

Exhibit A



LLELA Kayak Launch RFB #26-73-C

INTRODUCTION (See Specifications and Construction Plans for details)

The City of Lewisville is requesting competitive sealed bids from qualified contractors for the construction of a Kayak Launch at the Lewisville Lake Environmental Learning Area (LLELA). The project scope includes, but is not limited to, construction of a new kayak launch and associated site improvements at the Lewisville Lake spillway/LLELA area. Work generally consists of demolition and removal of select existing improvements, grading, erosion control, tree and fence removal, concrete pavement and sidewalks, ADA parking and striping, signage, gravel road and parking area improvements, pipe fencing and gates, and launch surface installation. Additionally, the construction will incorporate various supplementary elements as outlined in the plans and specifications.

BID BOND REQUIREMENTS

Bidders are required to submit a Bid Bond (with proper Power of Attorney) from a surety licensed to do business in the State of Texas, payable without recourse to the City of Lewisville, in an amount not less than five (5%) percent of the total amount of the base bid submitted to insure that the successful bidder will enter into a contract and execute all necessary bonds within ten (10) days after notice of award of the contract to them. **This bid security must be uploaded to Bonfire or included in the bid envelope along with the bid sheet for the bidder to be considered responsive.**

The successful bidder will be required to furnish the following bonds from a surety licensed to do business in the State of Texas. These bonds, along with proper insurance papers, will be incorporated as part of the final contract documents and will remain in effect until the completion and acceptance of the project. Maintenance bonds shall be in effect based on their stated term after final acceptance of the project:

A bid bond equal to 5% of the project amount is to be included with the sealed bid; a payment bond and performance bond at the project amount and a maintenance bond for two years from the date of the final acceptance.

All bidders are notified that the qualification statement provided in the bid documents must be completed and submitted with the bid proposal. Failure to include this completed form with your

bid may cause your bid to be disqualified as non-responsive.

The City is not responsible for any costs associated with the preparation of the bid from any vendor. Also, should a vendor bid an alternate; any test costs to prove equality of product will be at the expense of the vendor, not the City of Lewisville.

Each bidder is expected to inspect the site of the work and to inform himself regarding all local conditions. Ignorance of existing conditions of the site will not be a basis for any changes after the award of the bid.

Bids cannot be altered or amended after the submission deadline. Any interlineation, alteration, or erasure made before opening time must be initialed by the signee of the bid, guaranteeing authenticity.

In conformance with applicable statutes utilizing Federal Davis Bacon Wage Rates as adopted by the General Services Commission, the general prevailing wage rates in the locality in which the work is to be performed have been ascertained and such rate shall be the minimum paid for labor employed on this project; unless federal monies are used, in which case, specific wage decisions will be listed as part of the overall bid documents.

The City of Lewisville reserves the right to reject any and all bids, in whole or in part; to waive any informality in any bid. Award will be issued on the basis of lowest responsible bidder.

INSURANCE

Insurance shall be supplied by the awarded contractor within ten (10) days of notification of award, as detailed in this bid. Insurance must be approved by the City prior to the commencement of work and shall remain in effect throughout the entire duration of this project.

MISCELLANEOUS

All forms requiring either a signature or information to be filled in are to be returned with your bid. In addition, the language contained in the attached form entitled Purchase Order Terms and Conditions is made part of this request for bid through reference herein.

REQUEST FOR BIDS

Bids are to be submitted based on the specifications contained herein. Alternate bids will also be considered, provided the alternatives are clearly explained. All deviations from the specifications must be clearly identified and explained.

No telephone, email, or fax bids will be accepted. Bids may be accepted if delivered in person or by U.S. Postal Service, Federal Express, UPS, etc. or uploaded to Bonfire. The City is not responsible for missing, lost, or late delivery. Any RFB responses received after the time set for opening will be returned to the bidder unopened.

The preparation of the bid will be at the total expense of the bidder. There is no expressed or implied obligation for the City of Lewisville to reimburse responding bidders for any expense incurred in the preparation of bids in response to this request.

The City reserves the right to reject all bids, to consider alternatives, to waive any formalities and irregularities, and to re-solicit bids. In addition, during the evaluation period, the City may, where it may serve the City's best interest, request additional information or clarifications from bidders, or allow corrections of errors or omissions.

Each bidder shall guarantee and honor its response to these specifications for a period of ninety (90) days, or until the City enters a contract with one of the bidders, whichever occurs first.

The RFB will be available to interested parties on Bonfire or may be picked up in person at the Purchasing office.

All questions pertaining to this bid must be submitted in writing via Bonfire.

Bids may be uploaded to Bonfire at <https://cityoflewisville.bonfirehub.com/portal> or a sealed RFB consisting of one (1) hard copy and one (1) PDF file on a USB flash drive, clearly marked with the RFB title and date.

**RFB: 26-73-C
LLELA KAYAK LAUNCH**

Delivery address:
City of Lewisville
Finance Administration – Purchasing Division
Attn: Janine Carpenter, Senior Buyer
151 W Church St
Lewisville, TX 75057

Regardless of the chosen delivery method, it is the sole responsibility of contractor to ensure their complete submittal is inside the Finance Administration Department – Purchasing Division before the required time. The City will not be responsible for, without limitation, any delays occasioned by third parties. Late or emailed submittals shall not be accepted, without exception.

PRE-BID

A pre-bid conference will be held at the date and time specified on Bonfire. While attendance of the pre-bid conference is not mandatory, it is recommended due to the nature of the project.

PROPOSAL

City of Lewisville
Purchasing Office
151 West Church Street
P.O. Box 299002
Lewisville, Texas 75029-9002

LLELA KAYAK LAUNCH PROJECT NO. P1601

Proposal of _____
(hereinafter called Bidder), a corporation organized and existing under the laws of the State of _____, a partnership, or an individual doing business as _____

(Strike out inapplicable terms).

To the City of Lewisville, Texas (Owner)

The undersigned Bidder, in response to the Notice to Bidders for the construction of the above project and in conformity with the bidding documents; having examined the plans, specifications, related documents and the site of the proposed work; being familiar with all of the conditions relating to the construction of the proposed project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, supplies, equipment, staking, testing, traffic control, superintendence, etc., for the construction of the project in accordance with the plans, specifications, and contract documents at the unit prices proposed herein.

The undersigned Bidder proposes, acknowledges and agrees to construct the entire project as shown on the plans, fully in accordance with the requirements of the plans, specifications, and the contract documents for the prices included in this Proposal and fully understands and agrees that the various items of material, labor and construction not specifically enumerated and provided for herein are considered subsidiary to the several items for which direct payment is specifically provided. Further, the undersigned agrees that one such subsidiary item is the protection, adjustment, maintenance, repair or replacement of all underground lines and services, whether shown on the plans or not, all to the full satisfaction of the City Engineer in a timely manner.

The undersigned Bidder agrees to begin work under the contract on or before the date specified in the written Notice to Proceed, and to fully complete the project within **90 calendar days**. It is specifically stated and understood that the entire construction, including clean up, shall be completed within the above stated time.

The undersigned Bidder has contacted, within 72 hours prior to bid opening, the Office of the City Engineer (972) 219-3490, and has determined that all Addenda are as follows:

Addendum No. 1 dated

(Signature)

Addendum No. 2 dated

(Signature)

Addendum No. 3 dated

(Signature)

The undersigned Bidder acknowledges that the Owner reserves the right to waive any informality and to reject any or all proposals.

The undersigned Bidder acknowledges and agrees that this Proposal shall be good and may not be withdrawn for 90 days from the date of bid opening.

The undersigned Bidder has shown unit prices and amounts and agrees that in the case of discrepancy, the unit prices shown in figures shall stand and that the amounts and total will be adjusted to correspond to the unit prices shown.

The undersigned Bidder agrees to execute the Agreement and furnish the required Performance Bond and Payment Bond within fifteen calendar days from the date of award of a contract by the City; and agrees that any delay in furnishing the signed Agreement and Bonds will result in liquidated damages being applied in accordance with Item 108.8.1. of the Standard Specifications.

The undersigned Bidder has attached and made a part of this Proposal a bid security in conformance with Item 102.5. of the Standard Specifications and in accordance with the Notice to Bidders.

A 5% contingency line item will be included with the resulting contract and purchase order for this project. The contingency shall be used at the City's discretion and only upon written approval from the City. The amount listed as a contingency is not an obligation for payment from the City. Any unused contingency is retained by the City and is not payable to the Contractor.

Submitted:

(Signature)

(Name - Typed or Printed)

(Title)

(Seal, if corporation)

(Firm Name)

(Address)

(City/County/State/Zip Code)

(Telephone Number/Include Area Code)

(Date)

(Attest)

CONTRACTOR'S QUALIFICATIONS

ALL BIDDERS ARE NOTIFIED THAT THE FOLLOWING QUALIFICATION STATEMENT MUST BE COMPLETED AND SUBMITTED WITH THE BID OR PROPOSAL.

The contractor shall show they have experience with similar projects that require working in confined areas in close proximity to many physical features (fences, utility poles, guy lines, gas lines and meters, sewer manholes, cleanouts, etc.) which requires the contractor to plan work efforts and equipment needs with these limitations in mind. The contractor shall submit a list of Public Works Projects successfully completed within the last five (5) years, including the names of supervisors and type of equipment used to perform this work.

BIDDER'S QUALIFICATION STATEMENT

Project: _____

Contractor: _____

Name: _____ Title: _____

Address: _____

Phone: _____ Email: _____

Type of Business:

☐ Sole Proprietor ☐ Partnership ☐ Corporation ☐ Joint Venture Other _____

State and Date of Incorporation, Partnership, Ownership, Etc. _____

Principal Office Address: _____

Principal Office Contact & Phone: _____

Insurance:

Insurance Agency Name: _____

Insurance Agency Address: _____

Contact Name: _____ Phone: _____

Liability Insurance Provided and Limits of Coverage: _____

Workers Compensation Insurance Provider: _____

Surety Bonding Company (Performance & Payment: _____

Total Number of Employees to be Associated with this Job:

_____ Managerial _____ Administrative _____ Professional

_____ Skilled _____ Semi-Skilled _____ Other

Percentage of Work to be Done by Bidder's Employees (Based on Dollars Bid): _____

Type(s) of Work to be Done by Bidder's Employees (Examples: Concrete Paving, Structural Concrete, Water Lines, Sanitary Sewer Lines, Storm Pipe, Storm Inlets, Excavation, Lime, Bridge Fencing, etc.)

Access to Tools and Equipment: Percent Owned: _____ Percent Rented: _____

Number of Years in Business as a Contractor on Above Types of Work: _____

Sub-Contractor Information (use additional sheets, if needed.):

Name: _____ Phone: _____

Address: _____

Type of Work _____

List the most current completed projects like the type of work bid (use additional sheets, if necessary.)

Project: _____

Owner/Agency: _____

Year Built: _____ Contract Price: _____

Equipment Used: _____

Contact Name: _____ Title: _____

Email: _____ Phone: _____

Project: _____

Owner/Agency: _____

Year Built: _____ Contract Price: _____

Equipment Used: _____

Contact Name: _____ Title: _____

Email: _____ Phone: _____

Project: _____

Owner/Agency: _____

Year Built: _____ Contract Price: _____

Equipment Used: _____

Contact Name: _____ Title: _____

Email: _____ Phone: _____

Trade References (attach additional sheets if needed):

Company: _____ Contact: _____

Address: _____

Email: _____ Phone: _____

Company: _____ Contact: _____

Address: _____

Email: _____ Phone: _____

Company: _____ Contact: _____

Address: _____

Email: _____ Phone: _____

Bank References (attach additional sheets if needed):

Institution: _____ Contact Name: _____

Address: _____ Phone: _____

Financial statements are not required as part of this bid package, however a balance sheet and income statement from the previous fiscal year shall be required from the apparent low bidder to be reviewed and approved by the Finance Director prior to contract award.

Claims and Suits (If the answer to any of the questions is yes, please attach details):

Has your organization ever failed to complete any work awarded to it? ☐ Yes ☐ No

Are there any judgments, claims, arbitration proceedings, or suits pending or outstanding against your organization or its officers? ☐ Yes ☐ No

Has your organization filed any lawsuits or requested arbitration regarding construction contracts within the last five years? ☐ Yes ☐ No

Within the last five (5) years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract?
☐ Yes ☐ No

PROPOSED SUBCONTRACT BREAKDOWN

1.	Subcontractor	_____
	Address	_____
	Phone #	_____
	Description of Work	_____
2.	Subcontractor	_____
	Address	_____
	Phone #	_____
	Description of Work	_____
3.	Subcontractor	_____
	Address	_____
	Phone #	_____
	Description of Work	_____
4.	Subcontractor	_____
	Address	_____
	Phone #	_____
	Description of Work	_____

Reference is made to Item 21 on Page SS-11

LIST OF SUPPLIERS

1.	Item Supplied	_____
	Supplier	_____
	Address	_____
	Phone #	_____
2.	Item Supplied	_____
	Supplier	_____
	Address	_____
	Phone #	_____
3.	Item Supplied	_____
	Supplier	_____
	Address	_____
	Phone #	_____
4.	Item Supplied	_____
	Supplier	_____
	Address	_____
	Phone #	_____

PERFORMANCE BOND

STATE OF TEXAS
COUNTY OF DENTON

KNOW ALL MEN BY THESE PRESENTS: That _____ of the City of _____, County of _____, and State of _____, as Principal, and _____ authorized under the laws of the State of Texas to act as Surety on bonds for Principal, are held and firmly bound unto the City of Lewisville (Owner), in the penal sum of _____ Dollars (\$_____) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, by these presents:

WHEREAS, the Principal has entered into a certain written contract (Contract) with the Owner, dated the ____ day of _____, 20____ to construct:

LLELA KAYAK LAUNCH PROJECT NO. P1601

which Contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall faithfully perform said Contract and shall in all respects duly and faithfully observe and perform all and singular the covenants, conditions and agreements in and by said Contract agreed and covenanted by the Principal to be observed and performed, and according to the true intent and meaning of said Contract and the Plans and Specifications hereto annexed, then this obligation shall be void; otherwise to remain in full force and effect;

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Chapter 2253 of the Texas Government Code as amended and all liabilities on this bond shall be determined in accordance with the provisions of said Chapter to the same extent as if it were copied at length herein.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract, or to the work performed thereunder, or the plans, specifications, or drawings accompanying the same, shall in anyway affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work to be performed thereunder.

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

Principal

Surety

By:

By

Title:

Title

Address:

Address:

The name and address of the Resident Agent of Surety is:

Bond Number _____

PAYMENT BOND

**STATE OF TEXAS
COUNTY OF DENTON**

KNOW ALL MEN BY THESE PRESENTS: That _____ of the City of _____, County of _____, and State of _____, as Principal, and _____ authorized under the laws of the State of Texas to act as Surety on bonds for Principal, are held and firmly bound unto the City of Lewisville (Owner), in the penal sum of _____ Dollars (\$_____) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, by these presents:

WHEREAS, the Principal has entered into a certain written contract (Contract) with the Owner, dated the _____ day of _____, 20____ to construct:

**LLELA KAYAK LAUNCH
PROJECT NO. P1601**

which Contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall pay all claimants supplying labor and material to him or a subcontractor in the prosecution of the work provided for in said Contract, then, this obligation shall be void; otherwise to remain in full force and effect;

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Chapter 2253 of the Texas Government Code as amended and all liabilities on this bond shall be determined in accordance with the provisions of said Chapter to the same extent as if it were copied at length herein.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract, or to the work performed thereunder, or the plans, specifications or drawings accompanying the same, shall in anyway affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work to be performed thereunder.

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

Principal

Surety

By:

By

Title:

Title

Address:

Address:

The name and address of the Resident Agent of Surety is:

MAINTENANCE BOND

Bond No. _____

KNOW ALL MEN BY THESE PRESENTS:

That we, _____
(hereinafter called **Principal**), and _____, a corporation
organized under the laws of the State of _____ and authorized to do a surety business in the State
of Texas, (hereinafter called **Surety**), are held and firmly bound unto the City of Lewisville, Texas
(hereinafter called the **City**) in the full and just sum of _____,
lawful money of the United States of America, for the payment of which sum, well and truly to be made,
we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally,
firmly by these presents.

WHEREAS, said **Principal** has performed _____
improvements, which have been or are about to be completed and accepted by the **City** for the project
known as:

LLELA KAYAK LAUNCH PROJECT NO. P1601

AND WHEREAS, it is required that the **Principal** should guarantee the project from defects
caused by faulty or defective materials, workmanship, or design for a period of two years from and after
the date of acceptance of the completed project by the **City**.

NOW, THEREFORE, if the **Principal** shall for a period of two years from and after the date of
acceptance of the completed project by the **City** replace any and all defects arising in said work whether
resulting from faulty or defective materials, workmanship, or design, then the above obligation shall be
null and void; otherwise the obligation shall remain in full force and effect for two years from the date of
acceptance of the completed project by the **City**.

The **City** shall notify the **Principal** in writing of any defects for which the **Principal** is
responsible and shall specify in said notice a reasonable time within which the **Principal** shall have to
correct said defects. If the **Principal** fails to correct said defects within the time specified in said notice,

the **City**, in its discretion, may permit the **Surety** to correct said defects. If the **City** allows the **Surety** to correct said defects, the **Surety** shall have sixty (60) days thereafter within which to take such action as it deems necessary to insure performance of the **Principal's** obligation.

If such defects are not corrected after the time period specified in the notice or after the expiration of the sixty (60) day time period, whichever is applicable, the **City** shall have the right to correct the defects, and the **Principal** and **Surety**, jointly and severally, shall pay all costs and expenses incurred by the **City** in correcting the defects, including, but not limited to, the engineer, legal and other costs, together with any damages either direct or consequential, which the **City** sustains, or may sustain, on account of the **Principal's** failure to correct the defects. In addition, the **City** shall have the right to contract for the correction of said defects and, upon acceptance of a bid in accordance with the **City's** normal bidding process, the **Principal** and **Surety** shall become immediately liable for the amount of the bid. In the event that the **City** commences legal proceedings for the collection thereof, interest shall accrue on said amount at the rate of six (6) percent per annum, beginning at the commencement of said legal proceedings.

If the City commences suit for collection of any sums due hereunder, the **Principal** and **Surety**, jointly and severally, agree to pay all costs and expenses incurred by the **City**, including, but not limited to, attorney's fees.

IN WITNESS WHEREOF, the parties have caused this instrument to be signed and sealed by their respective authorized officers this _____ day of _____ 20__.

Principal: _____

Surety: _____

By: _____

By: _____

_____, *Attorney-in-Fact*

Address: _____

Address: _____

Witness as to Principal

**CITY OF LEWISVILLE
PURCHASING DIVISION**

BOND REQUIREMENTS AND RETAINAGE

BONDS

The successful bidder will be required to furnish the following bonds from a surety licensed to do business in the State of Texas. These bonds, along with proper insurance papers, will be incorporated as part of the final contract documents and will remain in effect until the completion and acceptance of the project. Maintenance bonds shall be in effect based on their stated term after final acceptance of the project:

Project amount \$10,001 to \$24,999 – a payment bond at the project amount and a maintenance bond for one year from the date of final payment.

Project amount \$25,000 to \$99,999 – a payment bond at the project amount and a maintenance bond for two years from the date of the final payment.

Project amount \$100,000 and greater – a signed, fully executed bid bond equal to five percent (5%) of the project amount is to be included with the sealed bid; a payment bond and performance bond at the project amount and a maintenance bond for two years from the date of the final payment.

RETAINAGE

Retainage will be based on the following: Fifteen percent (15%) retainage for contracts up to \$25,000; ten percent (10%) retainage for contracts more than \$25,000 and less than \$400,000; five percent (5%) retainage for contracts in excess of \$400,000.

**CITY OF LEWISVILLE
PURCHASING DIVISION**

INSTRUCTIONS TO BIDDERS

INSTRUCTIONS: These instructions apply to all bids and become a part of the terms and conditions of any bid submitted.

BIDS must not be faxed, but are to be submitted to the City in one of the following manners:

- A. **Electronic Receipt:** Bidders are encouraged to submit bids to the City through Bonfire. The City is a member of this electronic bidding platform and the submittal of bids to the City is at no cost to the bidder. The internet site is www.gobonfire.com.

or

- B. **Paper Bid Receipt:** Paper bids may be submitted to the City. Bidders are to submit the original and one PDF copy of the bid on a flash drive in a sealed envelope to the Purchasing Division prior to response due date/time. The sealed envelope is to be marked on the outside with the bidder's name, address, the bid invitation number, and closing date recorded on the bottom left corner of the envelope.

Address to:

City of Lewisville
Finance Administration - Purchasing Division
151 W. Church St.
Lewisville, Texas 75057

Sealed bids must be submitted in sufficient time as to be received and time stamped at the above location on or before the published bid date and time shown on the bid invitation. Bids received after submission deadline shall be returned unopened and will be considered void and unacceptable. The City of Lewisville is not responsible for lateness of mail carrier, etc.

BID: The bidder should quote its lowest and best price, F.O.B. destination on each item bid. If delivery and shipping quantities affect unit bid price, multiple bids may be made so as to indicate "price break" quantities in order for the City to determine maximum economic benefits. Pricing for paper bids shall be entered on the Bid Sheet in ink or typewritten. Totals shall be entered in the "Total Price" column of the Bid Sheet. In all cases of discrepancy between unit price and extended price, the unit price will be presumed to be correct.

MAKE-MODEL Items must be the best and latest model available of the type specified. If the bid invitation indicates a specific brand of product, the brand listed is deemed to be descriptive and not restrictive and is used to indicate the type and quality level desired for comparison purposes. Bidders may offer an approved equal to the brand listed, unless otherwise noted. The City shall make the final determination as to the brand offered being an approved equal to the brand listed. A Complete catalog or brochure showing in detail the item offered must accompany the bid.

SPLIT-AWARD: Bidders may furnish pricing for all or any portion of the bid invitation. Unless the bidder specifies otherwise in his bid, the City may award the contract for any item or group of items shown on the bid invitation.

BID FORMS: Bids submitted on other than City forms, whether electronic or paper, or with different terms or provisions may not be considered as responsive bids.

Bids must be held firm for ninety (90) days to allow for evaluation unless otherwise noted in the bid document.

F.O.B./DAMAGE: Quotations shall be bid F.O.B. Inside Delivery, Municipal Facility, Lewisville, Texas, and shall include all delivery and packaging costs. The City of Lewisville assumes no liability for goods delivered in damaged or unacceptable condition. The successful bidder shall handle all claims with carriers, and in case of damaged goods, shall ship replacement goods immediately upon notification by the City of damage.

INVOICES: Invoices must be submitted by the successful bidder in duplicate to the City of Lewisville Accounts Payable, P O Box 299002, Lewisville, TX 75029-9002 or may be emailed to: accountspayable_col@cityoflewisville.com.

TAXES: The City of Lewisville is exempt from Federal Manufacturer's Excise, and State Sales taxes. TAX MUST NOT BE INCLUDED IN BID. Tax exemption certificates will be executed by the City and furnished upon request.

PRICING: Bids should be firm. If the bidder, however, believes it necessary to base its price on price adjustment, such a bid may be considered, but only as an alternate bid.

PAYMENT TERMS: Payment terms are net 30 days after the goods are provided or services are completed, as required, or a correct invoice is received, whichever is later.

DELIVERY PROMISE - PENALTIES: Bids MUST show the number of calendar days required to place the materials in the possession of the City. DO NOT quote shipping dates. Consistent failure of a bidder to meet his delivery promises without valid reason may be cause for removal from the Bidder's List. When Delivery delays can be foreseen, the bidder shall give prior notice to the Purchasing Division which shall have the right to extend the delivery due date if reasons for delay appear acceptable. Default in promised delivery, without acceptable reasons, or failure to meet specifications, authorizes the Purchasing Division to purchase the goods elsewhere, and charge any increase in cost and handling to the defaulting bidder.

PACKAGING: Unless otherwise indicated, items will be new, unused, and in first class condition in containers suitable for damage-free delivery and storage.

CORRESPONDENCE: The bid number must appear on ALL correspondence, inquiries, etc. pertaining to the bid.

DELIVERY TIMES: Deliveries will be acceptable only during normal working hours at the designated City Municipal Facility.

PATENT RIGHTS: The Vendor agrees to indemnify and hold the City harmless from any and all claims involving patent right infringement or copyrights on goods supplied.

EVALUATION: Response to the specification in this bid is of primary importance in determining the lowest responsible bid.

BID AWARD: Bids will be awarded either on Lowest Responsible Bid or Best Value. The Criteria used to determine Best Value is as follows:

- Purchase Price
- The reputation of the bidder and of the bidder's goods and service
- The quality of the bidder's goods or services
- The extent to which the goods or services meet the municipality's needs.
- The bidder's past relationship with the municipality.
- The impact on the ability of the city to comply with laws and rules relating to contracting with historically underutilized businesses and non-profit organizations employing persons with disabilities.

The total long-term cost to the city to acquire the bidders good or services (Life Cycle Costing).

Any other relevant factors that a private business would consider in selecting a bidder.

FUNDING: The City of Lewisville is a home-rule municipal government operated and funded on an October 1 to September 30 Fiscal Year; accordingly, the City reserves the right to terminate, without liability to the City any contract for which funding is not available.

RESERVATIONS: The City expressly reserves the right to:

- A. Waive as an informality, minor deviations from specifications.
- B. Waive any defect, irregularity or informality in any bid or bidding procedure.
- C. Reject or cancel any or all bids.
- D. Reissue a bid invitation.
- E. Extend the bid opening time and date.
- F. Procure any item by other means.
- G. Increase or decrease the quantity specified in the bid invitation, unless the Bidder specifies otherwise.
- H. Consider and accept an alternate bid as provided herein when most advantageous
- I. to the City.

ASSIGNMENT: The successful bidder shall not sell, assign, transfer or convey this contract in whole or in part, without the prior written consent of the City.

AUDIT: The City of Lewisville reserves the right to audit the records and performance of the successful bidder during the term of the contract and for three years after the contract is completed.

PROTESTS: All protests regarding the bid solicitation process must be submitted in writing to the City Purchasing Manager within five (5) working days following the opening of bids. This includes all protests relating to advertising of bid notices, deadlines, bid opening, and all other related procedures under the Local Government Code, as well as any protests relating to alleged improprieties with the bidding process.

This limitation does not include protests relating to staff recommendations as to award of this bid. Protests relating to staff recommendations may be directed to the City Council by contacting the City Secretary.

Failure to Protest within the time allotted shall constitute a waiver of any protest.

ALTERING BIDS: Bid cannot be altered or amended after submission deadline. Any interlineation, or alteration made before opening time for sealed bids must be initialed by the signer of the bid, guaranteeing authenticity.

CHANGE ORDERS: No oral statement of any person shall modify or otherwise change, or affect the terms, conditions or specifications stated in the resulting contract. All change orders to the contract will be made in writing by the City of Lewisville.

ADDENDA: Any interpretations, corrections or changes to this Invitation for Bid and Specifications will be made by ADDENDA. Sole authority to issue addenda shall be vested in the City of Lewisville. Bidders shall acknowledge receipt of all addenda on bid form.

MINIMUM STANDARDS FOR RESPONSIBLE PROSPECTIVE BIDDERS: A prospective bidder must affirmatively demonstrate bidder's responsibility. A prospective bidder must meet the following requirements:

- Have adequate financial resources, or the ability to obtain such resources as required;
- Be able to comply with the required or proposed delivery schedule;
- Have a satisfactory record of performance;
- Have a satisfactory record of integrity and ethics;
- Be otherwise qualified and eligible to receive an award; and
- The City of Lewisville may request representation and other information sufficient to determine bidder's ability to meet these minimum standards listed above.

BIDDER SHALL PROVIDE with this bid response, all documentation required. Failure to provide this information may result in rejection of bid.

SUCCESSFUL BIDDER SHALL defend, indemnify and save harmless the City of Lewisville and all its officers, agents and employees and all entities, their officers, agents and employees who are participating in this contract from all suits, actions, or other claims of any character,

name and description brought for or on account of any injuries or damages received or sustained by any person, persons, or property on account of any negligent act or fault of the successful bidder, or of any agent, employee, subcontractor or supplier in the execution of, or performance under, any contract which may result from bid award. Successful bidder shall pay any judgment with cost which may be obtained against the City of Lewisville and participating entities growing out of such injury or damages.

TERMINATION FOR DEFAULT: The City of Lewisville reserves the right to enforce the performance of this contract in any manner prescribed by law or deemed to be in the best interest of the City in the event of breach or default of this contract. The City reserves the right to terminate the contract immediately in the event the successful bidder fails to 1) meet delivery schedules, or 2) otherwise perform in accordance with these specifications. Breach of contract or default authorizes the City to award to another bidder. Purchase elsewhere and charge the full increase in cost and handling to the defaulting successful bidder.

TESTING: Testing may be performed at the request of the City without expense to the City.

REMEDIES: The successful bidder and City of Lewisville agree that each party have all rights, duties, and remedies available as stated in the Uniform Commercial Code.

VENUE: This agreement will be governed and construed according to the laws of the State of Texas. This agreement is performable in Denton County, Texas.

SILENCE OF SPECIFICATION: The apparent silence of these specifications as to any detail or to the omission from it of a detailed description concerning any point shall be regarded as meaning that only the best commercial products and practices are to prevail. All interpretations of the specifications in this bid shall be made on the basis of this statement.

DEVIATIONS from specifications and alternate bids must be clearly shown on the bid form with complete information attached to form. They may or may not be considered.

NO EMPLOYEE of the City of Lewisville who has a financial interest in a prospective vendor shall participate in submitting a bid or proposal to conduct work for the City.

NO EMPLOYEE of the City of Lewisville shall receive any compensation for or as a result of a contract for goods or services purchased by the City if that employee was in a position to influence the City with respect to the contract.

ELIGIBLE BIDDER: Bidders are limited to those persons or firms who are qualified and engaged in a full-time business and can assume liabilities for any performance or warranty service required.

REJECTED ITEM(S): Item(s) that are rejected for failure to meet prescribed minimum specifications shall be returned to the supplier at no cost to the City of Lewisville.

INDEMNITY: The City of Lewisville will not accept a contract that contains any provision causing the City of Lewisville to indemnify the vendor for any reason.

VENDOR AGREEMENT: Any vendor agreements (service, maintenance, etc.) to be signed by the City of Lewisville must be submitted with your bid.

EXHIBIT A

PURCHASE ORDER TERMS & CONDITIONS

Seller and Buyer agree to comply with the following terms and conditions. These Terms and Conditions along with the purchase order shall constitute a contract between the Seller and Buyer upon the Seller issuing an invoice and/or providing any of the goods and services described in the purchase order. In the event of a conflict between these Terms and Conditions and a separate written agreement between the Seller and Buyer, the terms of the separate written agreement shall prevail.

1. SELLER TO PACKAGE GOODS: Seller will package goods in accordance with good commercial practice. Each shipping container shall be clearly and permanently packed as follows: (a) Seller's name and address; (b) Consignee's name, address and purchase order or purchase order release number and the supply agreement number if applicable; (c) Container number and total number of containers, e.g. box 1 of 4 boxes; and (d) the number of the container bearing the packing slip. Seller shall bear cost of packaging unless otherwise provided. Goods shall be suitably packed to secure lowest transportation costs and to conform with requirements of common carriers and any applicable specifications. Buyer's count or weight shall be final and conclusive on shipments not accompanied by packing lists.

2. SHIPMENT UNDER RESERVATION PROHIBITED: Seller is not authorized to ship the goods under reservation and no tender of a bill of lading will operate as a tender of goods.

3. TITLE AND RISK OF LOSS: The title and risk of loss of the goods shall not pass to Buyer until Buyer actually receives and takes possession of the goods at the point or points of delivery.

4. DELIVERY TERMS AND TRANSPORTATION CHARGES: F.O.B. Inside Delivery, Municipal Facility, Lewisville, Texas, and shall include all delivery and packaging costs. The Buyer assumes no liability for goods delivered in damaged or unacceptable condition. The Seller shall handle all claims with carriers, and in case of damaged goods, shall ship replacement goods immediately upon notification by Seller of damage.

5. NO REPLACEMENT OF DEFECTIVE TENDER: Every tender or delivery of goods must fully comply with all provisions of this contract as to time of delivery, quality and the like. If a tender is made which does not fully conform, this shall constitute a breach and Seller shall not have the right to substitute a conforming tender provided, where the time for performance has not yet expired, the Seller may notify Buyer of his intention to cure and may then make a conforming tender within the contract time but not afterward.

6. PLACE OF DELIVERY: The place of delivery shall be that set forth on the purchase order. Any change thereto shall be effected by modification as provided for in Clause 20, "Modifications", hereof. The terms of this contract are "no arrival, no sale".

7. INVOICES AND PAYMENTS: (a) Seller shall submit separate invoices on each purchase order after each delivery. Invoices shall indicate the purchase order number, shall be itemized and transportation charges, if any, shall be listed separately. A copy of the bill of lading, and the freight weigh bill when applicable, should be attached to the invoice. Mail to: City of Lewisville Accounts Payable, PO Box 299002 Lewisville, Texas 75029-9002. Payments shall be made thirty days after the goods are delivered to the Buyer, or a correct invoice is received, whichever is later. Suppliers should keep the Accounts Payable Office advised of any changes in remittance addresses. (b) Buyer's obligation is payable only and solely from funds available for the purpose of the purchase. Lack of funds shall render this contract null and void to the extent funds are not available and any delivered but unpaid for goods will be returned to Seller by Buyer. (c) Do not include Federal Excise, State or City Sales Tax. Buyer shall furnish tax exemption certificate, if required.

8. GRATUITIES: The Buyer may, by written notice to the Seller, cancel this contract without liability to Seller if it is determined by Buyer that gratuities, in the form of entertainment, gifts, or otherwise, were offered or given by the Seller, or any agent, or representative of the Seller, to any officer or employee of the City of Lewisville with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending or the making or any determinations with respect to the performing of such a contract. In the event this contract is cancelled by Buyer pursuant to this provision, Buyer shall be entitled, in addition to any other rights and remedies, to recover or withhold the amount of the cost incurred by Seller in providing such gratuities.

9. SPECIAL TOOLS AND TEST EQUIPMENT: If the price stated on the face hereof includes the cost of any special tooling or special test equipment fabricated or required by Seller for the purpose of filling this order, such special tooling equipment and any process sheets related thereto shall become the property of the Buyer and to the extent feasible shall be identified by the Seller as such.

10. WARRANTY PRICE: (a) The price to be paid by the Buyer shall be that contained in Seller's bid which Seller warrants to be no higher than Seller's current prices on orders by others for products of the kind and specification covered by this contract for similar quantities under similar or like conditions and methods of purchase. In the event Seller breaches this warranty, the prices of the items shall be reduced to the Seller's current prices on orders by others, or in the alternative, Buyer may cancel this contract without liability to Seller for breach or Seller's actual expense. (b) The Seller warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for commission, percentage, brokerage, or contingent fee excepting bona fide employees of bona fide established commercial or selling agencies maintained by the Seller for the purpose of securing business. For breach of violation of this warranty, the Buyer shall have the right in addition to any other right or rights to cancel this contract without liability and to deduct from the contract price, or otherwise recover the full amount of such commission, percentage, brokerage or contingent fee.

11. WARRANTY PRODUCTS: Seller shall not limit or exclude any implied warranties and any attempt to do so shall render this contract voidable at the option of the Buyer. Seller warrants that the goods furnished will conform to the specifications, drawings and descriptions listed in the bid invitation and to the sample(s) furnished by Seller, if any. In the event of a conflict between the specifications, drawings and descriptions, the specifications shall govern.

12. SAFETY WARRANTY: Seller warrants that the product sold to Buyer shall conform to the standards promulgated by the U. S. Department of Labor under the Occupational Safety and Health Act of 1970. In the event the product does not conform to OSHA standards, Buyer may return the product for correction or replacement at the Seller's expense. In the event Seller fails to make the appropriate correction within a reasonable time, correction made by Buyer will be at Seller's expense.

13. NO WARRANTY BY BUYER AGAINST INFRINGEMENTS: As part of this contract for sale Seller agrees to ascertain whether goods manufactured in accordance with the specifications attached to this contract will give rise to the rightful claim of any third person by way of infringement or the like. Buyer makes no warranty that the production of goods according to the specification will not give rise to such a claim, and in no event shall Buyer be liable to Seller for indemnification in the event that Seller is sued on the grounds of infringement or the like. If seller is of the opinion that an infringement or the like will result, he will notify Buyer to this effect in writing within two weeks after the signing of this contract. If Buyer does not receive notice and is subsequently held liable for the infringement of the like, Seller will save Buyer harmless. If Seller in good faith ascertains that production of the goods in accordance with the specifications will result in infringement or the like, this contract shall be null and void except that Buyer will pay Seller the reasonable cost of his search as to infringements.

14. RIGHT OF INSPECTION: Buyer shall have the right to inspect the goods at delivery before accepting them.

15. CANCELLATION: Buyer shall have the right to cancel for default all or any part of the undelivered portion of this order if Seller breaches any of the terms hereof including warranties of Seller or if the Seller becomes insolvent or commits acts of bankruptcy. Such right of cancellation is in addition to and not in lieu of any other remedies which Buyer may have in law or equity.

16. TERMINATION: The performance of work under this order may be terminated in whole or in part by the Buyer in accordance with this provision. Termination of work hereunder shall be effected by the delivery to the Seller of a "Notice of Termination" specifying the extent to which performance of work under the order is terminated and the date upon which such termination becomes effective. Such right of termination is in addition to and not in lieu of rights of Buyer set forth in Clause 15, herein.

17. FORCE MAJEURE: If by reason of Force Majeure, either party hereto shall be rendered unable wholly or in part to carry out its obligations under this contract then such party shall give notice and full particulars of Force Majeure in writing to the other party within a reasonable time after occurrence of the event or cause relied upon, and the

obligation of the party giving such notice, so far as it is affected by such Force Majeure, shall be suspended during the continuance of the inability then claimed, except as hereinafter provided, but for no longer period, and such party shall endeavor to remove or overcome such inability with all reasonable dispatch. The term Force Majeure as employed herein, shall mean acts of God, strikes, lockouts, or other industrial disturbances, act of public enemy, orders of any kind of government of the United States or the State of Texas or any civil military authority, insurrections, riots, epidemics, landslides, lightning, earthquakes, fires, hurricanes, storms, floods, washouts, droughts, arrests, restraint of government and people, civil disturbances, explosions, breakage or accidents to machinery, pipelines or canals, or other causes not reasonably within the control of the party claiming such inability.

18.ASSIGNMENT DELEGATION: No right or interest in this contract shall be assigned or delegation of any obligation made by Seller without the written permission of the Buyer. Any attempted assignment or delegation by Seller shall be wholly void and totally ineffective for all purposes unless made in conformity with this paragraph.

19.WAIVER: No claim or right arising out of a breach of this contract can be discharged in whole or in part by a waiver or renunciation of the claim or right unless the waiver or renunciation is supported by consideration and is in writing signed by the aggrieved.

20.MODIFICATIONS: This contract may be modified or rescinded only by a writing signed by both of the parties or their duly authorized agents. This shall include any change orders.

21.INTERPRETATION PAROLE EVIDENCE: This writing is intended by the parties as a final expression of their agreement and is intended also as a complete and exclusive statement of the terms of their agreement. No course of prior dealings between the parties and no usage of the trade shall be relevant to supplement or explain any term used in this contract. Acceptance or acquiescence in a course of performance rendered under this contract shall not be relevant to determine the meaning of this contract even though the accepting or acquiescing party has knowledge of the performance and opportunity for objection. Whenever a term defined by the Uniform Commercial Code is used in this contract, the definition contained in the Code is to control.

22.APPLICABLE LAW: This contract shall be governed by the Uniform Commercial Code. Wherever the term "Uniform Commercial Code" is used, it shall be construed as meaning the Uniform Commercial Code as adopted in the State of Texas as effective and in force on the date of this contract.

23.ADVERTISING: Seller shall not advertise or publish, without Buyer's prior consent, the fact that Buyer has entered into this contract, except to the extent necessary to comply with proper requests for information from an authorized representative of the federal, state or local government.

24.RIGHT TO ASSURANCE: Whenever one party to this contract in good faith has reason to question the other party's intent to perform he may demand that the other party give written assurance of his intent to perform. In the event that a demand is made and no assurance is given within five (5) days, the demanding party may treat this failure as an anticipatory repudiation of the contract.

25.VENUE: Both parties agree that venue for any litigation arising from this contract shall lie in Denton County, Texas.

26.DISCLOSURE: Pursuant to Chapter 176 of the Texas Local Government Code, a person or agent of a person who contracts or seeks to contract with the City of Lewisville must complete a conflict of interest questionnaire if the person or agent has an affiliation or business relationship that might cause a conflict of interest with the City. The conflict of interest questionnaire, which is available online at ethics.state.tx.us, must be filed with the City Secretary of the City of Lewisville no later than the seventh business day after the person or agent begins contract discussions or negotiations with the City of Lewisville or submits to the City of Lewisville an application, response to a request for proposal or bid, correspondence, or another writing related to a potential agreement with the City of Lewisville. An updated conflict of interest questionnaire must be filed in accordance with Chapter 176 of the Local Government Code

Seller should consult with legal counsel if you have questions regarding its compliance with the requirements of Chapter 176. It is the responsibility of each person or agent who is contracting or seeking to contract with the City of Lewisville to comply with the filing requirements of Chapter 176.

27. INDEPENDENT CONTRACTOR: Seller shall be considered an independent contractor and not an agent, servant, employee, or representative of Buyer in the performance of the work. No term or provision herein or act of the Seller shall be construed as changing that status.

28. TERMINATION FOR DEFAULT: Buyer reserves the right to enforce the performance of any Purchase Order in any manner prescribed by law or deemed to be in the best interest of Buyer in the event of breach or default. The Buyer reserves the right to terminate any purchase order and/or agreement with the Seller in the event the Seller fails to: (a) meet delivery schedules, or (b) otherwise perform in accordance with these terms and conditions.

29. PROTESTS: All protests regarding the solicitation process must be submitted in written form to the Purchasing Manager within five (5) working days following the opening of bids/proposals. This includes all protests relating to legal advertisements, deadlines, bid/proposal openings, and all other related procedures under the Local Government Code

Post-award protests must be submitted in written form to the City Manager within five (5) working days after award. The protest must include, at a minimum, the name of protester, bid/proposal number or description of goods or services, and a statement of grounds for protest.

30. INDEMNIFICATION: SELLER AGREES TO DEFEND, INDEMNIFY AND HOLD BUYER, ITS OFFICERS, AGENTS AND EMPLOYEES, HARMLESS AGAINST ANY AND ALL CLAIMS, LAWSUITS, JUDGMENTS, COSTS AND EXPENSES FOR PERSONAL INJURY (INCLUDING DEATH), PROPERTY DAMAGE OR OTHER HARM FOR WHICH RECOVERY OF DAMAGES IS SOUGHT, SUFFERED BY ANY PERSON OR PERSONS, THAT MAY ARISE OUT OF OR BE OCCASIONED BY SELLER'S BREACH OF ANY OF THESE TERMS AND CONDITIONS OR BY ANY NEGLIGENT OR STRICTLY LIABLE ACT OR OMISSION, INTENTIONAL TORT, INTELLECTUAL PROPERTY INFRINGEMENT, OR FAILURE TO PAY A SUBCONTRACTOR OR SUPPLIER COMMITTED BY SELLER, ITS OFFICERS, AGENTS, EMPLOYEES OR SUBCONTRACTORS, IN THE PERFORMANCE OF THIS CONTRACT; EXCEPT THAT THE INDEMNITY PROVIDED FOR IN THIS PARAGRAPH SHALL NOT APPLY TO ANY LIABILITY RESULTING FROM THE SOLE NEGLIGENCE OR FAULT OF BUYER, ITS OFFICERS, AGENTS, EMPLOYEES OR SEPARATE CONTRACTORS, AND IN THE EVENT OF JOINT AND CONCURRING NEGLIGENCE OR FAULT OF THE SELLER AND BUYER, RESPONSIBILITY AND INDEMNITY, IF ANY, SHALL BE APPORTIONED IN ACCORDANCE WITH THE LAW OF THE STATE OF TEXAS, WITHOUT WAIVING ANY GOVERNMENTAL IMMUNITY AVAILABLE TO BUYER UNDER TEXAS LAW AND WITHOUT WAIVING ANY DEFENSES OF THE PARTIES UNDER TEXAS LAW. THE PROVISIONS OF THIS PARAGRAPH ARE SOLELY FOR THE BENEFIT OF THE PARTIES HERETO AND NOT INTENDED TO CREATE OR GRANT ANY RIGHTS, CONTRACTUAL OR OTHERWISE, TO ANY OTHER PERSON OR ENTITY.

31. SEVERABILITY: In case any one or more of the provisions contained in these Terms and Conditions shall for any reason be held to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provision thereof, and these Terms and Conditions shall be construed as if such invalid, illegal, or unenforceable provision had never been contained herein.

32. IMMIGRATION REFORM AND CONTROL ACT (8 U.S.C 1324a): The Buyer supports the Immigration Reform and Control Act (IRCA), which is a comprehensive scheme prohibiting the employment of unauthorized aliens in the United States. The Seller and its subcontractors shall at all times during the term of the contract with the Buyer comply with the requirements of IRCA and shall notify the Buyer within fifteen (15) working days of receiving notice of a violation of IRCA. The Seller also warrants that it has not had an IRCA violation within the last five (5) years. The Buyer may terminate a contract with the Seller if the Buyer determines that (a) the Seller or its subcontractors have been untruthful regarding IRCA violations in the preceding five (5) years or (b) the Seller or its subcontractors fail to timely notify the Buyer of an IRCA violation.

33. ADA COMPLIANCE: All goods and services provided to the Buyer must be compliant with the Americans with Disabilities Act and any amendments thereto (the "ADA") and all regulations promulgated pursuant to the ADA. Seller will be required to certify compliance, if required under the law or otherwise required by the Buyer.

34. PROTECTION OF RESIDENT WORKERS: The Buyer actively supports the Immigration and Nationality Act (INA), which includes provisions addressing employment eligibility, employment verification, and nondiscrimination. Under the INA, employers may hire only persons who may legally work in the United States (i.e., citizens and nationals of the U.S.) and aliens authorized to work in the U.S. The employer must verify the identity and employment eligibility of anyone to be hired, which includes completing the Employment Eligibility Verification Form (I-9). The Seller shall establish appropriate procedures and controls so no services under the contract will be performed by any worker who is not legally eligible to perform such services or employment. The Buyer reserves the right to audit Seller's employment records to verify the existence of a completed Employment Eligibility Verification Form (I-9) for every worker performing services under the contract. The audit will be at the Buyer's expense.

35. TEXAS GOVERNMENT CODE CHAPTER 2252. Pursuant to Texas Government Code Chapter 2252, Subchapter F, Consultant affirms, by entering into this Agreement, that it is not identified on a list created by the Texas Comptroller of Public Accounts as a company known to have contracts with or provide supplies or services to Iran, Sudan, or a foreign terrorist organization.

36. TEXAS GOVERNMENT CODE CHAPTER 2271. Pursuant to Texas Government Code Chapter 2271, Consultant affirms that execution of this Agreement serves as written verification that Consultant: (1) does not boycott Israel, as defined by Texas Government Code Section 808.001; and (2) will not boycott Israel during the term of the Agreement. This section shall not apply if Consultant employs fewer than ten (10) full-time employees, or if the funds to be paid wholly or partly from public funds of the City under this Agreement are less than \$100,000.00.

37. TEXAS GOVERNMENT CODE CHAPTER 2274. Pursuant to Texas Government Code Chapter 2274, Consultant verifies the following:

- A. Consultant: (1) does not boycott energy companies, as defined by Texas Government Code Section 809.001; and (2) will not boycott energy companies during the term of this Agreement.
- B. Consultant: (1) does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association, as those terms are defined in that chapter; and (ii) will not discriminate during the term of this Agreement against a firearm entity or firearm trade association.

This section shall not apply if Consultant employs fewer than ten (10) full-time employees, if the funds to be paid wholly or partly from public funds of the City under this Agreement are less than \$100,000.00, or if this Agreement is otherwise exempted from the requirements of Texas Government Code Chapter 2274.

**CITY OF LEWISVILLE
PURCHASING DIVISION**

ADDITIONAL TERMS

ANTI-LOBBYING PROVISION

During the period between proposal / sealed bid submission date and the contract award, proposers, including their agents and representatives, shall not directly discuss or promote their proposal with any member of the City of Lewisville City Council or City staff except during City-Sponsored inquiries, briefings, interviews, or presentations, unless requested by the City.

This provision is not meant to preclude offerors from discussing other matters with City Council members or City staff. This policy is intended to create a level playing field for all potential offerors, assure that contract decisions are made in public, and to protect the integrity of the RFP / Bid Evaluation process. Violation of this provision may result in rejection of the offeror's proposal.

LAWS AND ORDINANCES

Laws and Ordinances: The Contractor shall always observe and comply with all Federal, State and local laws, ordinances and regulations which in any manner affect the Contract or the work and shall indemnify and save harmless the City against any claim arising from the violation of any such laws, ordinances and regulations whether by the Contractor or his employees.

PROTECTION OF RESIDENT WORKERS

Protection of Resident Workers: The City of Lewisville actively supports the Immigration and Nationality Act (INA) which includes provisions addressing employment eligibility, employment verification, and nondiscrimination. Under the INA, employers may hire only persons who may legally work in the United States (i.e., citizens and nationals of the U.S.) and aliens authorized to work in the U.S. The employer must verify the identity and employment eligibility of anyone to be hired, which includes completing the Employment Eligibility Verification Form (I-9). The Contractor and its Subcontractors shall establish appropriate procedures and controls so no services or products under the Contract Documents will be performed or manufactured by any worker who is not legally eligible to perform such services or employment. The City reserves the right to audit Contractor's or Subcontractor's employment records to verify the existence of a completed Employment Eligibility Verification Form (I-9) for every worker performing services or manufacturing products under the Contract Documents. The audit will be at the City's expense.

IMMIGRATION REFORM AND CONTROL ACT

Immigration Reform and Control Act (8 U.S.C. §1324a): The City of Lewisville supports the Immigration Reform and Control Act (IRCA) which is a comprehensive scheme prohibiting the employment of unauthorized aliens in the United States. The Contractor shall submit a declaration signed under penalty of perjury of the laws of the State of Texas stating that it has not been found in violation of IRCA by the United States Attorney General or Secretary of Homeland Security in the preceding five (5) years. The Contractor shall ensure that its Subcontractors submit a declaration signed under penalty of perjury of the laws of the State of

Texas stating that they have not been found in violation of IRCA by the United States Attorney General or Secretary of Homeland Security in the preceding five (5) years. The Contractor and its Subcontractors shall at all times during the term of the contract with the City comply with the requirements of IRCA and shall notify the City within fifteen (15) working days of receiving notice of a violation of IRCA. The City may terminate a contract with the Contractor if the City determines that (a) the Contractor or its Subcontractors have been untruthful regarding IRCA violations in the preceding five (5) years; (b) if the Contractor fails to ensure that its Subcontractors submit the aforementioned declaration; or (c) the Contractor or its Subcontractors fail to timely notify the City of an IRCA violation.

Contractor Name

Authorized Signature

Date

**CITY OF LEWISVILLE
PURCHASING DIVISION**

STATE RECIPROCAL REQUIREMENT

The City of Lewisville, as a governmental agency of the State of Texas, may not award a contract for general construction, improvements, services or public works projects or purchases of supplies, materials, or equipment to a non-resident bidder unless the non-resident's bid is lower than the lowest bid submitted by a responsible Texas resident bidder by the same amount that a Texas resident bidder would be required to underbid a non-resident bidder to obtain a comparable contract in the state in which the non-resident's principal place of business is located (Section 2252.002 of the Government Code). Bidder shall answer all the following questions by encircling the appropriate response or completing the blank provided.

1. Where is your principal place of business? _____
2. Only if your principal place of business is not in the state of Texas, please indicate:
 - A. In which state is your principal place of business located? _____
 - B. Does that state favor resident bidders (bidders in your state) by some dollar increment or percentage? ☐ YES ☐ NO
 - C. If "YES", what is that dollar increment or percentage? _____

NON-COLLUSION STATEMENT

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

Vendor:			
Address:			
City, State, Zip:			
Phone:			
Email:			
Bidder (Print Name):			
Bidder Signature:			
Job Title:			
Signature of company official authorizing this bid:			
Company Official (Print name):			
Job Title:			

Lewisville 2025 - Sustainability

Lewisville City Council unanimously adopted the Lewisville 2025 plan on July 14, 2014. The plan was developed after more than a year of public input and discussion that garnered hundreds of ideas and suggestions. That input was studied extensively by the Lewisville 2025 Steering Committee, City staff and professional consultants and formulated into the Lewisville 2025 plan. The plan provides a clear shared vision for the kind of community Lewisville wants to be when it turns 100 years old in 2025: a place that people choose to live, work and visit.

Lewisville 2025 identifies nine “Big Moves” to guide the community’s efforts toward being a thriving, desirable community. One of these Big Moves is sustainability. Lewisville defines sustainability in this way:

Limited resources, such as land, water, energy, clean air, natural assets, and public funds are used efficiently to provide a desirable quality of life and business climate today without reducing Lewisville’s ability to provide the desired quality of life and business climate for success of future generations.

The Purchasing Division’s goal is to support and encourage sustainable management practices through the purchase and use of materials, products and services that demonstrate environmental stewardship as well as fiscal and social responsibility. To that end, Lewisville will consider environmental factors such as but not limited to, recycled content, product life cycle, waste reduction, energy efficiency, toxicity, water consumption, and human health impacts when making purchasing recommendations. To assist City staff with evaluating these factors, prospective vendors may be required to provide specific information about their products and services that addresses environmental impacts.

Does Product or Service?	Yes	No	Details
Reduce energy consumption			
Reduce toxicity, including emissions			
Reduce waste			
Contain recyclable materials			
Reduce water consumption			
List other environmental impacts			

Attach supporting documentation if needed

PROJECT MANUAL

(Issued for Bidding)

FOR

LLELA KAYAK LAUNCH LEWISVILLE LAKE

***Lewisville Lake Spillway, E Jones St
Lewisville, TX 75057***

**CEI Project No. 33855.1
March 18, 2026**



Engineer's Seal and Signature

**CEI Engineering Associates, Inc.
P.O. Box 1408
Bentonville, Arkansas 72712
(479) 273-9472**

LLELA KAYAK LAUNCH LEWISVILLE LAKE

***Lewisville Lake Spillway, E Jones St
Lewisville, TX 75057***

CEI Project No. 33855.1

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00 73 00	Supplementary Conditions

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01 21 20	Allowances
01 22 01	Measurement and Payment
01 26 00	Modification Procedure
01 26 13	Contractors “Request for Information” Process
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01 66 00	Storage and Protection
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This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



Endorsed By



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National Society of Professional Engineers
1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
(800) 548-2723
www.asce.org

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GUIDELINES FOR USE OF EJCDC® C-700, STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

1.0 PURPOSE AND INTENDED USE OF THE DOCUMENT

EJCDC® C-700, Standard General Conditions of the Construction Contract (2018), is the foundation document for the EJCDC Construction Series. The General Conditions define the basic rights, responsibilities, risk allocations, and contractual relationship of the Owner and Contractor, and establish how the Contract is to be administered.

2.0 OTHER DOCUMENTS

EJCDC documents are intended to be used as a system and changes in one EJCDC document may require a corresponding change in other documents. Other EJCDC documents may also serve as a reference to provide insight or guidance for the preparation of this document.

These General Conditions have been prepared for use with either EJCDC® C-520, Agreement Between Owner and Contractor for Construction Contract (Stipulated Price), or EJCDC® C-525, Agreement Between Owner and Contractor for Construction Contract (Cost-Plus-Fee) (2018 Editions). The provisions of the General Conditions and the Agreement are interrelated, and a change in one may necessitate a change in the other.

To prepare supplementary conditions that are coordinated with the General Conditions, use EJCDC® C-800, Supplementary Conditions of the Construction Contract (2018).

The full EJCDC Construction series of documents is discussed in the EJCDC® C-001, Commentary on the 2018 EJCDC Construction Documents (2018).

3.0 ORGANIZATION OF INFORMATION

All parties involved in a construction project benefit significantly from a standardized approach in the location of subject matter throughout the documents. Experience confirms the danger of addressing the same subject matter in more than one location; doing so frequently leads to confusion and unanticipated legal consequences. Careful attention should be given to the guidance provided in EJCDC® N-122/AIA® A521, Uniform Location of Subject Matter (2012 Edition) when preparing documents. EJCDC® N-122/AIA® A521 is available at no charge from the EJCDC website, www.ejcdc.org, and from the websites of EJCDC's sponsoring organizations.

If CSI MasterFormat™ is used for organizing the Project Manual, consult CSI MasterFormat™ for the appropriate document number (e.g., under 00 11 00, Advertisements and Invitations), and accordingly number the document and its pages.

4.0 EDITING THIS DOCUMENT

Remove these Guidelines for Use. Some users may also prefer to remove the two cover pages.

Although it is permissible to revise the Standard EJCDC Text of C-700 (the content beginning at page 1 and continuing to the end), it is common practice to leave the Standard EJCDC Text of C-700 intact and unaltered, with modifications and supplementation of C-700's provisions set forth in EJCDC® C-800, Supplementary Conditions of the Construction Contract (2018). If the Standard Text itself is revised, the

user must comply with the terms of the License Agreement, Paragraph 4.0, Document-Specific Provisions, concerning the tracking or highlighting of revisions. The following is a summary of the relevant License Agreement provisions:

1. The term “Standard EJCDC Text” for C-700 refers to all text prepared by EJCDC in the main body of the document. Document covers, logos, footers, instructions, or copyright notices are not Standard EJCDC Text for this purpose.
2. During the drafting or negotiating process for C-700, it is important that the two contracting parties are both aware of any changes that have been made to the Standard EJCDC Text. Thus, if a draft or version of C-700 purports to be or appears to be an EJCDC document, the user must plainly show all changes to the Standard EJCDC Text, using “Track Changes” (redline/strikeout), highlighting, or other means of clearly indicating additions and deletions.
3. If C-700 has been revised or altered and is subsequently presented to third parties (such as potential bidders, grant agencies, lenders, or sureties) as an EJCDC document, then the changes to the Standard EJCDC Text must be shown, or the third parties must receive access to a version that shows the changes.
4. Once the document is ready to be finalized (and if applicable executed by the contracting parties), it is no longer necessary to continue to show changes to the Standard EJCDC Text. The user may produce a final version of the document in a format in which all changes are accepted, and the document at that point does not need to include any “Track Changes,” redline/strikeout, highlighting, or other indication of additions and deletions to the Standard EJCDC Text.

5.0 LICENSE AGREEMENT

This document is subject to the terms and conditions of the **License Agreement, 2018 EJCDC® Construction Series Documents**. A copy of the License Agreement was furnished at the time of purchase of this document, and is available for review at www.ejcdc.org and the websites of EJCDC’s sponsoring organizations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*
 - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
- 11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
 - 12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
 - 13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
 - 14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
 - 15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
 - 16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
 - 17. *Cost of the Work*—See Paragraph 13.01 for definition.
 - 18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
 - 19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
 - 20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 - 21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - 1. does not conform to the Contract Documents;
 - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - 3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
 - 1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 - 2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 - 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
 - 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 - 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 - 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

- A. *Standards Specifications, Codes, Laws and Regulations*
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. Abnormal weather conditions;
 - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

- D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

- C. *Reliance by Contractor on Technical Data:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents:* Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
 3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
 4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
 - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
 3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions:* Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
 4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

- of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
- H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;
 - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
 - 4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
 - 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
 - 1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 - 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 - 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

- A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

- E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
- 2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.
 2. *Samples*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
- 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
 - 1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 - 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 - 2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
 - 1. Observations by Engineer;
 - 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
 - 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 - 4. Use or occupancy of the Work or any part thereof by Owner;
 - 5. Any review and approval of a Shop Drawing or Sample submittal;
 - 6. The issuance of a notice of acceptability by Engineer;
 - 7. The end of the correction period established in Paragraph 15.08;
 - 8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.
- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 Indemnification

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 Delegation of Professional Design Services

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. An itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
 - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
 - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
 - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

- A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will be determined as follows:
1. A mutually acceptable fixed fee; or
 2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
 - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

- A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

- B. *Change Proposal Procedures*

- 1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
- 2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

- 3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
- 4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
 - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
 5. Other costs consisting of the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
 - 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
 - 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.
- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- C. *Costs Excluded:* The term Cost of the Work does not include any of the following items:
- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
 - 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
 - 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 - 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 - 5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 - 6. Expenses incurred in preparing and advancing Claims.
 - 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.
- D. *Contractor's Fee*
- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
 - 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances*: Contractor agrees that:
1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 3. by manufacturers of equipment furnished under the Contract Documents;
 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 Defective Work

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
 - 2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. Review of Applications

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

- b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

- d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
- 3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
 - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
 - 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
 - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 - 2. agree with the other party to submit the dispute to another dispute resolution process; or
 - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
 - 1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 - 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 - 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

DIVISIONS FOR SITE WORK

<i>Section No.</i>	<i>Title</i>
02 32 11	Site and Subsurface Investigation by Contractor
02 41 00	Demolition
03 31 60	Miscellaneous Concrete Work
03 32 00	Grout
31 00 10	Site Preparation
31 00 20	Earthwork
31 05 16	Aggregate Materials
31 23 03	Excavation, Backfill, and Compaction for Pavement
31 25 01	Erosion and Sedimentation Controls
31 25 50	Rock Check Dams
31 25 63	Silt Fence
31 25 70	Stabilized Construction Entrance
31 25 91	Concrete Washout Systems and Practices
31 80 00	General Requirements for Site Restoration
32 11 24	Aggregate Base Course [Parking Lots]
32 13 13	Portland Cement Concrete Paving
32 17 13	Precast Concrete Wheel Stops
32 17 23	Pavement Marking
32 17 24	Exterior Signage
32 90 00	Landscaping General Requirements
32 92 01	Seeding
32 93 43	Trees
32 94 00	Landscaping Accessories
Special Provision	Work in Wetlands and Waters of the U.S.
Special Provision	Temporary Construction Matting
Special Provision	6' Board Fence
Special Provision	Steel Pipe Fence (Including Gate)
Special Provision	Gravel Road (No Synthetic Reinforcement)
Special Provision	Geosystems Geopave Aggregate Pours Pavement
Special Provision	Hydroturf Ramp Surface (With Concrete Side Anchors)
Special Provision	Crossgrip Non-Slip PVC
Special Provision	Crossgrip Non-Slip PVC with Compacted Aggregate Base
Special Provision	Hydro-seed with Straw Erosion Mat
Special Provision	Biodegradable Coir Matting
Special Provision	Pyramat Synthetic Erosion Control Blanket

End of Document 00 01 10

DOCUMENT 00 72 00

GENERAL CONDITIONS

PART 1 GENERAL

1.01 GENERAL

- A. The Standard General Conditions of the Construction Contract, EJCDC Document C 700, Latest Edition, of the Engineer's Joint Contract Documents Committee, hereinafter referred to as General Conditions, are hereby made a part of this Specification to same extent as if bound herein.
- B. The Contractor is hereby specifically directed, as a condition of the Contract, to obtain the necessary number of copies of EJCDC Document C 700, to acquaint himself with the Articles contained therein, and to notify and appraise all subcontractors and any other parties to the Contract of, and bind them to, its conditions.
- C. No contractual adjustments shall be due as a result of failure on the part of the Contractor, subcontractors or other parties to the Contract to fully acquaint themselves with the conditions of EJCDC Documents C 700.
- D. The Standard General Conditions of the Construction Contract, EJCDC Documents C 700, is herein amended by the Supplementary Conditions.
- E. Upon execution of the Agreement, Owner and Contractor agree to abide by Exhibit GC-A to the General Conditions identified as the "Dispute Resolution Agreement" to the same extent as if it were dated and bound herein.
- F. The provisions of the General and Supplementary Conditions and Division 01 – General Requirements, apply to the work specified in each Section of the Specifications.

End of Document 00 72 00

DOCUMENT 00 73 00

SUPPLEMENTARY CONDITIONS

LIST OF SUBJECTS

SC-1.01	<i>Defined Terms</i>
SC-2.01.C	<i>Evidence of Owner's Insurance</i>
SC-2.02	<i>Copies of Documents</i>
SC-2.03.A	<i>Preliminary Schedules</i>
SC-4.04	<i>Progress Schedules</i>
SC-4.05	<i>Delays in Contactor's Progress</i>
SC-5.03	<i>Subsurface and Physical Conditions</i>
SC-5.05	<i>Underground Facilities</i>
SC-6.01	<i>Performance, Payment, and Other Bonds</i>
SC-6.02	<i>Insurance – General Provisions</i>
SC-6.03	<i>CONTRACTOR'S Insurance</i>
SC-6.03.C	<i>Additional Insureds</i>
SC-6.04	<i>Builders Risk and Other Property Insurance</i>
SC-6.06	<i>Receipt and Application of Insurance Proceeds</i>
SC-7.17	<i>CONTRACTOR'S General Warranty and Guarantee</i>
SC-9.06	<i>Insurance</i>
SC-13.03	<i>Adjustments in Unit Price</i>
SC-15.01.C	<i>Review of Applications</i>
SC-15.01.D	<i>Payment Becomes Due</i>
SC-15.03	<i>Substantial Completion</i>

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC No. 00700, 2018 Edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect. Paragraph numbers in these Supplementary Conditions correspond to the paragraph numbers in the General Conditions, except with the designation "SC".

SC-1.01 *Defined Terms*

The terms used in the Supplementary Conditions which are defined in the Standard General Conditions of the Construction Contract (No. 00700, 2018 Edition) have the meanings assigned to them in the General Conditions. In addition to the provisions of paragraph 1.01, the following supplemental definitions apply:

"1.01.30 *OWNER*" shall mean City of Lewisville acting through its duly authorized representatives. Address – 151 W. Church Street, Lewisville, TX 75057

Add the following definitions to paragraph 1.01 of the General Conditions:

"1.01.51 *Surety*" or "sureties" shall mean the bondsmen or party or parties who have made the fulfillment of the contract by Bonds, and whose signatures are attached to such Bonds.

1.01.52 *Advertisement* shall mean the legal publications pertaining to the work of this contract.

1.01.53 *Plans* shall mean, collectively, all of the Drawings pertaining to the contract and made a part thereof, and also such supplementary drawings as Engineer may issue from time to time in order to clarify the Drawings, or for the purpose of showing changes in the work as authorized under the General Requirements, or for the showing of details which are not shown thereon.

1.01.54 *Grade* shall mean and indicate the established elevations of the paving, earthen surfaces, flow lines of sewers and other appurtenances as shown on the Drawings."

SC-2.01.C *Evidence of Owner's Insurance*

Delete paragraph 2.01.C in its entirety.

SC-2.02 *Copies of Documents*

Delete paragraph 2.02A and 2.02B of the General Conditions in its entirety and insert the following in its place:

"A. ENGINEER shall furnish to CONTRACTOR five bound copies of the Agreement and other Contract Documents, the Bond or Bonds properly executed. CONTRACTOR shall execute the Agreement and submit all copies to the OWNER for execution. The date of contract on the

Agreement, Bond forms, and power of attorney shall be left blank for filling in by OWNER. These documents will be dated the day the OWNER executes the contract.

OWNER shall furnish to CONTRACTOR up to four copies of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction."

SC-2.03.A *Preliminary Schedules*

Add the following to the end of paragraph 2.03.A.3 of the General Conditions:

"The unit prices provided by CONTRACTOR in the Bid Form shall serve as the basis of the Schedule of Values. Additional subdivision of unit price or lump sum items shall be made as reasonably requested by ENGINEER or CONTRACTOR or as required to verify progress payments for Unit Price Work that will take place over several progress periods."

SC-4.04 *Progress Schedules*

Add a new paragraph 4.04.A.3 immediately following paragraph 4.04.A.2 of the General Conditions which shall read:

"3. An updated schedule, in the format specified in the Specifications, shall be required with each submittal for progress payment by CONTRACTOR. Failure to provide an accurate schedule (and/or updated schedule) shall be reason for OWNER to refuse progress payment to CONTRACTOR."

SC-4.05 *Delays in Contractor's Progress*

Delete section 4.05.C.2 of the General Conditions in its entirety, and replace it with the following:

"2. CONTRACTOR will be allowed delays for weather conditions, based on the concurrence of CONTRACTOR and OWNER or ENGINEER, for two circumstances: 1) isolated inclement weather, wherein the project site is determined to be unworkable for days of precipitation and days following for short times between otherwise good weather; and 2) sustained inclement weather, wherein the project site is determined to be unworkable for a sustained period of time, such as the winter months, with only an occasional working day within the sustained unworkable conditions. If CONTRACTOR believes either condition applies, a request shall be made to ENGINEER or OWNER for a site meeting and a joint determination of the site conditions and approval of the delay. ENGINEER will catalog these approved delays, and will incorporate them into a Change Order for signature of OWNER and CONTRACTOR."

SC-5.03 *Subsurface and Physical Conditions*

Some subsurface investigation has been conducted within the project site area, and ENGINEER has used some of the technical data related to subsurface and physical conditions in the preparation of Drawings and Specifications.

SC-5.05 *Underground Facilities*

Add a new paragraph 5.05.B.1 immediately following paragraph 5.05.B of the General Conditions which shall read:

"1. Does not apply to Underground Facilities that are being relocated by others as part of the Project. OWNER does not control the schedule of the owners of those Underground Facilities, and cannot determine whether those Underground Facilities will be relocated prior to, simultaneous to, or after the Work under these Contract Documents. CONTRACTOR shall advise ENGINEER of Underground Facilities that have been relocated, but may not make a claim for changes in the Contract Price or Contract Times as a result of any such relocation. If the relocation of Underground Facilities presents an obstacle to the Work continuing, CONTRACTOR shall inform OWNER and ENGINEER of the obstacle, and ENGINEER will determine if a change in the Work is required. If the change in the Work results in a change in the quantity of Unit Price Work, CONTRACTOR will be paid for the actual Unit Price Work installed."

Add the following new paragraphs immediately after paragraph 6.01.H of the General Conditions which read as follows:

"I. A governmental entity that makes a public work contract with a prime contractor shall require the contractor, before beginning the work, to execute to the governmental entity:

(1) a performance bond if the contract is in excess of \$100,000; and

(2) a payment bond if:

(A) the contract is in excess of \$25,000, and the governmental entity is not a municipality or a joint board created under Subchapter D (Definitions), Chapter 22 (County and Municipal Airports), Transportation Code; or

(B) the contract is in excess of \$50,000, and the governmental entity is a municipality or a joint board created under Subchapter D (Definitions), Chapter 22 (County and Municipal Airports), Transportation Code.

J. The performance bond is:

(1) solely for the protection of the state or governmental entity awarding the public work contract;

(2) in the amount of the contract; and

(3) conditioned on the faithful performance of the work in accordance with the plans, specifications, and contract documents.

K. The payment bond is:

(1) solely for the protection and use of payment bond beneficiaries who have a direct contractual relationship with the prime contractor or a subcontractor to supply public work labor or material; and

(2) in the amount of the contract.

L. A bond required by this section must be executed by a corporate surety in accordance with Section 1, Chapter 87, Acts of the 56th Legislature, Regular Session, 1959 (Article 7.19-1, Vernon's Texas Insurance Code).

M. A bond executed for a public work contract with the state or a department, board, or agency of the state must be payable to the state and its form must be approved by the attorney general. A bond executed for a public work contract with another governmental entity must be payable to and its form must be approved by the awarding governmental entity.

N. A bond required under this section must clearly and prominently display on the bond or on an attachment to the bond:

(1) the name, mailing address, physical address, and telephone number, including the area code, of the surety company to which any notice of claim should be sent; or

(2) the toll-free telephone number maintained by the Texas Department of Insurance under Subchapter B (Department Toll-free Number for Information and Complaints), Chapter 521 (Consumer Information and Complaints), Insurance Code, and a statement that the address of the surety company to which any notice of claim should be sent may be obtained from the Texas Department of Insurance by calling the toll-free telephone number.

O. A governmental entity may not require a contractor for any public building or other construction contract to obtain a surety bond from any specific insurance or surety company, agent, or broker.

P. A reverse auction procedure may not be used to obtain services related to a public work contract for which a bond is required under this section. In this subsection, "reverse auction procedure" has the meaning assigned by Section [2155.062 \(Purchase Methods\)](#) or a procedure similar to that described by Section [2155.062 \(Purchase Methods\)](#)."

SC-6.02 *Insurance – General Provisions*

Delete paragraph 6.02.G of the General Conditions in its entirety and insert the following in its place:

"G. CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and their agents and employees from and against all losses and claims, demands, payments, suits, actions, recoveries, judgments of every nature and description brought or recovered against them by reason of omission or act of CONTRACTOR, his agent(s), employees, Subcontractor, Supplier, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, in the execution of the Work or guarding of it. CONTRACTOR shall obtain in the name of OWNER and ENGINEER (either as co-insured or by endorsement), and shall maintain and pay the premiums for such insurance in an amount not less than \$1,000,000.00 for property damage and bodily injury limits, and with such provisions as shall protect OWNER and ENGINEER from contingent liability under this contract.

Add the following language at the end of paragraph 6.02.N of the General Conditions:

"Any wording such as "will endeavor" or "but failure to mail such notice shall impose no obligation or liability of any kind upon the [insurance] Company" shall be deleted from the policies and insurance certificates."

SC-6.03 *CONTRACTOR's Insurance*

The limits for liability for the insurance required by paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

Workers Compensation, etc.:

- 1) State: Statutory
- 2) Applicable Federal: Statutory
- 3) Employer's Liability: \$100,000.00 each occurrence

Comprehensive General Liability Insurance:

\$1,000,000.00 Combined Single Limit

Policies will include premise/operations, products, completed operations, independent contractors, explosions, collapse, underground hazard, Broad Form contractual, personal injury, with employment exclusion deleted and broad form property damage.

Comprehensive Automobile Liability:

(1) Bodily Injury:

\$1,000,000.00 Each person
\$2,000,000.00 Each occurrence

Property Damage:

\$500,000.00 Each occurrence

or

(2) a combined single limit of \$2,000,000.00.

SC-6.03.C *Additional Insureds*

Additional insureds with respect to insurance required by paragraph 6.03.C of the General Conditions shall include: _____, (OWNER), and **CEI Engineering Associates, Inc.** (ENGINEER).

SC-6.04 *Builder's Risk and Other Property Insurance*

Delete paragraph 6.04.B of the General Conditions in its entirety and insert the following in its place:

"B. CONTRACTOR shall purchase and maintain, until final payment, property insurance upon the Work at the site to the full insurable value thereof (subject to deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations) but not less than an amount equal to the total bid price. This insurance shall include the interest of OWNER, CONTRACTOR, Subcontractors, ENGINEER and ENGINEER's consultants in the Work (all of whom shall be listed as insured or additional insured parties), shall insure against the perils of fire and extended coverage, shall include "all-risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse, flood, and water damage, and such other perils as may be provided in the Supplementary Conditions, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to the fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all-risk" insurance or otherwise provided in these Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an application for payment. The policies of insurance required to be purchased and maintained by the CONTRACTOR in accordance with this paragraph 6.04 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to the OWNER by certified mail and will contain wavier provisions in accordance with General Condition paragraph 6.05.B and 6.05.C."

Delete paragraph 6.04.E of the General Conditions in its entirety and insert the following in its place:

"E. CONTRACTOR shall protect OWNER against all loss during the course of the contract. If, due to the nature of the Project, insurance coverage other than that specified is needed by CONTRACTOR to protect OWNER against all losses, CONTRACTOR shall be responsible for the determination of and procurement of any additional insurance needed."

Add the following paragraph 6.04.F to the General Conditions:

"F. Policies shall also specify that insurance provided by CONTRACTOR will be considered primary and not contributory to any other insurance available to OWNER or ENGINEER.

All policies will provide for 30 days written notice (certified mail shall be required) prior to any cancellation or non-renewal of insurance policies required under the Contract. Any such wording as "will endeavor" or "but failure to mail such notice shall impose no obligation or liability of any kind upon the Company..." shall be deleted from the policies and certificates."

SC-6.06 *Receipt and Application of Insurance Proceeds*

Delete paragraph 6.06.A, 6.06.B and 6.06.C of the General Conditions in its entirety.

SC-7.17 *CONTRACTOR's General Warranty and Guarantee*

Add the following paragraph 7.17.F:

"F. CONTRACTOR'S warranty shall be for a period of one (1) year, or longer if specified by special guarantees or by law, CONTRACTOR shall at the CONTRACTOR's expense make all repairs and replacements necessitated by defects in the materials, workmanship or prosecution of the Work under this contract, and pay for any damage to other works or property resulting from such defects. CONTRACTOR shall hold the OWNER and ENGINEER harmless from any liability of any kind arising from said defects.

The effective date for the beginning of the one (1) year warranty period will be as decided by the ENGINEER and will be either the date of the ENGINEER's recommendation for Final Payment in accordance with paragraph 15.06.B, *Review of Application and Acceptance*, or the date of Substantial Completion as specified in paragraph 15.03.

CONTRACTOR shall make all repairs or replacements promptly upon receipt of written order for the repairs or replacements from OWNER. If the CONTRACTOR fails to make the repairs or replacements promptly, OWNER may perform the work and the CONTRACTOR and the CONTRACTOR's Surety shall be liable for all costs thereof."

SC-9.06 *Insurance*

Delete paragraph 9.06 of the General Conditions in its entirety.

SC-15.01.C *Review of Applications*

Insert the following new paragraphs 15.01.C.6.d and 15.01.C.6.e to paragraph 15.01.C.6 of the General Conditions, as additional reasons for ENGINEER to reduce CONTRACTOR's request for progress payment, and renumber paragraphs 15.01.C.6.d and 15.01.C.6.e as 15.01.C.6.f and 15.01.C.6.g respectively.

"15.01.C.6.d liability for liquidated damages has been incurred by CONTRACTOR;

15.01.C.6.e CONTRACTOR has failed to maintain record documents as required by paragraph 7.12;"

SC-15.03 *Substantial Completion*

The following shall be added at the end of paragraph 15.03.A of the General Conditions:

"The Work will be considered substantially complete when the following work items are complete and ready for continuous use by the OWNER:

All pavement and gravel work has been completed, along with appurtenant items such as curb & gutter, sidewalks, striping, and signage.

CONTRACTOR has essentially completed the record documents required by paragraph 7.12, and, in ENGINEER's judgment, these are accurate and complete and will be ready for delivery to OWNER prior to Final Payment being made.

The following items need not be completed for the Work to be considered substantially complete:

Final cleanup of project area and final dressing of grassy/earthen areas behind curbs.

Determination of quality of growth resulting from sodding and seeding & mulching.

Other minor items identified for correction on the final punchlist."

End of Document 00 73 00

SECTION 01 11 00

SUMMARY OF WORK

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Contract Scope
- B. Work by Others
- C. Contractor Use of Premises
- D. Work Sequence
- E. Owners Representative

1.02 CONTRACT SCOPE

- A. The project consists of a kayak launch area with an associated access drive and parking lots, located at Lewisville Lake Spillway on E Jones Street in Lewisville, Texas. The Project work involves, but is not limited to: approximately 475 LF of 24'-0" wide geopave aggregate porous pavement; demolition as required; gravel removal; concrete ribbon curb; structural subgrade fill placement; base course; concrete pavement; gravel pavement; non-slip PVC ramp surface, synthetic turf; steel pipe fencing; permanent erosion control blanket; permanent pavement markings and sidewalks.

1.03 CONTRACTOR'S USE OF PREMISES

- A. Contractor will be limited to the areas owned by Owner, as noted on the Drawings. At Contractor's request, Owner may be able to make additional areas of the site available.
- B. Contractor may obtain additional construction easements from adjacent property owners for Contractor's convenience.
- C. No work shall begin until all agency approvals, easements, and required permits are obtained. Note that work on this project takes place totally within City of Lewisville.

1.05 WORK SEQUENCE

- A. Identify and locate all underground and above ground utilities on the site and in adjacent areas.

- B. Coordinate with other utilities and/or their contractors to provide orderly sharing of the site and schedule of activities to best continue the progress of the Work.
- C. Establish schedules and work areas for construction.
- D. Install erosion and sediment control devices before land disturbing activities begin in any area.

1.06 OWNERS REPRESENTATIVE

- A. For this project the Owners Representative will be CEI Engineering Associates, Inc.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

End of Section 01 11 00

DOCUMENT 01 21 20

ALLOWANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work that will be paid for by an Allowance.

1.02 DESCRIPTION

- A. Allowances are hereinafter described in detail with the allowance amount indicated.
- B. Amount of Allowances are already entered on the Bid Form, and will be entered in the Agreement.

1.03 SCHEDULE OF ALLOWANCES

- A. The following Allowances are applicable on this project.

Work Item Paid By Allowance

Allowance Amount

End of Document 01 21 20

DOCUMENT 01 22 01

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Method of measurement and Progress Payment.

1.02 PAYMENT APPLICATION

- A. Payment for the various items of the Project shall be based on the contract lump sum price or the contract unit price, whichever is applicable, and shall be compensation in full for the furnishing of all overhead, labor, materials, products, tools, equipment, transportation, services and appurtenances necessary to complete the work in accordance with the requirements of the Contract Documents.

1.03 SCHEDULE OF VALUES

- A. The Schedule of Values, as required by the General Conditions, will serve as the basis for all Contract Progress Payments.

1.04 UNIT PRICES

- A. The Unit Price Contract Progress Payments will be based on the price and quantity of each unit of work completed.

1.05 INCIDENTAL ITEMS

- A. Items indicated as incidental to a particular payment item are considered an integral part of that payment item, and will not be measured or considered in determining payments.
- B. Safety is considered as incidental to every payment item.
- C. Mobilization, clean-up, project closeout, project record documents, and all costs not directly mentioned in this section are considered as incidental to the project.
- D. Excess excavation is generally incidental to the payment item, except where Engineer has indicated during construction that an excavation be expanded due to subsurface conditions. Excess excavation undertaken by Contractor to stabilize the trench bottom or walls, where dewatering or shoring would be suitable to correct trench conditions, will not be considered an additional cost. Excess

excavation includes backfilling with approved material to return the excavation to the lines and grades indicated on the drawings.

PART 2 SCHEDULE OF VALUES

2.01 SUMMARY

- A. Contractor shall provide a detailed breakdown of the agreed Contract Amount or Unit Price item paid as a lump sum showing values allocated to each of the major parts of the work.

2.02 APPROVAL

- A. Prior to the first application for payment, Contractor shall submit a proposed Schedule of Values to Engineer.
 - (1) Contractor shall meet with Engineer and determine additional data, if any, required to be submitted.
 - (2) Contractor shall secure Engineer's approval of the Schedule of Values prior to submitting the first application for payment.
- B. Contractor shall assure mathematical accuracy of the sums.
- C. When required by Engineer, Contractor shall provide copies of the subcontracts or other data acceptable to the Engineer, substantiating the sums described.

PART 3 MEASUREMENT AND PAYMENT FOR UNIT PRICES

3.01 SUMMARY

- A. This section includes delineation of measurement criteria applicable to unit price work.
- B. Measurement methods are delineated for each individual bid item under this section.
- C. Engineer shall take all measurements and compute quantities accordingly.
- D. Contractor shall assist Engineer by providing necessary equipment, workers, and survey personnel as required.

3.02 UNIT QUANTITIES SPECIFIED

- A. Quantities and measurement indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements supplied or placed in the work and verified by Engineer shall determine payment.
- B. If the actual work requires more or fewer quantities than those quantities indicated, Contractor shall provide the required quantities at the unit prices contracted.

3.03 MEASUREMENT OF QUANTITIES

- A. Measurement by Weight: Items measured by weight will use U.S. Standard Handbook weights unless otherwise specified for an individual item.
- B. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness with a survey chain, steel tape, or accurate electronic measurement equipment.
- C. Measurement by Area: Measured by square dimension using mean length and width or radius, with a survey chain, steel tape, or accurate electronic measurement equipment.
- D. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord, with a survey chain, steel tape, or accurate electronic measurement equipment.
- E. Stipulated Price Measurement: Items measured by weight, volume, area, or linear means or combination thereof, as appropriate, as a completed item or unit of the work.

3.04 PAYMENT SCHEDULE

- A. Payment shall be made in conformance with the “Schedule of Values” submitted by Contractor in accordance with the Agreement and Engineer’s observation of the work completed to date.
- B. Retainage withheld from progress payments due Contractor shall be in accordance with the Agreement.

3.05 APPLICATION FOR PAYMENT

- A. Submit to Engineer three copies of each application for payment on EJCDC Form C-620 or other format previously approved by the Engineer.

- B. Pay periods shall be as designated in the Agreement unless otherwise agreed in writing between Owner and Contractor.

End of Document 01 22 01

SECTION 01 26 00

MODIFICATION PROCEDURE

PART 1 GENERAL

1.01 SUMMARY

- A. This section describes steps to make changes in the Work, Contract Price, Contract Times, or any combination thereof, as are described in written Change Orders signed by Owner, Contractor, and Owner's Representative and issued after execution of the Agreement, and in other instruments of change as described herein in accordance with the provisions of this Section. Section includes:
 - 1. Documentation of Change in Contract Price and Contract Time.
 - 2. Change Procedures.
 - 3. Field Order
 - 4. Work Change Directive.
 - 5. Stipulated Price Change Order.
 - 6. Unit Price Change order.
 - 7. Time and Material Change Order.
 - 8. Execution of Change Orders.
 - 9. Correlation of Contractor Submittals.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to General Conditions, Supplementary Conditions, and sections in Division 01 of these Specifications.
 - 2. Changes in the Work are described further in the General Conditions.
 - 3. Section 01 29 76 – Applications for Payment.
 - 4. Section 01 70 00 – Project Closeout, for requirements for Project Record Documents.

1.02 QUALITY ASSURANCE

- A. Take such measures needed to assure familiarity of Contractor's staff and employees with the procedures outlined in this section for processing Change Order data.
- B. Submit name of the individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

1.03 FORMAT

- A. Change Order Form: EJCDC C-941.
- B. Work Change Directive Form: EJCDC C-940.
- C. Field Order Form: Owner's or Owner's Representative's letter.

1.04 DOCUMENTATION OF CHANGE IN CONTRACT PRICE AND CONTRACT TIME.

- A. Maintain detailed records of work done on a time and material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work.
- B. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.
- C. On request, provide additional data to support computations:
 - 1. Quantities of products, labor, and equipment.
 - 2. Taxes, insurance and bonds.
 - 3. Overhead and profit.
 - 4. Justification for any change in Contract Time.
 - 5. Credit for deletions from the Work, similarly documented.
- D. Support each claim for additional costs, and for work done on a time and material basis, with additional information:
 - 1. Origin and date of claim.
 - 2. Dates and times work was performed, and by whom.
 - 3. Time records and wage rates paid.
 - 4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

1.05 FIELD ORDER

- A. Owner or Owner's Representative will authorize, in writing, minor changes in the Work not involving an adjustment to Contract Price or Contract Time as authorized by Paragraph 11.04 of the General Conditions by issuing a Field Order.

1.06 WORK CHANGE DIRECTIVE

- B. Owner or Owner's Representative may issue a Work Change Directive, signed by Owner, instructing Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

- C. The Work Change Directive will describe changes in the Work, and will designate method of determining any change in Contract Price or Contract Time.
- D. Promptly execute the change in Work.

1.07 STIPULATED PRICE CHANGE ORDER

- A. Based on notice of change and Contractor's fixed price quotation and subsequent negotiations.

1.08 UNIT PRICE CHANGE ORDER

- A. For pre-determined unit prices and quantities, Change Order will be executed on a fixed unit price basis.
- B. For unit costs or quantities of units of work which are not pre-determined, execute Work under a Work Change Directive, or based on negotiation and an executed Change Order.

1.09 TIME AND MATERIAL CHANGE ORDER

- A. Submit itemized account and supporting data after completion of change, within time limits indicated in the General Conditions.
- B. Owner or Owner's Representative will determine the change allowable in Contract Price and Contract Time as provided in the Contract Documents.
- C. Maintain detailed records of work done on time and material basis.
- D. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.

1.10 EXECUTION OF CHANGE ORDERS

- A. Owner or Owner's Representative will provide Change Order forms for signatures of parties as provided in the General Conditions in the number of copies indicated in the Supplementary Conditions.

1.11 CORRELATION OF CONTRACTOR SUBMITTALS

- A. 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 Price.

- B. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust time for other items of work affected by the change, and resubmit.
- C. Promptly enter changes in Project Record Documents.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

End of Section 01 26 00

SECTION 01 26 13

CONTRACTOR “REQUEST FOR INFORMATION” PROCESS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Administrative and procedural requirements for handling and processing “Request for Information”, (RFI).

1.02 DEFINITION

- A. RFI: Formal process used during construction to facilitate communication between Contractor and Engineer or Owners Representative, with regard to requests for additional information and clarification of intent of Contract Documents.
- B. Do not use RFI form during bidding. Direct questions during the bidding phase as indicated in the Bidding Requirements.

1.03 PROCEDURE

- A. Contractor shall be responsible for initiating RFIs.
 - 1. Submit RFIs directly to Engineer or Owners Representative.
 - 2. Submit RFI from Contractors office or field office only. RFIs submitted directly from subcontractors or suppliers will not be accepted.
 - 3. Submitted RFIs shall be consecutively numbered with only one item on each form.
- B. Engineer will review RFIs from Contractor with reasonable promptness and will notify Contractor in writing of decisions made.
- C. Engineer’s written response to RFIs shall not be considered as a Pricing Order or Pricing Directive and does not authorize changes in the Contract Amount or Contract Schedule.
- D. Maintain a log of RFIs submitted and related responses from Engineer.

1.04 RFI FORM

- A. RFIs shall be submitted on the attached form (Page 01 26 13-3), or duplicate format on Contractor’s letterhead. Engineer will not respond unless the attached form or equivalent format is utilized.

- B. If the submitted form or equivalent format does not provide space needed for complete information, additional sheets may be attached.

End of Document 01 26 13

CEI Engineering Associates, Inc.

CONTRACTOR "REQUEST FOR INFORMATION" FORM

Date: _____ RFI No. _____
To: _____ Project: _____
(Engineer) (City, State)
From: _____ Drawing No. _____
(General Contractor) Detail No. _____

(Project Superintendent) Specs Section No. _____

(Job Site Phone Number)

Information Requested:

Requested By: _____

Response:

(Response By)

(Date)

Distribution by the Engineer:

SECTION 01 29 73

SCHEDULE OF VALUES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for preparing a "Schedule of Values" to be used to determine partial payments for the various lump sum items or larger unit price items.

1.02 RELATED SECTIONS

- A. Section titled "Measurement and Payment" indicates how unit price items will be measured and paid.

1.03 SUBMITTALS

- A. Submit Schedule of Values to Engineer, per section 2.03 of the General Conditions and prior to first application for payment.
- B. Engineer will review Schedule of Values and either approve or request modifications.
- C. Schedule of Values must be approved before the first payment request is processed.

1.04 SCHEDULE OF VALUES

- A. Provide a breakdown of costs for each lump sum payment item and for any unit price item for which Contractor would like partial payments. Each item shall be referenced by payment item number and by specification section, where applicable.
- B. Breakdown of costs for each lump sum item may be by either:
 - 1. Materials and labor.
 - 2. Different parts of the lump sum item, with materials and labor together for each part.
- C. Breakdown shall indicate an accurate division of costs for all elements of the lump sum item. Costs shall not be "front weighted", resulting in early payment for work that has not been done.
- D. Schedule of Values shall be typed.

- E. Approved Schedule of Values will be used as the basis for partial payment of lump sum items as indicated in section titled Measurement and Payment.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

End of Section 01 29 73

SECTION 01 29 76

APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Comply with procedures described in this Section when applying for progress payments and final payment.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to the General Conditions, Supplementary Conditions, and sections in Division 01 of the Specifications.
 - 2. The Contract Price and the schedule for payments are described in the General Conditions.
 - 3. Payments upon Substantial Completion and Final Completion of the Work are described in the General Conditions and in Section 01 70 00 of the Specifications.
 - 4. Owner or Owner's Representative's approval of applications for progress payment and final payment may be contingent upon Owner or Owner's Representative's approval of status of Project Record Documents as described in Section 01 70 00 of the Specifications.

1.02 QUALITY ASSURANCE

- A. Prior to start of construction, secure Owner or Owner's Representative's approval of the schedule of values required to be submitted under Paragraph 2.05 of the General Conditions, and further described in Measurement and Payment provisions of these Specifications.
- B. During progress of the Work, modify the schedule of values as approved by Owner or Owner's Representative to reflect changes in the Contract Price due to Change Orders or other Modifications.
- C. Base requests for payment on the approved Schedule of Values.

1.03 FORMAT

- A. Submit a request for payment by filling in the agreed data, by typewriter or neat lettering in ink, on "Application for Payment" form provided by Owner or Owner's Representative, plus continuation sheet or sheets.

1.04 PREPARATION OF APPLICATIONS

- A. Present required information in typewritten form.
- B. Date and sign the Application for Payment in ink.
- C. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item work.

1.05 SUBMITTAL PROCEDURES

- A. Submit original of the Application for Payment, plus two identical copies including continuation sheet(s) to Owner or Owner's Representative.
- B. Owner or Owner's Representative shall review submittal and, either:
 - 1. Return the Application for Payment to Contractor indicating in writing the reasons for refusing to recommend payment. Re-submit revised Application For Payment.
 - 2. Owner or Owner's Representative will sign the Application for Payment and present to Owner for payment.
- C. Owner shall review Application for Payment and either:
 - 1. Give immediate notice of any portions of the recommended amounts withheld from payment in accordance with General Conditions paragraph 15.01.E.1.
 - 2. Sign Application For Payment and make disbursement to Contractor.
- D. Owner or Owner's Representative will distribute signed copies of Application for Payment to Contractor, Owner and Owner or Owner's Representative's file. Additional copies of Application for Payment will be distributed by Owner or Owner's Representative to the appropriate funding agency or agencies, if required.

1.06 SUBSTANTIATING DATA

- A. If payment request is for materials and for equipment to be permanently installed, or when Owner or Owner's Representative requires substantiating information, also submit copies of invoices or documentation as set forth in paragraph 15.01.B General Conditions.
- B. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

End of Section 01 29 76

SECTION 01 31 13

COORDINATION AND MEETINGS

PART 1 GENERAL

1.01 SUMMARY

- A. This Section expands upon requirements in the General Conditions regarding coordination, conferences and meetings. It includes:
 - 1. Coordination
 - 2. Pre-construction conference
 - 3. Progress meetings

1.02 RELATED SECTIONS

- A. Documents affecting work of this Section include, but are not necessarily limited to General Conditions, Supplementary Conditions, and sections in Division 01 of these Specifications.

1.03 COORDINATION

- A. Coordinate construction activities with other contractors working in the same vicinity on other projects, if applicable. Contractor is responsible for coordinating activities with all utility companies.
- B. On the basis of the schedule and progress meetings, notify the appropriate property owner of trenching, pipe laying, excavation, embankment, cleanup, or other activities scheduled to occur on, or adjacent to, their property during the coming week. The individual property owner, or tenant thereof, shall be notified at least 48 hours in advance of occupying, storing materials on, or performing work on any right-of-way or easement adjacent to or on their property.
- C. All planned interruptions of water service shall be coordinated with Owner or Owner's Representative and water utility. A minimum of 48 hours notice is required. Service interruptions, when allowed by Owner or Owner's Representative, shall be scheduled between 8:00 a.m. and 5:00 p.m. and shall be limited to a maximum time of 4 hours for each individual meter unless specifically approved otherwise.
- D. Coordinate scheduling, submittals, and Work of the various sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements with provisions for accommodating items installed later.

- E. Verify that characteristics of operating equipment are compatible with utility requirement for existing utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service such equipment.
- F. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion.

1.04 PRE-CONSTRUCTION CONFERENCE

- A. Owner or Owner's Representative will schedule a Pre-Construction Conference within 20 days after the Contract Times start to run, but before any Work at the site is started.
- B. Attendance Required: Authorized representatives of Owner, Owner's Representative, and Contractor.
- C. Agenda:
 - 1. Distribution of executed Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates, if not already done.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of Subcontractors, list of products, Schedule of Values, and proposed schedule.
 - 5. Designation of personnel representing the parties in Contract, and Owner or Owner's Representative.
 - 6. Procedures for processing field decisions, shop drawings, submittals, substitutions, applications for payments, Change Orders, and Contract closeout procedures.
 - 7. Construction schedule, including sequence of critical work.
 - 8. Channels and procedures for communication.
 - 9. Rules and regulations governing performance of the Work.
 - 10. Procedures for safety and first aid, security, quality control, and related matters.
 - 11. Maintaining required records.

1.05 PROGRESS MEETINGS

- A. Owner or Owner's Representative will schedule and administer meetings throughout progress of the Work as determined by Owner or Owner's Representative.
- B. Owner or Owner's Representative will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies within two days to Contractor, Owner, participants, and those affected by decisions made.

- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Owner's Representative, and others as appropriate to agenda topics for each meeting.
- D. Agenda:
1. Review minutes of previous meetings.
 2. Review of Work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems which impede planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of off-site fabrication and delivery schedules.
 7. Maintenance of progress schedule.
 8. Corrective measures to regain projected schedules.
 9. Planned progress during succeeding work period.
 10. Coordination of projected progress.
 11. Maintenance of quality and work standards.
 12. Effect of proposed changes on progress schedule and coordination.
 13. Other business relating to Work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

End of Section 01 31 13

SECTION 01 32 16

CONSTRUCTION PROGRESS SCHEDULES

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes procedural requirements for preparation, submittal, and updating of Contractor's construction progress schedules.
- B. Related Work:
 - 1. Documents affecting work of this Section include, but are not limited to, General Conditions, Supplementary Conditions, and sections in Division 01 of these Specification.
 - 2. Section 01 29 76 – Applications for Payment.
 - 3. Section 01 33 00 – Submittals: Shop drawings, product data, and samples.

1.02 FORMAT

- A. Prepare Schedules as a horizontal bar chart with separate bar for each major portion of Work or operation, identifying first work day of each week.
- C. Sequence of Listings: The chronological order of the start of each item of Work.
- D. Scale and Spacing: To provide space for notations and revisions.
- E. Sheet Size: Minimum multiples of 8 1/2 x 11 inches.

1.03 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Identify work of separate stages and other logically grouped activities.
- D. Provide sub-schedules to define critical portions of the entire Schedule.
- E. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- F. Provide separate schedule of submittal dates for shop drawings, product data, and samples, and dates reviewed submittals will be required from Owner or Owner's Representative.

G. Coordinate content with Schedule of Values specified in Section 01 29 73.

1.04 REVISIONS TO SCHEDULES

- A. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
- B. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
- C. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect.

1.05 SUBMITTALS

- A. Submit initial Schedules within 15 days after date of Owner-Contractor Agreement. After review, resubmit required revised data within 10 days.
- B. Submit the number of opaque reproductions which Contractor requires, plus three copies which will be retained by Owner or Owner's Representative, in which case it will eventually be forwarded to Owner.

1.06 DISTRIBUTION

- A. Distribute copies of reviewed Schedules to project site file, Subcontractors, suppliers, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in Schedules.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

End of Section 01 32 16

SECTION 01 32 23

CONSTRUCTION SURVEYS

PART 1 GENERAL

1.01 SUMMARY

- A. This Section defines staking services that Engineer will furnish, sets forth responsibilities of Contractor regarding the use and maintenance of same, and defines what construction staking is the responsibility of Contractor.
- B. Related Work: Documents affecting work of this Section include, but are not limited to, General Conditions, Supplementary Conditions, and sections in Division 01 of these Specifications.
- C. Definitions
 - 1. "Control Stakes" are the two original control points (X,Y,Z) set by Engineer for the construction work.
 - 2. "Construction Staking" is any additional staking required as the project progresses, which is the responsibility of Contractor.

1.02 REQUIREMENTS

- A. Engineer shall provide the following staking:
 - 1. Provide coordinates for control stakes as defined in section 1.01.C.1.
- B. Contractor shall provide the following staking:
 - 1. All construction staking except as provided by Engineer above.
 - 2. Reset stakes, marks or pins lost due to Contractor's operations.

1.03 CONTROL STAKING

- A. Notification
 - 1. If the two control points in 1.01.C.1 have not been set, notify Engineer, in writing, at least five days in advance of the date when control staking services are desired.
 - 2. Engineer shall provide control staking for the two control points in 1.01.C.1. Additional stakes shall be provided by Contractor.
- B. Checking Stakes
 - 1. Examine stakes before commencing operations.
 - 2. Notify Engineer if validity of any control stake is questionable.
 - 3. Engineer will check stake or stakes in question.
 - 4. Any control stakes found to be in error will be reset by Engineer.

5. Contractor shall pay for cost of checking and resetting stakes.

C. Preservation of Stakes

1. Inform employees, subcontractors, and suppliers of importance of control stakes and the necessity of their preservation.
2. Contractor shall pay for resetting any control stakes, marks, or pins lost due to Contractor's operations.

1.04 CONSTRUCTION STAKING

- A. Provide all construction staking as needed to complete the Work.

1.05 ELECTRONIC INFORMATION

- A. Electronic data will be provided by Engineer at Contractor's request, at no cost to Owner or Contractor.
- B. Printed drawings provided by Engineer are Contract Documents. Electronic data is not Contract Documents. Electronic data provided is for Contractor's convenience only. It is Contractor's responsibility to verify electronic data against printed drawings. Use of electronic data is at Contractor's risk.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

End of Section 01 32 23

SECTION 01 33 00

SUBMITTALS

PART 1 GENERAL

1.01 SUMMARY

- A. This section expands upon requirements regarding administrative and procedural requirements for submittal of progress schedules, shop drawings, product data, samples, manufacturer's instructions, and manufacturer's certificates.
- B. Related Work:
 - 1. Section 01 45 23 – Testing Laboratory Services
 - 2. Section 01 70 00 – Project Closeout

1.02 SUBMITTAL PROCEDURES

- A. Transmit each submittal with form acceptable to Owner or Owner's Representative.
- B. Sequentially number the transmittal forms. Re-submittals to have original number with an alphabetic suffix.
- C. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate.
- D. Apply Contractor's stamp, signed or initialed certifying that review, 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.
- E. Schedule submittals to expedite the Project, and deliver to Owner or Owner's Representative. Coordinate submission of related items.
- F. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- G. Provide space for Contractor and Owner or Owner's Representative review stamps.
- H. Revise and resubmit submittals as required; identify all changes made since previous submittal.
- I. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

- J. Indicate submittal dates required for shop drawings, product data, and samples.

1.03 SHOP DRAWINGS

- A. Submit the number of opaque reproductions which Contractor requires, plus two copies which will be retained by Owner or Owner's Representative. For installed equipment, one additional copy is required.
- B. Make Shop Drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the Work.
- C. Unless otherwise specified, make submittals in groups containing all associated items to assure that information is available for checking each item when it is received.
 - 1. Partial submittals may be rejected as not complying with the provisions of the Contract Documents.
 - 2. Contractor may be held liable for delays so occasioned.
- D. Make submittals far enough in advance of scheduled dates for installation to provide time required for reviews, for securing necessary approvals, for possible revisions and re-submittals, and for placing orders and securing delivery.
- E. In scheduling, allow at least ten working days for review by Owner or Owner's Representative following receipt of the submittal.
- F. Submittal log:
 - 1. Maintain an accurate submittal log for the duration of the Work, showing current status of all submittals at all times.
 - 2. Make the submittal log available to Owner or Owner's Representative for review upon request.
- G. After review distribute in accordance with article on Procedures above and for Record Documents described in Section 01 70 00.

1.04 PRODUCT DATA

- A. Submit the number of copies which Contractor requires, plus two copies which will be retained by Owner or Owner's Representative.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.
- C. After review, distribute in accordance with article on Procedures above and provide copies for Record Documents described in Section 01 70 00.

1.05 SAMPLES

- A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- B. Submit samples of coatings or finishes for Owner or Owner's Representative's selection.
- C. Include identification on each sample, with full product information.
- D. Submit the number of samples specified in individual specification sections; one of which will be retained by Owner or Owner's Representative.
- E. Reviewed samples which may be used in the Work are indicated in individual specification sections.

1.06 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specifications sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.
- B. Identify conflicts between manufacturers' instructions and Contract Documents.

1.07 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification sections, submit manufacturers' certificate to Owner or Owner's Representative for review, in quantities specified for Product Data.
- B. Indicate that material or product conforms to or exceeds specified requirements. Submit supporting reference data affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Owner or Owner's Representative.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

End of Section 01 33 00

SECTION 01 33 01

PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 GENERAL

1.01 SUMMARY

- A. This Section describes product options available to the Contractor, plus procedures for securing approval of proposed substitutions.

1.02 RELATED WORK

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 01 of these Specifications.
- B. Make submittals in accordance with pertinent provisions of Section 01 33 00.

1.03 PRODUCT OPTIONS

- A. The Contract is based on standards of quality established in the Contract Documents.
- B. In agreeing to the terms and conditions of the Contract, Contractor has accepted a responsibility to verify that the specified products will be available and to place orders for all required materials in such a timely manner as is needed to meet agreed upon construction schedule.
- C. Neither Owner nor Owner's Representative has agreed to the substitution of materials or methods called for in the Contract Documents, except as they may specifically otherwise state in writing.
- D. Materials and/or methods specified by name:
 - 1. Where materials and/or methods are specified by naming one single manufacturer and/or model number, without stating that equal products will be considered, only the material and/or method named is approved for incorporation into the Work.
 - 2. Should Contractor demonstrate to the satisfaction of Owner or Owner's Representative that a specified material or method was ordered in a timely manner and will not be available in time for incorporation into this Work, submit to Owner or Owner's Representative such data on proposed substitute materials and/or methods as are needed to help Owner or Owner's Representative determine suitability of the proposed substitution.

- E. Where materials and/or methods are specified by name and/or model number, followed by the words "or equal":
 - 1. The material and/or method specified by name establishes the required standard of quality;
 - 2. Materials and/or methods proposed by Contractor to be used in lieu of materials and/or methods;
 - 3. Information on proposed substitutions shall be submitted to Owner or Owner's Representative in triplicate in accordance with Paragraph 7.06 of the General Conditions.
- F. The following products do not require further approval except for interface within the Work:
 - 1. Products specified by reference to standard specifications such as ASTM, AWWA, and similar standards;
 - 2. Products specified by manufacturer's name and catalog model number.
- G. Where the phrase "or equal," or "or equal as approved by Owner or Owner's Representative," occurs in the Specifications, do not assume that the materials, equipment, or methods will be approved as equal unless the item has been specifically so approved for the Work by Owner or Owner's Representative.
- H. The decision of Owner shall be final regarding product substitutions.

1.04 REIMBURSEMENT OF OWNER'S COSTS

- A. In the event substitutions are proposed to Owner or Owner's Representative after the Contract has been awarded, Owner or Owner's Representative will record all time used by Owner's consultants in evaluating each such proposed substitution.
- B. Whether or not Owner or Owner's Representative approves a proposed substitution, Contractor shall promptly, upon receipt from Owner or Owner's Representative of any billing Owner encounters, reimburse Owner for the charges of Owner's Consultants for evaluating each such proposed substitute item.

1.05 DELAYS

- A. Delays in construction arising by virtue of the non-availability of a specified material and/or method will not be considered by Owner or Owner's Representative as justifying an extension of the agreed Contract Time.

End of Section 01 33 01

SECTION 01 41 00
REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Listing of certain applicable local, state, and federal regulatory requirements applicable to the project.
- B. Discussion of specific implementation of certain regulatory requirements.

1.02 NOT INCLUDED:

- A. Comprehensive listing of applicable local, state, and federal regulatory requirements applicable to the project.
- B. Reference to or listing of applicable safety standards.

1.03 RELATED SECTIONS

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and sections in Division 01 of these Specifications.
- B. Section 01 42 00 – Reference Standards & Abbreviations
- C. Specific sections of this Specification include additional requirements of local, state, and federal regulatory requirements.

1.04 AMERICANS WITH DISABILITIES ACT

- A. Comply with portions applicable to construction and construction sites.

1.05 US ARMY CORPS OF ENGINEERS

- A. Construction standards based on the requirements of US Army Corps of Engineers as listed in individual Specification sections and Engineer Manuals.

1.06 NPDES STORM WATER DISCHARGE PERMIT

- A. NPDES Permit: Contractor will apply to the State of Texas for stormwater discharges during construction at this site to be covered by General NPDES Permit No. TWR150000. This application includes filing a Notice of Intent (NOI)

and preparing a Storm Water Pollution Prevention Plan. This plan will be prepared by the Engineer/Design Professional.

B. Permit Activities: Manage the discharge of storm water from the project areas in accordance with the NPDES permit and the following provisions.

1. Minimum requirements for storm water construction permit compliance.
 - a. Place in field office file a copy of the Storm Water Pollution Prevention Plan (Plan) for this construction site. The objective of this Plan is to identify all potential pollution sources on-site and implement management and physical measures which reduce pollution and prevent such pollution from leaving the permit site.
 - b. Plan shall include methods and timing for prevention of stormwater pollution by the construction process, equipment and materials. This includes a description of both structural and non-structural control measures.
 - c. Plan will include flow diversion, erosion control, sediment containment, and re-vegetation consistent with the specified work and the stormwater permit.
 - d. Plan will specify Contractor's supervisory personnel who shall conduct required inspections of the site and control facilities and who shall file the written reports for each such inspection.
 - e. Plan will require inspection of the control facilities after each storm event of 0.5 inches or greater and once every 14 calendar days as specified in the permit. Such inspections are of particular importance in evaluating control structures and non-structural methods or procedures. Failure or ineffectiveness of control measures or procedures must be documented with corrective actions specified.
2. Conduct sampling and analysis of storm water run-off in accordance with the NPDES permit provisions. Analysis shall be performed by a laboratory approved by Owner.
3. Complete compliance reports required by the permit in a timely manner and provide Owner with copies of all data on stormwater management activities and monitoring.

C. Permit Compliance: Conduct storm water management practices in accordance with the permit. Contractor is responsible for any enforcement action taken or imposed by federal or state agencies, including the cost of fines, construction

delays, and remedial actions, resulting from Contractor's failure to comply with the permit provisions.

Monitor the suitability of the designated management practices to achieve the stormwater quality provisions of the permit, and notify Engineer of any changes made to management practices.

If changes are ordered by Engineer, an adjustment in Contract Price shall be considered in accordance with the General Conditions. However, Contractor's failure to monitor or report deficiencies to Owner will result in Contractor being liable for fines and construction delays resulting from any federal or state agency enforcement action.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

End of Section 01 41 00

SECTION 01 42 00

REFERENCE STANDARDS AND ABBREVIATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. A listing of organizations providing reference standards referenced in the Specifications.
- B. Information on the use of reference standards.
- C. A listing of abbreviations used throughout the Contract Documents.

1.02 RELATED SECTIONS

- A. General Conditions, Supplementary Conditions

1.03 SCHEDULE OF REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO)
555 12th Street NW, Suite 1000
Washington, DC 20004
www.transportation.org
- B. American Concrete Institute (ACI)
38800 Country Club Drive
Farmington Hills, MI 48331-3439
www.concrete.org
- C. American Concrete Pipe Association (ACPA)
38800 Country Club Drive
Farmington Hills, MI 48331-3439
www.concrete.org
- D. American Concrete Institute (ACI)
38800 Country Club Drive
Farmington Hills, MI 48331-3439
www.concrete.org
- E. Associated General Contractors of America (AGC)
2300 Wilson Blvd., Suite 300
Arlington, VA 22201
www.agc.org

- F. Asphalt Institute (AI)
2696 Research Park Drive
Lexington, KY 40511-8480
www.asphaltinstitute.org
- G. American National Standards Institute (ANSI)
1899 L. Street NW, 11th Floor
Washington, DC 20036
www.ansi.org
- H. American Sod Producers Association (ASPA)
4415 West Harrison Street
Hillside, IL 60612
- I. ASTM International (ASTM)
100 Barr Harbor Drive
P.O. Box C700
West Conshohocken, PA 19428-2959
www.astm.org
- J. American Water Works Association (AWWA)
6666 West Quincy Avenue
Denver, CO 80235-3098
www.awwa.org
- K. Engineers' Joint Contract Documents Committee (EJCDC)
American Council of Engineering Companies
1015 15th Street N.W., 8th Floor
Washington, DC 20005
www.ejcdc.org
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Skokie, IL 60077-1083

www.cement.org

- O. Underwriters' Laboratories, Inc. (UL)
333 Pfingsten Road
Northbrook, IL 60062-2096
www.ul.com

1.04 ABBREVIATIONS

- A. Whenever the following abbreviations and acronyms are used, they shall have the corresponding meaning as follows.

ACPA - American Concrete Pipe Association
AGA - American Gas Association
AISC - American Institute of Steel Construction
APA - American Plywood Association
ARDOT - Arkansas Department of Transportation
ASA - American Standards Association
AWG - American Wire Gauge
AWPA - American Wood Products Association
AWS - American Welding Society
GSA - General Services Administration, U.S. Government
MIL - Military Specification
NHBA - National Builders Hardware Association
NEC - National Electric Code
NEMA - National Electric Manufacturers Association
NFPA - National Fire Protection Association
NPT - National Pipe Thread
SBC - Standard Building Code (also SSBC)
SPA - Southern Products Association

A - Ampere
cfm - cubic feet per minute
CGMP - corrugated galvanized metal pipe
DIP - ductile iron pipe
gpm - gallons per minute
HDPE - high-density polyethylene pipe
Hp - horsepower
MGD - million gallons per day
N.C. - normally closed
N.O. - normally open
NPDES - National Pollutant Discharge Elimination System
O.C. - on centers
PE - Polyethylene
ppm - parts per million
psi - pounds per square inch

PVC - polyvinyl chloride (pipe)
R - motor starter relay
RCB - reinforced concrete box
RCP - reinforced concrete pipe
rpm - revolutions per minute
SWPPP - Storm Water Pollution Prevention Plan
T.D. - time delay
TDH - total dynamic head
V - volt

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

End of Section 01 42 00

DOCUMENT 01 45 01

GENERAL REQUIREMENTS FOR QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Items and methods that will assist Contractor in providing the specified quality of work.

1.02 RELATED SECTIONS

- A. Field sampling and testing laboratory services are described in either Section 01 45 23 or 01 45 24, whichever is included in the Specifications.

1.03 CONTRACTOR RESPONSIBILITIES

- A. Maintain quality control over suppliers, manufacturers, products, services, site conditions and workmanship, to produce work of specified quality.
- B. Comply with the manufacturers' instructions regarding specific installation requirements.
- C. Should the manufacturers' instructions conflict with the Contract Documents, request clarification from Owner or Owner's Representative before proceeding.
- D. Comply with specified standards as the minimum acceptable quality for the work except when more stringent tolerances, codes, or specific requirements indicate higher standards or more precise workmanship.
- E. Perform work only by persons qualified to produce workmanship as indicated in this section.

1.04 FIELD SAMPLES

- A. Install field samples for review at the site in accordance with the requirements of the individual Specification sections.
- B. Acceptable samples shall represent the quality level for the work.
- C. Where field samples are not specified in individual Specification sections to become a part of the completed work, restore the area after field samples have been accepted by Owner or Owner's Representative.

1.05 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When specified in individual Specification sections, the manufacturer or supplier shall provide a qualified representative, and other personnel as required, to provide on-site observations and recommendations which will ensure the Specifications are complied with. Duties of manufacturer's representative(s) shall be as follows.
 - 1. Observe existing field conditions, conditions of existing substrates, finished surfaces and installation quality of existing workmanship.
 - 2. Provide recommendations to assure acceptable installation and workmanship, including that required as a result of existing field conditions.
 - 3. Observe the quality of workmanship during installation.
 - 4. Where required, the observer shall start, test, and adjust equipment as applicable.
- B. Within ten days of installation, the manufacturer's representative shall submit a written report to Owner or Owner's Representative listing observations and recommendations.
- C. The manufacturer's representative shall report observations, site decisions or instructions given to installers that are supplemental or contrary to manufacturer's written instructions.

End of Document 01 45 01

SECTION 01 45 23

TESTING LABORATORY SERVICES

PART 1 GENERAL

1.01 SUMMARY

- A. This section describes testing and inspecting to be provided by Contractor, plus cooperation required from Contractor with Owner's selected testing agency and others responsible for testing and inspecting the Work.
- B. Related work:
 - 1. Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and sections in Division 01 of these Specifications.
 - 2. Requirements for testing may be described in various sections of these Specifications.
 - 3. Where no testing requirements are described, but Owner decides that testing is required, Owner may require such testing to be performed under current pertinent standards for testing. Payment for such testing will be made as described in this section.
- C. Work not included: Selection of testing laboratory: Owner and Contractor will each select a pre-qualified independent testing laboratory for the testing services required by each. Neither Owner nor Contractor shall utilize a testing laboratory against which the other has a reasonable objection.

1.02 QUALITY ASSURANCE

- A. The testing laboratory will be qualified to Owner's approval in accordance with ASTM E 329.
- B. Testing, when required, will be in accordance with all pertinent codes and regulations, and with selected standards of the ASTM International and the American Association of State Highway and Transportation Officials.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Comply with pertinent provisions of Section 01 66 00.
- B. Promptly process and distribute required copies of test reports and related instructions to assure necessary re-testing and replacement of materials with the least possible delay in progress of the Work.

PART 2 PRODUCTS

2.01 PROOF OF MATERIALS TESTING

- A. Materials to be incorporated into the work shall be tested, using suitable laboratory and source quality control tests, as indicated in individual specification sections, to prove their compliance with the Specifications.
- B. Proof of materials testing shall be paid for by Contractor.

2.02 PROOF OF CONSTRUCTION TESTING

- A. Completed construction shall be tested, using suitable in-situ and laboratory tests, as indicated in individual specification sections or as recommended by Owner's Representative or required by Owner, to prove compliance of completed work with Specifications.
- B. Initial proof of construction testing will be paid for by Owner.
- C. When initial tests indicate non-compliance with the Contract Documents, the costs of all tests associated with that non-compliance will be deducted by Owner from the Contract Price.

2.03 CODE COMPLIANCE TESTING

- A. Inspections and tests required by codes or ordinances, or by a plan approval authority, and which are made by a legally constituted authority, shall be the responsibility of and shall be paid for by Contractor, unless otherwise provided in the Contract Documents.

2.04 CONTRACTOR'S CONVENIENCE TESTING

- A. Inspecting and testing performed exclusively for Contractor's convenience shall be sole responsibility of Contractor.

PART 3 EXECUTION

3.01 COOPERATION WITH TESTING LABORATORY

- A. Representatives of the testing laboratory shall have access to the Work at all times and at all locations where the Work is in progress. Provide facilities for such access to enable the laboratory to perform its functions properly.

3.02 TAKING SPECIMENS

- A. Specimens and samples for testing, unless otherwise provided in the Contract Documents, shall be taken by qualified testing personnel. Sampling equipment and personnel will be provided by the testing laboratory. Deliver specimens and samples promptly to the testing laboratory.

3.03 SCHEDULES FOR TESTING

- A. Establishing schedule:
 - 1. By advance discussion with testing laboratory selected by Owner, determine the time required for laboratory to perform tests and to issue findings.
 - 2. Provide all required time within the construction schedule.
- B. Revising schedule: When changes of construction schedule are necessary during construction, coordinate all such changes with the testing laboratory as required.
- C. Adherence to schedule: When the testing laboratory is ready to test according to the established schedule, but is prevented from testing or taking specimens due to incompleteness of the Work, all extra charges for testing attributable to the delay may be back-charged to Contractor and shall not be borne by Owner.

End of Section 01 45 23

SECTION 01 50 00

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Construction facilities and temporary controls required for the Work.

1.02 Related work:

- A. Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and sections in Division 01 of these Specifications.
- B. Except that equipment furnished by subcontractors shall comply with requirements of pertinent safety regulations, such equipment normally furnished by the individual trades in execution of their own portions of the Work are not part of this section.

1.03 REQUIREMENTS

- A. Provide construction facilities and temporary controls needed for the Work including, but not necessarily limited to:
 - 1. Temporary Controls: Barriers, enclosures, fencing, protection of the Work, and water control.
 - 2. Construction Facilities: Access roads and temporary buildings.
 - 3. Project sign, if required.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Maintain temporary facilities and controls in proper and safe condition throughout progress of the Work.

PART 2 PRODUCTS

2.01 MAINTENANCE OF TRAFFIC

- A. Keep existing roads open to all traffic. Use detour routes as required. Keep the portion of the project being used by public traffic, either through or local traffic, in such condition to permit safe, continuous flow two-way traffic at all times.

- B. Where the nature of the work restricts or prohibits two-way flow, one-way operation may be maintained by use of flaggers.
- C. Conduct work as to assure the least possible obstruction to traffic. Provide for safety and convenience of the general public, residents affected by construction, and protection of persons and property.
- D. Maintain existing roads from the date work is begun until the project has been completed and accepted.
- E. Provide traffic control devices and operations required to delineate temporary hazards which result from construction. Traffic control devices shall comply with applicable portions of the MUTCD and the appropriate section of the state department of transportation Standard Specifications for Highway Construction. Traffic control devices which are ineffective due to size, age, wear and tear, or improper delineation shall be removed from the site and replaced with suitable devices.

2.02 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide protection for plant life designated to remain. Replace damaged plant life.
- C. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

2.03 WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment as required.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

2.04 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.
- C. Prohibit traffic on dressed and seeded areas.

2.05 SECURITY

- A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

2.06 ACCESS ROADS

- A. Construct and maintain temporary roads accessing public thoroughfares to serve construction area.
- B. Extend and relocate as Work progress requires. Provide detours necessary for unimpeded traffic flow.
- C. Provide and maintain access to fire hydrants free of obstructions.

2.07 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove waste materials, debris, and rubbish from site periodically and dispose off-site.

2.08 FIELD OFFICES AND SHEDS

- A. Contractor's facilities: Provide temporary field office building and/or sheds adequate in size and accommodation for Contractor's offices, supply, and storage.
- B. Locate temporary structures a minimum distance of 30 feet from existing and new structures.

2.09 ENCLOSURES

- A. Provide and maintain for the duration of construction all scaffolds, tarpaulins, canopies, warning signs, steps, platforms bridges, and other temporary constructing necessary for proper completion of the Work in compliance with pertinent safety and other regulations.
- B. Provide temporary weather-tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

2.10 TEMPORARY FENCING

- A. Provide and maintain for the duration of construction a temporary fence of design and type needed to prevent entry by the public onto the open excavation areas of the Work.
- B. Fencing shall be international orange in color, 4 feet high, have maximum 6 inch square opening and be supported by 6 foot posts located 10 to 12 feet on center and imbedded 18 inches into the ground.

PART 3 EXECUTION

3.01 MAINTENANCE AND REMOVAL

- A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the Work.
- B. Remove such temporary facilities and controls as rapidly as progress of the Work will permit, or as directed by Owner or Owner's Representative.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

End of Section 01 50 00

SECTION 01 66 00

STORAGE AND PROTECTION

PART 1 GENERAL

1.01 SUMMARY

- A. Protect products scheduled for use in the Work by appropriate means including, but not necessarily limited to, those described in this Section.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and sections in Division 01 of these Specifications.
 - 2. Additional procedures also may be described in other sections of these Specifications.

1.02 QUALITY ASSURANCE

- A. Include within Contractor's quality assurance program such procedures as are required to assure full protection of work and materials.

1.03 MANUFACTURERS' RECOMMENDATIONS

- A. Except as otherwise approved by Owner or Owner's Representative, determine and comply with manufacturers' recommendations of product handling, storage, and protection.

1.04 PACKAGING

- A. Deliver products to the job site in their manufacturer's original container, with labels intact and legible.
 - 1. Maintain packaged materials with seals unbroken and labels intact until time of use.
 - 2. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to Owner.
- B. Owner or Owner's Representative may reject as non-complying such material and products that do not bear satisfactory identification as to manufacturer, grade, quality, and other pertinent information.

1.05 STORAGE

- A. Store materials, supplies and equipment in an orderly fashion at the site of the work as will not unduly interfere with the progress of the work or that of other contractors.

1.06 PROTECTION

- A. Provide the necessary care in unloading procedures to prevent damage to materials and equipment delivered to the job site.
- B. Provide necessary security fencing and measures to prevent damage through vandalism or theft.
- C. At all times safely guard Owner's property from injury or loss in connection with this Contract. At all times safely guard and protect the Work, and that of adjacent property, from damage. Furnish, maintain, and use such equipment as may be necessary to protect adjacent property from damage caused by construction equipment, dust, mud, dirt, and refuse from operations. Failure to prevent such damage shall be cause for stopping the Work until dust, mud, dirt, and refuse are controlled. Be fully responsible for safety precautions and protection until acceptance of the Work.
- D. Exercise due care to avoid damage to existing improvements or facilities, fences, building, structures, adjacent properties, and trees and shrubs that are not to be removed.
- E. In the event of temporary suspension of work, or during inclement weather, or whenever Owner or Owner's Representative shall direct, direct Subcontractors to carefully protect the Work and materials against damages or injury from the weather.

1.07 REPAIRS AND REPLACEMENTS

- A. In event of damage, promptly make replacements and repairs to the approval of Owner or Owner's Representative and at no additional cost to Owner.
- B. Additional time required to secure replacements and to make repairs will not be considered by Owner or Owner's Representative to justify an extension in the Contract Times.

End of Section 01 66 00

SECTION 01 70 00

PROJECT CLOSEOUT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Description of an orderly and efficient transfer of the completed Work to Owner.
- B. Requirements regarding project closeout procedures, final cleaning, adjusting, project record documents, operation and maintenance data, and warranties; refer also to individual product specification sections.
- C. Related work: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and sections in Division 01 of these Specifications.

1.02 QUALITY ASSURANCE

- A. Prior to requesting inspection by Owner or Owner's Representative, use adequate means to assure that the Work is completed in accordance with the specified requirements and is ready for the requested inspection.

1.03 PROCEDURES

- A. Substantial Completion:
 - 1. Prepare and submit the list required by the General Conditions.
 - 2. Within a reasonable time after receipt of the list, Owner or Owner's Representative will inspect to determine status of completion.
 - 3. Should Owner or Owner's Representative determine that the Work is not substantially complete:
 - a. Owner or Owner's Representative promptly will so notify Contractor, in writing, giving reasons therefore.
 - b. Remedy the deficiencies and notify Owner or Owner's Representative when ready for re-inspection.
 - c. Owner or Owner's Representative will re-inspect the Work.
 - 4. When Owner or Owner's Representative concurs that the Work is substantially complete:
 - a. Owner or Owner's Representative will prepare a "Certificate of Substantial Completion", accompanied by Contractor's list of items to be completed or corrected, as verified by Owner or Owner's Representative.

- b. Owner or Owner's Representative will submit the Certificate to Owner and Contractor for their written acceptance of the responsibilities assigned to them in the Certificate.
- B. Final Completion:
 - 1. Prepare and submit the notice required by the General Conditions.
 - 2. Verify that the Work is complete including, but not necessarily limited to, the items mentioned in the General Conditions.
 - 3. Certify that:
 - a. Contract Documents have been reviewed;
 - b. Work has been inspected for compliance with the Contract Documents;
 - c. Work has been completed in accordance with the Contract Documents;
 - d. Equipment and systems have been tested as required, and are operational; and
 - e. Work is completed and ready for final inspection.
 - 4. Owner or Owner's Representative will make an inspection to verify status of completion.
 - 5. Should Owner or Owner's Representative determine that the Work is incomplete or defective:
 - a. Owner or Owner's Representative promptly will so notify Contractor and Owner, in writing, listing the incomplete or defective work.
 - b. Remedy the deficiencies promptly, and notify Owner or Owner's Representative when ready for re-inspection.
 - 6. When Owner or Owner's Representative determines that the Work is acceptable under the Contract Documents, he will request Contractor to make closeout submittals.
- C. Closeout submittals include, but are not necessarily limited to:
 - 1. Project Record Documents.
 - 2. Operation and maintenance data for items so listed in pertinent other Sections of these Specifications, and for other items when so directed by Owner or Owner's Representative.
 - 3. Warranties and Bonds
 - 4. Specifications with recorded changes made by addenda.
 - 5. Spare parts and materials extra stock
 - 6. Evidence of compliance with requirements of government agencies having jurisdiction including, but not necessarily limited to:
 - a. Certificates of Inspection;
 - b. Certificates of Occupancy;
 - 7. Certificates of Insurance for products and completed operations;
 - 8. Evidence of payment and release of liens;
 - 9. List of subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reached for emergency service at all times including nights, weekends, and holidays.

- D. Final adjustment of accounts: Submit a final statement of accounting to Owner or Owner's Representative, showing all adjustments to the Contract Price. A final Change Order reconciling quantities installed to contract amounts will be issued.

1.04 FINAL CLEANING

- A. Complete final cleaning prior to final inspection.
- B. Remove waste and surplus materials, rubbish, and construction facilities from the site.
- C. Restore areas disturbed by the Work, as specified in Section 31 80 00.

1.05 ADJUSTING

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

1.06 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents. Protect from deterioration and from loss and damage until completion of the Work. Record actual revisions to the Work. Do not use the record documents set for any purpose except entry of new data and for review by Owner or Owner's Representative.
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other Modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
- B. Store Record Documents separate from documents used for construction.
- C. Record information concurrent with construction progress. Failure to promptly make notations on Record Documents will be considered in evaluating requests for progress payments.
 - 1. Using an erasable colored pencil (not ink or indelible pencil), clearly describe the change by graphic line and note as required.
 - 2. Date all entries.
 - 3. Call attention to the entry by a "cloud" drawn around the area or areas affected.
 - 4. In the event of overlapping changes, use different colors for the overlapping changes.
- D. 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. Product substitutions or alternates utilized.

3. Changes made by Addenda and Modifications.
- E. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:
1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 2. Field changes of dimension and detail.
 3. Details not on original Contract Drawings.
- F. Submittal, Review, and Approval
1. Submit the completed set of Project Record Documents to Owner or Owner's Representative for review.
 2. Participate in review meetings as required.
 3. Make required changes and promptly deliver the final Project Record Documents to Owner or Owner's Representative.
- G. Contractor has no responsibility for recording changes in the Work subsequent to Final Completion, except for changes resulting from work performed under Warranty.

1.07 OPERATION AND MAINTENANCE DATA

- A. Submit three sets prior to final inspection, bound in 8-1/2 x 11 inch text pages, three ring capacity expansion binders with durable plastic covers. If all O&M documents are in electronic form, submit electronically in a file format acceptable to Owner or Owner's Representative.
- B. Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
1. Significant design criteria.
 2. List of equipment.
 3. Parts list for each component.
 4. Operating instructions.
 5. Maintenance instructions for equipment and systems.
 6. Maintenance instructions for cleaning methods, materials, and special precautions identifying detrimental agents.
- C. Project documents and certificates, including the following:
1. Shop Drawings and product data.
 2. Certificates.
 3. Photocopies of warranties.

1.08 WARRANTIES

- A. Provide duplicate notarized copies.

- B. Execute and assemble documents from Subcontractors, Suppliers, and manufacturers.
- C. Provide Table of Contents and assemble in three ring binder with durable plastic cover.
- D. Submit prior to final Application for Payment.
- E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

1.09 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.
- B. Deliver to Project site and place in location as directed; obtain receipt prior to final payment.

1.10 INSTRUCTION

- A. Instruct Owner's personnel in proper operation and maintenance of systems, equipment, and similar items which were provided as part of the Work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

End of Section 01 70 00

SECTION 02 32 11

SITE AND SUBSURFACE INVESTIGATION BY CONTRACTOR

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface reconnaissance and evaluation of existing site conditions.
- B. Sub-surface evaluation by Contractor's chosen method of investigation.

1.02 RELATED SECTIONS

- A. Section 00 72 00 – General Conditions.
- B. Section 00 73 00 – Supplementary conditions.
- C. Geotechnical Report titled Report of Subsurface Exploration and Geotechnical Evaluation, Lewisville Lake Environmental Learning Area (LLELA), dated November 4, 2025, and prepared by Building & Earth

1.03 REQUIREMENTS

- A. Contractor is responsible for having a thorough knowledge of all Drawings, Specifications, General and Supplementary Conditions, and other Contract Documents. Failure to acquaint himself with this knowledge does not relieve him of the responsibility for performing his work in a manner acceptable to Owner. No additional compensation will be allowed because of conditions that occur due to failure by Contractor to familiarize himself and all workers with this knowledge.
- B. Contractor is responsible for determining the existing conditions of the site and shall thoroughly examine all factors reasonably available to him, including but not limited to the Drawings, Specifications, geotechnical report (Report of Subsurface Exploration and Geotechnical Evaluation, Lewisville Lake Environmental Learning Area (LLELA), dated November 4, 2025, and prepared by Building & Earth), site boundary and topography, site conditions, site history, local information, and seasonal weather conditions. Geotechnical report data is not considered all conclusive and it is Contractor's responsibility to further investigate site conditions as he determines necessary. Contractor is totally responsible for acceptance of the site and preparation of the site to the proper grade and compaction requirements as indicated by the Contract Documents including Construction Drawings and Specifications. Any construction performed by Contractor on the project will constitute acceptance of the site.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

End of Section 02 32 11

SECTION 02 41 00

DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Demolition of designated site structures, retaining walls, and foundations, and removal of materials from site.
- B. Demolition and removal of pavements, curbs and gutters, drainage structures, utilities, signage, or landscaping.
- C. Disconnecting and capping or removal of identified utilities.
- D. Filling or removal of underground tanks, piping, and appurtenances.
- E. Filling voids in subgrade created as a result of removals or demolition.
- F. Hazardous material compliance.

1.02 RELATED SECTIONS

- A. Section 31 00 10 – Site Preparation
- B. Section 31 00 20 – Earthwork
- C. Section 31 05 16 – Aggregate Materials
- D. Section 31 25 01 – General Requirements for Erosion and Sediment Control
- E. Storm Water Pollution Prevention Plan
- F. Construction Drawings

1.03 REGULATORY REQUIREMENTS

- A. Conform to applicable local code for demolition of structures, safety of adjacent structures, dust control, and runoff control.
- B. Obtain required permits and licenses from appropriate authorities. Pay associated fees including disposal charges.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. Do not close or obstruct roadways, sidewalks, or fire hydrants without appropriate permits.
- E. Conform to applicable regulatory procedures when hazardous or contaminated materials are discovered.

- F. Test soils around buried tanks for contamination.

1.04 PROJECT RECORD DOCUMENTS

- A. Accurately record actual locations of capped utilities and subsurface obstructions that will remain after demolition.

1.05 PROJECT CONDITIONS

- A. Structures to be demolished will be discontinued in use and vacated prior to start of work.
- B. Neither Owner nor Engineer assumes responsibility for condition of structures to be demolished.
- C. In the event existing site conditions have changed after contractor has performed his site evaluation described in section 02 32 11, the Owner or Owner's Representative shall be consulted prior to start of work.
- D. Unless otherwise indicated in Contract Documents, items of salvageable value to Contractor shall be removed from site and structures. Storage or sale of removed items on site will not be permitted and shall not interfere with other work specified in Contract Documents.
- E. Explosives shall not be brought to site or used without written consent of authorities having jurisdiction. Such written consent will not relieve Contractor of sole responsibility for injury to persons or for damage to property due to blasting operations. Performance of required blasting shall comply with governing regulations.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. Aggregate materials as specified in Section 31 05 16.

PART 3 EXECUTION

3.01 PREPARATION

- A. Provide, erect, and maintain erosion control devices, temporary barriers, and security devices at locations indicated on Construction Drawings.
- B. Protect existing plant growth, landscaping materials, appurtenances, and structures which are not to be demolished. Replace or repair damage caused by demolition operations at no cost to Owner.
- C. Prevent movement or settlement of remaining adjacent structures and provide bracing and shoring as needed.

- D. Mark location of existing utilities. Protect and maintain in safe and operable condition utilities that are to remain. Prevent interruption of existing utility service to occupied or used facilities, except when authorized in writing by Authorities Having Jurisdiction. Provide temporary services during interruptions to existing utilities that are acceptable to governing authorities and utility owners.

3.02 DEMOLITION REQUIREMENTS

- A. Conduct demolition operations in a manner that will minimize interference with adjacent structures or pavements.
- B. Cease operations immediately if adjacent structures appear to be in danger. Notify authority having jurisdiction. Do not resume operations until directed.
- C. Conduct operations with minimum of interference to public or private access. Maintain ingress and egress at all times.
- D. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon, or limit access to their property.
- E. Sprinkle work with water to minimize dust. Provide hoses and water connections for this purpose.
- F. Comply with governing regulations pertaining to environmental protection.
- G. Clean adjacent roads, streets, highways, structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing prior to start of work.

3.03 DEMOLITION

- A. Demolish buildings completely and remove from site using methods as required to complete work within limitations of governing regulations. Small structures may be removed intact when acceptable to Authorities Having Jurisdiction.
- B. Proceed with demolition in systematic manner, from top of structure to ground. Complete demolition work above each floor or tier before disturbing supporting members on lower levels.
- C. Relocate demolition equipment and remove materials to prevent excessive loading to supporting walls, floors, or framing.
- D. Remove structural framing members and lower to ground by hoists, derricks, or other suitable methods.
- E. Demolish concrete and masonry in small sections. Break up concrete slabs-on-grade that are 3 feet or more below proposed subgrade and remove if adequate compaction cannot be obtained. Remove slabs-on-grade and below grade construction within the upper 3 feet of proposed subgrade.

3.04 FILLING BASEMENTS AND VOIDS

- A. Completely fill below grade areas and voids resulting from demolition or removal of structures, underground fuel storage tanks, wells, cisterns, etc., using approved select fill materials consisting of stone, gravel, and sand free from debris, trash, frozen materials, roots, and other organic matter.
- B. Ensure that areas to be filled are free of standing water, frost, frozen or unsuitable material, trash, and debris prior to fill placement.
- C. Place fill materials in accordance with Section 31 00 20 unless subsequent excavation for new work is required.
- D. Grade surface to match adjacent grades and to provide flow of surface drainage after fill placement and compaction.

3.05 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove from site debris, rubbish, and other materials resulting from demolition operations.
- B. No burning of any material, debris, or trash on-site or off-site will be allowed, except when allowed by appropriate governing authority and Owner. If allowed as stated above, burning shall be performed in manner prescribed by governing authority. Attend burning materials until fires have completely burned out or have been completely extinguished.
- C. Transport materials removed from demolished structures with appropriate vehicles and dispose off-site to areas which are approved for disposal by Authorities Having Jurisdiction and appropriate property owners.

End of Section 02 41 00

SECTION 03 31 60

MISCELLANEOUS CONCRETE WORK

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Cast-in-place concrete and reinforcing steel used in the construction of manholes, drainage structure, thrust blocks, sidewalks, concrete pads around valve and meter boxes, and concrete encasement.

1.02 RELATED WORK

- A. Quality control is specified in Division 01 of the Project Manual.
- B. Section 32 13 13 – Portland Cement Concrete Paving.

1.03 REFERENCES

- A. ASTM Standards
 - 1. A 615 - Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - 2. A 1064 - Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
 - 3. C 31 - Making and Curing Concrete Test Specimens in the Field
 - 4. C 33 - Concrete Aggregates
 - 5. C 39 - Compressive Strength of Concrete
 - 6. C 143 - Slump of Hydraulic-Cement Concrete
 - 7. C 150 - Portland Cement
 - 8. C 172 - Sampling Freshly Mixed Concrete
 - 9. C 231 - Air Content of Freshly Mixed Concrete by the Pressure Method
 - 10. C 260 – Air-Entraining Admixtures for Concrete
 - 11. C 309 – Liquid Membrane-Forming Compounds for Curing Concrete
 - 12. C 618 – Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

1.04 SUBMITTALS

- A. Submittals are not required for concrete work unless requested by Owner or Owner's Representative. If requested, submit drawings and data as follows. It is anticipated that these will only be required to be submitted if field observations indicate to Owner or Owner's Representative that the Work is not progressing according to the Contract Documents.
- B. Manufacturer's data for reinforcing steel.

- C. Manufacturer's data for admixtures and curing compound.
- D. Mix design for concrete.
- E. Reinforcing placement drawings.

1.05 QUALITY ASSURANCE

- A. Concrete shall be provided by a ready-mix plant that has been in operation sufficient time to have a proven record of supplying concrete mixtures that perform satisfactorily. Ready mix plant shall have a current State Highway Department approval.
- B. Concrete work, including formwork and reinforcing steel placement, shall be accomplished by workers experience in the type of work being performed.

PART 2 PRODUCTS

2.01 CEMENT

- A. Cement shall be Portland cement conforming to the requirements of ASTM C 150, Type I or IA. Type III or IIIA Portland Cement, high early strength, may be used if approved by Owner or Owner's Representative, at no extra cost to Owner.

2.02 AGGREGATE

- A. Coarse aggregates shall be no larger than 1-1/4 inches. The designated range of coarse aggregate shall be 1-1/4 inch to No. 4 sieve. Fine aggregates shall consist of clean, sound, sand conforming to ASTM C 33, and graded as follows.

<u>Sieve</u>	<u>Percent Passing</u>
3/8 inch	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#50	5-30
#100	0-10

2.03 WATER

- A. Water used in mixing concrete and mortar shall be potable water and shall be free from injurious amounts of acids, alkalies, oils, sewage, and organic matter.

2.04 REINFORCING STEEL

- A. Reinforcing steel shall be either deformed bars or welded wire fabric, as indicated on the Drawings. The steel shall conform to the following.

Deformed bars	ASTM A 615, Grade 60
Welded wire fabric	ASTM A 1064, Grade 65

2.05 CURING COMPOUND

- A. Spec Chem Pave Cure Rez, or equal, conforming to ASTM C 309.

2.06 CONCRETE COMPOSITION AND STRENGTH REQUIREMENTS

- A. Concrete shall be either Class A or Class B, and shall be composed of Portland cement, fine and coarse aggregate and water proportioned in keeping with the following.

	Class "A" Concrete	Class "B" Concrete
Minimum Sacks of Cement (per Cubic Yard)	6	5
Max Water (gallons per sack)	6-1/2	6
Slump (inches)	2 - 4 (w/ vibration) 4 - 6 (w/o vibration) 1 - 2 (for construction with extrusion machine)	2 - 4 (w/ vibration) 4 - 6 (w/o vibration) 1 - 2 (for construction with extrusion machine)
Air Entrainment (percent)	6	Not applicable

Water-cement ratio shall not exceed 0.45.

- B. Air-entraining agents, if used, shall conform to ASTM C 260. The total air content (entrained and entrapped air) shall be 6 percent plus or minus 1 percent.
- C. Proportioning of concrete shall be by weight except that water may be measured by volume. A one cubic foot sack of Portland cement will be considered as weighing 94 pounds.
- D. Unless otherwise indicated on the Drawings, Class A concrete made with ordinary Portland cement shall have a minimum compressive strength at 28 days of 3,500 psi, and Class B concrete made with ordinary Portland cement shall have a minimum compressive strength at 28 days of 2,500 psi. If made with high early strength cement, those strengths shall be attained at the end of 7 days.

- E. Concrete grades conforming to State Highway Department grades similar to the ones designated in Paragraph 2.06.A and 2.06.D may be used.
- F. Fly ash, if used, shall conform to ASTM C 618, Class C or F. Mixing Class C and Class F fly ashes will not be permitted. Fly ash may only be used as a partial replacement for Type 1 cement, not exceeding 20% by weight.

2.07 EXPANSION JOINT MATERIALS

- A. Expansion joints: asphalt impregnated fiberboard, meeting requirements of AASHTO M 213.
- B. Contraction (i.e. saw cut) joints: one part silicone formulation that does not require a primer for bond to concrete. Compound shall be compatible with concrete. Acetic acid cure sealants are not acceptable. Provide product of a manufacturer listed on the State Highway Department approved materials provider list.

PART 3 EXECUTION

3.01 REINFORCING STEEL

- A. Steel reinforcing shall be free from rust, scale, and from mortar, dirt, or other objectionable coatings at time of placement. It shall be placed accurately in accordance with details shown on the Drawings and with rebar detail drawings, and properly secured in position.

3.02 READY-MIX CONCRETE

- A. Ready-mix concrete shall be delivered and placed within one hour after all materials, including mixing water, shall have been placed in the mixing drum. Each batch shall be accompanied by a load ticket, with a copy for Owner or Owner's Representative, showing the concrete type, mixing proportions, and time mixing began.

3.03 VIBRATION

- A. Structural concrete shall be compacted by vibration as it is placed. The use of form vibrators is not acceptable. Internal vibrators shall be capable of transmitting vibration to the concrete at frequencies not less than 4,500 impulses per minute. Duration of vibration shall be limited to the time necessary to provide satisfactory consolidation without causing segregation. The vibrator shall not be inserted into lower courses previously vibrated. Vibrators shall be applied in a substantially vertical position and at uniformly spaced points not further apart than the visible effectiveness of the vibrator. Vibration shall be supplemented by such spading as Owner or Owner's Representative may require. Concrete in pipe foundations need not be vibrated if other methods produce satisfactory results. Slump of concrete shall be the minimum practical as specified in Paragraph 2.06.A.

3.04 FINISHING

- A. Finish formed concrete surfaces that will remain exposed with a smooth rubbed finish. Sidewalk, drive, and street repairs shall be finished to match existing sidewalks, drives, and streets.
- B. Patch form ties and honeycombing in structural concrete.

3.05 CURING

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Cure concrete for at least 7 consecutive days. Cure unformed surfaces by one of the following methods.

1. Cover surface with moist fabric so that a film of water remains on the surface throughout the curing period.
2. Cover surface with curing paper and seal with tape.
3. Apply a uniform coat of liquid curing and sealing compound in accordance with manufacturer's instructions.

3.06 FIELD QUALITY CONTROL

- A. Testing of concrete in the field, either as poured or after setting or curing, shall be as required by Owner or Owner's Representative. The cost of all testing to demonstrate compliance with the specifications shall as indicated in Division 01 of the Project Manual.
- B. Cooperate with testing laboratory personnel to take and properly handle field samples.
- C. Composite samples shall be obtained in accordance with ASTM C 172
- D. Mold three specimens from each test required in accordance with ASTM C 31; cure specimens in laboratory.
- E. Measure air content in Class A concrete in accordance with ASTM C 231.
- F. Test the specimens in accordance with ASTM C 39. Two specimens shall be tested at 28 days for acceptance and one specimen shall be tested at 7 days for information.
- G. The slump of the normal-weight concrete sample for each strength test shall be determined in accordance with ASTM C 143.
- H. Failure of concrete is defined as the average compressive strength of the two cylinders tested at 28 days not being equal to or greater than the specified 28 day compressive strength. In addition, a low compressive strength of the cylinder tested at 7 days may be considered as concrete failure if it is so low as to indicate that the specified 28 day strength will not be achieved.
- I. Should the test cylinders fail to demonstrate compliance with the specifications, reconstruct the concrete structure at no additional cost to Owner. Contractor shall then be responsible for the expenses involved in re-testing the concrete.
- J. Testing will be performed for every 50 cubic yards of concrete placed or as directed by Owner or Owner's Representative. The cost of all testing made at the request of Owner will be as indicated in Division 01 of the Project Manual. Owner or Owner's Representative shall furnish Contractor with copies of concrete testing required by Owner or Owner's Representative during the course of the Work.

3.07 CLEANING

- A. Clean work areas and all concrete formwork and waste. Waste concrete shall not be disposed of on site except as approved by Owner or Owner's Representative.

3.08 SCHEDULE

- A. Cast-in-place concrete class is generally indicated on the Drawings for each type of usage. The following schedule will govern where no concrete class is indicated on the Drawings.

	<u>Class A</u>	<u>Class B</u>
Curb and Gutter	x	
Sidewalks	x	
Trail	x	
Drainage structures	x	
Head walls	x	
Signage post holes		x
Thrust blocking		x
Fence post holes		x

End of Section 03 31 60

Section 03 32 00

GROUT

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work consists of furnishing all labor, materials and equipment necessary for installation of non-shrink grout at the following locations:
 - 1. Slope edges for tanks.
 - 2. Elsewhere as indicated on the Drawings.

1.02 SUBMITTALS

- A. Product Data: Submit catalog data on grout proposed for use.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver in original unopened containers and store in a dry place under cover.

1.04 JOB CONDITIONS

- A. Environmental Requirements: Maintain temperature of 40 degrees F or above for at least 72 hours following placement.

PART 2 PRODUCTS

2.01 NON-SHRINK GROUT

- A. Cement-Based: Acceptable Manufacturer and Products:
 - 1. U.S. Grout Corporation - Five Star Grout
 - 2. US Mix Co. - US Spec MP Grout
 - 3. Master Builders - Master Flow 713
 - 4. Euclid Chemical Company – Hi-Flow Grout
 - 5. L & M Chemicals - Crystex

PART 3 EXECUTION

3.01 INSTALLATION

- A. Verify that surface that will support grout is clean, dry, and to the correct lines and grades.

- B. At locations as indicated on the Drawings or in these Specifications, install and cure according to manufacturer's recommendations.

End of Section 03 32 00

SECTION 31 00 10

SITE PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cleaning site of debris, grass, trees, and other plant life in preparation for site or building earthwork.
- B. Protection of existing structures, trees, or vegetation that are indicated in Contract Documents to remain.
- C. Stripping topsoil from areas that are to be incorporated into limits of project or as otherwise indicated on Construction Drawings.

1.02 RELATED SECTIONS

- A. Section 02 32 11 – Site and Subsurface Investigation
- B. Section 02 41 00 – Demolition
- C. Section 31 00 20 – Earthwork
- D. Section 31 25 01 – General Requirements for Erosion and Sediment Control
- E. Storm Water Pollution Prevention Plan (SWPPP)
- F. Construction Drawings

1.03 ENVIRONMENTAL REQUIREMENTS

- A. Construct temporary erosion control systems as shown on Construction Drawings or as directed by the SWPPP to protect adjacent properties and water resources from erosion and sedimentation.
- B. In event that sitework on this project will disturb 5 or more acres, Contractor shall not begin construction without posting on site the "National Pollutant Discharge Elimination System" (NPDES) permit governing discharge of storm water from site for entire construction period. NPDES permit requires SWPPP to be in place during construction.
- C. Contractor is totally responsible for conducting storm water management practices in accordance with NPDES permit and for enforcement action taken or imposed by Federal or State agencies, including cost of fines, construction delays, and remedial actions resulting from Contractor's failure to comply with provisions of NPDES permit. Refer to Section 31 25 01.

- D. Contractor to fence/flag Waters of the U.S. boundaries (Elm Fork Trinity River/Wetland 1) and comply with USACE permit requirements. Construction matting where work is allowed in/near wetland.

1.04 PROJECT CONDITIONS

- A. In the event demolition operations are not part of the project and existing site conditions have changed after contractor has performed a site evaluation described in Section 02 32 11, consult Engineer prior to start of work.

PART 2 PRODUCTS

2.01 OFF-SITE MATERIALS

- A. Transport off-site materials to Project using well maintained and operating vehicles. Once on site, transporting vehicles shall stay on designated haul roads and shall at no time endanger improvements by rutting, overloading, or pumping.

PART 3 EXECUTION

3.01 PREPARATION

- A. Verify existing plant life that is to remain and that clearing limits are clearly tagged, identified, and marked in such manner as to ensure their safety throughout construction operations.

3.02 PROTECTION

- A. Locate and identify existing utilities that are to remain and protect from damage.
- B. Protect trees, plant growth, and features designated to remain as part of final landscaping.
- C. Conduct operations with minimum interference to public or private accesses and facilities. Maintain ingress and egress at all times and clean or sweep roadways daily as required by SWPPP or governing authority. Dust control shall be provided with sprinkling systems or equipment provided by Contractor.
- D. Protect benchmarks, property corners, and other survey monuments from damage or displacement. If marker needs to be removed it shall be referenced by licensed land surveyor and replaced, as necessary, by same.

- E. Provide traffic control as required, in accordance with the U.S. Department of Transportation's "Manual on Uniform Traffic Control Devices" and applicable state highway department and/or local municipal requirements.

3.03 CLEARING

- A. Clear areas required for access to site and execution of work.
- B. Unless otherwise indicated on Construction Drawings, remove trees, shrubs, grass, other vegetation, improvements, or obstructions interfering with installation of new construction. Removal includes digging out stumps and roots. Depressions caused by clearing and grubbing operations shall be filled to subgrade elevation to avoid ponding of water. Satisfactory fill material shall be placed in accordance with Section 31 00 20.
- C. Remove grass, trees, plant life, stumps, and other construction debris from site to dump site that is suitable for handling such material according to applicable laws and regulations.

3.04 TOPSOIL EXCAVATION

- A. Topsoil shall consist of organic surficial soil found in depth of not less than 6 inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones and other objects over 2 inches in diameter, weeds, roots, and other objectionable material.
- B. Cut heavy growths of grass from areas before stripping and remove cuttings with remainder of cleared vegetative material.
- C. Strip topsoil from areas that are to be filled, excavated, landscaped, or re-graded to such depth that it prevents intermingling with underlying subsoil or questionable material.
- D. Stockpile topsoil in storage piles in areas shown on Construction Drawings in a manner that will freely drain surface water. Cover storage piles as required to prevent windblown dust. Dispose of unsuitable topsoil as specified in section 02 41 00. Remove excess topsoil from site unless specifically noted otherwise on Construction Drawings.

End of Section 31 00 10

SECTION 31 00 20

EARTHWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cutting, filling, and grading to required lines, dimensions, contours, and elevations for proposed improvements.
- B. Scarifying, compacting, drying, and removal of unsuitable material to ensure proper preparation of areas for fills or proposed improvements.

1.02 RELATED SECTIONS

- A. Section 02 41 00 – Demolition
- B. Section 31 00 10 – Site Preparation
- C. Section 31 05 16 – Aggregate Materials
- D. Section 31 23 03 – Excavation, Backfill, and Compaction for Pavement
- E. Section 31 25 01 – General Requirements for Erosion and Sediment Control
- F. Geotechnical Report (if available) for boring locations and findings of subsurface materials and conditions. (See Appendix - A)
- G. Drawings

1.03 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM) latest edition.
 - D 698 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN.m/m³))
 - D 1557 Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN.m/m³))
 - D 2216 Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
 - D 2487 Classification of Soils for Engineering Purposes
 - D 4318 Liquid Limit, Plastic Limit, and Plasticity Index of Soils
 - D 6938 Density of Soil and Soil-Aggregate In Place by Nuclear Methods (Shallow Depth)
- B. American Association of State Highway and Transportation Officials (AASHTO) latest edition
 - T 88 Particle Size Analysis of Soils

- T180 Standard Method of Test for Moisture-Density Relations of Soils
 Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop
- T224 Standard Method of Test for Correction for Coarse Particles in the
 Soil Compaction Test
- C. Geotechnical Report (DF250133, 11/7/2025)

1.04 SUBMITTALS

- A. If requested by Engineer, submit a sample of each type of off-site fill material that is to be used at the site. Sample size, transport, and handling procedures shall be as determined by the independent testing laboratory. If allowed by Engineer, for materials supplied by a quarry in regular operation, submit gradation and certification of material in lieu of a sample.
- B. Submit name of each material supplier including the specific type and source of each material. Change in material source throughout project requires an additional submittal to Engineer for approval.
- C. If fabrics or geogrids are to be used, submit specific product design to Engineer for approval.

1.05 QUALITY ASSURANCE

- A. An independent testing laboratory, selected and paid by Owner, shall be retained to perform construction testing on site at a schedule and frequency determined by Engineer or Owner.
- B. Any quarry in regular production of earthen materials from which imported materials are obtained for this project shall have a regular quality control program that includes, as a minimum, the tests listed in paragraph 1.04 C.
- C. Following tests shall be performed as part of proof of materials testing requirements on each type of on-site or imported soil material used as compacted fill:
 - 1. Moisture and Density Relationship: ASTM D 698 (or ASTM D 1557)
 - 2. Mechanical Analysis: AASHTO T 88
 - 3. Plasticity Index: ASTM D 4318
 - 4. California Bearing Ratio (CBR) or Limerock Bearing Ratio (LBR) test shall be performed for each type of material that is imported from off-site for use in areas where pavement will be constructed.

- D. For the purposes of deciding when testing is required, an on-site borrow pit that is used to provide engineered fill for other locations on-site shall be tested the same as for materials imported from off-site.
- E. Field density tests for in-place materials shall be performed as part of proof of construction testing according to the Nuclear Method: ASTM D 2922 (Method B-Direct Transmission). Locations for tests will be selected by Engineer.
- F. The independent testing laboratory shall prepare test reports that indicate test location, elevation data, and test results. Owner, Engineer, and Contractor shall be provided with copies of reports within 96 hours of time that test was performed. In event that test performed fails to meet Specifications, Engineer and Contractor shall be notified immediately by the independent testing laboratory.
- G. All costs related to retesting due to test failures shall be paid for by Contractor at no additional expense to Owner. Owner reserves right to employ an additional independent testing laboratory to obtain a second opinion when deemed necessary. Contractor shall provide free access to site for testing activities.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Any fill required to raise grade for pavement areas, whether from an on-site or off-site source, should consist of select clayey sand, sandy clay, or clayey gravel having a liquid limit less than 45 or other approved fill classifying as SC, CL or GC according to the Unified Soils Classification System. Borrow material with liquid limits greater than 45 can be used provided the fill classifies as GC and less than 35 percent passes the No. 200 sieve.
- B. Imported fill material shall be as specified herein and as approved by Engineer.
- C. Aggregate fill as specified in Section 31 05 16.
- D. Topsoil as specified in Section 31 00 10 or in Section 32 90 00 or 32 90 01, if either is included in the Project Manual.
- E. Filter and drainage fabrics as specified in Section 31 25 01.

2.02 EQUIPMENT

- A. Off-site materials shall be transported to project using well maintained and operating vehicles. Once on site, transporting vehicles shall stay on designated haul roads and shall at no time endanger improvements by rutting, overloading, or pumping.

PART 3 EXECUTION

3.01 PREPARATION

- A. By submitting a bid, Contractor acknowledges investigating the site to determine type, quantity, quality, and character of excavation work to be performed.
- B. Identify required lines, spot elevations, contours, and benchmark datum.
- C. Locate and identify existing utilities that are to remain, and protect from damage.
- D. Notify utility companies to remove or relocate utilities that are in conflict with proposed improvements.
- E. Protect plant life, lawns, fences, existing structures, sidewalks, paving, and curbs outside of grading area from damage by excavating equipment and vehicular traffic.
- F. Protect benchmarks, property corners, and other survey monuments from damage or displacement. If marker needs to be removed it shall be referenced by licensed land surveyor and replaced, as necessary, by same.
- G. Prior to placing fill in low areas, such as previously existing creeks, ponds, ditches, or lakes, perform following procedures.
 - 1. Drain water out by gravity with ditch having flow line lower than lowest elevation in low area. If drainage cannot be performed by gravity ditch, use adequate pump to obtain same results.
 - 2. After drainage of low area is complete, remove mulch, mud, debris, and other unsuitable material using acceptable equipment and methods that will keep natural soils underlying low area dry and undisturbed.
 - 3. Muck, mud, and other materials removed from low areas proposed for fill shall be dried on-site by spreading in thin layers for observation. Material shall be inspected and, if found to be suitable for use as fill material, shall be incorporated into lowest elevation of site filling operation, but not under building subgrade areas or within the upper 10 feet of paving subgrade. If, after observation the material is found to be unsuitable, the material shall be removed from site.

3.02 CLASSIFICATION OF EARTHEN MATERIALS

- A. Materials excavated from the site will be classified as one of the following.

1. Common excavation: all excavation not included as rock excavation or excavation that is otherwise classified. This is material that is of sufficient quality that it can be used to support the loads of the finished project.
 2. Unsuitable material: any material that is of such a quality that it cannot be used at any location on the site and must be removed and disposed of.
 3. Excess material: material that would be considered common excavation except that it is surplus to the needs of the project and must be removed from the site.
 4. Rock: Rock excavation is defined as igneous, metamorphic, or sedimentary rock that cannot be excavated without drilling and blasting or the use of rippers or other mechanical methods, and all boulders or other detached stones each having a volume of 0.5 cubic yard or more.
- B. When performing grading operations during periods of wet weather, provide adequate drainage and ground water management to control moisture of soils.
- C. Shore, brace, and drain excavations as necessary to maintain a safe excavation, secure, and free of water at all times.
- D. Excavated material containing rock or stone greater than 6 inches in largest dimension is unacceptable as fill within proposed building subgrade and paving subgrade.
- E. Rock or stone less than 6 inches in largest dimension is acceptable as fill to within 24 inches of surface of proposed subgrade when mixed with suitable material.
- F. Rock or stone less than 2 inches in largest dimension and mixed with suitable material is acceptable as fill within the upper 24 inches of proposed subgrade.
- G. If unsuitable soils are encountered within an excavation at a depth such that adequate support of the finished project is in doubt, Engineer shall, with the aid of professional associates deemed necessary, investigate the nature of the soils and either 1) direct that the soils be used in place with modification, 2) direct that the soil be removed and disposed of or wasted on site if possible, and that engineered fill shall be constructed, using either suitable on-site materials or imported materials as necessary. Payment for such undercut and replacement shall be made in accordance with the Measurement and Payment section.

3.03 FILLING AND SUBGRADE PREPARATION

- A. Fill areas to contours and elevations indicated on the Drawings with acceptable materials. Use of frozen or frost-containing materials is not acceptable for filling operations.

- B. Place and compact fill in continuous lifts of substantial extent. If necessary, create benches as the work is brought up in layers. Benching shall be of sufficient width to permit operation of equipment. Each lift shall be stable before the next lift is placed. Plan the work so as to avoid small, patchwork lifts.
- C. Refer to Section 31 23 01 for filling requirements for structures.
- D. Refer to Section 31 23 02 for filling requirements for utilities.
- E. Refer to Sections 31 23 03 and 31 23 11 for filling requirements for pavements.
- F. Areas exposed by excavation or stripping and on which subgrade preparations are to be performed shall be scarified to minimum depth of 8 inches and compacted to minimum of 95 percent of optimum density, in accordance with ASTM D 698 at a moisture content of not less than 1 percentage point below and not more than 3 percentage points above optimum moisture content. These areas shall then be proof-rolled to detect areas of insufficient compaction. Proof-rolling shall be accomplished by making one or more passes with fully-loaded tandem-axle dump truck, or approved equal, under the supervision and direction of the independent testing laboratory or Engineer. Areas of failure shall be excavated and recompacted as specified.
- G. Should excavation operations encounter an underground condition that prohibits the work from progressing in some area, cease work in this area and contact Engineer immediately.
- H. Fill materials used in preparation of subgrade shall be placed in lifts or layers not to exceed 8 inches loose measure and compacted to minimum density of 95 percent of optimum density, in accordance with ASTM D 698 at a moisture content of not less than 1 percentage point below and not more than 3 percentage point above optimum moisture content.
- I. If compaction requirements are not complied with at any time during construction, remove and re-compact deficient areas until proper compaction is obtained, at no additional expense to Owner.

3.04 MAINTENANCE OF SUBGRADE

- A. Finished subgrades shall be verified by survey and testing to ensure proper horizontal and vertical controls have been complied with and compacted conditions are satisfactory for construction above subgrade.
- B. Use any methods necessary to protect the compacted subgrade from erosion, excessive moisture or drying conditions and wheel loading damage during

construction from concrete trucks, dump trucks, and other construction equipment.

- C. Remove areas of finished subgrade found to have insufficient compaction density to depth necessary and replace in manner that will comply with compaction requirements by use of material equal to or better than best subgrade material on site. Surface of subgrade after compaction shall be hard, uniform, smooth, stable, and true to grade and cross-section.
- D. If more than four weeks lapse between initial completion of subgrade construction and construction of the courses that the subgrade supports, retest the subgrade by proof-rolling and by compaction tests if required, to verify that subgrade is still suitable to support other construction. Engineer may increase or decrease the time at which re-testing of subgrade is required, depending on weather conditions, type of subgrade, etc.

3.05 BORROW SITES

- A. Upon completion of borrow operations, clean up and stabilize borrow areas as indicated on the Drawings in neat and reasonable manner to satisfaction of the borrow area property owner and with the Storm Water Pollution Prevention Plan requirements.

3.06 FINISH GRADING

- A. Finish grade areas where finish grade elevations or contours are indicated on Drawings, other than paved areas and buildings, including excavated areas, filled and transition areas, and landscaped areas. Graded areas shall be uniform and smooth, free from rock, debris, or irregular surface changes. Finished subgrade surface shall not be more than 0.10 foot above or below established finished subgrade elevation. Ground surfaces shall vary uniformly between indicated elevations. Finish ditches shall be graded to allow for proper drainage without ponding and in manner that will minimize erosion potential. For topsoil application, refer to Section 32 90 00 or 32 90 01.
- B. Correct settled and eroded areas within 1 year after date of completion at no additional expense to Owner. Bring grades to proper elevation. Replant or replace grass, shrubs, bushes, or other vegetation that appears dead, dying, or disturbed by construction activities. Refer to Section 31 25 01 for slope protection and erosion control.

End of Section 31 00 20

SECTION 31 05 16

AGGREGATE MATERIALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aggregate materials for use as specified in other Sections.

1.02 RELATED SECTIONS

- A. Section 31 00 20 – Earthwork
- B. Section 31 23 03 – Excavation, Backfill, and Compaction for Pavement
- C. Section 31 25 01 – General Requirements for Erosion and Sediment Control
- D. Construction Drawings
- E. State transportation department: Standard Specifications for Highway Construction

1.03 REFERENCE STANDARDS

- A. ASTM International (ASTM) latest edition.
 - D 448 Sizes of Aggregate for Road and Bridge Construction
 - D 698 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN.m/m³))
 - D 1557 Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 Kn.m/m³))
 - D 2216 Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
 - D 2487 Classification of Soils for Engineering Purposes
 - D 2922 Density of Soil and Soil-Aggregate In Place by Nuclear Methods (Shallow Depth)
 - D 3017 Water Content of Soil and Rock In Place by Nuclear Methods (Shallow Depth)
 - D 4318 Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- B. American Association of State Highway and Transportation Officials (AASHTO) latest edition
 - T 88 Particle Size Analysis of Soils

1.04 QUALITY ASSURANCE

- A. Tests and analysis of aggregate materials will be performed in accordance with ASTM and AASHTO procedures specified.

1.05 SUBMITTALS

- A. Submit 100 pound sample of each aggregate or mixture that is to be incorporated into project in air-tight containers to the independent testing laboratory for testing or submit gradation and certification of aggregate material that is to be incorporated into the project to the independent testing laboratory for review and recommended approval.
- B. Submit name of each material supplier including the specific type and source of each material. Any change in material source requires an additional submittal to the Owner or his designated representative for approval.

PART 2 PRODUCTS

2.01 GRANULAR BASE COURSE MATERIALS

- A. Aggregate base course shall be crushed stone so proportioned as to meet the requirements for Class 7 material as specified in Table 1.
- B. Granular material for over-excavation areas shall be either crushed stone and/or gravel so proportioned to meet the requirements for either Class 1 or Class 2 material as specified in Table 1.
- C. Percent of wear for Class 7 material, measured by AASHTO T 96, shall not be greater than 45.
- D. When it is necessary to blend two or more materials, each material shall be proportioned separately through mechanical feeders to ensure uniform production. Premixing or blending to avoid separate feeding will not be permitted. Blending materials on the roadway in order to obtain a mixture that will comply with the requirements specified will not be permitted.
- E. Shale and slate are not considered to be gravel or stone. Material furnished shall be reasonably free from shale, slate, and other objectionable, deleterious, or injurious matter.
- F. For Class 1 and Class 2 material, the fraction passing the #200 sieve shall not be greater than 3/4 of the fraction passing the #40 sieve. For Class 7 material, the fraction passing the #200 sieve shall have a liquid limit not greater than 25.
- G. When the material contains aggregate larger than that specified for the class required, it must be removed by screening or by screening and crushing. Removal of large size aggregate by hand methods will not be permitted.
- H. For Number 57 and 67 material, requirements are taken from ASTM D 448.

- I. Aggregate base for pavement areas shall comply with TxDOT Item 247, Grade 1–2 crushed limestone, consistent with the civil plans and geotechnical recommendations.
- J. Aggregate materials shall be compatible with pavement sections and subgrade assumptions shown on the Construction Drawings and Geotechnical Report (DF250133, 11/4/2025).
- K. Materials with excessive fines, shale, slate, or deleterious matter shall not be permitted.
- L. All aggregate sources shall be tested and approved prior to delivery to the site.
- M. Aggregate base shall be placed, moisture-conditioned, and compacted in accordance with Sections 31 00 20 and 31 23 03.

Table 1 Classes of Granular Material Grading and Crushing Requirements					
SIEVE	Percent Passing				
	Class 1	Class 2	Class 7	Number 57	Number 67
3 inch	100	100			
2 inch	95-100	95-100			
1½ inch			100	100	
1 inch				95-100	100
¾ inch	60-100	60-100	50-90		90-100
½ inch				25-60	
⅜ inch	40-80	40-80			20-55
#4	30-60	30-60	25-55	0-10	0-10
#8				0-5	0-5
#10	20-50	20-50			
#40	10-35	10-35	10-30		
#200	3-15	3-15	3-10		
Max Plasticity Index (minus #40 material)	13	10	6	NA	NA
Minimum percent crusher-run material			90	NA	NA

2.02 SOURCE QUALITY CONTROL

- A. Granular materials for aggregate base course and filling over-excavation areas shall be obtained from a quarry permanently established to furnish the materials specified, having a standard quality control and testing procedure in place.
- B. If requested, provide reports of standard quality control tests for the types of materials being furnished, such reports to include gradation of the completed mixture, Los Angeles hardness, plasticity index, and liquid limit.
- C. If requested by Engineer or Owner, provide source quality control testing of the actual material being furnished. Such tests will be requested if material as delivered on site does not appear to match the specifications, or if the compacted material does not seem to compact as specified. Such tests will include any which measure the properties specified, and will be required for every 1,000 cubic yards of granular material.

2.03 EQUIPMENT

- A. Off-site materials shall be transported to project using well maintained and operating vehicles. Once on site, transporting vehicles shall stay on designated haul roads and shall at no time endanger any improvements by rutting, overloading, or pumping.

PART 3 EXECUTION

3.01 STOCKPILING

- A. Stockpile on-site at locations indicated by Owner or Owner's Representative in such manner that there will be no standing water or mixing with other materials.

3.02 BORROW SITES

- A. Upon completion of borrow operations, clean up borrow areas as indicated on Construction Drawings in a neat and reasonable manner to the satisfaction of the property owner of the borrow area.

End of Section 31 05 16

SECTION 31 23 03

EXCAVATION, BACKFILL, AND COMPACTION FOR PAVEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavation to line, grade, and configuration as shown on Construction Drawings for proposed pavement areas.
- B. Fill to line, grade, and configuration as shown on Construction Drawings for proposed pavement areas.
- C. Compacting of materials in acceptable manner as specified.

1.02 RELATED SECTIONS

- A. Section 31 00 20 – Earthwork
- B. Section 31 05 16 – Aggregate Materials
- C. Section 32 13 13 – Portland Cement Concrete Paving
- D. Geotechnical Report (if available) for boring locations and findings of subsurface materials and conditions (See Appendix A)
- E. Construction Drawings

1.03 REFERENCE STANDARDS

- A. See Section 31 00 20.

1.04 QUALITY ASSURANCE

- A. The independent testing laboratory, selected by Owner or Owner's Representative and paid by Owner, shall be retained to perform construction testing on filling operations and subgrade analysis in accordance with the Construction Drawings and as specified in Section 31 00 20 and within this section.

1.05 SUBMITTALS

- A. Shop drawings or details pertaining to excavating and filling for pavement are not required unless otherwise shown on Construction Drawings or if contrary procedures to Contract Documents are proposed.
- B. Submit 100 lb. sample of each type of off-site fill material that is to be used in backfilling in air-tight containers to the independent testing laboratory for testing or submit gradation and certification of aggregate material that is to be used in

backfilling to the independent testing laboratory for review and recommended approval.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Fill material from on-site as specified in Section 31 00 20.
- B. Fill material from off-site as specified in Section 31 00 20.
- C. Aggregate material as specified in Section 31 05 16.

2.02 EQUIPMENT

- A. Off-site materials shall be transported to project using well maintained and operating vehicles. Once on site, transporting vehicles shall stay on designated haul roads and shall at no time endanger improvements by rutting, overloading, or pumping.

PART 3 EXECUTION

3.01 PREPARATION

- A. Establish lines, elevations, and grades necessary to construct pavements, curb, curb and gutter, bases, sidewalk, and roadways as shown on Construction Drawings.
- B. Protect benchmarks, property corners, and other survey monuments from damage or displacement. If marker needs to be removed it shall be referenced by licensed land surveyor and replaced, as necessary, by same.
- C. Locate and identify site utilities that have previously been installed and protect from damage.
- D. Locate and identify existing utilities that are to remain and protect from damage.
- E. Over-excavate and properly prepare areas of subgrade that are not capable of supporting proposed systems. These areas shall be stabilized by using acceptable structural fill or aggregate material placed and compacted as specified in Section 31 00 20.

3.02 EXCAVATION

- A. Excavate roadway and pavement areas to line and grade as shown on Construction Drawings.

- B. Place suitable material into project fill areas as specified in Section 31 00 20.
- C. Unsuitable excavated material shall be disposed of in a manner and location that is acceptable to local governing authorities.
- D. Perform excavation using capable, well maintained equipment and methods acceptable to local governing authorities.

3.03 FILLING AND SUBGRADE PREPARATION

- A. Areas exposed by excavation or stripping shall have a minimum 10 inch thick layer of select fill placed and compacted. After which, all area where subgrade preparations for paving are to be performed shall be scarified to minimum depth of 9 inch and compacted to a minimum of 98 percent of optimum density, in accordance with ASTM D 698 (or 98 percent of optimum density, in accordance with ASTM D 1557) at a moisture content of not less than 1 percent below and not more than 3 percent above optimum moisture content. These areas shall then be proof-rolled to detect areas of insufficient compaction. Proof-rolling shall be accomplished by making a minimum of 2 complete passes with fully-loaded tandem-axle dump truck weighing 25 tons minimum, or approved equal, in each of 2 perpendicular directions under supervision and direction of the independent testing laboratory. Areas of failure shall be excavated and recompacted as specified.
- B. Fill materials used in preparation of the subgrade shall be placed in lifts or layers not to exceed 8 inch loose measure and compacted to a minimum density of 98 percent of optimum density, in accordance with ASTM D 698, (or 98 percent of optimum density, in accordance with ASTM D 1557) at a moisture content of not less than 1 percent below and not more than 3 percent above optimum moisture content.
- C. Following table stipulates maximum allowable values for plasticity index (PI) and liquid limit (LL) of suitable fill materials to be used in specified areas, unless specifically stated otherwise on Construction Drawings:

	<u>PI</u>	<u>LL</u>
*Paving Area, below upper two feet	7-15	<40
*Paving Area, upper two feet	7-15	<40

(*References to depth are to proposed subgrade surface elevations)

3.04 COMPACTION

- A. Maintain optimum moisture content as specified to attain required compaction density.

- B. Materials shall be tested in accordance with Section 31 00 20.
- C. If compaction requirements are not complied with at any time during construction process, remove and re-compact deficient areas until proper compaction is obtained at no additional expense to Owner.

3.05 MAINTENANCE OF SUBGRADE

- A. Finished subgrades shall be verified to ensure proper horizontal and vertical controls have been complied with and compacted conditions are satisfactory for construction above subgrade.
- B. Contractor shall use any methods necessary to protect the compacted subgrade from erosion, excessive moisture or drying conditions and wheel loading damage during construction from concrete trucks, dump trucks, and other construction equipment.
- C. Remove areas of finished subgrade found to have insufficient compaction density to depth necessary and replace in manner that will comply with compaction requirements by use of material equal to or better than best subgrade material on site. Surface of subgrade after compaction shall be hard, uniform, smooth, stable, and true to grade and cross-section.

3.06 FINISH GRADING

- A. Finish grading shall be in accordance with Construction Drawings and as specified in Section 31 00 20.
- B. Grading of paving areas shall be checked by string line from grade stakes and/or, blue tops, set at not more than 50-foot centers. Tolerances of not more than 0.10-feet, will be permitted. Contractor shall provide engineering and field staking necessary for verification of lines, grades, and elevations.

End of Section 31 23 03

SECTION 31 25 01

EROSION AND SEDIMENTATION CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General requirements for temporary erosion and sediment control systems while land-disturbing activities are occurring during construction.
- B. Compliance requirements for TCEQ General Permit TXR150000 and Small Construction Site Notice (hereinafter call “the Permit” or the “CGP”)

1.02 RELATED SECTIONS

- A. Section 31 25 50 – Rock Check Dams
- B. Section 31 25 52 – Erosion Control Logs
- C. Section 31 25 61 – Polymer-Enhanced Soft Armoring
- D. Section 31 25 63 – Silt Fence
- E. Section 31 25 64 – Temporary Sediment Protection for Storm Inlet
- F. Section 31 25 70 – Stabilized Construction Entrance
- G. Section 31 25 71 – Manufactured Temporary Tracking Pad
- H. Section 31 25 91 – Concrete Washout Systems and Practices
- I. Section 31 37 02 – Permanent Transition Mat System
- J. Section 31 37 13 – Rip Rap
- K. Section 31 38 10 – Articulating Concrete Block Mats
- L. Section 32 92 01 – Seeding

1.03 REFERENCE DOCUMENTS

- A. Construction General Permit, as stated in Paragraph 1.01B
- B. Small Site Construction Notice, as stated in Paragraph 1.01B
- C. Stormwater Pollution Prevention Plan (SWPPP)
- D. USACE Wetlands Permit

1.04 REGULATORY REQUIREMENTS

- A. Discharge of stormwater from the construction site is regulated by Federal and State laws and regulations. The purpose of these is to minimize discharge of stormwater pollutants from construction activity and construction support activities.
- B. TCEQ administers these laws and regulations through a permit system. The Permit, also commonly called the Construction General Permit (CGP), is the

regulatory document governing stormwater discharges for this project. The permit requires that the operator ensure that the stormwater controls implemented at the site are consistent with all applicable Federal, State, and local requirements.

- C. The permit also prohibits discharge of most non-stormwater discharges, including: concrete washout water; excavation dewatering water; vehicle washing water; solvents or lubricating fluids; other fluids.
- D. For the purposes of this project, _____ is the Operator.
- E. No work may occur within the USACE delineated WOUS, not included within USACE Wetlands permit.

1.05 PROJECT CONDITIONS

- A. The project conditions are located in the Stormwater Pollution Prevention Plan (SWPPP). The Contractor shall make themselves familiar with the SWPPP, the approved limits of disturbance, flow patterns on site, any impaired waters, and endangered species.

1.06 QUALITY ASSURANCE

- A. Erosion and sediment control devices (also called best management practices, or BMPs) shall be installed by workers having training in the purpose of the devices. Foremen or site superintendents shall have similar training.

1.07 PERMIT PENALTIES

- A. Responsibility for payment of any penalties by Federal, State, or local authorities based on violations of the Permit or related laws is as follows.
 - 1. Penalties assessed because of defects in the selection or design of BMPs shall be paid by Owner.
 - 2. Penalties assessed because of ineffective installation of BMPs shall be paid by Contractor.
 - 3. Penalties assessed because of ineffective or insufficient maintenance of BMPs shall be paid by Contractor.
 - 4. Penalties assessed due to failure to conduct inspections when required and to document those inspections shall be paid by Owner.
 - 5. Penalties assessed for inadequate storage or display of records or documents related to the Permit shall be paid by Contractor.
 - 6. Penalties assessed for failure to update the SWPPP as required shall be paid by Owner.

- B. Owner shall deduct the amount of penalties due from Contractor from monies owed to Contractor. Owner or Owner's Representative shall prepare a Change Order to reflect this deduction.
- C. Where a penalty payable by Contractor is anticipated, but has not yet been assessed by a regulatory agency, and where that penalty may not be assessed for a period of months, Contractor may provide a financial assurance to Owner in lieu of having money withheld. Financial assurance may be a surety bond for the specific purpose, or an irrevocable letter of credit. The term shall be a minimum of two years, and the amount shall be the probable maximum amount of the fine.

PART 2 PRODUCTS

2.01 POSTING AND RECORD STORAGE

- A. Posting and record storage facilities are not required for this project.
- B. This project requires erection of a bulletin board for posting permit documents and other documents, and a storage box per the details and in the location indicated on the Drawings, for the posting of notices related to the Permit. If details of construction are not indicated on the Drawings, construct to provide protection against precipitation.
- C. A rain guage is required for this project.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install bulletin board as indicated on the Drawings. Install in a location where they can be easily seen by the public.
- B. Install erosion and sediment control devices where indicated on and according to the details on the Drawings.
- C. Installation shall be approved by Owner or Owner's Representative prior to the start of land-disturbing activities. Make any changes required until erosion and sediment control devices are approved by Owner or Owner's Representative.
- D. Deficiencies in or changes required to Drawings as applied to current conditions will be brought to the attention of Owner or Owner's Representative for remedial action.

- E. Owner or Owner's Representative has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow, and embankment operations and to direct Contractor to provide immediate additional erosion and sediment control measures. Additional material and work required and authorized by Owner or Owner's Representative which is beyond extent of Drawings shall be paid for by Owner. Owner or Owner's Representative shall prepare a Contract Modification covering this.

3.02 MAINTENANCE

- A. Perform maintenance of erosion and sediment control devices as often as necessary to keep them in effective working condition. Frequency of maintenance will depend on amount of run-off and amount of sediment build-up.

3.03 REMOVAL

- A. Remove erosion and sediment control devices as soon as upstream site stabilization is completed, or when no longer needed to minimize erosion or control sediment.
- B. Where erosion and sediment control devices are removed, restore areas to preconstruction conditions. However, regardless of pre-construction condition, areas shall not be left unstabilized.

3.04 SITE HOUSEKEEPING

- A. Maintain site in a manner to minimize potential stormwater pollution, including:
 - 1. Trash and litter control
 - 2. Spill prevention activities.
 - 3. Weekly stormwater meetings are required with documentation per SWPPP Appendix N.
 - 4. BMP deficiencies shall be corrected within 3 days; inappropriate BMPs corrected within 48 hours.
 - 5. All SWPPP amendments and BMP changes shall be logged in Appendix P.

3.05 INSPECTIONS

- A. Owner or Owner's Representative is responsible for conducting inspections required by the NPDES permit and the SWPPP, and for documenting those inspections in reports. Owner or Owner's Representative will provide Contractor copies of those inspection reports to store on site.
- B. Inspection frequency of every 14 days and within 24 hours after rainfall events of 0.5 inch or greater.
- C. On-site rain gauge shall be maintained with daily readings logged in accordance with SWPPP Appendix Q.

End of Section 31 25 01

SECTION 31 25 50

ROCK CHECK DAMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Install rock check dams where indicated on the Drawings or directed by Owner or Owner's Representative.

1.02 RELATED SECTIONS

- A. Section 31 25 01 – Erosion and Sedimentation Controls

1.03 UNIT PRICES

- A. Unit prices for work covered under this section are defined in Section 01 22 00 or 01 22 01, including incidentals, related work, method of measurement, if any, and partial payment provisions.

1.04 REFERENCES

- A. State Highway Department standard specifications for highway construction, the section covering Temporary Erosion Control Items and Devices

1.05 PROJECT CONDITIONS

- A. Rock check dams are required to provide a temporary silt barrier in locations of concentrated flow on the site during the term of land disturbing activities. This is to comply with the Construction General Permit and the SWPPP.
- B. The intent is that rock check dams, in each location to be provided, be installed once as a measured and paid item. If, due to the length of construction, the amount of rainfall during the project, the amount of sediment collected and removed, removal and reconstruction of a rock check dam is required, remove and replace or reconstruct the rock check dam at no additional payment.

1.06 QUALITY ASSURANCE

- A. Rock check dams shall be constructed by workers who are trained in the purpose of the rock check dam. A foreman or superintendent experienced in installing erosion and sediment control devices, and particularly silt fencing, shall oversee the work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. As indicated on the Drawings, construct rock check dams one of two ways:
 - 1. For rock check dams having a tributary drainage area of 2 acres or less, the entire check dam shall be constructed of 2 to 3 inch stone.
 - 2. For rock check dams having a tributary area of greater than 2 acres, the check dam shall be constructed of 2 to 3 inch stone on the upstream side and rip rap on the downstream side.
 - 3. Rock check dams in series in a drainage course shall all be constructed of the same materials.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Locations of rock check dams indicated on the Drawings are approximate. Slight relocations are allowed to accommodate other construction activities, subject to approval of Owner or Owner's Representative.
- B. Spacing of check dams shall be as indicated on the Drawings. Modify shape if required to accommodate the actual channel.

3.02 MAINTENANCE

- A. Maintenance of rock check dams includes:
 - 1. Removal of accumulated sediment when it exceeds 1/3 of the dam height.
 - 2. Restoration of the check dam to original shape when required due to construction activities.
 - 3. Restoration of the check dam to original shape when required due to stones being dislodged by high flows.
- B. When sediment has penetrated the interior of the rock check dam to the point that it no longer functions as an effective silt barrier, reconstruct the rock check dam with the same or new materials, removing accumulated sediment in the process.

3.03 REMOVAL

- A. When the area upstream of the rock check dam is permanently stabilized, as approved by Owner or Owner's Representative, remove the rock check dam. All stones should be removed from the site or incorporated into permanent installations, if possible. Restore and stabilize the area where the check dams were.
- B. Removal of rock check dams is a requirement for making final payment.

End of Section 31 25 50

SECTION 31 25 63

SILT FENCE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Standard Silt Fence (no wire backing) (SSF)
- B. Wire-Backed Silt Fence (WBSF)
- C. Belted Silt Retention Fence (BSRF)

1.02 RELATED SECTIONS

- A. Section 31 25 01 – Erosion and Sedimentation Controls

1.03 REFERENCES

- A. ASTM
 - 1. D 4439 Terminology for Geosynthetics
 - 2. D 4491 Test Methods for Water Permeability of Geotextiles by Permittivity
 - 3. D 4533 Test Method for Trapezoid Tearing Strength of Geotextiles
 - 4. D 4595 Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method
 - 5. D 4632 Test Method for Grab Breaking Load and Elongation of Geotextiles
 - 6. D 4751 Test Method for Determining Apparent Opening Size of a Geotextile
 - 7. D 4873 Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples
 - 8. D 5199 Test Method for Measuring the Nominal Thickness of Geosynthetics
 - 9. D 5261 Test Method for Measuring Mass per Unit Area of Geotextiles
 - 10. D 5493 Test Method for Permittivity of Geotextiles Under Load
 - 11. D 6241 Test Method for the Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe
 - 12. D 6461 Specification for Silt Fence Materials
 - 13. D 6462 Practice for Silt Fence Installation

1.04 SUBMITTALS

- A. Submit manufacturer's data, catalogue pages, etc. for geofabrics and for wire backing, if required. Fabric information should include, as a minimum:
 - 1. Apparent opening size
 - 2. Permittivity
 - 3. Flow Rate (Flux)

1.05 PROJECT CONDITIONS

- A. Silt fencing is required to provide a silt barrier on the site during the term of land disturbing activities. This is to comply with the Construction General Permit and the SWPPP.
- B. The intent is that silt fencing, in each location it is to be provided, be installed once as a measured and paid item. If, due to the length of construction, the amount of rainfall during the project, the amount of sediment collected and removed, removal and reconstruction of the silt fence is required, Contractor shall remove silt fence and install new silt fence at no additional payment. Fence posts may be reused if they are in good condition and are not disturbed when removing old fabric or installing new. The wire backing may be left in place and reused under the same conditions. Simply installing new fabric with the old fabric left in place is not acceptable.
- C. Average rainfall during the ____ months allotted for this construction is _____ inches. If during the course of construction, the cumulative rainfall amount is more than 50 percent greater than this, and if this added rainfall requires that the silt fencing be removed due to deterioration and normal wear, the removal and replacement will be at Owner's expense according to the applicable pay item.

1.06 QUALITY ASSURANCE

- A. Silt fence systems shall be assembled and installed by workers who are experienced in this type of construction. A foreman or superintendent experienced in installing erosion and sediment control devices, and particularly silt fencing, shall oversee the work.
- B. Silt fence that comes pre-assembled with fabric attached to posts at given intervals is acceptable for SSF provided:
 - 1. the posts are at the spacing indicated on the Drawings;
 - 2. the posts are long enough to have the depth of burial and above-ground projection required by the Drawings;
 - 3. the filter fabric is one of the types specified; and
 - 4. a sufficient amount of filter fabric is loose at the bottom to provide the embedment indicated on the Drawings.
- C. Owner or Owner's Representative shall inspect silt fence installation prior to any earth disturbing activity being performed in the area tributary to the silt fence.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Handle all materials in such manner as to preserve their quality and fitness for the work.
- B. Store silt fence components so as to assure preservation of quality and fitness for the work. Stored materials shall be located so as to facilitate prompt inspection.

- C. Any limitations on areas where materials can be stored are given in the General Requirements or on the Drawings.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Standard silt fence fabric shall be one of the following fabrics.
 - 1. Propex, Geotex 2127
 - 2. Thrace-Linq, GTF 170SF
 - 3. Mutual Industries, WF 200
 - 4. Hanes Geo, TerraTex SF-90
- B. Silt fence fabric shall include enough UV inhibitors and stabilizers to provide a minimum of 1 year service life from outdoor exposure.
- C. Belted Silt Retention Fence: fabric of spunbond polyester material, reinforced by internal scrim (or net), as manufactured by Silt-Saver, Inc.
- D. Fence posts shall comply with the details indicated on the Drawings.
- E. Wire backing shall be 14 gauge hog-wire type fence fabric, on a 6x6 spacing. Required width of wire mesh is indicated on the Drawings.
- F. Fence ties shall be aluminum or steel. Plastic ties (zip or otherwise) are not acceptable.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine silt fence fabric to verify it is undamaged, and that it complies with the specifications.
- B. Examine the area where silt fence is to be installed and verify that any initial clearing or grubbing has been done to allow for installation.

3.02 PREPARATION

- A. Location where silt fence is to be installed shall be marked on the ground prior to beginning of installation.
- B. Remove all debris from the surface that might hinder effective installation.

3.03 INSTALLATION – TRENCHING AND BACKFILL

- A. Excavate embedment trench a minimum of 6 inches deep by 6 inches wide, unless other dimensions are indicated on the Drawings.
1. Place excavated material on the upstream side of the trench
 2. Hand clear loose debris from trench.
 3. Place fence fabric in trench, flush on bottom and up the downstream side. Lay part of fabric that is to remain above ground on the ground on downstream side. Splice fabric when required, overlapping pieces in accordance with fabric manufacturer's recommendations, but not less than 6 inches. Do not incorporate short remnants of fabric into a longer fence run.
 4. Arrange fabric so that after it is raised to a vertical position it is not more than 24 inches high.
 5. Salvage end of silt fence shall always be placed on the non-buried end.
 6. Backfill trench with excavated material. Do not allow any stones or cobbles larger than 2 inches (in largest dimension) to be used in backfill. Backfill shall be free of deleterious materials, such as roots, trash, clods, sod, etc.
 7. Mound earthen material over the trench at least 2 inches higher than adjacent ground.
 8. Compact trench using mechanical compaction, taking care not to damage exposed fabric. A loaded wheeled vehicle may be used for compaction if approved by Owner or Owner's Representative and if compaction appears adequate to prevent washout of the trench backfill or piping under trench. A minimum of four passes of a vehicle weighing the equivalent of a loaded tandem-axle dump truck is the minimum compaction effort required. After compaction, top of backfill should be approximately level with adjacent grade.
 9. Where wire mesh backing is used, embed it a minimum of 2 inches into the trench prior to compaction, on the downstream side of the fabric.
- B. Fence Assembly
1. Lift the slack fence fabric, and wire backing when used, from the ground and either lay on the other side of the ground or hold vertically in place to allow fence post installation.
 2. Install fence posts at the spacing indicated on the Drawings. Posts shall be driven into undisturbed earth just on the downstream side of the trench, as close to the fabric as possible without puncturing or damaging fabric. Fence posts that wobble or otherwise do not seem firmly in place shall be removed and re-installed a short distance away.
 3. Install a fence post at any splice location, and tie fabric to post as specified.
 4. If wooden posts that cannot be driven are used, excavate holes with care; avoid damage to fabric and wire already installed. Annulus of holes must be backfilled to prevent posts from wobbling.
 5. Tie the fabric, and wire backing when used, to fence posts as indicated on the Drawings.
 6. When steel posts are used, nipples shall face away from fabric.
- C. Inspect completed fence to verify that:
1. fabric is properly embedded;
 2. fabric is properly lapped and spliced when necessary;

3. fabric is free of punctures or other damage;
 4. trench is properly backfilled;
 5. wire mesh, where used, is properly embedded;
 6. posts are properly spaced;
 7. fabric (and wire when used) are tied to posts at the required frequency; and
 8. no opportunity exists for run-off to go through, under, or around the silt fence.
- D. If the fence is in any way found not to comply with these specifications, or to result in an installation that will not comply with the SWPPP and the NPDES permit, repair or remove and replace the fence to bring into compliance.
- E. The mere laying the lower portion of the fence fabric on the ground and covering it with a layer of earthen material (i.e. not digging an embedment trench) is not acceptable.

3.04 INSTALLATION BY MACHINE SLICING

- A. The fabric shall be inserted by a machine in a slit in the soil 8 to 12 inches deep with the selvage edge on top. The slit shall be created such that a soil-slicing blade slightly disrupts soil upward as the blade slices through the soil. Directly behind the soil-slicing blade, the fabric shall be mechanically inserted down into the soil slit such that 8-12 inches of the fabric is below the ground surface. Soil slicing and fabric installation is a simultaneous operation using specialized equipment, achieving consistent placement and depth. No turning over (plowing) of soil is allowed for the slicing method. Compact the soil immediately next to the fabric as indicated in Paragraph 3.03.
- B. Post embedment and spacing, and fabric-to-post connections, shall be the same as specified elsewhere in this section.

3.05 INSTALLATION OF BSRF

- A. Install BSRF according to manufacturer's recommendations as to: type and size of post; post spacing; height of fabric above ground; and method of fastening fabric to posts.
- B. Embedment of fabric shall be essentially the same as described in paragraph 3.03

3.06 MAINTENANCE

- A. Silt fence shall be maintained during the entire project, or for whatever portion of the project it is required for controlling sediment movement from the site. The SWPPP and the Drawings indicate required specific sequencing of construction, if any.
- B. Maintenance of silt fence includes:
1. Removal of accumulated sediment when it exceeds 1/3 of the fabric height.
 2. Repair of damage due to construction activities.

3. Repair of damage due to normal wear and tear.
 4. Correction of any defects discovered from inspections during the project, such as ineffective bedding or improper joints.
- C. When silt fencing deteriorates to the point that it no longer functions as an effective silt barrier, replace with new silt fencing complying with this section.

3.07 MEASUREMENT AND PAYMENT

- A. Description – Construct and maintain silt fencing in the locations indicated on the Drawings, and remove the silt fencing and restore the area at the end of construction.
- B. Incidental Items – Trenching, post construction, fabric bedding, attachment of wire backing, attachment of fabric to posts and bedding, trench backfilling and compaction, and all equipment, materials, and labor required to complete the work. Maintenance is considered incidental. Replacement of damaged segments is considered incidental.
- C. Related Items – Other items of erosion and sediment control.
- D. Units and Measurement – Payment will be made at the unit price for each linear foot of silt fencing installed, including J-hook segments. 70 percent of the unit price will be paid once the installation is complete. 20 percent will be paid in four equal parts during the course of construction if maintenance is adequate. 10 percent will be paid for final removal and restoration. No extra payment will be made for overlapped fence portions where this method is used to provide joints in fabric. No payment will be made for silt fencing in locations where it is not shown on the Drawings, in the SWPPP, or where required by Owner or Owner's Representative.
- E. Partial Payment Provisions – None, except for units fully installed and functioning according to the details on the Drawings, as approved by Owner or Owner's Representative. When any segment of silt fence already paid for is later found to be damaged or deteriorated, payment for this portion of silt fencing will be deducted from later pay applications until the segment is repaired.

End of Section 31 25 63

SECTION 31 25 70

STABILIZED CONSTRUCTION ENTRANCE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnishing, installing, maintaining, and removing temporary stabilized construction entrances.

1.02 RELATED SECTIONS

- A. Section 31 25 01 – Erosion and Sedimentation Controls

1.03 QUALITY ASSURANCE

- A. See Section 31 25 01.

1.04 SUBMITTALS

- A. If a manufactured system will be used, submit manufacturer's information for that system.

PART 2 PRODUCTS

2.01 MATERIALS

- A. 3 to 6 inch diameter stones, a mixture roughly the same as used by the State Department of Transportation for similar uses. Shall be free of shale and excessive fines.
- B. Non-woven polypropylene, adequate weight to support stones and traffic loads. Alternate fabrics may be submitted to Owner or Owner's Representative for approval.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Strip topsoil from area to serve as stabilized construction entrance, and grade as required.
- B. Install filter fabric. Maintain contact between fabric and soil beneath.

- C. Install stones according to the details on the Drawings.

3.02 MAINTENANCE

- A. When the spaces between the top stones begin to be clogged with sediment, restore the construction entrance to its intended function by top dressing with more stones or by mechanically mixing the stones. Washing sediment away from stones is not a preferred practice, unless the washed sediment is properly contained.

3.03 REMOVAL

- A. When no longer required, remove according to Section 31 25 01.

End of Section 31 25 70

PROJECT-SPECIFIC SWPPP COORDINATION – LLELA

- Clarified entrance locations shall match SWPPP and erosion control plans.
- Added maintenance triggers tied to sediment accumulation and inspection findings.
- Reinforced requirement for removal and restoration per SWPPP sequencing.

SECTION 31 25 91

CONCRETE WASHOUT SYSTEMS AND PRACTICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary concrete washout station, either manufactured or self-installed

1.02 RELATED SECTIONS

- A. Section 31 25 01 – Erosion and Sedimentation Controls

1.03 REFERENCE DOCUMENTS

- A. As listed in Section 31 25 01.

1.04 QUALITY ASSURANCE

- A. Provide a site superintendent or foreman who has had education in the purpose of concrete washout containment.
- B. Enforce concrete washout procedures on subcontractors and ready-mix concrete supplier.
- C. The Drawings show a wood frame self-installed washout station. Contractor may use other types of construction for this washout station, such as earthen berm (above or below ground) or a manufactured system, so long as the alternate provide equivalent or better service as the one shown on the Drawings.

PART 2 PRODUCTS

2.01 SELF-INSTALLED SYSTEMS

- A. Plastic liner: 6 mil (minimum) thick polyethylene sheeting, free from slits, holes, or other defects that will prevent it from containing concrete washout water.
- B. The Drawings show a wood frame washout station. Other materials, such as wood frames, frame stakes, alternate wall materials, etc. shall be suitable for the intended purpose.

2.02 MANUFACTURED SYSTEMS

- A. Specially made for concrete washout; undamaged from prior use; leak free; adequately sized for the washout needs of the project, including rainfall allowance and freeboard. Hopper material may be metal or plastic.

PART 3 EXECUTION

3.01 SITING

- A. The Drawings indicate a location for the concrete washout station. An alternate location may be proposed. Obtain Owner's or Owner Representatives's approval before changing location. Washout station shall not be within 50 feet of a storm drain.
- B. Locate near a stabilized construction entrance or provide a dedicated stabilized construction entrance for the washout facility.
- C. Either provide signage to the washout facility or provide a person to direct concrete trucks to the washout area.

3.02 SELF-INSTALLED SYSTEM

- A. Size self-installed systems based on anticipated amount of washout water, plus an allowance for rainfall, plus 4 inches of freeboard. Both above ground and below ground systems are allowed.
- B. Liner shall make continuous contact with soil beneath so as to avoid tears when washout water is dumped.

3.03 MANUFACTURED SYSTEMS

- A. Securely anchor against movement from bumping. Install reasonably level to allow full capacity of hopper to be used.

3.04 OPERATION AND MAINTENANCE

- A. Washout practices:
 - 1. Perform washout of concrete trucks offsite or in designated concrete washout areas only.
 - 2. Do not wash out concrete trucks onto the ground, or into storm drains, open ditches, streets, or streams.
 - 3. Do not allow excess concrete to be dumped onsite, except in designated concrete washout areas.
 - 4. Perform washout in a manner that minimizes spray and splatter outside the containment area.

- B. Remove accumulated concrete solid and liquid waste when necessary to maintain washout containment capacity for future concrete work. If cleaning damages the liner of a self-installed system, replace the liner before more concrete washout occurs.

3.05 CLEANING

- A. Upon completion of concrete work, remove accumulated concrete solid waste and any residual liquid waste and dispose off-site according to regulations. This includes removal of visible concrete solids that have fallen near the washout station, and any contaminated soils.
- B. Dismantle self-installed system and remove non-soil materials from site. Remove manufactured systems from site.
- C. Restore washout area in accordance with Section 31 25 01.

End of Section 31 25 91

SECTION 31 80 00

GENERAL REQUIREMENTS FOR SITE RESTORATION

PART 1 GENERAL

1.01 SCOPE

- A. This section includes restoration of areas disturbed by this project. "Disturbed by this project" is defined as the excavation area plus any area in project vicinity disturbed by Contractor's operations, including operations of Subcontractors and suppliers, and utility owner operations necessary to complete this project.
- B. Keep work areas as clean and neat as practicable. Lawns, gardens, and vehicle and pedestrian crossings shall have excess quantities of supplies, excavated material, man made debris, and organic matter removed from the area immediately following construction.
- C. All property improvements shall be restored in kind or as nearly as practicable as determined by Owner or Owner's Representative.

1.02 RELATED WORK

- A. 31 00 20 – Earthwork
- B. 31 25 01 – Erosion and Sedimentation Controls

1.03 QUALITY ASSURANCE

- A. Adequate equipment and qualified personnel shall be applied to this phase of the work from the beginning of the project.

PART 2 PRODUCTS

2.01 TOPSOIL

- A. Topsoil shall be placed on disturbed areas equal to or better than the material on each side of the disturbed area.

2.02 FERTILIZER

- A. Fertilizer shall be 10-20-10 (nitrogen-phosphorous-potash) delivered to the site in labeled containers conforming to Texas fertilizer laws and bearing the name and warranty of the producer.

2.03 SEED

- A. Seed mixture per Class of Restoration
 - 1. Class 1 Restoration seed mixture shall be 40 percent Lawn Fescue, 30 percent Rye Grass (annual), and 30 percent Blue Grass.
 - 2. Class 2 Restoration seed mixture shall be 40 percent Field Fescue, 40 percent Rye Grass (annual), and 20 percent White Clover (common).
 - 3. Class 3 Restoration seed mixture shall be 40 percent Tall Fescue (Kentucky 31), 40 percent Rye Grass (annual), and 20 percent White Clover (common).
- B. Seed shall be labeled according to current requirements of the Texas State Plant Board.
- C. Seed shall be 95 percent pure and 85 percent germination by weight. 50 noxious weed seeds shall be the maximum amount allowed per pound. The following types of seed are not allowed in any amount: Johnson grass, wild onion, wild garlic, field bindweed, or nut grass.
- D. Fescue seed shall be certified endophyte free.

2.04 SOD

- A. Sod shall consist of a densely rooted growth of Bermuda grass, Zoysia, etc. and shall be substantially free from noxious weeds and undesirable grasses. The sod shall be cut in uniform strips with a minimum of 2 inches of root depth approximately 12 inches in width and not less than 12 inches in length but not longer than can be conveniently handled and transported.
- B. Sod for replacement of disturbed sodded areas shall be approved by Owner or Owner's Representative before cutting.

2.05 MULCH

- A. Straw mulch shall be good grade clean straw, free of weeds or seed, and of a quality approved by Owner or Owner's Representative prior to use.

2.06 WATER

- A. Water shall be of irrigation quality, free of impurities which are detrimental to plant growth.

PART 3 EXECUTION

3.01 GENERAL CONDUCT OF THE WORK

- A. Keep work areas as clean and neat as practicable. Lawns, gardens, and vehicle and pedestrian crossings shall have excess quantities of supplies, excavated material, manmade debris, and organic matter removed from the area immediately following construction.

3.02 SURFACE NOT GRAVELED OR PAVED FOR VEHICLE OR PEDESTRIAN USE.

- A. Class 1 Restoration – Areas of construction within lawns, gardens, or other well-kept areas, including street rights-of-way that are kept as lawns by adjacent landowners.
 - 1. After trench settlement is complete, replace topsoil to same depth as adjacent undisturbed areas.
 - 2. Trim and remove all damaged limbs on trees, trim limbs of shrubs or, if necessary, cut damaged shrub just below ground surface.
 - 3. Hand rake disturbed area to remove all rocks 1/2 inch or larger measured in any direction, all man-made debris, and all organic material. Debris and excess material shall be disposed of in a manner approved by the Owner or Owner's Representative and applicable government regulations.
 - 4. After raked area is accepted by Owner or Owner's Representative for seeding,
 - a. apply 250 pounds of fertilizer per acre.
 - b. apply 0.15 pounds of seed per 100 square feet.
 - c. apply 4,000 pounds of mulch per acre.
 - 5. Apply straw mulch using an asphalt mixing blower. Add asphalt to straw in sufficient quantity to bind mulch together. Top spraying of straw with asphalt is not acceptable.
 - 6. As an alternate method of seeding, seed may be applied by hydro mulching. The seed shall be mixed with water and wood cellulose fiber. The wood cellulose fiber shall be composed of natural wood chips and shall contain no growth or germination inhibiting factors and shall contain a water soluble, nontoxic coloring agent.
 - 7. Other alternate methods will be considered by Owner or Owner's Representative but shall not be utilized until expressly authorized by Owner or Owner's Representative.
 - 8. Where ground cover adjacent to disturbed areas contains grasses such as Bermuda grass, Zoysia, or other grasses not included in the prescribed seed mixture, remove and stockpile the existing sod on the job site. After trench settlement is complete, the sod shall be replaced to a condition equal to, or better than, that prior to construction. In the event that insufficient sod has been stored, or sod has been lost or destroyed, provide and install new ground cover of the existing type.

- B. Class 2 Restoration – Areas of construction within fields, meadows, and street rights-of-way which are mowed or cultivated (gardens excepted).
1. Tree and shrub treatment shall be as specified in Section 3.1.A.2.
 2. After trench settlement is complete, machine rake to remove rock, man made debris, and organic material to a condition equal to existing surface on the better side of the adjacent property.
 3. Remove all excess excavated material from the site, including excess material which has accumulated around fence posts, trees, mailboxes, etc. All areas which have been disturbed, such as that caused by equipment tracks, shall be carefully backfilled and repaired as though it were a part of the actual trench excavation.
 4. After raked area is accepted by Owner or Owner's Representative for seeding,
 - a. apply 250 pounds of fertilizer per acre.
 - b. apply 0.15 pounds of seed per 100 square feet.
 - c. apply 4,000 pounds of mulch per acre.
 5. Mulching and seeding methods shall be as specified in Section 3.1.A.
 6. Where existing field grass adjacent to disturbed areas contains grasses such as Bermuda, etc. grasses not included in the prescribed seed mixture, place such topsoil as required and seed with the existing type grass so that an equivalent ground cover will be provided.
- C. Class 3 Restoration – Areas of construction that are heavily brushed or wooded, steep rocky slopes, or other areas where it is not practical for the area to be cultivated.
1. Tree and shrub treatment shall be as specified in Section 3.1.A.2.
 2. Site raking shall be as specified in Section 3.1.B.2.
 3. Seeding shall be as specified in Section 3.1.B.3.
 4. Mulching and seeding methods shall be as specified in Section 3.1.A.

3.03 GROUND SURFACE GRAVELED FOR VEHICLE USE OR PAVED FOR PEDESTRIAN USE ONLY

- A. Restoration shall match existing surfacing and base sections.

3.04 RESTORATION OF SLOPES

- A. Terrace slopes where, in the opinion of Owner or Owner's Representative, erosion problems may arise after construction.

3.05 RESTORATION BY SODDING

- A. Area to be sodded
 1. Place 3 inches of topsoil before installing sod.
 2. Apply 250 pounds of fertilizer per acre and work into top 1 inch of topsoil.
 3. Make surface of top soil moist and firm (not compacted) at the time sod is placed.
- B. Sod
 1. Moisten sod before placing.
 2. Lay by hand along contour lines beginning at lowest elevation.
 3. Stagger transverse joints.
 4. Make tight joints between sod pieces.
 5. Cut sod into existing surface and backfill with topsoil to provide a smooth transition from sodded areas to non-sodded areas.
 6. Cut sod as needed to allow for other surface features, such as valve boxes, water meters, etc. If necessary, adjust those features to finished grade after sod is placed.
 7. Apply thin layer of topsoil over sod and overseed with 45 pounds of annual rye grass per acre.
- C. Maintenance of Sod
 1. Water overseeded areas as directed by Owner or Owner's Representative.
 2. Apply water to sod for 3 weeks as directed by Owner or Owner's Representative.

3.06 HARD SURFACED FOR VEHICLE OR PEDESTRIAN USE

- A. Pavement: Restore damaged pavement sections to existing joints or a sawed joint.
- B. Asphalt Surfaces
 1. Asphalt Pavement Repair. After the trench has been backfilled and compacted, as specified elsewhere in these Specifications, permanent repair shall be made as follows. The existing pavement shall be saw-cut and removed (including base) to a point 18 inches beyond the trench edge, or as directed by Owner or Owner's Representative.
 2. Asphalt pavement shall comply with requirements of the State Department of Transportation, for pavement of similar uses. See the Asphaltic Concrete Pavement specification in this Project Manual (if included).

3. Granular base course: as used by the State Department of Transportation, or approved equal base, shall match existing base in thickness or have following minimum thickness, whichever is greater.
 - a. 4 inches for areas used mainly by pedestrians.
 - b. 8 inches, placed in two courses, for areas used mainly by vehicles.
 - c. Compact each course to a density, as determined by AASHTO T191 or T238, of not less than 95 percent of maximum density determined by AASHTO T180
4. Apply prime coat to base course at rate of 0.25 gallons per square yard.
5. New asphalt pavement shall match existing asphalt in thickness or have following minimum thicknesses, whichever is greater.
 - a. 2 inches for areas used mainly by pedestrians.
 - b. 4 inches for areas used mainly by vehicles.
6. Place hot mixed, hot laid asphalt in maximum lifts of 2 inches compacted to 92 percent of the theoretical density to an elevation matching the existing finished grade.
7. One nuclear density test per asphaltic patch or repair shall be performed.
8. Any unacceptable patch or repair shall be recompact and retested without additional expense to Owner.

C. Concrete Surfaces

1. Concrete shall meet the requirements of Section 03 31 60.
2. Replace damaged pavement areas to existing joints or a sawed joint which is more than 3 feet from an existing joint.
3. New concrete pavement shall match existing pavement in thickness and reinforcement or have following minimum thicknesses, whichever is greater.
 - a. 4 inches for areas used mainly by pedestrians.
 - b. 6 inches for areas used mainly by vehicles.
4. New concrete pavement shall match elevation of pavement being replaced before it was damaged or to elevation directed by Owner or Owner's Representative.

D. Maintenance of Traffic

1. Carry on the Work in a manner which will cause the least interruption to traffic. All roads and highways shall be kept open to traffic at all times.

2. Provide adequate personnel to direct traffic when working in the street right-of-way.
3. Traffic control devices and methods shall be in strict accordance with the latest issue of the Manual of Uniform Traffic Control Devices.

End of Section 31 80 00

SECTION 32 11 24

AGGREGATE BASE COURSE [PARKING LOTS]

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Construction of granular base for asphaltic concrete and Portland cement concrete paving.

1.02 RELATED SECTIONS

- A. Section 31 00 10 – Site Preparation
- B. Section 31 00 20 – Earthwork
- C. Section 31 05 16 – Aggregate Materials
- D. Section 31 23 03 – Excavation, Backfill, and Compaction for Pavement
- E. Section 32 13 13 – Portland Cement Concrete Paving
- F. Section 32 90 00 – Landscaping General Requirements
- G. State Highway Department Standard Specifications
- H. Construction Drawings

1.03 REFERENCES

- A. ASTM International (ASTM) latest edition
 - D 698 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN.m/m³))
 - D 1557 Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 Kn.m/m³))
 - D 2216 Laboratory Determination of Water Content of Soil and Rock by Mass
 - D 2487 Classification of Soils for Engineering Purposes
 - D 3017 Water Content of Soil and Rock In Place by Nuclear Methods (Shallow Depth)
 - D 6938 Density of Soil and Soil-Aggregate In Place by Nuclear Methods
 - D 4318 Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- B. American Association of State Highway and Transportation Officials (AASHTO) latest edition
 - T 88 Particle Size Analysis of Soils

1.04 QUALITY ASSURANCE

- A. An independent testing laboratory, selected by Owner or Owner's Representative and paid as described in Division 01 of the Project Manual, shall be retained to perform construction testing of in-place base course for compliance with

requirements for thickness, compaction, density, and tolerances. Paving base course tolerances shall be verified by rod and level readings on not more than 50-ft centers and shall not be more than 0.05-feet above subgrade design elevation to allow for paving thicknesses as indicated on Construction Drawings. Contractor shall provide instruments and suitable benchmark.

- B. Following tests shall be performed on each type of material used as base course material:
 - 1. Moisture and Density Relationship: ASTM D 698 (or ASTM D 1557)
 - 2. Mechanical Analysis: AASHTO T 88
 - 3. Plasticity Index: ASTM D 4318
 - 4. Base material thickness: Perform 1 test equally spaced for every 20,000 sq. ft of in-place base material.
 - 5. Base material compaction: Perform 1 test equally spaced for each lift for each 20,000 sq. ft of in-place base material.
 - 6. Test each source of base material for compliance with applicable state highway department specifications.
- C. Field density tests for in-place materials shall be performed in accordance ASTM D 6938 (Direct Transmission).
- D. The independent testing laboratory shall prepare reports that indicate test location, elevation data, and test results. Owner, Owner's Representative, and Contractor shall be provided with copies of reports within 96 hours of time test was performed. In event that test performed fails to meet Specifications; Owner or Owner's Representative and Contractor shall be notified immediately by the independent testing laboratory.
- E. All costs related to retesting due to test failures shall be paid for by Contractor at no additional expense to Owner. Owner reserves right to employ an independent testing laboratory and to obtain a second opinion when deemed necessary. Provide free access to site for testing activities.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Aggregate base course materials are specified in Section 31 05 16.
- B. Submit materials certificate, to the independent testing laboratory, which is signed by materials producer and Contractor, certifying that materials comply with, or exceed, requirements specified.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that the subgrade has been inspected, tested, and gradients and elevations are correct, dry, and properly prepared in accordance with Section 31 23 03 and Section 31 23 12.

3.02 AGGREGATE BASE COURSE CONSTRUCTION

- A. Place base course material on completed and approved subgrade or existing base that has been bladed to substantially conform to the grade and cross sections indicated on the Drawings.
- B. Subgrade shall be free from excess or deficiency of moisture at the time of placing base course material. There shall be no standing water on subgrade. Do not place base course material on frozen subgrade.
- C. Perform base course construction in manner that will drain the surface properly and prevent runoff from adjacent areas from draining onto base course construction.
- D. Place aggregate on subgrade or other base course material and spread uniformly to such depth and lines that when compacted it will have the thickness, width, and cross section indicated on the Drawings. If specified compacted depth of base course exceeds 6 inches, construct base in two or more layers of approximately equal thickness. The maximum compacted thickness of any one layer shall not exceed 6 inches.
- E. Compact by any satisfactory method that will produce specified density. Maintain aggregate substantially at optimum moisture content during mixing, spreading, and compacting operations. Add water or aerate to dry as necessary. Maintain specific grade and cross section by blading throughout compaction operation.
- F. Unless indicated otherwise on the Drawings, compact material in each layer to a density of not less than 100 percent of maximum density at optimum moisture content in accordance with AASHTO T 180. Compact aggregate across full width of application.
- G. Spread base course material the same day that it is hauled. Do not use any base course material that becomes contaminated with the underlying strata. Perform spreading in such a manner that no segregation of coarse and fine particles nor nests or hard areas caused by dumping aggregate on subgrade will exist. Take care to prevent mixing of subgrade with base course material in blading and spreading.

- H. When base course is placed adjacent to an existing or newly constructed asphalt surface course, do not dump or mix aggregate on the pavement surface. Use mechanical spreading equipment, if necessary, to place base course on subgrade.
- I. If sufficient working space is not available to allow proper aeration or addition of water to base course material, mix the base course material by any satisfactory method prior to placement.
- J. Maintain base course in a satisfactory condition until accepted, and afterward until paving courses are constructed.

3.03 SPECIAL REQUIREMENTS FOR PARKING LOTS

- A. Where adjacent pavement sections differ (such as regular duty, medium duty, or heavy duty, or similar designations), base course thickness may be different for the adjacent courses, and the subgrade elevation may be different. In such circumstances, base course layers shall be constructed with sharp edges to facilitate pavement construction.
- B. For asphalt pavement construction: If base course layer has a sloping edge, at a location of discontinuous finished base course elevations, strike off the sloping portion of the edge to provide a consistent asphalt course thickness.
- C. For Portland cement concrete pavement: A sloping edge of the base course may be allowed by Owner or Owner's Representative if, in their opinion, the sloping edge will not be detrimental to construction of the pavement.

3.04 ACCEPTANCE

- A. Acceptance will be based on meeting compaction requirements and having the finished surface to within 0.5 inches of plan grade and having the specified thickness.
- B. Acceptance requires that the completed base course surface provide positive drainage according to the planned final pavement surface with exactly the correct thickness of asphalt. If it appears, in the judgment of Owner or Owner's Representative, that paving course(s) placed correctly will not drain because the base course elevations are not correct, additional work on the base course will be required
- C. If enough time lapses between construction of the base course and construction of pavement courses such that the continued satisfactory condition of the base course is questionable, Owner or Owner's Representative may require that more work be done to the base course and that its acceptability be demonstrated again.

End of Section 32 11 24

SECTION 32 13 13

PORTLAND CEMENT CONCRETE PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preparation and placement of Portland cement concrete roads, parking lots, and entrances.

1.02 RELATED SECTIONS

- A. Section 31 00 10 – Site Preparation
- B. Section 31 05 16 – Aggregate Material
- C. Section 32 11 23 – Paving Base Course
- D. Section 31 23 03 – Excavation Backfill and Compaction for Pavement
- E. Drawings

1.03 REFERENCE STANDARDS

- A. TXDOT Standard Specifications 2024 — Texas Department of Transportation, Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, TxDOT Publication, September 2024
- B. American Concrete Institute (ACI) latest edition
 - 304R Guide for Measuring, Mixing, Transporting, and Placing Concrete
 - 305R Hot Weather Concreteing
 - 306R Cold Weather Concreteing
 - 308 Standard Practice for Curing Concrete
 - 318 Building Code Requirements for Reinforced Concrete
 - 347 Recommended Practice for Concrete Formwork
- C. ASTM International (ASTM) latest edition
 - A 615 Deformed and Plain Billet-Steel for Concrete Reinforcement
 - A 1064 Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
 - C 31 Making and Curing Concrete Test Specimens in the Field
 - C 33 Concrete Aggregates
 - C 39 Compressive Strength of Cylindrical Concrete Specimens
 - C 42 Method of Obtaining and Testing Drilled Cores
 - C 94 Specification for Ready-Mixed Concrete
 - C 150 Portland Cement
 - C 260 Air-Entraining Admixtures for Concrete
 - C 309 Liquid Membrane-Forming Compounds for Curing Concrete
 - C 494 Chemical Admixtures for Concrete

D 1751 Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

- D. Federal Standard
FS TT-C-800 – Curing Compound, Concrete, for New and Existing Surfaces
- E. Concrete Reinforcing Steel Institute (CRSI) latest edition
CRSI-MSP Manual of Standard Practice
CRSI 63 Recommended Practice for Placing Reinforcing Bars
CRSI 65 Recommended Practice for Placing Bar Supports
- F. American Association of State Highway and Transportation Officials (AASHTO) latest edition
M 213 Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

1.04 QUALITY ASSURANCE

- A. An independent testing laboratory, selected by Owner and paid by Owner, shall randomly core pavement at a minimum rate of 1 core per 20,000 square feet of pavement, with a minimum of 3 cores from heavy duty areas and 3 cores from light duty areas. Core shall be tested for thickness and quality of aggregate distribution. Patch core holes immediately with Portland cement concrete and finish to provide level surface as specified.
- B. Establish and maintain required lines, grades and elevations.
- C. Check surface areas at intervals necessary to eliminate ponding areas. Remove and replace unacceptable paving as directed by Owner or Owner's Representative.

1.05 SUBMITTALS

- A. Submit materials certificate to Owner or Owner's Representative which is signed by materials producer and Contractor, certifying that materials comply with, or exceed, requirements specified herein.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Forms: Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects. Use flexible spring steel forms or laminated boards to form radius bends as required. Coat forms with a nonstaining type of coating that will not discolor or deface surface of concrete.

- B. Welded Wire Mesh: Welded plain cold-drawn steel wire fabric, ASTM A 1064. Furnish in flat sheets, not rolls, unless approved by Owner or Owner's Representative.
- C. Reinforcing Bars: Deformed steel bars, ASTM A 615, Grade 40.
- D. Concrete Materials:
 - 1. Portland Cement conforming to ASTM C 150, Type 1 or 1A. Type III or IIIA (high early strength) may be used if specifically approved by Owner or Owner's Representative.
 - 2. Coarse Aggregates conforming to 3/4 inches maximum to No. 4 minimum size.
 - 3. Fine Aggregates conforming to ASTM C 33
 - 4. Water shall conforming to ASTM C 94
- E. Joint Fillers: Resilient premolded bituminous impregnated fiberboard units complying with ASTM D 1751 or AASHTO M 213.
- F. Joint Sealants: Non-priming, pourable, self-leveling polyurethane. Acceptable sealants are Sonneborn "Sonolastic Paving Joint Sealant", Sonneborn "Sonomeric CT 1 Sealant", Sonneborn "Sonomeric CT 2 Sealant", Mameco "Vulken 245", or Woodmont Products "Chem-Caulk".

2.02 MIX DESIGN AND TESTING

- A. Design mix shall produce normal weight concrete consisting of Portland cement, aggregate, water-reducing admixture when approved by Owner or Owner's Representative, air-entraining admixture, and water to produce following properties:
 - 1. Compressive Strength: 3,500 psi (Normal Duty) and 7,500 psi (Heavy Duty), minimum at 28 days, unless otherwise indicated on the Drawings.
 - 2. Slump Range: 3 to 5 inches at time of placement
 - 3. Air Entrainment: 5 to 8 percent

PART 3 EXECUTION

3.01 PREPARATION

- A. Proofroll prepared base material surface to check for unstable areas. Paving work shall begin only after unsuitable areas have been corrected and are ready to receive paving.
- B. Remove loose material from compacted base material surface to produce firm, smooth surface immediately before placing concrete.

3.02 INSTALLATION

- A. Form Construction

1. Set forms to required lines, grades and elevations, rigidly braced and secured in accordance with ACI 347.
 2. Install sufficient quantity of forms to allow continuance of work; forms to remain in place a minimum of 24 hours after concrete placement and finishing operations.
 3. Check completed formwork for grade and alignment to following tolerances:
 - Top of forms not more than 1/8-inch in 10 feet
 - Vertical face on longitudinal axis, not more than 1/4-inch in 10 feet
 4. Clean forms after each use and coat with form release agent as often as required to ensure separation from concrete without damage to concrete.
- B. Reinforcement: Locate, place, and support reinforcement in accordance with CRSI 63 and CRSI 65.
- C. Concrete Placement
1. Place concrete in accordance with requirements of ACI 304R, 305R and 306R.
 2. Do not place concrete until base material and forms have been checked for line and grade. Moisten base material if required to provide uniform dampened condition at time concrete is placed. Concrete shall not be placed around manholes or other structures until they are at required finish elevation and alignment.
 3. Place concrete using methods which prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or other structural components. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices.
 4. Deposit and spread concrete in a continuous operation between transverse joints. If interrupted for more than 1/2 hour, place construction joint that corresponds to the established joint pattern.
- D. Joint Construction: Construct expansion, weakened-plane control or contraction, and construction joints straight with face perpendicular to concrete surface. Construct transverse joints perpendicular to longitudinal joints, unless otherwise indicated on the Drawings.
1. Weakened-Plane Control or Contraction Joints: Provide joints at a maximum spacing of 15 feet each way and at a depth not less than 1/4 of the concrete thickness and as follows:
 - a. Form tooled joints in fresh concrete by grooving top with the recommended tool to provide a rounded edge having a 3/16 inch radius.
 - b. Form sawed joints using powered saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut joints into hardened concrete as soon as surface will support the saw and not be torn, abraded, or otherwise damaged by cutting action.

2. Construction Joints: Provide joints that correspond to established joint pattern at end of placements and at locations where placement operations are stopped for period of more than 1/2 hour, except where such placements terminate at expansion joints. Construct joints using standard metal keyway-section forms unless otherwise indicated on construction drawings.
 3. Expansion Joints: Locate expansion joints at a maximum of 180 feet o.c. each way. Provide premolded joint filler for expansion joints abutting concrete curbs, catch basins, manholes, inlets, structures, sidewalks, and other fixed objects.
- E. Joint Fillers: Extend joint fillers full-width and depth of joint, and not less than 1/2-inch or more than 1-inch below finished surface where joint sealer is indicated. Furnish joint fillers in 1-piece lengths for full width being placed, wherever possible. Where more than 1 length is required, lace or clip joint filler sections together.
- F. Joint Sealants: Joints shall be sealed with approved exterior pavement joint sealants and shall be installed in accordance with manufacturer's recommendations.

3.03 CONCRETE FINISHING

- A. After striking off and consolidating concrete, smooth surface by screeding and floating. Adjust floating to compact surface and produce uniform texture. After floating, test surface for trueness with 10 foot straightedge. Distribute concrete as required to remove surface irregularities and refloat repaired areas to provide continuous smooth finish.
- B. Work edges of slabs and formed joints with edging tool, rounding edge to 3/16-inch radius. Eliminate tool marks on concrete surface. After completion of floating and trowelling, when excess moisture or surface sheen has disappeared, complete surface finishing, as follows:
1. Inclined Slab Surfaces: Provide coarse, nonslip finish by scoring surface with stiff-bristled broom perpendicular to flow of traffic.
 2. Paving: Provide coarse, nonslip finish by scoring surface with stiff-bristled broom perpendicular to flow of traffic.
- C. Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point up minor honeycombed areas. Remove and replace areas or sections with major defects, as directed by Owner or Owner's Representative.
- D. Protect and cure finished concrete paving using acceptable moist-curing methods, more particularly described in "water-curing" section of ACI 308.

3.04 CLEANING AND ADJUSTING

- A. Sweep concrete pavement and wash free of stains, discolorations, dirt, and other foreign material just prior to final inspection.

- B. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials.

End of Section 32 13 13

SECTION 32 17 13

PRECAST CONCRETE WHEEL STOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnish and install precast concrete wheel stops at parking spaces in the locations indicated on the drawings.

1.02 SUBMITTALS

- A. If requested by Owner or Owner's Representative, submit manufacturer's data, catalog pages, etc. for the wheel stops.

1.03 QUALITY ASSURANCE

- A. Precast concrete wheel stops shall be the product of a manufacturer regularly engaged in the manufacture of these units, and shall be manufactured in a precasting plant.
- B. Units precast at the job site are not acceptable.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Precast concrete wheel stop units shall be received at site and immediately inspected for damage and defects. If grading work is essentially complete, distribute units in the approximate locations where they will be installed. If grading work is not complete, handle and store pipe in such a way to minimize damage.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Manufactured wheel stop units from Portland cement concrete, using aggregate gradation appropriate for a small concrete unit.
- B. Reinforcement shall be deformed bars, grade 40 or above.
- C. Holes shall be factory drilled or cast in units.
- D. Anchor bars shall be No. 4 deformed bar or larger.

2.02 FABRICATION

- A. Shape of precast concrete unit shall be as indicated on the Drawings, as required by local codes, or in accordance with customary local practice.
- B. Precast units shall be fabricated under controlled conditions. Finish shall be smooth, without honeycombing or irregular surface.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine units when they arrive at the job site. Reject units that are damaged, or that are irregularly shaped or finished.

3.02 PREPARATION

- A. Surface shall be finished before units are installed. Surface shall be smooth, allowing entire bottom of unit to bear on pavement.

3.03 INSTALLATION

- A. Drill hole in pavement slightly larger than anchor bar. Hole should be large enough to allow bar to be easily hammered in place, but not so large that there is annular space between bar and hole wall.
- B. Install precast wheel stop units over drilled holes. Hammer bars in place through units. Bars shall not be pushed into holes using equipment. Any units damaged during installation shall be removed and replaced.

3.04 CLEANING

- A. Remove concrete or asphalt splatter that occurs after installation.
- B. Remove striping paint from wheel stop, or replace wheel stop.

End of Section 32 17 13

SECTION 32 17 23

PAVEMENT MARKING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnish and install reflectorized paint pavement markings, including words, arrows, and emblems, of the color and type specified, in accordance with the specifications and at the locations indicated on the Drawings.

1.02 RELATED SECTIONS

- A. Portland cement concrete paving is specified in section 32 13 13.
- B. Signage is specified in section 32 17 24.

1.03 REFERENCES

- A. TXDOT Standard Specifications 2024 — Texas Department of Transportation, Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, TxDOT Publication, September 2024.
- B. Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD).
- C. American Association of State Highway and Transportation Officials (AASHTO) M 247, “Glass Beads used in Traffic Paint”.
- D. American Society for Testing and Materials (ASTM) D 711, “No-Pick-Up Time of Traffic Paint”.

1.04 SUBMITTALS

- A. Submit product information of paint and glass beads to be used.

1.05 QUALITY ASSURANCE

- A. Pavement marking shall be accomplished by workers who are experienced in placing reflectorized paint pavement markings conforming to the MUTCD.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Paint shall be stored according to manufacturer’s recommendation.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Traffic Paint System: TxDOT Item 666; DMS-8200; beads per DMS-8290.
- B. Thermoplastic System: TxDOT Item 666; DMS-8220; beads per DMS-8290; primer/sealer if required.
- C. Color: White and yellow (and other colors only when shown/required) per TMUTCD and Plans.
- D. Provide materials conforming to the TxDOT Item governing the work and referenced DMS.

2.02 SOURCE QUALITY CONTROL

- A. Manufacturer shall maintain a regular quality control program that ensures that the specified requirements for paint are met. The written quality control program, as well as documentation concerning its continuing implementation, shall be available for the review by Engineer and Owner.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine pavement to be marked. Verify that paving work is complete, requiring only cleaning and preparation for painting.

3.02 PREPARATION

- A. Clean surface before paint application using any appropriate means.

3.03 APPLICATION

- A. Spot line locations if necessary.
- B. Apply paint in the locations and of the line types indicated on the Drawings.
- C. Apply reflectorized paint to clean, dry, dirt-free surfaces. Apply paint at a minimum wet film thickness of 15 mils, at rate of not less than 16.5 gallons per mile of 4 inch line.

- D. Place glass beads on the surface of the wet paint in the amount of not less than 6 pounds of beads per gallon of paint.
- E. Lines shall be even thickness. Ends of lines shall be sharp, with no splatter or unevenness.

3.04 QUALITY CONTROL

- A. Perform field checks consistent with TxDOT Item requirements for:
 - 1. Line width and skip pattern accuracy.
 - 2. Thickness (where applicable).
 - 3. Bead application and embedment appearance.
 - 4. Retro reflectivity (when required by the Contract/Item).
- B. Correct nonconforming work at no additional cost, including removal and replacement.

End of Section 32 17 23

SECTION 32 17 24
EXTERIOR SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnishing and installing signs of all types required, complete with bases, posts, and fastening hardware.
- B. Relocate signs as indicated on the Drawings, or as required to complete the Work.

1.02 RELATED SECTIONS

- A. Provisions for measurement and payment are specified in Division 01.
- B. Concrete is specified in Section 03 31 60.

1.03 REFERENCES

- A. Manual of Uniform Traffic Control Devices (MUTCD).
- B. ASTM International (ASTM).
 - 1. B 209, "Specification for Aluminum and Aluminum-Alloy Sheet and Plate".
 - 2. B 221, "Specification for Aluminum and Aluminum-Alloy Extruded bars, Rods, Wire, Shapes, and Tubes".
- C. Department of Transportation specifications for signage in the state where the project is located.

1.04 SUBMITTALS

- A. Submit shop drawings showing arrangements and spacing of letters, symbols, and borders for each type of sign; support to be used with each different type of sign; and proposed method of attaching signs to supports.
- B. Certified test reports covering sign panels, reflective sheeting, and prismatic reflectors will be required only if Owner or Owner's Representative believes signs delivered to the site or installed do not conform to the specified requirements.

1.05 QUALITY ASSURANCE

- A. Signage materials shall be manufactured by a manufacturer regularly engaged in producing signage materials complying with the specified standards.
- B. Installation of signs shall be accomplished with workers experienced in construction of the type of signage specified.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Signs shall meet the requirements of the MUTCD, Standard Highway Signs.
- B. Background colors for signs shall match colors specified in the MUTCD. Color and size of letters, symbols, borders, and background on signs shall be as specified in the MUTCD.
- C. Signs shall be made of aluminum and shall be reflectorized.
- D. Standard signs shall be fabricated without stiffeners on the back, of aluminum alloy conforming to ASTM B 209, Alloy 5052 H38, and shall consist of a single sheet of aluminum. Sign blank thickness shall be 0.100 inch for signs 5 square feet or less; and 0.125 inch for a sign size greater than 5 square feet. Sign blanks shall be flat and straight and within commercial tolerances established by the aluminum industry.
- E. Fabricate signs from either one piece extruded aluminum panels or extruded and welded panels. One piece extruded aluminum panels shall be fabricated of aluminum alloy conforming to ASTM B 221, Alloy 6063 T6. Extruded and welded aluminum panels shall be fabricated of sections of extruded aluminum alloy stiffeners conforming to ASTM B 221, Alloy 6063 T6 welded to flat sheet aluminum alloy conforming to ASTM B 209, Alloy 3003 H18. Welds shall be spot welds approximately 9 inches apart.
- F. One piece extruded aluminum panels shall be a minimum of 12 inches wide, except one 6 inch panel may be used per sign face when necessary to construct sign as indicated on the Drawings.
- G. Extrude and welded sign panel sections shall be either 2 feet or 3 feet in width. Exceptions to this are as defined in Department of Transportation specifications.
- H. Panels to which reflective sheeting is to be applied shall be degreased, etched, and alodized. Degreasing shall be done by either vapor method or alkaline method. Vapor degreasing shall be accomplished by total immersion of sign panels in a saturated vapor of trichloroethylene or perchloroethylene. Alkaline degreasing shall be accomplished by immersion of the sign panels in a tank containing

alkaline solutions, controlled and titrated to the solution manufacturer's recommendations. Immersion time shall depend upon amount of soil present and the gage of the metal. Trade mark printing shall be removed with lacquer thinner or by a controlled alkaline cleaning system.

- I. Etching shall be done by the acid method, in accordance with the requirements of Department of Transportation specifications.
- J. Sign panels shall be treated by alodizing process to uniformly provide a chemically formed light and tight amorphous coating that becomes an integral part of the aluminum alloy. This process shall be accomplished in accordance with the recommendation of the manufacturer of the coating.
- K. Fabrication, including cutting and punching of holes shall be completed prior to degreasing, etching, alodizing, and the application of reflective sheeting.
- L. Panels shall be free of buckles, warp, dents, cockles, burrs, and defects resulting from fabrication. Surface of panels shall be flat.
- M. Reflective sheeting shall conform to Department of Transportation specifications.
- N. Legend, which includes letters, numerals, symbols, arrows, and border, shall conform to Department of Transportation specifications.
- O. Post sign supports shall be made of a U-section channel or galvanized steel pipe and support as indicated on the Drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine sign materials upon receipt at the site. Remove damaged sign materials.

3.02 ERECTION

- A. Erect signs at the locations indicated on the Drawings.
- B. Erect signs plumb and to the indicated vertical and horizontal dimensions and clearances.
- C. Minimum horizontal clearance to any ground mounted sign shall be as specified in the MUTCD.
- D. Erect signs so that sign face is vertical and at 93 degrees away from center of the lane which the sign serves and away from the direction of travel. Where lanes

divide and on curves, orient sign faces so as to be most effective both day and night, and to avoid possibility of specular reflection.

- E. Field drill holes in sign support structure only when specified in the Drawings or as directed by Owner or Owner's Representative.

3.03 RELOCATION OF SIGNS

- A. Signs indicated to be relocated may be removed from their existing location and reinstalled in the designated new location, provided: the sign is undamaged; the amount of weathering is not extensive; and the sign meets latest MUTCD standards.
- B. Owner or Owner's Representative has final say of whether a sign and post may be reused.

3.04 ADJUSTING

- A. After signs have been installed, Owner or Owner's Representative will inspect signs at night. If specular reflection is apparent on any sign, adjust sign position to eliminate this condition.

3.05 CLEANING

- A. Clean installed signs of any construction dirt or dust.

End of Section 32 17 24

SECTION 32 90 00

LANDSCAPING GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preparation and excavation of planting beds.
- B. Planting of indicated plant materials and associated materials.

1.02 RELATED SECTIONS

- A. Section 31 00 20 – Earthwork
- B. Section 32 92 01 – Seeding
- C. Section 32 93 43 – Trees
- D. Drawings

1.03 REFERENCE STANDARDS

- A. American Nursery Stock Standard ANSI Z-60.1
- B. Test Methods for the Examination of Composting and Compost (published by the US Dept. of Agriculture and United State Compost Council (USCC)).

1.04 QUALITY ASSURANCE

- A. No error or discrepancy in Drawings or Specifications shall cause defective or inappropriate materials to be used or poor workmanship to be allowed.
- B. Condition of new plant materials is the responsibility of Contractor and shall be approved by Owner or Owner's Representative. Owner reserves the right to inspect and reject plants at any time and place.

1.05 SUBMITTALS

- A. Before ordering or purchasing materials, provide supplier information and samples of those materials to Owner or Owner's Representative for approval, if requested.
- B. Submit certification tags from trees, shrubs, and seed verifying type and purity.
- C. Unless otherwise authorized by Owner or Owner's Representative, notify Owner or Owner's Representative at least 48 hours in advance of anticipated delivery

date of plant materials. Legible copy of invoice, showing kinds and sizes of materials included for each shipment, shall be furnished to Owner or Owner's Representative.

- D. Inform Owner or Owner's Representative of date when planting shall commence.
- E. Soils testing reports for topsoil and compost.

1.06 PROJECT CONDITIONS

- A. Work must be carried out only during weather conditions favorable to landscape construction and to health and welfare of plants. Suitability of such weather conditions shall be monitored and determined by Contractor, subject to the review of Owner or Owner's Representative.

PART 2 PRODUCTS

2.01 PLANT MATERIALS

- A. Plants shall conform to requirements of American Standard for Nursery Stock of rules and grading upgraded to meet requirements indicated in related sections.

2.02 TOPSOIL

- A. Natural, friable, fertile, fine loamy soil possessing characteristics of representative topsoil in the vicinity that produces heavy growth.
- B. Topsoil shall be free from subsoil, objectionable weeds, litter, sods, stiff clay, stones larger than 1-inch in diameter, stumps, roots, trash, toxic substances, or any other material which may be harmful to plant growth or hinder planting operations.
- C. Verify amount of topsoil stockpiled and supply any additional as needed.
- D. Topsoil shall be tested for pH and macronutrient presence and fertility. Soil amendments shall be incorporated based on the results from the soils testing laboratory.

2.03 FERTILIZER

- A. Delivered, mixed as specified, in original unopened standard size bags showing weight, analysis, and name of manufacturer. Containers shall bear manufacturer's guarantee statement of analysis, or manufacturer's certificate of compliance covering analysis shall be furnished to Owner or Owner's Representative. Store

fertilizer in such manner to keep dry.

- B. Percentages of nitrogen, phosphorus, and potash shall be based on laboratory test recommendations as approved by Owner or Owner's Representative. For bidding assume 10 percent nitrogen, 6 percent phosphorus, and 4 percent potash by weight. At least 50 percent of total nitrogen shall contain no less than 3 percent water-insoluble nitrogen. At least 60 percent of nitrogen content shall be derived from super-phosphate containing not less than 18 percent phosphoric acid or bone meal containing 25-30 percent phosphoric acid and 2-3 percent nitrogen. Potash shall be derived from muriate of potash containing 55-60 percent potash.

2.04 COMPOST

- A. Furnish compost produced by aerobic (biological) decomposition of organic matter and meets the requirements of Table 1 and meeting requirements to the United States Composting Council (USCC) Seal of Testing Assurance (STA) program.
- B. Composition may include, but is not limited to, leaves and yard trimmings, biosolids, food scraps, food-processing residuals, manure or other agricultural residuals, forest residues, bark, and paper. Do not use mixed municipal solid waste compost.
- C. Compost shall not contain visible refuse, other physical contaminants or any substance considered harmful to plant growth or have a foul odor.
- D. The owner or owner's representative reserves the right to sample compost at the jobsite to verify compliance with the Specification by a STA-certified lab at the Owner's expense.

Table 1
Physical Requirements for Compost

PROPERTY	TEST METHOD	REQUIREMENT
Particle Size	TMECC1 02.02-B, "Sample Sieving for Aggregate Size Classification"	95% passing 5/8" 70% passing 3/8"
Heavy Metals Content	TMECC 04.06, "Heavy Metals and Hazardous Elements": 04.06-As, Arsenic 04.06-Cd, Cadmium 04.06-Cu, Copper 04.06-Pb, Lead 04.06-Hg, Mercury 04.06Mo, Molybdenum 04.06-Ni, Nickel	Pass

	04.06-Se, Selenium 04.06-Zn, Zinc	
Salinity	TMECC 04.10-A, “1:5 Slurry Method, Mass Basis”	5.0 dS/m Max
pH	TMECC 04.11-A, “1:5 Slurry pH”	5.5–8.5
Maturity	TMECC 05.05-A, “% Emergence and Relative Seedling Vigor”	> 80%
Organic Matter Content	TMECC 05.07-A, “Loss-On-Ignition Organic Matter Method”	25-65% (dry mass)
Stability	TMECC 05.08-B, “Carbon Dioxide Evolution Rate”	≤ 8
Fecal Coliform	TMECC 7.01-B “Fecal Coliforms”	1,000 MPN/g Max

2.05 PEAT MOSS

- A. Peat moss shall be Michigan peat moss or approved equal, similar in color and consistency.
- B. Peat moss shall be moss peat, finely shredded to pass 1/2-inch mesh and shall be no less than 90 percent organic material by weight, with ash content by ignition of no more than 10 percent.
- C. Material shall contain 35 to 66 percent moisture by weight, but shall have water-holding capacity of 150 to 200 percent.
- D. Material shall have pH value of 4 to 5.
- E. Material may be imported supplied in bales or domestic furnished in bulk. If furnished in bulk, material and its source must be acceptable to Owner or Owner’s Representative.

2.06 WATER

- A. On-site water shall be furnished by Contractor. Hose and other watering equipment shall be furnished by Contractor.

PART 3 EXECUTION

3.01 PREPARATION

- A. If project completion date prohibits in-season planting, prepare for out-of-season planting so that all plantings shall be completed and ready for acceptance at time of project completion, without additional cost to Owner.

- B. Provide sufficient tools and equipment required to carry out planting operation.
- C. Locations containing unsuitable subsoil shall be treated in one or more of the following ways.
 - 1. Where unsuitability is deemed by Owner or Owner's Representative to be due to excessive compaction caused by heavy equipment and where natural subsoil is other than AASHTO classification of A6 or 7, loosen such areas with spikes, discing, or other means to loosen soil to condition acceptable to Owner or Owner's Representative. Soil shall be loosened to minimum depth of 12-inches with additional loosening as required to obtain adequate drainage. Contractor may introduce peat moss, sand, or organic matter into the subsoil to obtain adequate drainage. In the event soil composition remains highly plastic and does not provide adequate drainage the contractor shall remove objectionable soil in planting areas and replace with topsoil as noted in section 2.02 above. Such remedial measures shall be considered as incidental, without additional cost to Owner.
 - 2. Where unsuitability is deemed by Owner or Owner's Representative to be due to presence of boards, mortar, concrete, or other construction materials in subgrade and where natural subsoil is other than AASHTO classification of A6 or 7, remove debris and objectionable material to a depth not less than 4" below planting surface. Such remedial measures shall be considered as incidental, without additional cost to Owner.
 - 3. Where unsuitability is deemed by Owner or Owner's Representative to be because natural subsoil falls into AASHTO classification of A6 or 7 and contains moisture in excess of 30 percent, then installation of sub-drainage system or other means removing excess moisture shall be used. Where such conditions have not been known or revealed prior to planting time and they have not been recognized in preparation of Drawings and Specifications, a change order to install proper remedial measures will be required. Drainage shall be directed to daylight for overland discharge at an elevation below the bottom of the planted area. Alternatively, drainage can be connected to on-site drainage conveyance systems. Connections to subsurface roof downspouts systems shall not be permitted.
- D. Planting operations shall be performed at a steady rate of work unless weather conditions make it impossible to work. No plant material shall be planted in frozen ground.
- E. Disk, drag, harrow, or hand rake subgrade to a depth of 4-inches to provide bond for topsoil in turfgrass areas. Topsoil which must be transported across finished

sidewalks or paving shall be delivered in such manner that no damage will be done to sidewalks or paving. Repair such damage at no cost to Owner.

- F. Place no topsoil until subgrade has been approved in accordance with Section 3100 20. Before placing topsoil, rake subsoil surface clear of stones, debris, and roots. Compact topsoil to form layer with minimum depth of 4-inches in lawn areas and 12-inches in shrub beds. Topsoil shall be placed so that after final settlement there will be good drainage conforming to elevations shown on Drawings.

3.02 PROTECTION

- A. Before commencing work, trees and shrubs which are to be saved must be protected from damage by placement of fencing flagged for visibility or some other suitable protective procedure approved by Owner or Owner's Representative. No work shall begin until this requirement is fulfilled.
- B. In order to avoid damage to roots, bark, or lower branches, no truck or other equipment shall be driven or parked within drip line of any tree that is to be saved, unless tree overspreads a proposed paved area.
- C. Use precautionary measures when performing work around trees, sidewalks, pavements, utilities, and other features either existing or previously installed.
- D. Adjust depth of earthwork and topsoil when working immediately adjacent to trees to be saved in order to prevent disturbing tree roots, undermining sidewalks and pavements, and damage in general to other features either existing or previously installed.
- E. Where excavation, filling, or grading is required within the dripline of trees that are to remain, work shall be performed as follows.
 - 1. Trenching: When trenching occurs around trees to remain, tree roots shall not be cut but trench shall be tunneled under or around roots by careful hand digging without injury to roots.
 - 2. Raising Grades:
 - a. Where fill not exceeding 16-inches is required, clean, washed gravel graded from 1- to 2-inches in size shall be placed directly around tree trunk. Gravel shall extend out from trunk on all sides a minimum of 18-inches and finish approximately 2-inches above finished grade at tree. Install gravel before any earth fill is placed. New earth fill shall not be left in contact with trunks of trees requiring fill.
 - b. Where fill exceeding 16-inches is required, a dry laid tree well shall be constructed around trunk of tree. Tree well shall extend out from

trunk on all sides minimum of 3-feet and to 3-inches above finish grade. Coarse grade rock shall be placed directly around tree well to a depth of 6-inches and extending out to drip line of tree. Clean, washed gravel graded from 1- to 2-inches in size shall be placed directly over coarse rock to a depth of 3-inches. Approved backfill material shall be placed directly over washed gravel to desired finish grade.

3. Lowering Grades: Existing trees in areas where new finish grade is to be lowered shall have regrading work done by hand to elevation indicated on Drawings. Roots as required shall be cut cleanly 3-inches below finished grade and scars covered with tree paint.
4. Trees marked for preservation that are more than 6-inches above proposed grades shall stand on broad rounded mounds and be graded smoothly into lower level. Trees located more than 16-inches above proposed grades shall have dry laid stone wall or other retaining structure as detailed on Drawings constructed minimum of 5-feet from trunk. Exposed or broken roots shall be cut clean and covered with topsoil.

3.03 MISCELLANEOUS INSTALLATIONS

- A. Peat moss shall be used for planting soil mixture only and not be used as mulch, except on ground cover.
- B. Areas to be covered with erosion control blankets shall be properly prepared, fertilized, and seeded before blanket is applied. When blanket is unrolled, netting shall be on top and fibers in contact with soil. In ditches, blanket shall be applied in direction of flow of water. On slopes, blankets shall be applied vertically on slope. Ends and sides shall be overlapped and stapled per manufacturer's instructions. Staple to manufacturer's recommendations.

3.04 MAINTENANCE DURING CONSTRUCTION

- A. Maintenance shall begin immediately after planting. Plant materials shall be watered, mulched, weeded, sprayed, fertilized, cultivated, and otherwise maintained and protected until acceptance. Defective work shall be corrected as soon as possible after it becomes apparent, and when weather and season permit.
- B. Lawns shall be maintained for at least 60 days after seeding, as long as is necessary to establish 95 percent cover of the specified grasses, until substantial completion of project, or until acceptance of lawns, whichever is later.
- C. Make weekly inspections to determine moisture content of soil and adjust watering schedule established to maintain proper moisture conditions.

- D. Watering shall be done in such a manner and as frequently as is deemed necessary by Owner or Owner's Representative to assure continued growth of healthy plants. Areas of site shall be watered in such way as to prevent erosion due to excessive quantities applied over small areas and to avoid damage to finished surface due to watering equipment.
- E. Furnish portable tanks, pumps, hose, pipe, connections, nozzles, and any other equipment required to transport water from available outlets and apply it to seeded areas in approved manner.
- F. Remove fences, signs, barriers, or other temporary protective devices after final acceptance.

3.05 WARRANTY

- A. Unless otherwise indicated in other specification sections or on the Drawings, plants shall be warranted to remain vigorous and healthy for a period of 3 years from the date of acceptance.
- B. Owner will conduct periodic inspections during the warranty period and will inform Contractor of any required replacement of failing plants.
- C. At the end of the warranty period, Owner and Contractor together shall make a final inspection of the landscaping, and determine what plants, if any, must be replaced. Immediately replace these with healthy plants.

END OF SECTION 32 90 00

SECTION 32 92 01

SEEDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Grass establishment, including seeding, sodding, and mulching.

1.02 RELATED SECTIONS

- A. Section 31 00 10 – Site Preparation
- B. Section 31 00 20 – Earthwork
- C. Section 32 90 00 – Landscaping General Requirements
- D. Drawings

1.03 REFERENCE STANDARDS

- A. Association of Official Seed Analysts (AOSA)

1.04 QUALITY ASSURANCE

- A. No error or discrepancy in Drawings or Specifications shall cause defective or inappropriate materials to be used or poor workmanship to be allowed.

1.05 SUBMITTALS

- A. Contractor shall be required to submit statements of guarantee and/or certifications from vendors who supply seed, mulches, tackifiers, and fertilizers to the design professional of record.
- B. Contractor shall furnish to Design Professional of Record a statement and seed tag for proposed materials certifying that seed furnished is from a lot that has been tested by a recognized laboratory for seed testing within six (6) months prior to the date of delivery.
- C. Substitutions shall be made only with written approval of the Owner or Owner's Representative. Substitutions will not be considered prior to opening of bids.

1.06 PROJECT CONDITIONS

- A. Work must be carried out only during weather conditions favorable to grass establishment. Suitability of such weather conditions may be determined by Owner or Owner's Representative.

PART 2 PRODUCTS

2.01 GENERAL

- A. All materials used shall be new and without flaws or defects of any type and shall be the best of their class and kind. Seeds shall be prepared for sale during the year of installation.
- B. All materials and equipment furnished shall be free of competing turf grass seed, noxious weeds including but not limited to any state-listed noxious weed species.
- C. Any materials that have become wet, moldy, or otherwise damaged in transit or in storage shall not be used.

2.02 TOPSOIL

- A. Natural, friable, fertile, fine loamy soil possessing characteristics of representative topsoil in the vicinity which produces heavy growth. pH shall be between 6.3 and 7.3. Organic content shall be not less than 3 percent. For imported topsoil, provide tests or certifications to show these conditions have been met. For on-site topsoil being re-applied, provide testing (if required by Owner or Owner's Representative) to show that native topsoil meets these requirements.
- B. Topsoil shall be free from subsoil, objectionable weeds, litter, sod clumps, stiff clay, stones larger than 1-inch diameter, stumps, roots, trash, toxic substances, or any other material which may be harmful to plant growth or hinder planting operations.
- C. Verify amount of topsoil stockpiled and supply any additional as needed.

2.03 FERTILIZER

- A. Fertilizer shall be delivered, mixed as specified in Paragraph 2.03. B /C. Pelletized fertilizer is to be provided in original unopened standard size bags showing weight, analysis and name of manufacturer. Containers shall bear manufacturer's guarantee statement of analysis or manufacturer's certificate of compliance covering analysis shall be furnished to Owner or Owner's Representative. Store fertilizer in such manner that it shall be kept dry.
- B. Percentages of nitrogen, phosphorus, and potash shall be based on laboratory test recommendations as provided by Owner / Owner's Representative /or Contractor. For bidding assume 10 percent nitrogen, 6 percent phosphorus, and 4 percent potash by weight. At least 50 percent of total nitrogen shall contain no less than 3 percent water-insoluble nitrogen. At least 60 percent of nitrogen content shall be

derived from super-phosphate containing not less than 18 percent phosphoric acid or bone meal containing 25 to 30 percent phosphoric acid and 2 to 3 percent nitrogen. Potash shall be derived from muriate of potash containing 55 to 60 percent potash.

- C. Compost meeting the requirements of Section 32 90 00 General Requirements for Landscaping. Compost soil amendment shall be applied at a rate of three (3) cubic yards per one-thousand (1,000) square feet equivalent to 1" of compost over the same area.

2.04 MULCH

- A. Mulch shall be straw or other local materials in regular use. At least seventy percent (70%) of the mulch by weight shall be ten (10) inches or more in length. Straw is to be mechanically crimped, tracked, or bound using agricultural tackifier for maximum retention. Mulch shall not contain any noxious weed, mold, cake, or decay. No hay may be used unless approved in advance by the Landscape Architect.
- B. Compost containing mulched leaves, grass clippings, or organic matter derived from animal bedding meeting requirements of section 32 90 00 mechanically spread to provide a 1/4" thick layer.
- C. Alternative forms of mulch such as curlex erosion blankets, coconut coir, etc. shall be submitted to the Landscape Architect for review prior to installation.

2.05 ORGANIC TACKIFIER / BINDER

- A. Organic tackifier derived from 100% guar-gum, starch, or biodegradable interlocking fibers derived from regenerated cellulose and sourced from sustainably harvested wood can be applied over straw mulch to promote straw to soil adhesion and prevent migration due to wind or rain.

2.06 WATER

- A. On-site water shall be furnished as indicated in Section 32 90 00.

2.07 SEED

- A. Lawn seed mixture shall be fresh, clean, new crop seed. Furnish to Owner or Owner's Representative the dealer's guarantee statement of composition including name and address of the supplier, the common, scientific, and variety name(s) of the seed(s), the lot number, point of origin, net weight, percent of weed content, and the guaranteed percentage of purity and germination.

- B. Use seed mixture(s) indicated on the Drawings.
- C. All seed shall be guaranteed for purity and germination, free of noxious weed seed and supplied on a Pure Live Seed (PLS) basis.

PART 3 EXECUTION

3.01 PREPARATION

- A. Preparation for Seeding:
 - 1. Grade seed bed areas to finish grades by adding topsoil to depth as required and filling as needed or removing surplus material such that areas are smooth and to uniform grade as indicated on Drawings. Lawn areas shall slope to drain.
 - 2. Where no grades are shown, areas shall have smooth and continual grade between existing or fixed controls, such as walks, curbs, catch basin, steps, or building, and elevations shown on the Drawings. Roll, scarify, rake, and level as necessary to obtain true, even lawn surfaces. Finish grades shall meet approval of Owner or Owner's Representative, before grass seed is sown.
 - 3. Loosen soil to depth of 6 inches in lawn areas by approved method of scarification and grade to remove ridges and depressions. Remove stones or foreign matter over 1-inch diameter from top 3 inches of soil. Grade lawn areas to finish grades.
 - 4. Seed beds shall be permitted to settle or should be firmed by rolling before seedings are made.
- B. Apply Fertilizer using one of the methods below.
 - 1. Compost as specified in Paragraph 2.03.C.
 - 2. Apply pelletized fertilizer in two applications with a thorough watering as specified in Section 3.05 immediately following each application. The first application shall be one week prior to seeding, at the rate of 25 pounds per 1,000 square feet and harrowed into the top 2 inches of topsoil. The second application shall be at the rate of 10 pounds per 1,000 square feet immediately following the second mowing.
 - 3. If hydroseeding is used for seeding, fertilizer and seed may be incorporated into one operation but a maximum of 800 pounds of fertilizer shall be permitted for each 1,500 gallons of water.

3.02 BROADCAST SEEDING

- A. Shall take place immediately following the completion of final seedbed preparation techniques and upon inspection and approval of the Owner's Representative and/or Landscape Architect. Apply seed using method appropriate

for site and weather conditions. Avoid applying seed during windy weather or precipitation.

- B. Seed in two directions at right angles to each other.
- C. Seed lawn areas by sowing evenly with approved mechanical seeder at rate of minimum of 5-lb/1,000 square feet unless a different seeding rate is indicated on the Drawings. Culti-packer or approved similar equipment may be used to cover seed and to form seed bed in one operation. In areas inaccessible to culti-packer, lightly rake seeded ground with flexible rakes and roll with water ballast roller.

3.03 HYDROSEEDING

- A. Hydromulching (Hydroseeding) applications shall be applied with tank-mounted truck equipment with a special pump and continuous agitation system.
 - 1. Seed should be added to the paper /wood based slurry immediately prior to beginning of operation, and remain in the tank not more than 30 minutes. Split applications of hydromulching shall be utilized to increase seed contact with soil.
 - 2. The first pass shall apply seed and hydro-mulch slurry at a rate of 500 pounds of fiber per acre followed by a second pass of 1,500 pounds of fiber mulch per acre and tackifier at a rate of 100 pounds per acre of dry ingredient if used.
 - 3. Tackifier shall be used on slopes steeper than 10:1. Care shall be taken such that concrete and or painted surfaces are not stained by dyed slurry applications.

3.04 MULCHING

- A. After seeded areas are rolled, apply mulch over seeded areas to improve germination and moisture retention. Apply at a rate consistent with local practice.

3.05 WATERING

- A. Water seeded areas as required to keep the top 1/4" soil continuously moist, avoid oversaturation by overwatering, and prolonged drought. Under no circumstance should the top 1/2" of soil completely dry out during grass seed germination and grass establishment. This will require frequent applications of water.
- B. Extended watering twice the first week equivalent to 1/2" of natural rainfall to a minimum soil penetration depth of 3 inches shall be provided at evenly spaced intervals for consistent soil moisture.
- C. Weekly watering to supplement natural rain equivalent of 1 inch of rainfall or 6 inch soil penetration depth required after first mowing. Frequency and interval will be based on site weather conditions and should be closely monitored by the

contractor.

3.06 HERBICIDE/CHEMICAL APPLICATIONS

- A. All noxious weed growth on the site shall be controlled by the contractor during the construction period and until the final inspection by spot application of herbicides which have been pre-approved by the Landscape Architect. Spot application of herbicides means detailed application of only the targeted weed species by wand or wick with a backpack applicator. No herbicides shall be permitted for general application (broadcast) during a time when it would cause detrimental impact to germination or establishment of the seeded grasses.
- B. Herbicides or other chemicals, if required, shall be applied using well-maintained spraying equipment by individuals working for contractor who are appropriately licensed by any State and/or Federal agency having jurisdiction over such applications. It shall be the responsibility of contractor to be knowledgeable of any and all current laws and regulations pertaining to herbicide and other chemical applications, and to advise Landscape Architect immediately if any requests for these applications made by Landscape Architect are inappropriate as they pertain to these laws and regulations. Herbicide application shall be conducted by trained weed control personnel who also can recognize the targeted weed species.
- C. Herbicides and other chemicals shall not be applied during periods when wind or other physical conditions cause the herbicides or chemicals to be transported a distance of more than five (5) feet from the immediate area where they are being placed. It shall be the responsibility of contractor to stop work immediately and to notify Landscape Architect if any weather or other physical condition exists which would make the application of herbicides or other chemicals inappropriate.
- D. All herbicides or other chemicals used, except solid fertilizers, shall be applied at a rate and strength, and by the method recommended by the manufacturer of the product being used. Failure to properly apply herbicides may result in the Landscape Architect requiring the contractor to reseed the damaged area at no cost to the Owner.

3.07 MAINTENANCE DURING CONSTRUCTION

- A. Lawns and other grassed areas shall be maintained for at least 60 days after seeding, or as long as is necessary to establish a uniform stand of the specified grasses, or until substantial completion of project, or until acceptance of lawns, whichever is later. A "uniform stand" is defined as 95 percent coverage.
- B. In event that grassing operations are completed too late in the fall season for adequate germination and/or growth, maintenance shall continue into the

following growing season or until a uniform stand of specified grasses has been established.

- C. After grass growth has started, areas which fail to show uniform stand of grass for any reason whatsoever shall be reseeded in accordance with the Drawings and as specified herein. Such areas shall be reseeded repeatedly until areas are covered with satisfactory growth of grass at no additional cost to Owner. If Contractor has reason to believe the failure to achieve a consistent, uniform stand throughout the seeding area is due to factors beyond Contractor's control, contact Owner or Owner's Representative. Owner or Owner's Representative will review the situation, have any necessary tests conducted, will indicate any changes needed to achieve a uniform stand, including changes in techniques, changes in seed mix or mulch, and addition of soil amendments.
- D. Conduct watering shall be done in such a manner and as frequently as is deemed necessary by Owner or Owner's Representative to assure continued growth of healthy grass. Areas of site shall be watered in such way as to prevent erosion due to excessive quantities applied over small areas and to avoid damage to finished surface due to watering equipment.
- E. Initiate mowing of seeded areas when grass has attained height of 2 inches to 3-inches. Grass height shall be maintained at 2 inch to 2½ inches at subsequent cuttings, depending on time of year. Not more than 1/3 of grass leaf shall be removed at any cutting and cuttings shall not occur closer than 10 days apart.
- G. Remove heavy cuttings to prevent destruction of underlying turf. If weeds or other undesirable vegetation threaten to smother planted species, such vegetation shall be mowed or, in case of rank growths, shall be uprooted, raked and removed from area by methods approved by Owner or Owner's Representative.
- H. Protect seeded area from trespassing while grass is germinating. Furnish and install fences, signs, barriers, or other necessary temporary protective devices. Repair damage resulting from trespass, erosion, washout, settlement, or other causes at no expense to Owner. Remove temporary protective devices at the end of the project or when no longer needed.
- I. Grassed areas damaged during process of work shall be the responsibility of Contractor, who shall restore disturbed areas to condition satisfactory to Owner or Owner's Representative. This may include filling to grade, fertilizing, seeding, and mulching.

End of Section 32 920 00

SECTION 32 93 43

TREES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnish and install trees in the locations indicated on the Drawings.
- B. Topsoil, mulch, and water required for trees.

1.02 RELATED SECTIONS

- A. Section 31 25 01 – General Requirements for Erosion and Sediment Control
- B. Section 32 90 00 – Landscaping General Requirements
- C. Section 32 94 00 – Landscaping Accessories
- D. Drawings

1.03 REFERENCE STANDARDS

- A. American Association of Nurserymen, Inc. (AAN) latest version
- B. American Standard for Nursery Stock
- C. American National Standards Institute Z60.1

1.04 QUALITY ASSURANCE

- A. No error or discrepancy in Drawings or Specifications shall cause defective or inappropriate materials to be used or poor workmanship to be allowed.
- B. Condition of new plant materials is the responsibility of Contractor and shall be approved by Owner or Owner's Representative. Owner reserves the right to inspect and reject plants at any time and place.

1.05 SUBMITTALS

- A. Before ordering or purchasing trees, provide photo samples of those materials to Owner or Owner's Representative for approval..
- B. Submit certification tags from trees, verifying type.
- C. Unless otherwise authorized by Owner or Owner's Representative, notify Owner or Owner's Representative at least 48 hours in advance of anticipated delivery date of plant materials. Legible copy of invoice, showing kinds and sizes of materials included for each shipment, shall be furnished to Owner or Owner's

- Representative.
- D. Inform Owner or Owner's Representative of date when planting shall commence.

1.06 PROJECT CONDITIONS

- A. Work must be carried out only during weather conditions favorable to landscape construction and to health and welfare of plants. Suitability of such weather conditions shall be monitored and determined by Contractor, subject to the review of Owner or Owner's Representative.

PART 2 PRODUCTS

2.01 TREES

- A. Furnish nursery-grown trees conforming to the requirements in ANSI Z60.1 with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
- B. Provide trees of sizes and grades indicated on the Drawings. Trees of a larger size may be used if acceptable to Owner or Owner's Representative, with a proportionate increase in size of root balls.
- C. Label each Tree with securely attached, waterproof tag bearing legible designation of botanical and common name.
- D. Select stock for uniform height and spread, and number label to assure symmetry in planting, unless a specific height and planting arrangement is otherwise indicated on the Drawings.

2.02 TOPSOIL

- A. As described in Section 32 90 00.

2.03 FERTILIZER

- A. As indicated on the Drawings, and as specified in Section 32 90 00.

2.04 COMPOST

- A. As indicated on the Drawings, and as specified in Section 32 90 00.

2.05 WATER

- A. On-site water shall be furnished as indicated in Section 32 90 00. Hose and other watering equipment shall be furnished by Contractor.

2.06 EROSION CONTROL BLANKET

- A. Provide and install where indicated on Drawings "Curlex" blankets by American Excelsior Company, "Polyjute" Style 465 GT by Synthetic Industries, or approved equal.

PART 3 EXECUTION

3.01 GENERAL

- A. If project completion date prohibits in-season planting, prepare for out-of-season seeding or sodding so that lawns shall be completed and ready for acceptance at time of project completion, without additional cost to Owner.
- B. Provide sufficient tools and equipment required to carry out planting operation.
- C. Planting operations shall be performed at a steady rate of work unless weather conditions make it impossible to work. No plant material shall be planted in frozen ground.

3.02 EXAMINATION

- A. Examine areas to receive trees for compliance with requirements and conditions affecting installation and performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.03 PREPARATION

- A. Protect structures, utilities, sidewalks, pavement, and lawns and other plants from damage caused by planting operations.
- B. Refer to Section 31 25 01, and sections referenced therein, for requirements to prevent erosion and to prevent migration of sediment in run-off.
- C. Lay out individual tree locations, and areas for multiple plantings. Stake locations, outline areas, adjust locations when required or requested, and obtain acceptance of the layout by Owner or Owner's representative before planting.

3.04 PROTECTION

- A. Before commencing work, native trees which are to be saved must be protected from damage by placement of fencing flagged for visibility or some other suitable protective procedure approved by Owner or Owner's Representative. No work shall begin until this requirement is fulfilled.
- B. In order to avoid damage to roots, bark, or lower branches, no truck or other equipment shall be driven or parked within drip line of any tree that is to be saved, unless tree overspreads paved area.
- C. Use precautionary measures when performing work around trees, shrubs, sidewalks, pavements, utilities, and other features either existing or previously installed.
- D. Adjust depth of earthwork and topsoil when working immediately adjacent to trees to be saved in order to prevent disturbing tree roots, undermining sidewalks and pavements, and damage in general to other features either existing or previously installed.

3.05 EXCAVATION FOR TREES

- A. Excavate circular pits with sides sloped inward. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit that are smeared or smoothed during excavation.
- B. Excavate approximately 3 times as wide as ball diameter for container-grown stock. Excavate at least 12 inches wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
- C. If drain tile is shown or required under planted areas, excavate to top of porous backfill over tile.
- D. Notify Owner or Owner's Representative if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations. Make adjustments to location of pit in consultation with Owner or Owner's Representative and excavate new pit.
- E. Uniformly blend compost as noted per section 32 90 00 paragraph 2.04 with excavated soil at one (1) part by volume compost to three (3) parts (1:3) by volume soil. Compost with a higher amounts of salts should be used at lower rate such as 1:4 parts compost to soil.
- F. Where excavations show soils are unsuitable for tree planting, follow the procedures of Section 32 90 00 paragraph 3.01 C.

3.06 TREE PLANTING

- A. Set container-grown stock plumb and in center of pit or trench with top of root ball 1 inch above adjacent finish grades.
- B. Carefully remove root ball from container without damaging root ball or plant.
- C. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

3.07 TREE PRUNING

- A. Prune, thin, and shape trees according to standard horticultural practice.
- B. Prune trees to retain natural character. Tree sizes indicated on the Drawings are sizes after pruning.

3.08 STAKING

- A. Anchor trees immediately after planting according to details on the Drawings, if none present, comply with section 32 94 00. Make modifications to staking procedures as required to accommodate field conditions.

3.09 TREE MULCHING

- A. Mulch backfilled surfaces of tree beds as indicated on the Drawings.
- B. Unless otherwise indicated on the Drawings: apply organic mulch 4 inches average thickness of loose organic mulch and finish level with adjacent finish grades, extending 12 inches beyond edge of planting pit or trench. Do not place mulch against shrub stems.

3.10 CLEAN-UP AND PROTECTION

- A. During exterior planting, keep adjacent paving and construction clean, and work area in an orderly contention.
- B. Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and any other adjacent work. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged exterior shrubs.

3.11 MAINTENANCE DURING CONSTRUCTION

A. Maintenance shall be as indicated in Section 92 90 00

End of Section 32 93 43

SECTION 32 94 00

LANDSCAPING ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnish and install various accessories for landscaping indicated on the Drawings or required for the plants being furnished.

1.02 RELATED SECTIONS

- A. Section 32 90 00 – Landscaping General Requirements
- B. Section 32 92 43 – Trees
- C. Drawings

1.03 QUALITY ASSURANCE

- A. Accessories designed to be single-use shall be new. Accessories designed to be re-used are acceptable pending Owner or Owner's Representative approval of condition.
- B. Condition of new plant materials is the responsibility of Contractor and shall be approved by Owner or Owner's Representative. Owner reserves the right to inspect and reject plants at any time and place.

1.04 SUBMITTALS

- A. If required by Owner or Owner's Representative, submit information concerning accessories prior to placing orders for them.
- B. When submittals for accessories are required, any accessories delivered to the Site prior to the submittal being made and reviewed may be rejected.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Steel edging: heavy duty, a minimum of 12 gauge; durable and rigid. Width 4 inches; length as required for the installation. Edging to be installed 2/3 below grade and 1/3 above grade. Provide four 12-inch long tapered stakes of 10 gauge

steel for each 10 feet of edging. Provide more stakes as required for curved edging installations. Provide heavy duty fastener in-line clips and corner clips to connect adjacent sections of edging. Color of edging and accessories as called out on Drawings or as determined by Owner.

- B. Weed barrier: a synthetic fabric that works to conserve soil moisture, increase growth, and prevents unwanted weeds from germinating. Woven, needle-punched, polypropylene fabric designed for professional and commercial use such as Dewitt 4.1 oz minimum, or approved equal. Simply using geotextiles normally for other uses is not acceptable. Spunbond products are prohibited.
- C. Staking materials: Duckbill underground tree anchoring system or approved equal. Model 40-RBK for 2 1/2" caliper trees or smaller. Model 68-RBK for 3" caliper trees or larger. For Duckbill anchors, drive anchors full depth, D-rings to remain exposed. Other staking materials and means are acceptable pending Owner or Owner's Representative approval. These include, but are not limited to, any fully subsurface tree anchoring systems or AHJ required anchoring systems.
- D. Erosion control blanket: Provide and install where indicated on Drawings "Curlex" blankets by American Excelsior Company, "Polyjute" Style 465 GT by Synthetic Industries unless otherwise indicated on the drawings, or approved equal.
- E. Tree guards: Unless otherwise indicated on the Drawings, plastic spiral, wrap-around tree trunk, held in place without fasteners; long enough to protect the bottom 12 inches of trunks.
- F. Single Tree Irrigation: Where an automatic irrigation system is not installed and irrigation is required at individual trees, a product such as a Gator Bag or Tree Diaper shall be used. Product selection shall be per Drawings and shall be submitted for Owner or Owner's Representative review prior to installation. Install per manufacturer's specifications.
- G. Root Barriers: When indicated on Drawings, a root barrier system shall be installed to protect hardscapes and foundations. NDS Root Barrier Panels product AP or SM, 24" high, or approved equal. Install per manufacturer's specifications.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Covered in the specification sections for each type of planting.

End of Section 32 94 00

SPECIAL PROVISION
WORK IN WETLANDS AND WATERS OF THE U.S.

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for construction activities occurring within or adjacent to jurisdictional wetlands and Waters of the United States (WOUS).
- B. Protection, access limitations, restoration, and compliance with federal permits.

1.02 RELATED SECTIONS

- A. 31 00 10 – Site Preparation
- B. 31 25 01 – General Requirements for Erosion and Sediment Control
- C. Storm Water Pollution Prevention Plan (SWPPP)
- D. Construction Drawings

1.03 REFERENCES

- A. Waters of the U.S. Delineation Report, Integrated Environmental Solutions, dated October 17, 2025.
- B. U.S. Army Corps of Engineers (USACE) Section 404 Permit Application and Approval Letter.
- C. Clean Water Act Sections 401 and 404.

1.04 ENVIRONMENTAL REQUIREMENTS

- A. Contractor shall comply with all USACE permit conditions governing work within wetlands and WOUS.
- B. Wetland boundaries (Elm Fork Trinity River and Wetland 1) shall be fenced or flagged prior to commencement of construction.
- C. No staging, stockpiling, fueling, or waste disposal shall occur within wetlands or WOUS.

- D. Any unauthorized disturbance shall be restored at the Contractor's expense.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Temporary fencing, flagging, and signage suitable for maintaining wetland boundaries for the duration of construction.

PART 3 EXECUTION

3.01 PREPARATION

- A. Construction activities shall be confined to areas shown on the Construction Drawings.
- B. Unauthorized disturbance shall be restored to pre-construction condition at Contractor's expense.

3.02 RESTORATION

- A. All disturbed wetland areas shall be restored to original grades and stabilized in accordance with permit requirements.

End of Section

SPECIAL PROVISION
TEMPORARY CONSTRUCTION MATTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnishing, installing, maintaining, and removing temporary construction matting.

1.02 RELATED SECTIONS

- A. 31 00 10 – Site Preparation
- B. 31 23 03 – Excavation
- C. 31 25 01 – General Requirements for Erosion and Sediment Control

1.03 REFERENCES

- A. Waters of the U.S. Delineation Report, Integrated Environmental Solutions, dated October 17, 2025.
- B. Construction Drawings

PART 2 PRODUCTS

2.01 MATERIALS

- A. Viking Mat Company
7615 Smetana Lane #140, Eden Prairie, MN 55344
Phone: (952) 941-6512
 - 1. Cross-Laminated Timber Access Mats (CLT Mats)
 - 2. Swamp Mats / Ground Protection Mats

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install matting prior to equipment entry into wetland or saturated soil areas.

- B. Mats shall overlap to prevent exposure of underlying soils.

3.02 REMOVAL

- A. Remove matting immediately upon completion of work.
- B. Restore disturbed areas and stabilize per SWPPP requirements.

End of Section

SPECIAL PROVISION

6' BOARD FENCE

1. DESCRIPTION

Furnish and install a 6-foot-high wood board fence complete, including posts, rails, boards, fasteners, and appurtenances.

2. MATERIALS

- A. Posts: Pressure-treated Southern Yellow Pine or equivalent, min. 4"x4"
- B. Rails: Pressure-treated lumber, min. 2"x4"
- C. Boards: 1"x6" pressure-treated pickets (dog-eared unless noted otherwise)
- D. Fasteners: Hot-dipped galvanized or stainless steel
- E. Concrete: Class C concrete for post embedment

3. CONSTRUCTION

- A. Post spacing: Max 8 ft O.C.
- B. Embed posts min. 30 in. into ground with concrete footing
- C. Provide minimum (3) horizontal rails per panel
- D. Boards installed tight or with max 1/4" spacing
- E. Top alignment shall be straight and uniform

4. MEASUREMENT & PAYMENT

- A. Measured by linear foot installed
- B. Includes all materials, labor, excavation, and concrete

End of Section

SPECIAL PROVISION
STEEL PIPE FENCE (INCLUDING GATE)

1. DESCRIPTION

Furnish and install welded steel pipe fence and gate assemblies.

2. MATERIALS

- A. Pipe: ASTM A53 or A500, Schedule 40
- B. Posts: Min. 2-3/8" OD
- C. Rails: Min. 1-5/8" OD
- D. Gate Frames: Steel pipe welded construction
- E. Coating: Galvanized or powder-coated
- F. Hardware: Hinges, latches, drop rods (galvanized)

3. CONSTRUCTION

- A. Post spacing: Max 10 ft O.C.
- B. Embed posts min. 36 in. in concrete
- C. Weld rails continuously or securely fastened
- D. Gates shall be plumb, operable, and lockable
- E. Provide gate stops and latching system

4. MEASUREMENT & PAYMENT

- A. Fence: Linear foot
- B. Gates: Each
- C. Includes posts, rails, hardware, and installation

End of Section

SPECIAL PROVISION

GRAVEL ROAD (NO SYNTHETIC REINFORCEMENT)

1. DESCRIPTION

Construct gravel roadway section without geotextile reinforcement.

2. MATERIALS

- A. Aggregate: TxDOT Item 247, Type A or D, Grade 1 or 2
- B. Subgrade: Native or improved soil

3. CONSTRUCTION

- A. Proof-roll subgrade
- B. Shape and compact to 95% Standard Proctor
- C. Place aggregate in lifts ≤ 6 inches
- D. Compact each lift to 95% density
- E. Final surface graded for drainage

4. MEASUREMENT & PAYMENT

- A. By square yard or cubic yard (as specified)
- B. Includes hauling, placement, and compaction

End of Section

SPECIAL PROVISION

GEOSYSTEMS GEOPAVE AGGREGATE POROUS PAVEMENT

1. DESCRIPTION

Install Geosystems GeoPave or approved equal porous pavement system filled with aggregate.

2. MATERIALS

- A. GeoPave Units: Manufacturer: Geosystems (or approved equal)
- B. Aggregate Fill: Clean, angular, open-graded (ASTM No. 57 or similar)
- C. Base Course: Crushed stone (TxDOT Item 247 or equivalent)

3. CONSTRUCTION

- A. Prepare subgrade and compact to 95%
- B. Install base layer (min. 4–6 inches compacted)
- C. Place GeoPave panels per manufacturer instructions
- D. Fill cells with aggregate and compact lightly
- E. Ensure panels are interlocked and level

4. MEASUREMENT & PAYMENT

- A. By square yard installed
- B. Includes base, panels, and aggregate fill

End of Section

SPECIAL PROVISION

HYDROTURF RAMP SURFACE (WITH CONCRETE SIDE ANCHORS)

1. DESCRIPTION

Furnish and install HydroTurf (or equal) reinforced turf system for ramp stabilization with concrete edge anchoring.

2. MATERIALS

- A. HydroTurf Mats: UV-stabilized synthetic turf reinforcement mat
- B. Anchors: Galvanized steel pins or stakes
- C. Concrete Anchors: Class C concrete edge beams
- D. Topsoil & Seed: As specified for turf establishment

3. CONSTRUCTION

- A. Grade ramp to design slope
- B. Compact subgrade
- C. Install concrete side anchors (min. 12" wide x 12" deep unless shown otherwise)
- D. Lay HydroTurf mats and secure with anchors per manufacturer spacing
- E. Backfill and seed through mat

4. MEASUREMENT & PAYMENT

- A. By square yard
- B. Includes anchors, concrete, and installation

End of Section

SPECIAL PROVISION
CROSSGRIP NON-SLIP PVC

1. DESCRIPTION

Provide and install Crossgrip (or equal) non-slip PVC matting system.

2. MATERIALS

- A. Matting: Crossgrip PVC, UV-resistant, anti-slip profile
- B. Fasteners/Anchors: Manufacturer-approved

3. CONSTRUCTION

- A. Place on prepared surface (soil, gravel, or pavement)
- B. Anchor per manufacturer recommendations
- C. Ensure full contact with surface
- D. Overlap joints as required

4. MEASUREMENT & PAYMENT

- A. By square yard installed
- B. Includes all anchoring and materials

End of Section

SPECIAL PROVISION

CROSSGRIP NON-SLIP PVC WITH COMPACTED AGGREGATE BASE

NON-SLIP PVC (CROSSGRIP)

1. DESCRIPTION

Install Crossgrip PVC matting over prepared aggregate base.

2. MATERIALS

- A. Matting: Crossgrip PVC, UV-resistant, anti-slip profile
- B. Fasteners/Anchors: Manufacturer-approved

3. CONSTRUCTION

- A. Install after aggregate base is complete and compacted
- B. Anchor securely to prevent movement

4. MEASUREMENT & PAYMENT

- A. By square yard installed

COMPACTED AGGREGATE BASE

1. DESCRIPTION

Construct compacted aggregate base layer for support of PVC matting.

2. MATERIALS

- A. Crushed limestone or flexible base (TxDOT Item 247)

3. CONSTRUCTION

- A. Place in lifts ≤ 6 inches
- B. Compact to 95% Standard Proctor
- C. Final surface smooth and level

4. MEASUREMENT & PAYMENT

- A. By square yard or cubic yard

End of Section

SPECIAL PROVISION

HYDRO-SEED WITH STRAW EROSION MAT

1. DESCRIPTION

Furnish and apply hydraulic seeding (hydro-seed) in combination with straw erosion control matting for soil stabilization and vegetation establishment.

2. MATERIALS

- A. Seed Mix: Native or TxDOT-approved seed mix suitable for North Texas (as specified in plans)
- B. Fertilizer: Commercial fertilizer per soil test or TxDOT Item 164
- C. Mulch (Hydraulic): Wood fiber or paper mulch
- D. Tackifier: Organic or synthetic binder
- E. Straw Matting: Machine-processed straw erosion control blanket with biodegradable netting (photodegradable or natural fiber)
- F. Staples: 11-gauge steel staples, 6–8 inches long

3. CONSTRUCTION

- A. Prepare soil surface by loosening top 2–4 inches
- B. Apply hydro-seed slurry uniformly (seed, mulch, fertilizer, tackifier)
- C. Install straw matting immediately after seeding
- D. Anchor matting with staples per manufacturer pattern (typically 2–3 ft spacing)
- E. Overlap edges minimum 4 inches; anchor in trenches at top of slope
- F. Avoid installation during high winds or heavy rainfall

4. MEASUREMENT & PAYMENT

- A. By square yard treated
- B. Includes soil prep, seed, mulch, matting, anchoring, and watering

End of Section

SPECIAL PROVISION
BIODEGRADABLE COIR MATTING

1. DESCRIPTION

Furnish and install 100% biodegradable coir (coconut fiber) matting for erosion control on slopes and channels.

2. MATERIALS

- A. Coir Mat: Woven or non-woven coconut fiber matting
 - o Typical weight: 400–900 g/m² depending on application
- B. Netting: Biodegradable (coir or jute) – no synthetic mesh unless approved
- C. Anchors/Staples: Steel staples or wooden stakes (as required)

3. CONSTRUCTION

- A. Grade and smooth surface prior to installation
- B. Excavate anchor trench (min. 6 inches deep) at top of slope
- C. Roll matting downslope in direction of water flow
- D. Secure with staples at manufacturer-recommended spacing (denser in channels)
- E. Overlap edges minimum 4–6 inches
- F. Backfill anchor trench and compact
- G. Seed before or after installation as specified

4. MEASUREMENT & PAYMENT

- A. By square yard installed
- B. Includes trenching, anchoring, overlaps, and incidentals

End of Section

SPECIAL PROVISION

PYRAMAT SYNTHETIC EROSION CONTROL BLANKET

1. DESCRIPTION

Furnish and install Pyramat® (or approved equal) high-performance turf reinforcement mat (TRM) for permanent erosion control in high-flow areas.

2. MATERIALS

- A. TRM: Pyramat® system (Propex or equal), UV-stabilized synthetic matrix
- B. Anchors: Steel staples, pins, or earth anchors per manufacturer
- C. Topsoil/Seed: As specified for vegetation establishment

3. CONSTRUCTION

- A. Prepare subgrade smooth and compacted
- B. Install anchor trench at top of slope/channel
- C. Roll TRM in direction of flow
- D. Secure with anchors per manufacturer's high-flow design spacing
- E. Overlap adjacent rolls min. 4–6 inches
- F. Backfill trench and secure terminal ends
- G. Install seed and topsoil either beneath or within mat system per manufacturer guidance
- H. Ensure full contact with soil (no bridging)

4. MEASUREMENT & PAYMENT

- A. By square yard installed
- B. Includes mat, anchors, trenching, overlaps, and installation

End of Section

VENDOR SUPPLEMENTAL INFORMATION

The following information is required for contract development.

1. In what state was your business formed? _____
2. Provide the following information for the person authorized to execute contracts on behalf of your organization:

Name _____ Title _____
Email Address _____ Telephone No. _____
Mailing Address _____ City _____ State _____ Zip _____

3. Provide the following information for the contact person authorized to implement this contract on behalf of your organization:

Name _____ Title _____
Email Address _____ Telephone No. _____
Mailing Address _____ City _____ State _____ Zip _____

4. Provide the following information for the person authorized to receive notices and communications regarding this contract on behalf of your organization:

Name _____ Title _____
Email Address _____ Telephone No. _____
*Physical Business Address _____ City _____ State _____ Zip _____

**Notices and communications will be mailed to this physical address*

5. Select and complete one of the following:

- a. ☐ **Sole Proprietorship**
- i. Legal name of Sole Proprietor: _____
- ii. Physical business address: _____
City _____ State _____ Zip _____
- b. ☐ **General Partnership**
- i. Legal name of Partnership: _____
- ii. Physical business address: _____
City _____ State _____ Zip _____

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

VENDOR SUPPLEMENTAL INFORMATION

- c. ☐ **Limited Partnership**
- i. Legal name of Limited Partnership: _____
- ii. General Partner(s):
- If a legal entity, name of the entity: _____
 - If an individual, name of the individual: _____
- iii. Physical business address: _____
- City _____ State _____ Zip _____
- d. ☐ **Corporation**
- i. Legal name of Corporation: _____
- ii. Physical business address _____
- City _____ State _____ Zip _____
- e. ☐ **Limited Liability Company**
- i. Legal name of Limited Liability Company: _____
- ii. Physical business address _____
- City _____ State _____ Zip _____
- f. ☐ **Other Entity (not listed)**
- i. Legal name and type of Company: _____
- ii. Physical business address _____
- City _____ State _____ Zip _____

6. Does your business have 10 or more full-time employees? ☐ No ☐ Yes

7. a. Are you a publicly traded business? ☐ No ☐ Yes – where traded: _____

b. Are you a wholly owned subsidiary of a publicly traded business? ☐ No ☐ Yes – which publicly traded business: _____

8. a. Is your business registered with the Texas Secretary of State? ☐ No ☐ Yes

b. If yes, please provide records or screenshot(s) from the Texas Secretary of State's website reflecting the name or names for which your business has been registered.

In signing this form, I acknowledge that I have read the above and state that the information contained therein is true and correct.

Signature: _____ Date: _____

Print Name: _____ Print Title: _____

CITY OF LEWISVILLE
PURCHASING DIVISION

EXCEPTIONS

Bid _____

On the lines below, please list any exceptions taken to this bid invitation

ITEM #	DESCRIPTION

Signature: _____

Company: _____

Date: _____

No exceptions taken to this bid invitation.

Signature: _____

Company: _____

Date: _____



Opinion of Probable Cost: LLELA Kayak Launch - 100% Plan Set
 Project Name: Lewisville, TX / LLELA Kayak Launch
 Project Number: 33855.1
 Location: 201 E Jones St. Lewisville, TX 75057
 Date: March 18, 2026

Preliminary Cost Estimate					
ITEM	UNIT	ESTIMATED QUANTITY	UNIT PRICE	ITEM TOTAL	TOTAL
DESIGN & PRE-CONSTRUCTION					
1 Meetings, Travel, Administrative Costs				\$ 9,500.00	
2 Survey				\$ 7,000.00	
3 30%, 60%, & 90% Design Construction Documents				\$ 37,000.00	
4 Permitting				\$ 7,500.00	
5 Specifications & Bidding				\$ 8,500.00	
6 Geotechnical Report				\$ 8,000.00	
DESIGN & PRE-CONSTRUCTION TOTAL					\$77,500.00
SITE WORK					
7 Earthwork, Clearing, Grubbing, & Top Soil (Allowance)	ACR	2	\$ 5,000.00	\$ 10,000.00	
8 Construction Entrance with Wash out	Each	1	\$ 6,500.00	\$ 6,500.00	
9 Erosion Control BMPs & Maintenance	L.S.	1	\$ 45,000.00	\$ 45,000.00	
10 Tree & Fence Removal	L.S.	1	\$ 10,000.00	\$ 10,000.00	
11 Excavation & Haul Off	C.Y.	67	\$ 45.00	\$ 3,015.00	
SITE WORK TOTAL					\$74,515.00
PARKING AREAS					
12 Heavy Duty Concrete Pavement	S.F.	1,490	\$ 12.00	\$ 17,880.00	
13 Sidewalks	S.F.	3,385	\$ 8.00	\$ 27,080.00	
14 Parking Striping- Spaces, Directional, and ADA	L.S.	1	\$ 1,500.00	\$ 1,500.00	
15 Informational/Rules & Regulation/Disposal Signage	L.S.	1	\$ 12,100.00	\$ 12,100.00	
16 Vehicular Signage	Each	8	\$ 800.00	\$ 6,400.00	
PARKING AREA TOTAL					\$64,960.00
GEOPAVE REINFORCED GRAVEL AREAS					
17 Gravel road with Presto Geosystems Geopave synthetic reinforcement	S.F.	14,205	\$ 16.00	\$ 227,280.00	
18 Gravel road	S.F.	14,920	\$ 8.00	\$ 119,360.00	
19 Concrete Wheel Stops	Each	13	\$ 125.00	\$ 1,625.00	
20 Porta-potty base construction	S.F.	536	\$ 8.00	\$ 4,288.00	
21 Pipe fencing: Install/ welded, paint applied	L.F.	795	\$ 85.00	\$ 67,575.00	
22 Sentinel Single In-Ground manual Swing Barrier Gate - 10ft Arm	Each	2	\$ 2,000.00	\$ 4,000.00	
23 Stone traffic blocks	Each	3	\$ 500.00	\$ 1,500.00	
GEOPAVE REINFORCED GRAVEL AREAS TOTAL					\$425,628.00
RAMP & KAYAK LAUNCH					
24 Concrete Edge Ribbon	L.F.	260	\$ 35.00	\$ 9,100.00	
25 PVC Grip Mat	S.F.	1,280	\$ 12.00	\$ 15,360.00	
26 Hydroturf Z Launch Zone	S.F.	2,420	\$ 14.00	\$ 33,880.00	
27 FlexTerra - Native Seed Mix 199	S.Y.	2,435	\$ 1.65	\$ 4,017.75	
28 FlexTerra HP-FGM Erosion Control Hydromulch	S.Y.	2,435	\$ 1.50	\$ 3,652.50	
29 Propex Synthetic Wrapped Gabion (Pyramattress)	S.Y.	180	\$ 210.00	\$ 37,800.00	
30 Propex Turf Reinforcement Mat - Lower Ramp Area Only	S.F.	3,077	\$ 9.00	\$ 27,693.00	
RAMP & KAYAK LAUNCH TOTAL					\$131,503.25
SUB-TOTAL:					\$696,606.25
Contractor's Mobilization, Bonds, Overhead & Profit:					\$ 139,321.25
SUB-TOTAL including Mobilization, Bonds, Overhead, & Profit:					\$ 835,927.50
Current A & E Fees:					\$ 77,500.00
10% Owner's Contingency:					\$ 83,592.75
GRAND TOTAL:					\$ 997,020.25
ALTERNATES OR VALUE ENGINEERING					
37 Alternate #1- Compacted aggregate instead of Pyramattress	S.Y.	180	\$ 72.00	\$ 12,960.00	\$ (24,840.00)
38 Alternate #2- Coconut Coir instead of Propex TRM	S.F.	3,077	\$ 1.00	\$ 3,077.00	\$ (24,616.00)
38 Alternate #3- Add Geopave & Stall Delineators to Gravel Parking Areas	LS	1	\$ 415.00	\$ 415.00	\$ 415.00
ALTERNATES DEDUCT TOTAL:					\$ (49,456.00)

* THIS IS A DESIGN ESTIMATE BASED ON CLIENT APPROVED 60% SET

All quantities and prices shown are preliminary and are subject to change based on further design development and construction price increases. Revised cost estimates will be prepared as design moves through Construction Document development.



City of Lewisville
RFB #26-73-C
LLELA Kayak Launch

Addendum No. 1

The bid document for the above-referenced project is amended as follows:

Questions from Bonfire:

Question: Please confirm the budget and/or engineer's estimate for the project.

Answer: The engineer's estimate is \$913,427.50 (without contingency).

Question: Hello, I hope you're doing well. We would like to seek clarification regarding the vendor structure for this project. Specifically, will the project be awarded to multiple specialized vendors, or is it required to go through a General Contractor (GC) for all scopes of work? Our company, [redacted], is based in Lewisville near City Hall, and we are particularly interested in participating as a signage partner directly / Bid directly with the City of Lewisville, if that is an option. We would appreciate any guidance you can provide on how best to position ourselves for this opportunity. Thank you for your time and assistance.

Answer: We prefer to go through one General Contractor.

Question: What is the thickness wanted for the Gravel road surface? there is no details for this item provided.

Answer: Reference Geo-Grid product specifications - detail 70B

Question: Is there a geotechnical report available for this project?

Answer: Yes, it has been uploaded to the Files section of Bonfire.

Question: Does the city have its own bid bond to be used or is an AIA bid bond acceptable?

Answer: An AIA bid bond is acceptable.



Question: Will utility locating through Texas 811 (DigTess) be provided by the Owner prior to construction? If not, is the Contractor responsible for coordinating and obtaining all required utility locates?

Answer: Contractor is responsible.

Question: What permitting and coordination requirements will be necessary when working with the U.S. Army Corps of Engineers, as well as applicable local, state, and federal agencies?

Answer: CEI has pursued and received USACE approvals for the design of this project. CEI has received Site Engineering and Floodplain Development Approvals for this project through The City of Lewisville.

Question: Is there a designated surveyor for this project, or will the Contractor be responsible for providing surveying services?

Answer: Recent survey is available. Survey performed by CEI Engineering Associates on 5/13/2025.

Question: What is the anticipated project start date?

Answer: We anticipate starting in late July.

Question: Is there a designated staging area for the project? If not, can the Contractor utilize adjacent parking areas for staging and site access?

Answer: Yes, the north parking lot can serve as a staging area.

Question: Are there any areas that will be restricted from public or visitor access during construction? If so, please identify these locations.

Answer: The project area will be restricted from public access during construction. This will be accomplished with a gate along the main road, and trail blockages on the trail system.



Question: In the event that required tree protection measures conflict with the proposed roadway alignment, what adjustments to the tree protection boundaries will be considered acceptable?

Answer: If work requires tree protection to be removed or adjusted outside the required measures, it should be done so temporarily and replaced immediately. We would prefer it if a member of the Lewisville Urban Forestry team could be present to observe in these scenarios.

Question: Is subgrade stabilization required as part of this project? If so, please provide specifications or typical sections.

Answer: CEI to provide Geo-technical Report for project site to review provided sub-grade stabilization requirements.

Question: For tree and vegetation removal, is full root ball removal required, or is clearing to the limits necessary for construction sufficient?

Answer: Full root ball.

Question: The plans indicate roadway widening that may require significant clearing. Has this been fully accounted for, and are there any specific limitations or restrictions on clearing activities?

Answer: All required trees and vegetation clearing have been accounted for in the plan. If during the course of work additional removal of materials is required, it will need to be approved by the City of Lewisville and USACE.

Questions from Pre-Bid Meeting:

Question: Are we able to walk through the site now?

Answer: Yes, you can enter through the main gate to access the site. Let the gate attendant know you are viewing the area for the LLELA Kayak Launch bid.



Question: How involved is the Corps of Engineers?

Answer: They are not heavily involved but want to ensure that no damage is done to their outlet and that we take environmental concerns into account.

Question: Does the lower parking lot flood? How high does it flood?

Answer: The lower lot can flood, but the upper lot does not flood. See Plans sheet C4.0 in regards to 100yr floodplain boundary. See Plans sheet 5.0 for Average Edge of Water (Topo 445.75') and Ordinary High Water Mark (Topo 447').

Question: Is there an assigned area for staging?

Answer: Yes.

Question: Does the pea gravel need to be brought in? And how thick is it?

Answer: No pea gravel is proposed. Please use 3/4" angular clean crushed aggregate, #57 'driveway gravel' or approved equal.

Question: Would excess material need to be hauled off or left there?

Answer: The City of Lewisville would explore if there are other places on LLELA property that excess material can be distributed. We would prefer to find ways to keep material on the property.

Question: Will a third-party inspection group be used?

Answer: Yes.



Question: The subgrade prep says to grade and compact existing top ground. Is anything needed to stabilize or reinforce the base?

Answer: Refer to the Geotechnical report, which has been uploaded to the Files section of Bonfire.

Question: Regarding tree protection and preservation- if the tree does not take back into the ground and flourish again, is the Contractor responsible?

Answer: Only during the warranty period.

Question: Does the City have any preferred subcontractors?

Answer: No.

Question: Does the City want the signs to look like what's out there now?

Answer: Yes.

Question: How would warranty work if floodgates are opened and something is disturbed?

Answer: A contractor warranty should cover materials/installation defects, but damage resulting from dam operations (e.g. excessive floodgate releases/ heavy floods/ etc.) that exceed design conditions of the kayak launch will be the property owner/property manager's responsibility.

Additional Updates:

Document 00 – Introduction and Bond Instructions

The above-referenced document has been updated. The delivery address on page 3 for paper bids was previously incorrect. Please download a new copy of this document from the Files section of Bonfire.



Document 11 - Plans

The above-referenced document has been updated. Please download a new copy of this document from the Files section of Bonfire.

Document 16 – Geotechnical Report

This is a new document. Please download a copy of this document from the Files section of Bonfire.

Document 17 – Pre-Bid Sign-In Sheet

The sign-in sheet from the pre-bid meeting held on April 16, 2026 has been uploaded to the Files section of Bonfire.

BidTable Updates

The BidTable has been updated. Please download a new copy of the BidTable for your pricing submission. The following lines were updated:

Line Item #4-6: Description changed from “Propex Synthetic Wrapped Gabion (Pyramattress) (or approved equal)” to “14” Depth Clean Gravel Base”

Line Item #6-1: Original Alternate #1 “Compacted Aggregate instead of Pyramattress” removed.

Basket 6 “Alternates” now has two lines instead of three: Line Item #6-1 “Alternate #1 – Coconut Coir instead of Propex TRM” and Line Item #6-2 “Alternate #2 – Add Geopave & Stall Delineators to Gravel Parking Areas”.

Submission Deadline Extended

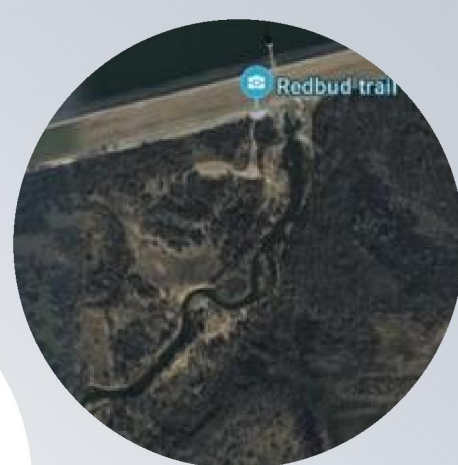
Bids are now due on Thursday, May 7, 2026, at 1:00 p.m.

This is an extension from the original due date of May 4, 2026 at 1:00 p.m.



Bid Opening Date and Time Change
The bid opening will now be held on Thursday, May 7, 2026, at 1:30 p.m. in the Development Services Conference Room on the second floor of Lewisville City Hall at 151 W Church St Lewisville, TX 75057.

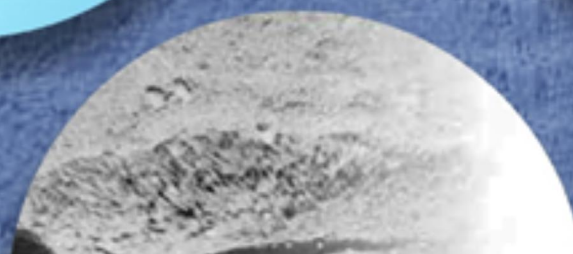
Bidders are advised to acknowledge receipt of Addendum No. 1 by filling in the appropriate blanks contained in the Proposal Form and, if applicable, the outer envelope of their bid. Bidders should also download the latest copy of the BidTable to submit accurate pricing.



REPORT OF SUBSURFACE EXPLORATION
AND GEOTECHNICAL EVALUATION
LEWISVILLE LAKE ENVIRONMENTAL LEARNING AREA (LLELA)
LEWISVILLE, TEXAS
BUILDING & EARTH PROJECT No.: DF250133

PREPARED FOR:
CEI Engineering Associates, Inc.

NOVEMBER 4, 2025



November 4, 2025

CEI Engineering Associates, Inc.
2600 NE 11th St, Suite 300
Bentonville, Arkansas 72712

Attention: Clif Rodgers, PLA – Project Manager

Subject: Report of Subsurface Exploration and Geotechnical Evaluation
Lewisville Lake Environmental Learning Area (LLELA)
Lewisville, Texas
Building & Earth Project No: DF250133

Dear Mr. Rogers:

The purpose of this exploration and evaluation was to determine general subsurface conditions at the site and to address applicable geotechnical aspects of the proposed construction and site development. The recommendations in this report are based on a physical reconnaissance of the site, conditions observed at the time of the exploration, and observation and classification of samples obtained from five (5) test borings conducted at the site. These recommendations are based on the conditions encountered at the time of the exploration. Confirmation of the anticipated subsurface conditions during construction is an essential part of geotechnical services.

We appreciate the opportunity to provide consultation services for the proposed project. If you have any questions regarding the information in this report or need any additional information, please call us.

Respectfully Submitted,
BUILDING & EARTH SCIENCES, INC.
TBPE Registered Firm, No. 3623



Mark Hurley, P.E.
Staff Engineer



Daniel L. Franklin, Jr., P.E.
Regional Chief Engineer

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APPENDIX

1.0 PROJECT & SITE DESCRIPTION

The project is a park area named the Lake Lewisville Environmental Learning Area located at 201 E. Jones Street in Lewisville, Texas. The site is currently a grass covered area with aggregate walking trails at the base of the Lake Lewisville Dam, west of the spillway. Plans are to make this area more accessible by providing paving for a roadway, sidewalks, and parking for visitors. Site grading information was not provided; however, we assume final grades will be +/- 3 feet of the existing topography based on the site plan.

Traffic information was not provided at the time of preparing this proposal. We anticipate passenger vehicles with occasional trucks, approximately 100,000 Equivalent Single Axle Loads (ESALs) will traverse the pavements. We have also included a section for heavy duty paving with 300,000 ESALs.

Reference:

- Lewisville Lake Environmental Learning Center – Proposed Boring Plan sketch dated 6/20/2025

Note:

- 1. Once available, the civil engineer should provide us with actual traffic and grading information to assist us with developing geotechnical recommendations.***

2.0 SCOPE OF SERVICES

The authorized subsurface exploration was performed on October 10, 2025, in conformance with our proposal DF27157, dated July 7, 2025. Mr. Ryan Y. Evitts provided notice to proceed by providing a Contract for Consultant Services dated September 2, 2025.

The purpose of the geotechnical exploration was to determine general subsurface conditions at specific boring locations and to gather data on which to base a geotechnical evaluation with respect to the proposed construction.

The subsurface exploration for this project consisted of five (5) soil test borings. The site was drilled using a GeoProbe 7822DT ATV mounted rig equipped with an automatic hammer for performing Standard Penetration Tests (SPT) to help evaluate the relative strength of soil. Refer to the Appendix for a description of the drilling and sampling procedures.

The soil boring locations were determined in the field by a representative of our staff using a hand-held GPS unit and Google Earth imaging. As such, the boring locations shown on the Boring Location Plan attached to this report should be considered approximate.

Prior to the advancement of the borings, a private locate company, GPRS, was onsite to perform ground penetrating radar that was used to help identify possible underground utilities within a 10-foot radius of each boring.

The soil samples recovered during our site investigation were visually classified and specific samples were selected by the project engineer for laboratory analysis. The laboratory analysis consisted of:

Test	ASTM	No. of Tests
Natural Moisture Content	D2216	16
Atterberg Limits	D4318	5
Material Finer Than No. 200 Sieve by Washing	D1140	8

Table 1: Scope of Laboratory Tests

The results of the laboratory analysis are presented on the enclosed Boring Logs and in tabular form in the Appendix of this report.

Descriptions of the laboratory tests that were performed are also included in the Appendix. Descriptions of the laboratory tests that were performed are also included in the Appendix. Samples not tested will be retained by Building & Earth for 30 days unless an alternate storage agreement is requested by the client.

The information gathered from the exploration was evaluated to determine a suitable subgrade for the proposed pavements. The information was also evaluated to help determine if any special subgrade preparation procedures will be required during the earthwork phase of the project.

This report is intended for use during design and preparation of specifications and may not address all conditions at the site during construction. Contractors reviewing this information should acknowledge that this document is for design information only and is not a substitute for means, methods, or construction practices, which remain the sole responsibility of the contractor.

The results of the work are presented within this report that addresses:

- General site geology.
- Summary of existing surface conditions.
- A description of the subsurface soil and groundwater conditions encountered at the boring locations.
- Presentation of field and laboratory test results.

- Site preparation considerations including material types to be expected at the site, treatment of any encountered unsuitable soils, excavation considerations, and surface drainage.
- Compaction requirements and recommended criteria to establish suitable material for structural backfill.
- Site development recommendations, including availability of on-site materials as structural fill and subgrade preparation.
- Recommended typical pavement sections.

3.0 GEOTECHNICAL SITE CHARACTERIZATION

The following discussion is intended to create a general understanding of the site from a geotechnical engineering perspective. It is not intended to be a discussion of every potential geotechnical issue that may arise, nor to provide every possible interpretation of the conditions identified. It is important to note that the following conditions and subsequent recommendations are based solely on the subsurface conditions observed at the boring locations, and the assumption that significant changes in subsurface conditions do not occur between boreholes. However, anomalous conditions can occur due to the geologic conditions at the site (including fill), and it will be necessary to evaluate the assumed conditions during site grading and pavement installation. The seasonal weather conditions and rainfall amount prior to and during site grading can have a significant impact on the near surface site conditions.

3.1 GEOLOGY

According to the Bureau of Economic Geology at The University of Texas at Austin, Geologic Atlas of Texas, the Lewisville Lake Environmental Learning Area site resides within Alluvium Deposits (Qal). Alluvium deposits (Qal) are flood plain deposits of Holocene age. They consist of gravel, sand, silt, clay, and organic matter.

3.2 EXISTING SURFACE CONDITIONS

At the time of our subsurface investigation, the site consisted of cultivated and native grasses with aggregate trails throughout. Based on the provided site plan the surface elevation in the area ranges from a low near the edge of the water at elevation 446 to high of elevation 467 near E. Jones Street. The surfaces slopes downwards south and east.

3.3 SUBSURFACE CONDITIONS

A generalized stratification summary has been prepared using data from the soil test borings and is presented in the table below. The stratification depicts the general soil conditions and strata types encountered during our field investigation.

Stratum No.	Typical Thickness (feet)	Description	Consistency
1 ⁽¹⁾	0.2	Geological Formation – FILL Crushed limestone aggregate	-
2 ⁽²⁾	18 to 20	Geological Formation – Terrace Deposits Lean Clay (CL) with sand, Clayey Sand (SC) with gravel, Shale, and Clayey Gravel (GC) Various combinations and shades of brown, red, tan and gray	Clays: Soft to very stiff Sands & Gravels: Loose to dense Shale - Hard

Table 2: Stratification Summary

Notes:

1. Encountered only in borings P-01.
2. Encountered in all borings and was the termination layer.

Subsurface soil profiles which show the thickness of the stratum referenced above have also been prepared based on the data obtained at the specific boring locations and are presented in the Appendix. Elevations shown on the boring logs were taken from Google Earth images for presentation purposes and should be considered approximate. The report elevations are near those shown on the site plan.

For specific details on the information obtained from individual soil borings, please refer to the Boring Logs included in the Appendix.

3.4 GROUNDWATER AT BORING LOCATIONS

For purposes of this report, “groundwater” refers to water encountered at the borehole locations. Designation between perched water and a true groundwater table was not included in our scope of work.

Free water was encountered only in Boring P-04 at the 7.5 foot depth during drilling; all other borings were dry to the 10 foot termination depths. The water level in Boring P-04 was 6 feet below grade at the completion of drilling.

Important Note: The prevalent weather conditions prior to construction will influence the amount and depth of water at the borehole locations. Identifying the static depth to the groundwater table verses the presence of perched water was not included in our scope of services. Nearby stormwater runoff can affect moisture levels to the depth that this investigation observed. The locations of specific seepage areas are impossible to predict, and seepage may not be evident until after rainfall events.

3.5 SEISMIC SITE CLASSIFICATION

Basis of Evaluation	Recommended Site Classification
2021 International Building Code (IBC) and ASCE 7, Chapter 20	D
This recommended seismic site classification is based on the 2021 Edition of the International Building Code, the subsurface conditions encountered in the borings, and our knowledge of the geologic conditions of the site. Our subsurface exploration extended to a maximum depth of about 10 feet; hence the seismic site classification should be re-evaluated in the event subsurface information is made available to a depth of 100 feet.	

Table 3: Seismic Site Classification

4.0 SITE DEVELOPMENT CONSIDERATIONS

Our recommendations are based on the subsurface conditions observed during the exploration and do not account for seasonal weather variations that may occur prior to or during construction.

Based on our evaluation of the subsurface information observed where the borings were conducted, and the anticipated traffic loads.

The primary geotechnical concerns for this project are:

- The onsite soils are considered moisture sensitive, i.e., they are prone to losing strength and stability with slight increases in soil moisture content.
- Groundwater seepage was encountered at a depth of about 7.5 feet below the existing grade during drilling.

Recommendations addressing the site conditions are presented in the following sections.

4.1 INITIAL SITE PREPARATION

All vegetation and deleterious materials should be removed from the proposed construction areas.

A geotechnical engineer should observe stripping and grubbing operations to evaluate that all unsuitable materials are removed from locations for proposed construction.

Materials disturbed during clearing operations should be stabilized in place or, if necessary, undercut to undisturbed materials and backfilled with properly compacted, approved structural fill.

During site preparation activities, the contractor should identify borrow source materials that will be used as structural fill and provide samples to the testing laboratory so that conformance to the Structural Fill requirements outlined below and appropriate moisture-density relationship curves can be determined.

4.2 PAVEMENT SUBGRADE PREPARATION

Following initial site preparation, low plasticity lean clays and sands are anticipated to be exposed. The onsite materials are prone to loss of strength when subjected to soil moisture increases. It is important that good surface drainage be established during construction to reduce this potential.

The potential vertical movements of soils were estimated based on the Texas Department of Transportation (TxDOT) Potential Vertical Rise (PVR) test method, Tex-124-E. This method is regularly performed in the industry for the prediction of potential vertical soil movements. The values of these tests are rounded up to the nearest 1/2-inch.

TxDOT's PVR test method correlates vertical swelling movement with index properties (Liquid Limit, Plastic Limit, and Plasticity Index), soil moisture content, and percent finer than the No. 40 Sieve by weight. This method calculates the potential vertical rise (PVR) of the existing grade due to normal climatological fluctuations in soil moisture content. The PVR was determined to be 1 inch or less for dry soil moisture conditions.

Prior to placement of any fill needed to achieve design grade, the project geotechnical engineer or their designated representative should evaluate the subgrade by proof rolling with a heavy (20- to 25-ton minimum), loaded tandem-axle dump truck. Any soft or unstable soils should be reworked to establish a stable subgrade prior to start of fill placement.

Proofrolling should be performed at finished subgrade when time lapses between completion of finished subgrade and start of placing the pavement sections. If proofrolled areas have been exposed to any precipitation, and/or have been exposed for more than 48 hours supplemental proofrolling should be performed to determine the subgrade remained suitable prior to start of pavement construction.

Some instability may exist during construction, depending on climatic and other factors immediately preceding and during construction. If any soft or otherwise unsuitable soils are identified during the proof rolling process, they should be reworked, or additional lime stabilization should be performed prior to pavement construction.

The prepared surface should be protected from traffic. Surface water should not be permitted to enter the prepared subgrade area.

4.3 MOISTURE SENSITIVE SOILS

Moisture sensitive clays and sands were present at the project site. Refer to the appended profiles and boring logs to identify areas in which these soils will be at final grade. These moisture sensitive soils will degrade if allowed to become saturated. Therefore, not allowing water to pond by maintaining positive drainage and temporary dewatering methods (if required) is important to help avoid degradation and softening of the soils.

Accordingly, construction during wet weather conditions should be avoided, as this could result in soft and unstable soil conditions that would require ground modification, such as in place stabilization or undercutting. Refer to the Wet Weather Construction section of this report for additional considerations.

It is the client's responsibility to evaluate expected weather patterns for the time of year construction is planned, as these conditions can significantly affect site preparation and earthwork activities. This is particularly important where moisture-sensitive soils are present, since periods of rainfall or freezing conditions may adversely impact soil performance, excavation, and compaction.

4.4 STRUCTURAL FILL

Requirements for structural fill on this project are as follows:

Soil Type	USCS Classification	Property Requirements	Placement Location
Imported Lean Clay or Clayey Sand	CL or SC	Liquid Limit < 40; 7 < Plasticity Index < 15; Percent passing # 200 sieve > 30%; Maximum particle size 3" in any dimension	Lower Plasticity Structural Fill: to be used for construction of pavements
Imported Flex Base – Grade 2 or better (TxDOT Item 247)	GW	Liquid Limit < 40, Plasticity Index < 10, Maximum Particle Size 1.75", other gradation requirements as stated in the specifications	Lower Plasticity Structural Fill: to be used for construction of pavements

Table 4: Structural Fill Requirements

Notes:

1. All structural fill should be free of vegetation, topsoil, and any other deleterious materials. The organic content of materials to be used for fill should be less than 3 percent.
2. Laboratory testing of the soils proposed for fill should be performed to verify their conformance with the above recommendations.

3. Materials classified as CL-ML, ML, or other silty soils with low plasticity (PI between 4 and 7) are not acceptable for structural fill. Fill should not include excess silt, which can reduce compaction or strength under loads.
4. Any fill to be placed at the site should be reviewed by the geotechnical engineer.

4.5 GENERAL FILL

Fill needed to raise grade outside the pavement areas should consist of existing clay, sands or imported soil with a liquid limit of less than 40 and free of any debris.

The fill should be placed in loose lifts 9 inches in thickness and compacted to a minimum of 95% of the material's maximum dry density as determined by ASTM D 698 (Standard Proctor) and maintain moisture at optimum to optimum +3%. The fill should not be allowed to dry before the placement of succeeding lifts.

4.6 REUSE OF EXISTING SOILS

The surficial soils identified in the borings generally consisted of lean clays with low plasticity. These clay soils may be reused for pavement construction. The sandy soils are not recommended for pavement construction but may be used as general fill in other construction areas.

4.7 COMPACTION CRITERIA

Compaction requirements for fill are as follows:

Specification	Recommendation	
	Compaction	Moisture
Low Plasticity Structural Fill	At least 98% of the standard Proctor (ASTM D698) maximum density	±2% of the optimum moisture content

Table 5: Fill Compaction Recommendations

4.8 PLACEMENT AND TESTING FREQUENCY CONSIDERATIONS

Placement recommendations for fill are as follows:

Specification	Recommendation
Lift Thickness	Maximum loose lift thickness of 9 inches, depending on type of compaction equipment used.
Utility Trench	Maximum loose lift thickness of 4 to 6 inches, depending on type of compaction equipment used and material.
Density Testing Frequency	Pavement areas: One test per 5,000 SF per lift with a minimum of three tests performed per lift. Utility trenches: One test per 150 linear feet per lift with a minimum of two tests performed per lift.

Table 6: Structural Fill Placement Recommendations

4.9 EXCAVATION CONSIDERATIONS

All excavations performed at the site should follow OSHA guidelines for temporary excavations. Excavated soils should be stockpiled according to OSHA regulations to limit the potential cave-in of soils.

Based on the subsurface conditions encountered in the test borings, we anticipate that the overburden soils can be excavated using a backhoe in good working condition.

Groundwater was encountered in one of the boreholes at a depth of 7.5 feet below current grade. **Thus, groundwater is unlikely to be encountered during construction, particularly during undercutting operations. However, conditions may change prior to construction and should be verified in advance.**

It should be noted that fluctuations in the water level could occur due to seasonal variations in rainfall, and prevalent weather conditions during site grading. The contractor must be prepared to remove water seepage from excavations if encountered during construction. Excavations extending below water levels will require dewatering systems (such as well points, sump pumps, or trench drains). The contractor should evaluate the most economical and practical dewatering method, as the design of permanent or temporary dewatering systems was not included in our scope of services.

4.10 UTILITY TRENCH BACKFILL

All utility trenches should be backfilled and compacted in the manner specified above for structural fill. It may be necessary to reduce the lift thickness to 4 to 6 inches to achieve compaction using hand-operated equipment.

4.11 LANDSCAPING AND DRAINAGE CONSIDERATION

The potential for soil moisture fluctuations construction area subgrades should be reduced to lessen the potential of subgrade movement. Site grading should include positive drainage away from construction.

4.12 WET WEATHER CONSTRUCTION

Excessive movement of construction equipment across the site during wet weather may result in ruts, which will collect rainwater, prolonging the time required to dry the subgrade soils. Therefore, the grading contractor must maintain positive drainage to avoid surface water ponding and provide temporary dewatering methods as required to help avoid degradation and softening of the soils.

During rainy periods, additional effort will be required to properly prepare the site and establish/maintain an acceptable subgrade. The difficulty will increase in areas where moisture sensitive soils are exposed at the subgrade elevation. Grading contractors typically postpone grading operations during wet weather to wait for conditions that are more favorable. Contractors can typically disk or aerate the upper soils to promote drying during intermittent periods of favorable weather.

When deadlines restrict postponement of grading operations, additional measures such as undercutting and replacing saturated soils or stabilization can be utilized to facilitate placement of additional fill material.

5.0 PAVEMENT CONSIDERATIONS

Specific traffic information was not provided. For pavement design purposes, we have assumed a level of traffic with assumed Equivalent 18-Kip Single Axle Loads (ESALs) shown in the following table.

If the owner/design team would like Building & Earth to assess alternate pavement sections, project specific traffic information should be provided for our consideration.

Type	Assumed ESALs
Light Duty	100,000
Heavy Duty	300,000

Table 7: Pavement Application and Assumed ESALS

In addition to the assumed ESAL, we used the following design parameters for rigid pavements:

Design Criteria	Value
Design life (Years)	20
Initial Serviceability	4.5
Terminal Serviceability	2.0
Reliability	85%
Standard Deviation	0.35

Table 8: Assumed Rigid Pavement Design Parameters

Based on the materials encountered at the boring locations and after our recommendations for site preparation are implemented, pavements at the subject site may be designed based on a California Bearing Ratio (CBR) of three (3). Note that no CBR or plate load testing was completed to develop these recommendations.

All subgrade, base, and pavement construction operations should meet the minimum requirements of the Texas Department of Transportation (TxDOT), *Standard Specifications for Highway Construction, 2014*.

5.1 REINFORCED RIGID PAVEMENT

The following reinforced rigid pavement sections are based on the design parameters presented above. We estimated a modulus of subgrade reaction (k) of 75 pci for the onsite clay soils. We further assumed a concrete elastic modulus (E_c) of 3.1×10^6 psi, and a concrete modulus of rupture (S'_c) of 600 psi.

Minimum Recommended Thickness (in)		Material
Light Duty ¹	Heavy Duty ²	
5.0	6.0	Portland Cement Concrete, $f'_c=4,000$ psi
12.0	12.0	Recompacted Subgrade

Table 9: Reinforced Rigid Pavement Recommendations

Notes:

1. Standard duty concrete pavements are typically reinforced with No. 3 reinforcing steel, placed at midpoint of concrete section, spaced 18 inches on center in both directions.
2. Heavy-duty concrete pavements are typically reinforced with No. 4 reinforcing steel, placed at midpoint of concrete section, spaced 18 inches on center in both directions.

Access drive approaches and other pavement areas that are frequently subjected to high traffic loads with frequent braking and turning of wheels should be constructed using reinforced rigid pavement comprised of 7 inches Portland cement concrete.

The concrete should be protected against moisture loss, rapid temperature fluctuations, and construction traffic for several days after placement. All pavements should be sloped for positive drainage. We suggest that a curing compound be applied after the concrete has been finished.

Portland cement concrete should have minimum 28-day compressive strength of 4,000 psi, maximum slump of 4 inches, and air content ranging between 3 and 5 percent.

We recommend a jointing plan be developed to control cracking and help preclude surficial migration of water into the subgrade. Additionally, we recommend the joints be sealed to further preclude surficial moisture migration into the underlying subgrade. Periodic maintenance of the pavement should be anticipated. This should include sealing cracks and joints and maintaining proper surface drainage to avoid ponding water on or near the pavement areas.

5.2 AGGREGATE PAVEMENT

We understand that portions of the pavement will be designed with an aggregate surface with geo-pave cell confinement. An aggregate only surfaced pavement section equal for the two traffic conditions is provided below.

Minimum Recommended Thickness (in)		Material
Light Duty	Heavy Duty	
16.0	20.0	TxDOT Item 247, crushed limestone aggregate, Grade 1-2
12.0	12.0	Recompacted Subgrade

Table 10: Aggregate Pavement Recommendations

Note: Aggregate thickness may be increased/decreased based on the type and strength of geotextile fabric placed on the subgrade. Additional analysis will be required to determine alternate sections.

Aggregate sections will require maintenance with traffic loading. Repairs are typically accomplished by adding additional stone in rutted areas.

We understand the designers wish to consider an aggregate section using Geo Cell confinement. One manufacturer of this system is GEOWEB ®. A heavy duty, woven geotextile fabric, such as Mirafi HP ®, or an approved equal should be placed on the

prepared subgrade before placing the geocells. A GW30VA cell is recommended for the light duty pavement. This product has a cell depth of 4 inches. The cells should be filled with TxDOT 274, Grade 1-2 stone and capped with an additional 2 inch wearing surface. An 8 inch deep cell product such as GW30V8 is recommended for heavy duty pavement sections with a 2 inch wearing surface. The manufacturer's recommendations for installation should be followed.

5.3 PAVEMENT DRAINAGE

All pavements should be sloped, approximately $\frac{1}{4}$ inch per foot, to provide rapid surface drainage. Water allowed to pond on or adjacent to the pavement could saturate the subgrade and cause premature deterioration of the pavements because of loss of strength and stability. Appropriate drainage systems should be provided to remove surface water from around the pavements.

5.4 PAVEMENT MAINTENANCE

Preventive maintenance should be planned and provided for through an ongoing pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and preserve the pavement.

Maintenance consists of both localized maintenance (e.g., crack, and joint sealing and patching) and global maintenance (e.g., surface sealing). Even with periodic maintenance, some movements, and related cracking may still occur, and repairs may be required.

The concrete should be protected against moisture loss, rapid temperature fluctuations, and construction traffic for several days after placement. All pavements should be sloped for positive drainage. We recommended that the pavements be reinforced to hold any cracks that might develop tightly together and restrain their growth.

All pavement components and construction operations must be in accordance with the applicable sections of the TxDot Standard Specifications.

6.0 SUBGRADE REHABILITATION

The subgrade soils often become disturbed during the period between initial site grading and construction of surface improvements. The amount and depth of disturbance will vary with soil type, weather conditions, construction traffic, and drainage.

The engineer should evaluate the subgrade soil during final grading to verify that the subgrade is suitable to receive pavement and/or concrete slab base materials. The final evaluation may include proof rolling or density tests.

Subgrade rehabilitation can become a point of controversy when different contractors are responsible for site grading and building construction. The construction documents

should specifically state which contractor will be responsible for maintaining and rehabilitating the subgrade. Rehabilitation may include moisture conditioning and re-compacting soils.

When deadlines or weather restrict grading operations, additional measures such as undercutting and replacing saturated soils or chemical stabilization can often be utilized.

7.0 CONSTRUCTION MONITORING

Field verification of site conditions is an essential part of the services provided by the geotechnical consultant. To confirm our recommendations, it will be necessary for Building & Earth personnel to make periodic visits to the site during site grading. Typical construction monitoring services are listed below.

- Periodic observations and consultations by a member of our engineering staff during site grading.
- Proof roll observations and/or DCPT tests.
- Field density tests during structural fill placement on a continuous basis.
- Observation and verification of the bearing surfaces exposed after subgrade excavation.
- Reinforcing steel inspections.
- Molding and testing of concrete cylinders.

8.0 CLOSING AND LIMITATIONS

This report was prepared for CEI Engineering, for specific application to the Lake Lewisville Environmental Learning Area project located in Lewisville, Texas. The information in this report is not transferable. This report should not be used for a different development on the same property without first being evaluated by the engineer.

The recommendations in this report were based on the information obtained from our field exploration and laboratory analysis. The data collected and presented in this report is representative of the subsurface conditions encountered at the specific boring locations at the time of the exploration. Variations in soil and groundwater conditions may occur between boring locations and throughout other areas of the site. Engineering judgment was applied regarding conditions between borings. In addition, seasonal or short-term changes in weather patterns, such as rainfall or drought, can further influence subsurface conditions. Evaluation of these potential variations and changes falls outside the scope of this report and should be addressed by the client and contractor during construction.

This report has been prepared in accordance with generally accepted standards of geotechnical engineering practice. No other warranty is expressed or implied. In the event that changes are made, or anticipated to be made, to the nature, design, or location of the project as outlined in this report, Building & Earth must be informed of the changes and given the opportunity to either verify or modify the conclusions of this report in writing, or the recommendations of this report will no longer be valid.

The scope of services for this project did not include any environmental assessment of the site or identification of pollutants or hazardous materials or conditions. If the owner is concerned about environmental issues Building & Earth would be happy to provide an additional scope of services to address those concerns.

This report is intended for use during design and preparation of specifications and may not address all conditions at the site during construction. Contractors reviewing this information should acknowledge that this document is for design information only and is not a substitute for means, methods, or construction practices, which remain the sole responsibility of the contractor.

An article published by the Geoprofessional Business Association (GBA), titled *Important Information About Your Geotechnical Report*, has been included in the Appendix. We encourage all individuals to become familiar with the article to help manage risk.

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GEOTECHNICAL INVESTIGATION METHODOLOGIES

The subsurface exploration, which is the basis of the recommendations of this report, has been performed in accordance with industry standards. Detailed methodologies employed in the investigation are presented in the following sections.

DRILLING PROCEDURES – STANDARD PENETRATION TEST (ASTM D1586)

At each boring location, soil samples were obtained at standard sampling intervals with a split-spoon sampler. The borehole was first advanced to the sample depth by augering and the sampling tools were placed in the open hole. The sampler was then driven 18 inches into the ground with a 140-pound automatic hammer free-falling 30 inches. The number of blows required to drive the sampler each 6-inch increment was recorded. The initial increment is considered the “seating” blows, where the sampler penetrates loose or disturbed soil in the bottom of the borehole. The blows required to penetrate the final two (2) increments are added together and are referred to as the Standard Penetration Test (SPT) N-value. The N-value, when properly evaluated, gives an indication of the soil’s strength and ability to support structural loads.

The SPT testing was performed using a drill rig equipped with an automatic hammer. An energy correction factor of 1.3 was applied to the recorded field N-values from the automatic hammer for the purpose of our evaluation. The N-values discussed or mentioned in this report and shown on the boring logs are recorded field values.

Samples retrieved from the boring locations were labeled and stored in plastic bags at the jobsite before being transported to our laboratory for analysis. The project engineer prepared Boring Logs summarizing the subsurface conditions at the boring locations.

BORING LOG DESCRIPTION

Building & Earth Sciences, Inc. used the gINT software program to prepare the attached boring logs. The gINT program provides the flexibility to custom design the boring logs to include the pertinent information from the subsurface exploration and results of our laboratory analysis. The soil and laboratory information included on our logs is summarized below:

DEPTH AND ELEVATION

The depth below the ground surface and the corresponding elevation are shown in the first two columns.

SAMPLE TYPE

The method used to collect the sample is shown. The typical sampling methods include Split Spoon Sampling, Shelby Tube Sampling, Grab Samples, and Rock Core. A key is provided at the bottom of the log showing the graphic symbol for each sample type.

SAMPLE NUMBER

Each sample collected is numbered sequentially.

SOIL DATA

Column 6 is a graphic representation of four different soil parameters. Each of the parameters use the same graph, however, the values of the graph subdivisions vary with each parameter. Each parameter presented on column 6 is summarized below:

- **Atterberg Limits** – The Atterberg Limits are plotted with the plastic limit to the left, and liquid limit to the right, connected by a horizontal line. The difference in the plastic and liquid limits is referred to as the Plasticity Index. The Atterberg Limits test results are also included in the Remarks column on the far right of the boring log.
- **Moisture** – The Natural Moisture Content of the soil sample as determined in our laboratory.

SOIL DESCRIPTION

The soil description prepared in accordance with ASTM D2488, Visual Description of Soil Samples. Strata changes are indicated by a solid line, with the depth of the change indicated on the left side of the line and the elevation of the change indicated on the right side of the line. If subtle changes within a soil type occur, a broken line is used. The Boring Termination or Auger Refusal depth is shown as a solid line at the bottom of the boring.

GRAPHIC

The graphic representation of the soil type is shown. The graphic used for each soil type is related to the Unified Soil Classification chart. A chart showing the graphic associated with each soil classification is included.

REMARKS

Remarks regarding borehole observations, and additional information regarding the laboratory results and groundwater observations.

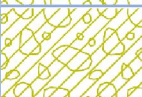
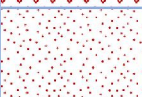
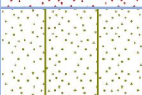
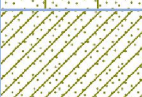
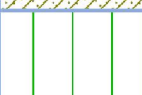
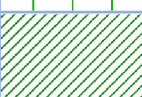
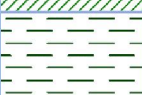
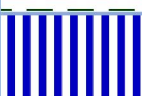
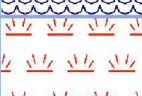
Major Divisions			Symbols		Group Name & Typical Description
			Lithology	Group	
Coarse Grained Soils More than 50% of material is larger than No. 200 sieve size	Gravel and Gravelly Soils More than 50% of coarse fraction is larger than No. 4 sieve	Clean Gravels (Less than 5% fines)		GW	Well-graded gravels, gravel – sand mixtures, little or no fines
				GP	Poorly-graded gravels, gravel – sand mixtures, little or no fines
		Gravels with Fines (More than 12% fines)		GM	Silty gravels, gravel – sand – silt mixtures
				GC	Clayey gravels, gravel – sand – clay mixtures
	Sand and Sandy Soils More than 50% of coarse fraction is smaller than No. 4 sieve	Clean Sands (Less than 5% fines)		SW	Well-graded sands, gravelly sands, little or no fines
				SP	Poorly-graded sands, gravelly sands, little or no fines
		Sands with Fines (More than 12% fines)		SM	Silty sands, sand – silt mixtures
				SC	Clayey sands, sand – clay mixtures
Fine Grained Soils More than 50% of material is smaller than No. 200 sieve size	Silts and Clays Liquid Limit less than 50	Inorganic		ML	Inorganic silts and very find sands, rock flour, silty or clayey fine sands or clayey silt with slight plasticity
				CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		Organic		OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays Liquid Limit greater than 50 sieve	Inorganic		MH	Inorganic silts, micaceous or diatomaceous fine sand, or silty soils
				CH	Inorganic clays of high plasticity
		Organic		OH	Organic clays of medium to high plasticity, organic silts
			Highly Organic Soils		

Table 1: Soil Classification Chart (based on ASTM D2487)

Building & Earth Sciences classifies soil in general accordance with the Unified Soil Classification System (USCS) presented in ASTM D2487. Table 1 and Figure 1 exemplify the general guidance of the USCS. Soil consistencies and relative densities are presented in general accordance with Terzaghi, Peck, & Mesri's (1996) method, as shown on Table 2, when quantitative field and/or laboratory data is available. Table 2 includes Consistency and Relative Density correlations with N-values obtained using either a manual hammer (60 percent efficiency) or automatic hammer (90 percent efficiency). The *Blows Per Increment* and *SPT N-values* displayed on the boring logs are the unaltered values measured in the field. When field and/or laboratory data is not available, we may classify soil in general accordance with the Visual Manual Procedure presented in ASTM D2488.

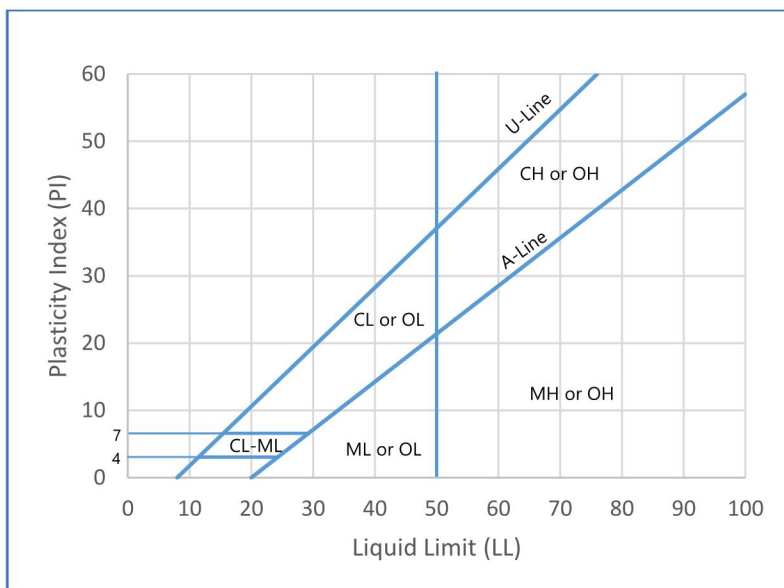


Figure 1: Plasticity Chart (based on ASTM D2487)

Non-cohesive: Coarse-Grained Soil			Cohesive: Fine-Grained Soil			
SPT Penetration (blows/foot)		Relative Density	SPT Penetration (blows/foot)		Consistency	Estimated Range of Unconfined Compressive Strength (tsf)
			Automatic Hammer*	Manual Hammer		
Automatic Hammer*	Manual Hammer		< 2	< 2	Very Soft	< 0.25
0 - 3	0 - 4	Very Loose	2 - 3	2 - 4	Soft	0.25 – 0.50
3 - 8	4 - 10	Loose	3 - 6	4 - 8	Medium Stiff	0.50 – 1.00
8 - 23	10 - 30	Medium Dense	6 - 12	8 - 15	Stiff	1.00 – 2.00
23 - 38	30 - 50	Dense	12 - 23	15 - 30	Very Stiff	2.00 – 4.00
> 38	> 50	Very Dense	> 23	> 30	Hard	> 4.00

Table 2: Soil Consistency and Relative Density (based on Terzaghi, Peck & Mesri, 1996)

* - Modified based on 80% hammer efficiency

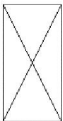
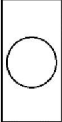
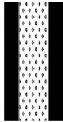
	Standard Penetration Test ASTM D1586 or AASHTO T-206		Dynamic Cone Penetrometer (Sower DCP) ASTM STP-399
	Shelby Tube Sampler ASTM D1587		No Sample Recovery
	Rock Core Sample ASTM D2113		Groundwater at Time of Drilling
	Auger Cuttings		Groundwater as Indicated

Table 1: Symbol Legend

Soil	Particle Size	U.S. Standard
Boulders	Larger than 300 mm	N.A.
Cobbles	300 mm to 75 mm	N.A.
Gravel	75 mm to 4.75 mm	3-inch to #4 sieve
Coarse	75 mm to 19 mm	3-inch to ¾-inch sieve
Fine	19 mm to 4.75 mm	¾-inch to #4 sieve
Sand	4.75 mm to 0.075 mm	#4 to #200 Sieve
Coarse	4.75 mm to 2 mm	#4 to #10 Sieve
Medium	2 mm to 0.425 mm	#10 to #40 Sieve
Fine	0.425 mm to 0.075 mm	#40 to #200 Sieve
Fines	Less than 0.075 mm	Passing #200 Sieve
Silt	Less than 5 µm	N.A.
Clay	Less than 2 µm	N.A.

Table 2: Standard Sieve Sizes

N-Value 	Standard Penetration Test Resistance calculated using ASTM D1586 or AASHTO T-206. Calculated as sum of original, field recorded values.	Atterberg Limits 	A measure of a soil's plasticity characteristics in general accordance with ASTM D4318. The soil Plasticity Index (PI) is representative of this characteristic and is bracketed by the Liquid Limit (LL) and the Plastic Limit (PL).
Qu 	Unconfined compressive strength, typically estimated from a pocket penetrometer. Results are presented in tons per square foot (tsf).	% Moisture 	Percent natural moisture content in general accordance with ASTM D2216.

Table 3: Soil Data

Hollow Stem Auger	Flights on the outside of the shaft advance soil cuttings to the surface. The hollow stem allows sampling through the middle of the auger flights.
Mud Rotary / Wash Bore	A cutting head advances the boring and discharges a drilling fluid to support the borehole and circulate cuttings to the surface.
Solid Flight Auger	Flights on the outside bring soil cuttings to the surface. Solid stem requires removal from borehole during sampling.
Hand Auger	Cylindrical bucket (typically 3-inch diameter and 8 inches long) attached to a metal rod and turned by human force.

Table 4: Soil Drilling Methods

Descriptor	Meaning
Trace	Likely less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

Table 5: Descriptors

Manual Hammer	The operator tightens and loosens the rope around a rotating drum assembly to lift and drop a sliding, 140-pound hammer falling 30 inches.
Automatic Trip Hammer	An automatic mechanism is used to lift and drop a sliding, 140-pound hammer falling 30 inches.
Dynamic Cone Penetrometer (Sower DCP) ASTM STP-399	Uses a 15-pound steel mass falling 20 inches to strike an anvil and cause penetration of a 1.5-inch diameter cone seated in the bottom of a hand augered borehole. The blows required to drive the embedded cone a depth of 1-3/4 inches have been correlated by others to N-values derived from the Standard Penetration Test (SPT).

Table 6: Sampling Methods

Non-plastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be re-rolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be re-rolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

Table 7: Plasticity

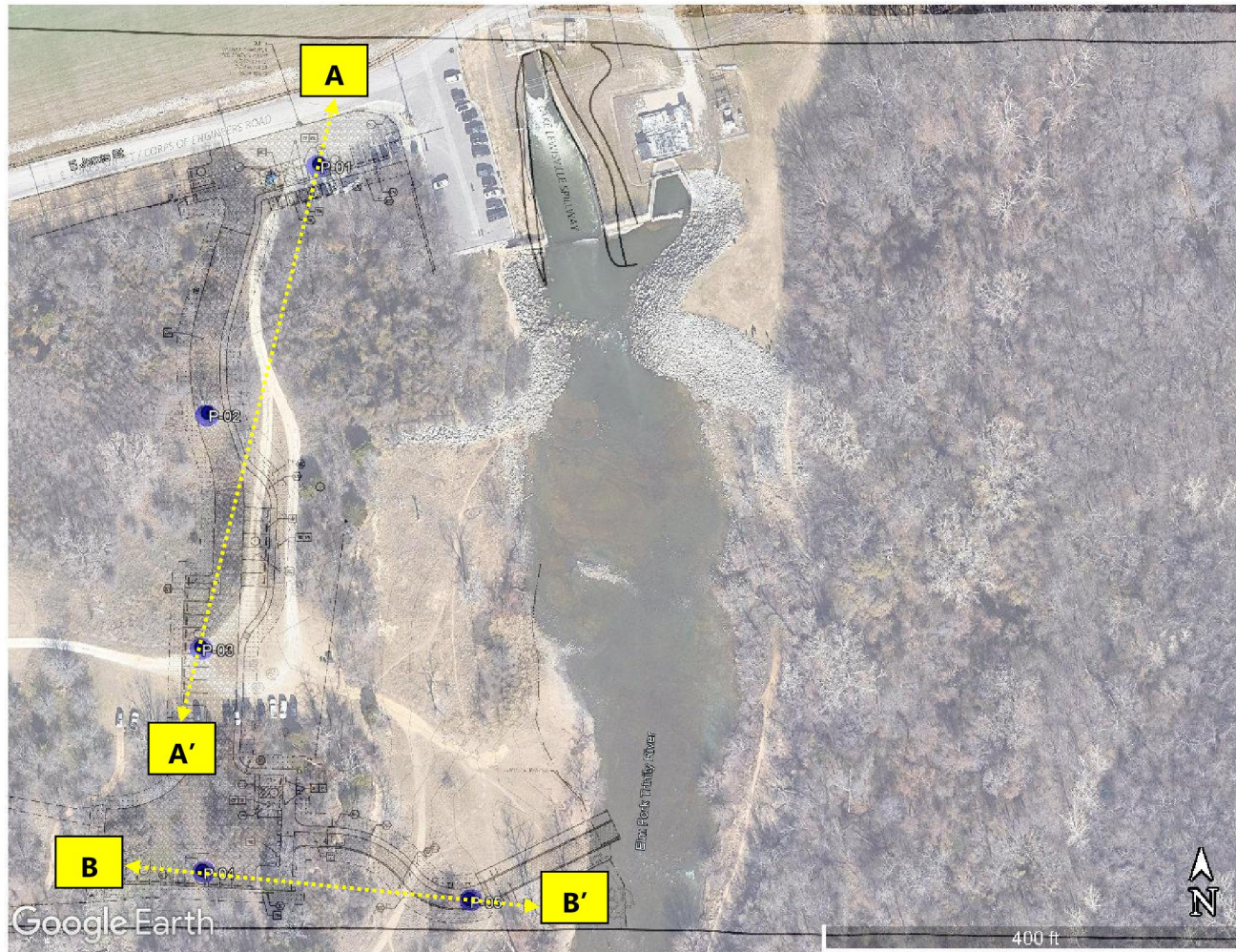
Dry	Absence of moisture, dusty, dry to the touch.
Moist	Damp but no visible water.
Wet	Visible free water, usually soil is below water table.

Table 8: Moisture Condition

Stratified	Alternating layers of varying material or color with layers at least 1/2 inch thick.
Laminated	Alternating layers of varying material or color with layers less than 1/4 inch thick.
Fissured	Breaks along definite planes of fracture with little resistance to fracturing.
Slickensides	Fracture planes appear polished or glossy, sometimes striated.
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown.
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay.
Homogeneous	Same color and appearance throughout.

Table 9: Structure

BORING LOCATION PLAN



**REFERENCE USED
TO PRODUCE THIS
DRAWING:**

Google Earth Satellite Image
with Site Plan, prepared by
Sherman Parks SP+ GP
dated 5/26/2025

BORING LOCATION PLAN

PROJECT NO.

DF250133

PROJECT NAME / LOCATION:

Lewisville Lake Environmental
Learning Area (LLELA)
Lewisville, Texas

DATE:

10/10/2025

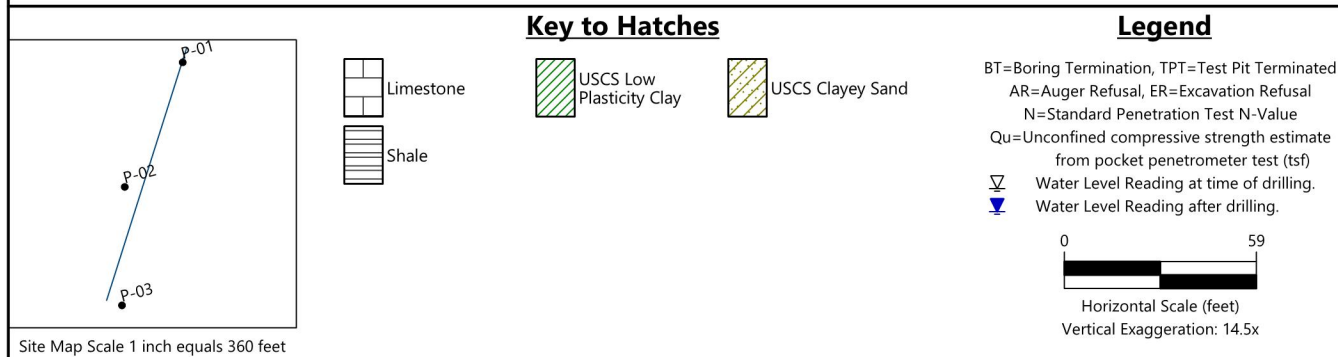
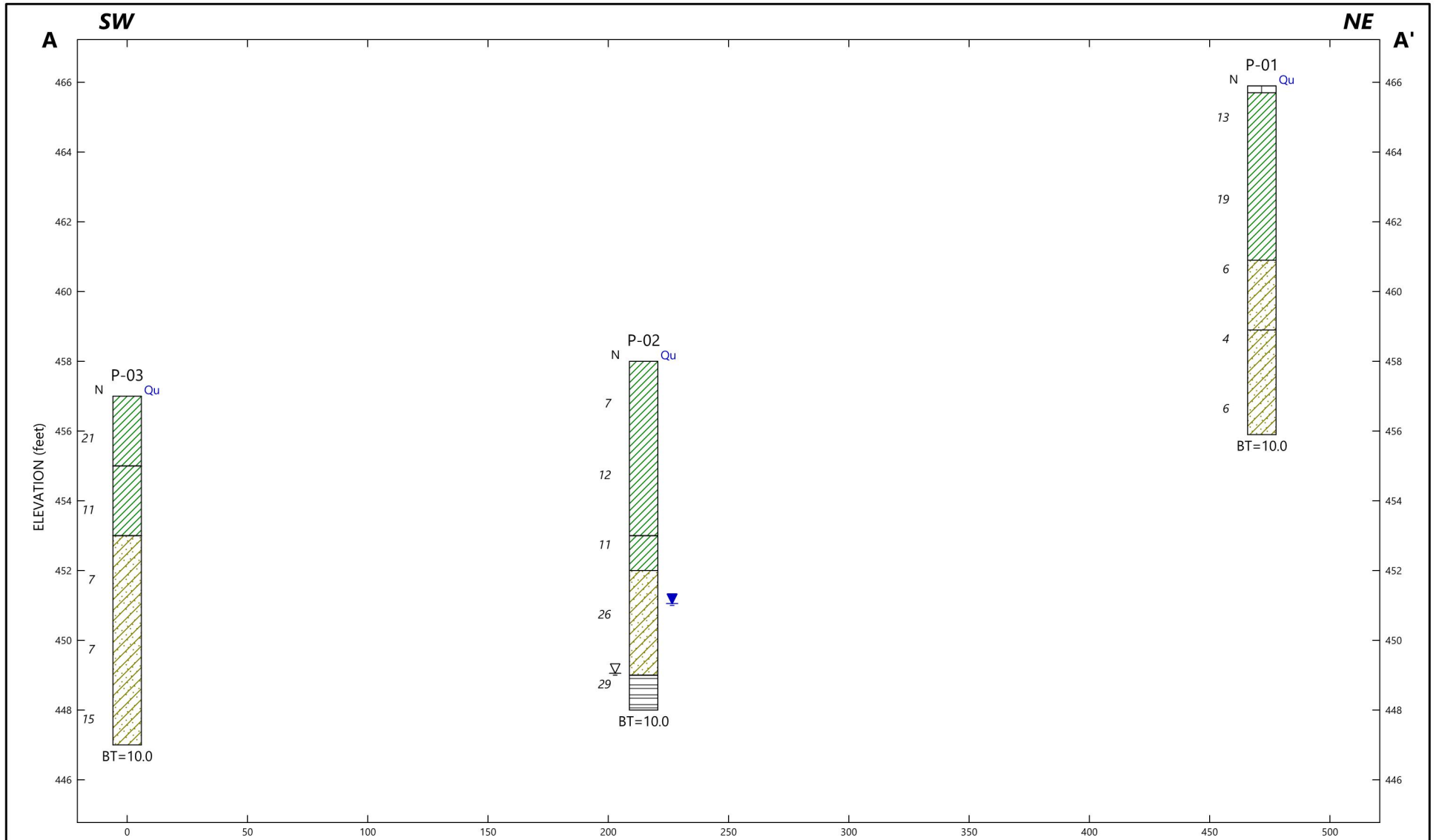
SCALE:

As Shown

BUILDING & EARTH

Geotechnical, Environmental, and Materials Engineers

SUBSURFACE PROFILES



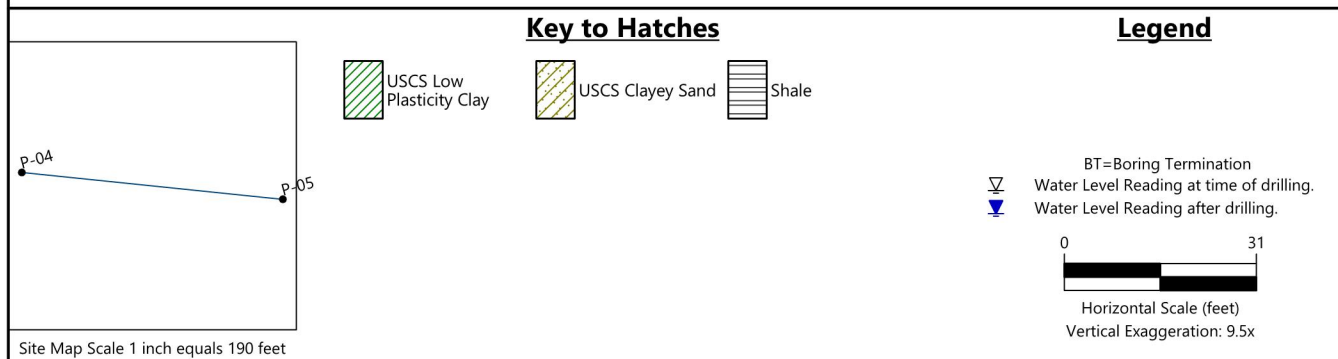
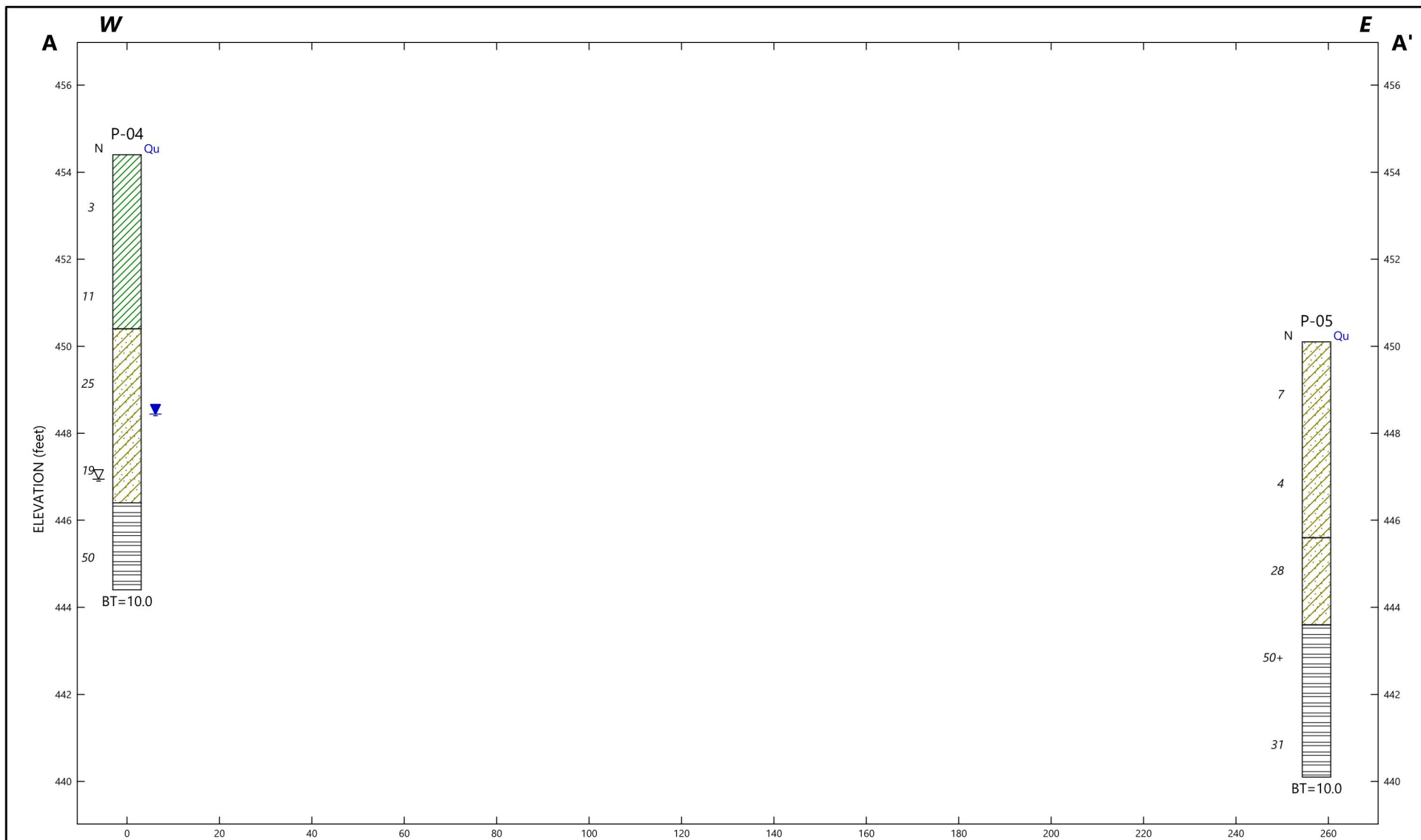
Building & Earth Sciences, Inc.
8420 Sterling St. Suite B, Irving, Texas 75063

Lewisville Lake Environmental Learning Area (LLELA)
Lewisville, Texas

Section Name A-A': Subsurface Profile
Figure Title

PROJECT NO: DF250133 | PLATE NO: A-1 | DATE: 10/24/25

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Geotechnical, Environmental, and Materials Engineers



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 8420 Sterling St. Suite B, Irving, Texas 75063

Lewisville Lake Environmental Learning Area (LLELA)
 Lewisville, Texas

Subsurface Profile

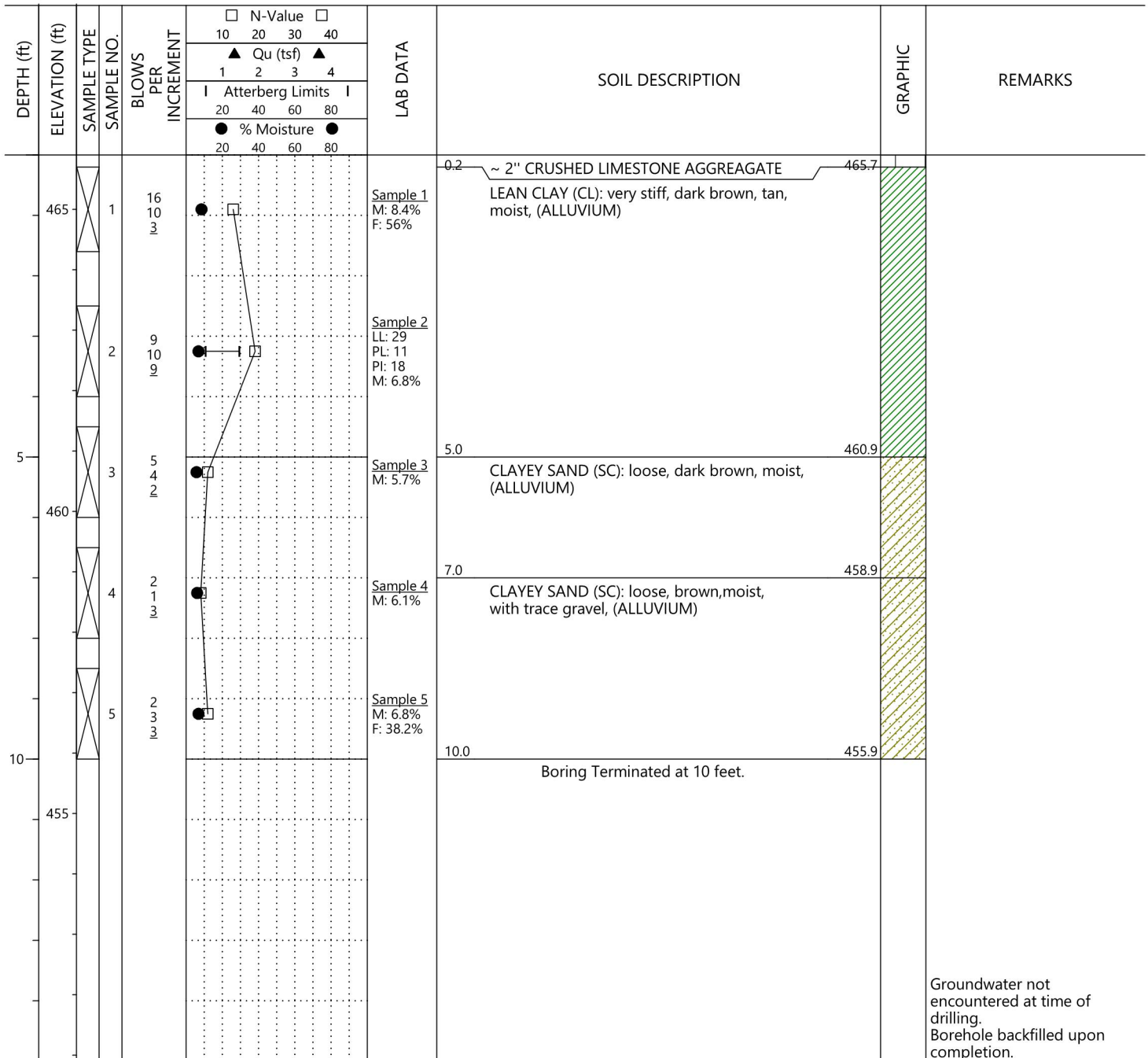
PROJECT NO: DF250133	PLATE NO: B-1	DATE: 10/24/25
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BUILDING & EARTH
 Geotechnical, Environmental, and Materials Engineers

BORING LOGS

PROJECT NAME: Lewisville Lake Environmental Learning Area (LLELA)
PROJECT NUMBER: DF250133
DRILLING METHOD: Solid Flight Auger
EQUIPMENT USED: GeoProbe 7822DT
HAMMER TYPE: Automatic
BORING LOCATION: 33.068263616° -96.964970445°

LOCATION: Lewisville, Texas
DATE DRILLED: 10/10/25
WEATHER: Sunny & Clear
ELEVATION: 465.9
DRILL CREW: West Drilling
LOGGED BY: M. Hurley



SAMPLE TYPE ☒ Split Spoon

N-VALUE STANDARD PENETRATION RESISTANCE (AASHTO T-206)

% MOISTURE PERCENT NATURAL MOISTURE CONTENT

☒ GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING

☒ STABILIZED GROUNDWATER LEVEL

LL: LIQUID LIMIT **M:** NATURAL MOISTURE CONTENT

PL: PLASTIC LIMIT **F:** PERCENT PASSING NO. 200 SIEVE

PI: PLASTICITY INDEX

Groundwater not encountered at time of drilling.
Borehole backfilled upon completion.

PROJECT NAME: Lewisville Lake Environmental Learning Area (LLELA)
PROJECT NUMBER: DF250133
DRILLING METHOD: Solid Flight Auger
EQUIPMENT USED: GeoProbe 7822DT
HAMMER TYPE: Automatic
BORING LOCATION: 33.067622075° -96.965338626°

LOCATION: Lewisville, Texas
DATE DRILLED: 10/10/25
WEATHER: Sunny & Clear
ELEVATION: 458
DRILL CREW: West Drilling
LOGGED BY: M. Hurley

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	BLOWS PER INCREMENT	LAB DATA				SOIL DESCRIPTION	GRAPHIC	REMARKS
					□ N-Value □						
					10 20 30 40						
					▲ Qu (tsf) ▲						
					1 2 3 4						
I Atterberg Limits I											
20 40 60 80											
● % Moisture ●											
20 40 60 80											
455 											

SAMPLE TYPE ☒ Split Spoon

N-VALUE STANDARD PENETRATION RESISTANCE (AASHTO T-206)

% MOISTURE PERCENT NATURAL MOISTURE CONTENT

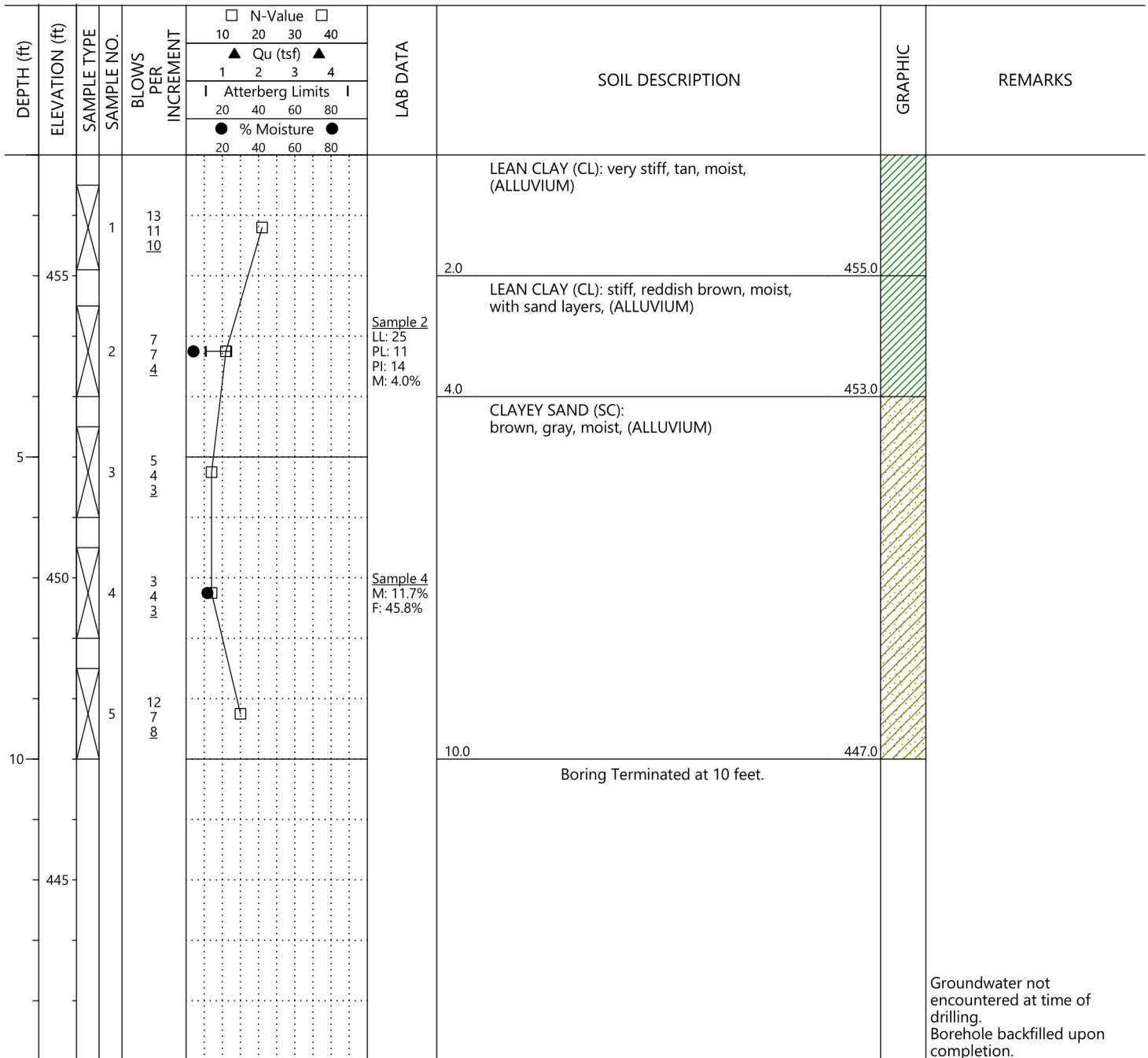
☒ GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING

☒ STABILIZED GROUNDWATER LEVEL

LL: LIQUID LIMIT **M:** NATURAL MOISTURE CONTENT
PL: PLASTIC LIMIT **F:** PERCENT PASSING NO. 200 SIEVE
PI: PLASTICITY INDEX

PROJECT NAME: Lewisville Lake Environmental Learning Area (LLELA)
PROJECT NUMBER: DF250133
DRILLING METHOD: Solid Flight Auger
EQUIPMENT USED: GeoProbe 7822DT
HAMMER TYPE: Automatic
BORING LOCATION: 33.06700807° -96.965366478°

LOCATION: Lewisville, Texas
DATE DRILLED: 10/10/25
WEATHER: Sunny & Clear
ELEVATION: 457
DRILL CREW: West Drilling
LOGGED BY: M. Hurley



SAMPLE TYPE ☒ Split Spoon

N-VALUE STANDARD PENETRATION RESISTANCE (AASHTO T-206)

% MOISTURE PERCENT NATURAL MOISTURE CONTENT

☒ GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING

☒ STABILIZED GROUNDWATER LEVEL

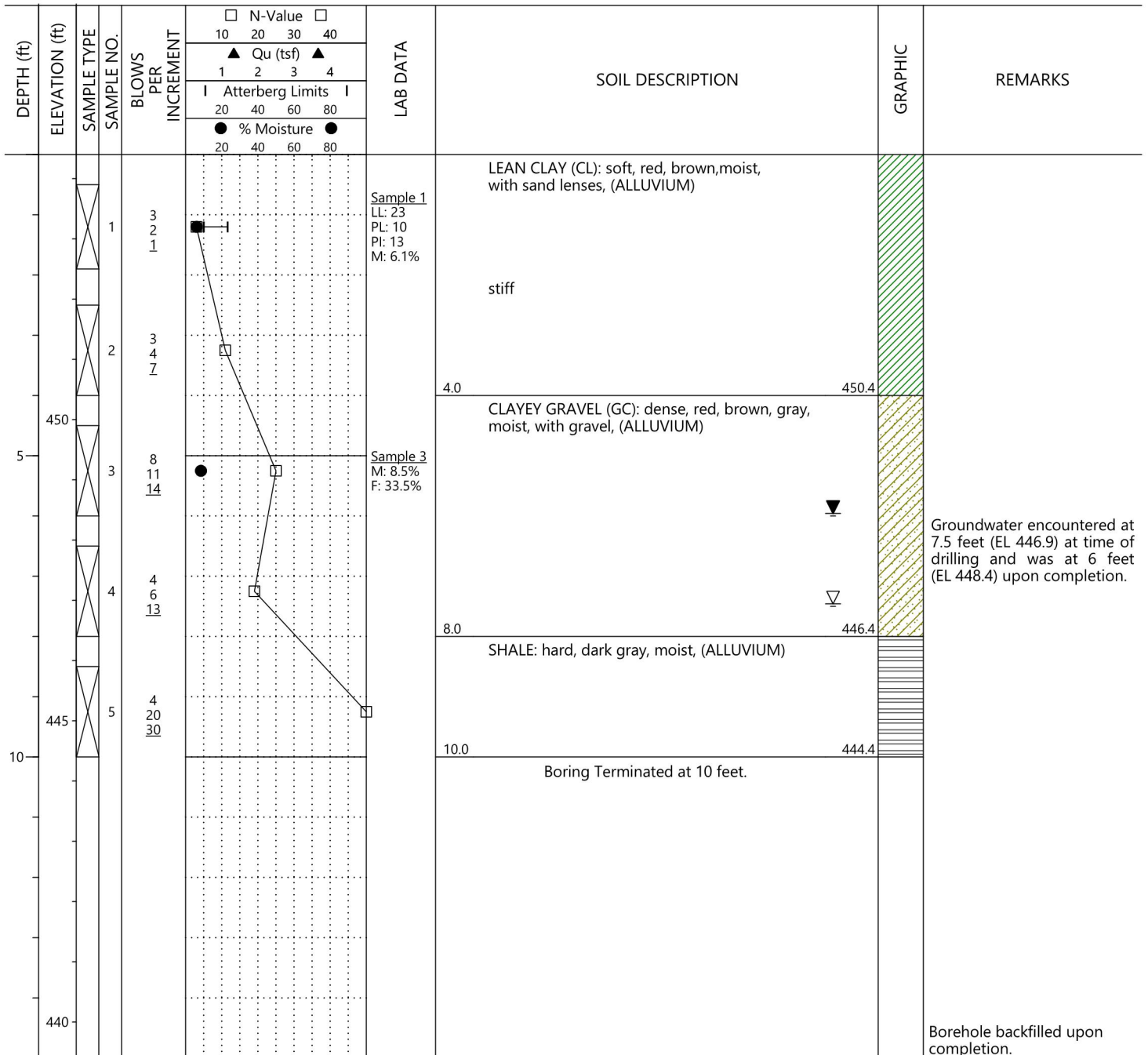
LL: LIQUID LIMIT **M:** NATURAL MOISTURE CONTENT

PL: PLASTIC LIMIT **F:** PERCENT PASSING NO. 200 SIEVE

PI: PLASTICITY INDEX

PROJECT NAME: Lewisville Lake Environmental Learning Area (LLELA)
PROJECT NUMBER: DF250133
DRILLING METHOD: Solid Flight Auger
EQUIPMENT USED: GeoProbe 7822DT
HAMMER TYPE: Automatic
BORING LOCATION: 33.066421257° -96.965371622°

LOCATION: Lewisville, Texas
DATE DRILLED: 10/10/25
WEATHER: Sunny & Clear
ELEVATION: 454.4
DRILL CREW: West Drilling
LOGGED BY: M. Hurley



SAMPLE TYPE ☒ Split Spoon

N-VALUE STANDARD PENETRATION RESISTANCE (AASHTO T-206)

% MOISTURE PERCENT NATURAL MOISTURE CONTENT

GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING

STABILIZED GROUNDWATER LEVEL

LL: LIQUID LIMIT **M:** NATURAL MOISTURE CONTENT

PL: PLASTIC LIMIT **F:** PERCENT PASSING NO. 200 SIEVE

PI: PLASTICITY INDEX

LOG OF BORING

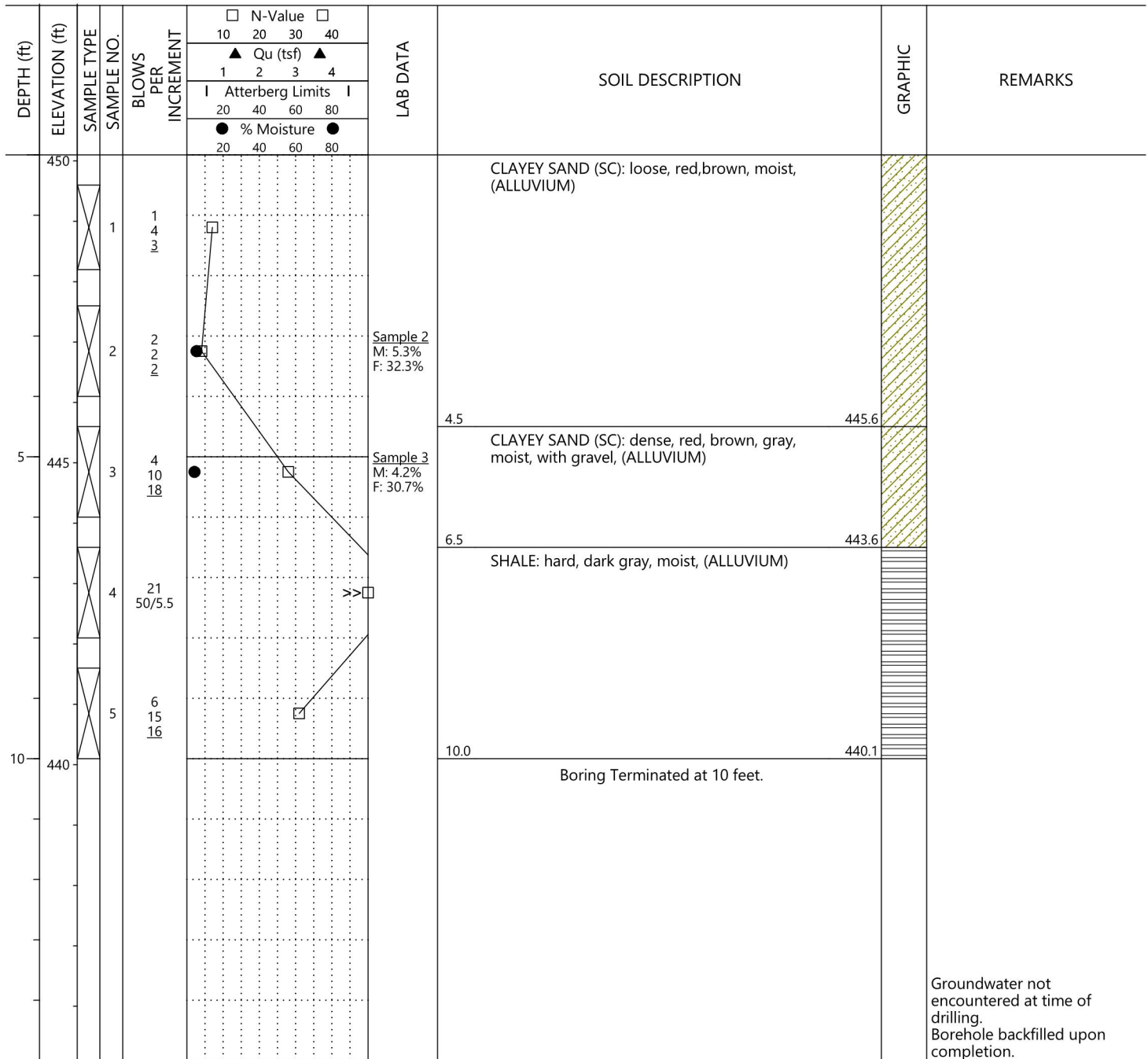
Designation: P-05

Sheet 1 of 1

8420 Sterling St
Irving, Texas 75060
Office: 469-320-9800

PROJECT NAME: Lewisville Lake Environmental Learning Area (LLELA)
PROJECT NUMBER: DF250133
DRILLING METHOD: Solid Flight Auger
EQUIPMENT USED: GeoProbe 7822DT
HAMMER TYPE: Automatic
BORING LOCATION: 33.066338672° -96.96453705°

LOCATION: Lewisville, Texas
DATE DRILLED: 10/10/25
WEATHER: Sunny & Clear
ELEVATION: 450.1
DRILL CREW: West Drilling
LOGGED BY: M. Hurley



SAMPLE TYPE ☒ Split Spoon

N-VALUE STANDARD PENETRATION RESISTANCE (AASHTO T-206)

% MOISTURE PERCENT NATURAL MOISTURE CONTENT

▽ GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING

 STABILIZED GROUNDWATER LEVEL

LL: LIQUID LIMIT M: NATURAL MOISTURE CONTENT

PL: PLASTIC LIMIT **F:** PERCENT PASSING NO. 200 SIEVE

PI: PLASTICITY INDEX

LABORATORY TEST PROCEDURES

A brief description of the laboratory tests performed is provided in the following sections.

DESCRIPTION OF SOILS (VISUAL-MANUAL PROCEDURE) (ASTM D2488)

The soil samples were visually examined by our engineer and soil descriptions were provided. Representative samples were then selected and tested in accordance with the aforementioned laboratory-testing program to determine soil classifications and engineering properties. This data was used to correlate our visual descriptions with the Unified Soil Classification System (USCS).

NATURAL MOISTURE CONTENT (ASTM D2216)

Natural moisture contents (M%) were determined on selected samples. The natural moisture content is the ratio, expressed as a percentage, of the weight of water in a given amount of soil to the weight of solid particles.

ATTERBERG LIMITS (ASTM D4318)

The Atterberg Limits test was performed to evaluate the soil's plasticity characteristics. The soil Plasticity Index (PI) is representative of this characteristic and is bracketed by the Liquid Limit (LL) and the Plastic Limit (PL). The Liquid Limit is the moisture content at which the soil will flow as a heavy viscous fluid. The Plastic Limit is the moisture content at which the soil is between "plastic" and the semi-solid stage. The Plasticity Index ($PI = LL - PL$) is a frequently used indicator for a soil's potential for volume change. Typically, a soil's potential for volume change increases with higher plasticity indices.

MATERIAL FINER THAN NO. 200 SIEVE BY WASHING (ASTM D1140)

Grain-size tests were performed to determine the partial soil particle size distribution. The amount of material finer than the openings on the No. 200 sieve (0.075 mm) was determined by washing soil over the No. 200 sieve. The results of wash #200 tests are presented on the boring logs included in this report and in the table of laboratory test results.

LABORATORY TEST RESULTS

LABORATORY TEST RESULTS

The results of the laboratory testing are presented in the following tables.

Boring No.	Depth (ft.)	Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	% Passing #200 Sieve
P-01	0.2 – 2.0	8.4				56.0
P-01	2.5 – 4.0	6.8	29	11	18	
P-01	4.5 – 6.0	5.7				
P-01	6.5 – 8.0	6.1				
P-01	8.5 – 10.0	6.8				38.2
P-02	0.5 – 2.0	8.2	21	9	12	
P-02	2.5 – 4.0	11.1	18	6	12	
P-02	4.5 – 6.0	12.1				51.1
P-02	6.5 – 8.0	7.0				36.2
P-02	8.5 – 10.0	16.8				
P-03	2.5 – 4.0	4.0	25	11	14	
P-03	6.5 – 8.0	11.7				45.8
P-04	0.5 – 2.0	6.1	23	10	13	
P-04	4.5 – 6.0	8.5				33.5
P-05	2.5 – 4.0	5.3				32.3
P-05	4.5 – 6.0	4.2				30.7

Table L-1: General Soil Classification Test Results

Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply this report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by:* the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time to perform additional study.* Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help

others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your GBC-Member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

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CITY OF LEWISVILLE
PRE-BID
RFB #26-73-C Pre-Bid Meeting
3:00 P.M., Thursday, April 16, 2026

	NAME (PRINT)	COMPANY	PHONE NUMBER	EMAIL ADDRESS
1	Janine Carpenter <i>JJC</i>	City of Lewisville	972-219-3766	jcarpenter@cityoflewisville.com
2	Marcus Gallegos <i>MG</i>	City of Lewisville	469-635-5298	mgallegos@cityoflewisville.com
3	Nufy Rangel	Black Fox Services	682-294-0024	nufy@TeamBlackFox.com
4	Dylan Hollums	Terrell Pk ¹ / ₂ Wallcover	432-770-8025	dylan@ktpaint.net
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