JEFFERSON COUNTY PURCHASING DEPARTMENT
Deborah L. Clark, Purchasing Agent

1149 Pearl Street
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LEGAL NOTICE
Advertisement for Invitation for Bids
November 29, 2022

Notice is hereby given that sealed bids will be accepted by the Jefferson County Purchasing Department for Invitation for Bid **(IFB 22-071/JW) Mesquite Point Public Boat Ramp** (Funding provided by the Texas Department of Parks and Wildlife, Contract No. CA-0000997). Specifications, Plans, and Bidding Documents for this project may be obtained via the Jefferson County Purchasing webpage at: https://www.co.jefferson.tx.us/Purchasing/

Bids are to be sealed and addressed to the Purchasing Agent with the bid number and name marked on the outside of the envelope or box. Bidders shall forward an original and two (2) copies of their bid to the address shown below. Jefferson County does not accept bids submitted electronically. Late bids will be rejected as non-responsive. Bids will be publicly opened and read aloud in the Jefferson County Engineering Department Conference Room (5th Floor, Historic Courthouse) 1149 Pearl Street, Beaumont, Texas 77701, at the time and date below. Bidders are invited to attend the sealed bid opening.

BID NAME:	**Mesquite Point Public Boat Ramp**
BID NUMBER:	**IFB 22-071/JW**
DUE BY TIME/DATE:	**11:00 AM CT, Friday, January 6, 2023**
MAIL OR DELIVER TO:	**Jefferson County Purchasing Department** **1149 Pearl Street, 1st Floor** **Beaumont, Texas 77701**

There will be a **Pre-Bid Conference** at **10:00 AM CT on Wednesday**, **December 14, 2022** at the Jefferson County Engineering Department Conference Room (5th Floor, Historic Courthouse) 1149 Pearl Street, Beaumont, Texas 77701.

The County shall require the bidder to furnish a bid security in the amount of five percent (5%) of the total contract cost. The bid bond must be executed with a surety company authorized to do business in the State of Texas. Within ten (10) days after the date of the signing of a contract, the bidder shall furnish a performance bond to the County for the full amount of the contract, if the contract exceeds one hundred thousand dollars ($100,000). If the contract is for one hundred thousand dollars ($100,000) or less, the County may provide that no money be paid to the contractor until completion and acceptance of the work or the fulfillment of the purchase obligation to the County.

Any questions relating to these bid requirements should be directed to at Jamey West, Contract Specialist at 409-835-8593 or via email at: Jamey.West@jeffcotx.us

Jefferson County encourages Disadvantaged Business Enterprises (DBEs), Minority/Women Business Enterprises (M/WBEs), and Historically Underutilized Businesses (HUBs) to participate in the bidding process. Jefferson County does not discriminate on the basis of race, color, national origin, sex, religion, age or disability in employment, or the provisions of services. Individuals requiring special accommodations are requested to contact our office at least seven (7) days prior to the bid due date at 409-835-8593.

All interested firms are invited to submit a bid in accordance with the terms and conditions stated in this bid.

Bidders are strongly encouraged to carefully read the entire invitation, as failure to return and/or complete all required documentation will result in a response being declared as non-responsive.

Deborah L. Clark, Purchasing Agent
Jefferson County, Texas

PUBLISH:
Beaumont Enterprise & Port Arthur News:
November 30, 2022 and December 7, 2022

The Examiner: **December 1, 2022**

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SECTION 1: GENERAL CONDITIONS OF BIDDING AND TERMS OF CONTRACT

By execution of this document, the Vendor accepts all general and special conditions of the contract as outlined below and, in the specifications, and plans.

1. BIDDING.

1.1 BIDS.
All bids must be submitted on the bid form furnished in this package.

1.2 AUTHORIZED SIGNATURES.
The bid must be executed personally by the Vendor, duly authorized partner of the partnership, or duly authorized officer of the corporation. If executed by an agent, a power of attorney or other evidence of authority to act on behalf of the Vendor shall accompany the bid to become a valid bid.

1.3 LATE BIDS.
Bids must be in the office of the Jefferson County Purchasing Agent before or at the specified time and date bids are due. Bids received after the submission deadline shall be rejected as non-responsive and returned unopened.

1.4 WITHDRAWAL OF BID PRIOR TO OPENING.
A bid may be withdrawn before the opening date by submitting a written request to the Purchasing Agent. If time allows, the Bidder may submit a new bid. Bidder assumes full responsibility for submitting a new bid before or at the specified time and date bids are due. Jefferson County reserves the right to withdraw a request for bids before the opening date.

1.5 WITHDRAWAL OF BID AFTER OPENING.
Bidder agrees that its offer may not be withdrawn or cancelled by the Vendor for a period of ninety (90) days following the date and time designated for the receipt of bids unless otherwise stated in the bid and/or specifications.

1.6 BID AMOUNTS.
Bids shall show net prices, extensions where applicable and net total. In case of conflict between unit price and extension, the unit price will govern. Any ambiguity in the bid as a result of omission, error, unintelligible or illegible wording shall be interpreted in the favor of Jefferson County.

1.7 EXCEPTIONS AND/OR SUBSTITUTIONS.
All bids meeting the intent of the specifications and plans will be considered for award. Vendors taking exception to the specifications and plans, or offering substitutions, shall state these exceptions in the section provided. If bid is made on an article other than the one specified, which a Bidder considers comparable, the name and grade of said article must be specified in the bid and sufficient specifications and descriptive data must accompany same to permit thorough evaluation. The absence of stated exceptions and/or substitutions shall indicate that the Vendor has not taken any exceptions to the specifications and shall be responsible to perform in strict accordance with the specifications. As a matter of practice, Jefferson County rejects exception(s) and /or substitutions as non-responsive but reserves the right to accept any and/or all of the exception(s) and/or substitution(s) deemed to be in the best interest of Jefferson County.

1.8 ALTERNATES.
The Invitation for Bid and/or specifications may expressly allow Bidder to submit an alternate bid. Presence of such an offer shall not be considered an indication of non-responsiveness.

1.9 DESCRIPTIONS.
Unless otherwise specified, any reference to make, manufacturer and/or model used in the bid specifications is merely descriptive and not restrictive, and is used only to indicate type, style, or quality of material desired.

1.10 BID ALTERATIONS.
Bids cannot be altered or amended after submission deadline. Any interlineations, alterations, or erasures made before opening time must be initialed by the signer of the bid, guaranteeing authenticity.

1.11 TAX EXEMPT STATUS.
Jefferson County is exempt from federal excise tax and state sales tax. Unless the bid form or specifications specifically indicate otherwise, the bid price must be net, exclusive of above-mentioned taxes and will be so construed. Therefore, the bid price shall not include taxes.

1.12 QUANTITIES.
Quantities indicated are estimated quantities only and are not a commitment to buy. Approximate usage does not constitute an order, but only implies the probable quantity that will be used. Commodities will be ordered on an as-needed basis. Bidder is responsible for accurate final counts.

1.13 BID AWARD.
Award of contract shall be made to the most responsible, responsive Bidder, whose offer is determined to be the best value, taking into consideration the relative importance of price. Jefferson County reserves the right to be the sole judge as to whether items bid will serve the purpose intended.

Jefferson County reserves the right to award based upon individual line items, sections or total bid.

1.14 SILENCE OF SPECIFICATIONS FOR COMPLETE UNITS.
All materials, equipment and/or parts that will become a portion of the completed work, including items not specifically stated herein but, necessary to render the service(s) complete and operational per the specifications, are to be included in the bid price. Vendor may be required to furnish evidence that the service, as bid, will meet or exceed these requirements.

1.15 ADDENDA.
Any interpretations, corrections or changes to the specifications and plans will be made by addenda no later than forty-eight (48) hours prior to the bid opening. Addenda will be posted on the Purchasing web site. Vendors are responsible for monitoring the web site in order to remain informed on addenda. Vendors shall acknowledge receipt of all addenda with submission of bid.

1.16 GENERAL BID BOND/SURETY REQUIREMENTS.
Failure to furnish bid bond/surety, if requested, will result in bid being declared non-responsive. Non-responsive bids will not be considered for award.

1.17 GENERAL INSURANCE REQUIREMENTS.
Failure to furnish Affidavit of Insurance, if required in these specifications, will result in bid being declared non-responsive. Non-responsive bids will not be considered for award.

1.18 RESPONSIVENESS.
A responsive bid shall substantially conform to the requirements of this Invitation to Bid and/or specifications contained herein. Bidders who substitute any other terms, conditions, specifications and/or requirements or who qualify their bids in such a manner as to nullify or limit their liability to the contracting entity shall have their bids deemed non-responsive. Also, bids containing any clause that would limit contracting authority shall be considered non-responsive. Examples of non-responsive bids include but shall not be limited to: a) bids that fail to conform to required delivery schedules as set forth in the bid request; b) bids with prices qualified in such a manner that the bid price cannot be determined, such as with vague wording that may include “price in effect at the time of delivery,” and c) bids made contingent upon award of other bids currently under consideration.

1.19 RESPONSIBLE STANDING OF BIDDER.

To be considered for award, Bidder must at least: have the ability to obtain adequate financial resources, be able to comply with required or proposed delivery/completion schedule, have a satisfactory record of performance; have a satisfactory record of integrity and ethics, and be otherwise qualified and eligible to receive award.

1.20 CONFIDENTIAL/PROPRIETARY INFORMATION.

If any material in the bid submission is considered by Bidder to be confidential or proprietary information (including manufacturing and/or design processes exclusive to the Bidder), Bidder **must** clearly mark the applicable pages of bid submission to indicate each claim of confidentiality. Additionally, Bidder must include a statement on company letterhead identifying all Bid Submission section(s) and page(s) that have been marked as confidential. Jefferson County will protect from public disclosure such portions of a bid, unless directed otherwise by legal authority, including existing open records acts. Merely making a blanket claim that the entire bid submission is protected from disclosure because it contains some proprietary information is not acceptable, and will make the entire bid submission subject to release under the Texas Public Information Act.

By submitting a bid, Bidder agrees to reproduction by Jefferson County, without cost or liability, of any copyrighted portions of Bidder's bid submission or other information submitted by Bidder.

1.21 PUBLIC BID OPENING.

Bidders are invited to be present at the opening of bids. After the official opening of bids, a period of not less than one week is necessary to evaluate bids. The amount of time necessary for bid evaluation may vary and is determined solely by the County. Following the bid evaluation, all bids submitted are available for public review.

2. PERFORMANCE.

2.1 DESIGN, STRENGTH, AND QUALITY.

Design, strength, and quality of materials and workmanship must conform to the highest standards of manufacturing and engineering practices. The apparent silence of specifications and/or plans as to any detailed description concerning any point shall be regarded as meaning that only the best commercial practices are to prevail. All interpretations of these specifications and/or plans shall be made on the basis of this statement.

2.2 AGE AND MANUFACTURE.

All tangible goods being bid must be new and unused, unless otherwise specified, in first-class condition, of current manufacture, and furnished ready to use. All items not specifically mentioned that are required for a complete unit shall be furnished.

2.3 DELIVERY LOCATION.

All deliveries will be made to the address(es) specified on the purchase order during normal working hours of 8:00 am CT to 4:00 pm CT, Monday through Friday, unless otherwise authorized by the Purchasing Agent or designee.

2.4 DELIVERY SCHEDULE.

Delivery time may be an important consideration in the evaluation of best value. The maximum number of days necessary for delivery ARO shall be stated in the space, if provided, on the bid form.

2.5 DELIVERY CHARGES.

All delivery and freight charges, F.O.B. destination shown on Jefferson County purchase order, as necessary to perform contract are to be included in the bid price.

2.6 INSTALLATION CHARGES.

All charges for assembly, installation and set-up shall be included in the bid price. Unless otherwise stated, assembly, installation and set-up will be required.

2.7 OPERATING INSTRUCTIONS AND TRAINING.

Clear and concise operating instructions and descriptive literature will be provided in English, if requested. On-site detailed training in the safe and efficient use and general maintenance of item(s) purchased shall be provided as needed at the request of Jefferson County. Instructions and training shall be at no additional cost to the County.

2.8 STORAGE.

Bidder agrees to provide storage of custom ordered materials, if requested, for up to thirty (30) calendar days.

2.9 COMPLIANCE WITH FEDERAL, STATE, COUNTY, AND LOCAL LAWS.

Bids must comply with all federal, state, county and local laws, including, but not limited to, all applicable standard safety, emission, and noise control requirements. Any vehicles or equipment shall contain all standard safety, emission, and noise control requirements required for the types and sizes of equipment at the time of their manufacture. The contractor agrees, during the performance of work or service, to comply with all applicable codes and ordinances of Jefferson County or the State of Texas as they may apply, as these laws may now read, or as they may hereafter be changed or amended.

2.10 OSHA.

The Bidder will certify all equipment complies with all regulations and conditions stipulated under the Williams-Steiger Occupational Safety and Health Act of 1971, as amended. The successful Bidder will further certify that all items furnished under this project will conform and comply with federal and State of Texas OSHA standards. The successful Bidder will agree to indemnify and hold harmless Jefferson County for any and all damages that may be assessed against the County.

2.11 PATENTS AND COPYRIGHTS.

The successful Vendor agrees to protect the County from claims involving infringements of patents and/or copyrights.

2.12 SAMPLES, DEMONSTRATIONS, AND TESTING.

At Jefferson County's request and direction, Bidder shall provide product samples and/or testing of items bid to ensure compliance with specifications. Samples, demonstrations and/or testing may be requested at any point prior to or following bid award. Samples, demonstrations and/or testing may be requested upon delivery and/or any point during the term of resulting contract. All samples (including return thereof), demonstrations, and/or testing shall be at the expense of the Bidder/Vendor.

2.13 ACCEPTABILITY.

All articles enumerated in the bid shall be subject to inspection by an officer designated for that purpose by Jefferson County. If found inferior to the quality called for, or not equal in value to the specifications, deficient in workmanship or otherwise, this fact shall be certified to the Purchasing Agent, who shall have the right to reject the whole or any part of the same. Items and/or work determined to be contrary to specifications must be replaced at the vendor's expense. Inferior items not retrieved by the vendor within thirty (30) calendar days, or an otherwise agreed upon time, shall become the property of the County. If disposal of such items warrants an expense, an amount equal to the disposal expense will be deducted from amounts payable to the vendor.

2.14 MAINTENANCE.

Maintenance required for equipment bid should be available in Jefferson County by a manufacturer authorized maintenance facility. Cost for this service shall be shown on the bid sheet as requested or on a separate sheet, as required. If Jefferson County opts to include maintenance, it shall be so stated in the purchase order and said cost will be included. Service will commence only upon expiration of applicable warranties and should be priced accordingly.

2.15 MATERIAL SAFETY DATA SHEETS.

Under the "Hazardous Communications Act," common known as the "Texas Right to Know Act," a Bidder must provide the user department, with each delivery, material safety data sheets which are applicable to hazardous substances

defined in the Act. Failure of the Bidder to furnish this documentation, will be cause to reject any bid applying thereto.

2.16 EVALUATION.

Evaluation shall be used as a determinant as to which services are the most efficient and/or most economical for the County. It shall be based on all factors having a bearing on price and performance of the items in the user environment. All bids are subject to tabulation by the Jefferson County Purchasing Department and recommendation to Jefferson County Commissioners' Court. Compliance with all bid requirements and needs of the using department are considered in evaluating bids. Pricing is not the only criteria for making a recommendation. The Jefferson County Purchasing Department reserves to right to contact any Bidder, at any time, to clarify, verify or requirement information with regard to this bid.

3. PURCHASE ORDERS AND PAYMENT.

3.1 PURCHASE ORDERS.

A purchase order(s) shall be generated by the Jefferson County Purchasing Agent to the successful vendor. The purchase order number must appear on all itemized invoices and packing slips. The County will not be held responsible for any work orders placed and/or performed without a valid current purchase order number. Payment will be made for all services rendered and accepted by the contract administrator for which a valid invoice has been received.

3.2 INVOICES.

All invoices shall reference the Purchase Order number. Invoices shall reference the bid item number or a detailed description for each item invoiced. If an item purchased and itemized on the invoice does not correspond to an item in any of the categories awarded to the vendor, invoice shall reference the item as "N/C" to indicate that it is a non-contract item. This requirement is to assist the County in verifying contract pricing on all invoices. Payment will be made under terms of net thirty (30) days unless otherwise agreed upon by seller and the purchasing department.

3.3 PROMPT PAYMENT.

In accordance with the State of Texas Prompt Payment Act, Article 601f V.T.C.S., payment will be made after receive and acceptance by the County of the merchandise ordered and of a valid invoice. Successful Bidder(s) is required to pay subcontractors within ten (10) days after the successful Bidder receives payment from the County.

3.4 FUNDING.

Jefferson County is operated and funded on an October 1 to September 30 basis; accordingly, the County reserves the right to terminate, without liability to the County, any contract for which funding is not available.

4. CONTRACT.

4.1 CONTRACT DEFINITION.

The General Conditions of Bidding and Terms of Contract, Specifications, Plans, Bidding Forms, Addenda, and any other documents made a part of this bid shall constitute the complete bid. This bid, when duly accepted by Jefferson County, shall constitute a contract equally binding between the successful Bidder and Jefferson County.

4.2 CHANGE ORDER.

No different or additional terms will become part of this contract with the exception of a change order. 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 and at the discretion and approval of Jefferson County. No change order will be binding unless signed by an authorized representative of the County and the vendor.

4.3 PRICE RE-DETERMINATION.

A price re-determination may be requested at the time of annual renewal. All requests for price re-determination shall be in written form. Cause for such request, i.e., manufacturer's direct cost, postage rates, Railroad Commission

rates, Federal/State minimum wage law, Federal/State unemployment taxes, F.I.C.A, Insurance Coverage Rates, etc., shall be substantiated in writing by the source of the cost increase. The Bidder's past experience of honoring contracts at the bid price will be an important consideration in the evaluation of the lowest and best bid. Jefferson County reserves the right to accept or reject any/all requests for price re-determination as it deems to be in the best interest of the County.

4.4 TERMINATION.

Jefferson County reserves the right to terminate the contract for default if the Bidder breached any of the terms therein, including warranties of Bidder or if the Bidder becomes insolvent or commits acts of bankruptcy. Such right of termination is in addition to and not in lieu of any other remedies which Jefferson County may have in law or equity. Default may be construed as, but not limited to, failure to deliver the proper goods and/or service within the proper amount of time, and/or to properly perform any and all services required to Jefferson County's satisfaction and/or to meet all other obligations and requirements. Contracts may be terminated without cause upon thirty (30) days' written notice to either party unless otherwise specified. Jefferson County reserves the right to award canceled contract to the next lowest Bidder. Bidder, in submitting this bid, agrees that Jefferson County shall not be liable to prosecution for damages in the event that the County declares the Bidder in default.

4.5 CONFLICT OF INTEREST.

Employees of the County are not permitted to maintain financial interest in, or receive payment, directly or indirectly, borrow from, lend to, invest in, or engage in any substantial financial transaction with any individual, organization, supplier, or subcontractor who does business with the County without disclosure. When conflict of interest is discovered, it shall be grounds for termination of contract.

4.6 INTEREST BY PUBLIC OFFICIALS.

No public official shall have interest in this contract, in accordance with Texas Local Government Code.

4.7 PRE-AWARD/CONTRACT CONTACT BETWEEN COUNTY AND VENDORS.

The Jefferson County Purchasing Department may initiate discussions with selected vendors; however, discussions may not be initiated by vendors.

The Jefferson County Purchasing Department expects to conduct discussions with vendor's representatives authorized to contractually obligate the vendor with an offer. **Vendors shall not contact any Jefferson County personnel during the IFB process without the express permission from the Jefferson County Purchasing Agent. The Purchasing Agent will disqualify any vendor who has made site visits, contacted Jefferson County personnel, or distributed any literature without authorization from the Jefferson County Purchasing Department.**

All correspondence relating to this IFB, from advertisement to award shall be sent to the Jefferson County Purchasing Department. All presentations and/or meetings between Jefferson County and the vendor relating to this IFB shall be coordinated by the Jefferson County Purchasing Department.

Selected vendors may be expected to make a presentation/product demonstration to an Evaluation Committee. Proposals, vendor presentations, and product/service evaluations may develop into negotiating sessions with the vendor(s) as selected by the Evaluation Committee. Jefferson County expects to conduct negotiations with vendor representatives authorized to contractually obligate the vendor with an offer. If vendor is unable to agree to contract terms and conditions, Jefferson County reserves the right to terminate contract negotiations with that vendor and initiate negotiations with another vendor. In addition to a presentation, visits by the Evaluation Committee to representative vendor client sites may be conducted where the proposed solution can be demonstrated in a production environment.

4.8 INJURIES OR DAMAGES RESULTING FROM NEGLIGENCE.

Successful vendor shall defend, indemnify and save harmless Jefferson County and all its officers, agents and employees 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 vendor, or of any agent, employee, subcontractor or supplier in the execution of, or performance under, any contract which may result from bid award. Successful vendor shall pay any judgment with cost which may be obtained against Jefferson County growing out of such injury or damages.

4.9 WARRANTY.

The successful vendor shall warrant that all materials utilized in the performance of this contract shall conform to the proposed specifications and/or all warranties as stated in the Uniform Commercial Code and be free from all defects in material, workmanship and title.

4.10 UNIFORM COMMERCIAL CODE.

The successful vendor and Jefferson County agree that both parties have all rights, duties, and remedies available as stated in the Uniform Commercial Code.

4.11 VENUE.

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

4.12 SALE, ASSIGNMENT, OR TRANSFER OF CONTRACT.

The successful vendor shall not sell, assign, transfer or convey this contract, in whole or in part, without the prior written consent of Jefferson County.

4.13 SILENCE OF SPECIFICATIONS.

The apparent silence of these specifications as to any detailed description concerning any point, shall be regarded as meaning that only the best commercial practices are to prevail. All interpretations of these specifications shall be made on the basis of this statement.

5. REJECTION OR WITHDRAWAL.

Submission of additional terms, conditions or agreements with the bid document are grounds for deeming a bid non-responsive and may result in bid rejection. Jefferson County reserves the right to reject any and all bids and to waive any informalities and minor irregularities or defects in bids. Bids may be withdrawn in person by a bidder or authorized representative, provided their identity is made known and a receipt is signed for the bid, but only if the withdrawal is made prior to the time set for receipt of bids. Bids are an irrevocable offer and may not be withdrawn within **90** days after opening date.

6. EMERGENCY/DECLARED DISASTER REQUIREMENTS.

In the event of an emergency or if Jefferson County is declared a disaster area, by the County, State, or Federal Government, this Acceptance of Offer may be subjected to unusual usage. Contractor shall service the county during such an emergency or declared disaster under the same terms and conditions that apply during non-emergency/disaster conditions. The pricing as specified in this Acceptance of Offer shall apply to serving the County's needs regardless of the circumstances. If Contractor is unable to supply the services under the terms of the Acceptance of Offer, then Contractor shall provide proof of such disruption and a copy of the invoice from Contractor's supplier(s).

Additional profit margin as a result of supplying services during an emergency or declared disaster shall not be permitted. In the event that additional equipment, supplies, and materials are required during the declared disaster, additional shipping, handling and drayage fees may apply.

7. AWARD.

The bid will be awarded to the responsible, responsive bidder(s) whose bid, conforming to the solicitation, will be most advantageous to Jefferson County – price and other factors considered. Unless otherwise specified in this IFB, Jefferson County reserves the right to accept a bid in whole or in part, and to award by item or by group, whichever

is deemed to be in the best interest of Jefferson County. Any bidder who is in default to Jefferson County at the time of submittal of the bid shall have that bid rejected.

Jefferson County reserves the right to clarify any contractual terms with the concurrence of the Contractor; however, any substantial non-conformity in the offer, as determined by Jefferson County, shall be deemed non-responsive and the offer rejected.

In evaluating bids, Jefferson County shall consider the qualifications of the bidders, and, where applicable, operating costs, delivery time, maintenance requirements, performance data, and guarantees of materials and equipment.

In addition, Jefferson County may conduct such investigation as it deems necessary to assist in the evaluation of a bid and to establish the responsibility, qualifications, and financial ability of the bidders to fulfill the contract.

Jefferson County reserves the right to award this contract on the basis of **lowest and best bid** in accordance with the laws of the State of Texas, to waive any formality or irregularity, to make awards to more than one offeror, and/or to reject any or all bids. In the event the lowest dollar offeror meeting specifications is not a awarded a contract, Offeror may appear before the Commissioners' Court and present evidence concerning Offeror responsibility after officially notifying the Office of the Purchasing Agent of Offeror's intent to appear.

8. CONTRACT.

A response to an IFB is an offer to contract with Jefferson County based upon the terms, conditions, and specifications contained in the IFB. Bids do not become contracts unless and until they are executed by Jefferson County, eliminating a formal signing of a separate contract. For that reason, all of the terms and conditions of the contract are contained in the IFB, unless any of the terms and conditions is modified by an IFB Amendment, a Contract Amendment, or by mutually agreed terms and conditions in the contract documents.

9. WAIVER OF SUBROGATION.

Bidder and bidder's insurance carrier waive any and all rights whatsoever with regard to subrogation against Jefferson County as an indirect party to any suit arising out of personal or property damages resulting from bidder's performance under this agreement.

10. FISCAL FUNDING.

A multi-year contract (if requested by the specifications) continuing as a result of an extension option must include fiscal funding out. If, for any reason, funds are not appropriated to continue the contract, said contract shall become null and void.

11. BID RESULTS.

Bid results are not provided in response to telephone inquiries. A preliminary tabulation of bids received will be posted on the Purchasing web page at https://www.co.jefferson.tx.us/Purchasing/ as soon as possible following bid opening. A final tabulation will be posted following bid award, and will also be available for review in the Purchasing Department.

12. CHANGES AND ADDENDA TO BID DOCUMENTS.

Each change or addendum issued in relation to this IFB document will be on file in the Office of the Purchasing Agent, and will be posted on the Purchasing web site as soon as possible. It shall be the bidder's responsibility to make inquiry as to change or addenda issued, and to monitor the web site. All such changes or addenda shall become part of the contract and all bidders shall be bound by such addenda. Information on all changes or addenda issued will be available at the Office of the County Purchasing Agent.

13. SPECIFICATIONS.

Unless otherwise stated by the bidder, the bid will be considered as being in accordance with Jefferson County's applicable standard specifications, and any special specifications outlined in the bid document. References to a

particular trade name, manufacturer's catalogue, or model number are made for descriptive purposes to guide the bidder in interpreting the requirements of Jefferson County, and should not be construed as excluding bids on other types of materials, equipment, and supplies. However, the bidder, if awarded a contract, will be required to furnish the particular item referred to in the specifications or description unless departure or substitution is clearly noted and described in the bid.

Jefferson County reserves the right to determine if equipment/ product being bid is an acceptable alternate. All goods shall be new unless otherwise so stated in the bid. Any unsolicited alternate bid, or any changes, insertions, or omissions to the terms and conditions, specifications, or any other requirements of the bid, may be considered non-responsive.

14. DELIVERY.

Bids shall include all charges for delivery, packing, crating, containers, etc. Unless otherwise stated by the bidder (in writing on the included Bid Form), prices bid will be considered as being based on F.O.B. destination/delivered freight included.

15. INTERPRETATION OF BID AN/OR CONTRACT DOCUMENTS.

All inquiries shall be made within a reasonable time prior to the date and time fixed for the bid opening, in order that a written response in the form of an addendum, if required, can be processed before the bids are opened. Inquiries received that are not made in a timely fashion may or may not be considered.

16. CURRENCY.

Prices calculated by the bidder shall be stated in U.S. dollars.

17. PRICING.

Prices shall be stated in units of quantity specified in the bid documents. In case of discrepancy in computing the amount of the bid, the unit price shall govern.

18. NOTICE TO PROCEED/PURCHASE ORDER.

The successful bidder may not commence work under this contract until authorized to do so by the Purchasing Agent.

19. CERTIFICATION.

By signing the offer section of the Offer and Acceptance page, Bidder certifies:

- The submission of the offer did not involve collusion or other anti-competitive practices.
- The Bidder has not given, offered to give, nor intends to give at any time hereafter, any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor, or service to any public servant in connection with the submitted offer.
- The Bidder hereby certifies that the individual signing the bid is an authorized agent for the Bidder and has the authority to bind the Bidder to the contract.

20. DEFINITIONS.

"County" – Jefferson County, Texas.
"Contractor" – The Bidder whose proposal is accepted by Jefferson County.

21. MINORITY-OWNED (MWBE), WOMEN-OWNED (WBE) AND HISTORICALLY UNDERUTILIZED (HUB) BUSINESS ENTERPRISE PARTICIPATION.

It is the desire of Jefferson County to increase the participation of Minority-Owned (MBE) , Women-Owned (WBE), and Historically Underutilized (HUB) business enterprises in its contracting and procurement programs. While the County does not have any preference or set aside programs in place, it is committed to a policy of equitable participation for these firms.

REMEDIES

(For all awarded contracts with a value greater than $150,000.00)

Any violation or breach of terms of this contract on the part of the Contractor or the Contractor's subcontractors may result in the suspension or termination of this contract or such other action that may be necessary to enforce the rights of the parties of this contract. The duties and obligations imposed by the contract documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law. Any violation or breach of terms of this contract of the Contractor or the Contractor's sub-contractors will be subject to the remedies, including liquidated damages, described in the bid specifications or Request for Proposal and the Client rules and regulations and special conditions which are incorporated herein by reference in their entirety.

TERMINATION FOR CAUSE AND CONVENIENCE

(For all awarded contracts with a value greater than $10,000.00)

The Client reserves the right to terminate this contract for cause or convenience pursuant to the rules and regulations and special conditions which are incorporated herein by reference in their entirety.

EQUAL EMPLOYMENT OPPORTUNITY

(For all awarded contracts that meet the definition of "federally assisted construction contract" provided in 41 CFR Part 60-1.3) ***Contractor must complete enclosed certification***

During the performance of this contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:
Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this non-discrimination clause.

2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

3. The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies

of the notice in conspicuous places available to employees and applicants for employment.

5. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

6. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

7. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

8. The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, that if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

DAVIS-BACON ACT AND COPELAND "ANTI-KICKBACK" ACT

(The Davis-Bacon Act only applies to the Emergency Management Preparedness Grant Program, Homeland Security Grant Program, Nonprofit Security Grant Program, Tribal Homeland Security Grant Program, Port Security Grant

Program, and Transit Security Grant Program. It DOES NOT apply to other FEMA grant and cooperative agreement programs, including the Public Assistance Program.

1. ***Minimum wages.***

i. All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 193 7 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1 (b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(l)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in §5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided,* that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(l)(ii) of this section) and the Davis Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

ii. (A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination, and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

2) The classification is utilized in the area by the construction industry; and

3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

iii. If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

iv. In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D)The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(l)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

i. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

ii. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided,* That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. ***Withholding.***

The Federal Agency and/or Client shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 193 7 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. ***Payrolls and basic records.***

i. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section l (b) (2) (B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(l)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section l(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

ii. (A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the federal agency if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the federal agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee *(e.g.,* the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web

site at *http://www.dol.gov/esa/whd(forms/wh347instr.htm* or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the federal agency if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the federal agency, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

1) That the payroll for the payroll period contains the information required to be provided under §5.5 (a) (3) (ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a) (3) (i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

i. The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the federal agency or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. ***Apprentices and trainees.***

i. ***Apprentices.*** Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio

permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractors registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

ii. ***Trainees.*** Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

iii. ***Equal employment opportunity***. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

5. ***Compliance with Copeland Act requirements.***

The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. ***Subcontracts***.

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a) (l) through (10) and such other clauses as FEMA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. ***Contract termination: debarment.***

A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. ***Compliance with Davis-Bacon and Related Act requirements.***

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. ***Breach.***

A breach of the contract clauses above may be grounds for termination of the contract, and for debarment as a contractor and subcontractor as provided in 29 C.F.R. § 5.12.

10. ***Disputes concerning labor standards.***

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

11. ***Certification of eligibility.***

1) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis Bacon Act or 29 CFR 5.12(a)(l).

2) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(l).

3) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

(For all awarded contracts related to "mechanics and laborers" with a value greater than $100,000.00)

1) **Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2) **Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $27 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

3) **Withholding for unpaid wages and liquidated damages.** The (write in the name of the Federal agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

4) **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

RIGHTS TO INVENTIONS MADE UNDER A CONTRACT OR AGREEMENT

(This requirement **does not apply** to the Public Assistance, Hazard Mitigation Grant Program, Fire Management Assistance Grant Program, Crisis Counseling Assistance and Training Grant Program, Disaster Case Management Grant Program, and Federal Assistance to Individuals and Households - Other Needs Assistance Grant Program, as FEMA awards under these programs do not meet the definition of "funding agreement." If FEMA federal award meets definition of "funding agreement" under 37 CFR §401.2(a), for all awarded contracts related to experimental, developmental, or research work type contracts)

(a) Definitions

(1) *Invention* means any invention or discovery which is or may be patentable or otherwise protectable under Title 35 of the United States Code, or any novel variety of *et seq.).*

(2) *Subject invention* means any invention of the *contractor* conceived or first actually reduced to practice in the performance of work under this *contract,* provided that in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act, 7 U.S.C. 240l (d)) must also occur during the period of *contract* performance.

(3) *Practical Application* means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are, to the extent permitted by law or government regulations, available to the public on reasonable terms.

(4) *Made* when used in relation to any invention means the conception or first actual reduction to practice of such invention.

(5) *Small Business Firm* means a small business concern as defined at section 2 of Pub. L. 85-536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration. For the purpose of this clause, the size standards for small business concerns involved in government procurement and subcontracting at 13 CFR 121.3-8 and 13 CFR 121.3- 12, respectively, will be used.

(6) *Nonprofit Organization* means a university or other institution of higher education or an organization of the type described in section 501 (c) {3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c) and exempt from taxation under section 501(a) of the Internal Revenue Code (25 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a state nonprofit organization statute.

(b) Allocation of Principal Rights

The *Contractor* may retain the entire right, title, and interest throughout the world to each subject invention subject to the provisions of this clause and 35 U.S.C. 203. With respect to any subject invention in which the *Contractor* retains title, the Federal government shall have a nonexclusive, non-transferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.

(c) Invention Disclosure, Election of Title and Filing of Patent Application by *Contractor*

(1) The *contractor* will disclose each subject invention to the *Federal Agency* within two months after the inventor discloses it in writing to *contractor* personnel responsible for patent matters. The disclosure to the agency shall be in the form of a written report and shall identify the *contract* under which the invention was made and the inventor(s). It shall be sufficiently complete in technical detail to convey a clear understanding to the extent known at the time of the disclosure, of the nature, purpose, operation, and the physical, chemical, biological or electrical characteristics of the invention. The disclosure shall also identify any publication, on sale or public use of the invention and whether a manuscript describing the invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after disclosure to the *agency,* the

Contractor will promptly notify the *agency* of the acceptance of any manuscript describing the invention for publication or of any on sale or public use planned by the *contractor.*

(2) The *Contractor* will elect in writing whether or not to retain title to any such invention by notifying the *Federal agency* within two years of disclosure to the *Federal agency.* However, in any case where publication, on sale or public use has initiated the one-year statutory period wherein valid patent protection can still be obtained in the United States, the period for election of title may be shortened by the *agency* to a date that is no more than 60 days prior to the end of the statutory period.

(3) The *contractor* will file its initial patent application on a subject invention to which it elects to retain title within one year after election of title or, if earlier, prior to the end of any statutory period wherein valid patent protection can be obtained in the United States after a publication, on sale, or public use. The *contractor* will file patent applications in additional countries or international patent offices within either ten months of the corresponding initial patent application or six months from the date permission is granted by the Commissioner of Patents and Trademarks to file foreign patent applications where such filing has been prohibited by a Secrecy Order.

(4) Requests for extension of the time for disclosure, election, and filing under subparagraphs (1), (2), and (3) may, at the discretion of the *agency,* be granted.

(d) Conditions When the Government May Obtain Title

The *contractor* will convey to the *Federal agency,* upon written request, title to any subject invention-

(1) If the *contractor* fails to disclose or elect title to the subject invention within the times specified in (c), above, or elects not to retain title; provided that the *agency* may only request title within 60 days after learning of the failure of the *contractor* to disclose or elect within the specified times.

(2) In those countries in which the *contractor* fails to file patent applications within the times specified in (c) above; provided, however, that if the *contractor* has filed a patent application in a country after the times specified in (c) above, but prior to its receipt of the written request of the *Federal agency,* the *contractor* shall continue to retain title in that country.

(3) In any country in which the *contractor* decides not to continue the prosecution of any application for, to pay the maintenance fees on, or defend in reexamination or opposition proceeding on, a patent on a subject invention.

(e) Minimum Rights to *Contractor* and Protection of the *Contractor* Right to File

(1) The *contractor* will retain a nonexclusive royalty-free license throughout the world in each subject invention to which the Government obtains title, except if the *contractor* fails to disclose the invention within the times specified in (c), above. The *contractor's* license extends to its domestic subsidiary and affiliates, if any, within the corporate structure of which the *contractor* is a party and includes the right to grant sublicenses of the same scope to the extent the *contractor* was legally obligated to do so at the time the *contract* was awarded. The license is transferable only with the approval of the *Federal* to which the invention pertains.

(2) The *contractor's* domestic license may be revoked or modified by the *funding Federal agency* to the extent necessary to achieve expeditious practical application of the subject invention pursuant to an application for an exclusive license submitted in accordance with applicable provisions at 37 CFR part 404 and *agency* licensing regulations (if any). This license will not be revoked in that field of use or the geographical areas in which the *contractor* has achieved practical application and continues to make the benefits of the invention reasonably accessible to the public. The license in any foreign country may be revoked or modified at the discretion of the *funding Federal agency* to the extent the *contractor,* its licensees, or the domestic subsidiaries or affiliates have failed to achieve practical application in that foreign country.

(3) Before revocation or modification of the license, the *funding Federal agency* will furnish the *contractor* a written notice of its intention to revoke or modify the license, and the *contractor* will be allowed thirty days (or such other time as may be authorized by the *funding Federal agency* for good cause shown by the *contractor)* after the notice to show cause why the license should not be revoked or modified. The *contractor* has the right to appeal, in accordance with applicable regulations in 37 CFR

part 404 and *agency* regulations (if any) concerning the licensing of Government-owned inventions, any decision concerning the revocation or modification of the license.

(f) *Contractor* Action to Protect the Government's Interest

(1) The *contractor* agrees to execute or to have executed and promptly deliver to the *Federal agency* all instruments necessary to

(i) establish or confirm the rights the Government has throughout the world in those subject inventions to which the *contractor* elects to retain title, and

(ii) convey title to the *Federal agency* when requested under paragraph (d) above and to enable the government to obtain patent protection throughout the world in that subject invention.

(2) The *contractor* agrees to require, by written agreement, its employees, other than clerical and nontechnical employees, to disclose promptly in writing to personnel identified as responsible for the administration of patent matters and in a format suggested by the *contractor* each subject invention made under *contract* in order that the *contractor* can comply with the disclosure provisions of paragraph (c), above, and to execute all papers necessary to file patent applications on subject inventions and to establish the government's rights in the subject inventions. This disclosure format should require, as a minimum, the information required by (c) (l), above. The *contractor* shall instruct such employees through employee agreements or other suitable educational programs on the importance of reporting inventions in sufficient time to permit the filing of patent applications prior to U.S. or foreign statutory bars.

(3) The *contractor* will notify the *Federal agency* of any decisions not to continue the prosecution of a patent application, pay maintenance fees, or defend in a reexamination or opposition proceeding on a patent, in any country, not less than thirty days before the expiration of the response period required by the relevant patent office.

(4) The *contractor* agrees to include, within the specification of any United States patent applications and any patent issuing thereon covering a subject invention, the following statement, "This invention was made with government support under (identify the *contract)* awarded by (identify the Federal agency). The government has certain rights in the invention."

(g) Subcontracts

(1) The *contractor* will include this clause, suitably modified to identify the parties, in all subcontracts, regardless of tier, for experimental, developmental or research work. The subcontractor will retain all rights provided for the *contractor* in this clause, and the *contractor* will not, as part of the consideration for awarding the subcontract, obtain rights in the subcontractor's subject inventions.

(2) In the case of subcontracts, at any tier, when the prime award with the Federal agency was a contract (but not a grant or cooperative agreement), the *agency,* subcontractor, and the contractor agree that the mutual obligations of the parties created by this clause constitute a contract between the subcontractor and the Federal agency with respect to the matters covered by the clause; provided, however, that nothing in this paragraph is intended to confer any jurisdiction under the Contract Disputes Act in connection with proceedings under paragraph (i) of this clause.

(h) Reporting on Utilization of Subject Inventions

The *Contractor* agrees to submit on request periodic reports no more frequently than annually on the utilization of a subject invention or on efforts at obtaining such utilization that are being made by the *contractor* or its licensees or assignees. Such reports shall include information regarding the status of development, date of first commercial sale or use, gross royalties received by the contractor, and such other data and information as the *agency* may reasonably specify. The *contractor* also agrees to provide additional reports as may be requested by the *agency* in connection with any march-in proceeding undertaken by the *agency* in accordance with paragraph (i) of this clause. As required by 35 U.S.C. 202(c) (5), the *agency* agrees it will not disclose such information to persons outside the government without permission of the *contractor.*

(i) Preference for United States Industry

Notwithstanding any other provision of this clause, the *contractor* agrees that neither it nor any assignee will

grant to any person the exclusive right to use or sell any subject inventions in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the *Federal agency* upon a showing by the *contractor* or its assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible.

(j) March-in Rights

The *contractor* agrees that with respect to any subject invention in which it has acquired title, the *Federal agency* has the right in accordance with the procedures in 37 CFR 401.6 and any supplemental regulations of the *agency* to require the *contractor,* an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the *contractor,* assignee, or exclusive licensee refuses such a request the *Federal agency* has the right to grant such a license itself if the *Federal agency* determines that:

(1) Such action is necessary because the *contractor* or assignee has not taken or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use.

(2) Such action is necessary to alleviate health or safety needs which are not reasonably satisfied by the *contractor,* assignee or their licensees;

(3) Such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the *contractor,* assignee or licensees; or

(4) Such action is necessary because the agreement required by paragraph (i) of this clause has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of such agreement.

(k) Special Provisions for *Contracts* with Nonprofit Organizations

If the *contractor* is a nonprofit organization, it agrees that:

(1) Rights to a subject invention in the United States may not be assigned without the approval of the *Federal agency,* except where such assignment is made to an organization which has as one of its primary functions the management of inventions, provided that such assignee will be subject to the same provisions as the *contractor;*

(2) The *contractor* will share royalties collected on a subject invention with the inventor, including Federal employee co-inventors (when the agency deems it appropriate) when the subject invention is assigned in accordance with 35 U.S.C. 202(e) and 37 CFR 401.10;

(3) The balance of any royalties or income earned by the *contractor* with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions, will be utilized for the support of scientific research or education; and

(4) It will make efforts that are reasonable under the circumstances to attract licensees of subject invention that are small business firms and that it will give a preference to a small business firm when licensing a subject invention if the *contractor* determines that the small business firm has a plan or proposal for marketing the invention which, if executed, is equally as likely to bring the invention to practical application as any plans or proposals from applicants that are not small business firms; provided, that the *contractor* is also satisfied that the small business firm has the capability and resources to carry out its plan or proposal. The decision whether to give a preference in any specific case will be at the discretion of the *contractor.* However, the *contractor* agrees that the Secretary applicants, and the *contractor* will negotiate changes to its licensing policies, procedures, or practices with the Secretary when the Secretary's review discloses that the *contractor* could take reasonable steps to implement more effectively the requirements of this paragraph (k)(4).

(l) Communication

Any communications to be given hereunder by either party to the other shall be deemed to be duly given if set forth in writing and personally delivered or sent by mail, registered or certified, postage prepaid with return receipt requested, as follows:

_____

_____

_____

_____

Written notices hereunder delivered personally shall be deemed communicated as of actual receipt; mailed notices shall be deemed communicated five (5) days after deposit in the mail, post prepaid, certified, in accordance with this Paragraph.

CLEAN AIR ACT

(For all awarded contracts with a value greater than $150,000.00)

(m) The contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq.

(n) The contractor agrees to report each violation to the (name of applicant entering into the contract) and understands and agrees that the (name of the applicant entering into the contract) will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.

(o) The contractor agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FEMA.

FEDERAL WATER POLLUTION CONTROL ACT

(For all awarded contracts with a value greater than $150,000.00)

(1) The contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.

(2) The contractor agrees to report each violation to the (name of the applicant entering into the contract) and understands and agrees that the (name of the applicant entering into the contract) will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.

(3) The contractor agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FEMA.

DEBARMENT AND SUSPENSION ***Contractor must complete enclosed certification***

(1) This contract is a covered transaction for purposes of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000. As such, the contractor is required to verify that none of the contractor's principals (defined at 2 C.F.R. § 180.995) or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935).

(2) The contractor must comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.

(3) This certification is a material representation of fact relied upon by Client. If it is later determined that the contractor did not comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, in addition to remedies available to (insert name of recipient/subrecipient/applicant), the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.

(4) The bidder or proposer agrees to comply with the requirements of 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C while this offer is valid and throughout the period of any contract that may

arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

BYRD ANTI-LOBBYING AMENDMENT

(For all awarded contracts with a value greater than $100,000.00.) ***Contractor must complete enclosed certification***

Byrd Anti-Lobbying Amendment, 31 U.S.C. § 1352 (as amended) Contractors who apply or bid for an award of $100,000 or more shall file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, officer or employee of Congress, or an employee of a Member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient who in turn will forward the certification(s) to the awarding agency.

The Contractor certifies, to the best of his or her knowledge and belief that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than federally appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this federal contract, grant, loan, or cooperative agreement, the contractor shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) Contractor will include language of this certification in all subcontract awards at any tier and require that all recipients of subcontract awards in excess of $150,000.00 shall certify and disclose accordingly.

PROCUREMENT OF RECOVERED MATERIALS

(The requirements of Section 6002 include procuring only items designated in guidelines of the EPA at 40

C.F.R. Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired by the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.)

(1) In the performance of this contract, the Contractor shall make maximum use of products containing recovered materials that are EPA designated items unless the product cannot be acquired:

   a) Competitively within a timeframe providing for compliance with the contract performance schedule;

   b) Meeting contract performance requirements; or

   c) At a reasonable price.

(2) Information about this requirement is available at EPA's Comprehensive Procurement Guidelines website, http://www.epa.gov/cpg/.

   The list of EPA-designate items is available at http://www.epa.gov/cpg/products.htm.

(3) The Contractor also agrees to comply with all other applicable requirements of Section 6002 of the "Solid Waste Disposal Act."

ACCESS TO RECORDS

The following access to records requirements apply to this contract:

(1) The Contractor agrees to provide the Client, the FEMA Administrator, the Comptroller General of the

United States, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts, and transcriptions.

(2) The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

(3) The Contractor agrees to provide the FEMA Administrator or his authorized representatives access to construction or other work sites pertaining to the work being completed under the contract.

(4) In compliance with the Disaster Recovery Act of 2018, the Client and the Contractor acknowledge and agree that no language in this contract is intended to prohibit audits or internal reviews by the FEMA Administrator or the Comptroller General of the United States.

CHANGES

To be eligible for FEMA assistance under the non-Federal entity's FEMA grant or cooperative agreement, the cost of the change, modification, change order, or constructive change must be allowable, allocable, within the scope of its grant or cooperative agreement, and reasonable for the completion of project scope.

FEMA recommends, therefore, that a non-Federal entity include a changes clause in its contract that describes how, if at all, changes can be made by either party to alter the method, price, or schedule of the work without breaching the contract. The language of the clause may differ depending on the nature of the contract and the end-item procured.

DHS SEAL, LOGO, AND FLAGS

The contractor shall not use the DHS seal(s), logos, crests, or reproductions of flags or likenesses of DHS agency officials without specific FEMA pre-approval.

COMPLIANCE WITH FEDERAL LAW, REGULATIONS, AND EXECUTIVE ORDERS

This is an acknowledgement that FEMA financial assistance will be used to fund all or a portion of the contract. The contractor will comply with all applicable Federal law, regulations, executive orders, FEMA policies, procedures, and directives.

NO OBLIGATION BY FEDERAL GOVERNMENT

The Federal Government is not a party to this contract and is not subject to any obligations or liabilities to the non-Federal entity, contractor, or any other party pertaining to any matter resulting from the contract.

PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS OR RELATED ACTS

The Contractor acknowledges that 31 U.S.C. Chap. 38 (Administrative Remedies for False Claims and Statements) applies to the Contractor's actions pertaining to this contract.

PROHIBITION ON CONTRACTING FOR COVERED TELECOMMUNICATIONS EQUIPMENT OR SERVICES

2 C.F.R. § 200.216, as implemented by FEMA Policy 405-143-1, prohibits the Contractor from using equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.

DOMESTIC PREFERENCES FOR PROCUREMENTS

As appropriate and to the extent consistent with law, the Contractor agrees, to the greatest extent practicable, prefer the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products).

AFFIRMATIVE SOCIOECONOMIC STEPS

If subcontracts are to be let, the prime contractor is required to take all necessary steps identified in 2 C.F.R. § 200.321(b)(1)-(5) to ensure that small and minority businesses, women's business enterprises, and labor surplus area firms are used when possible.

COPYRIGHT AND DATA RIGHTS

"License and Delivery of Works Subject to Copyright and Data Rights"

The Contractor grants to the Client a paid-up, royalty-free, nonexclusive, irrevocable, worldwide license in data first produced in the performance of this contract to reproduce, publish, or otherwise use, including prepare derivative works, distribute copies to the public, and perform publicly and display publicly such data. For data required by the contract but not first produced in the performance of this contract, the Contractor will identify such data and grant to the Client or acquires on its behalf a license of the same scope as for data first produced in the performance of this contract. Data, as used herein, shall include any work subject to copyright under 17 U.S.C. § 102, for example, any written reports or literary works, software and/or source code, music, choreography, pictures or images, graphics, sculptures, videos, motion pictures or other audiovisual works, sound and/or video recordings, and architectural works. Upon or before the completion of this contract, the Contractor will deliver to the Client data first produced in the performance of this contract and data required by the contract but not first produced in the performance of this contract in formats acceptable by the Client."

BYRD ANTI-LOBBYING CERTIFICATION

Certification for Contracts, Grants, Loans, and Cooperative Agreements-The undersigned certifies, to the best of his or her knowledge and belief, that:

1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The Contractor _____ certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C.Chap. 38, Administrative Remedies for False Claims and Statements, apply to this certification and disclosure, if any.

_____

Signature of Contractor's Authorized Official

_____

Name and Title of Contractor's Authorized Official

_____

Date

DEBARMENT/SUSPENSION CERTIFICATION

Non-Federal entities and contractors are subject to the debarment and suspension regulations implementing Executive Order 12549, Debarment and Suspension (1986) and Executive Order 12689, Debarment and Suspension (1989) at 2 C.F.R. Part 180 and the Department of Homeland Security's regulations at 2 C.F.R. Part 3000 (No procurement Debarment and Suspension).

This requirement applies to all FEMA grant and cooperative agreement programs.

Federal Executive Order (E .O.) 12549 "Debarment" requires that all contractors receiving individual awards, using federal funds, and all sub recipients certify that the organization and its principals are not debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any Federal department or agency from doing business with the Federal Government. By signing this document, you certify that your organization and its principals are not debarred. Failure to comply or attempts to edit this language may disqualify your bid. Information on debarment is available at the following websites: www.sam.gov and https://acguisition.qov/far/index.html see section 52.209-6.

The Contractor _____ certifies or affirms by your signature that neither you nor your principal is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department or agency.

_____

Signature of Contractor's Authorized Official

_____

Name and Title of Contractor's Authorized Official

_____

Date

REQUIRED FORM
Bidder: Please complete this form and include with bid submission.

CIVIL RIGHTS COMPLIANCE PROVISIONS

1. EQUAL EMPLOYMENT OPPORTUNITY (Equal Opportunity Clause)

(For all awarded contracts that meet the definition of "federally assisted construction contract" provided in 41 CFR Part 60-1.3)

During the performance of this contract, the contractor agrees as follows:

1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:

   Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or order this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

8) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, that if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order.

In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

_____

Signature of Contractor's Authorized Official

_____

Name and Title of Contractor's Authorized Official

_____

Date

REQUIRED FORM
<u>Bidder</u>: Please complete this form and include with bid submission.

SECTION 3: SPECIAL REQUIREMENTS/BID SUBMISSION INSTRUCTIONS

The following requirements and instructions **supersede** General Requirements where applicable.

1. SUBMISSION OF BID.

Bidder is Responsible for Submitting:

One (1) Original and Two (2) Bid Copies; with all copies to include a Completed Copy of this specifications packet, in its entirety.

The County requests that bid submissions NOT be bound by staples or glued spines.

Each Bidder shall ensure that required parts of their bid submission are completed with accuracy and submitted as per the requirements within this specifications packet, including any addenda.

Additionally, Bidder shall monitor the Jefferson County Purchasing Department Website for any addenda, additional instructions, or bid updates. https://www.co.jefferson.tx.us/Purchasing/

Failure to return and/or complete all required documentation will result in a response being declared as non-responsive.

Bids must be submitted in complete original form by mail or messenger to the following address:
Jefferson County Purchasing Department
1149 Pearl Street, 1st Floor
Beaumont, TX 77701

BID PACKAGING: Bidder shall submit response in a tightly sealed opaque envelope or box, plainly marked "SEALED BID." The outside of the envelope of box shall also include the IFB Number, IFB Name, IFB Due Date, and the Bidder's Name and Address; and shall be addressed to the Purchasing Agent.

All submissions must be received by 11:00 am CT, Friday, January 6, 2023.

Bids will be accepted at the above address until the time and date specified herein, and immediately after will be publicly opened and read aloud.

Jefferson County will not accept any responsibility for bids being delivered by third party carriers.

Late bids will not be accepted and will be returned unopened to the Bidder.
Jefferson County shall not be responsible for any effort or cost expended in the preparation of a response to this IFB.

All bid responses submitted in response to this invitation shall become the property of Jefferson County and will be a matter of public record available for review.

All protests should be coordinated through the Purchasing Office prior to award recommendation to Commissioners' Court.

COURTHOUSE SECURITY: All visitors to the Courthouse must pass through Security. Respondents planning to hand deliver proposals must allow time to get through Security, as a delay in entering the Courthouse will not be accepted as an excuse for late submittal. Mondays and Tuesdays are particularly heavy days.

In response to the Covid-19 pandemic, Jefferson County has implemented precautionary measures as currently recommended by the CDC within its facilities. Bidders are strongly urged to plan accordingly.

COUNTY HOLIDAYS (2022) Remaining:

December 23 & 26, 2022	Christmas	Friday & Monday
January 2, 2023	New Year's	Monday

COUNTY HOLIDAYS (2023):

January 16	Martin Luther King, Jr. DayMonday	
February 20 (Monday)	President's Day	Monday
April 7 (Friday) -	Good Friday	Friday
May 29 (Monday)	Memorial Day	Monday
July 4 (Tuesday)	Independence Day	Tuesday
September 4 (Monday)	Labor Day	Monday
November 10 (Friday)	Veteran's Day	Friday
November 23 & 24	Veteran's Day	Thursday & Friday
December 25 & 26	Christmas	Monday
January 1, 2024	New Year's	Monday

Submissions During Time of Inclement Weather, Disaster, or Emergency:

In case of inclement weather or any other unforeseen event causing the County to close for business on the date of a bid/proposal/statement of qualifications submission deadline, the IFB closing will automatically be postponed until the next business day that County offices are open to the public. Should inclement weather conditions or any other unforeseen event cause delays in courier service operations, the County may issue an addendum to all known vendors interested in the project to extend the deadline. It will be the responsibility of the vendor to notify the county of their interest in the project should these conditions impact their ability to submit a bid/proposal/statement of qualifications submission before the stated deadline. The County reserves the right to make the final judgement call to extend any deadline.

Should an emergency or unanticipated event interrupt normal County processes, and bid/proposal/statement of qualifications submissions cannot be received by the Jefferson County Purchasing Department's office by the exact time specified in the IFB and urgent County requirements preclude amendment to the IFB, the time specified for receipt of Statements of Qualifications will be deemed to be extended to the same time of day specified in the solicitation on the first business day on which normal County processes resume.

2. PRE-BID MEETING

There will be a Pre-Bid Meeting at **10:00 am CT on Wednesday, December 14, 2022**, at the Jefferson County Engineering Department Conference Room (5th Floor, Historic Courthouse) 1149 Pearl Street, Beaumont, Texas 77701.

3. QUESTIONS/DEADLINE FOR QUESTIONS.

Questions may only be submitted via email to **Jamey West, Contract Specialist** with the Jefferson County Purchasing Department at: Jamey.West@jeffcotx.us

The Deadline for asking questions or requesting additional information is **5:00 pm, CT, Thursday, December 21, 2022.**

4. VENDOR REGISTRATION (System for Award Management).

Vendors doing business with Jefferson County are **required** to be registered with The System for Award Management (SAM), with an "active" status. The System for Award Management (SAM) is the Official U.S. Government system that consolidated the capabilities of CCR/FedReg, ORCA, and EPLS. There is NO fee to register for this site. Entities may register at no cost directly from the SAM website at: https://www.sam.gov

In instances where a vendor has either an "Inactive" SAM Registration or is not currently registered with the System for Award Management, the Purchasing Department may *initially* accept proof (printout from the SAM website) that the vendor has begun the registration process in order for the IFB/RFQ/RFP submission to be considered as "responsive" to the specifications for the project.

However, the SAM Registration must be completed (showing "active" status, with no exclusions) prior to the award and/or execution of an agreement or contract for the project.

<u>BIDDER</u>: INSERT PROOF OF SYSTEM FOR AWARD MANAGEMENT (SAM) BEHIND THIS PAGE.

5. FORM 1295 (Texas Ethics Commission) SUBMISSSION REQUIREMENT/INSTRUCTIONS FOR BIDDERS.
All Non-Exempt Bidders are required to submit a completed FORM 1295 with bid submission.

1. Submit a FORM 1295 online via the Texas Ethics Commission website link below.
Vendors must enter the required information on Form 1295, and print a copy of the completed form.
The form will include a certification of filing that will contain a unique certification number.

2. Submit a FORM 1295 hard copy (completed & signed by an Authorized Agent of the Awarded Vendor), to the Jefferson County Purchasing Department **with bid submission.**

FORM 1295, Completion Instructions, and Login Instructions are available via the Texas Ethics Commission Website at: https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm

A sample of a completed FORM 1295 is included on **PAGE 34**.

FORM 1295 Implementation Background:
In accordance with House Bill 1295 (passed January 1, 2016), Vendors entering into contracts and professional agreements with Jefferson County will be required to complete a Certificate of Interested Parties (FORM 1295), **unless contract is considered exempt as described below.**

In 2017, the Texas legislature amended the law to require Form 1295 to include an "unsworn declaration" which includes, among other things, the date of birth and address of the authorized representative signing the form. The unsworn declaration, including the date of birth and address of the signatory, replaces the notary requirement that applied to contracts entered into before January 1, 2018. The TEC filing application does not capture the date of birth or street address of the signatory and it will not appear on forms that are filed using the TEC filing application.

Changes to the law requiring certain businesses to file a Form 1295 are in effect for contracts entered into or amended on or after January 1, 2018. The changes exempt businesses from filing a Form 1295 for certain types of contracts and replace the need for a completed Form 1295 to be notarized. Instead, the person filing a 1295 needs to complete an "unsworn declaration."

Question: Will the date of birth and address provided appear on the TEC's website when the form is filed?

Answer: No. The TEC filing application does not capture the date of birth or street address of the signatory and it will not appear on forms that are filed using the TEC filing application. Although the TEC does not capture the date of birth and street address of the signatory, the contracting state agency or governmental agency will have a physical copy of the form that includes the date of birth and address of the signatory. The TEC cannot answer whether the contracting state agency or governmental agency may release such information. Questions regarding the Texas Public Information Act may be directed to the Office of the Attorney General. See also Paxton v. City of Dall., No. 03-13-00546-CV, 2015 Tex. App. LEXIS 5228, at *10-11 (App.—Austin May 22, 2015) (mem. op.) (pet. denied) (available here)

FORM 1295 EXEMPTIONS:
What type of contracts are exempt from the Form 1295 filing requirement under the amended law?
The amended law adds to the list of types of contract exempt from the Form 1295 filing requirement.

A completed Form 1295 is not required for:
- a sponsored research contract of an institution of higher education
- an interagency contract of a state agency or an institution of higher education
- a contract related to health and human services if: the value of the contract cannot be determined at the time the contract is executed; and any qualified vendor is eligible for the contract
- a contract with a publicly traded business entity, including a wholly owned subsidiary of the business entity
- a contract with an electric utility, as that term is defined by Section 31.002, Utilities Code
- a contract with a gas utility, as that term is defined by Section 121.001, Utilities Code

SAMPLE COMPLETED FORM 1295

CERTIFICATE OF INTERESTED PARTIES — FORM 1295

OFFICE USE ONLY

Complete Nos. 1 - 4 and 6 if there are interested parties.
Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

1 **Name of business entity filing form, and the city, state and country of the business entity's place of business.**

YOUR FIRM NAME HERE

2 **Name of governmental entity or state agency that is a party to the contract for which the form is being filed.**

**JEFFERSON COUNTY, TEXAS*

3 **Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the services, goods, or other property to be provided under the contract.**

BID/CONTRACT/PO NUMBER GOES HERE

4 Name of Interested Party	City, State, Country (place of business)	Nature of Interest (check applicable)	
		Controlling	Intermediary
NAME OF PERSON/PERSONS THAT ~~OWN BUSINESS GOES HERE.~~ MUST LIST ANY PERSON THAT DOES NOT WORK FOR THE COMPANY LISTED IN #1 THAT WILL PROFIT FROM THE BID/CONTRACT/PO			

5 **Check only if there is NO Interested Party.** ☐ **ONLY CHECK IF NO CONTROLLING OR INTERMEDIARY PARTY**

6 **UNSWORN DECLARATION** Vendor is to complete #6 - Unsworn Declaration

My name is _____, and my date of birth is _____.

My address is _____, _____, _____, _____, _____.
(street) (city) (state) (zip code) (country)

I declare under penalty of perjury that the foregoing is true and correct.

Executed in _____ County, State of _____, on the _____ day of _____, 20_____.
(month) (year)

_____
Signature of authorized agent of contracting business entity
(Declarant)

ADD ADDITIONAL PAGES AS NECESSARY

Form provided by Texas Ethics Commission www.ethics.state.tx.us Revised 12/22/2017

Must file online at www.ethics.state.tx.us/File

<u>BIDDER</u>: INSERT COMPLETED FORM 1295 BEHIND THIS PAGE.

6. MULTIPLE VENDOR AWARD.

Jefferson County reserves the right to award this contract to more than one vendor at the County's discretion.

7. DELIVERY.

If delivery is required, all items must be packaged so as to be protected from damage during shipping and handling. Any item(s) damaged in shipping must be replaced in kind, or repaired, by the contractor, at the discretion of, and at no additional charge to, Jefferson County.

8. PAYMENT.

Jefferson County will pay original invoices that clearly itemize the goods and/or services provided as to quantity, part number, description, price, applicable discount (if any), labor charges showing time differential, if applicable and if previously agreed to, and delivery, installation, and set-up costs, if applicable and if previously agreed to. Only charges as stated on the Bid Form(s) submitted as a part of the bid will be considered.

Invoices must indicate Jefferson County as applicable, the address to which the product(s) and/or service(s) were delivered, and the applicable purchase order number. Invoices will be matched to delivery tickets prior to payment; therefore, all delivery tickets should have an accurate description of the product(s) and/or service(s).

Invoices shall be submitted to:
Jefferson County Auditing Department
Attention: Accounts Payable
1149 Pearl Street, 7th floor
Beaumont, TX 77701.

9. USAGE REPORTS.

Jefferson County reserves the right to request, and receive at no additional cost, up to two (2) times during the contract period, a usage report detailing the products and/or services furnished to date under a contract resulting from this IFB. The reports must be furnished no later than five (5) working days after written request and itemize all purchases to date by Jefferson County department, description of each item purchased, including manufacturer, quantity of each item purchased, per unit and extended price of each item purchased, and total amount and price of all items purchased.

10. INSURANCE.

The contractor (including any and all subcontractors as defined in Section 11.1.3 below) shall, at all times during the term of this contract, maintain insurance coverages with not less than the type and requirements shown below. Such insurance is to be provided at the sole cost of the contractor. These requirements do not establish limits of the contractor's liability.

All policies of insurance shall waive all rights of subrogation against the County, its officers, employees and agents; a copy of the policy wording or endorsement is required.

Contractor shall furnish Jefferson County with Certificate of Insurance naming Jefferson County as additional insured and will provide the actual policy wording or endorsement showing as such.

All insurance must be written by an insurer licensed to conduct business in the State of Texas.

Minimum Insurance Requirements:

Public Liability, including Products & Completed Operations	$1,000,000
Excess Liability	$1,000,000

Property Insurance (policy below that is applicable to this project):
Improvements & Betterments Policy: Improvements/Remodeling (for Lease Tenants)
Builder's Risk Policy: Structural Coverage for Construction Projects
Installation Floater Policy: Improvements/Alterations to Existing Structure

Workers' Compensation Statutory Coverage (See Section 9 Below)

11. WORKERS' COMPENSATION INSURANCE

11.1 Definitions:

11.1.1 **Certificate of coverage ("Certificate")** – A copy of a certificate of insurance, a certificate of authority to self-insure issued by the commission, or a coverage agreement, DWC-81, DWC-82, DWC-83, or DWC-84 showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the project.

11.1.2 **Duration of the project** – Includes the time from the beginning of the work on the project until the contractor's/person's work on the project has been completed and accepted by the governmental entity.

11.1.3 **Persons providing services on the project ("subcontractor") in article 406.096** – Includes all persons or entities performing all or part of the services under the contractor has undertaken to perform on the project, regardless of whether that person contracted directly with the contractor and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractor, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the project. "Services" includes, without limitation, providing, hauling or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

11.2 The Contractor shall provide coverage, based on proper reporting of classification code and payroll amounts and filing any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all employees of the contractor providing services on the project, for the duration of the project.

11.3 The Contractor must provide a certificate of coverage to the governmental entity prior to being awarded the contract – refer to Section 10 above.

11.4 If the coverage period shown on the Contractor's current certificate of coverage ends during the duration of the project, the Contractor must, prior to the end of the coverage period, file a new certificate of coverage with the governmental entity showing that coverage has been extended.

11.5 The Contractor shall obtain from each person providing services on a project, and provide to the governmental entity:

11.5.1 A certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file certificates of coverage showing coverage for all persons providing services on the project; and

11.5.2 No later than seven (7) days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate ends during the duration of the project.

11.6 The Contractor shall retain all required certificates of coverage for the duration of the project and for one (1) year thereafter.

11.7 The Contractor shall notify the governmental entity in writing by certified mail or personal delivery, within ten (10) days after the contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project.

11.8 The Contractor shall post on each project site a notice, in the text, form and manner prescribed by the Texas Department of Workers' Compensation, informing all persons providing services on the project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.

11.9 The Contractor shall contractually require each person with whom it contracts to provide services on a project to:

11.9.1 Provide coverage, based on reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all its employees providing services on the project, for the duration of the project.

11.9.2 Provide to the Contractor, prior to that person beginning work on the project a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project.

11.9.3 Provide the Contractor, prior to the end of coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project.

11.9.4 Obtain from each person with whom it contracts, and provide to the Contractor:

11.9.4.1 A certificate of coverage, prior to the other person beginning work on the project; and

11.9.4.2 the coverage period, if the coverage period shown on the current certificate of a new certificate of coverage showing extension of coverage, prior to the end of coverage ends during the duration of the project.

11.9.5 Retain all required certificates of coverage on file for the duration of the project and for one (1) year thereafter.

11.9.6 Notify the governmental entity in writing by certified mail or personal delivery, within ten (10) days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and

11.9.7 Contractually require each person with whom it contracts to perform as required by paragraphs 11.1. – 11.7., with the certificates of coverage to be provided to the person for whom they are providing services.

11.10 By signing this contract or providing or causing to be provided a certificate of coverage, the Contractor is representing to the governmental entity that all employees of the contractor who will provide services of the project will be covered by workers' compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

11.11 The Contractor's failure to comply with any of these provisions is a breach of contract by the Contractor which entitles the governmental entity to declare the contract void if the Contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the governmental entity.

11.12 TEXAS WORKERS' COMPENSATION INSURANCE REQUIRED NOTICE.

11.12.1 Workers' Compensation Insurance Coverage.

11.12.1.1 Definitions:

1. Certificate of coverage ("certificate") - A copy of a certificate of insurance, a certificate of authority to self-insure issued by the division, or a coverage agreement (DWC Form 81, DWC Form 82, DWC Form 83, or DWC Form 84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the project.

2. Duration of the project - includes the time from the beginning of the work on the project until the contractor's/person's work on the project has been completed and accepted by the governmental entity.

3. Persons providing services on the project ("subcontractor" in §406.096) - includes all persons or entities performing all or part of the services the contractor has undertaken to perform on the project, regardless of whether that person contracted directly with the contractor and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

11.12.1.2 The contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all employees of the contractor providing services on the project, for the duration of the project.

11.12.1.3 The contractor must provide a certificate of coverage to the governmental entity prior to being awarded the contract.

11.12.1.4 If the coverage period shown on the contractor's current certificate of coverage ends during the duration of the project, the contractor must, prior to the end of the coverage period, file a new certificate of coverage with the governmental entity showing that coverage has been extended.

11.12.1.5 The contractor shall obtain from each person providing services on a project, and provide to the governmental entity:

4. a certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file certificates of coverage showing coverage for all persons providing services on the project; and

5. no later than 7 days after receipt by the contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project.

11.12.1.6 The contractor shall retain all required certificates of coverage for the duration of the project and for one year thereafter.

11.12.1.7 The contractor shall notify the governmental entity in writing by certified mail or personal delivery, within 10 days after the contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project.

11.12.1.8 The contractor shall post on each project site a notice, in the text, form and manner prescribed by the Texas Department of Insurance, Division of Workers' Compensation, informing all persons providing services on the project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.

11.12.1.9 The contractor shall contractually require each person with whom it contracts to provide services on a project, to:

1. provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all of its employees providing services on the project, for the duration of the project;
2. provide to the contractor, prior to that person beginning work on the project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project;
3. provide the contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;
4. obtain from each other person with whom it contracts, and provide to the contractor:
    - a certificate of coverage, prior to the other person beginning work on the project; and
    - a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;
5. retain all required certificates of coverage on file for the duration of the project and for one year thereafter;
6. notify the governmental entity in writing by certified mail or personal delivery, within 10 days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and
7. contractually require each person with whom it contracts, to perform as required by paragraphs 1-7, with the certificates of coverage to be provided to the person for whom they are providing services.

11.12.1.10 By signing this contract or providing or causing to be provided a certificate of coverage, the contractor is representing to the governmental entity that all employees of the contractor who will provide services on the project will be covered by workers' compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the division. Providing false or misleading information may subject the contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

11.12.1.11 The contractor's failure to comply with any of these provisions is a breach of contract by the contractor which entitles the governmental entity to declare the contract void if the contractor does not remedy the breach within ten days after receipt of notice of breach from the governmental entity.

12. SPECIAL INSURANCE REQUIREMENTS FOR THIS PROJECT

12.1 GENERAL PROVISIONS

12.1.1 Contractor's Insurance

12.1.1.1 Obtain and maintain insurance that complies with this Section with coverage amounts equal to or greater than the amounts specified in Article 2 or greater

where required by Laws and Regulations. These are coverages in addition to those stated in the County Front End Specifications.

12.1.1.2 Coverage is to remain in effect at least until the Work is complete and longer if expressly required elsewhere in this Contract, and when Contractor may be correcting, removing, or replacing Defective Work as a warranty or correction obligation, or returning to the Site to conduct other tasks arising from the Contract.

12.1.1.3 Coverage is to apply with respect to the performance of the Work, whether 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.

12.1.1.4 Obtain insurance from companies that are duly licensed or authorized in the state in which the Project is constructed to issue insurance policies for the required limits and coverages and that have an A.M. Best rating of A VIII or better.

12.1.1.5 Alternative forms of insurance coverage, including self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not acceptable to meet the insurance requirements of this Contract.

12.1.1.6 Owner will not purchase or maintain insurance to protect the interest of Contractor, subcontractors, or others in the Work. Owner does not represent that the insurance coverage and limits established in this Contract are adequate to protect Contractor or the 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 it deems necessary and including the cost of this insurance in the offered Contract Price.

12.1.1.7 Contractor is fully responsible for all losses arising out of, resulting from, or connected with operations under this Contract whether or not these losses are covered by insurance. The acceptance of evidence of insurance by OPT, or others listed as an additional insured, that does not comply with the Contract requirements does not release Contractor from the requirement to comply with Contract requirements.

12.1.1.8 The required insurance and insurance limits do not limit the Contractor's liability under the indemnities granted to Owner's Indemnitees in the Contract Documents.

12.1.1.9 Do not perform any Work on the Project unless the required insurance policies are in effect. Owner may exclude Contractor from the Site and exercise the Owner's termination rights under the General Conditions if Contractor fails to obtain or maintain the required insurance.

12.1.1.10 Policies must provide notice before cancellation, non-renewal, or any material change in the policy's terms and conditions as described in Paragraph 1.04.D. Contractor is to notify Owner and the additional insured of any notice received within 3 days of receipt of a notice by Contractor. Contractor is to cease all Work covered by cancelled or non-renewed insurance if suitable coverage is not in place in time to prevent a lapse in coverage. Contractor is solely responsible for any delays associated with lapsed coverage.

12.1.1.11 Owner may elect, but is in no way obligated, to obtain equivalent insurance to protect the Owner's interests without prejudice to any other right or remedy if Contractor fails to obtain or maintain the required insurance. Owner may impose a reasonable Set-off against payments to recover the cost of the insurance.

12.1.1.12 Owner's policies, if any, operate separately and independently from policies required to be provided by Contractor and Contractor cannot rely upon the Owner's

policies to meet any of the Contractor's obligations to Owner, Design Professional, or any third party.

12.1.2 Subcontractor Or Supplier Insurance

12.1.2.1 Require subcontractors to purchase and maintain workers' compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project. Include OPT as additional insureds on subcontractor policies in accordance with Paragraph 12.1.3.

12.1.2.2 Require suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

12.1.2.3 Contractor is liable for all losses that would have been covered by subcontractor or supplier insurance if subcontractor or supplier fails to provide coverage.

12.1.3 Additional Insured

12.1.3.1 The following are to be named as an additional insured on all insurance policies, except workers' compensation insurance, builder's risk insurance, and the Contractor's professional liability insurance:

(1) Jefferson County, Texas
1149 Pearl Street, 1st Floor
Beaumont, Texas 77701

(2) Freese and Nichols, Inc.,
Attn: Risk Management
801 Cherry Street, Suite 2800,
Fort Worth, Texas, 76102

12.1.3.2 All insurance related notices are to be sent to the addresses listed above.

12.1.3.3 Notify Owner and each additional insured if Contractor fails to purchase or maintain the insurance required by the Contract Documents.

12.1.3.4 All insurance policies must include a waiver of subrogation in favor of each additional insured.

12.1.3.5 Provide for an endorsement that the "other insurance" clause will not apply to OPT where OPT is an additional insured. Contractor's insurance is primary and non-contributory with respect to any insurance or self-insurance carried by OPT for liability arising out of operations under this Contract.

12.1.4 Evidence of Insurance

12.1.4.1 Deliver evidence of insurance, in accordance with this Section, to the Owner with the signed Contract Documents to demonstrate that Contractor has obtained the policies, coverages, and endorsements required by the Contract.

(1) Continue to provide evidence Contractor is maintaining the required insurance for the duration of the Contract Times and such extended periods as required by the Contract Documents.

(2) Provide this evidence of insurance to Owner and each additional insured.

(3) Contractor may block out (redact) any confidential premium or pricing information and wording specific to a project or jurisdiction in any policy or endorsement furnished under this paragraph not applicable to this Contract.

12.1.4.2 OPT's failure to demand evidence of insurance or verify the Contractor's full compliance with insurance requirements or failure to identify a deficiency in compliance from the evidence provided is not a waiver of the Contractor's obligation to obtain and maintain the insurance required by the Contract Documents.

12.1.4.3 Provide evidence of insurance acceptable to Owner with the executed Contract Documents. Provide the following as evidence of insurance:

(1) Copy of insurance policies;
(2) Certificates of insurance on an acceptable form;
(3) Full disclosure of exclusions;
(4) Declaration pages, riders, or endorsements to policies;
(5) Documentation of deductibles;
(6) List of named and additional insureds for each policy; and
(7) Evidence that waivers of subrogation are provided on applicable policies.

12.1.4.4 Provide evidence of a requirement in the policy that at least 10 days' notice will be given before cancellation, non-renewal or any material change in the policy's terms and conditions including:

(1) Type of coverage provided;
(2) Riders or endorsements to policies;
(3) Policy limits of coverage;
(4) Change in deductible amount;
(5) Status of named or additional insured; or
(6) Waivers of subrogation.

12.1.4.5 Certificates of Insurance:

(1) Submit certificates of insurance meeting the applicable requirements of the applicable state department of insurance. No requirement of this Contract may be interpreted as requiring the issuance of a certificate of insurance on a form that has not first been filed with and/or approved by the applicable state department of insurance.
(2) Include the name of the Project in the description of operations box on the certificate of insurance, and the name of each additional insured.

12.1.4.6 Continuing Evidence of Coverage:

(1) Provide updated, revised, or new evidence of insurance prior to the expiration of existing policies. A certificate of insurance is acceptable as evidence of renewal of insurance policies, provided no changes are made in the policy originally provided with signed Contract Documents.
(2) Provide evidence of continuation of insurance coverage at final payment and for the following 3 years.

12.2 INSURANCE COVERAGE AMOUNTS AND POLICY REQUIREMENTS

12.2.1 CONTRACTOR'S INSURANCE

12.2.1.1 Commercial General Liability:

(1) Purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:
   a. Damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
   b. Damages insured by reasonably available personal injury liability coverage; and
   c. Damages because of injury to or destruction of tangible property wherever located, including loss of use resulting from the damage.
(2) Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form).

a. Provide additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). Equivalent endorsements may be used if Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available.
b. Provide ISO Endorsement CG 20 32 07 04 "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent for Design Professional additional insured.

(3) Provide the following coverages and endorsements:
a. Products and completed operations coverage.
b. Maintain coverage for 3 years after final payment.
c. Provide Owner and each other additional insured evidence of continuation of such insurance at final payment and for 3 years thereafter.
d. Blanket contractual liability coverage, including coverage of Contractor's contractual indemnity obligations in the General Conditions.
e. Severability of interests and no insured-versus-insured or cross-liability exclusions.
f. Underground, explosion, and collapse coverage.
g. Personal injury coverage.

(4) The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:
a. Modifications of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
b. Exclusion for water intrusion or water damage.
c. Provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
d. Exclusion of coverage relating to earth subsidence or movement.
e. Exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than workers' compensation).
f. Limitations or exclusions based on the nature of Contractor's work.
g. Professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

(5) Provide the following coverage with not less than the minimum limits indicated:

Commercial General Liability Insurance	Policy Limits
General Aggregate	$325,000 Per Occurrence $325,000 Per Aggregate $325,000 Combined Single Limit
Products - Completed Operations	
Personal and Advertising Injury (Limit Per Person)	
Bodily Injury and Property Damage – Each Occurrence	

12.2.1.2 Automobile Liability

(1) Purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the

ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis. Coverage can be provided through individual limits for bodily injury and for property damage or a combined single limit covering both bodily injury and property damage.

(2) Provide the following coverage with not less than the minimum limits indicated:

Automobile Liability Insurance	Policy Limits
Bodily Injury	
Each Person	$100,000
Each Accident	$300,000
Property Damage	
Each Accident	$25,000
Combined Single Limit	
Combined Single Limit for Bodily Injury and Property Damage	$1,000,000

<u>BIDDER</u>: INSERT COPY OF CERTIFICATE OF INSURANCE (COI) BEHIND THIS PAGE.

Note: For bid purposes, a general COI will suffice. However, a COI that includes the notation that "Jefferson County as an additional insured" will be required from Awarded Bidder(s) prior to the issuance of a Purchase Order.

BIDDER INFORMATION FORM

Instructions: Complete the form below. Please provide legible, accurate, and complete contact information. PLEASE PRINT.

Bid Number & Name: Invitation for Bid (IFB 22-071/JW) Mesquite Point Public Boat Ramp

Bidder's Company/Business Name: _____

Bidder's TAX ID Number: _____

If Applicable: **HUB Vendor No**. _____ **DBE Vendor No**. _____

Contact Person: _____ **Title:** _____

Phone Number (with area code): _____

Alternate Phone Number if available (with area code):_____

Fax Number (with area code):_____

Email Address: _____

Mailing Address (Please provide a <u>physical address for bid bond return</u>, if applicable):

_____
Address

_____
City, State, Zip Code

REQUIRED FORM
<u>Bidder</u>: Please complete this form and include with bid submission.

SECTION 4: MINIMUM SPECIFICATIONS / SCOPE

The following requirements and specifications supersede General Bid Requirements where applicable.

Any questions relating to bid submission or bid item specifications requirements should be directed to Jamey West, Contract Specialist/Jefferson County Purchasing Department at 409-835-8593 or via email at: Jamey.West@jeffcotx.us Please reference Bid Number: IFB 22-071/JW.

GENERAL SCOPE OF PROJECT:

Jefferson County is soliciting bids for the construction of the Mesquite Point Public Boat Ramp Project consisting of replacing boat ramps and finger piers, dredging, civil site work, and retro fitting adjacent existing timber bulkheads with steel sheet piling.

1. **SUMMARY**
   - A. Construct Work as described in the Contract Documents.
     1. Provide the materials, equipment, and incidentals required to make the Project completely and fully operable.
     2. Provide the labor, equipment, tools, and consumable supplies required for a complete Project.

2. **DESCRIPTION OF WORK**
   - A. Work is described in general, non-inclusive terms as:
     1. A boat ramp facility reconstruction project consisting of ramp and finger pier replacement, bulkhead work, channel dredging, and civil site work, to include:
        - a. Replacement of two existing ramps and adjacent finger piers with concrete ramps and finger piers, including fendering and mooring bitts
        - b. Steel sheet piling over existing timber bulkheads adjacent to ramps, including concrete caps and adjacent sidewalk replacement
        - c. All necessary demolition and excavation to replace ramps, finger piers, and sidewalks
        - d. Mechanical and/or hydraulic dredging of approaches to ramps
        - e. Signage, striping, trash cans, and other parking lot appurtenances
        - f.

3. **WORK UNDER OTHER CONTRACTS**
   - A. The Owner has no knowledge of work under other contracts, other than the Work included in this Contract, which may impact construction scheduling, testing, and startup.

4. **WORK BY OWNER**

No work is proposed to be performed by the Owner for this Project, other than light pole replacement noted in Section 5.

5. **CONSTRUCTION OF UTILITIES**

The Owner will coordinate with the utility provider to replace or relocate two existing light poles and associated wiring.

BID FORM

BIDDER INSTRUCTIONS: Please print clearly and complete Bid Form in its entirety.

Bid Form Exhibit A

Project:	Mesquite Point Public Boat Ramp	**Project No. :**	**IFB 22-071**
Owner:	Jefferson County, Texas		
Design Professional: Freese and Nichols, Inc.			
Offeror:			

BASE BID

Item No.	Item Description	Unit	Estimated Quantity	Unit Price	Extended Amount
Items in Base Bid (excluding Allowances) per Section 01 29 01 "Measurement and Basis for Payment"					
Part A – Mobilization and Demolition					
A1	MOBILIZATION (MAX OF 5%)	LS	1	$_____.___	$_____.___
A2	DEMOLISH FINGER PIERS & BULKHEADS TO PROPOSED GRADE	LS	1	$_____.___	$_____.___
A3	DEMOLISH FINGER PIER & SIDEWALK TO 3' AND 2' BELOW CURRENT GRADE	LS	1	$_____.___	$_____.___
A4	DEMOLISH CONCRETE BOAT RAMP	LS	1	$_____.___	$_____.___
A5	SAWCUT AND REMOVE EXISTING ASPHALT	SY	284	$_____.___	$_____.___
				SUBTOTAL Part A	$_____.___
Part B - Earthwork					
B1	LANDSIDE GRADING RAMP APPROACHES	SY	196	$_____.___	$_____.___
B2	DREDGING RAMP APPROACHES & PLACEMENT IN UPLAND COUNTY SITE	LS	1	$_____.___	$_____.___
B3	FLOWABLE FILL FOR NORTH RAMP	CY	10	$_____.___	$_____.___
B4	EXCAVATE AND CLEAN TOPSOIL FILL in S OF S RAMP	CY	33	$_____.___	$_____.___
B5	GRADING & BERMUDA BROADCAST SEED & WATERING - S OF S RAMP	SY	100	$_____.___	$_____.___
B6	RAMP EXCAVATION	CY	575	$_____.___	$_____.___
				SUBTOTAL Part B	$_____.___
Part C - Boat Ramp					
C1	CIP BOAT RAMP SLAB	CY	90	$_____.___	$_____.___
C2	RAMP GRAVEL BASE	CY	371	$_____.___	$_____.___
C3	MIRAFI 1100N FILTER FABRIC	SY	550	$_____.___	$_____.___
C4	DEWATERING (COFFERDAMMING ETC.)	LS	1	$_____.___	$_____.___
C5	RAMP TOE RIPRAP	CY	34	$_____.___	$_____.___
				SUBTOTAL Part C	$_____.___
Part D - Finger Piers					
D1	CIP COLUMNS	CY	5	$_____.___	$_____.___
D2	CIP RETAINING WALLS	CY	45	$_____.___	$_____.___
D3	CIP PIER BEAMS	CY	55	$_____.___	$_____.___
D4	VERTICAL & HORIZONTAL DOCK FENDERING	LS	1	$_____.___	$_____.___
D5	STAINLESS STEEL BITTS	EA	8	$_____.___	$_____.___
				SUBTOTAL Part D	$_____.___

Part E - Bulkhead and Sidewalks					
E1	SIDEWALK PAVING AND CONCRETE PAD AT RAMP (5000 PSI)	SY	52	$_____.___	$_____.___
E2	8" COMPACTED SUBGRADE	SY	84	$_____.___	$_____.___
E3	NZ-26 SHEET PILE	SF	3,166	$_____.___	$_____.___
E4	COAL TAR EPOXY ON BOTH SIDES OF SHEET PILE (2 COATS)	SF	2,971	$_____.___	$_____.___
E5	CONCRETE CAP (5,000 PSI)	CY	34	$_____.___	$_____.___
E6	CRUSHED STONE BACKFILL (AASHTO NO. 57 STONE)	CY	60	$_____.___	$_____.___
				SUBTOTAL Part E	$_____.___
Part F - Parking					
F1	ASPHALT PAVEMENT - PARKING EXTENSION & RAMP TIE-IN	SY	143	$_____.___	$_____.___
F2	PARKING TIES (CURB STOPS)	EA	3	$_____.___	$_____.___
F3	PAVEMENT MARKING, TYPE 2 (Y)(4")	LF	1000	$_____.___	$_____.___
				SUBTOTAL Part F	$_____.___
Part G - Miscellaneous					
G1	TRASH CAN RECEPTACLE	EA	1	$_____.___	$_____.___
G2	HANDICAP SIGN AND PAINTED SYMBOL	EA	2	$_____.___	$_____.___
G3	STORMWATER SWPP MEASURES	LS	1	$_____.___	$_____.___
				SUBTOTAL Part G	$_____.___
A	**Total Base Bid Items Amount (Sum of Extended Amounts for each Base Bid Line Item)**				**$_____.___**
PART H - Allowances in Base Bid per Section 01 23 10 "Alternates and Allowances"					
H1	ALLOWANCE FOR CONSTRUCTION MATERIALS TESTING	LS	1	$10,000.00	$10,000.00
B	**Total Allowance Amount (Sum of Extended Amounts for Each Allowance Line Item)**				$10,000.00
C	**Total Base Bid with Allowances (Sum of A and B)**				$_____.___

Contract Time

L	Offeror agrees to reach Substantial Completion in	142	days
M	Offeror agrees to reach Final Completion in	152	days

BIDDER ACKNOWLEDGEMENT OF BID ADDENDA (IF APPLICABLE):

Addendum 1 _____ Date Received_____

Addendum 2 _____ Date Received_____

Addendum 3 _____ Date Received_____

BIDDER: INCLUDE FULL, SIGNED, & ATTESTED COPY OF EACH ADDENDUM ISSUED WITH BID SUBMISSION.

REQUIRED FORM
Bidder: Please complete this form and include with bid submission.

<u>BIDDER</u>: INSERT COPY OF BID SURETY BEHIND THIS PAGE.

<u>BIDDER</u>: INSERT COMPLETED, SIGNED, AND ATTESTED ADDENDA BEHIND THIS PAGE.

VENDOR REFERENCES FORM

Bidder: Please list at least three (3) companies or governmental agencies (preferably a municipality) where the same or similar products and/or services as contained in this specification package were recently provided.

REQUIRED FORM
Bidder: Please complete this form and include with bid submission.

REFERENCE ONE

Government/Company Name: _____

Address: _____

Contact Person and Title: _____

Phone: _____ Fax: _____

Email Address: _____ Contract Period: _____

Scope of Work:

REFERENCE TWO

Government/Company Name: _____

Address: _____

Contact Person and Title: _____

Phone: _____ Fax: _____

Email Address: _____ Contract Period: _____

Scope of Work:

REFERENCE THREE

Government/Company Name: _____

Address: _____

Contact Person and Title: _____

Phone: _____ Fax: _____

Email Address: _____ Contract Period: _____

Scope of Work: _____

SIGNATURE PAGE

As permitted under Article 4413 (32c) V.A.C.S., other governmental entities may wish to participate under the same terms and conditions contained in this contract (i.e., piggyback). In the event any other entity participates, all purchase orders will be issued directly from and shipped directly to the entity requiring supplies/services. Jefferson County shall not be held responsible for any orders placed, deliveries made or payment for supplies/services ordered by another entity. Each entity reserves the right to determine their participation in this contract.

Would Bidder be willing to allow other governmental entities to piggyback off this contract, if awarded, under the same terms and conditions? .....**Yes** ☐ **No** ☐

This bid shall remain in effect for ninety (90) days from bid opening and shall be exclusive of federal excise and state and local sales tax (exempt).

The undersigned agrees, if this bid is accepted, to furnish any and all items upon which prices are offered, at the price and upon the terms and conditions contained in the Invitation for Bid, Conditions of Bidding, Terms of Contract, and Specifications and all other items made a part of the accepted contract.

The undersigned affirms that they are duly authorized to execute the contract, that this company, corporation, firm, 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 employee or agent to any other Bidder or to any other person(s) engaged in this type of business prior to the official opening of this bid. And further, that neither the Bidder nor their employees nor agents have been for the past six (6) months directly nor indirectly concerned in any pool or agreement or combination to control the price of goods or services on, nor to influence any person to bid or not to bid thereon.

Bidder (Entity Name)	Signature
Street & Mailing Address	Print Name
City, State & Zip	Date Signed
Telephone Number	Fax Number
E-mail Address	

REQUIRED FORM
<u>Bidder</u>: Please complete this form and include with bid submission.

CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The Contractor, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. Chap. 38, Administrative Remedies for False Claims and Statements, apply to this certification and disclosure, if any.

_____

Signature of Contractor's Authorized Official

_____

Name and Title of Contractor's Authorized Official *(Please Print)*

_____

Date

REQUIRED FORM
<u>Bidder</u>: Please complete this form and include with bid submission.

CONFLICT OF INTEREST QUESTIONNAIRE

FORM CIQ

For vendor doing business with local governmental entity

This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. *See* Section 176.006(a-1), Local Government Code.

A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.

OFFICE USE ONLY

Date Received

1 **Name of vendor who has a business relationship with local governmental entity.**

2 ☐ **Check this box if you are filing an update to a previously filed questionnaire.**

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)

3 **Name of local government officer about whom the information in this section is being disclosed.**

_____
Name of Officer

This section (item 3 including subparts A, B, C, & D) must be completed for each officer with whom the vendor has an employment or other business relationship as defined by Section 176.001(1-a), Local Government Code. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income, other than investment income, from the vendor?

☐ Yes ☐ No

B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer named in this section AND the taxable income is not received from the local governmental entity?

☐ Yes ☐ No

C. Is the filer of this questionnaire employed by a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more?

☐ Yes ☐ No

D. Describe each employment or business and family relationship with the local government officer named in this section.

4

_____ _____
Signature of vendor doing business with the governmental entity Date

Adopted 8/7/2015

REQUIRED FORM
<u>Bidder</u>: Please complete this form and include with bid submission.

LOCAL GOVERNMENT OFFICER CONFLICTS DISCLOSURE STATEMENT

FORM CIS

This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.

This is the notice to the appropriate local governmental entity that the following local government officer has become aware of facts that require the officer to file this statement in accordance with Chapter 176, Local Government Code.

OFFICE USE ONLY

Date Received

1 **Name of Local Government Officer**

2 **Office Held**

3 **Name of vendor described by Sections 176.001(7) and 176.003(a), Local Government Code**

4 **Description of the nature and extent of employment or other business relationship with vendor named in item 3**

5 **List gifts accepted by the local government officer and any family member, if aggregate value of the gifts accepted from vendor named in item 3 exceeds $100 during the 12-month period described by Section 176.003(a)(2)(B).**

Date Gift Accepted _____ Description of Gift _____

Date Gift Accepted _____ Description of Gift _____

Date Gift Accepted _____ Description of Gift _____

(attach additional forms as necessary)

6 **AFFIDAVIT**

I swear under penalty of perjury that the above statement is true and correct. I acknowledge that the disclosure applies to each family member (as defined by Section 176.001(2), Local Government Code) of this local government officer. I also acknowledge that this statement covers the 12-month period described by Section 176.003(a)(2)(B), Local Government Code.

_____
Signature of Local Government Officer

AFFIX NOTARY STAMP / SEAL ABOVE

Sworn to and subscribed before me, by the said _____, this the _____ day of _____, 20 _____, to certify which, witness my hand and seal of office.

_____ _____ _____
Signature of officer administering oath | Printed name of officer administering oath | Title of officer administering oath

Adopted 8/7/2015

THIS FORM IS FOR OFFICE USE ONLY

GOOD FAITH EFFORT (GFE) DETERMINATION CHECKLIST

Bidder intends to utilize subcontractors/subconsultants in the fulfillment of this contract (if awarded).
☐ Yes ☐ No

Instructions: In order to determine if a "Good Faith Effort" was made in soliciting HUBs for subcontracting opportunities, the following checklist and supporting documentation shall be completed by the Prime Contractor/Consultant, and returned with the Prime Contractor/ Consultant's bid. This list contains the **minimum** efforts that should be put forth by the Prime Contractor/Consultant when attempting to achieve or exceed the goals of HUB Subcontractor participation. The Prime Contractor/Consultant may extend his/her efforts in soliciting HUB Subcontractor participation beyond what is listed below.

Did the Prime Contractor/Consultant . . .?

☐ Yes ☐ No 1. To the extent practical, and consistent with standard and prudent industry standards, divide the contract work into the smallest feasible portions, to allow for maximum HUB Subcontractor participation?

☐ Yes ☐ No 2. **Notify** in writing a reasonable number of HUBs, allowing sufficient time for effective participation of the planned work to be subcontracted?

☐ Yes ☐ No 3. **Provide** HUBs that were genuinely interested in bidding on a subcontractor, adequate information regarding the project (i.e., plans, specifications, scope of work, bonding and insurance requirements, and a point of contract within the Prime Contractor/Consultant's organization)?

☐ Yes ☐ No 4. **Negotiate** in good faith with interested HUBs, and not reject bids from HUBs that qualify as lowest and responsive Bidders?

☐ Yes ☐ No 5. **Document** reasons HUBs were rejected? Was a written rejection notice, including the reason for rejection, provided to the rejected HUBs?

☐ Yes ☐ No 6. If Prime Contractor/Consultant has zero (0) HUB participation, **please explain the reasons why.**

If "No" was selected, please explain and include any pertinent documentation with your bid.
If necessary, please use a separate sheet to answer the above questions.

Printed Name of Authorized Representative	Signature
Title	Date

REQUIRED FORM
Bidder: Please complete this form and include with bid submission.

NOTICE OF INTENT (NOI) TO SUBCONTRACT WITH HISTORICALLY UNDERUTILIZED BUSINESS (HUB)

Bidder intends to utilize subcontractors/subconsultants in the fulfillment of this contract (if awarded).
☐ Yes ☐ No

Instructions for Prime Contractor/Consultant: Bidder shall submit this form with the bid; however, the information below may be submitted after contract award, but prior to beginning performance on the contract. Please submit one form for each HUB Subcontractor/Subconsultant with proper signatures, per the terms and conditions of your contract.

Contractor Name: _____ HUB: ☐ Yes ☐ No

Address: _____
Street City State Zip

Phone (with area code): _____ Fax (with area code): _____

Project Title & No.: _____

Prime Contract Amount: $ _____

HUB Subcontractor Name: _____

HUB Status (Gender & Ethnicity): _____

Certifying Agency: ☐ Tx. Bldg & Procurement Comm. ☐ Jefferson County ☐ Tx Unified Certification Prog.

Address: _____
Street City State Zip

Phone (with area code): _____ Fax (with area code): _____

Proposed Subcontract Amount: $ _____ Percentage of Prime Contract: _____ %

Description of Subcontract Work to be Performed: _____

Printed Name of Contractor Representative	Signature of Representative	Date
Printed Name of HUB	Signature of Representative	Date

Note: Nothing on this Notice of Intent Form is intended to confer any rights, expressed or implied, to any third parties.

Pre-Approval for Subcontractor Substitutions must be obtained from the Jefferson County Purchasing Agent's Representative. The "HUB Subcontractor/Subconsultant Change Form" must be completed and faxed to 409-835-8456.

REQUIRED FORM
Bidder: Please complete this form and include with bid submission.

HISTORICALLY UNDERUTILIZED BUSINESS (HUB)
SUCONTRACTING PARTICIPATION DECLARATION FORM

Bidder intends to utilize subcontractors/subconsultants in the fulfillment of this contract (if awarded).
☐ Yes ☐ No

Prime Contractor: _____ HUB: ☐ Yes ☐ No

HUB Status (Gender & Ethnicity): _____

Address: _____
Street City State Zip

Phone (with area code): _____ Fax (with area code): _____

Project Title & No.: _____ IFB/RFP No.: _____

Total Contract: $ _____ Total HUB Subcontract(s): $ _____

Construction HUB Goals: 12.8% MBE:: _____ % 12.6% WBE: _____ %

Sub-goals: 1.7 African-American, 9.7% Hispanic, 0.7% Native American, 0.8% Asian American.
Use these goals as a guide to diversify.

FOR HUB OFFICE USE ONLY:

Verification date HUB Program Office reviewed and verified HUB Sub information Date: _____ Initials: _____

PART I. HUB SUBCONTRACTOR DISCLOSURE

HUB Subcontractor Name: _____

HUB Status (Gender & Ethnicity): _____

Certifying Agency: ☐ Texas Bldg & Procurement Comm. ☐ Texas Unified Certification Prog.

Address: _____
Street City State Zip

Contact person: _____ Title: _____

Phone (with area code): _____ Fax (with area code): _____

Proposed Subcontract Amount: $ _____ Percentage of Prime Contract: _____ %

Description of Subcontract Work to be Performed: _____

REQUIRED FORM
<u>Bidder</u>: Please complete this form and include with bid submission.

HISTORICALLY UNDERUTILIZED BUSINESS (HUB)
SUBCONTRACTING PARTICIPATION DECLARATION FORM

HUB Subcontractor Disclosure

PART I: Continuation Sheet (Duplicate as Needed)

HUB Subcontractor Name: _____

HUB Status (Gender & Ethnicity): _____

Certifying Agency: ☐ Tx. Bldg & Procurement Comm. ☐ Jefferson County ☐ Tx Unified Certification Prog.

Address: _____
Street City State Zip

Contact person: _____ Title: _____

Phone (with area code): _____ Fax (with area code): _____

Proposed Subcontract Amount: $ _____ Percentage of Prime Contract: _____ %

Description of Subcontract Work to be Performed: _____

HUB Subcontractor Name: _____

HUB Status (Gender & Ethnicity): _____

Certifying Agency: ☐ Tx. Bldg & Procurement Comm. ☐ Jefferson County ☐ Tx Unified Certification Prog.

Address: _____
Street City State Zip

Contact person: _____ Title: _____

Phone (with area code): _____ Fax (with area code): _____

Proposed Subcontract Amount: $ _____ Percentage of Prime Contract: _____ %

Description of Subcontract Work to be Performed: _____

All HUB Subcontractor Participation may be verified with the HUB Subcontractor(s) listed on Part I.

REQUIRED FORM
<u>Bidder</u>: Please complete this form and include with bid submission.

HISTORICALLY UNDERUTILIZED BUSINESS (HUB)
SUCONTRACTING PARTICIPATION DECLARATION FORM

PART II: STATEMENT OF NON-COMPLIANCE FOR NOT MEETING HUB SUBCONTRACTING GOALS

Please complete Good Faith Effort (GFE) Checklist and attach any supporting documentation.

Our firm was unable to meet the HUB goals for this project for the following reasons:

- ☐ All subcontractors to be utilized are "Non-HUBs." *(Complete Part III)*
- ☐ HUBs were solicited but did not respond.
- ☐ HUBs solicited were not competitive.
- ☐ HUBs were unavailable for the following trade(s):
- ☐ Other: _____

Was the Jefferson County HUB Office contacted for assistance in locating HUBs? ☐ Yes ☐ No

PART III: DISCLOSURE OF OTHER "NON-HUB" SUBCONTRACTS

The Bidder shall use this area to provide a listing of all "Non-HUB" Subcontractors, including suppliers, that will perform under this project. A list of those "Non-HUB" Subcontractors the Bidder selects, after bid submission, shall be provided to the Purchasing Office not later than five (5) calendar days after being notified that Bidder is the apparent low Bidder. A list of those "Non-HUB" Subcontractors that are selected after contract award must be provided **immediately** after their selection.

Subcontractor Name: _____

Address: _____
Street City State Zip

Contact person: _____ Title: _____

Phone (with area code): _____ Fax (with area code): _____

Proposed Subcontract Amount: $ _____ Percentage of Prime Contract: _____ %

Description of Subcontract Work to be Performed: _____

Subcontractor Name: _____

Address: _____
Street City State Zip

Contact person: _____ Title: _____

Phone (with area code): _____ Fax (with area code): _____

Proposed Subcontract Amount: $ _____ Percentage of Prime Contract: _____ %

Description of Subcontract Work to be Performed: _____

REQUIRED FORM
<u>Bidder</u>: Please complete this form and include with bid submission.

HISTORICALLY UNDERUTILIZED BUSINESS (HUB)
SUBCONTRACTING PARTICIPATION DECLARATION FORM

Subcontractor Name: _____

Address: _____
Street City State Zip

Contact person: _____ Title: _____

Phone (with area code): _____ Fax (with area code): _____

Proposed Subcontract Amount: $ _____ Percentage of Prime Contract: _____ %

Description of Subcontract Work to be Performed: _____

Subcontractor Name: _____

Address: _____
Street City State Zip

Contact person: _____ Title: _____

Phone (with area code): _____ Fax (with area code): _____

Proposed Subcontract Amount: $ _____ Percentage of Prime Contract: _____ %

Description of Subcontract Work to be Performed: _____

I hereby certify that I have read the *HUB Program Instructions and Information*, truthfully completed all applicable parts of this form, and **attached any necessary support documentation as required**. I fully understand that intentionally falsifying information on this document may result in my not receiving a contract award or termination of any resulting contract.

Name (print or type): _____

Title: _____

Signature: _____

Date: _____

E-mail address: _____

Contact person that will be in charge of invoicing for this project:

Name (print or type): _____

Title: _____

Date: _____

E-mail address: _____

REQUIRED FORM
Bidder: Please complete this form and include with bid submission.

RESIDENCE CERTIFICATION/TAX FORM

Pursuant to Texas Government Code §2252.001 *et seq*., as amended, Jefferson County requests Resident Certification. §2252.001 *et seq*. of the Government Code provides some restrictions on the awarding of governmental contracts; pertinent provisions of §2252.001 are stated below:

(3) "Non-resident Bidder" refers to a person who is not a resident.

(4) "Resident Bidder" refers to a person whose principal place of business is in this state, including a contractor whose ultimate parent company or majority owner has its principal place of business in this state.

☐ I certify that _____ [company name] is a Resident Bidder of Texas as defined in Government Code §2252.001.

☐ I certify that _____ [company name] is a Nonresident Bidder as defined in Government Code §2252.001 and our principal place of business is _____ _____ (city and state).

Taxpayer Identification Number (T.I.N.):	
Company Name submitting bid/proposal:	
Mailing address:	
If you are an individual, list the names and addresses of any partnership of which you are a general partner:	

Property: List all taxable property owned by you or above partnerships in Jefferson County.

Jefferson County Tax Acct. No.*	Property address or location**

* This is the property amount identification number assigned by the Jefferson County Appraisal District.

** For real property, specify the property address or legal description. For business property, specify the address where the property is located. For example, office equipment will normally be at your office, but inventory may be stored as a warehouse or other location.

REQUIRED FORM
<u>Bidder</u>: Please complete this form and include with bid submission.

HOUSE BILL 89 VERIFICATION

I, _____, the undersigned representative of (company or business name)_____ (heretofore referred to as company) being an adult over the age of eighteen (18) years of age, after being duly sworn by the undersigned notary, do hereby depose and verify under oath that the company named above, under the provisions of Subtitle F, Title 10, Government Code Chapter 2270:

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

Pursuant to Section 2270.002, Texas Government Code:

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

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

_____
Signature of Company Representative

_____
Date

On this _____ day of _____, 20____, personally appeared

_____, the above-named person, who after by me being duly sworn, did swear and confirm that the above is true and correct.

Notary Seal

_____
Notary Signature

_____
Date

REQUIRED FORM
<u>Bidder</u>: Please complete this form and include with bid submission.

SENATE BILL 252 CERTIFICATION

On this day, I, Deborah L. Clark, Purchasing Agent for Jefferson County, Texas, pursuant to Texas Government Code, Chapter 2252, Section 2252.152 and Section 2252.153, certify that I did review the website of the Comptroller of the State of Texas concerning the listing of companies that is identified under Section 806.051, Section 807.051, or Section 2253.253 and I have ascertained that the below named company is not contained on said listing of companies which do business with Iran, Sudan, or any Foreign Terrorist Organization.

_____

Company Name

_____

IFB/RFP/RFQ number

Certification check performed by:

_____

Purchasing Representative

_____

Date

00 52 13 AGREEMENT

This Agreement is between Jefferson County (Owner) and **[name of Contractor to be inserted at time of Contract execution]** (Contractor).

Owner and Contractor agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is designated as follows:

Mesquite Point Public Boat Ramp
22-071

ARTICLE 2 – DESIGN PROFESSIONAL

2.01 The Design Professional for this Project is:

Freese and Nichols, Inc
801 Cherry Street, Suite 2800,
Fort Worth, Texas, 76102

ARTICLE 3 – CONTRACT TIMES

3.01 Contract Times

A. The Work is required to be substantially complete within 142 days after the date when the Contract Times commence to run as provided in the General Conditions and complete and ready for final payment in accordance with the General Conditions within 30 days after the date of Substantial Completion.

3.02 Liquidated Damages

A. Owner and Contractor recognize that the Contract Times specified for Substantial Completion and Final Completion are of the essence in the Contract. Owner and Contractor recognize that the Owner will suffer financial loss if the Work is not completed within the Contract Times specified in this Agreement **[and in Section 01 35 00 "Special Procedures"]** as may be adjusted in accordance with the General Conditions. Owner and Contractor also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration preceding the actual loss suffered by Owner if the Work is not completed within the Contract Times. Accordingly, instead of requiring proof of the amount of these damages, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Contractor agrees to pay Owner $**500**for each day that expires after the time specified in this Agreement for Substantial Completion until the Work is substantially complete.

2. Contractor agrees to pay Owner $**500** for each day that expires after the time specified in this Agreement for Final Completion until the Work is completed and ready for final payment in accordance with the General Conditions.

B. Liquidated damages for failing to timely attain Substantial Completion and Final Completion are not additive and will not be imposed concurrently.

SAMPLE

C. OPT will determine whether the Work has been completed within the Contract Times. Assessment of liquidated damages by the Owner does not waive the Owner's right to assess or collect additional damages which the Owner may sustain by the failure of the Contractor to perform in accordance with the terms of the Contract.

ARTICLE 4 – CONTRACT PRICE

4.01 Owner will pay Contractor for completion of the Work in accordance with the Contract Documents at the prices shown in this Agreement. The Contract Price has been computed in accordance with the General Conditions. Contractor acknowledges that for unit price items, estimated quantities are not guaranteed and are solely for the purpose of comparing Bids, and that final payment will be based on actual quantities determined in accordance with the Contract Documents.

ARTICLE 5 – PAYMENT PROCEDURES

5.01 Submit Applications for Payment in accordance with the General Conditions. Applications for Payment will be processed by the Construction Manager per Section 01 29 00 "Application for Payment Procedures."

5.02 Owner will make progress payments on or about the second Tuesday of each month during performance of the Work. Jefferson County pays on a "Net 30" basis, meaning it has up to pay 30 days to pay invoices from their date of issuance. Payment is based on the total earned value of Work completed in the previous month in accordance with the Schedule of Values established as provided in the General Conditions.

5.03 Payment will be made for the total earned value of Work completed in the previous month after deducting:

A. Retainage calculated per this Agreement;

B. Set-offs determined in accordance with the General Conditions; and

C. The total amount of payments previously made.

5.04 Retainage

A. Progress payments will be made in an amount equal to 90 percent of the total earned value to date for completed Work and properly stored materials. The remaining 10 percent of the total earned value to date will be held as retainage in accordance with Tex. Gov't Code Chapter 2252.

B. Owner may reduce the amount of retainage held after Substantial Completion if the Owner determines that the amount of retainage being held is in excess of that needed to protect the interest of the Owner. Owner may pay Contractor 100 percent of the earned value of the Work completed, less amounts withheld in accordance with the General Conditions and less 200 percent of Construction Manager's estimate of the value of Work to be completed or corrected to reach Final Completion. The reduction in the amount of retainage held per this paragraph requires approval of the Owner's governing body.

C. Retainage held by the Owner will be deposited in an interest-bearing account, with any interest earned by that account paid to the Contractor, only as required by Tex. Water Code Chapter 49 and Tex. Gov't Code Chapter 2252.

SAMPLE

5.05 Release or reduction in retainage is contingent upon the consent of surety to the reduction in retainage. Submit a Consent of Surety Company to Reduction of or Partial Release of Retainage form as provided by or approved by the Construction Manager.

5.06 Owner will pay the remainder of the Contract Price as recommended by Construction Manager in accordance with the General Conditions upon Final Completion and acceptance of the Work.

ARTICLE 6 – PAYMENT OF INTEREST

6.01 No interest payments will be paid to the Contractor for invoices not paid when due as provided in the General Conditions.

ARTICLE 7 – CONTRACTOR'S REPRESENTATIONS

7.01 The Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.

B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied the following Site related reports and drawings as identified in the Supplementary Conditions:

1. Geotechnical Data Reports regarding subsurface conditions at or adjacent to the Site;
2. Drawings of physical conditions relating to existing surface or subsurface structures at the Site;
3. Underground Facilities referenced in reports and drawings;
4. Reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site; and
5. Technical Data related to each of these reports and drawings.

E. Contractor has considered the:

1. Information known to Contractor;
2. Information commonly known to contractors doing business in the locality of the Site;
3. Information and observations obtained from visits to the Site; and
4. The Contract Documents.

F. Contractor has considered the items identified in this Article with respect to the effect of such information, observations, and documents on:

1. The cost, progress, and performance of the Work;
2. The means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and
3. Contractor's safety precautions and programs.

SAMPLE

G. Based on the information and observations referred to in the preceding paragraphs, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

H. Contractor is aware of the general nature of Work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

I. Contractor has correlated the information known to the Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.

J. Contractor has given the Construction Manager written notice of all conflicts, errors, ambiguities, or discrepancies that the Contractor has discovered in the Contract Documents, and the written resolution provided by the Construction Manager is acceptable to the Contractor.

K. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

L. Contractor's entry into this Agreement constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 8 – ACCOUNTING RECORDS

8.01 Accounting Record Availability: Contractor is to establish and maintain, in accordance with generally accepted accounting practices, full and detailed accounting records of materials incorporated into the Project, and labor, tools, materials, and equipment used for the Work, consistent with the requirements of the General Conditions and as necessary for proper financial management under this Agreement. Subject to prior written notice, provide Owner reasonable access during normal business hours to Contractor's records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and the Contractor's fee. Preserve all such documents for a period of 3 years after the final payment by the Owner.

ARTICLE 9 – OTHER REQUIREMENTS

9.01 Ineligibility to Receive State Grants or Loans or Receive Payment on State Contracts: As required by Tex. Fam. Code Section 231.006, Contractor certifies that the individual or business entity named in this contract, bid, or application is not ineligible to receive the specified grant, loan, or payment and acknowledges that this Contract may be terminated and payment may be withheld if this certification is inaccurate.

9.02 Workers' Compensation Insurance

A. By signing this Agreement, Contractor certifies that it provides workers' compensation insurance coverage for all employees employed on this Project pursuant to Tex. Lab. Code Section 406.096(a).

SAMPLE

B. As required by Section 406.096(b), Contractor must require each Subcontractor to certify in writing to the Contractor that the Subcontractor provides workers' compensation insurance coverage for all of the employees it employs on this Project. Contractor must provide these certifications to the Owner within **[10]** days of the Effective Date of the Agreement.

1.

9.03 Prohibition on Contracts with Companies Engaged in Business with Iran, Sudan, or Foreign Terrorist Organizations

A. Tex. Gov't Code Chapter 2252, Subchapter F, prohibits the award of governmental contracts to companies engaged in business with Iran, Sudan, or foreign terrorist organizations.

B. By signing this Agreement, Contractor certifies that it is not ineligible to be awarded this Contract under Chapter 2252, Subchapter F.

9.04 Prohibition on Contracts with Certain Companies that Boycott Israel

A. Tex. Gov't Code Chapter 2271 prohibits a governmental entity from entering into a contract with a company for goods or services unless the contract contains a written verification from the company that it: (1) does not boycott Israel; and (2) will not boycott Israel during the term of the contract.

B. By signing this Agreement, Contractor certifies that it does not boycott Israel and will not boycott Israel during the term of this Contract.

9.05 Prohibition on Contracts with Companies Boycotting Certain Energy Companies

A. Tex. Gov't Code Chapter 2274, as added by SB 13 during the 87th Leg., prohibits a governmental entity from entering into a contract with a company for goods or services unless the contract contains a written verification from the company that it: (1)does not boycott energy companies; and (2) will not boycott energy companies during the term of the contract.

B. By signing this Agreement, Contractor certifies that it does not boycott energy companies and will not boycott energy companies during the term of this Contract.

9.06 Prohibition on Contracts with Companies Boycotting Certain Energy Companies

A. Tex. Gov't Code Chapter 2274, as added by SB 19 during the 87th Leg., prohibits a governmental entity from entering into a contract with a company for goods or services unless the contract contains a written verification from the company that it: (1) does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association; and (2) will not discriminate during the term of the contract against a firearm entity or firearm trade association.

B. By signing this Agreement, Contractor certifies that it does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association and will not discriminate against a firearm entity or firearm trade association during the term of the contract.

9.07 Certificate of Interested Parties: Contractor must complete and submit a Certificate of Interested Parties (Form 1295) to the Owner with the signed Agreement as required by Tex. Gov't Code Section 2252.908.

SAMPLE

ARTICLE 10 – VENUE

10.01 Contractor agrees that venue lies exclusively in Jefferson County, Texas for any legal action.

ARTICLE 11 – CONTRACT DOCUMENTS

11.01 Contract Documents

A. Specifications Sections listed in Section 00 01 10 "Table of Contents" except as specifically excluded in Paragraph **[12.02]**.

B. Drawings listed in the **[Sheet Index on the Drawings.] [Section 00 01 15 "List of Drawings."]**

C. Addenda (Numbers 00 91 01 to 00 91 **[XX]**, inclusive).

D. Appendices listed in Section 00 01 10 "Table of Contents" except as specifically excluded in Paragraph 12.02.

E. The following Funding Agency forms are Contract Documents:

1. The Federal contract provisions listed in 00 74 01 Federal Contract Provisions

F. The following are also Contract Documents which may be delivered or issued on or after the Effective Date of the Contract:

1. Notice to Proceed.
2. Contract Amendment(s).
3. Change Order(s).
4. Field Order(s).
5. Work Change Directive(s).

G. There are no Contract Documents other than those listed above in this Paragraph. The Contract Documents may only be amended, modified, or supplemented as provided in `the General Conditions.

11.02 Bidding Requirements and Informational Documents

A. The following Bidding Requirements are not Contract Documents:

Section	Title
Division 00	**Procurement and Contracting Requirements**
00 41 16	Bid Form Exhibit A
00 43 13	Bid Bond

1. The following documents are provided for information only and are not part of the Contract Documents:

a. Geotechnical Report Mesquite Point Public Boat Ramp and Jetties Sabine Lake and Intercoastal Waterway Jefferson County Port Arthur, Texas by Tolunay-Wong Engineers.

SAMPLE

The Effective Date of the Contract is **[date to be inserted at the time of contract execution]**.

Owner: _____ *(typed or printed)*	Contractor: _____ *(typed or printed)*
By: _____ *(individual's signature)*	By: _____ *(individual's signature)*
Name: _____ *(typed or printed)*	Name: _____ *(typed or printed)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed* *(Attach evidence of authority to sign)*
Address for giving notice:	Address for giving notice:
_____	_____
_____	_____
_____	_____
Designated representative:	Designated representative:
Name: _____	Name: _____
Title: _____	Title: _____
Address:	Address:
_____	_____
_____	_____
_____	_____
Phone: _____	Phone: _____
Email: _____	Email: _____

END OF SECTION

SAMPLE

BID AFFIDAVIT

The undersigned certifies that the bid prices contained in this bid have been carefully reviewed and are submitted as correct and final. Bidder further certifies and agrees to furnish any and/or all commodities upon which prices are extended at the price offered, and upon the conditions contained in the specifications and the Notice to Bidders.

STATE OF_____ COUNTY OF_____

BEFORE ME, the undersigned authority, a Notary Public in and for the State of _____,

on this day personally appeared _____, who
(name)
after being by me duly sworn, did depose and say:

"I, _____ am a duly authorized officer of/agent
(name)
for _____ and have been duly authorized to execute the
(name of firm)
foregoing on behalf of the said_____.
(name of firm)

I hereby certify that the foregoing bid has not been prepared in collusion with any other Bidder or other person or persons engaged in the same line of business prior to the official opening of this bid. Further, I certify that the Bidder is not now, nor has been for the past six (6) months, directly or indirectly concerned in any pool or agreement or combination, to control the price of services/commodities bid on, or to influence any person or persons to bid or not to bid thereon."

Name and address of Bidder:_____

_____

Fax: _____ Telephone#_____

by: _____ Title:_____
(print name)

Signature:_____

SUBSCRIBED AND SWORN to before me by the above-named

_____ on

this the _____ day of_____, 20___.

_____
Notary Public in and for
the State of _____

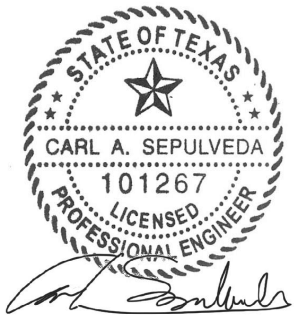
REQUIRED FORM
<u>Bidder</u>: Please complete this form and include with bid submission.

TECHNICAL SPECIFICATIONS
FOR CONSTRUCTION OF
MESQUITE POINT PUBLIC BOAT RAMP
Project No. 22-071



FREESE AND NICHOLS
10497 Town and Country Way, Suite 500
Houston, Texas 77024
Phone – (713) 600-6800
Fax – (817) 735-7491

November 23, 2022



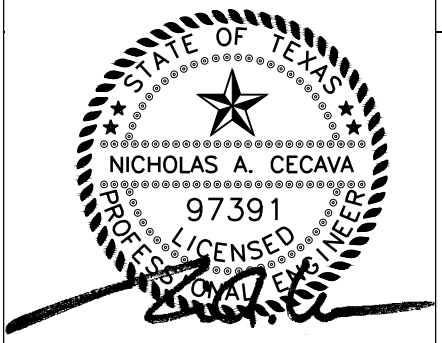
Freese and Nichols, Inc.
Texas Registered
Engineering Firm F-2144
November 23, 2022

00 01 07 DESIGN PROFESSIONAL SEALS



FREESE AND NICHOLS, INC.
TEXAS REGISTERED
ENGINEERING FIRM
F-2144

Specification Sections Sealed			
Division 00			
Division 01			
Division 02			
Division 31	31 05 16	31 23 19.01	31 32 19.15
Division 31	31 37 00		
Division 32	32 91 19.13		
Division 35			



FREESE AND NICHOLS, INC.
TEXAS REGISTERED
ENGINEERING FIRM
F-2144

Specification Sections Sealed			
Division 02			
Division 31	31 05 16		
Division 32	32 11 23	32 12 16	32 91 19.13

	Specification Sections Sealed			
	Division 03			
	Division 05			
	Division 31	31 05 13	31 23 10	31 23 23.34
	Division 31	31 41 16		
FREESE AND NICHOLS, INC. TEXAS REGISTERED ENGINEERING FIRM F-2144				

END OF SECTION

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00 52 13	Agreement
00 61 13	Performance Bond
00 61 16	Payment Bond
00 72 00	General Conditions
00 73 00	Supplementary Conditions
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00 74 00	Special Conditions for Texas Parks and Wildlife Department
Division 01	**General Requirements**
01 23 10	Alternates and Allowances
01 26 00	Change Management
01 29 00	Application for Payment Procedures
01 29 01	Measurement and Basis for Payment
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01 31 13	Project Administration
01 33 00	Document Management
01 33 02	Shop Drawings
01 33 03	Product Data
01 33 04	Operation and Maintenance Data
01 33 05	Construction Progress Schedule
01 50 00	Temporary Facilities and Controls
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Division 02	**Existing Conditions**
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03 11 00	Concrete Forming
03 21 00	Reinforcing Steel
03 30 00	Cast-In-Place Concrete

Section	Title
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05 50 00	Metal Fabrications
Division 31	**Earthwork**
31 05 13	Soils for Earthwork
31 05 16	Aggregates for Earthwork
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31 23 19.01	Care of Water During Construction
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32 12 16	Asphalt Paving
32 91 19.13	Topsoil Placement and Grading
Division 35	**Waterway & Marine Construction**
35 24 00	Dredging
Appendix	**Title**
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END OF SECTION

DIVISION 00

PROCUREMENT REQUIREMENTS AND FRONT MATTER

00 43 13 BID BOND

Owner will accept this form or other submission that includes the information requested herein

Offeror as Principal Name: Mailing address (principal place of business):	**Surety** Name: Mailing address (principal place of business): Physical address (principal place of business): Telephone (Main): Telephone (Claims): Surety's state of incorporation:
Owner Name: Mailing address (principal place of business):	
Contract Project name and number: Bid/Proposal Due Date:	***By submitting this bond, Surety affirms it is authorized to do business and licensed to execute bonds in the state where the Project is located.***
Bond Contract Price Offered: Penal Sum of Bond: 5% of Contract Price offered Date of Bond:	**Local Agent for Surety** Name: Company: Mailing address (principal place of business): Telephone (Main):

SAMPLE

Surety and Offeror, intending to be legally bound by this bond, do each cause this bond to be duly executed on its behalf by its authorized officer, agent, or representative. Surety and Offeror bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally to this bond. The condition of this obligation is such that if Owner accepts the Offeror's Bid or Proposal and Offeror delivers the executed Agreement and the required bonds and evidence of insurance within the time stipulated in the Bidding or Proposal Documents this obligation is null and void. Payment under this bond will be due and payable upon default by Offeror and within 30 days after receipt by Offeror and Surety of written notice of default from Owner. This Agreement shall be administered and interpreted under the laws of the state where the Project is located. Venue lies exclusively in Jefferson County, Texas for any legal action.

Offeror as Principal	**Surety**
Signature: _____	Signature: _____
Name: _____	Name: _____
Title: _____	Title: _____
Email: _____	Email: _____
	(Attach Power of Attorney)

END OF SECTION

SAMPLE

00 61 13 PERFORMANCE BOND

Owner will accept this form or other submission that includes the information requested herein.

Contractor as Principal Name: Mailing address (principal place of business):	**Surety** Name: Mailing address (principal place of business): Physical address (principal place of business): Telephone (Main): Telephone (Claims): Surety's state of incorporation:
Owner Name: Jefferson County, Texas Mailing address (principal place of business): Jefferson County 1149 Pearl Street 1st Floor Beaumont, TX 77701	***By submitting this bond, Surety affirms that it is licensed to provide and execute this bond and authorized to do business in Texas.***
Contract Project name and number: Contract Price: Effective Date of Contract:	**Local Agent for Surety** Name: Mailing address (principal place of business): Telephone (Main):
Bond Bond Amount: 100 percent of Contract Price Date of Bond: (Date of Bond cannot be earlier than Effective Date of Contract)	***The address of the surety company to which any notice of claim should be sent may be obtained from the Texas Dept. of Insurance by calling the following toll-free number: 1-800-252-3439.***

SAMPLE

Surety and Contractor, intending to be legally bound and obligated to Owner, do each cause this performance bond to be duly executed on its behalf by its authorized officer, agent, or representative. The Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally to this bond. The condition of this obligation is such that if the Contractor as Principal faithfully performs the Work required by the Contract then this obligation will be null and void; otherwise the obligation is to remain in full force and effect. Provisions of this bond shall be pursuant to the terms and provisions of Texas Government Code Chapter 2253 as amended and all liabilities on this bond shall be determined in accordance with the terms and provisions of said Chapter to the same extent as if it were copied at length herein. Venue lies exclusively in [specify name] County, Texas for any legal action.

Contractor as Principal	**Surety**
Signature: _____	Signature: _____
Name: _____	Name: _____
Title: _____	Title: _____
Email: _____	Email: _____
	(Attach Power of Attorney and place surety seal below)

END OF SECTION

SAMPLE

00 61 16 PAYMENT BOND

Owner will accept this form or other submission that includes the information requested herein.

<table>
<tr><td>Contractor as Principal
Name:
Mailing address (principal place of business):</td><td rowspan="4">Surety
Name:
Mailing address (principal place of business):

Physical address (principal place of business):

Telephone (Main):
Telephone (Claims):
Surety’s state of incorporation:

By submitting this bond, Surety affirms that it is licensed to provide and execute this bond and authorized to do business in Texas.

Local Agent for Surety
Name:
Mailing address (principal place of business):

Telephone (Main):

The address of the surety company to which any notice of claim should be sent may be obtained from the Texas Dept. of Insurance by calling the following toll-free number: 1-800-252-3439.</td></tr>
<tr><td>Owner
Name: Jefferson County, Texas
Mailing address (principal place of business):
Jefferson County
1149 Pearl Street 1st Floor
Beaumont, TX 77701</td></tr>
<tr><td>Contract
Project name and number:

Contract Price:
Effective Date of Contract:</td></tr>
<tr><td>Bond
Bond Amount: 100 percent of Contract Price
Date of Bond:
(Date of Bond cannot be earlier than Effective Date of Contract)</td></tr>
</table>

SAMPLE

Surety and Contractor intending to be legally bound and obligated to Owner do each cause this payment bond to be duly executed on its behalf by its authorized officer, agent, or representative. The Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally to this bond. The condition of this obligation is such that if the Contractor as Principal pays all claimants providing labor or materials to Contractor or to a Subcontractor in the prosecution of the Work required by the Contract then this obligation will be null and void; otherwise the obligation is to remain in full force and effect. Provisions of the bond shall be pursuant to the terms and provisions of Texas Government Code Chapter 2253 as amended and all liabilities on this bond shall be determined in accordance with the terms and provisions of said Chapter to the same extent as if it were copied at length herein. Venue lies exclusively in [specify name] County, Texas for any legal action.

Contractor as Principal	**Surety**
Signature: _____	Signature: _____
Name: _____	Name: _____
Title: _____	Title: _____
Email: _____	Email: _____
	(Attach Power of Attorney and place surety seal below)

END OF SECTION

SAMPLE

00 72 00 GENERAL CONDITIONS

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. A term with initial capital letters, including the term's singular and plural forms, has the meaning indicated in this Paragraph wherever used in the Bidding Requirements or Proposal Requirements or Contract Documents. In addition to the terms specifically defined, terms with initial capital letters in the Contract Documents may include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Documents issued prior to the receipt of Bids or Proposals which clarify or modify the Bidding Requirements/Proposal Requirements or the proposed Contract Documents.

2. *Agreement*—The document signed by Owner and Contractor that establishes the Contract Price and Contract Times, and designates the specific documents that are Contract Documents.

3. *Application for Payment*—The documents used by Contractor to request payments from Owner and the supporting documentation required by the Contract Documents.

4. *Bid; Proposal*—An offer submitted to Owner for the Project setting forth the Contract Price and Contract Times for the Work to be performed.

5. *Bidding Documents; Proposal Documents*—The Bidding Requirements or Proposal Requirements, the proposed Contract Documents, and Addenda.

6. *Bidding Requirements; Proposal Requirements*—The Invitation to Bid or Request for Proposals, Instructions to Offerors, Bid Security or Proposal Security, Bid Form or Proposal Form and attachments, and required certifications and affidavits.

7. *Bid Security; Proposal Security*—The financial security provided by Offeror at the time the Bid or Proposal is submitted and held by Owner until the Agreement is executed and the evidence of insurance and bonds required by the Contract Documents are provided.

8. *Change Order*—A document issued on or after the Effective Date of the Contract and signed by Owner and Contractor which modifies the Work, Contract Price, Contract Times, or terms and conditions of the Contract.

9. *Change Proposal*—A document submitted by Contractor in accordance with the requirements of the Contract Documents:

    a. Requesting an adjustment in Contract Price or Contract Times;

    b. Contesting an initial decision concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents;

    c. Challenging a Set-off against payment due; or

    d. Seeking other relief with respect to the terms and conditions of the Contract.

10. *Claim*—A demand or assertion by Owner or Contractor submitted in accordance with the requirements of the Contract Documents. A demand for money or services by an entity other than Owner or Contractor 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. *Construction Manager*—The individual or entity named as Construction Manager in the Agreement and the consultants, subconsultants, individuals, or entities directly or indirectly employed or retained by them to provide construction management as advisor services to Owner.
13. *Construction Manager at Risk (CMAR)*—The individual or entity selected by Owner to construct the Project using the Construction Manager at Risk project delivery method. The term Contractor means Construction Manager at Risk in the Contract Documents when the Construction Manager at Risk project delivery method is used.
14. *Contract*—The entire integrated set of documents concerning the Work and describing the relationship between the Owner and Contractor.
15. *Contract Amendment*—A document issued on or after the Effective Date of the Contract and signed by Owner and Contractor which:
    a. Authorizes new phases of the Work and establishes the Contract Price, Contract Times, or terms and conditions of the Contract for the new phase of Work; or
    b. Modifies the terms and conditions of the Contract, but does not make changes in the Work.
16. *Contract Documents*—Those items designated as Contract Documents in the Agreement.
17. *Contract Price*—The monetary amount stated in the Agreement and as adjusted by Modifications, and increases or decreases in unit price quantities, if any, that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
18. *Contract Times*—The number of days or the dates by which Contractor must achieve specified Milestones, achieve Substantial Completion, and complete the Work.
19. *Contractor*—The individual or entity with which Owner has contracted to perform the Work.
20. *Contractor's Team*—Contractor, Subcontractors, Suppliers, and individuals or entities directly or indirectly employed or retained by Contractor, Subcontractors, or Suppliers to perform part of the Work, or anyone for whose acts they may be liable.
21. *Cost of the Work*—The sum of costs incurred for the performance of the Work as allowed by Article 13.
22. *Day*—A day of 24 hours measured from midnight to the next midnight.
23. *Defective*—When applied to Work, refers to Work that is unsatisfactory, faulty, or deficient in that it:
    a. Does not conform to the Contract Documents;

b. Does not meet the requirements of applicable inspections, reference standards, tests, or approvals referred to in the Contract Documents; or

c. Has been damaged prior to Construction Manager's recommendation of final payment unless responsibility for the protection of the Work has been assumed by Owner at Substantial Completion in accordance with Article 15.

24. *Design Professional*—The individuals or entity named as the Architect or Engineer in the Agreement and the subconsultants, individuals, or entities directly or indirectly employed or retained by Design Professional to provide design or other technical services to Owner. Design Professional has responsibility for design and technical issues related to the Contract Documents.

25. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work. Shop Drawings and other documents generated by Contractor's Team are not Drawings.

26. *Effective Date of the Contract*—The date indicated in the Agreement on which the Contract becomes effective.

27. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including Shop Drawings and other Submittals, that are in an electronic or digital format.

28. *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.

29. *Field Order*—A document issued by Construction Manager or Design Professional requiring changes in the Work that do not change the Contract Price or the Contract Times.

30. *Final Completion*—The point where the Work is complete in accordance with the Contract Documents, items and documents required by the Contract Documents have been accepted by Owner and the Project is ready for Final Payment.

31. *Guaranteed Maximum Price (GMP)*—The maximum amount to be paid by Owner for the sum of the Cost of the Work plus Contractor's fee as set forth in the Agreement, subject to increases or decreases for changes in the Work, when the Construction Manager at Risk project delivery method is used.

32. *Hazardous Environmental Condition*—The presence of Constituents of Concern at the Site in quantities or circumstances that may present a danger to persons or property exposed to Constituents of Concern. The presence of Constituents of Concern at the Site necessary for the execution of the Work or to be incorporated into the Work is not a Hazardous Environmental Condition provided these Constituents of Concern are

controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract.

a. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.

b. 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.

33. *Indemnified Costs*—All costs, losses, judgments, and damages resulting from claims or demands against Owner's Indemnitees. These costs include fees for design professionals, attorneys, and other professionals and any legal, court, arbitration, or other dispute resolution costs.

34. *Laws and Regulations; Laws or Regulations*—Applicable laws, statutes, rules, regulations, ordinances, codes, permits, and binding decrees, resolutions, and orders of governmental bodies, agencies, authorities, and courts having jurisdiction over the Project.

35. *Liens*—Charges, security interests, or encumbrances upon Contract related funds, real property, or private property.

36. *Manufacturer*—The individual or entity that designs, casts, fabricates, manufactures, assembles, tests, and provides materials or equipment to be incorporated in the Work.

37. *Milestone*—A principal event in the performance of the Work that Contractor is required by Contract to complete by a specified date or within a specified time.

38. *Modification*—Change made to the Contract Documents by Contract Amendment, Change Order, Field Order, or Work Change Directive.

39. *Notice of Award*—The notice of Owner's acceptance of the Successful Offeror's Bid or Proposal.

40. *Notice to Proceed*—A notice to Contractor of the Contract Times and the date Work is to begin.

41. *Offeror*—An individual or entity that submits a Bid or Proposal to Owner.

42. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

43. *Owner's Budget*—The amounted budgeted by Owner for the construction of the Project.

44. *Owner's Indemnitees*—Each member of OPT and their officers, directors, members, partners, employees, agents, consultants, and subcontractors.

45. *Owner's Project Team (OPT)*—The Owner, Design Professional, Construction Manager, and the other entities identified in the Supplementary Conditions and the consultants, subconsultants, individuals or entities directly or indirectly employed or retained by them to provide services to Owner.

46. *Progress Schedule*—A schedule prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

47. *Project*—The total undertaking to be accomplished for Owner under the Contract Documents.

48. *Project Construction Manager (PCM)*—The authorized representative of OPT assigned to assist Construction Manager at the Site. The term Project Construction Manager includes assistants and field staff of Construction Manager.

49. *Project Management Information System (PMIS)*—The online project management system that will be used by OPT and Contractor to submit and share documentation and other related communications and information for this Project.

50. *Samples*—Physical examples of materials, equipment, or workmanship representing some portion of the Work that are used to establish the standards for that portion of the Work.

51. *Schedule of Anticipated Payments*—A detailed tabulation, prepared and maintained by Contractor, showing the anticipated amount of each Application for Payment and the month in which they will be submitted.

52. *Schedule of Submittals*—A detailed tabulation, prepared and maintained by Contractor, of each required submittal and the time requirements for review and approval of each submittal.

53. *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 Contractor's Applications for Payment.

54. *Set-off*–A reduction in payment due to Contractor under Article 15.

55. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by Contractor's Team 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.

56. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed. The Site includes rights-of-way, easements, and other lands or areas furnished by Owner which are designated for use by Contractor.

57. *Specifications*—The part of the Contract that describes the requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

58. *Subcontractor*—An individual or entity having a direct contract with Contractor or with other Subcontractors or Suppliers for the performance of a part of the Work.

59. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Construction Manager, or that is indicated as a Submittal in the Schedule of Submittals accepted by Construction Manager. Submittals, whether approved or accepted by OPT, are not Contract Documents.

60. *Substantial Completion*—The point where the Work or a specified part of the Work is sufficiently complete to be used for its intended purpose in accordance with the Contract Documents.
61. *Successful Offeror*—The Offeror to which Owner awards the Contract.
62. *Supplementary Conditions*—The part of the Contract that amends or supplements the General Conditions.
63. *Supplier*—A Manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with Subcontractors or other Suppliers to furnish materials or equipment to be incorporated in the Work.
64. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions with respect to either:
    a. Existing subsurface conditions at or adjacent to the Site;
    b. Existing physical conditions at or adjacent to the Site including existing surface or subsurface structures at the Site, except Underground Facilities; or
    c. Hazardous Environmental Conditions at the Site.
65. *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 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.
66. *Unit Price Work*—Work to be paid for based on unit prices.
67. *Work*—The construction of the Project or its component parts as required by the Contract Documents. Work includes and is the result of performing and providing all labor, services, and documentation to construct the Project; providing all materials and equipment to be incorporated into the Project, and providing related services for testing, startup and commissioning, all as required by the Contract Documents.
68. *Work Change Directive*—A directive issued to Contractor on or after the Effective Date of the Contract ordering an addition, deletion, or revision in the Work. The Work Change Directive serves as a memorandum of understanding regarding the directive until a Change Order can be issued.

1.02 Terminology

A. The words and terms discussed in this Paragraph 1.02 are not defined terms that require initial capital letters, but when used in the Bidding Requirements or Proposal Requirements or Contract Documents, have the indicated meaning.

B. Contract Documents are written using imperative language:

    1. Simple imperative sentence structure is used which places a verb as the first word in the sentence. It is understood that the words “furnish,” “install,” “perform,” “provide,”

or similar words include the meaning of the phrase “Contractor shall...” before these words.

2. Unless specifically stated that action is to be taken by OPT or others, it is understood that the action described is a requirement of Contractor.

C. The use of the words “furnish,” “install,” “perform,” and “provide” have the following meanings when used relating to services, materials, or equipment:

1. Furnish means to supply and deliver the specified services, materials, or equipment to the Site or other specified location ready for use or installation.

2. Install means to complete construction or assembly of the specified services, materials, or equipment so they are ready for their intended use.

3. Perform or provide means to furnish and install specified services, materials, or equipment, complete and ready for their intended use.

4. Perform or provide the specified services, materials, or equipment complete and ready for intended use if the Contract Documents require specific services, materials, or equipment, but do not expressly use the words “furnish,” “install,” “perform,” or “provide.”

D. The meaning and intent of certain terms or adjectives are described as follows:

1. The terms “as allowed,” “as approved,” “as ordered,” “as directed,” or similar terms in the Contract Documents indicate an exercise of professional judgment by OPT.

2. Adjectives like “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or similar adjectives are used to describe a determination of OPT regarding the Work.

3. Any exercise of professional judgment by OPT will be made solely to evaluate the Work for general compliance with the Contract Documents unless there is a specific statement in the Contract Documents indicating otherwise.

4. The use of these or similar terms or adjectives does not assign a duty or give OPT authority to supervise or direct the performance of the Work, or assign a duty or give authority to OPT to undertake responsibilities contrary to the provisions of Article 9, Article 10 or other provisions of the Contract Documents.

E. Requirements apply to all Work of the same kind, class, and type even though the word “all” or “any” is not stated.

F. The terms "includes" and “including" are used as terms of enlargement and not of limitation or exclusive enumeration, and use of these terms does not create a presumption that components not expressed are excluded. The terms “consist of” or “consisting of” limits the interpretation to only those items specifically listed.

G. It is understood that the cost of providing Work is included in the Contract Price and no additional compensation is to be paid by Owner unless specifically stated otherwise in the Contract Documents. Expressions like “at no additional cost to Owner,” “at Contractor’s expense,” or similar words mean that Contractor is to include the cost of this Work in their Contract Price and perform or provide specified Work without an increase in the Contract Price.

H. Words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with this recognized meaning unless stated otherwise in the Contract Documents.

I. Written documents are required where reference is made to notices, reports, approvals, consents, statements, instructions, opinions, or other types of documentation or communications required by the Contract Documents. Approval and consent documents must be received by Contractor prior to the action or decision for which approval or consent is given. These may be made in printed or electronic format through OPT's Project Management Information System or other electronic media as required by the Contract Documents or approved by Construction Manager.

J. Giving notice as required by the Contract Documents may be by printed or electronic media using a method that requires acknowledgment of the receipt of that notice.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 Delivery of Bonds and Evidence of Insurance

A. Provide required bonds and evidence of insurance required by the Contract Documents to Construction Manager with the executed Agreement.

B. Evidence of insurance must include copies of the insurance policies, including all endorsements, and identification of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

2.02 Copies of Documents

A. OPT will furnish one copy of the executed Contract Documents in electronic portable document format (PDF). This document is the Project Record Copy of the Contract Documents.

2.03 Before Starting Construction

A. Provide the following preliminary documents in accordance with the Contract Documents within 10 days after the Effective Date of the Contract:

1. Progress Schedule;
2. Schedule of Submittals;
3. Schedule of Values; and
4. Schedule of Anticipated Payments.

B. Designate the specific individuals authorized to act as representatives of Contractor. These individuals must have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of Contractor.

C. Owner will designate the specific individuals authorized to act as representatives of Owner and the limits of their authority regarding acting on behalf of Owner.

2.04 Electronic Transmittals

A. Except as otherwise stated elsewhere in the Contract Documents, the OPT and Contractor will send and accept Electronic Documents sent by Electronic Means using the protocols specified in Section 01 33 00 “Document Management.”

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 Intent

A. Requirements of each part of the Contract Documents are as binding as if required by all Contract Documents. It is the intent of the Contract Documents to describe a functionally complete project. The Contract Documents do not indicate or describe all the Work required to complete the Project. Additional details required for construction of the Project are to be provided by Contractor and coordinated with OPT.

B. Provide the labor, documentation, services, materials, or equipment that may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result, whether specifically called for in the Contract Documents or not. Include these related costs in the offered Contract Price.

C. Provide equipment that is functionally complete as described in the Contract Documents. The Drawings and Specifications do not indicate or describe all the Work required to complete the installation of equipment purchased by the Owner or Contractor. Additional details required for the correct installation of selected equipment are to be provided by Contractor and coordinated with Design Professional through Construction Manager.

D. Comply with the most stringent requirements where compliance with two or more standards is specified and they establish different or conflicting requirements for the Work, unless the Contract Documents indicate otherwise.

E. Provide materials and equipment comparable in quality to similar materials and equipment incorporated in the Project or as required to meet the minimum requirements of the application if the materials and equipment are shown in the Drawings but are not included in the Specifications.

F. The Project Record Copy of the Contract Documents governs if there is a discrepancy between the Project Record Copy of the Contract Documents and subsequent electronic or digital versions of the Contract Documents, including printed copies derived from these electronic or digital versions.

G. The Contract supersedes all prior written or oral negotiations, representations, and agreements. The Contract Documents comprise the entire Agreement between Owner and Contractor. The Contract Documents may be modified only by a Modification.

H. Request clarification from Construction Manager for a decision before proceeding if Contractor is not clear on the meaning of the Contract Documents. Construction Manager is to issue clarifications and interpretations of the Contract Documents in accordance with the Contract Documents.

I. Organization of the Documents:

1. Organization of the Contract Documents is not intended to control or lessen the responsibility of Contractor when dividing Work among Subcontractors or Suppliers, or to establish the extent of Work to be performed by trades, Subcontractors, or Suppliers, except on multi-prime contracts. Specifications or details do not need to be indicated or specified in each Specification or Drawing. Items shown in the Contract Documents are applicable regardless of their location in the Contract Documents.

2. Standard Paragraph titles and other identifications of subject matter in the Specifications are intended to aid in locating and recognizing various requirements of the Specifications. Titles do not define, limit, or otherwise restrict Specification text.

3. The Contract requirements described in the General Conditions, Supplementary Conditions, and General Requirements (Division 01 Sections of the Specifications) apply to Work regardless of where it is described in the Contract Documents, unless specifically noted otherwise.

4. Specifications or details do not need to be indicated or specified in each Specification or Drawing. Items shown in the Contract Documents are applicable regardless of their location in the Contract Documents.

J. 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.

K. Nothing in the Contract Documents creates:

1. a contractual relationship between OPT 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. an obligation on the part of OPT 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. Standard Specifications, Codes, Laws and Regulations:

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of technical societies, organizations, or associations, or to Laws or Regulations, whether specific or implied, are those in effect at the time Contractor's Bid or Proposal is submitted or when Contractor negotiates the Contract Price unless specifically stated otherwise in the Contract Documents.

2. No provision of referenced standard specifications, manuals, reference standards, codes, or instructions of a Supplier changes the duties or responsibilities of OPT or Contractor from those described in the Contract Documents or assigns a duty to or gives authority to OPT to supervise or direct the performance of the Work or undertake responsibilities inconsistent with the Contract Documents.

3. The provisions of the Contract Documents take precedence over standard specifications, manuals, reference standards, codes, or instructions of a Supplier unless specifically stated otherwise in the Contract Documents.

B. Comply with applicable construction industry standards, whether referenced or not.

1. Standards referenced in the Contract Documents govern over standards not referenced but recognized as applicable in the construction industry.

2. Comply with the requirements of the Contract Documents if they produce a higher quality of Work than the applicable construction industry standards.

3. Submit questions regarding which code or standard is applicable to Construction Manager. Design Professional will determine whether a code or standard is applicable, which of several codes or standards are applicable, or if the Contract Documents produce a higher quality of Work. Construction Manager will respond to the question as appropriate.

C. Make copies of reference standards available if requested by Construction Manager.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies:

1. Carefully study the Drawings and verify pertinent figures and dimensions with respect to actual field measurements before undertaking the Work. Immediately report conflicts, errors, ambiguities, or discrepancies that Contractor discovers or has actual knowledge of to Construction Manager.

2. Immediately notify the Construction Manager of conflicts, errors, ambiguities, or discrepancies in the Contract Documents or discrepancies between the Contract Documents and:

a. Applicable Laws or Regulations;

b. Actual field conditions;

c. Standard specifications, manuals, reference standards, or codes; or

d. Instructions of Suppliers.

3. Do not proceed with affected Work until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation from Construction Manager or by a Modification to the Contract Documents issued pursuant to Paragraph 11.01, except in an emergency as required by Paragraph 7.12.

4. Contractor is liable to OPT for failure to report conflicts, errors, ambiguities, or discrepancies in the Contract Documents of which Contractor has actual knowledge.

5. Contractor is deemed to have included the most expensive item, system, procedure, etc. in the Contract Price if a conflict, error, ambiguity, or discrepancy in the Contract Documents was known, but not reported prior to submitting the Bid or Proposal or when Contractor negotiates the Contract Price.

3.04 Interpretation of the Contract Documents

A. Submit questions concerning the non-technical or contractual/administrative requirements of the Contract Documents to Construction Manager immediately after the question arises. Construction Manager will provide an interpretation of the Contract Documents regarding these questions and will coordinate the response of OPT to Contractor.

B. Submit questions regarding the design of the Project described in the Contract Documents to Construction Manager immediately after the question arises. Construction Manager will request an interpretation of the Contract Documents from Design Professional. Construction Manager will coordinate the response of OPT to Contractor.

C. OPT may initiate a Modification to the Contract Documents through Construction Manager if a response to the question indicates that a change in the Contract Documents is required. Contractor may appeal Design Professional's or Construction Manager's interpretation by submitting a Change Proposal.

3.05 Reuse of Documents

A. Contractor's Team has no rights to the Contract Documents and may not use the Contract Documents or copies or electronic media editions of the Contract Documents other than for the construction of this Project. This provision survives final payment or termination of the Contract.

B. Contractor can retain a copy of the Contract Documents for record purposes, unless specifically prohibited by Owner for security reasons. Surrender paper and digital copies of the Contract Documents and other related documents and remove these documents from computer equipment or storage devices as a condition of final payment if Owner so directs.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 Commencement of Contract Times; Notice to Proceed

A. The Contract Times commence to run on the date indicated in the Notice to Proceed. If a Notice to Proceed is not issued, the Contract Times will commence to run 15 days after the Contract is signed by all parties.

B. Begin performing the Work on the date indicated in the Notice to Proceed. Do not begin Work before the date indicated in the Notice to Proceed or prior to providing evidence that insurance required in Article 6 is in effect.

4.02 Progress Schedule

A. Construct the Work in accordance with the Progress Schedule established in accordance with the Contract Documents.

1. Adjust the Progress Schedule as required to accurately reflect actual progress on the Work.

2. Submit proposed adjustments in the Progress Schedule that change the Contract Times in accordance with the requirements of Article 11.

B. Continue performing Work and adhere to the Progress Schedule during disputes or disagreements with Owner. Do not delay or postpone Work pending resolution of disputes or disagreements, or during an appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree.

4.03 Delays in Contractor's Progress

A. Contractor is not entitled to an adjustment in Contract Price or Contract Times for delays, disruptions, or interference caused by or within the control of Contractor's Team.

B. Contractor is entitled to an equitable adjustment in Contract Price or Contract Times if OPT directly delays, disrupts, or interferes with the performance or progress of the Work. Contractor is not entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Owner if this delay is concurrent with a delay, disruption, or interference attributable to or within the control of Contractor's Team.

C. Contractor is entitled to an equitable adjustment in the Contract Times, but not Contract Price, if Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of OPT or Contractor. These adjustments in Contract Times are Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. These unanticipated causes include:

1. Severe and unavoidable natural catastrophes e.g. fires, floods, epidemics, and earthquakes;
2. Acts of war or terrorism;
3. Acts or failures to act of utility owners or other third-party entities other than those third-party utility owners performing other work at or adjacent to the Site as arranged by Owner and, as contemplated in Article 8;
4. The existence of a differing subsurface or physical condition;
5. An Underground Facility not shown or not indicated with reasonable accuracy by the Contract Documents;
6. Hazardous Environmental Conditions; and
7. 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 unless this other work also for Owner.

D. Contractor is entitled to an equitable adjustment in the Contract Times, but not Contract Price, if Contractor's performance or progress is delayed or disrupted by weather conditions provided such weather conditions exceed those that could normally be expected for the Site in that month of the year, unless other provisions for Weather related delays are included in the Contract Documents. Contractor is to include time associated with normal weather-related delays in the Project Schedule and assumes the risks, including costs, associated with delays related to normal weather conditions.

E. Contractor is only entitled to an adjustment of the Contract Times for specific delays, disruptions, and interference to the performance or progress of the Work that can be

demonstrated to directly impact the ability of Contractor to complete the Work within the Contract Times. No adjustments in Contract Times are allowed for delays on components of the Work which were or could have been completed without impacting the Contract Times.

F. Notify Construction Manager immediately of a potential delaying, disrupting, or interfering event. Submit a Change Proposal seeking an adjustment in Contract Price or Contract Times within 30 days of the commencement of the delaying, disrupting, or interfering event. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11. Change Proposal seeking an increase in Contract Times or Contract Price submitted must include supporting data that details 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;
5. A revised Progress Schedule indicating all the activities affected by the delay, disruption, or interference;
6. An explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work;
7. The impact on Contract Price; and
8. Such additional supporting documentation as OPT may require.

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

5.01 Availability of Lands

A. Owner will furnish the Site and inform Contractor of encumbrances or restrictions known to Owner related to use of the Site with which Contractor must comply in performing the Work.

B. Provide for additional lands and access Contractor requires for temporary construction facilities or storage of materials and equipment, other than those identified in the Contract Documents. Provide documentation of authority to use these additional lands to Construction Manager before using them.

5.02 Use of Site and Other Areas

A. Confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Owner or Contractor has arranged to use through construction easements or agreements, and other adjacent areas as permitted by Laws and Regulations. Assume full responsibility for damage

or injuries which result from the performance of the Work or from other actions or conduct of Contractor's Team, including:

1. Damage to the Site;
2. Damage to adjacent areas used for Contractor's Team's operations;
3. Damage to other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and
4. Injuries and losses sustained by the owners or occupants of these lands or areas.

B. Take the following action if a damage or injury claim is made by the owner or occupant of adjacent land or area because of the performance of the Work, or because of other actions or conduct of Contractor's Team:

1. Take immediate corrective or remedial action as required by Paragraph 7.10; and
2. Attempt to settle the claim through negotiations with the owner or occupant, or otherwise resolve the claim by mediation or other dispute resolution proceeding or at law; and
3. **TO THE FULLEST EXTENT PERMITTED BY LAWS AND REGULATIONS, INDEMNIFY AND HOLD HARMLESS OWNER'S INDEMNITEES FROM AND AGAINST ANY SUCH CLAIM AND ALL INDEMNIFIED COSTS ARISING OUT OF OR RELATING TO ANY CLAIM OR ACTION BROUGHT BY ANY SUCH OWNER OR OCCUPANT AGAINST OWNER'S INDEMNITEES 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 CONTRACTOR'S TEAM.**

5.03 Subsurface and Physical Conditions

A. 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 these reports and drawings.

B. If no Technical Data have been identified in the Supplementary Conditions, then Technical Data is defined, with respect to conditions at the Site, 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, or 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.

D. Contractor may rely upon the accuracy of the Technical Data contained in these reports and drawings, but these reports and drawings are not Contract Documents. Except for this reliance on Technical Data, Contractor may not rely upon or make claims against Owner's Indemnitees with respect to:

1. The completeness of reports and drawings for Contractor's purposes, including aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, or Contractor's safety precautions and programs;

2. Other data, interpretations, opinions, and information contained in these reports or shown or indicated in the 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. Contractor's interpretation of or conclusions drawn from Technical Data or other data, interpretations, opinions, or information.

5.04 Differing Subsurface or Physical Conditions

A. Notify Construction Manager immediately, but in no event later than 3 days, after becoming aware of a subsurface or physical condition that is uncovered or revealed at the Site, and before further disturbing the subsurface or physical conditions or performing any related Work that:

1. Establishes that the Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. Requires 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.

B. Do not further disturb or perform Work related to this subsurface or physical condition, except in an emergency as required by Paragraph 7.12, until permission do so is issued by Construction Manager.

C. Construction Manager is to notify OPT after receiving notice of a differing subsurface or physical condition from Contractor. OPT will:

1. Promptly review the subsurface or physical condition;

2. Determine the necessity of OPT's obtaining additional exploration or tests with respect the subsurface or physical condition;

3. Determine if the subsurface or physical condition falls within one or more of the differing site condition categories in Paragraph 5.04.A;

4. Prepare recommendations regarding Contractor's resumption of Work relating to the subsurface or physical condition in question;

5. Determine the need for changes in the Drawings or Specifications; and

6. Advise Contractor of OPT's findings, conclusions, and recommendations.

D. Construction Manager is to issue a statement to Contractor regarding the subsurface or physical condition in question and recommend action as appropriate after review of OPT's findings, conclusions, and recommendations. Construction Manager may instruct Contractor to resume Work if OPT determines that the subsurface or physical condition in question has been adequately documented.

E. Contractor is entitled to an equitable adjustment in Contract Price or Contract Times to the extent that a differing subsurface or physical condition causes a change in Contractor's cost or time to perform the Work provided the condition falls within one or more of the categories described in Paragraph 5.04.A. Any adjustment in Contract Price for Work that is paid for on a unit price basis is subject to the provisions of Paragraph 13.03. Contractor is not entitled to an adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

1. Contractor knew of the existence of the subsurface or physical condition at the time Contractor made an offer to Owner with respect to Contract Price and Contract Times;

2. The existence of the subsurface or physical condition could have been discovered or revealed by examinations, investigations, explorations, tests, or studies of the Site and contiguous areas expressly required by the Bidding Requirements or Proposal Requirements or the Contract Documents prior to when Contractor's Bid or Proposal is submitted or when Contractor negotiates the Contract Price; or

3. Contractor failed to give notice as required by Paragraph 5.04.A.

F. Contractor may submit a Change Proposal no later than 30 days after Construction Manager's issuance of the OPT's statement to Contractor regarding the subsurface or physical condition in question.

5.05 Underground Facilities

A. The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to OPT by the owners of these Underground Facilities or by others. OPT is not responsible for the accuracy or completeness of information or data provided by others that OPT makes available to Contractor. Contractor is responsible for:

1. Reviewing and checking available information and data regarding existing Underground Facilities at the Site;

2. Complying with Laws and Regulations related to locating Underground Facilities before beginning Work;

3. Locating Underground Facilities shown or indicated in the Contract Documents;

4. Coordinating the Work with the owners, including Owner, of Underground Facilities during construction; and

5. The safety and protection of existing Underground Facilities at or adjacent to the Site and repairing damage resulting from the Work.

B. Notify Construction Manager and the owner of the Underground Facility immediately if an Underground Facility is uncovered or revealed at the Site that was not shown in the

Contract Documents or was not shown with reasonable accuracy in the Contract Documents. Do not further disturb conditions or perform Work affected by this discovery, except in the event of an emergency as required by Paragraph 7.12.

C. OPT is to take the following action after receiving notice from Construction Manager:

1. Promptly review the Underground Facility to determine if the Underground Facility was shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy;
2. Identify and communicate with the owner of the Underground Facility;
3. Prepare recommendations to OPT regarding Contractor's resumption of Work relating to this Underground Facility;
4. Determine the extent to which a change is required in the Drawings or Specifications to document the consequences of the existence or location of the Underground Facility; and
5. Construction Manager will advise Contractor of OPT's findings, conclusions, and recommendations and provide revised Drawings and Specifications if required.

D. Construction Manager is to issue a statement to Contractor regarding the Underground Facility in question and recommend action as appropriate after review of OPT's findings, conclusions, and recommendations.

E. Contractor is entitled to an equitable adjustment in the Contract Price or Contract Times to the extent that the existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy. Any adjustment in Contract Price for Work that is paid for on a unit price basis is subject to the provisions of Paragraph 13.03.

F. Contractor is not entitled an adjustment in the Contract Price or Contract Times with respect to an existing Underground Facility at the Site if:

1. Contractor knew of the existence of the existing Underground Facility at the Site at the time Contractor made an offer to Owner with respect to Contract Price and Contract Times;
2. The existence of the existing Underground Facility at the Site could have been discovered or revealed by examinations, investigations, explorations, tests, or studies of the Site and contiguous areas expressly required by the Bidding Requirements or Proposal Requirements or the Contract Documents prior to when Contractor's Bid or Proposal is submitted or when Contractor negotiates the Contract Price; or
3. Contractor failed to give notice as required by Paragraph 5.05.B.

G. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of adjustments in the Contract Price or Contract Times no later than 30 days after Construction Manager's issuance of OPT's statement to Contractor regarding the Underground Facility.

5.06 Hazardous Environmental Conditions at Site

A. The Supplementary Conditions identify those reports and drawings known to OPT relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and the Technical Data contained in these reports and drawings.

B. Contractor may rely upon the accuracy of the Technical Data contained in reports and drawings relating to Hazardous Environmental Conditions identified in the Supplementary Conditions, but these reports and drawings are not Contract Documents. Except for the reliance on expressly identified Technical Data, Contractor may not rely upon or make claims against Owner's Indemnitees with respect to:

1. The completeness of these reports and drawings for Contractor's purposes, including aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor or Contractor's safety precautions and programs related to Hazardous Environmental Conditions;

2. Other data, interpretations, opinions, and information contained in these reports or shown or indicated in the drawings; or

3. Any Contractor interpretation of or conclusion drawn from Technical Data or other data, interpretations, opinions, or information.

C. The results of tests performed on materials described in environmental reports specifically prepared for the Project and made available to Contractor are defined as Technical Data unless Technical Data has been defined more specifically in the Supplementary Conditions.

D. Contractor is not responsible for removing or remediating Hazardous Environmental Conditions encountered, uncovered, or revealed at the Site unless this removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

E. Contractor is responsible for controlling, containing, and duly removing and remediating Constituents of Concern brought to the Site by Contractor's Team and paying associated costs.

1. Owner may remove and remediate the Hazardous Environmental Condition and impose a Set-off against payments to Contractor for associated costs if Contractor's Team creates a Hazardous Environmental Condition and Contractor does not take acceptable action to remove and remediate the Hazardous Environmental Condition.

2. **TO THE FULLEST EXTENT PERMITTED BY LAWS AND REGULATIONS, CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS OWNER'S INDEMNITEES FROM AND AGAINST ALL CLAIMS AND INDEMNIFIED COSTS ARISING OUT OF OR RELATING TO THE FAILURE TO CONTROL, CONTAIN, OR REMOVE A CONSTITUENT OF CONCERN BROUGHT TO THE SITE BY CONTRACTOR'S TEAM, OR TO A HAZARDOUS ENVIRONMENTAL CONDITION CREATED BY CONTRACTOR'S TEAM. NOTHING IN THIS PARAGRAPH SHALL OBLIGATE CONTRACTOR TO INDEMNIFY ANY INDIVIDUAL OR ENTITY FROM AND AGAINST THE CONSEQUENCES OF THAT INDIVIDUAL'S OR ENTITY'S OWN NEGLIGENCE.**

F. Immediately notify Construction Manager and take the following action if Contractor uncovers or reveals a Hazardous Environmental Condition at the Site or adjacent areas used by Contractor's Team that was not created by Contractor's Team:

1. Secure or otherwise isolate this condition;

2. Stop Work in affected areas or connected with the condition, except in an emergency as required by Paragraph 7.12; and

3. Do not resume Work relating to the Hazardous Environmental Condition or in affected areas until after OPT has obtained required permits and Construction Manager sends notice to Contractor:

   a. Specifying that this condition and affected areas are or have been rendered safe for the resumption of Work; or

   b. Specifying special conditions under which Work may be resumed safely.

4. Owner may order the portion of the Work that is in the area affected by the Hazardous Environmental Condition to be deleted from the Work following the procedures in Article 11 if Contractor does not agree to:

   a. Resume the Work based on a reasonable belief it is unsafe; or

   b. Resume the Work under the special conditions provided by Construction Manager.

5. Owner may have this deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

G. Contractor may submit a Change Proposal or Owner may impose a Set-off if an agreement is not reached within 10 days of Construction Manager's notice regarding the resumption of Work as to whether Contractor is entitled to an adjustment in Contract Price or Contract Times or on the amount or extent of adjustments resulting from this Work stoppage or special conditions under which Contractor agrees to resume Work.

H. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or a Hazardous Environmental Condition uncovered or revealed at the Site.

~~**ARTICLE 6 – BONDS AND INSURANCE**~~

~~6.01 Performance, Payment, and Other Bonds~~

~~A. Furnish a performance bond in an amount equal to the Contract Price as security for the faithful performance of Work. Contractor is to use amounts paid by Owner to Contractor under the Contract for the performance of the Contract. This bond is to remain in effect until 1 year after the date of final payment.~~

~~B. Furnish a payment bond in an amount equal to the Contract Price as security to ensure payment of Contractor's obligations under the Contract Documents. This bond is to remain in effect until 1 year after the date of final payment.~~

~~1. Notify Construction Manager of claims filed against the payment bond. Notify the claimant and Construction Manager of undisputed amounts and the basis for~~

challenging disputed amounts when a claimant has satisfied the conditions prescribed by Laws and Regulations. Promptly pay undisputed amounts.

2. Owner is not liable for payment of costs or expenses of claimants under the payment bond. Owner has no obligations to pay, give notice, or take other action to claimants under the payment bond.

3. OPT will provide a copy of the payment bond and payment information to Subcontractors, Suppliers, or other persons or entities claiming to have furnished labor or materials used in the performance of the Work that request this information in accordance with Laws and Regulations.

C. Notify Construction Manager immediately if the surety on bonds furnished by Contractor:

1. Is declared bankrupt, or becomes insolvent;

2. Has its right to do business in state in which the Project is located is terminated; or

3. Ceases to meet the requirements of Paragraph 6.02.

D. Provide a bond and surety which comply with the requirements of Paragraph 6.02 within 20 days after the event giving rise to this notification.

E. Furnish other bonds as required by the Contract Documents.

F. Owner may exclude Contractor from the Site and exercise Owner's termination rights under Article 16 if Contractor fails to obtain or maintain required bonds.

6.02 Licensed Sureties

A. Provide bonds in the form prescribed by the Contract Documents from sureties named in the U.S. Department of the Treasury's Listing of Approved Sureties (Department Circular 570 "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies").

B. Provide bonds required by the Contract Documents from surety companies that are duly licensed or authorized to provide bonds in the state in which the Project is constructed.

6.03 Insurance - General Provisions

A. Obtain and maintain insurance with coverage amounts equal to or greater than the amounts specified in Section 00 73 16 "Insurance Requirements" or greater where required by Laws and Regulations.

B. Obtain insurance from companies that are duly licensed or authorized in the state in which the Project is constructed to issue insurance policies and that have an A.M. Best rating of A -VIII or better.

C. Deliver evidence of insurance in accordance with Section 00 73 16 "Insurance Requirements" to Owner to demonstrate that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Provide copies of these certificates to Owner and additional insured.

D. Furnish copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles upon request by Owner or any additional insured. Contractor

~~may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this paragraph.~~

~~E. OPT's failure to demand such certificates or other evidence of Contractor's full compliance with the insurance requirements or failure to identify a deficiency in compliance from the evidence provided is not a waiver of Contractor's obligation to obtain and maintain the insurance required by the Contract Documents.~~

~~F. Notify Owner if Contractor fails to purchase or maintain the insurance required by the Contract Documents. Do not perform any Work on the Project unless the required insurance policies are in effect. Owner may exclude Contractor from the Site and exercise Owner's termination rights under Article 16 if Contract fails to obtain or maintain the required insurance.~~

~~G. Owner may elect to obtain equivalent insurance to protect Owner's interests without prejudice to any other right or remedy if Contractor fails to obtain or maintain the required insurance. Owner may impose a reasonable Set-off against payments due under Article 15 to recover the cost of the insurance.~~

~~H. Owner does not represent that the insurance coverage and limits established in this Contract are adequate to protect Contractor or Contractor's interests.~~

~~I. The required insurance and insurance limits do not limit Contractor's liability under the indemnities granted to Owner's Indemnitees in the Contract Documents.~~

~~J. Provide for an endorsement that the "other insurance" clause will not apply to OPT where OPT is an additional insured shown on the policy. Contractor's insurance is primary and non-contributory with respect to any insurance or self-insurance carried by OPT for liability arising out of operations under this Agreement.~~

~~K. Include and list OPT and any other individuals or entities identified in the Section 00 73 16 "Insurance Requirements" as additional insureds on all policies except for the workers' compensation policy and Contractor's professional liability policy.~~

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 Contractor's Means and Methods of Construction

A. Contractor is solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. Provide professional engineering or other design services if the Contract Documents require such services or if Contractor determines that such services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety. Engineering or other design services are to be provided by a properly licensed design professional authorized to provide these services in the state in which the Project is constructed. Such services are not Owner-delegated professional design services under this Contract, and OPT does not have 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. Supervise, inspect, and direct the performance of the Work.

B. Provide a competent resident superintendent acceptable to OPT. The resident superintendent or acceptable qualified assistant is to always be present when Work is being done. Do not replace this resident superintendent except under extraordinary circumstances. Provide a replacement resident superintendent equally competent to the previous resident superintendent if replacement is required. Notify Owner prior to replacing the resident superintendent and obtain Owner's consent to the change in superintendent.

7.03 Labor; Working Hours

A. Provide competent, suitably qualified personnel to complete the Work. Maintain good discipline and order at the Site. Contractor is responsible for all acts and omissions of Contractor's Team.

B. Perform Work at the Site during regular working hours except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent to the Site and except as otherwise stated in the Contract Documents.

C. Do not perform Work on a Saturday, Sunday, or Owner-observed holiday without Construction Manager's consent. If a legal holiday falls on a Saturday, it will be observed the preceding Friday. If a legal holiday falls on a Sunday, it will be observed the following Monday.

D. Pay additional cost incurred by Owner for services of Construction Manager to observe Work constructed outside of regular working hours. Construction Manager will issue a Set-off in the Application for Payment for this cost per Paragraph 15.01.B.

7.04 Services, Materials, and Equipment

A. Provide services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and other facilities and incidentals necessary for the performance, testing, startup, and completion of the Work, whether or not these items are specifically called for in the Contract Documents.

B. Provide new materials and equipment to be incorporated into the Work. Provide special warranties and guarantees required by the Contract Document. Provide satisfactory evidence, including reports of required tests, as to the source, kind, and quality of materials and equipment as required by the Contract Documents or as requested by Construction Manager.

C. Store, apply, install, connect, erect, protect, use, clean, and condition materials and equipment in accordance with instructions of the applicable Supplier, unless otherwise required by the Contract Documents.

7.05 Concerning Subcontractors, and Suppliers

A. Contractor may retain Subcontractors and Suppliers which are acceptable to Owner for the performance of parts of the Work. Contractor must retain specific Subcontractors or Suppliers if required to do so by the Contract Documents. Contractor must use Subcontractors or Suppliers named in the Bid or Proposal if Contractor was selected in part based on these named Subcontractors or Suppliers.

B. Submit a list of proposed Subcontractors and Suppliers to Construction Manager prior to entering into binding subcontracts or purchase orders. These proposed Subcontractors or Suppliers are deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 10 days after receiving this list.

C. Owner may require the replacement of Subcontractors or Suppliers retained by Contractor. Provide an acceptable replacement for the rejected Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements, subject to Contractor's reasonable objections.

D. Contractor may be entitled to an adjustment in Contract Price or Contract Times with respect to a replacement of Subcontractors or Suppliers required by Owner. Notify Construction Manager immediately if a replacement of Subcontractors or Suppliers increases the Contract Price or Contract Times. Initiate a Change Proposal for the adjustment within 10 days of Owner's notice to replace a Subcontractor or Supplier. Do not make the replacement until the change in Contract Price or Contract Times has been accepted by Owner if Change Proposal is to be submitted. Contractor is not entitled to an adjustment in Contract Price or Contract Times if OPT requires the replacement of the Subcontractor or Supplier based on an unacceptable safety record, lack of experience or qualifications, or other cause.

E. Acceptance by Owner of Subcontractors, Suppliers, or other individuals or entities, whether initially or as a replacement, does not constitute a waiver of the obligation of Contractor to complete the Work in accordance with the Contract Documents.

F. Maintain a current and complete list of Subcontractors and Suppliers that are to perform or furnish part of the Work.

G. Contractor is fully responsible for the acts and omissions of Subcontractors and Suppliers and is solely responsible for scheduling and coordinating their Work.

H. Require Subcontractors, Suppliers, and other individuals or entities performing or furnishing Work to communicate with OPT through Contractor.

I. Contracts between Contractor and their Subcontractors or Suppliers may specifically bind the Subcontractors or Suppliers to the applicable terms and conditions of the Contract Documents. Contractor is responsible for meeting the requirements of the Contract Documents if they choose to not bind the Subcontractors or Suppliers to applicable terms or conditions of the Contract Documents.

J. OPT may furnish information about amounts paid to Contractor for Work provided by Subcontractors or Suppliers to the entity providing the Work.

K. Nothing in the Contract Documents:

1. Creates a contractual relationship between members of OPT and members of Contractor's Team; or

2. Creates an obligation on the part of Owner to pay or to see to the payment of money due members of Contractor's Team, except as may be required by Laws and Regulations.

7.06 Patent Fees and Royalties

A. Pay license fees, royalties, and costs incident to the use of inventions, designs, processes, products, or devices which are patented or copyrighted by others in the performance of the Work, or to incorporate these inventions, designs, processes, products, or devices which are patented or copyrighted by others in the Work. The Contract Documents identify inventions, designs, processes, products, or devices OPT knows are patented or copyrighted by others, or that its use is subject to patent rights or copyrights calling for the payment of a license fee or royalty to others. Contractor is to include the cost associated with the use of patented or copyrighted products or processes, whether specified or selected by Contractor, in the Contract Price.

B. **TO THE FULLEST EXTENT PERMITTED BY LAWS AND REGULATIONS, CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS OWNER'S INDEMNITEES FROM AND AGAINST ALL CLAIMS AND INDEMNIFIED COSTS ARISING OUT OF OR RELATING TO ANY INFRINGEMENT OF PATENT RIGHTS OR COPYRIGHTS BY CONTRACTOR'S TEAM 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.**

7.07 Permits

A. Obtain and pay for construction permits and licenses, and certificates of occupancy, if required. OPT is to assist Contractor in obtaining permits and licenses when required to do so by applicable Laws and Regulations. Pay governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time the Contractor's Bid or Proposal is submitted or when Contractor negotiates the Contract Price.

7.08 Taxes

A. Contractor is responsible for all taxes and duties arising out of the Work. Contractor is responsible for including in the Contract Price any applicable sales and use taxes and is responsible for complying with all applicable Laws and Regulations. Pay sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations.

7.09 Laws and Regulations

A. Give required notices and comply with Laws and Regulations applicable to the performance of the Work. OPT is not responsible for monitoring Contractor's compliance with Laws or Regulations except where expressly required by applicable Laws and Regulations.

B. Pay costs resulting from actions taken by Contractor that are contrary to Laws or Regulations. Contractor is not responsible for determining that the design aspects of the Work described in the Contract Documents is in accordance with Laws and Regulations. This does not relieve Contractor of its obligations under Paragraph 3.03.

C. **TO THE FULLEST EXTENT PERMITTED BY LAWS AND REGULATIONS, CONTRACTOR SHALL INDEMNIFY AND HOLD OWNER'S INDEMNITEES HARMLESS FROM ALL CLAIMS AND INDEMNIFIED COSTS RESULTING FROM ACTIONS TAKEN BY CONTRACTOR'S TEAM THAT ARE CONTRARY TO LAWS OR REGULATIONS.**

D. Owner or Contractor may give notice to the other party of changes in Laws or Regulations that may affect the cost or time of performance of the Work, including:

1. Changes in Laws or Regulations affecting procurement of permits; and

2. Sales, use, value-added, consumption, and other similar taxes which come into effect after Contractor's Bid or Proposal is submitted or when Contractor negotiates the Contract Price.

E. Contractor may submit a Change Proposal or Owner may initiate a Claim within 30 days of this notice if Owner and Contractor are unable to agree on entitlement to or on the amount or extent of adjustments in Contract Price or Contract Times resulting from these changes.

7.10 Safety and Protection

A. Contractor is solely responsible for initiating, maintaining, and supervising safety precautions and programs relating to the Work. This 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. Take necessary precautions for the safety of persons on the Site or who may be affected by the Work, and provide the necessary protection to prevent damage, injury, or loss to:

1. Work and materials and equipment to be incorporated in the Work, whether stored on or off the Site; and

2. Other property at or adjacent to the Site, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement during construction.

C. Comply with applicable Laws and Regulations relating to the safety and protection of persons or property. Erect and maintain necessary safeguards for safety and protection. Notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site when prosecution of the Work may affect them. Cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

D. Remedy damage, injury, or loss to property referred to in Paragraph 7.10.B caused by Contractor's Team. Pay remediation costs unless the damage or loss is:

1. Attributable to the fault of the Contract Documents;

2. Attributable to acts or omissions of OPT; or

3. Not attributable to the actions or failure to act of Contractor's Team.

E. Contractor's duties and responsibilities for safety and protection of persons or the Work or property at or adjacent to the Site continues until Work is completed and resumes whenever Contractor's Team returns to the Site to fulfill warranty or correction obligations or to conduct other tasks.

F. Comply with the applicable requirements of the Owner's safety program if required to do so in the Supplementary Conditions. A copy of the Owner's safety program will be provided in the Bidding Documents or Proposal Documents.

G. Provide a qualified and experienced safety representative at the Site whose duties and responsibilities are the prevention of accidents and maintaining and supervising safety programs.

7.11 Hazard Communication Programs

A. Coordinate the exchange of safety data sheets or other hazard communication information required to be made available or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.12 Emergencies

A. Act to prevent threatened damage, injury, or loss in emergencies affecting the safety or protection of persons or the Work or property at or adjacent to the Site. Notify Construction Manager immediately if Contractor believes that significant changes in the Work or variations from the Contract Documents have been caused or are required because of this need to act. A Modification is to be issued by Construction Manager if OPT determines that the incident giving rise to the emergency action was not the responsibility of Contractor and that a change in the Contract Documents is required because of the action taken by Contractor in response to this emergency.

7.13 Contractor's General Warranty and Guarantee

A. Contractor warrants and guarantees to Owner that Work is in accordance with the Contract Documents and is not Defective. Owner is entitled to rely on Contractor's warranty and guarantee. 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 7.14. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.13 is limited only by applicable Laws and Regulations restricting actions to enforce such rights. Assume and bear responsibility for costs and time delays associated with variations from the requirements of the Contract Documents.

B. This Contractor's warranty and guarantee excludes defects or damage caused by abuse, improper maintenance or operation, or modification by OPT; or normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete Work in accordance with the Contract Documents is absolute. None of the following constitute an acceptance of Defective Work,

a release of Contractor's obligation to perform Work in accordance with the Contract Documents or a release of Owner's warranty or guarantee rights under this Paragraph:

1. Observations by OPT;
2. Recommendation by Construction Manager or payment by Owner of progress or final payments;
3. The issuance of a certificate of Substantial Completion;
4. The issuance of a certificate of Final Completion;
5. The end of the correction period established in Paragraph 7.14;
6. Use or occupancy of part of the Work by Owner;
7. Review and approval of a Shop Drawing or Sample;
8. Inspections, tests, or approvals by others; or
9. Correction of Defective Work by Owner.

D. The Contract Documents may require Contractor to accept the assignment of a contract between the Owner and a contractor or supplier. The specific warranties, guarantees, and correction obligations contained in an assigned contract govern with respect to Contractor's performance obligations to Owner for the Work described in an assigned contract.

7.14 Correction Period

A. Promptly correct Defective Work without cost to Owner for 1 year after the date of Substantial Completion or longer periods of time prescribed by the terms of the Contract Documents.

B. Promptly correct damages to the Site or adjacent areas that Contractor has arranged to use through construction easements or other agreements. Promptly correct damages to Work or the work of others. Make corrections without cost to Owner.

C. Owner may have the Defective Work and damages described in Paragraphs 7.14.A and 7.14.B corrected if Contractor does not comply with the terms of Construction Manager's instructions, or in an emergency where delay would cause serious risk of loss or damage.

D. **NOTWITHSTANDING ANYTHING TO THE CONTRARY IN THIS AGREEMENT OR THE CONTRACT DOCUMENTS AND TO THE FULLEST EXTENT PERMITTED BY LAWS AND REGULATIONS, CONTRACTOR SHALL INDEMNIFY AND HOLD OWNER'S INDEMNITEES HARMLESS FROM AND AGAINST ALL CLAIMS AND INDEMNIFIED COSTS ARISING OUT OF OR RELATING TO THE CORRECTION OF DEFECTIVE WORK.**

E. The correction period starts to run from the date when a specific item of equipment or systems are placed in continuous beneficial use by Owner before Substantial Completion of Work if so provided in the Specifications or if accepted for beneficial use by Owner.

F. The correction period is extended for an additional period of 1 year for Defective Work corrected after the date of Substantial Completion or after the accepted date the correction period starts to run as described in Paragraph 7.14.E. This extended correction

period starts to run when Defective Work has been satisfactorily corrected under this Paragraph 7.14.

G. Contractor's obligations under this Paragraph 7.14 are in addition to other obligations or warranties. The provisions of this Paragraph 7.14 are not a substitute for, or a waiver of, the provisions of applicable statutes of limitation or repose.

7.15 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'S INDEMNITEES FROM AND AGAINST ALL CLAIMS AND INDEMNIFIED COSTS ARISING OUT OF OR RELATING TO THE PERFORMANCE OF THE WORK, PROVIDED THAT ANY SUCH CLAIM, ACTION, LOSS, 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'S TEAM.**

B. The indemnification obligation under Paragraph 7.15.A is not limited by the amount or type of damages, compensation, or benefits payable by or for members of Contractor's Team or other individuals or entities under workers' compensation acts, disability benefit acts, or other employee benefit acts in claims against Owner's Indemnitees by an employee or the survivor or personal representative of employee of Contractor's Team.

7.16 Delegation of Professional Design Services

A. Contractor is to provide professional design services required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures.

B. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. This delegation will specify the performance and design criteria that such services must satisfy and the Submittals that Contractor must furnish to Construction Manager with respect to Owner delegated design. Contractor is not required to provide these professional services in violation of applicable Laws and Regulations.

C. Owner-delegated professional design services provided through Contractor are 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 other Submittals prepared by such design professional. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Construction Manager, then such Shop Drawing or other Submittal must bear the design professional's written approval when submitted by Contractor to Construction Manager.

D. OPT is entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by Contractor's design professionals, provided OPT has specified to Contractor the performance and design criteria that these services must satisfy.

E. Pursuant to this Paragraph 7.16, OPT's review and approval of 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;

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 is not responsible for the adequacy of the performance or design criteria specified by OPT. Advise OPT if the performance or design criteria are known or considered likely to be inadequate or otherwise deficient.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 Other Work

A. Owner may arrange for other work at or adjacent to the Site which is not part of the Contractor's Work. This other work may be performed by Owner's employees or through other contractors. Utility owners may perform work on their utilities and facilities at or adjacent to the Site. Include costs associated with coordinating with entities performing other work or associated with connecting to this other work in the Contract Price if this other work is shown in the Contract Documents.

B. OPT is to notify Contractor of other work prior to starting the work and provide any knowledge they have regarding the start of utility work at or adjacent to the Site to Contractor.

C. Provide other contractors:

1. Proper and safe access to the Site;

2. Reasonable opportunity for the introduction and storage of materials and equipment; and

3. Reasonable opportunity to execute their work.

D. Provide cutting, fitting, and patching of the Work required to properly connect or integrate with other work. Do not endanger the work of others by cutting, excavating, or otherwise altering the work of others without the consent of Construction Manager and the others whose work will be affected.

E. Inspect the work of others and immediately notify Construction Manager if the proper execution of part of Contractor's Work depends upon work performed by others and this work has not been performed or is unsuitable for the proper execution of Contractor's Work. Contractor's failure to notify Construction Manager constitutes an acceptance of this other work as acceptable for integration with Contractor's Work. This acceptance does not apply to latent defects or deficiencies in the work of others.

F. Take adequate measures to prevent damages, delays, disruptions, or interference with the work of Owner, other contractors, or utility owners performing other work at or adjacent to the Site.

G. The provisions of this Article 8 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 4.03.

8.02 Coordination

A. Owner has sole authority and responsibility for coordination of this other work unless otherwise provided in the Contract Documents. Owner is to identify the entity with authority and responsibility for coordination of the activities of the various contractors, the limitations of their authority, and the work to be coordinated prior to the start of other work at or adjacent to the Site.

8.03 Legal Relationships

A. Contractor may be entitled to a change in Contract Price or Contract Times if, while performing other work at or adjacent to the Site for Owner, the OPT, other contractor, or utility owner:

1. Damages the Work or property of Contractor's Team;

2. Delays, disrupts, or interferes with the execution of the Work; or

3. Increases the scope or cost of performing the Work through their actions or inaction.

B. Notify Construction Manager immediately of the event leading to a potential Change Proposal so corrective or mitigating action can be taken. Submit the Change Proposal within 30 days of the event if corrective action has not adequately mitigated the impact of the actions or inactions of others. Information regarding this other work in the Contract Documents is used to determine if Contractor is entitled to a change in Contract Price or Contract Times. Changes in Contract Price require that Contractor assign rights against the other contractor or utility owner to Owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Changes in Contract Times require that the time extension is essential to Contractor's ability to complete the Work within the Contract Times.

C. Take prompt corrective action if Contractor's Team damages, delays, disrupts, or interferes with the work of Owner's employees, other contractors, or utility owners performing other work at or adjacent to the Site or agree to compensate other contractors or utility owners for correcting the damage. Promptly attempt to settle claims with other contractors or utility owners if Contractor damages, delays, disrupts, or interferes with the work of other contractors or utility owners performing other work at or adjacent to the Site.

D. Owner may impose a Set-off against payments due to Contractor and assign the Owner's contractual rights against Contractor with respect to the breach of the obligations described in this Paragraph 8.03 to other contractors or utility owners if damages, delays, disruptions, or interference occur.

E. **NOTWITHSTANDING ANYTHING TO THE CONTRARY IN THIS AGREEMENT OR THE CONTRACT DOCUMENTS AND TO THE FULLEST EXTENT PERMITTED BY LAWS AND REGULATIONS, CONTRACTOR SHALL INDEMNIFY AND HOLD OWNER'S INDEMNITEES**

HARMLESS FROM AND AGAINST ALL CLAIMS AND INDEMNIFIED COSTS RESULTING FROM CONTRACTOR'S TEAM'S ACTION OR INACTION RELATED TO DAMAGES, DELAYS, DISRUPTIONS, OR INTERFERENCE WITH THE WORK OF OWNER'S EMPLOYEES, OTHER CONTRACTORS, OR UTILITY OWNERS PERFORMING OTHER WORK AT OR ADJACENT TO THE SITE.

ARTICLE 9 – OWNER'S AND OPT'S RESPONSIBILITIES

9.01 Communications to Contractor

A. OPT issues communications to Contractor through Construction Manager except as otherwise provided in the Contract Documents.

9.02 Replacement of Owner's Project Team Members

A. Owner may replace members of OPT at its discretion.

9.03 Furnish Data

A. OPT is to furnish the data required of OPT under the Contract Documents.

9.04 Pay When Due

A. Owner is to make payments to Contractor when due as described in Article 15.

9.05 Lands and Easements; Reports and Tests

A. Owner's duties with respect to providing lands and easements are described in Paragraph 5.01. OPT will make copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site available to Contractor in accordance with Paragraph 5.03.

9.06 Insurance

A. Owner's responsibilities with respect to purchasing and maintaining insurance are described in Article 6.

9.07 Modifications

A. Owner's responsibilities with respect to Modifications are described in Article 11.

9.08 Inspections, Tests, and Approvals

A. OPT's responsibility with respect to certain inspections, tests, and approvals are described in Paragraph 14.02.

9.09 Limitations on OPT's Responsibilities

A. OPT does not supervise, direct, or have control or authority over, and is not responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or related safety precautions and programs, or for failure of Contractor to comply with Laws

and Regulations applicable to the performance of the Work. OPT is not responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

B. OPT is not responsible for the acts or omissions of Contractor's Team. No actions or failure to act, or decisions made in good faith to exercise or not exercise the authority or responsibility available under the Contract Documents creates a duty in contract, tort, or otherwise of OPT to the Contractor or members of Contractor's Team.

9.10 Undisclosed Hazardous Environmental Condition

A. OPT's responsibility for undisclosed Hazardous Environmental Conditions is described in Paragraph 5.06.

9.11 Compliance with Safety Program

A. Contractor is to inform OPT of its safety programs and OPT is to comply with the specific applicable requirements of this program.

ARTICLE 10 – DESIGN PROFESSIONAL'S AND CONSTRUCTION MANAGER'S STATUS DURING CONSTRUCTION

10.01 Owner's Representative

A. Construction Manager is Owner's representative. The duties and responsibilities and the limitations of authority of Construction Manager as Owner's representative are described in the Contract Documents.

10.02 Visits to Site

A. Design Professional is to make periodic visits to the Site to observe the progress and quality of the Work. Design Professional is to determine, in general, if the Work is proceeding in accordance with the Contract Documents based on observations made during these visits. Design Professional is not required to make exhaustive or continuous inspections to check the quality or quantity of the Work. Design Professional is to inform OPT of issues or concerns and Construction Manager is to work with Contractor to address these issues or concerns. Design Professional's visits and observations are subject to the limitations on Design Professional's authority and responsibility described in the Contract Documents.

B. Construction Manager is to observe the Work to check the quality and quantity of Work, implement Owner's quality assurance program and administer the Contract as Owner's representative as described in the Contract Documents. Construction Manager's visits and observations are subject to the limitations on Construction Manager's authority and responsibility described in the Contract Documents.

10.03 Rejecting Defective Work

A. OPT has the authority to reject Work in accordance with Article 14. Construction Manager is to notify Contractor of Defective Work of which it is aware and document when Defective Work has been corrected or accepted in accordance with Article 14.

10.04 Decisions on Requirements of Contract Documents and Acceptability of Work

A. Construction Manager is to render decisions regarding non-technical or contractual/administrative requirements of the Contract Documents and will coordinate the response of OPT to Contractor.

B. Design Professional is to render decisions regarding the conformance of the Work to the requirements of the Contract Documents. Design Professional will render a decision to either correct the Defective Work, or accept the Work under the provisions of Paragraph 14.04, if Work does not conform to the Contract Documents. Construction Manager will coordinate the response of OPT to Contractor.

C. Construction Manager will issue a Request for a Change Proposal if a Modification is required. Construction Manager will provide documentation for changes related to the non-technical or contractual/administrative requirements of the Contract Documents. Design Professional will provide documentation if design related changes are required through Construction Manager.

D. Contractor may appeal OPT's decision by submitting a Change Proposal if Contractor does not agree with the OPT's decision.

~~**ARTICLE 11 – CHANGES TO THE CONTRACT**~~

~~11.01 Amending and Supplementing the Contract Documents~~

~~A. A Contract Amendment, Change Order, Work Change Directive, or Field Order may modify the Contract Documents. Modifications that include a change in the Contract Price or Contract Times can only be made in a Contract Amendment or Change Order.~~

~~B. 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 design or technical matters, must be supported by Design Professional's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of Design Professional.~~

~~C. Proceed with the Changes in the Work or, in the case of a deletion in the Work, immediately cease construction activities related to the deleted Work upon receipt of the Modification.~~

~~D. Contractor is not entitled to an increase in the Contract Price or an extension of the Contract Times with respect to Work performed that is not required by the Contract Documents, except in the case of an emergency as provided in Paragraph 7.12, or in the case of uncovering Work as provided in Paragraph 14.05. Contractor is responsible for costs and time delays associated with variations from the requirements of the Contract Documents unless the variations are specifically approved by Change Order.~~

~~E. Acceptance of a Modification by Contractor constitutes agreement that the compensation provided by that Modification is the full, complete, and final compensation for all costs Contractor has or may incur because of or relating to this Modification whether these costs are known, unknown, foreseen, or unforeseen at this time, including any cost for delay, extended overhead, ripple or impact cost, or any other effect on changed or unchanged Work as a result of this Modification.~~

F. Acceptance of a Modification by Contractor constitutes agreement that the changes in Contract Times are the complete and final adjustments for direct impacts to the ability of Contractor to complete the Work within the Contract Times and are the only adjustments to which Contractor is entitled.

G. Perform added or revised Work under the applicable provisions of the Contract Documents for the same or similar Work unless different Drawings, Specifications, or directions are provided in the Modification.

H. Nothing in this paragraph 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.

11.02 Contract Amendments

A. Owner and Contractor may modify the terms and conditions of the Contract Documents without the recommendation of Design Professional using a Contract Amendment.

B. A Contract Amendment may also be used for authorizing a new task order for task order contracts or a new phase of the Work when using phased construction or purchasing Goods and Special Services to be incorporated into the Project. The Contract Amendment may be used to establish the Contract Price, Contract Times, or terms and conditions of the Contract for the new task order or phase of Work if not already established in the Contract Documents.

11.03 Change Orders

A. All changes to the Contract Documents that include a change in the Contract Price or the Contract Times for previously authorized Work and changes to the Work requiring Design Professional's approval must be made by a Change Order. Change Orders prepared by Construction Manager may cover:

1. Changes in Contract Price or Contract Times which are submitted by Contractor as a Change Proposal and agreed to by the parties;

2. Changes in Contract Price or Contract Times to pay for undisputed Work performed in accordance with a Work Change Directive;

3. Changes in Contract Price or Contract Times making final adjustments for Work covered under Alternates and Allowances;

4. Changes in Contract Price or Contract Times making final adjustments to actual quantities for Unit Price Work;

5. Changes in Contract Price resulting from an Owner Set-off, unless the set-off has been successfully challenged by Contractor;

6. Changes in Contract Price or Contract Times resulting from resolution of Claims;

7. Changes in Contract Price or Contract Times 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

8. Other similar provisions that will modify the Contract Price or Contract Times.

B. A Change Order may also be used to establish modifications of the Contract Documents that do not affect the Contract Price or Contract Times.

11.04 Work Change Directives

A. A Work Change Directive does not change the Contract Price or the Contract Times, but is evidence that the parties expect that the modifications ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations on the Contract Price and Contract Times.

B. Contractor must submit a Change Proposal seeking an adjustment of the Contract Price or the Contract Times no later than 30 days after the completion of the Work set out in the Work Change Directive if negotiations are unsuccessful under the terms of the Contract Documents governing adjustments.

11.05 Field Orders

A. Design Professional may require minor changes in the Work that do not change the Contract Price or Contract Times using a Field Order through Construction Manager. Construction Manager may issue a Field Order for non-technical, administrative issues. Submit a Change Proposal if Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times before proceeding with the Work described in the Field Order.

11.06 Change Proposals

A. Submit a Change Proposal to Construction Manager to:

1. Request an adjustment in the Contract Price or Contract Times;

2. Contest an initial decision by OPT concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents;

3. Contest a Set-off against payment due; or

4. Seek other relief under the Contract Documents.

B. Notify Construction Manager immediately if a Change Proposal is to be submitted. Submit each Change Proposal to Construction Manager no later than 30 days after the event initiating the Change Proposal. Submit the following as part of the Change Proposal:

1. Any proposed change in Contract Price, Contract Times, or other relief, accompanied by a statement that the requested Change Order is the entire adjustment to which Contractor believes it is entitled;

2. The reason for the proposed change; and

3. Supporting data, accompanied by a statement that the supporting data is accurate and complete.

C. Construction Manager is to advise OPT regarding the Change Proposal. OPT is to review each Change Proposal and Contractor's supporting data, and within 30 days after receipt of the documents, direct Construction Manager to either approve or deny the Change Proposal in whole or in part. Construction Manager is to issue a Change Order for an approved Change Proposal. Change Proposals are denied if Construction Manager does not

act on the Change Proposal within 30 days. Contractor may start the time for appeal of the denial under Article 12.

11.07 Change of Contract Price; Contract Times

A. Change Proposals for an adjustment in the Contract Price must comply with the provisions of this Paragraph 11.07. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12. Any adjustment of the Contract Times is subject to the limitations described in Paragraph 4.03.

B. An adjustment in the Contract Price is to be determined as follows:

1. By applying unit prices to the quantities of the items involved, subject to the provisions of Paragraph 13.03, where the Work involved is covered by unit prices in the Contract Documents;

2. By a mutually agreed lump sum where the Work involved is not covered by unit prices in the Contract Documents; or

3. Payment based on the Cost of the Work determined as provided in Article 13 when the Work involved is not covered by unit prices in the Contract Documents or the parties do not reach a mutual agreement to a lump sum.

C. The original Contract Price may not be increased by more than 25 percent unless further limited by Laws and Regulations. Owner may decrease the Work by up to 25 percent of the Contract Price without adjusting Contractor's fee.

11.08 Execution of Change Orders and Contract Amendments

A. Each Change Order or Contract Amendment must be specific and final as to changes in Contract Price and Contract Times for the changes described in the Change Order or Contract Amendment. Acceptance of a Change Order or Contract Amendment by Contractor constitutes a full accord and satisfaction for all claims and costs of any kind, whether direct or indirect, including impact, delay, or acceleration damages related to the Change Order or Contract Amendment. The execution of a Change Order or Contract Amendment by Contractor constitutes conclusive evidence of Contractor's agreement to the ordered changes in the Work, with no reservations or other provisions allowing for future changes in the Contract Price or Contract Times. This Contract, as amended, forever releases any claim against Owner for additional time or compensation for matters relating to or arising out of or resulting from the Work included within or affected by the executed Change Order or Contract Amendment. This release applies to claims related to the cumulative impact of all Change Orders or Contract Amendment and to any claim related to the effect of a change on unchanged Work.

B. A Change Order or Contract Amendment is deemed to be in full force as if executed by Contractor if Contractor refuses to execute a Change Order or Contract Amendment that is required to be executed under the terms of this Paragraph 11.08.

11.09 Notice to Surety

A. Notify the surety of Modifications affecting the general scope of the Work, changes in the provisions of the Contract Documents, or changes in Contract Price or Contract Times. Adjust the amount of each bond when Modifications change the Contract Price.

ARTICLE 12 – CLAIMS

12.01 Claims

A. Follow the Claims process described in this Article for a demand or assertion by Contractor:

1. Contesting an initial decision by OPT concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents;

2. Contesting OPT's decision regarding a Change Proposal;

3. Seeking resolution of a contractual issue that OPT has declined to address;

4. Seeking other relief with respect to the terms of the Contract; or

5. Any issue, request, demand, or dispute arising after Construction Manager's recommendation of Final Payment not specifically listed in the Certificate of Final Completion.

B. Notify Construction Manager no later than 7 days after the start of the event giving rise to the Claim or, in the case of appeals regarding Change Proposals, within 7 days of the decision under appeal. The responsibility to substantiate a Claim rests with the entity making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Price or Contract Times, Contractor must certify that the Claim is made in good faith, that the supporting data is 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. The entity receiving a Claim is to review the Claim and consider its merits. The Owner and Contractor are to seek to resolve the Claim through the exchange of information and direct negotiations. The Owner and Contractor may extend the time for resolving the Claim by mutual agreement. Notify Construction Manager of actions taken on a Claim.

D. Owner and Contractor may mutually agree to mediate the underlying dispute at any time after initiation of a Claim.

1. The agreement to mediate suspends the Claims process.

2. Owner or Contractor may unilaterally terminate the mediation process after 60 days from the agreement to mediate and resume the Claims process as of the date of the termination. The Claim process resumes as of the date of the conclusion of the mediation, as determined by the mediator, if the mediation is unsuccessful in resolving the dispute.

3. Owner and Contractor are to each pay one-half of the mediator's fees and costs.

E. If the entity receiving a Claim approves the Claim in part or denies it in part, this action is final and binding unless the other entity invokes the procedure described in Article 17 for final resolution of disputes within 30 days of this action.

F. Notify Construction Manager if efforts to resolve the Claim are not successful and the Claim is denied. A denial of the Claim is final and binding unless the other entity invokes the procedure described in Article 17 for the final resolution of disputes within 30 days of the denial.

G. The results of the agreement or action on the Claim is to be incorporated in a Change Order by Construction Manager to the extent they affect the Contract Documents, the Contract Price, or the Contract Times if the Owner and Contractor reach an agreement regarding a Claim.

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

13.01 Cost of the Work

A. The Cost of the Work is the sum of costs described in this Paragraph 13.01, except those excluded in Paragraph 13.01.D, necessary for the proper performance of the Work. 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, time-and-materials, or other cost-based terms; or

2. To determine the value of a Change Order, Change Proposal, Claim, Set-off, or other adjustment in Contract Price.

B. Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the events giving rise to the adjustment when the value of the adjustment is determined on the basis of the Cost of the Work.

C. Costs included in the Cost of the Work may not exceed the costs commonly incurred in the proximate area of the Site for similar work unless agreed to by Owner. Cost of the Work includes only the following items:

1. Payroll costs for Contractor's employees performing the Work, including one foreman per crew, and other required and agreed upon personnel for the time they are employed on the Work. Employees are to be paid according to wage rates for job classifications as agreed to by Owner in advance of the Work. Rates paid for this Work are to be the same as paid for Contract Work as established by certified payroll. Payroll costs may include:

a. Actual costs paid for salaries and wages;

b. Actual cost paid for fringe benefits, which consists of:

1) Social security contributions,

2) Unemployment,

3) Excise and payroll taxes,

4) Workers' compensation,

5) Health and retirement benefits, and

6) Paid time off for sick leave, vacations and holidays; and

c. Actual cost of additional compensation paid for performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, to the extent authorized by Owner.

2. Cost of materials and equipment furnished and incorporated in the Work, including transportation and storage costs and required Suppliers' field services. Contractor may retain cash discounts unless Owner provided funds to Contractor for early payment of these materials and equipment. Cash discounts are to be credited to Owner if Owner provides funds for early payment. Make provisions for trade discounts, rebates, refunds, and returns from sale of surplus materials and equipment and reduce the Cost of the Work by these amounts.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. Obtain competitive bids from Subcontractors acceptable to Owner if required by OPT. Bids are to be opened in the presence of Construction Manager and other designated members for OPT. Provide copies of bids to Construction Manager to use in determining, with OPT, which bids are acceptable. The Subcontractor's Cost of the Work and fee are determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01 if the subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee.

4. Supplemental 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. Costs of materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site including transportation and maintenance costs related specifically to the Work;

   c. Costs of engineers, architects, testing laboratories, surveyors, employed or retained for services specifically related to the Work.

   d. Actual cost for construction equipment, including the costs of transporting, loading, unloading, assembling, dismantling, and removing construction equipment, whether owned by Contractor or rented from others.

      1) Cost for construction equipment must not exceed the cost shown in the most current edition of the rental rate book named in the Supplemental Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.

      2) 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.

e. Applicable sales, consumer, use, and other similar taxes related to the Work for which Owner is not exempt, and which Contractor pays consistent with Laws and Regulations;

f. Deposits lost for causes other than negligence of Contractor's Team;

g. Royalty payments and fees for permits and licenses;

h. Cost of additional utilities, fuel, and sanitary facilities at the Site;

i. Minor expense items directly required by the Work; and

j. Premiums for bonds and insurance required by the Contract Documents.

D. The Cost of the Work does not include the following administrative costs which are to be covered by the Contractor's fee:

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, safety managers, superintendents, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, 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.C.1.

2. The cost of purchasing, renting or furnishing any tool or equipment whose current price would be less than $500 if purchased new at retail.

3. Office expenses 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 actions of Contractor's Team for the correction of Defective Work, disposal of materials or equipment that do not comply with Specifications, and correcting damage to property.

6. Losses, damages, and related expenses caused by damage to the Work or sustained by Contractor in connection with the performance of the Work. Contractor is entitled to recover costs if covered by Owner's insurance, if applicable. Such losses may include settlements made with the approval of Owner. Do not include these losses, damages, and expenses in the Cost of the Work when determining Contractor's fee.

7. Expenses incurred in preparing and advancing Claims.

8. Any Indemnified Cost paid with regard to Contractor's indemnification of Owner's Indemnitees.

9. Other overhead or general expense costs and the costs of items not described in Paragraph 13.01.C.

E. Contractor's fee is determined in accordance with the Agreement when the Work is performed on a cost-plus basis.

F. Contractor's Fee is determined as follows for Work included in a Change Proposal.

1. Contractor's fee is 15 percent of the costs included in the Cost of the Work per Paragraph 13.01.C.1 for payroll cost and per Paragraph 13.01.C.2 for cost of materials and equipment furnished and incorporated in the Work.

2. Contractor's fee is 5 percent of costs included in the Cost of the Work paid by Contractor for Work performed by Subcontractors per Paragraph 13.01.C.3.

3. No fee will be payable for costs included in the Cost of the Work for supplemental costs per Paragraph 13.01.C.4.

4. Fees are to be determined as follows where one or more tiers of Subcontracts are used:

a. The Subcontractor's fee is 15 percent for costs incurred under Paragraphs 13.01.C (excluding Paragraph 13.01.C.3) for the Subcontractor that performs the Work;

b. The Contractor and Subcontractors of a tier higher than that of the Subcontractor that performs the Work are allowed a fee of 5 percent of the total costs incurred by the next lower tier Subcontractor; and

c. Regardless of the number of subcontractor tiers involved, the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that performs the Work.

G. When a Change Proposal includes additions and credits, the Contractor's fee will be calculated on the sum of costs for each cost category in Paragraph 13.01.C. and applying the appropriate fee from Paragraph 13.01.E. The amount to be credited by Contractor to Owner for any Change Proposal which results in a net decrease in the Cost of Work will be the amount of the actual net decrease in the Cost of Work plus an additional amount equal to 5 percent of the actual net decrease in the Cost of Work.

H. Establish and maintain records in accordance with generally accepted accounting practices and submit these records, including an itemized cost breakdown together with supporting data, in a form and at intervals acceptable to Construction Manager whenever the Cost of the Work is to be determined pursuant to this Paragraph 13.01.

13.02 Allowances

A. Include allowances specified in the Contract Documents in the Contract Price and provide Work covered by the allowance as authorized by Owner through Construction Manager.

B. Contractor agrees that:

1. The cash allowance is used to compensate Contractor for the cost of furnishing materials and equipment for the Work covered by the allowance item in the Contract Documents. Cost may include applicable taxes. Make provisions for trade discounts, rebates, and refunds and reduce the allowance costs by these amounts.

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

3. Costs for cash allowances and installation costs as described in Paragraphs 13.02.B.1 and 13.02.B.2 above are included in the Contract Price.

C. Construction Manager will issue a Change Order to adjust the Contract Price by the difference between the allowance amount and the actual amount paid by Contractor for Work covered by the allowance. The Change Order will be issued at the time costs are incurred by Contractor for Work covered by the allowance and this Work is included on the Application for Payment.

13.03 Unit Price Work

A. The initial Contract Price for Unit Price Work is equal to the sum of the unit price line items in the Agreement. Each unit price line item amount is equal to the product of the unit price for each line item 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 comparing offers and determining an initial Contract Price. Payments to Contractor for Unit Price Work are to be based on actual quantities measured for Work in place.

C. Each unit price is deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Construction Manager is to determine the actual quantities and classifications of Unit Price Work performed by Contractor to be incorporated into each Application for Payment. Construction Manager's decision on actual quantities is final and binding, subject to the provisions of Paragraph 13.03.E.

E. Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price within 30 days of Construction Manager's decision under Paragraph 13.03.D, if:

1. The total cost of a particular item of Unit Price Work amounts to 20 percent or more of the total Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 20 percent from the estimated quantity of an item indicated in the Agreement;

2. There is no corresponding adjustment with respect to other items of Work; and

3. Contractor believes it has incurred additional expense as a result of this condition or if Owner believes that the quantity variation entitles Owner to an adjustment in the Contract Price.

F. Construction Manager will issue a Change Order adjusting estimated quantities to actual quantities to determine the final Contract Price.

13.04 Contingencies

A. Contingency funds may be included in the Contract Price to pay for Work not defined specifically by the Contract Documents that is essential to the completion of the Project. Contingency funds will be as described in the Agreement.

B. The contingency funds may be used for costs incurred by Contractor, provided these costs are approved by Owner. Costs are to be determined and documented in accordance with Paragraph 13.01. The contingency funds are not to be used for the following items:

1. Cost overruns due to changes in material costs after the Contract Price is established, unless specific price escalation provisions are made in the Agreement;

2. Rework required to correct Defective Work;

3. Inefficiencies in completing the Work due to Contractor's selected means, methods, sequences, or procedures of construction;

4. Work Contractor failed to include in the Contract Price;

5. Changes required by changes in Laws and Regulations enacted after the Contract Price is established; or

6. Any Work that does not constitute a change in Scope in the Work included in the Contract Price.

C. Construction Manager is to issue a Change Order for approved expenditures from contingency funds. When the Change Order is issued, the costs are to be added to the Application for Payment. Contractor is to maintain a tabulation showing the contingency amount, adjustments to the contingency amount, and amounts remaining as the Project progresses.

D. Any contingency amounts that are not included in a Change Order are retained by Owner. A Change Order will be issued to deduct unused contingency amounts from the Contract Price prior to Final Payment.

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

14.01 Access to Work

A. Provide safe access to the Site and the Work for the observation, inspection, and testing of the Work in progress. Contractor can require compliance with Contractor's safety procedures and programs as part of providing safe access.

14.02 Tests, Inspections, and Approvals

A. OPT may retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform inspections. Cooperate with inspection and testing personnel and assist with providing access for required inspections, tests, and handling test specimens or Samples.

B. Arrange for and facilitate inspections, tests, and approvals required by Laws or Regulations of governmental entities having jurisdiction that require Work to be inspected, tested, or approved by an employee or other representative of that entity. Pay associated costs and furnish Construction Manager with the required certificates of inspection or approval.

C. Arrange, obtain, and pay for inspections and tests required:

1. By the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to OPT;

2. To attain OPT'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;
5. For acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work;
6. For re-inspecting or retesting Defective Work, including any associated costs incurred by the testing laboratory for cancelled tests or standby time; and
7. For retesting due to failed tests.

D. Provide independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to OPT to provide these inspections and tests.

14.03 Defective Work

A. It is Contractor's obligation to ensure that the Work is not Defective.
B. OPT has the authority to determine whether Work is Defective and to reject Defective Work.
C. Construction Manager is to notify Contractor of Defective Work of which OPT has actual knowledge.
D. Promptly correct Defective Work.
E. Take no action that would void or otherwise impair Owner's special warranties or guarantees when correcting Defective Work.
F. Pay claims, costs, losses, and damages arising out of or relating to Defective Work, including:
    1. Costs for correction, removal, and replacement of Defective Work;
    2. Cost of the inspection and testing related to correction of Defective Work;
    3. Costs for Design Professional's fees associated with review and approval of design modifications for correction, removal, and replacement of Defective Work.
    4. Fines levied against Owner by governmental authorities because of Defective Work; and
    5. Costs of repair or replacement of work of others resulting from Defective Work.

14.04 Acceptance of Defective Work

A. Owner may elect to accept Defective Work instead of requiring correction or removal and replacement of Defective Work provided:
    1. This acceptance occurs prior to final payment;
    2. Design Professional confirms that the Defective Work is in general accordance with the design intent and applicable design principles; and

3. Design Professional confirms that acceptance of the Defective Work does not endanger public health or safety.

B. Owner may impose a reasonable Set-off against payments due under Article 15 for costs associated with OPT's evaluation of Defective Work to determine if it can be accepted and to determine the diminished value of the Work. Owner may impose a reasonable Set-off against payments due under Article 15 if the parties are unable to agree as to the decrease in the Contract Price to compensate Owner for the diminished value of Defective Work accepted. Construction Manager is to issue a Change Order for acceptance of the Defective Work prior to final payment. Pay an appropriate amount to Owner if the acceptance of Defective Work occurs after final payment.

14.05 Uncovering Work

A. OPT has the authority to require inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. Work that is covered prior to approval of Construction Manager must be uncovered for OPT's observation if requested by Construction Manager. Pay for uncovering Work and its subsequent restoration unless Contractor has given Construction Manager timely notice of Contractor's intention to cover the Work and Construction Manager fails to act with reasonable promptness in response to this notice.

C. Provide necessary labor, material, and equipment and uncover, expose, or otherwise make available the portion of the Work suspected of being Defective for observation, inspection, or testing if OPT considers it necessary or advisable that covered Work be observed by Design Professional or inspected or tested by others as directed by Construction Manager.

1. Pay for claims, costs, losses, and damages associated with uncovering, exposing, observing, inspecting, and testing if it is found that the uncovered Work is Defective. Pay costs for correction of Defective Work. Pay for reconstruction, repair, or replacement of work of others if it is found that the uncovered Work is Defective.

2. Submit a Change Proposal for an increase in the Contract Price or an extension of the Contract Times directly attributable to this uncovering, exposure, observation, inspection, testing, and reconstruction if the uncovered Work is found to not be Defective.

14.06 Owner May Stop the Work

A. Owner may order Contractor to stop the Work if:

1. The Work is Defective;

2. Contractor fails to supply sufficient skilled workers or suitable materials or equipment; or

3. Contractor performs Work that may fail to conform to the Contract Documents when completed.

B. This stop work order is to remain in effect until the reason for the stop work order has been eliminated. Owner's right to stop the Work does not create a duty to exercise this right for the benefit of Contractor's Team or surety.

14.07 Owner May Correct Defective Work

A. Owner may remedy Defective Work after 7 days' notice to Contractor if Contractor fails to correct Defective Work, or to remove and replace Defective Work as required by OPT;

B. Owner may:

1. Exclude Contractor from the Site;

2. Take possession of the Work and suspend Contractor's services related to the Work; and

3. Incorporate stored materials and equipment in the Work.

C. Allow OPT access to the Site and off-site storage areas to enable Owner to exercise the rights and remedies under this paragraph.

D. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 are to be charged against Contractor as a Set-off against payments due under Article 15. These claims, costs, losses, and damages include costs of repair and the cost of replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's Defective Work.

E. Contractor is not allowed an extension of the Contract Times because of delays in the performance of the Work attributable to the exercise of the Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; FINAL COMPLETION

15.01 Progress Payments

A. Progress payments are to be submitted to Construction Manager on the Application for Payment form provided by Construction Manager following procedures in the Contract Documents.

1. Progress payments for lump sum Work are to be paid based on the earned value to date at the amounts shown in the Schedule of Values submitted as required by Paragraph 2.03. Final payment will be for the total lump sum amount.

2. Progress payments for Unit Price Work are based on the number of units completed as determined under the provisions of Paragraph 13.03.

3. Progress payments for Work to be paid based on the Cost of the Work per Article 13 are to be paid for Work completed by Contractor during the pay period.

B. Reduction in Payment by Owner:

1. Owner is entitled to impose a Set-off against payment based on the following:

a. Claims made against Owner or costs, losses, or damages incurred by Owner related to:

1) Contractor's conduct in the performance of the Work, including workplace injuries, non-compliance with Laws and Regulations, or patent infringement; or

2) Contractor's failure to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site, including workplace injuries, property damage, and non-compliance with Laws and Regulations.

b. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

c. Work is Defective, or completed Work has been damaged by Contractor's Team, requiring correction or replacement;

d. Owner has been required to correct Defective Work or complete Work in accordance with Paragraph 14.07;

e. The Contract Price has been reduced by Change Orders;

f. Events have occurred that would constitute a default by Contractor justifying a termination for cause;

g. Liquidated or other damages have accrued because of Contractor's failure to achieve Milestones, Substantial Completion, or completion of the Work;

h. Liens have been filed regarding the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of these Liens;

i. Owner has been notified of failure to make payments to Subcontractors, Suppliers, or Employees;

j. Failure to submit up-to-date record documents as required by the Contract Documents;

k. Failure to submit monthly Progress Schedule updates or revised schedules as requested by Construction Manager;

l. Failure to provide Project photographs required by the Contract Documents;

m. Failure to provide Certified Payroll required by the Contract Documents;

n. Compensation for OPT for overtime charges of Construction Manager, third review of Shop Drawings, review of substitutions, re-inspection fees, inspections or designs related to correction of Defective Work, or other services identified as requiring payment by Contractor;

o. Costs for tests performed by Owner to verify that Work previously tested and found to be Defective has been corrected;

p. OPT has actual knowledge of the occurrence of events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents with associated cost impacts;

q. Payment would result in an over-payment of the Contract Price; or

r. Other items entitling Owner to a Set-off against the amount recommended.

2. Compensation for services of OPT staff is to be at the rates established in the Supplementary Conditions.

3. Construction Manager is to notify Contractor stating the amount and the reasons for an imposed Set-off. Owner is to pay Contractor amounts remaining after deduction of the Set-off. Owner is to pay the Set-off amount agreed to by Owner and Contractor if Contractor remedies the reasons for the Set-off. Contractor may submit a Change Proposal contesting the Set-off.

C. No payment will be made for Work authorized by a Work Change Directive until the Work Change Directive is incorporated into a Change Order, unless arrangements or interim payments have been included in the Work Change Directive. Payment can be included in an Application for Payment when the Change Order is approved.

D. Owner is to pay the amount of payment recommended by Construction Manager within 30 days after receipt of the Application for Payment and accompanying documentation from Construction Manager.

E. Contractor certifies that all Work, including materials, covered by each Application for Payment have been completed or delivered and stored in accordance with the Contract Documents, that all amounts have been paid for Work, materials, and equipment for which previous payment has been made by Owner, and that the current payment amount shown in this Application for Payment is due.

15.02 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to the Work, materials, and equipment furnished under the Contract is to pass to Owner free and clear of Liens, title defects, and patent, licensing, copyright, or royalty obligations no later than 7 days after the time of payment by Owner of the Application for Payment which includes these items.

15.03 Substantial Completion

A. Notify Construction Manager when the Work or portion of the Work to be accepted under Paragraph 15.04 is substantially complete and request a Certificate of Substantial Completion.

B. OPT is to inspect the Work after Contractor's notification to determine if the Work is substantially complete. Construction Manager is to either issue the Certificate of Substantial Completion which sets the date of Substantial Completion or notify Contractor of the reasons the Project is not considered to be substantially complete.

C. The OPT and Contractor are to meet to discuss Owner's use or occupancy of the Work following Substantial Completion. Items to be discussed at this meeting include:

1. Review of insurance policies with respect to the end of the Contractor's coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner;

2. Owner's assumption of responsibility for security, operation, protection of the Work, maintenance, and utilities upon Owner's use or occupancy of the Work;

3. Contractor's obligations for operations and maintenance during performance and acceptance testing;

4. Contractor's access to the Site to complete punch list items; and

5. Procedures for correction of Defective Work during the one-year correction period.

15.04 Partial Utilization

A. Owner may use or occupy substantially completed parts of the Work which are specifically identified in the Contract Documents, or which OPT and Contractor agree constitutes a separately functioning and usable part of the Work prior to Substantial Completion of the Work. Owner must be able to use that part of the Work for its intended purpose without significant interference with Contractor's performance of the remainder of the Work. Contractor and OPT are to follow the procedures of Paragraph 15.03 for this part of the Work.

B. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Article 6.

15.05 Final Inspection

A. OPT is to make a final inspection upon notice from Contractor that the entire Work or portion to be accepted under Paragraph 15.04 is complete. Construction Manager is to notify Contractor of Work determined to be incomplete or Defective. Immediately take corrective measures to complete the Work and correct Defective Work.

B. Notify Construction Manager when the entire Project and ready for Final Payment under Paragraph 15.06 and request a Certificate of Final Completion.

C. OPT is to inspect the Work after Contractor's notification to determine if the Project is complete. Construction Manager is to either issue the Certificate of Final Completion which sets the date of Final Completion or notify Contractor of the reasons the Project is not considered to be complete.

15.06 Final Payment

A. Make application for final payment after completing required corrections identified during the final inspection and delivering items and documents required by the Contract Documents. Provide the following with the final Application for Payment:

1. Consent of Surety to Final Payment acknowledging unsettled disputes; or

2. Affidavit of Payment of Debts and Claims or Affidavit of Release of Liens or furnish receipts or releases from Subcontractors and Suppliers when a payment bond is not required.

B. Construction Manager is to either recommend payment of the final Application for Payment to Owner if OPT is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled or notify Contractor of OPT's reasons for not recommending final payment.

C. The Work is complete, subject to surviving obligations, when it is ready for final payment as established by the Construction Manager's recommendation of payment of the final Application for Payment to Owner and the issuance of a Certificate of Final Completion.

D. Owner is to pay the amount of final payment recommended by Construction Manager within 30 days after receipt of the final Application for Payment and accompanying

documentation from Construction Manager; unless additional time is required for approval of a governing board or entity. Payment will be within 30 days of approval by the governing board or entity.

15.07 Waiver of Claims

A. The making of final payment does not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from:

1. Unsettled Liens or claims for non-payment;

2. Defective Work appearing after final inspection pursuant to Paragraph 15.05;

3. Contractor's failure to comply with the terms of special guarantees specified in the Contract Documents;

4. Outstanding Claims or express reservation of rights by Owner; or

5. Contractor's continuing obligations under the Contract Documents.

B. Contractor waives claims and rights against Owner by accepting final payment except for those Claims made in accordance with the provisions of Article 17 and specifically noted in the Certificate of Final Completion.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 Owner May Suspend Work

A. Owner may suspend the Work or a portion of the Work for a period of not more than 90 consecutive days, at any time and without cause, by notice to Contractor. This notice fixes the date on which Contractor is to resume Work. Contractor is entitled to adjustments in the Contract Price and Contract Times directly attributable to this suspension. Submit a Change Proposal seeking an adjustment no later than 30 days after the date fixed for resumption of Work.

16.02 Owner May Terminate for Cause

A. The occurrence of one or more of the following events constitutes a default by Contractor and justifies termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents, including failure to supply sufficient skilled workers or suitable materials or equipment;

2. Failure to adhere to the Progress Schedule;

3. Failure of Contractor to provide a satisfactory replacement bond or insurance in the event either is lost or canceled;

4. Failure of Contractor to maintain financial solvency to adequately complete the Project as indicated by one or more of the following:

a. A petition of bankruptcy is filed by or against Contractor;

b. Contractor is adjudged as bankrupt or insolvent;

c. Contractor or surety makes a general assignment for the benefit of creditors;

d. A receiver is appointed for the benefit of Contractor's creditors; or

e. A receiver is appointed because Contractor's insolvency;

5. Contractor's disregard of Laws or Regulations of public bodies having jurisdiction; or

6. Contractor's repeated disregard of the authority of OPT.

B. Contractor and surety must provide adequate assurance of future performance in accordance with the Contract Documents that is satisfactory to Owner if Contractor is believed to be in financial distress due to the existence of one or more of the indicators listed in Paragraph 16.02.A.4. Owner may terminate this Contract if Contractor and surety fail to provide adequate documentation satisfactory to Owner within 10 days of Construction Manager's request for this information.

C. Owner may declare Contractor to be in default, give notice to Contractor and surety that the Contract is terminated, and enforce the rights available to Owner under the performance bond after giving Contractor and surety 10 days' notice that one or more of the events identified in Paragraph 16.02.A has occurred.

D. Owner may exclude Contractor from the Site, take possession of the Work, incorporate the materials and equipment stored and complete the Work as Owner may deem expedient if Owner has terminated the Contract for cause.

E. Owner may elect not to proceed with termination of the Contract under this Paragraph 16.02 if Contractor begins to cure the cause for termination within 7 days of receipt of notice of intent to terminate.

F. Contractor is not entitled to receive further payments until the Work is completed if Owner proceeds as provided in this Paragraph 16.02. The amount of the Contract Price remaining is to be paid to Contractor if the unpaid balance exceeds the cost to complete the Work. This cost to complete the Work may include related claims, costs, losses, damages, and the fees and charges of engineers, architects, attorneys, and other professionals retained by Owner. Pay the difference to Owner if the cost to complete the Work including related claims, costs, losses, and damages exceeds the unpaid balance of the Contract Price. Claims, costs, losses, and damages incurred by Owner are to be reviewed as to their reasonableness and incorporated in a Change Order by Construction Manager. Owner is not required to obtain the lowest price for the Work performed when exercising its rights or remedies under this paragraph.

G. Termination does not affect the rights or remedies of Owner against Contractor or against surety under the payment bond or performance bond. Owner does not release Contractor from liability by paying or retaining money due Contractor.

16.03 Owner May Terminate for Convenience

A. Owner may terminate the Contract without cause after giving 7 days' notice to Contractor of the effective date of termination. Contractor is to be paid for the following if Owner terminates for convenience:

1. Work completed in accordance with the Contract Documents prior to the effective date of termination;

2. Actual costs sustained prior to the effective date of termination for Work in progress, plus a fair and reasonable amount for overhead and profit; fee calculated in accordance with Paragraph 13.01; and

3. Reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor will not be paid for loss of anticipated profits or revenue, post termination overhead costs, or other economic loss arising out of or resulting from this termination.

16.04 Contractor May Stop Work or Terminate

A. Contractor may terminate the Contract and issue a Change Proposal requesting payment from Owner on the same terms as provided in Paragraph 16.03 after 10 days' notice to Construction Manager provided that, through no act or fault of Contractor:

1. The Work is suspended for more than 90 consecutive days by Owner;

2. Construction Manager fails to act on an Application for Payment within 30 days after it is submitted; or

3. Owner fails to pay Contractor sums determined to be due, other than the final payment, within 30 days after payment is recommended by Construction Manager; and

4. OPT does not remedy this suspension or failure within 10 days after receipt of the notice.

B. Contractor may stop Work, without prejudice to other rights or remedies in lieu of terminating the Contract if Construction Manager has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed to pay Contractor within 30 days after payment is recommended by Construction Manager. 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 for 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. The Owner or Contractor may appeal a Claim, approved or denied in part or in full, by:

1. Electing to invoke the dispute resolution process if one is provided for in the Supplementary Conditions;

2. Agreeing with the other party to submit the dispute to a dispute resolution process; or

3. Notifying the other party of the intent to submit the dispute to a court of competent jurisdiction if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to.

~~ARTICLE 18 – MISCELLANEOUS~~

~~18.01 Computation of Times~~

~~A. Exclude the first day and include the last day when determining dates for a period referred to in the Contract Documents by days. The last day of this period is to be omitted from the determination if it falls on a Saturday, Sunday, or a legal holiday.~~

~~B. All references and conditions for a calendar day contract in the Contract Documents apply for a Fixed Date Contract. A fixed date contract is one in which the calendar dates for reaching Substantial Completion and/or Final Completion are specified in lieu of identifying the number of calendar days involved.~~

~~18.02 Independent Contractor~~

~~A. Contractor is to perform its duties under this Contract as an independent contractor. Contractor's Team and their personnel are not considered to be employees or agents of Owner. Nothing in this Agreement is to be interpreted as granting Contractor's Team the right or authority to make commitments for Owner. This Agreement does not constitute or create a joint venture, partnership, or formal business organization of any kind.~~

~~18.03 Cumulative Remedies~~

~~A. The duties and obligations imposed by these General Conditions and the rights and remedies available to the Owner or Contractor by these General Conditions are in addition to, and are not a limitation of, the rights and remedies which are otherwise imposed or available by:~~

~~1. Laws or Regulations,~~

~~2. Special warranties or guarantees, or~~

~~3. Other provisions of the Contract Documents.~~

~~B. The provisions of this Paragraph 18.03 are as effective as if repeated specifically in the Contract Documents regarding each duty, obligation, right, and remedy to which they apply.~~

~~18.04 Limitation of Damages~~

~~A. Owner's Indemnitees are not liable to Contractor for claims, costs, losses, or damages sustained by Contractor's Team associated with other projects or anticipated projects.~~

~~18.05 No Waiver~~

~~A. The failure of Owner or Contractor to enforce any provision of this Contract does not constitute a waiver of that provision, affect the enforceability of that provision, or the enforceability of the remainder of this Contract.~~

~~18.06 Severability~~

~~A. If a court of competent jurisdiction renders a part of this Contract invalid or unenforceable, that part is to be severed and the remainder of this Contract continues in full force.~~

~~18.07 Survival of Obligations~~

~~A. Representations, indemnifications, warranties, guarantees, and continuing obligations required by the Contract Documents survive completion and acceptance of the Work or termination of the Contract.~~

~~18.08 No Third-Party Beneficiaries~~

~~A. Nothing in this Contract can be construed to create rights in any entity other than the Owner and Contractor. Neither the Owner nor Contractor intends to create third party beneficiaries by entering into this 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 Assignment of Contract

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights or interests in the Contract will be binding on the other party without the written consent of the other party. 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.

18.11 No Waiver of Sovereign Immunity

A. Owner has not waived its sovereign immunity by entering into and performing its obligations under this Contract.

18.12 Controlling Law

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

B. Venue for legal proceedings lies exclusively in the county in which the Owner’s home office is located unless specified elsewhere in the Contract Documents.

END OF SECTION

00 73 00 SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement Section 00 72 00 “General Conditions.” The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below.

The paragraph numbers used in the Supplementary Conditions correspond to the General Condition paragraphs they modify with the prefix "SC" added—for example, “Paragraph SC-4.05.” modifies General Conditions Paragraph 4.05.

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC-1.01 Defined Terms

A. The Owner’s Project Team as defined in the Paragraph 1.01.A.45 of the General Conditions consists of the following organizations:

1. Jefferson County, Texas, 1149 Pearl Street, 1st Floor, Beaumont, Texas 77701
2. Freese and Nichols, Inc., 801 Cherry Street, Suite 2800, Fort Worth, Texas, 76102
3. Tolunay-Wong Engineers, 10710 S. Sam Houston Pkwy. W, Ste. 100, Houston, TX 77031

B. Replace Defined Term #12, Construction Manager, with the following:

Construction Manager—The Jefferson County representative or staff assigned to manage the construction progress of the Project on behalf of the Owner (i.e. Jefferson County).

C. Add as Defined Term #69: *County Front End Specifications* – The Jefferson County front end bid specification document to which the Division 00 and 01 and all Technical Specifications are attached to, titled “LEGAL NOTICE, Advertisement for Invitation for Bids, November 29, 2022”.

ARTICLE 2 – PRELIMINARY MATTERS

SC-2.02 Copies of Documents

A. Delete Paragraph 2.02.A in its entirety and insert the following in its place:

“A. Owner will furnish 1 printed copy of the Contract Documents (including one fully executed 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.”

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

SC-5.03 Subsurface and Physical Conditions

A. This Supplementary Condition identifies the reports and drawings referenced in Paragraph 5.03 of the General Conditions related to subsurface and physical conditions.

1. The following table lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data, and specifically identifies the Technical Data in the report upon which Contractor may rely:

Report Title	Report Date	Technical Data
Geotechnical Report Mesquite Point Public Boat Ramp and Jetties Sabine Lake And Intercoastal Waterway Jefferson County Port Arthur, Texas by Tolunay-Wong Engineers	April 21, 2022	Appendix A – Geotechnical Report

SC-5.06 Hazardous Environmental Conditions at Site

A. This Supplementary Condition identifies the reports and drawings referenced in Paragraph 5.06 of the General Conditions related to Hazardous Environmental Conditions at the Site.

1. The following table lists the reports known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and the Technical Data (if any) upon which Contractor may rely:

NONE

2. The following table lists the drawings known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and Technical Data (if any) contained in such Drawings upon which Contractor may rely:

NONE

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

SC-7.15 Indemnification

A. Supplement Paragraph 7.15 by adding the following paragraph:

"C. Contractor's obligations to indemnify or hold Owner's Indemnitees harmless against losses, damages, or expenses specified in these General Conditions shall be subject to the applicable limitations of Chapter 130 of the Texas Civil Practice and Remedies Code."

END OF SECTION

END OF EXHIBIT B

00 73 46 WAGE DETERMINATION SCHEDULE

"General Decision Number: TX20220052 02/25/2022

Superseded General Decision Number: TX20210052

State: Texas

Construction Type: Heavy

Counties: Jefferson and Orange Counties in Texas.

FLOOD CONTROL, including: Breakwaters, Channels, Channel Cut-offs, Dikes, Drainage Projects, Flood Control Projects, Irrigation Projects, Jetties, Land Drainage (not incidental to other construction), Land Leveling (not incidental to other construction), Land Reclamation, Levees, Pipelines, Ponds Pumping Stations (prefabricated drop-in not building), Revetments.

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

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at

after January 30, 2022:	least $15.00 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2022.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay covered workers at least $11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered

necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

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

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

* SUTX1990-035 01/31/1990

	Rates	Fringes
CARPENTER	$ 10.965 **	.90

Heavy Equipment Operator
Heavy duty mechanic, blade grader (self-propelled), bull clam, backfiller, derrick (power operated, all types); dragline, push cat operator; bulldozer & all types of cat tractors; cable-way; backhoe, shovel, crane (power operated, all types), elevating grader (self-propelled), hoist (motor driven 2 drums or more), mix mobile, winch truck, locomotive crane, mixer (14 cubic feet or more), paving mixer (all sizes), scraper (heavy type over 3 CY), trench machine (all sizes), gradeall, high lift, foundation boring machine, gasoline or diesel driven welding

```
     machines (7 to 12 machines
     pumpcrete machines & drill
     operator,   water well,
     tournapulls, DW-10 euclid,
     asphalt plants, crushing
     machines & batchplants,
     scoopmobiles, fingerlifts,
     open construction...........$  7.25 **

LABORER.........................$  7.25 **

Light Equipment Operator
     Air compressor, blade
     grader (towed), flexplane,
     form grader,   mixer (less
     than 14 cu. ft.), pumps
     pulsometer, truck crane
     driver, gasoline or diesel
     driven welding machines (3
     to 6 machines), hoist
     (single drum), scrapers (3
     cu. yds. or less)...........$  7.25 **

Oiler...........................$  7.25 **

Piledriver......................$  7.25 **

PILEDRIVERMAN...................$ 11.26 **           .85

TRUCK DRIVER....................$  7.25 **
------------------------------------------------------------
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WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

============================================================
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** Workers in this classification may be entitled to a
higher minimum wage under Executive Order 14026 ($15.00) or
13658 ($11.25).  Please see the Note at the top of the wage
determination for more information.
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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

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

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

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other

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

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

Survey Rate Identifiers

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

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

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the

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

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

WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

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

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

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

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

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

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

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

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END OF GENERAL DECISIO"

END OF SECTION

00 74 00 SPECIAL CONDITIONS FOR TEXAS PARKS AND WILDLIFE DEPARTMENT

ARTICLE 1 – FUNDING AGENCY REQUIREMENTS

1.01 This Project is funded in whole or in part by Texas Parks and Wildlife Department (Funding Agency). The Funding Agency requires specific conditions and reporting as a condition for providing this funding. The conditions and reporting forms of the Funding Agency are included in the Contract Documents. The Funding Agency requirements govern in the event of any conflict between the Funding Agency requirements and any other provision of the Contract Documents.

1.02 The applicable Funding Agency conditions and reporting forms are as follows:

Specification Section	Title	Funding Agency Document No.
00 74 01	Federal Contract Provisions	"Attachment K"

END OF SECTION

00 74 01 FEDERAL CONTRACT PROVISIONS

The Project is being funded in part with State of Texas funds through a Texas Parks and Wildlife Department (TPWD) grant. The Federal contract provisions listed herein from the Interlocal Agreement for the grant will apply.

In addition to other required provisions, the Performing Agency (Jefferson County) agrees to following provisions (as applicable):

(A) Contracts for more than the simplified acquisition threshold currently set at $150,000, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

(B) All contracts in excess of $10,000 must address termination for cause and for convenience by the non-Federal entity including the manner by which it will be effected and the basis for settlement.

Section 1, Paragraph 4.4 and Section 2 and of the County Front End Specifications contains the County terms for termination of the contract, including for cause and convenience.

(C) Equal Employment Opportunity. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

Section 2 of the County Front End Specifications contains the Equal Opportunity statements from 41 CFR Part 60.

(D) Davis-Bacon Act, as amended (40 U.S.C. 3141-3148). When required by Federal program legislation, all prime construction contracts in excess of $2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141- 3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person

employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.

Section 2 of the County Front End Specifications contains binding Davis-Bacon Act and Copeland "Anti-Kickback" Act requirements.

(E) Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708). Where applicable, all contracts awarded by the non-Federal entity in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

Section 2 of the County Front End Specifications contains binding Contract Work Hours and Safety Standards Act requirements

(F) Rights to Inventions Made Under a Contract or Agreement. If the Federal award meets the definition of “funding agreement” under 37 CFR § 401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.

Section 2 of the County Front End Specifications contains binding Rights to Inventions Made Under a Contract or Agreement requirements.

(G) Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended—Contracts and subgrants of amounts in excess of $150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA). (H) Mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. 6201).

Section 2 of the County Front End Specifications contains Clean Air Act and Federal Water Pollution Control Act requirements.

(H) Debarment and Suspension (Executive Orders 12549 and 12689)—A contract award (see 2 CFR 180.220) must not be made to parties listed on the government wide Excluded Parties List System in the System for Award Management (SAM), in accordance with the OMB guidelines at

2 CFR 180 that implement Executive Orders 12549 (3 CFR Part 1986 Comp., p. 189) and 12689 (3 CFR Part 1989 Comp., p. 235), “Debarment and Suspension.” The Excluded Parties List System in SAM contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

Section 2 of the County Front End Specifications contains Debarment and Suspension provisions, including certification by the Contractor.

(I) Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)—Contractors that apply or bid for an award of $100,000 or more must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

Section 2 of the County Front End Specifications contains Byrd Anti-Lobbying Amendment, including certification by the Contractor.

END OF SECTION

DIVISION 01

GENERAL REQUIREMENTS

01 23 10 ALTERNATES AND ALLOWANCES

PART 1 - GENERAL

1.01 SUMMARY

A. Alternates:

1. This Section describes each alternate by number and describes the basic changes to be incorporated into the Work when this alternate is made a part of the Work in the Agreement.
2. The Drawings and Specifications will outline the extent of Work to be included in the alternate Contract Price.
3. Coordinate related Work and modify surrounding Work as required to properly integrate the Work under each alternate, and provide a complete and functional Project as required by the Contract Documents.
4. Alternate Bids or Proposals may be accepted or rejected at the option of the Owner.
5. Owner may incorporate these alternates in the Contract when executed, or may issue a Change Order to incorporate these alternates within 120 days of the opening of Contractor's Bid or Proposal at the prices offered in the Contractor's Bid or Proposal, unless noted otherwise. A Request for a Change Proposal may be issued after 120 days or other designated time period to negotiate a new price for incorporating the Work into the Project.

B. Allowances:

1. The Lump Sum Bid Items described as "Allowances" have been set as noted in County Front End Specifications, Section 4, Bid Form Exhibit A and shall be included in the Total Base Bid of the Bid Form for each Bidder. The Allowance for Construction Materials Testing, provided by the contractor with owner's approval, will be reimbursed, based on testing firm invoicing.
2. Include the specified allowance amounts in the Contract Price.
3. The amount of each allowance includes:
    a. The cost of the product to the Contractor less any applicable trade discounts;
    b. Delivery to the Site; and
    c. Applicable taxes.
4. Include in the Contract Price all costs for:
    a. Handling at the Site, including unloading, uncrating, and storage per Section 01 31 00 "Project Management and Coordination."
    b. Cost for labor and equipment for installation and finishing.
    c. Cost for related products not specifically listed in the allowance required for installation, including consumable supplies and materials.
    d. All overhead, profit, and related costs.

5. Assist Owner in the selection of products.
    a. Identify qualified Suppliers.
    b. Obtain bids or proposals from qualified Suppliers.
    c. Present available alternates to the Owner through the Construction Manager. Notify Construction Manager of:
        1) Any objections to a particular Supplier or product.
        2) Effect on the construction schedule anticipated by the selection of each option.
        3) Cost of each option.
6. Upon selection of the product:
    a. Purchase and install the product.
    b. Contractor's responsibilities for products will be the same as for products selected by the Contractor.
7. Submit a Change Proposal per Section 01 26 00 "Change Management" to adjust the Contract Price if the net cost of the product is more or less than the specified amount.
    a. Adjust the unit cost applied to the quantities installed per the method of payment described in Section 01 29 00 "Application for Payment Procedures" for products specified as Unit Price Work.
    b. Do not perform Work until selection of alternate has been approved by the Owner.
    c. Provide actual invoices for the materials.

1.02 DOCUMENTATION

A. Provide documents for materials furnished as part of each alternate in accordance with Section 01 33 00 "Document Management."

1.03 DESCRIPTION OF ALLOWANCES

A. Allowance H1 ALLOWANCE FOR CONSTRUCTION MATERIALS TESTING.
    1. The sum of $10,000.00 to be used for the purchase of construction materials testing for the proposed work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 26 00 CHANGE MANAGEMENT

PART 1 - GENERAL

1.01 DEFINITIONS

A. Construction Manager—The individual or entity named as Construction Manager in the Agreement and the consultants, subconsultants, individuals, or entities directly or indirectly employed or retained by them to provide construction management as advisor services to Owner.

B. Design Professional—The individuals or entity named as the Architect or Engineer in the Agreement and the subconsultants, individuals, or entities directly or indirectly employed or retained by Design Professional to provide design or other technical services to the Owner. Design Professional has responsibility for design and technical issues related to the Contract Documents.

C. Owner's Project Team (OPT)—The Owner, Design Professional, Construction Manager, and the consultants, subconsultants, individuals or entities directly or indirectly employed or retained by them to provide services to Owner.

1.02 REQUESTS FOR CHANGE PROPOSAL

A. Construction Manager will initiate Modifications by issuing a Request for Change Proposal (RCP).

1. Construction Manager and Design Professional will prepare a description of proposed Modifications.

2. Construction Manager will issue the Request for Change Proposal form to Contractor. A number will be assigned to the Request for a Change Proposal when issued.

3. Return a Change Proposal in accordance with Paragraph 1.02 for evaluation by the Owner's Project Team (OPT).

1.03 CHANGE PROPOSALS

A. Submit a Change Proposal (CP) to the Construction Manager for Contractor initiated changes in the Contract Documents or in response to a Request for Change Proposal. Submit the Change Proposal and attach the forms provided by the Construction Manager.

1. Use the Change Proposal form provided by the Construction Manager.

2. Include with the Change Proposal:

a. A complete description of the proposed Modification if Contractor initiated or proposed changes to the OPT's description of the proposed Modification.

b. The reason the Modification is requested, if not in response to a Request for a Change Proposal.

c. A detailed breakdown of the cost of the change if the Modification requires a change in Contract Price. The itemized breakdown is to include:

1) List of materials and equipment to be installed;

2) Man hours for labor by classification;

3) Equipment used in construction;

4) Consumable supplies, fuels, and materials;

5) Royalties and patent fees;

6) Bonds and insurance;

7) Overhead and profit;

8) Field office costs;

9) Home office cost; and

10) Other items of cost.

d. Provide the level of detail outlined in the paragraph above for each Subcontractor or Supplier actually performing the Work if Work is to be provided by a Subcontractor or Supplier. Indicate appropriate Contractor mark ups for Work provided through Subcontractors and Suppliers. Provide the level of detail outlined in the paragraph above for self-performed Work.

e. Submit Change Proposals that comply with the General Conditions for Cost of Work.

f. Provide a revised schedule. Show the effect of the change on the Project Schedule and the Contract Times.

B. Submit a Change Proposal to the Construction Manager to request a Field Order.

C. A Change Proposal is required for all substitutions or deviations from the Contract Documents.

D. Request changes to products in accordance with Section 01 33 02 “Shop Drawings.”

1.04 CONSTRUCTION MANAGER WILL EVALUATE THE REQUEST FOR A MODIFICATION

A. Construction Manager will issue a Modification per the General Conditions if the Change Proposal is acceptable to the Owner. Construction Manager will issue a Change Order or Contract Amendment for any changes in Contract Price or Contract Times.

1. Change Orders and Contract Amendments will be sent to the Contractor for execution with a copy to the Owner recommending approval. A Work Change Directive may be issued if Work needs to progress before the Change Order or Contract Amendment can be authorized by the Owner.

2. Work Change Directives, Change Orders, and Contract Amendments can only be approved by the Owner.

a. Work performed on the Change Proposal prior to receiving a Work Change Directive or approval of the Change Order or Contract Amendment is performed at the Contractor’s risk.

b. No payment will be made for Work on Change Orders or Contract Amendments until approved by the Owner.

B. Contractor may be informed that the Change Proposal is not approved and construction is to proceed in accordance with the Contract Documents.

1.05 EQUAL NON-SPECIFIED PRODUCTS

A. The products of the listed manufacturers are to be furnished where the Specifications list several manufacturers and do not specifically list “or equal” or “or approved equal” products. Use of any products other than those specifically listed is a substitution. Follow the procedures in Paragraph 1.06 for a substitution.

B. Contractor may submit other manufacturers’ products that are in full compliance with the Specifications where Specifications list one or more manufacturers followed by the phrase “or equal” or “or approved equal.”

1. Submit a Shop Drawing as required by Section 01 33 02 “Shop Drawings” to document that the proposed product is equal or superior to the specified product.

2. Prove that the product is equal. It is not the OPT’s responsibility to prove the product is not equal.

a. Indicate on a point-by-point basis for each specified feature that the product is equal to the Contract Document requirements.

b. Make a direct comparison with the specified manufacturer’s published data sheets and available information. Provide this printed material with the Shop Drawing.

c. The decision of the Design Professional regarding the acceptability of the proposed product is final.

3. Provide a certification that, in furnishing the proposed product as an equal, the Contractor:

a. Has thoroughly examined the proposed product and has determined that it is equal or superior in all respects to the product specified.

b. Has determined that the product will perform in the same manner and result in the same process as the specified product.

c. Will provide the same warranties and/or bonds as for the product specified.

d. Will assume all responsibility to coordinate any modifications that may be necessary to incorporate the product into the construction and will waive all claims for additional Work which may be necessary to incorporate the product into the Project which may subsequently become apparent.

e. Will maintain the same time schedule as for the specified product.

C. A Change Proposal is not required for any product that is in full compliance with the Contract Documents. If the product is not in full compliance, it may be offered as a Substitution.

1.06 SUBSTITUTIONS

A. Substitutions are defined as any product that the Contractor proposes to provide for the Project in lieu of the specified product. Submit a Change Proposal per Paragraph **[1.02]**

along with documents required for a Shop Drawing as required by Section 01 33 02 “Shop Drawings” to request approval of a substitution.

B. Prove that the product is acceptable as a substitute. It is not the Design Professional’s responsibility to prove the product is not acceptable as a substitute.

1. Indicate on a point-by-point basis for each specified feature that the product is acceptable to meet the intent of the Contract Documents requirements.

2. Make a direct comparison with the specified Suppliers published data sheets and available information. Provide this printed material with the Shop Drawing.

3. The decision of the Design Professional regarding the acceptability of the proposed substitute product is final.

C. Provide a certification that, in making the substitution request, the Contractor:

1. Has determined that the substituted product will perform in substantially the same manner and result in the same ability to meet the specified performance as the specified product;

2. Will provide the same warranties and/or bonds for the substituted product as specified or as would be provided by the manufacturer of the specified product;

3. Will assume all responsibility to coordinate any modifications that may be necessary to incorporate the substituted product into the Project and will waive all claims for additional Work which may be necessary to incorporate the substituted product into the Project which may subsequently become apparent; and

4. Will maintain the same time schedule as for the specified product.

D. Pay for review of substitutions in accordance with Section 01 33 02 “Shop Drawings.”

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 29 00 APPLICATION FOR PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Submit Applications for Payment for completed Work and for materials and equipment in accordance with the General Conditions, the Supplementary Conditions, the Agreement, and this Section. The Contract Price is to include costs for:

1. Providing the Work in accordance with the Contract Documents;
2. Installing Owner furnished equipment and materials, if any;
3. Providing Work for alternates and allowances, if any;
4. Providing Work for extra work items, if any and if authorized
5. Commissioning, startup, training, and initial maintenance and operation;
6. Acceptance testing at the manufacturer's facilities or at the Site;
7. All home office overhead costs and expenses, including profit made directly or indirectly from the Project;
8. Project management, contract administration, and field office and field operations staff including supervision, clerical support, and technology system support;
9. Professional services including design fees, legal fees, and other professional services;
10. Bonds and insurance;
11. Permits, licenses, patent fees, and royalties;
12. Taxes;
13. Providing all documentation and Samples required by the Contract Documents;
14. Facilities and equipment at the Site including:
    a. Field offices, office furnishings, and all related office supplies, software, and equipment,
    b. Storage facilities for Contractor's use and storage facilities for stored materials and equipment including spare parts storage,
    c. Shops, physical plant, construction equipment, small tools, vehicles, and technology and telecommunications equipment,
    d. Safety equipment and facilities to provide safe access and working conditions for workers and for others working at the Site,
    e. Temporary facilities for power and communications,
    f. Potable water and sanitation facilities, and
    g. Mobilization and demobilization for all these facilities and equipment.
15. Products, materials, and equipment stored at the Site or other suitable location in accordance with Section 01 31 00 "Project Management and Coordination";

16. Products, materials, and equipment permanently incorporated into the Project;
17. Temporary facilities for managing water including facilities for pumping, storage, and treatment as required for construction and protection of the environment;
18. Temporary facilities for managing environmental conditions and Constituents of Concern;
19. Temporary facilities such as sheeting, shoring, bracing, formwork, embankments, storage facilities, working areas, and other facilities required for construction of the Project;
20. Temporary and permanent facilities for protection of all overhead, surface, or underground structures or features;
21. Temporary and permanent facilities for removal, relocation, or replacement of any overhead, surface, or underground structures or features;
22. Products, materials, and equipment consumed during the construction of the Project;
23. Contractor labor and supervision to complete the Project including that provided through Subcontractors or Suppliers;
24. Correcting Defective Work during the Contract Times, during the Correction Period, or as required to meet any warranty provision of the Contract Documents;
25. Risk associated with weather and environmental conditions, startup, and initial operation of facilities including equipment, processes, and systems;
26. Contractor safety programs, including management, administration, and training;
27. Maintenance of facilities including equipment, processes, and systems until operation is transferred to Owner;
28. Warranties, extended or special warranties, or extended service agreements;
29. Cleanup and disposal of any and all surplus materials; and
30. Demobilization of all physical, temporary facilities not incorporated into the Project.

B. Include the cost not specifically set forth as an individual payment item but required to provide a complete and functional system in the Contract Price.

C. Construction Manager may withhold processing the Applications for Payment if any of the following processes or documentation is not up to date:

1. Progress Schedule per Section 01 33 05 “Construction Progress Schedule.”
2.
3. Record Documents per Section 01 31 13 “Project Administration.”

1.02 SCHEDULE OF VALUES

A. Divide the Contract Price into an adequate number of line items to allow more accurate determination of the earned value for each line item when evaluating progress payments. Submit a detailed Schedule of Values for the Project at least 10 days prior to submitting the first Application for Payment using forms provided by the Construction Manager.

B. Do not apply for payment until the Schedule of Values has been approved by the Construction Manager.

C. Divide the cost associated with each line item in the Schedule of Values into installation and materials components.

1. Installation cost is to include all cost associated with the line item except materials cost.

2. Materials cost is the direct cost (as verified by invoice values) for products, materials, and equipment to be permanently incorporated into the Project associated with the line item.

3. Installation cost is to include all direct costs and a proportionate amount of the indirect costs for the Work associated with each line item. Include costs not specifically set forth as an individual payment item but required to provide a complete and functional system.

4. The sum of materials and installation costs for all line items must equal the Contract Price.

D. Use each unit price line item in the Agreement as a line item in the Schedule of Values. The sum of materials and installation costs for each line item for unit price contracts must equal the value of the line item in the Agreement. In addition to the installation cost described in Paragraph 1.02.C.3, installation costs for unit price items are to include costs for waste and overages.

1. Installation and materials cost may be left as a single installation component if:

   a. Contractor does not intend to request payment for stored materials for that line item; or

   b. Work in the line item will be completed within a single payment period.

2. Provide adequate detail to allow a more accurate determination of the earned value for installation costs, expressed as a decimal fraction of Work completed, for each line item.

3. Installation cost line items may not exceed $50,000.00. Items that are not subdivided into smaller units may only be included in the Application for Payment when Work on the entire unit is complete.

4. Lump sum items may be divided into an estimated number of units to estimate earned value. The estimated number of units times the cost per unit must equal the lump sum amount for that line item.

5. Include Contractor’s overhead and profit in the installation costs each line item in proportion to the value of the line item to the Contract Price.

6. Include cost not specifically set forth as an individual payment item but required to provide a complete and functional system in the Contract Price for each item.

7. Line items may be used to establish the value of Work to be added or deleted from the Project.

E. Include a breakdown of both mobilization and demobilization costs in the Schedule of Values. The total cost for both mobilization and demobilization may not exceed 5

percent of the total Contract Price. Payment for mobilization and demobilization will be based on the earned value of Work completed. Payment for these costs will only be made for Work completed for the following:

1. Bonds and insurance;
2. Transportation and setup for equipment;
3. Transportation and/or erection of all field offices, sheds, and storage facilities;
4. Salaries for preparation of documents required before the first Application for Payment; and
5. Salaries for field personnel directly related to the mobilization of the Project.

1.03 SCHEDULE OF ANTICIPATED PAYMENTS

A. Submit a schedule of the anticipated Application for Payments showing the anticipated application numbers, submission dates, and the amount to be requested for each Application for Payment on the form provided by the Construction Manager.

B. Update the schedule of anticipated payments as necessary to provide a reasonably accurate indication of the funds required to make payments each month to the Contractor for Work performed.

1.04 ALTERNATES, ALLOWANCES, AND EXTRA WORK ITEMS

A. Include line items and amounts for specified alternate Work and allowances for Work in the Agreement, if any, and as described in Section 01 23 10 “Alternates and Allowances.”

B. Include line items and amounts for Extra Work items in the Agreement, if any, and as described in Section 01 29 01 “Measurement and Basis for Payment.”

1.05 RETAINAGE AND SET-OFFS

A. Retainage will be withheld from each Application for Payment per the Agreement.

B. Reduce payments for set-offs per the General Conditions as directed by the Construction Manager.

1.06 PROCEDURES FOR SUBMITTING AN APPLICATION FOR PAYMENT

A. Submit a draft Application for Payment to the Construction Manager each month at least 20 days before the date established in the Agreement for Owner to make progress payments. Do not submit Applications for Payment more often than monthly. Review the draft Application for Payment with the Construction Manager to determine concurrence with:

1. Values requested for materials and equipment, stored or incorporated into the Project as documented by invoices;
2. The earned value for installation costs for each line item in the Application for Payment form expressed as a percent complete for that line item;
3. The quantity of Work completed for each unit price item;

4. Amount of retainage to be withheld; and
5. Set-offs included in the Application for Payment.

B. Submit Applications for Payment to the Construction Manager after agreement has been reached on the draft Application for Payment with the Construction Manager.

C. Provide all information requested in the Application for Payment form. Do not leave any blanks incomplete. If information is not applicable, enter "N/A" in the space provided.

1. Number each application sequentially and include the dates for the application period.
2. Complete the "Contract Time Summary" section on the Application for Payment form. If the Final Completion date shows the Project is more than 30 days behind schedule, revise the Schedule of Anticipated Payments to correspond to the updated schedule required per Section 01 33 05 "Construction Progress Schedule."
3. Complete the "Summary of Earned Value and Set-offs" section on the Application for Payment form. Show the total amounts for earned value of original Contract performed, earned value for Work on approved Contract Amendments and Change Orders, retainage and set-offs.
4. Sign and date the Contractor's Certification on the Application for Payment form that all Work, including materials, covered by this Application for Payment have been completed or delivered and stored in accordance with the Contract Documents, that all amounts have been paid for Work, materials, and equipment for which previous Payment has been made by the Owner, and that the current payment amount shown in this Application for Payment is now due.
5. Include "Attachment A - Tabulation of Earned Value of Original Contract Performed" to show the value of materials stored and successfully incorporated into the Project and the earned value for installation of the Work for each line item in the Application for Payment for Work. Attachment A includes Work on the original Contract Price and on approved Contract Amendments and Change Orders.
6. Include "Attachment B - Tabulation of Values for Materials and Equipment" to track invoices used to support amounts requested as materials in Attachment A. Enter materials to show the amount of the invoice assigned to each item in Attachment A if an invoice includes materials used on several line items.
7. Include "Attachment C - Summary of Set-offs" to document set-offs made per the Contract Documents. Show each set-off as it is applied. Show a corresponding line item to reduce the set-off amount if a payment held by a set-off is released for payment.
8. Include "Attachment D - Retainage Calculation" to show method for calculating retainage. The amount of retainage with respect to progress payments is stipulated in the Agreement. Any request for a reduction in retainage must be accompanied by a Consent of Surety to Reduction or Partial Release of Retainage.
9. Include "Attachment E - EVA Calculation" and the EVA Chart showing the anticipated and actual total earned value of fees, Work, and materials. Create a graphic representation (curve) of the anticipated progress on the Project each month.

Compare the anticipated cumulative total earned value of fees, Work, and materials to the actual total earned value of fees, Work, and materials to determine performance on budget and schedule. Adjust the table and curve to incorporate Modifications.

D. Submit attachments in Portable Document Format (PDF).

1. Generate attachments to the Application for Payment using the Excel spreadsheet provided by the Construction Manager.

2. Submit PDF documents with adequate resolution to allow documents to be printed in a format equivalent to the document original. Documents are to be scalable to allow printing on standard 8-1/2 x 11 or 11 x 17 paper.

1.07 ADJUSTMENTS TO THE SCHEDULE OF VALUES IN THE APPLICATION FOR PAYMENT

A. Submit a Change Proposal to request any changes to the Schedule of Values incorporated into the Application for Payment once approved. A Field Order will be issued by the Construction Manager to modify the Application for Payment form if approved.

B. Payment for materials and equipment shown in the Application for Payment will be made for the total of associated invoice amounts, up to the value shown for materials in the Application for Payment for that line item.

1. If the total amount for invoices for materials and equipment for a line item are less than the amount shown for the materials component of that line item in the Application for Payment, and it can be demonstrated that no additional materials or equipment are required to complete Work described in that item, the difference between the total invoice for materials and equipment and the materials component for that line item can be added to the installation component of that Work item.

2. Costs for material and equipment in excess of the value shown in the Schedule of Values may not be paid for under other line items.

1.08 CONSTRUCTION MANAGER'S RESPONSIBILITY

A. Construction Manager will review each draft Application for Payment with Contractor to reach an agreement on the amount to be recommended to Owner for payment. Contractor is to revise the Application for Payment to incorporate changes, if any, resulting from this review process.

B. Construction Manager will review the Application for Payment to determine that the Application for Payment has been properly submitted and is in accordance with the agreed to draft Application for Payment.

C. Construction Manager will either recommend payment of the Application for Payment to Owner or notify the Contractor of the reasons for not recommending payment. Contractor may make necessary corrections and resubmit the Application for Payment. Construction Manager will review resubmitted Application for Payment and reject or recommend payment of the Application for Payment to Owner as appropriate.

D. Construction Manager's recommendation of the Application for Payment constitutes a representation that based on its experience and the information available:

1. The Work has progressed to the point indicated;
2. The quality of the Work is generally in accordance with the Contract Documents; and
3. Requirements prerequisite to payment have been met.

E. This representation is subject to:

1. Further evaluation of the Work as a functioning whole;
2. The results of subsequent tests called for in the Contract Documents; or
3. Any other qualifications stated in the recommendation.

F. Construction Manager does not represent by recommending payment that:

1. Inspections made to check the quality or the quantity of the Work as it was performed were exhaustive or extended to every aspect of the Work in progress; or
2. Other matters or issues that might entitle Contractor to additional compensation or entitle Owner to withhold payment to Contractor exist.

G. Neither Construction Manager's review of Contractor's Work for the purposes of recommending payments nor Construction Manager's recommendation of payment imposes responsibility on the Construction Manager or Owner:

1. To supervise, direct, or control the Work;
2. For the means, methods, techniques, sequences, or procedures of construction, or safety precautions and programs;
3. For Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
4. To make examinations to ascertain how or for what purposes Contractor has used the monies paid on account of the Contract Price; or
5. To determine that title to the Work, materials, or equipment has passed to Owner free and clear of Liens.

1.09 FINAL APPLICATION FOR PAYMENT

A. Include adjustments to the Contract Price in the final Application for Payment for:

1. Approved Change Orders and Contract Amendments;
2. Allowances not previously adjusted by Change Order;
3. Deductions for Defective Work that have been accepted by the Owner;
4. Penalties and bonuses;
5. Deduction for all final set-offs; and
6. Other adjustments if needed.

B. Construction Manager will prepare a final Change Order reflecting the approved adjustments to the Contract Price which have not been covered by previously approved

Change Orders and, if necessary, to reconcile estimated unit price quantities with actual quantities.

C. Submit the final Application for Payment per the General Conditions, including the final Change Order. Provide the following with the final Application for Payment:

1. Evidence of payment or release of Liens on the forms provided by the Construction Manager and as required by the General Conditions.
2. Consent from surety to final payment.

D. Final payment will also require additional procedures and documentation per Section 01 70 00 “Execution and Closeout Requirements.”

1.10 PAYMENT BY OWNER

A. Payment by Owner will follow Section 3 of the “County Front End Specifications”.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 29 01 MEASUREMENT AND BASIS FOR PAYMENT

PART 1 - GENERAL

1.01 PAYMENT FOR MATERIALS AND EQUIPMENT

A. Payment will be made for materials and equipment materials properly stored and successfully incorporated into the Project less the specified retainage.

B. Provide a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of Liens. Provide documentation of payment for materials and equipment with the next Application for Payment. Remove items from the tabulation of materials and equipment if this documentation is not provided with the next Application for Payment.

C. Provide evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest.

D. The Work covered by progress payments becomes the property of the Owner at the time of payment. The Contractor's obligations with regard to proper care and maintenance, insurance, and other requirements are not changed by this transfer of ownership until final acceptance in accordance with the General Conditions.

E. Payment for materials and equipment does not constitute acceptance of the product.

1.02 MEASUREMENT AND BASIS FOR PAYMENTS ON LUMP SUM ITEMS

A. Measurement for progress payments is the invoice value for stored materials and the earned value for all other cost for constructing each item. Earned value is expressed as the value of the Work completed divided by the total value of installation cost. The total amount paid will be equal to the total lump sum amount for that item.

1.03 MEASUREMENT AND BASIS FOR PAYMENTS ON UNIT PRICE ITEMS

A. Measure the Work using the unit of measure indicated in this Section for each unit price line item. Payment will be made only for the actual measured unit and/or computed length, area, solid contents, number, and weight unless other provisions are made in the Contract Documents. Payment on a unit price basis will not be made for Work outside dimensions shown in the Contract Documents.

B. Payment will be made for the actual quantity of Work completed and for materials and equipment stored during the payment period. Payment amount is the Work quantity measured per Paragraph A above multiplied by the unit price for that line item in the Agreement.

1.04 MEASUREMENT AND BASIS FOR PAYMENT FOR BASE ITEMS

A. Item A1 MOBILIZATION (MAX OF 5%):

1. Measuring for payment is on a lump sum (LS) basis. Include the following costs in this Bid item:

a. Transportation and setup of equipment, and erection of all field offices, sheds, and storage facilities;

b. Staff and administration costs related to mobilization, and preparation of document and submittals required before the first Application for Payment.

c. Demobilization; and

d. Mobilization may not exceed 5 percent of the total Contract Price.

2. Payment will be made on the following basis: When at least 5% of the adjusted contract amount for construction is earned, 75% of the mobilization lump sum bid amount will be eligible for payment, minus retainage. Upon substantial completion of all work under this Contract and removal of all equipment and materials from the Project site, the remaining 25% of the mobilization lump sum bid amount will be eligible for payment, minus retainage.

B. Item A2 DEMOLISH FINGER PIERS & BULKHEADS TO PROPOSED GRADE:

1. Measurement is by the lump sum.

2. Payment for this item shall be based on the earned value of Work completed.

C. Item A3 DEMOLISH FINGER PIER & SIDEWALK TO 3' AND 2' BELOW CURRENT GRADE:

1. Measurement is by the lump sum.

2. Payment for this item shall be based on the earned value of Work completed.

D. Item A4 DEMOLISH CONCRETE BOAT RAMP:

1. Measurement is by the LS.

2. Payment for this item shall be based on the earned value of Work completed.

E. Item A5 SAWCUT AND REMOVE EXISTING ASPHALT:

1. Measurement is by the Square Yard (SY). This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the bid proposal. Limits of measurement for removing the asphalt will be as shown on the plans

2. Payment for this item shall be based on the earned value of Work completed.

F. Item B1 LANDSIDE GRADING RAMP APPROACHES:

1. Measurement is by the SY.

2. Payment for this item shall be based on the earned value of Work completed.

G. Item B2 DREDGING RAMP APPROACHES & PLACEMENT IN UPLAND COUNTY SITE:

1. Measurement is by the LS. Item includes all dredge mobilization, dredging and placement of dredged material within the designated dredged material placement area shown on the Drawings. Item includes providing the Owner with an after-dredge survey of the boat ramp approach, as specified in Specification 35 24 00 by a Texas-licensed Registered Professional Land Surveyor (RPLS) following project completion.

2. Payment for this item shall be based on the overall percentage of work completed.

H. Item B3 FLOWABLE FILL FOR NORTH RAMP:

1. Measurement is by the CY of installed flowable fill within the limits and to the elevation contour shown on the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

I. Item B4 EXCAVATE AND CLEAN TOPSOIL FILL in S OF S RAMP:

1. Measurement is by the CY of clean topsoil needed to fill within the indicated limits, and depths after excavating as indicated in the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

J. Item B5 GRADING & BERMUDA BROADCAST SEED & WATERING - S OF S RAMP:

1. Measurement is by the SY of area graded and seeded within the limits indicated in the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

K. Item B6 RAMP EXCAVATION:

1. Measurement is by the CY. This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the bid proposal. Limits of measurement for excavation will be as shown on the Drawings. Shrinkage or swelling factors will not be considered.

2. Payment for this item shall be based on the earned value of Work completed.

L. Item C1 CIP BOAT RAMP SLAB:

1. Measurement is by the CY of installed boat ramp slab to the dimensions shown on the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

M. Item C2 RAMP GRAVEL BASE:

1. Measurement is by the CY of installed gravel base to the dimensions and depths shown on the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

N. Item C3 MIRAFI 1100N FILTER FABRIC:

1. Measurement is by the SY of installed filter fabric to the dimensions, including overlapping and wrapping, as shown on the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

O. Item C4 DEWATERING (COFFERDAMMING ETC.):

1. Measurement is by the LS.

2. Payment for this item shall be based on completion of provision of dewatering necessary to construct the ramp and piers.

P. Item C5 RAMP TOE RIPRAP:

1. Measurement is by the CY of installed gravel base to the dimensions and depths shown on the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

Q. Item D1 CIP COLUMNS:

1. Measurement is by the CY of columns cast to the dimensions shown on the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

R. Item D2 CIP RETAINING WALLS:

1. CY

2. [Specify the unit of measure and a description of how measurement for this line item is to be made.]

S. Item D3 CIP PIER BEAMS:

1. Measurement is by the CY of pier beams cast to the dimensions shown on the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

T. Item D4 VERTICAL & HORIZONTAL DOCK FENDERING:

1. Measurement is by the LS for the system of vertical and horizontal fendering provided over the required limits shown in the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

U. Item D5 STAINLESS STEEL BITTS:

1. Measurement is by each (EA) mooring bitt installed.

2. Payment for this item shall be based on the number of each bitt installed.

V. Item E1 SIDEWALK PAVING (5000 PSI):

1. Measurement is by the SY of sidewalk poured to the dimensions shown on the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

W. Item E2 8" COMPACTED SUBGRADE:

1. Measurement is by the SY of compacted subgrade laid to the dimensions shown on the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

X. Item E3 NZ-26 SHEET PILE:

1. Measurement is by the SF of installed NZ-26 Sheet Pile to the dimensions and grades as shown on the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

Y. Item E4 COAL TAR EPOXY ON BOTH SIDES OF SHEE PILE (2 COATS):

1. Measurement is by the SF of installed coal tar epoxy on both sides of the sheet pile with 2 Coats, to the dimensions shown on the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

Z. Item E5 CONCRETE CAP (5,000 PSI):

1. Measurement is by the CY of installed concrete cap to the dimensions shown on the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

AA. Item E6 CRUSHED STONE BACKFILL (AASHTO NO. 57 STONE):

1. Measurement is by the CY. This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the bid proposal. Limits of measurement for crushed stone backfill will be as shown on the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

BB. Item F1 ASPHALT PAVEMENT - PARKING EXTENSION & RAMP TIE-IN:

1. Measurement is by the SY of installed pavement to the dimensions shown on the Drawings.

2. Payment for this item shall be based on the earned value of Work completed.

CC. Item F2 PARKING TIES (CURB STOPS):

1. Measurement is by EA parking tie installed.

2. Payment for this item shall be based on the earned value of Work completed.

DD. Item F3 PAVEMENT MARKING, TYPE 2 (Y)(4"):

1. Measurement is by the linear foot (LF) of pavement marking for the parking stalls and gore striping shown in the Drawings

2. Payment for this item shall be based on the earned value of Work completed.

EE. Item G1 TRASH CAN RECEPTACLE:

1. Measurement is by EA trash can receptacle installed.

2. Payment for this item shall be based on the earned value of Work completed.

FF. Item G2 HANDICAP SIGN AND PAINTED SYMBOL:

1. Measurement is by EA stall receiving a handicap sign and painted symbol.

2. Payment for this item shall be based on the earned value of Work completed.

GG. Item G3 STORMWATER SWPP MEASURES:

1. Measurement is by the LS.

2. Payment for this item shall be based on completion of provision of stormwater pollution prevention control necessary to construct the ramp and piers.

1.05 MEASUREMENT AND BASIS FOR PAYMENT FOR ALLOWANCES

A. Item H1 ALLOWANCE FOR CONSTRUCTION MATERIALS TESTING:

1. Measurement is by the LS.

2. Payment for this item shall be based on the earned value of Work completed, as supported by invoices from the testing laboratory up the amount listed on the Bid Form Exhibit A in the County Front End Specifications.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 31 00 PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SUMMARY

A. Furnish resources required to complete the Project in accordance with the Contract Documents and within the Contract Times.

B. Construct Project in accordance with current safety practices.

C. Manage Site to allow access to Site and control construction operations.

D. Construct temporary facilities to provide and maintain control over environmental conditions at the Site. Remove temporary facilities when no longer needed.

E. Provide temporary controls for pollution, management of water, and management of excess earth as required in Section 01 57 00 “Temporary Controls.”

1.02 STANDARDS

A. Perform Work to comply with:

1. Requirements of the Contract Documents;

2. Laws and Regulations; and

3. Specified industry standards.

1.03 DOCUMENTATION

A. Provide documents in accordance with Section 01 33 00 “Document Management.”

B. Provide copies of Supplier’s printed storage instructions prior to furnishing materials or products and installation instructions prior to beginning the installation.

C. Incorporate field notes, sketches, recordings, and computations made by the Contractor in Record Drawings per Section 01 31 13 “Project Administration.”

1.04 PERMITS

A. Obtain any required permits for construction at the Site.

B. Provide required permits for transporting heavy or oversized loads.

C. Provide other permits required to conduct any part of the Work.

D. Arrange for inspections and certification by agencies having jurisdiction over the Work and include the cost for these inspections and certifications in the Contract Price.

E. Make arrangements with private utility companies and pay fees associated with obtaining services or inspections.

F. Retain copies of permits and licenses at the Site and comply with all regulations and conditions of the permit or license.

1.05 SAFETY REQUIREMENTS

A. Manage safety to protect the safety and welfare of persons at the Site.

B. Provide safe access to move through the Site. Provide protective devices to warn and protect from hazards at the Site.

C. Provide safe access for those performing tests and inspections.

D. Maintain a supply of personal protective equipment for visitors to the Site.

E. Comply with latest provisions of the Occupational Health and Safety Administration (OSHA) and other Laws and Regulations.

F. Cooperate with accident investigations. Provide two copies of all reports, including insurance company reports, prepared concerning accidents, injuries, or deaths related to the Project to the Construction Manager as Record Data per Section 01 31 13 “Project Administration.”

1.06 ACCESS TO THE SITE

A. Maintain access to the facilities at all times. Do not obstruct roads, pedestrian walks, or access to the various buildings, structures, stairways, or entrances. Provide safe access for normal operations during construction.

B. Provide adequate and safe access for inspections. Leave ladders, bridges, scaffolding, and protective equipment in place until inspections have been completed. Construct additional safe access if required for inspections.

C. Use roadways for construction traffic only with written approval of the appropriate representatives of each entity. Roadways may not be approved for construction traffic. Obtain written approval to use roads to deliver heavy or oversized loads to the Site. Furnish copies of the written approvals to the Construction Manager as Record Data per Section 01 31 13 “Project Administration.”

1.07 CONTRACTOR’S USE OF THE SITE

A. Limit the use of Site for Work and storage to those areas designated on the Drawings or approved by the Construction Manager. Coordinate the use of the Site with the Construction Manager.

B. Provide security at the Site as necessary to protect against vandalism and loss by theft.

C. Park construction equipment in designated areas only and provide spill control measures as discussed in Section 01 57 00 “Temporary Controls.”

D. Park employees’ vehicles in designated areas only.

E. Obtain written permission of the property owner before entering privately-owned land outside of the Owner’s property, rights-of-way, or easements.

F. Cooperate with public and private agencies with facilities operating within the limits of the Project. Provide 48 hours’ notice to any applicable agency when Work is anticipated to proceed in the vicinity of any facility by using 811 (Call before you dig) prior to any excavation.

G. Conduct of Contractor's or Subcontractor's Employees:

1. Do not permit alcoholic beverages or illegal substances on the Site. Do not allow persons under the influence of alcoholic beverages or illegal substances to enter or remain on the Site at any time. Persons on Site under the influence of alcoholic beverages or illegal substances will be permanently prohibited from returning to the Site. Criminal or civil penalties may also apply.

2. Do not allow the use of offensive language or sexual harassment in any form. These actions will cause immediate and permanent removal of the offender from the premises. Criminal or civil penalties may apply.

3. Require workers to wear clothing that is inoffensive and meets safety requirements. Do not allow sleeveless shirts, shorts, or any exceedingly torn, ripped, or soiled clothing to be worn on the Site.

4. Do not allow the use, possession, concealment, transportation, promotion, or sale of the following prohibited items anywhere on the Site:

   a. Firearms (including air rifles and pistols and BB or pellet guns) and ammunition;

   b. Bows, crossbows, arrows, bolts, or any other projectile weapons;

   c. Explosives of any kind, including fireworks;

   d. Illegal knives;

   e. Other weapons prohibited by state Laws and Regulations; and

   f. Any other item that has been designed or intended to be used as a weapon.

   No exceptions will be made for the possession of a firearm by a person that has a valid state-issued license to carry a firearm. Remove any of the prohibited items listed above from the Site immediately and permanently. Any person found to be in possession of any prohibited item must also be removed from the Site and may be reported to local law enforcement.

1.08 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

A. Examine the Site and review the available information concerning the Site. Locate utilities, underground facilities, and existing structures. Verify the elevations of the structures adjacent to excavations. Report any discrepancies from information in the Contract Documents to the Construction Manager before beginning construction.

B. Determine if existing structures, poles, piping, or other utilities at excavations will require relocation or replacement. Prepare a Plan of Action per Section 01 31 13 "Project Administration." Coordinate Work with local utility company and others for the relocation or replacement.

C. Protect utilities, underground facilities and existing structures unless they are shown to be replaced or relocated on the Drawings. Restore damaged items to the satisfaction of the Owner and utility or property owner.

D. Carefully support and protect all structures and/or utilities so that there will be no failure or settlement where excavation or demolition endangers adjacent structures and utilities. Do not take existing utilities out of service unless required by the Contract Documents or

approved by the Construction Manager. Notify and cooperate with the utility owner if it is necessary to move services, poles, guy wires, pipelines, or other obstructions.

E. Protect existing trees and landscaping at the Site. Mark trees that may be removed during construction and review with the Construction Manager for approval before removing. Protect trees to remain from damage limiting activity, including stockpiling of materials within the drip line of the tree.

F. Protect buildings from damage when handling material or equipment. Protect finished surfaces, including floors, doors, and jambs. Remove doors and install temporary wood protective coverings over jambs, if needed.

1.09 DISRUPTION TO SERVICES/CONTINUED OPERATIONS

A. Owner's facilities are to continue in service as usual during the construction unless noted otherwise. Owner or utilities must be able to operate and maintain the facilities. Keep disruptions to existing utilities, piping, process piping, or electrical services to a minimum.

1. Do not restrict access to critical valves, operators, or electrical panels.

2. Do not store material or products inside structures unless authorized by the Construction Manager.

3. Limit operations to the minimum amount of space needed to complete the specified Work.

4. Maintain storm sewers and sanitary sewers in service at all times. Provide temporary service around the construction or otherwise construct the Work in a manner that flow is not restricted.

B. Provide a Plan of Action in accordance with Section 01 35 00 "Special Procedures" if facilities must be taken out of operation.

1.10 FIELD VERIFICATION

A. Perform complete field measurements prior to purchasing products or beginning construction for products required to fit existing conditions.

B. Verify property lines, control lines, grades, and levels indicated on the Drawings.

C. Verify pipe class, equipment capacities, existing electrical systems, and power sources for existing conditions.

D. Check Shop Drawings and indicate the actual dimensions available where products are to be installed.

E. Include field measurements in Record Documents as required in Section 01 31 13 "Project Administration."

1.11 REFERENCE DATA AND CONTROL POINTS

A. Construction Manager or Engineer will provide the following control points:

1. Base line or grid reference points for horizontal control.

2. Benchmarks for vertical control.

B. Locate and protect control points prior to starting the Work and preserve permanent reference points during construction. Designated control points may be on an existing structure or monument. Do not change or relocate points without prior approval of the Construction Manager. Notify Construction Manager when a reference point is lost, destroyed, or requires relocation. Replace Project control points on the basis of the original survey. Control points or benchmarks damaged, disturbed or destroyed as a result of the Contractor's negligence will be restored by the Construction Manager. Owner will impose a set-off as compensation for the effort required.

C. Provide complete engineering layout of the Work needed for construction.

1. Provide competent personnel. Provide equipment including accurate surveying instruments, stakes, platforms, tools, and materials.

2. Provide required surveying for the project improvements.

3. Provide Record Data per Section 01 31 13 "Project Administration" and measurements per standards.

1.12 DELIVERY AND STORAGE

A. Deliver products and materials to the Site in time to prevent delays in construction.

B. Deliver packaged products to Site in original undamaged containers with identifying labels attached. Open cartons as necessary to check for damage and to verify invoices. Reseal cartons and store properly until used. Leave products in original packages or other containers until installed. If original packages or containers are damaged, repackage in containers and include packing slips, labels and other information from the original packaging.

C. Deliver products that are too large to fit through openings to the Site in advance of the time enclosing walls and roofs are erected. Set in place, raised above floor on cribs or pallets.

D. Assume full responsibility for the protection and safekeeping of products stored at the Site.

E. Store products at locations acceptable to the Construction Manager and to allow Owner access to maintain and operate existing facilities.

F. Store products in accordance with the Supplier's storage instructions immediately upon delivery. Leave seals and labels intact. Arrange storage to allow access for maintenance of stored items and for inspection. Store unpacked and loose products on shelves, in bins, or in neat groups of like items.

G. Provide additional storage areas as needed for construction. Store products subject to damage by elements in substantial weather-tight enclosures or storage sheds. Provide and maintain storage sheds as required for the protection of products. Provide temperature, humidity control, and ventilation within the ranges stated in the Supplier's instructions. Remove storage facilities at the completion of the Project.

H. Protect the pipe interior. Keep all foreign materials such as dirt, debris, animals, or other objects out of the pipe during the Work.

I. Provide adequate exterior storage for products that may be stored out-of-doors.

1. Provide substantial platforms, blocking, or skids to support materials and products above ground which has been sloped to provide drainage. Protect products from soiling or staining.
2. Cover products subject to discoloration or deterioration from exposure to the elements, with impervious sheet materials. Provide ventilation to prevent condensation below covering.
3. Store loose, granular materials on clean, solid surfaces, or on rigid sheet materials, to prevent mixing with foreign matter.
4. Provide surface drainage to prevent erosion and ponding of water.
5. Prevent mixing of refuse or chemically injurious materials or liquids with stored materials.
6. Pipes and conduits stored outdoors are to have open ends sealed to prevent the entrance of dirt, moisture, and other injurious materials. Protect PVC pipe from ultraviolet light exposure.
7. Store products to prevent wind damage.

J. Protect and maintain mechanical and electrical equipment in storage.
1. Provide Supplier's service instructions on the exterior of the package.
2. Service equipment on a regular basis as recommended by the Supplier. Maintain a log of maintenance services. Submit the log as Record Data per Section 01 31 13 "Project Administration" when Owner assumes responsibility for maintenance and operation.
3. Provide power to and energize space heaters for all equipment for which these devices are provided.
4. Provide temporary enclosures for all electrical equipment, including electrical systems on mechanical devices. Provide and maintain heat in the enclosures until equipment is energized.

K. Maintain storage facilities. Inspect stored products on a weekly basis and after periods of severe weather to verify that:
1. Storage facilities continue to meet specified requirements;
2. Supplier's required environmental conditions are continually maintained; and
3. Products that can be damaged by exposure to the elements are not adversely affected.

L. Replace any stored item damaged by inadequate protection or environmental controls.

M. Payment may be withheld for any products not properly stored.

1.13 CLEANING DURING CONSTRUCTION

A. Provide positive methods to minimize raising dust from construction operations and provide positive means to prevent air-borne dust from disbursing into the atmosphere. Control dust and dirt from demolition, cutting, and patching operations.

B. Clean the Site as Work progresses and dispose of waste materials, keeping the Site free from accumulations of waste or rubbish. Provide containers at the Site for waste collection. Do not allow waste materials or debris to blow around or off of the Site. Control dust from waste materials. Transport waste materials with as few handlings as possible.

C. Comply with Laws and Regulations. Do not burn or bury waste materials. Remove waste materials, rubbish, and debris from the Site and legally dispose of these at public or private disposal facilities.

1.14 MAINTENANCE OF ROADS, DRIVEWAYS, AND ACCESS

A. Maintain roads and streets in a manner that is suitable for safe operations of public vehicle during all phases of construction unless the Owner approves a street closing. Do not close public roads overnight. Coordinate and arrange for emergency vehicle access when streets are to be closed.

B. Submit a Notification by Contractor for Owner's approval of a street closing. The request must state:

1. The reason for closing the street.

2. How long the street will remain closed.

3. Procedures to be taken to maintain the flow of traffic.

C. Obtain permits and permissions of the entity that owns the road prior to any Work and provide a copy of the permit or permission Record Data per Section 01 31 13 "Project Administration."

D. Construct temporary detours, including by-pass roads around construction, with adequately clear width to maintain the free flow of traffic at all times. Maintain barricades, signs, and safety features around the detour and excavations. Maintain barricades, signs, and safety features around the Work in accordance with all provisions of the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD).

E. Assume responsibility for any damage resulting from construction along roads or drives.

1.15 BLASTING

A. Blasting is not allowed for any purpose.

1.16 ARCHAEOLOGICAL REQUIREMENTS

A. Cease operations immediately and contact the Owner for instructions if historical or archaeological artifacts are found during construction.

B. The boat ramp site and footprint are a highly disturbed land area that has undergone recent demolition, reconstruction, and land building in the last two decades for previous boat ramps. No cultural resources is expected within the reconstruction area. Nevertheless, in case this becomes an issue in unforeseen circumstances, conduct all construction activities to avoid adverse impact of the sites where significant historical or archaeological artifacts are found or identified as an area where other artifacts could be found.

1. Obtain details for working in these areas from regulatory agencies.

2. Maintain confidentiality regarding the site(s) of artifacts.
3. Adhere to the requirements of applicable local, state, and federal Laws and Regulations.
4. Notify the Construction Manager and any local, state, or federal agency as required by applicable Laws and Regulations.

C. Do not disturb archaeological sites.

1. Obtain the services of a qualified archaeological specialist to instruct construction personnel on how to identify and protect archaeological finds on an emergency basis.
2. Coordinate activities to permit archaeological work to take place within the area.
    a. Attempt to archaeologically clear areas needed for construction as soon as possible.
    b. Provide a determination of priority for such areas.

D. Assume responsibility for any unauthorized destruction that might result to such sites by construction personnel, and pay all penalties assessed by state or federal agencies for non-compliance with these requirements.

E. Contract Times will be modified to compensate for delays caused by such archaeological finds. No additional compensation will be paid for delays.

1.17 ENDANGERED SPECIES RESOURCES

A. Do not perform any activity that is likely to destroy or adversely modify the habitat or jeopardize the continued existence of a threatened or endangered species as listed or proposed for listing under the Federal Endangered Species Act (ESA) or applicable state Laws and Regulations.

B. Cease Work immediately in the area of the encounter and notify the Construction Manager if a threatened or endangered species is encountered during construction. Construction Manager will implement actions in accordance with the ESA and applicable state statutes. Resume construction in the area of the encounter when authorized to do so by the Construction Manager.

1.18 OCCUPANCY

A. Owner has the right to occupy or operate any portion of the Project that is ready for use after notifying the Contractor of its intent to do so.

B. Testing of equipment and appurtenances including specified test periods, training, and startup does not constitute acceptance for operation.

C. Owner may accept the facility for continued use after startup and testing at the option of the Owner. If acceptance is delayed at the option of the Owner, shut down facilities per approved operation and maintenance procedures.

D. The execution of bonds is understood to indicate the consent of the surety to these provisions for occupancy of the structures and use of equipment.

E. Provide an endorsement from the insurance carrier permitting occupancy of the structures and use of equipment during the remaining period of construction.

F. Conduct operations to ensure the least inconvenience to the Owner and general public.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 31 13 PROJECT ADMINISTRATION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Administer contract requirements to construct the Project. Provide documentation per the requirements of this Section. Provide information as requested by the OPT.

1.02 DOCUMENTATION

A. Provide documents in accordance with Section 01 33 00 “Document Management.”

1.03 COMMUNICATION DURING THE PROJECT

A. Construction Manager is to be the first point of contact for all parties on matters concerning this Project.

B. Construction Manager will coordinate correspondence concerning:

1. Contract administration;
2. Clarification and interpretation of the Contract Documents;
3. Contract modifications;
4. Observation of Work and testing; and
5. Claims.

C. Construction Manager will normally communicate only with the Contractor. Any required communication with Subcontractors or Suppliers will only be with the direct involvement of the Contractor.

D. Direct written communications to the Construction Manager at the address indicated at the pre-construction conference. Include the following with communications as a minimum:

1. Name of the Owner;
2. Project name;
3. Contract title;
4. Project number;
5. Date; and
6. A reference statement.

E. Submit communications on the forms referenced in this Section or in Section 01 33 00 “Document Management.”

1.04 PROJECT MEETINGS

A. Pre-Construction Conference:

1. Attend a pre-construction conference;

2. The location of the conference will be determined by the Construction Manager;
3. The time of the conference will be determined by the Construction Manager, but will be after the Notice of Award is issued and not later than 15 days after the Notice to Proceed is issued;
4. The OPT, Contractor's project manager and superintendent, representatives of utility companies, and representatives from major Subcontractors and Suppliers may attend the conference; and
5. Provide and be prepared to discuss:
    a. Preliminary construction schedule per Section 01 33 05 "Construction Progress Schedule";
    b. Preliminary Schedule of Documents per Section 01 33 00 "Document Management";
    c. Schedule of Values and anticipated schedule of payments per Section 01 29 00 "Application for Payment Procedures";
    d. List of Subcontractors and Suppliers;
    e. Contractor's organizational chart as it relates to this Project; and
    f. Letter indicating the agents of authority for the Contractor and the limit of that authority with respect to the execution of legal documents, contract modifications, and payment requests.

B. Progress Meetings:
1. Attend meetings with the Construction Manager, Design Professional, and Owner.
    a. Meet monthly or as requested by the Construction Manager to discuss the Project.
    b. Meet at the Site or other location as designated by the Construction Manager.
    c. Contractor's superintendent and other key personnel are to attend the meeting. Other individuals may be requested to attend to discuss specific matters.
    d. Notify the Construction Manager of any specific items to be discussed a minimum of 1 week prior to the meeting.
2. Provide information as requested by the Construction Manager, Design Professional or Owner concerning this Project. Prepare to discuss:
    a. Status of overall project schedule;
    b. Contractor's detailed schedule for the next month;
    c. Anticipated delivery dates for equipment;
    d. Coordination with the Owner;
    e. Status of documents;
    f. Information or clarification of the Contract Documents;
    g. Claims and proposed modifications to the Contract;

h. Field observations, problems, or conflicts; and

i. Maintenance of quality standards.

3. Construction Manager will prepare a record of meeting proceedings. Review the record of the meeting and notify the Construction Manager of any discrepancies within 10 days of the date the record of the meeting is provided. The record will not be corrected after the 10 days have expired. Corrections will be reflected in the record of the following meeting.

C. Pre-Documentation and Pre-Installation Meetings:

1. Conduct pre-documentation and pre-installation meetings as required in the individual technical Specifications or as determined necessary by the Construction Manager (for example, instrumentation, roofing, concrete mix design, etc.).

2. Set the time and location of the meetings when ready to proceed with the associated Work. Submit a Notification by Contractor in accordance with Paragraph **[1.07]** for the meeting 2 weeks before the meeting. OPT must approve of the proposed time and location.

3. Attend the meeting and require the participation of appropriate Subcontractors and Suppliers in the meeting.

4. Construction Manager will prepare a record of meeting proceedings. Review the record of the meeting and notify the Construction Manager of any discrepancies within 10 days of the date the record of the meeting is provided. The record will not be corrected after the 10 days have expired. Corrections will be reflected in the record of the following meeting.

D. Weekly Coordination Meetings: Meet on a weekly basis with the Construction Manager or designated on-site representative of the OPT to discuss Work planned for the following week, review coordination issues, testing required, or other issues. Records of these meetings are not required.

1.05 REQUESTS FOR INFORMATION

A. Submit a Request for Information to the Construction Manager to obtain additional information or clarification of the Contract Documents.

1. Submit a separate Request for Information for each item on the form provided by the Construction Manager.

2. Attach adequate information to permit a response without further clarification. Construction Manager will return requests that do not have adequate information to the Contractor for additional information. Contractor is responsible for all delays resulting from multiple reviews due to inadequate information.

3. A response will be made when adequate information is provided. The response will be made on the Request for Information form provided by the Construction Manager.

B. Response to a Request for Information is given to provide additional information, interpretation, or clarification of the requirements of the Contract Documents, and does not modify the Contract Documents.

1. Submit a Change Proposal per Section 01 26 00 “Change Management” if a contract modification is suggested or required.

C. Use the Decision Register to document decisions made at meetings and actions to be taken in accordance with Paragraph 1.06.

D. Use the Action Item Register to document assignments for actions to be taken in accordance with Paragraph 1.06.

1.06 DECISION AND ACTION ITEM REGISTER

A. Construction Manager will maintain a Decision Register to document key decisions made during meetings, telephone conversations, or visits to the Site using the format provided by the Construction Manager:

1. Review the Decision Register prior to each regular meeting.

2. Report any discrepancies to the Construction Manager for correction or discussion at the next monthly meeting.

B. Construction Manager will maintain an Action Item Register in conjunction with the Decision Register to track assignments made during meetings, telephone conversations or visits to the Site using the format provided by the Construction Manager:

1. Review the Action Item Register prior to each regular meeting.

2. Report actions taken after the previous progress meeting on items in the register assigned to the Contractor or through the Contractor to a Subcontractor or Supplier to the Construction Manager. Report on status of progress 1 week prior to each progress meeting established in Paragraph 1.04 to allow Construction Manager to update the register prior to the Progress Meetings.

3. Be prepared to discuss the status at each meeting.

C. Decisions or action items in the register that require a change in the Contract Documents will have the preparation of a Modification as an action item if appropriate. The Contract Documents can only be changed by a Modification.

1.07 NOTIFICATION BY CONTRACTOR

A. Notify the Construction Manager of:

1. Need for testing;

2. Intent to work outside regular working hours;

3. Request to shut down facilities or utilities;

4. Proposed utility connections;

5. Required observation by Construction Manager, Engineer, or inspection agencies prior to covering Work; and

6. Training.

B. Provide notification a minimum of 2 weeks in advance to allow OPT time to respond appropriately to the notification.

C. Use the Notification by Contractor form provided by the Construction Manager.

1.08 REQUESTS FOR MODIFICATIONS

A. Submit requests for Modifications per Section 01 26 00 “Change Management.”

1.09 PLAN OF ACTION

A. Describe the following in the Plan of Action:
   1. Scheduled dates for construction;
   2. Work to be performed;
   3. Utilities, piping, or services affected;
   4. Length of time the service or utility will be disturbed;
   5. Procedures to be used to carry out the Work;
   6. Plan of Action to handle emergencies;
   7. List of manpower, equipment, and ancillary supplies;
   8. Backups for key pieces of equipment and key personnel; and
   9. Contingency plan that will be used if the original schedule cannot be met.

B. Submit plan 2 weeks prior to beginning the Work.

1.10 RECORD DATA

A. Submit information required by the Contract Documents that is not related to a product as Record Data using the form provided by the Construction Manager.

1.11 RECORD DOCUMENTS

A. Maintain one complete set of printed Record Documents at the Site including:
   1. Drawings;
   2. Specifications;
   3. Addenda;
   4. Modifications;
   5. Product Data and approved Shop Drawings;
   6. Construction photographs;
   7. Test Reports;
   8. Clarifications and other information provided in Request for Information responses; and
   9. Reference standards.

B. Store printed Record Documents and Samples in the Contractor’s field office.
   1. Record Documents are to remain separate from documents used for construction.

2. Provide files and racks for the storage of Record Documents.
3. Provide a secure storage space for the storage of Samples.
4. Maintain Record Documents in clean, dry, legible conditions, and in good order.
5. Make Record Documents and Samples available at all times for inspection by the OPT.

C. Maintain an electronic record of Specifications and Addenda to identify products provided in PDF format.

1. Reference the Product Data number, Shop Drawing number, and O&M manual number for each product and item of equipment furnished or installed.
2. Reference Modifications by type and number for all changes.

D. Maintain an electronic record of Drawings in PDF format.

1. Reference the Product Data number, Shop Drawing number, and O&M manual number for each product and item of equipment furnished or installed.
2. Reference Modifications by type and number for all changes.
3. Record information as construction is being performed. Do not conceal any Work until the required information is recorded.
4. Mark drawings to record actual construction.
    a. Depths of various elements of the foundation in relation to finished first floor datum or the top of walls.
    b. Horizontal and vertical locations of underground utilities and appurtenances constructed, and existing utilities encountered during construction.
    c. Location of utilities and appurtenances concealed in the Work. Refer measurements to permanent structures on the surface. Include the following equipment:
        1) Piping;
        2) Ductwork;
        3) Equipment and control devices requiring periodic maintenance or repair;
        4) Valves, unions, traps, and tanks;
        5) Services entrance;
        6) Feeders; and
        7) Outlets.
    d. Changes of dimension and detail.
    e. Changes by Modifications.
    f. Information in Requests for Information or included in the Decision Register.
    g. Details not on the original Drawings. Include field verified dimensions and clarifications, interpretations, and additional information issued in response to Requests for Information.

5. Mark Drawings with the following colors:
    a. Highlight references to other documents, including Modifications in blue.
    b. Highlight mark ups for new or revised Work (lines added) in yellow.
    c. Highlight items deleted or not installed (lines to be removed) in red.
    d. Highlight items constructed per the Contract Documents in green.
6. Submit Record Documents to Construction Manager for review and acceptance 30 days prior to Final Completion of the Project.

E. Applications for Payment will not be recommended for payment if Record Documents are found to be incomplete or not in order. Final payment will not be recommended without complete Record Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 33 00 DOCUMENT MANAGEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Submit documentation as required by the Contract Documents and as requested by the Construction Manager.

1.02 QUALITY ASSURANCE

A. Submit legible, accurate, complete documents presented in a clear, easily understood manner. Documents not meeting these criteria will be returned without review as “Not Approved.”

1.03 CONTRACTOR’S RESPONSIBILITIES

A. Review documents prior to submission. Make certifications as required by the Contract Documents and as indicated on Construction Manager provided forms.

B. Provide a Schedule of Documents to list the documents that are to be submitted, the dates on which documents are to be sent to the Construction Manager for review. Use the form provided by the Construction Manager for this list.

C. Incorporate the dates for processing documents into the Progress Schedule required by Section 01 33 05 “Construction Progress Schedule.”

1. Provide documents in accordance with the schedule so construction of the Project is not delayed.

2. Allow a reasonable time for the review of documents when preparing the Progress Schedule. Assume a 14-day review cycle for each document unless a longer period of time is indicated in the Contract Documents or agreed to by Construction Manager and Contractor.

3. Schedule delivery of review documents to provide all information for interrelated Work at one time.

4. Allow adequate time for processing documents so construction of the Project is not delayed.

1.04 FORMS AND WORKFLOWS

A. Use the forms or workflow process provided by the Construction Manager for project documentation.

1.05 DOCUMENT PREPARATION AND DELIVERY PROCEDURES

A. Deliver documents in electronic format as directed by the Construction Manager.

1. Do not leave any blanks incomplete. If information is not applicable, enter NA in the space provided.

2. Deliver all documents in Portable Document Format (PDF).

a. Create PDF document using Bluebeam Revu software.

b. Create PDF documents from native format files unless files are only available from scanned documents.

c. Rotate pages so that the top of each document appears at the top of the monitor screen when opened in PDF viewing software.

d. Provide PDF document with adequate resolution to allow documents to be printed in a format equivalent to the document original. Documents are to be scalable to allow printing on standard 8-1/2 x 11 or 11 x 17 paper.

e. Submit color PDF documents where color is required to interpret the document.

f. Create or convert documents to allow text to be selected for comments or searched using text search features. Run scanned documents through Optical Character Recognition (OCR) software if necessary.

g. Flatten markups in documents to prevent markups made by Contractor from being moved or deleted. Flatten documents to allow markup recovery.

h. Use Bluebeam Revu software to reduce file size using default settings except the option for “Drop Metadata”. Uncheck the “Drop Metadata” box when reducing file size.

i. Add footers to each document with the name of the Project.

B. Software Requirements:

1. OPT and Contractor will each acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the following software formats:

Document	Document Format
Email	.htm, .rtf, or .txt without formatting that impairs legibility of content on screen or in printed copies
Submittals	PDF
Applications for Payment	PDF and Microsoft® Excel
Progress Schedules	PDF and Schedule in Native Format
Layouts and drawings to be submitted to Owner for future use and modification.	Autodesk® AutoCAD .dwg format
Document submitted to OPT for future word processing use and modification.	Microsoft® Word
Spreadsheets and data submitted to OPT for future data processing use and modification.	Microsoft® Excel

2. Software will be the version currently published at the time Contract is signed, unless a specific software version is listed in the Supplementary Conditions. Prior to using any updated version of the software required in this Section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or convert to comply with this Paragraph 1.05.B.

1.06

1.06 DOCUMENTATION

A. Furnish documents as indicated in Section 01 33 01 “Document Register” or in the individual Specification Sections. Submit documents per the procedures described in the Contract Documents.

B. Submit documents per the Specification Sections shown in the following table:

Document Type	Specification Section
Application for Payment	01 29 00
Certified Test Report	01 33 02 for approval of product 01 40 00 to demonstrate compliance
Change Management	01 26 00
Equipment Installation Report	01 75 00
Graphic Documentation	01 33 06
Notification by Contractor	01 31 13
Operation & Maintenance Manuals	01 33 04
Product Data	01 33 03
Progress Schedules	01 33 05
Record Data	01 31 13
Request for Information	01 31 13
Schedule of Values	01 29 00
Shop Drawing	01 33 02
Substitutions	01 26 00
Suppliers and Subcontractors	01 31 13 01 33 03

1.07 Electronic Documents Protocol

A. The parties shall follow the provisions in this Section, referred to as the Electronic Documents Protocol (“EDP”), for exchange of electronic transmittals.

B. Basic Requirements:

1. Except as otherwise stated elsewhere in the Contract Documents, the OPT and Contractor will send and accept Electronic Documents sent by Electronic Means using the protocols provided in this Section.

2. The contents of the information in any Electronic Document will be the responsibility of the transmitting party. Electronic Documents may be used in the same manner as the printed versions of the same documents that are exchanged using non-electronic format and methods, and are subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.

3. Provisions of this Contract regarding Electronic Documents must be incorporated into other agreements or subcontracts on the Project. Nothing in this paragraph reduces or eliminates requirements:

a. to create, provide, or maintain an original printed record version of Drawings and Specifications, signed and sealed according to applicable Laws and Regulations;

b. to comply with any applicable Law or Regulation governing the signing and sealing of design documents and related Modifications or the signing and electronic transmission of any other documents; or

c. to comply with the notice requirements.

4. When sending Electronic Documents by Electronic Means the sending 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 sending Electronic Documents.

C. Software Requirements:

1. OPT and Contractor will each acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the following software formats:

Document	Document Format
Email	.htm, .rtf, or .txt without formatting that impair legibility of content on screen or in printed copies
Submittals	Bluebeam PDF
Applications for Payment	Bluebeam PDF and Microsoft® Excel
Progress Schedules	PDF and Schedule in Schedule in Native Format
Layouts and drawings to be submitted to Owner for future use and modification	Autodesk® AutoCAD .dwg format
Document submitted to OPT for future word processing use and modification	Microsoft® Word
Spreadsheets and data submitted to OPT for future data processing use and modification	Microsoft® Excel

2. Software will be the version currently published at the time Contract is signed, unless a specific software version is listed in the Supplementary Conditions. Prior to using any updated version of the software required in this section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or convert to comply with this Section.

3. The parties agree not to intentionally edit, reverse engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes any Electronic Document or information contained therein that was transmitted in a software data format, including Portable Document Format (PDF), intended by sender not to be modified, unless the receiving party obtains the permission of the sending party or is citing or quoting excerpts of the Electronic Document for Project purposes.

D. Requests by Contractor for Electronic Documents in Other Formats:

1. Release of any Electronic Documents developed during the design process (including Contract Documents, Technical Data, Drawings, and computer models) in formats other than those identified in this Section will be at the discretion of the OPT.

2. To the extent determined by OPT, release of Electronic Documents and other project information requested by Contractor ("Request") in formats other than those identified in this Section will be subject to the provisions of Owner's response to the Request, and to the following conditions:

a. The content included in the Electronic Documents covered by the Request was prepared by Design Professional as an internal working document or electronic computer model solely for Design Professional's purposes and not for any construction processes, and is being provided to Contractor on an "AS IS" basis without any warranties of any kind, including, any implied warranties of fitness for any purpose. As such, Contractor is advised and acknowledges that the content may not be suitable for Contractor's application, or may require substantial modification and independent verification by Contractor. The content may include limited resolution of models, not-to-scale schematic representations and symbols, use of notes to convey design concepts in lieu of accurate graphics, approximations, graphical simplifications, undocumented intermediate revisions, and other devices that may affect subsequent reuse.

b. Electronic Documents containing text, graphics, metadata, or other types of data that are provided by Design Professional to Contractor under the Request are only for convenience of Contractor. Any conclusion or information obtained or derived from such data will be at the Contractor's sole risk and Contractor waives any claims against the Design Professional or Owner arising from use of data in Electronic Documents covered by the Request.

c. **CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER AND DESIGN PROFESSIONAL AND THEIR SUBCONSULTANTS FROM ALL CLAIMS, DAMAGES, LOSSES, AND EXPENSES, INCLUDING ATTORNEYS' FEES AND DEFENSE COSTS ARISING OUT OF OR RESULTING FROM THE CONTRACTOR'S USE, ADAPTATION, OR DISTRIBUTION OF ANY ELECTRONIC DOCUMENTS PROVIDED UNDER THE REQUEST.**

d. Contractor agrees not to sell, copy, transfer, forward, give away or otherwise distribute this information (in source or modified file format) to any third party without the direct written authorization of Design Professional, unless such distribution is specifically identified in the Request and is limited to the Contractor's subcontractors. Contractor warrants that subsequent use by the Contractor's subcontractors complies with all terms of the Contract Documents and the Owner's response to Request.

3. In the event that Owner elects to provide or directs Design Professional to provide to Contractor any Contractor-requested Electronic Document versions of project information that is not explicitly identified in the Contract Documents as being available to Contractor, Owner shall be reimbursed by Contractor on an hourly basis for any costs necessary to create or otherwise prepare the data in a manner deemed appropriate by Design Professional in accordance with the General Conditions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 33 02 SHOP DRAWINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Shop Drawings are required for those products that cannot adequately be described in the Contract Documents to allow fabrication, erection, or installation of the product without additional detailed information from the Supplier. An example may be supplier's typical sections for installation.

B. Submit Shop Drawings as required by the Contract Documents and as reasonably requested by the Construction Manager to:

1. Record the products incorporated into the Project;

2. Provide detailed information for the products proposed for the Project regarding their fabrication, installation, commissioning, and testing; and

3. Allow the Design Professional to advise the Owner if products proposed for the Project by the Contractor conform, in general, to the design concepts of the Contract Documents.

C. Contractor's responsibility for full compliance with the Contract Documents is not relieved by the review of Shop Drawings, Samples, or mockups.

D. Submit a Change Proposal per Section 01 26 00 "Change Management" to request modifications to the Contract Documents, including those for approval of "or equal" products when specifically allowed by the Contract Documents or as a substitution for specified products or procedures. Deviations from the Contract Documents can only be approved by Change Order or Field Order.

1.02 QUALITY ASSURANCE

A. Submit legible, accurate, and complete documents presented in a clear, easily understood manner. Shop Drawings not meeting these criteria will not be approved.

B. Demonstrate that the proposed products are in full compliance with the design criteria and requirements of the Contract Documents, or will be if deviations requested per Paragraph 1.08 are approved.

C. Furnish and install products that fully comply with the information included in the Shop Drawings.

1.03 CONTRACTOR'S RESPONSIBILITIES

A. Furnish Shop Drawings for products as indicated in Section 01 33 01 "Document Register" or in the individual Specification Sections.

B. Shop Drawings are required for the following items:

Specification Section	Shop Drawing Description
See plans	Storm Water Pollution Prevention Plan

Specification Section	Shop Drawing Description
31 41 16	Steel Sheet Piling and Coatings
03 30 00	Reinforced Concrete Cap
03 30 00	Concrete Sidewalk
See plans	Dock Vertical and Horizontal Fendering
See plans	Mooring bitts
See plans	Trash Receptacle
35 24 00	Dredging Plan and Placement

C. Include Shop Drawings in the Document Register required by Section 01 33 00 “Document Management” to indicate the Shop Drawings to be submitted, the dates on which Shop Drawings are to be sent to the Construction Manager for review, and proposed dates that the product will be incorporated into the Project.

D. Incorporate the dates for processing Shop Drawings into the Progress Schedule required by Section 01 33 05 “Construction Progress Schedule.”

1. Submit Shop Drawings in accordance with the schedule so construction of the Project is not delayed.
2. Submit Shop Drawings for interrelated Work at one time.
3. Allow adequate time for ordering, fabricating, delivering, and installing products so construction of the Project is not delayed.

E. Complete the following before submitting a Shop Drawing or Sample:

1. Prepare and review the Shop Drawing or Sample. Coordinate the Shop Drawing or Sample with other Shop Drawings and Samples, with the requirements of the Work, and the Contract Documents;
2. Determine and verify specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to Shop Drawings and Samples;
3. Determine and verify the suitability of 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
4. Determine and verify information relative to Contractor’s responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

F. Determine and verify:

1. Field measurements, quantities, and dimensions are shown on the Shop Drawing and are accurate;
2. Location of existing structures, utilities, and equipment related to the Shop Drawing have been shown and conflicts between the products, existing structures, utilities, and equipment have been identified;

3. Conflicts that impact the installation of the products have been brought to the attention of the Construction Manager;
4. Shop Drawing is complete for its intended purpose; and
5. Conflicts between the Shop Drawing related to the various Subcontractors and Suppliers have been resolved.

G. Review Shop Drawings prior to submitting to the Construction Manager. Certify that all Shop Drawings have been reviewed by the Contractor and are in strict conformance with the Contract Documents as modified by Addenda, Change Order, Field Order, or Contract Amendment when submitting Shop Drawings except for deviations specifically brought to the Construction Manager's attention on an attached Shop Drawing Deviation Request form in accordance with Paragraph 1.08.

H. Fabrication or installation of any products prior to the approval of Shop Drawings is done at the Contractor's risk. Defective products may be rejected at the Owner's option.

I. Payment will not be made for products for which Shop Drawings or Samples are required until these are approved by the Construction Manager and Design Professional.

1.04 DOCUMENTATION

A. Provide adequate information in Shop Drawings and with Samples so the Design Professional can:

1. Assist the Owner in selecting colors, textures, or other aesthetic features.
2. Compare the proposed features of the product with the specified features and advise Owner that the product does, in general, conform to the Contract Documents.
3. Compare the performance features of the proposed product with those specified and advise the Owner that the product does, in general, conform to the performance criteria specified in the Contract Documents.
4. Review required certifications, guarantees, warranties, and service agreements for compliance with the Contract Documents.

B. Include a complete description of the material or equipment to be furnished, including:

1. Type, dimensions, size, arrangement, model number, and operational parameters of the components;
2. Weights, gauges, materials of construction, external connections, anchors, and supports required;
3. Performance characteristics, capacities, engineering data, motor curves, and other information necessary to allow a complete evaluation of mechanical components;
4. All applicable standards;
5. Fabrication and installation drawings, setting diagrams, manufacturing instructions, templates, patterns, and coordination drawings;
6. Wiring and piping diagrams and related controls;
7. Mix designs for concrete, asphalt, or other materials proportioned for the Project; and

8. Complete and accurate field measurements for products which must fit existing conditions. Indicate on the document that the measurements represent actual dimensions obtained at the Site.

C. Submit Shop Drawings that require coordination with other Shop Drawings for fabrication at the same time. Shop Drawings requiring coordination with other Shop Drawings will not be approved until a complete package is submitted, unless approved by the Construction Manager.

D. Submit information for all of the components and related equipment required for a complete and operational system in one Submittal.

1. Include electrical, mechanical, and other information required to indicate how the various components of the system function together as a system.

2. Provide certifications, warranties, and written guarantees and service contracts with the document package for review when these are required.

1.05 SPECIAL CERTIFICATIONS AND REPORTS

A. Provide all required special certifications, reports, and other documentation with the Shop Drawings as specified in the individual Specification Sections which may include:

1. Certified Test Reports (CTR): A report prepared by an approved testing agency giving results of tests performed on products to indicate their compliance with the Specifications. This report is to demonstrate that the product, when installed, will meet the requirements of the Contract Documents and is part of the Shop Drawing. Field tests may be performed by the Owner to determine that in place materials or products meet the same quality as indicated in the CTR submitted as part of the Shop Drawing.

2. Certification of Local Field Service (CLS): A certified letter stating that field service is available from a factory or supplier approved service organization located within a 300-mile radius of the Site. Include the names, addresses, and telephone numbers of approved service organizations with the certificate.

3. Certification of Adequacy of Design (CAD): A certified letter from the manufacturer of the equipment stating that the equipment has been designed to be structurally stable and to withstand all imposed loads without deformation, failure, or adverse effects to the performance and operational requirements of the unit. The letter must state that mechanical and electrical components have been adequately sized to be fully operational for the conditions specified or normally encountered by the product's intended use.

4. Certification of Applicator/Subcontractor (CSQ): A certified letter stating that the applicator or subcontractor proposed to perform a specified function is duly designated as factory authorized and trained for the application of the specified product.

1.06 SHOP DRAWING SUBMITTAL PROCEDURES

A. Submit Shop Drawings to the Construction Manager. Send all documents in digital format for processing.

1. Provide all information requested. Do not leave any blanks incomplete. If information is not applicable, enter NA in the space provided.
2. Submit all documents in Portable Document Format (PDF) as required by Section 01 33 00 “Document Management.” Provide color PDF documents where color is required to interpret the Shop Drawing. Provide Samples and color charts per Paragraph 1.08.
3. Submit each specific product, class of material, or equipment system separately so these can be tracked and processed independently. Do not submit Shop Drawings for more than one independent system in the same Submittal.
4. Submit items specified in different Specification Sections separately unless they are part of an integrated system.
5. Define abbreviations and symbols used in Shop Drawings.
    a. Use terms and symbols in Shop Drawings consistent with the Contract Drawings.
    b. Provide a list of abbreviations and their meaning as used in the Shop Drawings.
    c. Provide a legend for symbols used on Shop Drawings.
6. Mark Shop Drawings to reference:
    a. Related Specification Sections;
    b. Drawing number and detail designation;
    c. Equipment designation or name;
    d. Schedule references;
    e. System into which the product is incorporated; and
    f. Location where the product is incorporated into the Project.

B. Use the following conventions to markup Shop Drawings for review:
1. Make comments and corrections in the color blue. Add explanatory comments to the markup.
2. Highlight items in black (redact) that are not being furnished when the Supplier’s standard drawings or information sheets are provided so that only the products to be provided are in their original color.
3. Make comments in yellow where selections or decisions by the Design Professional are required, but such selections do not constitute a deviation from the Contract Documents. Add explanatory comments to the markup to indicate the action requested of the Design Professional.
4. Make comments in orange that are deviation requests. Include the deviation request number on the Shop Drawing that corresponds to the deviation request on the Shop Drawing Deviation Request form. Include explanatory comments in the Shop Drawing Deviation Request form.
5. Mark dimensions with the prefix “FD” to indicate field verified dimensions on the Shop Drawings.

C. Designate a document as requiring priority treatment to place the review of the Shop Drawing ahead of other Shop Drawings previously delivered. Shop Drawings are typically reviewed in the order received, unless Contractor requests that a different priority be assigned. Priority Shop Drawings will be reviewed before other Shop Drawings already received but not yet reviewed. Use of this priority designation for Shop Drawings may delay the review of Shop Drawings previously submitted. Contractor is responsible for delays resulting from the use of the priority designation status on Shop Drawings.

D. Complete the certification required by Paragraph 1.03.G.

1.07 SAMPLE AND MOCKUP SUBMITTAL PROCEDURES

A. Submit color charts and Samples for every product requiring color, texture, or finish selection.

1. Submit color charts and Samples only after Shop Drawings for the products have been approved.

2. Deliver all color charts and Samples at one time.

3. Provide Samples of adequate size to clearly illustrate the functional characteristics of the product, with integrally related parts and attachment devices.

4. Indicate the full range of color, texture, and patterns.

5. Deliver color charts and Samples to the field office and store for the duration of the Project.

6. Notify the Construction Manager that color charts and Samples have been delivered for approval using the Notification by Contractor form.

7. Submit color charts and Samples not less than 30 days prior to when these products are to be ordered or released for fabrication to comply with the Project schedule.

8. Remove Samples that have not been approved. Submit new Samples following the same process as for the initial Sample until Samples are approved.

9. Dispose of Samples when related Work has been completed and approved and disposal is approved by the Construction Manager. At Owner’s option, Samples will become the property of the Owner.

B. Construct mockups for comparison with the Work being performed.

1. Construct mockups from the actual products to be used in construction per the detailed specifications.

2. Construct mockups of the size and in the area indicated in the Contract Documents.

3. Construct mockups complete with texture and finish to represent the finished product.

4. Notify the Construction Manager that mockups have been constructed and are ready for approval using the Notification by Contractor form. Allow 2 weeks for Construction Manager to approve of the mockup before beginning the Work represented by the mockup.

5. Remove mockups that have not been approved. Construct new mockups following the same process as for the initial mockup until mockup is approved.

6. Protect mockups until Work has been completed and accepted by the Construction Manager.

7. Dispose of mockups when related Work has been completed and disposal is approved by the Construction Manager.

1.08 REQUESTS FOR DEVIATION

A. Submit a Change Proposal per Section 01 26 00 “Change Management” to request modifications to the Contract Documents, including those for approval of “or equal” products when specifically allowed by the Contract Documents or as a substitution for specified products or procedures.

B. Provide a Shop Drawing with the Change Proposal that clearly identifies deviations for any product or component of the product that does not fully comply with the Contract Documents using the Shop Drawing Deviation Request form provided by the Construction Manager. Mark deviations on the Shop Drawing per Paragraph 1.07.B.

C. Include a description of why the deviation is required and the impact on Contract Price or Contract Times. Include the amount of any cost savings to the Owner for deviations that result in a reduction in cost.

D. Identify each deviation request as a separate item. Include all requested deviations that must be approved as a group together and identify them as a single item.

E. Construction Manager will issue a Field Order or Change Order to approve acceptable deviations. Approval of a requested Shop Drawing deviation by the Design Professional on the Shop Drawings Deviation Request form indicates approval of the requested deviation only on its technical merits as generally conforming to the Contract Documents. Deviations from the Contract Documents can only be approved by a Modification issued by the Construction Manager.

1.09 CONSTRUCTION MANAGER AND DESIGN PROFESSIONAL RESPONSIBILITIES

A. Shop Drawings will be received by the Construction Manager. Construction Manager will log the documents and forward to the Design Professional for review per this Section for general conformance with the Contract Documents.

1. Design Professional’s review and approval will be only to determine if the products described in the Shop Drawing or Sample will, after installation or incorporation in the Work, conform to the information given in 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. Design Professional’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. Design Professional’s review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

B. Comments will be made on items called to the attention of the Design Professional for review and comment. Any marks made by the Design Professional do not constitute a

blanket review of the document or relieve the Contractor from responsibility for errors or deviations from the Contract requirements.

1. Design Professional will respond to Contractor's markups by either making markups directly in the Shop Drawing file using the color red or by attaching a Document Review Comments form with review comments keyed to the Drawings or Shop Drawing Deviation Request.
2. Shop Drawings that are reviewed will be returned with one or more of the following status designations:
    a. Approved: Shop Drawing is found to be acceptable as submitted.
    b. Approved as Noted: Shop Drawing is approved so long as corrections or notations made by Design Professional are incorporated into the Shop Drawing.
    c. Not Approved: Shop Drawing or products described are not acceptable.
    d. Cancelled: This action indicates that for some reason, the Shop Drawing is to be removed from consideration and all efforts regarding the processing of that document are to cease.
3. Shop Drawings will also be designated for one of the following actions:
    a. Documents Filed: Shop Drawing is acceptable without further action and has been filed as a record document.
    b. Shop Drawing Not Required: A Shop Drawing was not required by the Contract Documents. Resubmit the document per Section 01 33 03 "Product Data."
    c. Cancelled: This action indicates that for some reason, the Shop Drawing is to be removed from consideration and all efforts regarding the processing of that document are to cease.
    d. Revise and Resubmit: Shop Drawing has deviations from the Contract Documents, significant errors, or is inadequate and must be revised and resubmitted for subsequent review.

    Actions "a" through "c" will close out the Shop Drawing review process and no further action is required as a Shop Drawing. Action "d" requires follow up action to close out the review process.
4. Drawings with a significant or substantial number of markings by the Contractor may be marked "Approved as Noted." These drawings are to be revised to provide a clean record of the document. Proceed with ordering products as the documents are revised.
5. Dimensions or other data that do not appear to conform to the Contract Documents will be marked as "At Variance With" (AVW) the Contract Documents or other information provided. The Contractor is to make revisions as appropriate to comply with the Contract Documents.

C. Bring deviations to the Shop Drawings to the attention of the Design Professional for approval by using the Shop Drawing Deviation Request form. Use a single line for each requested deviation so the Status and Action for each deviation can be determined for that requested deviation. If approval or rejection of a requested deviation will impact other

requested deviation, then all related deviations should be included in that requested deviation line so the status and action can be determined on the requested deviation as a whole.

D. Requested deviations will be reviewed as a possible Modification to the Contract Documents.

1. A requested deviation will be marked as “Not Approved” if the requested deviation is unacceptable. Contractor is to revise and resubmit the Shop Drawing with corrections for approval.

2. A Field Order will be issued by the Construction Manager for deviations approved by the Design Professional if the requested deviation is acceptable and if the requested deviation will not result in a change in Contract Price or Contract Times. Requested deviations from the Contract Documents may only be approved by Field Order.

3. A requested deviation will not be approved if the requested deviation is acceptable but the requested deviation will or should result in a change in Contract Price or Contract Times. Submit any requested deviation that requires a change in Contract Price or Contract Times as a Change Proposal for approval prior to resubmitting the Shop Drawing.

E. Contractor is to resubmit a complete Shop Drawing incorporating revisions until it is acceptable and marked “Approved” or “Approved as Noted” and is assigned an action per Paragraph [1.090.B.3] that indicates that the Shop Drawing process is closed.

F. Information that is submitted as a Shop Drawing that should be submitted as Product Data or other type of document, or is not required may be returned without review, or may be deleted. No further action is required and the Shop Drawing process for this document will be closed.

1.10 RESUBMISSION REQUIREMENTS

A. Make all corrections or changes required by the Design Professional in the document and resubmit to the Construction Manager until approved.

B. Resubmit a complete Shop Drawing for each resubmittal. The last approved Shop Drawing must not rely on previous submissions. The final Shop Drawing is to provide a complete record for the Owner’s records.

C. Revise initial drawings or data and resubmit as specified for the reviewed document.

1. Highlight or cloud in green those revisions which have been made in response to the previous reviews by the Design Professional. This will include changes previously highlighted or clouded in yellow to direct attention to Design Professional to items requiring selections, decisions by the Design Professional or highlighted or clouded in orange for a requested deviation from the Contract Documents, or comments in red made by the Construction Manager.

2. Highlight and cloud new items in yellow where selections or decisions by the Design Professional are required, but such selections do not constitute a deviation from the Contract Documents. Add explanatory comments to the markup to indicate the action to be taken by the Design Professional.

3. Highlight and cloud new items in orange that are deviation requests. Include the deviation request number on the Shop Drawing that corresponds to the deviation request on the Shop Drawing Deviation Request form. Numbering for these new items is to start with the next number following the last Shop Drawing deviation requested. Include explanatory comments in the Shop Drawing Deviation Request form.

D. Pay for excessive review of Shop Drawings.

1. Excessive review of Shop Drawings is defined as any review required after the original review has been made and the first resubmittal has been checked to see that corrections have been made.

2. Review of Shop Drawings or Samples will be an additional service requiring payment by the Contractor if the Contractor submits a substitution for a product for which a Shop Drawing or Sample has previously been approved, unless the need for such change is beyond the control of Contractor.

3. Cost for additional review time will be billed to the Owner by the Design Professional for the actual hours required for the review of Shop Drawings by Design Professional and in accordance with the rates listed in Section 00 73 00 “Supplementary Conditions.”

4. A set-off will be included in each Application for Payment to pay the cost for the additional review. The set-off will be based on invoices submitted to the Owner for these services.

5. Need for more than one resubmission or any other delay in obtaining Design Professional’s approval of Shop Drawings will not entitle the Contractor to an adjustment in Contract Price or an extension of Contract Times.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 33 03 PRODUCT DATA

PART 1 - GENERAL

1.01 SUMMARY

A. Submit Product Data as required by the Contract Documents and as reasonably requested by the Construction Manager. Provide Product Data for all products unless a Shop Drawing is required for the same item.

B. Submit Product Data to provide documents that allow the Owner to:

1. Record the products incorporated into the Project;

2. Record detailed information about products regarding their fabrication, installation, commissioning, and testing; and

3. Provide replacement or repair of products at some future date.

C. Contractor's responsibility for full compliance with the Contract Documents is not relieved by the receipt or cursory review of Product Data.

D. Submit a Change Proposal per Section 01 26 00 "Change Management" to request modifications to the Contract Documents, including those for approval of "or equal" products when specifically allowed by the Contract Documents or as a substitution for specified products or procedures. Deviations from the Contract Documents can only be made by an approved Change Order or Field Order.

1.02 QUALITY ASSURANCE

A. Submit legible, accurate, and complete documents presented in a clear, easily understood manner. Product Data not meeting these criteria will not be accepted and must be resubmitted.

1.03 CONTRACTOR'S RESPONSIBILITIES

A. Furnish Product Data for products as indicated in the individual Technical Specification Sections.

B. Also, product Data is required for the items in the table below. If these items come with typical installation drawings from the supplier, they should be submitted as part of Shop Drawings.

Specification Section	Product Data Description
See Plans	Vertical and horizontal fendering products
See Plans	Vertical fender bracing if procured pre-fabricated
See Plans	Stainless steel mooring bitts

C. Include Product Data in a Products List to indicate the Product Data to be submitted, the dates on which documents are to be sent to the Construction Manager for review, and proposed dates that the product will be incorporated into the Project.

D. Complete the following before submitting Product Data:

1. Prepare Product Data and coordinate with Shop Drawings, Samples, Product Data for related products, and with the requirements of the Contract Documents;

2. Determine and verify specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information;

3. Determine and verify the suitability of 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

4. Determine and verify information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

E. Review Product Data prior to submitting to the Construction Manager. Certify that all Product Data has been reviewed by the Contractor and is in strict conformance with the Contract Documents as modified by Addenda, Change Order, Field Order, or Contract Amendment when submitting Product Data.

1.04 DOCUMENTATION

A. Include a complete description of the material or equipment to be furnished, including:

1. Type, dimensions, size, arrangement, model number, and operational parameters of the components;

2. Weights, gauges, materials of construction, external connections, anchors, and supports required;

3. Performance characteristics, capacities, engineering data, and other information necessary to allow a complete evaluation of mechanical components;

4. All applicable standards;

5. Fabrication and installation drawings, setting diagrams, manufacturing instructions, templates, patterns, and coordination drawings;

6. Mix designs for concrete, asphalt, or other materials proportioned for the Project; and

7. Complete and accurate field measurements for products which must fit existing conditions. Indicate on the document that the measurements represent actual dimensions obtained at the Site.

B. Submit information for all components and related equipment required for a complete and operational system in one submittal.

1. Provide certifications, warranties, and written guarantees and service contracts with the document package for review when these are required.

1.05 WARRANTIES AND SERVICE AGREEMENTS

A. Provide all product manufacturers' warranties.

1.06 CONSTRUCTION MANAGER AND DESIGN PROFESSIONAL RESPONSIBILITIES

A. Product Data will be received by the Construction Manager, logged, and provided to Design Engineer as the Project record.

1. Product Data may be reviewed to see that the information provided is adequate for the purpose intended. Product Data not meeting the requirements of Paragraph **[1.02]** may not be approved.

2. Product Data is not reviewed for compliance with the Contract Documents. Comments may be returned if deviations from the Contract Documents are noted during the cursory review performed to see that the information is adequate.

3. Contractor's responsibility for full compliance with the Contract Documents is not relieved by the review of Product Data. Contract modifications can only be approved by a Change Order or Field Order.

B. Construction Manager may take the following action in processing Product Data:

1. File Product Data as received if the cursory review indicates that the document meets the requirements of Paragraph 1.02. Document will be marked "Filed as Received" and "Documents Filed." No further action is required on that Product Data.

2. Not approve the Product Data for one of the following reasons:

a. The documentation requirements of the Contract Documents indicate that the document submitted as Product Data should have been submitted as a Shop Drawing. The Product Data will be marked "Not Approved" and "Submit as Shop Drawing." No further action is required on this document as Product Data and the Product Data process will be closed. Resubmit the document as a Shop Drawing per Section 01 33 02 "Shop Drawings."

b. The cursory review indicates that the document does not meet the requirements of Paragraph 1.02. The Product Data will be marked "Not Approved" and "Revise and Resubmit." Contractor is to resubmit the Product Data until it is acceptable and marked "Filed as Received." When Product Data is filed, no further action is required and the Product Data process will be closed.

c. The Product Data is not required by the Contract Documents nor is applicable to the Project. The Product Data will be marked "Not Approved" and "Cancelled." No further action is required and the Product Data process will be closed.

C. Contractor is to resubmit the Product Data until it is acceptable and marked "Filed as Received."

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 33 05 CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.01 SUMMARY

A. Prepare and submit a Progress Schedule for the Work and update the schedule on a monthly basis for the duration of the Project.

B. Provide Progress Schedule in adequate detail to allow Owner to monitor progress and to relate submittal processing to sequential activities of the Work.

C. Incorporate Contract Milestones into the schedule and show activities leading to achievement of these milestones.

D. Assume complete responsibility for maintaining the progress of the Work per the Progress Schedule submitted.

1.02 DOCUMENTATION

A. Submit the schedules to the Construction Manager. Send all documents in digital format for processing.

B. Do not leave any blanks incomplete. If information is not applicable, enter NA in the space provided.

C. Provide schedules, schedule updates and revisions to the Construction Manager in electronic format in its originating software and in Portable Document Format (PDF) as required by Section 01 33 00 “Document Management.”

D. Submit a preliminary Progress Schedule at the pre-construction conference.

E. Submit a detailed Progress Schedule at least 10 days prior to the first payment request.

F. Submit Progress Schedule updates monthly within 10 days after submitting Applications for Payment to indicate the progress made on the Project to the closing date for the Application for Payment. Failure to submit Progress Schedules will cause delay in the review and approval of subsequent Applications for Payment.

1.03 PROGRESS SCHEDULE REQUIREMENTS

A. Progress Schedule is to be in adequate detail to:

1. Ensure adequate planning, scheduling, and reporting during the execution of the Work;

2. Ensure the coordination of the Work of the Contractor and the various Subcontractors and Suppliers;

3. Monitor the progress of the Work; and

4. Evaluate the impact of proposed changes to the Contract Times and Project Schedule.

B. Provide personnel with 5 years’ minimum experience in scheduling construction work comparable to this Project. Prepare the Progress Schedule using acceptable scheduling software.

C. Provide the Progress Schedule in the form of a computer-generated critical path schedule which includes Work to be performed on the Project. It is intended that the Progress Schedule accomplish the following:

1. Give early warning of delays in time for correction.
2. Provide detailed plans for the execution of the Work in the form of future activities and events in sequential relationships.
3. Establish relationships of significant planned Work activities and provide a logical sequence for planned Work activities.
4. Provide continuous current status information.
5. Allow analysis of the Contractor's program for the completion of the Project.
6. Permit schedules to be revised when the existing schedule is not achievable.
7. Log the progress of the Work as it actually occurs.

D. Provide a time-scaled horizontal bar chart which indicates graphically the Work scheduled at any time during the Project. The chart is to indicate:

1. Complete sequence of construction by activity;
2. Identification of the activity by structure, location, and type of Work;
3. Chronological order of the start of each item of Work;
4. The activity start and stop dates;
5. The activity duration; and production rates used to determine the duration;
6. Successor and predecessor relationships for each activity;
7. A clearly indicated single critical path; and
8. Projected percentage of completion, based on dollar value of the Work included in each activity as of the first day of each month.

E. Provide a Progress Schedule for Submittals:

1. Indicate the specific dates each document is to be delivered to the Construction Manager.
2. Allow a reasonable time to review each document, taking into consideration the size and complexity of the document, other documents being processed, and other factors that may affect review time.
3. Include time for making revisions to the Shop Drawings and resubmitting the Shop Drawing for at least a second review.
4. Assume a 14-day review cycle for each time a Shop Drawing is submitted for review unless a longer period is indicated in the Contract Documents or provided by the Construction Manager.
5. Contractor is responsible for delays associated with additional time required to review incomplete or erroneous documents and for time lost when documents are submitted for products that do not meet specification requirements.

1.04 PROGRESS SCHEDULE REVISIONS

A. Revise the Progress Schedule if it appears that the schedule no longer represents the actual progress of the Work.

1. Submit a Plan of Action for schedule recovery if the Progress Schedule or earned value analysis indicates that the Project is more than 30 days behind schedule. The report is to include:

a. Number of days behind schedule;

b. Narrative description of the steps to be taken to bring the Project back on schedule; and

c. Anticipated time required to bring the Project back on schedule.

2. Submit a revised Progress Schedule indicating the action that the Contractor proposes to take to bring the Project back on schedule.

B. Revise the Progress Schedule to indicate any adjustments in Contract Times approved by a Modification.

1. Include a revised Progress Schedule with Change Proposals if a change in Contract Times is requested.

2. Construction Manager will deem any Change Proposal that does not have a revised Progress Schedule and request for a change in Contract Times as having no impact on the ability of the Contractor to complete the Project within the Contract Times.

C. Updating the Progress Schedule to reflect actual progress is not considered a revision to the schedule.

D. Applications for Payment will not be recommended for payment without a revised Progress Schedule and if required, the report indicating the Contractor's plan for bringing the Project back on schedule.

1.05 FLOAT TIME

A. Define float time as the amount of time between the earliest start date and the latest start date of a chain of activities on the construction schedule.

B. Float time is not for the exclusive use or benefit of either the Contractor or Owner.

C. Where several subsystems each have a critical path, the subsystem with the longest time of completion is the critical path and float time is to be assigned to other subsystems.

D. Schedule completion date must be the same as the Contract completion date. Time between the end of construction and the Contract completion date is float time.

1.06 MODIFICATION OF CONTRACT TIMES

A. Contract Times cannot be changed by the submission of a Progress Schedule. Contract Times can only be modified by a Change Order or Contract Amendment.

B. Submit a Change Proposal for any proposed change in Contract Times, and include justification for the change in accordance with the provisions of the Contract Documents.

1.07 NEAR-TERM LOOK AHEAD SCHEDULES

A. Provide a near-term look ahead schedule (NTLA Schedule) every 30 days, typically at periodic coordination meetings, using the form provided by the Construction Manager which shows the days of planned activity for the following:

1. Submittals to be provided and day of anticipated return;
2. Equipment and material deliveries;
3. Arrival and departure of key construction equipment; and
4. Activities for the Contractor and each Subcontractor.

B. Coordinate NTLA Schedule with Project Schedule. Submit a report with each NTLA Schedule identifying deviations from the Project Schedule.

C. Submit a report of near-term work planned in the previous NTLA Schedule that was delayed or not executed by marking actual activity on the previous near term look ahead schedule. Provide explanation of why planned work was not executed and plan to execute in the future and regain time lost.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01 50 00 TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

A. Provide temporary facilities, , Contractor's field offices, storage sheds, workshops, and other facilities needed to complete the Work.

B. Provide temporary utilities needed to support the operation of the facilities and construction activities.

C. Provide and maintain temporary project identification signs for Owner.

D. Provide temporary informational signs to identify key elements of construction and direct the flow of traffic.

E. Provide a weatherproof kiosk for display of permits and other notices required by Laws and Regulations.

1.02 QUALITY ASSURANCE

A. Inspect and test each utility before using facilities. Arrange for all required inspections and tests by regulatory agencies, and obtain required certifications and permits for use of facilities.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Transport, unload, and set up all temporary buildings and utilities.

1.04 JOB CONDITIONS

A. Locate buildings and sheds at the Site as indicated or as approved by the OPT.

B. Prepare the Site by removing trees, brush, or debris and performing demolition or grubbing needed to clear a space adequate for the structures.

C. Provide Contractor's temporary facilities and utilities in time to avoid delays in the performance of the Work.

D. Provide and maintain temporary facilities and utilities.

E. Operate temporary facilities in a safe and efficient manner.

1. Restrict loads on utilities to operate within their designed or designated capacities.

2. Provide sanitary conditions. Prevent public nuisance or hazardous conditions from developing or existing at the Site.

3. Prevent freezing of pipes, flooding, or the contamination of water.

4. Maintain site security and protection of the facilities.

F. Remove temporary facilities and utilities when construction is complete and removal is approved by the Construction Manager.

PART 2 - PRODUCTS

2.01 SIGN MATERIALS

A. Provide wood or metal signs in sound condition, structurally adequate to withstand wind and weather.

B. Provide 3/4-inch exterior grade A/D face veneer plywood with medium density overlay for sign surface.

C. Provide galvanized or stainless steel bolts, brackets, fasteners, and other hardware.

D. Provide exterior quality coatings.

2.02 CONTRACTOR'S FIELD OFFICE

A. Furnish a field office of adequate size for Contractor's use.

B. Subcontractors may provide their own field offices only when space is available on the Site and the OPT agrees to its size, condition, and location.

2.03 TEMPORARY STORAGE BUILDINGS

A. Furnish storage buildings of adequate size to store any materials or equipment delivered to the Site that might be affected by weather.

2.04 TEMPORARY SANITARY FACILITIES

A. Provide sanitary facilities at the Site for the entire duration of the Project. Maintain these facilities in a clean and sanitary condition at all times, and comply with the requirements of the local health authority. On large sites, provide portable toilets at such locations so that no point at the Site will be more than 600 feet from a toilet.

B. Use these sanitary facilities. Do not use restrooms within existing or Owner-occupied buildings.

2.05 TEMPORARY UTILITIES

A. Provide the temporary utilities for administration, construction, testing, disinfection, and startup of the Work, including electrical power, water, and telephone. Pay all costs associated with furnishing temporary utilities.

1. Provide a source of temporary electrical power of adequate size for construction procedures.

a. Use existing power systems where spare capacity is available. Provide temporary power connections that do not adversely affect the existing power supply. Submit connections to the Construction Manager for approval prior to installation.

b. Provide electrical pole and service connections that comply with Laws and Regulations and the requirements of the power company.

2. Provide temporary water. Potable water may be purchased from **[specify source]**.

3. Provide telephone service to the Site and install telephones inside the Contractor's and OPT's field offices.

B. Provide power for construction and storage. Provide power to energize space heaters for stored electrical equipment.

2.06 WATER FOR CONSTRUCTION

A. Provide temporary water for construction use including those that require potable grade water for construction. Owner can provide potable water for potable consumption. Non-potable water may be used as appropriate for filling water-inflated barriers and similar uses. Include the cost of water as needed in the Contract Price.

PART 3 - EXECUTION

3.01 LOCATION OF TEMPORARY FACILITIES

A. Locate temporary facilities in areas approved by the Construction Manager. Construct and install signs at locations approved by the Construction Manager. Install informational signs so they are clearly visible.

3.02 TEMPORARY LIGHTING

A. Provide temporary lighting inside buildings once buildings are weatherproof.

B. Provide exterior security lighting.

C. Provide lighting that is adequate to perform Work within any space. Temporary lights may be removed once the permanent lighting is in service.

D. Provide portable flood lights at any time that Work will be performed outside the structure at night. Provide adequate lighting at any location Work is being performed.

3.03 CONSTRUCTION FENCE

A. Contractor shall be responsible for providing required security to protect Contractor's own property, equipment and work in progress, and determine fencing or other security needs.

3.04 REMOVAL OF TEMPORARY FACILITIES

A. Remove temporary buildings, sheds, and utilities at the conclusion of the Project and restore the Site to original condition or finished condition in accordance with the Drawings.

B. Remove informational signs upon completion of construction.

C. Remove project identification signs, framing, supports, and foundations upon completion of the Project.

3.05 MAINTENANCE AND JANITORIAL SERVICE

A. Maintain signs and supports in a neat, clean condition. Repair damage to structures, framings, or signs.

B. Repair any damage to Work caused by placement or removal of temporary signage.

C. Service, maintain, and replace, if necessary, the field office computer equipment throughout the Project as required by the OPT including replacement cartridges for all office equipment.

END OF SECTION

01 57 00 TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

A. Provide labor, materials, equipment, and incidentals necessary to construct temporary facilities to provide and maintain control over environmental conditions at the Site. Remove temporary facilities when no longer needed.

B. Construct temporary impounding works, channels, diversions, furnishing, and operation of pumps, installing piping and fittings, and other construction for control of conditions at the Site. Remove temporary controls at the end of the Project.

1.02 DOCUMENTATION

A. Provide Shop Drawings in accordance with Section 01 33 02 “Shop Drawings.”

B. Provide copies of notices, records, and reports required by the Contract Documents or Laws and Regulations as Product Data in accordance with Section 01 31 13 “Project Administration.”

1.03 QUALITY ASSURANCE

A. Construct and maintain temporary controls with adequate workmanship using durable materials to provide effective environmental management systems meeting the requirements of the Contract Documents and Laws and Regulations. Use materials that require minimal maintenance to prevent disruption of construction activities while providing adequate protection of the environment.

B. Periodically inspect systems to determine that they are meeting the requirements of the Contract Documents.

1.04 POLLUTION CONTROL

A. Prevent the contamination of soil, water, or atmosphere by the discharge of noxious substances from construction operations. Provide adequate measures to prevent the creation of noxious air-borne pollutants. Prevent dispersal of pollutants into the atmosphere. Do not dump or otherwise discharge noxious or harmful fluids into drains or sewers, nor allow noxious liquids to contaminate public waterways in any manner.

B. Provide equipment and personnel and perform emergency measures necessary to contain any spillage.

1. Contain chemicals in protective areas and do not dump on soil. Dispose of such materials at off-site locations in an acceptable manner.

2. Excavate contaminated soil and dispose at an off-site location if contamination of the soil does occur. Fill resulting excavations with suitable backfill and compact to the density of the surrounding undisturbed soil.

3. Provide documentation to the Owner which states the nature and strength of the contaminant, method of disposal, and the location of the disposal site.

4. Comply with Laws and Regulations regarding the disposal of pollutants.

C. Groundwater or run-off water which has come into contact with noxious chemicals, sludge, or contaminated soil is considered contaminated. Do not allow contaminated water to enter streams or water courses, leave the Site in a non-contained form, or enter non-contaminated areas of the Site.

1. Construct temporary holding ponds or take other precautions and measures as required to contain the contaminated water and pump to a designated storage area.

2. Wash any equipment used for handling contaminated water or soil within contaminated areas three times with uncontaminated water prior to using such equipment in an uncontaminated area. Dispose of wash water used to wash such equipment as contaminated water.

1.05 EARTH CONTROL

A. Remove excess soil, spoil materials, and other earth not required for backfill. Control stockpiled materials to eliminate interference with Contractor and Owner's operations.

B. Dispose of excess earth off the Site. Provide written approval from the property owner for soils deposited on private property as Product Data per Section 01 31 13 "Project Administration." Obtain approval of the OPT if this disposal impacts the use of Site or other easements.

1.06 AIR POLLUTION CONTROL

A. Jefferson County is currently in attainment of National Ambient Air Quality Standards. The following is provided as general information should attainment status change. Air Pollution Watch Days:

1. Air Pollution Watch Days (APWD) may occur in the following times:

a. Typical Ozone Season: May 1 through October 31.

b. Critical Emission Time: 6:00 a.m. to 10:00 a.m.

2. Watch Days:

a. State or local environmental regulatory agencies, in coordination with the National Weather Service, may designate the following day as an APWD by 3:00 p.m. on the prior afternoon.

b. Begin work after 10:00 a.m. on designated APWD if work requires the use of heavy construction equipment for run times in excess of 1 hour prior to 10:00 a.m. Heavy construction equipment may be used prior to 10:00 a.m. if equipment is certified by EPA as "Low Emitting" or equipment burns Ultra Low Sulfur Diesel (ULSD), diesel emulsions, or alternative fuels such as CNG.

B. Obtain air permit for construction activities per requirements of Laws and Regulations.

1.07 TEMPORARY STORMWATER POLLUTION CONTROL

A. Provide temporary stormwater pollution control per Section 01 57 23 "Temporary Stormwater Pollution Control."

1.08 MANAGEMENT OF WATER

A. Manage water resulting from rains or ground water at the Site. Maintain trenches and excavations free of water at all times.

B. Lower the water table in the construction area by acceptable means if necessary to maintain a dry and workable condition at all times. Provide drains, sumps, casings, well points, and other water control devices as necessary to remove excess water.

C. Provide continuous operation of water management actions. Maintain standby equipment to provide proper and continuous operation for water management.

D. Ensure that water drainage does not damage adjacent property. Divert water into the same natural watercourse in which its headwaters are located, or other natural stream or waterway as approved by the Owner. Assume responsibility for the discharge of water from the Site.

E. Remove the temporary construction and restore the Site in a manner acceptable to the Construction Manager and to match surrounding material at the conclusion of the Work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide materials that comply with Laws and Regulations.

PART 3 - EXECUTION

3.01 CONSTRUCTING, MAINTAINING, AND REMOVING TEMPORARY CONTROLS

A. Construct temporary controls in accordance with Laws and Regulations.

B. Maintain controls in accordance with regulatory requirements where applicable or in accordance with the requirements of the Contract Documents.

C. Remove temporary control when no longer required, but before the Project is complete. Correct any damage or pollution that occurs as the result of removing controls while they are still required.

END OF SECTION

01 57 23 TEMPORARY STORMWATER POLLUTION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. Furnish labor, materials, equipment, and incidentals necessary to provide stormwater pollution prevention for the duration of the construction period including furnishing, installing, and maintaining erosion and sediment control structures and procedures and properly removing the features when no longer required.

B. Develop, implement, and maintain a stormwater pollution prevention plan (SWPPP) in compliance with local, state, and federal Laws and Regulations. Provide preventive measures to keep sediment and other pollutants from the construction activity from entering any stormwater system, including open channels.

C. Comply with the Texas Commission on Environmental Quality General Permit, TXR150000, (General Permit) for storm water discharges from construction activities under the Texas Pollutant Discharge Elimination System (TPDES) program.

D. File all required legal notices and obtain required permits prior to beginning any construction activity.

E. This Section provides guidelines and Best Management Practices information for the Contractor to use in adhering to all local, state, and federal environmental Laws and Regulations with respect to stormwater pollution prevention during construction activities.

1.02 DOCUMENTATION

A. Documentation must be provided in accordance with Section 01 33 00 “Document Management.”

B. Submit copies of required notices and reports to the Construction Manager as Product Data. Retain copies of these documents at the Site for review and inspection by the OPT or regulatory agencies at all times.

C. Submit copies of required notices to local, state, and federal authorities and any other entity as required by the General Permit and applicable Laws and Regulations.

D. Post a copy of required notices at the Site in a location where it is readily available for viewing by the general public and local, state, and federal authorities prior to starting construction activities and maintain the posting until completion of the construction activities.

E. Maintain copies of a schedule of major construction activities, inspection reports, and revision documentation with the SWPPP required under the General Permit.

F. Provide schedules in accordance with Paragraph 3.05.

1.03 QUALITY ASSURANCE

A. Comply with applicable requirements of all governing authorities having jurisdiction. The Specifications and the Drawings are not intended to be prescriptive but rather to convey

the intent to provide complete slope protection, erosion control, and stormwater pollution prevention for both the Owner's property and adjacent properties.

B. Contractor must develop and implement a SWPPP in accordance with the General Permit prior to the beginning of construction activity.

C. Contractor assumes sole responsibility for implementing, updating, and modifying the General Permit per Laws and Regulations for the SWPPP and Best Management Practices.

D. Stormwater pollution prevention measures must be established prior to the beginning of construction and maintained during the entire length of construction until final stabilization has been achieved for the area protected.

E. All land-disturbing activities must be planned and conducted to minimize the area to be exposed at any one time as well as time of exposure, off-site erosion, sedimentation, and adverse water quality impacts.

F. Surface water runoff originating upgrade of an exposed area must be managed to minimize erosion and sediment loss during the period of exposure.

G. Install measures to control both the velocity and rate of release so as to minimize erosion and sedimentation of the receiving water body (i.e. , ditch, channel, stream) in accordance with regulatory requirements and as directed by the OPT.

H. Periodically clean out and dispose of all sediment and other pollutants as necessary to maintain adequate treatment capacity of each pollution control feature. Clean out and properly dispose of all sediment and other stormwater pollutants at the time of completion of the Work.

1.04 JOB CONDITIONS, CODES AND ORDINANCES

A. Comply with the local codes and ordinances. If local codes and ordinances require more stringent or additional stormwater pollution prevention measures during construction beyond those required by state and federal Laws and Regulations, the Contractor must provide such measures at no additional cost.

1.05 STANDARDS

A. The applicable provisions of the following standards apply as if written here in their entirety:

1. ASTM International (ASTM):

ASTM D4632	Standard Test Method for Grab Breaking Load and Elongation of Geotextiles, 90 pounds
ASTM D4833	Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products, 60 pounds
ASTM D3786	Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method, 280 psi
ASTM D4751	Standard Test Method for Determining Apparent Opening Size of a Geotextile, U.S. Sieve No. 70 (max) to No. 100 (min)
ASTM D4355	Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc-Type Apparatus

ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort

PART 2 - PRODUCTS

2.01 MATERIALS

A. All materials used for stormwater pollution prevention must meet the minimum design and specification requirements identified below for commonly used sediment loss prevention. The Contractor must use appropriate control devices to protect against stormwater pollution from construction site activities.

B. Silt fences for perimeter controls located downstream of disturbed areas are subject to the following design criteria:

1. If 50 percent or less soil by weight passes the U.S. Standard sieve No. 200, select the apparent opening size (A.O.S.) to retain 85 percent of the soil.

2. If 85 percent or more of soil by weight passes the U.S. Standard sieve No. 200, silt fences must not be used unless the soil mass is evaluated and deemed suitable by a soil scientist or geotechnical engineer concerning the erodibility of the soil mass, dispersive characteristics, and the potential grain-size characteristics of the material that is likely to be eroded.

3. Silt fence fabric must meet the following minimum criteria:

   a. Tensile Strength, ASTM D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles, 90 pounds.

   b. Puncture Rating, ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products, 60 pounds.

   c. Mullen Burst Rating, ASTM D3786 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method, 280 psi.

   d. Apparent Opening Size, ASTM D4751 Test Method for Determining Apparent Opening Size of a Geotextile, U.S. Sieve No. 70 (max) to No. 100 (min).

   e. Ultraviolet Resistance, ASTM D4355 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc-Type Apparatus. Minimum 70 percent.

4. Filter stone for an overflow structure must be 1-1/2-inch washed stone containing no fine material. Angular shaped stone is preferable to rounded shaped stone.

5. Fence posts must be galvanized steel or equivalent and may be T-section or L-section, 1.3 pounds per linear foot minimum, and 4 feet in length minimum. Wood posts may be used depending on anticipated length of service and provided they are 4 feet in length minimum and have a nominal cross-section of 2 inches by 4 inches for pine or 2 inches by 2 inches for hardwoods.

6. Silt fence must be supported by galvanized steel wire fence fabric as follows:
    a. 4-inch by 4-inch mesh size, W1.4/1.4, minimum 14-gauge wire fence fabric;
    b. Hog wire, 12-gauge wire, small openings installed at bottom of silt fence;
    c. Standard 2-inch by 2-inch chain link fence fabric; or
    d. Other welded or woven steel fabrics consisting of equal or smaller spacing as that listed herein and appropriate gauge wire to provide support.

C. Stabilized construction exits used for sites in which significant truck traffic occurs on a daily basis are subject to the following design criteria:
1. The construction exit material must be a minimum thickness of 6 inches. The stone or recycled concrete used must be 3 to 5 inches in size with little or no fines.
2. The geotextile fabric must meet the following minimum criteria:
    a. Tensile Strength, ASTM D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles, 300 pounds.
    b. Puncture Strength, ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products, 120 pounds.
    c. Mullen Burst Rating, ASTM D3786 Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method, 600 psi.
    d. Apparent Opening Size, ASTM D4751 Test Method for Determining Apparent Opening Size of a Geotextile, U.S. Sieve No. 40 (max).

D. Alternative pollution prevention measures selected by the Contractor must be identified from one or more of the following reference sources, as appropriate for the region of the construction activity:
1. City of Austin Environmental Criteria Manual.
2. North Central Texas Council of Governments (NCTCOG) integrated Stormwater Management (iSWM) Design Manual for Construction.
3. Harris County/Harris County Flood Control District/City of Houston Stormwater Management Handbook for Construction Activities.

PART 3 - EXECUTION

3.01 PREPARATION

A. Prepare a SWPPP in accordance with applicable permit requirements for construction activity. Develop the SWPPP in conformance with the General Permit and any applicable local requirements.

B. Prepare and implement the SWPPP prior to the beginning of construction activity in accordance with local, state, and federal Laws and Regulations.

C. OPT may require Contractor to install stormwater pollution prevention devices and/or practices during construction in addition to those required under the approved SWPPP. Contractor must remain solely responsible for complying with all local, state, and federal Laws and Regulations.

3.02 INSTALLATION

A. Silt fences for perimeter controls located downstream of disturbed areas are subject to the following installation criteria:

1. Construct fences along a line of constant elevation (along a contour line if possible).
2. Maximum drainage area must be 0.25 acres per 100 linear feet of silt fence.
3. Maximum flow to any 20-foot section of silt fence must be 1 cfs.
4. Maximum distance of flow to silt fence must be 200 feet or less. If the slope exceeds 10 percent, the flow distance must be less than 50 feet.
5. Maximum slope adjacent to the fence must be 2:1.
6. Stone overflow structures or other outlet control devices must be installed at all low points along the fence or spaced at approximately 300 feet if there is no apparent low point.
7. A 6-inch wide trench is to be cut 6 inches deep at the toe of the fence to allow the fabric to be laid below the surface and backfilled with compacted earth or gravel to prevent bypass of runoff under the fence. Fabric must overlap at abutting ends a minimum of 3 feet and must be joined such that no leakage or bypass occurs. If soil conditions prevent a minimum toe-in depth of 6 inches or installation of support post to depth of 12 inches, silt fences must not be used.
8. Sufficient room for the operation of sediment removal equipment must be provided between the silt fence and other obstructions in order to properly maintain the fence.
9. The last 10 feet (or more) at the ends of a line of silt fence must be turned upslope to prevent bypass of stormwater. Additional upslope runs of silt fence may be needed every 200 to 400 linear feet, depending on the traverse slope along the line of silt fence.

a.

B. Stabilized construction exits for sites in which significant truck traffic occurs on a daily basis are subject to the following installation criteria:

1. Limit site access to one route during construction, if possible; two routes for linear and larger projects.
2. Prevent traffic from avoiding or shortcutting the full length of the construction exit by installing barriers. Barriers may consist of silt fence, construction safety fencing, or similar barriers.
3. Design the access point(s) to be at the upslope side of the construction site. Do not place construction access at the lowest point on the construction site.
4. Stabilized Construction Exits are to be constructed such that drainage across the entrance is directed to a controlled, stabilized outlet on-site with provisions for storage, proper filtration, and removal of wash water.
5. The exit must be sloped away from the paved surface so that stormwater is not allowed to leave the Site onto roadways.

6. Minimum width of exit must be 15 feet.

7. Vehicles must not be permitted to track or drop sediment onto paved roads, streets, or parking lots. When necessary, vehicles must be cleaned to remove sediment prior to exit onto paved areas. When washing is required, it must be done on a constructed wheel wash facility that drains into an approved sediment trap or sediment basin or other sedimentation/filtration device.

8. Minimum dimensions for the exit must be as follows:

Tract Area	Min. Width of Exit	Min. Length of Exit
<1 Acre	15 feet	20 feet
≥ 1 acre but <5 Acres	25 feet	50 feet
≥5 Acres	30 feet	50 feet

C. Install pollution control devices in a manner consistent with their designed intent.

3.03 MAINTENANCE

A. Maintain pollution prevention control structures and procedures in full working order at all times during construction. This must include any necessary repair or replacement of items which have become damaged or ineffective. Remove sediment and other pollutants which accumulate in pollution control devices as necessary to maintain the intended design efficiency for the pollution prevention measure.

B. Dispose properly of trash, debris, and other pollutants.

C. Place sediment material in approved earth spoil areas or return the sediment material to the area from which it eroded.

D. Maintain pollution prevention structures and procedures until construction is complete for the area protected and until the Site achieves final stabilization. Unless more stringently defined by local, state, or federal requirements, final stabilization is defined as achieving 70 percent of background vegetative cover or placement of permanent cover, such as concrete or asphalt.

E. Upon completion of construction and achievement of final stabilization, properly remove the temporary pollutant control structures and complete the area as indicated. Pollution control devices made of organic materials designed to degrade naturally in place will not require removal, unless specifically required by the OPT.

F. Silt fences must be inspected regularly (at least as often as required by the General Permit) for buildup of excess sediment, undercutting, sags, and other failures. Sediment should be removed when it reaches approximately one-half the height of the fence. In addition, determine the source of excess sediment and implement appropriate Best Management Practices to control the erosion. If the fabric becomes damaged or clogged, it must be repaired or replaced as necessary.

G. Inlet protection must be inspected regularly (at least as often as required by the General Permit). Floatable debris and other trash caught by the inlet protection should be removed after each storm event. Sediment should also be removed from curb inlet protection after each storm event because of the limited storage area associated with curb inlets. Sediment collected at inlet protection should be removed before it reaches half the height of the

protection device. Sediment should be removed from inlets with excavated impoundment protection before the volume of the excavation is reduced by 50 percent. In addition, the weep holes should be checked and kept clear of blockage. Concrete blocks, 2-inch by 4-inch boards, stakes, and other materials used to construct inlet protection should be checked for damaged and repaired or replaced if damaged. When filter fabric or organic filter tubes are used, they should be cleaned or replaced when the material becomes clogged. For systems using filter stone, when the filter stone becomes clogged with sediment, the stones must be pulled away from the inlet and cleaned or replaced. Because of the potential for inlet protection to divert runoff or cause localized flooding, remove inlet protection as soon as the drainage area contributing runoff to the inlet is stabilized. Ensure that all inlet protection devices are removed at the end of the construction.

H. The stone outlet sediment trap should be inspected regularly (at least as often as required by the General Permit) to check for clogging of the void spaces between stones. If the filter stone appears to be clogged, such that the basin will not completely drain, then the filter stone will require maintenance. If the filter stone is not completely clogged it may be raked with a garden rake to allow the water to release from the basin. If filter stone is completely clogged with mud and sediment, then the filter stone will have to be removed and replaced. Failure to keep the filter stone material properly maintained will lead to clogging of the stone riprap embankment. When this occurs, the entire stone rip-rap structure will need to be replaced. If the aggregate appears to be silted in such that efficiency is diminished, the stone should be replaced. Trash and debris should be removed from the trap after each storm event to prevent it from plugging the rock. Deposited sediment must be removed before the storage capacity is decreased by one-third, or sediment has reached a depth of 1 foot, whichever is less. The removed sediment must be stockpiled or redistributed in areas that are protected with erosion and sediment controls.

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J. Stabilized construction exits should be inspected regularly (at least as often as required by the General Permit). The stabilized construction exit must be maintained in a condition that prevents tracking or flow of sediment onto paved surfaces. Periodic re-grading and top dressing with additional stone must be done to keep the efficiency of the exit from diminishing. The rock must be re-graded when ruts appear. Additional rock must be added when soil is showing through the rock surface. Additional controls are needed if inspections reveal a properly installed and maintained exit, but tracking of soil outside the construction area is still evident. Additional controls may be daily sweeping of all soil spilled, dropped, or tracked onto public rights-of-way or the installation of a wheel cleaning system.

3.04 FIELD QUALITY CONTROL

A. In the event of conflict between the specified requirements and stormwater pollution control laws, rules, or regulations or other local, state, or federal agencies, the more restrictive laws, rules, or regulations will apply.

3.05 SCHEDULES

A. Prior to start of construction, submit schedules to the OPT for accomplishment of temporary and permanent erosion control work in connection with required clearing and grubbing, grading, construction, and paving. Include a proposed method of erosion and

dust control on haul roads and borrow pits and a plan for disposal of waste materials in the submittal.

END OF SECTION

01 60 00 PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Provide products for this Project that comply with the requirements of this Section. Specific requirements of the detailed equipment specifications govern in the case of a conflict with the requirements of this Section.

B. Comply with applicable specifications and standards.

1.02 DOCUMENTATION

A. Provide documents in accordance with the Contract Documents.

1.03 QUALITY ASSURANCE

A. Design Criteria:

1. Provide products designed for structural stability and operational capability.

2. Provide members designed to withstand all loads imposed by installation, erection, and operation of the product without deformation, failure, or adversely affecting the operational requirements of the product. Size and strength of materials for structural members are specified as minimums only.

3. Design mechanical and electrical components for all loads, currents, stresses, and wear imposed by startup and normal operations of the equipment without deformation, failure, or adversely affecting the operation of the unit. Mechanical and electrical components specified for equipment are specified as the minimum acceptable for the equipment.

B. Coordination:

1. Provide coordination of the entire Project, including verification that structures, piping, and equipment components to be furnished and installed for this Project are compatible.

2. Determine that the equipment furnished for this Project is compatible with the requirements of the Contract Documents and with the equipment and materials furnished by others.

3. Provide electrical components for equipment that comply with all provisions of the Contract Documents.

4. Apply protective coatings and paints to equipment in the shop that are fully compatible with the final coatings to be field applied in accordance with the Contract Documents.

C. Adapting Substitute Products:

1. The Drawings and Specifications are prepared for the specified products. Make modifications to incorporate the products into the Project if a substitution is requested

for a product is and approved in accordance with Section 01 26 00 “Change Management.”

2. Do not provide a product with a physical size that exceeds the available space. Consideration may be given to the acceptance of these products or equipment if the Contractor assumes all costs necessary to incorporate the item and the OPT approves such revisions.

3. Coordinate electrical requirements for the products to be installed in the Project, including revisions in electrical equipment components wiring and other elements necessary to incorporate the component.

1.04 STANDARDS

A. The applicable industry standards referenced in the Specifications apply as if written here in their entirety.

B. Provide equipment manufactured using structural and miscellaneous fabricated steel conforming to the standards of the American Institute of Steel Construction, except where indicated otherwise.

1.05 WARRANTIES AND GUARANTEES

A. Normal warranty provisions are as stated in the General Conditions and Section 01 78 36 “Warranties and Service Agreements.”

B. Correct Defective Work under the provisions of the General Conditions.

C. Provide warranties and guarantees for periods as defined in the Contract Documents. Individual Sections of the Specifications may have more stringent warranty requirements than stated in the General Conditions. The most stringent warranty will apply in the event of conflicts within the Contract Documents.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide products according to normally accepted engineering and shop practices, except where a higher standard of quality is required by the Contract Documents.

B. Manufacture like parts of duplicate units to standard sizes and gages that are interchangeable.

C. Two or more items of the same kind are to be identical and made by the same Supplier.

D. Provide products suitable for the intended service.

E. Adhere to the equipment capacities, sizes, and dimensions indicated in the Contract Documents.

F. Do not use products for any purpose other than that for which they were designed.

G. Provide new products. Do not provide equipment that has been in service at any time prior to delivery except for testing in accordance with the Contract Documents.

H. Provide materials suitable for service conditions.

I. Provide iron castings that are tough, close grained gray iron free from blowholes, flaws, or excessive shrinkage and that conform to ASTM A48.

J. Design structural members for shock or vibratory loads.

K. Provide steel that is at least 1/4 inch thick for all elements that will be submerged or subject to splashing all or part of the time during normal operation of the equipment. Chamfer or grind all edges to eliminate sharp exposed edges.

2.02 ANCHOR BOLTS

A. Provide suitable anchor bolts for each product.

B. Provide anchor bolts with templates or setting drawings in time to permit casting the anchor bolts in the concrete when concrete is placed.

C. Provide two nuts for each bolt.

D. Provide anchor bolts for products mounted on baseplates that are long enough to permit 1-1/2 inches of grout beneath the baseplate and to provide adequate anchorage into structural concrete. Bolts must be long enough to provide full nut engagement and leave three threads exposed. Housekeeping pads are not structural concrete.

E. Provide stainless steel anchor bolts, nuts, and washers.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install equipment including equipment pre-selected or furnished by the Owner. Assume responsibility for proper installation, startup, and making the necessary adjustments so that the equipment is placed in proper operating condition per Section 01 75 00 “Starting and Adjusting.”

3.02 LUBRICATION

A. Lubricate all products provided or installed for this Project, including products furnished by the Owner, per the manufacturer’s written recommendations until the product is accepted by the Owner.

END OF SECTION

01 70 00 EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Comply with requirements of the General Conditions and specified administrative procedures in closing out the Contract.

1.02 DOCUMENTATION

A. Submit affidavits and releases on forms provided by the Construction Manager.

1.03 SUBSTANTIAL COMPLETION

A. The following requirements must be met for the Project or a designated portion of the Work to be Substantially Complete per the General Conditions:

1. Work must be fully functional and able to operate in accordance with the Contract Documents without special or extraordinary efforts on the part of the Owner.

B. Conduct inspections with superintendent, Subcontractors, and Suppliers for the Work or a designated portion of the Work prior to calling for a Substantial Completion inspection by the OPT. Create a list of deficiencies in the Work that must be completed for the Project to qualify for Substantial Completion. Review the list with the Construction Manager or the designated member of the OPT. The Construction Manager or the designated member of the OPT may assist the Contractor with this effort; however, it is the Contractor's responsibility to create and manage this list of deficiencies until corrections are made.

C. Correct the identified deficiencies prior to calling for a Substantial Completion inspection.

D. Notify the Construction Manager that the Work or a designated portion of the Work is Substantially Complete per the General Conditions. Include a list of the items remaining to be completed or corrected before the Project will be considered for Final Completion.

E. OPT will visit the Site to observe the Work within a reasonable time after notification is received to determine the status of the Project.

F. Construction Manager will notify the Contractor that the Work is either Substantially Complete or that additional Work must be performed before the Project will be considered Substantially Complete.

1. Construction Manager will notify the Contractor of items that must be completed before the Project will be considered Substantially Complete.

2. Correct the noted deficiencies in the Work.

3. Notify the Construction Manager when the items of Work in the Construction Manager's notice have been completed.

4. OPT will revisit the Site and repeat the process.

5. Construction Manager will issue a Certificate of Substantial Completion to the Contractor when the OPT considers the Project to be Substantially Complete. The

certificate will include a tentative list of items to be corrected before Final Payment will be recommended.

6. Review the list and notify the Construction Manager of any objections to items on the list within 10 days after receiving the Certificate of Substantial Completion.

1.04 CLOSEOUT REQUIREMENTS

A. Provide the following before Final Completion:

1. Record Documents per Section 01 31 13 “Project Administration”;
2. Warranties, bonds, and service agreements;
3. Equipment Installation Reports;
4. Shop Drawings, Product Data, operation and maintenance manuals, and other documentation required by the Contract Documents;
5. Specified spare parts and special tools;
6. Certificates of occupancy, operating certificates, or other similar releases required to allow the Owner unrestricted use of the Work and access to services and utilities;
7. Evidence of continuing insurance and bond coverage as required by the Contract Documents; and

1.05 WARRANTIES, BONDS, AND SERVICES AGREEMENTS

A. Provide warranties, bonds, and service agreements required by Section 01 33 00 “Document Management” or by the individual Sections of the Specifications.

B. The date for the start of warranties, bonds, and service agreements is established per the General Conditions.

C. Compile warranties, bonds, and service agreements and review these documents for compliance with the Contract Documents.

1. Each document is to be signed by the respective Supplier or Subcontractor.
2. Each document is to include:
    a. The product or Work item description;
    b. The firm name, with the name of the principal, address, and telephone number;
    c. Scope of warranty, bond, or services agreement;
    d. Date, duration, and expiration date for each warranty bond and service agreement;
    e. Procedures to be followed in the event of a failure; and
    f. Specific instances that might invalidate the warranty or bond.

D. Submit digital copies of the documents to the Construction Manager for review.

E. Submit warranties, bonds, and services agreements within 10 days after equipment or components placed in service.

1.06 FINAL COMPLETION

A. Conduct inspections with Superintendent, Subcontractors, and Suppliers prior to calling for a Final Completion inspection by the OPT. Create a list of deficiencies in the Work that must be completed for the Project to qualify for the Final Completion inspection. Review the list with the Construction Manager or the designated member of the OPT. The Construction Manager or the designated member of the OPT may assist the Contractor with this effort; however, it is the Contractor's responsibility to create and manage this list of deficiencies until corrections are made.

B. Identify, list, and correct deficiencies prior to calling for a Final Completion inspection. The Project at the call for Final Completion represents the Contractor's interpretation of a project completed in conformance with the Contract Documents and reflects the Contractor's representation of a quality project meeting the Owner's expectations.

C. Notify the Construction Manager when:

1. Work has been completed and complies with the Contract Documents;
2. Equipment and systems have been tested per the Contract Documents and are fully operational;
3. Final operation and maintenance manuals have been provided to the Owner and all operator training has been completed;
4. Specified spare parts and special tools have been provided;
5. Work is complete and ready for final inspection;
6. Final documentation for all outstanding Modifications and Claims (other than those listed on the Certificate of Final Completion) have been processed and are ready for incorporation into the final Application for Payment; and
7. Closeout requirements in Paragraph 1.04 have been completed.

D. OPT will visit the Site to determine if the Project is complete and ready for final payment within a reasonable time after the notice is received.

E. Construction Manager will notify the Contractor that the Project is complete or will notify the Contractor that Work is Defective.

F. Take immediate steps to correct Defective Work. Notify the Construction Manager when Defective Work has corrected. OPT will visit the Site to determine if the Project is complete and the Work is acceptable. Construction Manager will issue a Certificate of Final Completion to the Contractor when the Project is complete or will notify the Contractor that Work is Defective.

G. Submit the request for final payment with closeout documentation described in Paragraph 1.05 if notified that the Project is complete and the Work is acceptable.

1.07 REINSPECTION FEES

A. Owner may impose a set-off against the Application for Payment in accordance with the General Conditions to compensate the OPT for additional visits to the Project if additional Work is required.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

DIVISION 02

EXISTING CONDITIONS

02 41 00 DEMOLITION

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment and incidentals necessary for every type of required demolition.

B. Furnish equipment of every type required to demolish and transport construction debris away from the Site.

C. Coordinate all demolition work with Section 01 35 00 “Special Procedures” if required.

1.02 STANDARDS

A. Work shall be performed in accordance with the codes and ordinances of the agency having authority over the Place of Record.

B. Occupational Safety and Health Association (OSHA), 29 CFR Parts 1010 and 1926, “Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite”, 40 CPR Part 61 - “National Emission Standard for Hazardous Air Pollutants”

1.03 DELIVERY AND STORAGE

A. Stockpile construction debris at the Site only as long as necessary to haul to a disposal site. Stack materials neatly and handle in an orderly manner until removed from the Site.

1.04 JOB CONDITIONS

A. Contractor shall visit the Site and determine the extent of demolition required and the Site conditions that might affect its proposal. Include costs of covering all aspects of the demolition as part of the proposal.

B. The Drawings shall be carefully reviewed to determine the extent of necessary demolition and to identify elements of the existing construction which are to remain in place. Report any discrepancies to Owner and Engineer before disturbing existing conditions. Property lines and limits of demolition shall be accurately located prior to beginning site demolition. Start of demolition activities shall represent confirmation by Contractor that existing conditions are as presented in the Contract Documents. Demolition outside the limits indicated on the Drawings, or outside the property lines shall not be performed.

1. For electrical demolition, verify field measurements and circuiting arrangements are as shown on the Drawings. Verify that existing wiring and equipment designated to be abandoned or demolished serve only abandoned facilities.

C. Material removed during demolition, and any equipment not otherwise designated to remain the property of the Owner, shall become the property of the Contractor, and shall be promptly removed from the Site.

D. Equipment and material designated as remaining the property of the Owner shall be removed from the structure and transported to a designated location on the Site and stored for the Owner’s use. Store on wood runners raised above the surrounding grade and cover with weather resistant covering that is tied securely in place.

E. Take necessary precautions in removing Owner designated property to prevent damage during the demolition process. Equipment shall be removed in one piece. Loose components may be removed separately. Controls and electrical equipment may be removed from the equipment and handled separately. Large units, such as motor driven pumps, may be dismantled and motors handled separately. Do not use a cutting torch to separate the Owner's equipment or material. Salvaged piping shall be taken apart at flanges or fittings and removed in sections.

2.00 PRODUCTS

2.01 MATERIALS

A. New materials and equipment for patching and extending work shall meet the requirements of the individual Sections in these Contract Documents. For materials not addressed in these documents, materials used shall meet or exceed the dimensions and quality of the existing work.

3.00 EXECUTION

3.01 SITE CLEARING

A. Perform site clearing to the limits indicated on the Drawings. Scrape the Site, removing brush, trees, weeds and trash. Haul debris away from the Site to an approved site as it accumulates.

B. Grub out tree and brush roots within the limits of buildings, parking lots, driveways and other structures. Remove rock out-croppings and boulders from any area within the limits of grading or structures. Remove roots and backfill any excavation resulting from tree removal with suitable soil for final grading plan.

C. Trees not located within the construction limits, or otherwise indicated for removal, shall remain in place. Visit the Site with the Engineer or Owner and identify those trees that are to remain. Mark all other trees with yellow paint to indicate removal. Protect remaining trees during construction. Wrap the tree trunks with 2 x 4 timbers if construction equipment must operate in close proximity to them.

D. Provide dust control as needed or requested by the Owner.

3.02 REMOVAL OF EXISTING SITE STRUCTURES

A. Remove concrete or masonry structures located below the ground line where indicated or where such structures will interfere with new construction. Where structures are a part of an active underground utility system, repair piping to prevent blockage in the flow.

B. Remove abandoned manholes, basins, or similar structures. With the Engineer's approval, and if structures will not interfere with any other proposed construction, they may be abandoned in place. Remove the top part of the structure so that it is a minimum of 2 feet below the new finish grade. Remove part of the floor system of basins, manholes and other such structures to prevent entrapment of water. Fill remaining cavities with approved backfill material.

C. Provide dust control as needed or as requested by the Owner.

3.03 REMOVAL OF STRUCTURES

A. Removal of Steel Structures: Meet with Owner and identify any material to be salvaged. Protect such material from damage using protective demolition methods. Remove steel structural members by unbolting, cutting welds, or cutting rivet heads and punching shanks through holes. Do not use flame-cutting unless approved by the Engineer.

B. Removal of Timber Structures:

1. Extract timber piles from the ground, except when existing piles are located in an area not interfering with any other construction. When approved by the Engineer, piles may be cut 3 feet below the finished ground line.

3.04 UNDERGROUND PIPING

A. Contractor shall be responsible for obtaining location of underground utilities at the Site. Arrange for all applicable utility companies to accurately locate underground piping and set color-coded flags along the pipe route. Investigate utility company's records to ascertain depths and sizes of piping and other ancillary features.

B. In the event that exact location of piping cannot be obtained, dig test holes as necessary to establish location of piping. Contractor shall not use mechanical digging machines within 6 feet of any active buried piping. For a distance of 4 feet on either side of buried piping, all digging shall be by hand excavation. If the piping is not active, or is to be abandoned or removed, any form of excavation may be used. Any existing active piping that is damaged during demolition will be repaired to new condition by the Contractor at no additional cost to the Owner.

3.05 BACKFILLING

A. Backfill cavities resulting from demolition. Fill cavities occurring within the limits of buildings, structures, or pavements in accordance with the requirements of other Sections of the Specifications. Backfill and compact cavities outside the construction limits to the same density as the surrounding earth. No testing is required for backfill outside the limits of new construction.

3.06 CLEANING AND REPAIR

A. Clean and repair existing materials and equipment which remain or are to be reused.

END OF SECTION

DIVISION 03

CONCRETE

03 11 00 CONCRETE FORMING

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish material and labor to form, tie, brace and support wet concrete, reinforcing steel and embedded items until the concrete has developed sufficient strength to remove forms.

1.02 QUALITY ASSURANCE

A. Design Criteria: Forms shall be designed for the pressure exerted by a liquid weighing 150 pounds per cubic foot. The rate of placing the concrete, the temperature of the concrete, and all other pertinent factors shall be taken into consideration when determining the depth of the equivalent liquid. An additional design live load of 50 pounds per square foot shall be used on horizontal surfaces.

B. Alignment Control:

1. True alignment of walls and other vertical surfaces having straight lines or rectangular shapes shall be controlled and checked by the following procedures:

a. Forming shall be arranged with provisions for adjusting the horizontal alignment of a form, after the form has been filled with concrete to grade, using wedges, turn buckles, or other adjustment methods. Establish a transit line or other reference so that adjustments can be made to an established line while the concrete in the top of the form is still plastic.

b. Adjusting facilities shall be at intervals which permit adjustments to a straight line. Concrete shall not be placed until adequate adjusting facilities are in place.

C. Tolerances: Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

1.03 STANDARDS

A. The applicable provisions of the following standards shall apply as if written here in their entirety:

1. American Concrete Institute (ACI) Specifications:

ACI 117	Specifications for Tolerances for Concrete Construction and Materials
ACI 301	Specifications for Structural Concrete
ACI 318	Building Code Requirements for Structural Concrete

2. American Institute of Steel Construction (AISC) Publication:

a. AISC Manual of Steel Construction.

3. American Iron and Steel Institute (AISI) Publication:

a. AISI Cold Formed Steel Design Manual.

4. American Plywood Association (APA) Standards:
    a. APA Design/Construction Guide: Concrete Forming.

1.04 DELIVERY AND STORAGE

A. Lumber for forms shall be stacked neatly on platforms raised above ground.

1.05 JOB CONDITIONS

A. The Contractor shall notify the Engineer upon completion of various portions of the work required for placing concrete so that compliance with the plans and specifications may be monitored. The Engineer will authorize the Contractor to proceed with the placement after this has been completed and corrections, if required, have been made.

B. In hot weather, both sides of the face forms may be required to be treated with oil to prevent warping and to secure tight joints.

2.00 PRODUCTS

2.01 MATERIALS

A. Lumber: Properly seasoned and of good quality; free from loose or unsound knots, knot holes, twists, shakes, decay, splits, and other imperfections which would affect its strength or impair the finished surface of the concrete.
    1. Refer to Section 03 30 00 “Cast-In-Place Concrete” for finish requirements.

B. Fiber Board Form Lining: Hardboard finished smooth on one side; minimum thickness of 3/16 inch thoroughly wet with water at least 12 hours before using.

C. Plywood Form Lining: Conforming to APA HDO; exterior exposure waterproof adhesive, 3/8 inch thick.

D. Form Oil: Light, clear oil; shall not discolor or injuriously affect the concrete surface, subsequent coatings, or delay or impair curing operations.

2.02 FABRICATIONS

A. Lumber: Lumber for facing or sheathing shall be surfaced on at least one side and two edges, and sized to uniform thickness. Lumber of nominal 1-inch thickness or plywood of 3/4-inch thickness shall be permitted for general use on structures, if backed by a sufficient number of studs and wales.

B. Special Form Lumber:
    1. Molding for chamfer strips or other uses shall be made of redwood, cypress, or pine materials of a grade that will not split when nailed, and which can be maintained to a true line without warping. The form shall be mill cut and dressed on all faces. Fillet forms at sharp corners, both inside and outside and at edges, with triangular chamfer strips at all non-contiguous edges exposed to view. Thoroughly oil chamfer strips before installation on forms.
    2. Construct forms for railings and ornamental work to standards equivalent to first class mill work.

3. All moldings, panel work, and bevel strips shall be straight and true with neatly mitered joints, and designed so that the finished work shall be true, sharp and clean cut.

C. Forms:

1. Forms shall be built mortar tight and of material sufficient in strength to prevent bulging between supports.

2. Reused forms or form lumber shall be maintained clean and in good condition as to accuracy, shape, strength, rigidity, tightness, and smoothness of surface.

3. All forms shall be so constructed as to permit removal without damage to the concrete. Exercise special care in framing forms for copings, offsets, railing and ornamental work, so that there will be no damage to the concrete when the forms are removed.

D. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.

E. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.

F. Metal Forms:

1. The specifications for “Forms” regarding design, mortar tightness, filleted corners, beveled projections, bracing, alignment, removal, re use, oiling, and wetting shall apply equally to metal forms.

2. The metal used for forms shall be of such thickness that the forms will remain true to shape. Bolt and rivet heads on the facing sides shall be countersunk. Clamps, pins, or other connecting devices shall be designed to hold the forms rigidly together and to allow removal without injury to the concrete.

3. Metal forms which do not present a smooth surface or line up properly shall not be used. Exercise special care to keep metal free from rust, grease, or other foreign material that discolors the concrete.

G. Form Linings:

1. Timber forms for exposed concrete surfaces which are to be given a rubbed finish shall be face-lined with an approved type of form lining material.

2. If plywood is used for form lining, it shall be made with waterproof adhesive and have a minimum thickness of 3/4 inch. It shall preferably be oiled at the mill and then re-oiled or lacquered on the job before using.

3. If fiber board is used, apply water to the screen side on the board. Stack the boards screen side to screen side. Use the smooth hard face as the contact surface of the form. Such surfaces may be formed with 3/4-inch thick plywood made with waterproof adhesive if backed with adequate studs and wales. The greatest strength of the outer plies should be at right angles to the studding. In this case, form lining will not be required.

4. Carefully align edges and faces of adjacent panels and fill the joints between panels with patching plaster or cold water putty to prevent leakage. Lightly sand with No. 0 sandpaper to make the joints smooth.
5. Forms which are reused shall have all unused form tie holes filled and smoothed as specified above.

H. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

I. Form Ties:

1. Metal form ties shall be used to hold forms in place and to provide easy metal removal. The use of wire for ties shall not be permitted.
2. Leave no metal or other material within 1-1/2 inches of the surface, when removing form tie assemblies which are used inside the forms to hold the forms in correct alignment. The assembly shall provide cone-shaped depressions in the concrete surface at least 1 inch in diameter and 1-1/2 inches deep to allow filling and patching. Such devices, when removed, shall leave a smooth depression in the concrete surface without undue injury to the surface from chipping or spalling.
3. Burning off rods, bolts, or ties shall not be permitted.
4. Metal ties shall be held in place by devices attached to wales. Each device shall be capable of developing the strength of the tie.
5. Metal and wooden spreaders which are separate from the forms shall be wired to top of form and shall be entirely removed as the concrete is placed.
6. In the construction of basement or water bearing walls, the portion of a single rod tie that is to remain in the concrete shall be provided with a tightly fitted washer at midpoint to control seepage. Multi-rod ties do not require washers. The use of form ties which are tapered or encased in paper or other material to allow the removal of complete tie, and which leave a hole through the concrete structure, shall not be permitted.

J. Falsework:

1. Falsework shall be designed and constructed so that no excessive settlement or deformation occurs. Falsework shall provide necessary rigidity.
2. Timber used in falsework centering shall be sound, in good condition and free from defects which impair its strength.
3. Steel members shall be of adequate strength and shape for the intended purpose.
4. Timber piling used in falsework may be of any wood species which satisfactorily withstands driving and which adequately supports the superimposed load.
5. When sills or timber grillages are used to support falsework columns, unless founded on solid rock, shale or other hard materials, place them in excavated pits. Backfill to prevent the softening of the supporting material from form drip or from rains that may

occur during the construction process. Sills or grillages shall be of ample size to support the superimposed load without settlement.

6. Falsework not founded on a satisfactory spread footing shall be supported on piling, which shall be driven to a bearing capacity to support the superimposed load without settlement.

3.00 EXECUTION

3.01 PREPARATION

A. Before placing concrete, ensure that embedded items are correctly, firmly and securely fastened into place. Embedded items shall be thoroughly clean and free of oil and other foreign material. Anchor bolts shall be set to the correct location, alignment and elevation by the use of suitable anchor bolt templates.

3.02 INSTALLATION

A. Pre-Placement:

1. During the elapsed time between building the forms and placing the concrete, maintain the forms to eliminate warping and shrinking.
2. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
    a. For concrete surfaces exposed to view: Class A, 1/8 inch.
    b. For concrete surfaces to receive a rubbed finish: Class A, 1/8 inch.
    c. For concrete surfaces to receive plaster, stucco or wainscoting: Class B, 1/4 inch.
    d. For concrete surfaces not exposed to view: Class D, 1 inch.
3. Construct forms tight enough to prevent loss of concrete mortar.
4. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.
5. Do not use rust-stained steel form-facing material.
6. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
7. Treat the facing of forms with suitable form oil before concrete is placed. Apply oil before the reinforcement is placed. Wet form surfaces which will come in contact with the concrete immediately before the concrete is placed.
8. At the time of placing concrete, the forms shall be clean and entirely free from all chips, dirt, sawdust, and other extraneous matter at the time. Forms for slab, beam and girder construction shall not have tie wire cuttings, nails or any other matter which would mar

the appearance of the finished construction. Clean forms and keep them free of foreign matter during concrete placement.

B. Where aluminum anchors, aluminum shapes, or aluminum electrical conduits are embedded in concrete, paint aluminum contact surfaces with zinc rich primer. Allow the paint to thoroughly dry before placing the aluminum in contact with the concrete.

C. Placement:

1. Set and maintain forms to the lines designated, until the concrete is sufficiently hardened to permit form removal. If, at any stage of the work, the forms show signs of bulging or sagging, immediately remove that portion of the concrete causing this condition. If necessary, reset the forms and securely brace against further movement.

2. Provide adequate cleanout openings where access to the bottom of the forms is not otherwise readily attainable.

3. Chamfer exterior corners and edges of permanently exposed concrete.

4. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

5. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement. Carefully and accurately place and support reinforcement in concrete structures.

D. Removal: Remove forms so that the underlying concrete surface is not marred or damaged in any way. Forms shall not be removed until the concrete has attained sufficient strength to safely carry the dead load, but in no case less than the number of curing days set forth in the following table:

Forms	Curing Days
Forms for concrete of minor structural load carrying importance	1 day
Forms for walls, columns, sides of drilled shafts, massive structural components and other members not resisting a bending moment during curing	1 day
Forms and falsework under slabs, beams and girders where deflections due to dead load moment may exist (for spans < or = 10 feet)	7 days
Forms and falsework under slabs, beams and girders where deflections due to dead load moment may exist (for spans > 10 feet and < or = 20 feet)	14 days
Forms and falsework under slabs, beams and girders where deflections due to dead load moment may exist (for spans > 20 feet)	21 days

E. Reuse:

1. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

2. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Owner's Representative.

F. Shores and Reshores:

1. Comply with ACI 318, ACI 301, and recommendations in ACI 347R for design, installation, and removal of shoring and re-shoring.

    a. Plan sequence of removal of shores and re-shore to avoid damage to concrete. Locate and provide adequate re-shoring to support construction without excessive stress or deflection.

END OF SECTION

03 21 00 REINFORCING STEEL

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor and reinforcing materials required to cut, bend, tie, splice, place and support the reinforcement in the material grades, sizes, quantities and locations specified.

1.02 QUALITY ASSURANCE

A. Tolerances:

1. Reinforcing shall be placed where specified, with the following maximum tolerances, plus or minus:

a. Concrete Cover: 1/4 inch.

b. Reinforcing Bar Spacing: 1/4 inch in 12 inches.

1.03 SUBMITTALS

A. Submittals shall be in accordance with Section 01 33 00 “Document Management” and shall include:

1. Shop Drawings:

a. Reinforcing bar layout drawing with bar lists clearly marked and referenced to the Drawings. Include:

1). Material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports of concrete reinforcing.

2). Additional reinforcing required for openings through concrete structures.

2. Record Data: Manufacturers’ literature for specified products.

3. Certified Test Reports:

a. Certification of steel quality, size, grade and manufacturer’s origin.

1.04 STANDARDS

A. The applicable provisions of the following standards shall apply as if written here in their entirety:

1. ASTM International (ASTM) Standards:

ASTM A1064	Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

2. American Concrete Institute (ACI) Publications:

ACI 301	Specification for Structural Concrete
ACI SP-66	ACI Detailing Manual

ACI 318	Building Code Requirements for Structural Concrete

3. Concrete Reinforcing Steel Institute (CRSI) Publications:

CRSI	Manual of Standard Practice

1.05 DELIVERY AND STORAGE

A. Store reinforcement above the surface of the ground upon platform skids or other supports. Protect from mechanical and chemical injury and surface deterioration caused by exposure to conditions producing rust. When placed in the Work, reinforcement shall be free from dirt, scale, dust, paint, oil and other foreign material. Tag and store reinforcement for ease of correlation with Shop Drawings.

1.06 JOB CONDITIONS

A. Proposed deviations from reinforcing indicated on the Drawings or Specifications shall be approved in writing by the Engineer prior to fabrication.

B. Lap lengths shall be of the length shown on the Drawings or noted in lap and embedment table, and shall be in compliance with ACI 318.

C. Specified cover for reinforcing shall be maintained throughout construction. Bars shall be cut to lengths necessary to allow for proper clearances. Cover of concrete shall be measured from face of forms to outside face of reinforcement.

D. Stirrups shall be hooked.

2.00 PRODUCTS

2.01 MATERIALS

A. Steel Reinforcing Bars: Billet-Steel bars for concrete reinforcement conforming to ASTM A615; Grade 60, deformed, with minimum yield strength of 60,000 psi. Steel reinforcing bars shall be produced in the United States of America.

B. Welded Wire Reinforcement: Cold-drawn steel wire conforming to ASTM A1064; flat sheets fabricated in accordance with ASTM A1064.

C. Joint Dowel Bars: Plain-steel bars, ASTM A615/A615M, Grade 60. Cut bars true to length with ends square and free of burrs.

D. Epoxy-Coated Joint Dowel Bars: ASTM A775/A775M; with ASTM A615/A615M, Grade 60, plain-steel bars.

E. Supports (Chairs): Bar supports shall be of the proper type for the intended use.

1. Exposed Surface: CRSI Class 1 – Maximum Protection – uniform high density polyethylene (plastic) or fiberglass reinforced plastic (FRP). Plastic protected wire bar supports are not allowed.

2. Unexposed Surface: CRSI Class 3 – No Protection.

F. Spacers: Precast mortar blocks with a 28-day compressive strength that is greater than the specified concrete strength in which the blocks are being placed. Additionally:

1. Cure a minimum of 4 days.
2. Blocks shall be in the form of a frustum positioned such that its size increases away from the formed surface. The surface placed adjacent to the forms shall not exceed 2-1/2 x 2-1/2 inches or 3 inches in diameter.
3. Blocks shall be accurately cast to the thickness required and the surface to be placed adjacent to the forms shall be a true plane free of surface imperfections.
4. Wires ties for securing reinforcement shall be embedded in the block.

G. Mechanical Splices:

1. Mechanical splices shall develop at least 125 percent of the reinforcement yield strength.
2. Threaded coupler shall utilize a metal coupling sleeve with internal threads.

H. Zinc Repair Material: ASTM A780, zinc-based solder, paint containing zinc dust, or sprayed zinc.

3.00 EXECUTION

3.01 FABRICATION

A. Reinforcing bars shall be bent cold by machine to shapes indicated on the Drawings; true to shapes indicated; irregularities in bending shall be cause for rejection. Unless otherwise noted, all hook and bend details and tolerances shall conform to the requirements of ACI SP-66 and ACI 318.

1. Fabricate reinforcement to provide lapped connections, bends and transitions in reinforcement as required for continuity of the typical reinforcement specified on the Drawings.
2. Unless otherwise detailed, intersecting wall and/or beam reinforcement shall extend to the far face and terminate in a standard hook. Reinforcement at the outside face of corners shall be continuous or provide lap splices at each side of the corner.

3.02 PREPARATION

A. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.

B. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcement.

3.03 INSTALLATION

A. General: Place the reinforcement carefully and accurately in the concrete structures. Rigidly tie and support the reinforcement. Welding of any type of reinforcement shall not be permitted.

B. Splices:

1. Splice reinforcement only as indicated on the Drawings or as approved by the Engineer prior to fabrication. Splices shall preferably occur at points of minimum stress.

2. Lap Splice: Lengths shall be as indicated on the Drawings. Rigidly wire the bars at all splices. Overlap sheets of wire fabric sufficiently to maintain a uniform strength and securely fasten.
3. Mechanical Splice: Threaded coupler, installed in accordance with the manufacturer's instructions and recommendations. The splice device shall develop at least 125 percent of the specified yield strength of the reinforcement.
4. Welding of reinforcing steel splices shall not be permitted**.**

C. Placement:

1. Place reinforcement, as indicated on the Drawings with the specified tolerances. Hold securely in place during the placing of the concrete. The minimum clear distance between bars shall be per ACI 318 unless noted otherwise. Always pass vertical stirrups around the main tension members and securely attach thereto. Wire reinforcing together at a sufficient number of intersections to produce a sound, sturdy mat or cage of reinforcement that will maintain the reinforcement in correct positions when the concrete is placed.
2. Hold the reinforcing steel in concrete slabs firmly in place with wire supports or "chairs." Sizing and spacing of the chairs shall be sufficient to properly support the steel, and shall be in accordance with CRSI Publications "Manual of Standard Practice in."
3. Space the reinforcing steel in concrete walls the proper distance from the face of the forms, as indicated on the Drawings:
    a. For wall surfaces exposed to view, use chairs.
    b. For wall surfaces not exposed to view, use chairs or precast mortar blocks.
4. Where reinforcing conflicts with location of anchor bolts, inserts, etc., submit prompt notifications so that revisions can be made before concrete is placed. No cutting of reinforcing shall be permitted without the prior approval of the Engineer.
5. Welded wire shall be fabricated flat sheets, in longest practical lengths. Lap joints one mesh. Do not locate end laps over beams of continuous structures or midway between supporting beams. Offset end laps of adjacent widths to prevent continuous lap. Fasten ends and sides of welded wire fabric at 48 inches O.C. with tie wire.
6. Reinforcing shall extend through construction joints.
7. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.04 FIELD QUALITY CONTROL

A. Concrete shall not be placed until the Engineer has observed the final placing of the reinforcing steel, and has given permission to place concrete.

END OF SECTION

03 30 00 CAST-IN-PLACE CONCRETE

1.00 GENERAL

1.01 SUMMARY

A. Furnish labor, materials, mixing and transporting equipment and incidentals necessary to proportion, mix, transport, place, consolidate, finish, and cure concrete in the structure.

1.02 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and silica fume; subject to compliance with requirements.

1.03 SUBMITTALS

A. Submittals shall be in accordance with Section 01 33 00 “Document Management” and shall include:

1. Shop Drawings:

a. Mix Design: For each mix design, provide documentation using field test data or trial mixture data in accordance with ACI 301, which includes average strength documentation using either field strength test data or trial mixtures.

b. Submit a schedule to the Owner’s representative which shows the sequence of concrete placements.

2. Certified Test Reports:

a. Materials used in the mix design and which will be used during production of concrete for the Project.

b. Water: Verification that all potable mix water and curing water sources do not exceed the non-potable water limits listed in ASTM C1602 Table 2.

c. Aggregate, conforming to ASTM C33, including the test reports for soundness and abrasion resistance.

d. Aggregate:

1). Verification that aggregate is not “potentially reactive” per ASTM C1260.

2). Or a cement chemical analysis indicating that the total alkali content is acceptable per Paragraph 2.02.A.

e. 7-day and 28-day compressive strength tests results.

f. If the sum total of chlorides in mix water and aggregates exceeds 80 percent of the specified limit for hardened concrete, then prior to use of concrete, test mix design to verify acceptable chloride ion concentrations in accordance with ASTM C1218.

3. Record Data:

a. Manufacturer’s literature on specified materials.

b. Documentation indicating conformance with ASTM C94 requirements.

1). Concrete delivery tickets in accordance ASTM C94.

c. Documentation of supplier's National Ready Mixed Concrete Association certification.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Manufacturer Qualifications:

1. A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C94 requirements for production facilities and equipment.

2. Manufacturer must be certified according to the National Ready Mixed Concrete Association's Certification of Ready Mixed Concrete Production Facilities.

C. Testing Agency Qualifications:

1. An independent testing agency, acceptable to authorities having jurisdiction and the Engineer, qualified according to ASTM C1077 and ASTM E329 to conduct the testing indicated.

2. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver cement in bulk or bags which are plainly marked with the brand and manufacturer's name. Immediately upon receipt, store cement in a dry, weather-tight, and properly ventilated structure which excludes moisture. Storage facilities shall permit easy access for inspection and identification. Cement not stored in accordance with the requirements shall not be used.

B. Sufficient cement shall be in storage to complete placement of concrete started. In order that cement may not become unduly aged after delivery, maintain records of delivery dates. Use cement which has been stored at the Site for 60 days or more before using cement of lesser age. No cement shall be used which is lumped, caked, stored more than 90 days, or whose temperature exceeds 170 F.

1.06 STANDARDS

A. Mixing, sampling, placing, curing and testing of concrete, and the materials used shall be in compliance with the latest revisions of the following standards, unless otherwise noted in the Contract Documents. The Contractor shall maintain one copy of each of the applicable standards at the construction field office.

1. ASTM International (ASTM) Standards:

ASTM Standards	
ASTM C31	Standard Practice for of Making and Curing Concrete Test Specimens in the Field
ASTM C33	Standard Specification for Concrete Aggregates
ASTM C39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C42	Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C94	Standard Specification of Ready Mixed Concrete
ASTM C109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
ASTM C125	Standard Terminology Relating to Concrete and Concrete Aggregates
ASTM C138	Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
ASTM C143	Standard Test Method for Slump of Hydraulic Cement Concrete
ASTM C150	Standard Specification for Portland Cement
ASTM C171	Standard Specification for Sheet Materials for Curing Concrete
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C173	Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM C191	Standard Test Method for Time of Setting of Hydraulic Cement by Vicat Needle
ASTM C192	Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260	Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C290	Standard Specification for Elastomeric Joint Sealants
ASTM C309	Standard Specification for Liquid Membrane Forming Compounds for Curing Concrete
ASTM C494	Standard Specification for Chemical Admixtures for Concrete
ASTM C579	Standard Test Methods for Compressive Strength of Chemical Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes
ASTM C580	Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes
ASTM C595	Standard Specification for Blended Hydraulic Cements
ASTM C618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

ASTM Standards	
ASTM C827	Standard Test Method for Change in Height at Early Stages of Cylindrical Specimens of Cementitious Mixtures
ASTM C845	Standard Specification for Expansive Hydraulic Cement
ASTM C881	Standard Specification for Epoxy Resin Base Bonding Systems for Concrete
ASTM C1116	Standard Specification for Fiber-Reinforced Concrete
ASTM C1218	Standard Test Method for Water-Soluble Chloride in Mortar and Concrete
ASTM C1240	Standard Specification for Silica Fume used in Cementitious Mixtures
ASTM C1260	Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D1751	Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D1752	Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM D2240	Standard Test Method for Rubber Property Durometer Hardness
ASTM E96	Standard Test Methods for Water Vapor Transmission of Materials

2. American Concrete Institute (ACI) Standards:

ACI Standards	
ACI 211.1	Standard Practice for Selecting Proportions for Normal, Heavy-weight, and Mass Concrete
ACI 301	Specification for Structural Concrete
ACI 305.1	Specification for Hot Weather Concreting
ACI 306.1	Standard Specification for Cold Weather Concreting
ACI 308.1	Specification for Curing Concrete
ACI 318	Building Code Requirements for Structural Concrete

3. Concrete Plant Manufacturers Bureau (CPMB) Standards:
   a. Concrete Plant Standards.

2.00 PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
2. Products: Subject to compliance with requirements, provide one of the products specified.
3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.02 CONCRETE MATERIALS

A. Cementitious Material; General: If the fine and/or coarse aggregates test "Potentially Reactive", in accordance with ASTM C1260, then a low alkali cementitious material shall be used. A low alkali cementitious material shall be such that, the Sodium Oxide Equivalent ($N_{a2}O_{eq}$) shall not exceed 0.6 percent of the total cementitious material content.

B. Cement; Type:

1. Type I or I/II Portland cement, conforming to ASTM C150; used for all concrete, unless noted otherwise.

C. Supplementary Cementitious Materials (SCM):

1. Fly Ash/Pozzolans: Conforming to ASTM C618, Class F fly ash; used in all classes of concrete. If fly ash is not available then provide a straight cement mix.

D. Coarse Aggregate:

1. Crushed stone or gravel conforming to ASTM C33, in the gradation size specified.
   a. Class: Severe weathering region, but not less than 3S.
   b. Class: Moderate weathering region, but not less than 3M.
   c. Class: Negligible weathering region, but not less than 1N.
   d. Aggregate shall have a coefficient of thermal expansion (CoTE) of 4.5 microstrain per degree Fahrenheit.
2. For gradation size number 467, a maximum aggregate size of 1-1/2 inches is:

Sieve Size	Percent Retained	Percent Passing
2"	0	100
1-1/2"	0-5	95-100
3/4"	30-65	35-70

Sieve Size	Percent Retained	Percent Passing
3/8”	70-90	10-30
No. 4	95-100	0-5

3. For gradation size number 57, the maximum aggregate size of 1 inch is:

Sieve Size	Percent Retained	Percent Passing
1-1/2”	0	100
1”	0-5	95-100
1/2”	40-75	25-60
No. 4	90-100	0-10
No. 8	95-100	0-5

4. For gradation size number 67, the maximum aggregate size of 3/4 inch is:

Sieve Size	Percent Retained	Percent Passing
1”	0	100
3/4”	0-10	90-100
3/8”	45-80	20-55
No. 4	90-100	10-10
No. 8	90-100	0-5

5. For gradation size number 8, the maximum aggregate size of 3/8 inch is:

Sieve Size	Percent Retained	Percent Passing
1”	0	100
3/8”	0-15	85-100
No. 4	70-90	10-30
No. 8	90-100	0-10
No. 16	95-100	0-5

E. Fine Aggregate:

1. Washed and screened natural sands or sands manufactured by crushing stones; conforming to ASTM C33. The gradation in ASTM C33 for air entrained concrete is:

Sieve Size	Percent Retained	Percent Passing
3/8”	0	100
#4	0-5	95-100
#8	0-20	80-100
#16	15-50	50-85
#30	40-75	25-60

Sieve Size	Percent Retained	Percent Passing
#50	70-90	10-30

2. Fine aggregate shall have not more than 45 percent retained between any two consecutive sieves. Its fineness modulus, as defined in ASTM C125, shall be not less than 2.3 nor more than 3.1.

F. Normal-Weight Aggregate for Slab-on-Grade: ASTM C33, combined gradations as follows:

1. 8 to 18 percent for 1-1/2 inch stone.
2. 8 to 22 percent for 3/4-inch or 1-inch stone.
3. 8 to 15 percent for #30 and #50 sieve.
4. 0 to 4 percent on top size sieve.
5. 1-1/2 to 5 percent on the #100 sieve.
6. Nominal Maximum Aggregate Size: 1 inch.

G. Water: Potable and complying with ASTM C1602.

2.03 ADMIXTURES

A. Measure and dose admixtures in accordance with manufacturer's recommendations.

B. Air Entraining Admixture: Conforming to ASTM C260.

C. Water Reducing Admixtures: Conforming to ASTM C494; Types A or D.

D. Set Retarding Admixtures: Conforming to ASTM C494; Types B and D.

E. Water Reducing Admixtures, High Range (HRWR): High Range Water Reducer shall comply with ASTM C494, Type F or G. HRWR shall be added to the concrete mix at the concrete batch plant. HRWR may not be added at placement site except to redose a batch and only after approval of the HRWR manufacturer. The high range water reducing admixture shall be able to maintain the plasticity range without significant loss of slump or rise in concrete temperature for 2 hours. Other admixtures may only be used with the HRWR if approved by the HRWR manufacturer. A representative of the HRWR manufacturer shall be present during any large placement, placement of slabs, or during times of unusual circumstance which may require changes to the product formulation.

1. Manufacturers:
    a. GCP Applied Technologies.
    b. Master Builders Solutions US LLC.
    c. Sika Corporation.

F. Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

1. Products:
    a. MasterLife CI 222; Master Builders Solutions US LLC.

b. DCI or DCI S, GCP Applied Technologies, Inc.

c. FerroGard-901; Sika Corporation.

d. Approved equal.

2.04 FLOOR AND SLAB TREATMENTS

A. Floor Hardener: Hardening agent for exposed concrete floors shall be dry-shake surface hardener. The standard application rate for this product shall be in accordance with the manufacturer's recommendations.

1. MasterTop 200; Master Builders Solutions US LLC.

2. Approved equal.

B. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, non-glazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 25 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

1. MasterTop 120 SR; Master Builder Solutions US LLC.

2. Approved equal.

C. Epoxy Broadcast Overlay System: Moisture tolerant, traffic bearing, skid resistant, seamless, protective, overlay system for application by the broadcast method.

1. Binder: 100 percent solids epoxy resin.

a. MasterSeal 350; Master Builders Solutions US LLC.

b. Approved equal.

2. Aggregate: Proprietary mixture or aluminum oxide, or silicon carbide, or roofing granules, or silica sand or trap rock passing the #50 sieve and retained on the #60 sieve.

a. MasterSeal 940 DR; Master Builders Solutions US LLC.

b. Approved equal.

2.05 CURING MATERIALS

A. Water: Potable and complying with ASTM C1602 **.**

B. Absorbent Material: AASHTO M182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd. dry.

C. Sheet Curing Material: Conforming to ASTM C171.

1. Waterproof paper.

2. Polyethylene film.

3. White burlap - polyethylene film.

D. Membrane Curing Compounds: Membrane curing compound conforming to ASTM C309; applied according to the manufacturer's recommendations. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, 18 to 22 percent solids.

1. Products:

a. Diamond Clear VOX; Euclid Chemical Co.

b. Lambco Glazecote 30; Lambert Corporation.

c. Dress & Seal; Laticrete International, Inc.

d. Vocomp-20; W.R. Meadows, Inc.

e. Cure & Seal 250E; Nox-Crete Products Group, Kinsman Corporation.

f. Starseal 0800; Vexcon Chemicals, Inc.

g. Approved equal.

E. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C1315, Type 1, Class A.

1. Products:

a. Polyseal WB-15; ChemMasters.

b. UV Safe Seal; Lambert Corporation.

c. Lumiseal Plus; Laticrete International, Inc.

d. MasterKure CC 1315 WB; Master Builders Solutions US LLC.

e. Vocomp-30; W.R. Meadows, Inc.

f. Vexcon Starseal 1315; Vexcon Chemicals, Inc.

g. Approved equal.

F. Finishing Aid: Spraying material designed to form a monomolecular film on fresh concrete that reduces the rate of evaporation of surface moisture prior to finishing. This material is not a curing compound. Concrete must be cured as specified.

1. MasterKure ER 50; Master Builders Solutions US LLC.

2. Approved equal.

2.06 RELATED MATERIALS

A. Expansion and Isolation Joint Filler:

1. Water retaining structures: ASTM D1752, Type I or II.

2. Non-water retaining structures: ASTM D1751; or ASTM D1752, Type I or II.

3. Thickness as indicated on the Drawings.

B. Expansion and Isolation Joint Sealant:

1. Non-water retaining structures: ASTM C920, Type S or M, Grade P or NS as applicable, Class 35, Use T, UV resistance.

2. Backing material for sealant shall be a rod of diameter and composition recommended by the sealant manufacturer.

C. Bonding Agent: Water-based epoxy modified, with integral corrosion inhibitor. Install according to the manufacturer's recommendations.

1. Sika Armatec 110 EpoCem; Sika Corporation.
2. MasterEmaco P 124; Master Builders Solutions US LLC.
3. Approved equal.

2.07 REPAIR MATERIALS

A. Structural Concrete Repair Material: Low-shrink, non-slump, non-metallic, quick setting patching mortar; as approved by the manufacturer for each application and applied accordance with the manufacturer's recommendations.

1. Products:
   a. Five Star Structural Concrete; Five Star Products, Inc.
   b. SikaTop 123; Sika Corporation.
   c. SikaTop 122; Sika Corporation.
   d. MasterEmaco N 425; Master Builders Solutions US LLC.
   e. Approved equal.

B. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C109/C109M.

C. Repair Topping: Traffic-bearing, cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch.

1. Cement Binder: ASTM C150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.

4. Compressive Strength: Not less than 5700 psi at 28 days when tested according to ASTM C109/C109M.

2.08 CONCRETE MIXTURES

A. Design Criteria:

1. Provide a mix design for each concrete application indicated. This may necessitate multiple mix designs for each class of concrete depending on HRWR, entrained air, and other requirements.
2. All Concrete shall be normal weight concrete composed of Portland cement, fine aggregate, coarse aggregate, admixtures, and water, as specified.
3. ACI 211.1 shall be the basis for selecting the proportions for concrete made with aggregates of normal and high density and of workability suitable for usual cast in place structures.
4. The workability of any mix shall be as required for the specific placing conditions and the method of placement. The concrete shall have the ability to be worked readily into corners and around reinforcing steel without the segregation of materials or the collection of free water on the surface. Compliance with specified slump limitations shall not necessarily designate a satisfactory mix.
5. In no case shall the amount of coarse material produce harshness in placing or honeycombing in the structure, when forms are removed. The maximum amount of coarse aggregate (dry loose volume) per cubic foot of finished concrete shall not exceed 0.82 cubic feet.
6. In calculating water-cement ratio: The water content shall include the amount of water batched or to be added later, plus the free water in the aggregate, and minus the water content at SSD conditions.
7. No allowance shall be made for the evaporation of water after batching. If additional water is required to obtain the desired slump, a compensating amount of cement shall also be added. In no case shall the maximum water cement ratio exceed the specified maximum or that of the approved mix design.
8. Air Entrainment: Provide the percent air entrainment in each concrete mix design as recommended by ACI 318:
    a. Exposure Class: F1, unless otherwise specified/restricted:
        1). Do not provide air-entrainment in drilled shafts unless placed underwater.
        2). Do not provide air-entrainment and entrapped air shall not exceed 3 percent for the following applications:
            a). Interior slabs.
            b). Slabs on composite metal decks.
9. Maximum water-soluble chloride ion content in concrete, by percent weight of concrete, shall not exceed ACI 318**]** Exposure Class C2.

10. When job conditions dictate, water-reducing and set-controlling admixtures may be used. Only specified admixtures shall be used. Admixtures shall be batched at the batch plant.
11. High Range Water Reducer (HRWR): Provide HRWR in mix designs for the following specified applications:
    a. Drilled shafts, footings, walls, columns, and beams.
    b. Interior of building curbs which are not cast monolithically with slabs.
    c. Precast concrete.
    d. Exception: Do not provide HRWR in slabs and pavement (a water reducer is permitted provided performance requirements are met).
12. If fly ash is to be used in place of cement, no more than 25 percent of the cement may be replaced.
13. Use silica fume where indicated. The trial mix shall be in accordance with this Section and the silica fume manufacturer.
    a. Single source throughout the Project.
    b. Added to the mix at a rate of 10 percent of cement content. No reduction in cement content shall be allowed, but it may be included when determining the water-cement ratio.
    c. Mix shall contain high range water reducer and air-entraining admixtures.
14. Concrete shall be capable of developing two-thirds of the required 28-day compressive strength in 7 days.
15. Shrinkage Limits: All concrete used in the following structures shall have a shrinkage limit of 0.04 percent at 28 days in accordance with ASTM C157**.**

B. Concrete Classifications:

Class	Min. 28-Day Compressive Strength (psi)	Max. Size Aggregate (inches)	Max. Water: Cementitious Materials Ratio	Slump +/-1 (inches)	Min. Sacks of Cement Per Cubic Yard **
A	4000	1.5 Size No. 467	0.45	3 (8*)	5.75
B	5000	1.0 Size No. 57	0.40	3	6.00
* Slump shown is with HRWR ** Provide one additional sack of cement per cubic yard if concrete must be deposited in standing water.					

C. Concrete Usage:

Class	Usage
Class A Use	Pavement, gutters, sidewalks

Class	Usage
Class B Use	Walls, columns, beams, ramp

D. Required Average Compressive Strength:

1. All concrete is required to have an average compressive strength greater than the specified strength. The required average compressive strength shall be established according to the requirements of ACI 301.

2. Standard Deviation: Calculate a standard deviation and establish the required average compressive strength (fcr') in accordance with ACI 301. If field test records are not available, select the required average strength from ACI 301.

E. Documentation of Required Average Compressive Strength:

1. Documentation indicating the proposed concrete proportions will produce an average compressive strength equal to or greater than fcr'. Documentation shall consist of field strength records or trial mixture.

2. Field Strength Test Records: Document field strength test records according to ACI 301, which is partially restated here:

   a. If field test data are available and represent a single group of at least 10 consecutive strength tests for one mixture, using the same materials, under the same conditions, and encompassing a period of not less than 45 days, verify that the average of the field test results equals or exceeds fcr'.

   b. If the field test data represent two groups of strength tests for two mixtures, plot the average strength of each group versus the water-cementitious materials ratio of the corresponding mixture proportions and interpolate between them to establish the required mixture proportions for fcr'.

3. Trial Mixtures:

   a. Establish trial mixture proportions according to ACI 301, which is partially restated here:

      1). Make at least three trial mixtures complying with performance and design requirements. Each trial mixture shall have a different cementitious material content. Select water-cementitious materials ratios that will produce a range of compressive strengths encompassing fcr'.

      2). Submit a plot of a curve showing the relationship between water-cementitious materials ratio and compressive strength.

      3). Establish mixture proportions so that the maximum water-cementitious materials ratio is not exceeded when the slump is at the maximum specified.

   b. Trial mixtures shall be designed, sampled, and tested by an independent testing laboratory, retained and paid by the Contractor and approved by the Owner.

   c. Provide 7-day and 28-day strengths test results.

4. Revisions to concrete mixtures:

    a. When less than 15 compressive strength tests results for a given class of concrete are available from the current Project:

        1). If any of the following criteria are met, take immediate steps to increase average compressive strength of the concrete.

            a). A 7-day compressive strength test result multiplied by 1.5 falls below the required 28-day compressive strength.

            b). A 28-day compressive strength test result is deemed not satisfactory.

    b. When at least 15 compressive strength test results for a given class of concrete become available from the current Project:

        1). Calculate the actual average compressive strength, standard deviation and required average compressive strength using the previous 15 consecutive strength tests. Submit results in graphical form with each 28-day test result for that class of concrete.

        2). If any of the following criteria are met, take immediate steps to increase average compressive strength of the concrete.

            a). A 7-day compressive strength test result multiplied by the average job-to-date ratio of 7-day to 28-day compressive strength falls below the required 28-day compressive strength.

            b). A 28-day compressive strength test result is deemed not satisfactory.

            c). The average compressive strength falls below the required average compressive strength.

    c. When revisions to the mix design are required, notify the Engineer in writing of the corrective actions taken.

2.09 OFF-SITE BATCH PLANT

A. Batch plants shall be an established concrete batching facility meeting the requirements of the Concrete Plant Standards of the Concrete Plant Manufacturers Bureau.

2.10 CONCRETE MIXING

A. Mixers may be stationary, truck, or paving mixers of approved design. They shall be capable of combining the materials into a uniform mixture and of discharging without mixture segregation. Stationary and paving mixers shall be provided with an acceptable device to lock the discharge mechanism until the required mixing time has elapsed. The mixers or mixing plant shall include a device for automatically counting the total number of batches of concrete mixed. The mixers shall be operated at the drum or mixing blade speed designated by the manufacturer on the name plate.

B. The mixing time for stationary mixers shall be based upon the mixer's ability to produce uniform concrete throughout the batch and from batch to batch. For guidance purposes, the manufacturer's recommendations, or 1 minute for 1 cubic yard plus 1/4 minute for each

additional cubic yard may be used. Final mixing time shall be based on mixer performance. Mixers shall not be charged in excess of the capacity specified by the manufacturer.

C. When a stationary mixer is used for partial mixing of the concrete (shrink mixed), the stationary mixing time may be reduced to the minimum necessary to intermingle the ingredients (about 30 seconds).

D. When a truck mixer is used, either for complete mixing (transit-mixed) or to finish the partial mixing in a stationary mixer and in the absence of uniformity test data, each batch of concrete shall be mixed not less than 70 nor more than 100 revolutions of the drum, at the rate of rotation designated by the manufacturer of the equipment as mixing speed. If the batch is at least 1/2 cubic yard less than the rated capacity, in the absence of uniformity test data, the number of revolutions at mixing speed may be reduced to no less than 50. Additional mixing shall be performed at the speed designated by the manufacturer of the equipment as agitating speed. When necessary for proper control of the concrete, mixing of transit-mixed concrete shall not be permitted until the truck mixer is at the Site of the concrete placement. Truck mixers shall be equipped with accurate revolution counters.

E. Paving mixers may be either single compartment drum or multiple compartment drum type. A sled or box of suitable size shall be attached to the mixer under the bucket to catch any concrete spillage that may occur when the mixer is discharging concrete into the bucket. Multiple compartment drum paving mixers shall be properly synchronized. The mixing time shall be determined by time required to transfer the concrete between compartments of the drum.

F. Vehicles used in transporting materials from the batching plant to the paving mixers shall have bodies or compartments of adequate capacity to carry the materials and to deliver each batch, separated and intact, to the mixer. Cement shall be transported from the batching plant to the mixers in separate compartments which are equipped with windproof and rain proof covers.

3.00 EXECUTION

3.01 PREPARATION

A. Notify the Owner's representative upon completion of various portions of the work required for placing concrete, so that inspection may be made as early as possible. Keep the Owner's representative informed of the anticipated concrete placing schedules.

B. All items, including lines and grades, forms, waterstops, reinforcing, inserts, piping, electrical, plumbing and the Contractor's concreting materials and equipment shall be in compliance with the Contract Documents before proceeding.

C. Do not place any concrete until formwork and the placing reinforcement in that unit is complete. Place no concrete before the completion of all adjacent operations which might prove detrimental to the concrete.

D. Brilliantly light the Site so that all operations are plainly visible when concrete mixing, placing, and finishing, continues after daylight. Whenever possible, concrete finishing shall be completed in daylight hours.

E. When placing concrete, the forms shall be clean and entirely free from all chips, dirt, sawdust and other extraneous matter. Forms for slab, beam and girder construction shall

not have tie wire cuttings, nails, or any other matter which would mar the appearance of the finished construction. Clean forms and keep them free of any foreign matter during concrete placing.

F. The concrete shall be mixed in quantities required for immediate use. Any concrete which is not in place within the time limits specified shall not be used. Concrete shall not be re-tempered.

G. Concrete shall not be placed if impending weather conditions would impair the quality of the finished Work.

H. Unless otherwise provided, the following requirements shall govern the time sequence on which construction operations shall be carried.

1. Forms for walls or columns shall not be erected on concrete footings until the concrete in the footing has cured for at least 2 curing days. Concrete may be placed in a wall or column as soon as the forms and reinforcing steel placements are approved.

2. Steel beams or forms and falsework for superstructures shall not be erected on ground-supported concrete substructures until the substructure concrete has cured for at least 4 curing days.

3. Falsework required for superstructures shall not be erected until the substructure has cured for 4 curing days, and shall not be removed until allowed for by Section 03 11 00 “Concrete Forming.”

3.02 EMBEDDED ITEMS

A. Where aluminum anchors, aluminum shapes, or aluminum electrical conduits are embedded in concrete, paint aluminum contact surfaces with zinc rich primer. Allow the paint to thoroughly dry before placing the aluminum in contact with the concrete.

B. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor bolts, accurately located, to elevations required.

3.03 JOINTS

A. Expansion Joints and Devices:

1. Workmanship: Exercise careful workmanship in joint construction to separate the concrete sections by an open joint or by the joint materials, and make the joints true to the outline indicated.

2. Expansion Joints: Construct expansion joints and devices to provide expansion and contraction. Construct joints which are to be left open or filled with poured joint material with forms which are adaptable for loosening or early removal. In order to avoid jamming by the expansion action of the concrete and the consequent likelihood of injuring adjacent concrete, remove or loosen these forms as soon as possible after the concrete has initially set. Make provisions for loosening the forms to permit free concrete expansion without requiring full removal.

3. Armored Joints: Carefully construct armored joints to avoid defective anchorage of the steel and porous or honeycombed concrete adjacent to same. Anchor pre-molded materials to the concrete on one side of the joint with approved adhesive. Anchor so that the material does not fall out of the joint.

B. Construction Joints:

1. Construction joints are formed by placing plastic concrete in direct contact with concrete which has attained its initial set. When concrete is specified as monolithic, the term shall be interpreted as the manner and sequence of concrete placement so that construction joints do not occur.

2. Additional horizontal and vertical construction joints, when submitted and approved by the Engineer, may have an impact on reinforcing details. Revise reinforcing details to reflect additional joints.

3. Unless otherwise provided, construction joints shall be square and normal to the forms. Provide bulkheads in the forms for all joints except horizontal joints.

4. Clean horizontal construction joints for receiving the succeeding lift using air water cutting. The surface shall be exposed sound, clean aggregate with a 1/4 inch amplitude. After cutting, wash the surface until there is no trace of cloudiness in the wash water.

5. In areas where air water cutting cannot be satisfactorily accomplished, or in areas where it is undesirable to disturb the surface of the concrete before it has hardened, prepare the surface for receiving the next lift by wet sand blasting to immediately remove all laitance and unsound concrete prior to placing of the next lift. Thoroughly wash the surface of the concrete after sand blasting to remove all loose material.

6. Provide construction joints with concrete keyways, reinforcing steel dowels, and waterstops where indicated on the Drawings. The method of forming keys in keyed joints shall permit the easy removal of forms without chipping, breaking, or damaging the concrete.

7. Construction joint layout unless otherwise indicated on the Drawings:

a. Maximum horizontal spacing of construction joints shall be 45 feet.

b. Maximum vertical spacing of construction joints shall be 15 feet.

C. Control Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness, spaced at not more than 15 feet on center, and as follows:

1. Tooled Joints: Form control joints after initial floating by tooling/grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

2. Sawed Joints: Form control joints with early entry dry-cut power saws within 2 hours of finishing operations. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Dowel Joints: Install dowel sleeves and dowels or dowel bar and support assemblies at joints where indicated.

1. Use dowel sleeves or lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.

E. Hardened Concrete: Where new concrete or grout is to be placed in contact with existing or recently hardened concrete, texture the existing or recently hardened surface by chipping or other means so that an irregular surface having a height variance of not less than 1/4 inch is created. The existing or recently hardened concrete shall then be coated with a bonding agent and new concrete or grout placed.

3.04 CONCRETE PLACEMENT

A. Cold Weather:

1. If air temperature has fallen to, or is expected to fall below 40 F during the protection period (a minimum of 48 hours but not less than that required by ACI 306.1), then cold weather concreting shall be performed in accordance with ACI 306.1.

2. In cases where the temperature drops below 40 F after the concreting operations have been started, sufficient canvas and framework or other type of housing shall be furnished to enclose and protect the structure, in accordance with the requirements of ACI 306.1. Sufficient heating apparatus to provide heat shall be supplied, and heating source and protection from combustion gas shall be in accordance with ACI 306.1. The concrete shall be protected when placed under all weather conditions. Should concrete placed under such conditions prove unsatisfactory, remove and replace the concrete at no cost to the Owner.

3. When the air temperature is above 30 F:

   a. The minimum concrete temperature at the time of mixing shall be 60 F unless other requirements of ACI 306.1 are met, which may allow for a lower mix temperature.

   b. The minimum concrete temperature at the time of placement and during the protection period shall be 55 F unless other requirements of ACI 306.1 are met, which may allow for a lower temperature.

4. The means used to heat a concrete mix shall be in accordance with ACI 306.1.

5. Salts, chemicals, or other foreign materials shall not be mixed with the concrete to preventing freezing. Calcium chloride is not permitted.

B. Hot Weather:

1. Hot weather is defined as any combination of high air temperature, low relative humidity, and wind velocity that impairs the quality of the concrete. Hot weather concreting shall be in accordance with ACI 305.1. Concrete shall be placed in the forms without the addition of any more water than that required by the design (slump). No excess water shall be added on the concrete surface for finishing. Control of initial set of the concrete and extending the time for finishing operations may be accomplished with the use of approved water reducing and set retarding admixture, as specified.

2. Maximum time intervals between the addition of mixing water and/or cement to the batch, and the placing of concrete in the forms shall not exceed the following (excluding HRWR admixture use):

Concrete Temperature	Maximum Time from Water Batch to Placement
Non-Agitated Concrete	
Up to 80 F	30 Minutes
Over 80 F	15 Minutes
Agitated Concrete	
Up to 75 F	90 Minutes
75 F to 89 F	60 Minutes

   a. The use of an approved set-retarding admixture will permit the extension of the above time maximums by 30 minutes, for agitated concrete only.

   b. The use of an approved high range water reducing (HRWR) or hydration-controlling admixture will allow placement time extensions as determined by the manufacturer.

3. The maximum temperature of fresh concrete at time of discharge shall not exceed 95 F. The temperatures of the mixing water shall be reduced by the use of chilled water or ice.

4. The maximum temperature of fresh concrete with high range water reducing admixture shall not exceed 100 F at time of discharge.

5. Under extreme heat, wind, or humidity conditions, concreting operations may be suspended if the quality of the concrete being placed is not acceptable.

C. Handling and Transporting:

1. Delivery tickets shall be required for each batch and shall be in accordance with ASTM C94. Each delivery ticket must show plainly the amount of water, in gallons that can be added to the mixer truck at the Site without exceeding the maximum water cement ratio approved for that mix design. Amount of water added must be in proportion to contents of truck.

2. Arrange and use chutes, troughs, or pipes as aids in placing concrete so that the ingredients of the concrete are not segregated. They shall be steel or steel lined. When steep slopes are necessary, equip the chutes with baffles or make in short lengths that reverse the direction of movement. Extend open troughs and chutes, if necessary, inside the forms or through holes left in the forms. Terminate the ends of these chutes in vertical downspouts.

3. Keep chutes, troughs, and pipes clean and free from coatings of hardened concrete by thoroughly flushing with water before and after placement. Discharge water used for flushing away from the concrete in place.

4. Use pumping equipment that has sufficient capacity so that:

   a. Discharge of pump concrete does not result in segregation.

b. Modification of accepted concrete mixture is not required.

5. Carting or wheeling concrete batches on completed concrete floor slab shall not be permitted until the slab has aged at least 4 curing days. Unless pneumatic tired carts are used, wheel the carts on timber planking so that the loads and impact are distributed over the slab. Curing operations shall not be interrupted for the purpose of wheeling concrete over finished slabs.

D. Depositing:

1. The method and manner of placing shall prevent segregation or separation of the aggregate or the displacement of the reinforcement. Use drop chutes or tremies as necessary.

2. Free Fall: Concrete shall not be allowed to free fall more than 10 feet when HRWR admixture is used or 5 feet without the use of HRWR. Free falling concrete shall avoid striking reinforcing during placement. Placement of concrete for heights exceeding the free fall limit shall be placed using a tremie.

a. Concrete shall not be allowed to free fall through water. Place as indicated below.

3. Prevent the splattering of forms and reinforcing bars if the splattered concrete will dry or harden before incorporation into the mass.

4. Fill each part of the forms by directly depositing concrete as near its final position as possible. Work the concrete under and around the reinforcement bars. Depositing large quantities at one point in the forms, then running or working it along the forms shall not be permitted.

a. Place required sections in one continuous operation to avoid additional cold joints. Each layer shall be fluid and concrete shall not have taken initial set when a new layer is placed upon it. Not more than 1 hour shall elapse between the placing of successive concrete layers in any portion of the structures included in continuous placement.

5. Place in continuous horizontal layers with a depth of from 1 to 3 feet. If excessive bleeding causes water to form on the surface of the concrete in tall forms, revise mix design to reduce the bleeding.

6. In tall walls, place the concrete to a point about 1 foot below the top of the wall and allow to settle for 1 hour. Resume and complete concreting before set occurs.

7. For slopes greater than 2 percent, start concrete placement at low end and proceed upslope.

8. After the concrete has taken initial set, the forms shall not be jarred. No force or load shall be placed upon projecting reinforcement.

E. Consolidating:

1. Compact each layer of concrete and flush the mortar to the surface of the forms by continuous-working mechanical vibrators. Apply the vibrator to the concrete immediately after deposit. Move vibrator throughout the layer of the newly placed concrete, several inches into the plastic layer below. Thoroughly work the concrete around the reinforcement, embedded fixtures and into the corners and angles of the forms until it is well-compacted.

2. Mechanical vibrators shall not be operated so that they penetrate or disturb previously placed layers which are partially set or hardened. They shall not be used to aid the flow of concrete laterally. The vibration shall be of sufficient duration to completely compact and embed reinforcement and fixtures, but not to an extent causing segregation.
3. Keep vibrators constantly moving in the concrete and apply vertically at points uniformly spaced, not farther apart than the radius over which the vibrator is visibly effective. The vibrator shall not be held in one location longer than required to produce a liquified appearance on the surface.
4. When submerged in concrete, internal vibrators shall maintain a frequency of not less than 6000 impulses per minute for heads with diameters greater than 5 inches and 10,000 impulses for smaller vibrator heads. The vibration intensity (amplitude) shall be sufficient to produce satisfactory consolidation.
    a. Vibrator head shall be sufficiently small to allow placement between reinforcing steel.
    b. Provide at least one standby vibrator.
    c. Check vibrators intended for regular service or standby service prior to concreting operations.

F. Placement in Water:

1. Deposit concrete in water only when dry conditions cannot be obtained. The forms, cofferdams, or caissons shall be sufficiently tight to prevent any water flowing through the space where concrete is to be deposited. Pumping of water shall not be permitted while the concrete is being placed, nor until it has set for at least 36 hours.
2. Carefully place the concrete using a tremie, closed bottom dumping bucket, or another approved method which does not permit the concrete to fall through the water without protection. The concrete shall not be disturbed after being deposited. Regulate depositing to maintain horizontal surfaces.
3. When a tremie is used, it shall consist of a tube constructed in sections having water-tight connections. The means of supporting the tremie shall permit the movement of the discharge end over the entire top surface of the work, and shall allow the tremie to be rapidly lowered to retard the flow. The number of times it is necessary to shift the location of the tremie shall be held to a minimum for any continuous placement of concrete. During the placing of concrete, keep the tremie tube full to the bottom of the hopper. When a batch is dumped into the hopper, slightly raise the tremie, but not out of the concrete at the bottom, until the batch discharges to the level of the bottom of the hopper. Stop the flow by lowering the tremie. Continue placing operations until the work is completed.
4. When concrete is placed by means of the bottom dump bucket, the bucket shall have a capacity of not less than 1/2 cubic yard. Lower the bucket gradually and carefully until it rests upon the concrete already placed. Raise it very slowly during the discharge travel to maintain still water at the point of discharge and to avoid agitating the mixture.
5. Use a sump or other approved method to channel displaced fluid and concrete away from the shaft excavation. Recover slurry and dispose of it as approved. Do not discharge displaced fluids into or in close proximity to streams or other bodies of water.

G. Placement in Slabs:

1. Allow concrete in columns, walls and deep beams or girders to stand for at least 1 hour to permit full settlement from consolidation, before concrete is placed for slabs they are to support. Haunches are considered as part of the slab and shall be placed integrally with them.

2. When monolithic slabs are placed in strips, the widths of the strips, unless otherwise specified or indicated, shall insure that concrete in any one strip is not allowed to lie in place for more than 1 hour before the adjacent strips are placed.

3. Immediately before placing concrete, thoroughly dampen the subgrade to receive concrete to prevent moisture absorption from the concrete.

4. As soon as concrete placing is complete for a slab section of sufficient width to permit finishing operations, level the concrete, strike off, tamp and screed. The screed shall be of a design adaptable to the use intended, shall have provision for vertical adjustment and shall be sufficiently rigid to hold true to shape during use.

5. The initial strike off shall leave the concrete surface at an elevation slightly above grade so that, when consolidation and finishing operations are completed, the surface of the slab is at grade elevation.

6. Continue tamping and screeding operations until the concrete is properly consolidated and free of surface voids. Bring the surface to a smooth, true alignment using longitudinal screeding, floating, belting, and/or other methods.

7. When used, templates shall be of a design which permits early removal so satisfactory finishing at and adjacent to the template is achieved.

8. While the concrete is still plastic, straighten the surface as required to achieve specified flatness requirements. Remove high spots and fill depressions with fresh concrete and re-float. Continue to check during the final finishing operation, until the surface is true to grade and free of depressions, high spots, voids, or rough spots.

9. Where floor drains are shown in slabs and sloping the slab is not indicated, slope slab to drain on a grade of 1/16 inch per foot. The thickness of slab at floor drain shall be the thickness of slab as indicated on the Drawings.

H. Placement in Foundations: Place concrete in deep foundations so that segregation of the aggregates or displacement of the reinforcement is avoided. Provide suitable chutes or vertical pipes. When footings can be placed in dry foundation pits without the use of cofferdams or caissons, forms may be omitted and the entire excavation filled with concrete to the elevation of the top of footing. The placing of concrete bases above mud slab is permitted after the forms are free from water and the seal course cleaned. Execute necessary pumping or bailing during concreting from a suitable sump located outside the forms.

I. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on the Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

3.05 FINISHING FORMED SURFACES

A. Forms for walls, columns, and sides of beams and girders shall be removed as specified in Section 03 11 00 "Concrete Forming." Patch, repair, finish, and clean concrete after form removal. Finish concrete not more than 7 days after form removal. Cure concrete as finishing progresses.

B. Air voids, for all types of finishes, are defects and shall be removed by rubbing or patching.

C. Finish Schedule:

Type of Finish	Location
No Finish	Surfaces which are not visible from the inside or outside of the completed structure, are more than 12" below finish grade, and where a coating/membrane/drainage board will not be installed
Smooth Finish	Surfaces exposed to view, areas below to a point 12" below grade, and where a coating/membrane/drainage board will be installed.

D. No Finish: Patch tie holes. Repair defects larger than 1-1/2 inches in diameter or 1/2 inch in deep. Remove projections larger than 1 inch.

E. Smooth Finish: The form facing material shall produce a smooth, uniform texture on the concrete. Patch tie holes. Repair defects larger than 3/4 inch wide or 1/2 inch deep. Remove projections flush with the adjacent surface.

3.06 FINISHING FLOORS AND SLABS

A. General: Screed, restraighten, and finish concrete surfaces. Do not wet concrete surfaces.

B. Finish slabs, platforms, and steps monolithically and apply as indicated on the Drawings and the following schedule of finishes:

Type of Finish	Location
Float Finish	Top of walls, vault top slabs not subject to pedestrian foot traffic.
Broom Finish	Exterior concrete platforms and steps.

1. Float Finish: Finish surfaces using a float to a true, even plane with no coarse aggregate visible. In the initial floating, while the concrete is plastic, use sufficient pressure on the float to bring excess moisture to the surface for removal. Apply a final "light float" finish to the surface as the concrete hardens. The surface shall have a uniform granular texture and shall meet the straightness requirements.

a. Finish surfaces to the following tolerances, measured within 24 hours according to ASTM E1155/E1155M for a randomly trafficked floor surface:

b. Finish and measure surface so gap at any point between concrete surface and an unleveled freestanding 10-foot long straightedge, resting on two high spots and placed anywhere on the surface, does not exceed the following:

1). 1/4 inch.

2). 3/16 inch.

3). 1/8 inch.

2. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.

3. Broom Finish: Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with the Engineer before application.

a. After broadcasting and tamping, apply float finish.

b. After curing, lightly work surface with a steel wire brush or an abrasive stone, and water to expose slip-resistive aggregate.

C. Give sidewalks a brush finish, unless noted otherwise. Score sidewalks at a spacing equal to the width of the walk and edge on each side using a tool with a radius of approximately 1/4 inch.

Note to Specifier: Typically delete option below unless required by the Project.

3.07 MISCELLANEOUS CONCRETE ITEMS

A. Normal Shrinkage Grouting:

1. Prior to grout application, thoroughly clean the surface of all foreign matter. Roughen concrete surface to CSP 4 and wet as required for a saturate surface dry condition (SSD). Set forms in place; tight and securely anchored to prevent the loss of grout.

2. The necessary materials and tools shall be on hand before starting grouting operations.

3. After preparing surface and immediately prior to grouting, provide scrub coat of grout material. Do not allow scrub coat to dry prior to placing grout.

4. After mixing, quickly and continuously place the grout to avoid overworking, segregation and breaking down of the initial set. Mix and place the grout where indicated on the Drawings. Cure grout using wet curing method for concrete. Grout shall receive a trowel finish, unless otherwise noted.

B. Non-Shrink Grout:

1. Obtain field technical assistance from the grout manufacturer, as required, to ensure that grout mixing and installation comply with the manufacturer's recommendations and procedures.

2. Roughen concrete surface as required by the manufacturer, but not less than CSP 4. Saturate the surface to achieve an SSD condition. Baseplates shall be free of oil, grease, laitance and other foreign substances.
    a. Epoxy Grout: Surface shall be dry as recommended by the manufacturer.
3. Place grout according to the manufacturer's directions so that spaces and cavities below the bottom of the baseplates are completely filled. Provide forms where structural components of the baseplates do not confine the grout. Trowel finish the non-shrink grout where the edge of the grout is exposed to view and after the grout has reached its initial set. Cut off the exposed edges of the grout at a 45-degree angle to the baseplate, bedplate, member, or piece of equipment.
4. Wet cure a minimum of 3 days, but not less than that recommended by the manufacturer.
    a. Epoxy Grout: Dry curing is acceptable if recommended by the manufacturer.
5. Use epoxy non-shrink grout under all machinery, pumps, equipment, and where chemicals are present that would abate cementitious non-shrink grouts.

3.08 CONCRETE CURING AND PROTECTION

A. General: Begin curing of concrete immediately after completion of finishing activities for unformed concrete and immediately after removal of forms from formed concrete. Apply curing method without staining, marring, or damaging concrete surfaces. Where pedestrian traffic is unavoidable, provide suitable walkways to protect the curing material and the concrete surface from damage. Unless a particular curing method is specified, select the appropriate curing method from the curing options indicated.

B. Length of Curing Period:
    1. Curing Day: A day on which the ambient temperature is above 50 deg. F for at least 18 hours.
    2. Curing Period: 7 consecutive curing days.
    3. Extended Curing Period: When curing day requirements are not met, then extend the curing period by one day for each day not in compliance. Extend curing up a maximum total of 14 consecutive days.

C. Wet Curing with Absorbent Material:
    1. Cover concrete surfaces with absorbent material and hold it in contact with concrete surface. Provide a minimum 8-inch lap of adjacent material section edges.
    2. Apply water to absorbent material and saturate. Maintain saturated condition for curing period – do not allow absorbent material to dry.
    3. Do not use wet curing if curing water will be subject to freezing during the curing period.

D. Sheet Curing: Cover concrete surfaces with sheets and hold in contact with concrete surface. Apply in accordance with manufacturer recommendations, which includes placement, patching holes, and tape joints per manufacturer recommendations.

E. Membrane Curing:

1. Cover the surface of the concrete with a continuous, uniform film. Application shall be in accordance with manufacturer recommendations. Prevent overspray as necessary to meet project requirements.

2. Do not allow foot traffic on surface in accordance with manufacturer recommendations.

3. Repair film if damaged within the curing period.

4. Unless preapproved, do not use membrane curing on surfaces that:

a. Receive concrete topping, terrazzo, paint, floor hardener, or other finish.

b. Are specified to have a rubbed finish.

F. Protection: During and after curing period, protect concrete surfaces from damage, marring, or staining by construction activities.

3.09 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.

B. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. If the surface of the concrete is bulged, uneven, or shows honeycombing or form marks, which in the Engineer's opinion cannot be repaired satisfactorily, remove and replace the entire section.

2. Patch honeycomb and minor defects in all concrete surfaces with structural concrete repair material. Cut back each defective area with a pneumatic chipping tool as deep as the defect extends, but in no case less than 1/2 inch. Prepare the existing concrete and apply repair material according to the manufacturer's recommendations. Finish the surface of the patches to match finish on surrounding concrete.

3. Immediately after form removal, cut out honeycombs, rock pockets, and voids to expose solid concrete but not less than 1-inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with repair material before bonding agent has dried.

C. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, pop outs, honeycombs, rock pockets, crazing and cracks in excess of 0.01-inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

2. After concrete has cured at least 14 days, correct high areas by grinding.

3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.

4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mix as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

D. Perform structural repairs of concrete, subject to Engineer's approval, using epoxy adhesive and patching mortar.

E. Repair materials and installation not specified above may be used, subject to Engineer's approval.

3.10 FIELD QUALITY CONTROL

A. Testing:

1. General:

a. Tests shall be required throughout the Work to monitor the quality of concrete. Samples shall be taken in accordance with ASTM C172.

b. Engineer may waive these requirements on concrete placements of 10 cubic yards or less. However, evidence shall be furnished showing a design mix which meets the Specifications.

c. Unless noted otherwise, testing of the materials, ready mix, transit mix, or central plant concrete will be by an independent testing agency. The independent testing agency will be approved by the Owner and paid by the Contractor. A summary of all tests performed will be available. No concrete shall be placed without a representative present at either the plant or at the Site.

d. Unless the Owner's laboratory is on the Site, provide housing for the curing and storage of test specimens and equipment.

2. Slump Test: Slump tests, in accordance with ASTM C143, shall be used to indicate the workability and consistency of the concrete mix from batch to batch. Generally, a slump test shall be made at the start of operations each day, at regular intervals throughout a working day, and at any time when the appearance of the concrete suggests a change in uniformity.

3. Air Content Test: Tests for the concrete's air content shall be made in accordance with ASTM C231 or ASTM C173, at the point of delivery of concrete, prior to placing in forms. The test shall be made frequently to monitor a proper air content uniform from batch to batch.

4. Temperature Test: Test for the concrete's temperature in accordance with ASTM C1064 and as follows: the temperature of the concrete to be placed shall be taken with a thermometer immediately before placement, with the point of measurement being in the chute or bucket. Temperature test shall be performed for each truck. Record temperatures on batch ticket.

5. Compression Test:

    a. Compression test specimens shall be 6-by-12-inch concrete cylinders made and cured in accordance with ASTM C31. If the maximum aggregate size is no larger than 1 inch, 4-by-8-inch concrete cylinders are acceptable. No fewer than two 6-by-12-inch or three 4-by-8-inch specimens shall be made for each test Sample. Samples shall be taken at a minimum of every 50 cubic yards of concrete for each class placed. At least one set of test specimens per day shall be made for each class of concrete used that day. Specimens shall be cured under laboratory conditions specified in ASTM C31. Additional concrete cylinders may be required for curing on the job under actual job curing conditions. These Samples could be required when:

        1). There is a possibility of the air temperature surrounding the concrete falling below 40 F, or rising above 90 F.

        2). The curing procedure may need to be improved and/or lengthened.

        3). It is necessary to determine when the structure may be put into service.

    b. Compression strength tests shall be made on the laboratory-cured and job-cured concrete cylinders at 7 and 28 days, in accordance with ASTM C39. The value of each test result shall be the average compressive strength of all of the cylinders in the test Sample. All cylinders within a test Sample shall be taken at the same time from the same batch of concrete. For the 28-day cylinders, the strength level shall be satisfactory if the averages of all sets of three consecutive strength test results exceed the required design compressive strength, and no individual strength test result falls below the required compressive strength by more than 500 psi.

6. High Early Strength Concrete Test: When Type "III" High Early Strength Portland cement is used instead of Type "I" Portland cement, the minimum allowable 28-day strength for Type "I" Portland cement concrete shall be at 7 days. The ages at time of test for Type "III" shall be 3 days and 7 days, instead of 7 days and 28 days, respectively, for Type "I."

7. Failure to Meet Requirements:

    a. Should the 7-day strengths shown by the test specimens fall below the required values, additional curing shall be performed on those portions of the structures

represented by the test specimens at the Contractor's expense. Test cores shall be obtained and tested in accordance with ASTM C42. If additional curing does not give the strength required, the Owner reserves the right to require strengthening, replacement of those substandard portions of the structure, or additional testing, at the Contractor's expense.

b. Upon receipt of the Contractor's written request, substandard concrete work may be reexamined in place by nondestructive testing methods or core Samples, in accordance with ACI 301. The services of an independent testing laboratory shall be retained and all expenses paid without compensation from the Owner. Laboratory results shall be evaluated by the Engineer, who shall make the final decision on acceptability of the concrete in question. Core Sample holes shall be repaired.

c. Nondestructive Testing: : Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.

d. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42 or by other methods as directed by Engineer.

B. The Owner may withhold payment for any section of concrete which does not meet the requirements of the Specifications. Withheld payment shall be based upon the unit prices established for concrete and reinforcing steel. Payment shall be withheld until the unacceptable concrete has been refinished, removed and replaced or otherwise brought into conformance with the Specifications.

C. PVC/TPER/PE Waterstops: Waterstops shall be observed by the Owner's representative prior to concrete placement. Unacceptable splicing defects include:

1. Misalignment of center bulb, ribs, and end bulbs greater than 1/16 inch.
2. Bond failure at joint deeper than 1/16 inch.
3. Misalignment which reduces waterstop cross-section more than 15 percent.
4. Bubble or visible porosity in the weld.
5. Visible signs of splice separation when a cooled splice is bent by hand at a sharp angle.
6. Charred or burnt material.

END OF SECTION

Concrete Mix Design

Project Name: _____

FNI Project Number: _____

Project Location: _____

Owner: _____

General Contractor: _____

Mix Number / Class: _____

A. Mix Design:

Cement	=	_____	lb/yd³
Fly Ash	=	_____	lb/yd³
Other Cementitious Material:			
_____	=	_____	lb/yd³
Fine Aggregate	=	_____	lb/yd³
Coarse Aggregate	=	_____	lb/yd³
Water	=	_____	lb/yd³
Water Reducing Admixture	=	_____	oz/yd³
High Range Water Reducer	=	_____	oz/yd³
Air Entraining Admixture	=	_____	oz/yd³
Other Admixture:			
_____	=	_____	oz/yd³
Slump	=	_____	inches
Gross Weight	=	_____	lb/yd³
Air Content	=	_____	percent
Water/Cement Ratio	=	_____	

B. Materials:

	Source	ASTM	Type	Remarks
Cement				
Fly Ash				
Other Cementitious Material: _____				
Fine Aggregate				
Coarse Aggregate				
Water				
Water Reducer				
High Range Water Reducer				
Air Entraining				

	Source	ASTM	Type	Remarks
Other Admixture: _____				

C. Determination of Average Strength Required (fcr'):

1. Test Records Available:

A. Summary of Test Records (Provide Supporting Documentation):

Test Group No.	No. of Consecutive Tests	Specified Strength (psi)	Standard Deviation (psi)
Average Standard Deviation:			

B. Standard Deviation Modification Factor (ACI 30 1, Table 4.2.3.3.a): ____.

C. Standard Deviation Used: ____.

D. Average Compressive Strength Required: ____.

2. Test Records Not Available:

A. Average Compressive Strength Required (ACI 30 1, Table 4.2.3.3.b, if required): ____.

D. Documentation of Required Average Compressive Strength (Check One):

1. Field Strength:

a. Field Strength Test Records (ACI 30 1, Table 4.2.3.3.a): ____. *Complete Attachment A.

2. Trial Mixtures:

a. Trial Mixtures (ACI 301, Table 4.2.3.3.b, if required): ____. *Complete Attachment B.

I, _____ certify that the above information is correct and all gradations, cement certifications, and test results are located at our place of business for review by the Engineer.

Name: _____ Date: _____

Title: _____

Company: _____

Address: _____

_____

_____

Attachment A

Documentation of Required Average Strength – Field Strength Records

(ACI 301, 4.2.3.4.a)

A. Summary of Test Records (Provide Supporting Documentation):

Test Record No.	No. of Tests in Record	Duration of Record (days)	Water-Cementitious Materials Ratio	Average Strength (psi)

B. Interpolation used? _____.

1. Provide an interpolation calculation or plot of strength versus proportions.

C. Submit the following data for each mix:

1. Brand, type, and amount of cement.
2. Brand, type, and amount of each admixture.
3. Source of each material used.
4. Amount of water.
5. Proportions of each aggregate material per cubic yard.
6. Gross weight per cubic yard.
7. Measured slump.
8. Measured air content.
9. Results of consecutive strength tests.

END OF ATTACHEMENT A

Attachment B

Documentation of Required Average Strength – Trial Mixtures

(ACI 301, 4.2.3.4.b)

A. Summary of Test Record(s):

Trial Mix No.	7-Day Tests		28-Day Tests		Water-Cementitious Materials Ratio	Slump (in)	Air Content (percent)	Temperature (F)
	No. of Test Cylinders	Strength (psi)	No. of Test Cylinders	Strength (psi)				

B. Maximum water-cementitious materials ratio _____.

1. Provide an interpolation calculation or plot of strength versus water-cementitious materials ratio.

C. Submit the following data for each mix:

1. Brand, type, and amount of cement.
2. Brand, type, and amount of each admixture.
3. Amount of water used in trial mixes.
4. Proportions of each aggregate material per cubic yard.
5. Gross weight per cubic yard.
6. Measured slump.
7. Measured air content.
8. Compressive strength developed at 7 days and 28 days, from not less than three test cylinders cast for each 7-day and 28-day test.

END OF ATTACHMENT B

DIVISION 05

METAL

05 50 00 METAL FABRICATIONS

1.00 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Aluminum framing and supports for applications where framing and supports are not specified in other Sections.

B. Products furnished, but not installed, under this Section:

1. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete.
2. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

C. Related Sections:

1. Section 03 30 00 “Cast-In-Place Concrete” for installing anchor bolts, steel pipe sleeves, slotted-channel inserts, wedge-type inserts, and other items cast into concrete.

1.03 ACTION SUBMITTALS

A. Product Data: For the following:

1. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.

1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified professional engineer.

B. Mill Certificates: Signed by manufacturers of stainless-steel certifying that products furnished comply with requirements.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

1.05 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, “Structural Welding Code - Steel.”

1.06 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

1.07 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages and steel weld plates and angles for casting into concrete. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete. Deliver such items to Project site in time for installation.

2.00 PRODUCTS

2.01 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

2.02 FERROUS METALS

A. Steel Pipe: ASTM A53/A53M, standard weight (Schedule 40) unless otherwise indicated.

2.03 NONFERROUS METALS

A. Aluminum Plate and Sheet: ASTM B209 (ASTM B209M), Alloy 6061-T6.

B. Aluminum Extrusions: ASTM B221 (ASTM B221M), Alloy 6063-T6.

C. Aluminum-Alloy Rolled Tread Plate: ASTM B632/B632M, Alloy 6061-T6.

D. Aluminum Castings: ASTM B26/B26M, Alloy 443.0-F.

2.04 FASTENERS AND ANCHORS

A. General: Unless otherwise indicated, provide Type 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941 (ASTM F1941M), Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

1. Provide stainless-steel fasteners for fastening aluminum.

B. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F593 (ASTM F738M); with hex nuts, ASTM F594 (ASTM F836M); and, where indicated, flat washers; Alloy Group 2 (A4).

2.05 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

2.06 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

3.00 EXECUTION

3.01 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

1. Cast Aluminum: Heavy coat of bituminous paint.
2. Extruded Aluminum: Two coats of clear lacquer.

G. Anti-Seize Lubricant: Where stainless steel nuts and bolts will be installed, apply anti-seize lubricant to threads as recommended by lubricant manufacturer to prevent seizure of nut and bolt during installation or upon removal at a future date.

3.02 FIELD QUALITY CONTROL

A. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

1. Corrective measures shall be taken when welding is unsatisfactory or indicates inferior workmanship. Chip and grind if the removal of part of the weld or a portion of the base metal is required. Where deposition of additional weld material is necessary, the sides of the area to be welded shall have no less than one to one (1:1) slope to allow room for depositing new material. Correct defective or unsound welds by the removal and replacement of the entire weld using the following procedures:

a. Excessive Convexity: Reduce to size by removal of excess weld metal by grinding.
b. Shrinkage Cracks, Cracks in Base Metal, Craters and Excessive Porosity: Remove defective portions of base and weld material down to sound metal, and deposit additional sound material.
c. Undercutting, Undersize, and Excessive Concavity: Clean and deposit additional weld metal.
d. Overlapping and Incomplete Fusion: Remove and replace the defective portion of the weld.
e. Slag Inclusion: Remove those parts of the welds containing slag. Fill with sound weld metal.
f. Removal of Adjacent Base Metal during Welding: Clean and form full size by depositing weld material.

2. Remove cracked welds throughout their length.
3. Where work performed subsequently to the making of the deficient weld has rendered the weld inaccessible, or has caused new conditions which make connection of the deficiency dangerous or ineffectual, restore the original conditions by removing welds or members, or both before making the necessary corrections. Another option is to compensate for the deficiency with additional work according to the revised design, approved by the Engineer.
4. Cut apart and reweld improperly fitted and misaligned parts.
5. Straighten members distorted by heat of welding using mechanical means or by carefully supervised application of a limited amount of localized heat. Heated areas shall not exceed 1200 degrees Fahrenheit as measured by Tempilsticks. Parts to be heated for straightening shall be free from external stress forces, except when mechanical means are used in conjunction with heat application.
6. If faulty welding or its removal for rewelding damages the base metal so that, in the Engineer's judgment, it is not in accordance with the intent of the Contract Documents, remove and replace the damaged material and compensate for the deficiency in a manner acceptable to the Engineer.
7. Maximum space between pieces or members for fillet welds shall be 1/16 inch. Only effective portion shall be considered in measuring fillet welds.

END OF SECTION

DIVISION 31

EARTHWORK

31 05 13 SOILS FOR EARTHWORK

1.00 GENERAL

1.01 WORK INCLUDED

A. This Section of the specifications describes the various classes of Earth Fill. All of the classes of Earth Fill contained in this specification may not be used on this project. The classes of Earth Fill used on this project are shown on the drawings or specified in other sections of the specifications. This Section does not include specifications for placement and compaction of Earth Fill. Specifications for placement and compaction of Earth Fill are included in other sections of the specifications and/or shown on the drawings.

1.02 STANDARDS

A. Soil materials shall be classified into the appropriate class of Earth Fill shown below according to ASTM D2487 “Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)” or other appropriate methods as designated by the Engineer.

2.00 PRODUCTS

2.01 MATERIALS; CLASSIFICATIONS

A. Class 1 Earth Fill: Limited to clays and sandy clays classified as CH material with a liquid limit greater than or equal to 50, a plasticity index greater than or equal to 25, and a minimum of 60 percent passing the No. 200 sieve, which are free of organic materials.

B. Class 2 Earth Fill: Limited to clays and sandy clays classified as CH and CL materials with a coefficient of permeability less than or equal to 1.0×10^{-7} cm/sec, a liquid limit greater than or equal to 30, a plasticity index greater than or equal to 15, and more than 50 percent passing the No. 200 sieve, which are free of organic materials.

C. Class 3 Earth Fill: Consist of any materials classified as CH, CL, SM, SP, SP-SM, SC, and GC, which have a minimum plasticity index of 4, which are free of organic materials.

D. Class 4 Earth Fill: Consist of materials which are classified as SP, SM, SC, CL, or dual classifications thereof, which have a liquid limit less than or equal to 35 and a plasticity index of a minimum of 4 and a maximum of 15, which are free of organic materials.

E. Class 5 Earth Fill: Consist of materials classified as SP or SP-SM which have a plasticity index less than or equal to 4 and a maximum of 12 percent passing the No. 200 sieve, which are free of organic materials.

F. Class 12 Earth Fill: Consist of soils suitable for topsoil which are relatively free of stones or other objectionable debris, which have sufficient humus content to readily support vegetative growth. The suitability of soils for topsoil shall be subject to the approval of the Engineer.

3.00 EXECUTION (NOT APPLICABLE)

END OF SECTION

31 05 16 AGGREGATES FOR EARTHWORK

1.00 GENERAL

1.01 WORK INCLUDED

A. This Section of the specifications describes the various classes of Aggregate Fill. All of the classes of Aggregate Fill contained in this specification may not be used on this project. The classes of Aggregate Fill used on this project are shown on the drawings or specified in other sections of the specifications. This Section does not include installation. Installation of Aggregate Fill is included in other sections of the specifications and/or on the drawings.

1.02 QUALITY ASSURANCE

A. Classification Testing:

1. Contractor Testing:

   a. Arrange for the services of an independent testing laboratory to sample and test proposed Aggregate Fill materials.

   b. Submit the test results to the Engineer, and obtain approval prior to providing Aggregate Fill.

2. Owner Testing: The Owner shall arrange and pay for additional testing on the Aggregate Fill after delivery to the project site as determined necessary by the Engineer.

B. Contamination Certification:

1. Obtain a written, notarized certification from the Supplier of each proposed Aggregate Fill source stating that to the best of the Supplier's knowledge and belief there has never been contamination of the source with hazardous or toxic materials.

2. Submit these certifications to the Engineer prior to proceeding to furnish Aggregate Fill to the site. The lack of such certification on a potential Aggregate Fill source shall be cause for rejection of that source.

1.03 STANDARDS

A. Aggregate Fill shall be classified into the appropriate class listed below according to ASTM testing procedures as specified for the various classes.

1. American Society for Testing and Materials (ASTM) Standards:

ASTM C33	Specification for Concrete Aggregates
ASTM C88	Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium sulfate
ASTM C125	Terminology Relating to Concrete and Concrete Aggregates
ASTM C131	Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C535	Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM D448	Classification for Sizes of Aggregate for Road and Bridge Construction

2.00 PRODUCTS

2.01 MATERIALS; CLASSIFICATIONS

A. Class 1 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 57:

Sieve Size Square Opening	Percent Passing
1-1/2”	100
1”	95-100
1/2”	25-60
No. 4	0-10
No. 8	0-5

B. Class 2 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 67:

Sieve Size Square Opening	Percent Passing
1”	100
3/4”	90-100
3/8”	20-55
No. 4	0-10
No. 8	0-5

C. Class 3 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 7:

Sieve Size Square Opening	Percent Passing
3/4”	100

1/2”	90-100
3/8”	40-70
No. 4	0-15
No. 8	0-5

D. Class 4 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 467:

Sieve Size Square Opening	Percent Passing
2”	100
1-1/2”	95-100
3/4”	35-70
3/8”	10-30
No. 4	0-5

E. Class 5 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 357:

Sieve Size Square Opening	Percent Passing
2-1/2”	100
2”	95-100
1”	35-70
1/2”	10-30
No. 4	0-5

F. Class 6 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 1:

Sieve Size Square Opening	Percent Passing
4”	100
3-1/2”	90-100
2-1/2”	25-60
1-1/2”	0-15
3/4”	0-5

G. Class 7 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and shall have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 6:

Sieve Size Square Opening	Percent Passing
1”	100
3/4”	90-100
1/2”	20-55
3/8”	0-15
No. 4	0-5

H. Class 8 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable materials and shall have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation in accordance with ASTM D448, size number 56:

Sieve Size Square Opening	Percent Passing
1-1/2”	100
1”	90-100
3/4”	40-85

1/2”	10-40
3/8”	0-15
No. 4	0-5

I. Class 9 Aggregate Fill:

1. Consist of washed and screened gravel and natural sands or sands manufactured by crushing stones complying with the requirements of ASTM C33, except that the gradation shall be as follows:

Sieve Size Square Opening	Percent Passing
1/2”	100
3/8”	95-100
No. 4	80-95
No. 8	65-85
No. 16	50-75
No. 30	25-60
No. 50	10-30
No. 100	0-10

2. Class 9 Aggregate Fill shall have not more than 45 percent passing any sieve and retained on the next consecutive sieve of those shown above, and its fineness modulus, as defined in ASTM C125, shall be not less than 2.3 nor more than 3.1.

J. Class 10 Aggregate Fill:

1. Consist of washed and screened natural sands or sands manufactured by crushing stones complying with the requirements and tests of ASTM C33. The gradation as included in ASTM C33 is as follows:

Sieve Size Square Opening	Percent Passing
3/8”	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	0-10

2. Class 10 Aggregate Fill shall have not more than 45 percent passing any sieve and retained on the next consecutive sieve of those shown above, and its fineness modulus, as defined in ASTM C125, shall be not less than 2.3 nor more than 3.1.

K. Class 11 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable material and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation:

Sieve Size Square Opening	Percent Passing
1-3/4”	100
7/8”	65-90
3/8”	50-70
No. 4	35-55
No. 40	15-30
No. 100	0-12 (Wet Sieve Method)

L. Class 12 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable material and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation:

Sieve Size Square Opening	Percent Passing
1-1/2”	100
1”	85-100
3/4”	60-95
3/8”	50-80
No. 4	40-65
No. 16	20-40
No. 100	0-12 (Wet Sieve Method)

M. Class 13 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable material and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and shall meet the following gradation:

Sieve Size Square Opening	Percent Passing
1-3/4”	100
7/8”	65-90

3/8”	50-70
No. 4	35-55
No. 40	15-30
No. 100	0-3 (Wet Sieve Method)

N. Class 14 Aggregate Fill: Consist of durable particles of crushed stone free of silt, clay, or other unsuitable material and have a percentage of wear of not more than 40 percent when tested in accordance with ASTM C131 or C535. When material is subjected to five cycles of the sodium sulfate soundness test in accordance with ASTM C88, Sodium Sulfate Solution, the weighted percentage of loss shall not exceed 12 percent. The source of the material shall be approved by the Engineer and meet the following gradation:

Sieve Size Square Opening	Percent Passing
1-1/2”	100
1”	85-100
3/4”	60-95
3/8”	50-80
No. 4	40-65
No. 16	20-40
No. 100	0-3 (Wet Sieve Method)

O. Class 15 Aggregate Fill: Consist of durable particles of silica sand, washed clean, chemically inert, and packaged by the Supplier. The material shall meet applicable regulatory requirements for monitor well filter pack. The source of the material shall be approved by the Engineer and shall meet the following gradation requirements:

Sieve Size Square Opening	Percent Passing
No. 20	98-100
No. 40	0-2

3.00 EXECUTION (NOT APPLICABLE)

END OF SECTION

31 23 10 STRUCTURAL EXCAVATION AND BACKFILL

1.00 GENERAL

1.01 SUMMARY

A. This Section specifies excavation, backfill materials, backfill placement and compaction procedures, and other construction activities incidental to project structures.

1.02 DEFINITIONS

A. Cofferdams: Any temporary or removable structure constructed to hold the surrounding earth and/or water out of the excavation, whether the structure is formed of soil, timber, steel, concrete, or a combination thereof, including the use of pumping wells or well points as required by design.

1.03 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design of cofferdams, including comprehensive engineering analysis by a qualified professional engineer for project specific site conditions. Design shall comply with AASHTO LRFD Bridge Design Specifications, latest addition.

1.04 QUALIFICATION ASSURANCE

A. Cofferdam Designer: A professional engineer licensed in the state in which the Project occurs.

B. Testing Agency: An independent testing agency that is AASHTO accredited.

1.05 SUBMITTALS

A. Submittals shall be in accordance with Section 01 33 00 “Document Management” and shall include:

1. Qualification Data: For professional engineer responsible for cofferdam design and testing agency.

2. Shop Drawings: Cofferdam placement and details for record purposes.

3. Calculations: For cofferdam indicated to comply with project specific site conditions, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation. Submittal shall be for record purposes.

4. Backfill material classifications: For each soil or aggregate backfill material provide a certification by the testing agency.

5. Compaction Test Results: Submit test results within 24 hours of successful testing.

1.06 STANDARDS

A. Material classification, placing, and testing shall be in compliance with the latest revisions of the following standards, unless otherwise noted in the Contract Documents.

1. ASTM International (ASTM) Standards:

ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D4253	Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
ASTM D6938	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
ASTM C33	Standard Specification for Concrete Aggregates

B. Any other testing required by these specifications and not specifically referenced to a standard shall be performed under ASTM or other appropriate standards as designated by the Engineer.

1.07 DELIVERY AND STORAGE

A. Deposit material to be used for backfill in storage piles at points convenient for handling of the material during the backfilling operations and as required to prevent contamination with other materials.

1.08 JOB CONDITIONS

A. Review subsurface investigations. A limited subsurface investigation has been performed by Tolunay Wong Engineers. A geotechnical report from that investigation is a part of the Construction Documents for information purposes only. The precise profile of soil and rock strata beneath this Site is not known.

B. Review the Site and determine the conditions which may affect the structural excavation, prior to the commencement of the excavation.

2.00 PRODUCTS

2.01 BACKFILL MATERIALS

A. Subgrade: Subgrade shall be flexible base in accordance with TxDOT 2014 Standard Specifications, Item 247, Grade 1 or 2, Type A or D.

B. Structural Fill Backfill: Structural Fill Backfill as indicated in drawings.

C. Working Platform: Working Platform as indicated in drawings.

D. Flowable Fill: Flowable fill shall be in accordance with Section 31 23 23.34 “Flowable Fill”

2.02 COMPACTION EQUIPMENT

A. Compaction equipment shall conform to the following requirements.

1. Heavy Compaction Equipment:
    a. Tamping Compactor: Steel wheels with rectangular face, tapered pads that prevent fluffing the soil. Compactor shall be equipped with cleaning fingers to remove soil accumulation from between pads.
        1). Operating Weight, Minimum: 30,000 pounds.
        2). Wheels or Drum Size, Minimum: 4 feet diameter.
        3). Travel Speed, Maximum: 10 mph.
    b. Pneumatic Rollers: Minimum eight-tire, pneumatic roller with a modular ballast system and flexible operating weight, and which will equally distribute load between tires to provide compaction uniformity.
        1). Operating Weight Range: As required for specified compaction, 36,000 to 50,000 pounds.
        2). Tire Pressure Range: 80 psi to 100 psi.
        3). Travel Speed, Maximum: 10 mph.
        4). Distance Between Edges of Adjacent Tires: Less than 50 percent of tire width.
    c. Vibratory Rollers: Smooth drum roller with 90 percent of the static weight transmitted through a single drum.
        1). Static Weight, Minimum: 20,000 pounds
        2). Centrifugal Force Per Drum, Minimum: 40,000 pounds
        3). Frequency: 1400 v/min
        4). Drum Size: Diameter 5 feet, +/- 1 foot; width between 6 and 9 feet.
        5). Travel Speed: 5 mph for self-propelled; 2 mph for towed.
        6). No backing up of the vibratory roller will be allowed on an embankment unless the vibrating mechanism is capable of being reversed.
2. Hand-Directed Compaction Equipment: Use power tampers and vibratory plate compactors in areas where it is impracticable or unacceptable to use heavy compaction equipment.

2.03 COFFERDAMS

A. Interior Dimensions: Of sufficient size to allow for all construction and inspection activities.

B. Walls: Watertight. Extend below proposed subgrade as required to prevent water infiltration through subgrade. Extend above 100-year water surface elevations, but not less than that required by design.

C. Provide pumping or bailing system as required by cofferdam design and/or Construction Document requirements.

D. Provide aggregate work platform as required by cofferdam design and/or as indicated on the Drawings. Aggregate work platform shall be installed as indicated below.

3.00 EXECUTION

3.01 PREPARATION

A. Clear and grub the area to be excavated prior to the start of excavation Remove the surficial vegetation, waste and soils to a minimum depth of 12 inches. Depth of removal shall not be less than that required to remove trees, shrubs, stumps, roots, and other organic material above and below ground from within the area to be excavated. Ensure below grade organic material is removed to a minimum depth of 18 inches below bottom of footing/structure.

3.02 EXCAVATION FOR FOUNDATIONS

A. General: Excavate subgrade to the depth indicated on Drawings, +/- 0.1 feet tolerance Extend limits of the excavation beyond the perimeter of the foundations as indicated on the Drawings.

1. Exposed subgrade surfaces shall be level and of sound, stable material, free of mud, frost, snow, or ice. Testing agency or Owner's representative shall confirm exposed subgrade is a suitable bearing material based on the Construction Documents.
2. Proof roll the exposed subgrade in accordance with TxDOT Item 216. Do not proof roll wet or saturated subgrades.
3. Where unsound or unstable material is uncovered, notify Owner's representative Remove objectionable material and replace after approval is received from Owner's representative. Replacement material shall be as indicated here unless otherwise indicated on Drawings:
    a. Soil subgrade replacement material: As indicated in drawings.

B. Aggregate Work Platform: Where indicated, install work platform on exposed foundation subgrade prior to allowing any vehicular traffic on subgrade.

C. Excavation Safety: All excavations shall be in accordance with OSHA requirements.

3.03 COFFERDAMS

A. Install and remove cofferdams without disturbing the subgrade or marring the structure.

B. Pump or bail water as required for construction and inspection work, and to prevent hydrostatic uplift pressures when not accounted for in the cofferdam design.

3.04 WATER IN FOUNDATION EXCAVATIONS

A. General:

1. Prevent water infiltration into foundation excavations. Remove standing water from excavation prior to placing concrete. If removal of standing water is not possible due to continuous water infiltration, then contact Owner's representative for additional direction regarding placing concrete underwater.
2. Do not dewater a foundation excavation while placing concrete or for a period of at least 24 hours after concrete placement.

B. Rock Foundation Subgrade: If rock material becomes weathered due to water infiltration, then remove weathered material and provide rock replacement material to restore foundation subgrade elevation.

C. Soil Foundation Subgrade: If foundation subgrade becomes saturated do not disturb the subgrade. Wait for water to evacuate the subgrade and subgrade surface to adequately stiffen prior to placing concrete. If subgrade is disturbed, then wait until subgrade has dried out, excavate disturbed subgrade and provide replacement material as indicated above.

3.05 COMPACTED BACKFILL

A. General: Backfill excavated spaces and areas not occupied by the permanent structure.

1. Backfill behind a retaining wall or basement-type wall shall not be placed until the concrete has reached its 28-day compressive strength or 7 days, whichever is longer.

2. Unless otherwise indicated on Drawings, structures with a top slab shall not backfilled until the top slab has been in place at least 4 days.

3. Structures with soil on opposing (opposite) sides shall be backfilled to prevent uneven loading of the structure – evenly raise backfill on opposing sides of the structure. The maximum differential backfill height between opposing sides is 1 foot.

4. Do not permit rollers to operate within 3 feet of structures.

5. Maximum Loose Lift Height:

a. Heavy Compaction Equipment: 8 inches.

b. Hand-Directed Compaction Equipment: 4 inches.

6. Previous Compacted Layer: If backfill placement occurs over a period of time greater than 24 hours, then scarify and recompact the previous day's final compacted layer.

a. Scarify and Recompact: 6-inch depth; adjust the moisture content; recompact.

b. Saturated subgrades shall not be worked on until sufficiently dry and harden so as not to be rutted with compaction equipment. Scarify and recompact layers damaged by weather or construction equipment.

B. Moisture: Prior to compacting backfill, mix and aerate or water the loose lift backfill material as necessary to adjust the moisture content and evenly distribute throughout. The material shall contain moisture within the limits specified below.

1. In accordance with ASTM D6938, determine the optimum moisture content for the maximum dry density.

2. Backfill moisture content shall be as indicated in Table 1, "Compacted Fill."

3. Aggregate fill: Completely cohesionless materials, shall be at a moisture content which will allow use of the specified compaction equipment and consistent achievement of the specified density.

C. Compaction: As required to achieve the specified density, increase the number of passes above the minimum specified and/or modify the weight of the equipment.

1. Determine the maximum dry density in accordance with ASTM D698 for cohesive soils and ASTM D4253 for cohesionless soils.

2. Minimum number of passes for all compacted fill types: 8.
3. Cohesive Soils: A tamping compactor or tamping compactor followed by a pneumatic roller shall be used.
4. Cohesionless or low cohesive soils: A vibratory roller or vibratory plate compactors shall be required if the material is cohesionless or with less than 15 percent passing the No. 200 sieve. Confirm applicability of vibratory compaction equipment in the field.
5. Overlap passes a minimum of 1 foot for heavy compaction equipment and 50 percent of the baseplate width for hand-directed equipment.
6. Backfill density shall be as indicated in Table 1, "Compacted Fill."

Table 1: Compacted Fill

Backfill Type	Density[1,2]	Moisture Content[3, 4]	Comments
Structural Fill	95%	-2% to +2%	N/A
Subgrade	95%	-2% to +2%	N/A

[1] The percentage indicated is the minimum required percentage of the maximum dry density as determined by the applicable ASTM.
[2] Below Vehicular Pavement: Scarify to a depth of 8, moisture condition, and recompact to not less than 100 percent of the maximum dry density.
[3] Range indicated is the acceptable tolerance with respect to the optimum moisture content.
[4] Completely cohesionless materials, shall be at a moisture content which will allow use of the specified compaction equipment and result in consistent achievement of the specified density.

3.06 FIELD QUALITY CONTROL

A. Contractor is responsible for the costs involved in providing an approved testing agency to perform quality control testing of backfill operations and verification of subgrade bearing material. The testing laboratory shall make tests of in-place density and moisture in accordance with ASTM Standards previously mentioned in this Section. The testing agency shall monitor backfill operations continuously or at intervals acceptable to the Owner's representative. It shall be the responsibility of the Contractor to notify the testing agency a minimum of two business days before backfill operations begin.

1. Unless noted otherwise, in-place density tests shall be conducted at a rate of one test per 3000 square feet for every lift.

END OF SECTION

31 23 19.01 CARE OF WATER DURING CONSTRUCTION

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment and incidentals necessary to operate pumps, piping and other facilities to assist in the removal of surface water, stormwater runoff, and ground water, and provide protection of the work site from water of any source. Build and maintain the necessary temporary cofferdams, berms, diversions, impounding works, channels and ditches to protect the work site from lake levels and spillway discharges, streamflow, and stormwater runoff. Remove the temporary works, equipment, and materials after completion in accordance with this Section and the applicable Drawings.

1.02 SUBMITTALS

A. Submittals shall be in accordance with Section 01 33 00 “Document Management” and shall include:

1. Plans and procedures for handling flood flows, stormwater runoff, and dewatering excavations for approval by the Engineer. Modifications to these plans shall also be submitted for approval by the Engineer.

2. Plans shall include a demonstration that any coffer dams or diversions provide at least 10-year flood protection for protected structures under construction. The 10-year Water Surface Elevation (WSE) at Sabine Pass (NOAA Station 8770570) is approximately 1.2 meters (3.9 ft) above Mean High Higher Water (MHHW) or 4.71 ft NAVD88 (using Sabine Pass Station 8770822 datums).

3. **[Specify/list as necessary for each project.]**

B. Approval of submittals does not relieve the Contractor of full responsibility and liability for care of water during construction.

2.00 PRODUCTS (NOT APPLICABLE)

3.00 EXECUTION

3.01 FLOOD FLOWS AND OTHER SURFACE WATER

A. The Contractor is responsible for handling and diverting any flood flows, stormwater runoff, stream flows, or any other water, including groundwater encountered during the progress of the work. Build, maintain, and operate cofferdams, channels, flumes, sumps, berms, ditches, and other temporary works as needed to pass spillway discharge and divert stream flow or stormwater runoff water through or around the construction site and away from construction work while it is in progress. The handling of stormwater runoff should be coordinated with the erosion control plan, as described in Section 01 57 23 “Temporary Stormwater Pollution Control.” Unless otherwise approved by the Owner, a diversion must discharge into the same natural watercourse in which its headworks are located. Construct permanent Work in areas free from water. Full responsibility for the successful dewatering

of the work areas rests with the Contractor. Remove protective works, after they have served their purpose, in a manner satisfactory to the Owner or its representative.

3.02 DEWATERING EXCAVATED AND OTHER FOUNDATION AREAS

A. Contractor is responsible for dewatering foundations for all areas during construction of the Project, including areas of required backfills. Lower the water table as needed to keep work areas free of standing water or excessively muddy conditions as needed for proper performance of the construction work. Furnish, prepare, and maintain drains, sumps, casings, well points, and other equipment needed to dewater areas for required construction work. Any dewatering method that causes a loss of fines from foundation areas shall not be permitted. Keep available standby equipment to ensure the proper and continuous operation of the dewatering system. Provide continuous monitoring (24 hours per day) of the dewatering system to ensure continuous operation.

B. Construction modifications in the dewatering system may be required by the Engineer to provide adequate performance. In the event of failure of the system, flooding of the excavation may be ordered by the Engineer until the system is operative.

3.03 DEWATERING BORROW AREAS

A. Unless otherwise specified on the Drawings, maintain the borrow areas in drainable condition or otherwise provide for timely removal of surface waters that accumulate, for any reason, within the borrow areas.

3.06 HISTORICAL INFORMATION

B. For the 9-year period of available data from NOAA Station 8770822 at Sabine Pass, the estimated average, maximum, and minimum water level elevation at the site are:

Months	Elevation (ft, NAVD88)		
	Average Daily High	Maximum	Minimum
January	0.89	2.76	-4.13
February	0.88	2.41	-4.19
March	1.12	2.73	-3.17
April	1.44	3.49	-2.92
May	1.57	3.91	-2.99
June	1.54	3.55	-2.30
July	1.21	2.86	-2.76
August	1.31	4.79	-3.09
September	1.71	3.83	-1.33
October	1.77	3.82	-3.52
November	1.48	3.30	-2.78

Months	Elevation (ft, NAVD88)		
	Average Daily High	Maximum	Minimum
December	1.12	2.88	-3.97

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. No measurements are required.

A1.02 PAYMENT

Note to Specifier: Specification writer needs to complete this.

A. Payment for the work covered under this Section will be made at the lump sum price bid for "Care of Water During Construction", which payment shall constitute full compensation for all costs of furnishing the labor, equipment, and materials for any temporary diversions and drainage channels, installing pumps and other dewatering equipment as required, maintaining the work area free from water, and removing the temporary protective works as needed to comply with this Section. Partial payments will be made based upon the number of days **bid**for the Contract and the number of contract days completed. If the contract term is changed by Change Order, the remaining portion of the lump sum will be divided over the remaining term of the Contract for partial payments.

END OF APPENDIX A

31 23 23.34 FLOWABLE FILL

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment, and incidentals necessary to mix and place flowable fill, consisting of Portland cement, fine aggregate, fly ash, and water in the proper proportions as specified hereinafter. Flowable fill (Controlled Low-Strength Material, CLSM) shall be used to bed and backfill around piping, utilities, and structures where indicated.

1.02 QUALITY ASSURANCE

A. Design Criteria – Flowable Fill Proportions and Consistency: Flowable fill shall be proportioned to give the necessary workability, strength, and consistency, and shall conform to the following governing requirements:

1. Permeability: Maximum permeability limit of $1x10^{-6}$ cm/sec. This limit shall apply at all locations where flowable fill is used as a utility trench plug (dam) within trench backfill materials.
2. Subsidence: Evaporation of bleed water shall not result in shrinkage of more than 10.4 mm per m (1/8 inch per ft.) of flowable fill depth. Measurement of a Final Bleeding shall be as measured in Section 10 of ASTM C940.
3. Strength for Excavatable Flowable Fill: Unconfined compressive strength at 28-days when tested in accordance with ASTM D4832: 100 psi (+/- 50 psi).
    a. Long-term strengths (greater than 90 days) shall not exceed 150 psi.
    b. Where indicated provide Excavatable Flowable Fill around utilities, unless noted otherwise.
    c. Excavatable Flowable Fill shall be excavatable with hand tools and conventional machinery such as backhoes.
4. Strength for Non-Excavatable Flowable Fill: Unconfined compressive strength at 28-days when tested in accordance with ASTM D4832: 150 psi minimum.
    a. Where indicated provide Non-Excavatable Flowable Fill below structures and/or around structures, unless noted otherwise.
5. Fluidity: Flowable fill shall be self-consolidating and non-segregating in accordance with ASTM C1611:
    a. Slump Flow Test: Minimum 20-inch mean spread.
    b. Visual Stability Index (VSI) Test: Less than or equal to 1.
6. Density, minimum: 100 pcf

B. Factory Testing: The Contractor shall be responsible for the design of the material. A trial mix shall be designed by an independent testing laboratory, retained by the Contractor. The testing laboratory shall submit verification that the materials and proportions of the trial mix design meets the requirement of the Specifications. In lieu of trial mix design, Contractor may submit historical data for a mix design used successfully in previous similar

work. The Contractor shall not make changes in materials, either in gradation, source, or brand, or proportions of the mixture after having been approved, except by specific approval of the Engineer.

C. Owner Testing: It is the responsibility of the Contractor to achieve and maintain the quality of material required by this Section. However, the Owner may secure the services of an independent testing laboratory to verify the quality of the flowable fill. The Owner shall have the right to require additional testing, strengthening, or replacement of flowable fill which has failed to meet the minimum requirements of this Section.

1.03 SUBMITTALS

A. Submit mix design on each material required. Provide backup data as required below.

B. Submit historical or trial mix data and test results as a basis for mix design approval. Required data shall include:

1.04 STANDARDS AND REFERENCES

A. Materials shall meet recommendation for mix design and placement, as published by National Ready Mixed Concrete Association.

B. The applicable provisions of the following references and standards shall apply to this Section as if written herein in their entirety.

1. ASTM International (ASTM) Standards:

ASTM C33	Specification for Concrete Aggregates
ASTM C40	Test Method for Organic Impurities in Fine Aggregates for Concrete
ASTM C150	Specification for Portland Cement
ASTM C618	Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as Mineral Admixture in Portland Cement Concrete
ASTM C 940	Standard Test Method for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory
ASTM C 1611	Standard Test Method for Slump flow of Self Consolidating Concrete
ASTM D 4832	Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders

2.00 PRODUCTS

2.01 MATERIALS

A. Cement: ASTM C150, Type I or II.

B. Fly Ash/Pozzolans: ASTM C618, Class C.

C. Fine Aggregate: ASTM C33, fine aggregate.

1. ASTM C40: Aggregate shall not contain strong alkali, or organic material which gives a color darker than the standard color.

D. Water: Potable and in conformance with ASTM C1602 and ASTM C1602, Table 2.

E. Performance Additive: As required to meet specification requirements:

1. DaraFill by GCP Applied Technologies.
2. MasterCell 25 by Master Builders Solutions US LLC.
3. Sika Lightcrete Powder by Sika Corporation.
4. Approved equal.

F. Chemical Admixtures for Concrete per ASTM C 494, as required by performance requirements.

2.02 MIXES

A. In the determination of the amount of water required for mix, consideration shall be given to the moisture content of the aggregate. The net amount of water in the mix will be the amount added at the mixer; plus the free water in the aggregate; and minus the absorption of the aggregate, based on a 30 minute absorption period. No water allowance shall be made for evaporation after batching.

B. The methods of measurement of materials shall be such that the proportions of water to cement are closely controlled during the progress of the Work and easily checked at any time by the Owner's representative. To avoid unnecessary or haphazard changes in consistency, the aggregate shall be obtained from sources which will insure a uniform quality and grading during any single day's operation and they shall be delivered to the Work and handled in such a manner that the variation in moisture content will not interfere with the steady production of flowable fill of reasonable degree of uniformity. Sources of supply shall be approved by the Owner's representative.

C. All material shall be separately and accurately measured. All equipment for measurement of materials shall be subject to approval by the Owner's representative.

3.00 EXECUTION

3.01 INSTALLATION

A. Contractor shall give the Owner's representative sufficient advance notice before starting to place material in any area, to permit inspection of the area, and preparation for pouring.

B. Conduct the operation of depositing the material so as to form a well consolidated mass and so as not to develop air pockets in confined spaces.

C. Unless specified otherwise, flowable fill shall be uniformly placed to the depth shown on the Drawings. The fill shall be brought up uniformly to the top of excavation elevation or as otherwise indicated on the Drawings. Placement of flowable fill shall then cease and the fill protected from traffic for a period of not less than 72 hours.

1. To prevent pipe flotation place material in lifts or provide alternate means.
2. Around structures, material shall be placed in lifts. Lift depth shall not exceed one-tenth of total structure embedment into subgrade nor 4 feet, whichever is less.

3. When multiple lifts are required, material shall be allowed to harden before placing next lift. Hardening time varies with each mix. Verify flowable fill has reached a penetration number of 1500, in accordance with ASTM C 403, but not less than 3 hours.

D. The material shall be placed against undisturbed trench walls, and shall not be placed on or against frozen ground.

E. At time of placement the ambient temperature shall be 35 F and rising.

3.02 FIELD QUALITY CONTROL

A. An approved testing laboratory shall perform the quality control testing of backfill operations. The testing laboratory shall sample material in accordance with ASTM D5971. The testing laboratory shall monitor backfill operation continuously or at intervals acceptable to the Owner and Engineer at structures. It shall be the responsibility of the Contractor to provide sufficient advance notification to the testing laboratory before backfill operations begin.

1. Strength: A strength test is the average of two cylinders per ASTM D4832.

2. Fluidity: A fluidity test is a Slump Flow Test and a VSI Test per ASTM C1611.

3. For all tests required, at a minimum perform one test per day, but not less than one per 150 cubic yards.

END OF SECTION

31 32 19.15 GEOTEXTILE

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment and incidentals necessary to install geotextile. Use geotextile to provide for the following applications:

1. Protection/Erosion Protection:

a. Under bedding stone or riprap along channels, shores and waterways; or

1.02 QUALITY ASSURANCE

A. Design Criteria:

1. The geotextile fabric shall be inert to commonly encountered chemicals, hydrocarbons, mildew and rot resistant, resistant to ultraviolet light exposure, insect and rodent resistant, and conform to the properties in the following table.

2. The minimum average roll value (MARV) in the weakest principle direction for strength properties of any individual roll tested from the manufacturing lot or lots of a particular shipment shall be in excess of the minimum average roll value (MARV) in the weakest principle direction stipulated herein.

B. Packing and Identification Requirements: Provide the geotextile in rolls wrapped with protective covering to protect the fabric from mud, dirt, dust, and debris. The fabric shall be free of defects or flaws which significantly affect its physical properties. Label each roll of fabric in the shipment with a number or symbol to identify that production run.

C. Sampling and Compliance Requirements: A competent laboratory must be maintained by the producer of the fabric at the point of manufacture to ensure quality control in accordance with ASTM testing procedures. The laboratory shall maintain records of its quality control results and provide a manufacturer's certificate upon request to the Engineer prior to shipment. The certificate shall include:

1. Name of manufacturer.

2. Chemical composition.

3. Product description.

4. Statement of compliance to specification requirements.

5. Signature of legally authorized official attesting to the information required.

1.03 SUBMITTALS

A. Submittals shall be in accordance with Section 01 33 00 "Document Management" and shall include:

1. Submit Manufacturer's certificate as stipulated in Paragraph **1.02.C**.

2. Samples.

2.00 PRODUCTS

2.01 MATERIALS

A. Geotextile: Non-woven fabric composed of polypropylene fibers, formed into a stable network by needle punching.

3.00 EXECUTION

3.01 INSTALLATION

A. Protection/Erosion Protection:

1. Exposure of geotextiles to the elements between laydown and cover shall be a maximum of 14 days to minimize damage potential. Install the geotextile fabric in accordance with the Drawings. Construction vehicles will not be allowed to traffic directly on the fabric. Place and anchor geotextile on a smooth graded surface approved by the Engineer. The geotextile shall be placed so that placement of the overlying materials will not excessively stretch or tear the fabric. Anchoring of the terminal ends of the geotextile shall be accomplished through the use of key trenches or aprons at the crest and the toe of the slope. Successive geotextile sheets shall be overlapped so that the upstream sheet is placed over the downstream sheet and/or upslope over downslope. In underwater applications, the geotextile and required thickness of backfill material shall be placed the same day. The geotextile shall be placed so that placement of the overlying materials will not excessively stretch or tear the fabric. Overlaps when necessary shall be 12 inches minimum except when placed under water where the overlap shall be a minimum of 36 inches. Use securing pins when necessary to ensure proper anchoring of the fabric, with securing pins spaced at 5- to 10-foot centers. Securing pins shall be 3/16-inch steel bars, pointed at one end and fabricated with a head to retain a steel washer having an outside diameter of not less than 1-1/2 inches. The pin length shall not be less than 19 inches. U-shaped pins or special staples shall be an acceptable option, if approved by the Engineer. Damaged geotextile shall be repaired with geotextile patch placed over the damaged area and extended 3 feet beyond the perimeter of the tear or damage.

2. The backfill placement shall begin at the toe and proceed up the slope. Back-dump the aggregate onto the fabric and spread in a uniform lift maintaining design aggregate thickness. Avoid over-stressing the soil by utilizing equipment in spreading and dumping that exerts only moderate pressures on the soil. Severe rutting at the time of placement is an indication of over-stressing the soil. Such soil over-stressing must be avoided. Increasing aggregate depths and reducing loads are two methods of reducing pressures on the soil. Fill any ruts that develop during spreading or compacting with additional aggregate rather than blading from surrounding areas.

END OF SECTION

31 37 00 ROCK RIPRAP

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment, tools and incidentals necessary to produce and place the rock riprap and gravel bedding material.

1.02 SUBMITTALS

A. Submittals shall be in accordance with Section 01 33 00 “Document Management.”

B. Certified Test Reports: soundness (ASTM C88), gradation (ASTM C136/ASTM D5519), and unit weight (ASTM C127).

1.03 STANDARDS

A. Sampling and testing of material shall comply with the latest revision of the following except where specifically modified:

1. ASTM International (ASTM):

ASTM C88	Standard Specification for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium sulfate
ASTM C127	Standard Specification for Specific Gravity and Absorption of Coarse Aggregates
ASTM C136	Standard Specification for Sieve Analysis of Fine and Coarse Aggregates
ASTM D5519	Standard Test Methods for Particle Size Analysis of Natural and Man-Made Riprap Materials

1.04 DELIVERY AND STORAGE; ROCK RIPRAP STOCKPILE

A. Rock Riprap temporarily stockpiled for construction purposes shall be located in an area approved by the Owner. Rock riprap materials shall not be located so as to block or restrict equipment and vehicle access to existing structures.

2.00 PRODUCTS

2.01 MATERIALS

A. Gravel Bedding Material:

1. Gravel bedding material shall be crushed stone, gravel or a blend of crushed stone and gravel. Bedding material shall be composed of tough durable particles; shall be free from thin, flat, and elongated pieces; shall be well graded between the prescribed limits; and shall contain no organic matter or soft, friable particles in quantities considered objectionable by the Owner.

2. Gravel bedding material shall have a loss of less than 18 percent weighted average at five cycles when tested for soundness in magnesium sulfate in accordance with ASTM C88. The test shall be run using normalized gradation and standardized aggregate sizes.

The standardized aggregate size is shown in the Drawings. A minimum of one soundness test shall be performed on materials delivered to the Site.

3. Gravel bedding material shall have a gradation as shown on the Drawings when tested in accordance with ASTM C136. The material shall not be skip graded, scalped of certain sizes, or have other irregularities which would be detrimental to the proper functioning of the bedding. Acceptance of bedding material shall be based on in-place gradations.

B. Rock Riprap:

1. Stone for rock riprap shall be durable and of a suitable quality for permanence in the structure and in the climate which it is to be used. The stone shall be free from cracks, seams, and other defects which would tend to increase unduly its deterioration from natural causes and shall be reasonably well graded between the prescribed limits as specified herein.

2. Except as otherwise specified, the rock fragments shall be angular to subrounded. The least dimension of an individual stone fragment shall be not less than one-third the greatest dimension of the stone.

3. Rock riprap shall have a minimum unit weight of 155 pounds per solid cubic foot based upon the bulk specific gravity (saturated surface dry) when tested in accordance with ASTM C127. A minimum of one bulk specific gravity (saturated surface dry) shall be performed on rock riprap material delivered to the Site.

4. Rock riprap shall have a loss of less than 18 percent after five cycles when tested for soundness in magnesium sulfate in accordance with ASTM C88. A minimum of one soundness-in-magnesium sulfate test shall be performed on rock riprap material delivered to the Site.

5. Rock Riprap gradation shall be as shown on the Drawings. Acceptance of rock riprap material shall be based upon in-place gradations.

2.02

2.02 MANUFACTURED PRODUCTS

A. Geotextile Fabric: Geotextile fabric shall be as specified on the Drawings

3.00 EXECUTION

3.01 FOUNDATION PREPARATION

A. Trim and dress areas on which gravel bedding and rock riprap are to be placed to conform to cross-sections shown on the Drawings within an allowable tolerance of plus or minus 2 inches from the slope lines and grades shown on the Drawings. Where such areas are below the allowable minus tolerance limit, bring areas to grade with compacted fill similar to the adjacent material in accordance with Section 35 73 13.16 “Compacted Fill [Dams]” or with well compacted gravel bedding material.

3.02 GEOTEXTILE FABRIC

A. Store and place fabric as specified by the manufacturer. Place the geotextile fabric after the foundation is prepared and cover immediately with gravel bedding material.

B. Place fabric with the length running up and down the slope unless otherwise approved. The geotextile shall be placed so that placement of the overlying materials will not excessively stretch or tear the fabric. Anchoring of the terminal ends of the geotextile shall be accomplished through the use of key trenches or aprons at the crest and the toe of the slope.

C. Make a minimum 24-inch lap on all joints. Secure fabric with nails or pins. Use nails at least 2 inches long with washers or U-shaped pins with legs at least 9 inches long. Space nails or pins at a maximum of 10 feet in each direction and 5 feet along the seams. Alternative anchor spacing may be used when approved.

D. Construction vehicles will not be allowed to traffic directly on the fabric. Damaged geotextile shall be repaired with geotextile patch placed over the damaged area and extended 3 feet beyond the perimeter of the tear or damage.

3.03 GRAVEL BEDDING PLACEMENT

A. Uniformly spread gravel bedding material on the prepared surface, in a satisfactory manner, to the slope lines and grades indicated on the Drawings. Placing of material by dumping from top of slope or by any method which tends to segregate particle sizes within the layer shall not be permitted. Repair any damage to the prepared surface or geotextile fabric during placing of the gravel bedding before proceeding with the Work. Compaction of the gravel bedding will not be required, but it shall be finished to present a reasonably even surface free from mounds or windrows.

3.04 ROCK RIPRAP PLACEMENT

A. Place stone for rock riprap on the gravel bedding in such manner as to produce a reasonably well-graded mass of rock with the minimum practicable percentage of voids, and construct within the specified tolerance to the lines and grades shown on the Drawings or staked in the field. A tolerance of plus 6 or minus 0 inches from the slope lines and grades shown on the Drawings shall be allowed in the finished surface of the rock riprap. Place rock riprap to its full course thickness at one operation and in such a manner as to avoid displacing the gravel bedding material. Distribute the larger stones evenly and conform the entire mass of stones in their final position to the specified gradation.

B. The finished rock riprap shall be free from objectionable pockets of small stones and clusters of larger stones. Place rock riprap loads along horizontal rows and progress up the slope. Place each load against previously placed rock riprap. Placing rock riprap in layers shall not be permitted. Placing rock riprap by dumping from top of slope, dumping into chutes, or by similar methods likely to cause segregation of the various sizes shall not be permitted. The desired distribution of the various sizes of stones throughout the mass shall be obtained by methods of placement which produces the specified results. Rearrange individual stones by mechanical equipment or by hand to the extent necessary to obtain a reasonably well graded distribution of stone sizes. Maintain the rock riprap protection until accepted and replace any material displaced by any cause to the lines and grades shown on the Drawings.

C. Rock riprap shall be placed in a manner to prevent damage to structures. Hand placing is required as necessary to prevent damage to any new and existing structures.

3.05 FIELD QUALITY CONTROL TESTING

A. Contractor shall be responsible for providing all testing, including gradation, unit weight, and soundness tests, for the Owner's review of the rock riprap and gravel bedding source prior to approval of the rock riprap for use. Contractor shall bear all costs, including additional testing, of the correction of materials which fail to meet the requirements of the Contract Documents.

A. Contractor shall be responsible for providing all testing to demonstrate compliance with the requirements of the Contract Documents. Particle size analysis shall be performed in accordance with ASTM D5519, Test Method A or B. The analysis shall be performed at the work site on a test pile of representative rock. The mass of the test pile shall be at least 20 times the mass of the largest rock in the pile. The results of the test shall be compared to the gradation required for the Project prior to beginning placement. Test pile results that do not meet the construction specifications shall be cause for the rock to be rejected. The test pile that meets contract requirements shall be left on the job site as a sample for visual comparison. The test pile shall be used as part of the last rock riprap to be placed..

END OF SECTION

APPENDIX A

A1.00 MEASUREMENT AND PAYMENT

A1.01 MEASUREMENT

A. Measurement for Rock Riprap (or Gravel Bedding) shall be to the neat lines and grades indicated on the Drawings or as modified by the Owner, and on the basis of the prescribed thickness measured perpendicular to the slope or surface on which it is placed.

B. Geotextile fabric shall be measured by the square yard of material placed in accordance with the Contract Documents. No allowance will be made for material in laps, seams or anchor trenches.

A1.02 PAYMENT

A. Rock Riprap: Payment for rock riprap material shall be made at the unit price bid per cubic yard for "Rock Riprap" which payment shall be full compensation for labor, equipment and materials, and for performing all operations necessary to furnish, transport, haul, handle, place, and test the rock riprap as specified and as indicated on the Drawings.

END OF APPENDIX A

31 41 16 - STEEL SHEET PILING

1.00 GENERAL

1.01 SCOPE

The work covered by this section consists of furnishing all plant, equipment, labor, and materials and performing all operations in connection with the installation steel sheet piling.

1.02 RELATED WORK SPECIFIED

A. Section 05 50 00 “Metal Fabrications”.

1.03 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

B. American Society for Testing and Materials (ASTM INTERNATIONAL)

1. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel
2. ASTM A 328/A 328M-Standard Specification for Steel Sheet Piling
3. ASTM A 572/A 572M -Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel

1.04 QUALITY ASSURANCE

A. Requirements for material tests, workmanship, and other measures for quality assurance shall be as specified herein and in Section 05 50 00 Metal Fabrications.

B. Materials Tests: Sheet piling and appurtenant materials shall be tested and certified by the manufacturer to meet the specified chemical, mechanical, and section property requirements prior to delivery to the site.

1.05 SUBMITTALS

Submit the following in accordance with Section 01 33 00 Submittal Procedures:

A. Shop Drawings:

Shop drawings for sheet piling, including fabricated sections, shall be submitted for approval and shall show complete piling dimensions and details, installation sequence, and location of installed piling. Shop drawings shall include details and dimensions of templates and other temporary guide structures for installing piling and shall provide details of the method of handling piling to prevent permanent deflection, distortion, or damage to piling interlocks.

B. Product Data:

Complete descriptions of sheet piling installation equipment, including hammers, extractors,

protection caps, and other installation appurtenances, shall be submitted for approval prior to commencement of work.

C. Test Reports:

Installation records of the sheet piling installation operations shall be submitted after installation is completed. These records shall provide a system of identification that shows the disposition of approved piling in the work, installation equipment performance data, piling dimensions, and top and bottom elevations of installed piling. Submit electronic file (pdf) of installation log for each pile installed, plus an electronic text file for the log.

D. Certificates:

Materials test certificates shall be submitted for each shipment and identified with specific lots prior to installing piling. Identification data should include piling type, dimensions, section properties, heat analysis number, chemical composition, mechanical properties, and mill identification mark.

1.06 QUALITY CONTROL

A. General

The Contractor shall establish and maintain quality control for pile installation records and operations to ensure compliance with contract specifications and maintain records of his quality control for all construction operations, including, but not limited to, the following:

1. Accurate location, alignment and plumbness of piling.
2. Full and proper engagement of interlocks.
3. Equipment descriptions of sheet piling installation equipment to be used.
4. Installation (equipment used).
5. Final position; depth of penetration; tip and cut-off elevations.
6. Uplift and vertical tolerances after installation.
7. Location and elevation of any obstruction encountered, and action directed by the Engineer.
8. Length of cover plate and weld size.
9. Manufacture of fabricated sections.
10. Cutting and splicing (welding).
11. Stockpiling and storage.
12. Removal and disposal of damaged piles.

B. Reporting: The original and an electronic copy (pdf) of these records and tests, as well as the records of corrective action taken, shall be furnished to the Engineer daily. Format of the report shall be as prescribed in Section 01 40 00 Quality Requirements.

1 07 DELIVERY, STORAGE AND HANDLING

A. Materials delivered to the site shall be new and undamaged and shall be accompanied by materials test certificates. The manufacturer's logo and mill identification mark shall be provided on the sheet piling. Sheet piling shall be stored and handled in the manner recommended by the manufacturer to prevent permanent deflection, distortion, or damage to the interlocks. Storage of sheet piling should also facilitate required inspection activities.

2.00 PRODUCTS

2.0.1 STEEL SHEET PILING

A. Steel for sheet piling shall conform to the requirements of ASTM A 328/A 328M and ASTM A 572/A 572M, Grade 50. Sheet piling, including special fabricated sections, shall be of the type and dimensions indicated on the shop drawings, and be of a design such that when in place, they will be continuously interlocked throughout their entire length. All sheet piling shall be provided with standard pulling holes located approximately 4 inches below the top of the pile, unless otherwise shown or directed. Steel sheet piling shall be hot rolled and shall have the properties equivalent to those listed in the following table:

Section Properties

Type of Section	Nominal Web Thickness (inches)	Section Modulus of Wall (in^3/ft)	Moment of Inertia of Wall (in^4/ft)	Nominal Section Width (inches)
NZ 26	0.5	48.5	419.9	27.56

2.0.2 SHEET PILING LENGTHS

A. All new sheet piling shall be provided in full lengths.

2.0.3 ROLLED CORNERS

A. Rolled corners, formed with new sheet piling, shall be of the types and dimensions shown on the drawings. Any proposed variations from the details shown on the drawings shall be submitted for approval of the Engineer. The sheet pile types shall be as required for the corners being manufactured and shall conform to the requirements of ASTM A 328/A 328M and all other requirements stated above for new piling.

2.0.4 FABRICATED SECTIONS

A. Fabricated sections, including special corners, transition piles, and tee sections, shall conform to the requirements stated herein, the details shown on the drawings, and the piling manufacturer's recommendations for fabricated sections. Metalwork fabrication for sheet piling sections shall conform to the requirements of 05 50 00 Metal Fabrications. Steel plates and angles used to fabricate the special sections shall conform to ASTM A 36/A 36M.

3.00 EXECUTION

3.01 INSTALLATION

A. General

1. All welding or gas cutting shall be in accordance with the current standards of the American Welding Society (AWS D1.1).

2. Virtual Refusal:

   a. Steel sheet piling shall be driven to the depths shown on the drawings or to virtual refusal.

   b. Virtual refusal is defined as ten (10) blows per inch with an approved pile hammer.

   c. A pile hammer shall be used to determine virtual refusal.

   d. The hammer shall be operating at the manufacturer's recommended stroke and speed when virtual refusal is measured.

B. Placing and Installation

1. Placing

   Any excavation required within the area where sheet pilings are to be installed shall be completed prior to placing sheet pilings. Pilings shall be carefully located as shown on the drawings or directed by the Engineer. Piles shall be placed in a plumb position with each pile interlocked with adjoining piles for its entire length, to form a continuous diaphragm throughout the length of each run of piling wall. Interlocks shall be properly engaged.

2. Installation

   All piles shall be installed to the depths shown on the drawings and shall extend to the cut-off elevation indicated. A tolerance of 1-1/2 inches above or below the indicated cut-off elevation will be permitted. The Engineer shall be immediately notified of any deviation from the indicated cut-off elevation for the bottom of the installed pile that is outside the specified tolerance. Pilings shall be installed by compliance confirmed methods so as not to subject the pilings to damage and to ensure proper interlocking throughout their lengths.

   Adequate precautions shall be taken to ensure that piles are installed plumb. Sheet piling shall not be installed more than 1/8 inch per foot out of plumb in the plane of the wall nor more than 1/8 inch per foot out of plumb perpendicular to the plane of the wall. If at any time the forward or leading edge of the piling wall is found to be out-of-plumb more than 1/8 inch per foot in the plane of the wall or 1/8 inch per foot perpendicular to the plane of the wall, the assembled piling shall be installed to the required depth and tapered pilings shall be provided and installed to interlock with the out-of-plumb leading edge or other compliance confirmed corrective measures shall be taken to ensure the plumbness of succeeding pilings. The maximum permissible taper for any tapered piling shall be 1 1/4 inch per foot of length.

C. Sheet Piling Driving:

1. Steel sheet piling shall be assembled before driving and then driven as a continuous wall, progressively in stages to keep the piles aligned correctly and minimize the danger of breaking the interlock between the sheets.

2. Steel sheet piling shall be driven to form a tight bulkhead.

3. A driving head shall be used and any piling which is damaged in driving, or which has broken interlocks between sections shall be pulled and replaced at contractor's expense.

4. The piling shall be driven within the following tolerances:

   a. Alignment:

      1. Sheet pile shall be driven to form a relatively straight line between the termini points shown on the drawings.
      2. Horizontal deviation of any point from a straight line connecting the two ends of the wall section shall be a maximum of six (6) inches.

   b. Plumbness: Each individual sheet pile section shall be driven vertical, within a horizontal tolerance of two percent (2%) of any vertical length measured along the pile.

   c. Elevation:

      1) Tops of sheet pile sections shall be within a tolerance of one (1) inch from plan elevations.
      2) contractor shall not be paid for excess sheet pile trimmed off the end of the pile to meet final grade.

D. Cutting Off and Splicing

1. Piles extending above grade in excess of the specified tolerance, and which cannot be installed deeper, shall be cut off to the required grade. The Contractor shall also trim the tops of piles excessively battered during installation, when directed to do so, at no cost to the Owner. Cut-offs shall become the property of the Contractor and shall be removed from the worksite.

2. Piles installed below the elevations indicated for the top of piles and piles which, because of damaged heads, have been cut off to permit further installation and are then too short to reach the required top elevation, shall be extended to the required top elevation by welding an additional length, when directed, without cost to the Owner.

3. Should splicing of additional lengths be necessary, the splice shall consist of an approved butt joint with a weld that fully penetrates the web. Welded extensions shall be a minimum of 6

inches in length.

4. Piles adjoining spliced piles shall be full length unless otherwise approved. Splices for these piles shall conform to the details shown on the drawings. Welding of splices shall conform to the requirements of Section 05 50 00 Metal Fabrications.

5. The Contractor may cut or burn holes in the piles for bolts, reinforcing steel, rods, drains, or utilities at locations and of sizes shown on the drawings or as directed. All cutting shall be done in a neat and workmanlike manner. Bolt holes in steel piling shall be drilled or may be burned and reamed by compliance confirmed methods, which will not damage the remaining metal. Holes, other than bolt holes, shall be reasonably smooth and of the proper size for rods and other items to be inserted.

E. Inspection of Piling

The Contractor shall inspect the interlocked joints of pilings extending above ground. Pilings found to be damaged or installed out of interlock shall be removed and replaced.

F. Painting

The top 8-inch length of sheet pile shall be unpainted. Twelve (12 feet) of the upper portions of the sheet pile beginning 8 inches down from the top of the pile, shall be painted with coal-tar epoxy as indicated in the drawings. The unpainted portion of steel sheet pile which shall be embedded in concrete shall be free from surface contaminants such as oil, loose particles, or similar debris that would inhibit bonding between the concrete and piling.

G. Contractor shall brace and/or provide soil grading as necessary during construction operations in order to provide lateral stability for the sheet pile wall. The sheet pile wall has been designed for the soil grades of the final configuration denoted on the drawings only. Other temporary configurations during the construction period shall not be allowed.

H. Care shall be taken during driving to keep from causing deformations of the top of the piles, splitting of section, or breaking of the interlock between sections. Care shall also be taken during driving to prevent and correct any tendency of steel sheet piles to twist or get out of plumb.

I. Steel Z piling shall be driven with the ball-end leading. Proper care and planning shall be used to allow for this construction procedure in both immediate and possible future walls.

J. Alternate Z piles shall be reversed end for end for proper interlocking in the “normal” position. Piles shall also be aligned properly to maintain a “normal” driving width.

K. For sheet piles driven into the native soils, pre-drilled soils, or excavated soils a vibratory driver may be used as long as the required depth is obtained.

L. Steel sheet pile that is full length as shown on the drawings and is required to be driven below the specified cutoff elevation shall be spliced with additional steel sheet piling with a full penetration butt weld.

END OF SECTION

DIVISION 32

EXTERIOR IMPROVEMENTS

32 11 23 AGGREGATE BASE COURSES

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment and incidentals necessary to perform operations in connection with the construction of flexible base. Flexible base shall consist of a foundation for a road surface or for other courses. Construct the flexible base foundation course as specified herein in one or more courses in conformance with the typical sections, lines, and grades indicated in the plans.

1.02 SUBMITTALS

A. Submittals shall be in accordance with Section 01 33 00 “Document Management” and shall include:

1. Sieve analysis, liquid and plastic limits, and plasticity index of the material to be used as record data.

1.03 STANDARDS

A. The applicable provisions of the following standards apply as if written herein, in their entirety:

1. ASTM International (ASTM) Standards:

ASTM C131	Test Methods for Resistance to Degradation of Small-Size Course Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM D4318	Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

1.04 DELIVERY AND STORAGE

A. Deliver materials in approved vehicles. Stockpile materials in locations that are acceptable to the Owner’s Representative and shape to drain.

2.00 PRODUCTS

2.01 MATERIALS

A. Base - General:

1. The materials shall be crushed or uncrushed as necessary to meet the requirements hereinafter specified, and shall consist of durable coarse aggregate particles mixed with approved binding materials. The material shall be approved by the Owner’s Representative.

2. Should the Contractor elect to produce the material from local pits, secure the material from the sources approved by the Owner’s Representative. The pits as utilized shall be opened in such a manner to immediately expose the vertical faces of the various strata of acceptable material and unless otherwise directed, the material shall be secured in

successive vertical cuts extending through the exposed strata, in order that a uniform mixed material will be secured.

B. Types:

1. Unless the type of material to be used is specified on the plans, the Contractor may use any one of the following types, provided the material proposed for use by the Contractor meets the requirements set forth in the specification test limits tabulation.

2. Type A - Crushed Limestone:

a. The material shall be obtained from approved sources, shall be crushed, and shall consist of durable particles of limestone mixed with approved binding materials. The material shall be approved by the Owner's Representative at the source. The processed material when properly slaked and tested by standard laboratory methods shall meet the following requirements:

Sieve Size	Percent Passing
1-3/4"	100
3/8"	40-80
No. 4	25-60
No. 40	15-35

b. The material when tested under "The Wet Ball Method for Determining the Disintegration of Flexible Base Materials" shall not develop more than 50 percent soil binder.

c. Materials passing the No. 40 sieve shall be known as "Binder" and shall meet the following requirements:

1). The liquid limit shall not exceed 40 when tested in accordance with ASTM D4318.

2). The plastic limit shall be determined by testing in accordance with ASTM D4318.

3). The plasticity index shall not exceed 12 nor be less than 4 when calculated in accordance with ASTM D4318.

4). The preparation of samples for testing according to ASTM D4318.

5). Materials retained on the No. 4 sieve shall have a percent wear of not more than 45 percent when tested in accordance with ASTM C131.

3. Type B - Processed Gravel:

a. The materials shall be obtained from approved sources and shall consist of durable particles of gravel mixed with approved binding materials. The material shall be approved by the Owner's Representative at the source. The processed material when properly slaked and tested by standard laboratory methods shall meet the following requirements:

Sieve Size Square Opening	Percent Passing
1-3/4"	40-80

Sieve Size Square Opening	Percent Passing
No. 4	40-80
No. 4	25-60
No. 40	15-35

b. Materials passing the No. 4 sieve shall be known as “Binder.” The portion of material passing the No. 40 sieve shall be known as “Soil Binder” and shall meet the following requirements:

1). The liquid limit shall not exceed 35 when tested in accordance with ASTM D4318.

2). The plastic limit shall be determined by testing in accordance with ASTM D4318.

3). The plasticity index shall not exceed 10 when calculated in accordance with ASTM D4318.

4). The preparation of samples for testing according to ASTM D4318.

5). Materials retained on the No. 4 sieve shall have a percent wear of not more than 55 percent when tested in accordance with ASTM C131.

4. Type C - Bank-Run Gravel:

a. The materials shall be obtained from approved sources and shall consist of durable particles of gravel mixed with approved binding materials. The material shall be free from thin or elongated pieces, lumps of clay, soil, loam, or vegetable matter. The material shall be approved by the Owner’s Representative at the source. The processed material when properly slaked and tested by standard laboratory methods shall meet the following requirements:

Sieve Size	Percent Passing
1-3/4”	95-100
No. 4	25-70
No. 40	15-35

b. Materials passing the No. 4 sieve shall be known as “Binder.” The portion of material passing the No. 40 sieve shall be known as “Soil Binder” and shall meet the following requirements:

1). The liquid limit shall not exceed 35 when tested in accordance with ASTM D4318.

2). The plastic limit shall be determined by testing in accordance with ASTM D4318.

3). The plasticity index shall not exceed 10 when calculated in accordance with ASTM D4318.

4). The preparation of samples for testing according to ASTM D4318.

5). Materials retained on the No. 4 sieve shall have a percent wear of not more than 55 percent when tested in accordance with ASTM C131.

3.00 EXECUTION

3.01 PREPARATION

A. In conformance with the typical sections, lines, and grades indicated, excavate and shape the road bed. Remove unstable or otherwise objectionable material from the subgrade and replace with approved material. Fill holes, ruts, and depressions with approved material. Sprinkle the subgrade, if necessary, and reshape and roll to the extent directed in order to place the subgrade in an acceptable condition to receive the base material. The surface of the subgrade shall be smooth and conform to line, grade, and typical sections. Prepare sufficient subgrade in advance to insure satisfactory prosecution of the work.

B. Utilize material excavated in the preparation of the subgrade in the construction of adjacent shoulders and slopes or otherwise disposed of as directed. Secure any additional material required for the completion of the shoulders and slopes from sources indicated or designated by the Owner's Representative.

C. Immediately before placing the base course material, check the subgrade for conformance with the grade and typical sections indicated. The surface of the subgrade shall not show deviation in excess of 1/4 inch in 5 feet in cross-section, nor 1/2 inch in 16 inches longitudinally.

3.02 PLACEMENT

A. Number of Courses: Where the base course exceeds 6 inches in thickness, construct the base course in two or more courses of equal thickness as indicated on the typical section.

B. Placing Types A, B, and C: Spread and shape the material deposited on the subgrade the same day. Move the material at least once from the original position in which it is deposited. In the event of inclement weather or other unforeseen circumstances which render impractical the spreading of the material during the first 24 hour period, scarify and spread the material as directed by the Owner's Representative. Sprinkle the material, if directed, and then blade, drag, and shape to conform to the typical section as indicated. Correct or replace and remove areas and "nests" of segregated course or fine material with well graded material as directed by the Owner's Representative. If additional binder is considered desirable or necessary after the material is spread and shaped, furnish and apply material in the amount directed by the Owner's Representative. Carefully incorporate such binder with the material in place by scarifying, harrowing, brooming, or by other approved methods.

C. First Course (Types A, B, and C): Sprinkle the course as necessary and compact to the extent necessary to provide not less than the percent density as hereinafter specified under "Density." In addition to the requirements specified for density, compact the full depth of the flexible base to the extent necessary to remain firm and stable under construction equipment. After each section and course of flexible base is complete, the independent testing laboratory shall make tests of the material. If the material fails to meet the density requirements, rework the material as necessary to meet the requirements. Throughout this entire operation, maintain the shape of the course by blading, and smooth the surface upon completion in conformity with the typical sections, lines, and grades indicated. On the surface of which pavement is to be placed, correct any deviation in excess of 1/4 inch in cross-section and in a length of 16 inches measured longitudinally by loosening, adding, or

removing material, reshaping, and re-compacting by sprinkling and rolling. Immediately correct irregularities, depressions, or weak spots which develop by scarifying the areas affected, adding suitable material as necessary, reshaping, and re-compacting by sprinkling and rolling. Should the base course, due to any reason or cause, lose required stability, density, and/or finish before the surfacing is complete, re-compact and refinish the base course at the Contractor's sole expense.

D. Succeeding Courses (Types A, B, and C): Use the same construction methods as prescribed for the first course. Prior to placing the surfacing on the completed base, "dry cure" the base to the extent directed by the Owner's Representative.

E. Density: The density of the flexible base material shall not be less than 95 percent maximum dry density as determined by ASTM D698. Perform testing of densities of compacted base in accordance with a method approved by the Owner's Representative.

F. Curb and Gutter: Place and compact paving types with flexible base under the curb and gutter at the same time and in the same operation as the flexible base under the pavement. Place the flexible base in 6-inch maximum courses. Place and compact the first course under both the curb and gutter and the pavement.

END OF SECTION

32 12 16 ASPHALT PAVING

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment and incidentals necessary to perform operations in connection with the construction of hot mix asphaltic concrete (HMAC) base course, leveling-up course and surface course or any other combination of these courses. Construct the pavement on the previously completed and approved subgrade, base, or existing pavement.

1.02 QUALITY ASSURANCE

A. Design Criteria: Use the services of an independent testing laboratory to prepare a mix design to comply with Texas Department of Transportation, Standard Specification Item 340 or may use a previously prepared mix design meeting the specification requirements with satisfactory substantiation of experience with the mix.

1.03 SUBMITTALS

A. Submittals shall be in accordance with Section 01 33 00 “Document Management” and shall include:

1. Mix design as record data.

1.04 STANDARDS

A. Hot mix asphaltic concrete (HMAC) pavement shall conform to the requirements of the current Texas Department of Transportation (TXDOT), Standard Specification for “Dense-Graded Hot Mix Asphaltic “, Item 340.

B. Asphaltic material shall comply with Texas Department of Transportation (TXDOT) Standard Specification Item 300.

1.05 DELIVERY AND STORAGE

A. Haul the asphaltic mixture to the job site in tight vehicles previously cleaned of foreign materials. Arrange the dispatching of vehicles so that all material delivered shall be placed and all rolling shall be completed during daylight hours. In cool weather, or for long hauls, canvas covers may be required. The inside of the truck body may be given a light coating of oil, if necessary, to prevent the asphaltic mixture from adhering to the body.

1.06 JOB CONDITIONS

A. Do not apply prime coat when the air temperature is below 50 F and falling, but may be applied when the air temperature is above 40 F and rising, the air temperature being taken in the shade and away from artificial heat. Do not place asphaltic material when general weather conditions, in the opinion of the Owner’s Representative are not suitable.

B. The asphaltic mixture shall be at a temperature between 225 and 350 F when dumped from the mixer. The Owner’s Representative shall determine the temperature, within the above

limitations. The mixture when dumped from the mixer shall not vary from the selected temperature more than 30 F.

2.00 PRODUCTS

2.01 MATERIALS

A. Aggregate: Conform to TXDOT Standard Specification Item 340. The Type "B" mixtures and at least three bins when producing Type "D" mixture. These bins shall contain the following sizes of aggregate, in percentages by weight or by volume, as applicable.

1. Gradation for base course or leveling-up course shall comply with Type B listed as follows:

a. Type "B" (Fine Graded Base Course):

Sieve Size	Percent Passing by Weight or Volume
1"	98-100
3/4"	84-98
5/8"	75-95
3/8"	60-80
No. 4	40-60
No. 8	29-43
No. 30	13-28
No. 50	6-20
No. 200	2-7
VMA percent minimum	12
The asphaltic material shall form from 3.5 to 7 percent of the mixture by weight unless specified otherwise on the plans.	

2. Gradation for surface course shall comply with Type D listed as follows:

a. Type "D" (Fine-Graded Surface Course):

Sieve Size	Percent Passing by Weight or Volume
1/2"	98-100
3/8"	85-100
No. 4	50-70
No. 8	35-46
No. 30	15-29
No. 50	7-20
No. 200	2-7

Sieve Size	Percent Passing by Weight or Volume
VMA percent minimum	14
The asphaltic material shall form from 4 to 8 percent of the mixture by weight unless specified otherwise on the plans.	

B. Asphaltic Materials: Comply with TXDOT Standard Specification Item 300. In general, the grade of asphalt shall be AC-10. Other grades of asphalt shall be considered if weather conditions or mix design appear to warrant a change. Prime coat shall comply with TXDOT Standard Specification Item 300, Grade MC-30. Tack coat shall meet the requirements of cutback asphalt RC-250.

2.02 EQUIPMENT

A. The equipment necessary for the construction of the hot mix asphaltic concrete pavement shall be on the project site and shall be approved by the Owner's Representative as to condition before the Contractor shall be permitted to begin construction operations on which the equipment is to be used. Equipment shall be maintained in good repair and operating condition.

B. Spreading and Finishing Machines:

1. The spreading and finishing machine shall be of a type approved by the Owner's Representative and capable of producing a surface that shall meet the requirements of the typical cross section and surface test.

2. Rollers:

a. Pneumatic Tire Roller: The roller shall consist of not less than seven pneumatic tire wheels, running on axles in such a manner that the rear group of tires shall cover the entire gap between adjacent tires of forward group; mounted in a rigid frame; and provided with a loading platform or body suitable for ballast loading. The front axle shall be attached to the frame in such a manner that the roller may be turned within a minimum circle. The tire shall afford surface contact pressures up to 90 pounds per square inch or more. The roller shall be so constructed as to operate in both forward and a reverse direction with suitable provisions for moistening the surface of the tires while operating; and shall be approved by the Owner's Representative.

b. Two-Axle Tandem Roller: The roller shall be an acceptable power-driven, steel-wheel tandem roller weighing not less than 8 tons. The roller must operate in forward and reverse directions; contain provisions for moistening the surface of the wheels while in motion; and shall be approved by the Owner's Representative.

c. Three-Wheel Roller: The roller shall be an acceptable power-driven, all steel three wheel roller weighing not less than 10 tons. The roller must operate in forward and reverse directions; contain provisions for moistening the surface of the wheels while in motion; and shall be approved by the Owner's Representative.

d. Vibratory Steel Wheel Roller: If approved for use by the Owner's Representative, this roller shall have a minimum weight of 6 tons. The compactor shall be equipped

with amplitude and frequency controls and shall be specifically designed to compact the material on which it is used. The roller shall be operated in accordance with the Manufacturer's recommendations.

3. Straightedges: The Contractor shall provide acceptable straightedges for the surface testing. Satisfactory templates shall be provided as required by the Owner's Representative.

3.00 EXECUTION

3.01 PREPARATION

A. Prime Coat: Apply a uniform coat of prime coat asphaltic material to the surface of the prepared subgrade, sub-base, or base, applied at a rate of not less than 0.30 gallons per square yard of surface. Apply a thin uniform coat of the prime coat material to contact surfaces of gutters, manholes, and other structures.

B. Tack Coat: Thoroughly clean the surface of the asphalt base course and apply a uniform coat of tack material meeting the requirements for cutback asphalt RC-250. Apply a tack coat when the surface to be paved is Portland cement concrete, brick, or asphaltic pavement. Apply the tack coat using sprayer at a rate not exceeding 0.05 gallons per square yard surface. Paint contact surfaces of curbs, gutters, vertical faces, and other structures in actual contact with asphaltic mixes with asphaltic material to provide a closely bonded, water-tight joint.

C. Compacted Thickness of Asphaltic Concrete Surface Courses and Base Courses:

1. Surface Course: The compacted thickness or depth of the asphaltic concrete surface shall be as indicated on the plans. Where the plans indicate a depth or thickness of the surface course greater than 2 inches compacted depth, same shall be placed in multiple courses of equal depth, each which shall not exceed 2 inches compacted depth. A tack coat is required between any of the multiple courses, and applied at the rate specified.

2. Base Course: The compacted thickness or depth of each base shall be as indicated. Where the plans indicate a depth or thickness of the course greater than 4 inches, same shall be accomplished by constructing multiple lifts of approximately equal depth, each of which shall not exceed these maximum compacted depths. An additional tack coat is required between any of the multiple lifts and must be applied at the rate specified.

3.02 PLACEMENT

A. Place the asphaltic mixture on an approved base course with the previously specified spreading and finishing machine in such a manner that, when properly compacted, the finished course shall comply with the maximum thickness requirements, shall be smooth, of uniform density and meet the requirements of the typical cross-sections and the surface test. During the placing and spreading of the asphaltic material, take care to prevent the spilling of the material onto adjacent pavement, gutters, or structures.

B. In small areas, which are inaccessible to the spreading and finishing machine, hand spreading may be authorized by the Owner's Representative, provided an acceptable surface can be obtained.

3.03 COMPACTION

A. Rolling with the three-wheel and tandem rollers shall start longitudinally at the sides and proceed toward the center of the surface course, overlapping on successive trips by at least half the width of the rear wheels. Alternate trips of the roller shall be slightly different in length. Rolling with the pneumatic tire roller shall be done as directed by the Owner's Representative. Rolling shall continue until no further compression can be obtained and all roller marks are eliminated. The motion of the rollers shall be slow enough at all times to avoid displacement of the asphaltic surface material. If displacement should occur, correct the situation at once by the use of rakes and fresh asphaltic mixtures. The roller shall not be allowed to stand on the surface course when it has not been fully compacted and allowed to cool. To prevent adhesion of the surface to the roller, the wheels shall be kept thoroughly moistened with water, but an excess of water shall not be permitted. Rollers must be in good mechanical condition. Take the necessary precautions to prevent the dripping of gasoline, oil, grease, or other foreign matter on the surface course while the rollers are in motion or when standing. In areas where surface course cannot be compacted with the roller, hand tamps, lightly oiled, shall be used to secure the required compaction.

B. With approval by the Owner's Representative, the vibratory steel wheel roller may be substituted for the three-wheel roller and tandem roller. Each course, after final compaction, shall contain from 5 to 9 percent air voids determined by TXDOT Test Method TEX207-F and TEX-227-F.

3.04 FIELD QUALITY CONTROL

A. Surface Tests: The finished surface of the pavement after compression shall be smooth and true to the established line, grade, and cross-section. When tested with a 16-foot straightedge placed parallel to the centerline of the roadway, the finished surface shall have no deviation in excess of 1/16 inch per foot from the nearest point of contact. The maximum ordinate measured from the face of the straightedge shall not exceed 1/4 inch at any point. Any point in the pavement surface not meeting these requirements shall be immediately corrected.

B. Pavement Thickness Test: Upon completion of the work and before final acceptance and final payment shall be made, pavement thickness test shall be made by the Owner or his authorized representative unless otherwise specified in the special provisions or in the plans. The number and location of tests shall be at the discretion of the Owner's Representative. The cost for the initial pavement thickness test shall be at the expense of the Owner. In the event a deficiency in the thickness of the pavement is revealed during normal testing operations, subsequent tests necessary to isolate the deficiency shall be at the Contractor's expense. The cost for the additional coring test shall be at the same rate charged by commercial laboratories.

END OF SECTION

32 91 19.13 TOPSOIL PLACEMENT AND GRADING

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment and incidentals necessary to place topsoil, free from rock and foreign material in areas designated to receive sodding or seeding.

2.00 PRODUCTS

2.01 TOPSOIL

A. General: The topsoil shall be fertile loam, easily cultivated and free from objectionable material, and shall have a relatively high erosion resistance and be readily able to support the growth of the planting, seeding, or sodding specified on the plans.

B. Sources:

1. The topsoil may be obtained from the right-of-way at sites of proposed excavation, or it may be obtained from sources outside the right-of-way, secured by the Contractor, and meeting the approval of the Engineer.

2. Topsoil required in addition to salvaged topsoil from the project shall be secured from approved off-site borrow sources. Excavated material from construction which is suitable for topsoil shall be salvaged and used before any topsoil is obtained from borrow source.

3.00 EXECUTION

3.01 INSTALLATION

A. Stockpile topsoil material at locations approved by the Owner's Representative. Remove any trash, wood, brush, stumps or other objectionable materials prior to placement. The source and stockpile areas shall be kept drained and in a neat and presentable condition. Place and spread topsoil to a uniform depth to provide 6-inch compacted depth, while maintaining drainage in areas to be seeded or sodded.

END OF SECTION

DIVISION 35

WATERWAY & MARINE CONSTRUCTION

35 24 00 DREDGING

1.00 GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment, and incidentals necessary to perform operations in connection with dredging and disposing of materials at the locations indicated on the Drawings.

B. The locations of the dredging limit lines, side sloping, and dredge disposal area are generally as shown on the Drawings.

1.02 QUALITY ASSURANCE

A. The quantity of dredging is estimated at approximately 401 cubic yards to meet the -7 feet North American Vertical Datum of 1988 (NAVD88) contour. This depth is within the originally permitted boat ramp depth that was previously dredged. The horizontal dredge extent along the shoreline is also within the originally permitted boat ramp dredged area. The project is being permitted under Nationwide Permit (NWP) 3 Maintenance, which allows removing accumulated sediment only under certain conditions tied to the original use and configuration of the existing facility and a limited amount outside of it. Adherence to the depth and extent shown on the Drawings is critical to using NWP 3. Quality control of dredging depth and extent shall be maintained by the Contractor through using surveys and carefully managing the position of dredge equipment and excavating ends to stay within the extents shown on the Drawings.

B. Quality of dredging will be determined by the After Dredge survey referenced in Section 1.03. Given the small quantity, it is up to the Contractor to determine whether progress surveys are warranted or practical or if periodic depth probing is required to control dredging to the planned grading and limits. Contractor should consider the positioning tolerance of the excavating end of dredging equipment in developing a survey or depth probing approach.

1.03 SUBMITTALS

A. Pre-Dredge Survey – Existing contours shown on Drawings are for information purposes and represent conditions at the time the bathymetric survey was performed in December 2021. Perform a pre-dredging bathymetric survey of existing conditions including the existing underwater contours to an extent at least 40 feet surrounding the dredge extent shown on the Drawings, referenced to the Plan vertical datum. Contractor shall provide description of methods and equipment to be used for the required surveys and quality control and quality assurance (QA/QC) procedures to be applied. Contractor shall provide documentation that survey equipment meets the recommended depth accuracy standards for Coastal Shallow Draft Projects shown in Table 3-1 of Engineer Manual (EM) 1110-2-1003, Hydrographic Surveying.

B. Submit a workplan for mobilizing and demobilizing the dredge equipment including where the floating plant needs to be loaded and unloaded on water if applicable. Indicate general descriptions of the type of equipment planned to be used for loading and unloading and locations for planned access to water for transporting the equipment.

C. Submit a dredging execution plan with the following elements at a minimum:

1. Include dredge method specific equipment proposed (type, vessel names, identification or model number etc. as applicable), the planned route for transporting material to the disposal site designated on the Drawings, whether by pipeline or bulk transport.

2. Provide the planned method of dewatering. The planned method of dewatering should include the technology and type of dewatering method, specific dewatering equipment used (e.g. plant, dewatering container) with manufacturer, model numbers, and either literature or certifications for the achievable return water quality.

3. Provide a plan for routing return water to the appropriate drainage paths, ditches etc. draining offsite and any stormwater pollution prevention plan controls anticipated to be needed to maintain water quality and prevent excessive erosion from return water flow.

D. After Dredge Survey – Perform an after-dredging bathymetric survey to demonstrate the proposed grade and contours on the Drawings have been achieved. The same minimum survey extents and accuracy standards for the Pre-Dredge Survey shall apply.

2.00 PRODUCTS

2.01 EQUIPMENT

A. Dredging equipment shall be the responsibility of the Contractor. No jet, water injection, or other forms of agitation dredging that simply dislodged dredged material into the water column without any capture shall be used. Mechanical or hydraulic dredging methods are acceptable.

B. Equipment used in transporting material to the disposal site is the responsibility of the Contractor.

3.00 EXECUTION

3.01 DREDGING

A. Dredge to the vertical and horizontal limits shown on the Drawings.

B. Dredge the side slopes no steeper than ratio shown on the Drawings, or to the natural angle of repose if shallower slopes develop during dredging.

3.02 DISPOSAL

A. No use of soil disturbing earthwork berms shall be used in the designated placement area shown in the Drawings to dewater material. Other self-contained means of dewatering shall be used. Examples are geotextile containers and packaged dewatering plants.

B. Dredged material shall be disposed of in the dredged material placement area indicated in the Drawings, and placed and spread as indicated in the Drawings.

C. Any debris, such as timber, wire, fishing line, metal or other non-sediment material excavated from the dredged footprint will become the responsibility of the Contractor to dispose of properly.

END OF SECTION

PART A
GEOTECHNICAL REPORT

TOLUNAY-WONG ENGINEERS

GEOTECHNICAL REPORT
MESQUITE POINT PUBLIC BOAT RAMP AND JETTIES
SABINE LAKE AND INTERCOASTAL WATERWAY
JEFFERSON COUNTY
PORT ARTHUR, TEXAS

Prepared for:

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April 21, 2022

TWE Project No. 21.23.148 / Report No. 129140

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April 21, 2022

Freese and Nichols, Inc.
10431 Morado Circle No. 300
Austin, Texas 78759

Attn: Mr. Carl Sepulveda, P.E.
Carl.Sepulveda@freese.com

Ref: Geotechnical Report
Mesquite Point Public Boat Ramp and Jetties
Sabine Lake and Intercoastal Waterway
Jefferson County
Port Arthur, Texas
TWE Project No. 21.23.148 / Report No. 129140

Dear Mr. Sepulveda,

Tolunay-Wong Engineers, Inc. (TWE) is pleased to submit this report of our geotechnical study performed for the above referenced project. This report contains a detailed description of field and laboratory work performed for this study as well as our geotechnical design and construction recommendations for the referenced project.

The information and recommendations provided in this report supersede and replace all previous information and recommendations transmitted by TWE on the project. We appreciate the opportunity to work with you on this phase of the project and look forward to the opportunity to provide additional services as the project progresses. If you have any questions regarding this report or if we can be of further assistance, please contact us.

Sincerely,

TOLUNAY-WONG ENGINEERS, INC.
TBPELS Firm No. F-124

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1 INTRODUCTION AND PROJECT DESCRIPTION

1.1 Introduction

This report presents the results of the geotechnical study performed for the Mesquite Point Public Boat Ramp and Jetties (MPPBR) within Sabine Lake and Intercoastal Waterway in Port Arthur, Texas. Our study was conducted in general accordance with TWE Proposal No. P21-B215 dated June 16, 2021 and authorized by issuance of a Freese and Nichols Master Subconsultant Agreement dated November 29, 2021.

1.2 Project Description

The project consists of the replacement of an existing boat ramp with a new concrete boat ramp with finger piers, as well as the installation of new rock jetties for Jefferson County at the Mesquite Point Public Boat Ramp (MPPBR) within Sabine Lake and Intercoastal Waterway in Port Arthur, Texas.

The new concrete boat ramp will be 77.25-ft long by 56-ft wide with a ramp slope of 1V:7H for the initial segment of the ramp and then a slope of 1V:5H thereafter with a flat section at the ramp bottom. Rock jetties will be constructed to the south and north sides of the boat ramp. The project will also include construction of incidental parking lot pavement associated with the boat ramp improvements. Project information provided by the Client is presented in Appendix A.

2 PURPOSE AND SCOPE OF SERVICES

The purposes of this geotechnical study were to evaluate the subsurface and groundwater conditions at the project site and to provide geotechnical information and recommendations for the new boat ramp, rock jetties and pavement systems associated with this project. Our scope of services for this study consisted of:

1. Conducting one (1) landside test boring to a depth of 25-ft below grade and three (3) marine test borings to depths of 50-ft below mudline to evaluate the subsurface stratigraphy and groundwater conditions at the project site;

2. Performing geotechnical laboratory tests on the recovered soil samples to evaluate the physical and engineering properties of the subsurface materials encountered;

3. Providing geotechnical foundation design recommendations for the boat ramp foundation including allowable soil bearing capacity and settlement estimates;

4. Providing geotechnical design recommendations for below grade walls including and lateral earth pressure coefficients and uplift considerations;

5. Performing global stability and settlement analyses of the critical rock jetty slope section for short-term and long-term conditions using the representative cross-section provided by the Client;

6. Providing geotechnical design recommendations for incidental concrete pavement for the parking area including suitable pavement material types and thicknesses and subgrade support characteristics; and,

7. Providing geotechnical construction recommendations including site and subgrade preparation, excavation considerations, groundwater control and dewatering, suitable fill and backfill material types, compaction requirements, foundation and pavement installation and overall quality control testing, inspection and monitoring guidelines.

Our scope of services did not include any environmental assessment for the presence or absence of wetlands or of hazardous or toxic materials within or on the soil, air or water at this site. Any statements in this report or on the boring logs regarding odors, colors, unusual items and conditions are strictly for the information of the Client. A geological fault study was also beyond the scope of this study.

3 FIELD PROGRAM

3.1 Test Borings

TWE conducted explorations of subsurface soil and groundwater conditions at the project site on January 10 and 13, 2021. The field program consisted of performing one (1) landside test boring, LB-1, to a depth of 25-ft below grade and three (3) marine test borings, MB-1 through MB-3, to depths of 50-ft below mudline. The test boring locations are shown on TWE Drawing No. 21.23.148-1 in Appendix B. TWE performed drilling, sampling, logging and backfilling of the boreholes and obtained groundwater level measurements during drilling and sampling.

3.1.1 Drilling Methods

Field operations were performed in general accordance with the Standard Practice for Soil Investigation and Sampling by Auger Borings (ASTM D1452). For the land boring, dry-auger drilling methods were implemented at existing grade. Wash or mud-rotary drilling methods were used once groundwater was observed or when borehole became unstable and/or collapsed. When groundwater was encountered, the borehole was allowed to stabilize for about 15-min prior to completing the boring. Soil samples were obtained continuously from existing ground surface to a depth of 12-ft, at 13-ft to 15-ft and at 5-ft depth intervals thereafter until the boring completion depth was reached. Upon completion of drilling and sampling, the boreholes were backfilled with cement-bentonite grout.

For the marine borings, threaded PVC casing, 6-in in diameter, was installed into the mudline to prevent borehole sloughing or collapse until competent materials were encountered. Wash or mud-rotary drilling methods were then performed from the mudline elevation to the respective boring completion depths below the existing mudline. Soil samples were obtained at 3-ft intervals from the existing mudline to a depth of 20-ft, at 5-ft depth intervals thereafter until the boring completion depths were reached. Upon drilling and sampling completion, the borehole was backfilled with cement-bentonite grout up to the existing mudline, the PVC casings were removed, and the boreholes were abandoned in place.

3.1.2 Soil Sampling

Fine-grained, cohesive soil samples were recovered from the soil borings by hydraulically pushing a 3-in diameter, thin-walled tube a distance of about 24-in. The field sampling procedures were conducted in general accordance with the Standard Practice for Thin-Walled Tube Sampling of Soils (ASTM D1587). Our Geotechnician visually classified the recovered soils and obtained field strength measurements of the recovered soils using a calibrated pocket penetrometer. The tube samples were extruded in the field, wrapped in foil, placed in moisture-sealed plastic bags and protected from disturbance prior to transport to our soil-mechanics laboratory. The recovered soil sample depths and field strength measurements are shown on the project boring logs in Appendix C.

Cohesionless or semi-cohesionless soils, and cohesive soils thought to be of similar nature during drilling, were collected with the Standard Penetration Test (SPT) sampler driven 18-in by blows from a 140-lb hammer falling 30-in in accordance with the Standard Test Method for Standard Penetration Test (SPT) and Spilt-Barrel Sampling of Soils (ASTM D1586). The number of blows required to advance the sampler three (3) consecutive 6-in depths are recorded for each corresponding sample on the boring log. The N-value, in blows per foot, is obtained from SPTs by adding the last two (2) blow count numbers. The consistency of cohesive soils and the relative density of cohesionless and semi-cohesionless soils can be inferred from the N-value. The samples obtained from the split-barrel sampler were visually classified, placed in moisture-sealed plastic bags and transported to our soil-mechanics laboratory. SPT sampling intervals and blow counts are presented on the project boring logs in Appendix C.

3.1.3 Boring Logs

Our interpretations of general subsurface soil and groundwater conditions at the boring locations are included on the project boring logs in Appendix C. The interpretations of the soil types throughout the boring depths and the locations of strata changes were based on visual classifications during field sampling and laboratory testing using the Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System) [ASTM D2487] and the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) [ASTM D2488]. A key to the symbols and terms used on boring logs is also included in Appendix C.

3.1.4 Groundwater Measurements

Groundwater level measurements were attempted in the open landside borehole during dry-auger drilling. Measurements were taken initially during dry-auger drilling when groundwater was first encountered and at 5-min intervals thereafter over a 15-min time period. The groundwater measurements observed within the soil boring are described in Section 5.3 of this report.

4 LABORATORY SERVICES

A laboratory testing program was conducted on selected soil samples to assist in classification and evaluation of the physical and engineering properties of the soils encountered in the project borings. Laboratory tests were performed in general accordance with ASTM International standards. The types and brief descriptions of the geotechnical laboratory tests performed are presented in Tables 4-1.

Table 4-1: Geotechnical Laboratory Testing Program

Test Description	Test Method
Amount of Material in Soils Finer than No. 200 Sieve	ASTM D1140
Water (Moisture) Content of Soil	ASTM D2216
One-Dimensional Consolidation of Soils using Incremental Loading	ASTM D2435
Unconsolidated-Undrained Triaxial Compression on Cohesive Soils	ASTM D2850
Liquid Limit, Plastic Limit and Plasticity Index of Soils	ASTM D4318
Consolidated Undrained (CU) Triaxial Compression Test on Cohesive Soils	ASTM D4767
Density (Unit Weight) of Soil Specimens	ASTM D7263

Standard geotechnical laboratory test results are presented on the test boring logs in Appendix C. The results of the consolidated undrained triaxial compression tests are presented in Appendix D. The results of the one-dimensional consolidation tests are provided in Appendix E and described in detail in Section 4.1.

4.1 Consolidation Testing

Results of one-dimensional consolidation tests performed on selected cohesive soil samples from test borings summarized in Table 4-3 and are included in Appendix E. Sample disturbance issues related to consolidation test results are discussed in detail in published literature for soft clays (Anderson and Kolstad, 1979, DeGroot et al., 2005) as well as for over-consolidated clays (Sabatini et al., FHWA Circular No. 5, 2002). According to the referenced FHWA publication, sample disturbance can occur during handling and transportation to laboratory despite best efforts put in to maintain structural integrity and moisture condition of the samples.

Anderson and Kolstad (1979) suggest the volumetric strain required to consolidate the sample back to its in-situ vertical effective stress is a relative indicator of sample quality. Table 4-2 shows the Specimen Quality Designations (SQD) suggested by Anderson and Kolstad (1979) which were used for screening of the consolidation samples.

Table 4-2: Specimen Quality Designation	
Volumetric Strain (%)	**Specimen Quality Designation (Description)**
< 1	A (Very Good to Excellent)
1 – 2	B (Good)
2 – 4	C (Fair)
4 – 8	D (Poor)
> 8	E (Very Poor)

Actual SQD determinations for each sample tested to date are provided in Table 4-3 below. Tabulated compressibility parameters derived from the consolidation tests are also presented in Table 4-3 below.

Table 4-3: Summary of Consolidation Data								
Test Boring	**Depth (ft)**	**Soil Classification**	**e_o**	**p_c (tsf)**	**C_c**	**C_r**	**OCR**	**SQD**
LB-1	8 – 10	Very Soft Sandy Fat Clay (CH)	1.14	0.7	0.27	0.033	2.6	C
MB-1	12 – 14	Soft Elastic Silt (MH)	2.85	0.6	1.42	0.140	2.6	C
MB-2	28 – 30	Very Stiff Fat Clay (CH)	1.08	4.6	0.42	0.042	6.6	B

Notations:

e_o = Initial Void Ratio
p_c = Pre-consolidation Pressure
C_c = Compression Index
C_r = Recompression Index
OCR = Overconsolidation Ratio
SQD = Sample Quality Designation

5 PROJECT SITE CONDITIONS

Our interpretations of soil and groundwater conditions within the project site are based on information obtained at the test boring locations referenced in this report. This information was used as the basis for our geotechnical conclusions and recommendations. Subsurface conditions could vary at areas not explored by the test boring locations. Significant variations in subsurface conditions encountered during construction at areas not explored by the test boring locations could require reassessment of our recommendations.

5.1 Site Description and Surface Conditions

The project site is located on the north side of the Walter Umphrey State Park office off of Martin Luther King Junior Drive (Texas Highway 82) in Port Arthur, Texas. At the time of our field program, the ground surface at the landside test boring location was relatively flat and surface condition consisted of asphaltic pavement. Surface drainage at the site seemed to be adequate.

5.2 Subsurface Soil Stratigraphy and Design Soil Parameters

The generalized subsurface soil conditions encountered within the boat ramp area and rock jetty areas were interpreted from the project boring logs presented in Appendix C. The generalized subsurface soil conditions for boat ramp and rock jetties are summarized in Tables 5-1 and 5-2, respectively.

Table 5-1: Generalized Subsurface Soil Stratigraphy – Boat Ramp

Elevation Range (ft)		Strata Description
(+)2	(-)4	Very Loose Sand
(-)4	(-)12	Very Soft Clay
(-)12	(-)21	Soft Clay
(-)21	(-)50	Stiff Clay
(-)50	(-)60	Firm Clay

Table 5-2: Generalized Subsurface Soil Stratigraphy – Rock Jetties

Elevation Range (ft)		Strata Description
(-)6	(-)12	Very Soft Clay
(-)12	(-)21	Soft Clay
(-)21	(-)35	Stiff Clay
(-)35	(-)42	Very Stiff Clay
(-)42	(-)60	Stiff Clay

Details of the soil conditions encountered in the individual project borings can be found on the corresponding soil boring logs presented in Appendix C. Approximate ground surface and mudline elevations were not provided at the time of this report submittal. Elevations referenced herein were approximated based on Google Earth.

Design soil parameters for engineering analyses were developed based on field and laboratory measurements, published literature and our experience with soils in the area. A ratio of undrained cohesion to effective overburden pressure (c/p) equaling 0.22 was used to determine minimum undrained shear strength values with depth according to the SHANSEP (Soil Stress History and Normalized Soil Engineering Properties) relation (Ladd and Foote, 1974). The design soil parameters developed for the boat ramp and rock jetty areas are presented in Appendix F.

It should be noted that the generalized design soil stratification and soil types along with depth, assumed for engineering analyses purposes, can vary from the soil types and conditions encountered in the individual boring locations.

5.3 Groundwater Measurements

Groundwater was encountered within project boring LB-1 at a depth of 4.0-ft below existing grade during dry-auger drilling. The static groundwater depth after the 15-minute period was 1.7-ft below existing grade.

The groundwater level can fluctuate with climatic and seasonal variations and should be verified before installation of the pipeline. Accurate determination of the static groundwater level is typically made with a standpipe piezometer. Installation of piezometers to evaluate long-term groundwater conditions at the project site was not included in our scope of work. A design groundwater level depth of 2-ft (El. 0-ft) was assumed for geotechnical analysis purposes.

6 NEW BOAT RAMP

6.1 Discussion

The boat ramp will consist of a 77.25-ft long by 56-ft wide by 8-in thick concrete slab with an initial slope of 1V:7H and then a slope of 1V:5H thereafter with a flat section at the bottom of the ramp. The slab will have thickened beam sections both transversely and longitudinally which will stiffen the ramp slab and serve as footings to support the columns for the center finger pier and walls on either side.

Retaining walls will be constructed on both sides of the ramp and the finger piers on the sides will be supported on these walls. The boat ramp profile provided by the Client, is shown on Figure 1 below and in Appendix A.

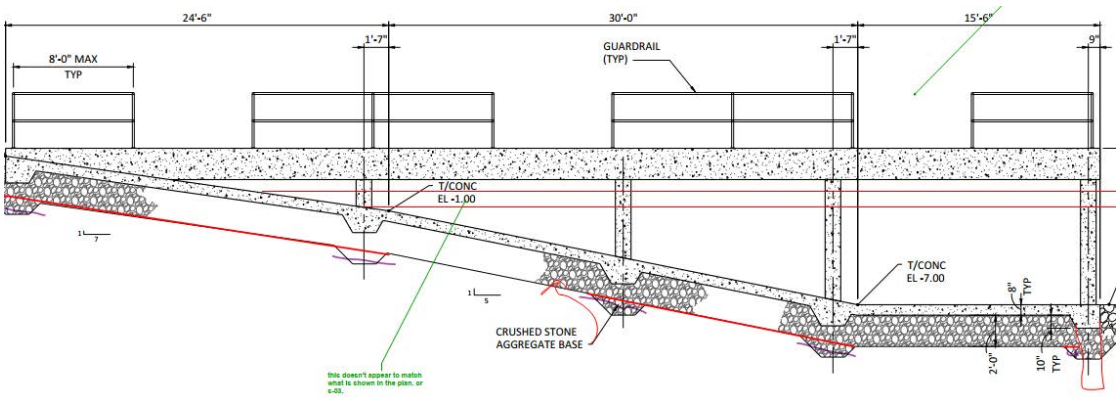


Figure 6-1: Boat Ramp Profile

6.2 Boat Ramp Foundation

Shallow foundation systems must satisfy two (2) independent design criteria with respect to soil conditions. The first criterion is the foundations should be designed with an appropriate factor of safety against bearing capacity failure of the underlying soils. The performance of shallow foundations could also be impacted by significant post-construction settlements even if the foundation contact pressures are reduced to help mitigate bearing capacity failure concerns. The second criterion is movement beneath the foundation system due to compression (consolidation) of the underlying soils must be within tolerable limits for the structure.

6.2.1 Allowable Net Bearing Pressure

We understand the ramp slab with thickened strip footing foundations will be placed within the elevation range of (+)2-ft to (-)7-ft. We recommend foundations be designed for a maximum allowable net soil bearing capacity of 500-psf. This bearing capacity value will provide a factor of safety of 3.0 against soil shear failure.

6.2.2 Settlement

Settlement analysis was performed using the computer software program Settle 3 by Rocscience, Inc. (Toronto, Canada). The magnitudes of the computed long-term settlements were corrected to account for three-dimensional excess pore water pressure dissipation effects as recommended by Skempton and Bjerrum (1957). The compressibility and soil stress history parameters (represented by over-consolidation ratios) required for long-term settlement analyses were derived based on results of field and laboratory testing, published correlations and engineering judgement. The generalized soil profile and soil compressibility parameters presented on Figures 1 and 2 in Appendix F were used to estimate settlements. We also considered the mat foundation sections to be fully flexible in our settlement analysis.

The maximum estimated post-construction consolidation settlements were on the order of approximately 1-in. The consolidation settlements will occur over the long-term for a period of approximately 10+ years.

6.3 Below Grade Walls

We have developed design soil parameters for use with analysis of below-grade walls based on the subsurface conditions encountered at the test boring locations LB-1 and MB-2. In addition to lateral earth pressure imposed by effective stress of soil, hydrostatic pressure acting on structures should also be considered for wall design. To facilitate analysis of below-grade structures, we have included design parameters considering drained (long-term or effective stress) and undrained (short-term or total stress) conditions.

6.3.1 Lateral Earth Pressures

For lateral pressures on a permanent structure, the controlling factors include the nature of the retained material and the relative rigidity of the walls. Walls should be analyzed for both short-term (undrained) and long-term (drained) conditions.

Recommended design soil parameters for the in-situ cohesive soils, including lateral earth pressure coefficients (K_o, K_a, K_p) for retaining wall design for both drained and undrained conditions are provided on Figure 3 in Appendix F.

6.3.2 Temporary (Short-Term) Lateral Earth Pressure Coefficients

Sheet piles used as temporary shoring to facilitate construction of below grade structures or as permanent walls could consist of cantilevered walls. A cantilever wall derives support from the passive resistance below the mudline to support the active pressures from the soil and hydrostatic pressures above the mudline without an anchorage. This type of wall is suitable for heights up to about 15-ft. We do not anticipate braced or anchored walls will be considered for this project for either temporary or permanent sheet pile systems. Recommended undrained soil parameters should be used for design of temporary sheet pile shoring systems.

6.3.3 Permanent (Long-Term) Lateral Earth Pressure Coefficients

The design of permanent earth retention walls should consider long-term lateral earth and hydrostatic pressures. Surcharge loads behind the walls, if present, should be included by considering a lateral uniform load equal to the lateral earth pressure coefficient times the vertical uniform surcharge load.

The recommended parameters for long-term (drained) conditions were based on soil friction angles and zero effective cohesion values. The effective or drained friction angles of cohesive soils were estimated using published correlation which relates friction angels to the plasticity indices (Kenney, 1959, Bjerrum and Simons, 1960 and Ladd et al. (1977). For rigid or non-yielding walls, at-rest earth pressure coefficients should be applicable. For yielding walls, active and passive earth pressure coefficients should be considered.

6.4 Construction Considerations

The performance of foundation system associated with the project will be highly dependent upon the quality of construction. Thus, we recommend foundation construction be monitored by TWE to help evaluate foundation construction in accordance with this report and the project specifications.

6.4.1 Excavation, Subgrade Preparation, and Fill Placement

Excavations required for construction of the new boat ramp slab and foundations are expected to encounter very loose wet clayey sands and soft to very soft clays. To provide a suitable working platform to support construction activities including equipment needed for sheet pile installation, we recommend the construction area be dewatered. We anticipate a cofferdam with sumps and pumps will be required as a minimum. The contractor should be responsible for providing temporary facilities needed to construct the boat ramp and foundations in the dry.

Considering the weak subgrade soils encountered in the borings at the boat ramp, we recommend the ramp area be overexcavated to accommodate the installation of a 2-ft thick geogrid reinforced aggregate working platform. We do not recommend proofrolling the exposed native subgrade soils. Overexcavation should be performed in a manner that minimizes disturbance to the exposed subgrade soil at the bottom of the excavation. A smooth mouth long reach bucket excavator should be considered for excavation of the new ramp. After dewatering the construction area and overexcavation, an 8-oz non-woven separator fabric should be placed over the exposed weak subgrade and a BX1200 geogrid should be placed over the separator fabric. A composite separator/geogrid product could be used for this application. These composite separator/geogrid products deploy as a single layer potentially saving time and labor cost. We recommend a 2-ft thick layer of clean free-draining crushed aggregate fill be placed over the geogrid. The 2-ft thickness is measured beneath the bottom of the ramp slab. Crushed aggregate should consist of ASTM C33 No. 57 stone. The stone should be compacted with a static smooth drum roller, however, compaction testing of the No. 57 stone is not required. If the transverse and longitudinal beams are 2-ft thick (measured from the top of slab), the thickened beams will bear on at least 1-ft of compacted crushed aggregate.

Excavation safety systems should be in accordance with current federal Occupational Safety and Health Administration (OHSA) Standards, 29 CFR part 1926, subpart P, Excavations. Details for open-cut slops and excavation shoring based on soil type and groundwater conditions are provided in the latest amended OSHA federal regulations.

Excavations for the construction of foundations should be designed in accordance with all applicable local, state and federal trenching regulations. The OSHA requirements do not generally require shallow excavations to depths of 5-ft or less to be sloped back or braced. However, if sloughing and caving is experienced, we recommend that the slopes be cut back to a stable slope. Excavations deeper than 5-ft are required to be sloped back or braced, according to OSHA regulations.

Based on our interpretation of the regulations and the subsurface conditions indicated in the provided borings, we classify the sand soils at this site as Type C soils. Excavations deeper than about 5-ft should be either braced or sloped back no steeper than 1.5(H):1(V) in Type C soils. Flatter slopes or bracing should be used if sloughing or raveling is observed.

As an alternative to sloped excavations, vertical short-term construction excavations could be used in conjunction with sheet pile or other shoring systems. Shoring systems should be properly designed to support lateral loads from the retained earth and hydrostatic pressures. Surcharge pressures at the ground surface should be added to the lateral earth pressures. The soil design parameters provided on Figure 3 in Appendix F could be used for design of shoring systems.

6.4.2 Groundwater Control

We expect water seepage will occur within boat ramp foundation excavation. Therefore, excavations should be graded to establish corner sumps to pump out any water seepage into the construction area. The Contractor is responsible for assessing the need for groundwater control and for developing appropriate dewatering procedures. Provisions should be made to divert surface water runoff from open excavations.

6.4.3 Geosynthetic Reinforcement

Prior to placing new aggregate fill over existing site soils, geosynthetic reinforcement which utilizes 8-oz non-woven geotextile separator fabric and biaxial (BX-1200 or equivalent) geogrid reinforcement are recommended. Geotextile separator fabric will provide separation between the fine-grained native site soils and crushed aggregate material. Geogrid will provide bearing capacity improvement of the subbase and lateral restraint of the base material layer. A minimum 2-ft overlap between adjacent roll sides and ends is suggested. Geosynthetic materials should be installed in accordance with Manufacturer recommendations. Proposed geosynthetic fabric and geogrid materials should be approved by the Engineer prior to use.

7 NEW ROCK JETTIES

7.1 Discussion

We understand rock jetties will be constructed on north and south sides of the boat ramp area primarily to shield the ramp from currents. Based on information provided by the Client, the planned jetty cross-sections have the crest at approximately El. (+)2-ft with a width of 2-ft. The side will be sloped to 2H:1V on the exterior side which will be facing wave action. The other side will be sloped to 1.5H:1V on the interior side which will be facing boat ramp area. The bottom of the jetty will be at El. (-)7-ft. Since the height of the south side jetty is slightly higher than the north side jetty, we considered the south section as critical for our stability analysis.

The jetties will consist of rock having a minimum D_{50} of 1-ft. Based on the information provided by the Client, we understand the design in-place bulk density of the proposed rock is on the order of approximately 92.3-pcf.

7.2 Global Stability

7.2.1 Methodology

Stability of the proposed rock jetty was evaluated for short-term (undrained or total stress) and long-term (drained or effective stress) conditions. The short-term (end of construction) condition corresponds to the stability conditions immediately after completion of construction. In this condition, excess pore water pressures in the supporting foundation soil are assumed to have not been dissipated due to rapid application of the loading. Therefore, the soils are assumed to be in an undrained state. The long-term condition represents the case where the excess pore water pressures in the supporing foundation soils have dissipated over time and an effective stress or drained state has developed. The soil design parameters used in our analyses for both short-term (undrained) and long-term (drained) conditions are presented on Figure 6 in Appendix F.

We performed global stability analyses using the computer program Slide 2018 by Rocscience. Slide is a two-dimensional (2D) limit equilibrium slope stability program for evaluating the factor of safety against stability failure. Slide analyzes the stability of slip surfaces using vertical slice limit equilibrium methods. Spencer's (1967) method was used which satisfies both force and moment equilibriums.

7.2.2 Results and Discussion

The results of our global stability evaluations are presented in Appendix G and are summarized in Table 7-1. According to the guidance provided in U.S. Army Corps of Engineers (USACE) Engineer Manual for Slope Stability (EM 1110-2-1902), the minimum recommended factors of safety for short-term and long-term global stability cases are 1.3 and 1.5, respectively. The global stability analysis results for short-term and long-term cases of proposed jetties met the USACE requirements.

Table 7-1: Summary of Global Stability Analyses for Rock Jetties			
Jetty Side Slope	**Figure No.**	**Case**	**Computed Minimum Factor of Safety**
2H:1V	1	Short-Term	2.34
	2	Long-Term	1.62
1.5H:1V	3	Short-Term	1.80
	4	Long-Term	1.37

7.3 Settlement

We performed analyses to provide an order of magnitude settlement estimates for planning and maintenance purposes. Settlement analysis was performed using the computer software program Settle 3 by Rocscience, Inc. (Toronto, Canada). The generalized soil profile developed and soil compressibility parameters presented on Figures 4 and 5 in Appendix F were used to estimate settlements.

Our analyses indicate the constructed jetties could settle on the order of 8-in over the project life. The actual settlement could be within 30% of the estimated amount based on variability and location along the project alignment. We recommend the top of jetties be surveyed on a periodic basis. Adjustments to jetty heights can be made if needed as part of normal maintenance. Adjustments to the levee height for settlement will not have adverse impact on levee stability.

7.4 Construction Considerations

To avoid rocks submergence in the weak clay subgrade soils and to improve the long-term performance of the rock jetties, we recommend an 8-oz non-woven geotextile fabric as a separation layer be placed between the rock and subgrade soils. A biaxial geogrid (BX-1200 or equivalent) layer could also be considered. Geogrid could be easier to install in underwater applications. The geotextile fabric should extend at least 5-ft beyond the jetty bottom perimeter. The geotextile should be pulled taut and anchored prior to rock placement.

8 PAVEMENT DESIGN RECOMMENDATIONS

We understand the project will include incidental pavements associated with the boat ramp replacement including parking and driveway area subjected to light passenger vehicular traffic only and no regular use by heavy trucks. We anticipate pavements could consist of concrete and/or flexible pavements. Our geotechnical recommendations for design of rigid and flexible pavements are provided below.

8.1 Recommended Pavement Section

Table 8-1
Recommended Pavement Thicknesses – Light Duty Pavements

Flexible Pavement System	
Component	**Recommended Minimum Thickness**
Asphaltic Concrete	2.0-in
Crushed Limestone Base	8.0-in
Properly Compacted Subgrade	--
Rigid Pavement System	
Component	**Recommended Minimum Thickness**
Reinforced Concrete	5.0-in
Properly Compacted Subgrade	--

If needed, we recommend structural fill be used beneath pavement areas. Structural fill can also be used to replace any weak or otherwise unsuitable subgrade soils that are encountered in areas where new pavements are to be constructed. Structural fill should consist of a clean, low-plasticity lean clay with a liquid limit of less than 40, a plasticity index between 10 and 20, and a maximum particle size of 3 inches. Structural fill should be placed in thin lifts, moisture conditioned between -2% and +3% of optimum moisture content and compacted to a minimum 95% of the maximum dry density as determined by ASTM D 698 (Standard Proctor Compaction Effort). We do not recommend the use of sands, silts or silty soils as structural fill for this project.

Reinforcing steel consisting of deformed steel rebar should be used in concrete pavement. Thickness is based on concrete flexural strength, soil modulus and traffic volume. Selection of steel is dependent on joint spacing, slab thickness and other factors as discussed in Portland Cement Association publications. The following suggested guidelines for the concrete pavement should be modified by the civil-structural engineer based upon the actual configuration of the pavement layout and published Portland Cement Association and ACI articles. Table 8-2 below presents these guidelines.

Table 8-2 Rigid Pavement Components	
Component	**Description**
Minimum Reinforcing Steel	#3 bars should be spaced at 18-in on centers in both directions.
Minimum Dowel Size	3/4-in bars, 18-in in length, with one (1) end treated to slip should be spaced at 12-in on centers at each joint.
Control Joint Spacing	Maximum control joint spacing should be 15-ft. If sawcut, control joints should be cut as soon as the concrete has hardened sufficiently to permit sawing without excessive raveling which is usually within four (4) to twenty-four (24) hours of concrete placement.
Isolation / Expansion Joints	Expansion joints should be used in areas adjacent to structures, such as manholes and walls.

8.2 Pavement Section Materials

Reinforced Concrete: Concrete should be designed to exhibit a flexural strength [three (3) point loading] of at least 550-psi at twenty-eight (28) days. Flexural strength (M_r) can be approximated by the following formula from ACI 330R: $M_r=2.3(f_c^{2/3})$ where f_c is the compressive strength of the concrete. The actual relationship between flexural and compressive strength for the proposed mix should be evaluated in the laboratory. In general, 550-psi flexural strength can be typically achieved with a concrete mix designed for a minimum twenty-eight (28) day compressive strength of 4,000-psi.

Hot Mix Asphaltic Concrete Surface Course: Hot-Mix Asphaltic Concrete (HMAC) should be a plant-mixed, hot-laid, dense-graded mixture of aggregate and asphalt binder having a fine surface meeting the requirements of Texas Department of Transportation (TxDOT) 2014 Standard Specifications Item 341 and specific criteria for the job mix formula. The HMAC mix should be compacted uniformly to contain between 3% to 8% in-place air voids (92% to 97% of the maximum theoretical density) as measured by ASTM D2041. Pneumatic-tired rollers should be used to seal the surface unless excessive pickup of fines occurs.

On the first day of production, rolling patterns should be established which produce the desired in-place air voids. All compaction operations should be completed before the pavement temperature drops below 160°F unless otherwise directed by the project specifications. The compacted pavement should be allowed to cool to 160°F or lower before opening to traffic. After final compaction, field density tests should be performed at locations representative of the entire pavement area.

Crushed Limestone Base: Flexible base course material should be composed of crushed limestone or recycled concrete meeting the requirements of TxDOT 2014 Standard Specifications Item 247, Type A or D, Grade 1-2. When used as base material for this project, it is not considered necessary to confirm Wet Ball Mill or Triaxial Compressive Strength requirements listed in TxDOT Item 247. Base material should be compacted in thin lifts (maximum 6-in after compaction) to a minimum of 95% of the maximum density as determined by ASTM D1557 and moisture-conditioned until it is within -2% to +3% of the optimum moisture content. After final compaction, field density tests should be performed at locations representative of the entire pavement area.

8.3 Pavement Construction

The following sections address pavement construction considerations such as site stripping, subgrade preparation, existing subgrade stabilization and new pavement materials for the proposed pavement sections.

8.3.1 Subgrade Preparation/Grading/Drainage

Existing pavement surface materials will be removed to expose existing subbase. Prior to installation of new pavements, we recommend the exposed subbase materials be proofrolled. We recommend proofrolling be performed using a rubber-tired pneumatic roller, loaded dump truck or water truck with a weight of at least 20-tons and tire pressures of at least 70-psi. We do not recommend using off-road earthmoving equipment (e.g. loaders and scrapers), compactors or tracked vehicles (e.g. bulldozers) for proofrolling.

Proofrolling specifications should provide acceptance criteria such as rut depths less than 2-in and no visual evidence of pumping. A representative of the Geotechnical Engineer should be present to observe and document proofrolling activities and to delineate areas of weak or unstable soils, if present. Problematic roadbed materials identified during proofrolling should be excavated and replaced per the project specifications.

Once stripping is completed, the pavement should be sloped and graded such that positive surface drainage is directed away from the pavement into drainage inlets or lateral ditches. Water should not be allowed to pond on or adjacent to the pavement causing the underlying materials to become saturated during construction. Failure to achieve good drainage could result in significant construction delays during periods of inclement weather.

8.4 Pavement Maintenance

Maintaining the pavement to prevent infiltration of water into the subgrade soils is essential. Allowing water to infiltrate the subgrade will result in high maintenance costs and premature pavement failure. Periodic maintenance should be performed on the pavement sections to seal any surface cracks and prevent infiltration of water into the subgrade.

9 DESIGN REVIEW AND REPORT LIMITATIONS

9.1 Design Review and Construction Monitoring

9.1.1 Geotechnical Design Review

Geotechnical review of the design drawings and specifications should be performed prior to construction. This review is recommended to check that the geotechnical recommendations and construction guidelines presented herein have been properly interpreted and incorporated into the construction documents.

9.1.2 Construction Monitoring

It is recommended that construction activities be monitored by an experienced construction materials testing firm proficient in quality control testing/inspection procedures. TWE would be pleased to assist in the development of a plan for construction monitoring to be incorporated in the overall quality control program.

Construction surveillance is recommended and has been assumed in preparing our recommendations. These field services are required to check for changes in conditions that could result in modifications to our recommendations. Performance of the foundation and pavement systems will be directly related to the Contractor's adherence to the recommendations in this report and the project plans and specifications. TWE would be pleased to provide these services to verify that construction has been performed in accordance with the intentions of this report upon request.

9.2 Limitations

9.2.1 Scope of Study

The scope of this study, as well as the conclusions and recommendations provided herein, were developed based on our understanding of the project. Assumptions were made when specific information was unknown. Revisions to our conclusions and recommendations could be necessary as a result of any significant project changes or if our assumptions are incorrect. Construction dewatering design, earth retention design, and construction site safety are the responsibility of the Contractor and have not been addressed herein. The scope of our study did not include evaluation of geologic faults. In addition, assessment of environmental conditions, including investigation for hazardous materials/pollutants/wastes, regulatory compliance, threatened or endangered species, cultural resources, floodplains, and jurisdictional wetlands were beyond the scope of our study.

9.2.2 Warranty

The professional services that form the basis for this report have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical engineers practicing in the same locality. No warranty, expressed or implied, is made as to the professional advice set forth.

9.2.3 Subsurface Variations

Our interpretations of subsurface conditions are based on data obtained at the boring locations only and at the time of our field exploration. Subsurface variations could exist between the boring locations and at areas not explored. The validity of our recommendations is based, in part, on assumptions made about subsurface conditions in areas not explored. Such assumptions can only be confirmed during construction. Therefore, construction observations by qualified geotechnical representatives are recommended to check for variations in subsurface conditions. Significant changes from our assumptions could require modification to our findings and recommendations.

9.2.4 Report Reliance

This report was prepared as an instrument of service for the sole and exclusive use by Freese and Nichols and their designated project design team, subject to the limitations stated herein and with specific application to the referenced project. This report should not be applied for any other purpose or project, except as described herein.

No third party may use or rely upon the information provided herein without the written consent of TWE, Inc. If any party other than Freese and Nichols chooses to rely on this instrument without our consent, said party expressly waives any rights it may otherwise have to claim its reliance on this instrument of professional service that resulted in injury, loss, or damage of any kind and will defend and indemnify TWE from any such claim.

9.2.5 Report Distribution

This report is intended to be used in its entirety. This report should be considered in whole and should not be distributed or made available in partial form.

If any changes in the nature, design or location of the project are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and the conclusions modified or verified in writing by TWE, who is not responsible for any claims, damages or liability associated with interpretation or reuse of the subsurface data or engineering analyses without the expressed written authorization of TWE.

This geotechnical engineering report is intended to assist in the planning and design of the project. We recommend the Client engage the services of a Design Engineer to perform final design of any site improvements and to prepare construction plans and specifications.

APPENDIX A: PART A

GEOTECHNICAL REPORT, MESQUITE POINT PUBLIC BOAT RAMP

CALL BEFORE YOU DIG!

Texas 811 — Know what's below. Call before you dig.

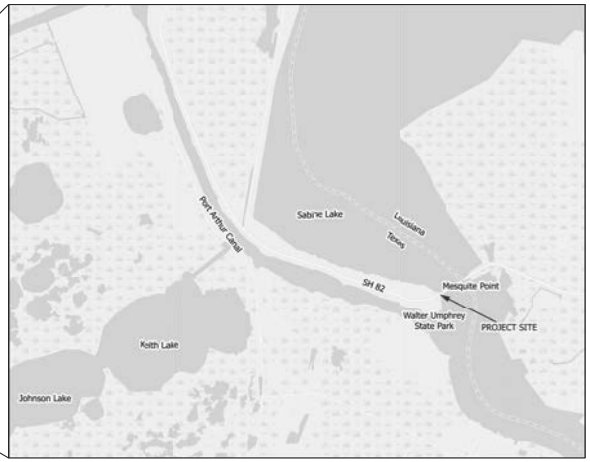
PARTICIPANTS REQUEST 48 HOURS NOTICE BEFORE YOU DIG, DRILL, OR BLAST - STOP AND CALL

811

THE LONE STAR NOTIFICATION COMPANY AT 1-800-669-8344



1 G-01 LOCATION MAP
NOT TO SCALE



2 G-01 VICINITY MAP
1" = 50,000'

JEFFERSON COUNTY LOGO

MESQUITE POINT PUBLIC BOAT RAMP

SABINE PASS
JEFFERSON COUNTY, TX

PREPARED BY:

FREESE AND NICHOLS
10497 Town and Country Way,
Suite 500
Houston, Texas 77024
Phone – (713) 600–6800
Web – www.freese.com

APRIL 2022

SHEET INDEX		
SEQ.	SHEET	DRAWING TITLE
GENERAL		
1	G-01	COVER SHEET
2	G-02	GENERAL NOTES, LEGEND, & QUANTITIES
3	G-03	EXISTING OVERALL TOPOGRAPHY PLAN
CIVIL		
4	C-01	DEMOLITION (SOUTH)
5	C-02	PROPOSED SITE PLAN LAYOUT
6	C-03	CIVIL PLANS (SOUTH)
7	C-04	CIVIL PLANS (NORTH)
8	C-05	SIDEWALK PLAN (SOUTH) & DETAILS
9	C-06	GRADING PLAN (SOUTH)
10	C-07	SWPPP PLAN & DETAILS
11	C-08	DREDGING
STRUCTURAL		
12	S-01	GENERAL STRUCTURAL NOTES
13	S-02	PLAN VIEW
14	S-03	SECTIONS

GEOTECHNICAL RPT - APPENDIX A - MATERIAL

60% SUBMITTAL

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

FREESE AND NICHOLS
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Web – www.freese.com

JEFFERSON COUNTY, TX
MESQUITE POINT PUBLIC BOAT RAMP
GENERAL
COVER SHEET

NO.	ISSUE	BY	DATE

P&N JOB NO. JFF21789
DATE 3/22/2022
DESIGNED CAS
DRAWN KBH
REVISED -
CHECKED VALUE
FILE NAME GN-ALL-COVER.dwg

VERIFY SCALE
Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

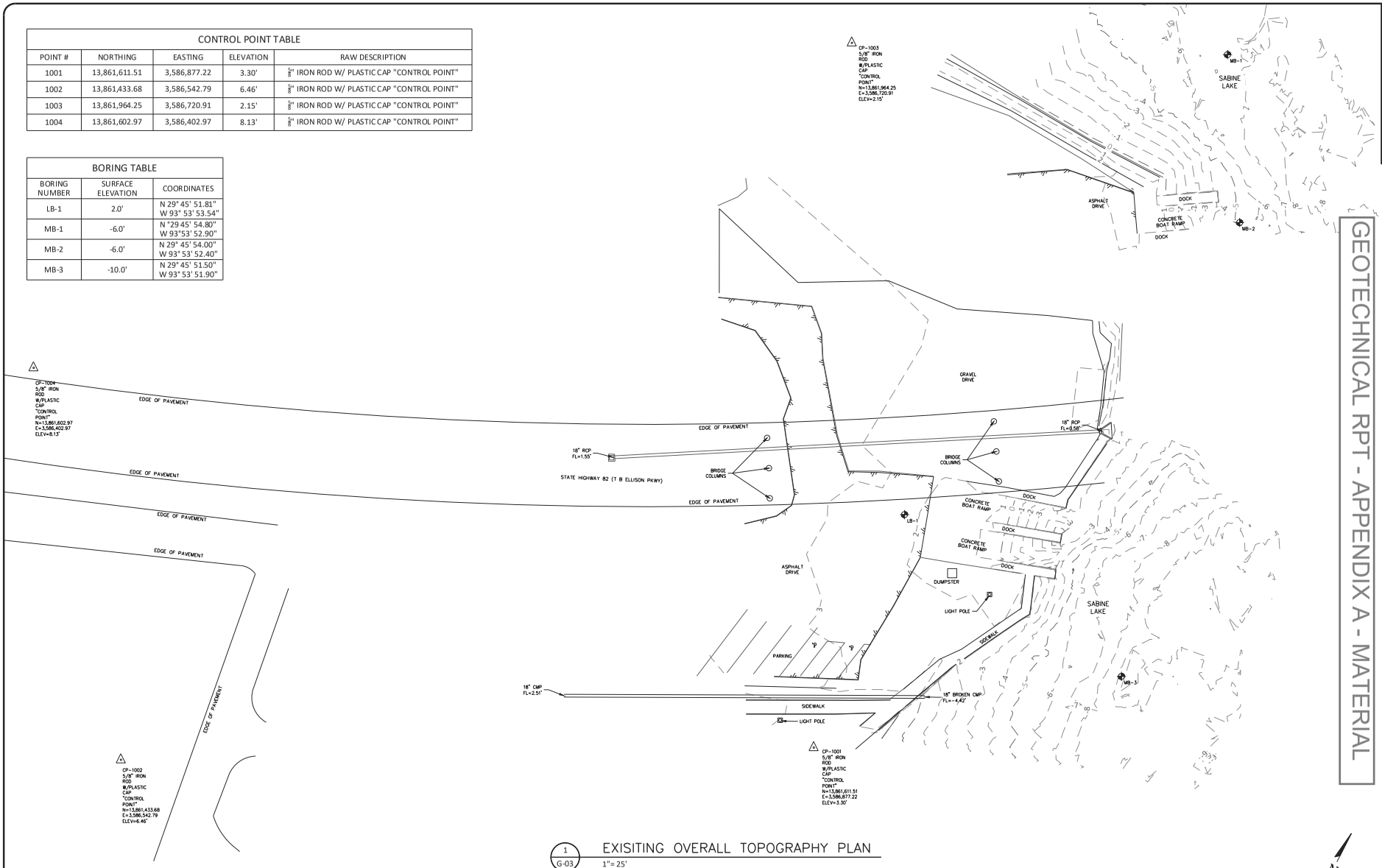
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SEQ. 1

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CONTROL POINT TABLE				
POINT #	NORTHING	EASTING	ELEVATION	RAW DESCRIPTION
1001	13,861,611.51	3,586,877.22	3.30'	5/8" IRON ROD W/ PLASTIC CAP "CONTROL POINT"
1002	13,861,433.68	3,586,542.79	6.46'	5/8" IRON ROD W/ PLASTIC CAP "CONTROL POINT"
1003	13,861,964.25	3,586,720.91	2.15'	5/8" IRON ROD W/ PLASTIC CAP "CONTROL POINT"
1004	13,861,602.97	3,586,402.97	8.13'	5/8" IRON ROD W/ PLASTIC CAP "CONTROL POINT"

BORING TABLE		
BORING NUMBER	SURFACE ELEVATION	COORDINATES
LB-1	2.0'	N 29° 45' 51.81" W 93° 53' 53.54"
MB-1	-6.0'	N °29 45' 54.80" W 93°53' 52.90"
MB-2	-6.0'	N 29° 45' 54.00" W 93° 53' 52.40"
MB-3	-10.0'	N 29° 45' 51.50" W 93° 53' 51.90"



1 G-03 EXISITING OVERALL TOPOGRAPHY PLAN
1"= 25'

NOTES
1. ALL BEARINGS AND COORDINATES SHOWN AREA BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204) NAD 83 (2001 ADJ.; EPOCH 2010.0) USING THE TXDOT VRS SYSTEM. ALL COORDINATES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY A TXTDOT SURFACE ADJUSTMENT FACTOR OF 1.00007.
2. ALL PROJECT ELEVATIONS ARE REFERENCED TO NAVD88, GEOID 12B AND BASED ON GPS OBSERVATION MEANS USING THE TXDOT VRS SYSTEM AT THE TIME OF THE SURVEY.
3. ALL MEASUREMENTS ARE U.S. SURVEY FEET.
4. SURVEY WAS PERFORMED IN DECEMBER 2021.

N
0 25' 50'
SCALE IN FEET

60% SUBMITTAL

GEOTECHNICAL RPT - APPENDIX A - MATERIAL

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Texas Registered Engineering Firm F-2144
FREESE NICHOLS
10497 Town and Country Way,
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Web - www.freese.com

JEFFERSON COUNTY, TX
MESQUITE POINT PUBLIC BOAT RAMP
GENERAL
EXISTING OVERALL TOPOGRAPHY PLAN

NO.	ISSUE	BY	DATE

P&N JOB NO. JFF21789
DATE 3/22/2022
DESIGNED CAS
DRAWN KBH
REVISED -
CHECKED VALUE
FILE NAME CV-ALL-PL-EX_TOPO.dwg

VERIFY SCALE
Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET G-03
SEQ. 3

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(IFR 23.07/UW) TECHNICAL SPECIFICATIONS
APPENDIX A, PAGE 1 OF 8

ALL PLOTTED SHEETS MUST HAVE A SEAL OR SEAL DISCLAIMER

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Houston, Texas 77024
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Web - www.freese.com

PROPOSED SITE LAYOUT

CIVIL

MESQUITE POINT PUBLIC BOAT RAMP

JEFFERSON COUNTY, TX

NO.	ISSUE	BY	DATE

F&N JOB NO. JFF21789
DATE 3/22/2022
DESIGNED CAS
DRAWN KBH
REVISED
CHECKED VALUE

FILE NAME CV-ALL-PL-LAYT.dwg

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SEQ. 7

60% SUBMITTAL

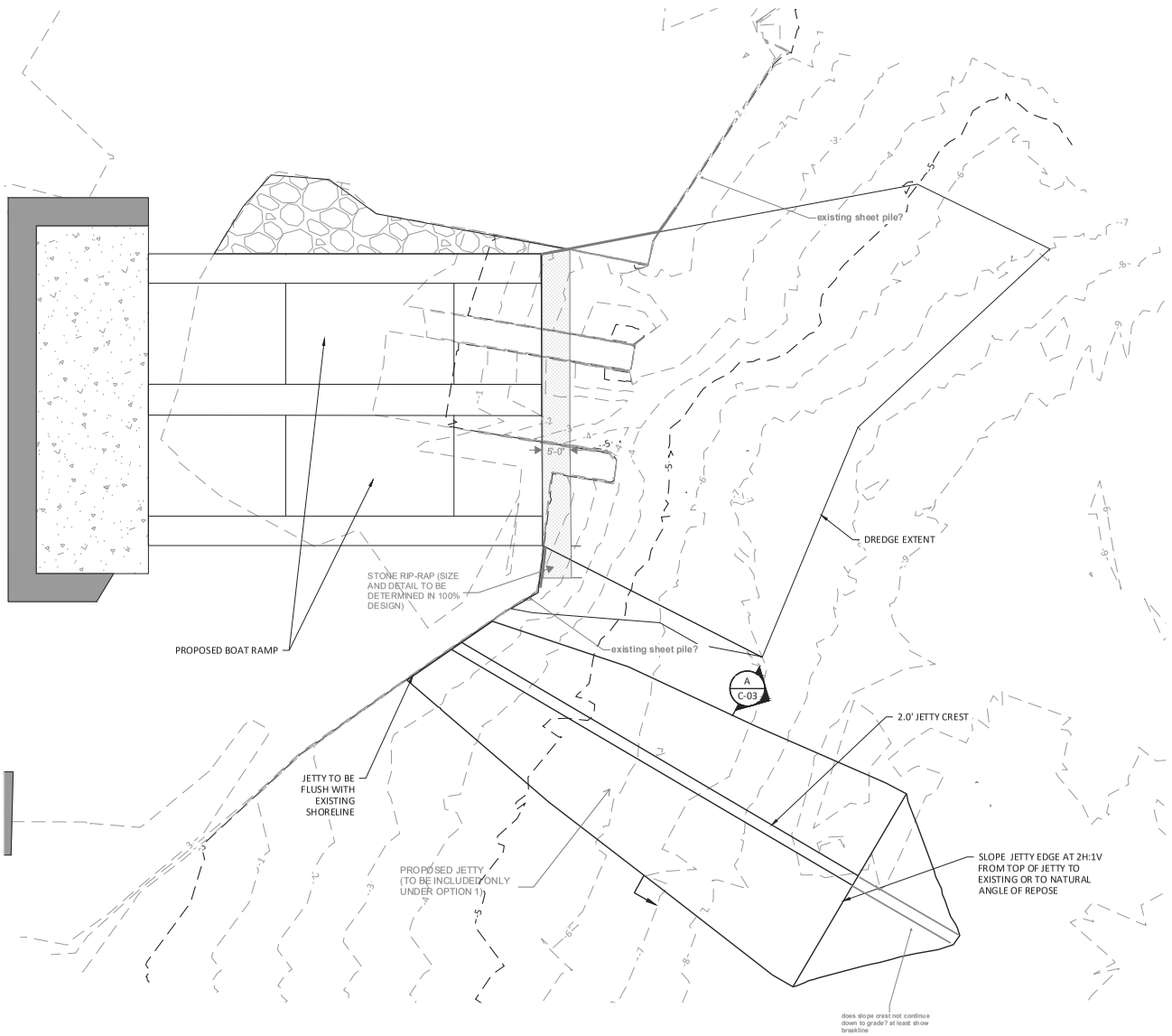
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GEOTECHNICAL RPT - APPENDIX A - MATERIAL

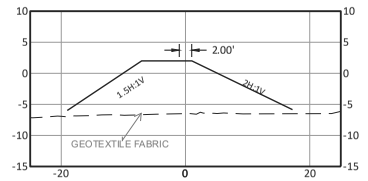
1 C-02 PROPOSED SITE LAYOUT 1"=25'

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1 C-03 CIVIL PLANS (SOUTH)
1"=10'



A C-03 SOUTH JETTY SECTION
1"=10'

GEOTECHNICAL RPT - APPENDIX A - MATERIAL

N

0 10' 20'
SCALE IN FEET

60% SUBMITTAL

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Texas Registered Engineering Firm F-2144

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JEFFERSON COUNTY, TX
MESQUITE POINT PUBLIC BOAT RAMP
CIVIL
CIVIL PLANS
SOUTH

NO.	ISSUE	BY	DATE

P&N JOB NO. JFF21789
DATE 3/22/2022
DESIGNED CAS
DRAWN KBH
REVISED -
CHECKED VALUE
FILE NAME CV-ALL-PL-CIVIL.dwg

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet adjust scale. 0 1"

SHEET C-03
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(IFB 23-07/UW) TECHNICAL SPECIFICATIONS
APPENDIX A, PAGE 8 OF 8

NO.	ISSUE	BY	DATE	F&N JOB NO.	JPF21789
				DATE	3/22/2022
				DESIGNED	CAS
				DRAWN	KBH
				REVISED	
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VERIFY SCALE Bar is one inch on original (3 drawing). If not one inch on this sheet, adjust scale.
0 1

SHEET C-06
SEQ. 11

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CIVIL
GRADING PLAN
SOUTH

JEFFERSON COUNTY, TX
MESQUITE POINT PUBLIC BOAT RAMP

GEOTECHNICAL RPT - APPENDIX A - MATERIAL

60% SUBMITTAL

SCALE IN FEET
0 20' 40'

N

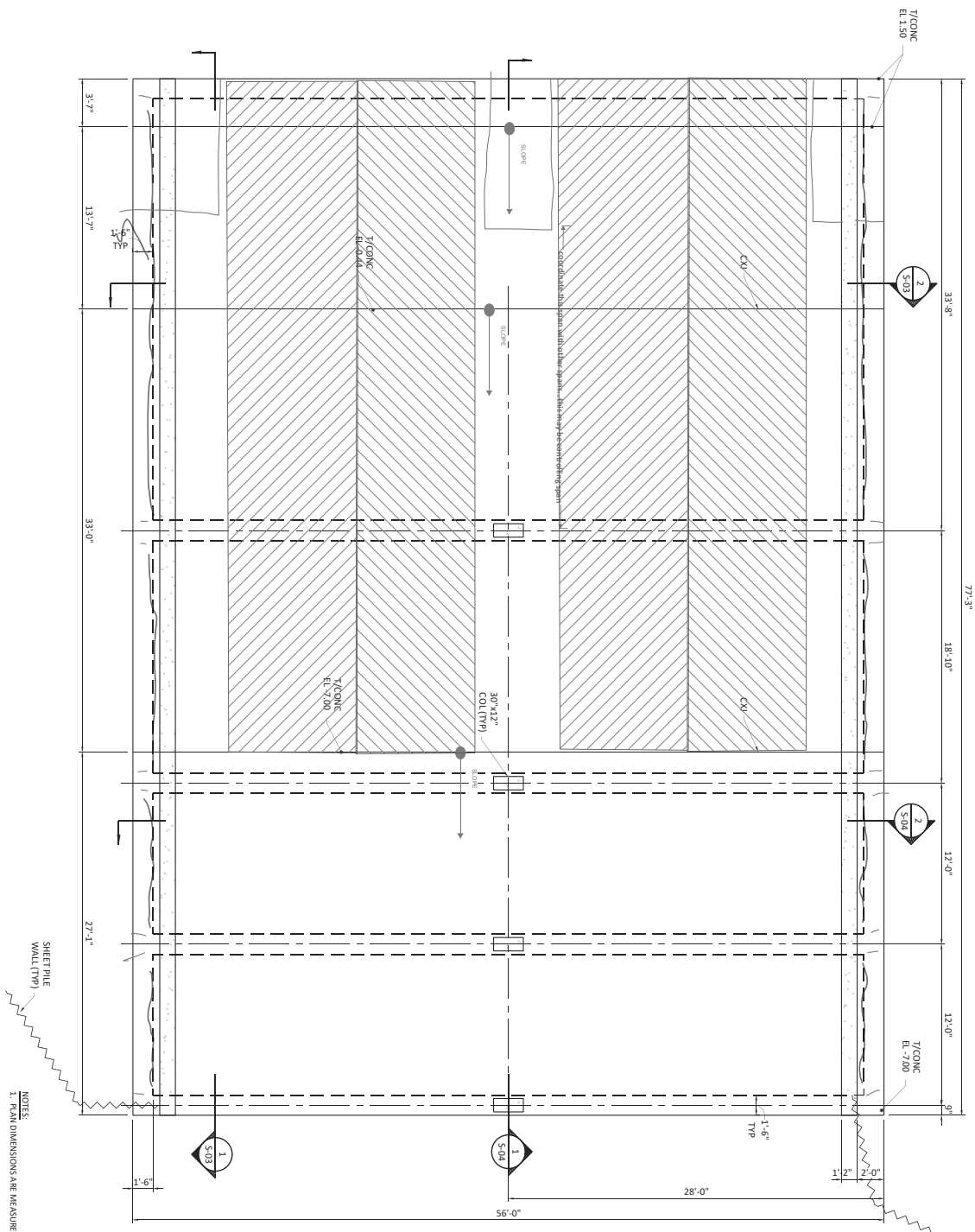
1 C-06 GRADING PLAN (SOUTH) 1"=20'

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NORTH

1 FOUNDATION PLAN
1/4" = 1'-0"

NOTES:
1. PLAN DIMENSIONS ARE MEASURED FROM HORIZONTAL.

0 1' 2' 4'
1/4"=1'-0"
8'

60% SUBMITTAL

GEOTECHNICAL RPT - APPENDIX A - MATERIAL

SEQ.	SHEET	NO.	ISSUE	BY	DATE
.	S-02				

VERIFY SCALE 0 1 Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

F&N JOB NO. JFF21789
DATE 03/27/22
DESIGNED ACD
DRAWN STV
REVISED
CHECKED PAB
FILE NAME ST-JFF-PL-FNDN.dwg

JEFFERSON COUNTY, TX

MESQUITE POINT PUBLIC BOAT RAMP

STRUCTURAL

.

RAMP FOUNDATION PLAN

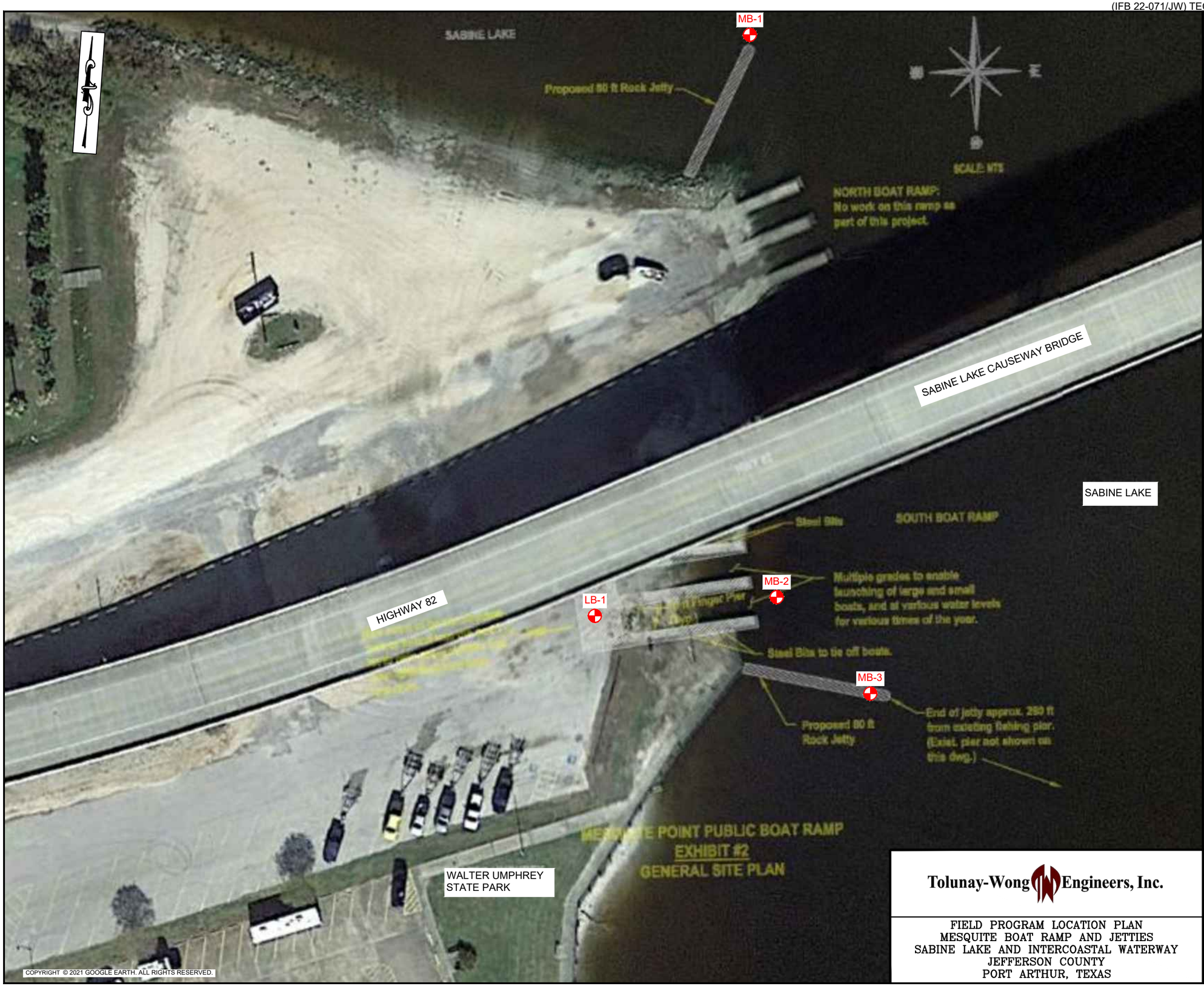
FREESE AND NICHOLS
10497 Town and Country Way,
Suite 500
Houston, Texas 77024
Phone - (713) 600-6800
Web - www.freese.com

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

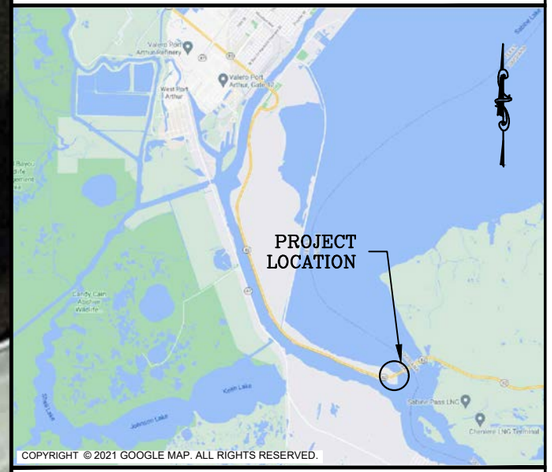
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VICINITY MAP



FIELD PROGRAM COORDINATES

ITEM	DEPTH	LATITUDE	LONGITUDE
MB–1	50’	29° 45’ 54.80” N	93° 53’ 52.90” W
MB–2	50’	29° 45’ 52.00” N	93° 53’ 52.40” W
MB–3	50’	29° 45’ 51.50” N	93° 53’ 51.90” W
LB–1	25’	29° 45’ 51.81” N	93° 53’ 53.54” W

LEGEND

SYMBOL	DESCRIPTION
⊕	TEST BORING LOCATION

Tolunay-Wong Engineers, Inc.

FIELD PROGRAM LOCATION PLAN
MESQUITE BOAT RAMP AND JETTIES
SABINE LAKE AND INTERCOASTAL WATERWAY
JEFFERSON COUNTY
PORT ARTHUR, TEXAS

Drawn	*O.R.*	*04–19–2022*
Checked	*M.K.*	*04–19–2022*
Approved	*T.G.H.*	*04–19–2022*
Scale	*N.T.S.*	

TWE DRAWING NO. 21.23.148–1

LOG OF BORING LB-1

PROJECT: Mesquite Point Public Boat Ramp and Jetties
Jefferson County - Port Arthur, Texas

CLIENT: Freese and Nichols, Inc.
Austin, Texas

COORDINATES: N 29° 45' 51.81"
W 93° 53' 53.54"

SURFACE ELEVATION: 2'

DRILLING METHOD:
Dry Augered: 0' to 4'
Wash Bored: 4' to 25'

ELEVATION (FT) / DEPTH (FT)	SAMPLE TYPE	SYMBOL	MATERIAL DESCRIPTION	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
0			ASPHALT (2")												
			FILL: STABILIZED CRUSHED AGGREGATE (5")		11/6" 16/6" 8/6"	14								23	
0			Medium dense gray CLAYEY SAND (SC)												
			Firm gray SANDY SILTY CLAY (CL-ML)	(P)1.00		26		28	7						
5			Very loose gray CLAYEY SAND (SC), with shell fragments -no sample recovery from 4.5' to 6'		WOH										
			Soft gray SANDY FAT CLAY (CH)	(T)0.11		57	70				0.39	10	3	62	
-5			-becomes very soft at 8'	(T)0.09		40		50	25						CON
10			Very soft gray FAT CLAY (CH) -with sand pockets from 10.5' to 12'		WOH 1/6" 1/6"										
-10					WOH	76		83	49						
15															
-15			-soft with shell fragments from 18' to 20' -with sand seams at 18'	(T)0.14		91	50				0.44	6	16		
20															
-20			-becomes stiff, gray and tan with slickensides at 23'	(P)1.75		27		65	47						
25			Bottom @ 25'												
-25															
30															
-30															
35															

COMPLETION DEPTH: 25 ft
DATE BORING STARTED: 01/10/22
DATE BORING COMPLETED: 01/10/22
LOGGER: J. O'Burke
PROJECT NO.: 21.23.148

NOTES: Free Water Depth = 4.0-ft. 15-min Static Water Depth = 1.7-ft. 15-min Total Hole Depth = 3.3-ft. Borehole was backfilled with cement-bentonite grout. CON: One-Dimensional Consolidation. WOH: Weight of Hammer.

LOG OF BORING MB-1

PROJECT: Mesquite Point Public Boat Ramp and Jetties
Jefferson County - Port Arthur, Texas

CLIENT: Freese and Nichols, Inc.
Austin, Texas

COORDINATES: N 29° 45' 54.80"
W 93° 53' 52.90"

SURFACE ELEVATION: -6'

DRILLING METHOD:
Dry Augered: -- to --
Wash Bored: 0' to 50'

ELEVATION (FT) / DEPTH (FT)	SAMPLE TYPE	SYMBOL	MATERIAL DESCRIPTION	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
0			Very soft gray SANDY LEAN CLAY (CL)		WOH	50		43	23						
			-with shell fragments from 0' to 2'												
-10 / 5					WOH	56								62	
			Soft gray ELASTIC SILT (MH), with sand pockets		1/6" 2/6" 2/6"	83		72	23						
-15 / 10			-becomes very soft at 9'	(T)0.15		86	50				0.22	4	8	97	
			-with shell fragments at 12'	(T)0.18		92		96	40						CON
-20 / 15			Loose gray SILTY SAND (SM), with shell fragments		1/6" 3/6" 3/6"	31								27	
			Stiff, brown and tan FAT CLAY (CH), with ferrous nodules and sand seams	(P)2.50		24	100	50	31		1.88	15	16		
-25 / 20															
			-firm from 23' to 25'	(P)1.25		27									
-30 / 25			-with calcareous nodules from 23' to 35'												
-35 / 30				(P)1.50											
				(P)2.75		29		74	44						
-40 / 35															

COMPLETION DEPTH: 50 ft
DATE BORING STARTED: 01/13/22
DATE BORING COMPLETED: 01/13/22
LOGGER: C. Hughes
PROJECT NO.: 21.23.148

NOTES: Top of water to mudline = 6.0-ft. Borehole was backfilled with cement-bentonite grout. CON: One-Dimensional Consolidation. WOH: Weight of Hammer.

LOG OF BORING MB-1

PROJECT: Mesquite Point Public Boat Ramp and Jetties
Jefferson County - Port Arthur, Texas

CLIENT: Freese and Nichols, Inc.
Austin, Texas

COORDINATES: N 29° 45' 54.80"
W 93° 53' 52.90"

SURFACE ELEVATION: -6'

DRILLING METHOD:
Dry Augered: -- to --
Wash Bored: 0' to 50'

ELEVATION (FT) / DEPTH (FT)	SAMPLE TYPE	SYMBOL	MATERIAL DESCRIPTION	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
35			Stiff, brown and tan FAT CLAY (CH), with ferrous nodules, sand seams and silt pockets												
-45 40			-with calcareous nodules from 38' to 40'	(P)2.00		31	90				1.47	9	33		
-50 45				(P)2.25											
-55 50				(P)1.50		45		69	36						
			Bottom @ 50'												
-60 55															
-65 60															
-70 65															
-75 70															

COMPLETION DEPTH: 50 ft
DATE BORING STARTED: 01/13/22
DATE BORING COMPLETED: 01/13/22
LOGGER: C. Hughes
PROJECT NO.: 21.23.148

NOTES: Top of water to mudline = 6.0-ft. Borehole was backfilled with cement-bentonite grout. CON: One-Dimensional Consolidation. WOH: Weight of Hammer.

LOG OF BORING MB-2

PROJECT: Mesquite Point Public Boat Ramp and Jetties
Jefferson County - Port Arthur, Texas

CLIENT: Freese and Nichols, Inc.
Austin, Texas

COORDINATES: N 29° 45' 54.00"
W 93° 53' 52.40"

SURFACE ELEVATION: -6'

DRILLING METHOD:
Dry Augered: -- to --
Wash Bored: 0' to 50'

ELEVATION (FT) / DEPTH (FT)	SAMPLE TYPE	SYMBOL	MATERIAL DESCRIPTION	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
0			Very loose gray SILTY SAND (SM), with shell fragments		WOH	34								25	
-10 / 5					WOH	39			NP						
			Firm gray SANDY LEAN CLAY (CL), with shell fragments		1/6" 3/6" 3/6"	63								62	
-15 / 10			Soft gray ELASTIC SILT (MH), with sand pockets	(P)0.50		70		91	46						CU
			-with shell fragments from 9' to 11'												
-20 / 15			-with ferrous nodules at 12'	(T)0.13		83	51				0.36	3	11		
			Very stiff, brown and tan FAT CLAY (CH)	(P)3.25		28		61	37						
			-with sand seams from 15' to 30'												
-25 / 20			-stiff from 15' to 25'	(P)1.50											
-30 / 25				(P)2.50		29	93				1.49	10	20		
-35 / 30				(P)3.00		37		66	43						CON
-40 / 35			-becomes stiff at 33'	(P)2.50		33								99	

COMPLETION DEPTH: 50 ft
DATE BORING STARTED: 01/12/22
DATE BORING COMPLETED: 01/12/22
LOGGER: C. Hughes
PROJECT NO.: 21.23.148

NOTES: Top of water to mudline = 6.0-ft. Borehole was backfilled with cement-bentonite grout. CON: One-Dimensional Consolidation. CU: Consolidated Undrained Triaxial Compression. WOH: Weight of Hammer. NP: Non-Plastic.

LOG OF BORING MB-2

PROJECT: Mesquite Point Public Boat Ramp and Jetties
Jefferson County - Port Arthur, Texas

CLIENT: Freese and Nichols, Inc.
Austin, Texas

COORDINATES: N 29° 45' 54.00"
W 93° 53' 52.40"

SURFACE ELEVATION: -6'

DRILLING METHOD:
Dry Augered: -- to --
Wash Bored: 0' to 50'

ELEVATION (FT) / DEPTH (FT)	SAMPLE TYPE	SYMBOL	MATERIAL DESCRIPTION	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
35			Stiff, brown and tan FAT CLAY (CH)												
-45 / 40			Firm gray ELASTIC SILT (MH), with ferrous nodules	(P)1.25		53									
-50 / 45				(P)1.00		53		80	40						
-55 / 50			Firm gray FAT CLAY with SAND (CH), with ferrous nodules, shell fragments and silt pockets	(P)0.75		29	93				0.93	8	41	82	
			Bottom @ 50'												
-60 / 55															
-65 / 60															
-70 / 65															
-75 / 70															

COMPLETION DEPTH: 50 ft
DATE BORING STARTED: 01/12/22
DATE BORING COMPLETED: 01/12/22
LOGGER: C. Hughes
PROJECT NO.: 21.23.148

NOTES: Top of water to mudline = 6.0-ft. Borehole was backfilled with cement-bentonite grout. CON: One-Dimensional Consolidation. CU: Consolidated Undrained Triaxial Compression. WOH: Weight of Hammer. NP: Non-Plastic.

LOG OF BORING MB-3

PROJECT: Mesquite Point Public Boat Ramp and Jetties
Jefferson County - Port Arthur, Texas

CLIENT: Freese and Nichols, Inc.
Austin, Texas

COORDINATES: N 29° 45' 51.50"
W 93° 53' 51.90"

SURFACE ELEVATION: -10'

DRILLING METHOD:
Dry Augered: -- to --
Wash Bored: 0' to 50'

ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	MATERIAL DESCRIPTION	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
-10	0			Very soft gray ELASTIC SILT (MH), with sand pockets -with shell fragments from 0.5' to 2'		WOH	73		77	41						
						WOH										
-15	5			-becomes soft at 6' -with shell fragments from 6' to 8'	(T)0.20		88								96	
					(T)0.15		79		87	49						
-20	10			Stiff, brown and gray LEAN CLAY (CL), with ferrous nodules and sand seams -with calcareous nodules from 12' to 17'	(P)2.75		24		47	26						
-25	15				(P)2.00		25	102				1.85	13	13		
				-with silt pockets from 18' to 35'	(P)2.25											
-30	20															
				-becomes brown and tan at 23'	(P)2.75		29		44	23						
-35	25															
				-with calcareous nodules from 28' to 30'	(P)3.25		26	97				1.96	6	24		
-40	30															
					(P)1.75											
-45	35															

COMPLETION DEPTH: 50 ft
DATE BORING STARTED: 01/12/22
DATE BORING COMPLETED: 01/12/22
LOGGER: C. Hughes
PROJECT NO.: 21.23.148

NOTES: Top of water to mudline = 10.0-ft. Borehole was backfilled with cement-bentonite grout. CU: Consolidated Undrained Triaxial Compression. WOH: Weight of Hammer.

LOG OF BORING MB-3

PROJECT: Mesquite Point Public Boat Ramp and Jetties
Jefferson County - Port Arthur, Texas

CLIENT: Freese and Nichols, Inc.
Austin, Texas

COORDINATES: N 29° 45' 51.50"
W 93° 53' 51.90"

SURFACE ELEVATION: -10'

DRILLING METHOD:
Dry Augered: -- to --
Wash Bored: 0' to 50'

ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	MATERIAL DESCRIPTION	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
-45	35			Stiff, brown and tan LEAN CLAY (CL), with ferrous nodules, silt pockets and sand seams	(P)2.25		35		48	22						CU
-50	40															
-55	45			Stiff gray ELASTIC SILT (MH), with ferrous nodules	(P)1.50											
				-becomes firm at 48'	(P)1.25		59		100	58						
-60	50			Bottom @ 50'												
-65	55															
-70	60															
-75	65															
-80	70															

COMPLETION DEPTH: 50 ft
DATE BORING STARTED: 01/12/22
DATE BORING COMPLETED: 01/12/22
LOGGER: C. Hughes
PROJECT NO.: 21.23.148

NOTES: Top of water to mudline = 10.0-ft. Borehole was backfilled with cement-bentonite grout. CU: Consolidated Undrained Triaxial Compression. WOH: Weight of Hammer.

KEY TO SYMBOLS AND TERMS USED ON BORING LOGS FOR SOIL

Most Common Unified Soil Classifications System Symbols

- Lean Clay (CL)
- Lean Clay w/ Sand (CL)
- Sandy Lean Clay (CL)
- Fat Clay (CH)
- Fat Clay w/ Sand (CH)
- Sandy Fat Clay (CH)
- Silty Clay (CL-ML)
- Sandy Silty Clay (CL-ML)
- Silty Clayey Sand (SC-SM)
- Clayey Sand (SC)
- Sandy Silt (ML)
- Silty Sand (SM)
- Silt w/ Sand (ML)
- Well Graded Sand (SW)
- Well Graded Sand w/ Gravel (SW-GM)
- Poorly Graded Sand (SP)
- Poorly Graded Sand w/ Silt (SP-SM)
- Silt (ML)
- Elastic Silt (MH)
- Elastic Silt w/ Sand (MH-SP)
- Silty Gravel (GM)
- Clayey Gravel (GC)
- Well Graded Gravel (GW)
- Well Graded Gravel w/ Sand (SP-GM)
- Poorly Graded Gravel (GP)
- Peat

Miscellaneous Materials

Fill — Concrete — Asphalt and/or Base

Sampler Symbols	Meaning
	Pavement core
	Thin - walled tube sample
	Standard Penetration Test (SPT)
	Auger sample
	Sampling attempt with no recovery
	TxDOT Cone Penetrometer Test

Field Test Data

2.50	Pocket penetrometer reading in tons per square foot
(T)1.13	Torvane Measurement in tons per square foot
8/6"	Blow count per 6 - in. interval of the Standard Penetration Test
	Observed free water during drilling
	Observed static water level

Laboratory Test Data

Wc (%)	Moisture content in percent
Dens. (pcf)	Dry unit weight in pounds per cubic foot
Qu (tsf)	Unconfined compressive strength in tons per square foot
UU (tsf)	Compressive strength under confining pressure in tons per square foot
Str. (%)	Strain at failure in percent
LL	Liquid Limit in percent
PI	Plasticity Index
#200 (%)	Percent passing the No. 200 mesh sieve
( )	Confining pressure in pounds per square inch
*	Slickensided failure
**	Did not fail @ 15% strain

RELATIVE DENSITY OF COHESIONLESS & SEMI-COHESIONLESS SOILS

The following descriptive terms for relative density apply to cohesionless soils such as gravels, silty sands, and sands as well as semi-cohesive and semi-cohesionless soils such as sandy silts, and clayey sands.

Relative Density	Typical N_{60} Value Range*
Very Loose	0-4
Loose	5-10
Medium Dense	11-30
Dense	31-50
Very Dense	Over 50

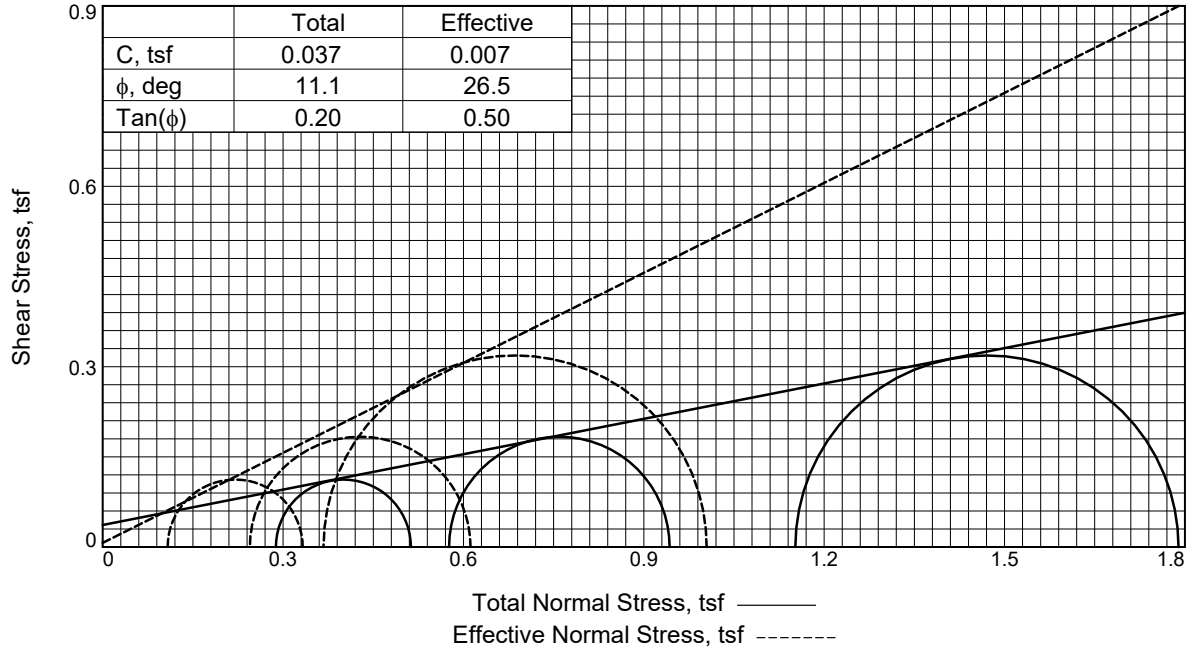
* N_{60} is the number of blows from a 140-lb weight having a free fall of 30-in. required to penetrate the final 12-in. of an 18-in. sample interval, corrected for field procedure to an average energy ratio of 60% (Terzaghi, Peck, and Mesri, 1996).

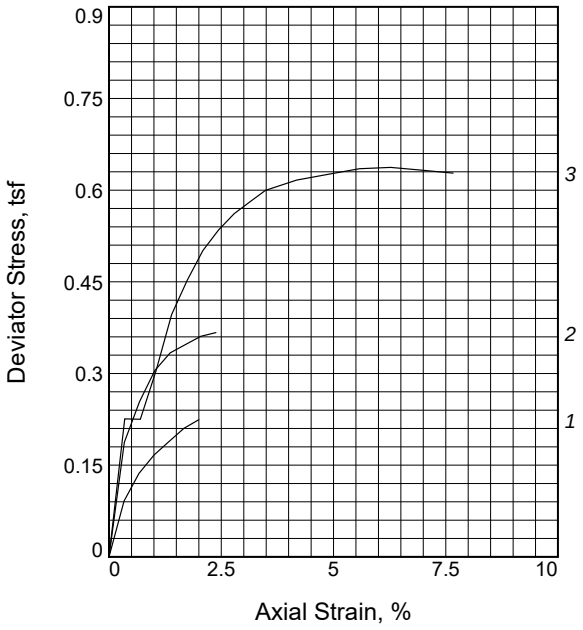
CONSISTENCY OF COHESIVE SOILS

The following descriptive terms for consistency apply to cohesive soils such as clays, sandy clays, and silty clays.

Typical Compressive Strength (tsf)	Consistency	Typical SPT "N_{60}" Value Range**
$q_u < 0.25$	Very soft	≤ 2
$0.25 \leq q_u < 0.50$	Soft	3-4
$0.50 \leq q_u < 1.00$	Firm	5-8
$1.00 \leq q_u < 2.00$	Stiff	9-15
$2.00 \leq q_u < 4.00$	Very Stiff	16-30
$q_u \geq 4.00$	Hard	≥ 31

** An "N_{60}" value of 31 or greater corresponds to a hard consistency. The correlation of consistency with a typical SPT "N_{60}" value range is approximate.





Sample No.		1	2	3
Initial	Water Content, %	76.3	76.3	76.3
	Dry Density, pcf	53.7	53.7	53.7
	Saturation, %	97.2	97.2	97.2
	Void Ratio	2.0806	2.0806	2.0806
	Diameter, in.	1.40	1.40	1.40
	Height, in.	3.00	3.00	3.00
At Test	Water Content, %	78.5	78.5	78.5
	Dry Density, pcf	53.7	53.7	53.7
	Saturation, %	100.0	100.0	100.0
	Void Ratio	2.0806	2.0806	2.0806
	Diameter, in.	1.40	1.41	1.43
	Height, in.	3.00	2.94	2.87
Strain rate, in./min.				
Back Pressure, psi		10.00	10.00	10.00
Cell Pressure, psi		14.00	18.00	26.00
Fail. Stress, tsf		0.22	0.37	0.64
Total Pore Pr., tsf		0.90	1.05	1.50
Ult. Stress, tsf				
Total Pore Pr., tsf				
$\bar{\sigma}_1$ Failure, tsf		0.33	0.61	1.00
$\bar{\sigma}_3$ Failure, tsf		0.11	0.24	0.37

Type of Test:
CU with Pore Pressures

Sample Type: Undisturbed

Description: Clay, dark brown wet silty sandy

Assumed Specific Gravity= 2.65

Remarks:

Figure _____

Client:

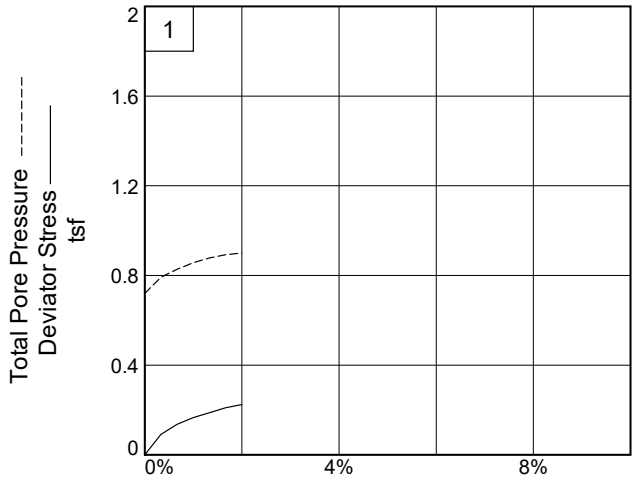
Project: Mesquite Point Public Boat Ramp & Jetties

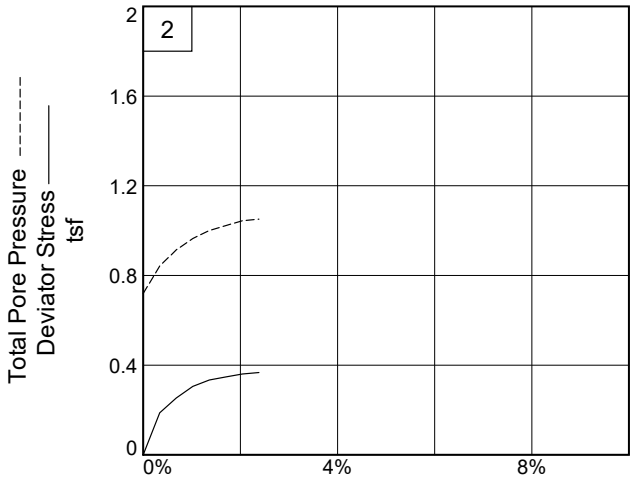
Location: MB-2

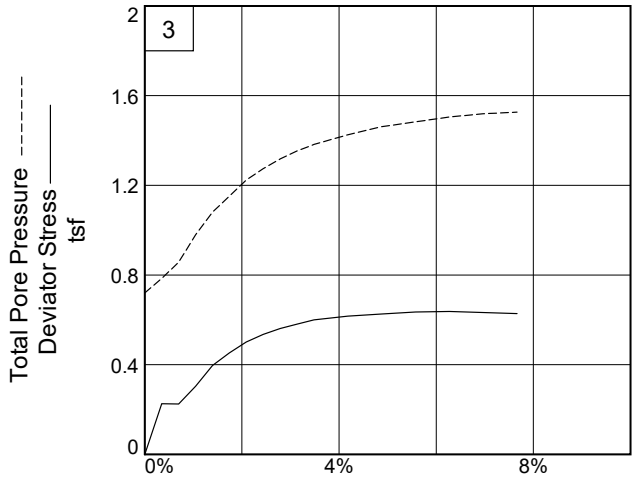
Depth: 9.0'-11.0'

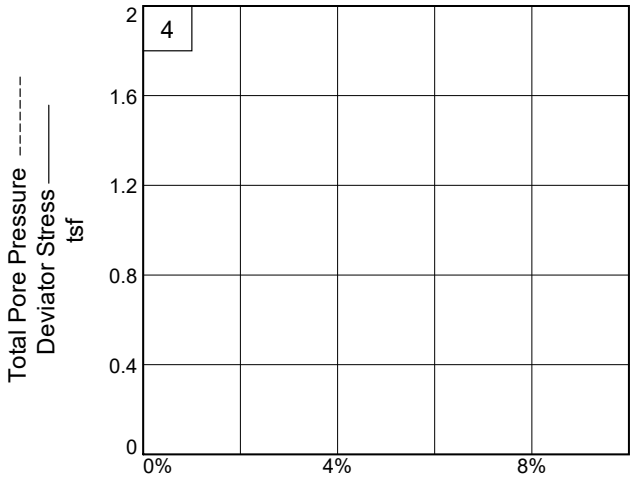
Proj. No.: 21.23.148 **Date Sampled:** 1/31/2022

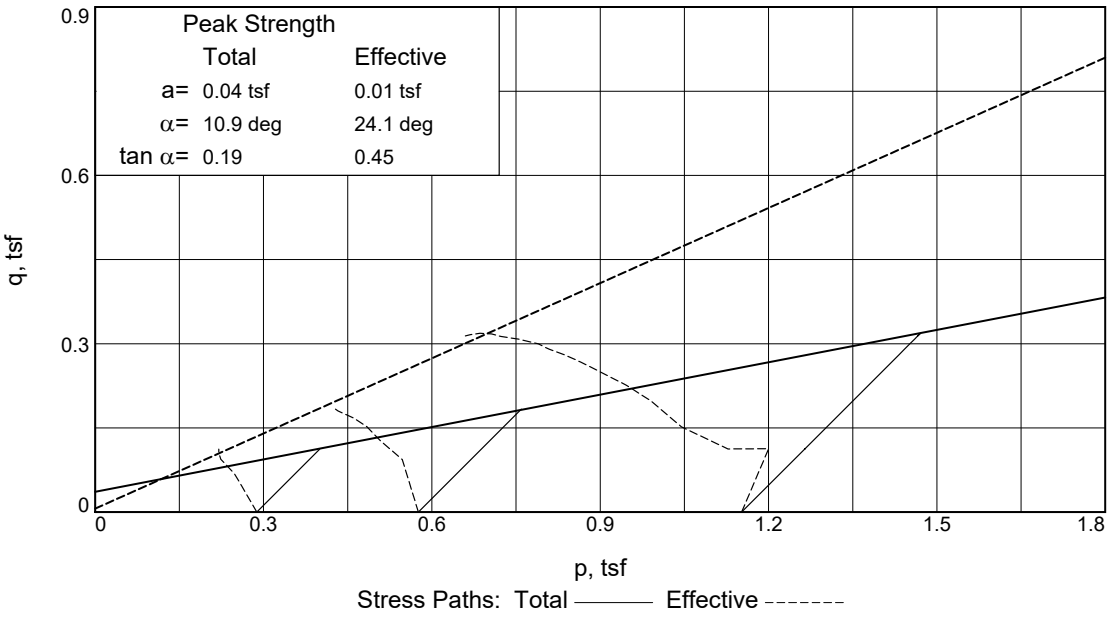
TRIAXIAL SHEAR TEST REPORT
M L Testing, LLC
Bluff Dale, TX











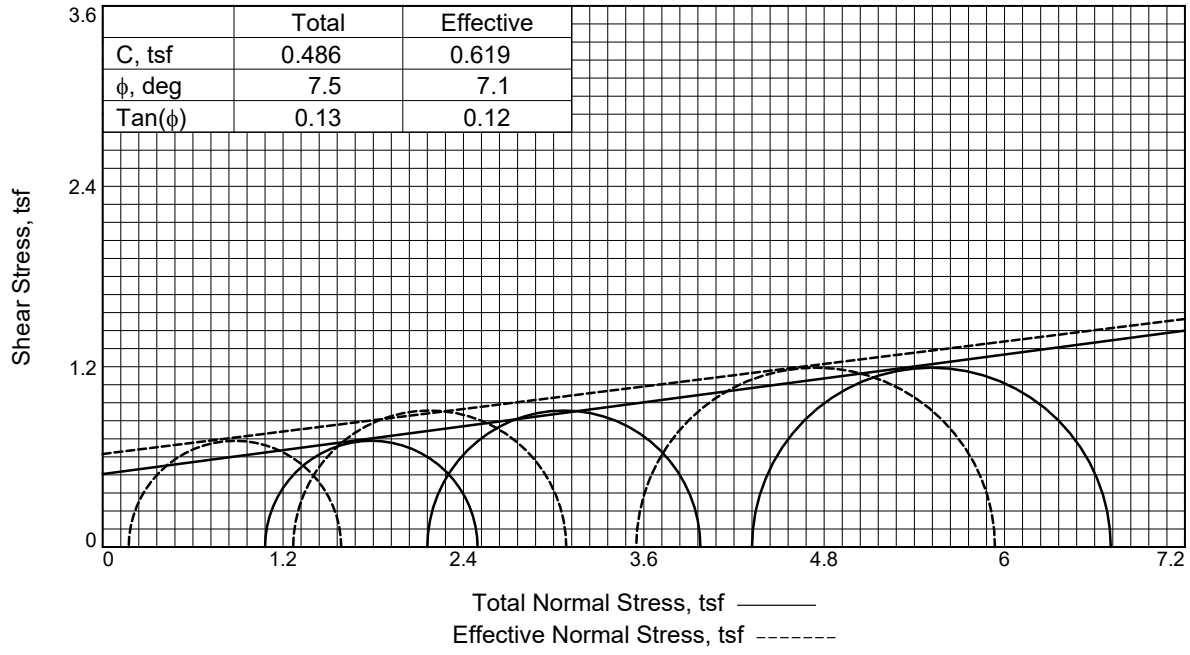
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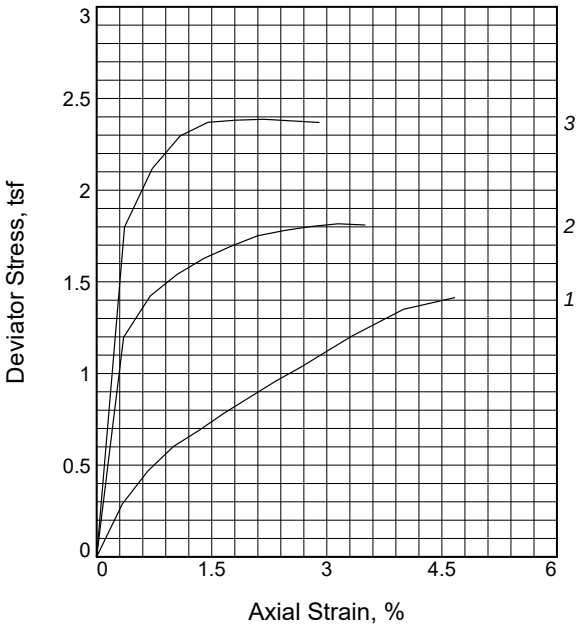
Project: Mesquite Point Public Boat Ramp & Jetties

Location: MB-2 **Depth:** 9.0'-11.0'

Project No.: 21.23.148 **Figure** _____

M L Testing, LLC





Sample No.		1	2	3
Initial	Water Content, %	39.6	39.6	39.6
	Dry Density, pcf	78.6	78.6	78.6
	Saturation, %	94.9	94.9	94.9
	Void Ratio	1.1044	1.1044	1.1044
	Diameter, in.	1.40	1.40	1.40
	Height, in.	3.00	3.00	3.00
At Test	Water Content, %	41.7	41.7	41.7
	Dry Density, pcf	78.6	78.6	78.6
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.1044	1.1044	1.1044
	Diameter, in.	1.40	1.43	1.46
	Height, in.	3.00	2.86	2.76
Strain rate, in./min.				
Back Pressure, psi		10.00	10.00	10.00
Cell Pressure, psi		25.00	40.00	70.00
Fail. Stress, tsf		1.41	1.82	2.39
Total Pore Pr., tsf		1.63	1.61	1.49
Ult. Stress, tsf				
Total Pore Pr., tsf				
$\bar{\sigma}_1$ Failure, tsf		1.59	3.08	5.94
$\bar{\sigma}_3$ Failure, tsf		0.17	1.27	3.55

Type of Test:
CU with Pore Pressures

Sample Type: Undisturbed

Description: Clay, light gray & brown w/sand sms

Assumed Specific Gravity= 2.65

Remarks:

Figure _____

Client:

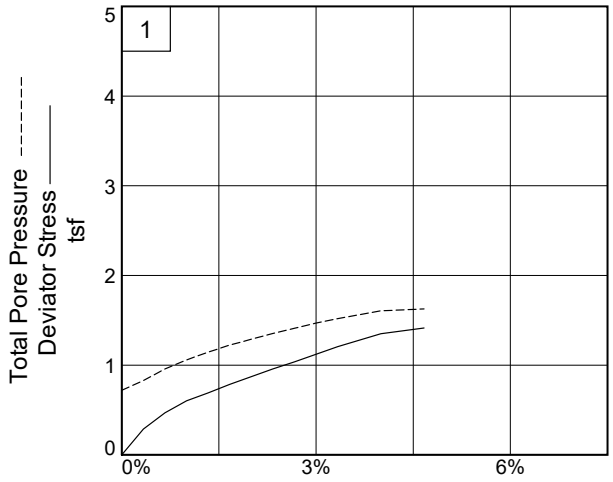
Project: Mesquite Point Public Boat Ramp & Jetties

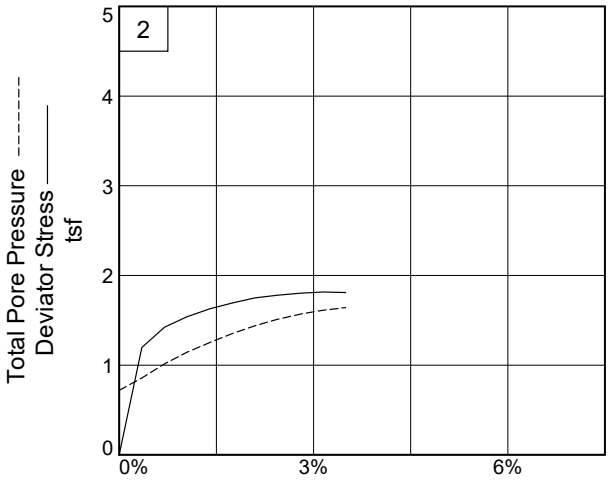
Location: MB-3

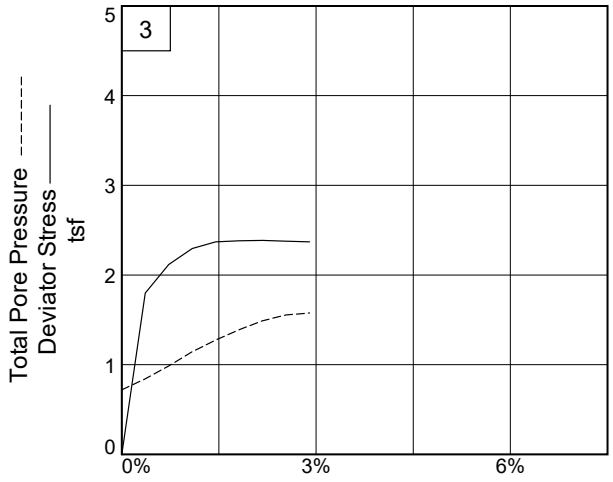
Depth: 38.0'-40.0'

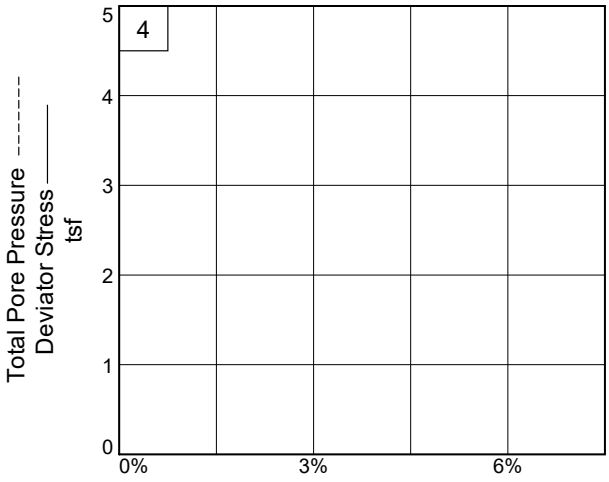
Proj. No.: 21.23.148 **Date Sampled:** 1/31/2022

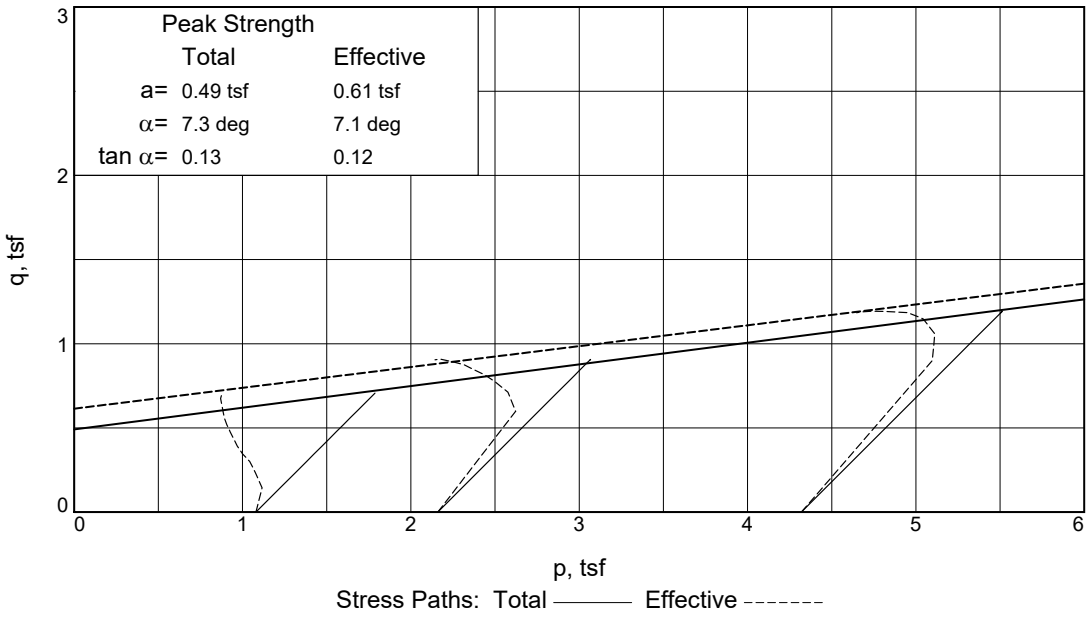
TRIAXIAL SHEAR TEST REPORT
M L Testing, LLC
Bluff Dale, TX











Client:

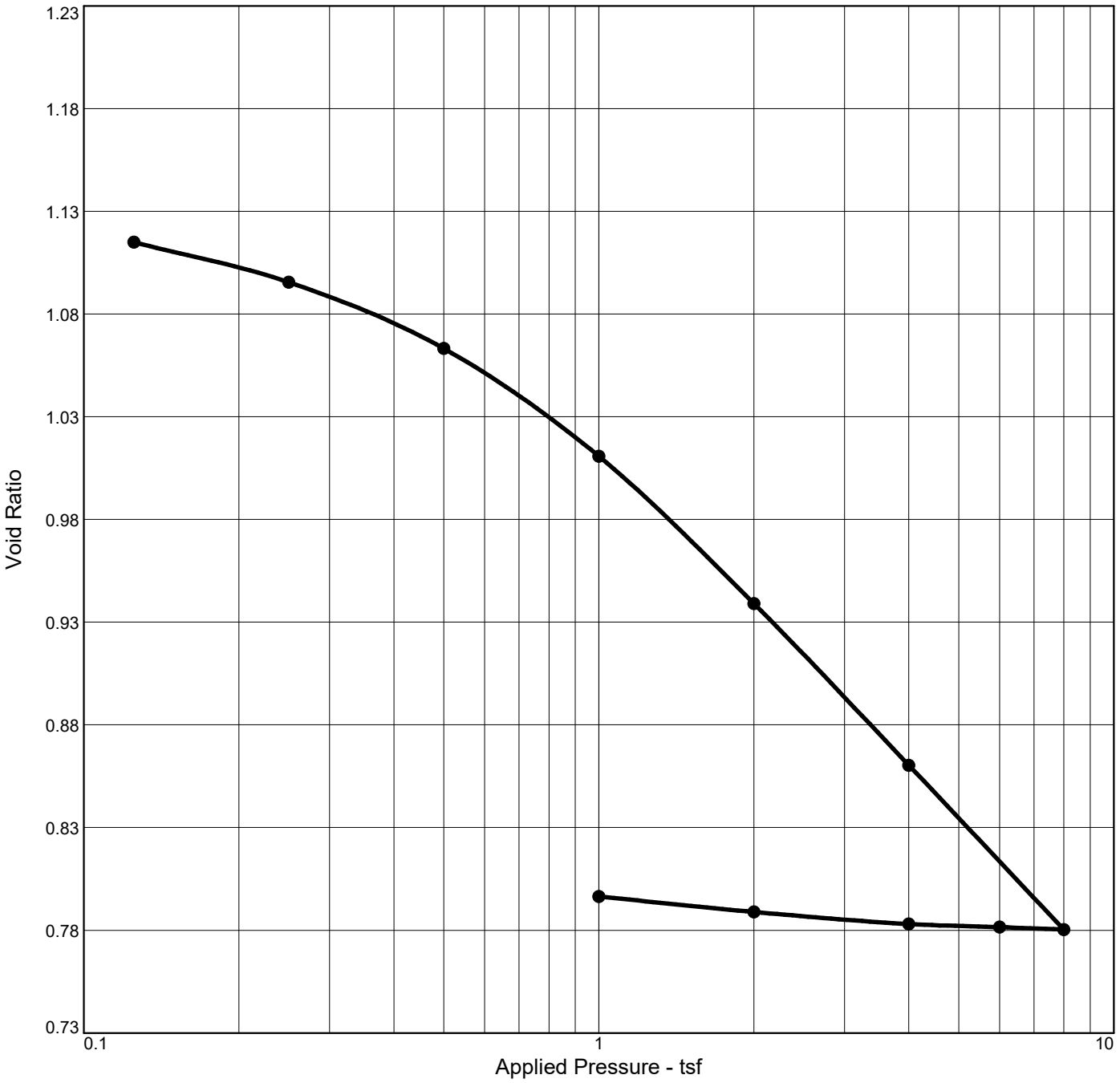
Project: Mesquite Point Public Boat Ramp & Jetties

Location: MB-3 **Depth:** 38.0'-40.0'

Project No.: 21.23.148 **Figure** _____

M L Testing, LLC

ONE-DIMENSIONAL CONSOLIDATION



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
Saturation	Moisture							
97.3 %	41.2 %	78.9	50	25	2.7	0.27	0.7	1.144

MATERIAL DESCRIPTION	USCS	AASHTO
Very soft gray SANDY FAT CLAY (CH)	CH	

Project No. 21.23.148 **Client:** Freese and Nichols, Inc.

Project: Mesquite Point Public Boat Ramp and Jetties
Jefferson County - Port Arthur, Texas

Source of Sample: LB-1 **Depth:** 8

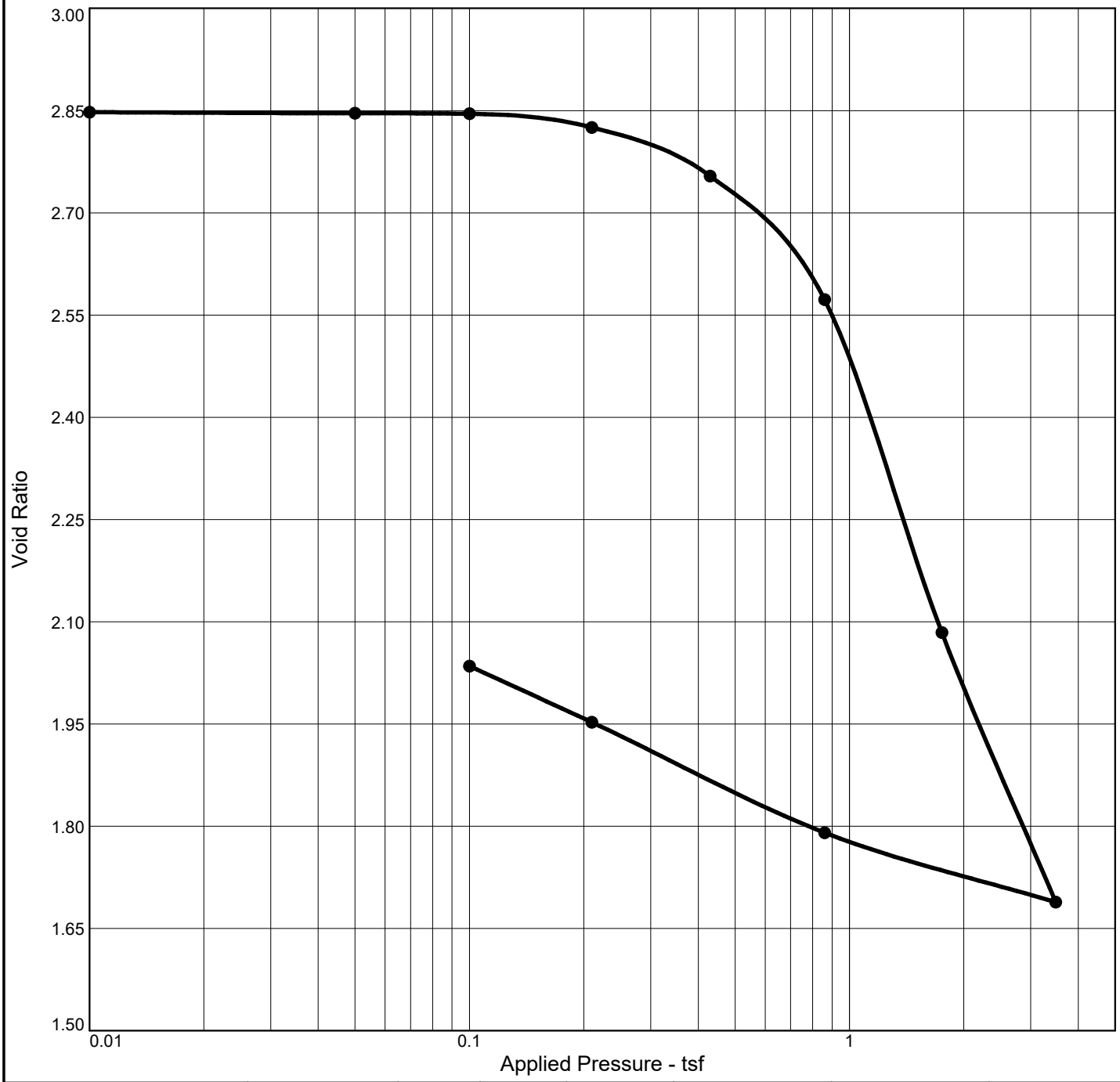
Remarks:

Tolunay-Wong Engineers, Inc.

Houston, Texas

Figure

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
Saturation	Moisture							
99.7 %	99.6 %	46.2	96	40	2.85	0.23	0.6	2.848

MATERIAL DESCRIPTION	USCS	AASHTO
Soft gray ELASTIC SILT (MH)	MH	

Project No. 21.23.148 **Client:** Freese & Nichols, Inc.

Project: Mesquite Point Public Boat Ramp & Jetties

Source of Sample: MB-1 **Depth:** 12-14

Tolunay-Wong Engineers, Inc.

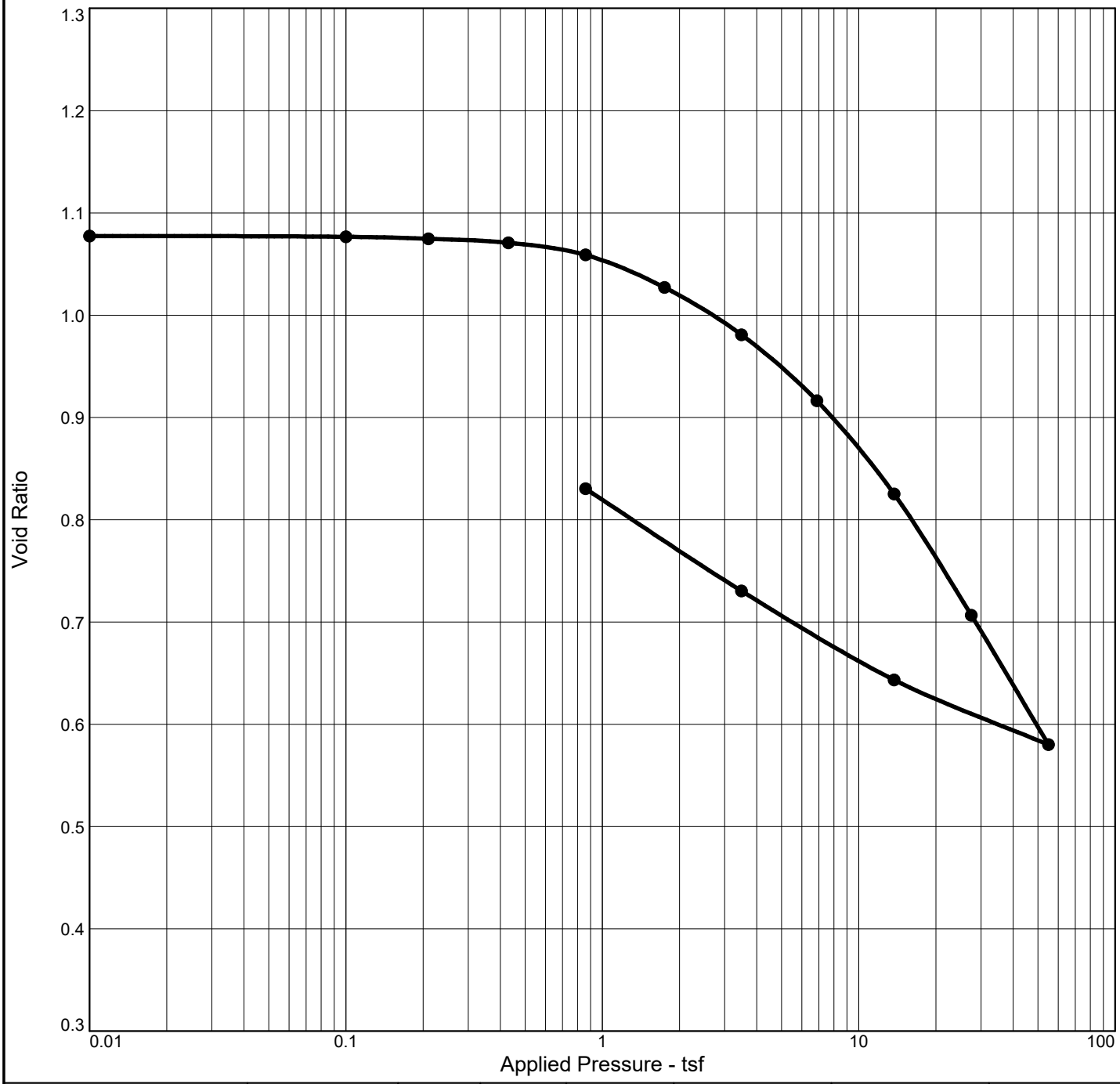
Beaumont, TX

Remarks:

Test method: ASTM D2434
Specific gravity: Assumed

Figure

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
Saturation	Moisture							
99.2 %	38.2 %	84.1	66	43	2.80	0.69	4.6	1.077

MATERIAL DESCRIPTION	USCS	AASHTO
Very stiff, brown and tan FAT CLAY (CH)	CH	

Project No. 21.23.148 **Client:** Freese & Nichols, Inc.

Project: Mesquite Point Public Boat Ramp & Jetties

Source of Sample: MB-2 **Depth:** 28-30

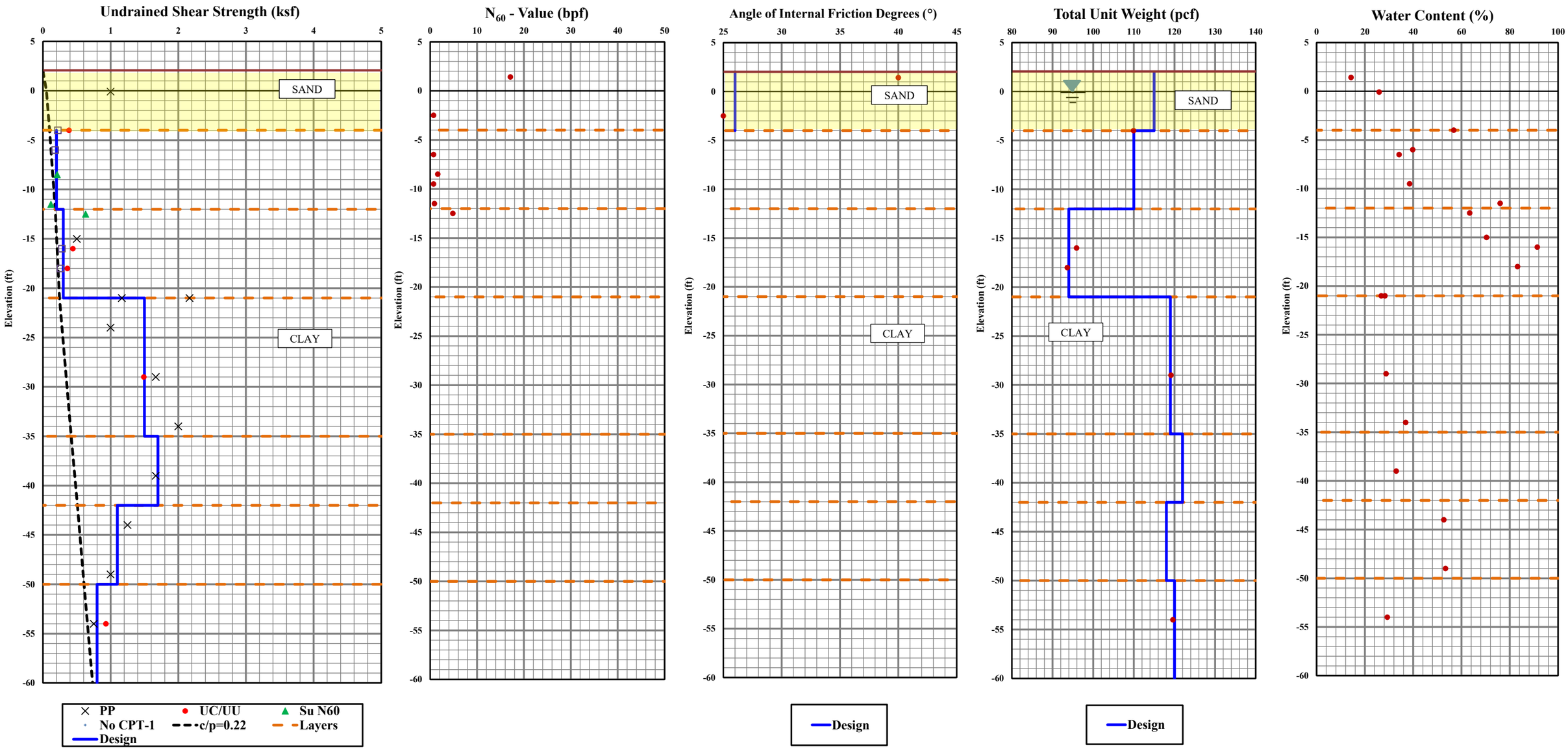
Tolunay-Wong Engineers, Inc.

Beaumont, TX

Remarks:

Test method: ASTM D2435
Specific gravity: Assumed

Figure



Mesquite Point Public Boat Ramp and Jetties Jefferson County - Port Arthur, Texas	**Tolunay-Wong Engineers, Inc.**	Project Number: 21.23.148 Report Number: 129140
Freese and Nichols, Inc. Austin, Texas	**Design Soil Parameters Boat Ramp (Project Borings LB-1 and MB-2)**	Appendix F Figure 1

Tabulated Design Soil Parameters

Elevation Range (ft)		Thickness of Layer (ft)	Soil Type	Undrained Shear Strength, S_u (psf)	Internal Friction Angle, Φ (°)	Total Unit Weight, γ (pcf)	Effective Vertical Stress at Center of Layer, σ'_{vo} (psf)	Initial Void Ratio, e_o	Compression Index, C_c	Recompression Index, C_r	Overconsolidation Ratio, OCR	Elastic Modulus, E (ksf)
2	0	2	Sand	--	26	115	115	0.70	--	--	--	90
0	-4	4	Sand	--	26	115	335	0.70	--	--	--	90
-4	-12	8	Clay	200	--	110	631	1.15	0.32	0.036	1.6	156
-12	-21	9	Clay	300	--	94	963	2.20	1.20	0.124	1.6	86
-21	-35	14	Clay	1,500	--	119	1,502	0.75	0.22	0.028	6.6	300
-35	-42	7	Clay	1,700	--	122	2,107	0.90	0.30	0.032	5.1	340
-42	-50	8	Clay	1,100	--	118	2,538	1.40	0.44	0.040	2.4	438
-50	-60	10	Clay	800	--	120	3,048	1.00	0.60	0.072	1.3	235

Mesquite Point Public Boat Ramp and Jetties Jefferson County - Port Arthur, Texas	Tolunay-Wong Engineers, Inc.	Project Number: 21.23.148 Report Number: 129140
Freese and Nichols, Inc. Austin, Texas	**Summary of Design Soil Parameters Boat Ramp**	Appendix F Figure 2

Recommended Soil Design Parameters for Retaining Wall Design - Boat Ramp Area

Soil Layer	Soil Description	Elevation Range (ft)	γ (pcf)	γ' (pcf)	Undrained Parameters (Short-Term)							Drained Parameters (Long-Term)						
					c (psf)	φ (°)	δ (°)	a (psf)	K_a	K_p	K_o	c' (psf)	φ' (°)	δ (°)	a (psf)	K_a	K_p	K_o
1	Very Loose Sand	(+)2 to 0	115	115	0	26	13	0	0.39	2.56	0.56	0	26	13	0	0.39	2.56	0.56
2	Very Loose Sand	0 to (-)4	115	53	0	26	13	0	0.39	2.56	0.56	0	26	13	0	0.39	2.56	0.56
3	Very Soft Clay	(-)4 to (-)12	110	48	200	0	0	200	1.00	1.00	1.00	20	28	14	0	0.36	2.77	0.53
4	Soft Clay	(-)12 to (-)21	94	32	300	0	0	300	1.00	1.00	1.00	30	21	11	0	0.47	2.12	0.64
5	Stiff Clay	(-)21 to (-)35	119	57	1,500	0	0	850	1.00	1.00	1.00	150	24	12	0	0.43	2.34	0.60
6	Stiff Clay	(-)35 to (-)42	122	60	1,700	0	0	890	1.00	1.00	1.00	170	22	11	0	0.45	2.22	0.62
7	Stiff Clay	(-)42 to (-)50	118	56	1,100	0	0	770	1.00	1.00	1.00	110	24	12	0	0.43	2.34	0.60
8	Firm Clay	(-)50 to (-)60	120	58	800	0	0	650	1.00	1.00	1.00	80	21	11	0	0.47	2.12	0.64

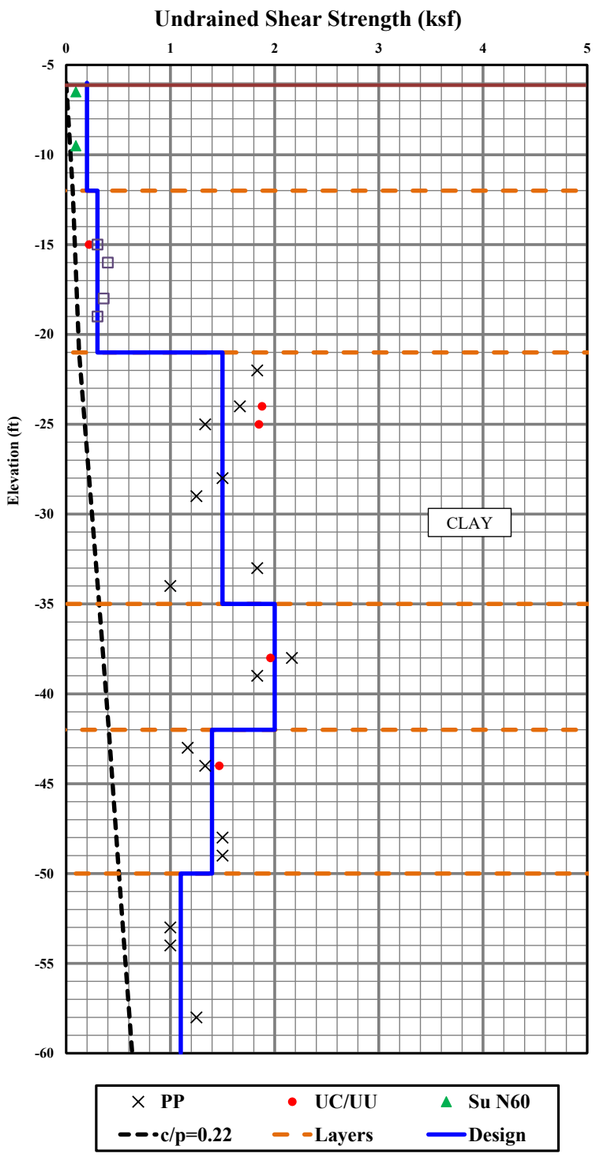
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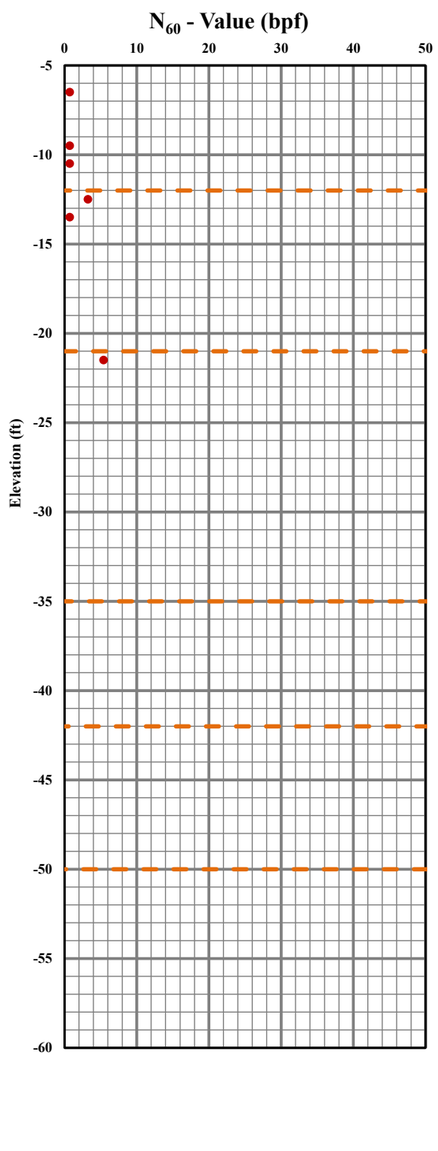
(1) Plasticity index (PI) was used to provide a correlation of effective friction angle for clay soils.
(2) Effective cohesion values were estimated using published correlations and our experience with similar soils.
(3) K_a, K_p and K_o provided are based on Rankine's earth pressure theory assume horizontal ground surface and smooth wall neglecting angle of wall friction.
(4) If wall friction is considered, K_a, K_p and K_o should be re-calculated based on Coulomb's earth pressure theory.

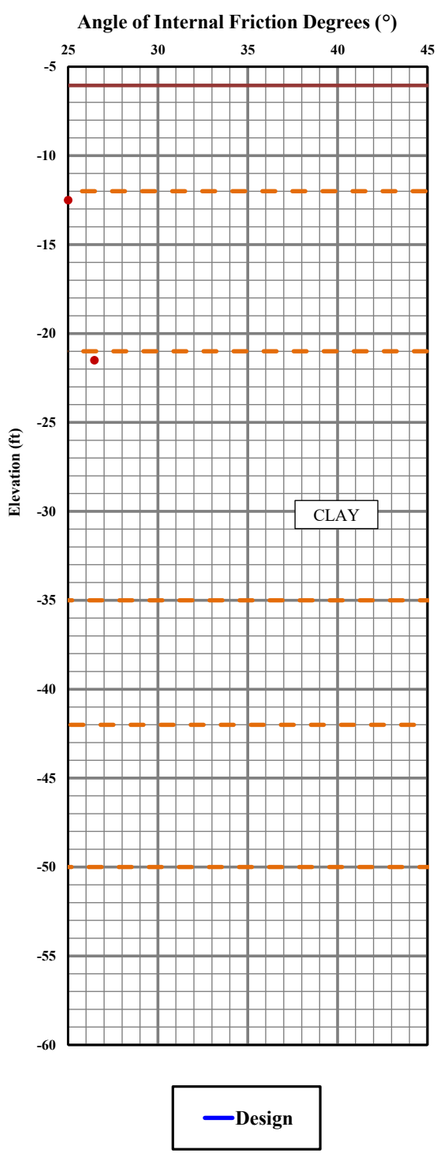
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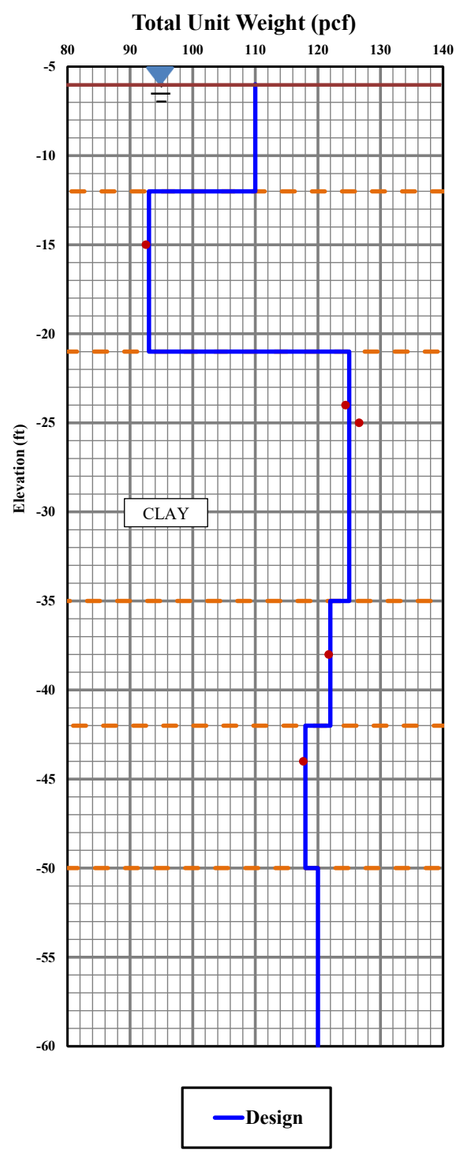
γ = Total Unit Weight
γ' = Submerged Unit Weight
c = Cohesion
φ = Friction Angle
δ = Angle of Wall Friction
a = Adhesion
K_a = Active Earth Pressure Coefficient (Rankine)
K_p = Passive Earth Pressure Coefficient (Rankine)
K_o = At-Rest Earth Pressure Coefficient (Rankine)

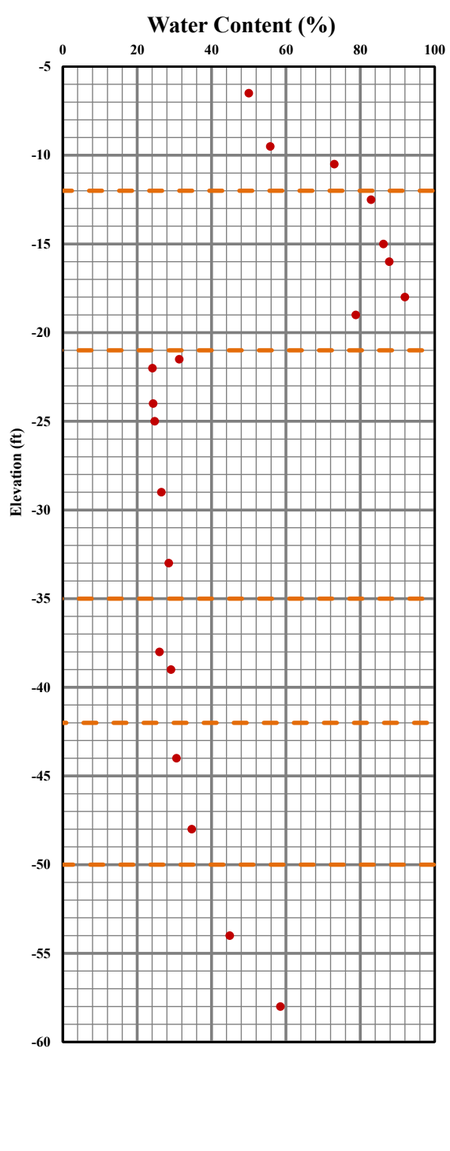
Mesquite Point Public Boat Ramp and Jetties **Jefferson County - Port Arthur, Texas**	Tolunay-Wong Engineers, Inc.	**Project Number:** 21.23.148 **Report Number:** 129140
Freese and Nichols, Inc. **Austin, Texas**	**Recommended Soil Design Parameters for Retaining Wall Design** **Boat Ramp Area**	**Appendix** F **Figure** 3











Mesquite Point Public Boat Ramp and Jetties Jefferson County - Port Arthur, Texas	**Tolunay-Wong Engineers, Inc.**	Project Number: 21.23.148 Report Number: 129140
Freese and Nichols, Inc. Austin, Texas	**Design Soil Parameters Rock Jetties (Project Borings MB-1 and MB-3)**	Appendix F Figure 4

Tabulated Design Soil Parameters

Elevation Range (ft)		Thickness of Layer (ft)	Soil Type	Undrained Shear Strength, S_u (psf)	Internal Friction Angle, Φ (°)	Total Unit Weight, γ (pcf)	Effective Vertical Stress at Center of Layer, σ'_{vo} (psf)	Initial Void Ratio, e_o	Compression Index, C_c	Recompression Index, C_r	Overconsolidation Ratio, OCR	Elastic Modulus, E (ksf)
-6	-12	6	Clay	200	--	110	143	1.15	0.32	0.036	2.6	106
-12	-21	9	Clay	300	--	93	423	2.20	1.20	0.124	2.6	95
-21	-35	14	Clay	1,500	--	125	999	0.75	0.22	0.028	6.6	378
-35	-42	7	Clay	2,000	--	122	1,646	0.90	0.30	0.032	6.6	400
-42	-50	8	Clay	1,400	--	118	2,077	0.90	0.38	0.038	4.0	811
-50	-60	10	Clay	1,100	--	120	2,587	1.40	0.60	0.076	2.2	288

Mesquite Point Public Boat Ramp and Jetties Jefferson County - Port Arthur, Texas	**Tolunay-Wong Engineers, Inc.**	Project Number: 21.23.148 Report Number: 129140
Freese and Nichols, Inc. Austin, Texas	**Summary of Design Soil Parameters Rock Jetties**	Appendix F Figure 5

Recommended Soil Design Parameters for Stability Analysis - Rock Jetties

Soil Layer	Soil Description	Elevation Range (ft)	γ (pcf)	γ' (pcf)	Undrained Parameters (Short-Term)							Drained Parameters (Long-Term)						
					c (psf)	φ (°)	δ (°)	a (psf)	K_a	K_p	K_o	c' (psf)	φ' (°)	δ (°)	a (psf)	K_a	K_p	K_o
1	Very Soft Clay	(-)6 to (-)12	110	48	200	0	0	200	1.00	1.00	1.00	0	27	13	0	0.38	2.63	0.55
2	Soft Clay	(-)12 to (-)21	93	31	300	0	0	300	1.00	1.00	1.00	30	22	11	0	0.45	2.22	0.62
3	Stiff Clay	(-)21 to (-)35	125	63	1,500	0	0	850	1.00	1.00	1.00	150	27	13	0	0.38	2.63	0.55
4	Very Stiff Clay	(-)35 to (-)42	122	60	2,000	0	0	950	1.00	1.00	1.00	200	22	11	0	0.45	2.22	0.62
5	Stiff Clay	(-)42 to (-)50	118	56	1,400	0	0	830	1.00	1.00	1.00	140	28	14	0	0.36	2.77	0.53
6	Stiff Clay	(-)50 to (-)60	120	58	1,100	0	0	770	1.00	1.00	1.00	110	21	11	0	0.47	2.12	0.64

Notes:

(1) Plasticity index (PI) was used to provide a correlation of effective friction angle for clay soils.
(2) Effective cohesion values were estimated using published correlations and our experience with similar soils.
(3) K_a, K_p and K_o provided are based on Rankine's earth pressure theory assume horizontal ground surface and smooth wall neglecting angle of wall friction.
(4) If wall friction is considered, K_a, K_p and K_o should be re-calculated based on Coulomb's earth pressure theory.

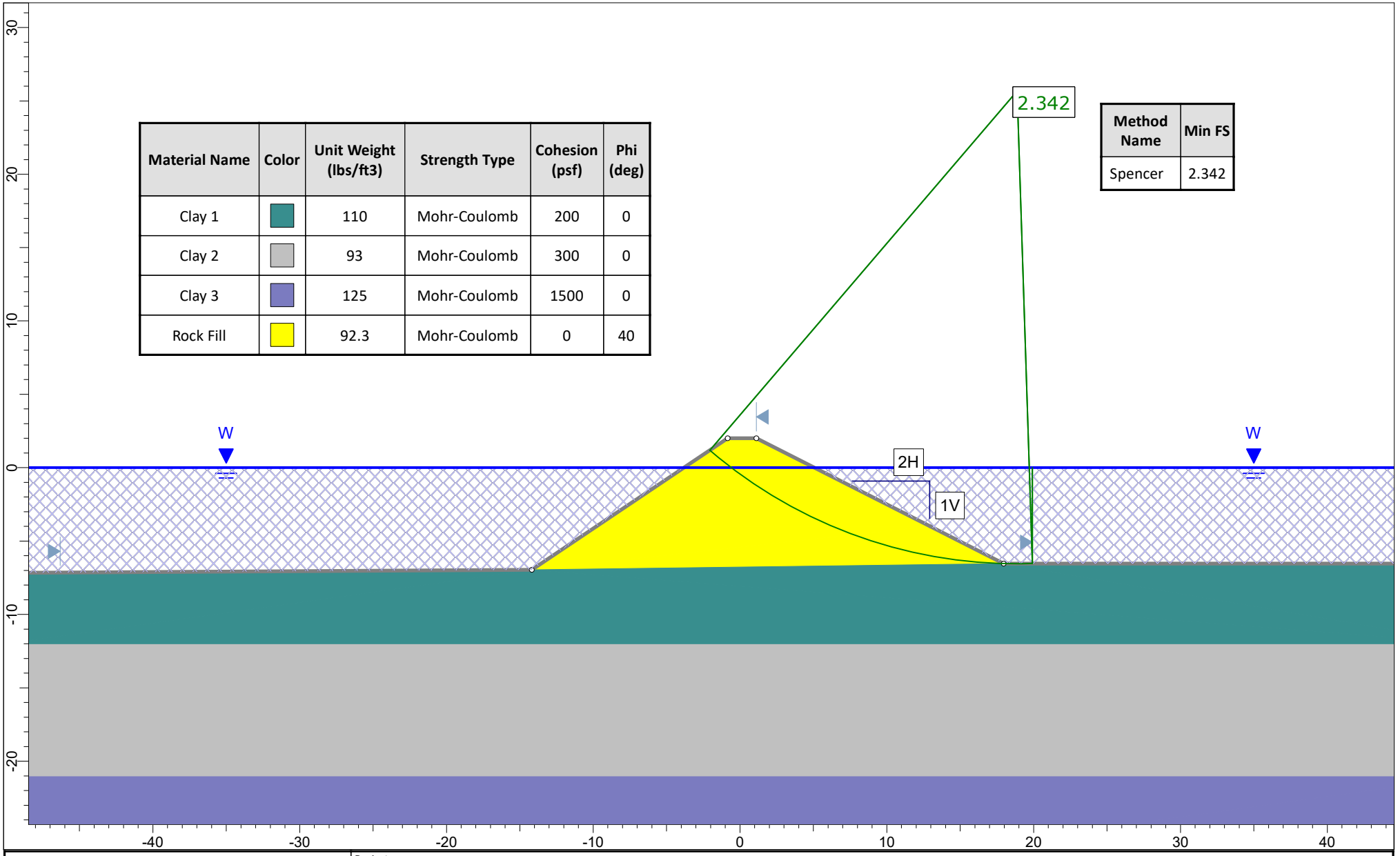
Legend:

γ = Total Unit Weight
γ' = Submerged Unit Weight
c = Cohesion
φ = Friction Angle
δ = Angle of Wall Friction
a = Adhesion
K_a = Active Earth Pressure Coefficient (Rankine)
K_p = Passive Earth Pressure Coefficient (Rankine)
K_o = At-Rest Earth Pressure Coefficient (Rankine)

Mesquite Point Public Boat Ramp and Jetties **Jefferson County - Port Arthur, Texas**	**Tolunay-Wong Engineers, Inc.**	**Project Number:** 21.23.148 **Report Number:** 129140
Freese and Nichols, Inc. **Austin, Texas**	**Recommended Soil Design Parameters for Stability Analysis** **Rock Jetties**	**Appendix** F **Figure** 6

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Clay 1		110	Mohr-Coulomb	200	0
Clay 2		93	Mohr-Coulomb	300	0
Clay 3		125	Mohr-Coulomb	1500	0
Rock Fill		92.3	Mohr-Coulomb	0	40

Method Name	Min FS
Spencer	2.342



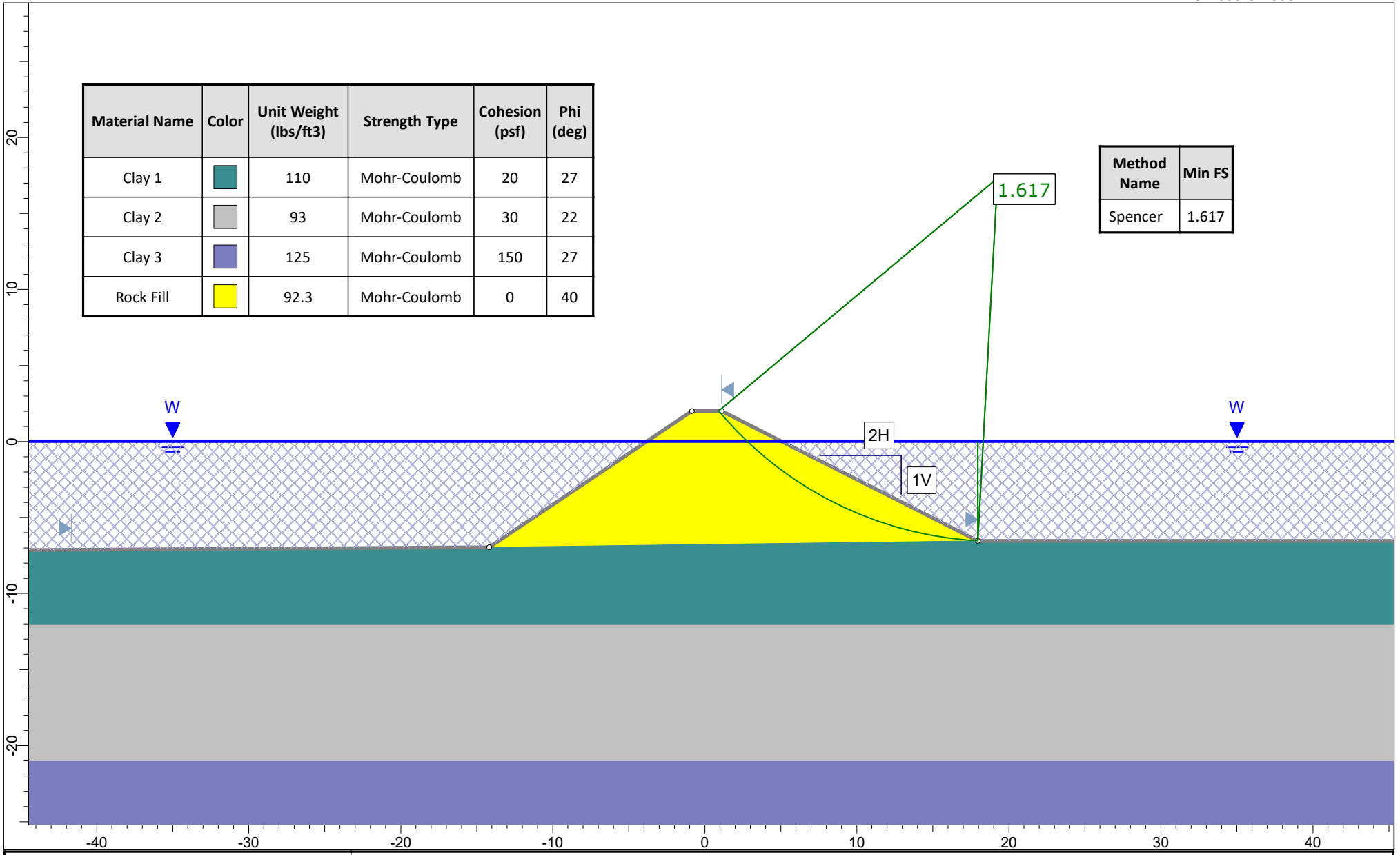
Tolunay-Wong Engineers, Inc.

Project	Mesquite Point Public Boat Ramp and Jetties		
Analysis Description	Rock Jetty Slope 2H:1V - Global Stability Analysis - Short-term (Undrained)		
Project No.	21.23.148	Scale 1:108	Company Freese and Nichols, Inc.
Date	3/31/2022		Figure No. 1

SLIDEINTERPRET 8.032

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Clay 1		110	Mohr-Coulomb	20	27
Clay 2		93	Mohr-Coulomb	30	22
Clay 3		125	Mohr-Coulomb	150	27
Rock Fill		92.3	Mohr-Coulomb	0	40

Method Name	Min FS
Spencer	1.617



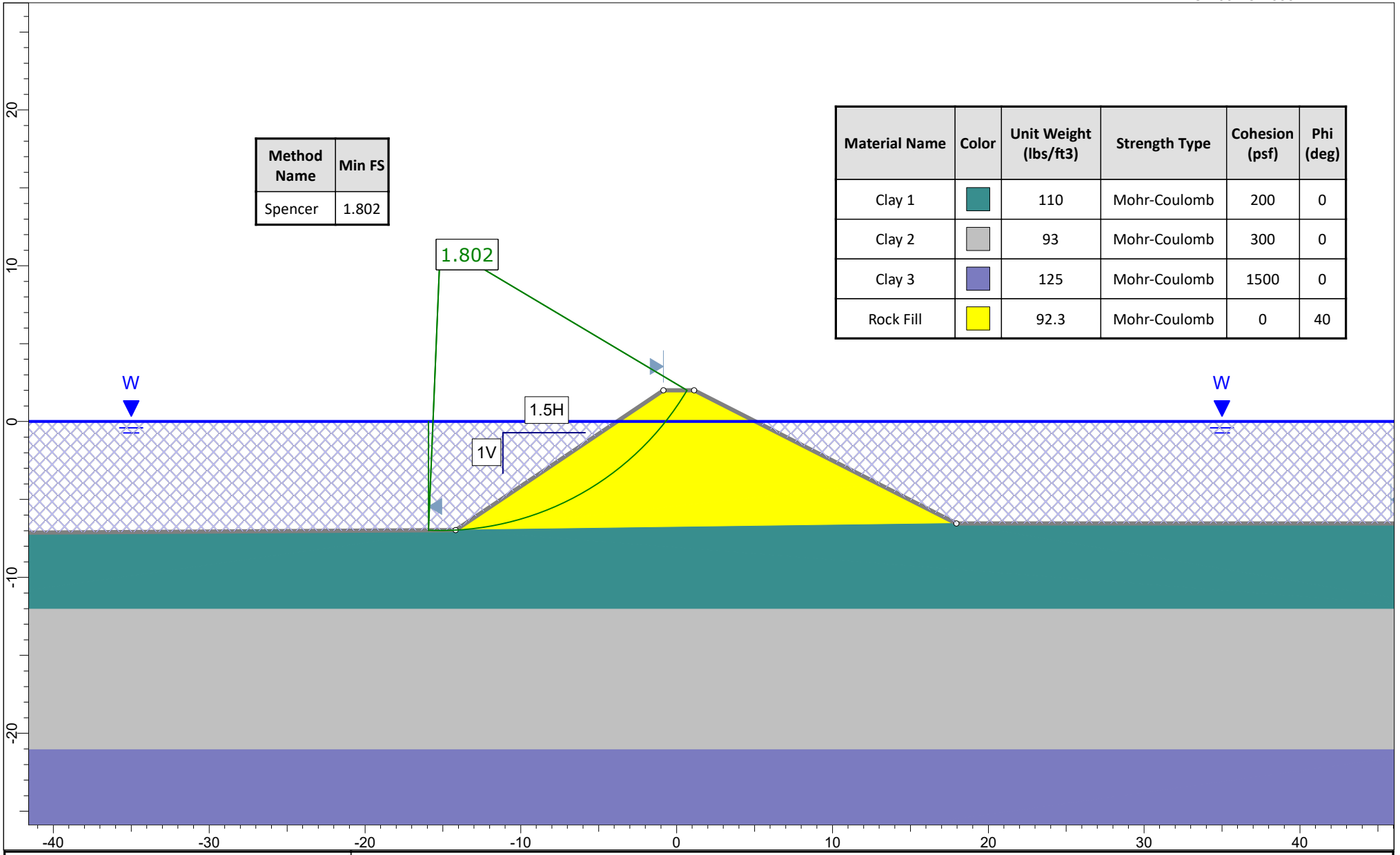
Tolunay-Wong Engineers, Inc.

Project	Mesquite Point Public Boat Ramp and Jetties		
Analysis Description	Rock Jetty Slope 2H:1V - Global Stability Analysis - Long-term (Drained)		
Project No.	21.23.148	Scale 1:105	Company Freese and Nichols, Inc.
Date	3/31/2022		Figure No. 2

SLIDEINTERPRET 8.032

Method Name	Min FS
Spencer	1.802

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Clay 1		110	Mohr-Coulomb	200	0
Clay 2		93	Mohr-Coulomb	300	0
Clay 3		125	Mohr-Coulomb	1500	0
Rock Fill		92.3	Mohr-Coulomb	0	40



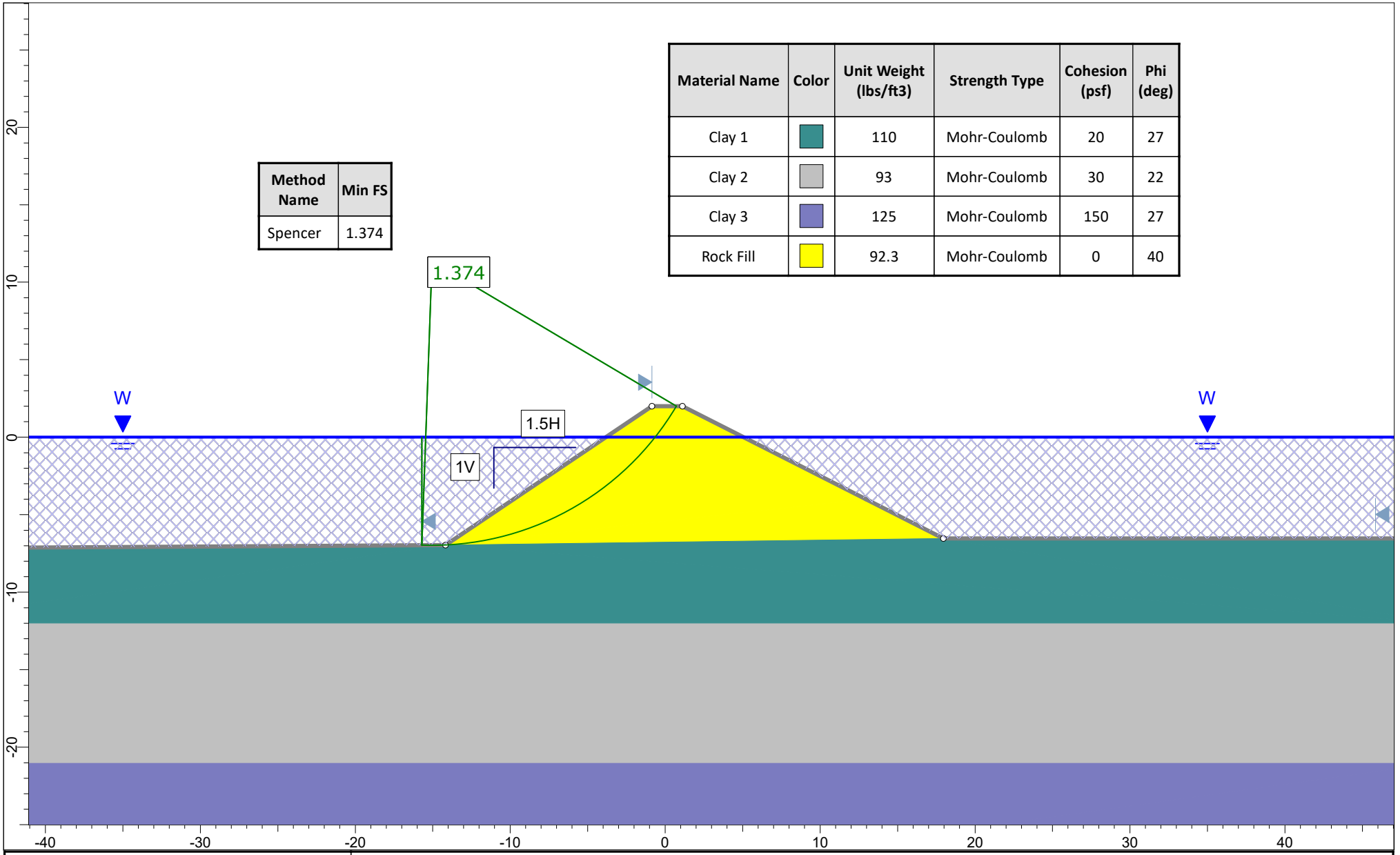
Tolunay-Wong Engineers, Inc.

Project	Mesquite Point Public Boat Ramp and Jetties		
Analysis Description	Rock Jetty Slope 1.5H:1V - Global Stability Analysis - Short-term (Undrained)		
Project No.	21.23.148	Scale 1:102	Company Freese and Nichols, Inc.
Date	3/31/2022		Figure No. 3

SLIDEINTERPRET 8.032

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Clay 1		110	Mohr-Coulomb	20	27
Clay 2		93	Mohr-Coulomb	30	22
Clay 3		125	Mohr-Coulomb	150	27
Rock Fill		92.3	Mohr-Coulomb	0	40

Method Name	Min FS
Spencer	1.374



Tolunay-Wong Engineers, Inc.

Project	Mesquite Point Public Boat Ramp and Jetties		
Analysis Description	Rock Jetty Slope 1.5H:1V - Global Stability Analysis - Long-term (Drained)		
Project No.	21.23.148	Scale 1:103	Company Freese and Nichols, Inc.
Date	3/31/2022		Figure No. 4

SLIDEINTERPRET 8.032

DRAWINGS FOR

MESQUITE POINT PUBLIC BOAT RAMP

Project No. 22-071

FREESE AND NICHOLS
10497 Town and Country Way, Suite 500
Houston, Texas 77024
Phone – (713) 600-6800
Fax – (817) 735-7491

November 17, 2022

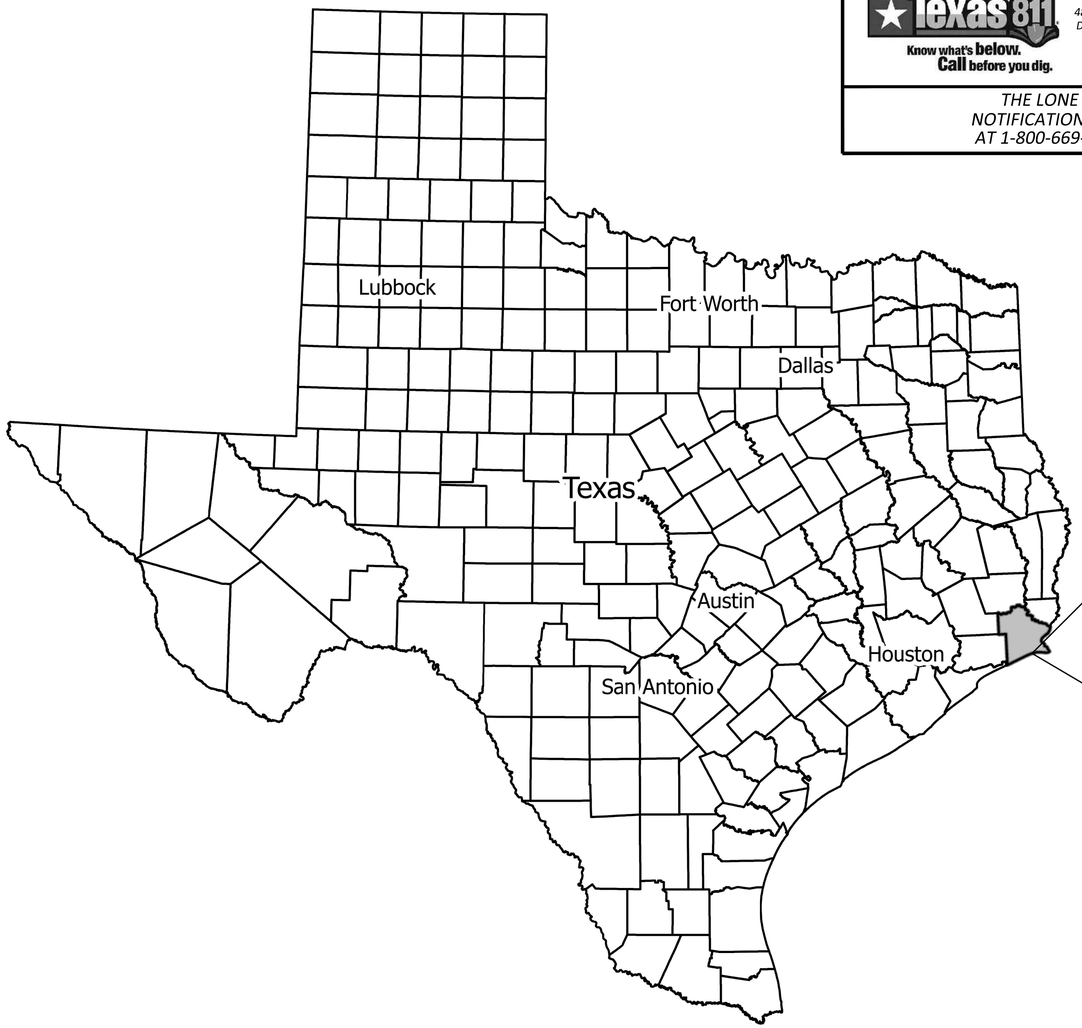
CALL BEFORE YOU DIG!

Texas 811 — Know what's below. Call before you dig.

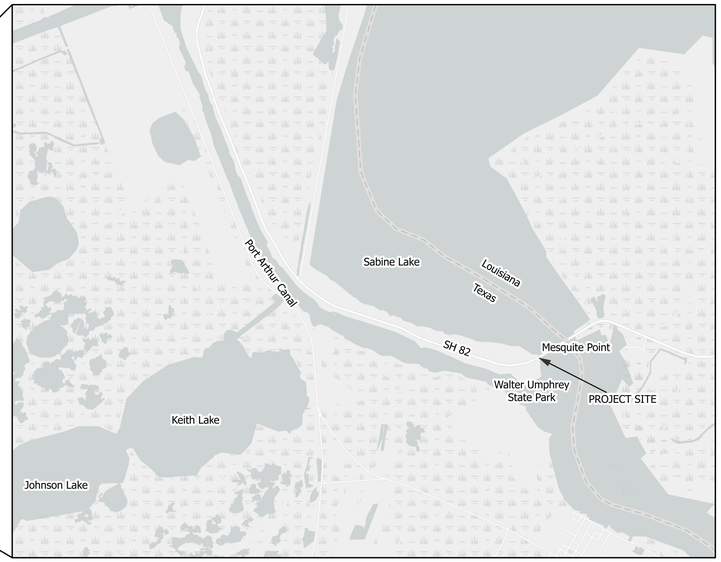
PARTICIPANTS REQUEST 48 HOURS NOTICE BEFORE YOU DIG, DRILL, OR BLAST - STOP AND CALL

811

THE LONE STAR NOTIFICATION COMPANY AT 1-800-669-8344



1 G-01 LOCATION MAP
NOT TO SCALE



2 G-01 VICINITY MAP
1" = 50,000'

MESQUITE POINT PUBLIC BOAT RAMP

SABINE PASS
JEFFERSON COUNTY, TX

PREPARED BY:

FREESE AND NICHOLS
10497 Town and Country Way,
Suite 500
Houston, Texas 77024
Phone – (713) 600–6800
Web – www.freese.com
Engineering Firm F–2144

NOVEMBER 2022

STATE OF TEXAS — CARL A. SEPULVEDA — 101267 — LICENSED PROFESSIONAL ENGINEER

11/17/22

JEFFERSON COUNTY TEXAS

SHEET INDEX		
SEQ.	**SHEET**	**DRAWING TITLE**
GENERAL		
1	G-01	COVER SHEET
2	G-02	GENERAL NOTES, LEGEND, & QUANTITIES
3	G-03	EXISTING OVERALL TOPOGRAPHY PLAN
CIVIL		
4	C-01	DEMOLITION (SOUTH)
5	C-02	PROPOSED SITE PLAN LAYOUT
6	C-03	CIVIL PLANS (SOUTH)
7	C-04	GRADING PLAN (SOUTH)
8	C-05	DREDGING
9	C-06	DREDGE MATERIAL PLACEMENT
10	C-07	MISCELLANEOUS SECTIONS
STRUCTURAL		
11	S-01	GENERAL STRUCTURAL NOTES
12	S-02	RAMP FOUNDATION PLAN
13	S-03	SECTIONS I
14	S-04	SECTIONS II
15	S-05	BULKHEAD SECTION AND DETAILS

GENERAL:

1. OMISSIONS FROM THE DRAWINGS OR SPECIFICATIONS, OR THE MISDESCRIPTION OF DETAILS OF WORK WHICH ARE MANIFESTLY NECESSARY TO CARRY OUT THE INTENT OF THE DRAWINGS AND SPECIFICATIONS, OR WHICH ARE CUSTOMARILY PERFORMED, SHALL NOT RELIEVE THE CONTRACTOR FROM PERFORMING SUCH OMITTED OR MISDESCRIBED DETAILS OF THE WORK, BUT THEY SHALL BE PERFORMED AS IF FULLY AND CORRECTLY SET FORTH AND DESCRIBED IN THE DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL CHECK ALL DRAWINGS AND SPECIFICATIONS FURNISHED TO HIM IMMEDIATELY UPON THEIR RECEIPT AND SHALL PROMPTLY NOTIFY THE ENGINEER OF ANY DISCREPANCIES. THE CONTRACTOR SHALL REVIEW ALL DRAWINGS AND VERIFY DIMENSIONS BEFORE LAYING OUT THE WORK AND WILL BE RESPONSIBLE FOR ANY ERRORS WHICH MIGHT HAVE BEEN AVOIDED THEREBY.
2. ALL TOPOGRAPHIC AND BATHYMETRIC ELEVATIONS ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). ALL HORIZONTAL COORDINATE DATA ARE SHOWN IN THE STATES PLANE COORDINATE SYSTEM FOR THE TEXAS SOUTH CENTRAL ZONE (4204). SEE SURVEY SHEETS G-03 FOR DETAILS.
3. THE UTILITY LOCATIONS SHOWN ON THESE DRAWINGS ARE CONSIDERED APPROXIMATE AND WERE OBTAINED FROM THE BEST INFORMATION AVAILABLE INCLUDING GENERAL TOPOGRAPHIC SURVEY. THE ACTUAL LOCATION OF UTILITIES MAY VARY FROM THAT SHOWN AND THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THEIR LOCATIONS, GRADES, AND DIMENSIONS PRIOR TO STARTING ANY WORK THAT COULD DISTURB THEM.
4. WHERE EXISTING ASPHALT AND CONCRETE ARE TO BE CUT, THESE CUTS SHALL BE VERTICAL AND MADE WITH A SAW. CONTRACTOR WILL BE RESPONSIBLE FOR REPAVING AREAS DISTURBED BY CONSTRUCTION.
5. TOPSOIL AND SEEDING SHALL BE PLACED ON ALL DISTURBED AREAS. TOPSOIL SHALL HAVE A PH RANGE OF 5.5 TO 7, AND SHALL BE FREE OF STONES LARGER THAN ONE INCH, DEBRIS, AND EXTRANEOUS MATERIALS HARMFUL TO PLANT GROWTH.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING WORK AREA IN A CONDITION SAFE FOR PARK VISITORS AND EXCLUDING VISITORS FROM UNSAFE AREAS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROCURING ALL LEGALLY REQUIRED PERMITS AND LICENSES, PAY ALL CHARGES AND FEES, GIVE ALL NOTICES NECESSARY AND INCIDENTAL TO THE DUE AND LAWFUL PROSECUTION OF THE WORK, AND ARRANGE FOR ALL INSPECTIONS, PER THE CONTRACT DOCUMENTS.

QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
	DEMOLITION		
1	DEMOLISH FINGER PIERS & BULKHEADS TO PROPOSED GRADE	140	LF
2	DEMOLISH FINGER PIER & SIDEWALK TO 3' AND 2' BELOW PROPOSED GRADE	129	LF
3	DEMOLISH CONCRETE BOAT RAMP	61	CY
4	SAWCUT AND REMOVE EXISTING ASPHALT	284	SY
	EARTHWROK		
5	LANDSIDE GRADING RAMP APPRACHES	196	SY
6	DREDGING	401	CY
7	DREDGING MOBILIZATION & DEMOBILIZATION	1	LS
8	FLOWABLE FILL FOR NORTH RAMP	10	CY
9	S OF S RAMP - EXCAVATE AND CLEAN TOPSOIL FIL	33	CY
10	S OF S RAMP - GRADING & BERMUDA BROADCAST SEED & WATERING	100	CY
11	RAMP EXCAVATION	575	CY
	BOAT RAMP		
12	CIP BOAT RAMP SLAB	90	CY
13	RAMP GRAVEL BASE	371	CY
14	MIRAFI 1100N FILTER FABRIC	550	SY
15	DEWATERING (COFFERDAMMING, ETC.)	1	LS
16	RAMP TOE RIPRAP	34	CY
	FINGER PIERS		
17	CIP COLUMNS	5	CY
18	CIP RETAINING WALLS	45	CY
19	CIP PIER BEAMS	55	CY
20	VERTICAL FENDERING	32	EA
21	HORIZONTAL FENDERING	5	EA
22	STAINLESS STEEL BITS	8	EA
	BULKHEAD AND SIDEWALKS		
23	SIDEWALK PAVING AND CONCRETE PAD AT RAMP	190	SY
24	8" COMPACTED SUBGRADE	84	SY
25	NZ-26 SHEET PILE	3166	SF
26	COAL TAR EPOXY ON BOTH SIDES OF SHEET PILE (2 COATS)	2971	SF
27	CONCRETE CAP (5,000 PSI)	34	CY
28	CRUSHED STONE BACKFILL (AASHTO NO. 57 STONE)	60	CY
	PARKING		
29	ASPHALT PAVEMENT - PARKING EXTENSION & RAMP TIE-IN	143	SY
30	PARKING TIES (CURB STOPS)	3	EA
31	PAVEMENT MARKING, TYPE 2 (Y)(4")	1000	LF
	MISC.		
32	TRASH CAN RECEPTABLE	1	EA
33	REMOVE AND REPLACE (OR RELOCATE LIGHT POLE)	2	EA
34	HANDICAP SIGN AND PAINTED SYMBOL	2	EA
35	SWPPP MEASURES	1	LS

LEGEND/ABBREVIATIONS

EXISTING

- LIGHT STANDARD
- SIGN
- EXISTING TRASH CAN
- HANDICAP PARKING
- BORING LOCATION
- CONTROL POINT
- BRIDGE COLUMNS
- EDGE OF PAVEMENT
- EDGE OF ASPHALT
- 2 EXISTING CONTOUR

N

NORTH ARROW

PROPOSED

- 20.0% PROPOSED GRADE
- TC = 2.50 TOP OF CONCRETE ELEVATION
- PROPOSED TRASH CAN
- PROPOSED HANDICAP PARKING
- FENDER
- MOORING BIT
- SHEET PILE
- CONTROL JOINT (CJ)
- CONCRETE PAD
- GRADE TO EXISTING
- RIPRAP/GRAVEL
- EXISTING PAVEMENT/ ASPHALT REMOVAL
- EXISTING BOAT RAMP REMOVAL
- EXISTING BOAT DOCK REMOVAL
- FLOWABLE FILL
- EXCAVATE, FILL, GRADE & SEED

NOTE:
WHERE THE WORD "PROPOSED" OR "PROP."
IS UTILIZED IN THIS SET OF DOCUMENTS, IT SHALL MEAN "NEW CONSTRUCTION TO BE PERFORMED AS PART OF THIS CONTRACT."

TESTING SCHEDULE

DESCRIPTION	MINIMUM RATE	EST. QUANTITY
SOILS:		
STANDARD PROCTOR - TRENCH BACKFILL	PER MATERIAL SOURCE	1
STANDARD PROCTOR - SUBGRADE	PER PARKING AREA	1
DENSITIES - TRENCH BACKFILL	PER 200 LF TRENCH/LIFT	-
DENSITIES - SUBGRADE (STREET)	PER 200 LF LANE/LIFT	-
DENSITIES - SUBGRADE (DRIVEWAYS)	PER 2 DRIVEWAYS	-
DENSITIES - SUBGRADE (SIDEWALKS)	PER 5000 SF	1
FLEXIBLE BASE:		
SIEVE ANALYSIS	PER 300O CY	1
ATTERBURG LIMITS	PER 3000 CY	1
MODIFIED PROCTOR	PER 3000 CY	1
L.A. ABRASION	PER 3000 CY	1
CBR (STANDARD)	PER MATERIAL SOURCE	-
WET BALL MILL TEST	PER MATERIAL SOURCE	-
TRIAXIAL TEST	PER MATERIAL SOURCE	-
HOT-MIX ASPHALT CONCRETE (HMAC):		
EXTRACTION, SIEVE ANALYSIS	PER 500 TONS OR DAY	-
LAB DENSITY & STABILITY	PER 500 TONS OR DAY	–
THEORETICAL DENSITY (RICE METHOD)	PER 500 TONS OR DAY	-
TEMPERATURE - DURING LAY-DOWN	CONTINUOUS AS NEEDED	-
THICKNESS - IN PLACE (CORE)	PER 1000 LF STREET	-
% AIR VOIDS - IN PLACE (CORE)	PER 1000 LF STREET	-
% THEORETICAL DENSITY - IN PLACE (CORE)	PER 1000 LF STREET	-
CONCRETE:		
CURB & GUTTER		
SIDEWALKS	PER 500 LF C&G	-
PAVEMENT PAD	PER 4000 SF	1
	PER 2500 SF	1
RIGID PAVEMENT (ADD/ALT.):		
COMPRESSION STRENGTH (7 & 28 DAY)		
FLEXURAL (BEAM) STRENGTH (7 & 28 DAY)	PER 2500 SY OR DAY	-
AIR CONTENT	PER 2500 SY OR DAY	-
SLUMP	PER 2500 SY OR DAY	-
	PER 2500 SY OR DAY	-

NOTE:

1. THE ABOVE TESTING RATES ARE ONLY ANTICIPATED GUIDELINES, THE ENGINEER RESERVES THE RIGHT TO CONDUCT ADDITIONAL TESTING AT THE ENGINEER'S DISCRETION. RE-TEST FOR FAILURES ARE NOT INCLUDED.
2. MOISTURE CONTENTS TO BE INCLUDED WITH DENSITY TEST.
3. IN THE EVENT OF FAILURES, ADDITIONAL TESTS WILL BE REQUIRED.
4. ALL TESTING SHALL BE PROVIDED BY THE CONTRACTOR WITH OWNER'S APPROVAL. AN ALLOWANCE ITEM HAS BEEN PROVIDED FOR REIMBURSEMENT, BASED ON TESTING FIRM INVOICING.

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144
STATE OF TEXAS · CARLA A. SEPULVEDA · 101267 · LICENSED PROFESSIONAL ENGINEER
11/17/22
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JEFFERSON COUNTY, TX
MESQUITE POINT PUBLIC BOAT RAMP
GENERAL
SHEET INDEX, LEGEND, & GENERAL NOTES

F&N JOB NO. JFF21789
DATE 11/22/2022
DESIGNED CAS
DRAWN KBH
REVISED -
CHECKED NAC
FILE NAME GN-ALL-INDEX.dwg

NO.	ISSUE	BY	DATE

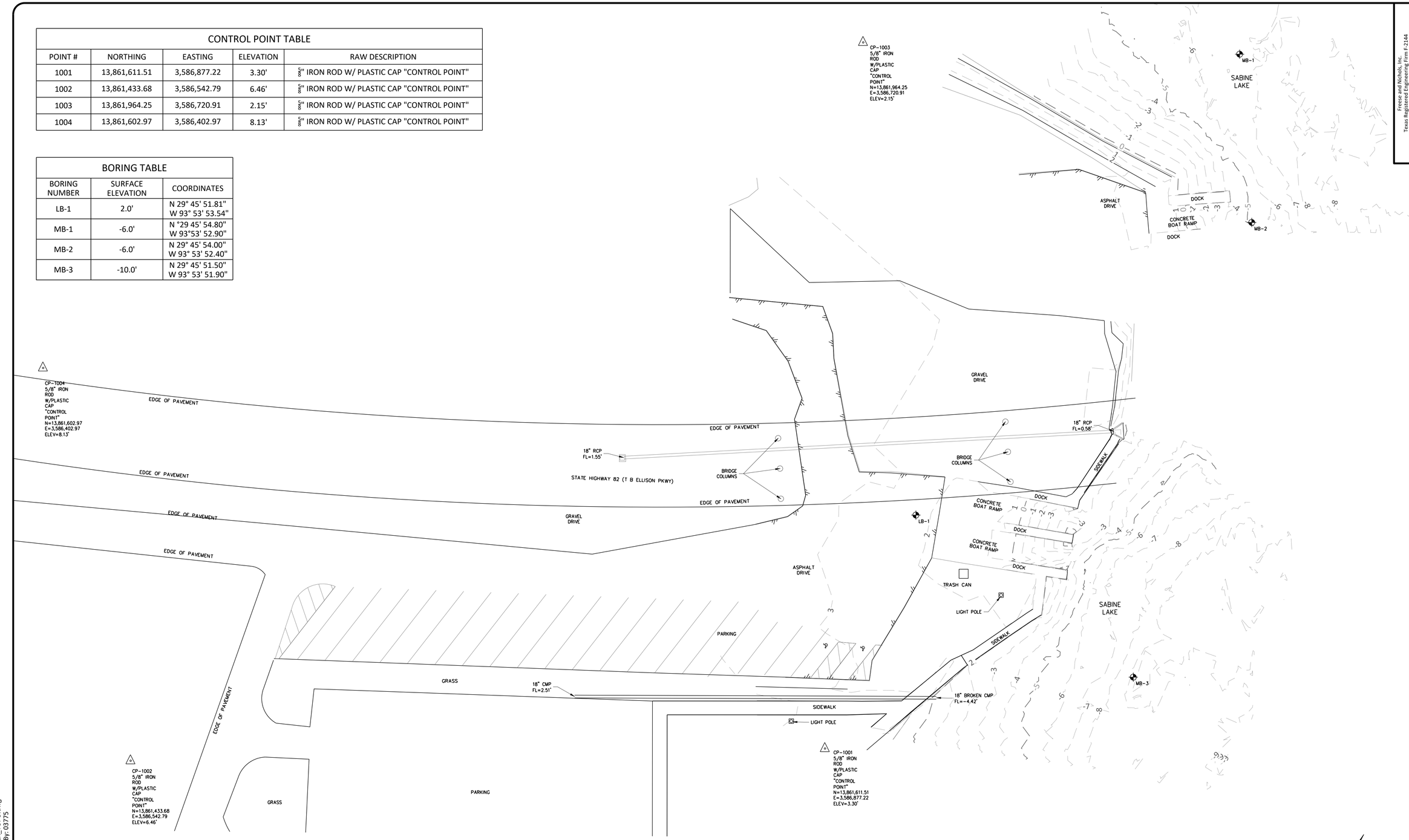
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SHEET G-02
SEQ. 2

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CONTROL POINT TABLE				
POINT #	NORTHING	EASTING	ELEVATION	RAW DESCRIPTION
1001	13,861,611.51	3,586,877.22	3.30'	5/8" IRON ROD W/ PLASTIC CAP "CONTROL POINT"
1002	13,861,433.68	3,586,542.79	6.46'	5/8" IRON ROD W/ PLASTIC CAP "CONTROL POINT"
1003	13,861,964.25	3,586,720.91	2.15'	5/8" IRON ROD W/ PLASTIC CAP "CONTROL POINT"
1004	13,861,602.97	3,586,402.97	8.13'	5/8" IRON ROD W/ PLASTIC CAP "CONTROL POINT"

BORING TABLE		
BORING NUMBER	SURFACE ELEVATION	COORDINATES
LB-1	2.0'	N 29° 45' 51.81" W 93° 53' 53.54"
MB-1	-6.0'	N °29 45' 54.80" W 93°53' 52.90"
MB-2	-6.0'	N 29° 45' 54.00" W 93° 53' 52.40"
MB-3	-10.0'	N 29° 45' 51.50" W 93° 53' 51.90"



1 G-03 EXISITING OVERALL TOPOGRAPHY PLAN

1"= 25'

NOTES

1. ALL BEARINGS AND COORDINATES SHOWN ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204) NAD 83 (2001 ADJ.;EPOCH 2010.0) USING THE TXDOT VRS SYSTEM. ALL COORDINATES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY A TXTDOT SURFACE ADJUSTMENT FACTOR OF 1.00007.
2. ALL PROJECT ELEVATIONS ARE REFERENCED TO NAVD88, GEOID 12B AND BASED ON GPS OBSERVATION MEANS USING THE TXDOT VRS SYSTEM AT THE TIME OF THE SURVEY.
3. ALL MEASUREMENTS ARE U.S. SURVEY FEET.
4. SURVEY WAS PERFORMED IN DECEMBER 2021.

N

0 25' 50'

SCALE IN FEET

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JEFFERSON COUNTY, TX

MESQUITE POINT PUBLIC BOAT RAMP

GENERAL

EXISTING OVERALL TOPOGRAPHY PLAN

NO.	ISSUE	BY	DATE

F&N JOB NO.	JFF21789
DATE	11/1/2022
DESIGNED	CAS
DRAWN	KBH
REVISED	-
CHECKED	NAC
FILE NAME	CV-ALL-PL-EX_TOPO.dwg

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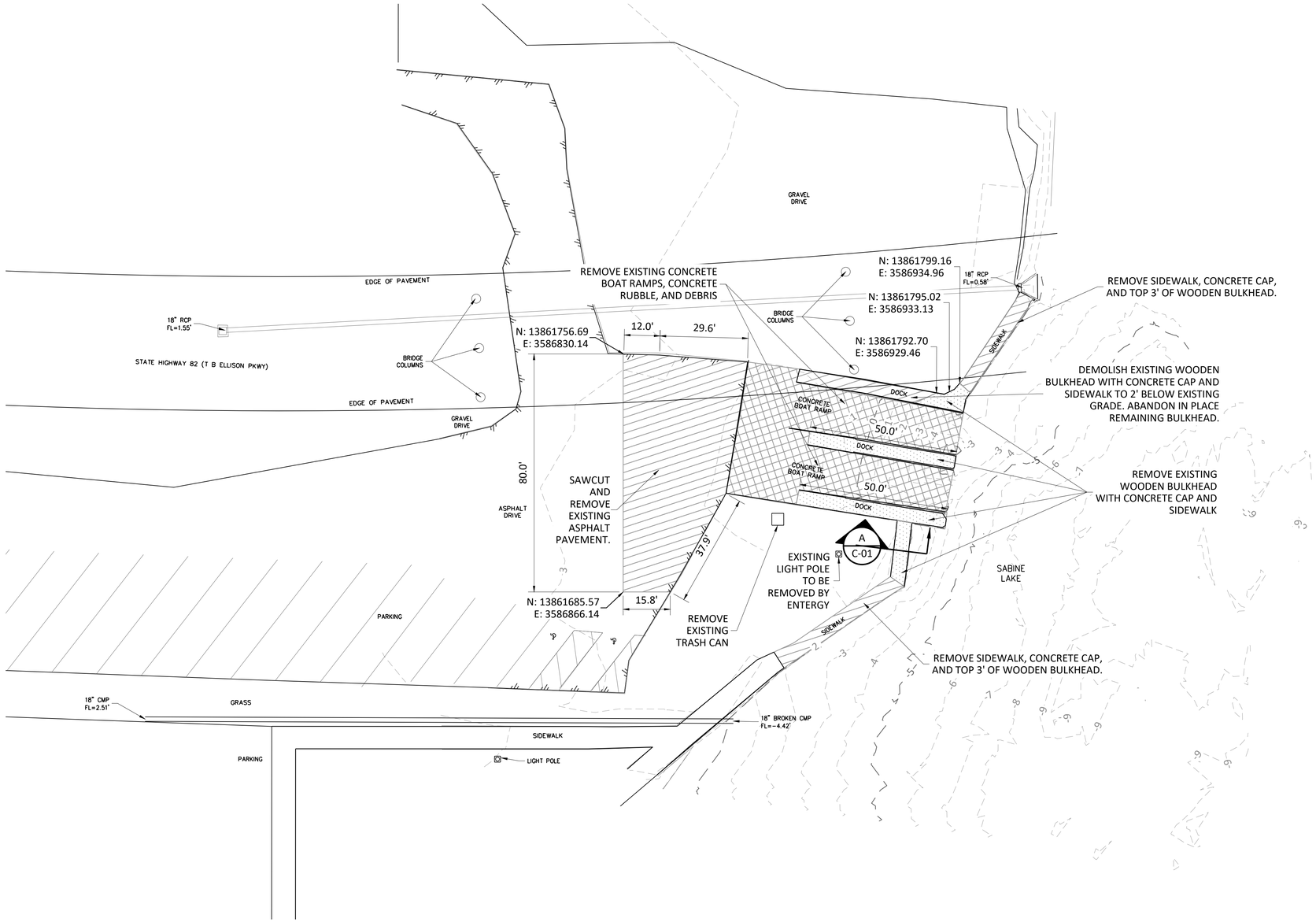
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SHEET G-03

SEQ. 3

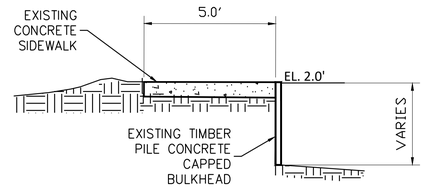
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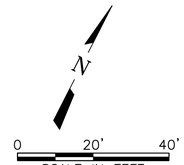
1 C-01 DEMOLITION PLAN (SOUTH)

1"=20'



A C-01 SECTION

NOT TO SCALE



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JEFFERSON COUNTY, TX

MESQUITE POINT PUBLIC BOAT RAMP

CIVIL

DEMOLITION SOUTH

NO.	ISSUE	BY	DATE

F&N JOB NO. JFF21789
DATE 11/1/2022
DESIGNED NAC
DRAWN KBH
REVISED -
CHECKED RG
FILE NAME CV-ALL-PL-DEMO.dwg

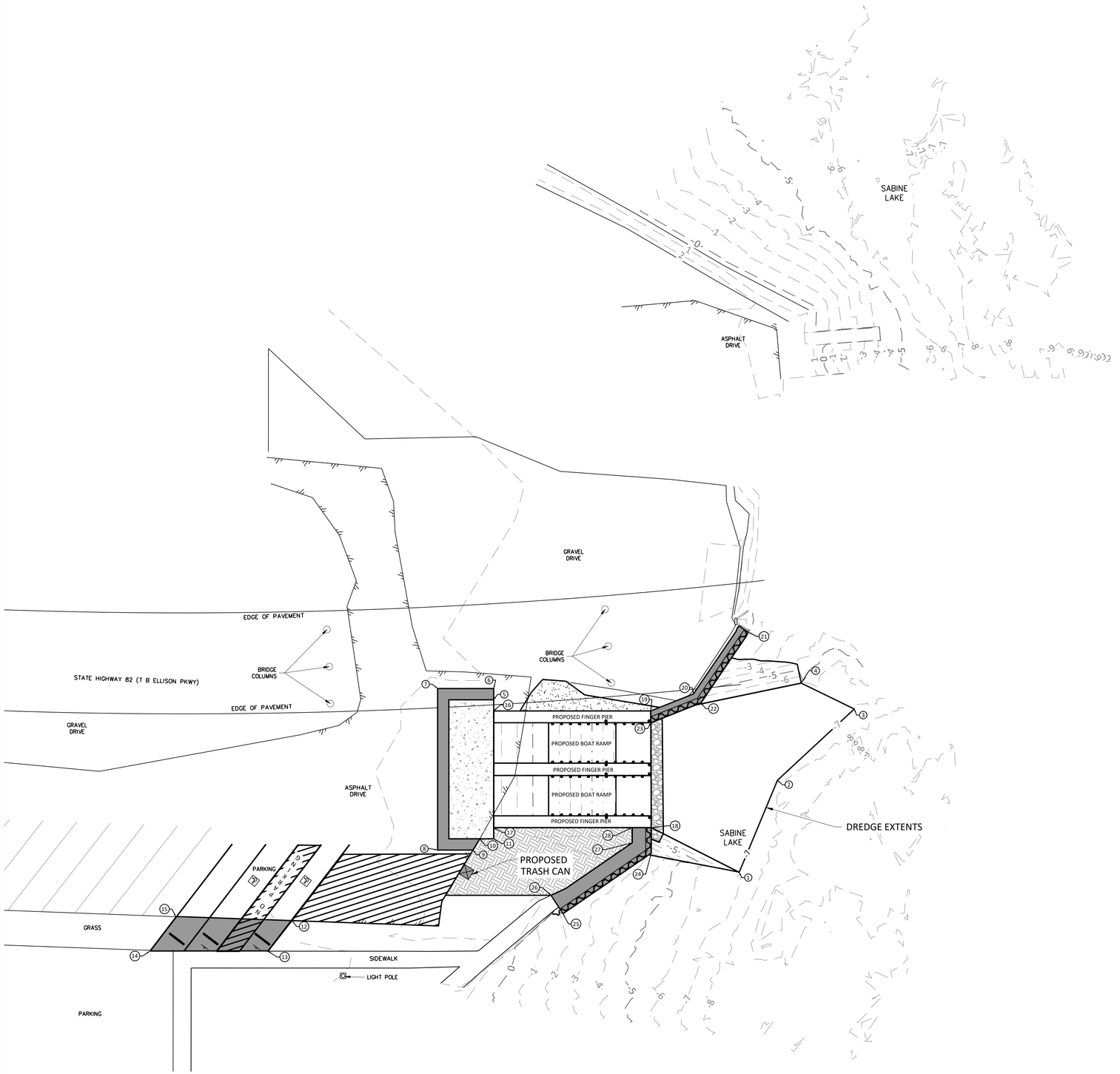
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0 1"

SHEET C-01

SEQ. 4

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1 C-02 PROPOSED SITE LAYOUT

1"=25'

POINT TABLE		
DREDGING EXTENTS		
POINT #	NORTHING	EASTING
1	13,861,737.75	3,586,990.42
2	13,861,782.03	3,586,987.03
3	13,861,825.88	3,587,003.10
4	13,861,825.43	3,586,976.78
CONCRETE PAVEMENT		
POINT #	NORTHING	EASTING
5	13,861,756.62	3,586,858.01
6	13,861,761.07	3,586,855.74
7	13,861,749.72	3,586,833.46
8	13,861,685.57	3,586,866.14
9	13,861,692.72	3,586,880.19
10	13,861,698.55	3,586,880.62
11	13,861,701.37	3,586,886.15
12	13,861,628.09	3,586,822.57
13	13,861,611.07	3,586,819.15
14	13,861,587.10	3,586,772.24
15	13,861,606.09	3,586,775.67
BOAT RAMP		
POINT #	NORTHING	EASTING
16	13,861,752.16	3,586,860.28
17	13,861,705.83	3,586,883.88
18	13,861,737.65	3,586,946.48
19	13,861,783.93	3,586,922.65
SIDEWALK		
POINT #	NORTHING	EASTING
20	13,861,799.28	3,586,936.16
21	13,861,834.96	3,586,945.41
22	13,861,797.25	3,586,940.95
23	13,861,779.27	3,586,925.05
24	13,861,727.53	3,586,951.62
25	13,861,685.68	3,586,928.83
26	13,861,690.54	3,586,920.35
27	13,861,727.80	3,586,941.96
28	13,861,733.84	3,586,938.87

N

0 25 50
SCALE IN FEET

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JEFFERSON COUNTY, TX
MESQUITE POINT PUBLIC BOAT RAMP
CIVIL
PROPOSED SITE LAYOUT

F&N JOB NO.	JFF21789		
DATE	11/1/2022		
DESIGNED	NAC		
DRAWN	KBH		
REVISED	-		
CHECKED	RG		
FILE NAME	CV-ALL-PL-LAYT.dwg		

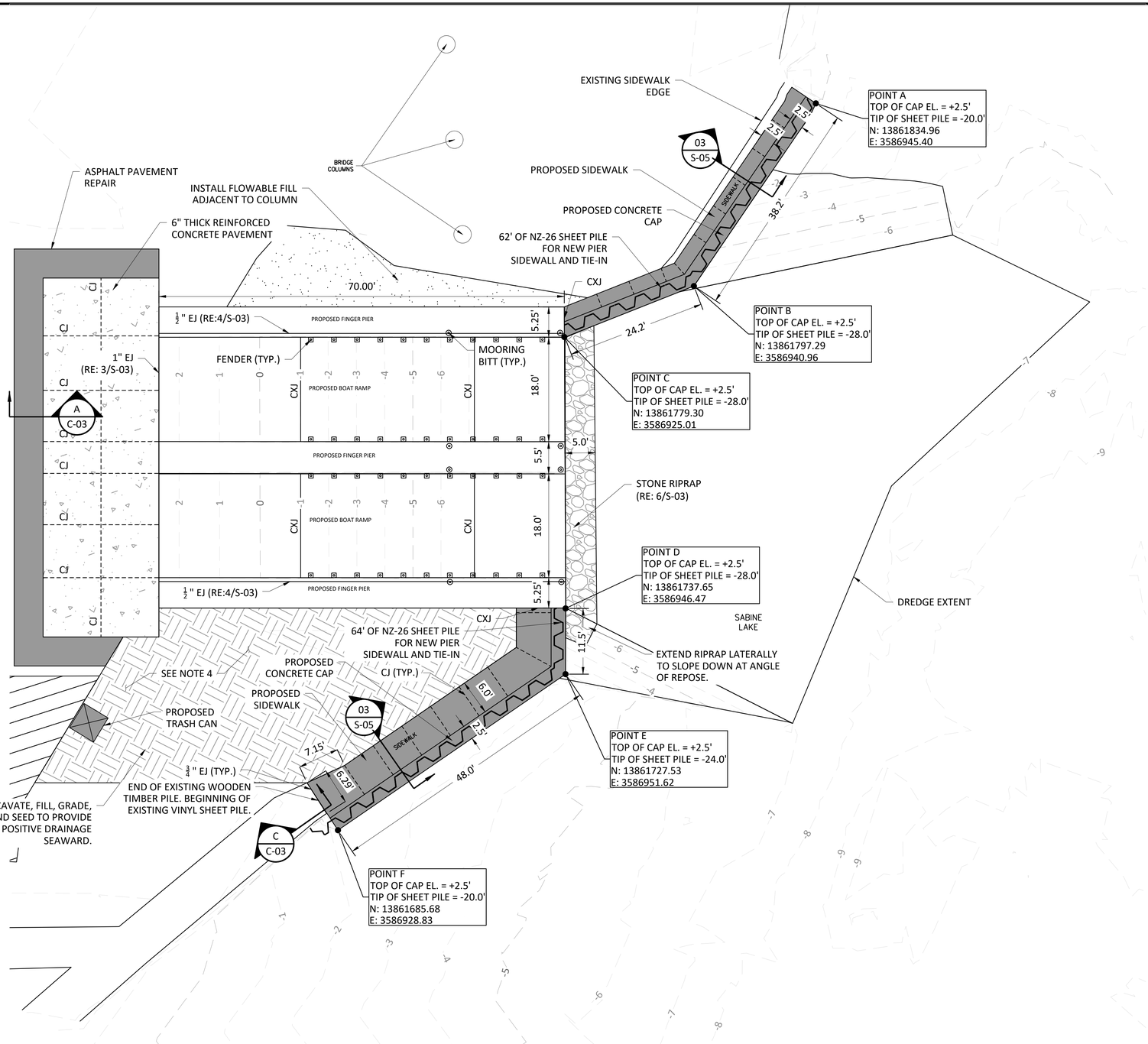
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VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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SHEET C-02
SEQ. 5

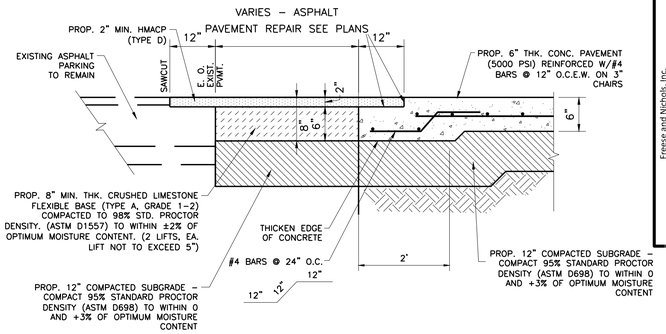
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NOTES
1. SHEET PILE TIP ELEVATION CHANGES LINEARLY BETWEEN POINTS.
2. TOP PORTION OF SHEET PILE WITHOUT CONCRETE CAP SHALL BE COATED ON BOTH SIDES PER STRUCTURAL GENERAL NOTES. REFER TO SHEET S-01.
3. SHEET PILE WILL NOT BE STABLE WITHOUT HYDROSTATIC PRESSURE FROM WATER SIDE. CONTRACTOR IS RESPONSIBLE TO PROVIDE ADEQUATE SHORING IF SHEET PILE IS INSTALLED WHILE DEWATERING OCCURS DURING CONSTRUCTION.
4. EXCAVATE EXISTING SOILS WITHIN THE SHADED AREA TO 6" BELOW THE PROPOSED TOP OF SIDEWALK. REMOVE AND DISPOSE OF ANY CONCRETE RUBBLE AND CONSTRUCTION DEBRIS. BACKFILL WITH CLEAN TOPSOIL AND ROLL WITH SUITABLE CONSTRUCTION EQUIPMENT AS REQUIRED FOR INITIAL STABILITY. TOPSOIL SHALL MATCH THE TOP OF PROPOSED SIDEWALK CROWNING IN THE CENTER TO MAINTAIN POSITIVE DRAINAGE 2% MIN, 4% MAX. MATCH EXISTING GRADES AND INSTALL BERMUDA SEEDING ON ALL DISTURBED AREAS.
5. BACKFILL FOR ENTIRE VOLUME OF EXCAVATION ADJACENT TO THE BRIDGE COLUMNS SHALL BE EXCAVATABLE FLOWABLE FILL WITH A MINIMUM THICKNESS OF 12" AND SHALL BE PLACED TO WITHIN 6" OF THE FINAL FINISHED GRADE. (FLOWABLE FILL TO CONFORM TO TXDOT REQUIREMENTS SHOWN ON TABLE 2 OF ITEM 401). BACKFILL THE REMAINING 6" WITH CLEAN NATIVE SOILS TO MATCH EXISTING.
6. REFER TO B/C-03 FOR CONTROL JOINT (CJ) DETAILS AND REFER TO 2/S-05 FOR CONSTRUCTION JOINT (CXJ) DETAILS.

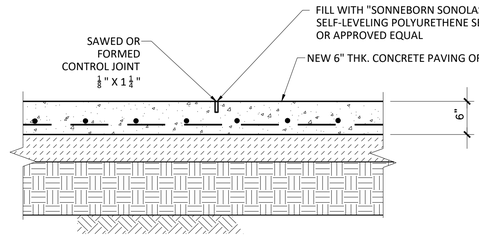
1 C-03 **CIVIL PLANS (SOUTH)**
1"=10'



NOTE:

IN NO CASE SHALL THE THICKNESS OF THE ASPHALT OR BASE MATERIAL BE LESS THAN THE THICKNESS OF EXISTING ADJACENT MATERIAL.

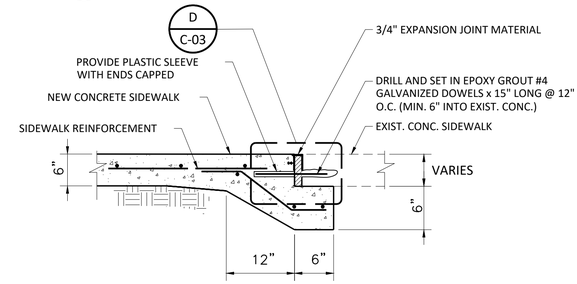
A C-03 **CONCRETE PAVEMENT TO ASPHALT TIE-IN DETAIL**
NOT TO SCALE



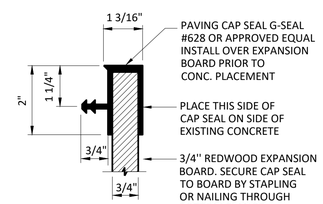
SAW CUT NOTE:
1. USE CONVENTIONAL SAW TO CUT JOINTS AS SOON AS THE CONCRETE HAS HARDENED SUFFICIENTLY TO PREVENT AGGREGATES FROM BEING DISLODGED BY THE SAW.

B C-03 **CONTROL JOINT DETAIL**
NOT TO SCALE

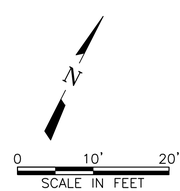
D C-03



C C-03 **EXISTING SIDEWALK TIE-IN EXPANSION JOINT DETAIL**
NOT TO SCALE



D C-03 **CAP SEAL DETAIL**
NOT TO SCALE



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JEFFERSON COUNTY, TX
MESQUITE POINT PUBLIC BOAT RAMP
CIVIL
CIVIL PLANS SOUTH

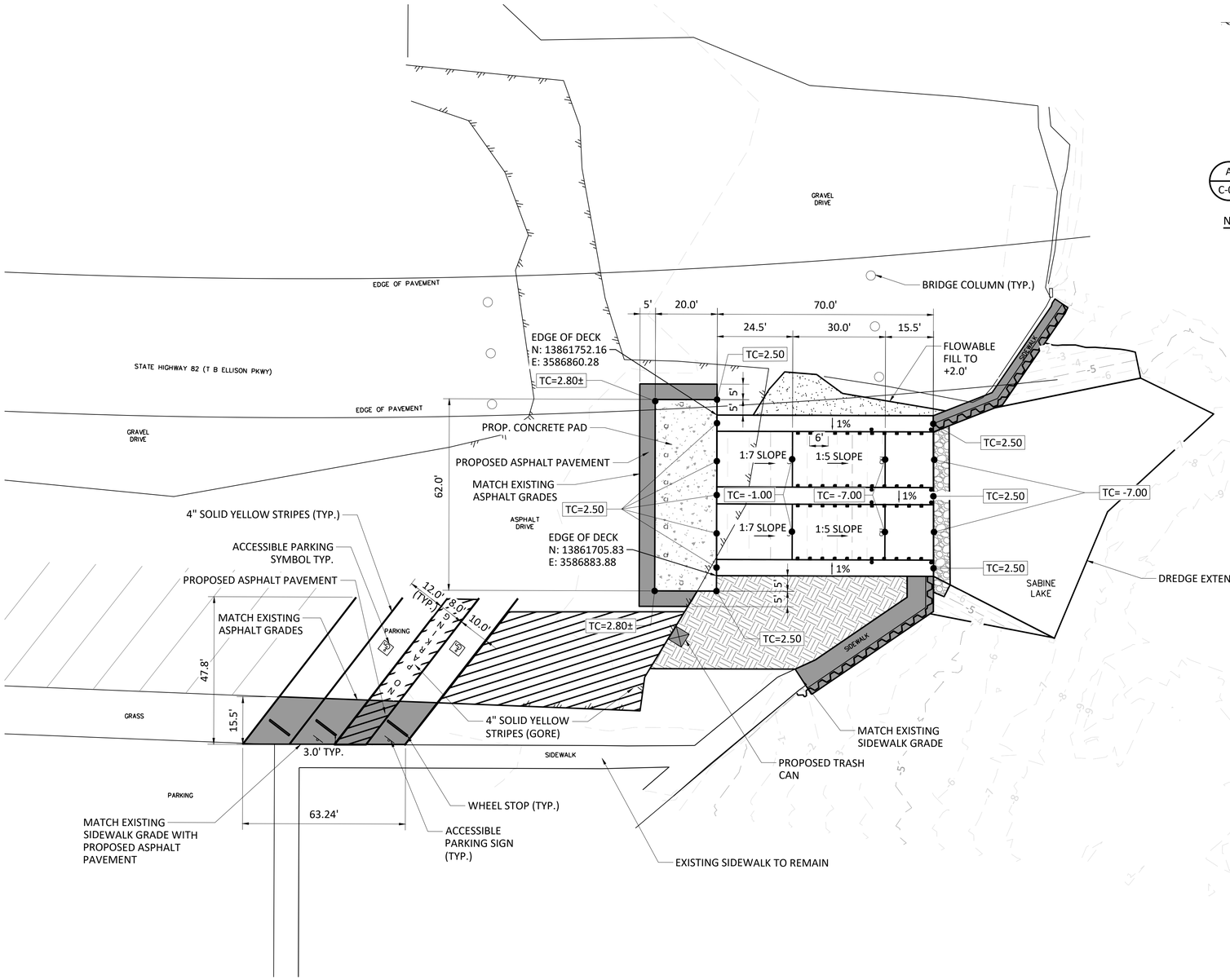
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CHECKED RG
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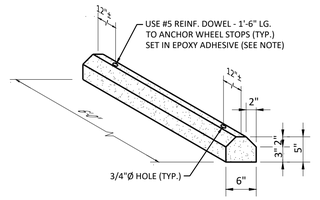
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0 1"

SHEET C-03
SEQ. 6

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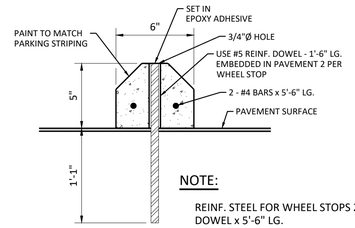


1 / C-04 GRADING PLAN (SOUTH)
1"=20'



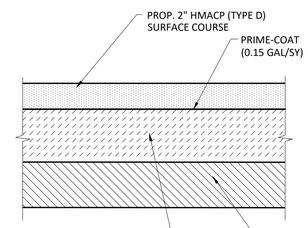
A / C-04 WHEEL STOP DETAIL
NOT TO SCALE

NOTE:
CONTRACTOR TO COAT DOWEL BARS IN EPOXY AND FILL ANY VOIDS AT THE TOP.



B / C-04 WHEEL STOP SECTION
NOT TO SCALE

NOTE:
REINF. STEEL FOR WHEEL STOPS 2 - DOWEL x 5'-6" LG.



C / C-04 PROPOSED ASPHALT PAVEMENT SECTION
NOT TO SCALE

N

0 20' 40'
SCALE IN FEET

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JEFFERSON COUNTY, TX
MESQUITE POINT PUBLIC BOAT RAMP

CIVIL
GRADING
SOUTH

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CHECKED	RG
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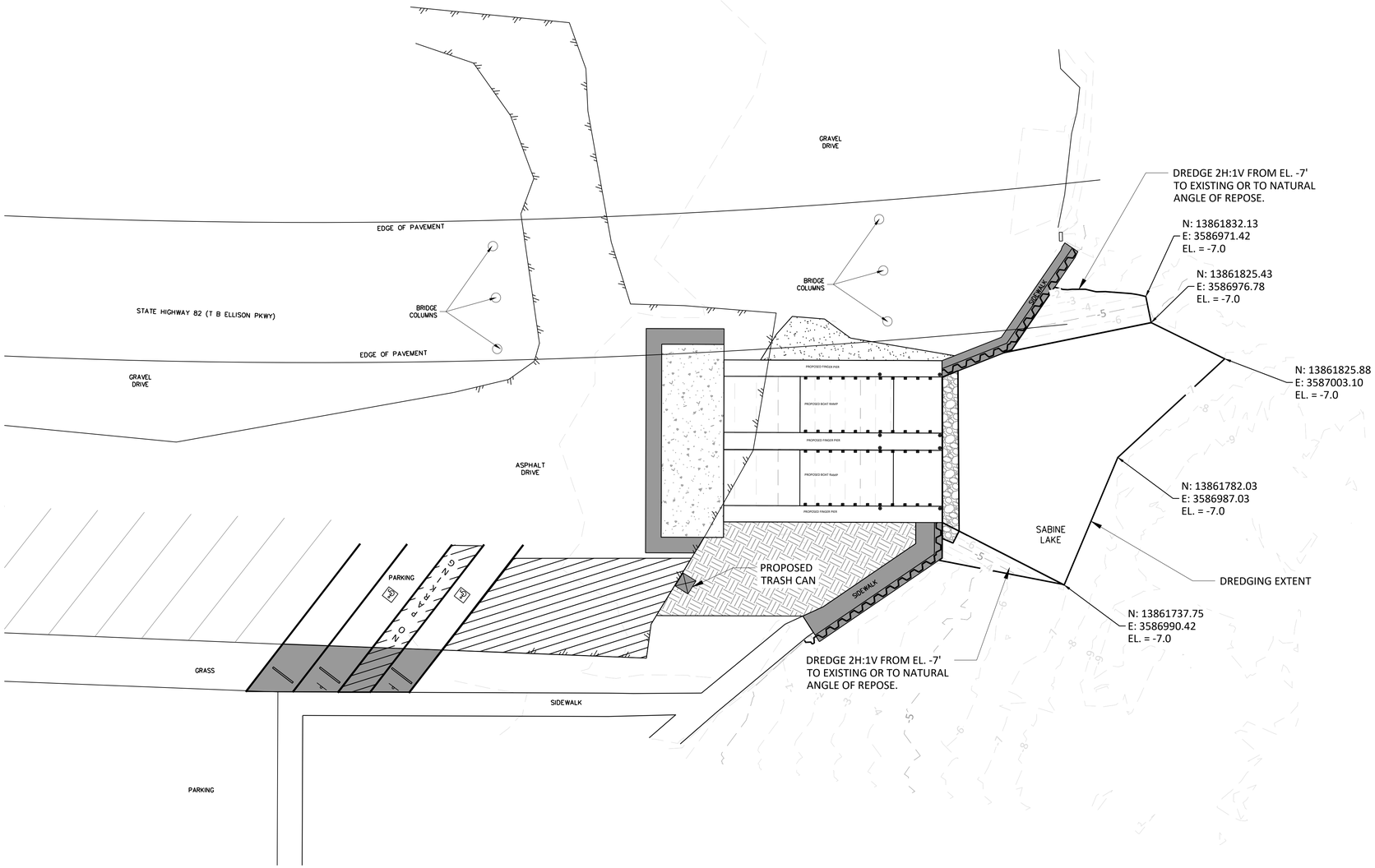
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SHEET
C-04

SEQ.
7

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1 C-05 DREDGING PLAN (SOUTH)
1"=20'

N

0 20' 40'
SCALE IN FEET

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Texas Registered Engineering Firm F-2144

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JEFFERSON COUNTY, TX
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DREDGING PLAN

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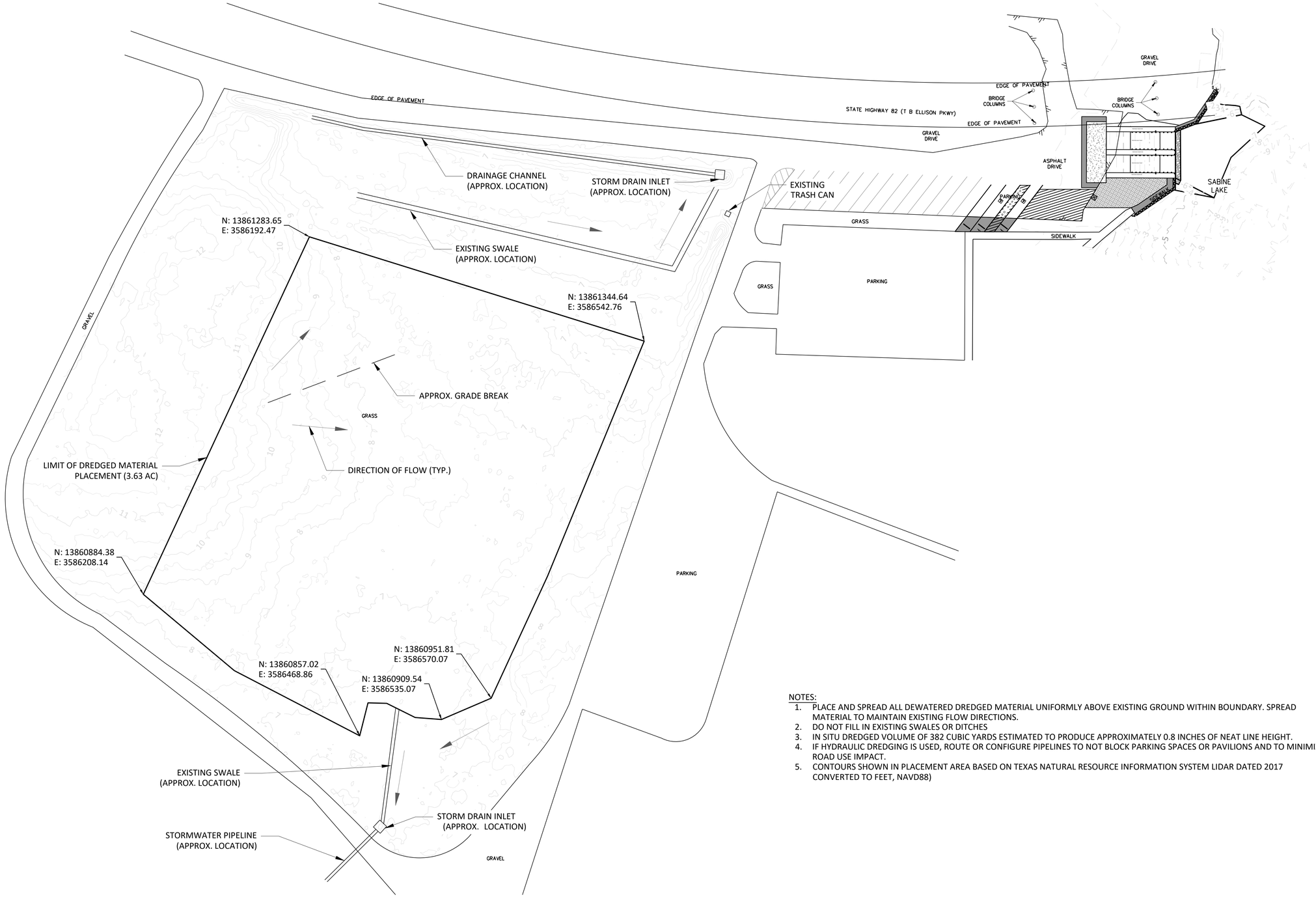
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DATE 11/1/2022
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0 1

SHEET C-05
SEQ. 8

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NOTES:

1. PLACE AND SPREAD ALL DEWATERED DREDGED MATERIAL UNIFORMLY ABOVE EXISTING GROUND WITHIN BOUNDARY. SPREAD MATERIAL TO MAINTAIN EXISTING FLOW DIRECTIONS.
2. DO NOT FILL IN EXISTING SWALES OR DITCHES
3. IN SITU DREDGED VOLUME OF 382 CUBIC YARDS ESTIMATED TO PRODUCE APPROXIMATELY 0.8 INCHES OF NEAT LINE HEIGHT.
4. IF HYDRAULIC DREDGING IS USED, ROUTE OR CONFIGURE PIPELINES TO NOT BLOCK PARKING SPACES OR PAVILIONS AND TO MINIMIZE ROAD USE IMPACT.
5. CONTOURS SHOWN IN PLACEMENT AREA BASED ON TEXAS NATURAL RESOURCE INFORMATION SYSTEM LIDAR DATED 2017 CONVERTED TO FEET, NAVD88)

1 / C-06 DREDGED MATERIAL PLACEMENT
1"=50'

N

0 50' 100'
SCALE IN FEET

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS · CARA A. SEPULVEDA · 101267 · LICENSED PROFESSIONAL ENGINEER

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DREDGED MATERIAL PLACEMENT

F&N JOB NO.	JFF21789
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REVISED	-
CHECKED	RG

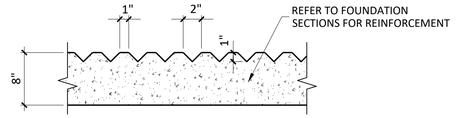
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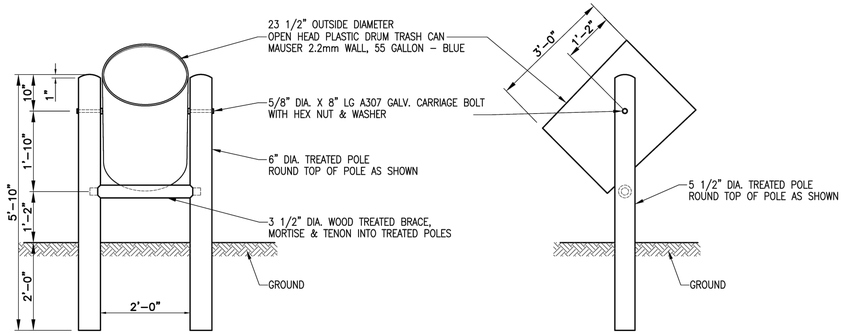


1 S-02 V-GROOVE SURFACE FINISH DETAIL

NOT TO SCALE

NOTE:

CLEAR COVER FROM BOTTOM OF V-GROOVES AND REINFORCING BARS SHALL BE 3".

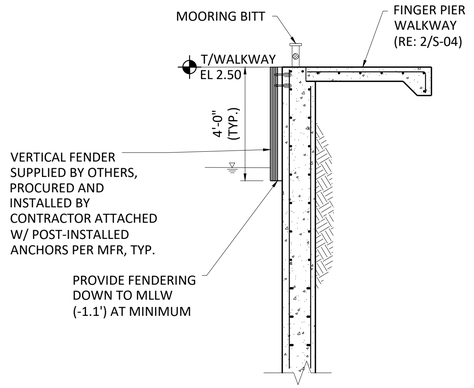


2 – FRONT VIEW TRASH CAN AMENITY

NOT TO SCALE

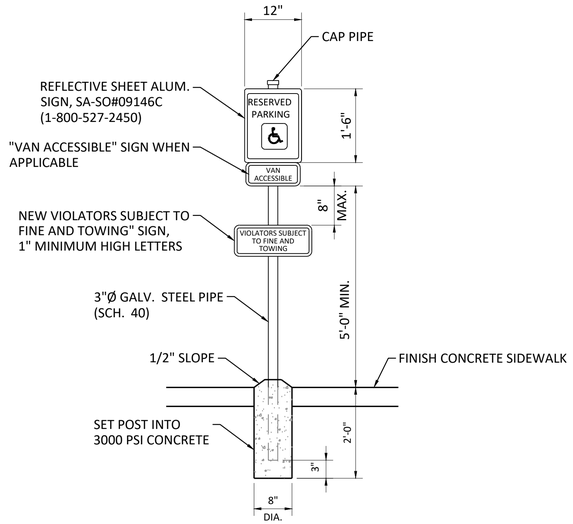
3 – SIDE VIEW TRASH CAN AMENITY

NOT TO SCALE



4 C-03 FENDER SECTION

NOT TO SCALE

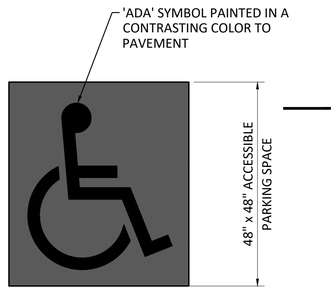


5 C-04 ACCESSIBLE PARKING SIGN DETAIL

NOT TO SCALE

NOTES:

1. SIGN FACE SHALL BE REFLECTORIZED FLAT SURFACE SHEETING.
2. SIGN SHALL HAVE WHITE LETTERS AND SYMBOLS ON A BLUE BACKGROUND.
3. SIGNS SHALL BE PROVIDED DIRECTLY IN FRONT OF PARKING SPACE AT BACK EDGE OF SIDEWALK OR AS SHOWN ON PLANS.

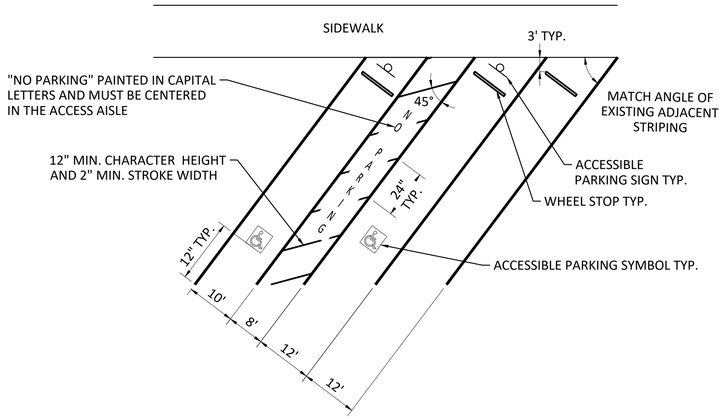


6 C-04 ACCESSIBLE SYMBOL DETAIL

NOT TO SCALE

NOTES:

1. WHEELCHAIR SYMBOL SHALL BE PAINTED WHITE ON A BLUE BACKGROUND.
2. WORDS AND SYMBOLS CAN BE EITHER PREFORMED THERMOPLASTIC OR TYPE 1/ TYPE II PAVEMENT MARKINGS.

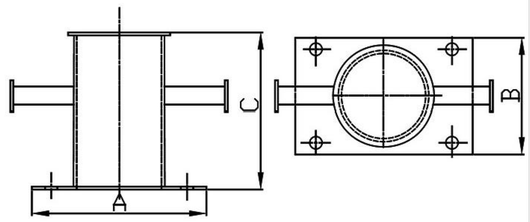


7 C-04 ADA ACCESSIBLE BOAT AND TRAILER PARKING STALLS

NOT TO SCALE

NOTE:

ALL STRIPING SHALL BE 4" WIDE. COLOR OF STRIPES TO BE SOLID YELLOW. (TXDOT SPEC. NO. WPT-10)



8 C-03 316 STAINLESS SAMSON POST MOORING BITT, HEAVY DUTY

NOT TO SCALE

NOTES:

1. DIMENSIONS A = 6" TO 8", B = 4" TO 5", C = 6" TO 7.5"
2. MINIMUM CROSS BAR LENGTH = 6"
3. DEVIATIONS OR SUBSTITUTES TO BE APPROVED BY OWNER.
4. REFER TO STEEL BITTS' MANUFACTURER RECOMMENDATION FOR CONNECTION TO CONCRETE. ANCHOR BOLTS MUST BE 316SS WITH A DIAMETER SIZED TO PROPERLY FIT THE PRE-DRILLED BASE PLATE. DRILL AND EPOXY 6" MINIMUM INTO CONCRETE. CONTRACTOR MUST TACK WELD 2 OF THE 4 ANCHOR BOLTS TO THE BASE PLATE.

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

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11-2-2022

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JEFFERSON COUNTY, TX

MESQUITE POINT PUBLIC BOAT RAMP

MISCELLANEOUS DETAILS

F&N JOB NO.	JFF21789
DATE	11/1/2022
DESIGNED	NAC
DRAWN	KBH
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GENERAL

1. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE 2018 INTERNATIONAL BUILDING CODE, INCLUDING LOCAL SUPPLEMENTS, EXCEPT WHERE APPLICABLE CODES OR THE CONTRACT DOCUMENTS ARE MORE RESTRICTIVE.

2. DESIGN IS IN ACCORDANCE WITH 2018 INTERNATIONAL BUILDING CODE, LOCAL AMENDMENTS, AND APPLICABLE CODE REFERENCED STANDARDS.

3. PRIOR TO FABRICATION OR CONSTRUCTION:
   A. VERIFY DIMENSIONS AND LOCATIONS OF ALL OPENINGS, DEPRESSIONS, OFFSETS, SLEEVES, CURBS, PADS, INSERTS, EQUIPMENT REQUIREMENTS, ETCETERA.
   B. REVIEW OTHER DISCIPLINE DRAWINGS FOR SIZE AND LOCATION OF ALL OPENINGS, DEPRESSIONS, OFFSETS, SLEEVES, CURBS, PADS, INSERTS, EQUIPMENT REQUIREMENTS, ETCETERA, WHICH ARE NOT SHOWN ON STRUCTURAL DRAWINGS.
   C. FIELD VERIFY ALL EXISTING CONDITIONS, INCLUDING LOCATION AND DIMENSIONS OF ALL EXISTING CONSTRUCTION AND UTILITIES.
   D. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES BETWEEN DISCIPLINES, CONSTRUCTABILITY ISSUES, OR EXISTING CONDITIONS.

4. REMOVE ALL ABANDONED FOUNDATIONS, UTILITIES, PIPELINES, ETCETERA THAT INTERFERE WITH NEW CONSTRUCTION.

5. PROVIDE EXCAVATION SHORING TO PROTECT AND SUPPORT FOUNDATION SOILS UNDER EXISTING STRUCTURES.

6. THE STRUCTURE IS DESIGNED FOR STABILITY IN THE FINAL CONDITION ONLY. PROVIDE TEMPORARY BRACING AND SHORING AS REQUIRED FOR STABILITY DURING CONSTRUCTION.

7. PLANS, SECTIONS, AND DETAILS ARE NOT TO BE SCALED FOR DETERMINATION OF QUANTITIES, LENGTHS, OR FIT OF MATERIALS.

8. THE GENERAL NOTES AND TYPICAL DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY.

LOADS

1. FINGER PIER LIVE LOADS: 100 PSF

2. LATERAL LOADS:
   A. RISK CATEGORY II
   B. SEISMIC LOAD:
      i. SEISMIC IMPORTANCE FACTOR: I = 1.00
      ii. MAPPED SPECTRAL ACCELERATIONS: S_S = 0.076, S_1 = 0.044
      iii. SITE CLASS: D
      iv. SPECTRAL RESPONSE COEFFICIENT: S_{DS} = 0.081, S_{D1} = 0.071
      v. SEISMIC DESIGN CATEGORY: B
      vi. DESIGN BASE SHEAR V = 0.01W

3. WAVE PRESSURE PARALLEL TO FINGER PIERS: 200 PLF

FOUNDATION

1. FOUNDATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT "MESQUITE POINT PUBLIC BOAT RAM AND JETTIES SABINE LAKE AND INTERCOASTAL WATERWAY; CITY OF PORT ARTHUR; JEFFERSON COUNTY, TEXAS", DATED APRIL, 2022, PREPARED BY TOLUNAY-WONG ENGINEERS, INC. (REPORT NO. 129140).
2. EXCAVATION DESIGN AND SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR. ANY SLOPES SHOWN ARE A MAXIMUM AND SHALL BE DECREASED AS REQUIRED FOR SAFETY OR TO MEET OSHA REQUIREMENTS.

3. EXCAVATION AND SUBGRADE PREPARATION
   A. REMOVE THE SURFICIAL VEGETATION, WASTE AND LOOSE SOILS TO A MINIMUM DEPTH OF 12 INCHES.
   B. EXCAVATE THE SITE TO THE PROPOSED FINISHED SUBGRADE WHERE CUTTING TO SUBGRADE IS REQUIRED. EXTEND THE LATERAL LIMITS OF THE EXCAVATION 2'-0" BEYOND THE PERIMETER OF THE FOUNDATION.
   C. ALL BACKFILL MATERIAL SHALL CONSIST OF MATERIALS WHICH ARE CONSIST OF MATERIAL WHICH ARE CLASSIFIED AS SP, SM, SC, CL, OR DUAL CLASSIFICATIONS THEREOF, WHICH HAVE A LIQUID LIMIT LESS THAN OR EQUAL TO 35 AND A PLASTICITY INDEX OF A MINIMUM OF 4 AND A MAXIMUM OF 15, WHICH ARE FREE OF ORGANIC MATERIALS.
   D. BACKFILL SHALL BE PLACED IN MAXIMUM 8" LOOSE LIFTS FOR HEAVY EQUIPMENT AND 4" LOOSE LIFTS FOR HAND-DIRECTED EQUIPMENT. COMPACT TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 (STANDARD PROCTOR), AND AT A MOISTURE CONTENT WITH -2% TO 2% OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698. IN-PLACE FIELD DENSITY TESTS SHALL BE CONDUCTED AT A RATE OF ONE TEST PER 3,000 SQUARE FEET FOR EVERY LIFT.

4. STRUCTURAL FILL SHALL BE COMPACTED NATIVE SOIL BEHIND THE WALLS. COMPACT TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 (STANDARD PROCTOR)' AND A MOISTURE CONTENT WITH -2% TO 2% OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698.

5. ALL BELOW GRADE FOUNDATION ELEMENTS ARE DESIGNED WITH FORMED SIDES.IF THE CONTRACTOR ELECTS TO USE EARTH FORMED SIDES, THE EXPOSED SURFACE AND 12 INCHES BELOW GRADE SHALL BE FORMED TO THE DESIGN DIMENSION AND ONE INCH SHALL BE ADDED TO EACH SIDE TO PROVIDE ADEQUATE COVER OVER THE REINFORCING AT THE CONTRACTOR'S EXPENSE. ALL CONCRETE EXPOSED TO VIEW IN THE FINAL CONDITION, AND 12 INCHES BELOW GRADE SHALL BE FORMED.

6. ALLOWABLE NET BEARING PRESSURES USED FOR FOUNDATION DESIGNS IS 500 PSF.

7. WORKING PLATFORM: 24" OF COMPACTED CLEAN CRUSHED STONE (ASTM C33 NO. 57 COARSE AGGREGATE) OVER NON-WOVEN GEOTEXTILE (MIRAFI 1100N OR APPROVED EQUAL.) LAP SEGMENTS A MINIMUM OF 3 FEET BUT NOT LESS THAN THAT REQUIRED BY THE MANUFACTURER. EXTEND GEOTEXTILE BEYOND LIMITS OF CRUSHED STONE AS REQUIRED TO ENCLOSE ENDS OF CRUSHED STONE AND TOP WHERE EXPOSED. EXTEND GEOTEXTILE AN ADDITIONAL 12" TO RETURN/LAP UNDER CONCRETE SLAB.

8. PLACEMENT OF WORK PLATFORM SHALL BE WITHIN 24 HOURS OF FINAL EXCAVATION.

9. WHERE CLAYEY OR SANDY SUBGRADE IS SATURATED:
   A. EXCAVATE AS REQUIRED TO WITHIN 3 FEET OF FINAL SUBGRADE SURFACE.
   B. NO EQUIPMENT TRAFFIC IS PERMITTED ON GROUND SURFACE WITHIN 3 FEET OF FINAL SUBGRADE. DO NOT CUT OR REMOLD FINAL SUBGRADE SURFACE.
   C. PERFORM FINAL EXCAVATION WITH SMOOTH EDGE BUCKET.
   D. HAND PLACE GEOTEXTILE TO CREATE A SMOOTH, WRINKLE FREE INSTALLATION. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
   E. PLACEMENT OF SPECIFIED, COMPACTED CRUSHED STONE ON GEOTEXTILE SHALL BE COMPLETED PRIOR TO OPERATING EQUIPMENT OVER GEOTEXTILE. A MINIMUM OF 12" FOR LIGHT EQUIPMENT, 18" FOR HEAVY EQUIPMENT.

CONCRETE

1. ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, UNLESS NOTED OTHERWISE, SHALL BE IN ACCORDANCE WITH THE ACI DETAILING MANUAL (ACI SP-66), LATEST EDITION.

2. CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI AND CONCRETE MIX DESIGN AS FOLLOWS:
   A. CEMENT: PORTLAND CEMENT, ASTM C 150, TYPE I/II, EQUIVALENT ALKALIES < 0.60%
   B. W/C RATIO: 0.4 MAXIMUM
   C. AGGREGATE: ASTM C 33, 1" MAXIMUM, CLASS 3M
   D. ENTRAINED AIR: ACI 318-14, EXPOSURE CLASS C2
   E. SLUMP: 3" (+/-1")
   F. MAXIMUM WATER-SOLUBLE CHLORIDE ION CONTENT IN CONCRETE BY WEIGHT OF CEMENT: 0.15

4. ALL REINFORCING SHALL BE IN ACCORDANCE WITH ASTM A615, GRADE 60, DEFORMED.

5. CONCRETE CLEAR COVER OVER REINFORCING SHALL BE AS LISTED BELOW, UNLESS NOTED OTHERWISE.
   A. CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"
   B. ALL OTHER: 2"
   C. SEE DRAWINGS FOR EXCEPTIONS

6. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" INSIDE FORMS OR TOOLED TO 3/4" RADIUS ON SLABS UNLESS NOTED OTHERWISE.

7. ALL CONSTRUCTION JOINTS (CXJ) SHALL BE THOROUGHLY CLEANED AND PURPOSELY ROUGHENED TO 1/4" PRIOR TO PLACING ADJACENT CONCRETE.

8. ADDITIONAL CONSTRUCTION JOINTS SHALL HAVE PRIOR APPROVAL OF THE ENGINEER.

9. PENETRATIONS OTHER THAN SHOWN SHALL NOT BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

10. IN CASES WHERE REINFORCING BARS CANNOT BE EXTENDED AS FAR AS REQUIRED DUE TO THE LIMITED EXTENT OF THE ADJACENT CONCRETE STRUCTURE, THE BARS SHALL EXTEND AS FAR AS POSSIBLE AND END IN STANDARD HOOKS.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL FORMING, TEMPORARY BRACING AND SHORING.

12. UNLESS NOTED OTHERWISE, HOOKS SHOWN ON DRAWINGS SHALL BE ASSUMED TO BE STANDARD HOOKS PER ACI 318.

13. UNLESS NOTED OTHERWISE, LAP SPLICES IN BEAMS AND WALLS SHALL BE STAGGERED.

14. ALL REINFORCING SHALL BE CONTINUOUS. CONTINUOUS BARS SHALL LAP 48 BAR DIAMETERS OF SMALLER BAR, LAPPED, UNLESS NOTED OTHERWISE. ALL REBAR EMBEDMENT LENGTHS SHALL BE 36 BAR DIAMETERS, UNLESS NOTED OTHERWISE.

POST-INSTALLED ANCHORS (EXPANSION OR ADHESIVE)

1. INSTALL IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII), BUT NOT LESS THAN THAT INDICATED BELOW.

2. INSTRUCTIONS BELOW ARE NOT INTENDED TO CONFLICT WITH APPLICABLE SAFETY OR OSHA REGULATIONS OR TO RELIEVE CONTRACTOR OF COMPLIANCE WITH ALL APPLICABLE SAFETY AND OSHA REGULATIONS. IN CASE OF CONFLICT WITH SAFETY OR OSHA REGULATIONS, CONTACT THE ENGINEER FOR GUIDANCE BEFORE PROCEEDING WITH FABRICATION OR CONSTRUCTION.

3. ADHESIVE ANCHORS SHALL ONLY BE INSTALLED BY CONSTRUCTION PERSONNEL CERTIFIED UNDER ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM OR APPROVED EQUAL. SUBMIT CERTIFICATIONS AS RECORD DATA PRIOR TO ANCHOR INSTALLATION.

4. ANCHOR DIAMETER AND EMBEDMENT SHALL BE AS INDICATED.

5. HOLES SHALL BE DRILLED USING ROTARY HAMMER DRILLS WITH ANSI MATCHED TOLERANCE CARBIDE-TIPPED DRILL BITS. DRILL BIT DIAMETER SHALL MATCH DIAMETER RECOMMENDED BY MANUFACTURER. DRILL HOLES USING HILTI SAFESET TECHNOLOGY OR APPROVED EQUAL.

6. USE CARE AND CAUTION WHEN INSTALLING TO AVOID CUTTING OR DAMAGING EXISTING REINFORCING STEEL. FIELD VERIFY EXISTING REINFORCING LOCATIONS PRIOR TO FABRICATION OR CONSTRUCTION, AND THEN COORDINATE REBAR LOCATIONS WITH SHOP DRAWINGS.

7. ADHESIVE ANCHORS SHALL BE DEFORMED REINFORCING BARS (ASTM A615, GR 60) OR STAINLESS STEEL 316, UNLESS NOTED OTHERWISE, AND AS NOTED BELOW:
   A. ADHESIVE SHALL BE HILTI HIT-RE 500 V3 OR AN APPROVED EQUAL. SUBMIT PUBLISHED COMPARISONS BETWEEN EACH SPECIFIED AND EACH ALTERNATE ANCHOR.
   B. PRIOR TO INSTALLATION: ALL DEFORMED BARS AND THREADED ROD SHALL BE CLEAN, FREE OF OIL, GREASE, OR OTHER RESIDUE, IN ACCORDANCE WITH MPII.
   C. VERIFY HOLE IS CLEAR OF DUST AND DEBRIS.
   D. INSTALL ADHESIVE STARTING AT BACK OF HOLE. AS REQUIRED BY MPII, USE MANUFACTURER SUPPLIED PISTON PLUG INJECTION SYSTEM FOR ALL HORIZONTAL AND VERTICALLY INCLINED HOLES.
   E. INSTALL ANCHOR BY SIMULTANEOUSLY TWISTING AND INSERTING INTO HOLE.
   F. ALLOW ANCHOR TO SET REQUIRED TIME. DO NOT DISTURB.
   G. TIGHTEN NUT. DO NOT OVER-TORQUE.
   H. MINIMUM CONCRETE AGE AT TIME OF INSTALLATION: 28 DAYS
   I. CONCRETE TEMPERATURE RANGE AT TIME OF INSTALLATION SHALL BE: 41DEG F TO 104DEG F.
   J. CONCRETE MOISTURE CONDITION AT TIME OF INSTALLATION: DRY.

STEEL SHEET PILE

1. SHALL CONFORM TO ASTM A 572, GRADE 50 KSI.

2. SHEET PILE IS DESIGNED FOR ITS FINAL LOADING CONDITION SHORING WILL BE REQUIRED IF SHEET PILE IS INSTALLED WITHOUT WATER PRESSURE FROM LAKESIDE.

3. OVERALL DIMENSION AND INTERLOCK SHALL BE PER MANUFACTURER DETAILS SPECIFIED SECTION.

4. COAT WITH A COAL TAR EPOXY OVER THE TOP 12FT OF THE SECTION ON BOTH SIDES. COAT AND ALLOW TO CURE PRIOR TO DRIVING.
   A. BITUMINOUS, TWO-COMPONENT POLYAMIDE-EPOXY, TARGUARD BY SHERWIN WILLIAMS OR APPROVED EQUAL.
   B. COLOR: BLACK
   C. APPLY TWO COATS. EACH COAT TO HAVE A MINIMUM DFT OF 10MILS. TOTAL, MINIMUM DFT IS 20 MILS.
   D. PILE SURFACE PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
   E. UPPER 8" OF SHEET PILE SHALL NOT RECEIVE COATING.

5. COATINGS DAMAGED DUE TO TRANSPORTATION, DELIVERY, HANDLING AND INSTALLATION SHALL BE REPAIRED AND TOUCHED-UP IN THE FIELD IN ACCORDANCE WITH THE COATING MANUFACTURER RECOMMENDATION.

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

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JEFFERSON COUNTY, TX

MESQUITE POINT PUBLIC BOAT RAMP

STRUCTURAL

GENERAL NOTES

NO.	ISSUE	BY	DATE

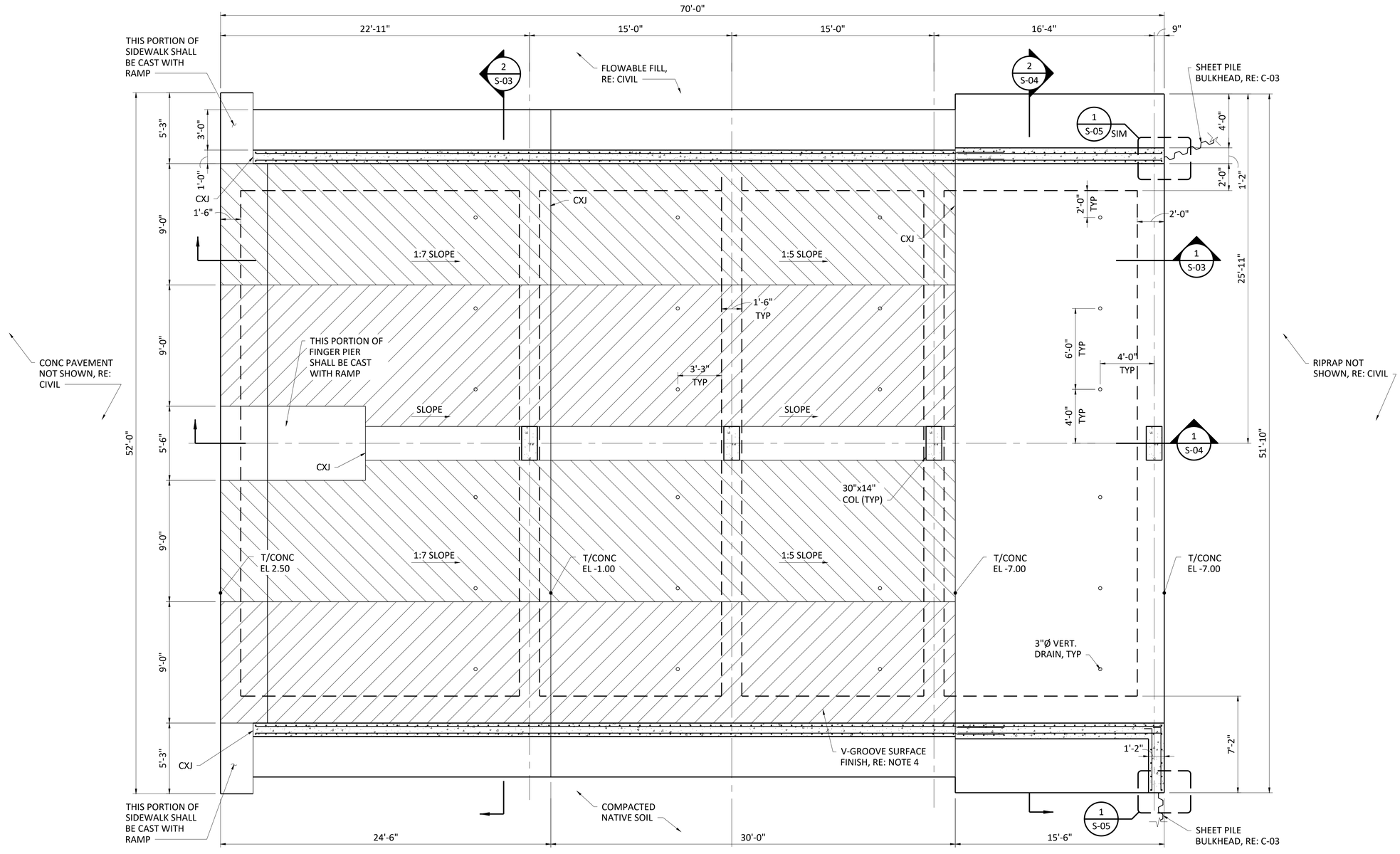
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PLAN NOTES:

1. PLAN DIMENSIONS ARE MEASURED FROM HORIZONTAL.
2. REFER TO 2/S-03 FOR WALL REINFORCING DETAILS.
3. REFER TO CIVIL DRAWINGS FOR SHEETPILE DIMENSIONS AND LOCATION.
4. REFER TO 1/C-07 FOR V-GROOVE SURFACE FINISH DETAIL.
5. VERTICAL DRAIN PIPES CAN BE MOVED SLIGHTLY TO AVOID CONFLICT WITH SLAB REINFORCEMENT TO PROVIDE A MINIMUM OF 2" CLEAR.
6. REFER TO 2/S-05 FOR CONSTRUCTION JOINTS (CXJ) DETAILS.

NORTH 1 FOUNDATION PLAN

1/4" = 1'-0"

0 1' 2' 4' 8'

1/4"=1'-0"

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

STATE OF TEXAS MASOUD GHAREMANEAD MANESH 134629 LICENSED PROFESSIONAL ENGINEER

11/2/2022

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JEFFERSON COUNTY, TX

MESQUITE POINT PUBLIC BOAT RAMP

STRUCTURAL

RAMP FOUNDATION PLAN

F&N JOB NO.	JFF21789
DATE	11/1/2022
DESIGNED	MGM
DRAWN	STV
REVISED	
CHECKED	PAB
FILE NAME	ST-JFF-PL-FNDN.dwg

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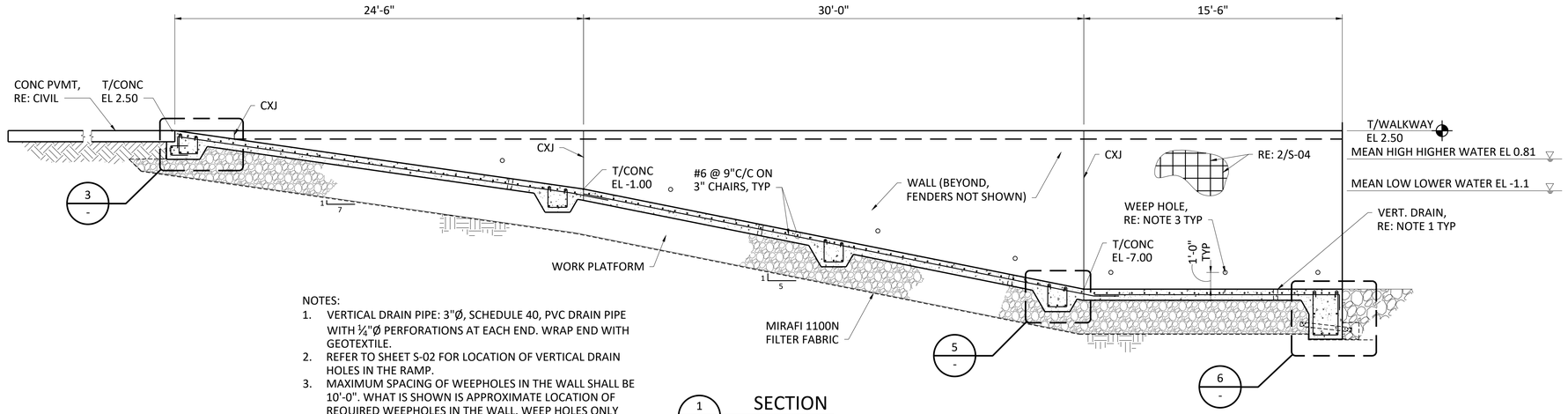
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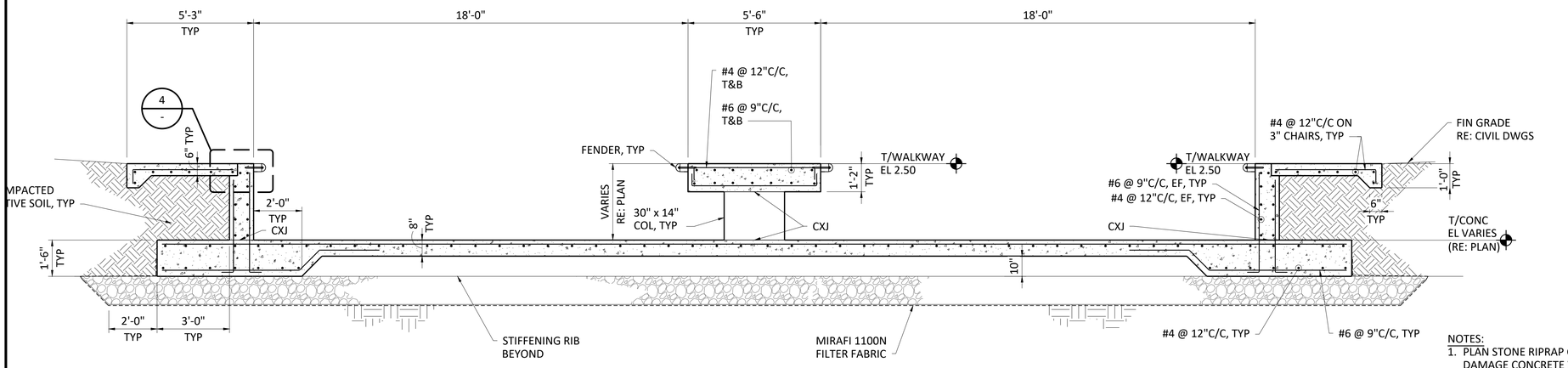
NOTES:
1. VERTICAL DRAIN PIPE: 3"Ø, SCHEDULE 40, PVC DRAIN PIPE WITH ¼"Ø PERFORATIONS AT EACH END. WRAP END WITH GEOTEXTILE.
2. REFER TO SHEET S-02 FOR LOCATION OF VERTICAL DRAIN HOLES IN THE RAMP.
3. MAXIMUM SPACING OF WEEPHOLES IN THE WALL SHALL BE 10'-0". WHAT IS SHOWN IS APPROXIMATE LOCATION OF REQUIRED WEEPHOLES IN THE WALL. WEEP HOLES ONLY APPLY TO THE WALL WITH COMPACTED NATIVE SOIL BACKFILL.
4. WEEPHOLES IN THE WALLS ARE NOT NEEDED ABOVE MEAN HIGH HIGHER WATER ELEVATION.

1 / S-02 SECTION
1/4"=1'-0"

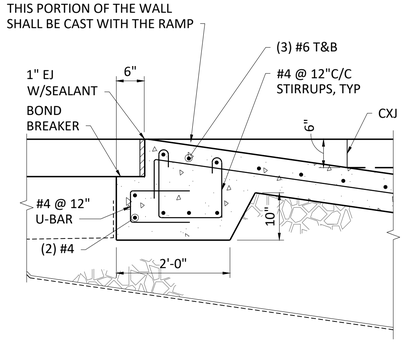
GRAVEL BEDDING GRADATION (TxDOT ITEM 432)	
SIEVE SIZE	PERCENT PASSING, BY WEIGHT
3 INCH	100
1½ INCH	50 - 80
¾ INCH	20 - 60
No. 4	0 - 15
No. 40	0 - 5

STONE RIPRAP GRADATION (TxDOT THICKNESS 15 INCH		
PERCENT SMALLER THAN	MIN (INCH)	MIN (INCH)
100	-	16.1
90	13.04	15.75
50	9.21	12.91
8	6.39	-

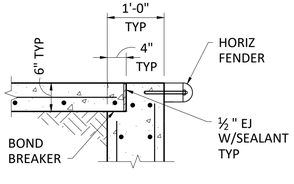
NOTES:
1. PLAN STONE RIPRAP CAREFULLY WHEN ADJACENT TO CONCRETE SURFACES. DO NOT DAMAGE CONCRETE WITH STONE PLACEMENT.
2. STONE RIPRAP AND BEDDING MATERIAL SHALL BE IN ACCORDANCE WITH 2014 TXDOT STANDARD SPECIFICATION ITEM 432, PROTECTION STONE RIPRAP.



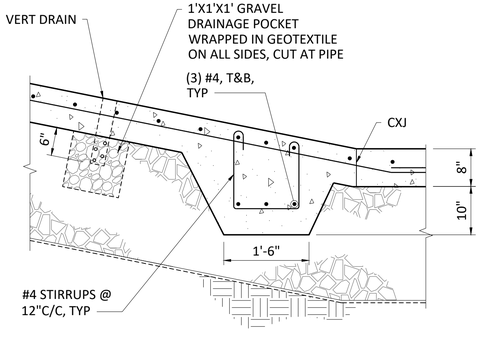
2 / S-02 SECTION
3/8"=1'-0"



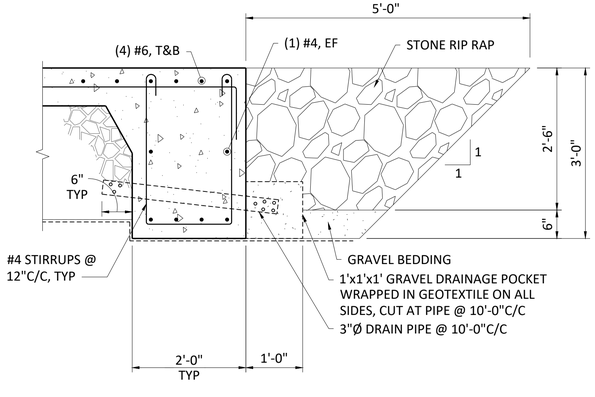
3 / - HEEL GRADE BEAM DETAIL
3/4"=1'-0"



4 / - WALKWAY TO WALL CONNECTION
3/4"=1'-0"



5 / - TYPICAL INTERIOR GRADE BEAM
3/4"=1'-0"



6 / - TOE GRADE BEAM DETAIL
3/4"=1'-0"

0 6" 1' 2'
3/4"=1'-0

0 1' 2' 4'
3/8"=1'-0

0 1' 2' 4' 8'
1/4"=1'-0"

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

TEXAS MASOUD DAMGHANIJAD 134629 LICENSED PROFESSIONAL ENGINEER
11/2/2022

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JEFFERSON COUNTY, TX
MESQUITE POINT PUBLIC BOAT RAMP
STRUCTURAL
SECTIONS I

F&N JOB NO.	JFF21789		
DATE	11/1/2022	DESIGNED	MGM
		DRAWN	STV
		REVISED	
		CHECKED	PAB
FILE NAME	ST-JFF-SC-RAMP01.dwg		

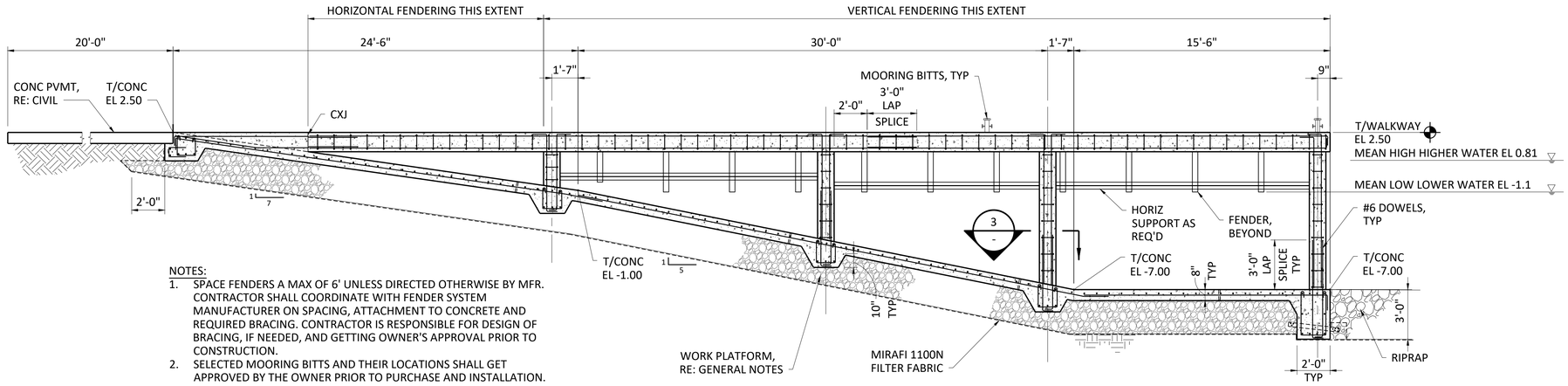
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VERIFY SCALE 0 1

SHEET S-03
SEQ. 13

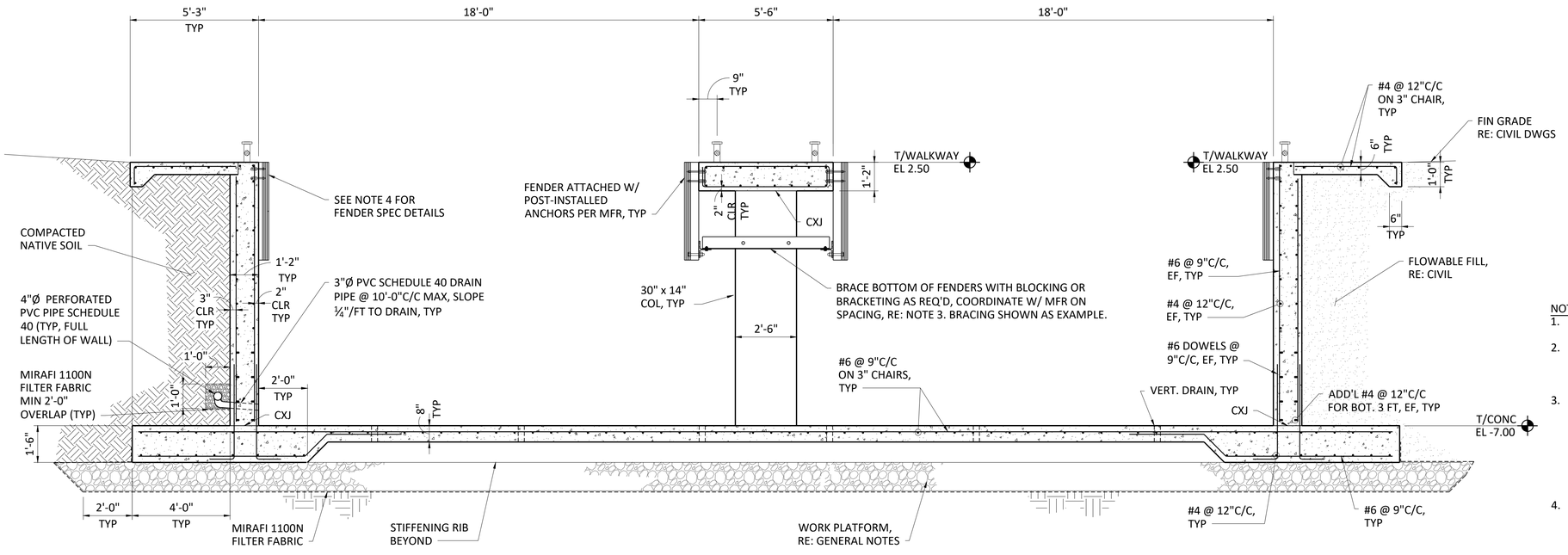
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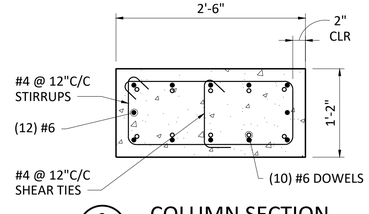


NOTES:
1. SPACE FENDERS A MAX OF 6' UNLESS DIRECTED OTHERWISE BY MFR. CONTRACTOR SHALL COORDINATE WITH FENDER SYSTEM MANUFACTURER ON SPACING, ATTACHMENT TO CONCRETE AND REQUIRED BRACING. CONTRACTOR IS RESPONSIBLE FOR DESIGN OF BRACING, IF NEEDED, AND GETTING OWNER'S APPROVAL PRIOR TO CONSTRUCTION.
2. SELECTED MOORING BITTS AND THEIR LOCATIONS SHALL GET APPROVED BY THE OWNER PRIOR TO PURCHASE AND INSTALLATION.

1 / S-02 SECTION
1/4"=1'-0"



2 / S-02 SECTION
3/8"=1'-0"



3 / - COLUMN SECTION
1"=1'-0"

NOTES:
1. FLOWABLE SHALL BE PLACED IN LIFTS. LIFT DEPTH SHALL NOT EXCEED 4 FEET.
2. FOR MULTIPLE LIFTS PLACEMENT, MATERIAL SHALL BE ALLOWED TO HARDEN BEFORE PLACING NEXT LIFT. VERIFY FLOWABLE FILL HAS REACHED A PENETRATION NUMBER OF 1500, IN ACCORDANCE WITH ASTM C 403, BUT NOT LESS THAN 3 HOURS.
3. THE CONNECTIONS AND BRACINGS SHOWN ARE ONLY A GENERIC REPRESENTATION OF WHAT MAY BE REQUIRED. OTHER BRACING SUCH AS BLOCKING OR STIFFENED VERTICAL METAL BRACKETS MAY BE ACCEPTABLE PER FENDER SYSTEM MANUFACTURER RECOMMENDATION OR PROPOSED FOR OWNER'S APPROVAL. FENDER AND BRACING SHALL BE SUFFICIENT FOR A 42-FT FREEMAN 42LR CENTER CONSOLE BOAT AND SUITABLE FOR SEAWATER EXPOSURE AND IMMERSION.
4. FENDER SYSTEM SHALL BE A VERTICAL SYSTEM FOR EXTENT INDICATED ON SECTION 1 IN THIS SHEET USING MARINE-GRADE EPDM RUBBER OR PVC FOR THE IMPACT SURFACE TO PROVIDE FENDING FROM TOP OF FINGER PIER TO MEAN LOW LOWER WATER ELEVATION.
5. HORIZONTAL FENDERING SHALL BE PROVIDED FOR EXTENT SHOWN IN SECTION 1, THIS SHEET, AND USE MARINE-GRADE EPDM RUBBER OR PVC FOR IMPACT SURFACE. MOUNTING WILL BE PER FENDER SYSTEM MANUFACTURER RECOMMENDATION OR PROPOSED FOR OWNER'S APPROVAL AND SHALL BE SUFFICIENT FOR A 42-FT FREEMAN 42LR CENTER CONSOLE BOAT

0 1' 2' 4'
3/8"=1'-0
0 6" 1' 2'
1"=1'-0"
0 1' 2' 4' 8'
1/4"=1'-0"

Freese and Nichols, Inc.
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11/2/2022

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JEFFERSON COUNTY, TX

MESQUITE POINT PUBLIC BOAT RAMP

STRUCTURAL

SECTIONS II

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BY | DATE | NO. | ISSUE

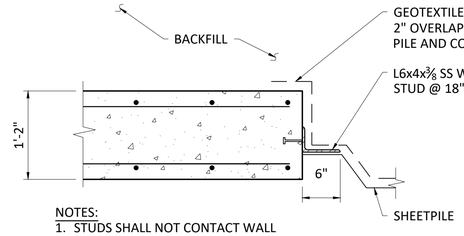
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SHEET S-04

SEQ. 14

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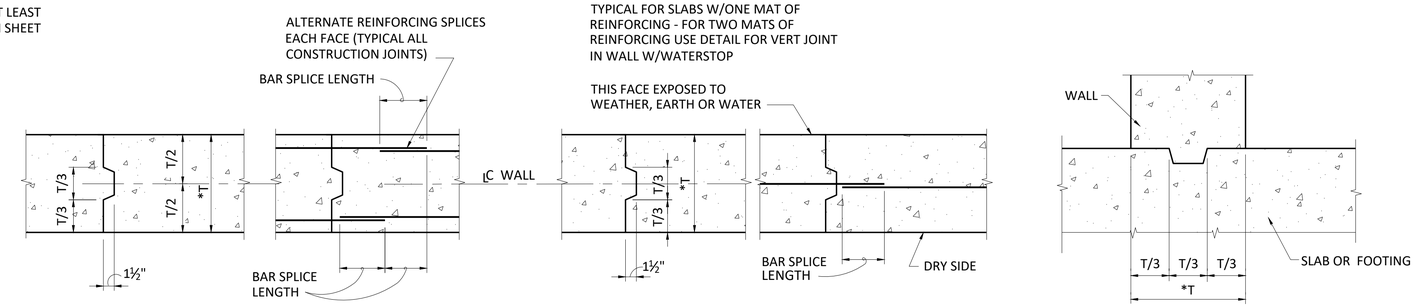
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NOTES:
1. STUDS SHALL NOT CONTACT WALL REINFORCEMENT. ADJUST LOCATION OF EMBED ANGLE TO AVOID STUDS TOUCHING BARS

1 S-02 SHEETPILE TO WALL CONNECTION DETAIL

1"=1'-0"



VERTICAL IN WALLS

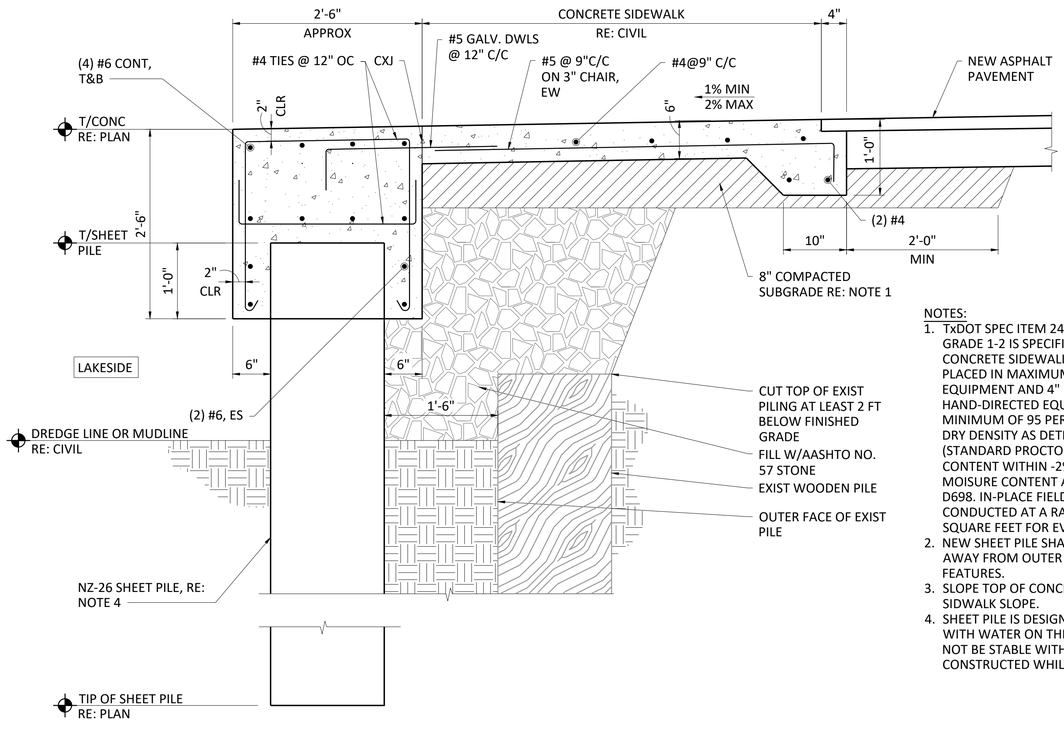
HORIZONTAL IN SLABS

HORIZONTAL IN WALLS (NO STARTER WALLS)

* T=THICKNESS OF WALL OR SLAB

2 - CONSTRUCTION JOINTS DETAILS

NOT TO SCALE



NOTES:
1. TxDOT SPEC ITEM 247 "FLEXIBLE BASE" TYPE A, GRADE 1-2 IS SPECIFIED FOR SUGRADE UNDER CONCRETE SIDEWALK. SUBGRADE SHALL BE PLACED IN MAXIMUM 8" LOOSE LIFTS FOR HEAVY EQUIPMENT AND 4" LOOSE LIFTS FOR HAND-DIRECTED EQUIPMENT. COMPACT TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 (STANDARD PROCTOR), AND AT A MOISTURE CONTENT WITHIN -2% TO 2% OF THE OPTIMUM MOISURE CONTENT AS DETERMNED BY ASTM D698. IN-PLACE FIELD DENSITY TESTS SHALL BE CONDUCTED AT A RATE OF ONE TEST PER 3,000 SQUARE FEET FOR EVERY LIFT.
2. NEW SHEET PILE SHALL BE DRIVEN AT LEAST 18" AWAY FROM OUTER POINT OF THE EXISTING FEATURES.
3. SLOPE TOP OF CONCRETE CAP TO MATCH SIDWALK SLOPE.
4. SHEET PILE IS DESIGNED FOR ITS FINAL CONITION WITH WATER ON THE LAKESIDE. SHEET PILE WILL NOT BE STABLE WITHOUT SHORING, IF IT GETS CONSTRUCTED WHILE DEWATERING LAKESIDE.

3 C-03 CONCRETE CAP AND SIDEWALK SECTION

1"=1'-0"

0 6" 1' 2'
1"=1'-0"

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JEFFERSON COUNTY, TX

MESQUITE POINT PUBLIC BOAT RAMP

STRUCTURAL

BULKHEAD SECTION AND DETAILS

F&N JOB NO.	JFF21789
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