



ST. TAMMANY PARISH

MICHAEL B. COOPER
PARISH PRESIDENT

NOTICE TO BIDDERS

ST. TAMMANY PARISH

Sealed bids will be received by the Department of Procurement, until 2:00 p.m., **Wednesday, December 17th, 2025** and then opened and read publicly at that time by the Procurement Staff for the following project:

Bid # 25-12-2 Lower Tchefuncte Breakwater Restoration

Each paper bid must be submitted in a sealed envelope. The outside of the envelope shall show the Name and Address of the Bidder, the State Contractor's License Number of the Bidder (if the work is estimated at \$50k or more), the Bid Name and the Bid Number.

The project classification is:

Heavy Construction and/or Dredging

This bid package is available online at www.bidexpress.com or LaPAC <https://wwwcfprd.doa.louisiana.gov/osp/lapac/pubmain.cfm>. It is the Vendor's responsibility to check Bid Express, or LaPAC frequently for any possible addenda that may be issued. The Parish is not responsible for a Vendor's failure to download any addenda documents required to complete a submission.

A Non- MANDATORY Pre-Bid Conference will be held on November 24, 2025, at 11:00 AM, at 21454 Koop Dr., Mandeville, LA, in Building B, 3rd floor Conference Room. All prospective bidders are expected to attend.

Bids will be received at 21454 Koop Dr., Suite 2F, Mandeville, LA 70471 from each bidder or his agent and given a written receipt, by certified mail with return receipt requested, or electronically at www.bidexpress.com.

Procurement Department

BID PROPOSAL

ST. TAMMANY PARISH
GOVERNMENT



BID PACKAGE FOR

LOWER TCHEFUNCTE BREAKWATER RESTORATION

BID NO.: 25-12-2

OCTOBER 2025

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Instructions to Bidders

Bidders are urged to promptly review the requirements of this specification and submit questions for resolution as early as possible during the bid period. Questions or concerns must be submitted in writing to the Procurement Department no later than 2:00 CST seven (7) working days prior to the bid opening date. Otherwise, this will be construed as acceptance by the bidders that the intent of the specifications is clear and that competitive bids may be obtained as specified herein. Protests with regard to the specification documents will not be considered after bids are opened.

1. Bid security is required. Be sure that your bid includes such security as is necessary to meet Parish requirements and is properly signed. The bid must be fully completed. All applicable Louisiana license numbers must be affixed.
2. The Owner is the St. Tammany Parish Government (the “Parish”).
3. The terms “he/his” and “it/its” may be used interchangeably.
4. The terms “Owner,” the “Parish,” and “St. Tammany Parish” may be used interchangeably.
5. The successful Bidder understands the limited contract time in the contract is **180 Calendar Days**, and shall submit any request for an extension of time in accordance with the General and Supplementary Conditions. Said request will reflect the days requested and the reason for same. No extension request is guaranteed or absolute.
6. Bidder specifically understands that acknowledgment of the General Conditions is required. Bidder specifically understands that signature of receipt of the General Conditions is mandated. **The Bidder’s signature on the “Louisiana Uniform Public Work Bid Form” will serve as acknowledgment of the Bidder’s receipt and understanding of the General Conditions as well as any Supplementary Conditions.**
7. ***If any additional work is performed by the contractor without written approval by owner, the cost of the work will be borne by the contractor and will not be reimbursed by the Parish.***
8. **Only** the Louisiana Uniform Public Bid Form, the Unit Price Form (if necessary), the bid security, and written evidence of authority of person signing the bid shall be submitted on or before the bid opening time and date provided for in the Bid Documents. Necessary copies of the Louisiana Uniform Public Work Forms and Unit Price Forms (if necessary) will be furnished for Bidding. Bound sets of the Contract Documents are for Bidder’s information and should not be used in submitting Bids.
9. All other documents and information required are to be submitted by the low Bidder within ten (10) days after the opening of the bids, and at the same time of day and location as given for the opening of the bids in the Bid Documents.
10. Each Bid must be submitted in a sealed envelope, unless submitted electronically. The outside of the envelope shall show the name and address of the Bidder, the State Contractor’s License Number of the Bidder (if work requires contractor’s license), and the Project name and the Bid number. In the case of an electronic bid proposal, a contractor may submit an authentic digital signature on the electronic bid proposal accompanied by the contractor’s license number, Project name and the Bid number.
11. The price quoted for the Work shall be stated in words and figures on the Bid Form, and in figures only on the Unit Price Form. The price in the Bid shall include all costs necessary for the complete performance of the Work in full conformity with the conditions of the Contract Documents, and shall include all applicable Federal, State, Parish, Municipal or other taxes and is the responsibility of the contractor to obtain tax exemption if applicable. The price bid for the items listed on the Unit Price Form will include the cost of all related items not listed, but which are normally required to do the type of Work bid.

12. The Bid shall be signed by the Bidder. The information required on the Louisiana Uniform Public Work Bid Form must be provided. Evidence of agency, corporate, or partnership authority is required and shall be provided in conformance with LSA-R.S. 38:2212(B).
13. Only a Contractor licensed by the State to do the type of Work as indicated on the Notice to Bidders can submit a Bid. The Bidder's signature on the Bid Form certifies that he holds an active license under the provisions of Chapter 24 of Louisiana Revised Statutes Title 37. Failure to be properly licensed constitutes authority for the Owner to reject the Bid.
14. Bidders shall not attach any conditions or provisions to the Bid. Any conditions or provisions so attached may, at the sole option of the Owner, cause rejection of the Bid.
15. A Bid Guarantee of five percent (5%) of the amount of the total Bid, including Alternates, must accompany the Proposal and, at the option of the Bidder, may be a cashier's check, certified check or a satisfactory Bid Bond. The Bid Guarantee must be attached to the Louisiana Uniform Public Work Bid Form. No Bid will be considered unless it is so guaranteed. Cashier's check or certified check must be made payable to the order of the Owner. Cash deposits will not be accepted. The Owner reserves the right to cash or deposit the cashier's check or certified check. Such guarantees shall be made payable to the Parish of St. Tammany. In accordance with LSA-R.S. 38:2218(C), if a bid bond is used, it shall be written by a surety or insurance company currently on the U.S. Department of the Treasury Financial Management Service list of approved bonding companies which is published annually in the Federal Register, or by a Louisiana domiciled insurance company with at least an A- rating in the latest printing of the A.M. Best's Key Rating Guide to write individual bonds up to ten percent of policyholders' surplus as shown in the A.M. Best's Key Rating Guide or by an insurance company in good standing licensed to write bid bonds which is either domiciled in Louisiana or owned by Louisiana residents. It is **not** required to be on any AIA form.
16. Bid securities of the three (3) lowest Bidders will be retained by the Owner until the Contract is executed or until final disposition is made of the Bids submitted. Bid securities of all other Bidders will be returned promptly after the canvas of Bids. Bids shall remain binding for forty-five (45) days after the date set for Bid Opening. The Parish shall act within the forty-five (45) days to award the contract to the lowest responsible bidder or reject all bids. However, the Parish and the lowest responsible bidder, by mutual written consent, may agree to extend the deadline for award by one or more extensions of thirty (30) calendar days. In the event the Owner issued the Letter of Award during this period, or any extension thereof, the Bid accepted shall continue to remain binding until the execution of the Contract.
17. A Proposal may be withdrawn at any time prior to the scheduled closing time for receipt of Bids, provided the request is in writing, executed by the Bidder or its duly authorized representative and is filed with the Owner prior to that time. When such a request is received, the Proposal will be returned to the Bidder unopened. A bid withdrawn under the provisions of LSA-R.S. 38:2214(C) cannot be resubmitted.
18. Written communications, over the signature of the Bidder, to modify Proposals will be accepted and the Proposal corrected in accordance therewith if received by the Owner prior to the scheduled closing time for receipt of Bids. Oral, telephonic or telegraphic Modifications will not be considered.
19. No oral interpretation obligating the Owner will be made to any Bidder as to the meaning of the Drawings, Specifications and Contract Documents. Every request for such an interpretation shall be made in writing and addressed and forwarded to the Owner. Inquiries received within seven (7) days prior to the day fixed for opening of the Bids may not be given consideration. Every interpretation made to the Bidder shall be in the form of an addendum to the Specifications. All such Addenda shall become part of the Contract Documents. Failure of the Owner to send or failure of Bidder to receive any such interpretation shall not relieve any Bidder from any obligation under this Bid as submitted without Modification. All Addenda shall be issued in accordance with the Public Bid Law, LSA-R.S. 38:2212(O).
20. The Owner reserves the right to reject any or all Bids for just cause in accordance with the Public Bid Law, LSA-R.S. 38:2214(B). Incomplete, informal, illegible, or unbalanced Bids may be rejected. Reasonable grounds for belief that any one Bidder is concerned directly or indirectly with more than one Bid will cause rejection of all Bids wherein such Bidder

is concerned. If required, a Bidder shall furnish satisfactory evidence of its competence and ability to perform the Work stipulated in its Proposal. Incompetence will constitute cause for rejection. If the Parish determines that the bidder is not responsive or responsible for any reason whatsoever, the bid may be rejected in accordance with State law.

21. Contractor shall be liable without limitation to the Parish for any and all injury, death, damage, loss, destruction, damages, costs, fines, penalties, judgments, forfeitures, assessments, expenses (including attorney fees), obligations, and other liabilities of every name and description, which may occur or in any way arise out of any act or omission of Contractor, its owners, agents, employees, partners or subcontractors.
22. Upon notice of any claim, demand, suit, or cause of action against the Parish, alleged to arise out of or be related to this Contract, Contractor shall investigate, handle, respond to, provide defense for, and defend at its sole expense, even if the claim, demand, suit, or cause of action is groundless, false, or fraudulent. The Parish may, but is not required to, consult with or assist the Contractor, but this assistance shall not affect the Contractor's obligations, duties, and responsibilities under this section. Contractor shall obtain the Parish's written consent before entering into any settlement or dismissal.
23. It is understood and agreed that neither party can foresee the exigencies beyond the control of each party which arise by reason of an Act of God or force majeure; therefore, neither party shall be liable for any delay or failure in performance beyond its control resulting from an Act of God or force majeure. The Parish shall determine whether a delay or failure results from an Act of God or force majeure based on its review of all facts and circumstances. The parties shall use reasonable efforts, including but not limited to, use of continuation of operations plans (COOP), business continuity plans, and disaster recovery plans, to eliminate or minimize the effect of such events upon the performance of their respective duties under this Contract.
24. Contractor shall fully indemnify and hold harmless the Parish, without limitation, for any and all injury, death, damage, loss, destruction, damages, costs, fines, penalties, judgments, forfeitures, assessments, expenses (including attorney fees), obligations, and other liabilities of every name and description, which may occur or in any way arise out of any act or omission of Contractor, its owners, agents, employees, partners or subcontractors. The Contractor shall not indemnify for the portion of any loss or damage arising from the Parish's act or failure to act.
25. Contractor shall fully indemnify and hold harmless the Parish, without limitation, from and against damages, costs, fines, penalties, judgments, forfeitures, assessments, expenses (including attorney fees), obligations, and other liabilities in any action for infringement of any intellectual property right, including but not limited to, trademark, trade-secret, copyright, and patent rights.

When a dispute or claim arises relative to a real or anticipated infringement, the Contractor, at its sole expense, shall submit information and documentation, including formal patent attorney opinions, as required by the Parish.

If the use of the product, material, service, or any component thereof is enjoined for any reason or if the Contractor believes that it may be enjoined, Contractor, while ensuring appropriate migration and implementation, data integrity, and minimal delays of performance, shall at its sole expense and in the following order of precedence: (i) obtain for the Parish the right to continue using such product, material, service, or component thereof; (ii) modify the product, material, service, or component thereof so that it becomes a non-infringing product, material, or service of at least equal quality and performance; (iii) replace the product, material, service, or component thereof so that it becomes a non-infringing product, material, or service of at least equal quality and performance; or, (iv) provide the Parish monetary compensation for all payments made under the Contract related to the infringing product, material, service, or component, plus for all costs incurred to procure and implement a non-infringing product, material, or service of at least equal quality and performance. Until this obligation has been satisfied, the Contractor remains in default.

The Contractor shall not be obligated to indemnify that portion of a claim or dispute based upon the Parish's unauthorized: i) modification or alteration of the product, material or service; ii) use of the product, material or service in combination with other products not

furnished by Contractor; or, iii) use of the product, material or service in other than the specified operating conditions and environment.

26. Bidders shall familiarize themselves with and shall comply with all applicable Federal and State Laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over construction of the Project, which may directly or indirectly affect the Work or its prosecution. These laws and/or ordinances will be deemed to be included in the Contract, as though herein written in full.
27. Each Bidder shall visit the site of the proposed Work and fully acquaint itself with all surface and subsurface conditions as they may exist so that it may fully understand this Contract. Bidder shall also thoroughly examine and be familiar with drawings, Specifications and Contract Documents. The failure or omission of any Bidder to receive or examine any form, instrument, Drawing or document or to visit the site and acquaint itself with existing conditions shall in no way relieve any Bidder from any obligation with respect to its Bid and the responsibility in the premises.
28. The standard contract form enclosed with the Proposal documents is a prototype. It is enclosed with the Contract Documents for the guidance of the Owner and the Contractor. It has important legal consequences in all respects and consultation with an attorney is encouraged. Contractor shall be presumed to have consulted with its own independent legal counsel.
29. When one set of Contract plans show the Work to be performed by two or more prime Contractors, it is the responsibility of each Bidder to become knowledgeable of the Work to be performed by the other where the Work upon which this bid is submitted is shown to come into close proximity or in conflict with the Work of the other. In avoiding conflicts, pressure pipe lines must be installed to avoid conflict with gravity pipe lines and the Bidder of the smaller gravity pipe line in conflict with the larger gravity pipe line must include in his Bid the cost of a conflict box at these locations. The location of and a solution to the conflicts do not have to be specifically noted as such on the plans.
30. Bidder shall execute affidavit(s) attesting compliance with LSA-R.S. 38:2212.10, 38:2224, 38:2227, each as amended, and other affidavits as required by law, prior to execution of the contract.
31. In accordance with Louisiana Law, all Corporations (See LA R.S. 12:26.1) and Limited Liability Companies (See LA R.S. 12:1308.2) should be registered and in good standing with the Louisiana Secretary of State in order to hold a contract.
32. Sealed Bids shall be delivered to St. Tammany Parish Government at the office of **St. Tammany Parish Government, Department of Procurement, 21454 Koop Drive, Suite 2-F, Mandeville, LA 70471**, and a receipt given, until the time and date denoted in Notice to Bidders, at which time and place the Bids shall be publicly opened and read aloud to those present. In accordance with LSA-R.S. 38:2212(H), the designer's final estimated cost of construction shall be read aloud upon opening bids. Sealed Bids may also be mailed by certified mail to **St. Tammany Parish Government, Department of Procurement, 21454 Koop Drive, Suite 2-F, Mandeville, LA 70471**, and must be received before the bid opening. Bids may also be submitted electronically. Information concerning links for electronic bidding is contained in the Notice to Bidders. It is the responsibility of the Bidders to ensure that bids are delivered in a timely fashion. **Late bids, regardless of reason, will not be considered, and will be returned to bidder.**
33. Paper bids shall be placed in a sealed envelope, marked plainly and prominently as indicated in the Notice to Bidders, and these Instructions, and addressed:

**St. Tammany Parish Government
Department of Procurement
21454 Koop Drive, Suite 2-F
Mandeville, LA 70471**
34. See Notice to Bidders for availability of Drawings, Specifications and Contract Documents via electronic methods.

35. The successful Bidder shall be required to post in each direction a public information sign, 4' x 4' in size, at the location of the project containing information required by the Owner. The Owner shall supply this information.
36. The award of the Contract, if it is awarded, will be to the lowest responsible Bidder, in accordance with State Law. No award will be made until the Owner has concluded such investigations as it deems necessary to establish the responsibility and qualifications of the Bidder to do the Work in accordance with the Contract Documents to the satisfaction of the Owner within the time prescribed as established by the Department based upon the amount of work to be performed and the conditions of same. The written contract and bond shall be issued in conformance with LSA-R.S. 38:2216. If the Contract is awarded, the Owner shall give the successful Bidder written notice of the award within forty-five (45) calendar days after the opening of the Bids in conformance with LSA-R.S. 38:2215(A), or any extension as authorized thereunder.
37. At least three days prior to the execution of the Contract, the Contractor shall deliver to the Owner the required Bonds.
38. Failure of the successful Bidder to execute the Contract and deliver the required Bonds within ten (10) days of the Notice of the Award shall be just cause for the Owner to annul the award and declare the Bid and any guarantee thereof forfeited. Award may then be made to the next lowest responsible bidder.
39. In order to ensure the faithful performance of each and every condition, stipulation and requirement of the Contract and to indemnify and hold harmless the Owner from any and all damages, either directly or indirectly arising out of any failure to perform same, the successful Bidder to whom the Contract is awarded shall furnish a Performance and Payment Bond in an amount of at least equal to one hundred percent (100%) of the Contract Price. The Contract shall not be in force or binding upon the Owner until such satisfactory Bond has been provided to and approved by the Parish. The cost of the Bond shall be paid for by the Contractor unless otherwise stipulated in the Special Provisions.
40. No surety Company will be accepted as a bondsman which has no permanent agent or representative in the State upon whom notices referred to in the General Conditions of these Specifications may be served. Service of said notice on said agent or representative in the State shall be equal to service of notice on the President of the Surety Company, or such other officer as may be concerned.
41. In conformance with LSA-R.S. 38:2219(A)(1)(a), (b), and (c):

Any surety bond written for a public works project shall be written by a surety or insurance company currently on the U.S. Department of the Treasury Financial Management Service list of approved bonding companies which is published annually in the Federal Register, or by a Louisiana domiciled insurance company with at least an A- rating in the latest printing of the A.M. Best's Key Rating Guide, to write individual bonds up to ten percent of policyholders' surplus as shown in the A.M. Best's Key Rating Guide or by an insurance company that is either domiciled in Louisiana or owned by Louisiana residents and is licensed to write surety bonds.

For any public works project, no surety or insurance company shall write a bond which is in excess of the amount indicated as approved by the U.S. Department of the Treasury Financial Management Service list or by a Louisiana domiciled insurance company with an A- rating by A.M. Best up to a limit of ten percent of policyholders' surplus as shown by A.M. Best; companies authorized by this Paragraph who are not on the treasury list shall not write a bond when the penalty exceeds fifteen percent of its capital and surplus, such capital and surplus being the amount by which the company's assets exceed its liabilities as reflected by the most recent financial statements filed by the company with the Department of Insurance.

In addition, any surety bond written for a public works project shall be written by a surety or insurance company that is currently licensed to do business in the state of Louisiana. All contractors must comply with any other applicable provisions of LSA-R.S. 38:2219.
42. Should the Contractor's Surety, even though approved and accepted by the Owner, subsequently remove its agency or representative from the State or become insolvent,

bankrupt, or otherwise fail, the Contractor shall immediately furnish a new Bond in another company approved by the Owner, at no cost to the Owner. The new Bond shall be executed under the same terms and conditions as the original Bond. The new bond shall be submitted within thirty (30) days of such time as the Owner notifies Contractor or from the time Contractor learns or has reason to know that the original surety is no longer financially viable or acceptable to the Parish, whichever occurs first. In the event that Contractor fails or refuses to timely secure additional surety, then the Owner may secure such surety and thereafter deduct such cost or expense from any sum due, or to become due to Contractor.

43. The Contractor's bondsman shall obligate itself to all the terms and covenants of these Specifications and of contracts covering the Work executed hereunder. The Owner reserves the right to do Extra Work or make changes by altering, adding to deducting from the Work under the conditions and in the manner herein before described without notice to the Contractor's surety and without in any manner affecting the liability of bondsman or releasing it from any of its obligations hereunder.
44. The Bond shall also secure for the Owner the faithful performance of the Contract in strict accordance with plans, specifications, and other Contract Documents. It shall protect the Owner against all lien laws of the State and shall provide for payment of reasonable attorney's fees for enforcement of Contract and institution or concursus proceedings, if such proceedings become necessary. Likewise, it shall provide for all additional expenses of the Owner occurring through failure of the Contractor to perform.
45. The surety of the Contractor shall be and does hereby declare and acknowledge itself by acceptance to be bound to the Owner as a guarantor, jointly and in solido, with the Contractor, for fulfillment of terms of the Contract.
46. The performance Bond and Labor and Material Bond forming part of this Contract shall be continued by Contractor and its Surety for a period of one (1) year from date of acceptance of the Work/Project by Owner to assure prompt removal and replacement of all defective material, equipment, components thereof, workmanship, etc., and to assure payment of any damage to property of Owner or others as a result of such defective materials, equipment, workmanship, etc.
47. Contractor authorizes Parish to deduct from any payment due herein costs and service fees for recordation of this Contract in full or an excerpt hereof, or any revisions or modifications thereof as required by law. Contractor agrees to execute an excerpt or extract of this agreement for recordation purposes. If Contractor fails to execute such an excerpt, then the Parish shall file and record the entire Contract and all attachments at the expense of Contractor and Parish is hereby authorized to deduct all related costs from any proceeds due to the Contractor.
48. Contractor shall secure and maintain at its expense such insurance that will protect it and the Parish from claims for injuries to persons or damages to property which may arise from or in connection with the performance of Services or Work hereunder by the Contractor, his agents, representatives, employees, and/or subcontractors. The cost of such insurance shall be included in Contractor's bid.
49. The Contractor shall not commence work until it has obtained all insurance as required for the Parish Project. If the Contractor fails to furnish the Parish with the insurance protection required and begins work without first furnishing Parish with a currently dated certificate of insurance, the Parish has the right to obtain the insurance protection required and deduct the cost of insurance from the first payment due the Contractor. Further deductions are permitted from future payments as are needed to protect the interests of the Parish including, but not limited to, renewals of all policies.
50. Payment of Premiums: The insurance companies issuing the policy or policies shall have no recourse against the Parish of St. Tammany for payment of any premiums or for assessments under any form of policy.
51. Deductibles: Any and all deductibles in the described insurance policies shall be assumed by and be at the sole risk of the Contractor.

52. Authorization of Insurance Company(ies) and Rating: All insurance companies must be authorized to do business in the State of Louisiana and shall have an A.M. Best rating of no less than A-, Category VII.
53. Policy coverages and limits must be evidenced by Certificates of Insurance issued by Contractor's carrier to the Parish and shall reflect:

Date of Issue: Certificate must have current date.

Named Insured: The legal name of Contractor under contract with the Parish and its principal place of business shall be shown as the named insured on all Certificates of Liability Insurance.

Name of Certificate Holder: St. Tammany Parish Government, Office of Risk Management, P. O. Box 628, Covington, LA 70434

Project Description: A brief project description, including Project Name, Project Number and/or Contract Number, and Location.

Endorsements and Certificate Reference: All policies must be endorsed to provide, and certificates of insurance must evidence the following:

Waiver of Subrogation: The Contractor's insurers will have no right of recovery or subrogation against the Parish of St. Tammany, it being the intention of the parties that all insurance policy(ies) so affected shall protect both parties and be the primary coverage for any and all losses covered by the below described insurance. *Policy endorsements required for all coverages.*

Additional Insured: The Parish of St. Tammany shall be named as additional named insured with respect to general liability, marine liability, pollution/environmental liability, automobile liability and excess liability coverages. *Policy endorsements required.*

Hold Harmless: Contractor's liability insurers shall evidence their cognizance of the Hold Harmless and Indemnification in favor of St. Tammany Parish Government by referencing same on the face of the Certificate(s) of Insurance.

Cancellation Notice: Producer shall provide thirty (30) days prior written notice to the Parish of policy cancellation or substantive policy change.

54. The types of insurance coverage the Contractor is required to obtain and maintain throughout the duration of the Contract shall be designated by a separate document issued by the Office of Risk Management.
55. It is the intent of these instructions that they are in conformance with State Bid Laws. Should there be any discrepancy or ambiguity in these provisions, the applicable State Bid Law shall apply.
56. The letting of any public contract in connection with funds that are granted or advanced by the United States of America shall be subject to the effect, if any, of related laws of said United States and valid rules and regulations of federal agencies in charge, or governing use and payment of such federal funds.
57. Protests based on alleged solicitation improprieties that are apparent before bid opening, or the time set for receipt of initial proposals must be filed with and received by the Procurement Department BEFORE two (2) working days of the bid opening. Any other protest shall be filed no later than ten (10) calendar days after: the opening of the bid; the basis of the protest is known; or the basis of the protest should have been known (whichever is earlier).
58. It is the Parish's policy to provide a method to protest exclusion from a competition or from the award of a contract, or to challenge an alleged solicitation irregularity. It is always better to seek a resolution within the Parish system before resorting to outside agencies and/or litigation to resolve differences. All protests must be made in writing, and shall be

concise and logically presented to facilitate review by the Parish. The written protest shall include:

The protester’s name, address, and fax and telephone numbers and the solicitation, bid, or contract number;

A detailed statement of its legal and factual grounds, including a description of the resulting prejudice to the protester;

Copies of relevant documents;

All information establishing that the protester is an interested party and that the protest is timely; and

A request for a ruling by the agency; and a statement of the form of relief requested.

The protest shall be addressed to St. Tammany Parish Government Department of Procurement, P.O. Box 628, Covington, LA 70434

The protest review shall be conducted by the Parish Legal Department.

Only protests from interested parties will be allowed. Protests based on alleged solicitation improprieties that are apparent before bid opening, or the time set for receipt of initial proposals, must be filed with and received by the Department of Procurement BEFORE those deadlines.

Any other protest shall be filed no later than ten (10) calendar days after the basis of the protest is known, or should have been known (whichever is earlier).

The Parish will use its best efforts to resolve the protest within thirty (30) days of the date that it is received by the Parish. The written response will be sent to the protestor via mail and fax, if a fax number has been provided by the protestor. The protester can request additional methods of notification.

- 59. The last day to submit questions to Procurement shall be no later than 2:00 pm CST, seven (7) working days prior to the opening of bids, and verification on comparable products will be no later than 2:00 pm CST, fourteen (14) working days prior to the opening date of the bid/proposal due date. Further, any questions or inquiries must be submitted via fax to 985-898-5227, or via email to Procurement@stpgov.org. Any questions or inquiries received after the required deadline to submit questions or inquiries will not be answered.

Schedule of Events

	<u>Date</u>	<u>Time (CT)</u>
Bid Due Date	December 17, 2025	2:00 PM
Pre-Bid Meeting	November 24, 2025	11:00 AM
Inquiry Deadline	December 8, 2025	2:00 PM
Addendum Deadline	December 12, 2025	2:00 PM

NOTE: The Parish reserves the right to revise this schedule. Any such revision will be formalized by the issuance of an addendum to the Bid Request.

- 60. St. Tammany Parish Government contracts to be awarded are dependent on the available funding and/or approval by members designated and/or acknowledged by St. Tammany Parish Government. At any time, St. Tammany Parish Government reserves the right to cancel the award of a contract if either or both of these factors is deficient.
- 61. Any action by the Parish to disqualify any Bidder on the grounds that they are not a responsible Bidder shall be conducted in accordance with LSA-R.S. 38:2212(X).
- 62. Failure to complete or deliver within the time specified or to provide the services as specified in the bid or response will constitute a default and may cause cancellation of the contract. Where the Parish has determined the contractor to be in default. The Parish

reserves the right to purchase any or all products or services covered by the contract on the open market and to charge the contractor with the cost in excess of the contract price. Until such assessed charges have been paid, no subsequent bid or response from the defaulting contractor will be considered.

63. If any part of the provisions contained herein and/or in the Specifications and Contract for the Work shall for any reason be held invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions of this Agreement or attachment, but it shall be construed as if such invalid, illegal, or unenforceable provision or part of a provision had never been contained herein.

Section 03

Summary of Work

I. Work to Include:

The scope of work shall include constructing approximately 800' coastal rip-rap breakwater along the eastern side of the Tchefuncte River outfall to Lake Pontchartrain.

II. Location of Work:

Lat 30°22'30.63"N, Long. 90°09'33.19" W
Lake Pontchartrain at the mouth of the Tchefuncte River
St. Tammany Parish, Louisiana

III. Documents: Bid Documents dated October 2025, and entitled:

Lower Tchefuncte Breakwater Restoration
Bid No. 25-12-2

IV. OTHER REQUIREMENTS (as applicable)

When not otherwise specified herein, all work and materials shall conform to the requirements of the Louisiana Department of Transportation and Development hereafter called LDOTD (2016 Edition of Louisiana Standard Specifications for Roads and Bridges).

This project is federally grant-funded and therefore requires the Contractor to have a Unique Entity Identification number (UEI). The Contractor should submit with their response their UEI number. If the Contractor does not have a UEI already, then they must register at the below link before an award can be made.

<https://sam.gov/content/entity-registration>

Table 3.1

Liquidated Damages	
Original Contract Amount	Daily Charge
Dollars	Dollars
0 - 250,000	500
250,000 – 1 Million	1,000
> 1 Million – 5 Million	1,500
> 5 Million – 10 Million	2,000
> 10 Million	3,000

- Parish reserves the right to increase the Daily charge rate due to additional provisions required in order to complete the project as described in the specifications

LOUISIANA UNIFORM PUBLIC WORK BID FORM

TO: St. Tammany Parish Government
21454 Koop Dr., Suite 2F
Mandeville, La 70471

(Owner to provide name and address of owner)

BID FOR: Lower Tchefuncte Breakwater Restoration
Bid No. 25-12-2

(Owner to provide name of project and other identifying information.)

The undersigned bidder hereby declares and represents that she/he; a) has carefully examined and understands the Bidding Documents, b) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, c) has personally inspected and is familiar with the project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services for the construction and completion of the referenced project, all in strict accordance with the Bidding Documents prepared by: Digital Engineering & Imaging, Inc and dated: October 2025.

(Owner to provide name of entity preparing bidding documents.)

Bidders must acknowledge all addenda. The Bidder acknowledges receipt of the following ADDENDA: (Enter the number the Designer has assigned to each of the addenda that the Bidder is acknowledging)

TOTAL BASE BID: For all work required by the Bidding Documents (including any and all unit prices designated “Base Bid” * but not alternates) the sum of:

Dollars (\$

ALTERNATES: For any and all work required by the Bidding Documents for Alternates including any and all unit prices designated as alternates in the unit price description.

Alternate No. 1 (Owner to provide description of alternate and state whether add or deduct) for the lump sum of:

Not Applicable Dollars (\$ Not Applicable)

Alternate No. 2 (Owner to provide description of alternate and state whether add or deduct) for the lump sum of:

Not Applicable Dollars (\$ Not Applicable)

Alternate No. 3 (Owner to provide description of alternate and state whether add or deduct) for the lump sum of:

Not Applicable Dollars (\$ Not Applicable)

NAME OF BIDDER:

ADDRESS OF BIDDER:

LOUISIANA CONTRACTOR’S LICENSE NUMBER:

NAME OF AUTHORIZED SIGNATORY OF BIDDER:

TITLE OF AUTHORIZED SIGNATORY OF BIDDER:

SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER **:

DATE:

THE FOLLOWING ITEMS ARE TO BE INCLUDED WITH THE SUBMISSION OF THIS LOUISIANA UNIFORM PUBLIC WORK BID FORM:

* The Unit Price Form shall be used if the contract includes unit prices. Otherwise it is not required and need not be included with the form. The number of unit prices that may be included is not limited and additional sheets may be included if needed.

** A CORPORATE RESOLUTION OR WRITTEN EVIDENCE of the authority of the person signing the bid for the public work as prescribed by LA R.S. 38:2212(B)(5).

BID SECURITY in the form of a bid bond, certified check or cashier’s check as prescribed by LA R.S. 38:2218(A) attached to and made a part of this bid.

LOUISIANA UNIFORM PUBLIC WORK BID FORM
UNIT PRICE FORM

TO:

St. Tammany Parish Government
21454 Koop Drive, Suite 2F
Mandeville, LA. 70471
(OWNER TO PROVIDE NAME AND ADDRESS OF OWNER)

BID FOR:

LOWER TCHEFUNCTE BREAKWATER
RESTORATION
Bid No. 25-12-2
(OWNER TO PROVIDE PROJECT NAME & OTHER IDENTIFYING INFO)

UNIT PRICES: This form shall be used for any & all work required by the Bidding Documents & described as unit prices. Amounts shall be stated in figures & only in figures.

Description:		☒ BASE BID	OR	☐ ALT #	MOBILIZATION AND DEMOBILIZATION	
REF NO.:	QUANTITY	UNIT OF MEASURE		UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)	
1	1	LUMP				
Description:		☒ BASE BID	OR	☐ ALT #	CONSTRUCTION SURVEYING	
REF NO.:	QUANTITY	UNIT OF MEASURE		UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)	
2	1	LUMP				
Description:		☒ BASE BID	OR	☐ ALT #	GEOTEXTILE FABRIC	
REF NO.:	QUANTITY	UNIT OF MEASURE		UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)	
3	3650	SQYD				
Description:		☒ BASE BID	OR	☐ ALT #	GEODRID	
REF NO.:	QUANTITY	UNIT OF MEASURE		UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)	
4	3650	SQYD				

Wording for "description" is to be provided by the Owner. All Quantities Estimated. The Contractor will be paid based upon actual quantities as verified by the Owner.

UNIT PRICES: This form shall be used for any & all work required by the Bidding Documents & described as unit prices. Amounts shall be stated in figures & only in figures.

Description:		☒ BASE BID	OR	☐ ALT #	GRADED RIP RAP (440 LB GRADATION)	
REF NO.:	QUANTITY	UNIT OF MEASURE		UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)	
5	7750	TON				
Description:		☒ BASE BID	OR	☐ ALT #	SETTLING PLATES	
REF NO.:	QUANTITY	UNIT OF MEASURE		UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)	
6	3	EACH				
Description:		☒ BASE BID	OR	☐ ALT #	LIGHTED DAYBEACONS	
REF NO.:	QUANTITY	UNIT OF MEASURE		UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)	
7	4	EACH				

Wording for "description" is to be provided by the Owner. All Quantities Estimated. The Contractor will be paid based upon actual quantities as verified by the Owner.

Section 05

**AFFIDAVIT PURSUANT TO LSA-R.S. 38:2224 and 38:2227
FOR BIDDERS FOR PUBLIC WORKS CONTRACTS**

STATE OF _____

PARISH/COUNTY OF _____

BEFORE ME, the undersigned authority, in and for the above stated State and Parish (or County), personally came and appeared:

Print Name

who, after first being duly sworn, did depose and state:

1. That affiant is appearing on behalf of _____, who is seeking a public contract with St. Tammany Parish Government.
2. That affiant employed no person, corporation, firm, association, or other organization, either directly or indirectly, to secure the public contract under which he received payment, other than persons regularly employed by the affiant whose services in connection with the construction, alteration or demolition of the public building or project or in securing the public contract were in the regular course of their duties for affiant; and
3. That no part of the contract price received by affiant was paid or will be paid to any person, corporation, firm, association, or other organization for soliciting the contract, other than the payment of their normal compensation to persons regularly employed by the affiant whose services in connection with the construction, alteration or demolition of the public building or project were in the regular course of their duties for affiant.
4. If affiant is a sole proprietor, that after July 2, 2010, he/she has not been convicted of, or has not entered a plea of guilty or *nolo contendere* to any of the crimes or equivalent federal crimes listed in LSA-R.S. 38:2227(B).
5. If affiant is executing this affidavit on behalf of a juridical entity such as a partnership, corporation, or LLC, etc., that no individual partner, incorporator, director, manager, officer, organizer, or member, who has a minimum of a ten percent ownership in the bidding entity, has been convicted of, or has entered a plea of guilty or *nolo contendere* to any

of the crimes or equivalent federal crimes listed in LSA-R.S. 38:2227(B).

- 6. If affiant is a sole proprietor, that neither affiant, nor his/her immediate family is a public servant of St. Tammany Parish Government or the Contract is not under the supervision or jurisdiction of the public servant’s agency.
- 7. If affiant is executing this affidavit on behalf of a juridical entity such as a partnership, corporation, or LLC, etc., that no public servant of St. Tammany Parish Government, or his/her immediate family, either individually or collectively, has more than a 25% ownership interest in the entity seeking the Contract with St. Tammany Parish Government if the Contract will be under the supervision or jurisdiction of the public servant’s agency.

Printed Name: _____
Title: _____
Entity name: _____

THUS SWORN TO AND SUBSCRIBED BEFORE ME,
THIS _____, DAY OF _____, 202__.

Notary Public
Print Name: _____
Notary I.D./Bar No.: _____
My commission expires: _____

**AFFIDAVIT PURSUANT TO LSA-R.S. 38:2212.10 CONFIRMING
REGISTRATION AND PARTICIPATION IN A STATUS VERIFICATION
SYSTEM**

STATE OF _____
PARISH/COUNTY OF _____

BEFORE ME, the undersigned authority, in and for the above stated State and Parish (or County), personally came and appeared:

Print Name

who, after first being duly sworn, did depose and state:

- 1. That affiant is appearing on behalf of _____,
a private employer seeking a bid or a contract with St. Tammany Parish
Government for the physical performance of services within the State of
Louisiana.
- 2. That affiant is registered and participates in a status verification system to
verify that all employees in the state of Louisiana are legal citizens of the
United States or are legal aliens; and
- 3. That affiant shall continue, during the term of the contract, to utilize a status
verification system to verify the legal status of all new employees in the
state of Louisiana.
- 4. That affiant shall require all subcontractors to submit to the affiant a sworn
affidavit verifying compliance with this law.

Printed Name: _____
Title: _____
Name of Entity: _____

THUS SWORN TO AND SUBSCRIBED BEFORE ME,
THIS _____, **DAY OF** _____, **202**__.

Notary Public
Print Name: _____
Notary I.D./Bar No.: _____
My commission expires: _____



Section 06

INSURANCE REQUIREMENTS*

Construction Project: Lower Tchefuncte Breakwater Restoration_____

Project/Quote/Bid#: 25-12-2_____

*****IMPORTANT – PLEASE READ*****

Prior to submitting your quote or bid, it is recommended that you review these insurance requirements with your insurance broker/agent.

These requirements modify portions of the insurance language found in the General Conditions and/or Supplementary General Conditions; however, there is no intention to remove all sections pertaining to insurance requirements and limits set forth in the General Conditions and/or Supplementary General Conditions, only to amend and specify those items particular for this Project.

- A. The Provider shall secure and maintain at its expense such insurance that will protect it and St. Tammany Parish Government (the "Parish") from claims for bodily injury, death or property damage as well as from claims under the Workers' Compensation Acts that may arise from the performance of services under this agreement. All certificates of insurance shall be furnished to the Parish and provide thirty (30) days prior notice of cancellation to the Parish, in writing, on all of the required coverage.
- B. All policies shall provide for and certificates of insurance shall indicate the following:
1. Waiver of Subrogation: The Provider's insurers will have no right of recovery or subrogation against the Parish of St. Tammany, it being the intention of the parties that all insurance policy(ies) so affected shall protect both parties and be the primary coverage for any and all losses covered by the below described insurance.
 2. Additional Insured: St. Tammany Parish Government shall be named as Additional Insured with respect to general liability, automobile liability and excess liability coverages, as well as marine liability and pollution/environmental liability, when those coverages are required or necessary.
 3. Payment of Premiums: The insurance companies issuing the policy or policies will have no recourse against St. Tammany Parish Government for payment of any premiums or for assessments under any form of policy.
 4. Project Reference: The project(s) and location(s) shall be referenced in the Comment or Description of Operations section of the Certificate of Insurance (Project ##-###, or Bid # if applicable, Type of Work, Location).
- C. Coverage must be issued by insurance companies authorized to do business in the State of Louisiana. Companies must have an A.M. Best rating of no less than A-, Category VII. St. Tammany Parish Risk Management Department may waive this requirement only for Workers Compensation coverage at their discretion.

Provider shall secure and present proof of insurance on forms acceptable to St. Tammany Parish Government, Office of Risk Management no later than the time of submission of the Contract to the Parish. However, should any work performed under this Contract by or on behalf of Provider include exposures that are not covered by those insurance coverages, Provider is not relieved of its obligation to maintain appropriate levels and types of insurance necessary to protect itself, its agents and employees, its subcontractors, St. Tammany Parish Government (Owner), and all other interested third parties, from any and all claims for damage or injury in connection with the services performed or provided throughout the duration of this Project, as well as for any subsequent periods required under this Contract.

The insurance coverages checked (✓) below are those required for this Contract.

- ☒ 1. **Commercial General Liability*** insurance – **Occurrence Form** - with a Combined Single Limit for bodily injury and property damage of at least \$1,000,000 per Occurrence / \$2,000,000 General Aggregate and \$2,000,000 Products-Completed Operations. Contracts over \$1,000,000 may require higher limits. The insurance shall provide for and the certificate(s) of insurance shall indicate the following coverages:
- a) Premises - operations;
 - b) Broad form contractual liability;
 - c) Products and completed operations;
 - d) Personal/Advertising Injury;
 - e) Broad form property damage (for Projects involving work on Parish property);
 - f) Explosion, Collapse and Damage to underground property.
 - g) Additional Insured forms CG 2010 and CG 2037 in most current edition are required.
- ☒ 2. **Business Automobile Liability*** insurance with a Combined Single Limit of \$1,000,000 per Occurrence for bodily injury and property damage, and shall include coverage for the following:
- a) Any auto;
 - or**
 - b) Owned autos; **and**
 - c) Hired autos; **and**
 - d) Non-owned autos.
- ☒ 3. **Workers' Compensation/Employers Liability insurance*** - Workers' Compensation coverage as required by State law. Employers' liability limits shall be a minimum of \$1,000,000 each accident, \$1,000,000 each disease, \$1,000,000 disease policy aggregate. **When water activities are expected to be performed in connection with this project, coverage under the USL&H Act, Jones Act and/or Maritime Employers Liability (MEL) must be included. Coverage for owners, officers and/or partners in any way engaged in the Project shall be included in the policy.** The names of any excluded individual must be shown in the Description of Operations/Comments section of the Certificate.
- ☐ 4. **Pollution Liability and Environmental Liability*** insurance in the minimum amount of \$1,000,000 per occurrence / \$2,000,000 aggregate including full contractual liability and third party claims for bodily injury and/or property damage, for all such hazardous waste, pollutants and/or environmental exposures that may be affected by this project stemming from pollution/environmental incidents as a result of Contractor's operations.

If coverage is provided on a claims-made basis, the following conditions apply:

- 1) the retroactive date must be prior to or coinciding with the effective date of the Contract, or prior to the commencement of any services provided by the Contractor on behalf of the Parish, whichever is earlier; AND
- 2) continuous coverage must be provided to the Parish with the same retro date for 24 months following acceptance or termination of the Project by the Parish either by
 - a) continued renewal certificates **OR**
 - b) a 24 month Extended Reporting Period

*The Certificate must indicate whether the policy is written on an occurrence or claims-made basis and, if claims-made, the applicable retro date must be stated.

- ☐ 5. **Contractor's Professional Liability/Errors and Omissions*** insurance in the sum of at least \$1,000,000 per claim / \$2,000,000 aggregate is required when work performed by Contractor or on behalf of Contractor includes professional or technical services including, but not limited to, construction administration and/or management, engineering services such as design, surveying, and/or inspection, technical services such as testing and laboratory analysis, and/or environmental assessments. An occurrence basis policy is preferred.

If coverage is provided on a claims-made basis, the following conditions apply:

- 1) the retroactive date must be prior to or coinciding with the effective date of the Contract, or prior to the commencement of any services provided by the Contractor on behalf of the Parish, whichever is earlier; AND
- 2) continuous coverage must be provided to the Parish with the same retro date for 24 months following acceptance or termination of the Project by the Parish either by
 - a) continued renewal certificates **OR**
 - b) a 24 month Extended Reporting Period

*The Certificate must indicate whether the policy is written on an occurrence or claims-made basis and, if claims-made, the applicable retro date must be stated.

- ☒ 6. **Marine Liability/Protection and Indemnity*** insurance is required for any and all vessel and/or marine operations in the minimum limits of \$1,000,000 per occurrence / \$2,000,000 per project general aggregate. The coverage shall include, but is not limited to, the basic coverages found in the Commercial General Liability insurance and coverage for third party liability

***Excess/Umbrella Liability** insurance may be provided to meet the limit requirements for any Liability coverage. For example: if the General Liability requirement is \$3,000,000 per occurrence, but the policy is only \$1,000,000 per occurrence, then the excess policy should be at least \$2,000,000 per occurrence thereby providing a combined per occurrence limit of \$3,000,000.)

- ☐ 7. **Owners Protective Liability (OPL)** shall be furnished by the Contractor and shall provide coverage in the minimum amount of \$1,000,000 CSL each occurrence / \$1,000,000 aggregate. **St. Tammany Parish Government, ATTN: Risk Management Department, P. O. Box 628, Covington, LA 70434 shall be the first named insured on the policy.**

- ☐ 8. **Builder's Risk Insurance** written as an "all-risk" policy providing coverage in an amount at or greater than one hundred percent (100%) of the completed value of the contracted project. Any contract modifications increasing the contract cost will require an increase in the limit of the Builder's Risk policy. Deductibles should not exceed \$5,000 and Contractor shall be responsible for all policy deductibles. This insurance shall cover materials at the site, stored off the site, and in transit. The Builder's Risk Insurance shall include the interests of the Owner, Contractor and Subcontractors and shall terminate only when the Project is accepted in writing. **St. Tammany Parish Government, ATTN: Risk Management Department, P. O. Box 628, Covington, LA 70434 shall be named as a Loss Payee on the policy.**

- ☐ 9. **Installation Floater Insurance**, on an "all-risk" form, shall be furnished by Contractor and carried for the full value of the materials, machinery, equipment and labor for each location. The Contractor shall be responsible for all policy deductibles. The Installation Floater Insurance shall provide coverage for property owned by others and include the interests of the Owner, Contractor and Subcontractors and shall terminate only when the Project is accepted in writing. **St. Tammany Parish Government, ATTN: Risk Management Department, P. O. Box 628, Covington, LA 70434 shall be named as a Loss Payee on the policy.**

- D. All policies of insurance shall meet the requirements of the Parish prior to the commencing of any work. The Parish has the right, but not the duty, to approve all insurance coverages prior to commencement of work. If any of the required policies are or become unsatisfactory to the Parish as to form or substance; or if a company issuing any policy is or becomes unsatisfactory to the Parish, the Provider shall promptly obtain a new policy, timely submit same to the Parish for approval, and submit a certificate thereof as provided above. The Parish agrees not to unreasonably withhold approval of any insurance carrier selected by Provider. In the event that Parish cannot agree or otherwise authorize a carrier, Provider shall have the option of selecting and submitting a new insurance carrier within 30 days of said notice by the Parish. In the event that the second submission is insufficient or is not approved, then the Parish shall have the unilateral opportunity to thereafter select a responsive and responsible insurance carrier all at the cost of Provider and thereafter deduct from Provider's fee the cost of such insurance.
- E. Upon failure of Provider to furnish, deliver and/or maintain such insurance as above provided, this contract, at the election of the Parish, may be declared suspended, discontinued or terminated. Failure of the Provider to maintain insurance shall not relieve the Provider from any liability under the contract, nor shall the insurance requirements be construed to conflict with the obligation of the Provider concerning indemnification.
- F. Provider shall maintain a current copy of all annual insurance policies and agrees to provide a certificate of insurance to the Parish on an annual basis or as may be reasonably requested for the term of the contract or any required Extended Reporting Period. Provider further shall ensure that all insurance policies are maintained in full force and effect throughout the duration of the Project and shall provide the Parish with annual renewal certificates of insurance evidencing continued coverage, without any prompting by the Parish.
- G. It shall be the responsibility of Provider to require that these insurance requirements are met by all contractors and sub-contractors performing work for and on behalf of Provider. Provider shall further ensure the Parish is named as an additional insured on all insurance policies provided by said contractor and/or sub-contractor throughout the duration of the project.
- H. Certificates of Insurance shall be issued as follows:

**St. Tammany Parish Government
Attn: Risk Management
P O Box 628
Covington, LA 70434**

To avoid contract processing delays, be certain the project name/number is included on all correspondence including Certificates of Insurance.

***NOTICE: St. Tammany Parish Government reserves the rights to remove, replace, make additions to and/or modify any and all of the insurance requirements at any time.**

Any inquiry regarding these insurance requirements should be addressed to:

**St. Tammany Parish Government
Office of Risk Management
P O Box 628
Covington, LA 70434
Telephone: 985-898-5226
Email: riskman@stpgov.org**

Section 07

Project Signs

1. General

- a. Work to include providing and installing project sign(s) at the beginning of the project. Some projects may require multiple signs. Should more than one sign be required, it will be reflected in the bidding documents.

2. Materials

- a. The printed project sign(s) shall be 3/8" primed Medium Density Overlay (MDO) **OR** 3-millimeter corrugated plastic secured to exterior plywood (4' x 4').
- b. Contractor shall not use previously provided templates and/or fonts.

3. Execution

- a. The sign(s) shall be printed on a project-by-project basis in black and white, using the template and font provided to the Contractor by the St. Tammany Parish Government Project Manager.
- b. All signage proofed and approved by State Tammany Parish Government before project sign(s) are to be produced by the Contractor.
- c. Exact placement of the project sign(s) must be coordinated with, and approved by, the St. Tammany Parish Government Project Manager prior to sign installation.
- d. The sign(s) is to be installed such that the bottom of the sign is a minimum of 5' above the existing ground elevation.
- e. Sign(s) is to be maintained throughout the period of construction. If sign(s) is damaged or destroyed, repair and/or replacement of sign(s) will be at Contractor's expense.
- f. Contractor is responsible for the removal of all project signs upon issuance of final acceptance by the St. Tammany Parish Government Project Manager at no direct pay.
- g. Cost to be included in "Temporary Signs and Barricades

Blank Template of Parish Project Sign:



MICHAEL B. COOPER
Parish President

Councilmember Name
Council District X

Total Dollar \$
amount specified here

\$XXX,XXX.XX

Project Name
Description of
Project Work

Name of Street, Bridge,
Subdivision, etc. stated here

Short Description of Project stated here
(if deemed applicable by the Parish)

Example of a Completed Parish Project Sign:



MICHAEL B. COOPER
Parish President

RYKERT O. TOLEDANO, JR
Council District 5

\$514,444.40

Dove Park
Subdivision Drainage
Drainage Improvements along
Swallow St., Sparrow St.,
Partridge St. and Egret St.

Section 08

General Conditions for St. Tammany Parish Government

This index is for illustrative purposes only and is not intended to be complete nor exhaustive.

All bidders/contractors are presumed to have read and understood the entire document. Some information contained in these conditions may not be applicable to all projects.

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01.00 DEFINITIONS OF TERMS

Whenever used in these General Conditions or in other Contract Documents, the following terms shall have the meanings indicated, and these shall be applicable to both the singular and plural thereof.

- 01.01 A.A.S.H.T.O American Association of State Highway and Transportation Officials. When A.A.S.H.T.O. is referred to in these Specifications it takes the meaning of the specification for materials and methods of testing specified by this association and the specification stated is considered to be a part of the Specifications as if written herein in full.
- 01.02 A.C.I American Concrete Institute. When A.C.I. is referred to in these Specifications it takes the meaning of the specification for materials and methods of testing specified by this institute and the specification stated is considered to be a part of the Specifications as if written herein in full.
- 01.03 Addenda Written or graphic instruments issued prior to the opening of bids which clarify, correct, modify or change the bidding or Contract Documents.
- 01.04 Advertisement The written instrument issued by the Owner at the request of the Owner used to notify the prospective bidder of the nature of the Work. It becomes part of the Contract Documents.
- 01.05 Agreement The written agreement or contract between the Owner and the Contractor covering the Work to be performed and the price that the Owner will pay. Other documents, including the Proposal, Addenda, Specifications, plans, surety, insurance, etc., are made a part thereof.
- 01.06 Application for Payment The form furnished by the Owner which is to be used by the Contractor in requesting incremental (progress) payments and which is to include information required by Section 28.01 and an affidavit of the Contractor. The affidavit shall stipulate that progress payments theretofore received from the Owner on account of the Work have been applied by Contractor to discharge in full of all Contractor's obligations reflected in prior applications for payment.
- 01.07 A.S.T.M. American Society of Testing Materials. When A.S.T.M. is referred to in these Specifications it takes the meaning of the specification for materials and methods of testing specified by this society and the specification stated is considered to be a part of the Specifications as if written herein in full.
- 01.08 Bid The offer or Proposal of the Bidder submitted on the prescribed form setting forth all the prices for the Work to be performed.
- 01.09 Bidder Any person, partnership, firm or corporation submitting a Bid for the Work.
- 01.10 Bonds Bid, performance and payment bonds and other instruments of security, furnished by the Contractor and its surety in accordance with the Contract Documents and Louisiana law.
- 01.11 Change Order A written order to the Contractor signed by the Owner authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time after execution of the Agreement.
- 01.12 Contract Documents The Agreement, Addenda, Contractor's Bid and any documentation accompanying or post-bid documentation when attached as an exhibit, the Bonds, these General Conditions, the Advertisement for Bid, Notice to Contractor, all supplementary conditions, the Specifications, the Drawings, together with all Modifications issued after the execution of the Agreement.
- 01.13 Contract Price The total monies payable to the Contractor under the Contract Documents.

- 01.14 Contract Time The number of consecutive calendar days stated in the Agreement for the completion of the Work.
- 01.15 Contractor The person, firm, corporation or Contractor with whom the Owner has executed the Agreement.
- 01.16 Defective Work When work which is unsatisfactory, faulty or deficient for any reason whatsoever, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, test or approval referred to in the Contract Documents, or has been damaged prior to the Owner's recommendation or acceptance.
- 01.17 Drawings The Drawings and plans which show the character and scope of the Work to be performed and which have been prepared or approved by the Owner and are referred to in the Contract Documents.
- 01.18 Field Order A written order issued by the Owner or his agent which clarifies or interprets the Contract Documents.
- 01.19 Modification (a) A written amendment of the Contract Documents signed by both parties, (b) A Change Order, (c) A written clarification or interpretation issued by the Owner or his agent. Modification may only be issued after execution of the Agreement.
- 01.20 Notice of Award The written notice by Owner to the lowest responsible Bidder stating that upon compliance of the conditions enumerated in the Notice of Award, or enumerated in the Bid documents, the Owner will deliver the Contract Documents for signature. The time for the delivery of the Contract Documents can be extended in conformance with Louisiana Law.
- 01.21 Notice to Contractor Instructions, written or oral given by Owner to Contractor and deemed served if given to the Contractor's superintendent, foreman or mailed to Contractor at his last known place of business.
- 01.22 Notice to Proceed A written notice given by the Owner fixing the date on which the Contract Time will commence, and on which date the Contractor shall start to perform his obligation under the Contract Documents. Upon mutual consent by both parties, the Notice to Proceed may be extended.
- 01.23 Owner St. Tammany Parish Government, acting herein through its duly constituted and authorized representative, including but not limited to the Office of the Parish President or its designee, its Chief Administrative Officer, and/or Legal Counsel. St. Tammany Parish Government (hereinafter, the "Parish") and Owner may be used interchangeably.
- 01.24 Project The entire construction to be performed as provided in the Contract Documents.
- 01.25 Project Representative The authorized representative of the Owner who is assigned to the Project or any parts thereof.
- 01.26 Proposal The Bid submitted by the Bidder to the Owner on the Proposal form setting forth the Work to be done and the price for which the Bidder agrees to perform the Work.
- 01.27 Shop Drawings All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the Contractor, Subcontractor, Manufacturer, Supplier or Distributor and which illustrate the equipment, material or some portion of the Work.
- 01.28 Specifications The Instructions to Bidders, these General Conditions, the Special Conditions and the Technical Provisions. All of the documents listed in the "Table of Contents."
- 01.29 Subcontractor An individual, firm or corporation having a direct Contract with the Contractor or with any other Subcontractor for the performance of a part of the Project Work.
- 01.30 Substantial Completion The date as certified by the Owner or its agent when the construction of the Project or a specified part thereof is sufficiently complete in accordance with the Contract Documents so that the Project or specified part can be utilized for the

purposes for which it was intended; or if there is no such certification, the date when final payment is due in accordance with Section 28.

- 01.31 Superintendent Contractor's site representative. The person on the site who is in full and complete charge of the Work.
- 01.32 Time Unless specifically stated otherwise, all time delays shall be calculated in calendar days.
- 01.33 Work Any and all obligations, duties and responsibilities necessary to the successful completion of the Project assigned to or undertaken by the Contractor under the Contract Documents, usually including the furnishing of all labor, materials, equipment and other incidentals.
- 01.34 The terms "he/himself" may be used interchangeably with "it/itself."

02.00 PROPOSAL

- 02.01 All papers bound with or attached to the Proposal Form are a necessary part thereof and must not be detached.
- 02.02 For submitting Bids, the only forms allowed shall be the "Louisiana Uniform Public Work Bid Form", "Louisiana Uniform Public Works Bid Form Unit Price Form" (if necessary), the Bid Bond, and written evidence of authority of person signing the bid. Necessary copies of the Louisiana Uniform Public Work Forms will be furnished for Bidding. Bound sets of the Contract Documents are for Bidder's information and should not be used in submitting Bids.
- 02.03 Proposal forms must be printed in ink or typed, unless submitted electronically. Illegibility or ambiguity therein may constitute justification for rejection of the Bid.
- 02.04 Each Bid must be submitted in a sealed envelope, unless submitted electronically. The outside of the envelope shall show the name and address of the Bidder, the State Contractor's License Number of the Bidder (if work requires contractor's license), and the Project name and number for which the Bid is submitted, along with the Bid number.
- 02.05 The price quoted for the Work shall be stated in words and figures on the Bid Form, and in numbers only on the Unit Price Form. The price in the Proposal shall include all costs necessary for the complete performance of the Work in full conformity with the conditions of the Contract Documents, and shall include all applicable Federal, State, Parish, Municipal or other taxes. The price bid for the items listed on the Unit Price Form will include the cost of all related items not listed, but which are normally required to do the type of Work bid.
- 02.06 The Bid shall be signed by the Bidder. The information required on the Louisiana Uniform Public Work Bid Form must be provided. Evidence of agency, corporate, or partnership authority is required and shall be provided in conformance with LSA-R.S. 38:2212(B).
- 02.07 Only the Contractors licensed by the State to do the type of Work involved can submit a Proposal for the Work. The envelope containing the Proposal shall have the Contractor's license number on it. Failure to be properly licensed constitutes authority by the Owner for rejection of Bid.
- 02.08 Bidders shall not attach any conditions or provisions to the Proposal. Any conditions or provisions so attached may, at the sole option of the Owner, cause rejection of the Bid or Proposal.
- 02.09 A Bid Guarantee of five percent (5%) of the amount of the total Bid, including Alternates, must accompany the Proposal and, at the option of the Bidder, may be a cashier's check, certified check or a satisfactory Bid Bond. The Bid Guarantee must be attached to the Louisiana Uniform Public Work Bid Form. No Bid will be considered unless it is so guaranteed. Cashier's check or certified check must be made payable to the order of the Owner. Cash deposits will not be accepted. The Owner reserves the right to cash or deposit the cashier's check or certified check. Such guarantees shall be made payable to the Parish

of St. Tammany. In accordance with LSA-R.S. 38:2218(C), if a bid bond is used, it shall be written by a surety or insurance company currently on the U.S. Department of the Treasury Financial Management Service list of approved bonding companies which is published annually in the Federal Register, or by a Louisiana domiciled insurance company with at least an A- rating in the latest printing of the A.M. Best's Key Rating Guide to write individual bonds up to ten percent of policyholders' surplus as shown in the A.M. Best's Key Rating Guide, or by an insurance company in good standing licensed to write bid bonds which is either domiciled in Louisiana or owned by Louisiana residents. It is **not** required to be on any AIA form.

- 02.10 Bid securities of the three (3) lowest Bidders will be retained by the Owner until the Contract is executed or until final disposition is made of the Bids submitted. Bid securities of all other Bidders will be returned promptly after the canvas of Bids. Bids shall remain binding for forty-five (45) days after the date set for Bid Opening. The Parish shall act within the forty-five (45) days to award the contract to the lowest responsible bidder or reject all bids as permitted by Public Bid Law. However, the Parish and the lowest responsible bidder, by mutual written consent, may agree to extend the deadline for award by one or more extensions of thirty (30) calendar days. In the event the Owner issued the Letter of Award during this period, or any extension thereof, the Bid accepted shall continue to remain binding until the Execution of the Contract.
- 02.11 A Proposal may be withdrawn at any time prior to the scheduled closing time for receipt of Bids, provided the request is in writing, executed by the Bidder or its duly authorized representative and is filed with the Owner prior to that time. When such a request is received, the Proposal will be returned to the Bidder unopened.
- 02.12 Written communications, over the signature of the Bidder, to modify Proposals will be accepted and the Proposal corrected in accordance therewith if received by the Owner prior to the scheduled closing time for receipt of Bids. Oral, telephonic or telegraphic Modifications will not be considered.
- 02.13 No oral interpretation obligating the Owner will be made to any Bidder as to the meaning of the Drawings, Specifications and Contract Documents. Every request for such an interpretation shall be made in writing and addressed and forwarded to the Owner. No inquiry received within seven (7) days prior to the day fixed for opening of the Bids shall be given consideration. Every interpretation made to the Bidder shall be in the form of an addendum to the Specifications. All such Addenda shall become part of the Contract Documents. Failure of Bidder to receive any such interpretation shall not relieve any Bidder from any obligation under this Bid. All Addenda shall be issued in accordance with the Public Bid Law, LSA-R.S. 38:2212(O)(2)(a) and (b).
- 02.14 The Owner reserves the right to reject any or all Bids for just cause in accordance with the Public Bid Law, LSA-R.S. 38:2214(B). Incomplete, informal or unbalanced Bids may be rejected. Reasonable grounds for belief that any one Bidder is concerned directly or indirectly with more than one Bid will cause rejection of all Bids wherein such Bidder is concerned. If required, a Bidder shall furnish satisfactory evidence of its competence and ability to perform the Work stipulated in its Proposal. Incompetence will constitute cause for rejection. If the Parish determines that the bidder is not responsive or responsible for any reason whatsoever, the bid may be rejected in accordance with State law.
- 02.15 The Contractor shall indemnify and hold harmless the Owner from any and all suits, costs, penalties or claims for infringement by reason of use or installation of any patented design, device, material or process, or any trademark and copyright in connection with the Work agreed to be performed under this Contract, and shall indemnify and hold harmless the Owner for any costs, expenses and damages which it may be obliged to pay by reason of any such infringement at any time during the prosecution or after completion of the Work.
- 02.16 Bidders shall familiarize themselves with and shall comply with all applicable Federal and State Laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over construction of the Project, which may directly or indirectly affect the Work or its prosecution. These laws and/or ordinances will be deemed to be included in the Contract, as though herein written in full.
- 02.17 Each Bidder shall visit the site of the proposed Work and fully acquaint itself with all surface and subsurface conditions as they may exist so that it may fully understand this

Contract. Bidder shall also thoroughly examine and be familiar with drawings, Specifications and Contract Documents. The failure or omission of any Bidder to receive or examine any form instrument, Drawing or document or to visit the site and acquaint itself with existing conditions, shall in no way relieve any Bidder from any obligation with respect to its Bid and the responsibility in the premises.

- 02.18 The standard contract form enclosed with the Proposal documents is a prototype. It is enclosed with the Contract Documents for the guidance of the Owner and the Contractor. It has important legal consequences in all respects and consultation with an attorney is encouraged. Contractor shall be presumed to have consulted with its own independent legal counsel.
- 02.19 When one set of Contract plans show the Work to be performed by two or more prime Contractors, it is the responsibility of each Bidder to become knowledgeable of the Work to be performed by the other where the Work upon which this bid is submitted is shown to come into close proximity or into conflict with the Work of the other. In avoiding conflicts, pressure pipe lines must be installed to avoid conflict with gravity pipe lines and the Bidder of the smaller gravity pipe line in conflict with the larger gravity pipe line must include in his Bid the cost of a conflict box at these locations. The location of and a solution to the conflicts do not have to be specifically noted as such on the plans.
- 02.20 Bidder shall execute affidavit(s) attesting compliance with LSA-R.S. 38:2212.10, 38:2224, 38:2227, each as amended, and other affidavits as required by law, prior to execution of the contract.
- 02.21 Sealed Proposals (Bid) shall be received by St. Tammany Parish Government at the office of St. Tammany Parish Government, Department of Procurement, 21454 Koop Drive, Suite 2-F, Mandeville, LA 70471, until the time and date denoted in Notice to Bidders, at which time and place the Proposals (Bids), shall be publicly opened and read aloud to those present. In accordance with LSA-R.S. 38-2212(A)(3)(c)(i), the designer's final estimated cost of construction shall be read aloud upon opening bids. Sealed Proposals (Bids) may also be mailed by certified mail to St. Tammany Parish Government, Department of Procurement, 21454 Koop Drive, Suite 2-F, Mandeville, LA 70471, and must be received before the bid opening. Bids may also be submitted electronically. Information concerning links for electronic bidding is contained in the Notice to Bidders.
- 02.22 Proposals (Bids) shall be executed on Forms furnished and placed in a sealed envelope, marked plainly and prominently as indicated in the Notice to Bidders, and these General Conditions, and addressed:

St. Tammany Parish Government
Department of Procurement
21454 Koop Drive, Suite 2-F
Mandeville, LA 70471

- 02.23 See Notice to Bidders for availability of Drawings, Specifications and Contract Documents via electronic methods.
- 02.24 The successful Bidder shall be required to post in each direction a public information sign, 4' x 4' in size, at the location of the project containing information required by the Owner. The Owner shall supply this information.

03.00 AWARD, EXECUTION OF DOCUMENTS, BONDS, ETC.

- 03.01 The award of the Contract, if it is awarded, will be to the lowest responsible Bidder, in accordance with State Law. No award will be made until the Owner has concluded such investigations as it deems necessary to establish the responsibility, qualifications and financial ability and stability of the Bidder to do the Work in accordance with the Contract Documents to the satisfaction of the Owner within the time prescribed as established by the Department based upon the amount of work to be performed and the conditions of same. The written contract and bond shall be issued in conformance with LSA-R.S. 38:2216. The Owner reserves the right to reject the Bid of any Bidder in accordance with the Public Bid Law, LSA-R.S. 38:2214. If the Contract is awarded, the Owner shall give the successful Bidder written notice of the award within forty-five (45) calendar days after

the opening of the Bids in conformance with LSA-R.S. 38:2215(A), or any extension as authorized thereunder.

- 03.02 At least three counterparts of the Agreement and of such other Contract Documents as practicable shall be signed by the Owner and the Contractor. The Owner shall identify those portions of the Contract Documents not so signed and such identification shall be binding on both parties. The Owner and the Contractor shall each receive an executed counterpart of the Contract Documents.
- 03.03 Prior to the execution of the Agreement, the Contractor shall deliver to the Owner the required Bonds.
- 03.04 Failure of the successful Bidder to execute the Agreement and deliver the required Bonds within twenty (20) days of the Notice of the Award shall be just cause for the Owner to annul the award and declare the Bid and any guarantee thereof forfeited.
- 03.05 In order to ensure the faithful performance of each and every condition, stipulation and requirement of the Contract and to indemnify and save harmless the Owner from any and all damages, either directly or indirectly arising out of any failure to perform same, the successful Bidder to whom the Contract is awarded shall furnish a surety Bond in an amount of at least equal to one hundred percent (100%) of the Contract Price. The Contract shall not be in force or binding upon the Owner until such satisfactory Bond has been provided to and approved by the Parish. The cost of the Bond shall be paid for by the Contractor unless otherwise stipulated in the Special Provisions.
- 03.06 No surety Company will be accepted as a bondsman who has no permanent agent or representative in the State upon whom notices referred to in the General Conditions of these Specifications may be served. Services of said notice on said agent or representative in the State shall be equal to service of notice on the President of the Surety Company, or such other officer as may be concerned.
- 03.07 In conformance with LSA-R.S. 38:2219(A)(1)(a), (b), and (c):

Any surety bond written for a public works project shall be written by a surety or insurance company currently on the U.S. Department of the Treasury Financial Management Service list of approved bonding companies which is published annually in the Federal Register, or by a Louisiana domiciled insurance company with at least an A- rating in the latest printing of the A.M. Best's Key Rating Guide, to write individual bonds up to ten percent of policyholders' surplus as shown in the A.M. Best's Key Rating Guide or by an insurance company that is either domiciled in Louisiana or owned by Louisiana residents and is licensed to write surety bonds.

For any public works project, no surety or insurance company shall write a bond which is in excess of the amount indicated as approved by the U.S. Department of the Treasury Financial Management Service list or by a Louisiana domiciled insurance company with an A- rating by A.M. Best up to a limit of ten percent of policyholders' surplus as shown by A.M. Best; companies authorized by this Paragraph who are not on the treasury list shall not write a bond when the penalty exceeds fifteen percent of its capital and surplus, such capital and surplus being the amount by which the company's assets exceed its liabilities as reflected by the most recent financial statements filed by the company with the Department of Insurance.

In addition, any surety bond written for a public works project shall be written by a surety or insurance company that is currently licensed to do business in the state of Louisiana. All contractors must comply with any other applicable provisions of LSA-R.S. 38:2219.

- 03.08 Should the Contractor's Surety, even though approved and accepted by the Owner, subsequently remove its agency or representative from the State or become insolvent, bankrupt, or otherwise fail, the Contractor shall immediately furnish a new Bond in another company approved by the Owner, at no cost to the Owner. The new Bond shall be executed under the same terms and conditions as the original Bond. The new bond shall be submitted within thirty (30) days of such time as the Owner notifies Contractor or from the time Contractor learns or has reason to know that the original surety is no longer financially viable or acceptable to the Parish, whichever occurs first. In the event that Contractor fails

or refuses to timely secure additional surety, then the Owner may secure such surety and thereafter deduct such cost or expense from any sum due or to become due Contractor.

- 03.09 The Contractor's bondsman shall obligate itself to all the terms and covenants of these Specifications and of contracts covering the Work executed hereunder. The Owner reserves the right to do Extra Work or make changes by altering, adding to deducting from the Work under the conditions and in the manner herein before described without notice to the Contractor's surety and without in any manner affecting the liability of bondsman or releasing it from any of its obligations hereunder.
- 03.10 The Bond shall also secure for the Owner the faithful performance of the Contract in strict accordance with plans and Specifications. It shall protect the Owner against all lien laws of the State and shall provide for payment of reasonable attorney fees for enforcement of Contract and institution or concursus proceedings, if such proceedings become necessary. Likewise, it shall provide for all additional expenses of the Owner occurring through failure of the Contractor to perform.
- 03.11 The surety of the Contractor shall be and does hereby declare and acknowledge itself by acceptance to be bound to the Owner as a guarantor, jointly and in solido, with the Contractor, for fulfillment of terms of Section 03.00.
- 03.12 The performance Bond and Labor and Material Bond forming part of this Contract shall be continued by Contractor and its Surety for a period of one (1) year from date of acceptance of this Contract by Owner to assure prompt removal and replacement of all defective material, equipment, components thereof, workmanship, etc., and to assure payment of any damage to property of Owner or others as a result of such defective materials, equipment, workmanship, etc.
- 03.13 Contractor shall pay for the cost of recording the Contract and Bond and the cost of canceling same. Contractor shall also secure and pay for all Clear Lien and Privilege Certificates (together with any updates) which will be required before any final payment is made, and that may be required before any payment, at the request of the Owner, its representative, agent, architect, engineer and the like. All recordation and Clear Lien and Privilege Certificate requirements shall be in accordance with those requirements noted herein before in contract Specifications.

04.00 SUBCONTRACTS

- 04.01 Contractor shall be fully responsible for all acts and omissions of its Subcontractors and of persons and organizations for whose acts any of them may be liable to the same extent that it is responsible for the acts and omissions of persons directly employed by it. Nothing in the Contract Documents shall create any contractual relationship between Owner and any Subcontractor or other person or organization having a direct Contract with Contractor, nor shall it create any obligation on the part of the Owner to pay or to see to the payment of any monies due any Subcontractor.
- 04.02 Nothing in the Contract Documents shall be construed to control the Contractor in dividing the Work among approved Subcontractors or delineating the Work to be performed by any trade.
- 04.03 The Contractor agrees to specifically bind every Subcontractor to all of the applicable terms and conditions of the Contract Documents prior to commencing Work. Every Subcontractor, by undertaking to perform any of the Work, shall thereby automatically be deemed bound by such terms and conditions.
- 04.04 The Contractor shall indemnify and hold harmless the Owner and their agents and employees from and against all claims, damages, losses and expenses including Attorney's fees arising out of or resulting from the Contractor's failure to bind every Subcontractor and Contractor's surety to all of the applicable terms and conditions of the Contract Documents.

05.00 ASSIGNMENT

- 05.01 Neither party to this Contract shall assign or sublet its interest in this Contract without prior written consent of the other, nor shall the Contractor assign any monies due or to become due to it under this Contract without previous written consent of the Owner, nor without the consent of the surety unless the surety has waived its right to notice of assignment.

06.00 CORRELATION, INTERPRETATION AND INTENT OF CONTRACT DOCUMENTS.

- 06.01 It is the intent of the Specifications and Drawings to describe a complete Project to be constructed in accordance with the Contract Documents. The Contract Documents comprise the entire Agreement between Owner and Contractor. Alterations, modifications and amendments shall only be in writing between these parties.
- 06.02 The Contract Documents are intended to be complimentary and to be read *in pari materii*, and what is called for by one is as binding as if called for by all. If Contractor finds a conflict, error or discrepancy in the Contract Documents, it shall call it to the Owner's attention, in writing, at once and before proceeding with the Work affected thereby; however, it shall be liable to Owner for its failure to discover any conflict, error or discrepancy in the Specifications or Drawings. In resolving such conflicts, errors and discrepancies, the documents shall be given precedence in the following order: Agreement, Modifications, Addenda, Special Conditions, General Conditions, Construction Specifications and Drawings. The general notes on the plans shall be considered special provisions. Figure dimensions on Drawings shall govern over scale dimensions and detail Drawings shall govern over general Drawings. Where sewer connections are shown to fall on a lot line between two lots, the Contractor shall determine this location by measurement not by scale. Any Work that may reasonably be inferred from the Specifications or Drawings as being required to produce the intended result shall be supplied whether or not it is specifically called for. Work, materials or equipment described herein which so applied to this Project are covered by a well-known technical meaning or specification shall be deemed to be governed by such recognized standards unless specifically excluded.
- 06.03 Unless otherwise provided in the Contract Documents, the Owner will furnish to the Contractor (free of charge not to exceed ten (10) copies) Drawings and Specifications for the execution of Work. The Drawings and Specifications are the property of the Owner and are to be returned to it when the purpose for which they are intended have been served. The Contractor shall keep one copy of all Drawings and Specifications, including revisions, Addenda, details, Shop Drawings, etc. on the Work in good order and available to the Owner or the regulatory agency of the governmental body having jurisdiction in the area of the Work.

07.00 SHOP DRAWINGS, BROCHURES AND SAMPLES

- 07.01 After checking and verifying all field measurements, Contractor shall submit to Owner for approval, five copies (or at Owner's option, one reproducible copy) of all Shop Drawings, which shall have been checked by and stamped with the approval of Contractor and identified as Owner may require. The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, materials of construction and the like to enable Owner to review the information as required.
- 07.02 Contractor shall also submit to Owner, for review with such promptness as to cause no delay in Work, all samples as required by the Contract Documents. All samples will have been checked by and stamped with the approval of Contractor identified clearly as to material, manufacturer, any pertinent catalog numbers and the use for which intended. At the time of each submission, Contractor shall in writing call Owner's attention to any deviations that the Shop Drawings or samples may have from the requirements of the Contract Documents.
- 07.03 Owner will review with reasonable promptness Shop Drawings and samples, but its review shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents. The review of a separate item as such will not indicate approval of the assembly in which the item functions. Contractor shall make any corrections required by Owner and shall return the required number of

corrected copies of Shop Drawings and resubmit new samples for review. Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections called for by Owner on previous submissions. Contractor's stamp of approval on any Shop Drawing or sample shall constitute a representation to Owner that Contractor has determined and verified all quantities, dimensions, field construction criteria, materials catalog numbers and similar data and thereafter assumes full responsibility for doing so, and that it has reviewed or coordinated each Shop Drawing or sample with the requirements of the Work and the Contract Documents.

- 07.04 Where a Shop Drawing or sample submission is required by the Specifications, no related Work shall be commenced until the submission has been reviewed by Owner. A copy of each reviewed shop Drawing and each inspected sample shall be kept in good order by Contractor at the site and shall be available to Owner.
- 07.05 Owner's review of Shop Drawings or samples shall not relieve Contractor from its responsibility for any deviations from the requirements of the Contract Documents unless Contractor has in writing called Owner's attention to such deviation at the time of submission and Owner has given written approval to the specific deviation, nor shall any review by Owner relieve Contractor from responsibility for errors or omissions in the Shop Drawings. The mere submittal of shop drawings which contain deviations from the requirements of plans, specifications and/or previous submittals in itself does not satisfy this requirement.

08.00 RECORD DRAWINGS

- 08.01 The Contractor shall keep an accurate record in a manner approved by the Owner of all changes in the Contract Documents during construction. In Work concerning underground utilities, the Contractor shall keep an accurate record in a manner approved by the Owner of all valves, fittings, etc. Before the Work is accepted by the Owner, and said acceptance is recorded, the Contractor shall furnish the Owner a copy of this record.
- 08.02 Contractor shall keep an accurate drawing measured in the field to the nearest 0.1' of the location of all sewer house connections. The location shown shall be the end of the connection at the property line measured along the main line of pipe from a manhole.
- 08.03 Contractor shall keep an accurate drawing of the storm water drainage collection system. Inverts to the nearest 0.01' and top of castings shall be shown as well as location of all structures to the nearest 0.1'. Upon completion of the Work, the plan will be given to the Owner.

09.00 PROGRESS OF WORK

- 09.01 Contractor shall conduct the Work in such a professional manner and with sufficient materials, equipment and labor as is considered necessary to ensure its completion within the time limit specified.
- 09.02 The Owner shall issue a Notice to Proceed to the Contractor within twenty (20) calendar days from the date of execution of the Contract. Upon mutual consent by both parties, the Notice to Proceed may be extended. The Contractor is to commence Work under the Contract within ten (10) calendar days from the date the Notice to Proceed is issued by the Owner.
- 09.03 The Contractor, immediately after being awarded the Contract, shall prepare and submit for the Owner's approval an estimated progress schedule for the work to be performed, as well as a construction signing layout for all roads within the project area. The Contractor shall not start work or request partial payment until the work schedule has been submitted to the Owner for approval.
- 09.04 Revisions to the original schedule will be made based on extension of days granted for inclement weather or change orders issued under the contract. No other revision shall be made which affects the original completion or updated completion date, whichever is applicable.

- 09.05 Failure of the Contractor to submit an estimated progress schedule or to complete timely and on schedule the Work shown on the progress schedule negates any and all causes or claims by the Contractor for accelerated completion damages. These accelerated damage claims shall be deemed forfeited.
- 09.06 Meetings will be held as often as necessary to expedite the progress of the job. Meetings will be held during normal working hours at the jobsite and shall be mandatory for the Contractor and all Sub-Contractors working on the project. Meetings may be requested by the Owner at any time and at the discretion of the Owner.

10.00 OWNER'S RIGHT TO PROCEED WITH PORTIONS OF THE WORK

- 10.01 Upon failure of the Contractor to comply with any notice given in accordance with the provisions hereof, the Owner shall have the alternative right, instead of assuming charge of the entire Work, to place additional forces, tools, equipment and materials on parts of the Work. The cost incurred by the Owner in carrying on such parts of the Work shall be payable by the Contractor. Such Work shall be deemed to be carried on by the Owner on account of the Contractor. The Owner may retain all amounts of the cost of such Work from any sum due Contractor or those funds that may become due to Contractor under this Agreement.
- 10.02 Owner may perform additional Work related to the Project by itself or it may let any other direct contract which may contain similar General Conditions. Contractor shall afford the other contractors who are parties to such different contracts (or Owner, if it is performing the additional Work itself) reasonable opportunity for the introduction and storage of materials and equipment and the execution of Work, and shall properly connect and coordinate its Work with the subsequent work.
- 10.03 If any part of Contractor's Work depends upon proper execution or results upon the Work of any such other contractor (or Owner), Contractor shall inspect and promptly report to Owner in writing any defects or deficiencies in such Work that render it unsuitable for such proper execution and results. Failure to so report shall constitute an acceptance of the other Work as fit and proper for the relationship of its Work except as to defects and deficiencies which may appear in the other Work after the execution of its Work.
- 10.04 Whatever Work is being done by the Owner, other Contractors or by this Contractor, the parties shall respect the various interests of the other parties at all times. The Owner may, at its sole discretion, establish additional rules and regulations concerning such orderly respect of the rights of various interests.
- 10.05 Contractor shall do all cutting, fitting and patching of its Work that may be required to integrate its several parts properly and fit to receive or be received by such other Work. Contractor shall not endanger any Work of others by cutting, excavating or otherwise altering Work and will only alter Work with the written consent of Owner and of the other contractors whose Work will be affected.
- 10.06 If the performance of additional Work by other contractors or Owner is not noted in the Contract Documents, written notice thereof shall be given to Contractor prior to starting any such additional Work. If Contractor believes that the performance of such additional Work by Owner or others may cause additional expense or entitles an extension of the Contract Time, the Contractor may make a claim therefor. The claim must be in writing to the Owner within thirty (30) calendar days of receipt of notice from the Owner of the planned additional Work by others.

11.00 TIME OF COMPLETION

- 11.01 The Notice to Proceed will stipulate the date on which the Contractor shall begin work. That date shall be the beginning of the Contract Time charges.
- 11.02 Contractor shall notify the Owner through its duly authorized representative, in advance, of where Contractor's work shall commence each day. A daily log shall be maintained by Contractor to establish dates, times, persons contacted, and location of work. Specific notice shall be made to the Owner if the Contractor plans to work on Saturday, Sunday, or

a Parish approved holiday. If notice is not received, no consideration will be given for inclement weather and same shall be considered a valid work day.

- 11.03 The Work covered by the Plans, Specifications and Contract Documents must be completed sufficiently for acceptance within the number of calendar days specified in the Proposal and/or the Contract, commencing from the date specified in the Notice to Proceed. It is hereby understood and mutually agreed, by and between the Contractor and the Owner, that the time of completion is an essential condition of this Contract, and it is further mutually understood and agreed that if the Contractor shall neglect, fail or refuse to complete the Work within the time specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as partial consideration for the awarding of this Contract, to pay the Owner based on **Table 3.1** as specified in the Contract, not as a penalty, but as liquidated damages for such breach of contract for each and every calendar day that the Contractor shall be in default after the time stipulated in the Contract for completing the Work. It is specifically understood that the Owner shall also be entitled to receive a reasonable attorney fee and all costs in the event that Contractor fails to adhere to this agreement and this contract is referred to counsel for any reason whatsoever. Reasonable attorney fees shall be the prevailing hourly rate of the private sector, and in no event shall the hourly rate be less than \$175.00 per hour. All attorney fees shall be paid to the operating budget of the Office of the Parish President.
- 11.04 Prior to final payment, the Contractor may, in writing to the Owner, certify that the entire Project is substantially complete and request that the Owner or its agent issue a certificate of Substantial Completion. See Section 29.00.
- 11.05 The Owner may grant an extension(s) of time to the Contractor for unusual circumstances which are beyond the control of the Contractor and could not reasonably be foreseen by the Contractor prior to Bidding. Any such request must be made in writing to the Owner within seven (7) calendar days following the event occasioning the delay. The Owner shall have the exclusive and unilateral authority to determine, grant, and/or deny the validity of any such claim.
- 11.06 Extensions of time for inclement weather shall be processed as follows:

Commencing on the start date of each job, the Parish Inspector assigned to same shall keep a weekly log, indicating on each day whether inclement weather has prohibited the Contractor from working on any project within the specific job, based upon the following:

1. Should the Contractor prepare to begin work on any day in which inclement weather, or the conditions resulting from the weather, prevent work from beginning at the usual starting time, and the crew is dismissed as a result, the Contractor will not be charged for a working day whether or not conditions change during the day and the rest of the day becomes suitable for work.
2. If weather conditions on the previous day prevent Contractor from performing work scheduled, provided that no other work can be performed on any project within the package. The Parish Inspector shall determine if it is financially reasonable to require the Contractor to deviate from the schedule and relocate to another location.
3. If the Contractor is unable to work at least 60% of the normal work day due to inclement weather, provided that a normal working force is engaged on the job.

Any dispute of weather conditions as related to a specific job shall be settled by records of the National Weather Service.

11.07 Extensions of time for change orders

When a change order is issued, the Owner and Contractor will agree on a reasonable time extension, if any, to implement such change. Consideration shall be given for, but not limited to, the following:

1. If material has to be ordered;
2. Remobilization and or relocation of equipment to perform task; and
3. Reasonable time frame to complete additional work.

Time extensions for change orders shall be reflected on the official document signed by the Owner and Contractor.

- 11.08 At the end of each month, the Owner or its agent will furnish to the Contractor a monthly statement which reflects the number of approved days added to the contract. The Contractor will be allowed fourteen (14) calendar days in which to file a written protest setting forth in what respect the monthly statement is incorrect; otherwise, the statement shall be considered accepted by the Contractor as correct.
- 11.09 Apart from extension of time for unavoidable delays, no payment or allowance of any kind shall be made to the Contractor as compensation for damages because of hindrance or delay for any cause in the progress of the Work, whether such delay be avoidable or unavoidable.

12.00 LIQUIDATED DAMAGES

- 12.01 In case the Work is not completed in every respect within the time that may be extended, it is understood and agreed that per diem deductions per **Table 3.1** for liquidated damages, as stipulated in the Proposal and/or Contract, shall be made from the total Contract Price for each and every calendar day after and exclusive of the day on which completion was required, and up to the completion of the Work and acceptance thereof by the Owner. It is understood and agreed that time is of the essence to this Contract, and the above sum being specifically herein agreed upon in advance as the measure of damages to the Owner on account of such delay in the completion of the Work. It is further agreed that the expiration of the term herein assigned or as may be extended for performing the Work shall, *ipso facto*, constitute a putting in default, the Contractor hereby waiving any and all notice of default. The Contractor agrees and consents that the Contract Price, reduced by the aggregate of the entire damages so deducted, shall be accepted in full satisfaction of all Work executed under this Contract. It is further understood and agreed that Contractor shall be liable for a reasonable attorney fee and all costs associated with any breach of this agreement, including but not limited to this subsection. In the event that any dispute or breach herein causes referrals to counsel, then Contractor agrees to pay a reasonable attorney fee at the prevailing hourly rate of the private sector. In no event shall the hourly rate be less than \$175.00 per hour.

13.00 LABOR, MATERIALS, EQUIPMENT, SUPERVISION, PERMITS AND TAXES

- 13.01 The Contractor shall provide and pay for all labor, materials, equipment, supervision, subcontracting, transportation, tools, fuel, power, water, sanitary facilities and all incidentals necessary for the completion of the Work in substantial conformance with the Contract Documents.
- 13.02 The Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. It shall at all times maintain good discipline and order at the site.
- 13.03 Unless otherwise specifically provided for in the Specifications, all workmanship, equipment, materials, and articles incorporated in the Work covered by this Contract are to be new and of the best grade of their respective kinds for the purpose intended. Samples of materials furnished under this Contract shall be submitted for approval to the Owner when and as directed.
- 13.04 Whenever a material or article required is specified or shown on the plans by using the name of a proprietary product or of a particular manufacturer or Contractor, any material or article which shall perform adequately the duties imposed by the general design will be considered equal, and satisfactory, providing the material or article so proposed is of equal substance and function and that all technical data concerning the proposed substitution be approved by the Owner prior to the Bidding. The Owner shall have the exclusive and unilateral discretion to determine quality and suitability in accordance with LSA-R.S. 38:2212(T)(2).

- 13.05 Materials shall be properly and securely stored so as to ensure the preservation of quality and fitness for the Work, and in a manner that leaves the material accessible to inspection. Materials or equipment may not be stored on the site in a manner such that it will interfere with the continued operation of streets and driveways or other contractors working on the site.
- 13.06 The Contractor, by entering into the Contract for this Work, sets itself forth as an expert in the field of construction and it shall supervise and direct the Work efficiently and with its best skill and attention. It shall be solely responsible for the means, methods, techniques, sequences and procedures of construction.
- 13.07 Contractor shall keep on the Work, at all times during its progress, a competent resident Superintendent, who shall not be replaced without written Notice to Owner except under extraordinary circumstances. The Superintendent will be Contractor's representative at the site and shall have authority to act on behalf of Contractor. All communications given to the Superintendent shall be as binding as if given to the Contractor. Owner specifically reserves the right to approve and/or disapprove the retention of a new superintendent, all to not be unreasonably withheld.
- 13.08 Any foreman or workman employed on this Project who disregards orders or instructions, does not perform his Work in a proper and skillful manner, or is otherwise objectionable, shall, at the written request of the Owner, be removed from the Work and shall be replaced by a suitable foreman or workman.
- 13.09 The Contractor and/or its assigned representative shall personally ensure that all subcontracts and divisions of the Work are executed in a proper and workmanlike manner, on scheduled time, and with due and proper cooperation.
- 13.10 Failure of the Contractor to keep the necessary qualified personnel on the Work shall be considered cause for termination of the Contract by the Owner.
- 13.11 Only equipment in good working order and suitable for the type of Work involved shall be brought onto the job and used by the Contractor. The Contractor is solely responsible for the proper maintenance and use of its equipment and shall hold the Owner harmless from any damages or suits for damages arising out of the improper selection or use of equipment. No piece of equipment necessary for the completion of the Work shall be removed from the job site without approval of the Owner.
- 13.12 All Federal, State and local taxes due or payable during the time of Contract on materials, equipment, labor or transportation, in connection with this Work, must be included in the amount bid by the Contractor and shall be paid to proper authorities before acceptance. The Contractor shall furnish all necessary permits and certificates and comply with all laws and ordinances applicable to the locality of the Work. The cost of all inspection fees levied by any governmental entity whatsoever shall be paid for by the Contractor.
- 13.13 In accordance with St. Tammany Police Jury Resolution 86-2672, as amended, the Contractor must provide in a form suitable to the Owner an affidavit stating that all applicable sales taxes for materials used on this project have been paid.
- 13.14 During the period that this Contract is in force, neither party to the Contract shall solicit for employment or employ an employee of the other.
- 13.15 All materials or equipment shown on the Drawings or included in these specifications shall be furnished unless written approval of a substitute is obtained from the Designer, or Owner if no separate designer.
- 13.16 If a potential supplier wishes to submit for prior approval a particular product other than a product specified in the contract documents, he shall do so no later than fourteen working days prior to the opening of bids. Within ten days, exclusive of holidays and weekends, after such submission, the prime design professional shall furnish to both the public entity and the potential supplier written approval or denial of the product submitted. The burden of proof of the equality of the proposed substitute is upon the proposer and only that information formally submitted shall be used by the Designer in making its decision.

13.17 The decision of the Designer/Owner shall be given in good faith and shall be final.

14.00 QUANTITIES OF ESTIMATE, CHANGES IN QUANTITIES, EXTRA WORK

- 14.01 Whenever the estimated quantities of Work to be done and materials to be furnished under this Contract are shown in any of the documents, including the Proposal, such are given for use in comparing Bids and the right is especially reserved, except as herein otherwise specifically limited, to increase or diminish same not to exceed twenty-five percent (25%) by the Owner to complete the Work contemplated by this Contract. Such increase or diminution shall in no way vitiate this Contract, nor shall such increase or diminution give cause for claims or liability for damages.
- 14.02 The Owner shall have the right to make alterations in the line, grade, plans, form or dimensions of the Work herein contemplated, provided such alterations do not change the total cost of the Project, based on the originally estimated quantities, and the unit prices bid by more than twenty-five percent (25%) and provided further that such alterations do not change the total cost of any major item, based on the originally estimated quantities and the unit price bid by more than twenty-five (25%). (A major item shall be construed to be any item, the total cost of which is equal to or greater than ten percent (10%) of the total Contract Price, computed on the basis of the Proposal quantity and the Contract unit price). Should it become necessary, for the best interest of the Owner, to make changes in excess of that herein specified, the same shall be covered by supplemental agreement either before or after the commencement of the Work and without notice to the sureties. If such alterations diminish the quantity of Work to be done, such shall not constitute a claim for damages for anticipated profits for the Work dispensed with, but when the reduction in amount is a material part of the Work contemplated, the Contractor shall be entitled to only reasonable compensation as determined by the Owner for overhead and equipment charges which it may have incurred in expectation of the quantity of Work originally estimated, unless specifically otherwise provided herein; if the alterations increase the amount of Work, the increase shall be paid according to the quantity of Work actually done and at the price established for such Work under this Contract except where, in the opinion of the Owner, the Contractor is clearly entitled to extra compensation.
- 14.03 Without invalidating the Contract, the Owner may order Extra Work or make changes by altering, adding to, or deducting from the Work, the Contract sum being adjusted accordingly. The consent of the surety must first be obtained when necessary or desirable, all at the exclusive discretion of the Owner. All the Work of the kind bid upon shall be paid for at the price stipulated in the Proposal, and no claims for any Extra Work or material shall be allowed unless the Work is ordered in writing by the Owner.
- 14.04 Extra Work for which there is no price or quantity included in the Contract shall be paid for at a unit price or lump sum to be agreed upon in advance in writing by the Owner and Contractor. Where such price and sum cannot be agreed upon by both parties, or where this method of payment is impracticable, the Owner may, at its exclusive and unilateral discretion, order the Contractor to do such Work on a Force Account Basis.
- 14.05 In computing the price of Extra Work on a Force Account Basis, the Contractor shall be paid for all foremen and labor actually engaged on the specific Work at the current local rate of wage for each and every hour that said foremen and labor are engaged in such Work, plus ten percent (10%) of the total for superintendence, use of tools, overhead, direct & indirect costs/expenses, pro-rata applicable payroll taxes, pro-rata applicable workman compensation benefits, pro-rata insurance premiums and pro-rata reasonable profit. The Contractor shall furnish satisfactory evidence of the rate or rates of such insurance and tax. The Contractor will not be able to collect any contribution to any retirement plans or programs.
- 14.06 For all material used, the Contractor shall receive the actual cost of such material delivered at the site of the Work, as shown by original receipted bill, to which shall be added five percent (5%). There will be absolutely no additional surcharges or additional fees attached hereto with respect to this subsection.
- 14.07 For any equipment used that is owned by the Contractor, the Contractor shall be allowed a rental based upon the latest prevailing rental price, but not to exceed a rental price as determined by the Associated Equipment Distributors (A.E.D. Green Book).

- 14.08 The Contractor shall also be paid the actual costs of transportation for any equipment which it owns and which it has to transport to the Project for the Extra Work. There will be absolutely no additional surcharges or additional fees attached hereto with respect to this subsection.
- 14.09 If the Contractor is required to rent equipment for Extra Work, but not required for Contract items, it will be paid the actual cost of rental and transportation of such equipment to which no percent shall be added. The basis upon which rental cost are to be charged shall be agreed upon in writing before the Work is started. Actual rental and transportation costs shall be obtained from receipted invoices and freight bills.
- 14.10 No compensation for expenses, fees or costs incurred in executing Extra Work, other than herein specifically mentioned herein above, will be allowed.
- 14.11 A record of Extra Work on Force Account basis shall be submitted to the Owner on the day following the execution of the Work, and no less than three copies of such record shall be made on suitable forms and signed by both the Owner or his representative on the Project and the Contractor. All bids for materials used on extra Work shall be submitted to the Owner by the Contractor upon certified statements to which will be attached original bills covering the costs of such materials.
- 14.12 Payment for Extra Work of any kind will not be allowed unless the same has been ordered in writing by the Owner.

15.00 STATUS OF THE ENGINEER (NOT APPLICABLE)

16.00 INJURIES TO PERSONS AND PROPERTY

- 16.01 The Contractor shall be held solely and exclusively responsible for all injuries to persons and for all damages to the property of the Owner or others caused by or resulting from the negligence of itself, its employees or its agents, during the progress of or in connection with the Work, whether within the limits of the Work or elsewhere under the Contract proper or as Extra Work. This requirement will apply continuously and not be limited to normal working hours or days. The Owner's construction review is for the purpose of checking the Work product produced and does not include review of the methods employed by the Contractor or to the Contractor's compliance with safety measures of any nature whatsoever. The Contractor agrees to pay a reasonable attorney fee and other reasonable attendant costs of the Owner in the event it becomes necessary for the Owner to employ an attorney to enforce this section or to protect itself against suit over the Contractor's responsibilities. Attorney fees shall be at the prevailing hourly rate of the private sector. The attorney fee hourly rate shall not be less than \$175.00 per hour. All attorney fees collected shall be paid to the operating budget of the Office of the Parish President.
- 16.02 The Contractor must protect and support all utility infrastructures or other properties which are liable to be damaged during the execution of its Work. It shall take all reasonable and proper precautions to protect persons, animals and vehicles or the public from the injury, and wherever necessary, shall erect and maintain a fence or railing around any excavation, and place a sufficient number of lights about the Work and keep same burning from twilight until sunrise, and shall employ one or more watchmen as an additional security whenever needed. The Contractor understands and agrees that the Owner may request that security be placed on the premises to ensure and secure same. The Owner shall have exclusive authority to request placement of such security. Contractor agrees to retain and place security as requested, all at the sole expense of Contractor. Additional security shall not be considered a change order or reason for additional payment by the Owner. The Contractor must, as far as practicable and consistent with good construction, permit access to private and public property and leave fire hydrants, catch basins, streets, etc., free from encumbrances. The Contractor must restore at its own expense all injured or damaged property caused by any negligent act of omission or commission on its part or on the part of its employees or subcontractors, including, but not limited to, sidewalks, curbing, sodding, pipes conduits, sewers, buildings, fences, bridges, retaining walls, tanks, power lines, levees or any other building or property whatsoever to a like condition as existed prior to such damage or injury.

- 16.03 In case of failure on the part of the Contractor to restore such property or make good such damage, the Owner may upon forty-eight (48) hours' notice proceed to repair or otherwise restore such property as may be deemed necessary, and the cost thereof will be deducted from any monies due or which may become due under its Contract.
- 16.04 Contractor agrees to protect, defend, indemnify, save, and hold harmless St. Tammany Parish Government, its elected and appointed officials, departments, agencies, boards and commissions, their officers, agents servants, employees, including volunteers, from and against any and all claims, demands, expense and liability arising out of injury or death to any person or the damage, loss or destruction of any property to the extent caused by any negligent act or omission or willful misconduct of Contractor, its agents, servants, employees, and subcontractors, or any and all costs, expense and/or attorney fees incurred by St. Tammany Parish Government as a result of any claim, demands, and/or causes of action that results from the negligent performance or non-performance by Contractor, its agents, servants, employees, and subcontractors of this contract. Contractor agrees to investigate, handle, respond to, provide defense for and defend any such claims, demand, or suit at its sole expense and agrees to bear all other costs and expenses related thereto caused by any negligent act or omission or willful misconduct of Contractor, its agents, servants, employees, and subcontractors.
- 16.05 As to any and all claims against Owner, its agents, assigns, representatives or employees by any employee of Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts as may be liable, the indemnification obligation under Paragraph 16.04 shall not be limited in any way or by any limitation on the amount or type of damages, compensation or benefits payable by or for Contractor or any Subcontractor under workmen's compensation acts, disability benefit acts or other employee benefit acts.
- 16.06 No road shall be closed by the Contractor to the public except by written permission of the Owner. If so closed, the Contractor shall maintain traffic over, through and around the Work included in his Contract, with the maximum practical convenience, for the full twenty-four hours of each day of the Contract, whether or not Work has ceased temporarily. The Contractor shall notify the Owner at the earliest possible date after the Contract has been executed and, in any case, before commencement of any construction that might in any way inconvenience or endanger traffic, in order that necessary and suitable arrangements may be determined. Any and all security, maintenance, labor or costs associated with traffic control herein shall be at the sole expense of Contractor. This expense shall be paid directly by the Contractor. This expense shall not be considered as a change order nor shall it allow the Contractor any additional cost reimbursement whatsoever. All traffic deviations herein shall be coordinated with the appropriate law enforcement officials of this Parish.
- 16.07 The convenience of the general public and residents along the Works shall be provided for in a reasonable, adequate and satisfactory manner. Where existing roads are not available as detours, and unless otherwise provided, all traffic shall be permitted to pass through the Work. In all such cases, the public shall have precedence over Contractor's vehicles insofar as the traveling public's vehicles shall not be unduly delayed for the convenience of the Contractor. In order that all unnecessary delay to the traveling public may be avoided, the Contractor shall provide and station competent flagmen whose sole duties shall consist of directing and controlling the movement of public traffic either through or around the Work. Any and all security, maintenance, labor or costs associated with traffic control herein shall be at the sole expense of Contractor. This expense shall be paid directly by the Contractor. This expense shall not be considered as a change order nor shall it allow the Contractor any additional cost reimbursement whatsoever. All traffic deviations herein shall be coordinated with the appropriate law enforcement officials of this Parish.
- 16.08 The Contractor shall arrange its Work so that no undue or prolonged blocking of business establishments will occur.
- 16.09 Material and equipment stored on the right of way or work site shall be so placed and the Work at times shall be so conducted as to ensure minimum danger and obstruction to the traveling public.
- 16.10 During grading operations when traffic is being permitted to pass through construction, the Contractor shall provide a smooth, even surface that will provide a satisfactory passageway

for use of traffic. The road bed shall be sprinkled with water if necessary to prevent a dust nuisance, provided the dust nuisance is a result of the Work.

- 16.11 Fire hydrants shall be accessible at all times to the Fire Department. No material or other obstructions shall be placed closer to a fire hydrant than permitted by ordinances, rules or regulations or within fifteen (15) feet of a fire hydrant, in the absence of such ordinance, rules or regulations.
- 16.12 The Contractor shall not, without the written permission of the Owner, do Work for a resident or property owner abutting the Work at the time that this Work is in progress.
- 16.13 No Work of any character shall be commenced on railroad right-of-way until the Railroad Company has issued a permit to the Owner and has been duly notified by the Contractor in writing (with a copy forwarded to the Owner) of the date it proposes to begin Work, and until an authorized representative of the Railroad Company is present, unless the Railroad Company waives such requirements. All Work performed by the Contractor within the right-of-way limits of the railroad shall be subject to the inspection and approval of the chief engineer of the Railroad Company or its authorized representative. Any precautions considered necessary by said chief engineer to safeguard the property, equipment, employees and passengers of the Railroad Company shall be taken by the Contractor without extra compensation. The Contractor shall, without extra compensation, take such precautions and erect and maintain such tell-tale or warning devices as the Railroad Company considers necessary to safeguard the operation of its trains. The temporary vertical and horizontal clearance specified by the chief engineer of the Railroad Company in approving these shall be maintained at all times. No steel, brick, pipe or any loose material shall be left on the ground in the immediate vicinity of the railway track. Before any Work is done within Railroad right of way, the Contractor shall provide and pay all costs of any special insurance requirements of the Railroad.
- 16.14 The Contractor, shall, without extra compensation, provide, erect, paint and maintain all necessary barricades. Also, without extra compensation, the Contractor shall provide suitable and sufficient lights, torches, reflectors or other warning or danger signals and signs, provide a sufficient number of watchmen and flagmen and take all the necessary precautions for the protection of the Work and safety of the Public.
- 16.15 The Contractor shall erect warning signs beyond the limits of the Project, in advance of any place on the Project where operations interfere with the use of the road by traffic, including all intermediate points where the new Work crosses or coincides with the existing road. All barricades and obstructions shall be kept well painted and suitable warning signs shall be placed thereon. All barricades and obstructions shall be illuminated at night and all lights or devices for this purpose shall be kept burning from sunset to sunrise.
- 16.16 Whenever traffic is maintained through or over any part of the Project, the Contractor shall clearly mark all traffic hazards. No direct payment will be made for barricades, signs and illumination therefore or for watchmen or flagmen.
- 16.17 The Contractor will be solely and completely responsible for conditions on the job site, including safety of all persons and property during performance of the Work. This requirement will apply continuously and not be limited to normal working hours. The duty of the Owner to conduct construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's safety measures, in, or near the construction site.

17.00 SANITARY PROVISIONS

- 17.01 The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of its employees as may be necessary to comply with the rules and regulations of the State Health Agency or of the other authorities having jurisdiction and shall permit no public nuisance.

18.00 RIGHTS OF WAY

- 18.01 The Owner will furnish the Contractor with all necessary rights-of-way for the prosecution of the Work. The rights of way herein referred to shall be taken to mean only permission to use or pass through the locations or space in any street, highway, public or private property in which the Contractor is to prosecute the Work.
- 18.02 It is possible that all lands and rights of way may not be obtained as herein contemplated before construction begins, in which event the Contractor shall begin its Work upon such land and rights of way as the Owner may have previously acquired. Any delay in furnishing these lands by the Owner can be deemed proper cause for adjustment in the Contract amount and/or in the time of completion.

19.00 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE

- 19.01 The Contractor shall not enter upon private property for any purpose without first obtaining permission from the Owner, as well as the private property owner and/or and private property Lessees. The Contractor shall use every precaution necessary for the preservation of all public and private property, monuments, highway signs, telephone lines, other utilities, etc., along and adjacent to the Work; the Contractor shall use every precaution necessary to prevent damage to pipes, conduits, and other underground structures; and shall protect carefully from disturbance or damage all land monuments and property marks until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed. The street and highway signs and markers that are to be affected by the Work shall be carefully removed when the Work begins and stored in a manner to keep them clean and dry. The Contractor must obtain all necessary information in regard to existing utilities and shall give notice in writing to the owners or the proper authorities in charge of streets, gas, water, pipes, electric, sewers and other underground structures, including conduits, railways, poles and pole lines, manholes, catch basins, fixtures, appurtenances, and all other property that may be affected by the Contractor's operations, at least forty-eight (48) hours before its operations will affect such property. The Contractor shall not hinder or interfere with any person in the protection of such Work or with the operation of utilities at any time. When property, the operation of railways, or other public utilities are endangered, the Contractor shall at its own expense, maintain flagmen or watchmen and any other necessary precautions to avoid interruption of service or damage to life or property, and it shall promptly repair, restore, or make good any injury or damage caused by its negligent operations in an acceptable manner. The Contractor must also obtain all necessary information in regard to the installation of new cables, conduits, and transformers, and make proper provisions and give proper notifications, in order that same can be installed at the proper time without delay to the Contractor or unnecessary inconvenience to the Owner.
- 19.02 The Contractor shall not remove, cut or destroy trees, shrubs, plants, or grass that are to remain in the streets or those which are privately owned, without the proper authority. Unless otherwise provided in the Special Provisions or the Proposal, the Contractor shall replace and replant all plants, shrubs, grass and restore the grounds back to its original good condition to the satisfaction of the Owner and/or the property owner. The Contractor shall assume the responsibility of replanting and guarantees that plants, shrubs, grass will be watered, fertilized and cultivated until they are in a growing condition. No direct payment will be made for removing and replanting of trees, shrubs, plants or grass unless such items are set forth in the Proposal.
- 19.03 When or where direct damage or injury is done to public or private property by or on account of any negligent act, omission, neglect or otherwise of the Contractor, it shall make good such damage or injury in an acceptable manner.

20.00 CONTRACTORS RESPONSIBILITY FOR WORK

- 20.01 Until final acceptance of the Work by the Owner as evidence by approval of the final estimate, the Work shall be in the custody and under the charge and care of the Contractor and it shall take every necessary precaution against injury or damage to any part thereof by the action of the elements or from the non-execution of the Work; unless otherwise provided for elsewhere in the Specifications or Contract. The Contractor shall rebuild, repair, restore and make good, without extra compensation, all injuries or damages to any portion of the Work occasioned by any of the above causes before its completion and

acceptance, and shall bear the expenses thereof. In case of suspension of the Work from any cause whatever, the Contractor shall be responsible for all materials and shall properly and securely store same, and if necessary, shall provide suitable shelter from damage and shall erect temporary structures where necessary. If in the exclusive discretion of the Owner, any Work or materials shall have been damaged or injured by reason of failure on the part of the Contractor or any of its Subcontractors to so protect the Work, such materials shall be removed and replaced at the sole expense of the Contractor. Such amount shall be deducted from any sum due or to be due Contractor.

- 20.02 The Contractor shall give all notice and comply with all Federal, State, and local laws, ordinances, and regulations in any manner affecting the conduct of the Work, and all such orders and decrees as exist, or may be enacted by bodies or tribunals having any jurisdiction or authority over the Work, and shall indemnify and hold harmless the Owner against any claim or liability arising from, or based on, the violation of any such law, ordinance, regulation, order or decree, whether by itself, its employees or Subcontractors.

21.00 TESTS AND INSPECTIONS CORRECTION & REMOVAL OF DEFECTIVE WORK

- 21.01 Contractor warrants and guarantees to Owner that all materials and equipment will be new unless otherwise specified and that all Work will be of good quality and free from faults or defects and in accordance with the requirements of the Contract Documents. All unsatisfactory Work, all faulty or Defective Work and all Work not conforming to the requirements of the Contract Documents at the time of acceptance shall be considered Defective. Prompt and reasonable notice of all defects shall be given to the Contractor.
- 21.02 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any Work to specifically be inspected, tested or approved by some public body, Contractor shall assume full responsibility therefor, pay all costs in connection therewith and furnish Owner the required certificates of inspection, testing or approval. All other inspections, tests and approval required by the Contract Documents shall be performed by organizations acceptable to Owner and Contractor and the costs thereof shall be borne by the Contractor unless otherwise specified.
- 21.03 Contractor shall give Owner timely notice of readiness of the Work for all inspections, tests or approvals. If any such Work required to be inspected, tested or approved is covered without written approval of Owner, it must, if requested by Owner, be uncovered for observation, and such uncovering shall be at Contractor's expense unless Contractor has given Owner timely notice of its intention to cover such Work and Owner has not acted with reasonable promptness in response to such notice.
- 21.04 Neither observations by Owner nor inspections, tests or approvals shall relieve Contractor from its obligations to perform the Work in accordance with the requirements of the Contract Document.
- 21.05 Owner and its representatives will at reasonable times have access to the Work. Contractor shall provide proper and safe facilities for such access and observation of the Work and also for any inspection or testing thereof by others.
- 21.06 If any Work is covered contrary to the written request of Owner, it must, be uncovered for Owner's observation and replaced at Contractor's expense. If any Work has been covered which Owner has not specifically requested to observe prior to its being covered, or if Owner considers it necessary or advisable that covered Work be inspected or tested by others, the Contractor, at Owner's request, shall uncover, expose or otherwise make available for observations, inspections or testing as Owner may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is Defective, Contractor shall bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services, and an appropriate deductive Change Order shall be issued. If, however, such Work is not found to be Defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction.

- 21.07 If the Work is Defective, or Contractor fails to supply sufficient skilled workmen or suitable materials or equipment, or if the Contractor fails to make prompt payments to Subcontractors or for labor, materials or equipment, Owner may order Contractor to stop the Work, or any portion thereof, until the cause of such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor or any other party.
- 21.08 Prior to approval of final payment, Contractor shall promptly, without cost to Owner and as specified by Owner, either correct any Defective Work, whether or not fabricated, installed or completed, or if the Work has been rejected by Owner, remove it from the site and replace it with non-defective Work. If Contractor does not correct such Defective Work or remove and replace such rejected Work within a reasonable time, all as specified in a written notice from Owner, Owner may have the deficiency corrected or the rejected Work removed and replaced. All direct or indirect costs of such correction or removal and replacement including compensation for additional professional services shall be paid by Contractor, and an appropriate deductive Change Order shall be issued. Contractor shall also bear the expense of making good all Work of others destroyed or damaged by its correction, removal or replacement of its Defective Work.
- 21.09 If, after the approval of final payment and prior to the expiration of one year after the date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents, any Work is found to be Defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions, either correct such Defective Work or if it has been rejected by Owner, remove it from the site and replace it with non-defective Work. If Contractor does not promptly comply with the terms of such instructions, Owner may have the Defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, shall be paid by Contractor. The Contractor agrees to pay a reasonable attorney fee and other reasonable attendant costs of the Owner in the event it becomes necessary for the Owner to employ an attorney to enforce this section or to protect itself against suit over the Contractor's responsibilities. Attorney fees shall be at the prevailing hourly rate of the private sector. The attorney fee hourly rate shall not be less than \$175.00 per hour. All attorney fees collected shall be paid to the operating budget of the Office of the Parish President.
- 21.10 If, instead of requiring correction or removal and replacement of Defective Work, Owner (and prior to approval of final payment) prefers to accept it, the Owner may do so. In such case, if acceptance occurs prior to approval of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Price, or, if the acceptance occurs after approval of final payment, an appropriate amount shall be paid by Contractor to Owner.
- 21.11 If Contractor should fail to progress the Work in accordance with the Contract Documents, including any requirements of the Progress Schedule, Owner, after seven (7) days written Notice to Contractor, may, without prejudice to any other remedy Owner may have, make good such deficiencies and the cost thereof including compensation for additional professional services shall be charged against Contractor. In such cases, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents including an appropriate reduction in the Contract Price. If the payments then or thereafter due Contractor are not sufficient to cover such amount, Contractor shall pay the difference to Owner.
- 21.12 The Owner may appoint representatives to make periodic visits to the site and observe the progress and quality of the executed Work. These representatives shall be governed by the same restrictions placed on the Owner by these Specifications. The governing body of the Federal, State or local government exercising authority in the area of the Work may appoint representatives to observe the progress and quality of the Work. Contractor shall cooperate with and assist these representatives in the performance of their duties.
- 21.13 The Contractor shall be responsible for the faithful execution of its Contract and the presence or absence of the Owner's or Government's Representative is in no way or manner to be presumed or assumed to relieve in any degree the responsibility or obligation of the Contractor.

- 21.14 The Contractor shall notify the Owner and the Governmental Agency having jurisdiction as to the exact time at which it is proposed to begin Work so the Owner may provide for inspection of all materials, foundations, excavations, equipment, etc., and all or any part of the Work and to the preparation or manufacture of materials to be used whether within the limits of the Work or at any other place.
- 21.15 The Owner or its representatives shall have free access to all parts of the Work and to all places where any part of the materials to be used are procured, manufactured or prepared. The Contractor shall furnish the Owner all information relating to the Work and the material therefor, which may be deemed necessary or pertinent, and with such samples of materials as may be required. The Contractor, at its own expense, shall supply such labor and assistance as may be necessary in the handling of materials for proper inspection or for inspection of any Work done by it.
- 21.16 No verbal instructions given to the Contractor by the Owner, Project Representative or any of their agents shall change or modify the written Contract. Contractors shall make no claims for additional payments or time based upon verbal instructions.

22.00 SUBSURFACE CONDITIONS

- 22.01 It is understood and agreed that the Contractor is familiar with the subsurface conditions that will be encountered and its price bid for the Work includes all of the costs involved for Work in these conditions and it is furthermore agreed that it has taken into consideration, prior to its Bid and acceptance by Owner, all of the subsurface conditions normal or unusual that might be encountered in the location of the Work.
- 22.02 Should the Contractor encounter during the progress of the Work subsurface conditions at the site materially differing from those shown on the Drawings or indicated in the Specifications, the attention of the Owner shall be directed to such conditions before the conditions are disturbed. If the Owner finds that the conditions materially differ from those shown on the Drawings or indicated in the Specifications, it shall at once make such changes in the Drawings or Specifications as it may find necessary, and any increase or decrease in cost or extension of time resulting from such changes shall be adjusted in the same manner as provided for changes for Extra Work. The Contractor shall submit breakdowns of all costs in a manner as instructed and approved by the Owner.

23.00 REMOVAL AND DISPOSAL OF STRUCTURES AND OBSTRUCTIONS

- 23.01 Bidder shall thoroughly examine the site of the Work and shall include in its Bid the cost of removing all structures and obstructions in the way of the Work.
- 23.02 The Contractor shall remove any existing structures or part of structures, fence, building or other encumbrances or obstructions that interfere in any way with the Work. Compensations for the removal of any structure shall be made only if the item(s) to be removed was/were listed as pay item(s) on the Proposal.
- 23.03 If called for in the Special Conditions, all privately and publicly owned materials and structures removed shall be salvaged without damage and shall be piled neatly and in an acceptable manner upon the premises if it belongs to an abutting property owner, otherwise at accessible points along the improvements. Materials in structures which is the property of the Owner or property of any public body, private body or individual which is fit for use elsewhere, shall remain property of the original Owner. It shall be carefully removed without damage, in sections which may be readily transported; same shall be stored on or beyond the right of way. The Contractor will be held responsible for the care and preservation for a period of ten (10) days following the day the last or final portion of the materials stored at a particular location are placed thereon. When privately owned materials are stored beyond the right of way, the Contractor will be held responsible for such care and preservation for a period of ten (10) days responsibility period for care and preservation of the materials begins. The Contractor must furnish the Owner with evidence satisfactory that the proper owner of the materials has been duly notified by the Contractor that the said owner must assume responsibility for its materials on the date following the Contractor's ten (10) day responsibility.

24.00 INSURANCE

- 24.01 Contractor shall secure and maintain at its expense such insurance that will protect it and the Parish from claims for injuries to persons or damages to property which may arise from or in connection with the performance of Services or Work hereunder by the Contractor, his agents, representatives, employees, and/or subcontractors. The cost of such insurance shall be included in Contractor's bid.
- 24.02 The Contractor shall not commence work until it has obtained all insurance as required for the Parish Project. If the Contractor fails to furnish the Parish with the insurance protection required and begins work without first furnishing Parish with a currently dated certificate of insurance, the Parish has the right to obtain the insurance protection required and deduct the cost of insurance from the first payment due the Contractor. Further deductions are permitted from future payments as are needed to protect the interests of the Parish including, but not limited to, renewals of all policies.
- 24.03 Payment of Premiums: The insurance companies issuing the policy or policies shall have no recourse against the Parish of St. Tammany for payment of any premiums or for assessments under any form of policy.
- 24.04 Deductibles: Any and all deductibles in the described insurance policies shall be assumed by and be at the sole risk of the Contractor.
- 24.05 Authorization of Insurance Company(ies) and Rating: All insurance companies must be authorized to do business in the State of Louisiana and shall have an A.M. Best rating of no less than A-, Category VII.
- 24.06 Policy coverages and limits must be evidenced by Certificates of Insurance issued by Contractor's carrier to the Parish and shall reflect:

Date of Issue: Certificate must have current date.

Named Insured: The legal name of Contractor under contract with the Parish and its principal place of business shall be shown as the named insured on all Certificates of Liability Insurance.

Name of Certificate Holder: St. Tammany Parish Government, Office of Risk Management, P. O. Box 628, Covington, LA 70434

Project Description: A brief project description, including Project Name, Project Number and/or Contract Number, and Location.

Endorsements and Certificate Reference: All policies must be endorsed to provide, and certificates of insurance must evidence the following:

Waiver of Subrogation: The Contractor's insurers will have no right of recovery or subrogation against the Parish of St. Tammany, it being the intention of the parties that all insurance policy(ies) so affected shall protect both parties and be the primary coverage for any and all losses covered by the below described insurance. *Policy endorsements required for all coverages.*

Additional Insured: The Parish of St. Tammany shall be named as additional named insured with respect to general liability, marine liability, pollution/environmental liability, automobile liability and excess liability coverages. *Policy endorsements required.*

Hold Harmless: Contractor's liability insurers shall evidence their cognizance of the Hold Harmless and Indemnification in favor of St. Tammany Parish Government by referencing same on the face of the Certificate(s) of Insurance.

Cancellation Notice: Producer shall provide thirty (30) days prior written notice to the Parish of policy cancellation or substantive policy change.

24.07 The types of insurance coverage the Contractor is required to obtain and maintain throughout the duration of the Contract, include, but is not limited to:

1. Commercial General Liability insurance with a Combined Single Limit for bodily injury and property damage of at least \$1,000,000 per Occurrence/\$2,000,000 General Aggregate/Products-Completed Operations Per Project. The insurance shall provide for and the certificate(s) of insurance shall indicate the following coverages:
 - a) Premises - operations;
 - b) Broad form contractual liability;
 - c) Products and completed operations;
 - d) Personal Injury;
 - e) Broad form property damage;
 - f) Explosion and collapse.
2. Marine Liability/Protection and Indemnity insurance is required for any and all vessel and/or marine operations in the minimum limits of \$1,000,000 per occurrence/\$2,000,000 per project general aggregate. The coverage shall include, but is not limited to, the basic coverages found in the Commercial General Liability insurance and coverage for third party liability.
3. Contractors' Pollution Liability and Environmental Liability insurance in the minimum amount of \$1,000,000 per occurrence, \$2,000,000 general aggregate and include coverage for full contractual liability and for all such environmental and/or hazardous waste exposures affected by this project.
4. Business Automobile Liability insurance with a Combined Single Limit of \$1,000,000 per Occurrence for bodily injury and property damage, and shall include coverage for the following:
 - a) Any automobiles;
 - b) Owned automobiles;
 - c) Hired automobiles;
 - d) Non-owned automobiles;
 - e) Uninsured motorist.
5. Workers' Compensation/Employers Liability insurance: worker's compensation insurance coverage and limits as statutorily required; Employers' Liability Coverage shall be not less than \$1,000,000 each accident, \$1,000,000 each disease, \$1,000,000 disease policy aggregate, except when projects include exposures covered under the United States Longshoremen and Harbor Workers Act, Maritime and/or Jones Act and/or Maritime Employers Liability (MEL) limits shall be not less than \$1,000,000/\$1,000,000/\$1,000,000. *Coverage for owners, officers and/or partners shall be included in the policy and a statement of such shall be made by the insuring producer on the face of the certificate.*
6. Owners Protective Liability (OPL) (formerly Owners and Contractors Protective Liability (OCP) Insurance) shall be furnished by the Contractor naming St. Tammany Parish Government as the Named Insured and shall provide coverage in the minimum amount of \$1,000,000 combined single limit (CSL) each occurrence, \$2,000,000 aggregate. Any project valued in excess of \$3,000,000 shall be set by the Office of Risk Management. The policy and all endorsements shall be addressed to St. Tammany Parish Government, Office of Risk Management, P. O. Box 628, Covington, LA 70434.
7. Builder's Risk Insurance shall be required on buildings, sewage treatment plants and drainage pumping stations, and shall be written on an "all-risk" or equivalent policy form in the amount of the full value of the initial Contract sum, plus value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising 100% total value for the entire project including foundations. Deductibles should not exceed \$5,000 and Contractor shall be responsible for any and all policy deductibles. This insurance shall cover portions of the work stored off the site, and also portions of the work in transit. In addition, Installation Floater

Insurance, on an “all-risk” form, will be carried on all pumps, motors, machinery and equipment on the site or installed. Both the Builder’s Risk Insurance and the Installation Floater Insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors and shall terminate only when the Project has been accepted. St. Tammany Parish Government, P. O. Box 628, Covington, LA 70434 shall be the first named insured on the Builder’s Risk and Installation Floater Insurance.

8. Professional Liability (errors and omissions) insurance in the sum of at least One Million Dollars (\$1,000,000) per claim with Two Million Dollars (\$2,000,000) annual aggregate.
 9. An umbrella policy or excess policy may be required and/or allowed to meet minimum coverage limits, subject to the review and approval by St. Tammany Parish Government, Office of Risk Management.
- 24.08 All policies of insurance shall meet the requirements of the Parish of St. Tammany prior to the commencing of any work. The Parish of St. Tammany has the right, but not the duty, to approve all insurance policies prior to commencing of any work. If at any time, it becomes known that any of the said policies shall be or becomes unsatisfactory to the Parish of St. Tammany as to form or substance; or if a company issuing any such policy shall be or become unsatisfactory to the Parish of St. Tammany, the Contractor shall promptly obtain a new policy, timely submit same to the Parish of St. Tammany for approval and submit a certificate thereof as provided above. The Parish agrees to not unreasonably withhold approval of any insurance carrier selected by Contractor. In the event that Parish cannot agree or otherwise authorize said carrier, Contractor shall have the option of selecting and submitting new insurance carrier within 30 days of said notice by the Parish. In the event that the second submission is insufficient or is not approved, then the Parish shall have the unilateral opportunity to thereafter select a responsive and responsible insurance carrier all at the cost of Contractor and thereafter deduct from Contractor's fee the cost of such insurance.
- 24.09 Upon failure of Contractor to furnish, deliver and/or maintain such insurance as above provided, the contract, at the election of the Parish of St. Tammany, may be forthwith declared suspended, discontinued or terminated. Failure of the Contractor to maintain insurance shall not relieve the Contractor from any liability under the contract, nor shall the insurance requirements be construed to conflict with the obligation of the Contractor concerning indemnification.
- 24.10 Contractor shall maintain a current copy of all annual insurance policies and provide same to the Parish of St. Tammany as may be reasonably requested.
- 24.11 It shall be the responsibility of Contractor to require that these insurance requirements are met by all contractors and sub-contractors performing work for and on behalf of Contractor. Contractor shall further ensure the Parish is named as additional insured on all insurance policies provided by said contractor and/or sub-contractor throughout the duration of the project, and that renewal certificates for any policies expiring prior to the Parish’s final acceptance of the project shall be furnished to St. Tammany Parish Government, Department of Legal, Office of Risk Management, without prompting.

NOTICE:

These are only an indication of the coverages that are generally required. Additional coverages and/or limits may be required for projects identified as having additional risks or exposures. Please note that some requirements listed may not necessarily apply to your specific services. St. Tammany Parish Government reserves the right to remove, replace, make additions to and/or modify any and all of the insurance requirement language upon review of the final scope of services presented to Office of Risk Management prior to execution of a contract for services.

For inquiries regarding insurance requirements, please contact:

**St. Tammany Parish Government
Office of Risk Management
P. O. Box 628
Covington, LA 70434
Telephone: 985-898-5226
Email: riskman@stpgov.org**

- 24.12 Nothing contained in these insurance requirements is to be construed as limiting the extent of the Contractor's Responsibility for payment of damages resulting from its operations under this Contract.

25.00 OWNER'S RIGHT TO OCCUPANCY

- 25.01 The Owner shall have the right to use, at any time, any and all portions of the Work that have reached such a stage of completion as to permit such occupancy, provided such occupancy does not hamper the Contractor or prevent its efficient completion of the Contract or be construed as constituting an acceptance of any part of the Work.
- 25.02 The Owner shall have the right to start the construction of houses, structures or any other building concurrent with the Contractor's Work.

26.00 SURVEY HORIZONTAL AND VERTICAL CONTROL

- 26.01 The Owner shall provide surveys for construction to establish reference points which in its judgment are necessary to enable Contractor to layout and proceed with its Work. Contractor shall be responsible for surveying and laying out the Work and shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of the Owner. Contractor shall report to Owner whenever any reference point is lost or destroyed and the Owner shall decide if the reference point shall be replaced by its or the Contractor's forces.
- 26.02 The Contractor shall establish lines and grades with its own forces in sufficient number and location for the proper execution of the Work.
- 26.03 If the Contractor, during the construction, damages the established property corners and/or other markers and thereafter requests the Owner to re-stake same in order to complete the project, this expense will be borne solely by the Contractor.

27.00 TERMINATION OF THE CONTRACT, OWNER'S AND CONTRACTORS RIGHT TO STOP WORK.

- 27.01 If the Contractor should be adjudged bankrupt (voluntarily or involuntarily) or if it should make a general assignment for the benefit of its creditors, or if a receiver should be appointed on account of its insolvency, or if it should persistently or repeatedly refuse or should fail (except in cases for which extension of time is provided) to supply enough properly skilled workmen or proper materials, or if it should fail to make prompt payment to Subcontractors or for material or labor, or persistently disregard laws, ordinances or the instructions of the Owner, or otherwise be guilty of a substantial violation of any provision of the Contract, then the Owner, upon the certificate of the Owner that, in its unilateral discretion and judgment, believes sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor ten (10) calendar days written notice, terminate the employment of the Contractor and take possession of the premises and of all materials, tools and appliances thereon and finish the Work by whatever method the Owner may deem expedient.
- 27.02 Failure of the Contractor to start the Work within the time limit specified herein or substantial evidence that the progress being made by the Contractor is sufficient to complete the Work within the specified time shall be grounds for termination of the Contract by the Owner.
- 27.03 Before the Contract is terminated, the Contractor and its surety will first be notified in writing by the Owner of the conditions which make termination of the Contract imminent.

When after ten (10) calendar days' notice is given and if satisfactory effort has not been made by the Contractor or its surety to correct the conditions, the Owner may declare, in its exclusive discretion, that the Contract is terminated and so notify the Contractor and its surety accordingly.

- 27.04 Upon receipt of notice from the Owner that the Contract has been terminated, the Contractor shall immediately discontinue all operations. The Owner may then proceed with the Work in any lawful manner that it may elect until Work is finally completed.
- 27.05 The exclusive right is reserved to the Owner to take possession of any machinery, implements, tools or materials of any description that shall be found upon the Work, to account for said equipment and materials, and to use same to complete the Project. When the Work is finally completed, the total cost of same will be computed. If the total cost is less than the Contract Price, the difference will not be paid to the Contractor or its surety.
- 27.06 In case of termination, all expenses incident to ascertaining and collecting losses under the Bond, including legal services, shall be assessed against the Bond.
- 27.07 If the Work should be stopped under any order of any court or public authority for period of sixty (60) calendar days, through no act or fault of the Contractor or anyone employed by it, or if the Owner shall fail to pay the Contractor within a reasonable time any sum certified by the Owner, then the Contractor may, upon ten (10) calendar days written notice to the Owner, stop Work or terminate this Contract and recover from the Owner payment for all Work properly and professionally executed in a workmanlike manner. This loss specifically includes actual cost of materials and equipment, together with all wages inclusive of all federal, state, and local tax obligations. This loss specifically includes reimbursement of all insurances on a pro-rata basis from the date of termination to date of policy period. This loss excludes and specifically does not include recovery by the Contractor for lost profit, indirect & direct expenses, overhead, and the like.

28.00 PAYMENTS TO THE CONTRACTOR

- 28.01 Monthly certificates for partial payment, in a form approved by the Owner, shall be transmitted to the Owner upon receipt from the Contractor and acceptance by the Owner. In accordance with LSA-R.S. 38:2248(A), when the Contract Price is less than five hundred thousand dollars, these certificates shall be equal to ninety percent (90%) of both the Work performed and materials stored at the site; and when the Contract Price is five hundred thousand dollars or more, these certificates shall be equal to ninety-five percent (95%) of both the Work performed and materials stored at the site. Partial payment certificates shall include only Work, materials and equipment that are included in official Work Order and which meet the requirements of plans, Specifications and Contract Documents. These monthly estimates shall show the amount of the original estimate for each item, the amount due on each item, the gross total, the retained percentage, the amount previously paid and the net amount of payment due.
- 28.02 After final completion and acceptance by the Owner of the entire Work, and when the Contract Price is less than five hundred thousand dollars, the Owner shall issue to the Contractor Certificate of Payment in sum sufficient to increase total payments to ninety percent (90%) of the Contract Price. After final completion and acceptance by the Owner of the entire Work, and when the Contract Price is five hundred thousand dollars or more, the Owner shall issue to the Contractor Certificate of Payment in sum sufficient to increase total payments to ninety-five percent (95%) of the Contract Price.
- 28.03 When the Contract Price is less than five hundred thousand dollars, the final payment certificate of the remaining ten percent (10%) of the Contract Price, minus any deduction for deficient or Defective Work or other applicable deductions, will be issued by the Owner forty-five (45) days after filing acceptance in the Mortgage Office of the Parish and a Clear Liens and Privilege Certificate has been secured. When the Contract Price is five hundred thousand dollars or more, the final payment certificate of the remaining five percent (5%) of the Contract Price, minus any deduction for deficient or Defective Work or other applicable deductions, will be issued by the Owner forty-five (45) days after filing acceptance in the Mortgage Office of the Parish and a Clear Liens and Privilege Certificate has been secured. Before issuance of the final payment certificate, the Contractor shall deposit with the Owner a certificate from the Clerk of Court and Ex-Officio Recorder of

Mortgages from the Parish in which the Work is performed to the effect that no liens have been registered against Contract Work.

- 28.04 When, in the opinion of the Contractor, the Work provided for and contemplated by the Contract Documents has been substantially completed, the Contractor shall notify the Owner in writing that the Work is substantially complete and request a final inspection. The Owner shall proceed to perform such final inspection accompanied by the Contractor. Any and all Work found by this inspection to be Defective or otherwise not in accordance with the plans and Specifications shall be corrected to the entire satisfaction of the Owner and at the sole expense of the Contractor. If the Contract is found to be incomplete in any of its details, the Contractor shall at once remedy such defects, and payments shall be withheld and formal acceptance delayed until such Work has been satisfactorily completed.
- 28.05 If payment is requested on the basis of materials and equipment not incorporated in the Work, but delivered and suitably stored and protected from damage and theft at the site, the Request for Payment shall also be accompanied by such data, satisfactory to the Owner, as will establish Owner's title to the material and equipment and protect its interest therein, including applicable insurance.
- 28.06 Each subsequent Request for Payment shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied to discharge in full all of Contractor's obligations reflected in prior Request for Payment.
- 28.07 Each subsequent request for payment shall include an affidavit by Contractor that Contractor, all subcontractors, agents, material suppliers and all other persons supplying material to the project upon which State of Louisiana and/or St. Tammany sales taxes are lawfully due have paid these taxes and that all supplies and materials purchased for this project and for which Contractor has been paid have had all lawfully due State and/or St. Tammany sales taxes paid.
- 28.08 The Bid Proposal, unless otherwise modified in writing, and the Contract constitute the complete Project. The Contract Prices constitute the total compensation payable to Contractor and the cost of all of the Work and materials, taxes, permits and incidentals must be included into the Bid submitted by the Contractor and included into those items listed on the Proposal.
- 28.09 Any additional supporting data required by the Owner in order to substantiate Contractor's request for payment shall be furnished by Contractor at no cost to the Owner.
- 28.10 Owner may withhold from payment to Contractor as may be necessary to protect itself from loss on account of:
- (1) Defective and/or inferior work;
 - (2) Damage to the property of Owner or others caused by Contractor;
 - (3) Failure by Contractor to make payments properly to sub-contractors or to pay for labor, materials or equipment used on this project;
 - (4) Failure by Contractor to pay taxes due on materials used on this project;
 - (5) Damage by Contractor to another Contractor;
 - (6) Insolvency;
 - (7) Bankruptcy, voluntary or involuntary;
 - (8) Revocation of corporate status;
 - (9) Failure to follow corporate formalities;
 - (10) Unprofessional activities;
 - (11) Unworkmanlike performance;
 - (12) Fraud and/or misrepresentation of any kind.

29.00 ACCEPTANCE AND FINAL PAYMENT(S)

- 29.01 Upon receipt of written notice from Contractor that the work is substantially complete and usable by Owner or the Public in suitable manner, the Owner and the Contractor shall jointly inspect the work.
- 29.02 If the Owner by inspection determines that the work is not substantially complete in a suitable manner for use by the Owner or the Public, then the Owner shall so notify the Contractor in writing stating such reason. All reasons need not be disclosed unless actually

known. The Owner is afforded an opportunity to amend said notices as are reasonably possible.

- 29.03 If the Owner by its inspection determines that the work is substantially complete, it shall prepare a list of all items not satisfactorily completed and shall notify the Contractor and Owner in writing that the work is substantially complete and subject to satisfactory resolution of those items on the list (punch list). Punch lists may be amended from time to time by Owner in the event that additional deficiencies are discovered. In accordance with LSA-R.S. 38:2248(B), any punch list generated during a construction project shall include the cost estimates for the particular items of work the design professional has developed based on the mobilization, labor, material, and equipment costs of correcting each punch list item. The design professional shall retain his working papers used to determine the punch list items cost estimates should the matter be disputed later. The contract agency shall not withhold from payment more than the value of the punch list. Punch list items completed shall be paid upon the expiration of the forty-five (45) day lien period. The provisions of this Section shall not be subject to waiver.
- 29.04 Upon determination of substantial completeness with the punch list, the Contract Time is interrupted and the Contractor is given a reasonable time not to exceed thirty (30) consecutive calendar days to effect final completion by correcting or completing all of those items listed on the punch list. If the items on the punch list are not completed in a satisfactory manner within the thirty day period, then the Contract Time will begin to run again and will include for purposes of determining liquidated damages the thirty day period the grace period being withdrawn.
- 29.05 Upon receipt by Owner of written determination that all work embraced by the contract has been completed in a satisfactory manner, the Owner shall provide a written acceptance to Contractor who shall record Owner's written acceptance with the recorder of Mortgages, St. Tammany Parish. The Contractor shall properly prepare, submit and pay for all costs associated with said Acceptance. The Contractor is also responsible for preparation, re-submission and payment of any and all updated certificates.
- 29.06 Retainage monies, minus those funds deducted in accordance to the requirements of this agreement including but not limited to Paragraph 28.10, shall be due Contractor not earlier than forty-six (46) calendar days after recordation of certificate of Owner's acceptance provided the following:
- (1) Contractor shall prepare, secure, pay for and submit clear lien and privilege certificate, signed and sealed by Clerk of Court or Recorder of Mortgages, Parish of St. Tammany and dated at least forty-six (46) days after recordation of certificate of acceptance;
 - (2) Ensure that the official representative of the Owner has accepted as per LSA-R.S. 38:2241.1, *et seq.* and that all following sub-sections have been properly satisfied as per law;
 - (3) Ensure that all signatures are affixed and that there exists the requisite authority for all signatures;
 - (4) Ensure accurate and proper legal descriptions;
 - (5) Properly identify all parties and/or signatories;
 - (6) Properly identify all mailing addresses;
 - (7) Correctly set for the amount of the contract, together with all change orders;
 - (8) Set out a brief description of the work performed;
 - (9) Reference to any previously recorded contract, lien or judgment inscription that may affect the property;
 - (10) Certification that substantial completion has occurred, together with any applicable date(s);

- (11) Certification that no party is in default and/or that the project has been abandoned.

29.07 After securing the clear lien and privilege certificate the Contractor shall prepare its final application for payment and submit to Owner. The Owner shall approve application for payment, or state its objections in writing and forward to Contractor for resolution.

30.00 NOTICE AND SERVICE THEREOF

30.01 Any Notice to Contractor from the Owner relative to any part of this Contract shall be in writing and shall be considered delivered and the service thereof completed when said notice is posted; by certified mail, return receipt requested to the said Contractor at its last given address, or delivered in person to said Contractor or its authorized representative on the Work.

31.00 INTENTION OF THESE GENERAL CONDITIONS

31.01 These General Conditions shall be applicable to all contracts entered into by and between the Owner and Contractors, except as may be altered or amended with the consent of the Owner, and/or provided for in the Special Conditions of each contract. Contractor shall be presumed to have full knowledge of these General Conditions which shall be applicable to all contracts containing these General Conditions, whether Contractor has obtained a copy thereof or not.

32.00 SEVERABILITY

32.01 If any one or more or part of any of the provisions contained herein and/or in the Specifications and Contract for the Work shall for any reason be held invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions of this Agreement or attachment, but it shall be construed as if such invalid, illegal, or unenforceable provision or part of a provision had never been contained herein.

32.02 CHANGING THESE CONDITIONS: Owner reserves the right to change or modify these General Conditions as it deems best, or as required by law. The General Conditions may also be modified for a particular project by the use of Special Conditions prior to the issuance of the Advertisement for Bid. However, once an advertisement for bid is made for any specific project, any changes to the General Conditions as they affect that specific project must be made in writing and issued via an addendum in accordance with State Law.

33.00 LAW OF THE STATE OF LOUISIANA

33.01 The Contract Documents shall be governed by the Law of the State of Louisiana.

33.02 The Contractor agrees to pay reasonable attorney's fees and other reasonable attendant costs, in the event that it becomes necessary for the Owner to employ an attorney in order to enforce compliance with or any remedy relating to any covenants, obligations, or conditions imposed upon the Contractor by this Agreement. Attorney fees shall be based upon the prevailing hourly rate of attorney rates in the private sector. In no case shall the hourly rate be less than \$175.00 per hour. All attorney fees collected shall be paid the operating budget of the Office of the Parish President.

33.03 The jurisdiction and venue provisions shall apply to all contractors, sureties, and subcontractors. The 22nd Judicial District for the Parish of St. Tammany shall be the court of exclusive jurisdiction and venue for any dispute arising from these General Conditions and/or any contract executed in conjunction with these General Conditions. All parties specifically waive any rights they have or may have for removal of any disputes to Federal Court, or transfers to different State District Court.

33.04 Contractor warrants that it has and/or had received a copy of these General Conditions at all times material hereto; Contractor further agrees that it has read and fully and completely

understands each and every condition herein.

33.05 The property description will be more fully set out by an attached exhibit.

33.06 The Contractor warrants that it has the requisite authority to sign and enter this agreement.

33.07 It is specifically understood and agreed that in the event Contractor seeks contribution from the Parish or pursues its legal remedies for any alleged breach of this agreement by the Parish, then the following list of damages SHALL NOT BE RECOVERABLE BY CONTRACTOR. This list includes, but is not limited to:

1. indirect costs and/or expenses;
2. direct costs and/or expenses;
3. time-related costs and/or expenses;
4. award of extra days;
5. costs of salaries or other compensation of Contractor's personnel at Contractor's principal office and branch offices;
6. expenses of Contractor's principal, branch and/or field offices;
7. any part of Contractor's capital expenses, including any interest on Contractor's capital employed for the work;
8. any other charges related to change orders;
9. overhead and general expenses of any kind or the cost of any item not specifically and expressly included in Cost of Work.

33.08 DEFAULT AND WAIVERS

It is understood that time is of the essence. It is specifically understood between the parties that Contractor waives any and all notice to be placed in default by the Owner. This subsection shall supersede and prime any other subsection herein above that is in conflict. The Owner specifically reserves its right and specifically does not waive the requirement to be placed in default by the Contractor as per law.

33.09 St. Tammany Parish Government contracts to be awarded are dependent on the available funding and/or approval by members designated and/or acknowledged by St. Tammany Parish Government. At any time St. Tammany Parish Government reserves the right to cancel the award of a contract if either or both of these factors is deficient.

33.10 It is the Parish's policy to provide a method to protest exclusion from a competition or from the award of a contract, or to challenge an alleged solicitation irregularity. It is always better to seek a resolution within the Parish system before resorting to outside agencies and/or litigation to resolve differences. All protests must be made in writing, and shall be concise and logically presented to facilitate review by the Parish. The written protest shall include:

1. The protester's name, address, and fax and telephone numbers and the solicitation, bid, or contract number;
2. A detailed statement of its legal and factual grounds, including a description of the resulting prejudice to the protester;
3. Copies of relevant documents;
4. All information establishing that the protester is an interested party and that the protest is timely; and
5. A request for a ruling by the agency; and a statement of the form of relief requested.

The protest shall be addressed to Director of Procurement, St. Tammany Parish Government, P.O. Box 628, Covington, LA 70434.

The protest review shall be conducted by the Parish Procurement Department.

Only protests from interested parties will be allowed. Protests based on alleged solicitation improprieties that are apparent before bid opening, or the time set for receipt of initial

proposals must be filed with and received by the Procurement Department BEFORE those deadlines.

Any other protest shall be filed no later than ten (10) calendar days after the basis of the protest is known, or should have been known (whichever is earlier).

The Parish will use its best efforts to resolve the protest within thirty (30) days of the date that it is received by the Parish. The written response will be sent to the protestor via mail and, fax, if a fax number has been provided by the protestor. The protester can request additional methods of notification.

CORPORATE RESOLUTION

EXCERPT FROM MINUTES OF MEETING OF THE BOARD OF DIRECTORS OF INCORPORATED.

AT THE MEETING OF DIRECTORS OF _____,
INCORPORATED, DULY NOTICED AND HELD ON _____,
A QUORUM BEING THERE PRESENT, ON MOTION DULY MADE AND SECONDED. IT
WAS:

RESOLVED THAT _____, BE AND IS HEREBY
APPOINTED, CONSTITUTED AND DESIGNATED AS AGENT AND ATTORNEY-IN-
FACT OF THE CORPORATION WITH FULL POWER AND AUTHORITY TO ACT ON
BEHALF OF THIS CORPORATION IN ALL NEGOTIATIONS, BIDDING, CONCERNS
AND TRANSACTIONS WITH THE PARISH OF ST. TAMMANY OR ANY OF ITS
AGENCIES, DEPARTMENTS, EMPLOYEES OR AGENTS, INCLUDING BUT NOT
LIMITED TO, THE EXECUTION OF ALL BIDS, PAPERS, DOCUMENTS, AFFIDAVITS,
BONDS, SURETIES, CONTRACTS AND ACTS AND TO RECEIVE ALL PURCHASE
ORDERS AND NOTICES ISSUED PURSUANT TO THE PROVISIONS OF ANY SUCH BID
OR CONTRACT, THIS CORPORATION HEREBY RATIFYING, APPROVING,
CONFIRMING, AND ACCEPTING EACH AND EVERY SUCH ACT PERFORMED BY
SAID AGENT AND ATTORNEY-IN-FACT.

I HEREBY CERTIFY THE FOREGOING TO BE
A TRUE AND CORRECT COPY OF AN
EXCERPT OF THE MINUTES OF THE ABOVE
DATED MEETING OF THE BOARD OF
DIRECTORS OF SAID CORPORATION, AND
THE SAME HAS NOT BEEN REVOKED OR
RESCINDED.

SECRETARY-TREASURER

DATE

Certificate of Insurance Instructions

The below information is intended to guide Contractors on what information is needed to be listed on the Certificate of Insurance. All Insurance limit requirements can be found in Section 06.

- **Certificate Holder** – STPG must be listed as the certificate holder, and it must include our address of: P.O. Box 628, Covington, LA 70434
 - Reason: the certificate holder is where cancellations of coverage, or updated certificates are mailed. If a vendor terminates a policy, we will be notified.
- **Additional Insured** – We must be named as an additional insured so that if there is a lawsuit against the vendor for a project, their coverage will cover STPG as well if we are named in the lawsuit.
 - We must be named in the Description of Operations box – reason: there could be other additional insureds, and we want to have no doubt that we are one of the additional insureds.
 - We must be named as additional insured on the following coverages: General liability, Auto Liability, Umbrella/Excess Liability, Environmental/Pollution Liability.
 - Professional Liability policies do not allow for an additional insured by most carriers.
- **Project Name & Contract #** - We need this listed in the Description of Operations, again so that if there is a lawsuit, we have proof that coverage was active for that project.
- **Waiver of Subrogation** – This can either be listed in the Description of Operations or checked off in the appropriate columns.

From the Insurance Requirement form:

Waiver of Subrogation: The Provider's insurers will have no right of recovery or subrogation against the Parish of St. Tammany, it being the intention of the parties that all insurance policy(ies) so affected shall protect both parties and be the primary coverage for any and all losses covered by the below described insurance.

- **Owners Protective Liability (OPL) or (OCP)** – Certificate of Insurance for OCP names St. Tammany Parish Government as the Insured and the Certificate Holder.
- Sample of Certificate of Insurance (COI) can be found on page 2.
- Please refer to this section in the package labeled “Insurance Requirements” for limits required for this project

Any questions regarding insurance requirements please contact the Risk Department at 985-898-5226 or email riskman@stpgov.org



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:		FAX (A/C, No):	
	PHONE (A/C, No, Ext):			
INSURED	E-MAIL ADDRESS:			
	INSURER(S) AFFORDING COVERAGE			NAIC #
	INSURER A :			
	INSURER B :			
	INSURER C :			
	INSURER D :			
INSURER E :				
INSURER F :				

COVERAGES**CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	GENERAL LIABILITY						EACH OCCURRENCE \$
	☐ COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence) \$
	☐ CLAIMS-MADE ☐ OCCUR						MED EXP (Any one person) \$
							PERSONAL & ADV INJURY \$
							GENERAL AGGREGATE \$
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG \$
	☐ POLICY ☐ PRO-JECT ☐ LOC						\$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident) \$
	☐ ANY AUTO						BODILY INJURY (Per person) \$
	☐ ALL OWNED AUTOS	☐ SCHEDULED AUTOS					BODILY INJURY (Per accident) \$
	☐ HIRED AUTOS	☐ NON-OWNED AUTOS					PROPERTY DAMAGE (Per accident) \$
							\$
	UMBRELLA LIAB						EACH OCCURRENCE \$
	☐ EXCESS LIAB	☐ OCCUR					AGGREGATE \$
	☐ DED ☐ RETENTION \$	☐ CLAIMS-MADE					\$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY						WC STATUTORY LIMITS ☐ OTH-ER ☐
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)	☐ Y ☐ N	☐ N/A				E.L. EACH ACCIDENT \$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE \$
							E.L. DISEASE - POLICY LIMIT \$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Project Name:

Contract #:

(Name St. Tammany Parish Government as an additional insured).

CERTIFICATE HOLDER**CANCELLATION**

St. Tammany Parish Government
P.O. Box 628
Covington, LA 70434

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Bond No.: _____

**CONTRACT AGREEMENT
BETWEEN PARISH AND CONTRACTOR**

BY: ST. TAMMANY PARISH GOVERNMENT

**UNITED STATES OF
AMERICA**

WITH:

**STATE OF LOUISIANA
ST. TAMMANY PARISH**

This agreement is entered into this _____ day of _____,
20____, by and between: «txtREQCompanyName», hereinafter called the "Contractor", whose
business address is «txtREQAddress», «txtREQCity», «txtREQState» «txtREQZip» and the St.
Tammany Parish Government, hereinafter called the "Parish", whose business address is P.O.
Box 628, Covington, LA 70434 (collectively, the "Parties") for «txtPROJECTNAME» project.
Witnessed that the Contractor and the Parish, in consideration of premises and the mutual
covenants, consideration and agreement herein contained, agree as follows:

1. SCOPE OF SERVICES

The Contractor shall furnish all labor and materials and perform all of the work required to build, construct and/or complete in a thorough and workmanlike manner:

«txtScopeSummary»

2. CONSTRUCTION DOCUMENTS

It is recognized by the Parties herein that said Construction Documents, including by way of example and not of limitation, the plans and Specifications, General Conditions, Supplementary General Conditions, any addenda thereto, the drawings (if any), and the bid, quote or other procurement documents impose duties and obligations upon the Parties herein, and said Parties thereby agree that they shall be bound by said duties and obligations. For these purposes, all of the provisions contained in the aforementioned Construction Documents are incorporated herein by reference with the same force and effect as though said Construction Documents were herein set out in full. Copies of the aforementioned Construction Documents are in the possession of both the Contractor and the Parish for reference.

3. TIME FOR COMPLETION

The work shall be commenced on a date to be specified in a written order of the Parish and shall be completed within «intCompletionTime» calendar days from and after said date.

4. COMPENSATION TO BE PAID TO THE CONTRACTOR

The Parish will pay and the Contractor will accept in full consideration for the performance of the Contract the sum of «curREQGrandTotal» dollars.

5. PERFORMANCE AND PAYMENT BOND

To these presents personally came and intervened _____,
(Name of Attorney in Fact)
herein acting for _____, a corporation organized
(Surety)
and existing under the laws of the State of _____, and duly authorized to transact business in the State of Louisiana, as surety, who declared that having taken cognizance of this Contract and of the Construction Documents mentioned herein, he hereby in his capacity as its Attorney in Fact obligates his company, as surety for the said Contractor, unto the said Parish, up to the sum of «curREQGrandTotal». The condition of this performance and payment bond

shall be that should the Contractor herein not perform the Contract in accordance with the terms and conditions hereof, or should said Contractor not fully indemnify and save harmless the Parish from all costs and damages which he may suffer by said Contractor's non-performance or should said Contractor not pay all persons who have fulfilled obligations to perform labor and/or furnish materials in the prosecution of the work provided for herein, including by way of example, workmen, laborers, mechanics, and furnishers of materials, machinery, equipment and fixtures, then said surety agrees and is bound to so perform the Contract and make said payment(s).

Contractor and Parish specifically agree to and recognize (1) the statutory employer relationship existing between the Parish and any employees performing work under this Contract as employees of the Contractor or employees of the "Sub-Contractor", and (2) that the work performed by the employees of the Contractor and the employees of the "Sub-Contractor" is part of the Parish's business, occupation or trade and is essential to the ability of the Parish to generate their products or services, all of which is in accordance with LSA-R.S. 23:1061, and as may be amended.

6. LIABILITY AND INDEMNIFICATION

A. Duty to Defend

Upon notice of any claim, demand, suit, or cause of action against the Parish, alleged to arise out of or be related to this Contract, Contractor shall investigate, handle, respond to, provide defense for, and defend at its sole expense, even if the claim, demand, suit, or cause of action is groundless, false, or fraudulent. The Parish may, but is not required to, consult with or assist the Contractor, but this assistance shall not affect the Contractor's obligations, duties, and responsibilities under this section. Contractor shall obtain the Parish's written consent before entering into any settlement or dismissal.

B. Contractor Liability

Contractor shall be liable without limitation to the Parish for any and all injury, death, damage, loss, destruction, damages, costs, fines, penalties, judgments, forfeitures, assessments, expenses (including attorney fees), obligations, and other liabilities of every name and description, which may occur or in any way arise out of any act or omission of Contractor, its owners, agents, employees, partners or subcontractors.

C. Force Majeure

It is understood and agreed that neither party can foresee the exigencies beyond the control of each party which arise by reason of an Act of God or force majeure; therefore, neither party shall be liable for any delay or failure in performance beyond its control resulting from an Act of God or force majeure. The Parish shall determine whether a delay or failure results from an Act of God or force majeure based on its review of all facts and circumstances. The parties shall use reasonable efforts, including but not limited to, use of continuation of operations plans (COOP), business continuity plans, and disaster recovery plans, to eliminate or minimize the effect of such events upon the performance of their respective duties under this Contract.

D. Indemnification

Contractor shall fully indemnify and hold harmless the Parish, without limitation, for any and all injury, death, damage, loss, destruction, damages, costs, fines, penalties, judgments, forfeitures, assessments, expenses (including attorney fees), obligations, and other liabilities of every name and description, which may occur or in any way arise out of any act or omission of Contractor, its

owners, agents, employees, partners or subcontractors. The Contractor shall not indemnify for the portion of any loss or damage arising from the Parish's act or failure to act.

E. Intellectual Property Indemnification

Contractor shall fully indemnify and hold harmless the Parish, without limitation, from and against damages, costs, fines, penalties, judgments, forfeitures, assessments, expenses (including attorney fees), obligations, and other liabilities in any action for infringement of any intellectual property right, including but not limited to, trademark, trade-secret, copyright, and patent rights.

When a dispute or claim arises relative to a real or anticipated infringement, the Contractor, at its sole expense, shall submit information and documentation, including formal patent attorney opinions, as required by the Parish.

If the use of the product, material, service, or any component thereof is enjoined for any reason or if the Contractor believes that it may be enjoined, Contractor, while ensuring appropriate migration and implementation, data integrity, and

minimal delays of performance, shall at its sole expense and in the following order of precedence: (i) obtain for the Parish the right to continue using such product, material, service, or component thereof; (ii) modify the product, material, service, or component thereof so that it becomes a non-infringing product, material, or service of at least equal quality and performance; (iii) replace the product, material, service, or component thereof so that it becomes a non-infringing product, material, or service of at least equal quality and performance; or, (iv) provide the Parish monetary compensation for all payments made under the Contract related to the infringing product, material, service, or component, plus for all costs incurred to procure and implement a non-infringing product, material, or service of at least equal quality and performance. Until this obligation has been satisfied, the Contractor remains in default.

The Contractor shall not be obligated to indemnify that portion of a claim or dispute based upon the Parish's unauthorized: i) modification or alteration of the product, material or service; ii) use of the product, material or service in combination with other products not furnished by Contractor; or, iii) use of the

product, material or service in other than the specified operating conditions and environment.

7. MODIFICATION OF CONTRACT TERMS

Provided that any alterations which may be made in the terms of the Contract or in the work to be done under it, or the giving by the Parish of any extensions of time for the performance of the Contract, or any other forbearance on the part of either the Parish or the Contractor to the other shall not in any way release the Contractor or the Surety from their liability hereunder, notice to the Surety of any such alterations, extensions or other forbearance being hereby waived.

8. TERMINATION, CANCELLATION, AND SUSPENSION

A. Termination

The term of this Contract shall be binding upon the Parties hereto until the work has been completed by the Provider and accepted by the Parish, and all payments required to be made to the Provider have been made. But, this Contract may be terminated upon thirty (30) days written notice under any or all of the following conditions:

- 1) By mutual agreement and consent of the Parties hereto;
- 2) By the Parish as a consequence of the failure of the Provider to comply with the terms, progress, or quality of the work in a satisfactory manner, proper allowances being made for circumstances beyond the control of the Provider;
- 3) By either party upon failure of the other party to fulfill its obligations as set forth in this Contract;
- 4) By the Parish with less than thirty (30) days' notice due to budgetary reductions and changes in funding priorities by the Parish;
- 5) In the event of the abandonment of the project by the Parish.

Upon termination, the Provider shall be paid for actual work performed prior to the Notice of Termination, either based upon the established hourly rate for services actually performed, or on a pro-rata share of the basic fee based upon the phase or percentage of work actually completed, depending on the type of compensation previously established under this Contract.

Upon Termination, the Provider shall deliver to the Parish all original documents, notes, drawings, tracings, computer files, and other files pertaining to this Contract or the Work performed, except for the Provider's personal and administrative files.

B. Cancellation

The continuation of this Contract is contingent upon the appropriation of funds to fulfill the requirements of the Contract by the Parish. If the Parish fails to appropriate sufficient monies to provide for the continuation of this or any other Contract, or if such appropriation is reduced by the veto of Parish President by any means provided in the appropriations Ordinance to prevent the total appropriation for the year from exceeding revenues for that year, or for any other lawful purpose, and the effect of such reduction is to provide insufficient monies for the continuation of the Contract, the Contract shall terminate on the date of the beginning of the first fiscal year for which funds are not appropriated. It is understood and agreed that paragraph (9)(C) below may preempt this paragraph, all at the exclusive and unilateral option of the Parish.

C. Suspension

Should the Parish desire to suspend the work, but not definitely terminate the Contract, the Parish shall supply the Provider with thirty (30) days' notice. The Parish will also

supply Provider thirty (30) days' notice that the work is to be reinstated and resumed in full force. Provider shall receive no additional compensation during the suspension period. The Parties may revisit the terms of this Contract during the suspension period. The suspension shall not exceed six (6) months, unless mutually agreed upon between the Parties.

- D.** Failure to complete or deliver within the time specified or to provide the services as specified in the bid or response will constitute a default and may cause cancellation of the contract. Where the Parish has determined the contractor to be in default. The Parish reserves the right to purchase any or all products or services covered by the contract on the open market and to charge the contractor with the cost in excess of the contract price. Until such assessed charges have been paid, no subsequent bid or response from the defaulting contractor will be considered.
- E.** In the event of a default and/or breach of this agreement and this matter is forwarded to legal counsel, then the prevailing party may be entitled to collect a reasonable attorney fees and all costs associated therewith whether or not litigation is initiated. Attorney fees shall be based upon the current, reasonable prevailing rate for counsel in the private

sector. The Parties agree to be responsible for such attorney fees, together for all with legal interest from date of agreement breach, plus all costs of collection.

- F.** Termination or cancellation of this agreement will not affect any rights or duties arising under any term or condition herein.
- G.** As to the filing of voluntary or involuntary bankruptcy by Provider, Provider agrees that if any execution or legal process is levied upon its interest in this Contract, or if any liens or privileges are filed against its interest, or if a petition in bankruptcy is filed against it, or if it is adjudicated bankrupt in involuntary proceedings, or if it should breach this Contract in any material respect, the Parish shall have the right, at its unilateral option, to immediately cancel and terminate this Contract. In the event that Provider is placed in any chapter of bankruptcy, voluntarily or involuntarily, or otherwise triggers any provision of the preceding sentence herein, it is understood and agreed that all materials, goods and/or services provided shall be and remain the property of the Parish. All rights of Provider as to goods, wares, products, services, materials and the like supplied to Parish shall be deemed forfeited.

9. RECORDATION OF CONTRACT

Contractor authorizes Parish to deduct from any payment due herein costs and service fees for recordation of this Contract in full or an excerpt hereof, or any revisions or modifications thereof as required by law.

10. AUTHORITY TO ENTER CONTRACT

The undersigned representative of Contractor warrants and personally guarantees that he/she has the requisite and necessary authority to enter and sign this Contract on behalf of the corporate entity, partnership, etc. The undersigned Parties warrant and represent that they each have the respective authority and permission to enter this Contract. In the event that Contractor is a member of a corporation, partnership, L.L.C., L.L.P., or any other juridical entity, the Parish requires, as an additional provision, that Contractor supply a certified copy of a corporate resolution authorizing the undersigned to enter and sign this Contract. Another option to fulfill this additional provision he/she can supply Louisiana Secretary of State Business filings confirming that he/she is a managing member of a

Bond No.:_____

corporation, partnership, L.L.C., L.L.P., or any other juridical entity which
authorizes the undersigned to enter and sign this Contract.

In Witness thereof, the Parties hereto on the day and year first above written have
executed this Contract in **One (1)** counterparts, each of which shall, without proof or
accountancy for the other counterparts, be deemed an original thereof.

WITNESSES:

CONTRACTOR:

Signature

Signature

Print Name

Print Name

Signature

Title

Print Name

Date

Bond No.: _____

WITNESSES:

**ST. TAMMANY PARISH
GOVERNMENT:**

Signature

Print Name

Signature

Print Name

Michael B. Cooper
Parish President

Date

APPROVED BY:

Assistant District Attorney- Civil
Division

(Surety)

Signature

Date

Print Name

Section 12

Department of the Interior (DOI) (GOMESA) 30 CFR 1219.410

1. Equal Employment Opportunity

The Contractor agrees to comply with Executive Order 11246 of September 24, 1965 entitled "Equal Employment Opportunity," as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41 CFR Chapter 60).

2. Copeland Anti-Kickback Act

The Contractor agrees to comply with the Copeland "Anti-Kickback" Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR Part 3). These regulations are herein incorporated by reference in this contract.

3. Davis Bacon and Related Acts

The Contractor agrees to comply with the Davis-Bacon Act (40 U.S.C. 276a to 276a-7) as supplemented by Department of Labor regulations (29 CFR Part 5). These regulations are herein incorporated by reference in this contract.

4. Contract Work Hours and Safety Standards Act

The Contractor agrees to comply with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330) as supplemented by Department of Labor regulations (29 CFR Part 5). These regulations are herein incorporated by reference in this contract.

5. Rights to Inventions, Copyrights, and Rights in Data

The Contractor agrees to comply with requirements and regulations pertaining to copyrights and rights in data.

6. Records Access and Retention

The Contractor agrees to grant access by Parish, the State, Federal agencies, the Comptroller General of the United States, or any of their duly authorized representatives to any books, documents, papers, and records of the contractor which are directly pertinent to that specific contract for the purpose of making audit, examination, excerpts, and transcriptions.

The Contractor agrees to retain all required records for three (3) years after final payments have been made and/or all other pending matters are closed.

7. Debarment and Suspension

The Contractor is prohibited from awarding any subcontract expected to equal or exceed \$25,000 to persons (individuals or organizations) listed on the Excluded Parties List System (EPLS) which is available at www.epls.gov.

8. Energy and Environmental Conservation

The Contractor agrees to comply with 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 (Pub. L. 94-163, 89 Stat. 871). [53 FR 8045, 8087, Mar. 11, 1998, as amended at 60 FR 19639, 19641, Apr. 19, 1995; 61 FR 7166, Feb. 26, 1996]. These regulations are herein incorporated by reference in this contract.

9. Reporting

The Contractor agrees to comply with all Federal, State, and Parish requirements and regulations pertaining to reporting on projects receiving Federal, State, or Parish funding.

10. Clean Air and Water Acts

The Contractor agrees to comply with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h)), section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR Part 15). These regulations are herein incorporated by reference in this contract.

11. Legal Remedies

Contracts must include administrative, contractual, and legal remedies for use in cases in which contractors violate or breach contract terms. The contract must also make clear the remedial actions which you may take.

12. Termination

Contracts in excess of \$10,000 must explain the conditions under which you may terminate them for cause or for your convenience, including the process for bringing about the termination and the basis for settlement.

13. Release of Funds

The Contractor agrees that no award, or execution of contract, or Notice to Proceed, will occur until a Release of Funds is issued by HUD for CDBG-DR Disaster Recovery funds.

14. Section 3

The Contractor agrees to comply with all applicable standards, orders, or requirements issued under Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3).

Section 13
Technical Specifications

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SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS/REQUIREMENTS INCLUDED

- A. Work covered under these Plans and Specifications includes all labor, materials, tools, equipment, plant, supplies, superintendence, insurance, incidentals, and services necessary or required to fully complete the work for “Lower Tchefuncte River Breakwater Project” in accordance with these Specifications and in conformity to the lines, grades, and elevations shown on the Plans.
- B. The Contractor shall furnish all labor, materials, equipment, tools, services, and incidentals to complete all work required by these specifications and as shown on the drawings.
- C. The Contractor shall perform the work complete, in place and ready for continuous service, and shall include repairs, replacements, and restoration required as a result of damages caused during this construction.
- D. The Contractor shall furnish and install all materials, equipment, and labor which is reasonably and properly inferable and necessary for the proper completion of the work, whether specifically indicated in the Contract Documents or not.
- E. Publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only. Louisiana Department of Transportation and Development (DOTD) Publications DOTD Louisiana Standard Specifications for Roads and Bridges (2016)
- F. Bidders shall attend the pre-bid conference and be thoroughly familiar with job conditions, particularly the soft soils, shallow water, and exposed marine conditions, prior to submitting a bid. Failure to give proper consideration to these conditions when preparing bids shall not constitute grounds for additional compensation.
- G. Owner will provide the following permits (see Appendix B):
 - i. LA Department of Natural Resources Coastal Use Permit
 - ii. U.S. Army Corps of Engineers (USACE) 10/404 Permit

1.02 CONTRACTS

The Contract consists of a unit bid price. The Bidder shall complete the schedule of all unit prices included in the Bid Form and shall accept all fixed unit prices listed therein. The total Bid will be determined as the sum of the products of the estimated quantity of each item and the unit price bid. The final Contract Price will be subject to adjustment according to final measured, used, or delivered quantities as provided in Division 1, and the unit prices in the bid will apply to such final quantities except that unit prices will be subject to change by Change Order if quantities vary more than twenty-five percent (25%).

All operations in connection with the Work shall be in accordance with Subsection 107.09, "Navigable Waters and Wetlands," of the Louisiana Standard Specification for Roads and Bridges, 2016. Failure of Contractor to become familiar with all terms, conditions, and provisions of the rules and regulations applicable to the Work shall not relieve the Contractor of their responsibility under the Contract. Navigable depths shall not be impaired except as specified and allowed by laws regulating navigation in the area.

1.03 WORK SEQUENCE

- A. Work Sequence shall be at the discretion of the contractor.

1.04 CONSTRUCTION AREAS

- A. Contractor shall limit his use of the construction areas for work and storage to allow for:
 - 1) Commercial Use.
 - 2) Owner use.
 - 3) Public use.
- B. Coordinate use of work site under direction of Engineer.
- C. Assume full responsibility for the protection and safekeeping of products under this contract, stored on the site.
- D. Move any stored products, under Contractor's control, which interfere with operations of the Owner or separate contractor.
- E. Obtain and pay for the use of additional storage or work areas needed for operations.
- F. Contractor shall remove all debris, trash, and garbage from the site within 15 days after completion of the construction activities. Refer to paragraph SP 19, "Clean-Up," of the General Conditions.

- G. Contractor shall not deposit dredged or excavated material into areas other than those shown on the Plans or stated in permits without prior written approval of Engineer.
- H. Construction materials unloaded from barges, trucks, or railroad cars that cannot be immediately used for construction shall be stored in approved storage areas. Storage areas shall be located reasonably near the job site and approved by Owner. The storage areas shall be prepared by Contractor and made relatively smooth in order that all of the stored material may later be recovered free from dirt or other foreign materials.
- I. Contractor shall provide a daily record of activities starting on the notice to proceed date and ending on the date of final acceptance. Records shall document general quantity and locations of materials installed, percent project completion, and adverse weather or other problems that cause delays.

1.05 OWNER OCCUPANCY

- A. Contractor shall at all times conduct his operations as to insure the least inconvenience to the general public.

1.06 EXISTING FEATURES

- A. Contractor shall be responsible for investigating, locating, and protecting all existing facilities, structures, services, and pipelines on, above, or under the surface of the area where dredging, excavating, placement, spudding, or pile driving operations are to be performed. Owner will not be held responsible for damage to Contractor's equipment, employees, subcontractors, adjacent property owners, or anyone else connected with the project due to encountering objects underground, above or below the water line or seafloor.
- B. Existing features, where indicated on the Plans, are shown only to the extent such information was made available to or discovered by Engineer during preparation of the Plans. There is no guarantee as to the accuracy or completeness of such information, and all responsibility for the accuracy and completeness is expressly disclaimed. Contractor shall identify all pipelines and other utilities in the project area and along access routes. The locations of pipelines and overhead utilities shown on the drawings are approximate. If Contractor fails to discover an installation underground, above or below the water line or seafloor and damages the same, the Contractor shall be responsible for the cost of the repair.
- C. Soil boring logs are provided in Appendix A. These data represent the most recent information available. However, variations may exist in the surface and subsurface conditions between sample locations. Contractor shall draw their own

conclusions as to the character of the in-situ soil material. Refer to General Note 6 on Sheet 2 of the drawings.

- i. Owner and Engineer disclaim any responsibility for the accuracy, true location and extent of the geotechnical investigation that has been prepared by others. They further disclaim responsibility for interpretation of that data by bidders. Soil boring logs are bound in this project manual for the bidders' convenience only and are not and shall not constitute part of the bidding and Contract Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

- A. Refer to Proposal Form
- B. Payment shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labors, operations, and incidentals appurtenant to complete the work being described, as necessary to complete the various items of the work all in accordance with the requirement of the Contract Documents, including all costs of compliance with the regulations of public agencies having jurisdiction. The Contractor is hereby on notice that no separate payment will be made for any item not specifically called out, but that is required to properly complete the project.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

PART 4 – MEASUREMENT AND PAYMENT

4.01 SCOPE

The Total Bid Price shall cover all work required by the Contract Documents. All costs in connection with the proper and successful completion of the work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction equipment, and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in the unit and lump sum prices bid. All work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices bid.

4.02 ESTIMATED QUANTITIES

All estimated quantities stipulated in the Bid Form or other Contract Documents, as listed in the Louisiana Uniform Public Works Bid Form Unit Prices Table, are approximate and are to be used only (a) as a basis for estimating the probable cost of the work, and (b) for the purpose of comparing the bids submitted for the work. The actual amounts of work done and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done and materials furnished. The Owner does not expressly or by implication agree that the nature of the materials encountered below the surface of the ground, or the actual quantities of material encountered or required will correspond therewith and reserves the right to increase or decrease any quantity, or to eliminate any quantity, as Owner may deem necessary. No compensation will be given for any quantities not used.

4.03 MOBILIZATION AND DEMOBILIZATION (ITEM 1)

Measurement for payment for mobilization and demobilization will be on a lump-sum basis as specified herein. Payment for mobilization and demobilization shall cover all preparatory work, obtaining all permits, insurance and bonds, movement of personnel, equipment, supplies and incidentals to the project site, preconstruction photographs and videos, the establishment of temporary offices, magnetometer survey, and other construction facilities necessary for work on this project. It shall include removal of all personnel, equipment, supplies and incidentals from the project site, removal of temporary offices and other construction facilities necessary for work on this project, all as required for the proper performance and completion of the work. Payment will be made at the contract lump sum price, subject to the following provisions: Sixty percent (60%) of the mobilization/demobilization lump sum price will be paid to the Contractor upon complete mobilization to the Project Site. The remaining forty percent (40%) will be paid to the Contractor upon final acceptance of the Work and removal of all equipment and unused materials.

No price adjustments will be made for this item due to changes in the work.

4.04 CONSTRUCTION SURVEYING (ITEM 2)

Measurement and payment for Item No. 2 shall be by the contract lump sum price and shall constitute full compensation for moving personnel, equipment, supplies, and other incidentals related to this item of the Work. Forty percent (40%) of the lump sum price for Surveying will be paid to the Contractor upon completion of the Initial Preconstruction Survey. Forty percent (40%) of the lump sum price for Surveying will be paid to the Contractor upon completion of the Progress Surveys. The remaining twenty percent (20%) will be paid to the Contractor upon completion of the As-built Survey.

4.05 GEOTEXTILE FABRIC (ITEM 3)

Measurement and payment for Item No. 3 shall be per square yard in place as delineated on the drawings. Overlaps will be measured as a single layer. Price and payment shall constitute full compensation for providing all plant, labor, material, and equipment and performing all operations necessary for the complete and satisfactory installation of the geotextile fabric. No payment shall be made for geotextile fabric that is rejected or damaged due to CONTRACTOR fault or negligence.

4.06 GEOGRID (ITEM 4)

Measurement and payment for Item No. 4 shall be per square yard in place as delineated on the drawings. Overlaps will be measured as a single layer. Price and payment shall constitute full compensation for providing all plant, labor, material, and equipment and performing all operations necessary for the complete and satisfactory installation of the geogrid. No payment shall be made for geotextile fabric that is rejected or damaged due to CONTRACTOR fault or negligence.

4.07 GRADED RIP RAP (440 LB GRADATION) (ITEM 5)

Measurement and payment for Item No. 5 shall be per ton and include all labor, materials, and equipment necessary to place the rip rap as detailed in the plans and specifications. Barge tickets to be turned in to Engineer for payment. Final acceptance is contingent on placement tolerances with respect to finished elevations of armor stone which shall be plus or minus 0.3 ft unless otherwise noted. Stone placement shall maximize contact between individual stones on all sides with each stone having at least three points of contact with other stones.

4.08 SETTLEMENT PLATES (ITEM 6)

Measurement and payment for Item No. 6 shall be per each settlement plate installed and accepted and shall include all labor and materials necessary for installation.

4.09 LIGHTED DAYBEACONS (ITEM 7)

Measurement and payment for Item No. 7 shall be per each installed and shall include the cost of all labor and materials necessary for installation.

4.10 ACCESS AND FLOTATION CHANNELS

Any flotation channel dredging required for access to the site shall be considered incidental to the contractor's mobilization cost for any base bid or alternate. This shall include costs associated with the installation, maintenance, and permitting of temporary warning signs.

END OF SECTION

SECTION 01152

REQUESTS FOR PAYMENT

PART I - GENERAL

1.01 REQUIREMENTS INCLUDED

Submit applications for payment to the Engineer in accord with the schedule established by Conditions of the Contract.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Agreement between owner and Contractor: Unit Price.
- B. Conditions of the Contract: Progress Payments, Retainages and Final Payment.
- C. Section 01380: Construction Photographs and Video Taping.
- D. Section 01700: Contract Closeout.

1.03 FORMAT AND DATA REQUIRED

- A. Submit payment requests in the form required by owner with itemized data typed on 8 ½ x 11 white paper continuation sheets.
- B. Provide itemized data on continuation sheet: format, schedules, line items and values.

1.04 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

- A. All payment requests must be accompanied by a completed pay request checklist and must include a signed affidavit regarding previous payments received, a short progress narrative describing work performed since previous payment submittal, progress photos as per Section 01380, current project schedule and invoices for any stored materials billed. The pay request checklist form shall be as provided on page 01152-3. All items required on the checklist must be included with each pay request for the request to be considered.
- B. When the Owner or the Engineer requires additional substantiating data, the Contractor shall submit suitable information, with a cover letter.
- C. Submit one copy of all data required with a cover letter for each monthly pay request. Any additional substantiating data requested shall also be submitted as required in Part B above.

1.05 PREPARATION OF APPLICATION FOR FINAL PAYMENT

- A. Fill in application form as specified for progress payments.
- B. Use continuation sheet for presenting the final statement of accounting as specified in section 01700 - Contract Closeout.

1.06 SUBMITTAL PROCEDURE

- A. Submit applications for payment to the Engineer at the times stipulated in the Agreement.
- B. Number: Two hard copies or one electronic copy of each application.
- C. When the Engineer finds application properly completed and correct, he will transmit certificate for payment to the owner, with copy to Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

PAY REQUEST CHECKLIST
(CONSTRUCTION CONTRACT)

PARTIAL PAY REQUEST:

Construction Schedule (Updated as needed)	_____
Progress Narrative	_____
Schedule of Values	_____
Progress Photos	_____
List of Stored Materials Billed	_____
Invoice for Stored Materials Billed	_____
Insurance for (off Site)	_____
Stored Materials Billed	_____

FINAL PAY REQUEST:

Application for Payment	_____
w/Final Statement of Accounts	_____
Punch List (checked off)	_____
O & M Manuals (Date Submitted)	_____
Record Drawings (Date Submitted)	_____
Clear L & P Certificate	_____
Warranties & Bonds	_____
Consent of Surety to Final Payment	_____
Letter from Contractor stating that	_____
he shall warranty the work for	
one year following date of	
Substantial Completion	_____
Verification of Bond to Remain in	
effect for one year from Final	
Payment	_____

END OF SECTION

SECTION 01153

CHANGE ORDER PROCEDURES

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Promptly implement change order procedures.
 - 1. Provide full written data required to evaluate changes.
 - 2. Maintain detailed records of work done on a time-and-material/force account basis.
 - 3. Provide full documentation to Engineer on request.
- B. Designate in writing the member of Contractor's organization.
 - 1. Who is authorized to accept changes in the Work.
 - 2. Who is responsible for informing others in the contractors employ of the authorization of changes in the Work.
- C. Owner will designate in writing the person who is authorized to execute Change Orders.

1.02 DEFINITIONS

- A. Change order: See General Conditions.

1.03 PRELIMINARY PROCEDURES

- A. Owner or Engineer may initiate changes by submitting a Proposal Request to Contractor. Request will include:
 - 1. Detailed description of the Change, Products, and location of the change in the Project.
 - 2. Supplementary or revised Drawings and Specifications.
 - 3. The projected time span for making the change, and a specific statement as to whether overtime work is, or is not, authorized.
 - 4. A specific period of time during which the requested price will be considered valid.
 - 5. Such request is for information only, and is not an instruction to execute the changes, nor to stop work in progress.
- B. Contractor may initiate changes by submitting a written notice to Engineer, containing:

1. Description of the proposed changes.
2. Statement of the reason for making the changes.
3. Statement of the effect on the Contract Sum and the Contract Time.
4. Statement of the effect on the work of separate contractors.
5. Documentation supporting any change in Contract Sum or Contract Time, as appropriate.

1.04 DOCUMENTATION OF PROPOSALS AND CLAIMS

- A. Support each quotation for a lump-sum proposal, and for each unit price which has not previously been established, with sufficient substantiating data to allow Engineer to evaluate the quotation.
- B. On request, provide additional data to support time and cost computations:
 1. Labor required.
 2. Equipment required.
 3. Products required.
 - a. Recommended source of purchase and unit cost.
 - b. Quantities required.
 4. Taxes, insurance and bonds.
 5. Credit for work deleted from Contract, similarly documented.
 6. Overhead and profit.
 7. Justification for any change in Contract Time.
- C. Support each claim for additional costs, and for work done on a time-and-material/force account basis, with documentation as required for a lump-sum proposal, plus additional information.
 1. Name of the Owner's authorized agent who ordered the work, and date of the order.
 2. Dates and times work was performed, and by whom.
 3. Time record, summary of hours worked, and hourly rates paid.
 4. Receipts and invoices for:
 - a. Equipment used, listing dates and times of use.
 - b. Products used, listing of quantities.
 - c. Subcontracts.

1.05 PREPARATION OF CHANGE ORDERS

- A. Engineer will prepare each Change Order.
- B. Form: Owner's Form, to be provided to the Contractor.
- C. Change Order will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change.

- D. Change Order will provide an accounting of the adjustment in the Contract Sum and in the Contract Time.

1.06 LUMP SUM/FIXED PRICE CHANGE ORDER

- A. Content of Change Orders will be based on, either:
 - 1. Engineer's Proposal Request and contractor's responsive Proposal as mutually agreed between Owner and Contractor.
 - 2. Contractor's Proposal for a change, as recommended by Engineer.
- B. Owner and Engineer will sign and date the Change Order as authorization for the Contractor to proceed with the changes.
- C. Contractor may sign and date the Change Order to indicate agreement with the terms therein.

1.07 UNIT PRICE CHANGE ORDER

- A. Content of Change Orders will be based on, either:
 - 1. Engineer's definition of the scope of the required changes.
 - 2. Contractor's Proposal for a change, as recommended by Engineers.
 - 3. Survey of completed work.
- B. The amounts of the unit prices to be:
 - 1. Those stated in the Agreement.
 - 2. Those mutually agreed upon between Owner and Contractor.
- C. When quantities of each of the items affected by the Change Order can be determined prior to start of the work:
 - 1. Owner and Engineer will sign and date the Change Order as authorization for Contractor to proceed with the changes.
 - 2. Contractor may sign and date the Change Order to indicate agreement with the terms therein.
- D. When quantities of the items cannot be determined prior to start of the work:
 - 1. Engineer or Owner will issue a construction change authorization directing Contractor to proceed with the change on the basis of unit prices, and will cite the applicable unit prices.
 - 2. At completion of the change, Engineer will determine the cost of such work

based on the unit prices and quantities used.

- a. Contractor shall submit documentation to establish the number of units of each item and any claims for a change in Contract Time.
3. Engineer will sign and date the Change Order to establish the change in Contract Sum and in Contract Time.
4. Owner and contractor will sign and date the change Order to indicate their agreement with the terms therein.

1.08 CORRELATION WITH CONTRACTOR'S SUBMITTALS

- A. Periodically revise Schedule of Values and Application for Payment forms to record each change as a separate item of work, and to record the adjusted Contract Sum.
- B. Periodically revise the Construction Schedule to reflect each change in Contract Time.
 1. Revise subschedules to show changes for other items of work affected by the changes.
- C. Upon completion of work under a Change Order, enter pertinent changes in Record Documents.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART I - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Engineer shall schedule and administer pre-construction meeting, periodic progress meetings, and specially called meetings throughout progress of the work. At a minimum, he shall perform the following duties:
 - 1) Prepare agenda for meetings.
 - 2) Distribute written notice of each meeting four days in advance of meeting date.
 - 3) Make physical arrangements for meetings.
 - 4) Preside at meetings.
 - 5) Record the minutes; include significant proceedings and decisions.
 - 6) Reproduce and distribute copies of minutes within three days after each meeting.
 - (a) To participants in the meeting
 - (b) To parties affected by decisions made at the meeting
- B. Representative of contractors, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.02 RELATED REQUIREMENTS

- A. Instructions to Bidders: Pre-bid Conferences.
- B. Section 01340: Shop Drawings, Product Data and Samples.

1.03 PRE-CONSTRUCTION MEETING

- A. Schedule prior to issuance of Notice to Proceed.
- B. Location: A central site, convenient for all parties, designated by the Engineer.
- C. Attendance:
 - 1) Owner's Representative.
 - 2) Engineer and his professional consultants.

- 3) Contractor's Superintendent.
- 4) Major Subcontractors.
- 5) Major suppliers.
- 6) Others as appropriate.

D. Suggested Agenda:

- 1) Distribution and discussion of:
 - (a) List of major subcontractors and suppliers.
 - (b) Projected Construction Schedules.
 - (c) Values for progress payment purposes.
- 2) Critical work sequencing.
- 3) Major equipment deliveries and priorities.
- 4) Project Coordination:
 - (a) Designation of responsible personnel.
- 5) Procedures and processing of:
 - (a) Field decisions.
 - (b) Proposal requests.
 - (c) Submittals.
 - (d) Change Orders.
 - (e) Applications for Payment.
- 6) Adequacy of distribution of Contract Documents.
- 7) Procedures for maintaining Record Documents.
- 8) Use of premises:
 - (a) Work and storage areas.
 - (b) Owner's requirements.
- 9) Construction facilities, controls and construction aids.
- 10) Temporary utilities.
- 11) Safety and first-aid procedures.

- 12) Security procedures.
- 13) Housekeeping procedures.

1.04 PROGRESS MEETINGS

- A. Schedule regular monthly meetings.
- B. Hold called meetings to review progress of the work.
- C. Location of the meetings: As designated by the Engineer.
- D. Attendance:
 - 1) Engineer, and his professional consultants, as needed.
 - 2) Contractor.
 - 3) Subcontractors, as appropriate to the agenda.
 - 4) Suppliers, as appropriate to the agenda.
 - 5) Others.
- E. Suggested Agenda:
 - 1) Review, approval of minutes of previous meeting.
 - 2) Review of work progress since previous meeting.
 - 3) Field observations, problems, conflicts.
 - 4) Problems which impede Construction Schedule.
 - 5) Review of off-site fabrication, delivery schedules.
 - 6) Corrective measures and procedures to regain projected schedule.
 - 7) Revisions to Construction Schedule.
 - 8) Progress, schedule, during succeeding work period.
 - 9) Coordination of schedules.
 - 10) Review submittal schedules; expedite as required.
 - 11) Maintenance of quality standards.
 - 12) Pending changes and substitutions.

13) Review proposed changes for:

- (a) Effect on Construction Schedule and on completion date.
- (b) Effect on other contracts of the project.

14) Other business.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULING

PART 1 – GENERAL

1.01 PROGRAM DESCRIPTION

- A. A Critical Path Method (CPM) construction schedule shall be used to control the work of this Contract and to provide a definitive basis for determining job progress. The construction schedule shall be prepared, maintained, and updated by the Contractor. The construction schedule shall be reviewed by the Engineer as described herein. All work shall be done in accordance with the established CPM schedule and the Contractor and his/her subcontractors shall be responsible for cooperating fully with the Engineer and the Owner in effectively utilizing the CPM schedule.
- B. The CPM schedule to be prepared and submitted by the Contractor shall consist of a CPM network (diagram of activities) in the Time Scale Logic and a computer-generated schedule (print-out) as specified herein.
- C. Within ten calendar days following written Notice to Proceed, the Contractor shall submit to the Engineer for review and approval a Preliminary Guideline CPM Schedule covering the first 60 calendar days of Work to be performed.
- D. The Preliminary Guideline CPM Schedule shall:
 - 1. Illustrate a feasible CPM schedule for completion of the work under this Contract within the time specified.
 - 2. Provide an elementary example of a CPM schedule in the format to be used for the detailed CPM schedule specified. The Preliminary Guideline CPM Schedule is not as detailed as the CPM schedule required under this Contract.
 - 3. Establish mandatory milestone dates. Designate milestones on the Preliminary Guideline CPM Schedule with asterisks.
- E. The Preliminary Guideline CPM Schedule is not to be considered binding except for the time required for contract completion and the mandatory milestones.
- F. Contractor shall develop his own outline of the Work and prepare his proposed CPM schedule. The computer-based schedule shall be the product of a recognized commercial computer software producer and shall meet all of the requirements defined herein.

1.02 QUALIFICATIONS

- A. Have the capability of preparing and utilizing the specified CPM scheduling technique. A statement of CPM capability shall be submitted in writing to the Engineer within ten calendar days after the award of the Contract and will verify that either the Contractor's organization has in-house capability qualified to use the technique or that the Contractor employs a consultant who is so qualified. Capability shall be verified by description of the construction projects to which the Contractor or his/her consultant has successfully applied the CPM scheduling technique and which were controlled throughout the duration of the project by means of systematic use and updating of a computer-based CPM schedule. The submittal shall include the name of the individual on the Contractor's staff who will be responsible for the CPM schedule and for providing the required updating information.

1.03 NETWORK REQUIREMENTS

- A. The network shall show the order and inter-dependence of activities and the sequence in which the work is to be accomplished as planned by the Contractor. The basic concept of a network analysis diagram shall be followed to show how the start of a given activity is dependent on the completion of preceding activities and its completion restricts the start of following activities.
- B. Detailed network activities shall include: construction activities, the submittal and approval of samples of materials and shop drawings, the procurement of materials and equipment, fabrication of materials and equipment and their delivery, installation and testing, start-up and training. Break the work into activities with duration no longer than 20 working days each, except as to non-construction activities (such as procurement of materials and delivery of equipment) and any other activities for which the Engineer may approve the showing of longer duration. To the extent feasible, activities related to a specific physical area of the work shall be grouped on the network for ease of understanding and simplification.
- C. Separate activities shall be provided for each significant identifiable function in each trade area in each facility. Activities shall be so identified that there will be no reasonable doubt as to how much work remains on each. Specific activities which shall be included are: all sub contract work, all interface work between subcontractors and between the Contractor and subcontractors leakage tests of tanks and pipelines, electrical connections to each item of equipment, supplier and manufacturer technical assistance, mechanical connections to each item of equipment all tests concrete finishing, each item of site work, (including restraints on other activities) and all utilities, fuels and chemicals.
- D. Each activity on the network shall have the following indicated on the node

representing it.

1. A single duration (i.e., the single best estimate of elapsed time considering the scope of the work involved in the activity and the resources planned for accomplishing the activity) expressed in working days.
 2. A five character (or less) code indicative of the party responsible for accomplishing the activity.
 3. A cost estimate for each activity which, when accumulated with the cost of all activities, equals the total contract cost. Estimated overhead and profit shall be prorated throughout all activities. Materials costs shall be assigned to delivery activities.
 4. A brief description of the activity.
 5. Manpower estimate for each activity.
- E. The selection and number of activities shall be subject to the Engineer's approval. The detailed network shall be time scaled. In addition to the brief description, submit a separate list of all activities containing a detailed narrative of the scope of each activity, including the trades and subcontractors involved, the activity duration, and the cost of each activity as it pertains to the pay items on the Schedule of Values.
- F. To the extent that the network or any revision thereof shows anything not jointly agreed upon or fails to show anything jointly agreed upon, it shall not be deemed to have been approved by the Engineer. Failure to include on a network any element of work required for the performance of this Contract shall not excuse the Contractor from completing all work required within any applicable completion date, notwithstanding the review of the network by the Engineer.
- G. Except where earlier completions are specified, CPM schedules which show completion of all work prior to the contractor completion date may be approved by the Engineer but in no event shall they be acceptable as a basis for claim for delay against the Owner or Engineer by the Contractor.

1.04 COMPUTER-GENERATED SCHEDULE REQUIREMENTS

- A. Each computer-generated schedule submittal from the CPM activity network shall include the following tabulations: a list of activities in numerical order, a list of activity precedence's, a schedule sequenced by Early Start Date and a schedule sequenced by Total Float. Each schedule shall include the following minimum items:
1. Activity numbers

2. Estimated duration
3. Activity description
4. Early start date (calendar dated)
5. Early finish date (calendar dated)
6. Latest allowable start date (calendar dated)
7. Latest allowable finish date (calendar dated)
8. Status (whether critical)
9. Estimated cost of the activity
10. Total float and free float

B. In addition, each schedule shall be prefaced with the following summary data:

1. Contract name and number
2. Contractor's name
3. Contract duration
4. Contract schedule
5. The effective or starting date of the schedule (the date indicated in the Notice to Proceed).

C. The work day to calendar date correlation shall be based on an 8-hour day and 40-hour week with adequate allowance for holidays, adverse weather and all other special requirements of the work.

1.05 INITIAL CONFERENCE

A. Within ten days following the receipt of the Notice to Proceed, meet with the Engineer to discuss and agree on the proposed standards for the CPM schedule. At this conference submit to the Engineer a preliminary network defining the planned operations during the first 60 calendar days after Notice to Proceed. The general approach for the balance of the project shall be indicated. Cost of activities expected to be completed or partially completed before submission and approval of the complete network shall be included.

1.06 APPROVED CPM SCHEDULE

- A. Within 45 days following the receipt of the Notice to Proceed, submit two prints of the proposed CPM activity network and a computer-generated schedule to the Engineer. Following review by the Engineer and Owner, the Contractor shall incorporate the Engineer's comments into the network and submit five prints and two reproducible of the revised network and two copies of the computer-generated schedule. This final submittal shall be delivered to the Engineer within 60 days after the Notice to Proceed.
- B. CPM schedules which contain activities showing negative float or which extend beyond the contract completion date in the computer-generated schedule will not be approved.
- C. The Contractor shall participate in the initial review and evaluation of the proposed network diagram and schedule by the Engineer. The approved network shall then be approved CPM schedule to be used for planning, organizing and directing the work, and reporting progress.
- D. Approval of the CPM activity network by the Engineer is advisory only and shall not relieve the Contractor of responsibility for accomplishing the work within the contract completion date. Omissions and errors in the approved CPM schedule shall not excuse performance less than that required by the Contract. Approval by the Engineer in no way makes the Engineer an insurer of the CPM schedule's success or liable for time or cost overruns flowing from its shortcomings. The Owner hereby disclaims any obligation or liability by reason of approval by its agent, the Engineer, of the CPM schedule.
- E. The CPM activity network shall be prepared in accordance with the format used in the Preliminary Guideline CPM Schedule noted above. The network shall be submitted on sheets 24-in by 36-in and may be divided into as many separate sheets as required.

1.07 PROGRESS REPORTING

- A. Progress under the approved CPM schedule shall be evaluated monthly by the Contractor and the Engineer. Not less than seven days prior to each monthly progress meeting, they shall meet at the job-site and jointly evaluate the status of each activity on which work has started or is due to start, based on the preceding CPM schedule; to show actual progress, to identify those activities started and those completed during the previous period, to show the estimated time required to complete or the percent complete of each activity started but not yet completed and to reflect any changes indicated for the network. Activities shall not be considered to be complete until they are, in fact, 100 percent complete.
- B. At each progress meeting, submit a narrative report based on the CPM schedule evaluation described above, in a format agreed upon by the Contractor

and the Engineer. The report shall include a description of the progress during the previous period in terms of completed activities, and explanation of each activity which is showing a delay, a description of problem areas, current and anticipated delaying factors and their estimated impact on performance of other activities and completion dates and an explanation of corrective action taken or proposed. This report, as well as the CPM Status Report, will be discussed at each progress meeting.

1.08 RESPONSIBILITY FOR SCHEDULE COMPLIANCE

- A. Whenever it becomes apparent from the current CPM schedule and CPM Status Report that delays to the critical path have resulted and the contract completion date will not be met, or when so directed by the Engineer, Contractor shall take some or all of the following actions at no additional cost to the Owner. He shall submit to the Engineer for approval, a written statement of the steps intended to take to remove or arrest the delay to the critical path in the approved schedule.
 - 1. Increase construction manpower in such quantities and crafts as will substantially eliminate the backlog of work.
 - 2. Increase the number of working hours per shift, shifts per day, working days per week, the amount of construction equipment, or any combination of the foregoing, sufficiently to substantially eliminate the backlog of work.
 - 3. Reschedule activities to achieve maximum practical concurrence of accomplishment of activities and comply with the revised schedule.
- B. If when so requested by the Engineer, failure to submit a written statement of the steps intended to take or should fail to take such steps as approved by the Engineer, the Engineer may direct the Contractor to increase the level of effort in man-power (trades), equipment and work schedule (overtime, weekend and holiday work, etc) to be employed by the Contractor in order to remove or arrest the delay to the critical path in the approved schedule and the Contractor shall promptly provide such level of effort at no additional cost to the Owner.

1.09 ADJUSTMENT OF CONTRACT SCHEDULE AND COMPLETION TIME

- A. If the Contractor desires to make changes in his/her method of operating which affect the approved CPM schedule, he/she shall notify the Engineer in writing stating what changes are proposed and the reason for the change. If the Engineer approves these changes, the Contractor shall review and submit for approval, without additional cost to the Owner, all of the affected portions of the CPM network. The CPM schedule shall be adjusted by the Contractor only after prior approval of his/her proposed changes by the Engineer. Adjustments may

consist of changing portions of the activity sequence, activity durations, division of approved activities, or other adjustments as maybe approved by the Engineer. The addition of extraneous, non-working activities and activities which add unapproved restraints to the CPM schedule shall not be approved.

- B. If the completion of any activity, whether or not critical, falls more than 100 percent behind its approved duration, submit for approval a schedule adjustment showing each such activity divided into two activities reflection completed versus uncompleted work.
- C. Shop drawings which are not approved on the first submittal or within the schedule time and equipment which do not pass the specified tests shall be immediately rescheduled.
- D. The contract completion time will be adjusted only for causes specified in this Contract. In the event the Contractor requests an extension of any contract completion date, he/she shall furnish such justification and supporting evidence as the Engineer may deem necessary to determine whether the Contractor is entitled to an extension of time under the provisions of this Contract. The Engineer will after receipt of such justification and supporting evidence, make findings offset and will advise the Contractor in writing thereof. If the Engineer finds that the Contractor is entitled to any extension of any contract completion date, the Engineer's determination as to the total number of days extension shall be based upon the currently approved CPM schedule and on all data relevant to the extension. Such data shall be included in the next updating of the schedule. Actual delays in activities which, according to the CPM schedule, do not affect any contract completion date shown by the critical path in the network will not be the basis for a change therein.
- E. Each request for change in any contract completion date shall be submitted by the Contractor to the Engineer within 30 days after the beginning of the delay for which a time extension is requested but before the date of final payment under this Contract. No time extension will be granted for requests which are not submitted within the foregoing time limit.
 - 1. From time to time it may be necessary for the contract schedule or completion time to be adjusted by the Owner to reflect the effects of job conditions, weather, technical difficulties, strikes, unavoidable delays on the part of the Owner or its representatives and other unforeseeable conditions which may indicate schedule adjustments or completion time extensions. Under such conditions, the Engineer will direct the Contractor to reschedule the work or contract completion time to reflect the changed conditions and the Contractor shall revise his/her schedule accordingly. No additional compensation will be made to the Contractor for such schedule changes except for unavoidable overall contract time extensions beyond the actual completion of all unaffected work, in which case the

Contractor shall take all possible action to minimize any time extension and any additional cost to the Owner. Available float time in the CPM schedule may be used by the Owner as defined by the Engineer, as well as by the Contractor.

- F. The Owner controls the float time in the approved CPM network and, therefore, without obligation to extend either the overall completion date or any intermediate completion dates set out in the CPM network, the Owner may initiate changes to the work that absorb float time only. Owner initiated changes that affect the critical path on the approved CPM network shall be the sole grounds for extending (or contracting) said completion dates. Contractor-initiated changes that encroach on the float time identified in the approved CPM network may be accomplished with the Owner's concurrence. Such changes, however, shall give way to Owner-initiated changes competing for the same float time.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01340

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

Submit shop drawings, product data and samples required by Contract Documents.

1.02 RELATED REQUIREMENTS

- A. Conditions of the Contract: Definitions and Additional responsibilities of parties.
- B. Designate in a separate schedule, the dates for submission and the dates that reviewed shop drawings, product data and samples will be needed.

1.03 SHOP DRAWINGS

- A. Drawings shall be presented in a clear and thorough manner.
 - 1) Details shall be identified by reference to sheet and detail as shown on contract drawings.
- B. Minimum sheet size: 8 1/2 inches by 11 inches.

1.04 PRODUCT DATA

- A. Preparation
 - 1) Clearly mark each copy to identify pertinent products or models.
 - 2) Show performance characteristics and capacities.
 - 3) Show dimensions.
- B. Manufacturer's standard schematic drawings and diagrams.
 - 1) Modify drawings and diagrams to delete information which is not applicable to the work.
 - 2) Supplement standard information to provide information specifically applicable to the work.

1.05 SAMPLES

- A. Office samples shall be of sufficient size and quantity to clearly illustrate:

- 1) Functional characteristics of the product, with integrally related parts and attachment devices.
- 2) Full range of color, texture and pattern.

1.06 CONTRACTOR RESPONSIBILITIES

- A. Review shop drawings, product data and samples prior to submission.
- B. Determine and verify:
 - 1) Field measurements
 - 2) Field construction criteria
 - 3) Catalog numbers and similar data
 - 4) Conformance with specifications
 - 5) Confirm compatibility of equipment to be supplied within location to be erected.
- C. Coordinate each submittal with requirements of the work and of the contract documents.
- D. Notify the Engineer in writing, at time of submission, of any deviations in the submittals from requirements of the contract documents.
- E. Begin no fabrication or work which requires submittals until return of submittals with Engineer approval.

1.07 SUBMISSION REQUIREMENTS

- A. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the work or in the work of any other contractor.
- B. Number of Submittals required:
 - 1) Shop Drawings and Product Data: Submit one (1) set of reproducibles and two (2) sets of prints of each shop drawing submittal for review. After final review in which there are no exceptions noted or referenced the contractor shall furnish the Engineer two (2) complete sets and one (1) electronic set for use by the Engineer and Owner.
 - 2) Samples: Submit the number stated in each specification section.
- C. Submittals shall contain:
 - 1) The date of submission and the dates of any previous submissions.
 - 2) The project title and number.

- 3) Contract identification.
- 4) The names of:
 - (a) Contractor
 - (b) Supplier
 - (c) Manufacturer
- 5) Identification of the product, with the specification section number.
- 6) Field dimensions, clearly identified as such.
- 7) Relation to adjacent or critical features of the work or materials.
- 8) Applicable standards, such as ASTM or Federal specification numbers.
- 9) Identification of deviations from Contract Documents.
- 10) Identification of revisions on resubmittals.
- 11) A blank space for Contractor and Engineer stamps.
- 12) Contractor's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the work and of Contract Documents.

D. Submittals should be made using the Letter of Transmittal form attached to this section as page 01340-6. Submittals received without this submittal form will be returned to the Contractor without action. Transmittals shall be numbered in sequence for each Section of the Specifications. The number after the dash indicates the Section of the Specifications, and the number before the dash is the sequence number of the transmittal (e.g. 1-15100 would be the first transmittal applicable to Section 15100 of the Specifications. 2-15100 would be the second transmittal for Section 15100, etc.)

1.08 RESUBMISSION REQUIREMENTS

- A. Make any corrections or changes in the submittals required by the Engineer and resubmit until no exceptions are taken by the Engineer.
- B. Shop Drawings and Product Data:
 - 1) Revise initial drawings or data, and resubmit as specified for the initial submittal.

- 2) Indicate any changes which have been made other than those requested by the Engineer.

C. Samples: Submit new samples as required for initial submittal.

1.09 DISTRIBUTION

A. Distribute reproductions of Shop Drawings and copies of Product Data which carry the Engineer review stamp to:

- 1) Job site file
- 2) Record Documents file
- 3) Other affected contractors
- 4) Subcontractors
- 5) Supplier or Fabricator

B. Distribute samples which carry the Engineer review stamp as directed by the Engineer.

1.10 ENGINEER DUTIES

A. Review submittals within 15 calendar days.

B. Affix review stamp and initials or signature, and indicate requirements, if any, for resubmittal.

C. Return submittals to Contractor.

1.11 ENGINEER'S ACTION

A. Final unrestricted release. Work may proceed, provided it complies with contract documents, when submittal is returned with the following:

Marking: No exceptions taken

B. Final-But-Restricted Release. Work may proceed, provided it complies with notations and corrections on submittal and with contract documents, when submittal is returned with the following:

Marking: Revised as Noted.

C. Returned for Resubmittal. Do not proceed with work. Revise submittal in accordance with notations thereon, and resubmit without delay to obtain a different action marking. Do not allow submittals with the following marking (or unmarked submittals where a marking is required) to be used in connection with performance of the work:

Marking: Amend and Resubmit or

Rejected - See Remarks

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01380

CONSTRUCTION PHOTOGRAPHS AND VIDEOS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

Contractor shall employ a competent photographer to take construction record photographs and video prior to and during the course of the work.

1.02 PHOTOGRAPHY REQUIRED

- A. Video Survey as specified herein (pre-construction).
- B. Provide five (5) photographs each month of each major portion of the work taken at each major stage of construction.
- C. Provide digital files of each photograph identified with contract number, description of view and date.

1.03 COSTS OF PHOTOGRAPHY

Contractor shall pay costs for specified video and photography. Parties requiring additional photography or prints will pay photographer directly.

PART 2 - PRODUCTS

2.01 Digital Photographs

- A. Color
- B. Identify each with a caption, listing:
 - 1. Name of project.
 - 2. Facility location.
 - 3. Orientation of view.
 - 4. Date and time of exposure.
 - 5. Name of Contractor.

2.02 VIDEOS

- A. Specifications for Audio-Video Survey

Prior to the start of construction of the contract, the Contractor shall furnish to the Engineer the video of the construction areas on a SharePoint. The SharePoint video file shall be reviewed by the Engineer and either approved or additional coverage will be required to fully show the physical conditions of the work areas. The Contractor shall have the additional coverage videoed and shall not begin work,

including moving equipment and/or material on the project site, until the audio-video survey has been approved by the Engineer. After approval, the Contractor shall supply two copies of the audio-video survey to the Engineer. The SharePoint will remain available for viewing by the Contractor and may be reviewed by him for any assistance that the SharePoint may provide in resolving disputes which arise with the property owners claiming improper restoration of their properties. That SharePoint will also be used as a guide by the Engineer, prior to issuance of final payments, in determining the adequacy of restoration and the extent of damages attributable to the Contractor's work. The Owner will also have access to the SharePoint.

B. Technical Requirements

The total audio-video recording system and the procedures employed in its use shall be such as to produce a finished product that will fulfill the technical requirements of the project, as well as those more subjective requirements of high-quality audio and video production. The video portion of the recording shall reproduce bright, sharp, clear pictures with accurate colors and shall be free from distortion or any other form of picture imperfection. The audio portion of the recording shall reproduce precise and concise explanatory notes by the camera operator with proper volume, clarity and freedom from distortion.

C. Recorder

The recorder shall be an acceptable digital recording device format.

D. Camera

The color video camera shall have a horizontal resolution of at least 550 lines at center and 4 megapixels.

PART 3 - EXECUTION

3.01 TECHNIQUE FOR STILL PHOTOGRAPHS

- A. Factual presentation.
- B. Correct exposure and focus.
 - 1. High resolution and sharpness.
 - 2. Maximum depth-of-field.
 - 3. Minimum distortion.

3.02 VIEWS REQUIRED FOR STILL PHOTOGRAPHS

- A. Contractor shall photograph from locations to adequately illustrate condition of

construction and state of progress. Consult with Engineer at each period of photography for instructions concerning views required.

- B. Prior to construction, five photographs of pertinent features shall be taken at various locations at the site as selected by the Engineer and promptly submitted to the Engineer. The same views shall be rephotographed during construction showing the installation of all material. Photographs shall also be taken upon completion of the project. Additional progress photographs shall be made monthly throughout the progress of the work at the same locations as above when work has taken place at that location during the month and submitted with each of the Contractor's applications for progress payment.

3.03 TECHNIQUE AND VIEWS REQUIRED FOR VIDEO TAPING

- A. At the start of production, an identification summary shall be read into the record while, at the same time, a wide-angle view with numeric displays shall be provided for a visual record. This summary will include (1) video number, (2) job title, (3) job location, (4) positional location at job start, (5) date and time, (6) weather and (7) any other notable conditions.

- B. Coverage

The recording shall include coverage of all surface features located within the construction zone-of-influence. This zone shall be defined as (1) the area within 500 feet of the work area and (2) areas directed by the Owner. The coverage shall be continuous (i.e., the camera shall not be turned off once photography has begun) to the greatest extent practically possible. If the camera must be turned off then a verbal message shall be inserted stating that the camera will be turned off and the reason for discontinuing coverage.

- C. Visibility

No recording shall be done during periods of significant precipitation, mist or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects of recording.

- D. Experience

The operator in charge must have had previous experience video documenting a minimum of fifty miles of pre-construction work. Any apprentice operators must be continuously supervised by an above-described experienced operator.

3.04 DELIVERY OF PHOTOGRAPHS

- A. Preconstruction photographs shall be delivered to the Engineer prior to the mobilization of any equipment or materials or the beginning of construction on each

pump station site.

- B. Deliver progress prints to Engineer to accompany each Application for Payment.

3.05 DELIVERY OF VIDEO

- A. Recording Schedule

The recording shall be performed prior to the placement of any construction materials or equipment on the proposed construction site, but not more than seven weeks prior to the placement of materials or equipment.

- B. After approval of videos, upload to the SharePoint that is to be set up by the Engineer.

- C. Unacceptable Documentation

The Owner shall have the authority to reject all or any portion of the picture and video documentation not conforming to the specifications. Those rejected portions shall be rerecorded and resubmitted at no additional cost to the Owner.

- D. Specification Deviations

Any deviation from these specifications must have the written approval of the Owner/Engineer.

- E. Payment

There will be no separate payment for construction photographs and videos. Payment for the work covered under this section shall be included within the pay item for mobilization and demobilization. Video documentation will be made in accordance with the project specifications.

END OF SECTION

SECTION 01410

TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

Contractor shall employ and pay for the services of an independent testing laboratory to perform specified testing as required by the specifications.

- 1) The Contractor shall coordinate with the laboratory to facilitate the execution of its required services.
- 2) Employment of the laboratory shall in no way relieve the Contractor's obligations to perform the work of the contract.

1.02 RELATED REQUIREMENTS

- A. Conditions of the contract: Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities.
- B. Respective sections of Specifications: Certification of products.

1.03 LABORATORY DUTIES

- A. Cooperate with the Engineer and Contractor to provide certified personnel after due notice.
- B. Perform specified inspections, sampling and testing of materials and methods of construction:
 - 1) Comply with specified standards.
 - 2) Ascertain compliance of materials with requirements of Contract Documents.
- C. Promptly notify the Engineer and Contractor of observed irregularities or deficiencies of work or products.
- D. Promptly submit one (1) hard copy and one (1) electronic copy of written report of each test and inspection to the Engineer, and one (1) hard copy and one (1) electronic copy to the owner. Each report shall include:
 - 1) Date issued.
 - 2) Project title and number.
 - 3) Testing laboratory name, address and telephone number.

- 4) Name and signature of laboratory inspector.
- 5) Date and time of sampling or inspection.
- 6) Record of temperature and weather conditions.
- 7) Date of test.
- 6) Identification of product and specification section.
- 9) Location of sample or test in the project.
- 10) Type of inspection or test.
- 11) Results of test and compliance with Contract Documents.
- 12) Interpretation of test results, when requested by the Engineer.

E. Perform additional tests as required by the Engineer or Owner.

1.04 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

Laboratory is not authorized to:

- 1) Release, revoke, alter or enlarge on requirements of Contract Documents.
- 2) Approve or accept any portion of the work.
- 3) Perform any duties of the Contractor.

1.05 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with laboratory personnel; provide access to work, and to manufacturer's operations.
- B. Secure and deliver to the laboratory, when requested by the Engineer, adequate quantities of representational samples of materials proposed to be used and which require testing.
- C. Provide to the laboratory the preliminary design mix proposed to be used for concrete and other materials mixes which require control by the testing laboratory.
- D. Furnish copies of products test reports as required.
- E. Furnish incidental labor and facilities:
 - 1) To provide access to work to be tested.
 - 2) To obtain and handle samples at the project site or at the source of the product to be tested.
 - 3) To facilitate inspections and tests.
 - 4) For storage and curing of test samples.

F. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests. When tests or inspections cannot be performed after such notice, contractor shall be responsible for laboratory personnel time and travel expenses incurred due to Contractor's negligence.

G. Make arrangements with the laboratory and pay for additional samples and tests required for Contractor's convenience.

H. Contractor to pay for all retesting as a result of test failure.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01600

MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Material and equipment incorporated into the work:

- 1) Conform to applicable specifications and standards.
- 2) Comply with size, make, type and quality specified, or as specifically approved, in writing, by the Engineer.
- 3) Manufactured and Fabricated Products:
 - (a) Design, fabricate and assemble in accord with the best engineering and shop practices.
 - (b) Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.
 - (c) Two or more items of the same kind shall be identical, by the same manufacturer.
 - (d) Products shall be suitable for service conditions.
- 4) Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.02 RELATED REQUIREMENTS

- A. Conditions of the Contract
- B. Section 01010: Summary of Work
- C. Section 01340: Shop Drawings, Product Data and Samples

1.03 MANUFACTURER'S INSTRUCTIONS

- A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including two copies to the Engineer.
 - 1) Maintain one set of complete instructions at the job site during installation and until completion.

- B. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.
 - 1) Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.
 - 2) Do not proceed with work without clear instructions.
- C. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.04 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of products in accord with construction schedules; coordinate to avoid conflict with work and conditions at the site.
 - 1) Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
 - 2) Immediately upon delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that products are properly protected and undamaged.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

1.05 STORAGE AND PROTECTION

- A. Store products in accord with manufacturer's instructions, with seals and labels intact and legible.
 - 1) Store products subject to damage by the elements in weathertight enclosure.
 - 2) Maintain temperature and humidity within the ranges required by manufacturer's instructions.
- B. Exterior Storage
 - 1) Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter and entrance to drainage systems.
- C. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.

D. Protection after Installation

- 1) Provide substantial coverings as necessary to protect installed products from damage from marine traffic and subsequent construction operations. Remove when no longer needed.

1.06 SUBSTITUTIONS AND PRODUCT OPTIONS

A. Products List

- 1) Within 30 days after contract date, submit to the Engineer a complete list of major products proposed to be used, with the name of the manufacturer, supplier, and the installing subcontractor.

B. Contractor's Options

- 1) For products specified only by reference standard, select any product meeting that standard.
- 2) For products specified by naming several products or manufacturers, select any one of the products or manufacturers named, which complies with the specifications.
- 3) For products specified by naming one or more products or manufacturers and "or equal", Contractor must submit a request as for substitutions for any product or manufacturer not specifically named.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

Comply with requirements stated in Conditions of the Contract and in specifications for administrative procedures in closing out the work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Conditions of the Contract: Fiscal provisions, legal submittals and additional administrative requirements.
- B. Section 01720: Project Record Documents.
- C. Section 01740: Warranties and Bonds.

1.03 SUBSTANTIAL COMPLETION

- A. When the Contractor considers the work is substantially complete, he shall submit to the Engineer:
 - 1) A written notice that the work, or designated portion thereof, is substantially complete.
 - 2) A list of items to be completed or corrected.
- B. Within a reasonable time after receipt of such notice, the Engineer will make an inspection to determine the status of completion.
- C. Should the Engineer determine that the work is not substantially complete:
 - 1) The Engineer will promptly notify the Contractor, in writing, giving the reasons therefore.
 - 2) The Contractor shall remedy the deficiencies in the work, and send a second written notice of substantial completion to the Engineer.
 - 3) The Engineer will reinspect the work.
- D. When the Engineer finds that the work is substantially complete, he will:

- 1) Prepare and deliver to the Owner a tentative Certificate of Substantial Completion on the appropriate parish form with - a tentative list of items to be completed or corrected before final payment.
- 2) After consideration of any objections made by the Owner as provided in Conditions of the Contract, and when the Engineer considers the work substantially complete, he will execute and deliver to the Owner and the contractor a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.04 FINAL INSPECTION

- A. When Contractor considers the work is complete, he shall submit written certification that:
 - 1) Contract Documents have been reviewed.
 - 2) Work has been inspected for compliance with Contract Documents.
 - 3) Work has been completed in accordance with Contract Documents.
 - 4) Work is completed and ready for final inspection.
- B. Engineer will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should Engineer consider that the work is incomplete or defective:
 - 1) Engineer will promptly notify the contractor, in writing, listing the incomplete or defective work.
 - 2) Contractor shall take immediate steps to remedy the stated deficiencies and send a second written certification to Engineer that the work is complete.
 - 3) Engineer will reinspect the work.
- D. When the Engineer finds that the work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals.

1.05 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a final statement of accounting to the Engineer.
- B. Statement shall reflect all adjustments to the Contract Sum:
 - 1) The original Contract Sum.

- 2) Additions and deductions resulting from:
 - (a) Previous Change Orders
 - (b) Unit Prices
 - (c) Penalties and Bonuses
 - (d) Deductions for liquidated damages
 - (e) Deductions for reinspection payments
 - (f) Other adjustments
- 3) Total Contract Sum, as adjusted.
- 4) Previous payments.
- 5) Sum remaining due.

C Engineer will prepare a final Change order, reflecting approved adjustments to the contract sum which are not previously made by change orders.

1.06 FINAL APPLICATION FOR PAYMENT

Contractor shall submit the final application for payment in accordance with procedures and requirements stated in the Conditions of the Contract.

1.07 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

- A. Project Record Documents.
- B. Warranties and Bonds.
- C. Evidence of Payment and Release of Liens: To requirements of General and Supplementary conditions.
- D. Certificates of Insurance for Products and Completed operations.
- E. As-Built Drawings.
- F. Maintenance Manuals.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

The Contractor shall maintain at the site for the Owner's permanent records one copy of:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other Modifications to the Contract.
5. Engineer Field Orders or Written Instructions.
6. Approved Shop Drawings, Product Data.
7. Field Test Records.
8. Construction Photographs.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01340: Shop Drawings, Product Data and Samples.
- B. Section 01700: Contract Closeout.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. The Contractor shall store documents and samples in his office apart from documents used for construction.
- B. The Contractor shall maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- C. The Contractor shall make documents and samples available at all times for inspection by the Engineer and Owner.

3.02 MARKING-UP RECORD DRAWINGS

The Contractor shall mark with red erasable pencil and, where necessary, use other pencil colors, as required.

3.03 RECORDING

- A. Label each document (including record prints and shop drawings) "PROJECT RECORD" in neat large printed letters.
- B. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.
- C. Drawings. Legibly mark field drawings to record actual construction:
 - 1. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.
 - 2. Field changes of dimensions and details.
 - 3. Changes made by change order.
 - 4. Details not on original Contract Drawings.
- D. Specifications and Addenda. The Contractor shall legibly mark each Section to record:
 - 1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
 - 2. Changes made by Field Order or by Change Order.

3.04 SUBMITTALS

- A. At Contract close-out deliver record documents to the Engineer including marked-up drawings, as-built survey, specifications, addenda, change orders and other modifications to contract; Engineers field orders and written instructions, approved shop drawings, product data, field test records and any other documents which serve as a record of actual field installation and construction different from the original contract documents. Engineer will submit them to Owner.
- B. Accompany submittals with transmittal letters in duplicates containing:
 - 1. Date
 - 2. Project title and number
 - 3. Contractor's name and address
 - 4. Title and number of each Record Document
 - 5. Signature of Contractor or his authorized representative

END OF SECTION

SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Compile specified warranties and bonds.
- B. Compile specified service and maintenance contracts.
- C. Co-execute submittals when so specified.
- D. Review submittals to verify compliance with Contract Documents.
- E. Submit to Engineer for review and transmittal to owner.

1.02 RELATED REQUIREMENTS

- A. Instructions to Bidders: Bid or Proposal Bonds.
- B. Conditions of the Contract: Performance Bond and Labor and Material Payment Bond.
- C. Conditions of the Contract: General Warranty of Construction.
- D. Section 01700: Contract Closeout.

1.03 SUBMITTAL REQUIREMENTS

- A. Assemble warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors.
- B. Number of original signed copies required: Two (2) each.
- C. Table of Contents: Neatly typed, in orderly sequence. Provide complete information for each item.
 - 1. Product or work item.
 - 2. Firm, with name of principal, address and telephone number.
 - 3. Scope.
 - 4. Date of beginning of warranty, bond or service and maintenance contract.
 - 5. Duration of warranty, bond, or service maintenance contract.
 - 6. Provide information for Owner's personnel:
 - a. Proper procedure in case of failure.
 - b. Instances which might affect the validity of warranty or bond.
 - 7. Contractor, name of responsible principal, address and telephone number.

1.04 FORM OF SUBMITTALS

- A. Prepare in duplicate packets.
- B. Format:
 - 1. Size 8 ½" x 11", punch sheets for standard 3-ring binder. Fold larger sheets to fit into binders.
 - 2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS". List:
 - a. Title of project.
 - b. Name of Contractor.
- C. Binders: Commercial quality, 3-ring, with durable and cleanable plastic covers.

1.05 TIME OF SUBMITTALS

- A. Make submittals within ten days after Date of Substantial Completion, prior to final request for payment.
- B. For items of work, where acceptance is delayed materially beyond Date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

1.06 SUBMITTALS REQUIRED

Submit warranties, bonds, service and maintenance contracts as specified in respective sections of specifications.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 02315

DREDGING, FILL, AND GRADING

1.1 SCOPE

- A. Furnish all labor, materials, equipment and incidentals required and perform all excavation and dredging work and grading; place and compact backfill and fill; and dispose of unsuitable waste and surplus materials as shown in the Drawings and as specified herein.
- B. Provide the services of a licensed professional engineer, registered in the State in which the work is located, to prepare and needed temporary excavation support system designs and submittals.
- C. If needed, furnish and install temporary excavation support systems, including sheeting, shoring and bracing, to ensure the safety of personnel and protect adjacent structures, piping, etc, in accordance with Federal, State and local laws, regulations and requirements.
- D. Dredging shall consist of removing and satisfactorily placing all material required for backfill on the peninsula and, if needed, construct the flotation channel. The limits of dredge work shall conform to the lines and grades shown on the project plans. Tolerances veering from these requirements must be approved by the ENGINEER.
- E. If needed, furnish and install turbidity curtains totally enclosing dredging within watercourses to confine sedimentation within the construction area.

1.2 METHOD

No method of dredging will be specified. The CONTRACTOR will use any environmentally acceptable method that will complete the work in accordance to that shown on the drawings. However, the CONTRACTOR shall submit to the ENGINEER the method and equipment intended to be used to complete dredging of flotation channels.

1.3 DISPOSAL

Dredged material shall be deposited in areas as shown on the drawings or as directed by the ENGINEER. Any material that is deposited elsewhere than as indicated on the plans or as authorized by the ENGINEER shall be required to be removed and deposited in approved areas at the CONTRACTOR's expense. Additionally, the CONTRACTOR will be responsible for restoring unauthorized disposal areas to pre-project conditions at his own expense.

1.4 CONSTRUCTION

Side slopes of the channels shall be cut true to the proper cross sections as indicated on the drawings. The channels shall be maintained to transport equipment and materials to the project area for the duration of the construction.

- 1.4.1 Dredging of flotation channels will not be allowed within 45 feet of any structure or adjacent bankline unless approved by Engineer.

1.5 TURBIDITY CURTAIN (DEEP)

1.5.1 Description

This work shall consist of furnishing and placing a geosynthetic barrier totally enclosing dredging within watercourses to confine sedimentation within the construction area. The CONTRACTOR shall provide a floating Turbidity Curtain, not silt fence, in depths equal to or greater than 2 feet. The Turbidity Curtain shall be a pre-assembled system, including the geotextile/geomembrane, connection and securing mechanisms, flotation devices, stakes, and ballast chain. The CONTRACTOR shall provide a system of adequate capability, appropriate for the site conditions such as depth (shown on plans), current, and wind/waves. The Turbidity Curtain shall be constructed according to this specification, and the details shown on the plans.

1.5.2 Materials

1.5.2.1 Geosynthetic

The geosynthetic shall meet the minimum physical requirements for Stabilization Geotextile, except the permittivity (ASTM D 4491) requirement shall be 0.06 sec^{-1} maximum. Geosynthetics may be polymer impregnated to negate permittivity and opening size requirements. Hemmed pockets shall be sewn or heat bonded for flotation devices and bottom weights. Panel ends shall have metal grommets placed through a reinforced hem. Connections between panels shall be tightly tied with synthetic or wire rope to prevent flow through the joint.

1.5.2.2 Flotation

Flotation devices shall be closed-cell polystyrene. The buoyancy (volume) required will depend upon site conditions; however, sufficient freeboard shall be provided to prevent overtopping.

1.5.2.3 Stakes

Stakes, when used to assist in maintaining alignment of the curtain, shall be hardwood or steel with sufficient length and cross-section to support the curtain.

External supports may be used; however, embedment depth shall not be less than 1.5 feet.

1.5.2.4 Hardware

All hardware such as stakes, ballast chain, connection bolts, reinforcement plates, and tension cables shall be galvanized, stainless steel, aluminum, or otherwise corrosion resistant. The ballast chain shall have sufficient mass to maintain the geosynthetic in a vertical position, but shall not be less than 0.7 lb/ft.

1.5.3 Construction Methods

1.6 NAVIGATION

The CONTRACTOR shall mark the channels with buoys and lights in accordance with the rules and regulations of the U.S. Coast Guard and the U.S. Army Corps of ENGINEERS.

1.7 MEASUREMENT AND PAYMENT

BASE BID

Dredging, Fill, and Grading will be paid for at the lump sum price for “Dredging, Fill and Grading”. Price and payment shall constitute full compensation for all materials, labor, supplies, and equipment required for dredging approximately 32,200 cubic yards of material from the permitted dredge area shown on the plans and placing to on the peninsula to the lines and grades shown on the plans.

Any flotation channel dredging required for access to the site beyond the fill required in the base bid shall be considered incidental to the contractor’s mobilization cost for any base bid or alternate. This operation will be considered complete when the remaining disposal material is placed back into the flotation channel and the bottom depth of the temporary disposal area is back to pre-construction conditions and/elevations.

END OF SECTION

SECTION 09 TECHNICAL SPECIFICATIONS

TS-1 CONSTRUCTION SURVEYING

- 1.1 **Scope:** Contractor shall furnish all of the materials, labor, and equipment necessary to perform pre-construction hazard, initial, progress, and as-built surveys of the breakwater, settlement plates, and optional access and flotation channels as shown in the Plans. Contractor shall provide the details for the survey layout and stakeout in the Work Plan. All surveys shall be stamped by a professional surveyor licensed in the State of Louisiana
- 1.2 **Reference and Control:**
 - 1.2.1 Survey data shall reference the North American Datum of 1983 (NAD 83), Louisiana South Zone, U. S. Survey Feet, and the North American Vertical Datum of 1988 (NAVD 88), U. S. Survey Feet. Temporary Bench Marks (TBMs) and staff gauges shall be installed as deemed necessary by the Contractor to perform all surveys.
 - 1.2.2 All surveys shall follow the recommendations and guidelines stated in *A Contractor's Guide to the Standards of Practice for CPRA Contractors Performing GPS Surveys and Determining GPS Derived Orthometric Heights within the Louisiana Coastal Zone* (CPRA, 2016).
- 1.3 **Submittals:** Submittals required under this section include the following:
 1. Name and Affiliation of Professional Land Surveyor (For Information Only)
 2. Pre-Construction Hazard Survey
 3. Survey Notification (For Information Only)
 4. Initial Survey Drawings
 5. Progress Survey Drawings
 6. Settlement Plate Time History
 7. As-Built Survey Drawings
 8. Aerial Photography
- 1.4 **Survey Drawings:** Plan-view and cross-section plots showing initial and progress/as-built lines and grades shall accompany monthly payment requisitions. Survey plots shall also be provided in a digital format approved by Engineer. All survey data shall be referenced to the project datums shown on the Plans. All plots shall contain title blocks and clearly display the following information:
 1. Cover Sheet
 2. Project name
 3. Parish Name
 4. Professional Land Surveyor's seal, signature, and affiliation (All PDF copies shall include signed seal.)
 5. Date(s) surveys were performed
 6. Location and description of survey control
 7. Vertical and horizontal datums
 8. Sheet names and numbers
 9. Name of Contractor
 10. Graphic Scale Bar(s)
 11. Transducer frequency (as applicable)
 12. Description of submittal (ex. Initial Survey, Progress Survey 1, etc.)

1.4.1 Drawings shall be provided in 11" X 17" format. Digital copies shall be provided in AutoCAD and Adobe PDF formats. Settlement plate time history submittal shall be provided in Excel format. Point files of the initial, progress, and as-built surveys shall be included in digital submittals and shall contain the following information:

1. Point number
2. Northing (NAD 83 US FT.)
3. Easting (NAD 83 US FT.)
4. Elevation (NAVD 88 FT.)
5. Description (Natural grade, armor stone, etc.)

1.4.2 Survey drawings shall meet the following minimum layout requirements:

1. Initial survey drawings shall show initial cross sections superimposed over survey data shown in the Plans and the design template(s).
2. Pre-Construction Hazard Survey data shall be plotted over the project layout sheets provided in the Plans.
3. Progress survey cross-sections shall be plotted over initial survey data, where available, and the design template(s).
4. A time history of settlement plate elevations shall be plotted for each settlement plate. Submittal shall include table of settlement plate elevation shots as well as plots of time history.
5. As-built survey plots shall show as-built cross-sections superimposed over progress and initial cross-sections. As-built survey submittal shall include plan views with as-built survey data plotted over georeferenced acceptance aerial photography required under section

1.5 Survey Notification: Engineer shall be notified 5 days prior to all surveys performed by Contractor so that Engineer or Engineer's designee may accompany the survey crew and witness the Work.

1.6 Prior to commencing surveying activities, Contractor shall provide name and affiliation of professional surveyor to be used on project. All survey submittals shall be signed and sealed by a professional land surveyor licensed in the State of Louisiana with a minimum of ten (10) years of marine experience and a minimum of five (5) marine projects.

1.7 Pre-Construction Hazard Survey: Contractor is responsible for identifying and avoiding all pipelines, utilities, and other obstructions in the project area and along all access routes to the project site. Survey schedule for pre-construction hazard survey shall follow the same requirements as the initial survey. At a minimum, a hazard survey (i.e., magnetometer or other supplemental method) shall be performed along the centerline of the access channels, flotation channels, and breakwater. In addition to centerline, perpendicular track lines shall be run at 250-ft (max) intervals and extend landward from 25 ft (min) beyond the seaward edge of each of the proposed features up to the current +1.0 ft NAVD88 contour. Contractor shall be responsible for determining if more detailed surveying is required to capture all pipelines, utilities, and obstructions. All pipelines and other obstructions shall be probed in coordination with pipeline/obstruction owner and appropriately marked throughout construction according to United States Coast Guard standards. Submittal for hazard survey shall clearly show all track lines, coordinates, amplitudes, signature types, and signature widths of all hits. The survey shall also show the coordinates, top elevation, and ground cover for all pipelines. A report documenting the results of the hazard survey along with a summary of associated

interpretations and recommendations shall be submitted to Engineer. In addition, all potential hazards or obstructions shall be plotted on the initial survey drawing submittal.

- 1.8 Initial Survey: Proposed schedule for staging initial survey shall be outlined in Contractor's Work Plan. Contractor's schedule shall allow at least 10 working days for Engineer to review initial survey submittal. The initial survey shall cover the length of the shoreline in which the breakwater will be constructed within 3 months from the time the survey is performed. If the breakwater is not constructed within 3 months from the time the survey was performed, an additional survey may be required. Initial survey submission shall be conducted within a single 7-day period. Drawings of the plan views and cross sections shall be developed from this survey by Contractor.

- 1.8.1 Transects: Survey transect locations shall reoccupy those shown in the Plans. Additional survey transects shall be included so that transect spacing is a maximum of 150 ft. Transects shall also be surveyed at the center of each breakwater gap and at each terminal. Location of terminals shall be determined by the base bid and/or additives awarded. Survey transects shall be perpendicular to breakwater centerline. At a minimum, transects shall extend from the current +1.0 ft NAVD88 contour to 350 ft seaward of the breakwater centerline. Survey shots along transects shall be taken at all significant grade breaks and a maximum horizontal spacing of 20 ft.

- 1.8.2 Access Channel Transects: Survey transects shall be taken perpendicular to the centerline of all access channels before excavation. Transect spacing shall be a maximum of 250 ft with a minimum of 3 transects per access channel. Transects shall extend 250 ft (min) from the access channel centerline in either direction. Survey shots along transects shall be taken at all significant grade breaks and a maximum horizontal spacing of 10 ft.

- 1.9 Breakwater Alignment Review and Staking: Initial surveys will be reviewed by Engineer to update breakwater alignment based on erosion that has occurred since survey data shown in the Plans were collected. After Engineer's review of initial survey submittal, Engineer will provide Contractor updated Breakwater Alignment Point coordinates. Prior to commencement of breakwater construction, Contractor shall install stakes at each updated Breakwater Alignment Point to verify and adjust alignment of the breakwater if deemed necessary by Engineer. Stakes shall be installed along the centerline of the breakwater and approximate location of the breakwater toe. Stakes shall be labeled with the Breakwater Alignment Point No., e.g., "A1." After staking, Engineer will review staking and verify or adjust alignment. Any adjustments made in the field by Engineer shall be documented in Contractor's daily report and include coordinates of adjusted Breakwater Alignment Points.

Contractor's Work Plan shall detail the proposed schedule for performing the initial survey and subsequent breakwater staking. Contractor shall include adequate time to allow for Engineer's review of initial surveys and review of breakwater staking. Contractor shall not begin excavation of flotation/access channels or breakwater construction without written concurrence from Engineer of breakwater alignment. Contractor shall maintain the stakes until breakwater construction at alignment point begins.

- 1.10 Progress Surveys:

- 1.10.1 Progress surveys shall be performed to document the progression of Work and as substantiation for monthly payment. Progress surveys shall be performed to provide the following:

1. To verify excavation limits of flotation/access channels. Access and flotation channel progress surveys shall be reviewed by Engineer prior to initiating breakwater construction.
2. To document elevation of settlement plates immediately after: (1) installation of settlement plate, (2) placement of graded riprap, and (3) weekly thereafter for at least four weeks (28 days) after completion of constructed breakwater portion.
3. For interim acceptance of all other Work for progress payments.
4. At the discretion of the Engineer, following any periods of ten (10) days of inactivity to partially constructed breakwater cross-sections.

1.10.2 Progress Survey Transects: Progress survey transects shall reoccupy all initial survey transect locations. Additional transects at each breakwater terminal shall include typical sections shown on the Plans and extend 50 ft (min) beyond the respective outer toes of each breakwater segment. Progress survey plots shall show progress survey transects superimposed over initial survey transects. The following list describes transects for progress surveys.

1. Access and Flotation Channel: To be performed after excavation of access and flotation channels. Flotation channel survey transects shall extend from the breakwater centerline to 50 ft (min) seaward of the temporary stockpile. Access channel survey transects shall reoccupy initial survey transect locations, be oriented perpendicular to the apparent access channel centerline, and extend 250 ft (min) from the apparent access channel centerline in either direction. Survey shots along transects shall be taken at all significant grade breaks and a maximum horizontal spacing of 10 ft.
2. Graded Riprap Transects: To be performed after placement of graded riprap. Survey transects shall extend from 50 ft (min) landward of the breakwater centerline to 50 ft (min) seaward of the breakwater toe extent. Survey shots along transects shall be taken at all significant grade breaks and a maximum horizontal spacing of 2 ft. Progress surveys for graded riprap shall be taken within 7 days of placement of material in each transect location.
3. Settlement Plates: To be performed immediately after: (1) installation of settlement plates, (2) placement of graded riprap, and (3) weekly thereafter for at least four weeks (28 days) after completion of constructed breakwater portion. Survey shots shall be taken at the top of pipe and grade elevation at the settlement plate.

1.11 As-built Survey: Upon project completion, an as-built survey shall be performed to document conditions of the completed Work and for verification of final backfilling of channels. The As-Built Survey shall incorporate all field changes, change orders, and quantities of materials placed. All revisions shall be shown in red and be easily distinguishable from the original design. The as-built survey shall be conducted within a single 14-day period. Data obtained during progress surveys shall not be considered part of the as-built survey unless otherwise approved by Engineer. Final payment will not be received until the As-Built Survey and Work have gained Acceptance from the Engineer

As-built survey transects shall reoccupy initial survey transects and progress access channel transects. In addition, a transect shall be surveyed along the breakwater centerline. Survey shots along transects shall be taken at all significant grade breaks and

a maximum horizontal spacing of 10 ft. Survey shots shall also be taken at each of the installed settlement plates (top of pipe and grade elevation at the settlement plate).

TS-2 MOBILIZATION AND DEMOBILIZATION

- 2.1 Scope: The Contractor shall furnish all labor and equipment necessary to move personnel, equipment, supplies and incidentals to and from the Project Site, establish facilities necessary for the Work, obtain bonds, required insurance and any other pre-construction expenses necessary to perform the Work.
- 2.2 Arbitrary Mobilization by Contractor: The Owner shall pay for ONE mobilization and demobilization effort. Should the Contractor demobilize prior to completing the Work, subsequent remobilization shall be performed at no cost to the Owner.
- 2.3 Ratio of Mobilization and Demobilization Effort: Sixty percent (60%) of the mobilization/demobilization lump sum price will be paid to the Contractor upon complete mobilization to the Project Site. The remaining forty percent (40%) will be paid to the Contractor upon final acceptance of the Work and removal of all equipment and unused materials.
- 2.4 Justification of Costs: The Contractor will be required to submit a written Claim to the Engineer if the cost of mobilization and demobilization is unreasonable in relation to the total cost of the Work. The Engineer shall make a determination on the justification of the Claim. Failure to adequately justify this relation in the Claim shall result in payment of actual mobilization and demobilization costs. The determination by the Engineer is not subject to appeal.

TS-3 GEOTEXTILE

- 3.1 Scope: The Work includes furnishing materials, labor, and equipment for the installation of geotextile composite materials (geotextile fabric and geogrid) beneath the graded riprap and for the encapsulated lightweight aggregate core, in accordance with these Specifications and applicable Plans.
- 3.2 References: Publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

American Society for Testing and Materials (ASTM) Publications

- D 1388 Standard Test Method for Stiffness of Fabrics
- D 3786 Standard Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics - Diaphragm Bursting Strength Tester Method
- D 4354 Standard Practice for Sampling Geosynthetics for Testing
- D 4355 Standard Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light (Xenon-Arc Type Apparatus)
- D 4533 Standard Test Method for Trapezoidal Tearing Strength of Geotextiles
- D 4595 Standard Test Method for Tensile Properties of Geotextiles by Wide- Width Strip Method
- D 4632 Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
- D 4751 Standard Test Method for Determining Apparent Opening Size of a Geotextile
- D 4759 Standard Practice for Determining the Specification Conformance of Geosynthetics
- D 4833 Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
- D 4884 Standard Test Method for Seam Strength of Sewn Geotextiles
- D 5261 Standard Test Method for Measuring Mass per Unit Area of Geotextiles
- D 5818 Practice for Obtaining Samples of Geosynthetics from a Test Section for Assessment of Installation Damage.
- D 6637 Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method

Geosynthetic Research Institute (GRI) Publications

GRI-GG2-87 Standard Test for Geogrid Junction Strength

U.S. Army Corps of Engineers (USACE) Publications

CW 02215 Civil Works Construction Guide, November 1977

U.S. Environmental Protection Agency (EPA) Publications

EPA 9090 Compatibility Test for Wastes and Membrane Liners

- 3.3 Submittals: Submittals required under this section include the following:
1. Manufacturer's Product Data and Installation Instructions for Geotextile Fabric and Geogrid (For Information Only)
 2. Certified Test Reports for Geotextile Fabric and Geogrid
 3. Sewn Seam Details and Laboratory Test Reports
 4. Surveys (Section TS-1, "Construction Surveying")
- 3.4 Delivery, Storage and Handling of Materials: Materials delivered to the site shall be inspected for damage, unloaded, and stored with the minimum of handling. Materials shall not be stored

directly on the ground without a fabric or plastic liner beneath and shall be kept free of dirt and debris.

- 3.5 Geotextile Fabric: Geotextile fabric shall be pervious sheets consisting of long-chain synthetic polymers composed of at least 85% by weight polyolefins, polyesters, polypropylenes, or polyamides. Sheets shall be formed into a stable network such that filaments or yarns retain their relative position to each other. Sheets shall be inert to chemicals commonly encountered in natural seawater and the soil conditions encountered at the site, and be UV stabilized. The sheets shall have a selvedge or otherwise finished edge to prevent outer filaments or yarns from pulling away from the sheet. The listed geotextile product types are approved for different applications and different reaches. No payment will be made for geotextile fabric that is applied in incorrect project circumstances.

- 3.5.1 Physical Properties: Conformance of geotextile fabric shall be in accordance with ASTM D 4759. Fabric shall be sampled in accordance with ASTM D 4354 and tested to verify the following minimum physical properties and requirements:

Table 1: Geotextile Fabric			
Application: Placement beneath graded rip rap			
Product: WINFAB 4x6 or equivalent			
Physical Property	Unit	Test Method	Measure
Fabric Type	--	--	Woven
Apparent Opening Size (max)	U.S. Sieve	ASTM D 4751	#40
Tensile Strength @ 5% strain (min)	lb/ft	ASTM D 4595	2,300
CBR Puncture (min)	lb	ASTM D 6241	3,000
Trapezoid Tear Strength (min)	lb	ASTM D 4533	180
Ultraviolet Resistance (500 hours) (min)	%	ASTM D 4355	80

- 3.5.2 Certified Test Reports: Submit manufacturer's certified test results to Engineer showing actual test values of the geotextile fabric physical properties. The certificate shall contain the signer's title and affiliation, test date(s), the name and address of Contractor, the contract number, and project name and location. The mill certificate or affidavit shall list test results and attest that the materials meet the chemical, physical, and manufacturing requirements in this Specification. Provide manufacturer's recommendations for installation and protection instructions for the project considering the foundation soil conditions.

- 3.5.3 Sewn Seams:

1. Contractor may apply sewn seams or laps for geotextile joints. Thread for seams shall be multi-ply polyester. Nylon thread shall not be used.
2. Written details and drawings shall be submitted for sewn seams. Details shall address, but not be limited to, thread type, thread tension (sewing device), stitch density and type, overlap, and number of rows and type of chainstitch. Also submit laboratory test reports evaluating the load-transfer capability of the proposed seams in accordance with ASTM D 4884.

- 3.6 Geogrid: Geogrid for placement beneath the graded riprap shall be an integrally formed grid structure manufactured of a stress-resistant polypropylene material, or Engineer approved alternate, and possess complete continuity of all properties throughout its structure. Geogrid

shall accept applied force in use by positive mechanical interlock (i.e., by direct mechanical keying) with (a) compacted soil or fill materials, (b) contiguous sections of itself when overlapped and embedded in compacted soil or fill materials, and (c) rigid mechanical connectors such as bodkins, pins, or hooks.

- 3.6.1 Physical Properties: Conformance of geogrid shall be in accordance with ASTM D 4759. Geogrid shall be sampled in accordance with ASTM D 4354 and tested to verify the following minimum physical properties and requirements:

Table 2: Geogrid			
Application: Placement beneath graded rip rap			
Physical Property	Unit	Test Method	Measure
Aperture Nominal Dimensions (MD & CD) (max)	in	I.D. Callipered ¹	2.0
Junction Strength	lb/ft	GRI-GG2	1,700
Tensile Strength @ 2% Strain (MD & CD) (min)	lb/ft	ASTM D 6637	580
Tensile Strength @ 5% Strain (MD & CD) (min)	lb/ft	ASTM D 6637	1,200
Resistance to Installation Damage (min)	% GP	ASTM D 5818	70
Notes: 1. Maximum inside dimension in each principle direction measured by calipers. 2. Resistance to bending force measured via ASTM D 1388, Option A, using specimen dimensions of 864 mm in length by 1 aperture in width. 3. Resistance to loss of load capacity of structural integrity when subjected to mechanical stress in installation measured via ASTM D 5818 in crushed stone classified as poorly graded gravel with a maximum 2 inch particle size (GP).			

- 3.6.2 Certified Test Reports: Submit manufacturer's certified test results to Engineer showing actual test values of the geogrid physical properties. The certificate shall contain the signer's title and affiliation, test date(s), the name and address of Contractor, the contract number, and project name and location. The mill certificate or affidavit shall list test results and attest that the materials meet the chemical, physical, and manufacturing requirements in this Specification. Provide manufacturer's recommendations for installation and protection instructions for the project considering the foundation soil conditions.
- 3.7 Subgrade Preparation: The surface to receive geotextiles shall be prepared as needed to provide a relatively smooth surface free of ruts and erosion rills, obstructions, abrupt depressions, and debris.
- 3.8 Surveying: Refer to Section TS-1, "Construction Surveying."
- 3.9 Protection: Materials shall be protected at all times to ensure the original chemical and physical properties. Work shall be sequenced so that geotextile materials are not exposed more than 7 days from the time materials are removed from their protective covering and sheets are fully covered by graded riprap and/or opaque temporary coverings. During periods of shipment and storage, geotextile materials shall be protected from direct sunlight, ultra-violet rays, and high temperatures and in accordance with any other instructions of the manufacturer. Unpackaged

rolls and sheets shall be protected with temporary opaque coverings. Damaged materials shall be either removed and replaced or covered with a second layer of geotextiles extending three (3) ft in each direction from the damaged area. Any material that is rejected or damaged due to the fault or negligence of Contractor shall be repaired or replaced at no additional cost to Owner.

3.10 Placement Beneath Graded Riprap: geotextile fabric and geogrid shall be placed in accordance with the manufacturer's instructions, and placement method shall meet, as a minimum, the following criteria:

1. Geotextile fabric may be placed simultaneously with the geogrid by preattaching or bonding the fabric to the bottom of each sheet of geogrid with provision for sufficient overlaps to form the geogrid composite. Pre-attaching or bonding geogrid to underlying geotextile fabric is at Contractor's option. Composite shall be placed with geotextile fabric beneath geogrid. Method of pre-attachment shall be provided for concurrence by Engineer. Care shall be taken to ensure that geogrid composite sections do not separate during construction.
2. Geogrid composite shall be placed to completely cover subgrade at locations shown on Plans and shall be relatively free of wrinkles, creases and sags before overlying rock is placed.
3. Adjacent sheets of geogrid composite shall overlap a minimum of 3 ft unless shown otherwise on the Plans.
4. Sheets shall not be staked down to the extent that they are taut and subject to significant puncture or tearing during subsequent graded riprap placement.
5. Method of graded riprap placement shall be such that sheets are not pulled apart at connections/ laps or significantly punctured or torn.
6. Geogrid composite placed on a slope shall be oriented so that the strongest material axis bears the majority of the anticipated load.
7. The geogrid composite shall be protected from damage during placement of stone. This shall be accomplished by limiting the height of drop to less than one (1) ft.
8. Construction equipment or vehicles shall not operate directly on sheets unless otherwise permitted by Engineer.
9. The Work shall be scheduled so that all installed geogrid composite is completely covered with a layer of rock by the end of each workday.

TS-4 RIP RAP

- 4.1 Scope: The Work includes furnishing materials, labor, and equipment for construction of graded riprap (GRR) structures in accordance with these Specifications and applicable Plans. Contractor shall furnish all of the materials, labor, and equipment necessary to construct the breakwater to the lines, grades and thicknesses provided on the Plans and in these Specifications, or as directed by Engineer. Contractor shall determine the number of lifts required to meet the tolerances specified on the Plans and in these Specifications.
- 4.2 References: Publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

American Society for Testing and Materials (ASTM) Publications

C 535 Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

D 75 Standard Practice for Sampling Aggregates

D 3740 Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction

D 5519 Standard Test Method for Particle Size Analysis of Natural and Man-Made Riprap Materials

D 6092 Standard Practice for Specifying Standard Sizes of Stone for Erosion Control

D 6473 Standard Test Method for Specific Gravity and Absorption of Rock For Erosion Control

E 329 Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

Louisiana Department of Transportation and Development (DOTD) Publications

DOTD Louisiana Standard Specifications for Roads and Bridges (2016)

- 4.3 Submittals: Submittals required under this section include the following:
1. Daily Progress Reports
 2. Barge Displacement Tables and Hydrometer (Water Density) Test Reports
 3. Surveys (Section TS-1, "Construction Surveying")
 4. GRR Submittals listed in Table 1

Table 1 – GRR Submittal Schedule		
GRR Submittal Number	Submittal Description	Required Submission Timeframe
1	Name, Location, and Historical Quality Reports from Quarry	At pre-construction conference
2	Testing Laboratory Qualifications	At pre-construction conference
3	GRR Delivery, Staging, and Testing Schedule	Before transport or delivery of any GRR from quarry
4	GRR Quality and Gradation Test Report 1	With or after GRR Submittal No. 3 but before transport or delivery of any GRR from quarry
5	GRR Quality and Gradation Test Reports	Every 10,000 tons before shipment of GRR from quarry

1. GRR Submittal 1: Contractor shall provide the name and location of the quarry that will be the source of the GRR for the project at the Pre-Construction Conference. Contractor shall also provide historical quality reports from the selected quarry to determine the acceptability of the GRR from the proposed source. Historical quality reports are not considered suitable alternatives to the quality and gradation reports required during construction. Quality and gradation reports during construction shall be from new tests performed on actual GRR to be used on the project.
2. GRR Submittal 2: Testing laboratory qualifications shall be submitted at the Pre-Construction Conference.
3. GRR Submittal 3: Before commencing GRR delivery to project site, Contractor shall submit a GRR delivery, staging, and testing schedule, and a description of the planned gradation test procedure. The schedule shall describe when GRR quality and gradation testing will be performed to ensure that test results are available for Engineer's review before GRR being shipped from the quarry. A minimum of 2 quality and 2 gradation tests are required and shall be provided at specified intervals to ensure compliance with quality and gradation requirements. The first quality and gradation test reports shall be performed, submitted, and reviewed by Engineer before delivery of any GRR. The remaining quality and gradation tests shall be performed, submitted, and reviewed by Engineer at approximately 10,000 ton intervals and before shipment of GRR.
4. GRR Submittals 4, 5, and Up: Contractor shall obtain Engineer's review and confirmation of compliance of gradation and quality tests before shipment of GRR in the increments stated in Table 1. If a single shipment of GRR is planned to encompass multiple increments, Contractor shall submit the required number of test submittals and receive review and confirmation of compliance before shipment of GRR from quarry. Contractor may request variations to timeframes in Table 1 in GRR delivery, staging, and testing schedule.

4.4 Materials Testing:

- 4.4.1 Contractor/Quarry shall provide all equipment and facilities for testing construction materials.
- 4.4.2 Prior to commencing GRR production, Contractor shall provide the name and location of the quarry that will provide the GRR for the project. Suitable test reports and service records are required to determine the acceptability of the GRR from the proposed source. Reports shall be from new tests performed on actual GRR to be used on project. Acceptable GRR shall meet the quality acceptance criteria below when tested in accordance with the procedures listed below:
 1. Sampling of the GRR shall be performed in accordance with ASTM D 75.
 2. The absorption of GRR shall be determined in accordance with ASTM D 6473.
 3. The unit weight of GRR shall be provided based on the apparent specific gravity determined in accordance with ASTM D 6473.
 4. The loss by abrasion of GRR shall be determined in accordance with ASTM C 535, processed and tested for No. 1 grading.
 5. The gradation of the GRR shall be determined in accordance with ASTM D 5519, Test Method C.
- 4.4.3 Throughout the duration of the Work, Contractor/Quarry shall inspect, sample, and test

construction materials for compliance with the specified requirements and record the inspection of all operations. All sampling and testing shall be performed by a qualified testing laboratory meeting the requirements of ASTM D 3740 and ASTM E 329. A copy of the records of inspection, as well as the records of corrective action taken, shall be provided to Engineer. Owner reserves the right to test additional samples to verify the submitted test records at Owner's expense. If the first test results indicate that the materials do not meet the specified requirements, the additional test will be at Contractor's expense. As a minimum, Contractor/Quarry shall perform quality control inspection and testing, for Graded Riprap in accordance with the following:

1. Gradation and Quality Tests

a. Testing Frequency: One gradation and one quality test shall be submitted before construction and for every 10,000 tons of graded riprap delivered thereafter.

b. Sample Size: At least 50 stones and 10 tons per test.

2. Placement: Continuous inspection of placement to ensure proper thickness and that material is not segregated.

4.5 GRR Material:

4.5.1 Stone: All stone for GRR shall be durable natural stone. It shall be free from visible cracks, clay pockets, cavities (vugs), laminations, and other defects that would tend to increase unduly its deterioration from natural causes. Stone shall not include objectionable quantities of dirt, sand, clay, and/or rock fines. Stone shall have a solids unit weight (including the permeable and impermeable voids in the particles, but not including the voids between particles) of 155 PCF (min) and 165 PCF (max) (based on apparent specific gravity). Stone having a solids unit weight greater than 165 PCF may be submitted to Engineer for approval but may require GRR layer thickness modification to reduce bearing pressure on soft soils. The absorption shall not exceed 3% and maximum loss by abrasion shall be 36%.

The GRR shall be reasonably well graded and shall include essentially all stone sizes between the two extremes specified which will result in a dense, fairly well-graded material not having noticeable voids or a lack of the larger sizes. GRR size range (gradation) shall conform to the requirements of LA DOTD Standard Specification Section 711, "440 lb Riprap Class Modified"

4.5.2 Stone Shape: The greatest dimension of each stone shall not be more than three times its least dimension. The faces of individual stones shall be roughly angular, not rounded, in shape.

4.6 Coordination with Quarry: Contractor shall be knowledgeable of the methods used at the quarry to produce the GRR gradations specified, especially the effects of repeated handling. Contractor shall coordinate with the quarry and use loading and unloading methods that ensure required gradations are provided for placement.

4.7 GRR Placement: GRR shall be placed over the prepared subgrade and geotextiles within the limits indicated on the Plans. The finished surfaces and stone layer thicknesses shall not deviate from the lines and grades shown by more than the tolerances indicated on the Plans. Tolerances are to be measured perpendicular to the neat lines. The stone layer shall be constructed as indicated on the Plans, and include the following characteristics:

1. Contractor shall be aware that soft soil conditions exist and employ placement techniques as described on the Plans.
 2. Contact between individual stones shall be maximized on all sides. Each stone shall have at least three (minimum) points of contact with other stones. Keep extreme differences between the top surfaces of abutting stones to a minimum to the greatest extent practicable.
 3. GRR shall be placed and spread in such a manner that the various stone sizes produce a relatively uniform surface and a completed layer that is a reasonably well-graded, compact mass of rock with minimal percentage of voids. Smaller stones and/or chips and fragments shall be placed as required to produce a relatively uniform finished outer surface.
 4. GRR shall be placed carefully onto the underlying surface (geotextile, geogrid composite/encapsulated lightweight aggregate) by limiting the height of drop to less than one (1) ft.
- 4.8 Misplaced Materials: If any GRR is deposited elsewhere than in places designated or approved, Contractor may be required to remove such misplaced material and redeposit it where directed at Contractor's expense.
- 4.9 Surveying: Contractor shall provide initial, progress, and as-built surveys of GRR as well as time history plots showing weekly surveys of settlement plates. Refer to Specification Section TS-1, "Construction Surveying."
- 4.10 Acceptance: Acceptance of GRR will be based on Engineer's review of the gradation and quality tests, surveys, and the other requirements of the Plans and these Specifications. Layer thickness will be verified by comparison of surveys taken prior to and after rock placement and visually in the field.

TS-5 ACCESS AND FLOTATION CHANNEL

- 5.1 Scope: Contractor shall furnish all materials, labor, and equipment necessary to conduct the optional access and flotation channel excavation (mechanical dredging), stockpiling, and backfilling of soil. Contractor shall bear responsibility for maintaining channels in a useable configuration throughout the duration of the Work, as needed. The Contractor shall be responsible for determination of dredge volumes associated with any necessary flotation channel excavation.
- 5.2 Excavation Limits: The limits of excavation shall conform to the lines, grades and slopes specified in the Plans. It shall be the responsibility of Contractor to obtain a permit modification and prior approval from Engineer to enlarge or relocate the channels. Contractor shall also obtain and submit to Engineer a letter of no objection from any pipeline company for the proposed excavation inside their right-of-way.
- 5.3 Material Stockpiles: The dredged material shall be temporarily deposited seaward of the flotation channels and adjacent to access channels and conform to the elevations, grades and lines specified in the Plans. Stockpiles shall be clearly marked with temporary warning signs as shown in the Plans. Contractor shall be responsible for coordinating with the USCG and obtain any necessary permits for temporary warning signs. Upon completion of Work, dredged material shall be placed back into the channels as indicated on the Plans. The temporary disposal areas shall be reworked to within approximately 6 inches of the original grade. Unauthorized placement areas shall be restored to pre-construction conditions at the expense of Contractor.
- 5.4 Backfilling: Excavations shall be backfilled with previously excavated/stockpiled material as promptly as the Work permits but not until required surveying has been performed and Engineer has accepted associated breakwater sections. Backfill material shall be placed in uniform lifts to avoid unequal soil pressures. Contractor shall be aware that soft soil conditions exist and employ suitable placement. Final top surface of backfilled areas shall be relatively uniformly graded. Compaction of backfill will not be required; however, the top surface shall be manipulated so that it is reasonably smooth and free of voids and abrupt humps or depressions.
- 5.5 Unsatisfactory Dredged Material: Material such as rocks, cable, trees, tires, concrete, debris, etc. shall become the property of the Contractor, removed from the project site, and disposed of in accordance with all applicable laws and ordinances.
- 5.6 Surveying: Contractor shall provide initial, progress, and as-built surveys. Refer to Section TS-1, "Construction Surveying."
- 5.7 Acceptance: This work is considered complete when the access and flotation channels have been backfilled. Surveys shall be submitted to verify that excavated areas have been backfilled.

Measurement and Payment: Refer to Specification Section 01025, "Measurement and Payment." All costs associated with the optional access and flotation channels, including costs associated with the installation, maintenance, and permitting of temporary warning signs, shall be subject to payment under Item 1: Mobilization and Demobilization. Any flotation channel dredging required for access to the site shall be considered incidental to the contractor's mobilization cost for any base bid or alternate. This operation will be considered complete when the remaining disposal material is placed back into the flotation channel and the bottom

depth of the temporary disposal area is back to pre-construction conditions and/elevations.

TS-6 MARINE HAZARD MARKERS

6.1 Lighted Daybeacons

6.1.1 Scope: The Work includes furnishing materials, labor, and equipment necessary to construct, install, survey and maintain the lighted daybeacons in accordance with these Specifications and applicable Plans.

6.1.2 Submittals: Submittals required under this paragraph include the following:

1. Surveys (Refer to TS-2)
2. Material Certifications for Treated Timber Post, Aluminum Plate Signage, Hardware, Reflective Tape, and Signal Lights
3. Shop Drawings
4. Battery Housing Lock Combination and Instructions

6.2 Materials: Lighted daybeacons shall be constructed of the materials and to the dimensions required as shown in the plans. See details and notes on plan Sheet 12 for requirements. Contractor shall submit certifications showing accordance with the material requirements for the treated timber post, aluminum plate signage, hardware, reflective tape, and signal lights prior to installation of the lighted daybeacons.

6.3 Installation: The lighted daybeacons shall be installed at locations as shown on the Plans and approved by the Engineer. Contractor shall exercise care when performing work in the vicinity of the lighted daybeacons. Contractor shall submit shop drawings detailing the method to be used to attach the marine lantern to the timber post for review at least seven (7) days prior to installation of the lighted daybeacons. The Contractor shall maintain the warning lights, including locking the battery housing, until final acceptance. Prior to installing the battery housing lock, the contractor shall submit written instructions for changing the lock combination and shall submit the lock combination to be used.

6.4 Surveying: Contractor shall survey the adjacent grade, sign location, and sign elevation of the lighted daybeacons. Refer to Section TS-1, "Construction Surveying."

6.5 Maintenance: Contractor shall maintain all lighted daybeacons until Work is completed. Any damaged lighted daybeacons shall be repaired or replaced by Contractor at no expense to the Owner.

TS-7 SETTLEMENT PLATES

- 7.1 Scope: Contractor shall furnish all of the materials, labor, and equipment necessary to construct, install, survey, and maintain the settlement plates in accordance with these Specifications and applicable Plans.
- 7.2 Materials: Plates shall be fabricated with a four ft (4') by four ft (4') by one fourth inch ($\frac{1}{4}$ ") steel plate and a three inch (3") diameter galvanized steel Schedule 40 or heavier riser pipe welded to the center of the plate using a three-sixteenth-inch ($\frac{3}{16}$ ") continuous fillet. The pipe shall be a of a length that achieves a cap elevation of +5 ft NAVD88 and the top closed with a galvanized cap tack welded to the pipe in at least three (3) locations equally spaced around the pipe perimeter. After fabrication, the plates shall be hot-dip galvanized.
- 7.3 Zinc Coating: Zinc coating shall be applied in a manner and thickness quality conforming to ASTM A 123. In any case where the zinc coating becomes damaged, the damaged area shall be re-galvanized with a suitable low-melting zinc base alloy, as recommended by the American Hot-Dip Galvanizers Association. One coat of a vinyl wash primer followed by red top coat shall be applied over the zinc coat. All painting shall conform to the latest edition of the LA DOTD Standard Specification Section 811 and 1008, or approved equivalent.
- 7.4 Installation: The plates shall be installed at locations as shown on the Plans and approved by the Engineer. Locations will be updated based on updates to the breakwater alignment. Settlement plates shall not be installed until updated breakwater alignments and updated settlement plate locations have been approved by Engineer. Contractor shall exercise care when performing work in the vicinity of the settlement plates to not damage the settlement plate. Leveling of the plate bed shall be accomplished by removing the minimum amount of earth or rock necessary to produce a level foundation.
- 7.5 Surveying: Refer to Section TS-1, "Construction Surveying."
- 7.6 Maintenance: Contractor shall maintain all settlement plates until Work is completed. Any damaged settlement plates shall be repaired or replaced by Contractor at no expense to Owner.

END OF SECTION 09 – TECHNICAL SPECIFICATIONS

Appendix A

Soil Borings **Geotechnical Report**

GEOTECHNICAL INVESTIGATION

PROPOSED LOWER TCHEFUNCTE
BREAKWATER RESTORATION PROJECT

ST. TAMMANY PARISH, LOUISIANA

TBG PROJECT NO. 5820G

Prepared for:
DIGITAL ENGINEERING
KENNER, LOUISIANA



1428½ Claire Avenue, Gretna, Louisiana 70053

(504) 227-2273 • fax: (504) 227-2274

7250 Stennis Airport Rd. Suite 206, Kiln, Mississippi 39576

(228) 466-2556 • fax: (228) 466-2571

Betagroupgc.com



September 19, 2022

Digital Engineering and Imaging Inc.
527 W. Esplanade Ave. #200
Kenner, Louisiana 70065

Attn: Mr. Andrew Woodroof, P.E.

Reference: Report of Geotechnical Investigation
Proposed Lower Tchefuncte Breakwater Restoration Project
St. Tammany Parish, LA
TBG Report No. 5820G

Dear Mr. Woodroof:

The Beta Group, LLC (TBG) has performed a Geotechnical Investigation for the above referenced site in St. Tammany Parish, Louisiana. The attached report presents our understanding of the project, reviews our exploration procedures, describes existing site and general subsurface conditions, and presents our evaluations and recommendations.

We have enjoyed working with you on this project and look forward to assisting you during the continuing design and construction activities. Please contact us at anytime if you have any questions regarding this report or need further service.

Sincerely,

THE BETA GROUP, LLC

Alex Jaramillo, P.E.

Senior Project Engineer



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PURPOSE AND SCOPE OF SERVICES

PURPOSE OF SERVICES

The purpose of the Geotechnical Investigation was to explore the subsurface conditions at the site and to provide geotechnical design recommendations for the proposed Breakwater Restoration Project, site preparation, earthwork and quality control measures related to these design aspects.

SCOPE OF SERVICES

To accomplish the stated purpose, we executed the following:

1. Documented existing surface conditions and features at the project site and the marked boring locations.
2. Performed a subsurface exploration consisting of four (4) undisturbed soil test borings to the depths of 40 feet below the existing mudline in the general area of the Breakwater Restoration and two (2) shallow borings within the Tchefuncte River to the 2 ft. depth below the existing mudline at the locations provided to The Beta Group (TBG) by Mr. Andrew Woodroof, P.E. of Digital Engineering and Imaging Inc.
3. Performed laboratory testing on selected soil samples to ascertain soil properties for engineering purposes.
4. Evaluated the findings of the subsurface exploration and laboratory data relative to general subsurface characterization, support, and other geotechnical aspects of the project.

Our scope of services did not include a survey of the boring locations and elevations, quantity of estimates, preparation of plans or specifications, or the identification and evaluation of environmental aspects of the project site.

PROPOSED PROJECT DESCRIPTION

We understand the project will consist of an investigation and analysis along the northern shoreline of Lake Ponchartrain to Engineer and Design a Breakwater System near the mouth of the

Tchefuncte River. This geotechnical investigation includes an area approximately 2,500 ft. extending from the peninsula of the existing Tchefuncte River Light house to the Lake Ponchartrain Shoreline east of the Tchefuncte River.

SUBSURFACE EXPLORATION

FIELD EXPLORATION

The subsurface exploration consisted of four (4) undisturbed soil test borings (designated as B-1 thru B-4) and two (2) shallow borings (designated as GB-1 and GB-2) completed between March 14 through March 15, 2015 at the referenced site and at the approximate locations shown on the attached Boring Location Plan (Figure No. 1).

The soil test borings locations were located in the field by a TBG representative by making reference to a site plan (with approximate locations) provided by Mr. Andrew Woodroof, P.E. of Digital Engineering and Imaging, Inc. The borings locations were plotted and topographical information was estimated. The methods used in the determination of the boring locations shown on the Boring Location Plan should be considered approximate.

The soil test borings were drilled utilizing a pontoon boat mounted drill rig at the designated locations shown on the Boring Location Plans. Undisturbed sampling was performed continuously in the upper 10 feet and on 5 ft. centers thereafter, with a 3-inch diameter thin-walled tube sampler. Representative samples were removed from the tubes and placed in moisture-proof containers for laboratory testing.

When cohesionless material was encountered, which could not be sampled by undisturbed methods, the Standard Penetration Test was performed. This test consists of driving a two inch diameter split spoon sampler 1 ft. (after first seating it 6 inches) with a 140 lb. hammer falling 30 inches. The number of blows required to drive the sampler gives an indication of the density of the material.

The soil test borings were advanced through the soil overburden to the assigned termination depths of 40 feet and 2 feet below the existing mudline.

LABORATORY TESTING

Laboratory tests were conducted on selected samples in general accordance with ASTM standards. The laboratory testing performed for this project consisted of:

- Atterberg Limit Determination Tests
- Unconfined Compression Tests
- Natural Moisture Content
- Unit Weight Determination Tests
- One (1) Point Consolidation Test
- Particle Size Analysis
- Percent Passing #200 Sieve

The test results are summarized on the individual Boring Logs in the Appendix of this report.

SITE AND SUBSURFACE CONDITIONS

SITE CONDITIONS

TBG performed reconnaissance of the site on March 14, 2022. The site is located along the northern shoreline of Lake Ponchartrain. The area will include approximately 5,000 ft. east-west extending from the peninsula of the Lighthouse to the Lake Ponchartrain Shoreline east of the mouth of the Tchefuncte River, in Mandeville, LA.

SUBSURFACE CONDITIONS

Boring B-1: Reference to the log of boring B-1 shows that beginning at the mud-line; there is 2 ft. of very soft dark gray clay followed by very soft black peat to the 4 ft. depth. This peat is underlain by medium stiff to stiff gray sandy clay to the 33 ft. depth proceeded by medium stiff tan silty clay to at least the boring's termination depth of 40 ft.

Boring B-2: Reference to the log of boring B-2 shows that beginning at the mud-line; there is 18 ft. of very soft gray clay followed by very soft gray sandy clay to the 23 ft. depth. This sandy clay is proceeded by very soft gray clay to the 33 ft. depth and followed by very loose gray silty sand to at least the boring's termination depth of 40 ft.

Boring B-3: Reference to the log of boring B-3 shows that beginning at the mud-line; there is 2 ft. of very soft dark gray organic clay followed by stiff tan and gray silty clay to the 6 ft. depth. This clay is underlain by soft to medium stiff gray and tan clay to the 13 ft. depth. This clay is proceeded by stiff tan and gray silty clay to the 28 ft. depth and below this clay is stiff tan and gray sandy clay to the 33 ft. depth. This sandy clay is followed by medium stiff tan and gray silty clay to at least the boring's termination depth of 40 ft.

Boring B-4: Reference to the log of boring B-4 shows that beginning at the mud-line; there is 2 ft. of very loose gray sand followed by very soft gray sandy clay to the 6 ft. depth. This clay is underlain by very soft gray silty clay to the 18 ft. depth and followed by very soft gray clay to the 23 ft. depth. This clay is proceeded by medium stiff to stiff gray silty clay to the 27 ft. depth and underlain by medium dense gray silty sand to at least the boring's termination depth of 40 ft.

Boring GB-1: Reference to the log of boring GB-1 shows that beginning at the mud-line; there is very loose gray clayey sand to at least the boring's termination depth of 2 ft.

Boring GB-2: Reference to the log of boring GB-2 shows that beginning at the mud-line; there is soft gray sandy clay to at least the boring's termination depth of 2 ft.

GROUNDWATER CONDITIONS

At the time of making the borings, groundwater could not be monitored due to the borings having been completed in open water and below the mud-line. The soil borings were drilled in 5 ft. to 18 ft. of water. It should be noted that groundwater levels tend to fluctuate with seasonal and climatic changes, the proximity to any water bodies, as well as with some types of construction operations. As such, groundwater levels at other times of the year may be different than those described in this report. These observations were made while completing the borings and may not have become fully static at the time of measurement. If groundwater is important to construction, it should be measured at that time.

ENGINEERING EVALUATION & RECOMMENDATIONS

The following evaluations and recommendations are based on our observations at the site, interpretation of the field and soil laboratory data obtained during this exploration, and our experience with similar subsurface conditions and projects. Subsurface conditions in unexplored locations may vary from those encountered. If the project location or design

information changes, we request that we be advised so that we may re-evaluate our recommendations.

Design recommendations for the given location are dependent on the soil and site conditions. The subsurface exploration aids the geotechnical engineer in determining the necessary geotechnical recommendations needed. In addition, since the method of construction greatly affects the soils intended for the Breakwater Project, consideration must be given to the implementation of suitable methods of site preparation, material compaction, and other aspects of construction.

FURNISHED INFORMATION AND BREAKWATER ANALYSES

We understand that the project consists of constructing a new Breakwater System along the northern shoreline of Lake Ponchartrain near the mouth of the Tchefuncte River, in Mandeville, La. Three (3) Breakwater System layouts were provided, one (1) of which will be selected in the final stages of design.

1. The proposed **Continuous** Breakwater System Layout 1 is 2,529 linear ft. in the southwest to northeast direction and uses the soil information of borings B-3 and B-4.
2. Proposed **Segmented** Breakwater System Layout 1 consists of one 289 linear ft. segment, four 500 linear ft. segments, and a 60 ft. break between each segment. This layout is in the southwest to northeast direction and uses the soil information of borings B-3 and B-4.
3. Proposed **Continuous** Breakwater System Layout 2 is 2,478 linear ft. in the west to east direction and uses the soils information of borings B-1, B-2, and B-3.

The selected Breakwater System will be approximately 5 ft. in width at the crown with an El.+3.0. The bottom of the Breakwater System will be approximately 50 ft. in width from toe to toe and have a maximum toe at El. -6.0. The side slopes of the Breakwater System will be 2H:1V on the Shore Side and 3H:1V on the Lake Side. The unit weight of the riprap is understood to be 165 lbs./ft³. The water elevations are understood to be from El. +0.79 to El. +1.37. The associated plans can be found in the appendix of this report.

Analyses were made based on the soil borings and laboratory test data to develop geotechnical related parameters for use in the design of the Breakwater System, these include the evaluation of global stability, settlement, and time rate of consolidation.

SLOPE STABILITY ANALYSIS

Geotechnical analyses with regard to overall stability were made based on the cross-section provided by Victoria Jaye, P.E. of Digital Engineering and Imaging, Inc. and data obtained from the site. The analyses were performed using the "Circular Method", SLOPE/W GeoStudio version 11.3.1. The effects of strength gain due to riprap placement were not considered in our analyses. The stability analyses shows the direction of active forces are from the Lake Side (Lake) to the Shore Side (Shore) and from Shore Side to Lake Side of the proposed Breakwater System. The most critical cross-sections were analyzed to determine the factor of safety for the new construction. The results of the slope stability analyses are given below.

SLOPE STABILITY ANALYSIS OF TYPICAL BREAKWATER SECTION

Boring	APPROX LEEVE CROWN ELEV. (FT.)	APPROX LEEVE BOTTOM WIDTH. (FT.)	RUN ORIENTATION	LAKE SIDE WATER ELEV. (FT.)	SHORE SIDE WATER ELEV. (FT.)	MINIMUM FACTOR OF SAFETY
1	El. +3.0	50 ft.	Lake to Shore	+1.37	+0.79	1.879
			Shore to Lake	+0.79	+1.37	1.714
2	El. +3.0	50 ft.	Lake to Shore	+1.37	+0.79	1.420
			Shore to Lake	+0.79	+1.37	1.538
3	El. +3.0	50 ft.	Lake to Shore	+1.37	+0.79	2.140
			Shore to Lake	+0.79	+1.37	1.975
4	El. +3.0	50 ft.	Lake to Shore	+1.37	+0.79	1.350
			Shore to Lake	+0.79	+1.37	1.352

In general, a minimum factor of safety of 1.3 is believed needed to assure good stability against a deep-seated slope type failure.

SETTLEMENT ANALYSIS

Some long-term settlements, including some differential settlements, should be expected to develop with time along the alignment. In view of this, analyses were made to estimate long-term consolidation settlements due to the loads imposed. Long-term differential settlements could also develop due to variations in bottom grades, structure geometry and characteristics of

the underlying subsoils along a given segment and across its cross-section. This is particularly important considering the length of the structure and the limited number of borings made during the subsoil investigation. The results of the settlement analyses are shown below.

ESTIMATED SETTLEMENT OF TYPICAL BREAKWATER SECTION

Boring	Approx. Levee Crown Elev. (FT.)	Approx. Levee Toe Elev. (FT.)	Pressure (PSF)	Center Settlement (IN.)	Edge Settlement (IN.)
1	El. +3.0	El. -6.0	1,485	12.2	4.12
2	El. +3.0	El. -6.0	1,485	23.7	6.50
3	El. +3.0	El. -6.0	1,485	12.4	4.88
4	El. +3.0	El. -6.0	1,485	10.3	3.44

TIME RATE

The estimated settlement values are approximate long-term estimates. Additional analyses were made to determine the estimated time to achieve various degrees of consolidation (percent of ultimate settlement). The results of our analyses are provided on the following table.

Approximate Time Rate of Consolidation			
Percent Primary Consolidation (% of Ultimate Primary Settlement)	Time		
	Days	Months	Years
30	9	0.29	0.02
50	24	0.80	0.07
70	49	1.63	0.13
90	103	3.43	0.28

If the Breakwater Layout that includes boring B-2 is selected, we should be contacted to re-analyze the time-rate of consolidation due to the amount of settlement estimated. It should be noted that time-rate estimates are difficult to predict considering the length and size of the Breakwater and the limited number of borings made. Therefore, actual values may vary by up to ± 20 to 30% from these given values considering the possible variations in subsoil conditions. Consequently, additional riprap may need to be added in the future to maintain the design grades and shape of the structure.

The foregoing estimated settlements do not consider any future lifts needed to raise the grade or reshape the geometry of the structure. These settlement predictions are only due to self-weight of the proposed construction and do not include those due to regional or global settlements and associated rise in water level which are expected to be relatively uniform throughout the geographical area of the site. It should be noted that settlement and time-rate of consolidation analyses are highly dependent on the characteristics of the material and geometry, construction conditions, water level during construction and long-term maintenance program.

CONSTRUCTION MATERIALS

It should be noted that this report does not address the adequacy and design from hydraulic or environmental viewpoints. In addition, no consideration was given in the above analyses to the performance of the structures under extreme events, such as hurricanes. The size, gradation and angularity of the riprap to be used for construction should be based on the hydraulic and mechanical requirements considered in the design, which is beyond the scope of this investigation. However, the riprap should have appropriate physical properties including adequate weight to resist erosion due to waves, storms and hurricane forces.

CONSTRUCTION CONSIDERATIONS

In general, methods, means and sequence of construction should be the responsibility of the contractor who should be specialized in this type of underwater work. However, some geotechnical related recommendations are offered herein in this regard. It should be noted that the foregoing analyses assumed that all construction will be performed in the "wet" at or near the mean low water level. In general, construction should proceed from the centerline outwards to avoid the buildup of significant mud waves within the construction area.

CONSTRUCTION QUALITY CONTROL

As previously discussed, the Geotechnical Engineer of record should be retained to monitor and test earthwork activities, pile driving activities, subgrade preparations, as well as any additional construction activities. We recommend that TBG be employed to monitor the earthwork construction, and to report that the recommendations contained in this report are completed in a satisfactory manner. Our continued involvement on the project will aid in the proper

implementation of the recommendations discussed herein.

The following is a recommended scope of services:

- Review of project plans and construction specifications to verify that the recommendations presented in this report have been properly interpreted and implemented.
- Observe the earthwork process to document that subsurface conditions encountered during construction are consistent with the conditions anticipated in this report.
- Observe the subgrade conditions before placing structural materials.
- Observe the placement and compaction of all structural materials, and perform laboratory and field compaction testing.

CONSULTATION

Often during final design and/or construction, questions can arise or services are needed to complete the project. TBG offers various construction services such as pile logging, vibration monitoring, pile load tests, subgrade preparation testing, etc. At your request, TBG would be pleased to discuss these services with a brief phone call or conference.

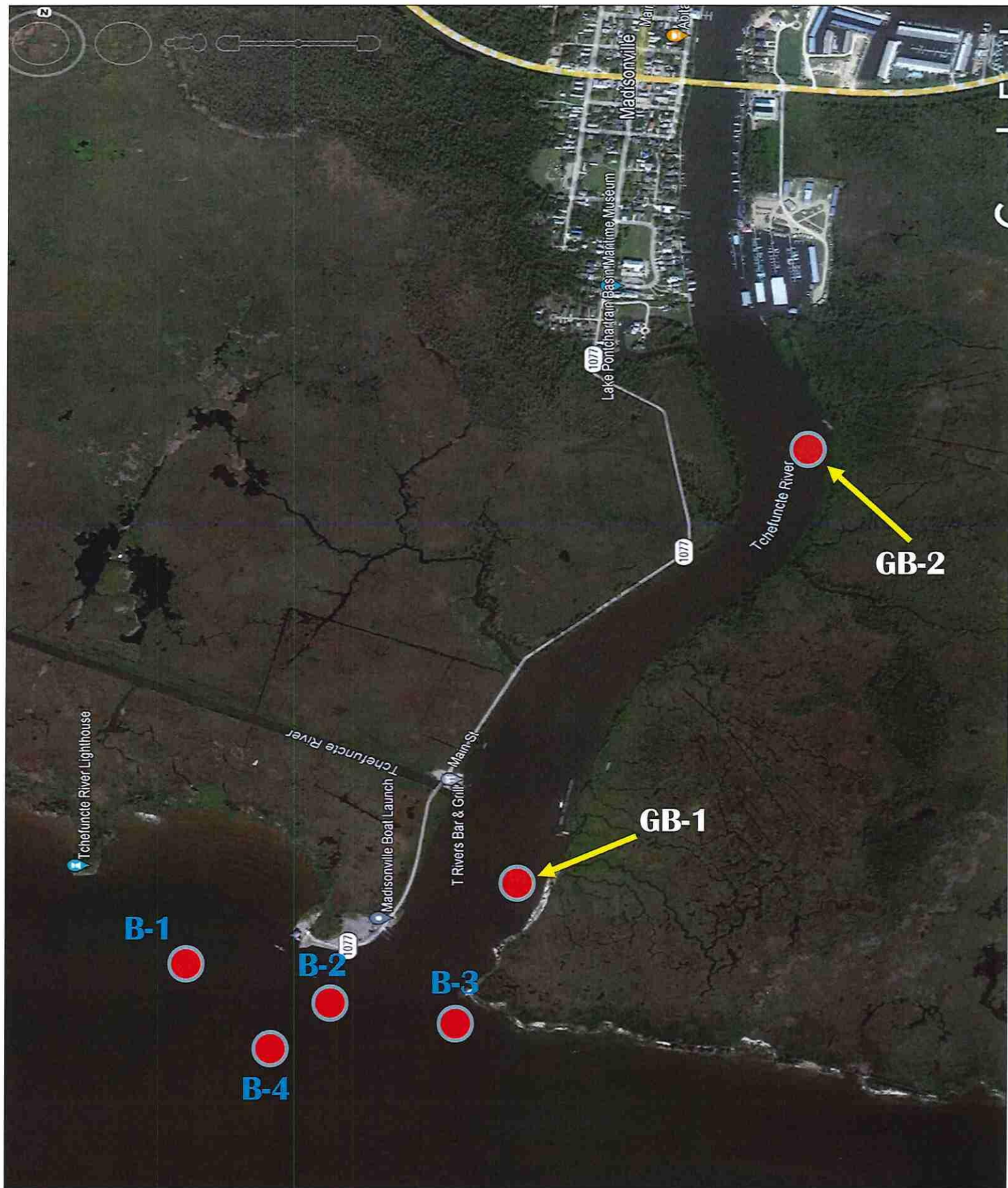
LIMITATIONS

This report has been prepared for the exclusive use of Digital Engineering and Imaging, Inc. and their assigns for specific application to the referenced property in accordance with generally accepted geotechnical engineering practices.

No other warranty, expressed or implied, is made. These recommendations do not reflect variations in subsurface conditions that may be intermediate of the boring locations or in unexplored areas of the site. Should such variations become apparent during construction, we

reserve the right to re-evaluate our recommendations based upon on-site observations of the conditions. In the event changes are made in the proposed construction plans, the recommendations presented in this report shall not be considered valid unless reviewed by our firm and modified or verified in writing.

Appendix



BORING LOCATION PLAN

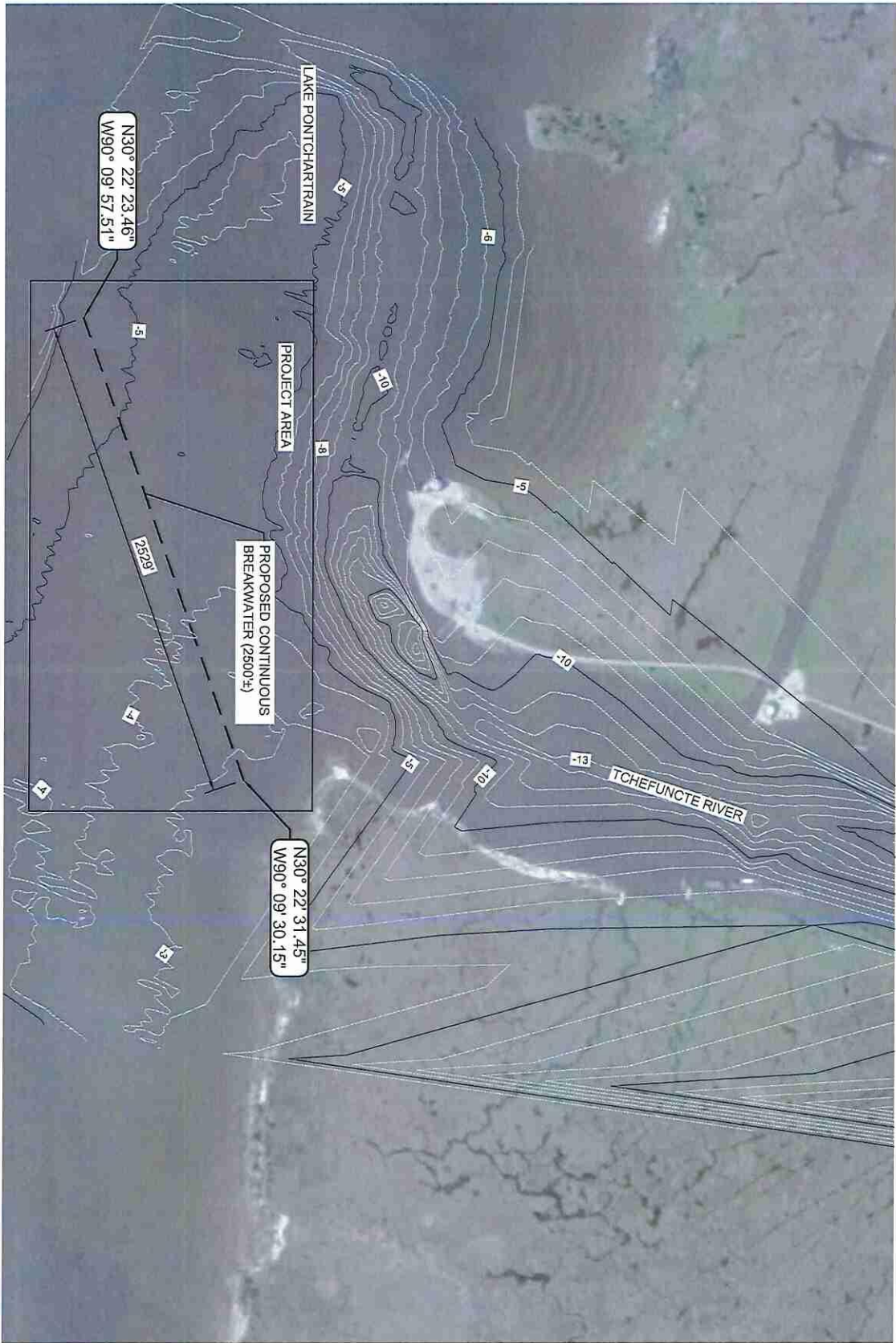
● BORING LOCATION

North



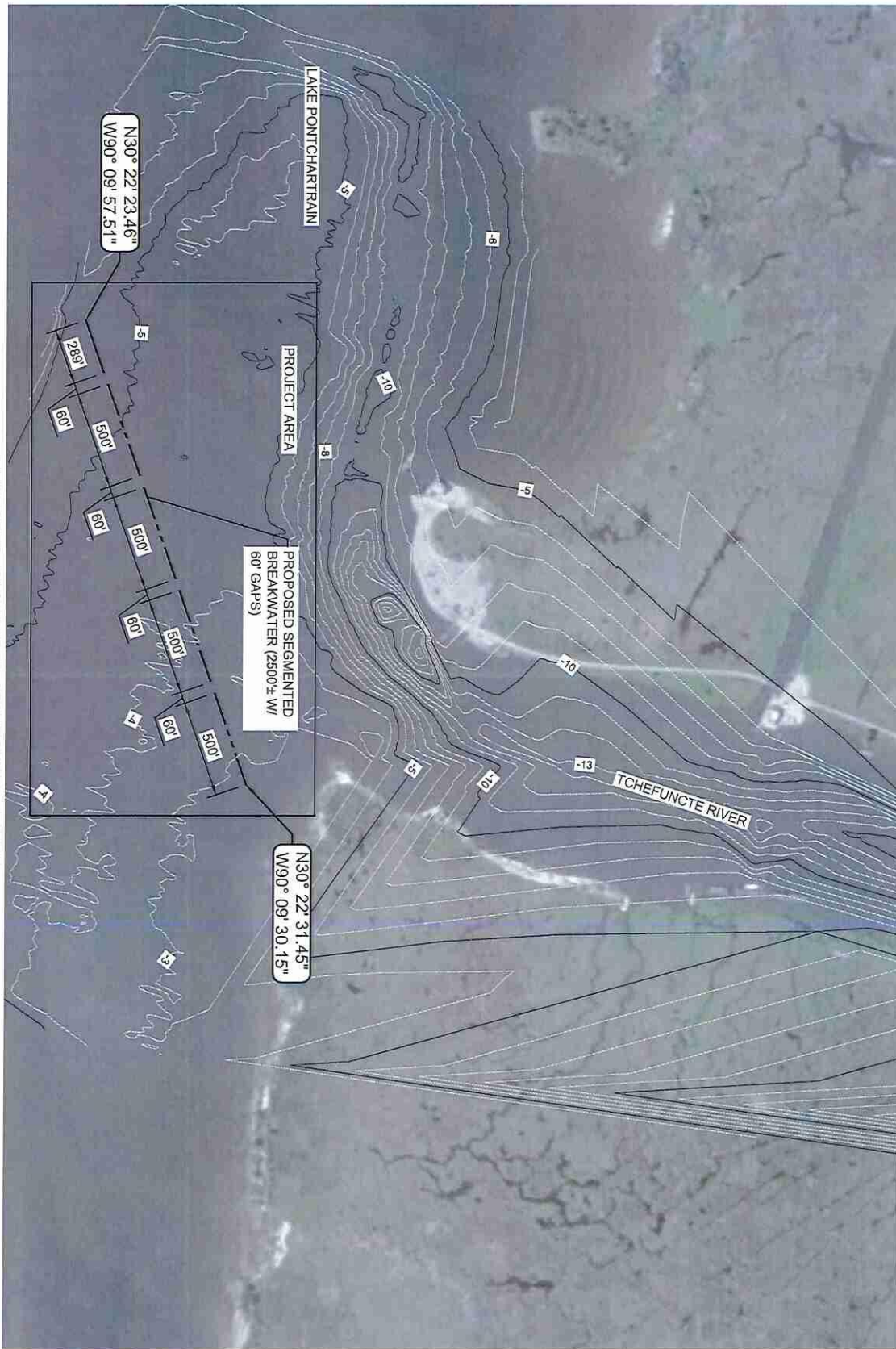
THE BETA GROUP, LLC.
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 504-227-2273 fax: 504-227-2274
 Betagroupgc.com

Client:	Digital Engineering
Project:	Proposed Lower Tchefuncle Breakwater Project
Location:	St. Tammany Parish, Louisiana
TBG Project No:	5820G
Date:	4/27/22
Scale: Not To Scale	
Figure 1	



PROPOSED CONTINUOUS BREAKWATER LAYOUT 1
 SCALE: 1" = 500'

DATE: MAY 2022 SHEET OF			ST. TAMMANY PARISH ADDRESS 1 ADDRESS 2	 DIGITAL ENGINEERING & MAPPING, INC. 827 W. COTLAND AVE., STE. 200 KENNER, LA 70002 - PH: (504) 488-6129				
	STATE PROJECT NUMBER:	DESIGNED BY: YPM			REV.	DATE	DESCRIPTION	BY
	DRAWN BY: DRW	APPROVED BY: AKW						



PROPOSED SEGMENTED BREAKWATER LAYOUT 1
 SCALE: 1" = 500'

DATE: MAY 2022 SHEET OF			ST. TAMMANY PARISH ADDRESS 1 ADDRESS 2	 DIGITAL ENGINEERING & PLANNING, INC. 521 W. EUPHRASIE AVE., STE. 200 KENNER, LA 70002 • PH: (504) 466-9125						
	STATE PROJECT NUMBER:	DESIGNED BY: VPM								
	DRAWN BY: DRW	APPROVED BY: AKW								
						REV.	DATE	DESCRIPTION	BY	

Proposed Lower Tchefuncte
Breakwater Restoration

St. Tammany Parish, Louisiana

Digital Engineering
527 W. Esplanade Ave. #200
Kenner, La. 70065

LOG OF SOIL BORING B-1



Sheet 1 of 1

File: 5820G

Date: 3/15/22

Logged by: T. Roche

Driller: S.E.R.

Rig: Boat

FIELD DATA				LABORATORY DATA								Soil Type	Location: Lat. 30° 22' 35.94" Long. 90° 9' 56.35"	
Ground Water Level	Depth (feet)	Samples	Field Test Results	Compressive Strength (tsf)	Water Content (%)	Wet Unit Weight (pcf)	Atterberg Limits			Percent Passing #200 Sieve	Organic Content		Surface Elevation:	
							LL	PL	PI				Description	
			0.25 (P)	0.09	87	86							Very Soft Dark Gray CLAY (CH)	
			0.25 (P)	0.08	213	77							Very Soft Black PEAT (PT)	
	- 5 -		0.75 (P)	1.32	19	131	30	11	19				Medium Stiff to Stiff Gray SANDY CLAY (CL)	
			2.75 (P)	1.48	18	134								
			1.25 (P)	0.84	19	133								
	- 10 -													
			2.0 (P)		19									
	- 15 -													
			4.5 (P)	1.48	15	136							Medium Stiff Tan SILTY CLAY (CL)	
	- 20 -													
			1.25 (P)		17									
	- 25 -													
			2.5 (P)	1.22	15	137	22	11	11					
	- 30 -													
			1.0 (P)		30								Medium Stiff Tan SILTY CLAY (CL)	
	- 35 -													
			1.0 (P)	0.82	28	124								
	- 40 -													
Ground Water Level Data					Boring Advancement Method					Boring completed at 40 ft.				
					Wash borehole full depth:					Mudline 7 ft. below water surface.				
					4" Dia. Rotary Wash: to 40 ft.									
					Boring Abandonment Method									
					Borehole grouted with cement/ bentonite upon completion					Strata Boundaries and Sample Lengths May Not Be Exact				

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Proposed Lower Tchefuncte
Breakwater Restoration

St. Tammany Parish, Louisiana

Digital Engineering
527 W. Esplanade Ave. #200
Kenner, La. 70065

LOG OF SOIL BORING B-2



Sheet 1 of 1

File: 5820G
Date: 3/15/22
Logged by: T. Roche
Driller: S.E.R.
Rig: Boat

FIELD DATA				LABORATORY DATA								Soil Type	Location: Lat. 30° 22' 33.77" Long. 90° 9' 44.35"	
Ground Water Level	Depth (feet)	Samples	Field Test Results	Compressive Strength (tsf)	Water Content (%)	Wet Unit Weight (pcf)	Atterberg Limits			Percent Passing #200 Sieve	Organic Content		Surface Elevation:	
							LL	PL	PI				Description	
			0.25 (P)	0.06	73	103						Very Soft Gray CLAY (CH)		
			0.25 (P)	0.05	62	103								
	- 5		0.25 (P)	0.17	54	102								
			0.25 (P)	0.19	52	105	60	17	43					
			0.25 (P)	0.12	52	102								
	- 10													
			0.25 (P)	0.15	75	96						Very Soft Gray SANDY CLAY (CL)		
	- 15													
			0.25 (P)	0.06	25	130						Very Soft Gray CLAY (CH)		
	- 20													
			0.25 (P)	0.17	39	109	43	18	25			Very Soft Gray CLAY (CH)		
	- 25													
			0.25 (P)	0.19	45	108						Very Loose Gray SILTY SAND (SM)		
	- 30													
			3 b/f 1-2-1		30					13				
	- 35		3 b/f 2-1-2		39									
			3 b/f 1-1-2		34					17				
	- 40											Boring completed at 39 ft.		
Ground Water Level Data				Boring Advancement Method							Notes			
				Wash borehole full depth: 4" Dia. Rotary Wash: to 39 ft.							Mudline 18 ft. below water surface.			
				Boring Abandonment Method										
				Borehole grouted with cement/ bentonite upon completion							Strata Boundaries and Sample Lengths May Not Be Exact			

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Proposed Lower Tchefuncte
Breakwater Restoration

St. Tammany Parish, Louisiana

Digital Engineering
527 W. Esplanade Ave. #200
Kenner, La. 70065

LOG OF SOIL BORING B-3



Sheet 1 of 1

File: 5820G

Date: 3/15/22

Logged by: T. Roche

Driller: S.E.R.

Rig: Boat

FIELD DATA				LABORATORY DATA								Soil Type	Location: Lat. 30° 22' 32.8" Long. 90° 9' 35.01"	
Ground Water Level	Depth (feet)	Samples	Field Test Results	Compressive Strength (tsf)	Water Content (%)	Wet Unit Weight (pcf)	Atterberg Limits			Percent Passing #200 Sieve	Organic Content		Surface Elevation:	
							LL	PL	PI				Description	
			0.25 (P)	0.08	167	83							Very Soft Dark Gray ORGANIC CLAY (OH)	
			1.25 (P)	1.15	29	120							Stiff Tan and Gray SILTY CLAY (CL)	
	- 5 -		1.0 (P)	1.32	25	124								
			0.5 (P)	0.43	43	110							Soft to Medium Stiff Gray and Tan CLAY (CH)	
			1.5 (P)	0.52	45	108	63	20	43					
	- 10 -													
			1.75 (P)		24								Stiff Tan and Gray SILTY CLAY (CL)	
	- 15 -													
			1.25 (P)	1.43	25	128								
	- 20 -													
			1.75 (P)		24									
	- 25 -													
			2.5 (P)	1.59	18	131	44	17	27				Stiff Tan and Gray SANDY CLAY (CL)	
	- 30 -													
			1.0 (P)		24								Medium Stiff Tan and Gray SILTY CLAY (CL)	
	- 35 -													
			1.25 (P)	0.45	25	125								
	- 40 -													
Ground Water Level Data					Boring Advancement Method					Boring completed at 40 ft.				
					Wash borehole full depth:					Mudline 5 ft. below water surface.				
					4" Dia. Rotary Wash:									
					to 40 ft.									
					Boring Abandonment Method									
					Borehole grouted with cement/ bentonite upon completion									
Strata Boundaries and Sample Lengths May Not Be Exact														

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Proposed Lower Tchefuncte
Breakwater Restoration

St. Tammany Parish, Louisiana

Digital Engineering
527 W. Esplanade Ave. #200
Kenner, La. 70065

LOG OF SOIL BORING B-4



Sheet 1 of 1

File: 5820G
Date: 3/15/22
Logged by: T. Roche
Driller: S.E.R.
Rig: Boat

FIELD DATA			LABORATORY DATA									Soil Type	Location: Lat. 30° 22' 28.35" Long. 90° 9' 49.59"	
Ground Water Level	Depth (feet)	Samples	Field Test Results	Compressive Strength (tsf)	Water Content (%)	Wet Unit Weight (pcf)	Atterberg Limits			Percent Passing #200 Sieve	Organic Content		Surface Elevation:	
							LL	PL	PI				Description	
			0.25 (P)		27					2			Very Loose Gray SAND (SP)	
			0.25 (P)	0.20	34	130							Very Soft Gray SANDY CLAY (CL)	
	- 5		0.25 (P)	0.15	24	130								
			0.25 (P)	0.11	27	126	32	15	17				Very Soft Gray SILTY CLAY (CL)	
			0.5 (P)	0.16	26	116								
	- 10													
			0.25 (P)	0.10	23	120								
	- 15													
			0.25 (P)	0.11	95	103							Very Soft Gray CLAY (CH)	
	- 20													
		X	12 b/f 3-9-3		37					93			Medium Stiff to Stiff Gray SILTY CLAY (CL)	
	- 25	X	8 b/f 2-4-4		32									
		X	13 b/f 4-6-7		25					5			Medium Dense Gray SILTY SAND (SM)	
	- 30													
		X	11 b/f 4-4-7		20									
	- 35													
		X	13 b/f 6-7-6		23					10				
	- 40													
Ground Water Level Data				Boring Advancement Method					Notes					
				Wash borehole full depth: 4" Dia. Rotary Wash: to 40 ft.					Mudline 10 ft. below water surface.					
				Boring Abandonment Method										
				Borehole grouted with cement/ bentonite upon completion					Strata Boundaries and Sample Lengths May Not Be Exact					

ARD LOG01 01R 5820G.GPJ LOG01R.GDT 9/19/22

Proposed Lower Tchefuncte
Breakwater Restoration

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Digital Engineering
527 W. Esplanade Ave. #200
Kenner, La. 70065

LOG OF SOIL BORING GB-1



Sheet 1 of 1

File: 5820G
Date: 3/15/22
Logged by: T. Roche
Driller: S.E.R.
Rig: Boat

FIELD DATA			LABORATORY DATA							Soil Type	Location: Lat. 30° 22' 48.44" Long. 90° 9' 26.78"	
Ground Water Level	Depth (feet)	Field Test Results	Compressive Strength (tsf)	Water Content (%)	Wet Unit Weight (pcf)	Atterberg Limits			Percent Passing #200 Sieve		Organic Content	Surface Elevation:
						LL	PL	PI			Description	
		0.25 (P)		23	129				41		Very Loose Gray CLAYEY SAND (SC)	
											Boring completed at 2 ft.	
	- 5 -											
	- 10 -											
	- 15 -											
	- 20 -											
	- 25 -											
	- 30 -											
	- 35 -											
	- 40 -											
Ground Water Level Data			Boring Advancement Method					Notes				
			Wash borehole full depth: 4" Dia. Rotary Wash: to 2 ft.					Strata Boundaries and Sample Lengths May Not Be Exact				
			Boring Abandonment Method Borehole grouted with cement/ bentonite upon completion									

Proposed Lower Tchefuncte
Breakwater Restoration

St. Tammany Parish, Louisiana

Digital Engineering
527 W. Esplanade Ave. #200
Kenner, La. 70065

LOG OF SOIL BORING GB-2



Sheet 1 of 1

File: 5820G
Date: 3/15/22
Logged by: T. Roche
Driller: S.E.R.
Rig: Boat

FIELD DATA				LABORATORY DATA							Location: Lat. 30° 23' 36.33" Long. 90° 9' 4.82"		
Ground Water Level	Depth (feet)	Samples	Field Test Results	Compressive Strength (tsf)	Water Content (%)	Wet Unit Weight (pcf)	Atterberg Limits			Percent Passing #200 Sieve	Organic Content	Soil Type	Surface Elevation:
							LL	PL	PI				Description
			0.25 (P)	0.25	34	131				54			Soft Gray SANDY CLAY (CL)
			0.25 (P)	0.26	32	130							
			0.25 (P)	0.25	31	130							Boring completed at 2 ft.
	- 5 -												
	- 10 -												
	- 15 -												
	- 20 -												
	- 25 -												
	- 30 -												
	- 35 -												
	- 40 -												
Ground Water Level Data				Boring Advancement Method							Notes		
				Wash borehole full depth: 4" Dia. Rotary Wash: to 2 ft.							Mudline 16 ft. below water surface.		
				Boring Abandonment Method									
				Borehole grouted with cement/ bentonite upon completion									
													Strata Boundaries and Sample Lengths May Not Be Exact

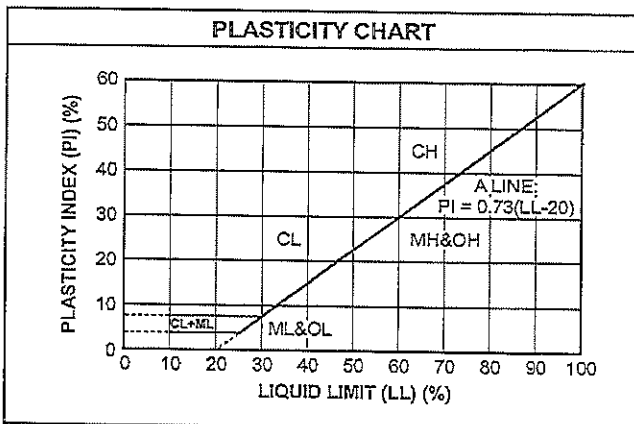
UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART		
COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)		
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	
	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
	GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	
	GM	Silty gravels, gravel-sand-silt mixtures
	GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	
	SW	Well-graded sands, gravelly sands, little or no fines
	SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	
	SM	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)		
SILTS AND CLAYS Liquid limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils

LABORATORY CLASSIFICATION CRITERIA		
GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with P.I. greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent GW, GP, SW, SP
 More than 12 percent GM, GC, SM, SC
 5 to 12 percent Borderline cases requiring dual symbols



DESCRIPTION OF TERMS AND SYMBOLS USED ON SOIL BORING LOG

Form LOGTERMS Strata Boundaries May Not Be Exact

CONSOLIDATION TEST DATA

4/28/2022

Client: The Beta Group

Project: Tchefuncte River Project (5820G)

Project Number: 22A110

Location: B-3

Depth: 6-8

Material Description: Brown and Light gray fat clay

Liquid Limit: 105

Plasticity Index: 75

USCS: CH

Testing Remarks: Swell Pressure= 1841 psf

Tested by: JSA

Checked by: VT

Test Specimen Data

NATURAL MOISTURE	VOID RATIO	AFTER TEST
Wet w+t = 174.92 g.	Spec. Gr. = 2.70	Wet w+t = 53.25 g.
Dry w+t = 129.37 g.	Est. Ht. Solids = 0.438 in.	Dry w+t = 41.46 g.
Tare Wt. = 31.56 g.	Init. V.R. = 1.242	Tare Wt. = 13.57 g.
Moisture = 46.6 %	Init. Sat. = 101.2 %	Moisture = 42.3 %
UNIT WEIGHT	TEST START	Dry Wt. = 27.89 g.
Height = 0.981 in.	Height = 0.981 in.	
Diameter = 2.499 in.	Diameter = 2.499 in.	
Weight = 139.17 g.		
Dry Dens. = 75.2 pcf		

End-Of-Load Summary

Pressure (psf)	Final Dial (in.)	Deformation (in.)	C_v (ft./day)	C_α	Void Ratio	% Strain
start	1.81512	0.00000			1.242	
1841	1.82477	0.00965	0.101		1.220	1.0 Compr.
4000	1.84160	0.02648	0.416		1.182	2.7 Compr.
8000	1.87806	0.06294	0.133		1.098	6.4 Compr.
16000	1.92267	0.10755	1.348		0.996	11.0 Compr.
32000	1.97704	0.16192	0.002		0.872	16.5 Compr.
8000	1.94373	0.12861	0.003		0.948	13.1 Compr.

Compression index (C_c), psf = 0.32 Preconsolidation pressure (P_p), psf = 4378 Void ratio at P_p (e_m) = 1.173

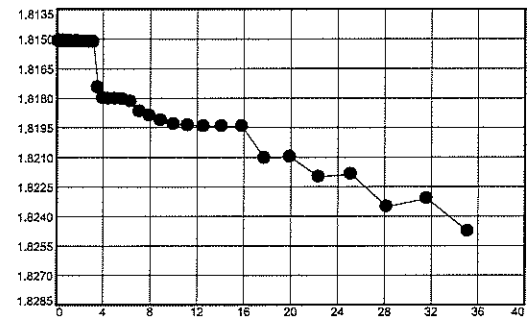
AME

Pressure: 1841 psf

TEST READINGS

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	1.81512	23	12.5333	1.81745
2	0.0167	1.81510	24	15.8000	1.81800
3	0.0500	1.81510	25	19.9000	1.81803
4	0.0833	1.81509	26	25.0667	1.81802
5	0.1333	1.81511	27	31.5833	1.81805
6	0.1833	1.81511	28	39.7667	1.81818
7	0.2500	1.81510	29	50.0667	1.81869
8	0.3333	1.81509	30	63.0500	1.81889
9	0.4333	1.81511	31	79.4000	1.81914
10	0.5667	1.81513	32	99.9667	1.81933
11	0.7333	1.81511	33	125.8500	1.81939
12	0.9333	1.81514	34	158.4500	1.81944
13	1.2000	1.81513	35	199.4833	1.81944
14	1.5167	1.81512	36	251.1500	1.81945
15	1.9333	1.81514	37	316.2000	1.82105
16	2.4500	1.81513	38	398.0667	1.82098
17	3.1000	1.81512	39	501.1667	1.82200
18	3.9333	1.81514	40	630.9333	1.82185
19	4.9500	1.81515	41	794.3000	1.82351
20	6.2500	1.81514	42	999.9833	1.82309
21	7.8833	1.81515	43	1233.0500	1.82477
22	9.9500	1.81516			



Void Ratio = 1.220 Compression = 1.0%

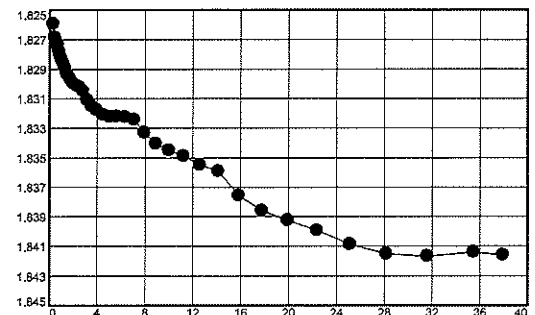
 $D_0 = 1.8047$ $D_{90} = 1.8180$ $D_{100} = 1.8195$ C_v at 20.08 min. = 0.101 ft.²/day

Pressure: 4000 psf

TEST READINGS

Load No. 2

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	1.82182	13	1.1167	1.82838
2	0.1000	1.82595	14	1.3833	1.82858
3	0.2000	1.82686	15	1.7000	1.82891
4	0.2333	1.82696	16	2.1167	1.82932
5	0.2667	1.82702	17	2.6333	1.82951
6	0.3000	1.82710	18	3.2833	1.82974
7	0.3500	1.82723	19	4.1000	1.82998
8	0.4167	1.82732	20	5.1333	1.83014
9	0.5000	1.82737	21	6.4333	1.83023
10	0.6167	1.82774	22	8.0667	1.83050
11	0.7500	1.82801	23	10.1333	1.83111
12	0.9167	1.82821	24	12.7167	1.83152



AME

Pressure: 4000 psf

TEST READINGS (continued)

Load No. 2

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
25	15.9833	1.83178	35	158.6333	1.83550	45	1440.0500	1.84160
26	20.0833	1.83207	36	199.6667	1.83592			
27	25.2500	1.83224	37	251.3333	1.83758			
28	31.7667	1.83220	38	316.3833	1.83861			
29	39.9500	1.83226	39	398.2667	1.83926			
30	50.2500	1.83243	40	501.3500	1.83994			
31	63.2333	1.83331	41	631.1167	1.84088			
32	79.5667	1.83406	42	794.4833	1.84152			
33	100.1500	1.83450	43	1000.1667	1.84168			
34	126.0333	1.83489	44	1259.1000	1.84140			

Void Ratio = 1.182 Compression = 2.7%

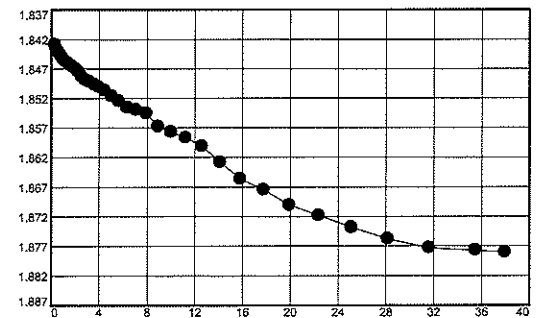
 $D_0 = 1.8259$ $D_{90} = 1.8301$ $D_{100} = 1.8305$ C_v at 4.74 min. = 0.416 ft.²/day

Pressure: 8000 psf

TEST READINGS

Load No. 3

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	1.83807	24	12.7000	1.84960
2	0.1000	1.84286	25	15.9667	1.85008
3	0.2000	1.84365	26	20.0667	1.85068
4	0.2167	1.84365	27	25.2333	1.85161
5	0.2500	1.84379	28	31.7500	1.85247
6	0.3000	1.84396	29	39.9333	1.85352
7	0.3500	1.84411	30	50.2500	1.85399
8	0.4167	1.84422	31	63.2167	1.85457
9	0.5000	1.84443	32	79.5667	1.85679
10	0.6000	1.84455	33	100.1333	1.85772
11	0.7333	1.84486	34	126.0167	1.85869
12	0.9000	1.84516	35	158.6167	1.86015
13	1.1000	1.84544	36	199.6667	1.86288
14	1.3667	1.84565	37	251.3167	1.86565
15	1.7000	1.84586	38	316.3667	1.86747
16	2.1000	1.84612	39	398.2500	1.87006
17	2.6167	1.84630	40	501.3333	1.87185
18	3.2667	1.84662	41	631.1000	1.87387
19	4.1000	1.84691	42	794.4833	1.87577
20	5.1333	1.84743	43	1000.1500	1.87733
21	6.4167	1.84822	44	1259.0833	1.87772
22	8.0667	1.84885	45	1440.2667	1.87806
23	10.1167	1.84916			



Void Ratio = 1.098 Compression = 6.4%

 $D_0 = 1.8428$ $D_{90} = 1.8498$ $D_{100} = 1.8506$ C_v at 13.98 min. = 0.133 ft.²/day

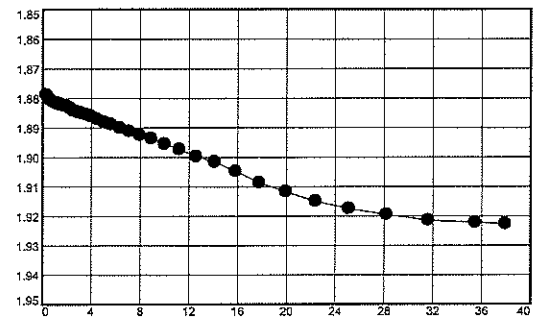
AME

Pressure: 16000 psf

TEST READINGS

Load No. 4

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	1.87427	24	12.7000	1.88549
2	0.1000	1.87874	25	15.9667	1.88610
3	0.2000	1.87937	26	20.0667	1.88699
4	0.2167	1.87950	27	25.2333	1.88798
5	0.2500	1.87972	28	31.7500	1.88894
6	0.3000	1.87993	29	39.9333	1.88999
7	0.3500	1.88016	30	50.2500	1.89119
8	0.4167	1.88050	31	63.2167	1.89251
9	0.5000	1.88075	32	79.5667	1.89366
10	0.6000	1.88090	33	100.1333	1.89548
11	0.7333	1.88111	34	126.0167	1.89734
12	0.9000	1.88132	35	158.6167	1.89967
13	1.1000	1.88142	36	199.6667	1.90149
14	1.3667	1.88152	37	251.3333	1.90473
15	1.6833	1.88187	38	316.3667	1.90864
16	2.1000	1.88200	39	398.2500	1.91164
17	2.6167	1.88223	40	501.3333	1.91491
18	3.2667	1.88247	41	631.1000	1.91745
19	4.1000	1.88271	42	794.4833	1.91949
20	5.1167	1.88327	43	1000.1667	1.92138
21	6.4167	1.88403	44	1259.0833	1.92215
22	8.0667	1.88460	45	1440.1667	1.92267
23	10.1167	1.88494			



Void Ratio = 0.996 Compression = 11.0%

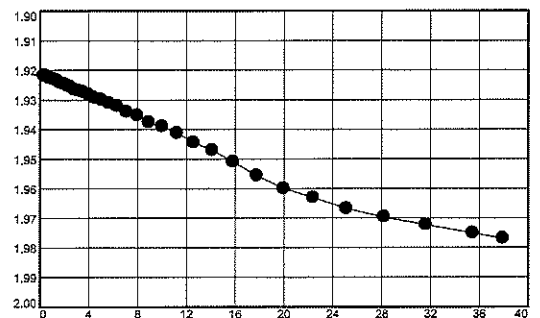
 $D_0 = 1.8771$ $D_{90} = 1.8815$ $D_{100} = 1.8820$ C_v at 1.27 min. = 1.348 ft.²/day

Pressure: 32000 psf

TEST READINGS

Load No. 5

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	1.91617	12	0.9000	1.92275
2	0.1000	1.92176	13	1.1000	1.92294
3	0.2000	1.92183	14	1.3667	1.92302
4	0.2167	1.92183	15	1.7000	1.92327
5	0.2500	1.92200	16	2.1000	1.92357
6	0.3000	1.92212	17	2.6167	1.92404
7	0.3500	1.92221	18	3.2833	1.92437
8	0.4167	1.92226	19	4.1000	1.92468
9	0.5000	1.92243	20	5.1333	1.92511
10	0.6000	1.92253	21	6.4333	1.92562
11	0.7333	1.92260	22	8.0667	1.92652



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Pressure: 32000 psf

TEST READINGS (continued)

Load No. 5

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
23	10.1167	1.92684	33	100.1333	1.93907	43	1000.1667	1.97230
24	12.7167	1.92734	34	126.0333	1.94133	44	1259.1000	1.97514
25	15.9667	1.92815	35	158.6333	1.94443	45	1440.1833	1.97704
26	20.0833	1.92925	36	199.6667	1.94708			
27	25.2500	1.92999	37	251.3333	1.95099			
28	31.7500	1.93103	38	316.3667	1.95561			
29	39.9333	1.93210	39	398.2500	1.95990			
30	50.2500	1.93406	40	501.3333	1.96314			
31	63.2333	1.93526	41	631.1167	1.96681			
32	79.5667	1.93757	42	794.4833	1.96968			

Void Ratio = 0.872 Compression = 16.5%

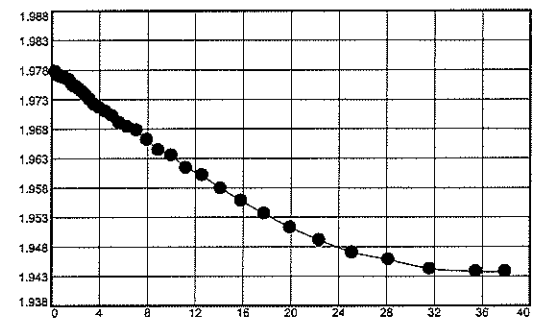
 $D_0 = 1.9200$ $D_{90} = 1.9703$ $D_{100} = 1.9759$ C_v at 840.24 min. = 0.002 ft.²/day

Pressure: 8000 psf

TEST READINGS

Load No. 6

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	1.98509	24	12.7167	1.97215
2	0.1000	1.97768	25	15.9667	1.97159
3	0.2000	1.97726	26	20.0833	1.97106
4	0.2167	1.97721	27	25.2500	1.97027
5	0.2500	1.97713	28	31.7500	1.96905
6	0.3000	1.97717	29	39.9333	1.96831
7	0.3500	1.97700	30	50.2500	1.96773
8	0.4167	1.97699	31	63.2333	1.96614
9	0.5000	1.97690	32	79.5667	1.96436
10	0.6000	1.97687	33	100.1333	1.96348
11	0.7333	1.97684	34	126.0333	1.96136
12	0.9000	1.97672	35	158.6333	1.96011
13	1.1000	1.97668	36	199.6667	1.95790
14	1.3667	1.97658	37	251.3333	1.95579
15	1.7000	1.97645	38	316.3667	1.95357
16	2.1000	1.97629	39	398.2500	1.95122
17	2.6333	1.97583	40	501.3333	1.94913
18	3.2833	1.97535	41	631.1167	1.94697
19	4.1000	1.97516	42	794.4833	1.94581
20	5.1333	1.97483	43	1000.1667	1.94419
21	6.4333	1.97439	44	1259.1000	1.94376
22	8.0667	1.97376	45	1440.2333	1.94373
23	10.1167	1.97305			

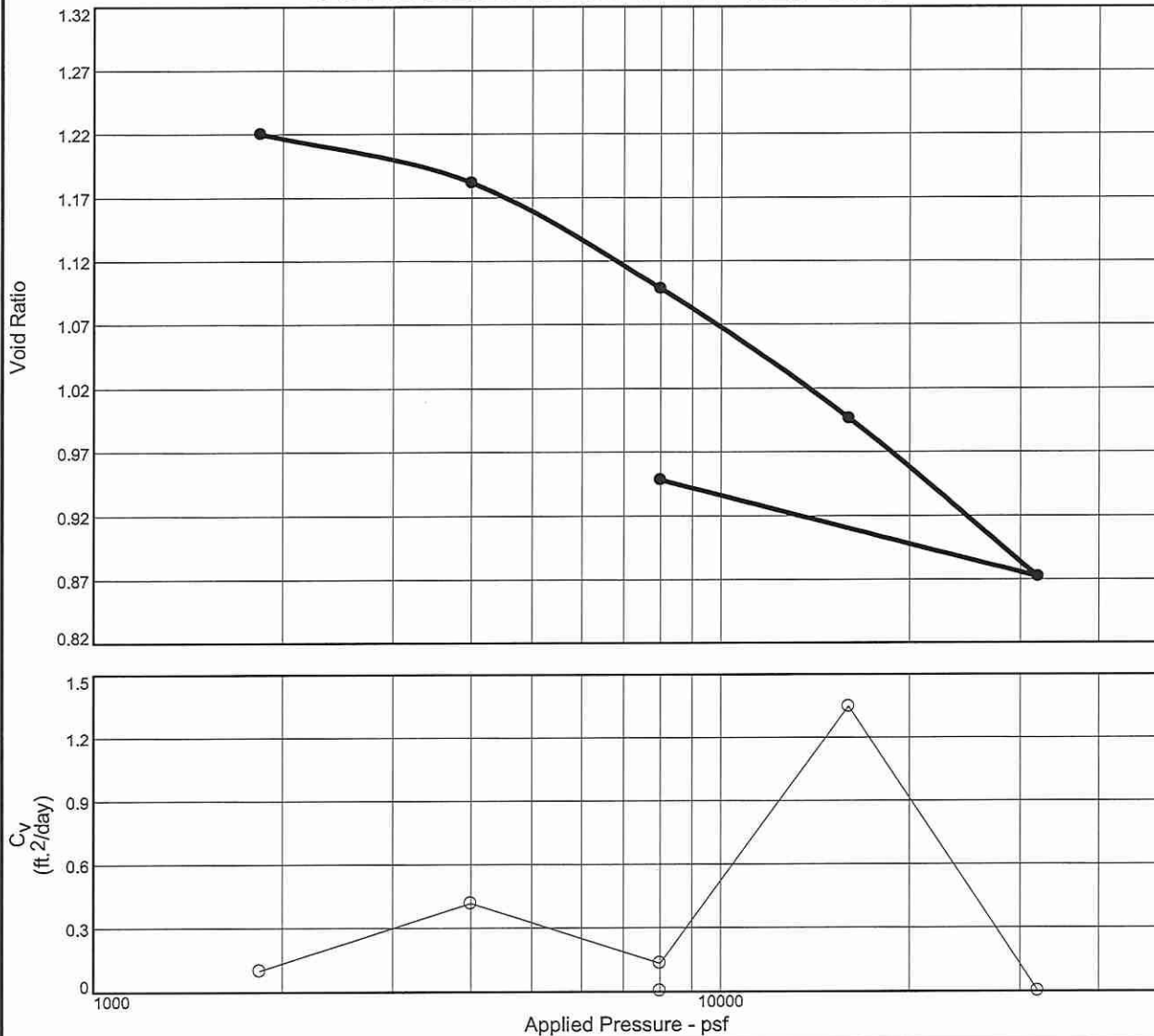


Void Ratio = 0.948 Compression = 13.1%

 $D_0 = 1.9780$ $D_{90} = 1.9499$ $D_{100} = 1.9467$ C_v at 463.89 min. = 0.003 ft.²/day

AME

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _c (psf)	C _c	Initial Void Ratio
Saturation	Moisture							
101.2 %	46.6 %	75.2	105	75	2.70	4378	0.32	1.242

MATERIAL DESCRIPTION							USCS	AASHTO
Brown and Light gray fat clay							CH	

Project No. 22A110 **Client:** The Beta Group

Project: Tchefuncte River Project (5820G)

Source of Sample: B-3 **Depth:** 6-8

ADAPTIVE
MANAGEMENT AND ENGINEERING

Remarks:

Swell Pressure= 1841 psf

Figure

Tested By: JSA **Checked By:** VT

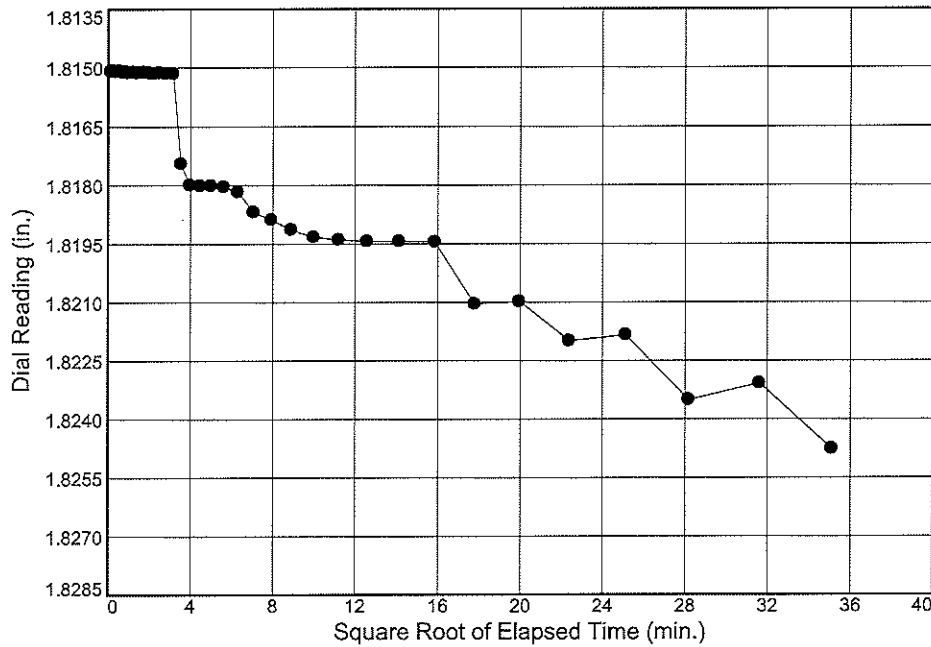
Dial Reading vs. Time

Project No.: 22A110

Project: Tchefuncte River Project (5820G)

Source of Sample: B-3

Depth: 6-8



Load No.= 1

Load= 1841 psf

$D_0 = 1.8047$

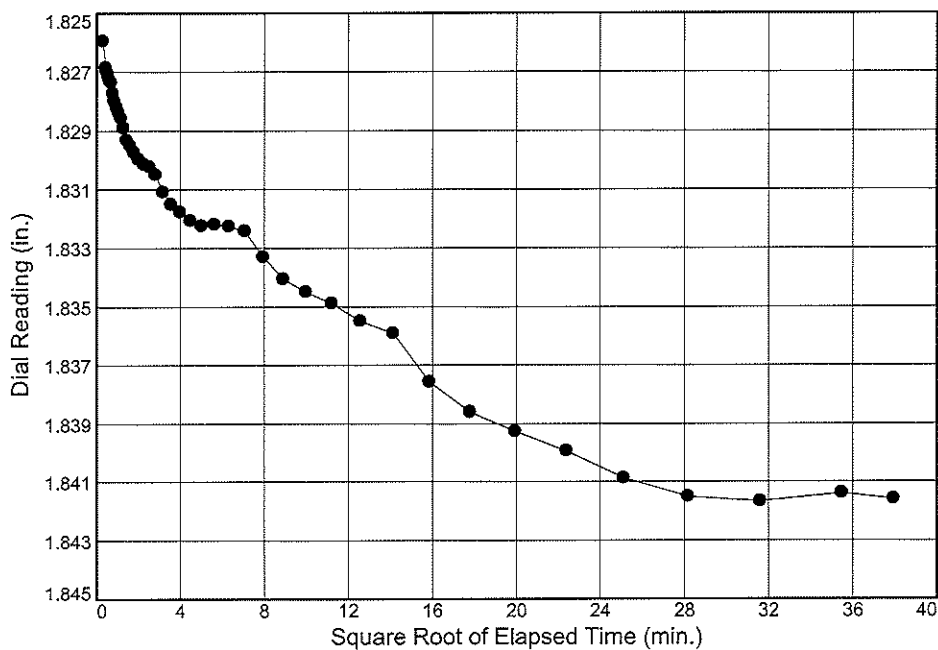
$D_{90} = 1.8180$

$D_{100} = 1.8195$

$T_{90} = 20.08 \text{ min.}$

$C_v @ T_{90}$

0.101 ft.²/day



Load No.= 2

Load= 4000 psf

$D_0 = 1.8259$

$D_{90} = 1.8301$

$D_{100} = 1.8305$

$T_{90} = 4.74 \text{ min.}$

$C_v @ T_{90}$

0.416 ft.²/day

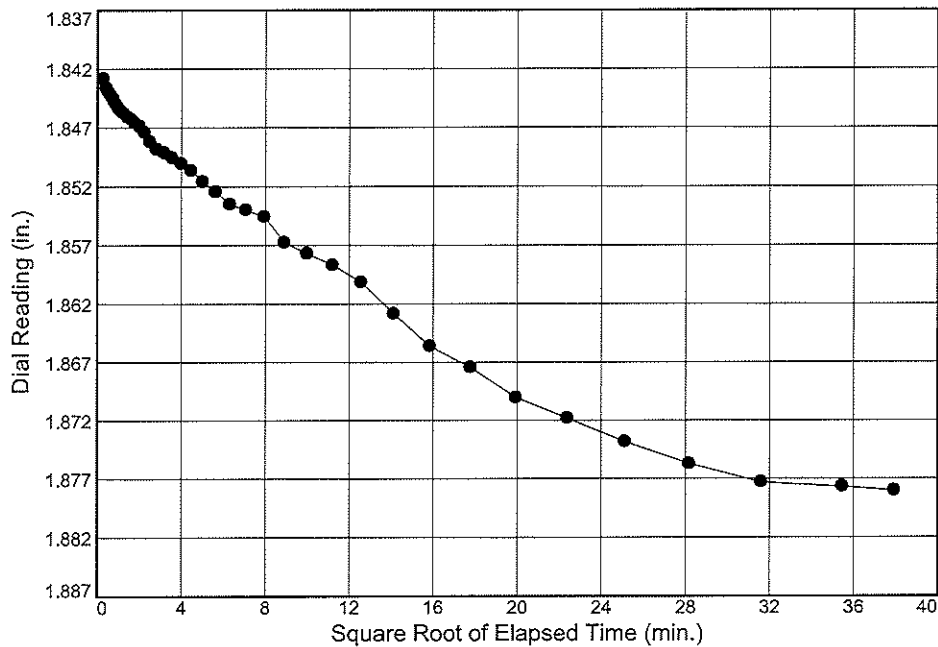
Figure

AME

Dial Reading vs. Time

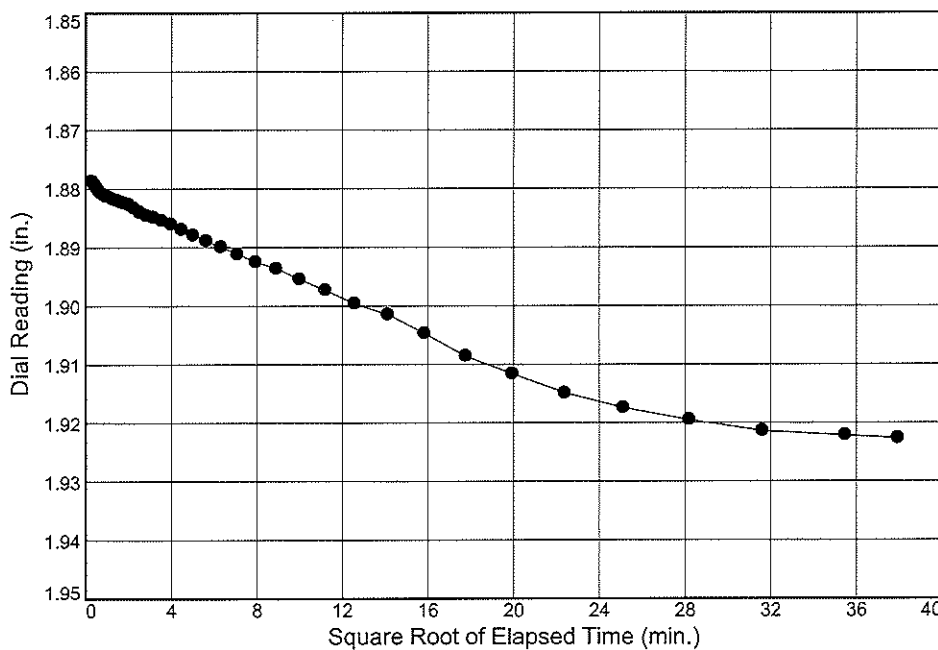
Project No.: 22A110
Project: Tchefuncte River Project (5820G)

Source of Sample: B-3 Depth: 6-8



Load No.= 3
Load= 8000 psf
 $D_0 = 1.8428$
 $D_{90} = 1.8498$
 $D_{100} = 1.8506$
 $T_{90} = 13.98 \text{ min.}$

$C_v @ T_{90}$
0.133 ft.²/day



Load No.= 4
Load= 16000 psf
 $D_0 = 1.8771$
 $D_{90} = 1.8815$
 $D_{100} = 1.8820$
 $T_{90} = 1.27 \text{ min.}$

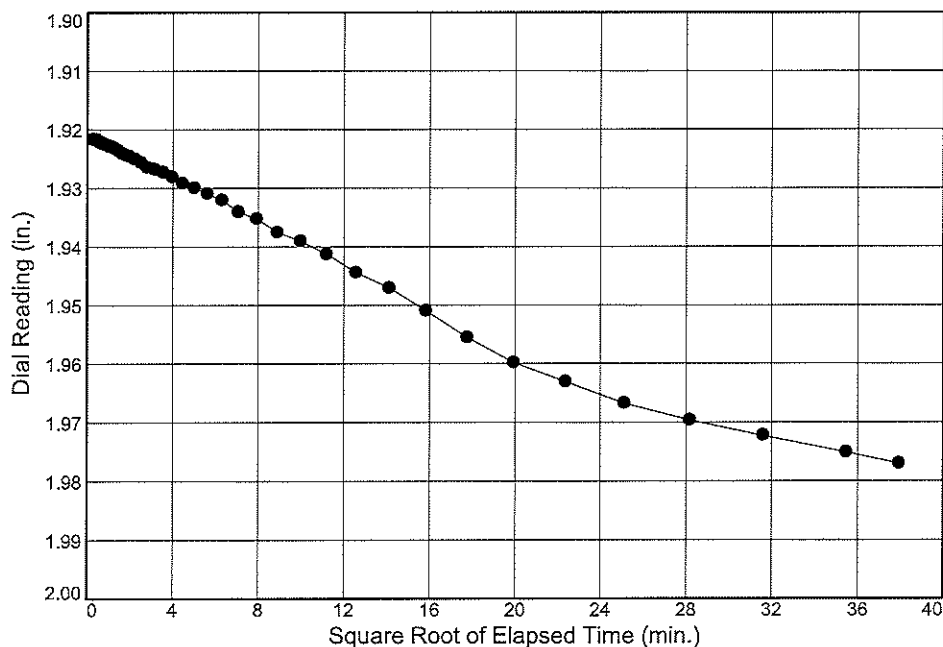
$C_v @ T_{90}$
1.348 ft.²/day

Figure

Dial Reading vs. Time

Project No.: 22A110
Project: Tchefuncte River Project (5820G)

Source of Sample: B-3 Depth: 6-8



Load No.= 5

Load= 32000 psf

$D_0 = 1.9200$

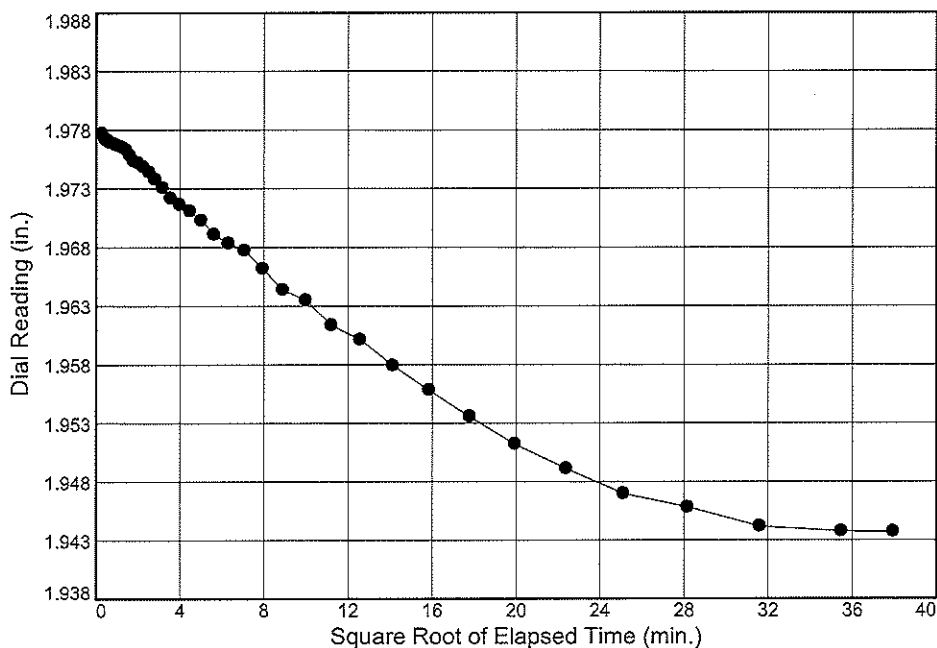
$D_{90} = 1.9703$

$D_{100} = 1.9759$

$T_{90} = 840.24 \text{ min.}$

$C_v @ T_{90}$

0.002 ft.²/day



Load No.= 6

Load= 8000 psf

$D_0 = 1.9780$

$D_{90} = 1.9499$

$D_{100} = 1.9467$

$T_{90} = 463.89 \text{ min.}$

$C_v @ T_{90}$

0.003 ft.²/day

AME

Figure

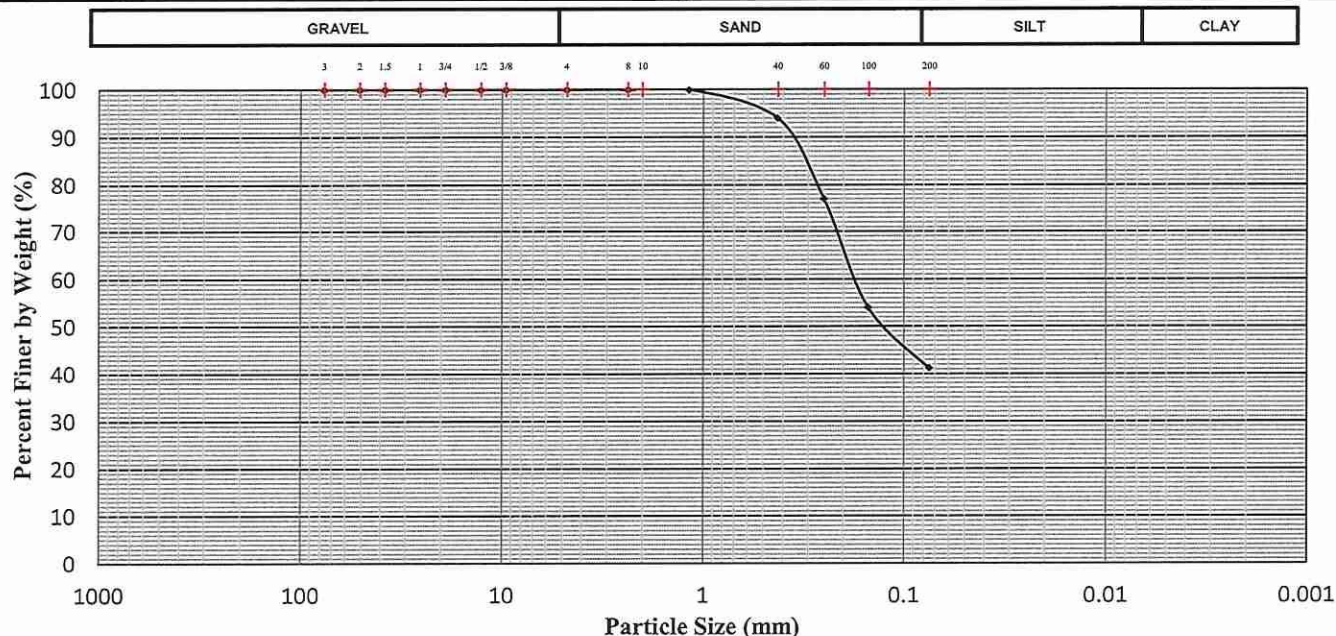
Date Issued: 4/8/22

Laboratory Testing Summary

Report No.: 5820G-SA040822

Test Date: 3/24/22	Date Sampled: 3/17/22	Sample Location: GB-1 (0-2ft)
Project No.: 5820G	Project Name: Proposed Lower Tchefuncte Breakwater Restoration	
Contractor: Beta Testing and Inspection	TBG Client Name: Digital Engineering	
Material Description: Gray Clayey Sand	Lab Technician: J. Allen	

Particle-Size Analysis ASTM C 136



Sieve	% Finer	Required	Pass/Fail	Sulphate Soundness				
3-inch	100.0 %			N/A				
2-inch	100.0 %			% Loss	N/A	Weighted Avg.	N/A	3/8" to #4
1 1/2-inch	100.0 %			% Loss	N/A	Weighted Avg.	N/A	3/4" to 3/8"
1-inch	100.0 %			% Loss	N/A	Weighted Avg.	N/A	1 1/2" to 3/4"
3/4-inch	100.0 %			% Loss	N/A	Weighted Avg.	N/A	2 1/2" to 1 1/2"
1/2-inch	100.0 %			Total			N/A	
3/8-inch	100.0 %			LA Abrasion				
No. 4	100.0 %			N/A			Unit Weight	
No. 8	100.0 %			% Loss	N/A		ASTM D7263-21	
No. 16	100.0 %			Specific Gravity			Dry Unit Weight	104.8pcf
No. 40	94.0 %			ASTM C127			Wet Unit Weight	129.4pcf
No. 50	77.0 %			Bulk SG	N/A		Moisture %	23.8
No. 100	54.0 %			% Absorption	N/A			
No. 200	41.2 %							
Reviewed by:								Gradation Requirements:
Alex Jaramillo, P.E. M.ASCE Senior Project Engineer								N/A

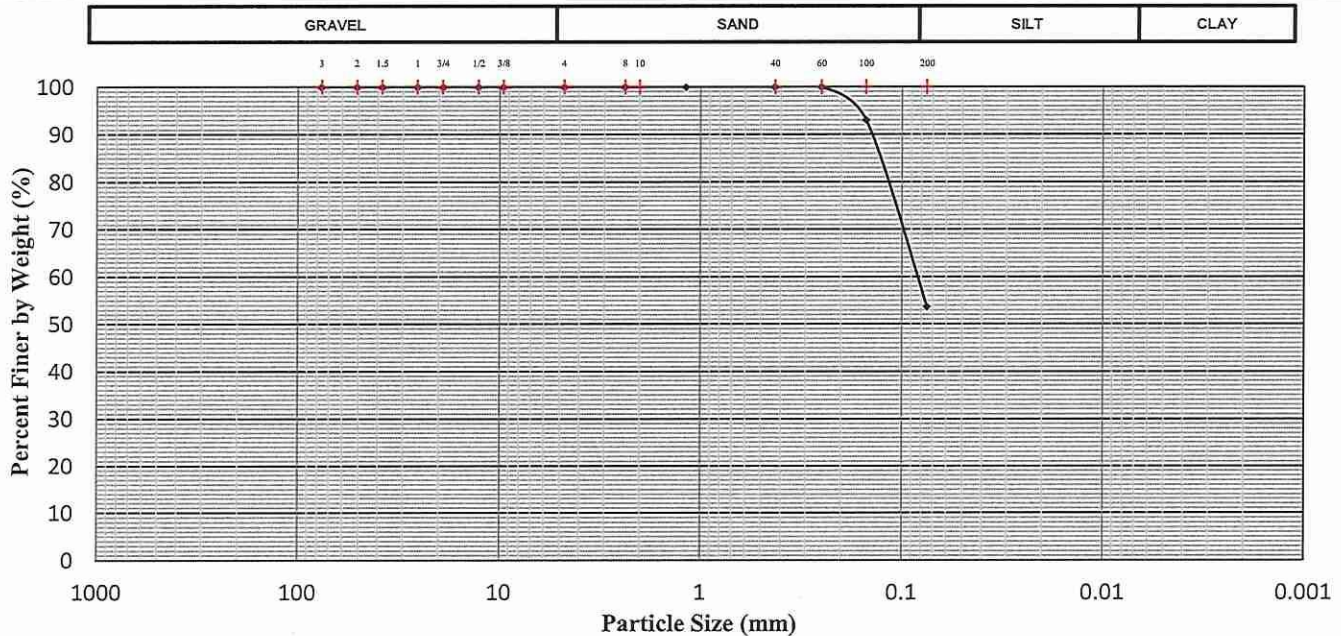
Date Issued: 4/8/22

Laboratory Testing Summary

Report No.: 5820G-SA040822B

Test Date: 3/24/22	Date Sampled: 3/17/22	Sample Location: GB-2 (0-2ft)
Project No.: 5820G	Project Name: Proposed Lower Tchefuncte Breakwater Restoration	
Contractor: Beta Testing and Inspection	TBG Client Name: Digital Engineering	
Material Description: Gray Sandy Clay	Lab Technician: J. Allen	

Particle-Size Analysis ASTM C 136



Sieve	% Finer		Required	Pass/Fail	Sulphate Soundness				
3-inch	100.0	%			N/A				
2-inch	100.0	%			% Loss	N/A	Weighted Avg.	N/A	3/8" to #4
1 1/2-inch	100.0	%			% Loss	N/A	Weighted Avg.	N/A	3/4" to 3/8"
1-inch	100.0	%			% Loss	N/A	Weighted Avg.	N/A	1 1/2" to 3/4"
3/4-inch	100.0	%			% Loss	N/A	Weighted Avg.	N/A	2 1/2" to 1 1/2"
1/2-inch	100.0	%			Total			N/A	
3/8-inch	100.0	%			LA Abrasion				
No. 4	100.0	%			N/A			Unit Weight	
No. 8	100.0	%			% Loss	N/A		ASTM D7263-21	
No. 16	100.0	%			Specific Gravity			Dry Unit Weight	98.7pcf
No. 40	100.0	%			ASTM C127			Wet Unit Weight	130.pcf
No. 50	100.0	%			Bulk SG	N/A		Moisture %	32.3
No. 100	93.0	%			% Absorption	N/A			
No. 200	53.7	%							

Reviewed by:
Alex Jaramillo, P.E. M.ASCE Senior Project Engineer

Gradation Requirements:
N/A

Slope Stability

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File Information

File Version: 11.03
Revision Number: 14
Date: 09/19/2022
Time: 03:40:32 PM
Tool Version: 11.3.1.23726
File Name: Boring B-1, Typical Layout, Mudline Elev. -6.0, Lake to Shore.gsz
Directory: S:\2-GEOTECH\Projects\2022\5820G\
Last Solved Date: 09/19/2022
Last Solved Time: 03:40:34 PM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

Slope Stability

Kind: SLOPE/W

Analysis Type: Spencer

Settings

PWP Conditions from: Piezometric Line

Apply Phreatic Correction: No

Use Staged Rapid Drawdown: No

Unit Weight of Water: 62.430189 pcf

Slip Surface

Direction of movement: Right to Left

Use Passive Mode: No

Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1

Optimize Critical Slip Surface Location: Yes

Optimizations Settings

Maximum Iterations: 2,000

Starting Points: 8

Ending Points: 16

Driving Side Maximum Convex Angle: 5 °

Resisting Side Maximum Convex Angle: 1 °

Tension Crack Option: (none)

Distribution

F of S Calculation Option: Constant

Advanced

Geometry Settings

Minimum Slip Surface Depth: 0.1 ft

Number of Slices: 30

Factor of Safety Convergence Settings

Maximum Number of Iterations: 100

Tolerable difference in F of S: 0.001
Under-Relaxation Criteria
Initial Rate: 1
Minimum Rate: 0.1
Rate Reduction Factor: 0.65
Reduction Frequency (iterations): 50
Solution Settings
Search Method: Root Finder
Tolerable difference between starting and converged F of S: 3
Maximum iterations to calculate converged lambda: 20
Max Absolute Lambda: 2

Materials

1- Clay (CH)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 86 pcf
Total Cohesion: 90 psf
Pore Water Pressure
Piezometric Line: 1

2- Peat (PT)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 77 pcf
Total Cohesion: 80 psf
Pore Water Pressure
Piezometric Line: 1

3-Sandy Clay (CLS)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 134 pcf
Total Cohesion: 1,100 psf
Pore Water Pressure
Piezometric Line: 1

4- Silty Clay (CL)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 124 pcf
Total Cohesion: 820 psf
Pore Water Pressure
Piezometric Line: 1

Rip Rap

Slope Stability Material Model: High Strength
Unit Weight: 165 pcf
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (-91, -6) ft

Left-Zone Right Coordinate: (-2.98, 2.76) ft
Left-Zone Increment: 8
Right Type: Range
Right-Zone Left Coordinate: (-1.61, 3) ft
Right-Zone Right Coordinate: (92.6, -6) ft
Right-Zone Increment: 8
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (-100, -6) ft
Right Coordinate: (100, -6) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-100 ft	0.79 ft
Coordinate 2	-6.92 ft	0.79 ft
Coordinate 3	-2.5 ft	3 ft
Coordinate 4	2.5 ft	3 ft
Coordinate 5	7.39 ft	1.37 ft
Coordinate 6	100 ft	1.37 ft

Geometry

Name: 2D Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	-20.5 ft	-6 ft
Point 2	-2.5 ft	3 ft
Point 3	2.5 ft	3 ft
Point 4	29.5 ft	-6 ft
Point 5	-100 ft	-6 ft
Point 6	-100 ft	-8 ft
Point 7	100 ft	-8 ft
Point 8	100 ft	-6 ft
Point 9	100 ft	-12 ft
Point 10	-100 ft	-12 ft
Point 11	-100 ft	-19 ft
Point 12	100 ft	-19 ft
Point 13	100 ft	-34 ft

Point 14	-100 ft	-34 ft
Point 15	-100 ft	-39 ft
Point 16	100 ft	-39 ft
Point 17	100 ft	-46 ft
Point 18	-100 ft	-46 ft
Point 19	-100 ft	-10 ft
Point 20	100 ft	-10 ft

Regions

	Material	Points	Area
Region 1	Rip Rap	1,2,3,4	247.5 ft ²
Region 2	1- Clay (CH)	5,6,7,8,4,1	400 ft ²
Region 3	2- Peat (PT)	7,20,19,6	400 ft ²
Region 4	3-Sandy Clay (CLS)	12,9,20,19,10,11,14,15,16,13	5,800 ft ²
Region 5	4- Silty Clay (CL)	16,17,18,15	1,400 ft ²

Slip Results

Slip Surfaces Analysed: 73 of 406 converged

Current Slip Surface

Slip Surface: 406

Factor of Safety: 1.879

Volume: 395.39053 ft³

Weight: 53,165.275 lbf

Resisting Moment: 3,691,259.9 lbf·ft

Activating Moment: 1,964,270.4 lbf·ft

Resisting Force: 6,531.7774 lbf

Activating Force: 3,475.9698 lbf

Slip Rank: 1 of 406 slip surfaces

Exit: (-47.994723, -6) ft

Entry: (29.551265, -6) ft

Radius: 27.040674 ft

Center: (-23.466534, 555.31791) ft

Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	-47.089351 ft	-6.603941 ft	461.60513 psf	510.13433 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 2	-44.864965 ft	-7.6013775 ft	523.87528 psf	577.23784 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 3	-41.810715 ft	-8.1059405 ft	555.37524 psf	607.25275 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 4	-39.024527 ft	-8.2696543 ft	565.59592 psf	619.24203 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 5	-36.922623 ft	-8.3749467 ft	572.16935 psf	627.35201 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice	-34.73308 ft	-8.4905952	579.38931	636.50293	0 psf	80 psf	0 psf	2- Peat

6		ft	psf	psf				(PT)
Slice 7	-32.4559 ft	-8.6165995 ft	587.25578 psf	646.20852 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 8	-30.17872 ft	-8.7426038 ft	595.12225 psf	655.9141 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 9	-27.45496 ft	-8.893317 ft	604.53131 psf	667.52284 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 10	-24.527342 ft	-9.0741793 ft	615.82257 psf	682.11052 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 11	-21.842447 ft	-9.2604819 ft	627.45348 psf	696.46185 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 12	-20.46901 ft	-9.3557836 ft	633.40319 psf	706.67318 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 13	-20.397395 ft	-9.358034 ft	633.54368 psf	707.3773 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 14	-19.013093 ft	-9.3844282 ft	635.19147 psf	781.0829 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 15	-16.325739 ft	-9.4370166 ft	638.47458 psf	922.7159 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 16	-13.638385 ft	-9.489605 ft	641.75768 psf	1,064.3489 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 17	-10.951031 ft	-9.5421934 ft	645.04078 psf	1,205.9819 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 18	-8.263677 ft	-9.5947818 ft	648.32389 psf	1,347.6149 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 19	-6.590855 ft	-9.627517 ft	660.64184 psf	1,446.0851 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 20	-5.15778 ft	-9.5274285 ft	699.12687 psf	1,550.5895 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 21	-3.276925 ft	-9.2103879 ft	738.04503 psf	1,672.0859 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 22	-0.65489763 ft	-8.4999384 ft	717.94332 psf	1,681.4622 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 23	1.8451024 ft	-7.8225527 ft	675.65401 psf	1,626.3872 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 24	3.323505 ft	-7.4219732 ft	633.50856 psf	1,546.7751 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 25	4.754145 ft	-7.0856865 ft	582.74241 psf	1,444.127 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 26	6.37564 ft	-6.8267184 ft	532.83157 psf	1,335.182 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 27	8.708335 ft	-6.4913949 ft	490.78836 psf	1,205.538 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 28	11.028522 ft	-6.227961 ft	474.34214 psf	1,107.3628 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 29	13.032227 ft	-6.080113 ft	465.11196 psf	1,026.0935 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 30	15.322907 ft	-6.005675 ft	460.46478 psf	945.2479 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 31	17.90056 ft	-6.0046469 ft	460.40059 psf	856.9217 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 32	20.478213 ft	-6.0036188 ft	460.33641 psf	768.59551 psf	0 psf	90 psf	0 psf	1- Clay (CH)

Slice 33	23.055867 ft	-6.0025907 ft	460.27223 psf	680.26931 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 34	25.63352 ft	-6.0015626 ft	460.20804 psf	591.94312 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 35	28.211173 ft	-6.0005345 ft	460.14386 psf	503.61692 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 36	29.525633 ft	-6.0000102 ft	460.11113 psf	460.38092 psf	0 psf	90 psf	0 psf	1- Clay (CH)

Slope Stability

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File Information

File Version: 11.03
Revision Number: 16
Date: 09/19/2022
Time: 03:47:10 PM
Tool Version: 11.3.1.23726
File Name: Boring B-1, Typical Layout, Mudline Elev. -6.0, Shore to Lake.gsz
Directory: S:\2-GEOTECH\Projects\2022\5820G\
Last Solved Date: 09/19/2022
Last Solved Time: 03:47:12 PM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

Slope Stability

Kind: SLOPE/W

Analysis Type: Spencer

Settings

PWP Conditions from: Piezometric Line

Apply Phreatic Correction: No

Use Staged Rapid Drawdown: No

Unit Weight of Water: 62.430189 pcf

Slip Surface

Direction of movement: Left to Right

Use Passive Mode: No

Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1

Optimize Critical Slip Surface Location: Yes

Optimizations Settings

Maximum Iterations: 2,000

Starting Points: 8

Ending Points: 16

Driving Side Maximum Convex Angle: 5 °

Resisting Side Maximum Convex Angle: 1 °

Tension Crack Option: (none)

Distribution

F of S Calculation Option: Constant

Advanced

Geometry Settings

Minimum Slip Surface Depth: 0.1 ft

Number of Slices: 30

Factor of Safety Convergence Settings

Maximum Number of Iterations: 100

Tolerable difference in F of S: 0.001
Under-Relaxation Criteria
Initial Rate: 1
Minimum Rate: 0.1
Rate Reduction Factor: 0.65
Reduction Frequency (iterations): 50
Solution Settings
Search Method: Root Finder
Tolerable difference between starting and converged F of S: 3
Maximum iterations to calculate converged lambda: 20
Max Absolute Lambda: 2

Materials

1- Clay (CH)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 86 pcf
Total Cohesion: 90 psf
Pore Water Pressure
Piezometric Line: 1

2- Peat (PT)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 77 pcf
Total Cohesion: 80 psf
Pore Water Pressure
Piezometric Line: 1

3-Sandy Clay (CLS)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 134 pcf
Total Cohesion: 1,100 psf
Pore Water Pressure
Piezometric Line: 1

4- Silty Clay (CL)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 124 pcf
Total Cohesion: 820 psf
Pore Water Pressure
Piezometric Line: 1

Rip Rap

Slope Stability Material Model: High Strength
Unit Weight: 165 pcf
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (-95, -6) ft

Left-Zone Right Coordinate: (2, 3) ft
Left-Zone Increment: 8
Right Type: Range
Right-Zone Left Coordinate: (2.5, 3) ft
Right-Zone Right Coordinate: (92.6, -6) ft
Right-Zone Increment: 8
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (-100, -6) ft
Right Coordinate: (100, -6) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-100 ft	1.37 ft
Coordinate 2	-5.5 ft	1.37 ft
Coordinate 3	-2.5 ft	3 ft
Coordinate 4	2.5 ft	3 ft
Coordinate 5	9 ft	0.79 ft
Coordinate 6	100 ft	0.79 ft

Geometry

Name: 2D Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	-20.5 ft	-6 ft
Point 2	-2.5 ft	3 ft
Point 3	2.5 ft	3 ft
Point 4	29.5 ft	-6 ft
Point 5	-100 ft	-6 ft
Point 6	-100 ft	-8 ft
Point 7	100 ft	-8 ft
Point 8	100 ft	-6 ft
Point 9	100 ft	-12 ft
Point 10	-100 ft	-12 ft
Point 11	-100 ft	-19 ft
Point 12	100 ft	-19 ft
Point 13	100 ft	-34 ft

Point 14	-100 ft	-34 ft
Point 15	-100 ft	-39 ft
Point 16	100 ft	-39 ft
Point 17	100 ft	-46 ft
Point 18	-100 ft	-46 ft
Point 19	-100 ft	-10 ft
Point 20	100 ft	-10 ft

Regions

	Material	Points	Area
Region 1	Rip Rap	1,2,3,4	247.5 ft ²
Region 2	1- Clay (CH)	5,6,7,8,4,1	400 ft ²
Region 3	2- Peat (PT)	7,20,19,6	400 ft ²
Region 4	3-Sandy Clay (CLS)	12,9,20,19,10,11,14,15,16,13	5,800 ft ²
Region 5	4- Silty Clay (CL)	16,17,18,15	1,400 ft ²

Slip Results

Slip Surfaces Analysed: 76 of 406 converged

Current Slip Surface

Slip Surface: 406

Factor of Safety: 1.714

Volume: 391.18745 ft³

Weight: 52,761.303 lbf

Resisting Moment: 2,630,299.3 lbf·ft

Activating Moment: 1,534,447 lbf·ft

Resisting Force: 5,782.4541 lbf

Activating Force: 3,373.4869 lbf

Slip Rank: 1 of 406 slip surfaces

Exit: (47.992904, -6) ft

Entry: (-20.523482, -6) ft

Radius: 24.101884 ft

Center: (24.526667, 444.7025) ft

Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	-20.511741 ft	-6.0000012 ft	460.11056 psf	460.70512 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 2	-19.246595 ft	-6.0001262 ft	460.11837 psf	522.58992 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 3	-16.739785 ft	-6.0003738 ft	460.13383 psf	651.61992 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 4	-14.232975 ft	-6.0006215 ft	460.14929 psf	780.64992 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 5	-11.726165 ft	-6.0008692 ft	460.16475 psf	909.67992 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice	-9.29457 ft	-6.0902339	465.74381	1,037.6345	0 psf	90 psf	0 psf	1- Clay

6		ft	psf	psf				(CH)
Slice 7	-6.93819 ft	-6.2687158 ft	476.88647 psf	1,174.133 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 8	-5.63 ft	-6.3678035 ft	483.07253 psf	1,253.944 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 9	-5.127405 ft	-6.4058721 ft	498.08774 psf	1,298.6433 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 10	-3.627405 ft	-6.6161514 ft	562.09611 psf	1,434.4524 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 11	-1.25 ft	-7.0000632 ft	624.30583 psf	1,560.2475 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 12	1.25 ft	-7.4037721 ft	649.50945 psf	1,594.9024 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 13	3.721095 ft	-7.8028132 ft	648.50238 psf	1,562.1203 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 14	5.71277 ft	-8.124436 ft	626.30553 psf	1,480.1444 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 15	7.18646 ft	-8.424392 ft	613.75091 psf	1,416.7638 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 16	8.020285 ft	-8.644688 ft	609.80504 psf	1,382.161 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 17	8.5755 ft	-8.8733233 ft	612.29365 psf	1,363.6631 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 18	9.065 ft	-9.0853354 ft	616.51905 psf	1,353.1177 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 19	9.49558 ft	-9.2718281 ft	628.16183 psf	1,351.4408 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 20	10.56651 ft	-9.5874215 ft	647.86438 psf	1,352.2643 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 21	12.378243 ft	-9.7647058 ft	658.93227 psf	1,316.8488 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 22	14.59101 ft	-9.8047673 ft	661.43332 psf	1,244.4697 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 23	16.803777 ft	-9.8448288 ft	663.93436 psf	1,172.0905 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 24	19.016543 ft	-9.8848902 ft	666.43541 psf	1,099.7114 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 25	21.22931 ft	-9.9249517 ft	668.93646 psf	1,027.3323 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 26	23.442077 ft	-9.9650133 ft	671.43751 psf	954.95312 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 27	25.786345 ft	-9.8440925 ft	663.8884 psf	873.17057 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 28	28.262115 ft	-9.5621895 ft	646.28914 psf	766.87559 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 29	30.735395 ft	-9.28057 ft	628.70758 psf	701.2649 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 30	32.767405 ft	-9.0624345 ft	615.08934 psf	683.53998 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 31	34.45206 ft	-8.890966 ft	604.38453 psf	670.79036 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 32	36.610777 ft	-8.6836297 ft	591.44049 psf	653.90306 psf	0 psf	80 psf	0 psf	2- Peat (PT)

Slice 33	39.15213 ft	-8.456959 ft	577.28939 psf	636.4316 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 34	41.693483 ft	-8.2302883 ft	563.1383 psf	618.96014 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 35	43.154207 ft	-8.0584765 ft	552.41206 psf	617.46832 psf	0 psf	80 psf	0 psf	2- Peat (PT)
Slice 36	44.234282 ft	-7.726142 ft	531.66435 psf	591.18292 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 37	46.014341 ft	-7.178426 ft	497.47034 psf	543.91305 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 38	47.0547 ft	-6.8014525 ft	473.93581 psf	533.62204 psf	0 psf	90 psf	0 psf	1- Clay (CH)
Slice 39	47.598967 ft	-6.3491685 ft	445.69964 psf	506.19313 psf	0 psf	90 psf	0 psf	1- Clay (CH)

Slope Stability

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File Information

File Version: 11.03
Revision Number: 22
Date: 09/20/2022
Time: 10:05:18 AM
Tool Version: 11.3.1.23726
File Name: Boring B-2, Typical Layout, Mudline Elev. -6.0, Lake to Shore.gsz
Directory: S:\2-GEOTECH\Projects\2022\5820G\
Last Solved Date: 09/20/2022
Last Solved Time: 10:05:22 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

Slope Stability

Kind: SLOPE/W

Analysis Type: Spencer

Settings

PWP Conditions from: Piezometric Line

Apply Phreatic Correction: No

Use Staged Rapid Drawdown: No

Unit Weight of Water: 62.430189 pcf

Slip Surface

Direction of movement: Right to Left

Use Passive Mode: No

Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1

Optimize Critical Slip Surface Location: Yes

Optimizations Settings

Maximum Iterations: 2,000

Starting Points: 8

Ending Points: 16

Driving Side Maximum Convex Angle: 5 °

Resisting Side Maximum Convex Angle: 1 °

Tension Crack Option: (none)

Distribution

F of S Calculation Option: Constant

Advanced

Geometry Settings

Minimum Slip Surface Depth: 0.1 ft

Number of Slices: 30

Factor of Safety Convergence Settings

Maximum Number of Iterations: 100

Tolerable difference in F of S: 0.001
Under-Relaxation Criteria
Initial Rate: 1
Minimum Rate: 0.1
Rate Reduction Factor: 0.65
Reduction Frequency (iterations): 50
Solution Settings
Search Method: Root Finder
Tolerable difference between starting and converged F of S: 3
Maximum iterations to calculate converged lambda: 20
Max Absolute Lambda: 2

Materials

1- Clay (CH)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 103 pcf
Total Cohesion: 186 psf
Pore Water Pressure
Piezometric Line: 1

2- Sandy Clay (CLS)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 130 pcf
Total Cohesion: 155 psf
Pore Water Pressure
Piezometric Line: 1

3-Clay (CH)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 108 pcf
Total Cohesion: 215 psf
Pore Water Pressure
Piezometric Line: 1

4- Silty Sand (SM)

Slope Stability Material Model: Mohr-Coulomb
Unit Weight: 120 pcf
Effective Cohesion: 0 psf
Effective Friction Angle: 10 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Rip Rap

Slope Stability Material Model: High Strength
Unit Weight: 165 pcf
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (-91, -6) ft
Left-Zone Right Coordinate: (-2.98, 2.76) ft
Left-Zone Increment: 8
Right Type: Range
Right-Zone Left Coordinate: (-1.61, 3) ft
Right-Zone Right Coordinate: (92.6, -6) ft
Right-Zone Increment: 8
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (-100, -6) ft
Right Coordinate: (100, -6) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-100 ft	0.79 ft
Coordinate 2	-6.92 ft	0.79 ft
Coordinate 3	-2.5 ft	3 ft
Coordinate 4	2.5 ft	3 ft
Coordinate 5	7.39 ft	1.37 ft
Coordinate 6	100 ft	1.37 ft

Geometry

Name: 2D Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	-20.5 ft	-6 ft
Point 2	-2.5 ft	3 ft
Point 3	2.5 ft	3 ft
Point 4	29.5 ft	-6 ft
Point 5	-100 ft	-6 ft
Point 6	-100 ft	-8 ft
Point 7	100 ft	-8 ft
Point 8	100 ft	-6 ft
Point 9	100 ft	-12 ft
Point 10	-100 ft	-12 ft
Point 11	-100 ft	-19 ft

Point 12	100 ft	-19 ft
Point 13	100 ft	-34 ft
Point 14	-100 ft	-34 ft
Point 15	-100 ft	-39 ft
Point 16	100 ft	-39 ft
Point 17	-100 ft	-10 ft
Point 18	100 ft	-10 ft
Point 19	-100 ft	-24 ft
Point 20	100 ft	-24 ft
Point 21	-100 ft	-29 ft
Point 22	100 ft	-29 ft
Point 23	100 ft	-45 ft
Point 24	-100 ft	-45 ft

Regions

	Material	Points	Area
Region 1	Rip Rap	1,2,3,4	247.5 ft ²
Region 2	1- Clay (CH)	7,8,4,1,5,6,17,10,11,19,20,12,9,18	3,600 ft ²
Region 3	4- Silty Sand (SM)	16,23,24,15	1,200 ft ²
Region 4	3-Clay (CH)	14,15,16,13,22,21	2,000 ft ²
Region 5	2- Sandy Clay (CLS)	20,19,21,22	1,000 ft ²

Slip Results

Slip Surfaces Analysed: 68 of 406 converged

Current Slip Surface

Slip Surface: 406

Factor of Safety: 1.420

Volume: 2,145.6611 ft³

Weight: 245,380.79 lbf

Resisting Moment: 1,166,524.2 lbf·ft

Activating Moment: 821,458.02 lbf·ft

Resisting Force: 20,517.68 lbf

Activating Force: 14,456.463 lbf

Slip Rank: 1 of 406 slip surfaces

Exit: (-53.241551, -6) ft

Entry: (35.730727, -6) ft

Radius: 42.077355 ft

Center: (-12.205539, 8.7257377) ft

Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	-51.031456 ft	-10.950419 ft	732.95657 psf	1,178.6659 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 2	-46.977823 ft	-17.651482 ft	1,151.3052 psf	1,717.5498 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice	-43.290747	-21.15277	1,369.8913	2,072.2922	0 psf	186 psf	0 psf	1- Clay

3	ft	ft	psf	psf				(CH)
Slice 4	-40.83427 ft	-23.451707 ft	1,513.4143 psf	2,300.299 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 5	-39.271915 ft	-24.849279 ft	1,600.665 psf	2,445.7623 psf	0 psf	155 psf	0 psf	2- Sandy Clay (CLS)
Slice 6	-36.444318 ft	-27.349279 ft	1,756.7405 psf	2,764.8214 psf	0 psf	155 psf	0 psf	2- Sandy Clay (CLS)
Slice 7	-32.612798 ft	-30.716775 ft	1,966.9739 psf	3,194.6103 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 8	-29.28871 ft	-33.579079 ft	2,145.6681 psf	3,495.2205 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 9	-26.65161 ft	-35.793456 ft	2,283.9121 psf	3,731.6372 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 10	-24.11891 ft	-37.931152 ft	2,417.3688 psf	3,959.1506 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 11	-21.67628 ft	-39.992826 ft	2,546.0795 psf	4,238.1126 psf	298.35109 psf	0 psf	0 psf	4- Silty Sand (SM)
Slice 12	-19.70077 ft	-41.660232 ft	2,650.176 psf	4,486.8748 psf	323.85955 psf	0 psf	0 psf	4- Silty Sand (SM)
Slice 13	-17.057775 ft	-43.036002 ft	2,736.0656 psf	4,724.1156 psf	350.54686 psf	0 psf	0 psf	4- Silty Sand (SM)
Slice 14	-14.08237 ft	-43.777604 ft	2,782.3639 psf	4,910.1287 psf	375.18233 psf	0 psf	0 psf	4- Silty Sand (SM)
Slice 15	-11.81909 ft	-43.858431 ft	2,787.41 psf	5,036.7132 psf	396.61285 psf	0 psf	0 psf	4- Silty Sand (SM)
Slice 16	-8.803725 ft	-43.275768 ft	2,751.0342 psf	5,050.1219 psf	405.39119 psf	0 psf	0 psf	4- Silty Sand (SM)
Slice 17	-6.371205 ft	-42.471169 ft	2,717.9336 psf	5,092.9317 psf	418.77624 psf	0 psf	0 psf	4- Silty Sand (SM)
Slice 18	-4.3353992 ft	-40.644822 ft	2,667.4623 psf	4,898.4784 psf	393.38833 psf	0 psf	0 psf	4- Silty Sand (SM)
Slice 19	-2.6741942 ft	-38.807319 ft	2,604.6013 psf	4,959.6508 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 20	-1.298835 ft	-37.285997 ft	2,515.0624 psf	4,806.762 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 21	1.103495 ft	-34.628716 ft	2,349.1678 psf	4,514.1155 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 22	2.40233 ft	-33.200088 ft	2,259.9783 psf	4,363.0899 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 23	3.115355 ft	-32.470144 ft	2,201.6022 psf	4,248.3578 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 24	5.2944154 ft	-30.420094 ft	2,028.2708 psf	3,910.6512 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 25	7.1240604 ft	-28.758484 ft	1,886.4612 psf	3,660.3841 psf	0 psf	155 psf	0 psf	2- Sandy Clay (CLS)
Slice 26	9.443095 ft	-26.652431 ft	1,749.4456 psf	3,296.2419 psf	0 psf	155 psf	0 psf	2- Sandy Clay (CLS)
Slice 27	11.953605 ft	-24.393946 ft	1,608.448 psf	2,913.7655 psf	0 psf	155 psf	0 psf	2- Sandy Clay (CLS)
Slice 28	13.888935 ft	-22.727152 ft	1,504.3897 psf	2,642.246 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 29	16.844765 ft	-20.181456 ft	1,345.4615 psf	2,273.7895 psf	0 psf	186 psf	0 psf	1- Clay (CH)

Slice 30	19.800595 ft	-17.63576 ft	1,186.5332 psf	1,905.333 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 31	22.628127 ft	-15.38004 ft	1,045.7081 psf	1,585.5772 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 32	25.32736 ft	-13.414295 ft	922.98632 psf	1,287.3487 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 33	28.026593 ft	-11.44855 ft	800.26451 psf	989.12013 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 34	29.438105 ft	-10.422181 ft	736.18808 psf	836.33728 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 35	31.057682 ft	-9.2840128 ft	665.13203 psf	712.79751 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 36	34.173045 ft	-7.0946709 ft	528.451 psf	484.48986 psf	0 psf	186 psf	0 psf	1- Clay (CH)

Slope Stability

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File Information

File Version: 11.03
Revision Number: 29
Date: 09/20/2022
Time: 10:06:19 AM
Tool Version: 11.3.1.23726
File Name: Boring B-2, Typical Layout, Mudline Elev. -6.0, Shore to Lake.gsz
Directory: S:\2-GEOTECH\Projects\2022\5820G\
Last Solved Date: 09/20/2022
Last Solved Time: 10:06:22 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

Slope Stability

Kind: SLOPE/W

Analysis Type: Spencer

Settings

PWP Conditions from: Piezometric Line

Apply Phreatic Correction: No

Use Staged Rapid Drawdown: No

Unit Weight of Water: 62.430189 pcf

Slip Surface

Direction of movement: Left to Right

Use Passive Mode: No

Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1

Optimize Critical Slip Surface Location: Yes

Optimizations Settings

Maximum Iterations: 2,000

Starting Points: 8

Ending Points: 16

Driving Side Maximum Convex Angle: 5 °

Resisting Side Maximum Convex Angle: 1 °

Tension Crack Option: (none)

Distribution

F of S Calculation Option: Constant

Advanced

Geometry Settings

Minimum Slip Surface Depth: 0.1 ft

Number of Slices: 30

Factor of Safety Convergence Settings

Maximum Number of Iterations: 100

Tolerable difference in F of S: 0.001
Under-Relaxation Criteria
Initial Rate: 1
Minimum Rate: 0.1
Rate Reduction Factor: 0.65
Reduction Frequency (iterations): 50
Solution Settings
Search Method: Root Finder
Tolerable difference between starting and converged F of S: 3
Maximum iterations to calculate converged lambda: 20
Max Absolute Lambda: 2

Materials

1- Clay (CH)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 103 pcf
Total Cohesion: 186 psf
Pore Water Pressure
Piezometric Line: 1

2- Sandy Clay (CLS)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 130 pcf
Total Cohesion: 155 psf
Pore Water Pressure
Piezometric Line: 1

3-Clay (CH)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 108 pcf
Total Cohesion: 215 psf
Pore Water Pressure
Piezometric Line: 1

4- Silty Sand (SM)

Slope Stability Material Model: Mohr-Coulomb
Unit Weight: 120 pcf
Effective Cohesion: 0 psf
Effective Friction Angle: 10 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Rip Rap

Slope Stability Material Model: High Strength
Unit Weight: 165 pcf
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (-91, -6) ft
Left-Zone Right Coordinate: (2, 3) ft
Left-Zone Increment: 8
Right Type: Range
Right-Zone Left Coordinate: (2.5, 3) ft
Right-Zone Right Coordinate: (92.6, -6) ft
Right-Zone Increment: 8
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (-100, -6) ft
Right Coordinate: (100, -6) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-100 ft	1.37 ft
Coordinate 2	-5.76 ft	1.37 ft
Coordinate 3	-2.5 ft	3 ft
Coordinate 4	2.5 ft	3 ft
Coordinate 5	9.1 ft	0.79 ft
Coordinate 6	100 ft	0.79 ft

Geometry

Name: 2D Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	-20.5 ft	-6 ft
Point 2	-2.5 ft	3 ft
Point 3	2.5 ft	3 ft
Point 4	29.5 ft	-6 ft
Point 5	-100 ft	-6 ft
Point 6	-100 ft	-8 ft
Point 7	100 ft	-8 ft
Point 8	100 ft	-6 ft
Point 9	100 ft	-12 ft
Point 10	-100 ft	-12 ft
Point 11	-100 ft	-19 ft

Point 12	100 ft	-19 ft
Point 13	100 ft	-34 ft
Point 14	-100 ft	-34 ft
Point 15	-100 ft	-39 ft
Point 16	100 ft	-39 ft
Point 17	-100 ft	-10 ft
Point 18	100 ft	-10 ft
Point 19	-100 ft	-24 ft
Point 20	100 ft	-24 ft
Point 21	-100 ft	-29 ft
Point 22	100 ft	-29 ft
Point 23	100 ft	-45 ft
Point 24	-100 ft	-45 ft

Regions

	Material	Points	Area
Region 1	Rip Rap	1,2,3,4	247.5 ft ²
Region 2	1- Clay (CH)	7,8,4,1,5,6,17,10,11,19,20,12,9,18	3,600 ft ²
Region 3	4- Silty Sand (SM)	16,23,24,15	1,200 ft ²
Region 4	3-Clay (CH)	14,15,16,13,22,21	2,000 ft ²
Region 5	2- Sandy Clay (CLS)	20,19,21,22	1,000 ft ²

Slip Results

Slip Surfaces Analysed: 55 of 406 converged

Current Slip Surface

Slip Surface: 406

Factor of Safety: 1.538

Volume: 2,140.097 ft³

Weight: 243,985.51 lbf

Resisting Moment: 1,007,174.2 lbf·ft

Activating Moment: 654,863.47 lbf·ft

Resisting Force: 18,339.232 lbf

Activating Force: 11,929.436 lbf

Slip Rank: 1 of 406 slip surfaces

Exit: (58.133453, -6) ft

Entry: (-35.461906, -6) ft

Radius: 42.197751 ft

Center: (13.358848, 8.6912188) ft

Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	-34.135235 ft	-6.845 ft	512.864 psf	474.11925 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 2	-31.481892 ft	-8.535 ft	618.37102 psf	650.65508 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice	-28.655263	-10.420762	736.09952	841.72651	0 psf	186 psf	0 psf	1- Clay

3	ft	ft	psf	psf				(CH)
Slice 4	-25.65535 ft	-12.502287 ft	866.04949 psf	1,059.4363 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 5	-22.655437 ft	-14.583812 ft	995.99947 psf	1,277.1461 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 6	-20.82774 ft	-15.88782 ft	1,077.409 psf	1,403.5287 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 7	-18.843155 ft	-17.481872 ft	1,176.9259 psf	1,661.7129 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 8	-15.529465 ft	-20.143483 ft	1,343.0908 psf	2,112.6092 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 9	-12.432231 ft	-22.737144 ft	1,505.0135 psf	2,540.2783 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 10	-9.6838817 ft	-25.14675 ft	1,655.4457 psf	2,986.1167 psf	0 psf	155 psf	0 psf	2- Sandy Clay (CLS)
Slice 11	-7.0679606 ft	-27.44025 ft	1,798.6293 psf	3,425.991 psf	0 psf	155 psf	0 psf	2- Sandy Clay (CLS)
Slice 12	-5.52447 ft	-28.7935 ft	1,890.4651 psf	3,693.1116 psf	0 psf	155 psf	0 psf	2- Sandy Clay (CLS)
Slice 13	-5.10327 ft	-29.162785 ft	1,926.6674 psf	3,738.107 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 14	-3.80855 ft	-30.338681 ft	2,040.4937 psf	3,974.532 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 15	-2.59975 ft	-31.459777 ft	2,148.2166 psf	4,191.602 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 16	-1.25 ft	-32.920952 ft	2,242.5518 psf	4,361.676 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 17	1.25 ft	-35.627334 ft	2,411.5117 psf	4,661.073 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 18	3.416095 ft	-37.972246 ft	2,538.7544 psf	4,868.8714 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 19	4.48265 ft	-38.981271 ft	2,579.4521 psf	4,951.2805 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 20	6.866555 ft	-38.998348 ft	2,530.6835 psf	4,825.5957 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 21	10.85825 ft	-38.997942 ft	2,483.9687 psf	4,641.7111 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 22	14.35975 ft	-38.997586 ft	2,483.9465 psf	4,521.4242 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 23	16.335365 ft	-38.996139 ft	2,483.8562 psf	4,453.647 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 24	18.376908 ft	-38.994785 ft	2,483.7716 psf	4,383.1621 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 25	21.995265 ft	-38.994615 ft	2,483.761 psf	4,258.8821 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 26	25.613622 ft	-38.994445 ft	2,483.7504 psf	4,134.602 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 27	28.4614 ft	-38.125305 ft	2,429.4898 psf	3,986.6954 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 28	30.06099 ft	-36.786839 ft	2,345.9291 psf	3,812.7637 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 29	32.450825 ft	-34.529218 ft	2,204.9854 psf	3,581.8061 psf	0 psf	215 psf	0 psf	3-Clay (CH)

Slice 30	36.108515 ft	-30.952799 ft	1,981.7089 psf	3,203.6613 psf	0 psf	215 psf	0 psf	3-Clay (CH)
Slice 31	40.296677 ft	-26.582294 ft	1,708.8575 psf	2,657.845 psf	0 psf	155 psf	0 psf	2- Sandy Clay (CLS)
Slice 32	44.994957 ft	-21.439984 ft	1,387.8221 psf	2,093.6161 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 33	48.866 ft	-17.204676 ft	1,123.411 psf	1,667.5196 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 34	51.93016 ft	-13.854091 ft	914.23338 psf	1,330.4913 psf	0 psf	186 psf	0 psf	1- Clay (CH)
Slice 35	55.797847 ft	-9.0893995 ft	616.77277 psf	873.99343 psf	0 psf	186 psf	0 psf	1- Clay (CH)

Slope Stability

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File Information

File Version: 11.03
Revision Number: 8
Date: 09/19/2022
Time: 03:59:55 PM
Tool Version: 11.3.1.23726
File Name: Boring B-3, Typical Layout, Mudline Elev. -6.0, Lake to Shore.gsz
Directory: S:\2-GEOTECH\Projects\2022\5820G\
Last Solved Date: 09/19/2022
Last Solved Time: 03:59:56 PM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

Slope Stability

Kind: SLOPE/W

Analysis Type: Spencer

Settings

PWP Conditions from: Piezometric Line

Apply Phreatic Correction: No

Use Staged Rapid Drawdown: No

Unit Weight of Water: 62.430189 pcf

Slip Surface

Direction of movement: Right to Left

Use Passive Mode: No

Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1

Optimize Critical Slip Surface Location: Yes

Optimizations Settings

Maximum Iterations: 2,000

Starting Points: 8

Ending Points: 16

Driving Side Maximum Convex Angle: 5 °

Resisting Side Maximum Convex Angle: 1 °

Tension Crack Option: (none)

Distribution

F of S Calculation Option: Constant

Advanced

Geometry Settings

Minimum Slip Surface Depth: 0.1 ft

Number of Slices: 30

Factor of Safety Convergence Settings

Maximum Number of Iterations: 100

Tolerable difference in F of S: 0.001
Under-Relaxation Criteria
Initial Rate: 1
Minimum Rate: 0.1
Rate Reduction Factor: 0.65
Reduction Frequency (iterations): 50
Solution Settings
Search Method: Root Finder
Tolerable difference between starting and converged F of S: 3
Maximum iterations to calculate converged lambda: 20
Max Absolute Lambda: 2

Materials

1- Organic Clay (OH)

Slope Stability Material Model: Undrained ($\Phi=0$)
Unit Weight: 83 pcf
Total Cohesion: 80 psf
Pore Water Pressure
Piezometric Line: 1

2- Silty Clay (CL)

Slope Stability Material Model: Undrained ($\Phi=0$)
Unit Weight: 122 pcf
Total Cohesion: 1,200 psf
Pore Water Pressure
Piezometric Line: 1

3- Clay (CH)

Slope Stability Material Model: Undrained ($\Phi=0$)
Unit Weight: 109 pcf
Total Cohesion: 460 psf
Pore Water Pressure
Piezometric Line: 1

4- Silty Clay (CL)

Slope Stability Material Model: Undrained ($\Phi=0$)
Unit Weight: 128 pcf
Total Cohesion: 1,430 psf
Pore Water Pressure
Piezometric Line: 1

5- Sandy Clay (CLS)

Slope Stability Material Model: Undrained ($\Phi=0$)
Unit Weight: 131 pcf
Total Cohesion: 1,590 psf
Pore Water Pressure
Piezometric Line: 1

6- Silty Clay (CL)

Slope Stability Material Model: Undrained ($\Phi=0$)
Unit Weight: 125 pcf

Total Cohesion: 450 psf

Pore Water Pressure

Piezometric Line: 1

Rip Rap

Slope Stability Material Model: High Strength

Unit Weight: 165 pcf

Pore Water Pressure

Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range

Left-Zone Left Coordinate: (-93.54, -6) ft

Left-Zone Right Coordinate: (-2.98, 2.76) ft

Left-Zone Increment: 8

Right Type: Range

Right-Zone Left Coordinate: (-1.61, 3) ft

Right-Zone Right Coordinate: (92.6, -6) ft

Right-Zone Increment: 8

Radius Increments: 4

Slip Surface Limits

Left Coordinate: (-100, -6) ft

Right Coordinate: (100, -6) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-100 ft	0.79 ft
Coordinate 2	-6.92 ft	0.79 ft
Coordinate 3	-2.5 ft	3 ft
Coordinate 4	2.5 ft	3 ft
Coordinate 5	7.39 ft	1.37 ft
Coordinate 6	100 ft	1.37 ft

Geometry

Name: 2D Geometry

Settings

View: 2D

Element Thickness: 1 ft

Points

	X	Y

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	-29.798381 ft	-6.057026 ft	427.46112 psf	465.92274 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 2	-29.69848 ft	-6.1294505 ft	431.9826 psf	453.21622 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 3	-28.857845 ft	-6.3173915 ft	443.71579 psf	459.55593 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 4	-27.247135 ft	-6.6624765 ft	465.25951 psf	488.25704 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 5	-25.292388 ft	-7.065432 ft	490.4161 psf	521.18615 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 6	-22.993603 ft	-7.526258 ft	519.18556 psf	559.50848 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 7	-21.428765 ft	-7.8288955 ft	538.07927 psf	583.52973 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 8	-20.75666 ft	-7.9459702 ft	545.38827 psf	593.30188 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 9	-20.47376 ft	-7.9954057 ft	548.47453 psf	600.7947 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 10	-19.373889 ft	-7.9999914 ft	548.76082 psf	649.87822 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 11	-17.226627 ft	-7.9999922 ft	548.76087 psf	759.67859 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 12	-15.079365 ft	-7.999993 ft	548.76092 psf	869.47896 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 13	-12.932103 ft	-7.9999938 ft	548.76097 psf	979.27933 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 14	-10.784841 ft	-7.9999946 ft	548.76102 psf	1,089.0797 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 15	-8.315605 ft	-7.9999606 ft	548.7589 psf	1,215.3401 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 16	-5.8308275 ft	-7.9998995 ft	582.7537 psf	1,376.556 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 17	-3.6524825 ft	-7.9998458 ft	650.7476 psf	1,556.265 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 18	-2.531655 ft	-7.9924406 ft	685.27202 psf	1,635.7473 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 19	-2.1798 ft	-7.9104271 ft	681.14002 psf	1,631.5611 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 20	-0.7697 ft	-7.5902031 ft	661.14838 psf	1,605.4504 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 21	1.4101 ft	-7.0990254 ft	630.48406 psf	1,564.7707 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 22	3.121705 ft	-6.7133468 ft	593.46835 psf	1,498.7086 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 23	4.76281 ft	-6.4238975 ft	541.24648 psf	1,388.6582 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 24	6.50403 ft	-6.2016625 ft	491.13741 psf	1,276.864 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 25	7.307925 ft	-6.1238254 ft	469.54892 psf	1,228.2282 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)

Slice 26	8.31507 ft	-6.0629409 ft	464.0399 psf	1,186.9949 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 27	9.748775 ft	-6.0036665 ft	460.33939 psf	1,135.5916 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 28	11.219539 ft	-6.0002993 ft	460.12917 psf	1,085.2461 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 29	13.143799 ft	-6.0002678 ft	460.12721 psf	1,019.3251 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 30	15.068058 ft	-6.0002364 ft	460.12525 psf	953.404 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 31	16.992317 ft	-6.0002049 ft	460.12328 psf	887.48293 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 32	18.916576 ft	-6.0001735 ft	460.12132 psf	821.56185 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 33	20.840834 ft	-6.000142 ft	460.11936 psf	755.64078 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 34	22.765093 ft	-6.0001106 ft	460.11739 psf	689.71971 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 35	24.689352 ft	-6.0000791 ft	460.11543 psf	623.79863 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 36	26.613612 ft	-6.0000477 ft	460.11347 psf	557.87756 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 37	28.537871 ft	-6.0000162 ft	460.1115 psf	491.95649 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 38	29.51588 ft	-6.0000003 ft	460.11051 psf	460.46872 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)

Slope Stability

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File Information

File Version: 11.03
Revision Number: 11
Date: 09/19/2022
Time: 03:15:38 PM
Tool Version: 11.3.1.23726
File Name: Boring B-3, Typical Layout, Mudline Elev. -6.0, Shore to Lake.gsz
Directory: S:\2-GEOTECH\Projects\2022\5820G\
Last Solved Date: 09/19/2022
Last Solved Time: 03:15:40 PM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

Slope Stability

Kind: SLOPE/W

Analysis Type: Spencer

Settings

PWP Conditions from: Piezometric Line

Apply Phreatic Correction: No

Use Staged Rapid Drawdown: No

Unit Weight of Water: 62.430189 pcf

Slip Surface

Direction of movement: Left to Right

Use Passive Mode: No

Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1

Optimize Critical Slip Surface Location: Yes

Optimizations Settings

Maximum Iterations: 2,000

Starting Points: 8

Ending Points: 16

Driving Side Maximum Convex Angle: 5 °

Resisting Side Maximum Convex Angle: 1 °

Tension Crack Option: (none)

Distribution

F of S Calculation Option: Constant

Advanced

Geometry Settings

Minimum Slip Surface Depth: 0.1 ft

Number of Slices: 30

Factor of Safety Convergence Settings

Maximum Number of Iterations: 100

Tolerable difference in F of S: 0.001
Under-Relaxation Criteria
Initial Rate: 1
Minimum Rate: 0.1
Rate Reduction Factor: 0.65
Reduction Frequency (iterations): 50
Solution Settings
Search Method: Root Finder
Tolerable difference between starting and converged F of S: 3
Maximum iterations to calculate converged lambda: 20
Max Absolute Lambda: 2

Materials

1- Organic Clay (OH)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 83 pcf
Total Cohesion: 80 psf
Pore Water Pressure
Piezometric Line: 1

2- Silty Clay (CL)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 122 pcf
Total Cohesion: 1,200 psf
Pore Water Pressure
Piezometric Line: 1

3- Clay (CH)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 109 pcf
Total Cohesion: 460 psf
Pore Water Pressure
Piezometric Line: 1

4- Silty Clay (CL)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 128 pcf
Total Cohesion: 1,430 psf
Pore Water Pressure
Piezometric Line: 1

5- Sandy Clay (CLS)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 131 pcf
Total Cohesion: 1,590 psf
Pore Water Pressure
Piezometric Line: 1

6- Silty Clay (CL)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 125 pcf

Total Cohesion: 450 psf
Pore Water Pressure
Piezometric Line: 1

Rip Rap

Slope Stability Material Model: High Strength
Unit Weight: 165 pcf
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (-51.44357, -6) ft
Left-Zone Right Coordinate: (2.2, 3) ft
Left-Zone Increment: 8
Right Type: Range
Right-Zone Left Coordinate: (2.68, 2.94) ft
Right-Zone Right Coordinate: (92.6, -6) ft
Right-Zone Increment: 8
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (-100, -6) ft
Right Coordinate: (100, -6) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-100 ft	1.37 ft
Coordinate 2	-5.75 ft	1.37 ft
Coordinate 3	-2.5 ft	3 ft
Coordinate 4	2.5 ft	3 ft
Coordinate 5	9.1 ft	0.79 ft
Coordinate 6	100 ft	0.79 ft

Geometry

Name: 2D Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	-20.512874 ft	-6.0000003 ft	460.11051 psf	460.6499 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 2	-19.577402 ft	-6.0000189 ft	460.11167 psf	505.08997 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 3	-17.732205 ft	-6.0000556 ft	460.11396 psf	600.1079 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 4	-15.887008 ft	-6.0000924 ft	460.11626 psf	695.12584 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 5	-14.041812 ft	-6.0001291 ft	460.11855 psf	790.14378 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 6	-12.196615 ft	-6.0001659 ft	460.12085 psf	885.16172 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 7	-10.351418 ft	-6.0002026 ft	460.12314 psf	980.17966 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 8	-8.30315 ft	-6.0679445 ft	464.35228 psf	1,087.9653 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 9	-6.46374 ft	-6.2269955 ft	474.28186 psf	1,191.9765 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 10	-5.0526425 ft	-6.4075542 ft	507.38924 psf	1,301.3709 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 11	-3.6579275 ft	-6.5860167 ft	562.2008 psf	1,431.026 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 12	-2.730285 ft	-6.722333 ft	599.7566 psf	1,514.0853 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 13	-1.842425 ft	-6.9038685 ft	618.30038 psf	1,548.0586 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 14	-0.2636375 ft	-7.2675833 ft	641.00716 psf	1,575.4405 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 15	1.5787875 ft	-7.726112 ft	669.6332 psf	1,613.3725 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 16	2.58796 ft	-7.9772672 ft	683.47409 psf	1,629.3276 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 17	3.47893 ft	-7.9988819 ft	666.19808 psf	1,597.6276 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 18	5.08495 ft	-7.9983298 ft	632.59032 psf	1,509.2503 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 19	6.69097 ft	-7.9977777 ft	598.98256 psf	1,420.873 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 20	8.29699 ft	-7.9972256 ft	565.3748 psf	1,332.4956 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 21	9.8787825 ft	-7.9966819 ft	548.55421 psf	1,261.1031 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 22	11.421347 ft	-7.9961516 ft	548.5211 psf	1,208.4614 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 23	13.442255 ft	-7.989239 ft	548.08955 psf	1,139.2551 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 24	14.75594 ft	-7.9826285 ft	547.67685 psf	1,093.5801 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 25	15.958305 ft	-7.9909315 ft	548.19521 psf	1,052.9168 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)

Slice 26	18.1375 ft	-7.9741725 ft	547.14894 psf	978.91112 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 27	19.23194 ft	-7.94865 ft	545.55557 psf	938.61259 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 28	20.164175 ft	-7.9532708 ft	545.84404 psf	906.46596 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 29	21.906545 ft	-7.9635124 ft	546.48343 psf	847.91031 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 30	23.648915 ft	-7.973754 ft	547.12281 psf	789.35467 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 31	25.391285 ft	-7.9839956 ft	547.7622 psf	730.79902 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 32	27.133655 ft	-7.9942372 ft	548.40158 psf	672.24338 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 33	28.32374 ft	-7.921056 ft	543.83287 psf	637.91485 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 34	29.07132 ft	-7.5953642 ft	523.49987 psf	601.36017 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 35	29.509705 ft	-7.3423737 ft	507.70563 psf	563.56924 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)
Slice 36	30.267001 ft	-6.6683865 ft	465.62848 psf	522.35672 psf	0 psf	80 psf	0 psf	1- Organic Clay (OH)

Slope Stability

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File Information

File Version: 11.03
Revision Number: 34
Date: 09/20/2022
Time: 10:17:25 AM
Tool Version: 11.3.1.23726
File Name: Boring B-4, Typical Layout, Mudline Elev. -6.0, Lake to Shore.gsz
Directory: S:\2-GEOTECH\Projects\2022\5820G\
Last Solved Date: 09/20/2022
Last Solved Time: 10:17:26 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

Slope Stability

Kind: SLOPE/W
Analysis Type: Spencer
Settings
 PWP Conditions from: Piezometric Line
 Apply Phreatic Correction: No
 Use Staged Rapid Drawdown: No
 Unit Weight of Water: 62.430189 pcf
Slip Surface
 Direction of movement: Right to Left
 Use Passive Mode: No
 Slip Surface Option: Entry and Exit
 Critical slip surfaces saved: 1
 Optimize Critical Slip Surface Location: Yes
 Optimizations Settings
 Maximum Iterations: 2,000
 Starting Points: 8
 Ending Points: 16
 Driving Side Maximum Convex Angle: 5 °
 Resisting Side Maximum Convex Angle: 1 °
 Tension Crack Option: (none)
Distribution
 F of S Calculation Option: Constant
Advanced
 Geometry Settings
 Minimum Slip Surface Depth: 0.1 ft
 Number of Slices: 30
 Factor of Safety Convergence Settings
 Maximum Number of Iterations: 100

Tolerable difference in F of S: 0.001
Under-Relaxation Criteria
Initial Rate: 1
Minimum Rate: 0.1
Rate Reduction Factor: 0.65
Reduction Frequency (iterations): 50
Solution Settings
Search Method: Root Finder
Tolerable difference between starting and converged F of S: 3
Maximum iterations to calculate converged lambda: 20
Max Absolute Lambda: 2

Materials

1- Sand (SP)

Slope Stability Material Model: Mohr-Coulomb
Unit Weight: 120 pcf
Effective Cohesion: 0 psf
Effective Friction Angle: 15 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

2- Sandy Clay (CLS)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 130 pcf
Total Cohesion: 212.5 psf
Pore Water Pressure
Piezometric Line: 1

3-Silty Clay (CL)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 120 pcf
Total Cohesion: 186 psf
Pore Water Pressure
Piezometric Line: 1

4- Clay (CH)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 103 pcf
Total Cohesion: 180 psf
Pore Water Pressure
Piezometric Line: 1

Rip Rap

Slope Stability Material Model: High Strength
Unit Weight: 165 pcf
Pore Water Pressure
Piezometric Line: 1

5- Silty Clay (CL)

Slope Stability Material Model: Undrained (Phi=0)

Unit Weight: 115 pcf
Total Cohesion: 500 psf
Pore Water Pressure
Piezometric Line: 1

6- Silty Sand (SM)

Slope Stability Material Model: Mohr-Coulomb
Unit Weight: 120 pcf
Effective Cohesion: 0 psf
Effective Friction Angle: 20 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (-51.44357, -6) ft
Left-Zone Right Coordinate: (-2.5, 3) ft
Left-Zone Increment: 8
Right Type: Range
Right-Zone Left Coordinate: (-1.5, 3) ft
Right-Zone Right Coordinate: (92.6, -6) ft
Right-Zone Increment: 8
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (-100, -6) ft
Right Coordinate: (100, -6) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-100 ft	0.79 ft
Coordinate 2	-6.92 ft	0.79 ft
Coordinate 3	-2.5 ft	3 ft
Coordinate 4	2.5 ft	3 ft
Coordinate 5	7.39 ft	1.37 ft
Coordinate 6	100 ft	1.37 ft

Geometry

Name: 2D Geometry

Settings

View: 2D

Element Thickness: 1 ft

Points

	X	Y
Point 1	-20.5 ft	-6 ft
Point 2	-2.5 ft	3 ft
Point 3	2.5 ft	3 ft
Point 4	29.5 ft	-6 ft
Point 5	-100 ft	-6 ft
Point 6	-100 ft	-8 ft
Point 7	100 ft	-8 ft
Point 8	100 ft	-6 ft
Point 9	100 ft	-12 ft
Point 10	-100 ft	-12 ft
Point 11	-100 ft	-19 ft
Point 12	100 ft	-19 ft
Point 13	100 ft	-34 ft
Point 14	-100 ft	-34 ft
Point 15	-100 ft	-39 ft
Point 16	100 ft	-39 ft
Point 17	-100 ft	-10 ft
Point 18	100 ft	-10 ft
Point 19	-100 ft	-24 ft
Point 20	100 ft	-24 ft
Point 21	-100 ft	-29 ft
Point 22	100 ft	-29 ft
Point 23	100 ft	-45 ft
Point 24	-100 ft	-45 ft
Point 25	-100 ft	-33 ft
Point 26	100 ft	-33 ft

Regions

	Material	Points	Area
Region 1	Rip Rap	1,2,3,4	247.5 ft ²
Region 2	2- Sandy Clay (CLS)	7,6,17,10,9,18	800 ft ²
Region 3	6- Silty Sand (SM)	13,26,25,14,15,24,23,16	2,400 ft ²
Region 4	4- Clay (CH)	20,19,21,22	1,000 ft ²
Region 5	1- Sand (SP)	8,4,1,5,6,7	400 ft ²
Region 6	3-Silty Clay (CL)	11,19,20,12,9,10	2,400 ft ²
Region 7	5- Silty Clay (CL)	22,21,25,26	800 ft ²

Slip Results

Slip Surfaces Analysed: 32 of 406 converged

Current Slip Surface

Slip Surface: 406

Factor of Safety: 1.350

Volume: 845.01846 ft³
 Weight: 114,584.78 lbf
 Resisting Moment: 1,030,160.2 lbf·ft
 Activating Moment: 763,267.7 lbf·ft
 Resisting Force: 11,594.651 lbf
 Activating Force: 8,584.3754 lbf
 Slip Rank: 1 of 406 slip surfaces
 Exit: (-37.706339, -6) ft
 Entry: (29.599795, -6) ft
 Radius: 27.243907 ft
 Center: (-9.2844409, 64.856082) ft

Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	-36.709505 ft	-7 ft	486.33117 psf	558.22791 psf	19.264674 psf	0 psf	0 psf	1- Sand (SP)
Slice 2	-34.715835 ft	-9 ft	611.19155 psf	951.93495 psf	0 psf	212.5 psf	0 psf	2- Sandy Clay (CLS)
Slice 3	-32.722166 ft	-11 ft	736.05192 psf	1,211.935 psf	0 psf	212.5 psf	0 psf	2- Sandy Clay (CLS)
Slice 4	-31.319966 ft	-12.406653 ft	823.86954 psf	1,371.0255 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 5	-29.64067 ft	-13.936303 ft	919.3659 psf	1,537.809 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 6	-27.14204 ft	-15.776185 ft	1,034.23 psf	1,717.7567 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 7	-24.69264 ft	-17.209952 ft	1,123.7404 psf	1,889.8088 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 8	-21.98397 ft	-18.751557 ft	1,219.9831 psf	2,070.7198 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 9	-19.85941 ft	-19.932289 ft	1,293.6964 psf	2,245.2602 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 10	-18.50414 ft	-20.669148 ft	1,339.6987 psf	2,400.0362 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 11	-17.131455 ft	-21.237823 ft	1,375.2011 psf	2,504.555 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 12	-15.298671 ft	-21.547886 ft	1,394.5584 psf	2,610.7445 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 13	-12.949114 ft	-21.792362 ft	1,409.8211 psf	2,760.5784 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 14	-10.599556 ft	-22.036837 ft	1,425.0838 psf	2,910.4123 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 15	-8.2499987 ft	-22.281313 ft	1,440.3464 psf	3,060.2462 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 16	-6.99761 ft	-22.352753 ft	1,444.8064 psf	3,028.4477 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 17	-5.9939325 ft	-21.695813 ft	1,432.7008 psf	3,029.9957 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 18	-4.1417975 ft	-20.48353 ft	1,414.8324 psf	3,037.3229 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice	-2.857865	-19.6759 ft	1,404.4899	3,058.9488	0 psf	186 psf	0 psf	3-Silty

19	ft		psf	psf				Clay (CL)
Slice 20	-1.25 ft	-18.770623 ft	1,359.1441 psf	2,979.8394 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 21	1.25 ft	-17.363046 ft	1,271.2688 psf	2,810.9302 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 22	3.76867 ft	-15.944958 ft	1,156.3362 psf	2,570.9828 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 23	6.21367 ft	-14.679832 ft	1,026.4735 psf	2,297.7607 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 24	8.578975 ft	-13.572259 ft	932.84805 psf	2,059.5028 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 25	9.98324 ft	-12.901529 ft	890.97425 psf	1,922.5672 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 26	11.128741 ft	-12.393773 ft	859.27494 psf	1,837.1051 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 27	12.532866 ft	-11.799385 ft	822.16716 psf	1,707.4492 psf	0 psf	212.5 psf	0 psf	2- Sandy Clay (CLS)
Slice 28	14.225684 ft	-11.155272 ft	781.9551 psf	1,575.2053 psf	0 psf	212.5 psf	0 psf	2- Sandy Clay (CLS)
Slice 29	16.663491 ft	-10.268278 ft	726.57991 psf	1,376.5476 psf	0 psf	212.5 psf	0 psf	2- Sandy Clay (CLS)
Slice 30	19.101299 ft	-9.3812846 ft	671.20473 psf	1,177.8899 psf	0 psf	212.5 psf	0 psf	2- Sandy Clay (CLS)
Slice 31	21.539106 ft	-8.4942909 ft	615.82954 psf	979.23227 psf	0 psf	212.5 psf	0 psf	2- Sandy Clay (CLS)
Slice 32	24.42134 ft	-7.490647 ft	553.17186 psf	796.35929 psf	65.161873 psf	0 psf	0 psf	1- Sand (SP)
Slice 33	26.938502 ft	-6.7044792 ft	504.09126 psf	625.82438 psf	32.618292 psf	0 psf	0 psf	1- Sand (SP)
Slice 34	28.646168 ft	-6.2524377 ft	475.87023 psf	517.41116 psf	11.130861 psf	0 psf	0 psf	1- Sand (SP)
Slice 35	29.549897 ft	-6.0132085 ft	460.9351 psf	461.65752 psf	0.19357285 psf	0 psf	0 psf	1- Sand (SP)

Slope Stability

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File Information

File Version: 11.03
Revision Number: 27
Date: 09/20/2022
Time: 10:18:13 AM
Tool Version: 11.3.1.23726
File Name: Boring B-4, Typical Layout, Mudline Elev. -6.0, Shore to Lake.gsz
Directory: S:\2-GEOTECH\Projects\2022\5820G\
Last Solved Date: 09/20/2022
Last Solved Time: 10:18:16 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

Slope Stability

Kind: SLOPE/W

Analysis Type: Spencer

Settings

PWP Conditions from: Piezometric Line

Apply Phreatic Correction: No

Use Staged Rapid Drawdown: No

Unit Weight of Water: 62.430189 pcf

Slip Surface

Direction of movement: Left to Right

Use Passive Mode: No

Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1

Optimize Critical Slip Surface Location: Yes

Optimizations Settings

Maximum Iterations: 2,000

Starting Points: 8

Ending Points: 16

Driving Side Maximum Convex Angle: 5 °

Resisting Side Maximum Convex Angle: 1 °

Tension Crack Option: (none)

Distribution

F of S Calculation Option: Constant

Advanced

Geometry Settings

Minimum Slip Surface Depth: 0.1 ft

Number of Slices: 30

Factor of Safety Convergence Settings

Maximum Number of Iterations: 100

Tolerable difference in F of S: 0.001
Under-Relaxation Criteria
Initial Rate: 1
Minimum Rate: 0.1
Rate Reduction Factor: 0.65
Reduction Frequency (iterations): 50
Solution Settings
Search Method: Root Finder
Tolerable difference between starting and converged F of S: 3
Maximum iterations to calculate converged lambda: 20
Max Absolute Lambda: 2

Materials

1- Sand (SP)

Slope Stability Material Model: Mohr-Coulomb
Unit Weight: 120 pcf
Effective Cohesion: 0 psf
Effective Friction Angle: 15 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

2- Sandy Clay (CLS)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 130 pcf
Total Cohesion: 212.5 psf
Pore Water Pressure
Piezometric Line: 1

3-Silty Clay (CL)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 120 pcf
Total Cohesion: 186 psf
Pore Water Pressure
Piezometric Line: 1

4- Clay (CH)

Slope Stability Material Model: Undrained (Phi=0)
Unit Weight: 103 pcf
Total Cohesion: 180 psf
Pore Water Pressure
Piezometric Line: 1

Rip Rap

Slope Stability Material Model: High Strength
Unit Weight: 165 pcf
Pore Water Pressure
Piezometric Line: 1

5- Silty Clay (CL)

Slope Stability Material Model: Undrained (Phi=0)

Unit Weight: 115 pcf
Total Cohesion: 500 psf
Pore Water Pressure
Piezometric Line: 1

6- Silty Sand (SM)

Slope Stability Material Model: Mohr-Coulomb
Unit Weight: 120 pcf
Effective Cohesion: 0 psf
Effective Friction Angle: 20 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (-87, -6) ft
Left-Zone Right Coordinate: (2, 3) ft
Left-Zone Increment: 8
Right Type: Range
Right-Zone Left Coordinate: (2.5, 3) ft
Right-Zone Right Coordinate: (92.6, -6) ft
Right-Zone Increment: 8
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (-100, -6) ft
Right Coordinate: (100, -6) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-100 ft	0.79 ft
Coordinate 2	-5.76 ft	1.37 ft
Coordinate 3	-2.5 ft	3 ft
Coordinate 4	2.5 ft	3 ft
Coordinate 5	9.1 ft	0.79 ft
Coordinate 6	100 ft	0.79 ft

Geometry

Name: 2D Geometry

Settings

View: 2D

Element Thickness: 1 ft

Points

	X	Y
Point 1	-20.5 ft	-6 ft
Point 2	-2.5 ft	3 ft
Point 3	2.5 ft	3 ft
Point 4	29.5 ft	-6 ft
Point 5	-100 ft	-6 ft
Point 6	-100 ft	-8 ft
Point 7	100 ft	-8 ft
Point 8	100 ft	-6 ft
Point 9	100 ft	-12 ft
Point 10	-100 ft	-12 ft
Point 11	-100 ft	-19 ft
Point 12	100 ft	-19 ft
Point 13	100 ft	-34 ft
Point 14	-100 ft	-34 ft
Point 15	-100 ft	-39 ft
Point 16	100 ft	-39 ft
Point 17	-100 ft	-10 ft
Point 18	100 ft	-10 ft
Point 19	-100 ft	-24 ft
Point 20	100 ft	-24 ft
Point 21	-100 ft	-29 ft
Point 22	100 ft	-29 ft
Point 23	100 ft	-45 ft
Point 24	-100 ft	-45 ft
Point 25	-100 ft	-33 ft
Point 26	100 ft	-33 ft

Regions

	Material	Points	Area
Region 1	Rip Rap	1,2,3,4	247.5 ft ²
Region 2	2- Sandy Clay (CLS)	7,6,17,10,9,18	800 ft ²
Region 3	6- Silty Sand (SM)	13,26,25,14,15,24,23,16	2,400 ft ²
Region 4	4- Clay (CH)	20,19,21,22	1,000 ft ²
Region 5	1- Sand (SP)	8,4,1,5,6,7	400 ft ²
Region 6	3-Silty Clay (CL)	11,19,20,12,9,10	2,400 ft ²
Region 7	5- Silty Clay (CL)	22,21,25,26	800 ft ²

Slip Results

Slip Surfaces Analysed: 59 of 406 converged

Current Slip Surface

Slip Surface: 406

Factor of Safety: 1.352

Volume: 1,397.5967 ft³
 Weight: 180,669.99 lbf
 Resisting Moment: 2,033,677.3 lbf·ft
 Activating Moment: 1,503,950.8 lbf·ft
 Resisting Force: 15,798.378 lbf
 Activating Force: 11,681.146 lbf
 Slip Rank: 1 of 406 slip surfaces
 Exit: (69.047568, -6) ft
 Entry: (-20.571417, -6) ft
 Radius: 37.411847 ft
 Center: (31.276441, 97.06539) ft

Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	-20.535708 ft	-6.0162613 ft	455.44847 psf	454.81602 psf	-0.16946404 psf	0 psf	0 psf	1- Sand (SP)
Slice 2	-18.301795 ft	-7.0335668 ft	519.81737 psf	674.40952 psf	41.422841 psf	0 psf	0 psf	1- Sand (SP)
Slice 3	-14.261716 ft	-9.0259583 ft	645.75505 psf	1,061.2342 psf	0 psf	212.5 psf	0 psf	2- Sandy Clay (CLS)
Slice 4	-10.524001 ft	-11.037699 ft	772.78452 psf	1,514.4235 psf	0 psf	212.5 psf	0 psf	2- Sandy Clay (CLS)
Slice 5	-7.19408 ft	-12.981138 ft	895.39323 psf	1,922.2944 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 6	-4.13 ft	-14.953333 ft	1,069.9494 psf	2,365.4664 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 7	-1.523775 ft	-16.630831 ft	1,225.5565 psf	2,699.5542 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 8	0.81441 ft	-18.308884 ft	1,330.3176 psf	2,879.6484 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 9	2.338185 ft	-19.494829 ft	1,404.3564 psf	3,009.6917 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 10	3.671395 ft	-20.617321 ft	1,449.9462 psf	3,079.503 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 11	6.014185 ft	-22.589827 ft	1,524.1149 psf	3,186.6426 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 12	8.0780907 ft	-23.78804 ft	1,555.7743 psf	3,314.9849 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 13	9.0353007 ft	-24.015365 ft	1,549.9561 psf	3,290.4216 psf	0 psf	180 psf	0 psf	4- Clay (CH)
Slice 14	10.381145 ft	-24.334986 ft	1,568.5576 psf	3,275.4535 psf	0 psf	180 psf	0 psf	4- Clay (CH)
Slice 15	11.834385 ft	-24.688311 ft	1,590.6157 psf	3,254.7158 psf	0 psf	180 psf	0 psf	4- Clay (CH)
Slice 16	13.368444 ft	-25.24358 ft	1,625.2813 psf	3,245.8307 psf	0 psf	180 psf	0 psf	4- Clay (CH)
Slice 17	16.092371 ft	-26.255982 ft	1,688.4857 psf	3,257.0926 psf	0 psf	180 psf	0 psf	4- Clay (CH)
Slice 18	18.816299 ft	-27.268383 ft	1,751.6902 psf	3,268.3544 psf	0 psf	180 psf	0 psf	4- Clay (CH)
Slice	21.540226 ft	-28.280785 ft	1,814.8946 psf	3,279.6163 psf	0 psf	180 psf	0 psf	4- Clay

19	ft	ft	psf	psf				(CH)
Slice 20	24.248628 ft	-28.61521 ft	1,835.7728 psf	3,300.9761 psf	0 psf	180 psf	0 psf	4- Clay (CH)
Slice 21	26.941502 ft	-28.271657 ft	1,814.3247 psf	3,173.5399 psf	0 psf	180 psf	0 psf	4- Clay (CH)
Slice 22	28.89397 ft	-27.825777 ft	1,786.4883 psf	3,112.0841 psf	0 psf	180 psf	0 psf	4- Clay (CH)
Slice 23	31.264557 ft	-26.753571 ft	1,719.5504 psf	2,979.3805 psf	0 psf	180 psf	0 psf	4- Clay (CH)
Slice 24	34.793672 ft	-25.15737 ft	1,619.8992 psf	2,814.3864 psf	0 psf	180 psf	0 psf	4- Clay (CH)
Slice 25	36.927057 ft	-24.179634 ft	1,558.859 psf	2,718.7096 psf	0 psf	180 psf	0 psf	4- Clay (CH)
Slice 26	38.560479 ft	-23.384089 ft	1,509.193 psf	2,628.1492 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 27	41.089667 ft	-22.152268 ft	1,432.2901 psf	2,479.7638 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 28	43.618856 ft	-20.920447 ft	1,355.3873 psf	2,331.3783 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 29	46.445203 ft	-19.5646 ft	1,270.7415 psf	2,165.995 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 30	49.568708 ft	-18.084728 ft	1,178.3528 psf	1,987.7478 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 31	52.692212 ft	-16.604855 ft	1,085.9641 psf	1,809.5007 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 32	55.815718 ft	-15.124983 ft	993.5754 psf	1,631.2535 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 33	59.72307 ft	-13.133691 ft	869.25865 psf	1,399.723 psf	0 psf	186 psf	0 psf	3-Silty Clay (CL)
Slice 34	63.06532 ft	-11.147654 ft	745.26996 psf	1,197.1695 psf	0 psf	212.5 psf	0 psf	2- Sandy Clay (CLS)
Slice 35	65.425009 ft	-9.206486 ft	624.08251 psf	967.88738 psf	0 psf	212.5 psf	0 psf	2- Sandy Clay (CLS)
Slice 36	67.917808 ft	-7 ft	486.33117 psf	561.02128 psf	20.013155 psf	0 psf	0 psf	1- Sand (SP)

Appendix B

Permits

DEPARTMENT OF THE ARMY PERMIT

Permittee: Saint Tammany Parish Government

Permit No.: MVN-2024-00121-TREC

Issuing Office: New Orleans District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: To construct and maintain a new riprap breakwater to protect the inside shoreline and the Madisonville Boat Launch from wave action. The proposed project would be completed in two phases. Phase 1 would consist of 1,347 linear feet of breakwater. Phase 2 consists of constructing the remaining 1,606 linear feet for a total of 2,953 linear feet. A 3,520 linear foot temporary flotation channel would be dredged for construction access and will be backfilled to natural grade upon completion of construction. The project as proposed would permanently impact 8.78 acres of water bottoms, in accordance with the attached (thirty) drawings, sheets one through thirty dated, May 23, 2025.

Project Location: Lake Pontchartrain, at the mouth of the Tchefuncte River, within Saint Tammany Parish, Louisiana, (30.375175, -90.159219).

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **August 31, 2030**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions: See page 4.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

() Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. **Reevaluation of Permit Decision.** This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

- a. You fail to comply with the terms and conditions of this permit.
- b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
- c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. **Extensions.** General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.



X
(PERMITTEE)



X
(DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Brad P. LaBorde

Digitally signed by Brad P.
LaBorde
Date: 2025.09.16 15:25:41
-05'00'

Brad P. LaBorde, Chief, Eastern Evaluation Branch
for SCOTTY M. AUTIN, U.S. Army, Colonel, District Engineer

(DATE)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE)

(DATE)

Special Conditions: MVN-2024-00121-TREC

7. Permittees that discover any previously unknown historic, cultural, or archeological remains and artifacts while accomplishing the permitted activity must immediately notify the US Army Corps of Engineers, New Orleans District Regulatory Division (CEMVN-RG), halt all construction activity at the location of discovery, and avoid construction activities within a fifty (50) foot buffer zone of the location of discovery until the required coordination has been completed. CEMVN-RG will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
8. If abandoned cemeteries, unmarked graves, or human remains are discovered during the permitted activity, the permittee will stop work immediately and comply with the Louisiana Unmarked Human Burial Sites Preservation Act (La. R.S. 8:671 et seq.). The permittee will notify local law enforcement, CEMVN-RG, and the Louisiana Division of Archaeology (LDOA), within the Louisiana Department of Culture, Recreation and Tourism, Office of Cultural Development, by telephone at 225-342-8170 to assess the nature and age of the human skeletal remains within twenty-four (24) hours of the discovery of unmarked human remains and will accompany local law enforcement personnel during all field investigations. If the appropriate local law enforcement official determines that the remains are not a crime scene, and the remains are more than 50 years old, LDOA has jurisdiction over the remains. In no instance will human remains be removed from the discovery site until jurisdiction is established. In cases where the LDOA assumes jurisdiction and the remains are determined to be American Indian, LDOA will consult with Tribes, CEMVN-RG, and the permittee to determine the appropriate course of action.
9. The permittee shall adhere to the enclosed Standard Manatee Conditions for In-Water Activities as per the Information, Planning and Consultation (IPAC) for Endangered Species in Louisiana, dated January 27, 2020, between the U.S. Army Corps of Engineers, New Orleans and U.S. Fish and Wildlife Service, Ecological Services Office.
10. The permittee is advised of the requirements set forth in the attached Section 408 Memorandum for Record and the associated Special Conditions. All responsibilities and compliance related to the subject conditions are hereby directed to and have oversight by the USACE Navigation Office, Operations Manager, Mr. Robert L. Swayze with this District. Should you have any questions on the requirements and restrictions stipulated, you shall contact the specified Operations Manager, who may be reached at 504-220-0852 or robert.l.swayze@usace.army.mil.
11. The permittee shall properly install adequate erosion/siltation control measures around construction areas that require land-based earthwork (i.e., excavation and/or deposition of fill materials, land contouring, machinery rutting, fill maneuvering and redistribution, etc.), to aid in preventing project related sediments, debris and other pollutants from entering adjacent wetlands or waters. Acceptable measures include but are not limited to the proper use and positioning of temporary silt fences, straw bales, fiber/core logs, wooden barriers, seeding or sodding of exposed soils, or other approved EPA construction site storm-water runoff control and best management practices. Control techniques shall be installed prior to the commencement of earthwork activities and maintained until the project is complete and/or the subject areas are stabilized.
12. The permittee is responsible for ensuring that all contractors and/or workers associated with project construction and implementation, are equally aware of the authorized plans, conditions, and/or restrictions associated with this approval.
13. All work shall be done in accordance with the approved plans and confined to the permitted work area(s) represented within the attached drawings. If the project requires modifications to the authorized plan, the permittee shall contact this office to obtain a permit amendment and/or review and decision on the plans, prior to commencement of those alterations.

MVN-2024-00121
St. Tammany Parish
Sheet 1 of 30

[illegible]

1. PROJECT SITE IS NOT ACCESSIBLE BY LAND. CONTRACTOR SHALL ACCESS THE SITE FROM A NAVIGABLE WATERBODY. DREDGING FOR SITE ACCESS SHALL BE LIMITED TO THE LIMITS SHOWN FOR TEMPORARY ACCESS AND FLOTATION CHANNELS IN THESE DRAWINGS. CONTRACTOR MAY USE MADISONVILLE BOAT LAUNCH FOR ACCESS.
2. ACCESS DREDGING AND FLOTATION CHANNELS SHALL BE AT NO DIRECT PAY.
3. SURVEY INFORMATION WAS PROVIDED BY T. BAKER SMITH, LLC BASED ON FIELD WORK CONDUCTED DURING JANUARY 2022. OTHER UNIDENTIFIED ANOMALIES AND OBSTRUCTIONS MAY EXIST. CONTRACTOR SHALL PERFORM A PRE-CONSTRUCTION HAZARD SURVEY AND LOCATE ALL UTILITIES AND OBSTRUCTIONS BEFORE STARTING WORK. REFER TO APPENDIX A IN THE SPECIFICATIONS FOR ADDITIONAL SURVEY INFORMATION. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS BEFORE STARTING CONSTRUCTION ACTIVITIES. DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO ENGINEER.
4. EXISTING UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING PIPELINE/UTILITY OPERATORS AND LOUISIANA ONE CALL (1-800-272-3020) AT LEAST (5) WORKING DAYS BEFORE MOBILIZATION. ALL PIPELINES AND UNDERGROUND UTILITIES SHALL BE MARKED BY CONTRACTOR. CONTRACTOR SHALL MAINTAIN MARKERS DURING CONSTRUCTION. CONTRACTOR SHALL NOT ANCHOR, SPUD, PLACE MATERIAL OR EXCAVATE WITHIN 100 FT OF ANY PIPELINE. CONTRACTOR SHALL COORDINATE WITH OWNERS OF EXISTING PIPELINES BEFORE WORKING AROUND OR OVER SUCH PIPELINES.
5. PROJECT IS WITHIN AND ADJACENT TO ENVIRONMENTALLY & ARCHAEOLOGICAL SENSITIVE AREAS. CONTRACTOR SHALL AVOID IMPACTS TO THESE AREAS DURING THE COURSE OF WORK. OWNER RESERVES THE RIGHT TO SUSPEND WORK AT ANY TIME IF IMPACTS OCCUR UNTIL SATISFACTORY CORRECTIVE MEASURES ARE IMPLEMENTED BY CONTRACTOR. REFER TO SPECIFICATION APPENDIX C "PERMITS" FOR ADDITIONAL REQUIREMENTS, INCLUDING CONDITIONS TO AVOID IMPACTS TO MANATEES, STURGEON, AND EXISTING VEGETATION.
6. CONTRACTOR SHALL BE FAMILIAR WITH AND ANTICIPATE EXISTING SOFT SOIL CONDITIONS AT THE WORK SITE. SOIL INVESTIGATION DATA WERE ACQUIRED BY THE BETA GROUP, LLC, AND PRESENTED. IN SOIL BORING LOGS (REFER TO APPENDIX IN SPECIFICATIONS). IN PREPARING BIDS, CONTRACTOR SHALL ANTICIPATE CONSTRUCTION SETTLEMENTS OF UP TO 12 IN.
7. CONTRACTOR SHALL BE AWARE OF SUBMERGED LOGS, FALLEN TREES, AND STUMPS (I.E., "NATURAL TIMBER DEBRIS") ALONG THE LAKE BOTTOM WITHIN THE PROJECT AREA. CONTRACTOR SHALL LOCATE AND REMOVE SUCH DEBRIS AS REQUIRED TO COMPLETE THE WORK. AFTER REMOVAL, NATURAL TIMBER DEBRIS SHALL BECOME PROPERTY OF CONTRACTOR AND BE DISPOSED OFFSITE IN ACCORDANCE B WITH APPLICABLE LAWS/ORDINANCES.
8. CONTRACTOR SHALL TAKE PRECAUTIONS, SECURE EQUIPMENT, AND PROTECT THE WORK AGAINST ADVERSE WEATHER, MARINE CONDITIONS, AND SURGE/WAKE FROM PASSING VESSELS.
9. THE LIMITS OF BREAKWATER CONSTRUCTION SHALL BE STAKED BY THE CONTRACTOR FOR CONCURRENCE BY THE ENGINEER BEFORE STARTING CONSTRUCTION. REFER TO SPECIFICATION SECTION "CONSTRUCTION SURVEYING."
10. CONTRACTOR SHALL MAKE OWN ARRANGEMENTS, OBTAIN PERMISSION FROM APPLICABLE PROPERTY OWNERS AND PAY ALL ASSOCIATED FEES FOR EQUIPMENT STAGING, MATERIAL FABRICATION, AND LOADING BARGES ON PRIVATE PROPERTY.
11. WATER DEPTHS VARY AND MAY NOT ACCOMMODATE DRAFT OF FULLY-LOADED BARGES. PROVISIONS SHALL BE MADE TO ACCESS SHALLOWER AREAS THROUGH USE OF LIGHT-LOADED BARGES OR OTHER EQUIPMENT SUITED TO SHALLOWER WATER.
12. AT CONTRACTOR'S OPTION, TEMPORARY ACCESS AND FLOTATION CHANNELS MAY BE DREDGED (VIA MECHANICAL SIDECASTING) TO FACILITATE ACCESS BY DEEPER DRAFT BARGES. STOCKPILES OF SIDECAST MATERIAL SHALL BE MARKED WITH TEMPORARY WARNING SIGNS AS SHOWN. NATURAL TIMBER DEBRIS SHALL BE RELOCATED AS DESCRIBED IN NOTE 6. UPON COMPLETION OF THE WORK ASSOCIATED WITH EACH PHASE OF THE PROJECT, ACCESS AND FLOTATION CHANNELS SHALL BE BACKFILLED AND TEMPORARY WARNING SIGNS SHALL BE REMOVED. HYDRAULIC DREDGING OF FLOTATION CHANNEL IS NOT ALLOWED.
13. CONTRACTOR SHALL STAKE LOCATIONS OF ALL PERMANENT WARNING SIGNS FOR APPROVAL BY ENGINEER BEFORE INSTALLATION.

1. ALL ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) GEOID 12B IN U.S. SURVEY FEET (FEET). ALL HORIZONTAL COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), LOUISIANA STATE PLANE GRID COORDINATE SYSTEM (1702) SOUTH ZONE, IN FEET.
2. MONUMENTS USED FOR HORIZONTAL/VERTICAL CONTROL:

PROJECT REFERENCE CONTROL COORDINATE LISTING			
POINT	NORTHING	EASTING	ELEVATION
10000080	685126.813	3650522.423	1.2280
3. SURVEY CONTROL EMPLOYED DURING CONSTRUCTION SHALL MATCH CONTROL PUBLISHED IN THESE CONTRACT DOCUMENTS. NO OTHER SURVEY CONTROL SHALL BE CONSIDERED WITHOUT PRIOR WRITTEN APPROVAL FROM ENGINEER. TO MAINTAIN CONSISTENCY BETWEEN PROJECT DESIGN AND CONSTRUCTED WORK, UPDATES, CORRECTIONS OR OTHER CHANGES PUBLISHED BY NATIONAL GEODETIC SURVEY OR OTHER ENTITIES FOR THESE CONTROL MONUMENTS SHALL NOT BE APPLIED WITHOUT PRIOR APPROVAL FROM ENGINEER.
4. EXCEPT AS NOTED OTHERWISE, SPOT ELEVATIONS AND SURVEY TRANSECTS ARE BASED ON SURVEYS CONDUCTED BY T. BAKER SMITH, LLC. IN JANUARY 2022.
5. CONDITIONS AND ACCURACY OF SURVEY CONTROL MONUMENTS ARE NOT GUARANTEED. CONTRACTOR SHALL VERIFY ACCURACY OF SURVEY CONTROL MONUMENTS BEFORE CONSTRUCTION. IMMEDIATELY REPORT ANY DISCREPANCIES TO ENGINEER

	STA 47+00		SURVEY CONTROL POINT
	STA 48+00		SOIL BORING
	CONSTRUCTION BASELINE		UNIDENTIFIED MAGNETIC ANOMALY
	PARISH LINE		EXISTING ELEVATION, FT
	LIMITS OF CONSTRUCTION		BREAKWATER ALIGNMENT POINT
	PROPOSED BREAKWATER FOOTPRINT		CENTERLINE
	LIGHTED DAYBEACON		DETAIL
	TEMPORARY WARNING SIGN		EAST, EASTING
	SETTLEMENT PLATE (SP)		ELEVATION
	EXISTING MAJOR CONTOUR		FEET
	EXISTING MINOR CONTOUR		HOT-DIPPED GALVANIZED
	APPROXIMATE LOCATION OF EXISTING PIPELINE		GRADED RIPRAP
	APPROXIMATE LOCATION OF EXISTING OVERHEAD UTILITY		MEAN HIGH WATER
	FLOTATION CHANNEL		MEAN TIDE LEVEL
	TEMPORARY STOCKPILE		MAXIMUM
	ARMOR STONE		MINIMUM
	EXISTING GROUND / EARTHEN MATERIAL		MEAN LOW WATER
	GEOTEXTILE COMPOSITE		NORTH, NORTHING
			NORTH AMERICAN VERTICAL DATUM
			NOT TO SCALE
			OTHER HAND
			SHEET
			STATION
			STILL WATER LEVEL
			TYPICAL
			WITH

TIDAL DATUMS	
DATUM	NOAA GAGE 8761993 (NAVD83)
MEAN HIGH WATER (MHW)	+1.37
MEAN TIDE LEVEL (MTL)	+1.08
MEAN LOW WATER (MLW)	+0.79

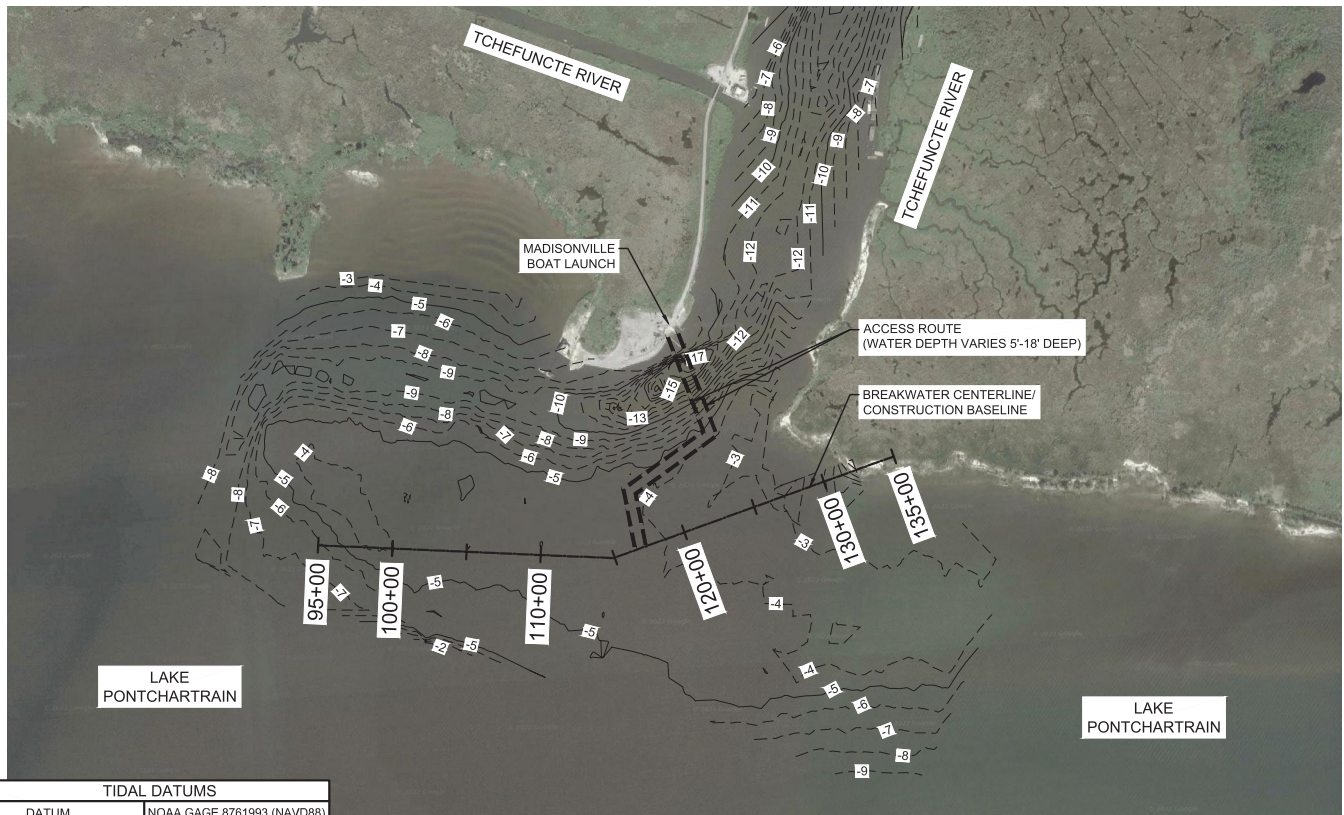
PERMIT SET



LOWER TCHEFUNCTE RIVER
BREAKWATER PROJECT
ST. TAMMANY, LOUISIANA

GENERAL NOTES AND LEGEND

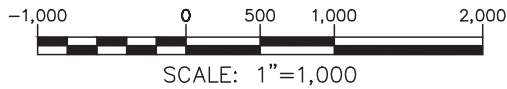
SHEET	SHEET NUMBER	DATE
2	2 of 30	MAY 23, 2025



TIDAL DATUMS	
DATUM	NOAA GAGE 8761993 (NAVD88)
MEAN HIGH WATER (MHW)	+1.37
MEAN TIDE LEVEL (MTL)	+1.08
MEAN LOW WATER (MLW)	+0.79

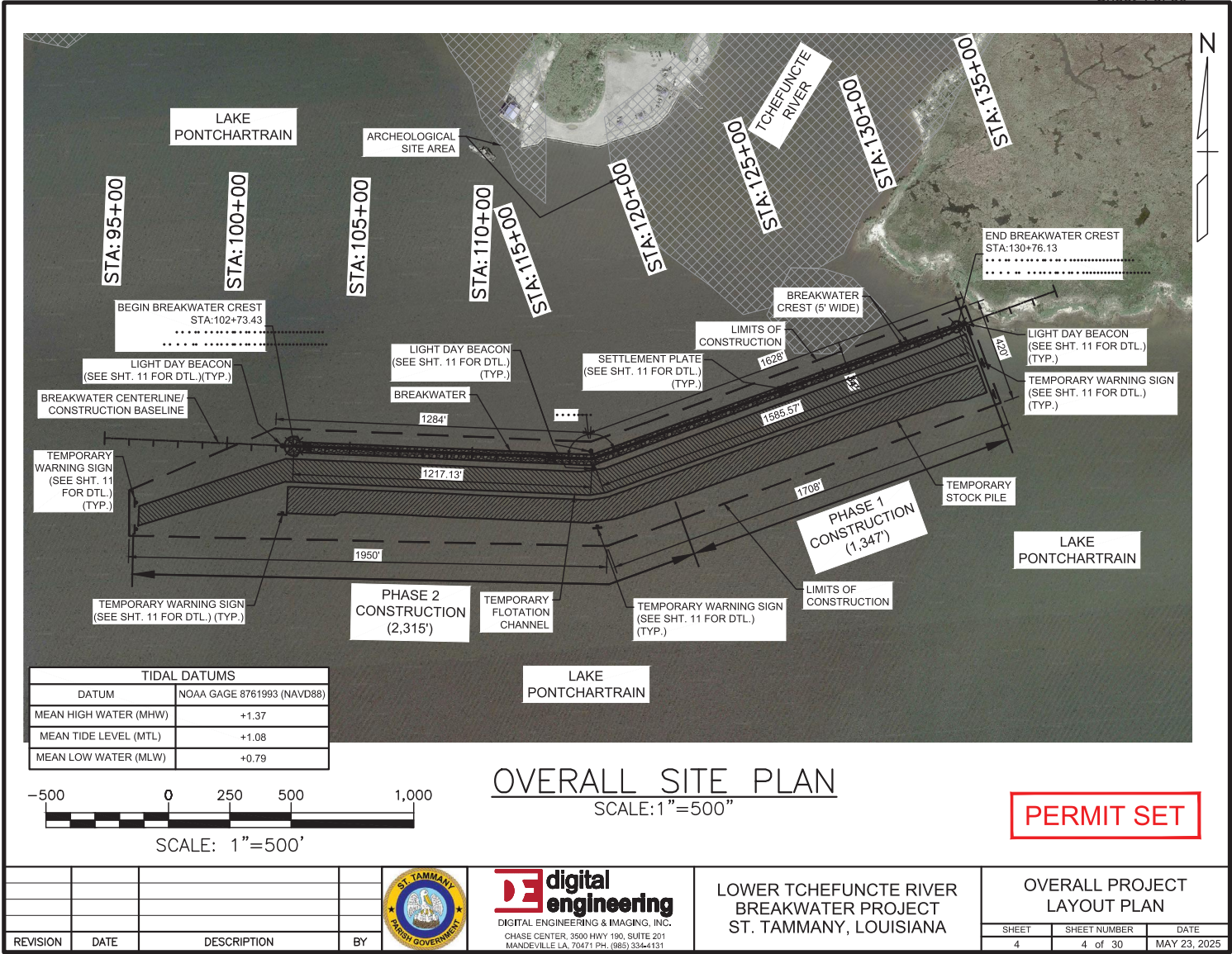
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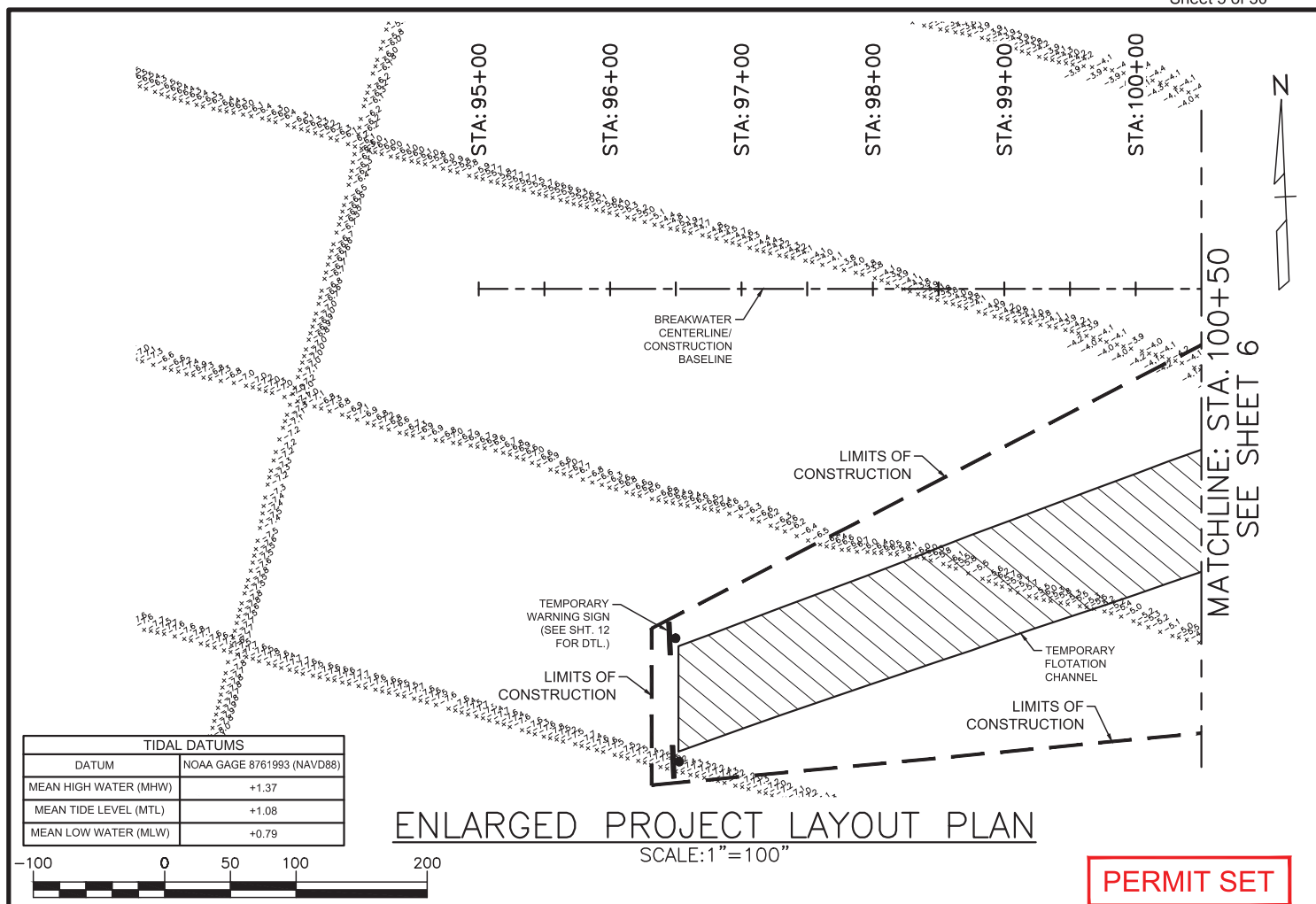
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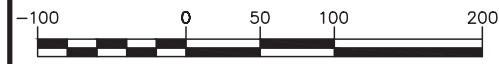
PERMIT SET

						LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	OVERALL EXISTING SITE PLAN		
							SHEET	SHEET NUMBER	DATE
REVISION	DATE	DESCRIPTION	BY		DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDEVILLE LA, 70471 PH. (985) 334-4131		3	3 of 30	MAY 23, 2025

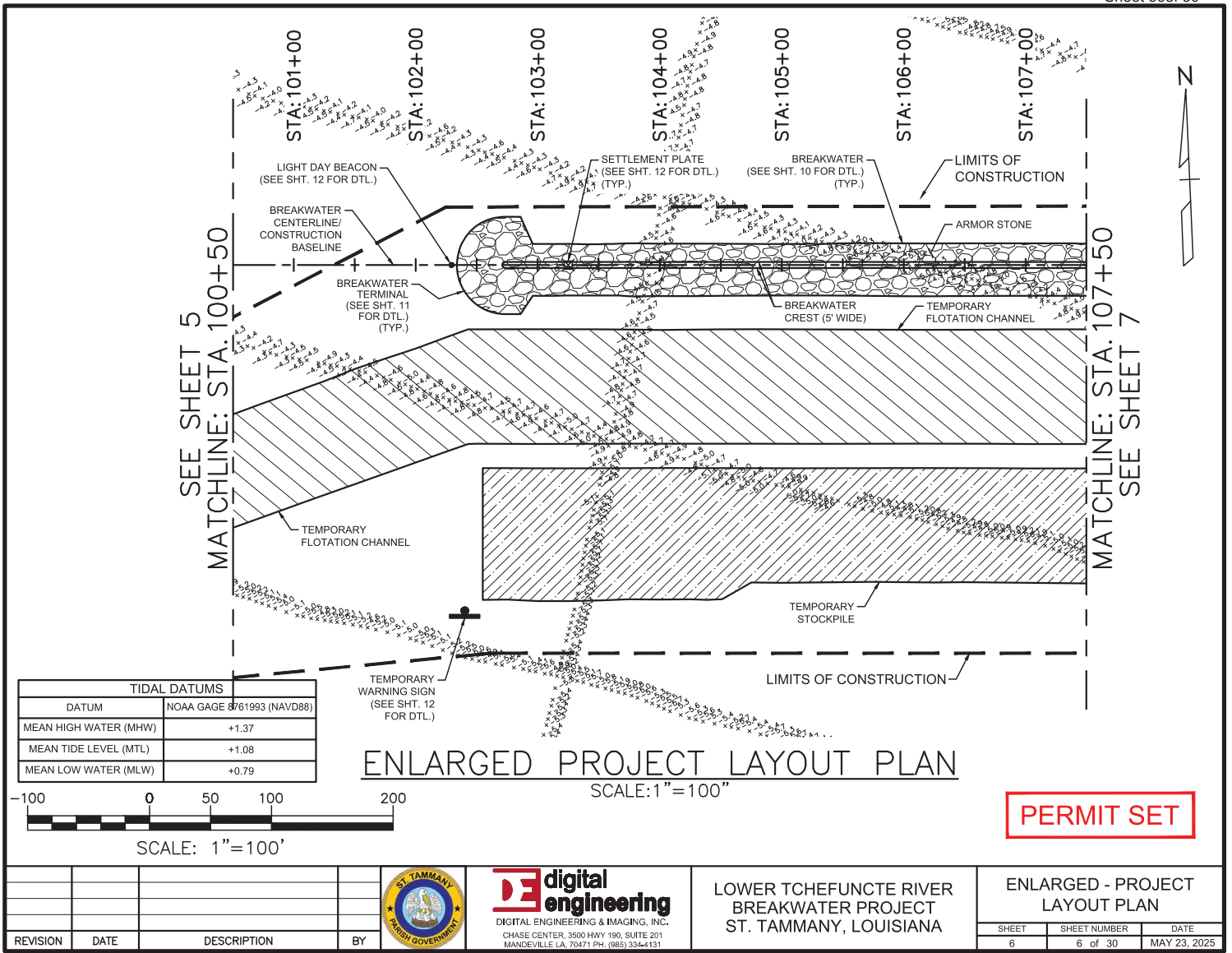




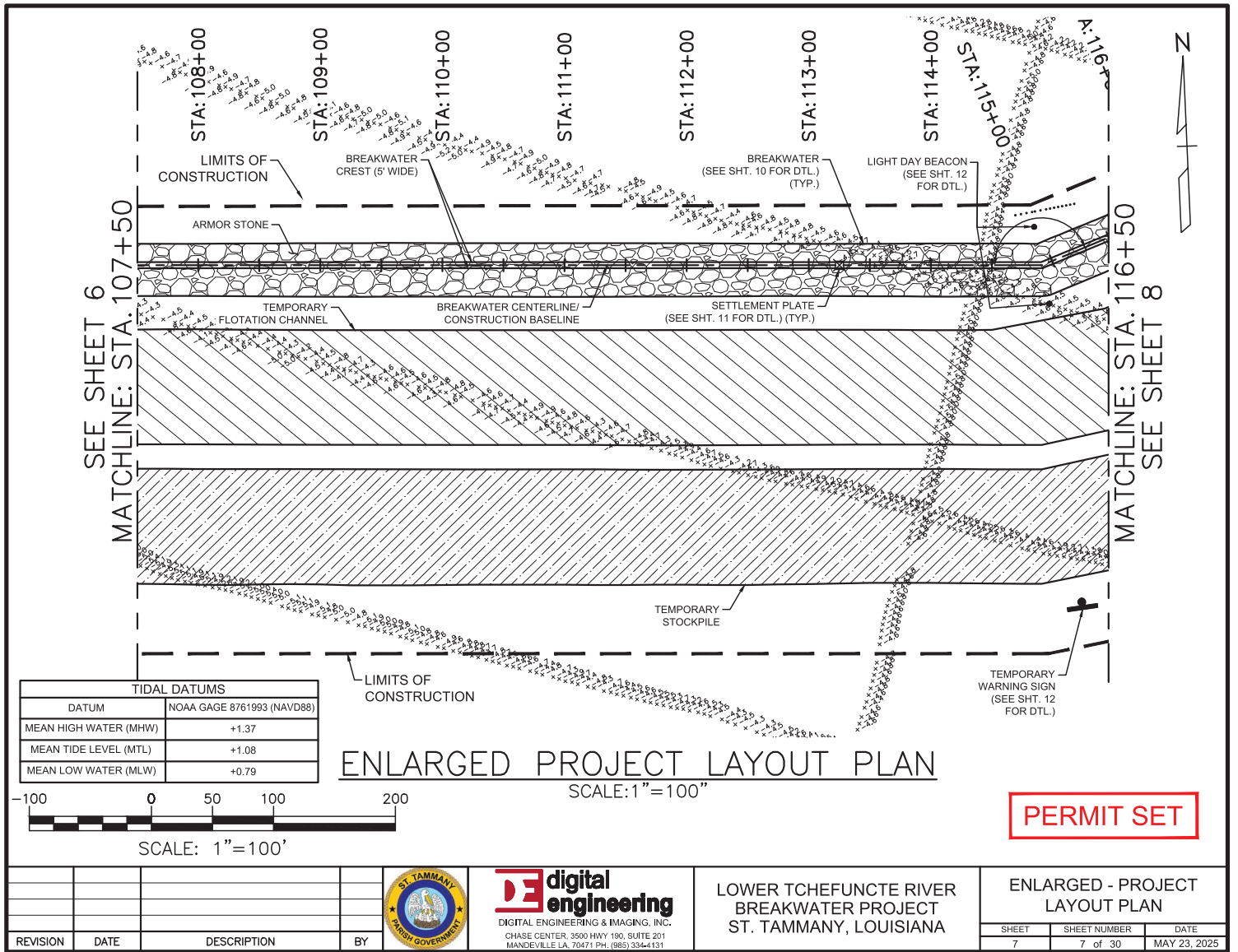
TIDAL DATUMS	
DATUM	NOAA GAGE 8761993 (NAVD88)
MEAN HIGH WATER (MHW)	+1.37
MEAN TIDE LEVEL (MTL)	+1.08
MEAN LOW WATER (MLW)	+0.79



						LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	ENLARGED - PROJECT LAYOUT PLAN		
REVISION	DATE	DESCRIPTION	BY				SHEET	SHEET NUMBER	DATE
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					 DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDERLIE, LA 70471 PH: (985) 334-4131	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	ENLARGED - PROJECT LAYOUT PLAN		
REVISION	DATE	DESCRIPTION	BY				SHEET	SHEET NUMBER	DATE
							6	6 of 30	MAY 23, 2025



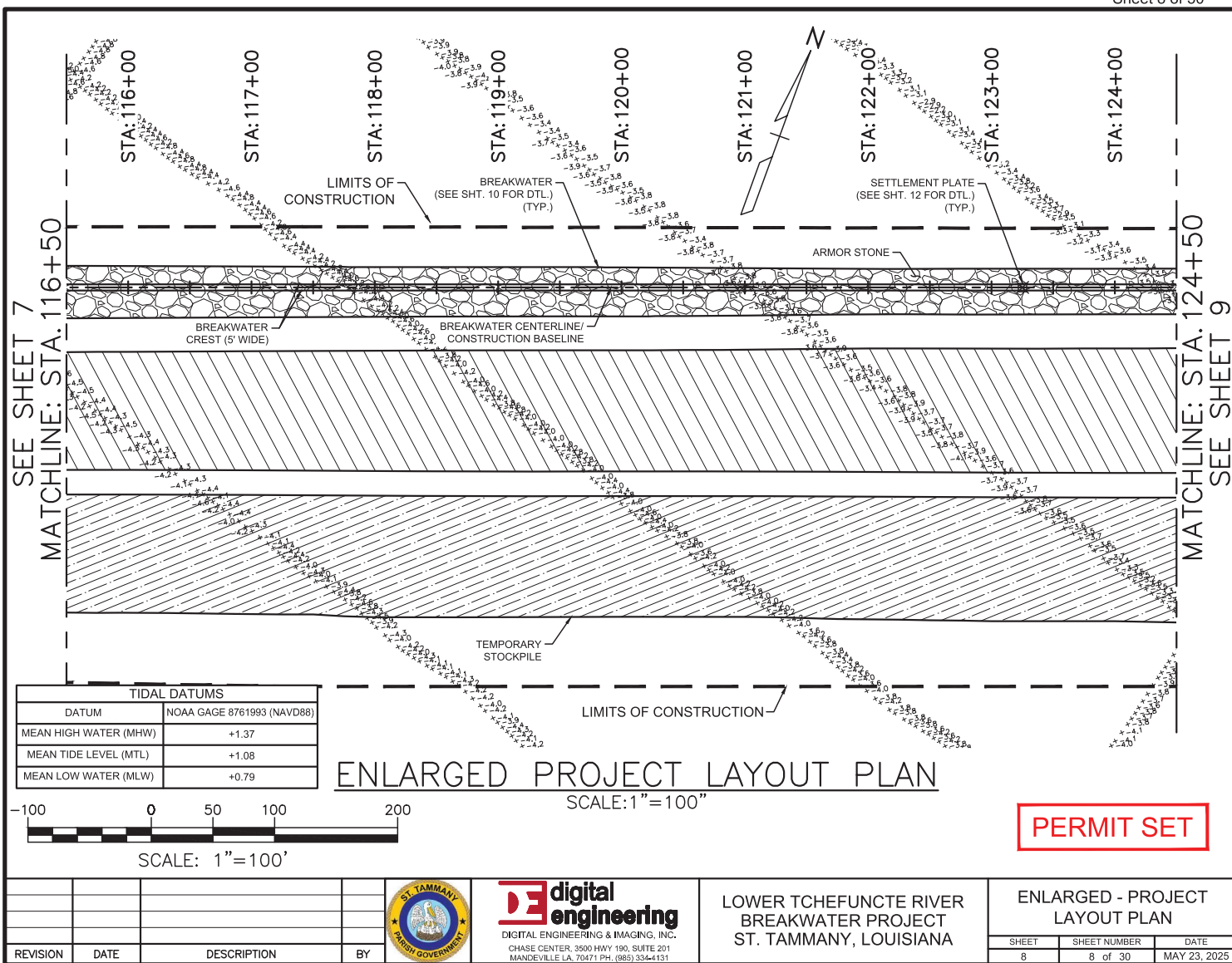
REVISION	DATE	DESCRIPTION	BY

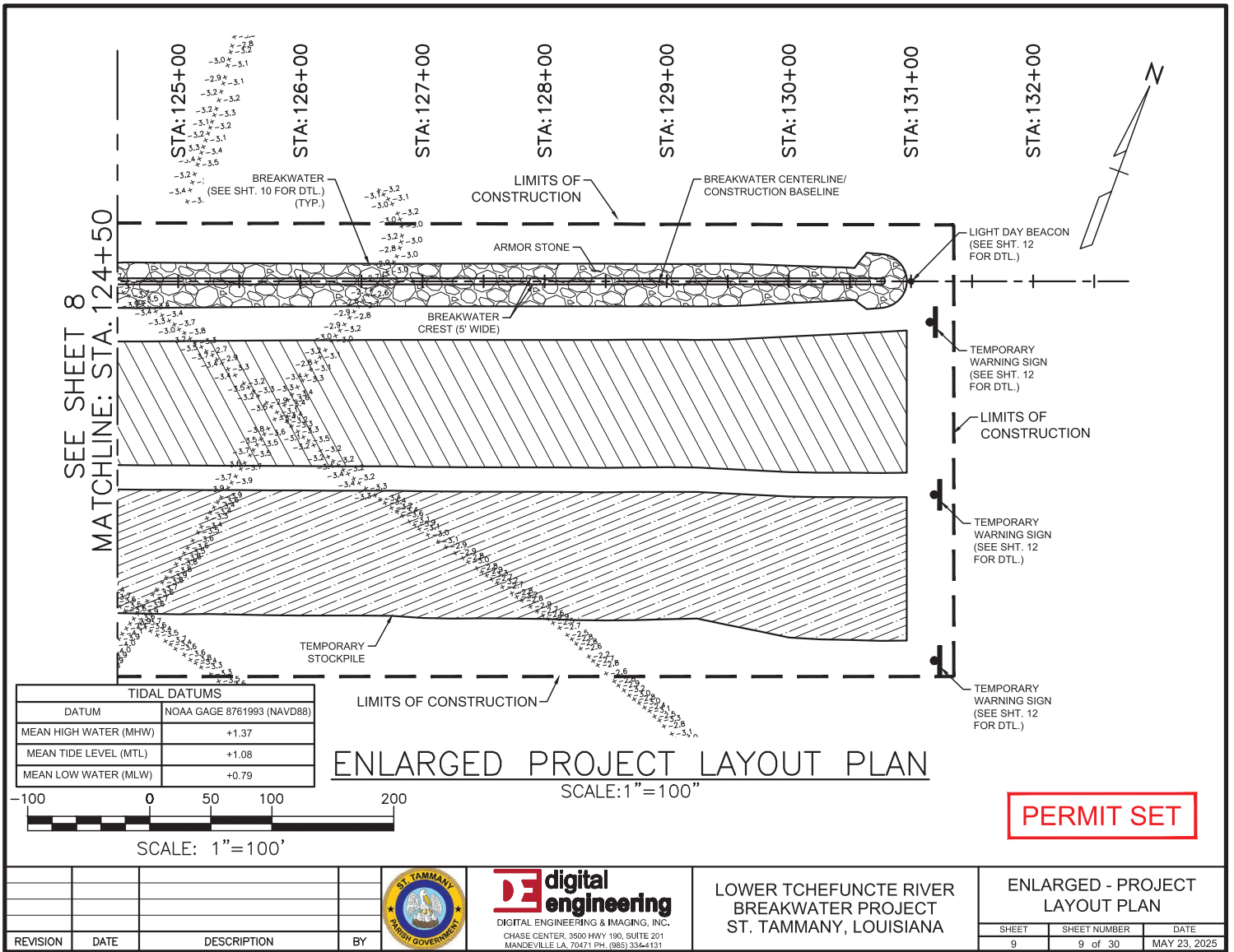


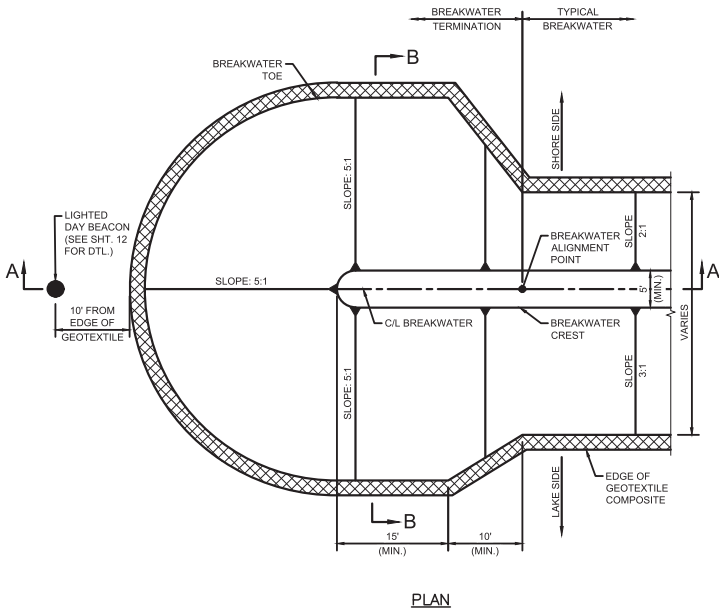
LOWER TCHEFUNCTE RIVER
BREAKWATER PROJECT
ST. TAMMANY, LOUISIANA

ENLARGED - PROJECT
LAYOUT PLAN

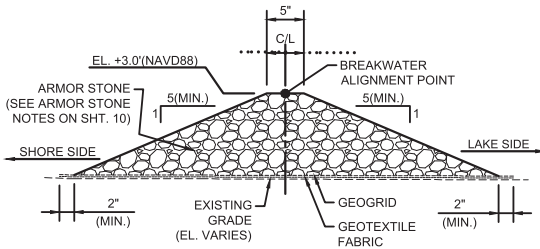
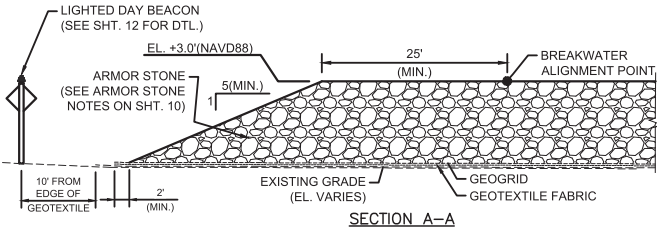
SHEET	SHEET NUMBER	DATE
7	7 of 30	MAY 23, 2025







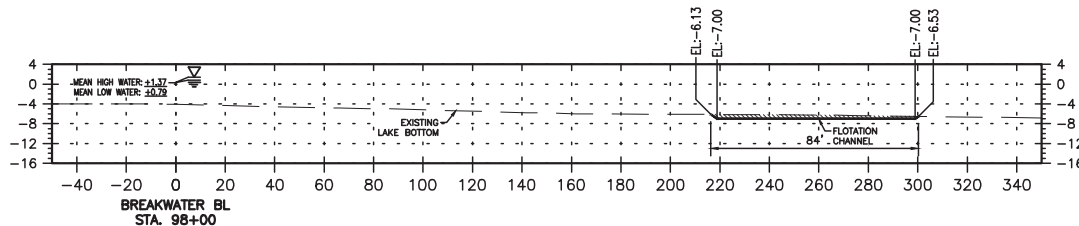
TYPICAL BREAKWATER TERMINAL DETAIL
 N.T.S.



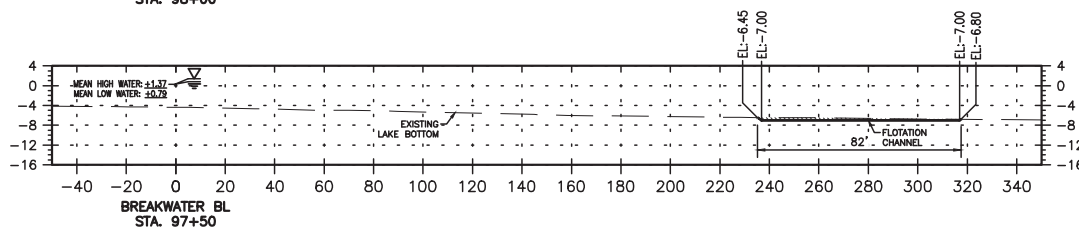
SECTION B-B

PERMIT SET

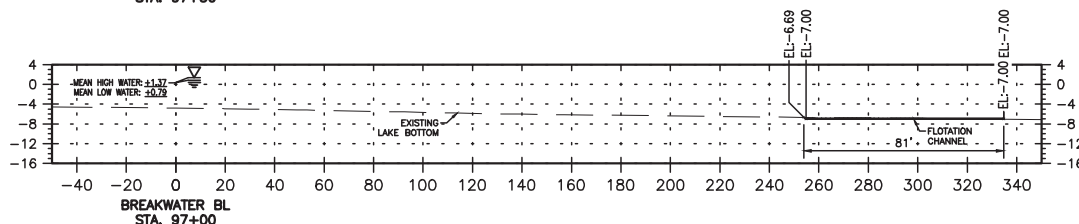
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							SHEET	SHEET NUMBER	DATE
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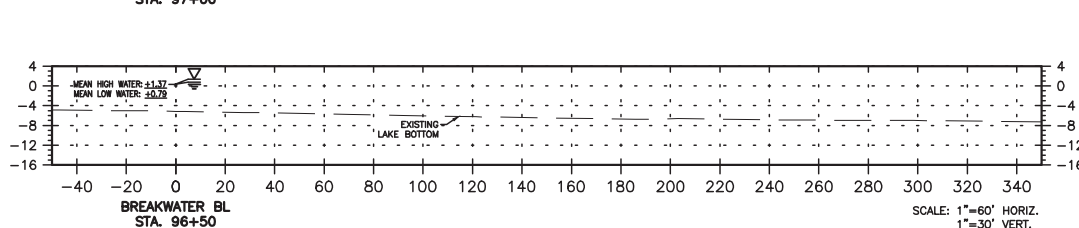
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CHANNEL CUT: 85 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 41 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 12 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.



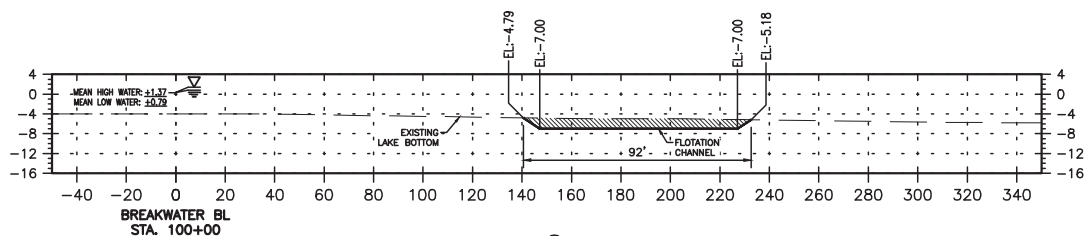
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CHANNEL CUT: 0 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.

SCALE: 1"=60' HORIZ.
1"=30' VERT.

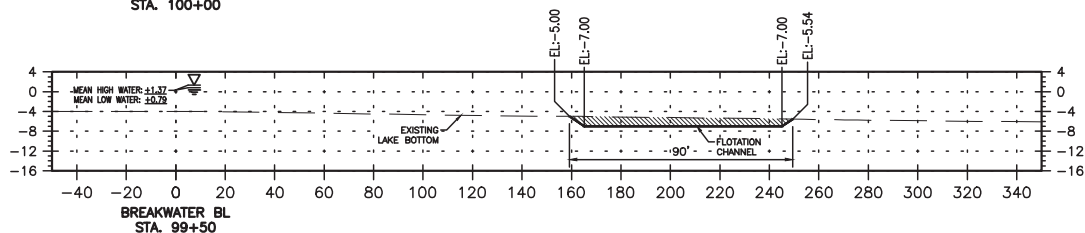
NOTE:
UPON COMPLETION OF THE WORK ASSOCIATED WITH EACH PHASE OF THE PROJECT, ACCESS AND FLOTATION CHANNELS SHALL BE BACKFILLED AND TEMPORARY WARNING SIGNS SHALL BE REMOVED. FLOTATION CHANNEL MAY BE RE-DREDGED FOR SUBSEQUENT PHASE(S) OF WORK. CHANNEL CUT AND STOCKPILE FILL QUANTITIES REFLECT ALLOWABLE QUANTITY EACH TIME CHANNEL IS DREDGED.

PERMIT SET

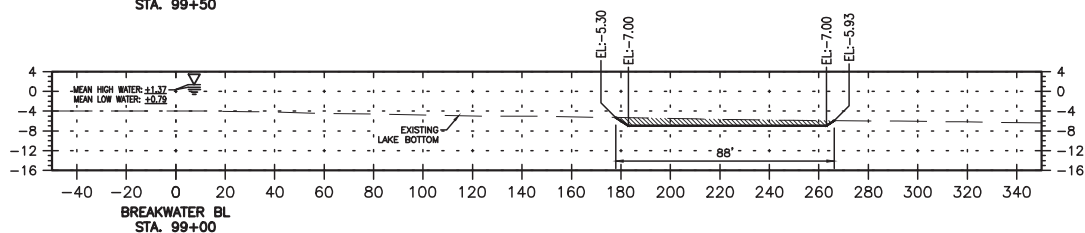
					 DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDERLIE, LA 70471 PH: (985) 334-4131	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY				SHEET	SHEET NUMBER	DATE
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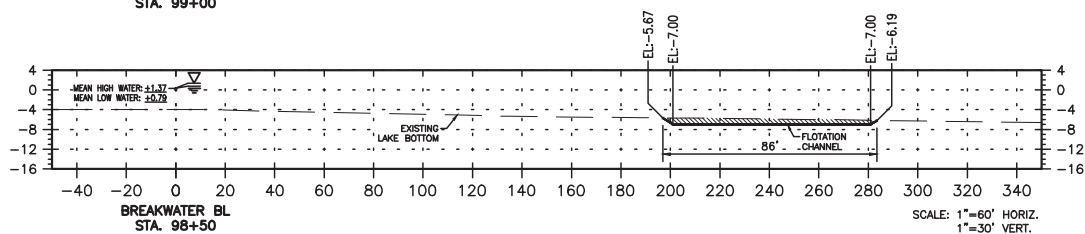
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 298 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 242 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 190 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.



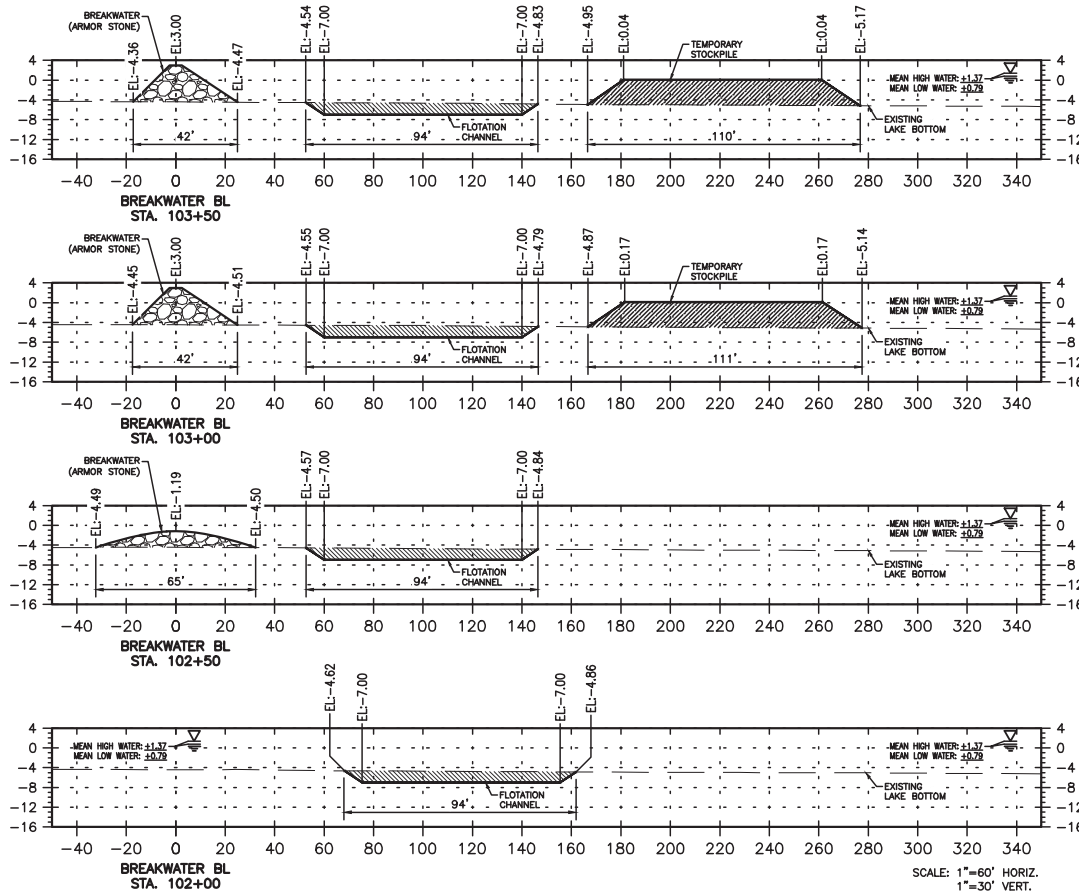
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 141 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.

SCALE: 1"=60' HORIZ
1"=30' VERT.

PERMIT SET

					 DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDEVILLE LA, 70471 PH. (985) 334-4131	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY				SHEET	SHEET NUMBER	DATE
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					 DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDEVILLE LA, 70471 PH. (985) 334-4131	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY				SHEET	SHEET NUMBER	DATE
							15	14 of 30	MAY 23, 2025



ARMOR FILL: 326 CU. YDS.
CHANNEL CUT: 379 CU. YDS.
STOCKPILE FILL: 908 CU. YDS.

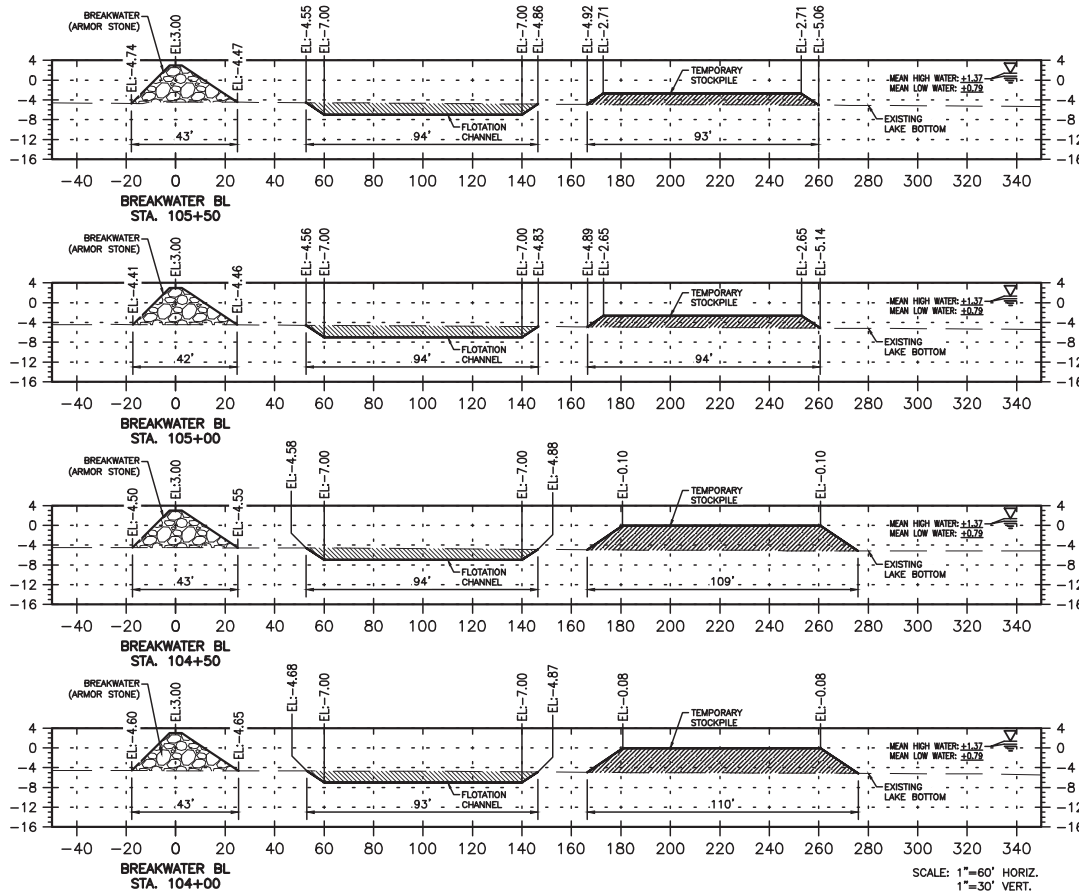
ARMOR FILL: 288 CU. YDS.
CHANNEL CUT: 374 CU. YDS.
STOCKPILE FILL: 460 CU. YDS.

ARMOR FILL: 123 CU. YDS.
CHANNEL CUT: 365 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.

ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 375 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.

PERMIT SET

					 DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDEVILLE, LA 70471 PH: (985) 334-4131	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY				SHEET	SHEET NUMBER	DATE
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ARMOR FILL: 327 CU. YDS.
CHANNEL CUT: 371 CU. YDS.
STOCKPILE FILL: 374 CU. YDS.

ARMOR FILL: 328 CU. YDS.
CHANNEL CUT: 370 CU. YDS.
STOCKPILE FILL: 626 CU. YDS.

ARMOR FILL: 336 CU. YDS.
CHANNEL CUT: 365 CU. YDS.
STOCKPILE FILL: 872 CU. YDS.

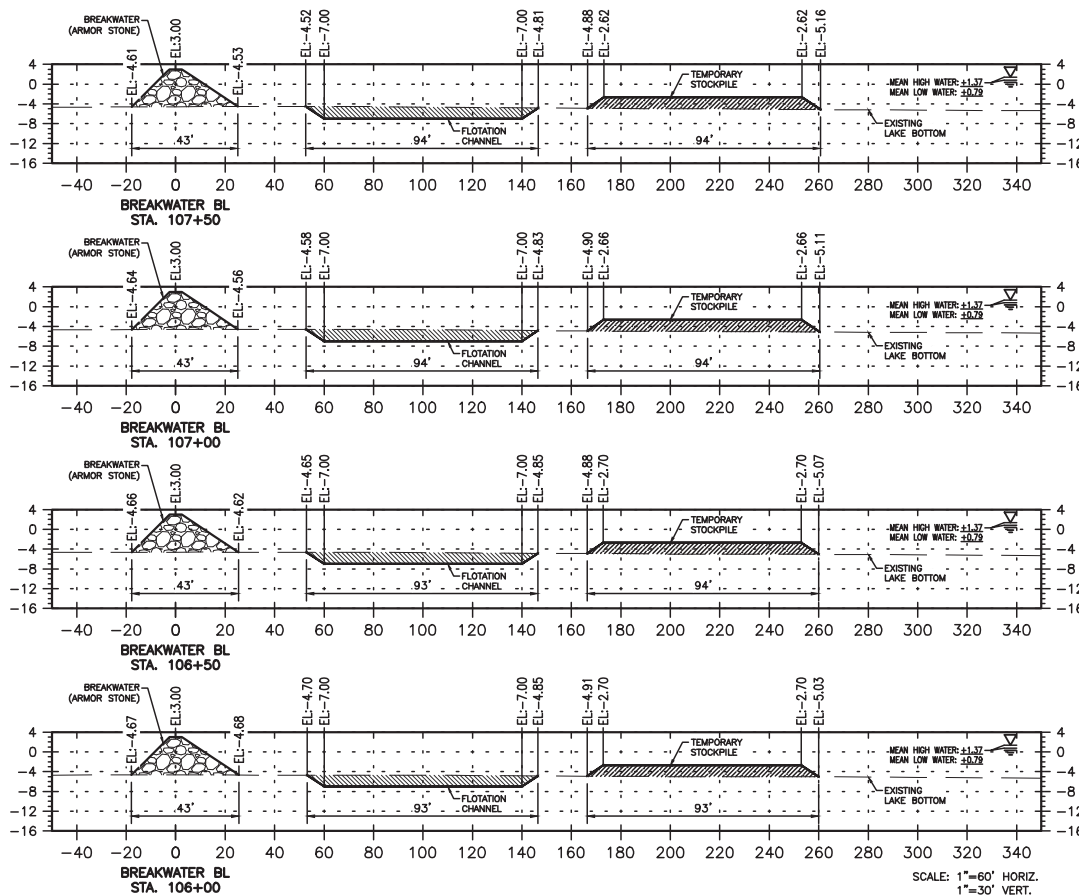
ARMOR FILL: 332 CU. YDS.
CHANNEL CUT: 370 CU. YDS.
STOCKPILE FILL: 886 CU. YDS.

PERMIT SET

				  LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS	
REVISION	DATE	DESCRIPTION	BY		SHEET	DATE
					17	MAY 23, 2025

DIGITAL ENGINEERING & IMAGING, INC.
CHASE CENTER, 3500 HWY 190, SUITE 201
MANDERLIE LA, 70471 PH. (985) 334-4131

SHEET	SHEET NUMBER	DATE
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ARMOR FILL: 337 CU. YDS.
CHANNEL CUT: 378 CU. YDS.
STOCKPILE FILL: 382 CU. YDS.

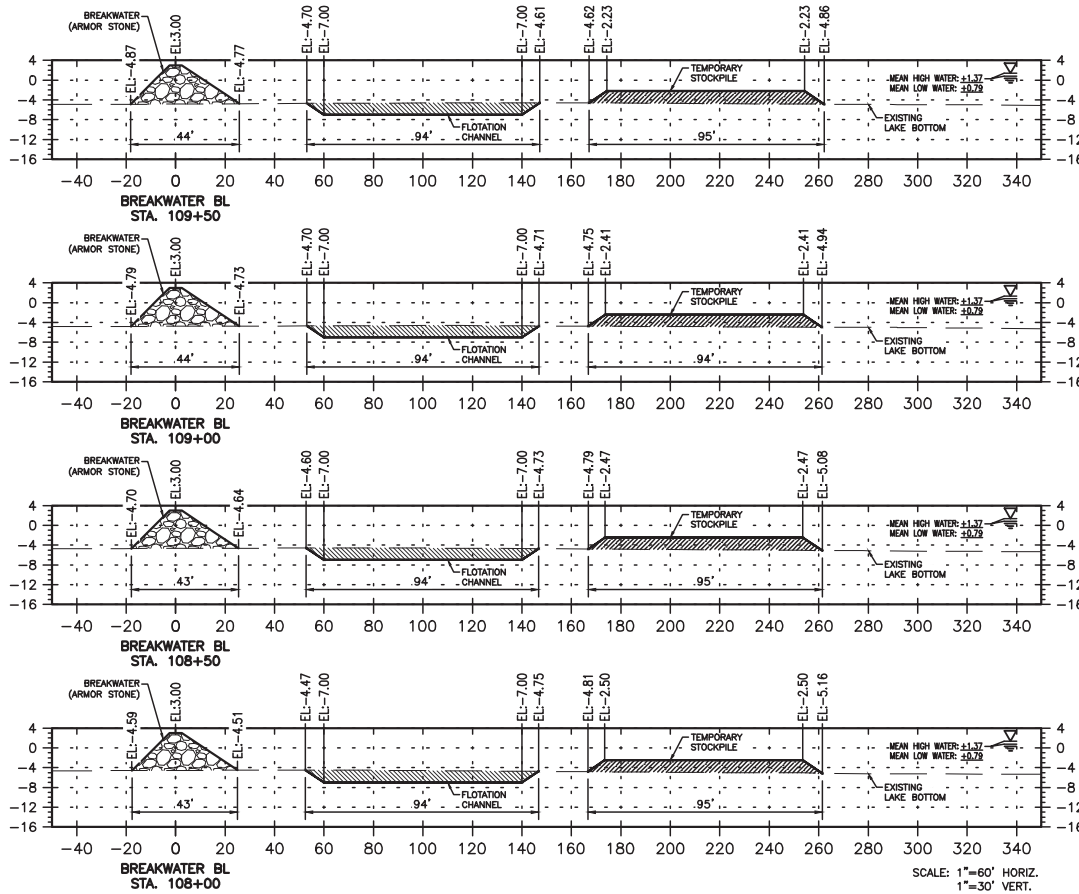
ARMOR FILL: 339 CU. YDS.
CHANNEL CUT: 371 CU. YDS.
STOCKPILE FILL: 373 CU. YDS.

ARMOR FILL: 342 CU. YDS.
CHANNEL CUT: 364 CU. YDS.
STOCKPILE FILL: 368 CU. YDS.

ARMOR FILL: 337 CU. YDS.
CHANNEL CUT: 366 CU. YDS.
STOCKPILE FILL: 368 CU. YDS.

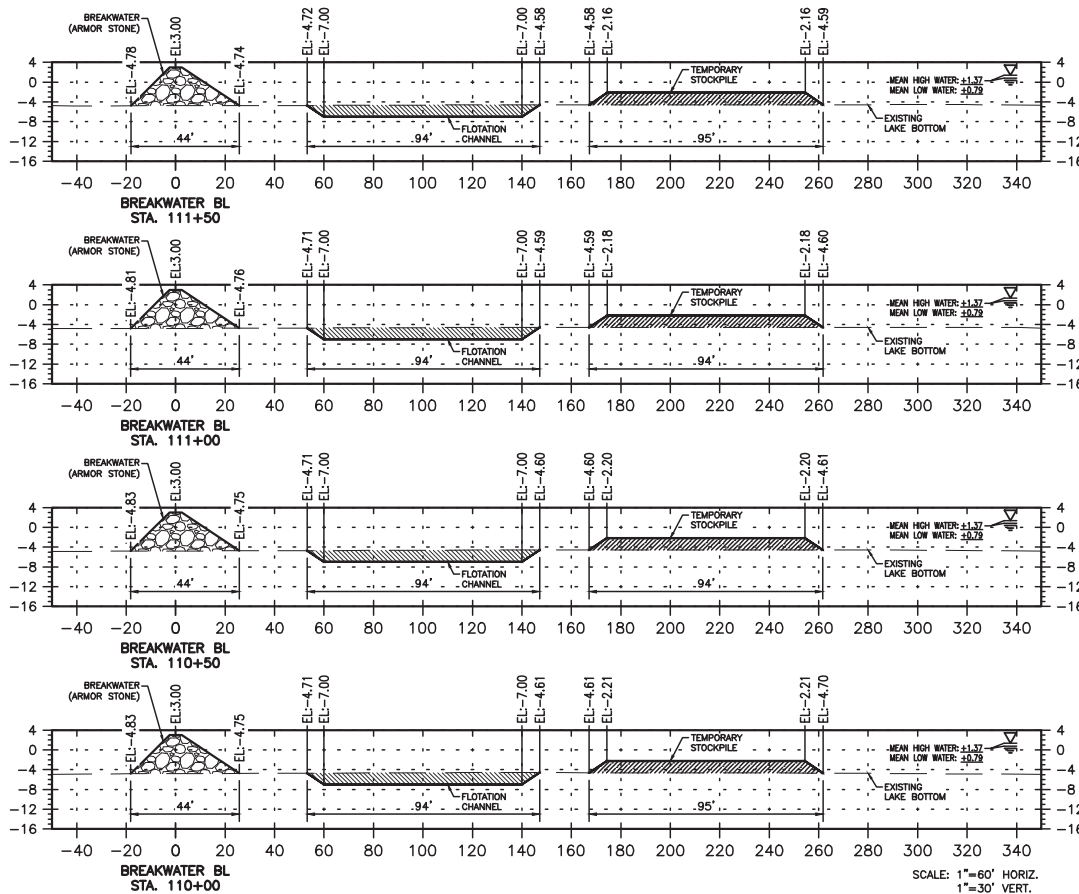
PERMIT SET

						LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY				SHEET	SHEET NUMBER	DATE
							18	17 of 30	MAY 23, 2025



PERMIT SET

					 DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDERLILLE LA, 70471 PH. (985) 334-4131	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY				SHEET	SHEET NUMBER	DATE
							19	18 of 30	MAY 23, 2025



ARMOR FILL: 352 CU. YDS.
CHANNEL CUT: 381 CU. YDS.
STOCKPILE FILL: 392 CU. YDS.

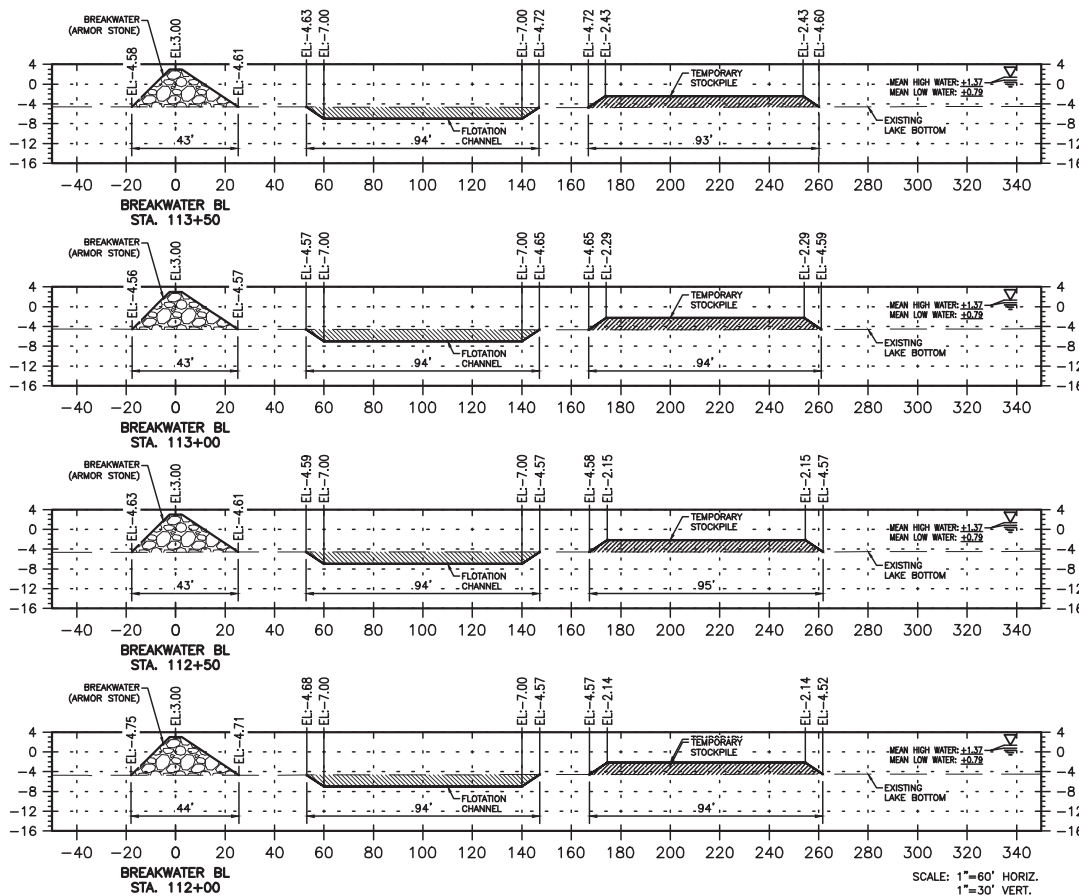
ARMOR FILL: 354 CU. YDS.
CHANNEL CUT: 381 CU. YDS.
STOCKPILE FILL: 390 CU. YDS.

ARMOR FILL: 353 CU. YDS.
CHANNEL CUT: 381 CU. YDS.
STOCKPILE FILL: 390 CU. YDS.

ARMOR FILL: 355 CU. YDS.
CHANNEL CUT: 381 CU. YDS.
STOCKPILE FILL: 398 CU. YDS.

PERMIT SET

				 	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY			SHEET	SHEET NUMBER	DATE
						20	19 of 30	MAY 23, 2025



ARMOR FILL: 336 CU. YDS.
CHANNEL CUT: 381 CU. YDS.
STOCKPILE FILL: 369 CU. YDS.

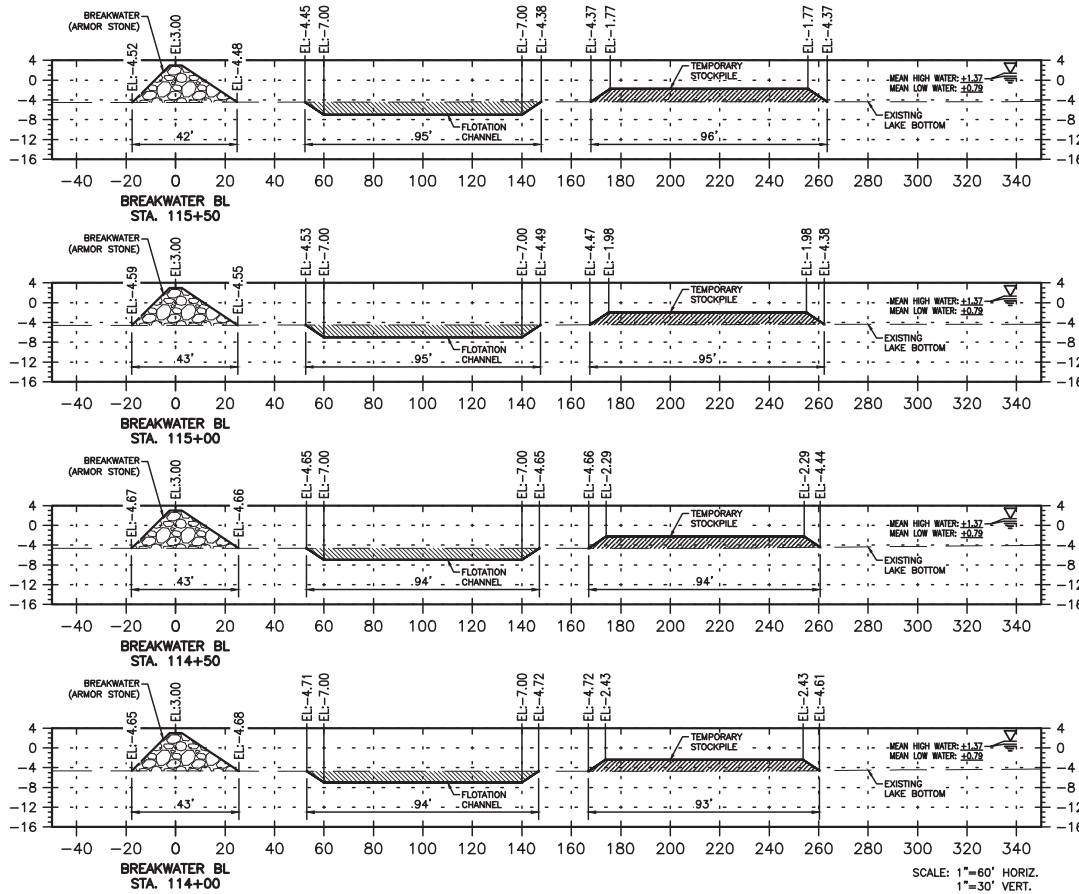
ARMOR FILL: 337 CU. YDS.
CHANNEL CUT: 390 CU. YDS.
STOCKPILE FILL: 386 CU. YDS.

ARMOR FILL: 344 CU. YDS.
CHANNEL CUT: 387 CU. YDS.
STOCKPILE FILL: 392 CU. YDS.

ARMOR FILL: 350 CU. YDS.
CHANNEL CUT: 381 CU. YDS.
STOCKPILE FILL: 391 CU. YDS.

PERMIT SET

				 	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY			SHEET	SHEET NUMBER	DATE
						21	20 of 30	MAY 23, 2025



ARMOR FILL: 333 CU. YDS.
CHANNEL CUT: 412 CU. YDS.
STOCKPILE FILL: 410 CU. YDS.

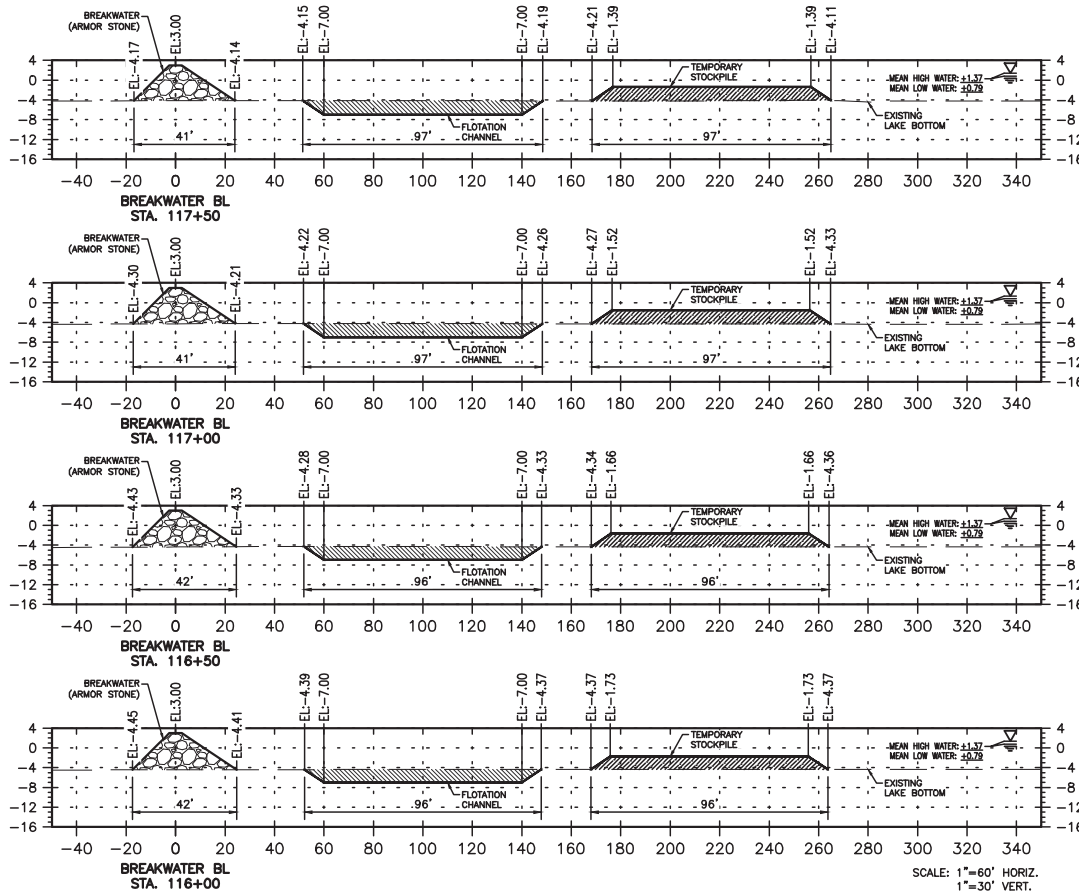
ARMOR FILL: 346 CU. YDS.
CHANNEL CUT: 701 CU. YDS.
STOCKPILE FILL: 1027 CU. YDS.

ARMOR FILL: 343 CU. YDS.
CHANNEL CUT: 374 CU. YDS.
STOCKPILE FILL: 370 CU. YDS.

ARMOR FILL: 341 CU. YDS.
CHANNEL CUT: 371 CU. YDS.
STOCKPILE FILL: 363 CU. YDS.

PERMIT SET

				  digital engineering DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDERLIE, LA 70471 PH: (985) 334-4131	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY			SHEET	SHEET NUMBER	DATE
						22	21 of 30	MAY 23, 2025



ARMOR FILL: 307 CU. YDS.
CHANNEL CUT: 459 CU. YDS.
STOCKPILE FILL: 455 CU. YDS.

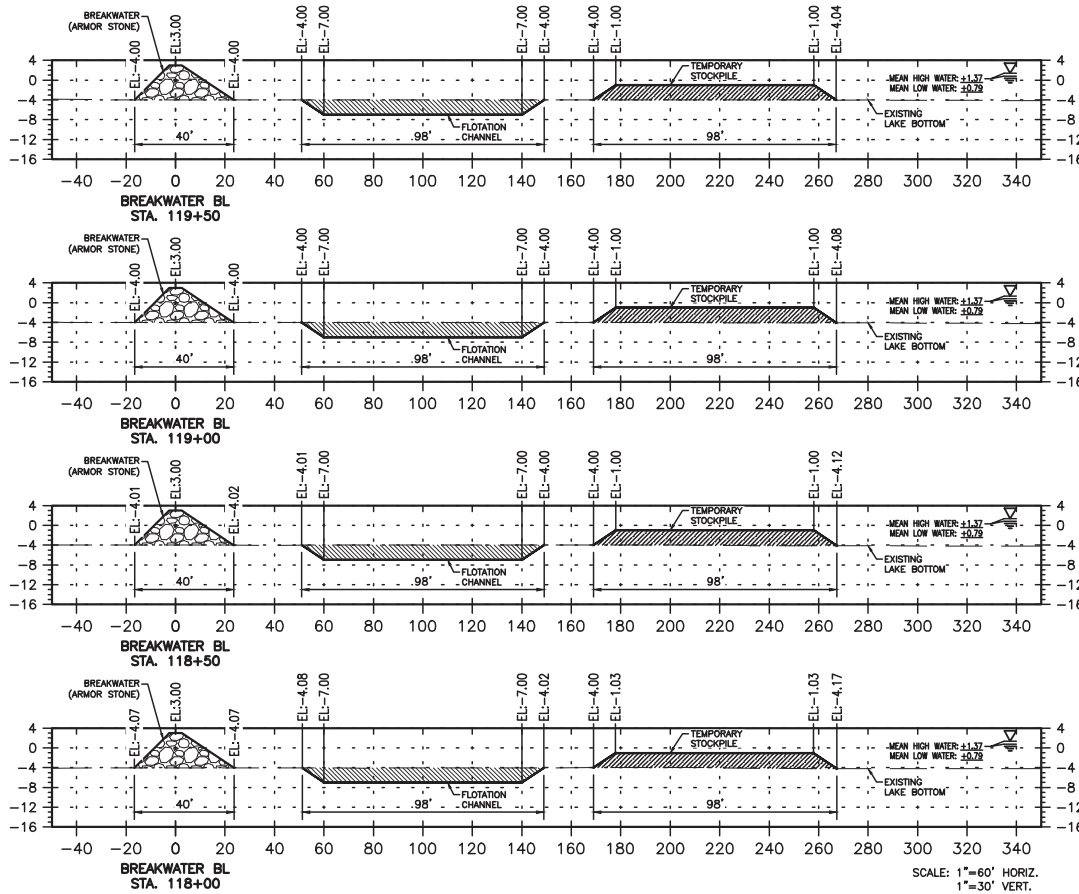
ARMOR FILL: 316 CU. YDS.
CHANNEL CUT: 446 CU. YDS.
STOCKPILE FILL: 448 CU. YDS.

ARMOR FILL: 323 CU. YDS.
CHANNEL CUT: 435 CU. YDS.
STOCKPILE FILL: 435 CU. YDS.

ARMOR FILL: 328 CU. YDS.
CHANNEL CUT: 424 CU. YDS.
STOCKPILE FILL: 427 CU. YDS.

PERMIT SET

				  digital engineering DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDEVILLE LA, 70471 PH. (985) 334-4131	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY			SHEET	SHEET NUMBER	DATE
						23	22 of 30	MAY 23, 2025



ARMOR FILL: 292 CU. YDS.
CHANNEL CUT: 495 CU. YDS.
STOCKPILE FILL: 500 CU. YDS.

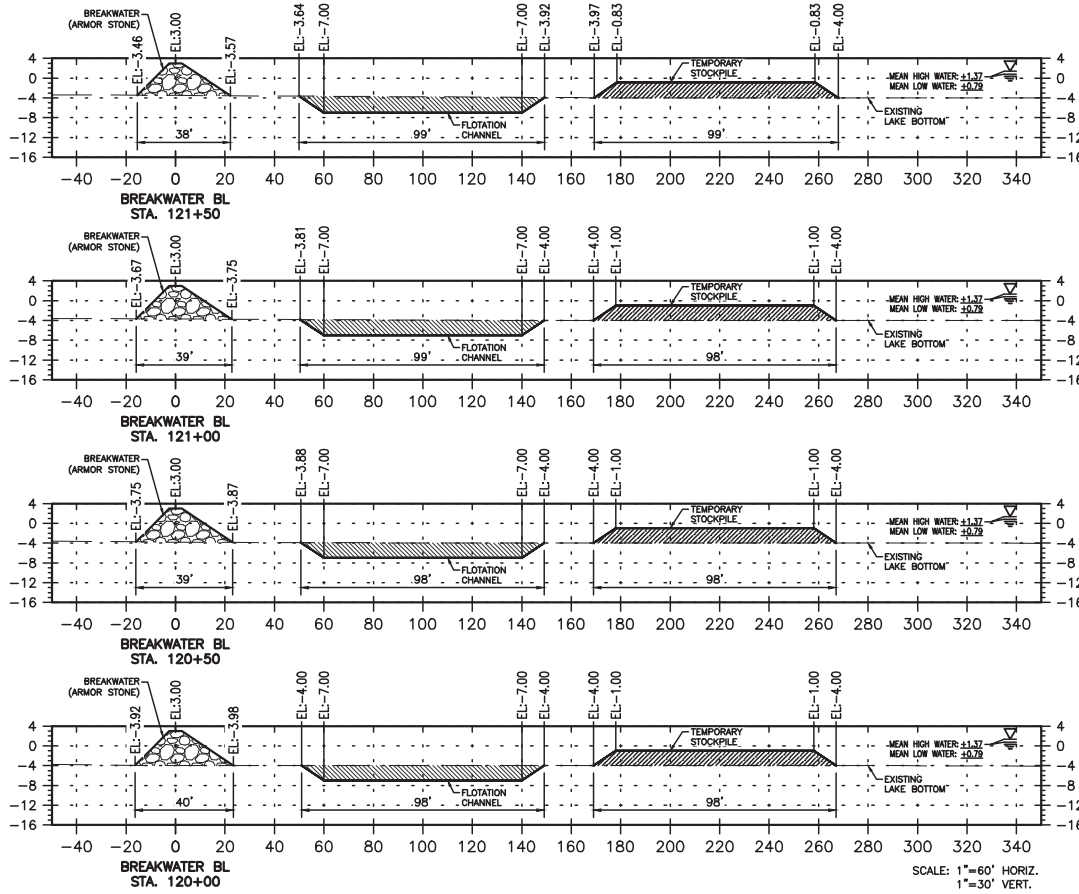
ARMOR FILL: 293 CU. YDS.
CHANNEL CUT: 495 CU. YDS.
STOCKPILE FILL: 504 CU. YDS.

ARMOR FILL: 295 CU. YDS.
CHANNEL CUT: 490 CU. YDS.
STOCKPILE FILL: 502 CU. YDS.

ARMOR FILL: 300 CU. YDS.
CHANNEL CUT: 475 CU. YDS.
STOCKPILE FILL: 477 CU. YDS.

PERMIT SET

					 DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDERLIE, LA 70471 PH: (985) 334-4131	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY				SHEET	SHEET NUMBER	DATE
							24	23 of 30	MAY 23, 2025



ARMOR FILL: 264 CU. YDS.
CHANNEL CUT: 523 CU. YDS.
STOCKPILE FILL: 510 CU. YDS.

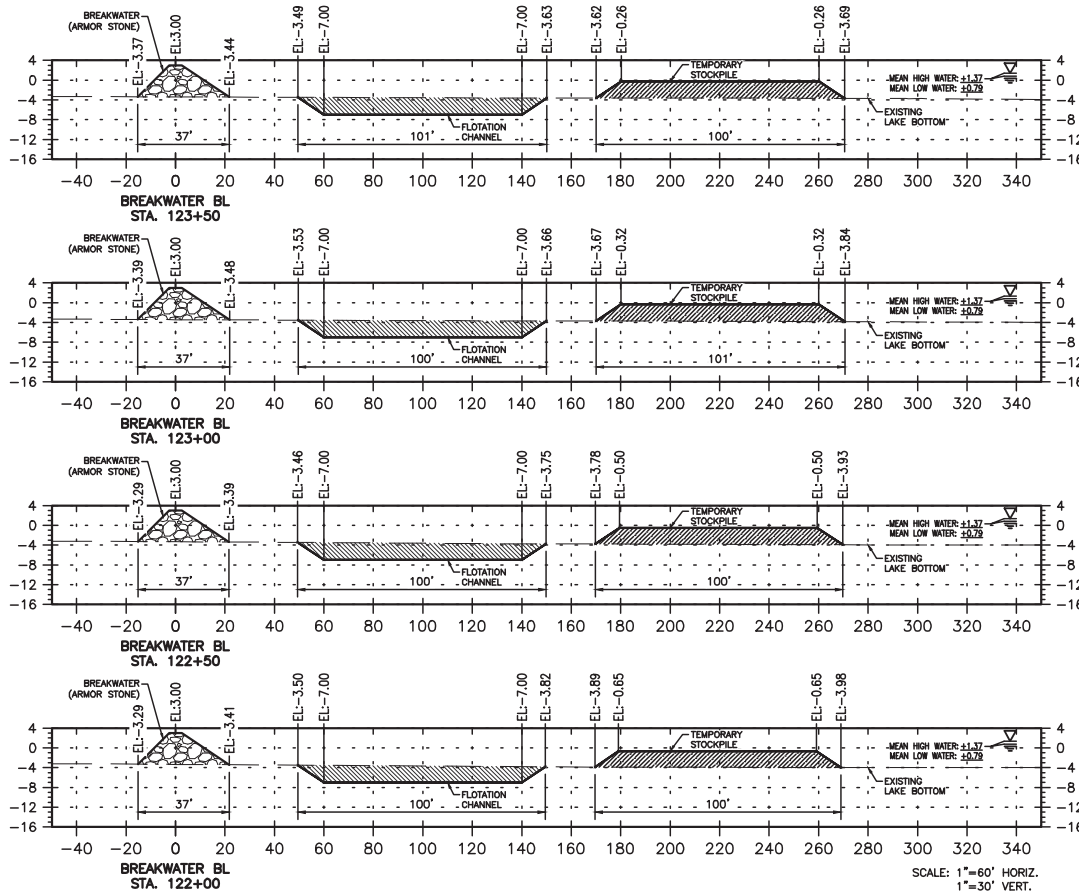
ARMOR FILL: 275 CU. YDS.
CHANNEL CUT: 506 CU. YDS.
STOCKPILE FILL: 495 CU. YDS.

ARMOR FILL: 284 CU. YDS.
CHANNEL CUT: 498 CU. YDS.
STOCKPILE FILL: 495 CU. YDS.

ARMOR FILL: 291 CU. YDS.
CHANNEL CUT: 495 CU. YDS.
STOCKPILE FILL: 496 CU. YDS.

PERMIT SET

					 DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDEVILLE LA, 70471 PH. (985) 334-4131	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY				SHEET	SHEET NUMBER	DATE
							25	24 of 30	MAY 23, 2025



ARMOR FILL: 251 CU. YDS.
CHANNEL CUT: 570 CU. YDS.
STOCKPILE FILL: 569 CU. YDS.

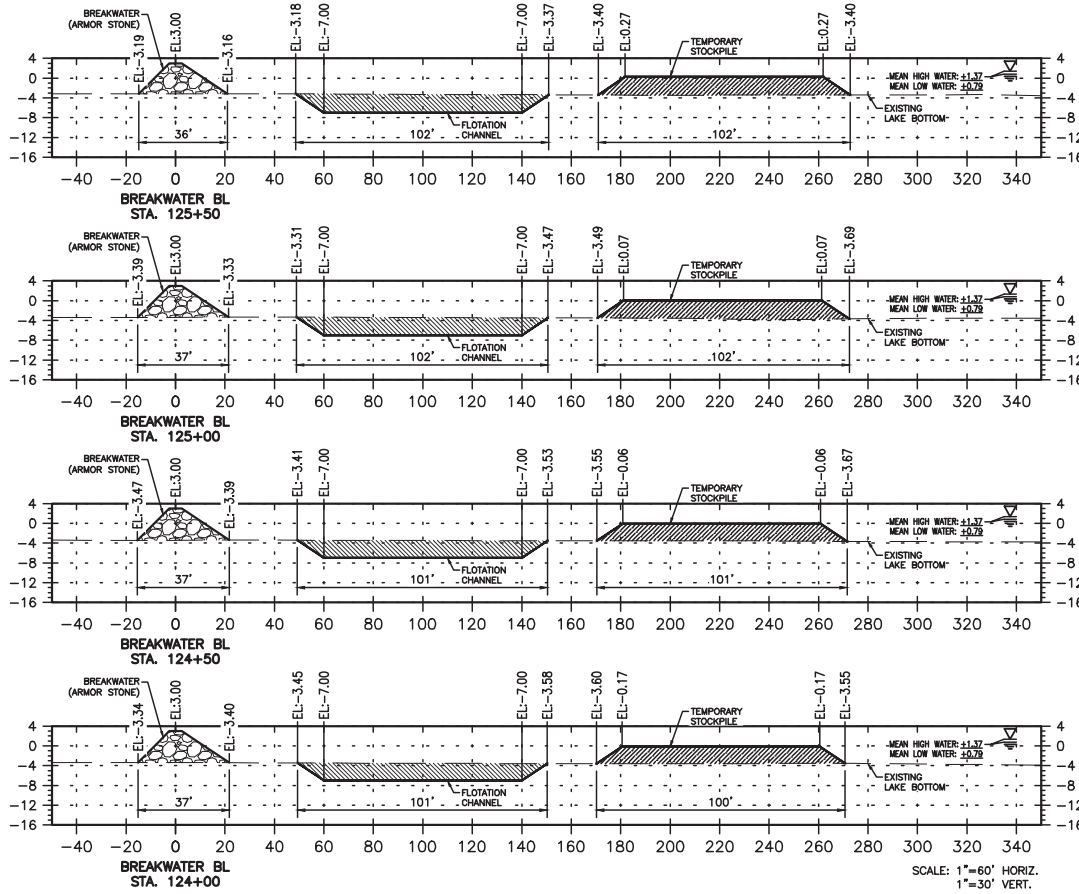
ARMOR FILL: 249 CU. YDS.
CHANNEL CUT: 566 CU. YDS.
STOCKPILE FILL: 568 CU. YDS.

ARMOR FILL: 246 CU. YDS.
CHANNEL CUT: 561 CU. YDS.
STOCKPILE FILL: 553 CU. YDS.

ARMOR FILL: 252 CU. YDS.
CHANNEL CUT: 546 CU. YDS.
STOCKPILE FILL: 535 CU. YDS.

PERMIT SET

				 	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY			SHEET	SHEET NUMBER	DATE
						26	25 of 30	MAY 23, 2025



ARMOR FILL: 240 CU. YDS.
 CHANNEL CUT: 617 CU. YDS.
 STOCKPILE FILL: 626 CU. YDS.

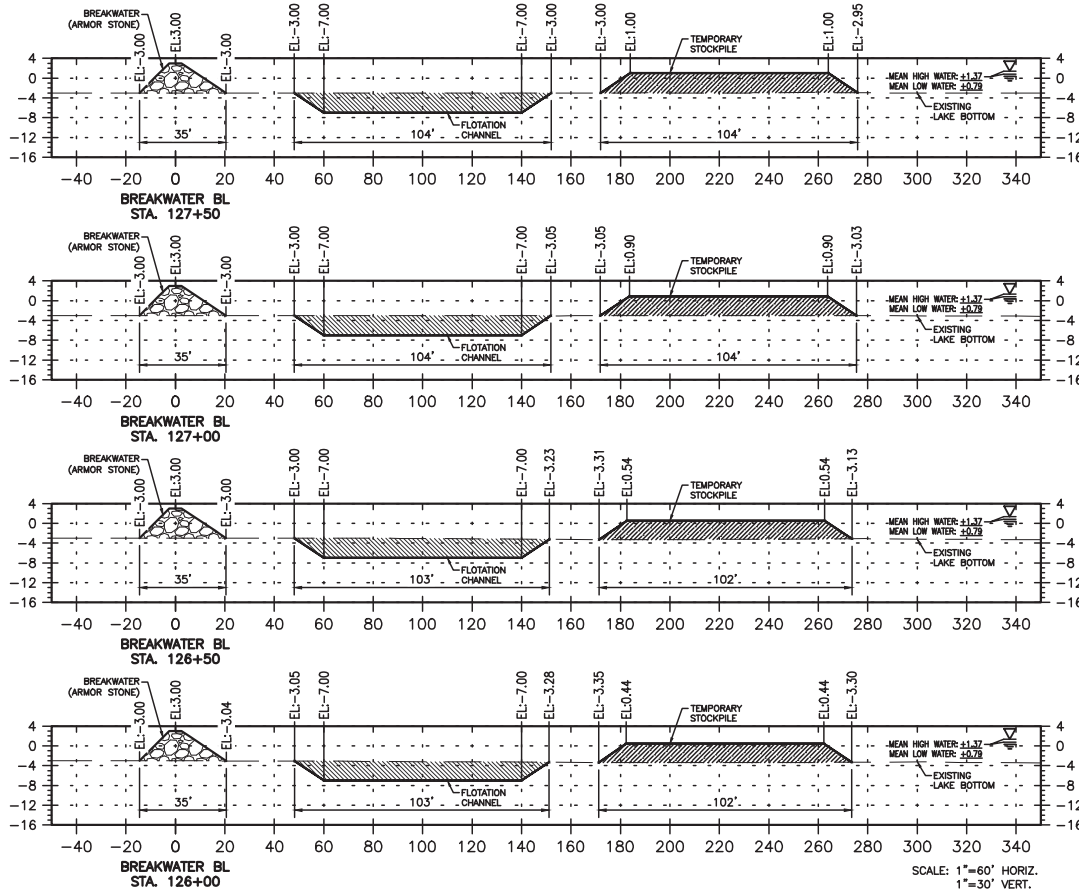
ARMOR FILL: 249 CU. YDS.
 CHANNEL CUT: 600 CU. YDS.
 STOCKPILE FILL: 608 CU. YDS.

ARMOR FILL: 249 CU. YDS.
 CHANNEL CUT: 588 CU. YDS.
 STOCKPILE FILL: 579 CU. YDS.

ARMOR FILL: 248 CU. YDS.
 CHANNEL CUT: 579 CU. YDS.
 STOCKPILE FILL: 566 CU. YDS.

PERMIT SET

				 	LOWER TCHEFUNTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY			SHEET	SHEET NUMBER	DATE
						27	26 of 30	MAY 23, 2025



ARMOR FILL: 223 CU. YDS.
CHANNEL CUT: 681 CU. YDS.
STOCKPILE FILL: 671 CU. YDS.

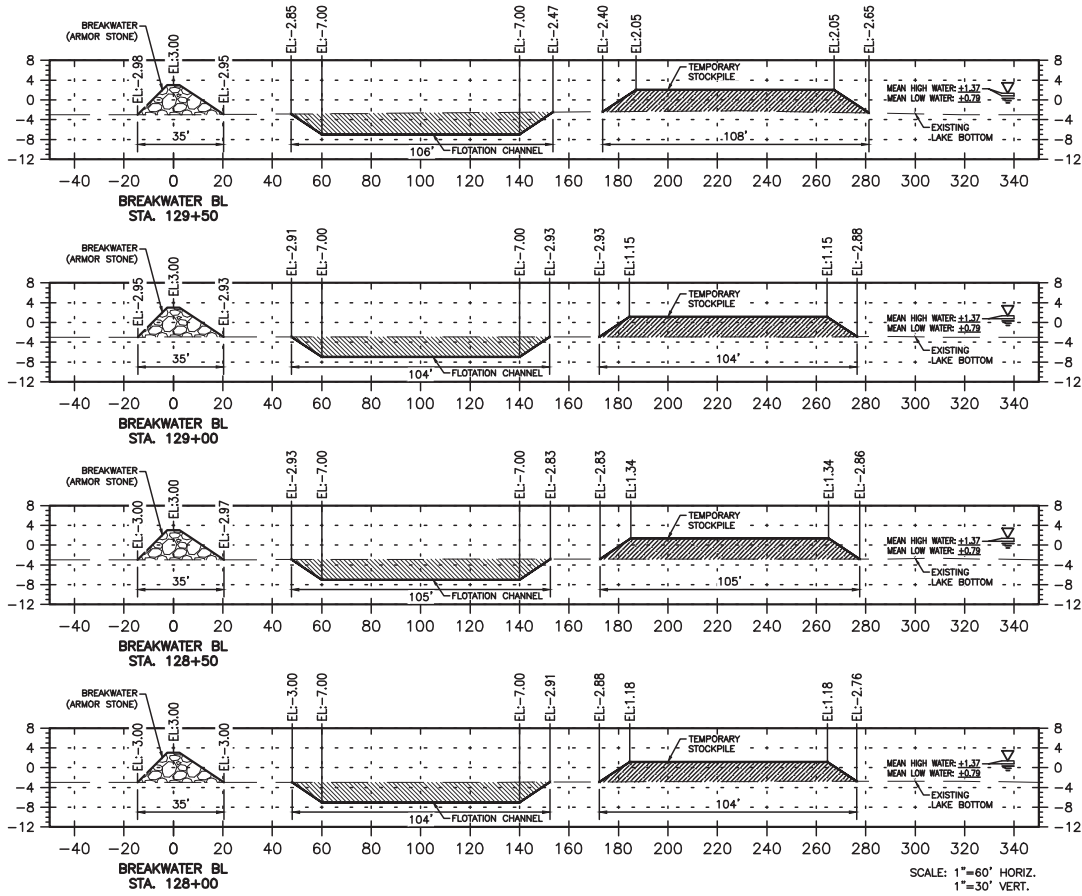
ARMOR FILL: 223 CU. YDS.
CHANNEL CUT: 673 CU. YDS.
STOCKPILE FILL: 654 CU. YDS.

ARMOR FILL: 223 CU. YDS.
CHANNEL CUT: 657 CU. YDS.
STOCKPILE FILL: 643 CU. YDS.

ARMOR FILL: 229 CU. YDS.
CHANNEL CUT: 637 CU. YDS.
STOCKPILE FILL: 634 CU. YDS.

PERMIT SET

					 DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDERLIE, LA 70471 PH: (985) 334-4131	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY				SHEET	SHEET NUMBER	DATE
							28	26 of 30	MAY 23, 2025



ARMOR FILL: 220 CU. YDS.
CHANNEL CUT: 723 CU. YDS.
STOCKPILE FILL: 731 CU. YDS.

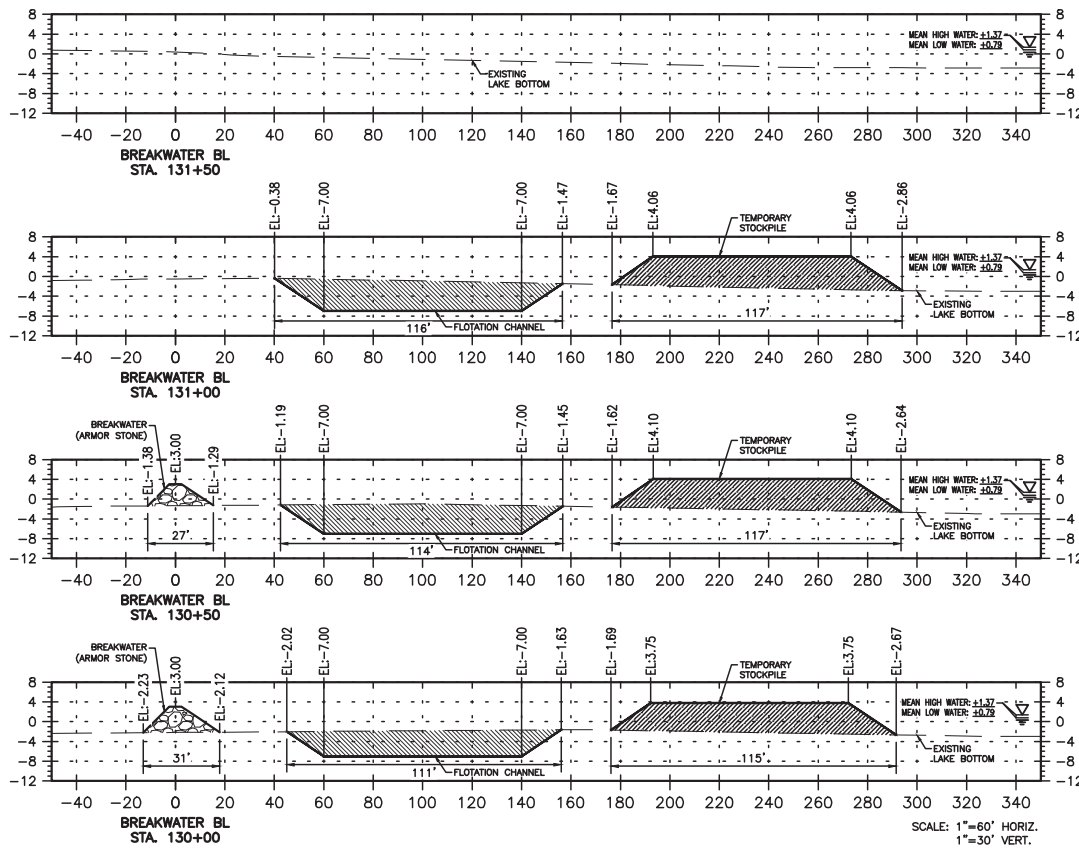
ARMOR FILL: 221 CU. YDS.
CHANNEL CUT: 703 CU. YDS.
STOCKPILE FILL: 708 CU. YDS.

ARMOR FILL: 222 CU. YDS.
CHANNEL CUT: 697 CU. YDS.
STOCKPILE FILL: 698 CU. YDS.

ARMOR FILL: 223 CU. YDS.
CHANNEL CUT: 684 CU. YDS.
STOCKPILE FILL: 678 CU. YDS.

PERMIT SET

					 DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDEVILLE LA, 70471 PH. (985) 334-4131	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY				SHEET	SHEET NUMBER	DATE
							29	26 of 30	MAY 23, 2025



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 555 CU. YDS.
STOCKPILE FILL: 579 CU. YDS.

ARMOR FILL: 64 CU. YDS.
CHANNEL CUT: 1083 CU. YDS.
STOCKPILE FILL: 1145 CU. YDS.

ARMOR FILL: 150 CU. YDS.
CHANNEL CUT: 987 CU. YDS.
STOCKPILE FILL: 1102 CU. YDS.

ARMOR FILL: 197 CU. YDS.
CHANNEL CUT: 832 CU. YDS.
STOCKPILE FILL: 917 CU. YDS.

PERMIT SET

					 DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDEVILLE, LA 70471 PH: (985) 334-4131	LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT ST. TAMMANY, LOUISIANA	CROSS SECTIONS		
REVISION	DATE	DESCRIPTION	BY				SHEET	SHEET NUMBER	DATE
							30	26 of 30	MAY 23, 2025

MEMORANDUM FOR RECORD: Chief, Regulatory Branch ATTN: Molly Connerton

SUBJECT: MFR IN ACCORDANCE WITH EC 1165-2-220, APPENDIX G – St. Tammany Parish
MVN-2024-00121-TREC, P20230728

1. Please reference the Memorandum For Record (MFR) dated 08 July 2024. Subsequently, we have received an amended request dated 02 June 2025 requesting a revision to extend the proposed floatation channel. The Operations Manager for the Gulf Intracoastal Waterway navigation project and the Tchefuncte River project (ODV) has reviewed the amended application from Digital Engineering & Imaging Inc. on behalf of St. Tammany Parish proposing construction of a riprap breakwater in Lake Pontchartrain at the mouth of the Tchefuncte River in St. Tammany Parish, Louisiana.
2. It has been determined that the proposed work is within the Tchefuncte River navigation servitude but is outside of the navigation fairway limits. Therefore, this request has no impact to the usefulness of the project and will not be injurious to the public interest.

The scope of this analysis for Section 408 evaluation is limited to the federal limits of the Federal Navigation Channel.

3. The Tchefuncte and Bouge Falaya Rivers project is authorized for navigation, therefore no consideration was given to potential flood inducement of the proposed breakwater structure for the Tchefuncte River. Recommend that the applicant consider the effect of the proposed breakwater for flood inducement.
4. ODV has no objections to the subject request provided the following navigation conditions are included as part of the Section 10 permit documents as per EC 1165-2-220, APPENDIX K (enclosed):

PROJECT- SPECIFIC CONDITIONS:

- a. The work is performed in accordance with the submitted application and amended drawings submitted on 2 June 2025.
- b. Any damage to the channels and/or banks resulting from the Applicant's activities is repair at the Applicant's expense and to the satisfaction of the Corps of Engineers.
- c. No dredged/excavated material or debris can be discharged into the federal channel.
- d. There shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein.
- e. The applicant will, at his or her expense, install and maintain any safety light, signals, and signs prescribed by the United States Coast Guard, through regulations or otherwise, on authorized facilities or on equipment used in performing work under the authorization.
- f. The applicant shall return the spoil to the floatation access channel before demobilization and survey the site to ensure removal of any underwater obstructions. The applicant assumes all responsibility for the danger of the spoil mounds during and post construction.

- g. You must submit a copy of "as-built" drawings within 60 days of completion of work showing the new work as it relates to identifiable features of the federal project.
 - h. If the proposed project, or future maintenance work, involves the use of floating construction equipment (barge mounted cranes, barge mounted pile driving equipment, floating dredge equipment, dredge discharge pipelines, etc.,) in the waterway, the applicant is advised to notify the appropriate Captain of the Port so that a Notice to Mariners, if required, may be provided about one month before you plan to start work. Contact information for the local Captain of the Port's offices may be located at <https://homeport.uscg.mil> under "port directory". In addition, a copy of your permit approval and drawings should be mailed to the Commander, Eighth Coast Guard District, Hale Boggs Federal Building, 500 Poydras Street, Room 1230, New Orleans, Louisiana 70130, or emailed to D08-DG-District-DPW@uscg.mil. Telephone inquiries can be directed to the Eighth Coast Guard District, Waterways Management at (504) 671-2330.
 - i. The applicant understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said work shall cause unreasonable obstruction to the free navigation of the navigable waters, the applicant will be required upon due notice from the Corps of Engineers, to remove, relocate or alter the structural work **or** obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.
5. The above Section 408 special conditions and standard conditions enclosed are enforceable by the USACE Navigation Manager for the MROV, Tiger Pass as per Appendix G, EC 1165-2-220. The point of contact for enforcing such Section 408 conditions in the Section 10 permit is Brandon Keck at 504-862-2630, brandon.e.keck@usace.army.mil or Robert Swayze, 504-862-2060, robert.l.swayze@usace.army.mil.
6. On future correspondence, please also reference tracking number 2024-0406.

KECK.BRANDON.EDW
ARD.1367377620

Digitally signed by
KECK.BRANDON.EDWARD.1367377620
Date: 2025.08.12 15:42:42 -05'00'

for Robert L. Swayze, III, P.E.
Senior Operations Manager
Operations Division

Enclosure (Standard 408 conditions)

U.S. Army Corps of Engineers
New Orleans District
Section 408
EC-1165-2-220 Appendix K
Standard Terms and Conditions

LIMITS OF THE AUTHORIZATION

1. This permission only authorizes you, the requester, to undertake the activity described herein under the authority provided in Section 14 of the Rivers and Harbors Act of 1899, as amended (33 USC 408). This permission does not obviate the need to obtain other federal, state, or local authorizations required by law. This permission does not grant any property rights or exclusive privileges, and you must have appropriate real estate instruments in place prior to construction and/or installation.
2. The time limit for completing the work authorized end on 5 years from the date of 408 permission or 5 years from the date of the Regulatory permit if a Regulatory permit is required. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
3. Without prior written approval of the USACE, you must neither transfer nor assign this permission nor sublet the premises or any part thereof, nor grant any interest, privilege, or license whatsoever in connection with this permission. Failure to comply with this condition will constitute noncompliance for which the permission may be revoked immediately by USACE.
4. The requester understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration of the work herein authorized, or if, in the opinion of the Secretary of the Army or an authorized representative, said work will cause unreasonable conditions and/or obstruction of USACE project authorized design, the requester will be required upon due notice from the USACE, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim can be made against the United States on account of any such removal or alteration.

INDEMNIFICATION AND HOLD HARMLESS

5. The United States will in no case be liable for:
 - a. Any damage or injury to the structures or work authorized by this permission that may be caused or result from future operations undertaken by the United States, and no claim or right to compensation will accrue from any damage; or
 - b. Damage claims associated with any future modification, suspension, or revocation of this permission.
6. The United States will not be responsible for damages or injuries which may arise from or be incident to the construction, maintenance, and use of the project requested by you, nor for damages to the property or injuries to your officers, agents, servants, or employees, or others who may be on your premises or project work areas of the federal project(s) rights-of-way. By accepting this permission, you hereby agree to fully defend, **indemnify**, and **hold harmless** the United States and USACE from any and all such claims, subject to any limitations in law.
7. Any damage to the water resources development project or other portions of any federal project(s) resulting from your activities must be repaired at your expense.

REEVALUATION OF PERMISSION

8. The determination that the activity authorized by this permission would not impair the usefulness of the federal project and would not be injurious to the public interest was made in reliance on the information you provided.
9. This office, at its sole discretion, may reevaluate its decision to issue this permission at any time circumstances warrant, which may result in a determination that it is appropriate or necessary to modify or revoke this permission. Circumstances that could require a reevaluation include, but are not limited to, the following:
 - a. You fail to comply with the terms and conditions of this permission.
 - b. The information provided in support of your application for permission proves to have been inaccurate or incomplete; or
 - c. Significant new information surfaces which this office did not consider in reaching the original decision that the activity would not impair the usefulness of the water resources development project and would not be injurious to the public interest.

CONDUCT OF WORK UNDER THIS PERMISSION

10. You are responsible for implementing any requirements for mitigation, reasonable and prudent alternatives, or other conditions or requirements imposed as a result of environmental compliance.
11. Work/usage allowed under this permission must proceed in a manner that avoids interference with inspection, operation, and maintenance of the federal project.
12. In the event of any deficiency in the design or construction of the requested activity, you are solely responsible for taking remedial action to correct the deficiency.
13. The right is reserved to the USACE to enter upon the premises at any time and for any purpose necessary or convenient in connection with government purpose, to make inspections, to operate and/or to make any other use of the lands as may be necessary in connection with government purposes, and you will have no claim for damages on account thereof against the United States or any officer, agent, or employee thereof.
14. You must provide copies of pertinent design, construction, and/or usage submittal/documents. USACE may request that survey and photographic documentation of the alteration work and the impacted project area be provided before, during, and after construction and/or installation.
15. You may be required to perform an inspection of the federal project with the USACE, prior to your use of the structure, to document existing conditions.
16. USACE shall not be responsible for the technical sufficiency of the alteration design nor for the construction and/or installation work.
17. **You must submit a copy of “as-built” drawings within 60 days of completion of work showing the new work as it relates to identifiable features of the federal project.**

STANDARD MANATEE CONDITIONS FOR IN-WATER ACTIVITIES

During in-water work in areas that potentially support manatees, all personnel associated with the project shall be instructed and aware of the potential presence of manatees, manatee speed zones, and the need to avoid collisions with, and injury to, manatee. All personnel shall be advised that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973. Additionally, personnel shall be instructed not to attempt to feed or otherwise interact with the animal, although passively taking pictures or video would be acceptable.

All on-site personnel are responsible for observing water-related activities for the presence of manatee(s). We recommend the following to minimize potential impacts to manatees in areas of their potential presence:

- All work, equipment, and vessel operation shall cease if a manatee is spotted within a 50-foot radius (buffer zone) of the active work area. Once the manatee has left the buffer zone on its own accord (manatees must not be herded or harassed into leaving), or after 30 minutes have passed without additional sightings of manatee(s) in the buffer zone, in-water work can resume under careful observation for manatee(s).
- If a manatee(s) is sighted in or near the project area, all vessels associated with the project shall operate at “no wake/idle” speeds within the construction area and at all times while in waters where the draft of the vessel provides less than a four-foot clearance from the bottom. Vessels shall follow routes of deep water whenever possible.
- If used, siltation or turbidity barriers shall be properly secured, made of material in which manatees cannot become entangled, and be monitored to avoid manatee entrapment or impeding their movement.
- Temporary signs concerning manatees shall be posted prior to and during all in-water project activities and removed upon completion. Each vessel involved in construction activities shall display at the vessel control station or in a prominent location, visible to all employees operating the vessel, a temporary sign at least 8½" X 11" reading language similar to the following: “CAUTION BOATERS: MANATEE AREA/ IDLE SPEED IS REQUIRED IN CONSTRUCTION AREA AND WHERE THERE IS LESS THAN FOUR FOOT BOTTOM CLEARANCE WHEN MANATEE IS PRESENT”. A second temporary sign measuring 8½" X 11" shall be posted at a location prominently visible to all personnel engaged in water-related activities and shall read language similar to the following: “CAUTION: MANATEE AREA/EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50 FEET OF OPERATION”.
- Collisions with, injury to, or sightings of manatees shall be immediately reported to the U.S. Fish and Wildlife Service’s, Louisiana Ecological Services Office (337/291-3100) and the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (225/765-2821). Please provide the nature of the call (i.e., report of an incident, manatee sighting, etc.); time of incident/sighting; and the approximate location, including the latitude and longitude coordinates, if possible.



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS LA 70118-3651

September 15, 2025

Regulatory Division
Eastern Evaluation Branch

SUBJECT: MVN-2024-00121-TREC

Mr. Trip Sharp
Saint Tammany Parish Government
21454 Koop Drive
Mandeville, LA 70471

Dear Mr. Sharp:

Enclosed is a permit dated this date, subject as above, authorizing work under the Department of the Army permit program.

You are again reminded that any work not in accordance with the approved plans is subject to removal regardless of the expense and the inconvenience that such removal may involve and regardless of the date when the discrepancy is discovered.

Your attention is directed to all the terms and conditions of the approval. In order to have the work approved in accordance with the issued permit, all terms and conditions of the permit and plans shown on the drawings attached thereto must be rigidly adhered to.

It is necessary that you notify the District Engineer, Attention: Eastern Evaluation Branch, in writing, prior to commencement of work and also upon its completion. The notification must include the permittee's name, as shown on the permit, and the permit number. Please note the expiration date on the permit. Should the project not be completed by that date, you may request a permit time extension. Such requests must be received before, but no sooner than six months before, the permit expiration date and must show the work completed and the reason the project was not finished within the time period granted by the permit.

In addition, please find enclosed this District's decision pursuant to 33 USC 408 (Section 408) concerning your request to alter or occupy an existing U.S. Army Corps of Engineers Civil Works Project. Questions concerning the enclosed permission should be directed to the point of contact provided in the Section 408 permission letter.

A copy of Page 1 of the permit (ENG Form 1721) must be conspicuously displayed at the project site. Also, you must keep a copy of the signed permit at the project site until the work is completed.

Sincerely,

**Brad P.
LaBorde**

Digitally signed by
Brad P. LaBorde
Date: 2025.09.16
15:31:00 -05'00'

Brad P. LaBorde
Chief, Eastern Evaluation Branch

Enclosure



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS LA 70118-3651

August 13, 2025

Regulatory Division
Eastern Evaluation Branch

SUBJECT: MVN-2024-00121-TREC

Mr. Trip Sharp
Saint Tammany Parish Government
21454 Koop Drive
Mandeville, LA 70471

Dear Mr. Sharp:

We are forwarding a draft copy of a permit, subject as above, which will authorize work under the Department of the Army permit program, after signed by a responsible official of this office.

The unsigned, undated copy of the permit is enclosed. You must sign and date the permit, signifying acceptance of the terms and conditions therein, and return the signed permit to this office. Upon receipt of the permit, the permit will be signed by the responsible official and will be returned to you.

Return To: U.S. Army Corps of Engineers, Regulatory Division, Eastern Evaluation Branch, 7400 Leake Ave, New Orleans, LA 70118-3651 or you can send back electronically. If you have any questions regarding this draft permit, please contact Ms. Molly Connerton, Project Manager at (601) 973-2373.

You are advised that you do not have a valid permit at this time, and no regulated work may be performed until you receive the final permit signed by a responsible official of this office.

Before signing and returning the permit to this office, carefully consider the information contained in the permit. Also, carefully consider the information contained in the enclosed form "Notification of Applicant Option (NAO)" which lists the options available to you in your evaluation of the enclosed permit.

If you choose to accept the terms and conditions of this permit, you must sign and return this permit with the drawings within 60 days of the date of this letter. If you fail to do so, we will assume, you no longer plan to do the work covered by the draft permit, and your application will be removed from our files.

Sincerely,

 Digitally signed
by Brad Guarisco
Date: 2025.08.14
15:58:17 -05'00'

Brad A. Guarisco
Acting Chief, Regulatory Division

Enclosures

JEFF LANDRY
GOVERNOR



AURELIA S. GIACOMETTO
SECRETARY

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL SERVICES

Mr. Andrew Woodroof
Digital Engineering & Imaging, Inc.
527 W Esplanade Avenue
Suite 200
Kenner, LA 70065

DEC 12 2024

AI No.: 89527
Activity No.: CER20240002

RE: St. Tammany Parish Government – Lower Tchefuncte River Breakwater Project
Water Quality Certification WQC 241010-01
Corps of Engineers Permit MVN-2024-00121-BMM
Coastal Use Permit P20230728
St. Tammany Parish

Dear Mr. Woodruff:

The Louisiana Department of Environmental Quality, Water Permits Division (LDEQ), has reviewed the application requesting authorization to place fill to construct a new riprap breakwater to protect the inside shoreline and the Madisonville Boat Launch from wave action. The proposed project would be completed in two phases. Phase 1 would consist of constructing 1,347 linear feet of breakwater. Phase 2 consists of constructing the remaining 1,606 linear feet for a total of 2,953 linear feet. A temporary flotation channel would be dredged for construction access and will be backfilled to natural grade upon completion of construction. All activity will occur in Lake Pontchartrain at the mouth of the Tchefuncte River near 2000 Main Street in Madisonville, St. Tammany Parish.

The information provided in the application and the additional information received November 18, 2024, has been reviewed to assess compliance with State Water Quality Standards, the approved Water Quality Management Plan and applicable state water laws, rules and regulations. LDEQ has complied with its public notice procedures established pursuant to Clean Water Act Section 401(a)(1). LDEQ determined that the requirements for a Water Quality Certification have been met. LDEQ concludes that the discharge of fill will not violate water quality standards as provided for in LAC 33:IX.Chapter 11. Therefore, LDEQ hereby issues St. Tammany Parish Government – Lower Tchefuncte River Breakwater Project Water Quality Certification, WQC 241010-01.

Should you have any questions concerning any part of this certification, please contact Elizabeth Hill at (225) 219-3225 or by email at elizabeth.hill@la.gov. Please reference Agency Interest (AI) number 89527 and Water Quality Certification 241010-01 on all future correspondence to this Department to ensure all correspondence regarding this project is properly filed into the Department's Electronic Document Management System.

Sincerely,

Jenniffer Sheppard, Administrator
Water Permits Division

c: IO-W

ec: michael.a.maaninen@usace.army.mil

awoodroof@deii.net
taylor.ross@la.gov

ST. TAMMANY PARISH, LA
PROJECT NO. DV2100012

[illegible]

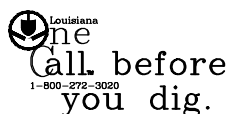
**digital
engineering**
DIGITAL ENGINEERING & IMAGING, INC.
CHASE CENTER, 3500 HWY 190, SUITE 201
MANDEVILLE LA, 70471 PH, (985) 334-4131

DESIGNED BY: AKW
CHECKED BY: JMS
DRAWN BY: MSC
CHECKED BY: JMS
PROJECT MGR.: AKW
APPROVED BY: AKW

LOWER TCHÉFUNCTE RIVER BREAKWATER PROJECT

MILE SHEET

PROJECT NO.	DV2100012
DATE	MAY, 2025
SCALE	
SHEET NO.	1



- PROJECT SITE IS NOT ACCESSIBLE BY LAND. CONTRACTOR SHALL ACCESS THE SITE FROM A NAVIGABLE WATERBODY. DREDGING FOR SITE ACCESS SHALL BE LIMITED TO THE LIMITS SHOWN FOR TEMPORARY ACCESS AND FLOTATION CHANNELS IN THESE DRAWINGS. CONTRACTOR MAY USE MADISONVILLE BOAT LAUNCH FOR ACCESS.
2. ACCESS DREDGING AND FLOTATION CHANNELS SHALL BE AT NO DIRECT PAY.
3. SURVEY INFORMATION WAS PROVIDED BY T. BAKER SMITH, LLC BASED ON FIELD WORK CONDUCTED DURING JANUARY 2022. OTHER UNIDENTIFIED ANOMALIES AND OBSTRUCTIONS MAY EXIST. CONTRACTOR SHALL PERFORM A PRE-CONSTRUCTION HAZARD SURVEY AND LOCATE ALL UTILITIES AND OBSTRUCTIONS BEFORE STARTING WORK. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS BEFORE STARTING CONSTRUCTION ACTIVITIES. DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO ENGINEER.
4. EXISTING UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING PIPELINE/UTILITY OPERATORS AND LOUISIANA ONE CALL (1-800-272-3020) AT LEAST (5) WORKING DAYS BEFORE MOBILIZATION. ALL PIPELINES AND UNDERGROUND UTILITIES SHALL BE MARKED BY CONTRACTOR. CONTRACTOR SHALL MAINTAIN MARKERS DURING CONSTRUCTION. CONTRACTOR SHALL NOT ANCHOR, SPUD, PLACE MATERIAL OR EXCAVATE WITHIN 100 FT OF ANY PIPELINE. CONTRACTOR SHALL COORDINATE WITH OWNERS OF EXISTING PIPELINES BEFORE WORKING AROUND OR OVER SUCH PIPELINES.
5. PROJECT IS WITHIN AND ADJACENT TO ENVIRONMENTALLY & ARCHAEOLOGICAL SENSITIVE AREAS. CONTRACTOR SHALL AVOID IMPACTS TO THESE AREAS DURING THE COURSE OF WORK. OWNER RESERVES THE RIGHT TO SUSPEND WORK AT ANY TIME IF IMPACTS OCCUR UNTIL SATISFACTORY CORRECTIVE MEASURES ARE IMPLEMENTED BY CONTRACTOR. REFER TO SPECIFICATION APPENDIX B "PERMITS" FOR ADDITIONAL REQUIREMENTS, INCLUDING CONDITIONS TO AVOID IMPACTS TO MANATEES, STURGEON, AND EXISTING VEGETATION.
6. CONTRACTOR SHALL BE FAMILIAR WITH AND ANTICIPATE EXISTING SOFT SOIL CONDITIONS AT THE WORK SITE. SOIL INVESTIGATION DATA WERE ACQUIRED BY THE BETA GROUP, LLC, AND PRESENTED IN SOIL BORING LOGS (REFER TO APPENDIX A IN SPECIFICATIONS). IN PREPARING BIDS, CONTRACTOR SHALL ANTICIPATE CONSTRUCTION SETTLEMENTS OF UP TO 12 IN.
7. CONTRACTOR SHALL BE AWARE OF SUBMERGED LOGS, FALLEN TREES, AND STUMPS (I.E., "NATURAL TIMBER DEBRIS") ALONG THE LAKE BOTTOM WITHIN THE PROJECT AREA. CONTRACTOR SHALL LOCATE AND REMOVE SUCH DEBRIS AS REQUIRED TO COMPLETE THE WORK. AFTER REMOVAL, NATURAL TIMBER DEBRIS SHALL BECOME PROPERTY OF CONTRACTOR AND BE DISPOSED OFFSITE IN ACCORDANCE WITH APPLICABLE LAWS/ORDINANCES.
8. CONTRACTOR SHALL TAKE PRECAUTIONS, SECURE EQUIPMENT, AND PROTECT THE WORK AGAINST ADVERSE WEATHER, MARINE CONDITIONS, AND SURGE/WAKE FROM PASSING VESSELS.
9. THE LIMITS OF BREAKWATER CONSTRUCTION SHALL BE STAKED BY THE CONTRACTOR FOR CONCURRENCE BY THE ENGINEER BEFORE STARTING CONSTRUCTION. REFER TO SPECIFICATION SECTION TS-1 "CONSTRUCTION SURVEYING."
10. CONTRACTOR SHALL MAKE OWN ARRANGEMENTS, OBTAIN PERMISSION FROM APPLICABLE PROPERTY OWNERS AND PAY ALL ASSOCIATED FEES FOR EQUIPMENT STAGING, MATERIAL FABRICATION, AND LOADING BARGES ON PRIVATE PROPERTY.
11. WATER DEPTHS VARY AND MAY NOT ACCOMMODATE DRAFT OF FULLY-LOADED BARGES. PROVISIONS SHALL BE MADE TO ACCESS SHALLOWER AREAS THROUGH USE OF LIGHT-LOADED BARGES OR OTHER EQUIPMENT SUITED TO SHALLOWER WATER.
12. AT CONTRACTOR'S OPTION, TEMPORARY ACCESS AND FLOTATION CHANNELS MAY BE DREDGED (VIA MECHANICAL SIDECASTING) TO FACILITATE ACCESS BY DEEPER DRAFT BARGES. STOCKPILES OF SIDECAST MATERIAL SHALL BE MARKED WITH TEMPORARY WARNING SIGNS AS SHOWN. NATURAL TIMBER DEBRIS SHALL BE RELOCATED AS DESCRIBED IN NOTE 6. UPON COMPLETION OF THE WORK, ACCESS AND FLOTATION CHANNELS SHALL BE BACKFILLED AND TEMPORARY WARNING SIGNS SHALL BE REMOVED. HYDRAULIC DREDGING OF FLOTATION CHANNEL IS NOT ALLOWED.
13. CONTRACTOR SHALL STAKE LOCATIONS OF ALL PERMANENT WARNING SIGNS FOR APPROVAL BY ENGINEER BEFORE INSTALLATION.

1. ALL ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) GEOID 12B IN U.S. SURVEY FEET (FEET). ALL HORIZONTAL COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), LOUISIANA STATE PLANE GRID COORDINATE SYSTEM (1702) SOUTH ZONE, IN FEET.

2. MONUMENTS USED FOR HORIZONTAL/VERTICAL CONTROL:

PROJECT REFERENCE CONTROL COORDINATE LISTING			
POINT	NORTHING	EASTING	ELEVATION
10000060	685126.813	3650522.423	1.2260

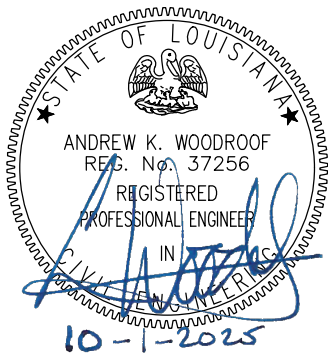
3. SURVEY CONTROL EMPLOYED DURING CONSTRUCTION SHALL MATCH CONTROL PUBLISHED IN THESE CONTRACT DOCUMENTS. NO OTHER SURVEY CONTROL SHALL BE CONSIDERED WITHOUT PRIOR WRITTEN APPROVAL FROM ENGINEER. TO MAINTAIN CONSISTENCY BETWEEN PROJECT DESIGN AND CONSTRUCTED WORK, UPDATES, CORRECTIONS OR OTHER CHANGES PUBLISHED BY NATIONAL GEODETIC SURVEY OR OTHER ENTITIES FOR THESE CONTROL MONUMENTS SHALL NOT BE APPLIED WITHOUT PRIOR APPROVAL FROM ENGINEER.

4. EXCEPT AS NOTED OTHERWISE, SPOT ELEVATIONS AND SURVEY TRANSECTS ARE BASED ON SURVEYS CONDUCTED BY T. BAKER SMITH, LLC. IN JANUARY 2022.

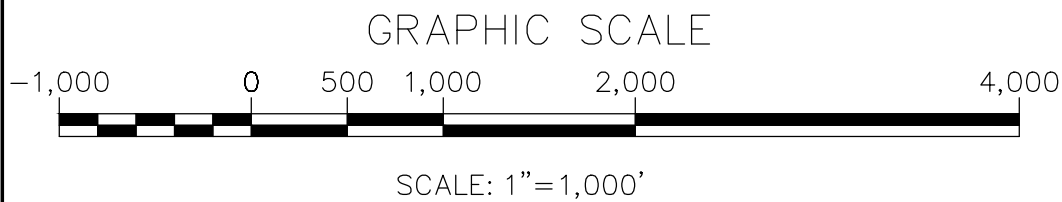
5. CONDITIONS AND ACCURACY OF SURVEY CONTROL MONUMENTS ARE NOT GUARANTEED. CONTRACTOR SHALL VERIFY ACCURACY OF SURVEY CONTROL MONUMENTS BEFORE CONSTRUCTION. IMMEDIATELY REPORT ANY DISCREPANCIES TO ENGINEER

	CONSTRUCTION BASELINE		SURVEY CONTROL POINT
	PARISH LINE		SOIL BORING
	LIMITS OF CONSTRUCTION		UNIDENTIFIED MAGNETIC ANOMALY
	PROPOSED BREAKWATER FOOTPRINT		EXISTING ELEVATION, FT
	LIGHTED DAYBEACON		BREAKWATER ALIGNMENT POINT
	TEMPORARY WARNING SIGN		C/L CENTERLINE
	SETTLEMENT PLATE (SP)		DTL DETAIL
	EXISTING MAJOR CONTOUR		E EAST, EASTING
	EXISTING MINOR CONTOUR		EL ELEVATION
	APPROXIMATE LOCATION OF EXISTING PIPELINE		FT FEET
	APPROXIMATE LOCATION OF EXISTING OVERHEAD UTILITY		HDG HOT-DIPPED GALVANIZED
	FLOTATION CHANNEL		GRR GRADED RIPRAP
	TEMPORARY STOCKPILE		MHW MEAN HIGH WATER
	ARMOR STONE		MAX MAXIMUM
	EXISTING GROUND / EARTHEN MATERIAL		MIN MINIMUM
	GEOTEXTILE COMPOSITE		MLW MEAN LOW WATER
			MTL MEAN TIDE LEVEL
			N NORTH, NORTHING
			NAVD NORTH AMERICAN VERTICAL DATUM
			N.T.S. NOT TO SCALE
			O.H. OTHER HAND
			SHT SHEET
			STA STATION
			SWL STILL WATER LEVEL
			TYP TYPICAL
			W / WITH

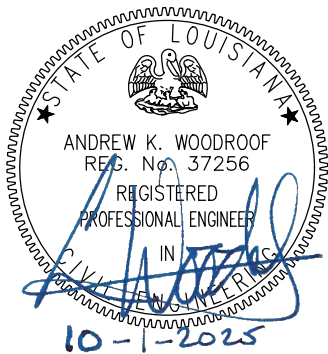
TIDAL DATUMS	
DATUM	NOAA GAGE 8761993 (NAVD88)
MEAN HIGH WATER (MHW)	+1.64
MEAN TIDE LEVEL (MTL)	+0.79
MEAN LOW WATER (MLW)	-0.30



DWG PATH: S:\650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater\20 Design\CA01
DWG NAME: 650-1673_03_OVERALL EXISTING SITE PLAN
PLOT DATE: Wednesday, October 01, 2025 @ 3:05pm



OVERALL EXISTING SITE PLAN
SCALE: 1"=1,000"



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DIGITAL ENGINEERING & IMAGING, INC.
CHASE CENTER, 3500 HWY 190, SUITE 201
MANDERLIE LA, 70471 PH. (985) 334-4131

DESIGNED BY: AKW
CHECKED BY: JMS
DRAWN BY: MSC
CHECKED BY: JMS
PROJECT MGR.: AKW
APPROVED BY: AKW

LOWER TCHEFUNCTE RIVER
BREAKWATER PROJECT

OVERALL EXISTING SITE PLAN

PROJECT NO.
DV2100012

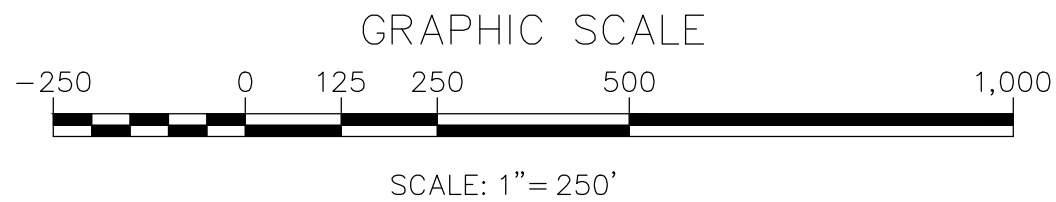
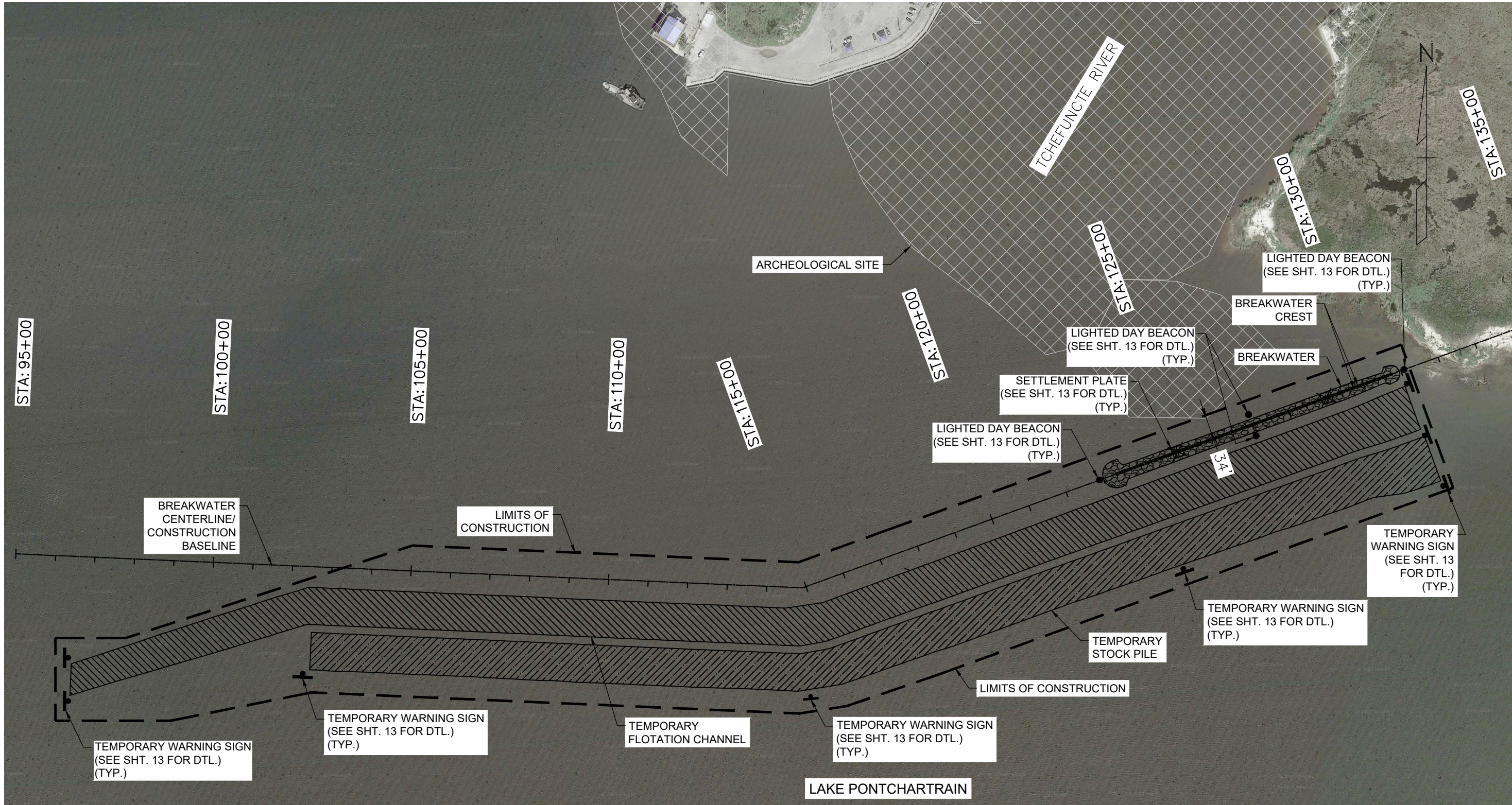
DATE
MAY, 2025

SCALE

SHEET NO.
3

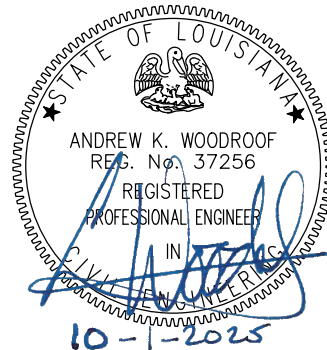
REVISION	DATE	DESCRIPTION	BY

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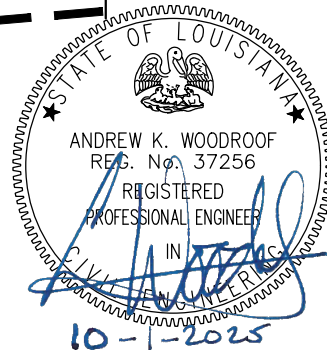
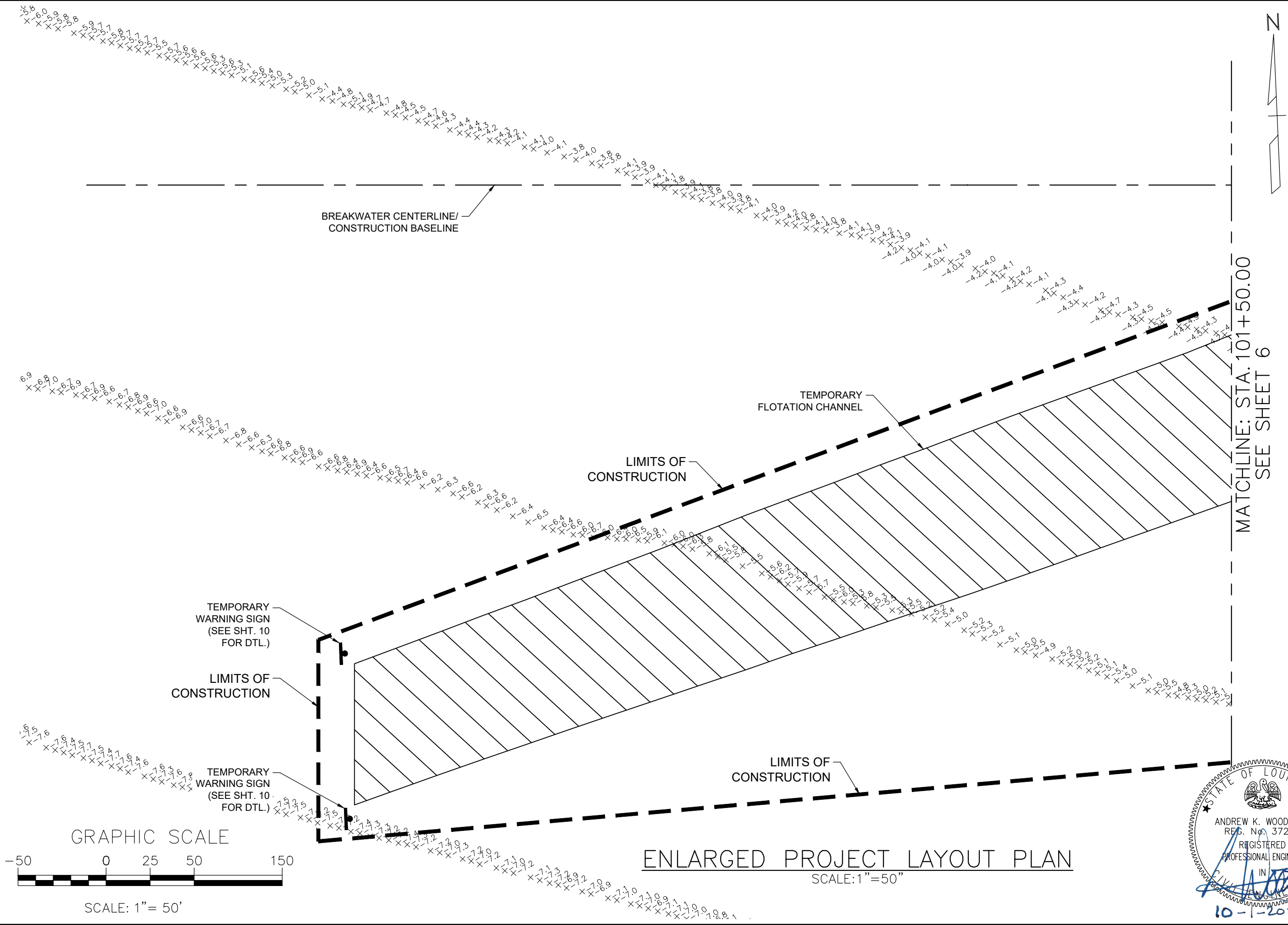
OVERALL SITE PLAN

SCALE: 1"=250'



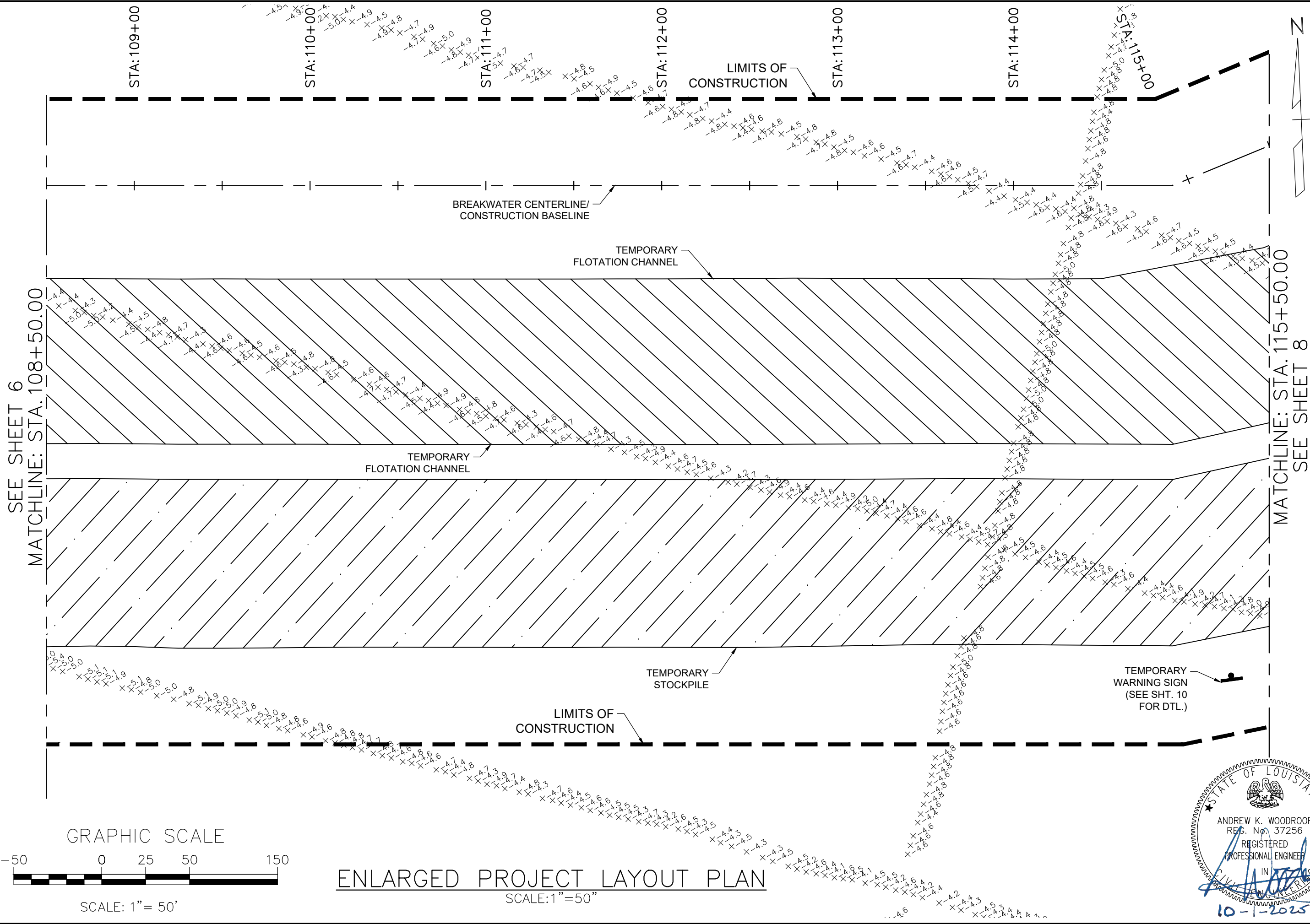
DESIGNED BY: AKW		CHECKED BY: JMS		DRAWN BY: MSC		CHECKED BY: JMS		PROJECT MGR.: AKW		APPROVED BY: AKW	
digital engineering DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDERLILLE LA, 70471 PH. (985) 334-4131											
LOWER TCHFUNCTE RIVER BREAKWATER PROJECT											
OVERALL PROJECT LAYOUT PLAN											
PROJECT NO. DV2100012											
DATE MAY, 2025											
SCALE											
SHEET NO. 4											
REVISION											
DATE											
DESCRIPTION											
BY											

DWG PATH: S:\650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater\20 Design\CAO\ PLOT DATE: Wednesday, October 01, 2025 @ 3:05pm
DWG NAME: 650-1673_05-10-ENLARGED SITE PLAN_OPPOSITE



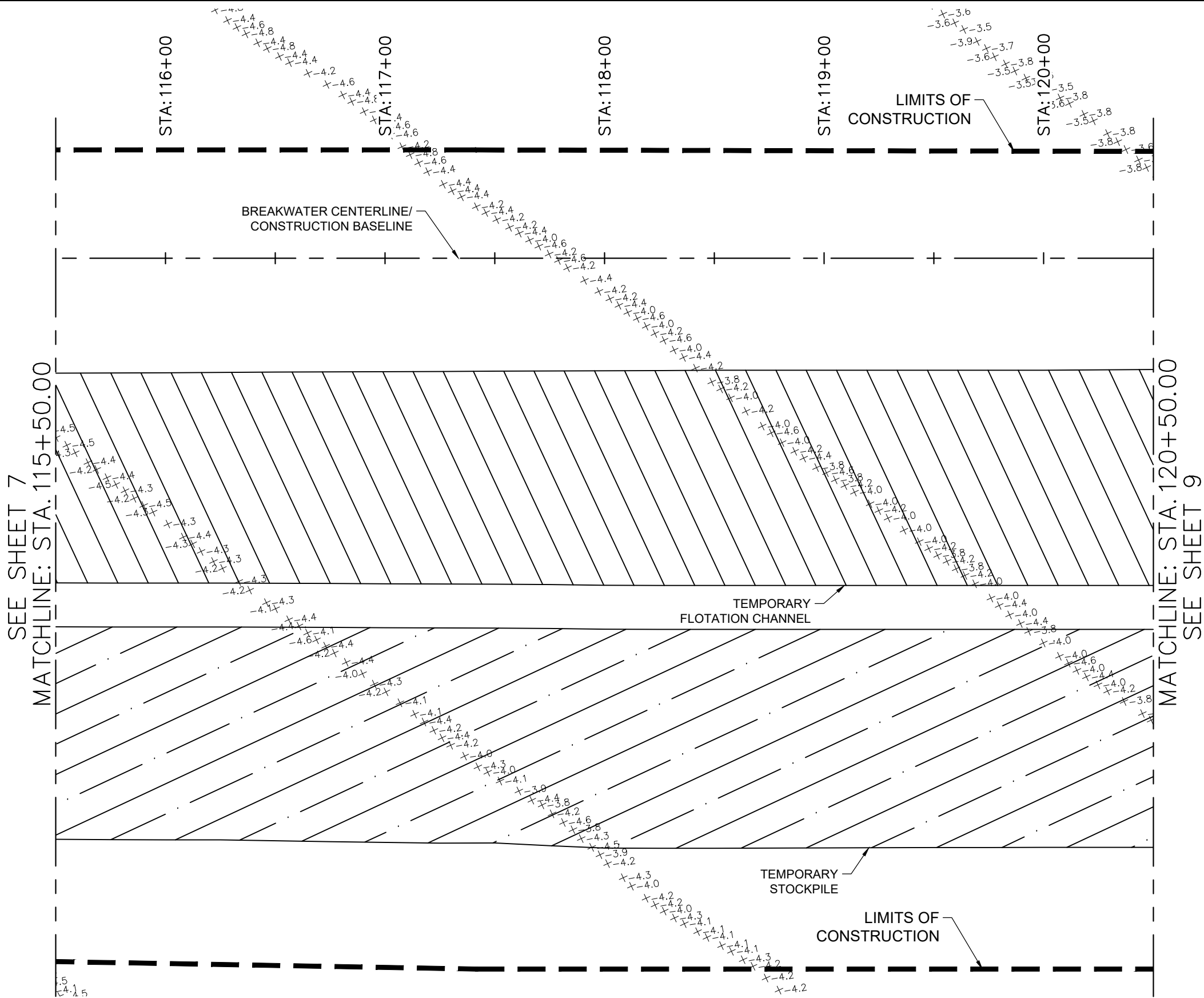
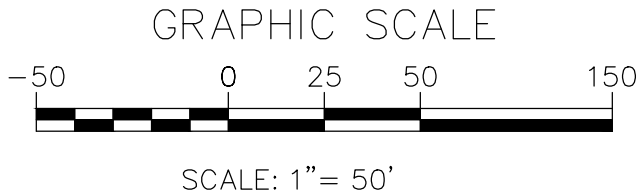
PROJECT NO. DV2100012		DESIGNED BY: AKW		 digital engineering DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDERVILLE LA, 70471 PH. (985) 334-4131						
DATE MAY, 2025		CHECKED BY: JMS								
SCALE		DRAWN BY: MSC								
SHEET NO. 5		CHECKED BY: JMS								
		PROJECT MGR.: AKW								
		APPROVED BY: AKW								
LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT										
ENLARGED - PROJECT LAYOUT PLAN										
				REVISION		DATE		DESCRIPTION		BY

DWG PATH: S:\650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater\20 Design\CA01 PLOT DATE: Wednesday, October 01, 2025 @ 3:05pm
DWG NAME: 650-1673_05-10 ENLARGED SITE PLAN_OPPPOSITE LAYOUT TAB: 7

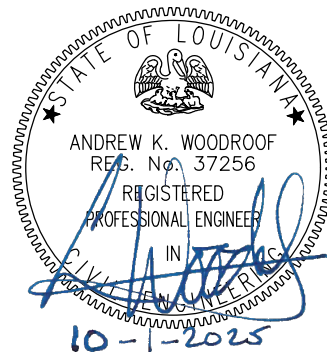


DESIGNED BY: AKW		CHECKED BY: JMS		DRAWN BY: MSC		CHECKED BY: JMS		PROJECT MGR.: AKW		APPROVED BY: AKW							
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LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT						ENLARGED - PROJECT LAYOUT PLAN											
PROJECT NO. DV2100012																	
DATE MAY, 2025																	
SCALE																	
SHEET NO. 7																	
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DWG PATH: S:\650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater\20 Design\CAO\650-1673_05-10-ENLARGED SITE PLAN_OPPPOSITE
DWG NAME: 650-1673_05-10-ENLARGED SITE PLAN_OPPPOSITE
PLOT DATE: Wednesday, October 01, 2025 @ 3:05pm



ENLARGED PROJECT LAYOUT PLAN
SCALE: 1" = 50'



PROJECT NO. DV2100012		DATE MAY, 2025		SCALE		SHEET NO. 8	
DESIGNED BY: AKW		CHECKED BY: JMS		DRAWN BY: MSC		CHECKED BY: JMS	
PROJECT MGR.: AKW		APPROVED BY: AKW		REVISION		DATE	
DESCRIPTION		BY					

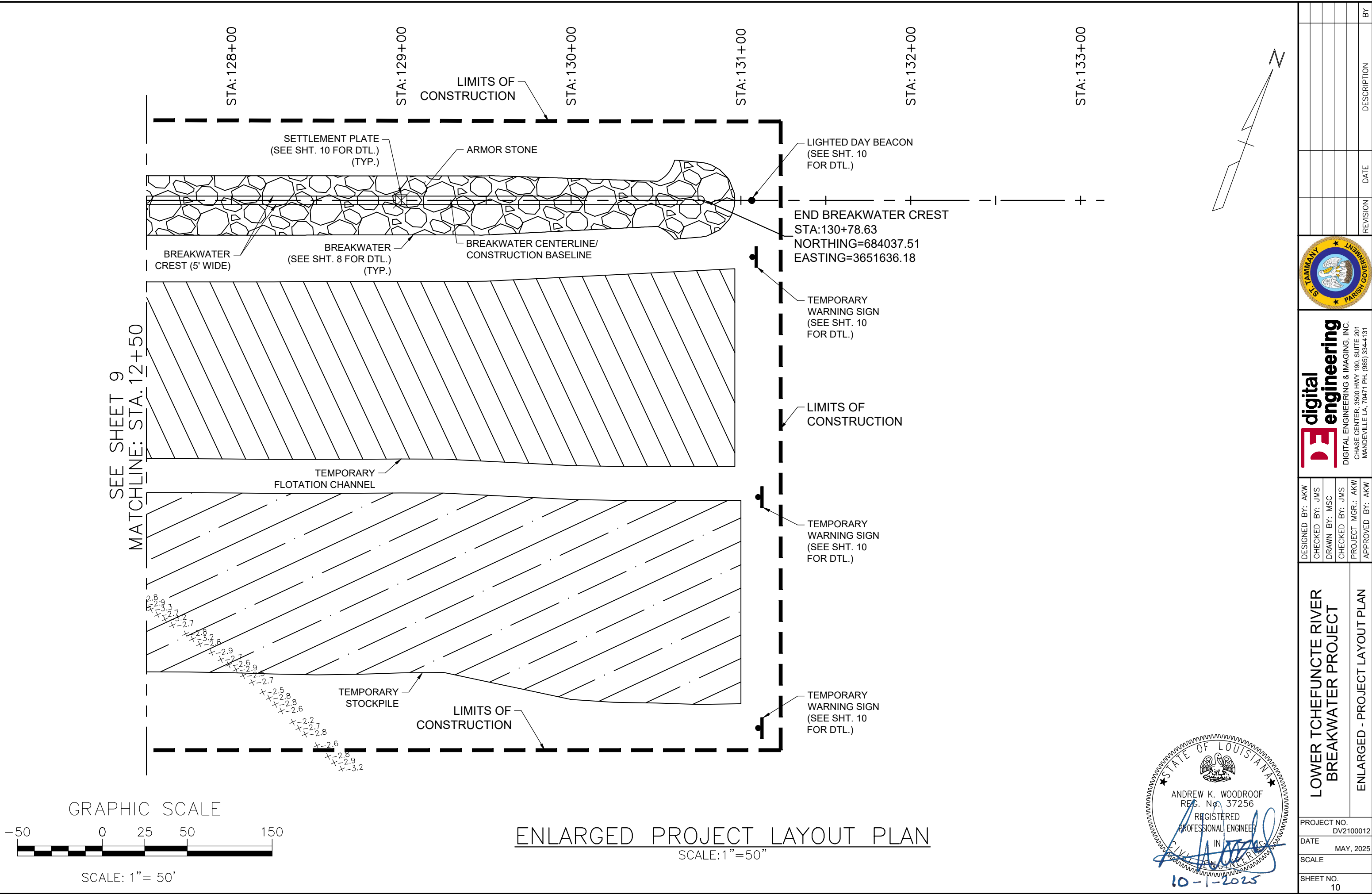


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LOWER TCHEFUNCTE RIVER
BREAKWATER PROJECT

ENLARGED - PROJECT LAYOUT PLAN

DWG PATH: S:\650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater\20 Design\CAU\ PLOT DATE: Wednesday, October 01, 2025 @ 3:05pm
DWG NAME: 650-1673_05-10-ENLARGED SITE PLAN_OPPPOSITE



PROJECT NO. DV2100012		DATE MAY, 2025		SCALE		SHEET NO. 10	
DESIGNED BY: AKW		CHECKED BY: JMS		DRAWN BY: MSC		CHECKED BY: JMS	
PROJECT MGR.: AKW		APPROVED BY: AKW		REVISION		DATE	
DESCRIPTION		BY					

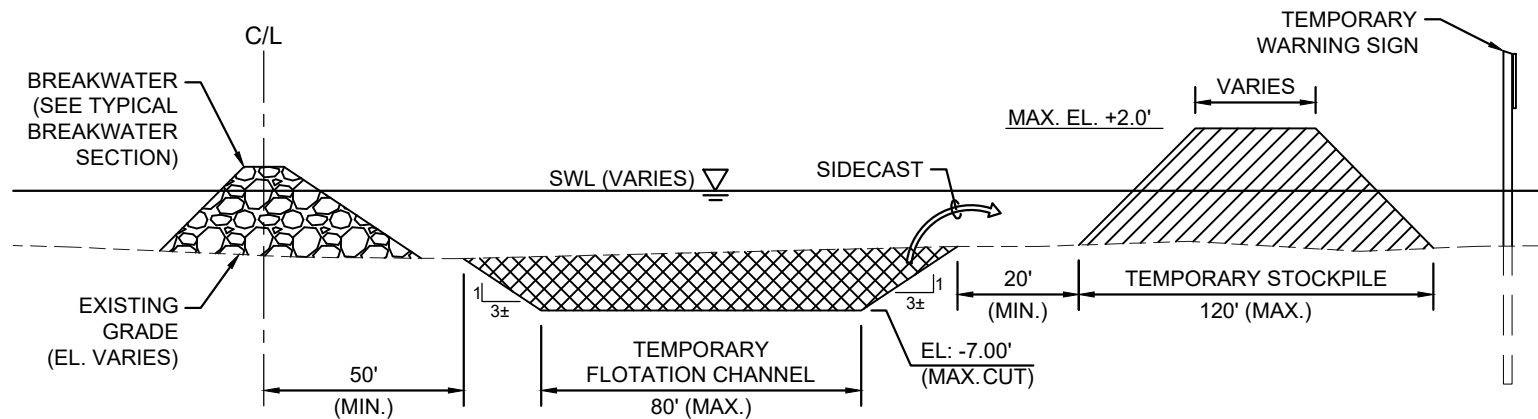


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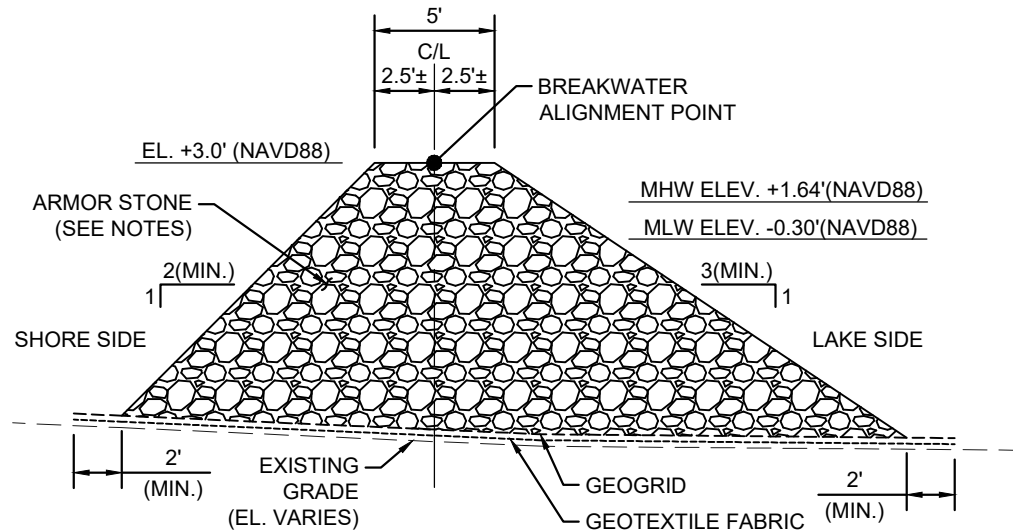
**LOWER TCHEFUNCTE RIVER
BREAKWATER PROJECT**

ENLARGED - PROJECT LAYOUT PLAN

DWG PATH: S:\650 - St. Tammany Parish\650-1673 Lower Tchoufoune Breakwater\20 Design\CAV
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PLOT DATE: Thursday, October 09, 2025 @ 4:43pm



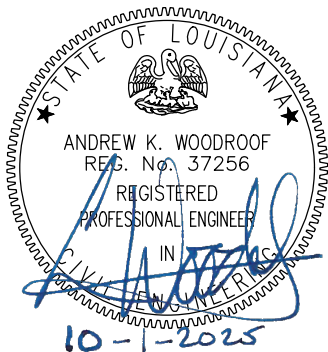
TYPICAL SECTION – BREAKWATER
TEMPORARY FLOTATION CHANNEL
N.T.S.



TYPICAL BREAKWATER SECTION
N.T.S.

ARMOR STONE NOTES:

1. UNLESS OTHERWISE NOTED, PLACEMENT TOLERANCES WITH RESPECT TO FINISHED ELEVATIONS OF ARMOR STONE SHALL BE PLUS OR MINUS 0.3 FT.
2. ARMOR STONE PLACEMENT SHALL MAXIMIZE CONTACT BETWEEN INDIVIDUAL STONES ON ALL SIDES WITH EACH STONE HAVING AT LEAST THREE POINTS OF CONTACT WITH OTHER STONES.
3. DUE TO SOFT FOUNDATION SOILS, CONTRACTOR SHALL ANTICIPATE SETTLEMENT OF BREAKWATER DURING CONSTRUCTION. ACTUAL INSTANTANEOUS SETTLEMENTS MAY VARY. EXCAVATION OF BREAKWATER SUBGRADE IS NOT ALLOWED.
4. EXISTING BOTTOM CONSISTS OF SOFT SOILS. SOIL DISPLACEMENT MAY OCCUR UPON PLACEMENT OF ARMOR STONE. CONTRACTOR SHALL USE DROP HEIGHTS OF NO GREATER THAN ONE FOOT AND EMPLOY OTHER PLACEMENT TECHNIQUES TO HELP PREVENT DAMAGE TO UNDERLYING GEOTEXTILES. UNDERLYING GEOTEXTILE COMPOSITE SHALL EXTEND A MINIMUM OF 2 FT. BEYOND EDGE OF ARMOR STONE BEFORE SETTLEMENT. CONTRACTOR SHALL CONSIDER OTHER METHODS OF MINIMIZING SOIL DISPLACEMENT SUCH AS TACKING THE EDGES OF THE GEOTEXTILE COMPOSITE WITH ARMOR STONE BEFORE LOADING CENTRAL PORTIONS. ADJACENT SHEETS OF GEOGRID COMPOSITE SHALL OVERLAP A MINIMUM OF 3 FEET.
5. NATURAL TIMBER DEBRIS WITHIN BREAKWATER FOOTPRINT SHALL BE CLEARED/CUT/REMOVED TO WITHIN ± SIX (6) INCHES OF EXISTING GRADE TO ALLOW FOR A SMOOTH SURFACE BEFORE PLACING GEOTEXTILE COMPOSITE. VOIDS IN EXISTING GRADE CREATED BY REMOVAL OF SUCH NATURAL TIMBER DEBRIS SHALL BE LIMITED TO SIX (6) INCHES (MAX.) BELOW EXISTING GRADE.
6. REFER TO SPECIFICATION SECTION, "ARMOR STONE".
7. SUBGRADE BENEATH BREAKWATER SHALL BE PREPARED IN ACCORDANCE WITH SPECIFICATION SECTION, "GEOTEXTILES".
8. ARMOR STONE GRADATION SHALL BE LA DOTD 440 LB. MODIFIED, SEE SPECIFICATION SECTION, "RIP RAP".

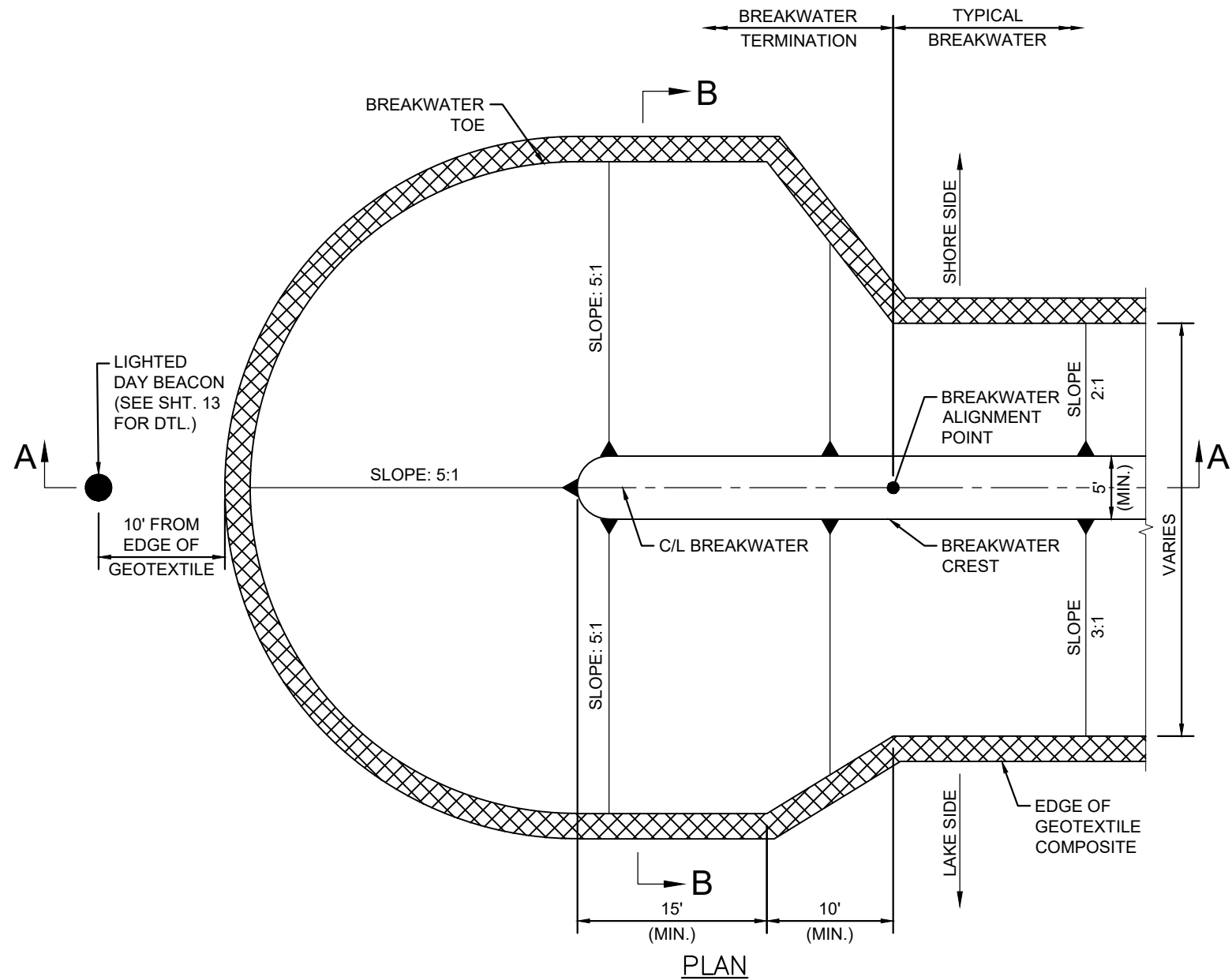


PROJECT NO. DV2100012		DATE MAY, 2025		SCALE		SHEET NO. 11	
DESIGNED BY: AKW		CHECKED BY: JMS		DRAWN BY: MSC		CHECKED BY: JMS	
PROJECT MGR.: AKW		APPROVED BY: AKW		REVISION		DATE	
DESCRIPTION		BY					
LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT		SECTIONS AND DETAILS					

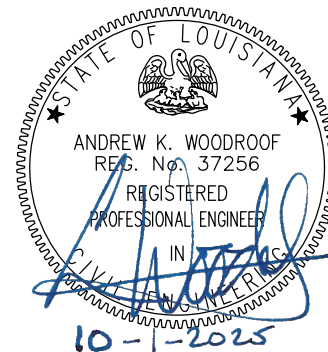
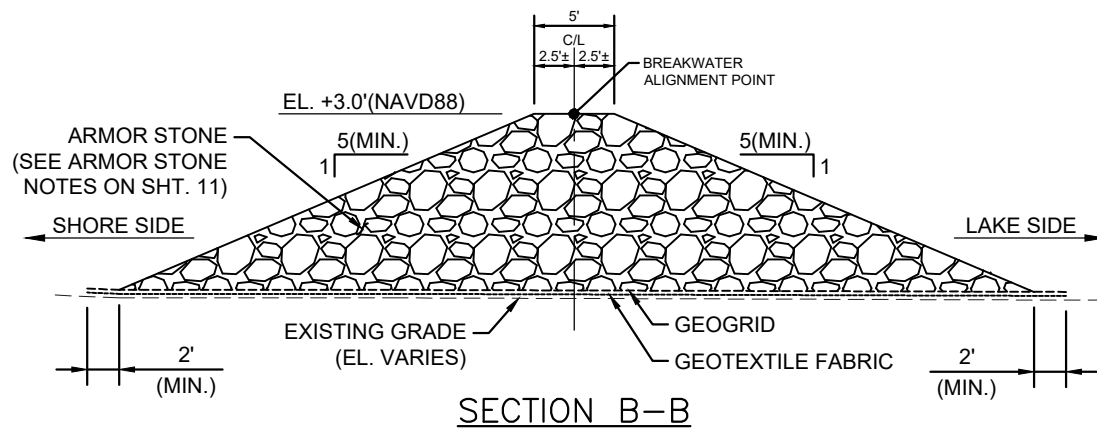
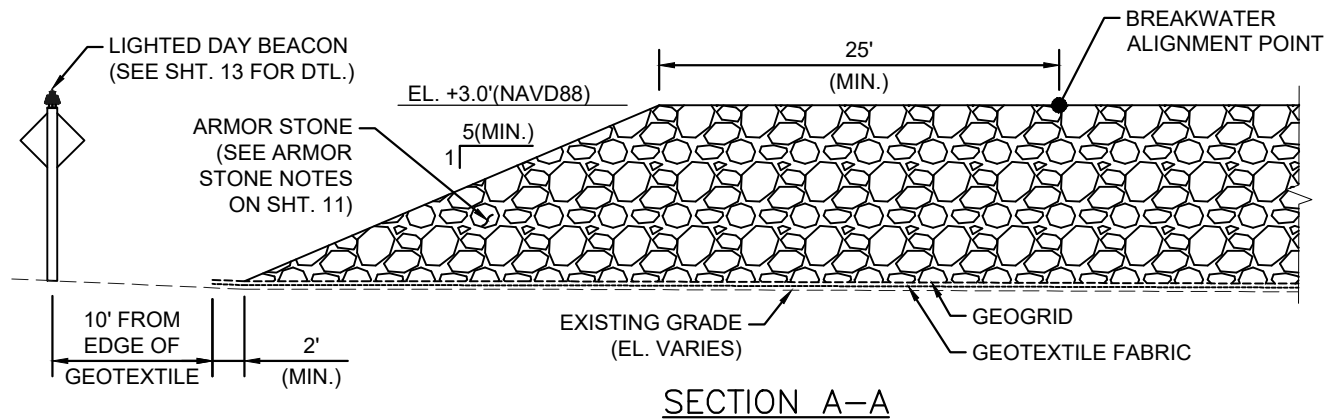


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MANDERLILLE LA, 70471 PH. (985) 334-4131

DWG PATH: S:\650 - St. Tammany Parish\650-1673 Lower Tchoufoucte Breakwater\20 Design\CAV
DWG NAME: 650-1673_11-13_SECTIONS_DETAILS
PLOT DATE: Wednesday, October 01, 2025 3:05pm

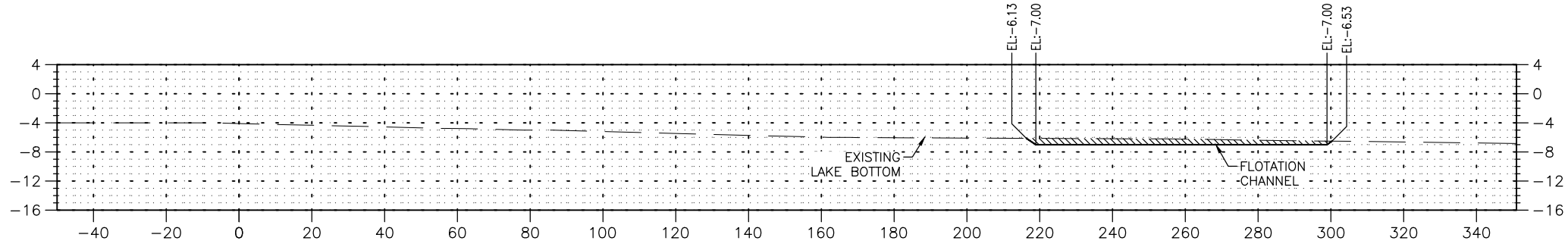


TYPICAL BREAKWATER TERMINAL DETAIL
N.T.S.

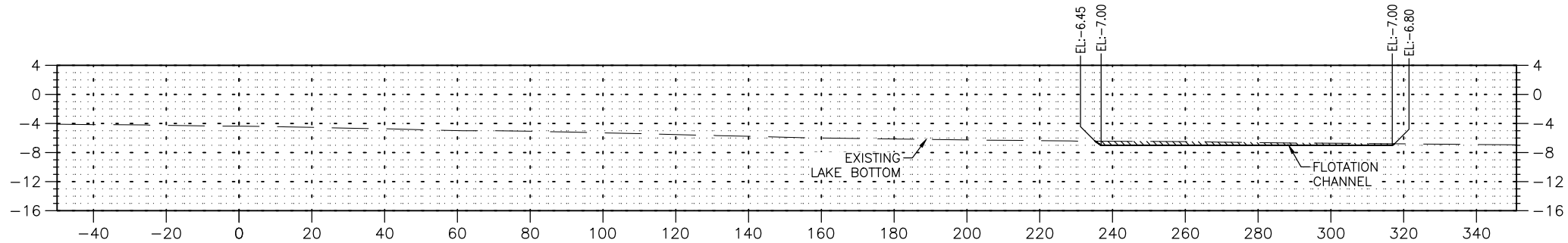


PROJECT NO.		DV2100012
DATE	MAY, 2025	
SCALE		
SHEET NO.	12	
DESIGNED BY: AKW		CHECKED BY: JMS
DRAWN BY: MSC		CHECKED BY: JMS
PROJECT MGR.: AKW		APPROVED BY: AKW
LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT		SECTIONS AND DETAILS
digital engineering		DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDERLIE LA, 70471 PH. (985) 334-4131
ST. TAMMANY PARISH GOVERNMENT		
REVISION		DATE
DESCRIPTION		BY

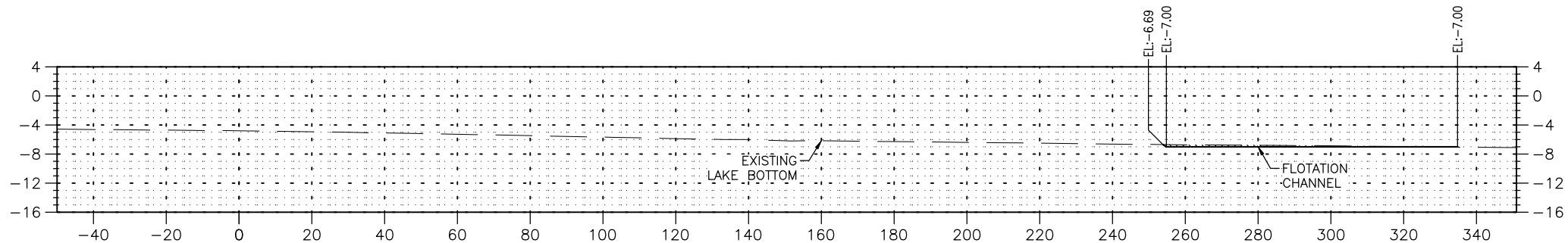
DWG PATH: S:\650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater_20 Design\CA01
DWG NAME: 650-1673_14-31_CROSS SECTIONS
LAYOUT TAB: 14
PLOT DATE: Wednesday, October 01, 2025 @ 3:05pm



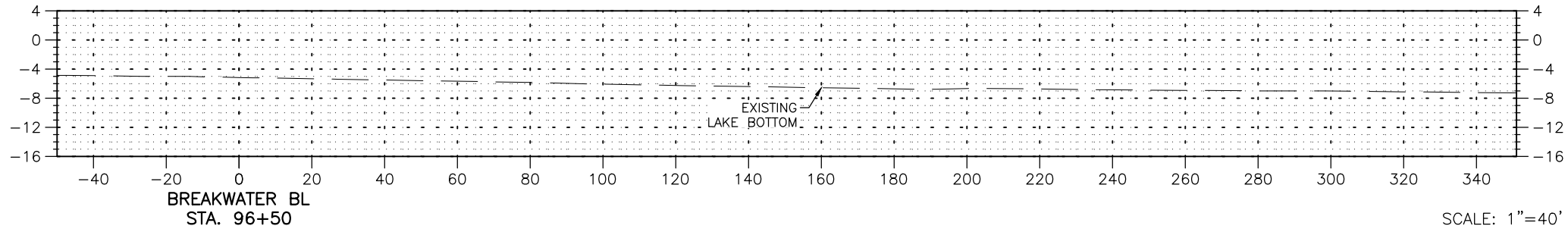
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 85 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 41 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.

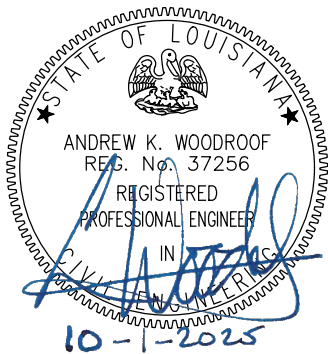


ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 12 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 0 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.

SCALE: 1"=40' HORIZ.
1"=20' VERT.



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MANDERLIE LA, 70471 PH. (985) 334-4131

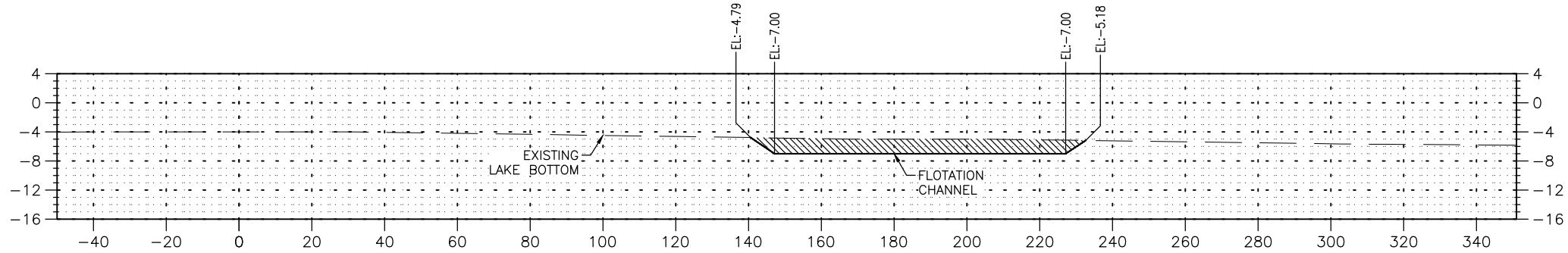
DESIGNED BY: AKW
CHECKED BY: JMS
DRAWN BY: MSC
CHECKED BY: JMS
PROJECT MGR.: AKW
APPROVED BY: AKW

LOWER TCHEFUNCTE RIVER
BREAKWATER PROJECT
CROSS SECTIONS

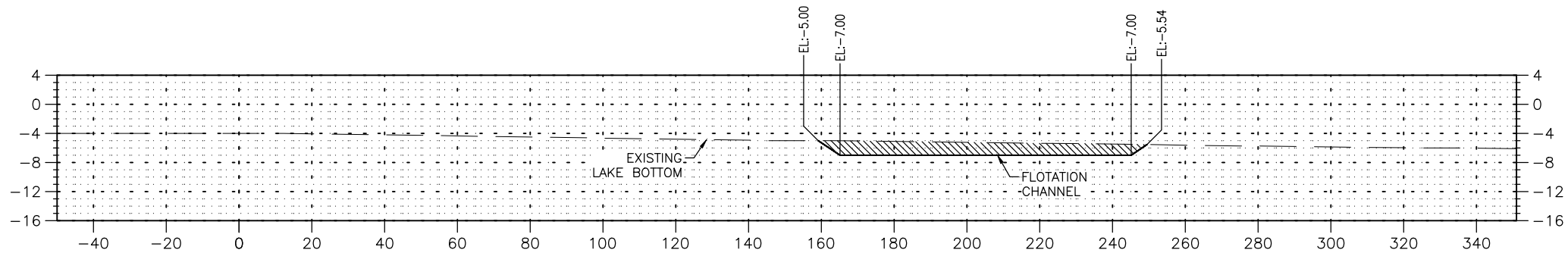
PROJECT NO. DV2100012
DATE MAY, 2025
SCALE
SHEET NO. 14

REVISION	DATE	DESCRIPTION	BY

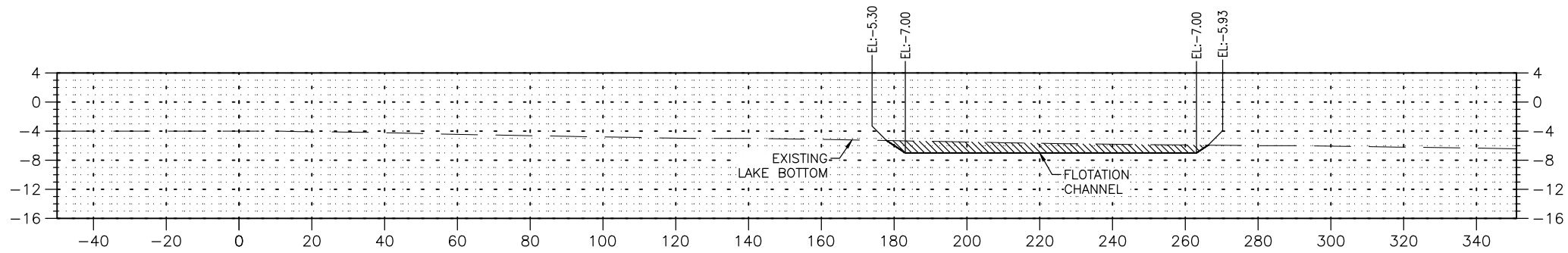
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DWG NAME: 650-1673_14-31_CROSS SECTIONS
LAYOUT TAB: 15
PLOT DATE: Wednesday, October 01, 2025 @ 3:05pm



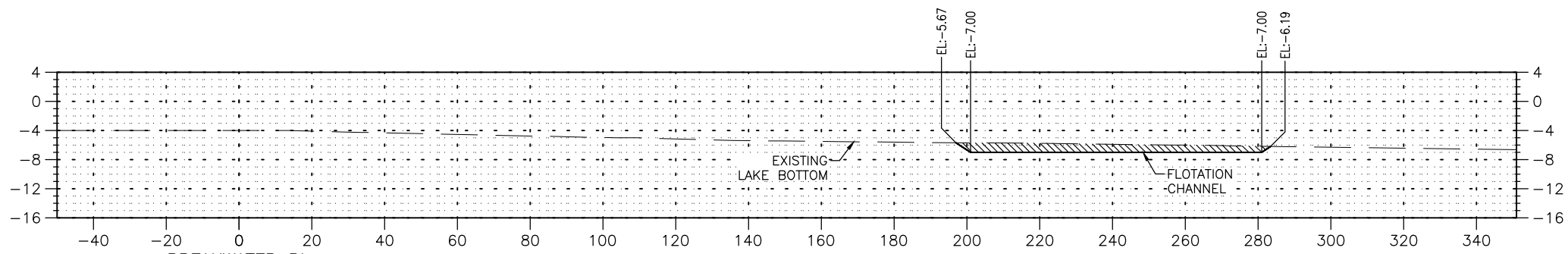
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 298 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 242 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.

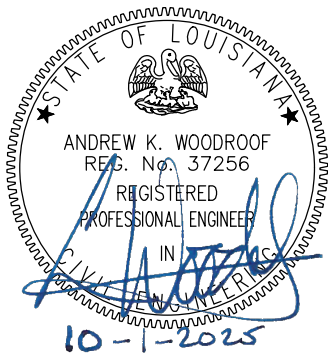


ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 190 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 141 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.

SCALE: 1"=40' HORIZ.
1"=20' VERT.



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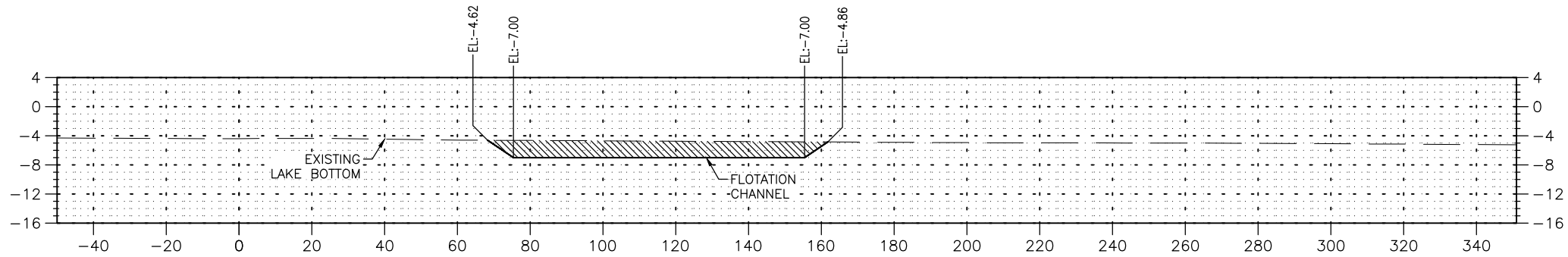
DESIGNED BY: AKW
CHECKED BY: JMS
DRAWN BY: MSC
CHECKED BY: JMS
PROJECT MGR.: AKW
APPROVED BY: AKW

LOWER TCHEFUNCTE RIVER
BREAKWATER PROJECT
CROSS SECTIONS

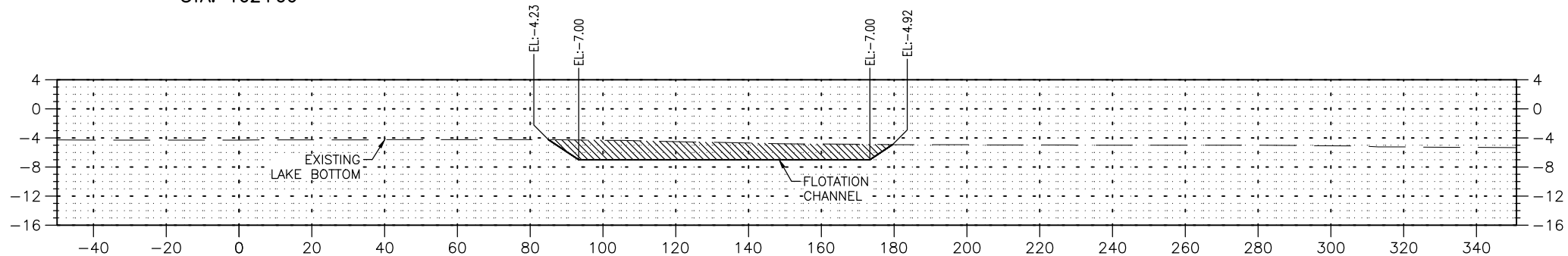
PROJECT NO. DV2100012
DATE MAY, 2025
SCALE
SHEET NO. 15

REVISION	DATE	DESCRIPTION	BY

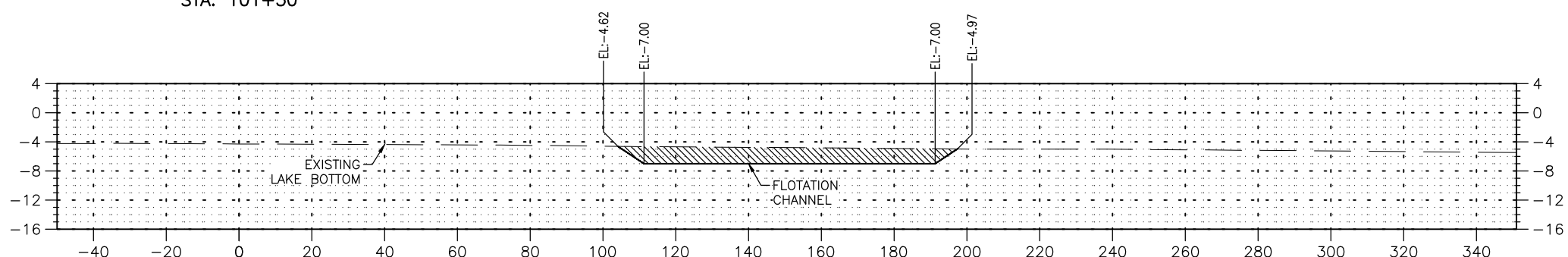
DWG PATH: S:\650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater\20 Design\CAV
DWG NAME: 650-1673_14-31_CROSS SECTIONS
LAYOUT TAB: 16
PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm



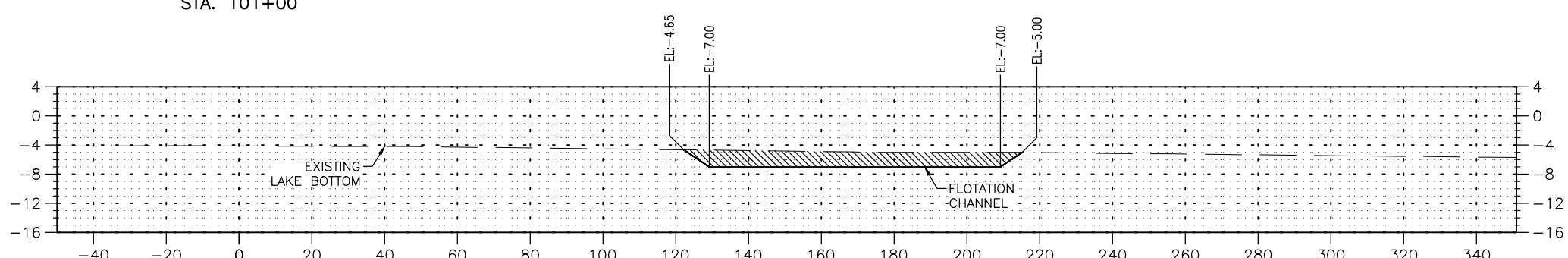
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 375 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 370 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.

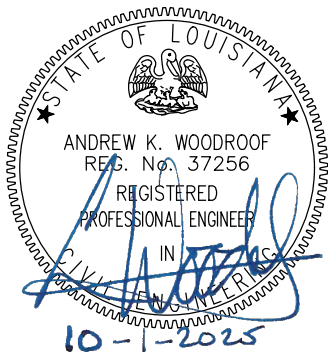


ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 346 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 329 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.

SCALE: 1"=40' HORIZ.
1"=20' VERT.



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MANDERLILLE LA, 70471 PH: (985) 334-4131

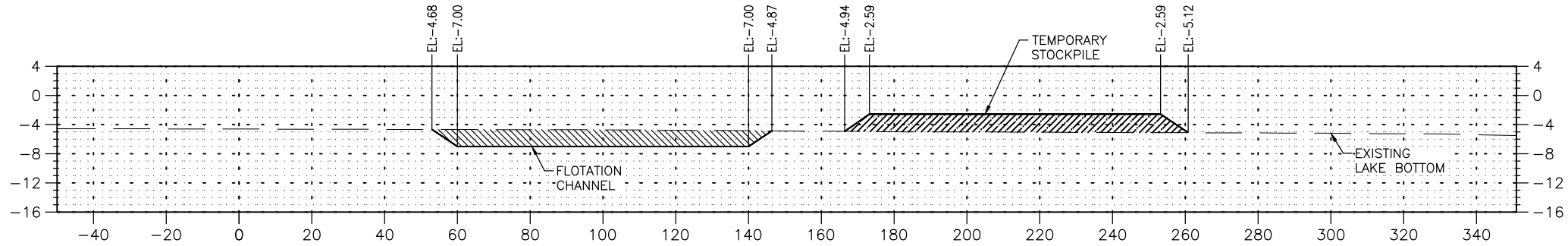
DESIGNED BY: AKW
CHECKED BY: JMS
DRAWN BY: MSC
CHECKED BY: JMS
PROJECT MGR.: AKW
APPROVED BY: AKW

LOWER TCHEFUNCTE RIVER
BREAKWATER PROJECT
CROSS SECTIONS

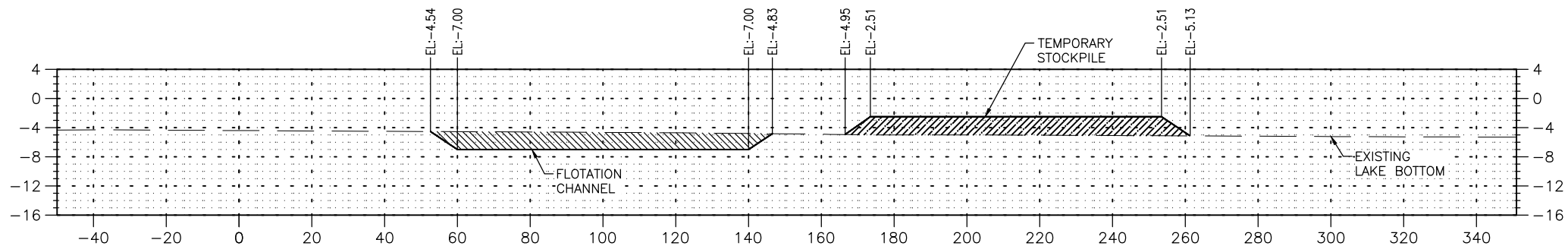
PROJECT NO. DV2100012
DATE MAY, 2025
SCALE
SHEET NO. 16

REVISION	DATE	DESCRIPTION	BY

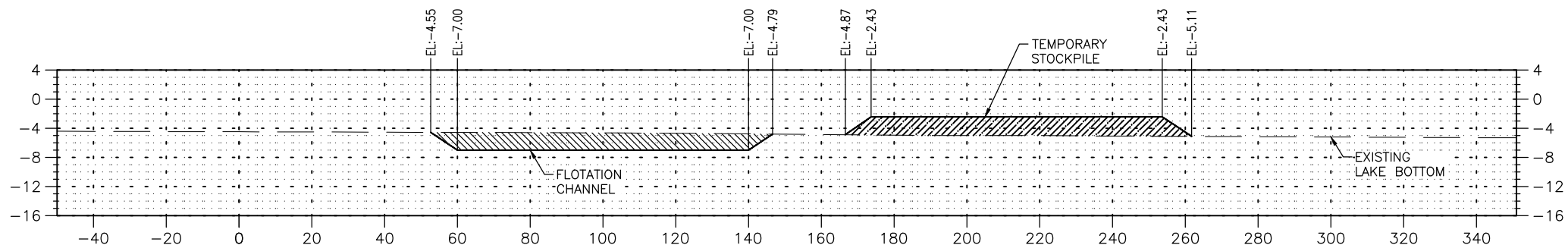
DWG PATH: S:\ 650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater 20 Design\CA01
DWG NAME: 650-1673_14-31_CROSS SECTIONS
PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm
LAYOUT TAB: 17



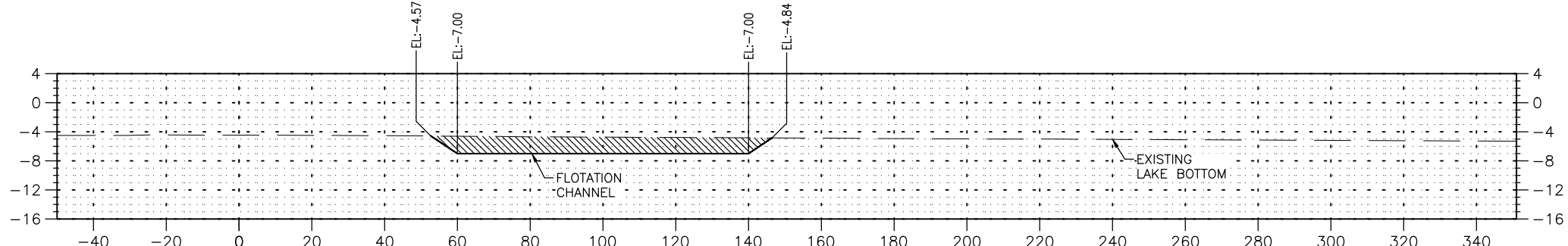
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 370 CU. YDS.
STOCKPILE FILL: 402 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 379 CU. YDS.
STOCKPILE FILL: 413 CU. YDS.

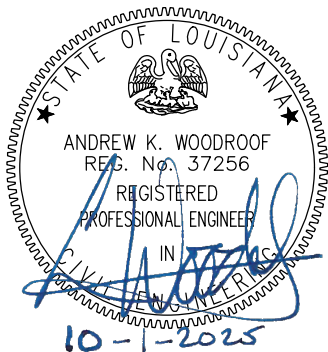


ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 374 CU. YDS.
STOCKPILE FILL: 209 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 365 CU. YDS.
STOCKPILE FILL: 0 CU. YDS.

SCALE: 1"=40' HORIZ.
1"=20' VERT.



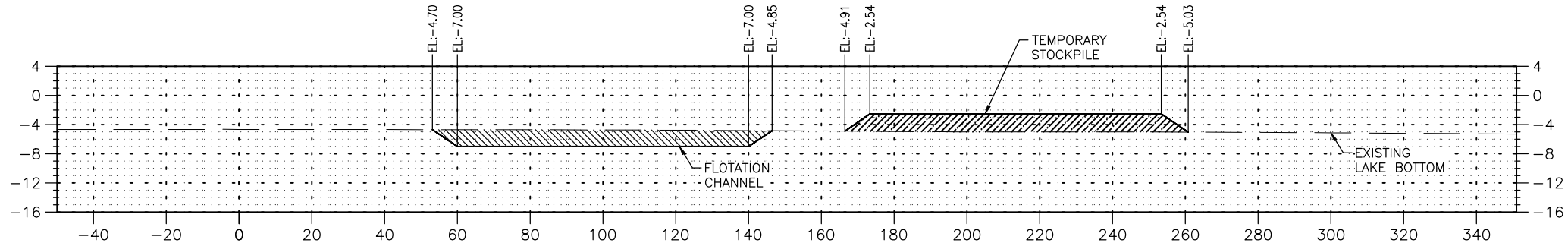
DESIGNED BY: AKW		CHECKED BY: JMS		DRAWN BY: MSC		CHECKED BY: JMS		PROJECT MGR.: AKW		APPROVED BY: AKW	
PROJECT NO.		DATE		SCALE		SHEET NO.		REVISION		DATE	
DV2100012		MAY, 2025				17					
DESCRIPTION											
BY											



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MANDERLILLE LA, 70471 PH. (985) 334-4131

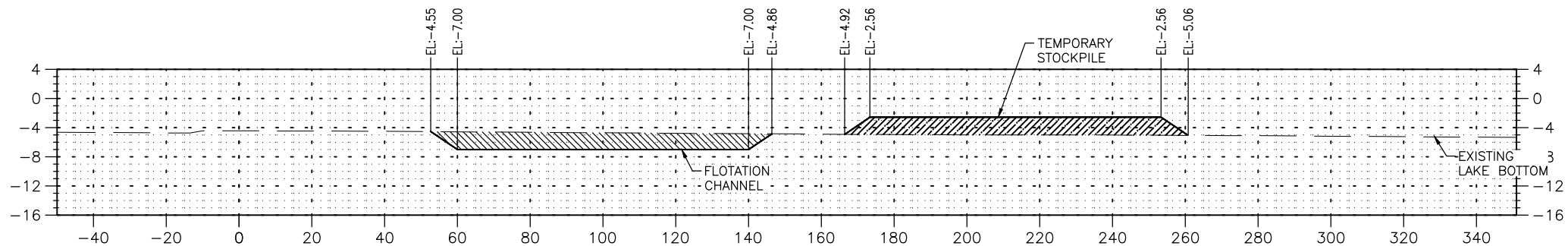
LOWER TCHEFUNCTE RIVER
BREAKWATER PROJECT
CROSS SECTIONS

DWG PATH: S:\ 650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater 20 Design\CAV
DWG NAME: 650-1673_14-31_CROSS SECTIONS
LAYOUT TAB: 18
PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm



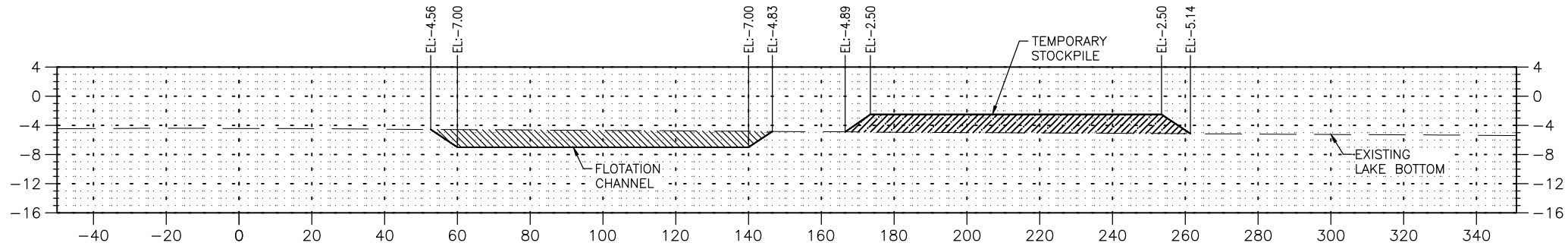
BREAKWATER BL
STA. 106+00

ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 366 CU. YDS.
STOCKPILE FILL: 394 CU. YDS.



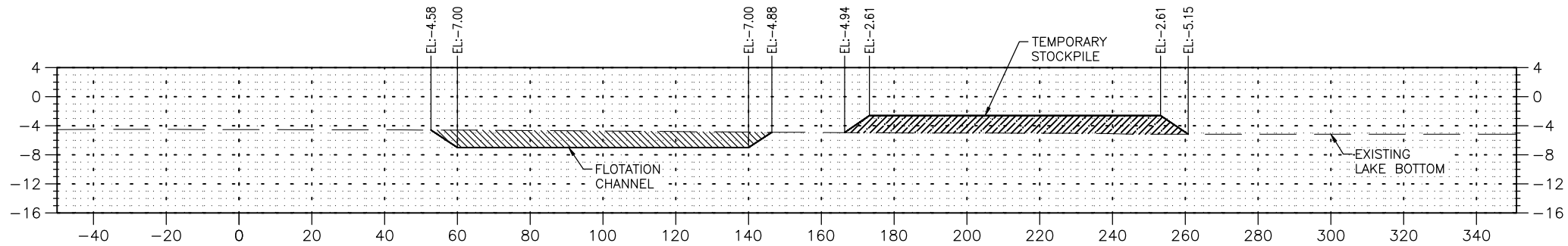
BREAKWATER BL
STA. 105+50

ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 371 CU. YDS.
STOCKPILE FILL: 401 CU. YDS.



BREAKWATER BL
STA. 105+00

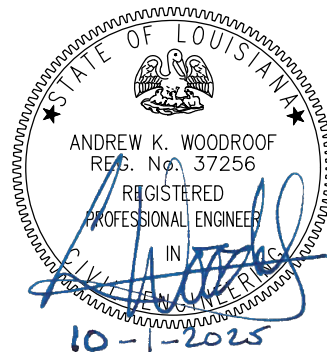
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 370 CU. YDS.
STOCKPILE FILL: 400 CU. YDS.



BREAKWATER BL
STA. 104+50

ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 365 CU. YDS.
STOCKPILE FILL: 394 CU. YDS.

SCALE: 1"=40' HORIZ.
1"=20' VERT.



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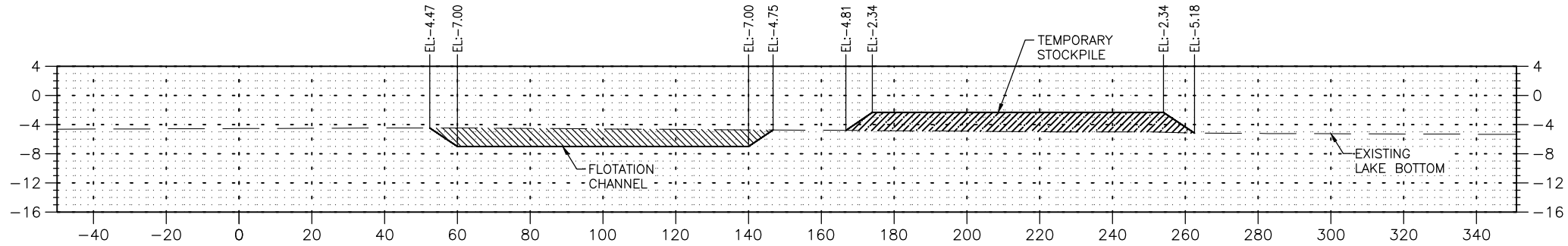
DESIGNED BY: AKW
CHECKED BY: JMS
DRAWN BY: MSC
CHECKED BY: JMS
PROJECT MGR.: AKW
APPROVED BY: AKW

LOWER TCHEFUNCTE RIVER
BREAKWATER PROJECT
CROSS SECTIONS

PROJECT NO.
DV2100012
DATE
MAY, 2025
SCALE
SHEET NO.
18

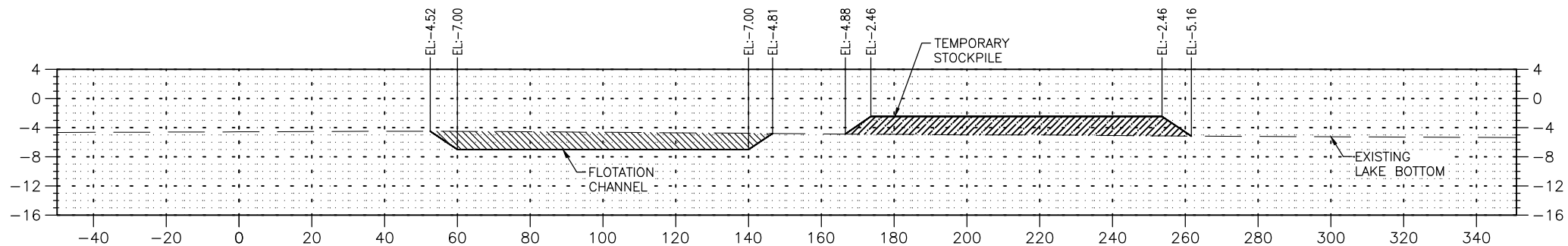
REVISION	DATE	DESCRIPTION	BY

DWG PATH: S:\650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater 20 Design\CAV
DWG NAME: 650-1673_14-31_CROSS SECTIONS
LAYOUT TAB: 19
PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm



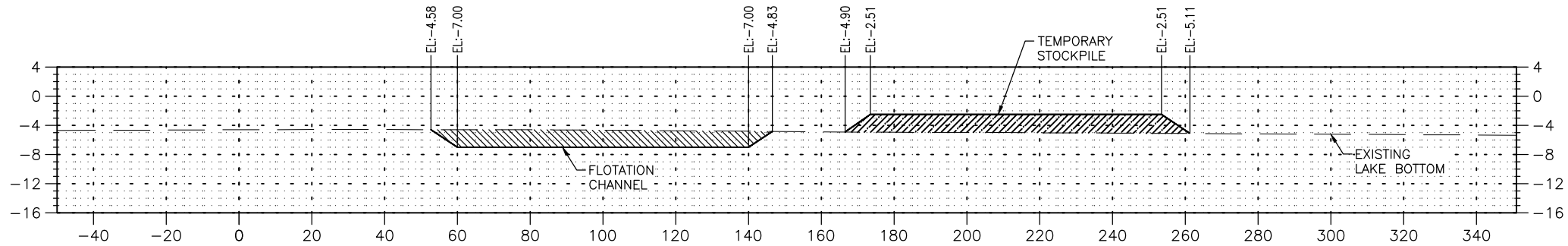
BREAKWATER BL
STA. 108+00

ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 385 CU. YDS.
STOCKPILE FILL: 420 CU. YDS.



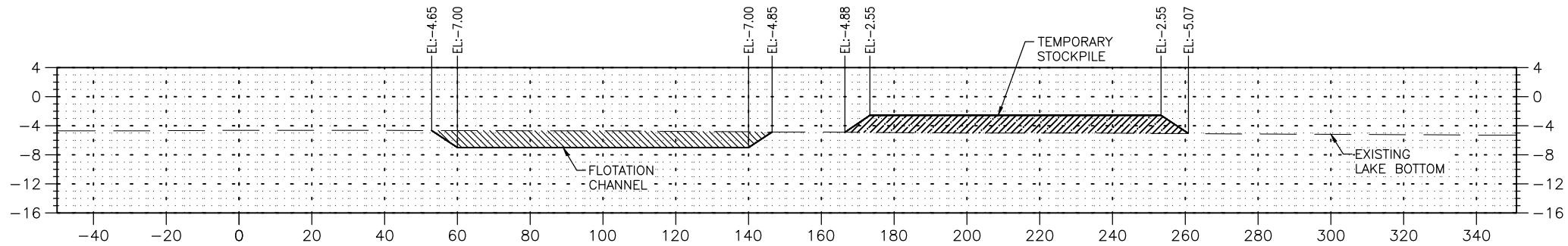
BREAKWATER BL
STA. 107+50

ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 378 CU. YDS.
STOCKPILE FILL: 409 CU. YDS.



BREAKWATER BL
STA. 107+00

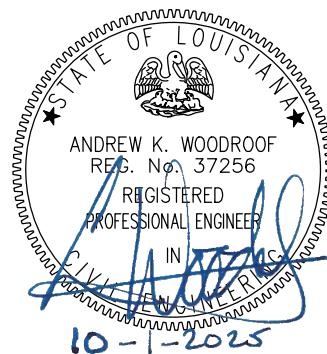
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 371 CU. YDS.
STOCKPILE FILL: 399 CU. YDS.



BREAKWATER BL
STA. 106+50

ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 364 CU. YDS.
STOCKPILE FILL: 395 CU. YDS.

SCALE: 1"=40' HORIZ.
1"=20' VERT.



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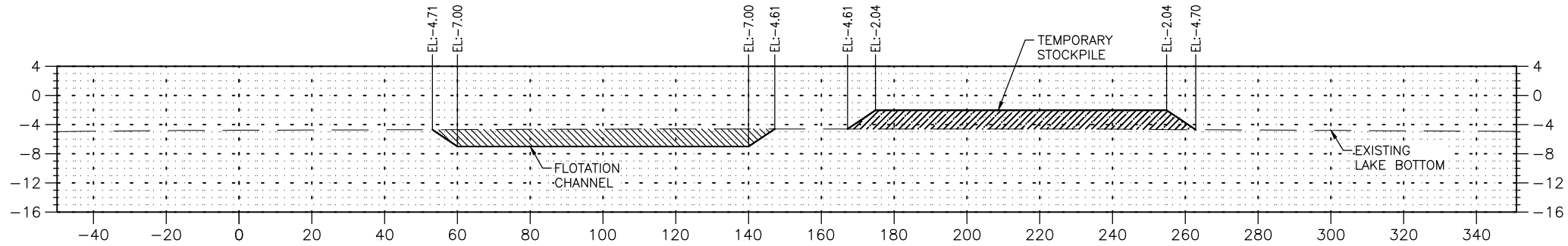
DESIGNED BY: AKW
CHECKED BY: JMS
DRAWN BY: MSC
CHECKED BY: JMS
PROJECT MGR.: AKW
APPROVED BY: AKW

LOWER TCHEFUNCTE RIVER
BREAKWATER PROJECT
CROSS SECTIONS

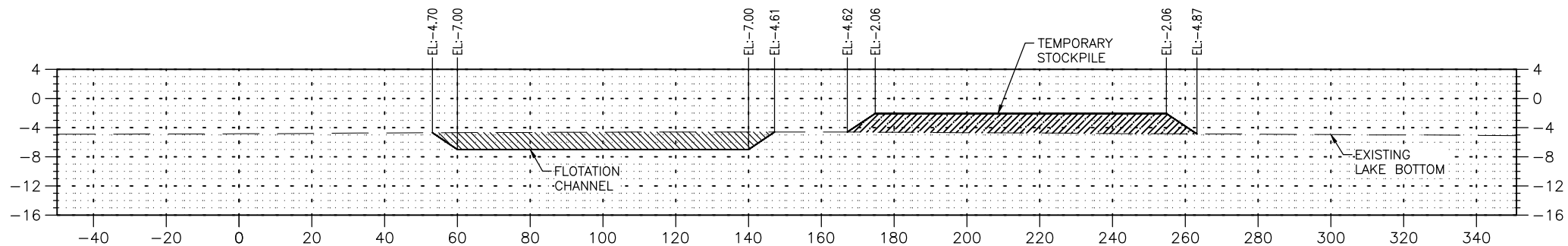
PROJECT NO.
DV2100012
DATE
MAY, 2025
SCALE
SHEET NO.
19

REVISION	DATE	DESCRIPTION	BY

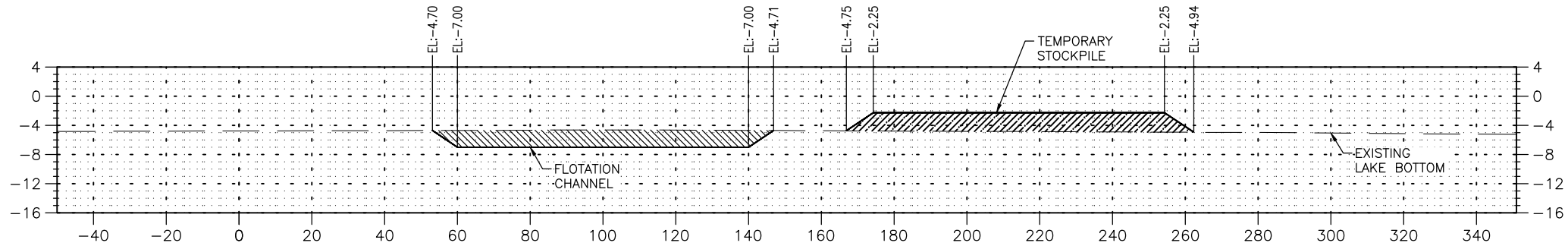
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DWG NAME: 650-1673_14-31_CROSS SECTIONS
PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm



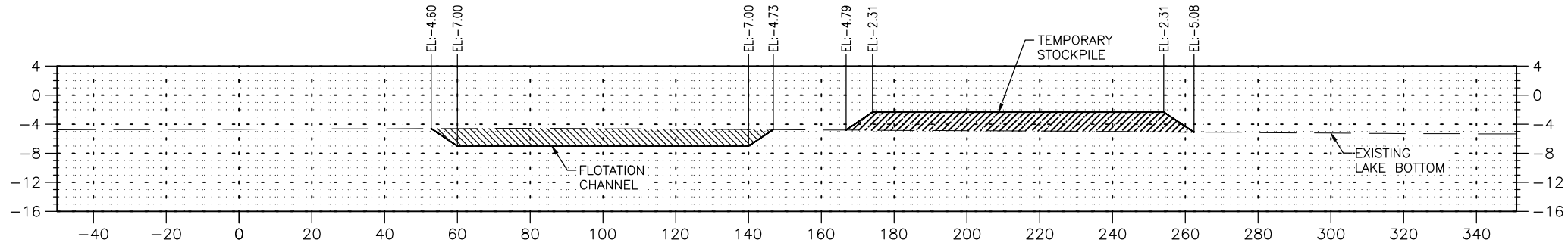
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 381 CU. YDS.
STOCKPILE FILL: 428 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 380 CU. YDS.
STOCKPILE FILL: 429 CU. YDS.

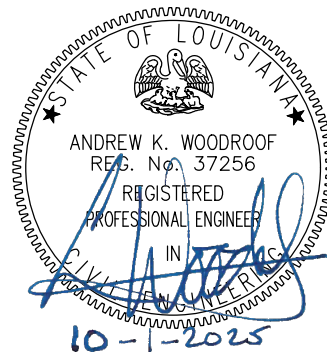


ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 381 CU. YDS.
STOCKPILE FILL: 423 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 386 CU. YDS.
STOCKPILE FILL: 425 CU. YDS.

SCALE: 1"=40' HORIZ.
1"=20' VERT.



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CHASE CENTER, 3500 HWY 190, SUITE 201
MANDERLILLE LA, 70471 PH. (985) 334-4131

DESIGNED BY: AKW
CHECKED BY: JMS
DRAWN BY: MSC
CHECKED BY: JMS
PROJECT MGR.: AKW
APPROVED BY: AKW

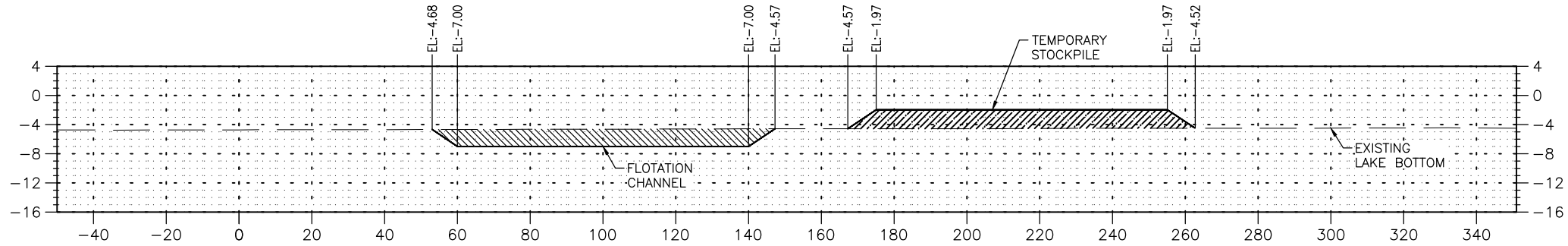
**LOWER TCHEFUNCTE RIVER
BREAKWATER PROJECT**

CROSS SECTIONS

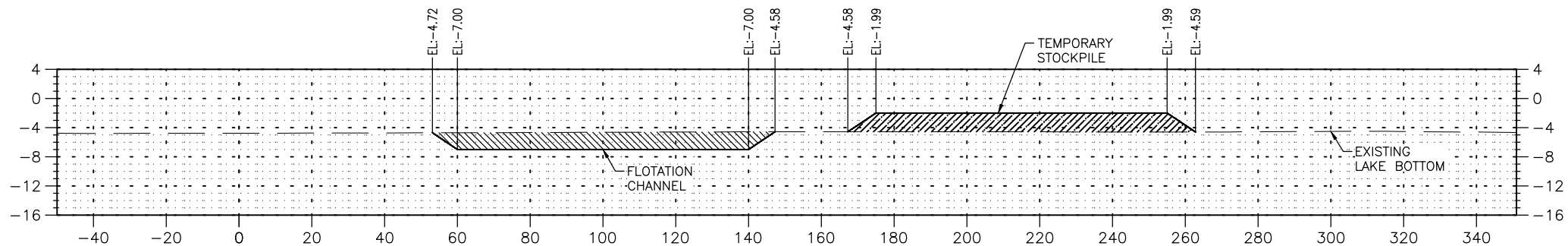
PROJECT NO.
DV2100012
DATE
MAY, 2025
SCALE
SHEET NO.
20

REVISION	DATE	DESCRIPTION	BY

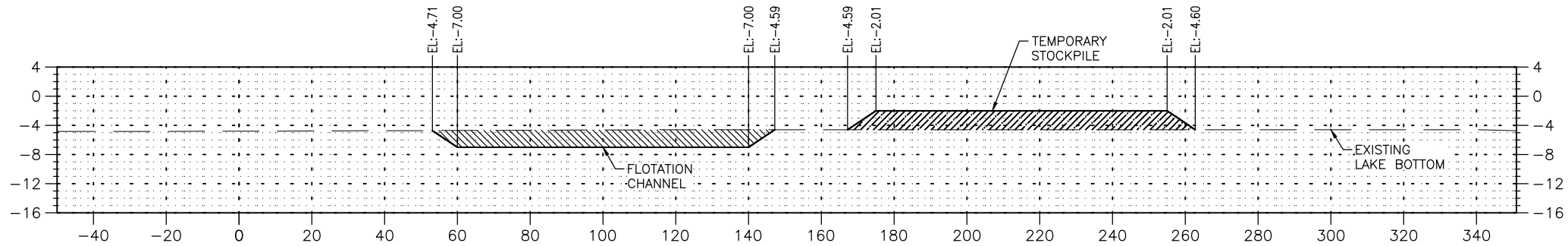
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DWG NAME: 650-1673_14-31_CROSS SECTIONS
LAYOUT TAB: 21
PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm



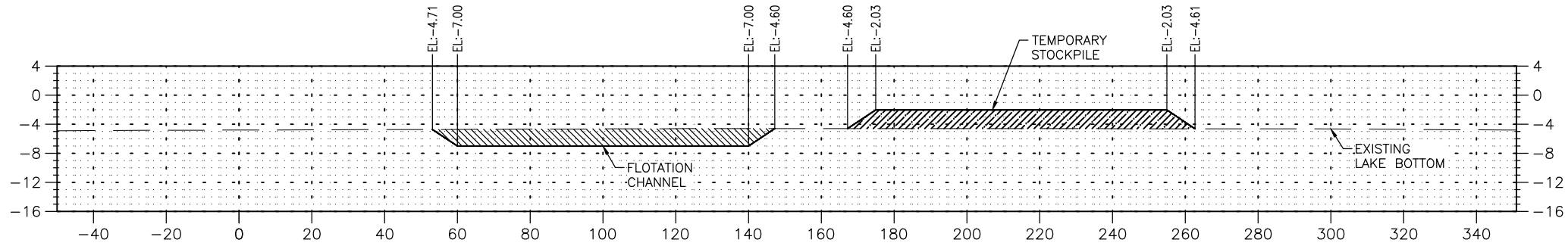
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 381 CU. YDS.
STOCKPILE FILL: 421 CU. YDS.



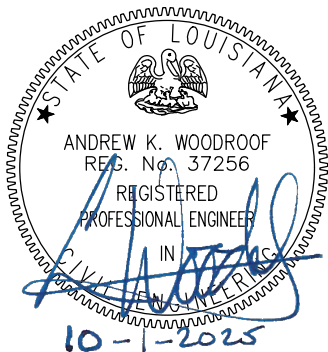
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 381 CU. YDS.
STOCKPILE FILL: 421 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 381 CU. YDS.
STOCKPILE FILL: 420 CU. YDS.

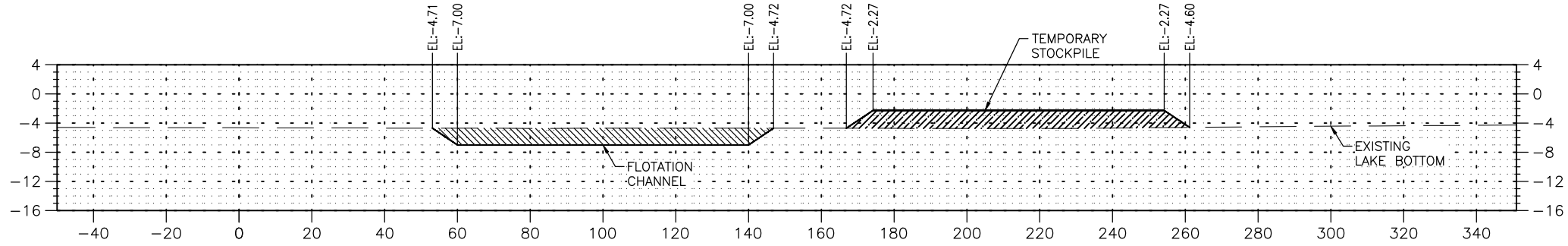


ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 381 CU. YDS.
STOCKPILE FILL: 420 CU. YDS.

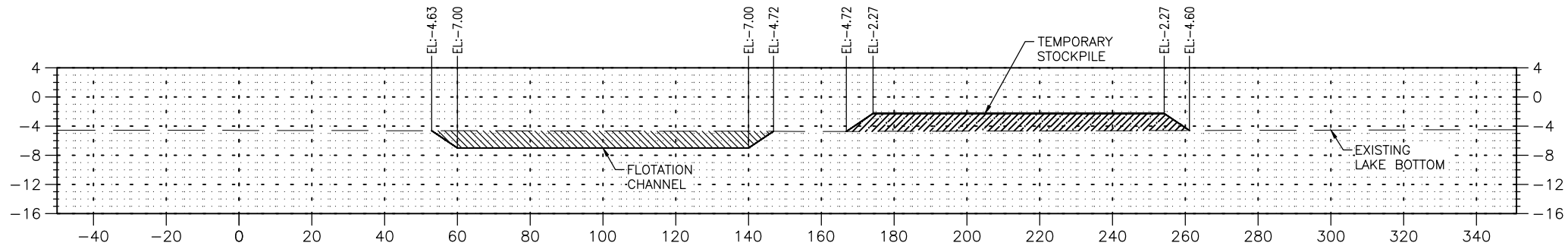


LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT CROSS SECTIONS		DESIGNED BY: AKW	 digital engineering DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDEVILLE LA, 70471 PH. (985) 334-4131						
		CHECKED BY: JMS							
		DRAWN BY: MSC							
		CHECKED BY: JMS							
		PROJECT MGR.: AKW							
		APPROVED BY: AKW							
PROJECT NO. DV2100012									
DATE MAY, 2025									
SCALE									
SHEET NO. 21									
		REVISION	DATE	DESCRIPTION					

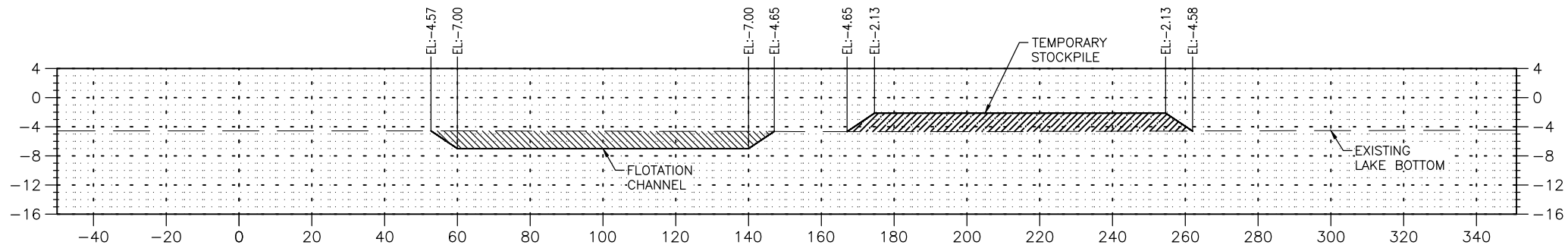
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DWG NAME: 650-1673_14-31_CROSS SECTIONS
PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm
LAYOUT TAB: 22



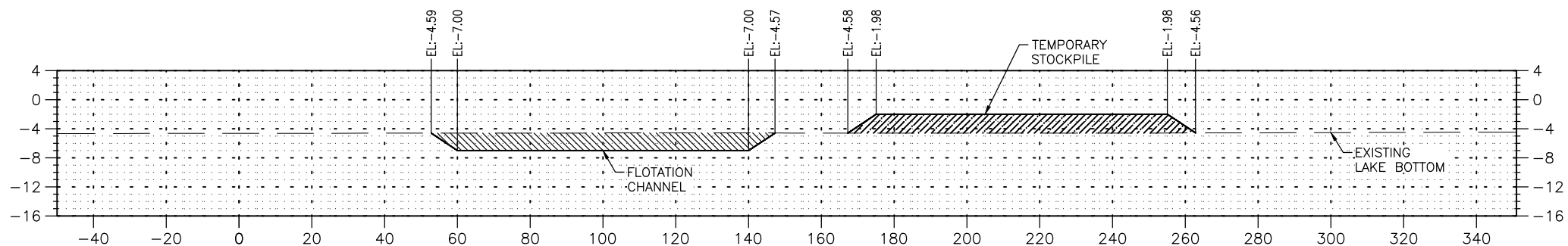
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 371 CU. YDS.
STOCKPILE FILL: 391 CU. YDS.



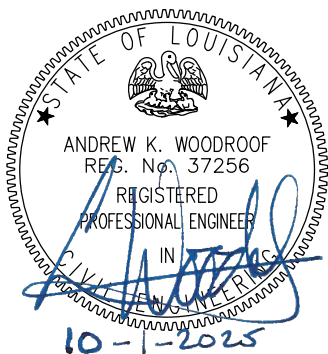
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 381 CU. YDS.
STOCKPILE FILL: 397 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 390 CU. YDS.
STOCKPILE FILL: 416 CU. YDS.

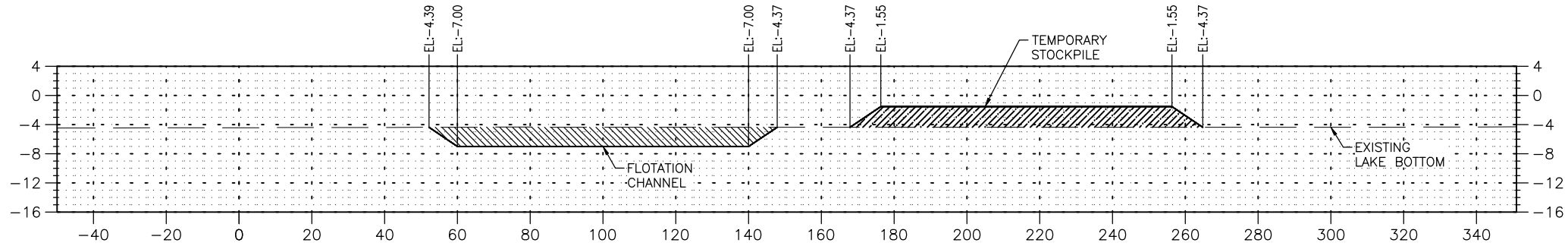


ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 387 CU. YDS.
STOCKPILE FILL: 422 CU. YDS.

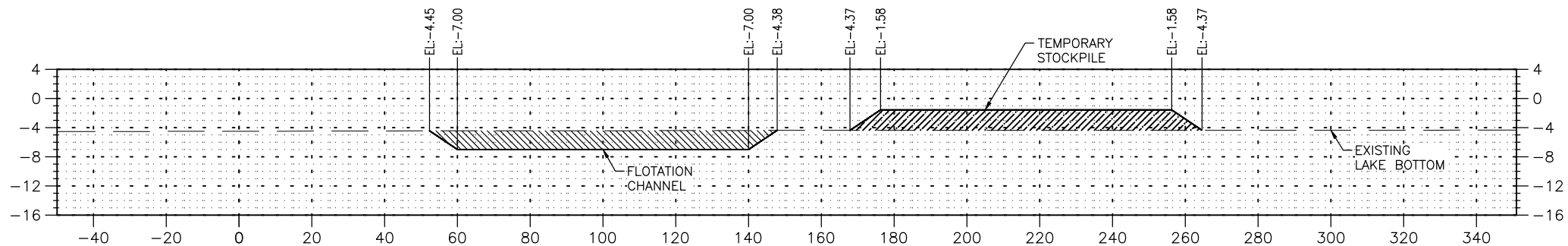


DESIGNED BY: AKW		CHECKED BY: JMS		DRAWN BY: MSC		CHECKED BY: JMS		PROJECT MGR.: AKW		APPROVED BY: AKW	
PROJECT NO.		DATE		SCALE		SHEET NO.		BY		DESCRIPTION	
DV2100012		MAY, 2025				22					
LOWER TCHEFUNCTE RIVER		BREAKWATER PROJECT		CROSS SECTIONS							

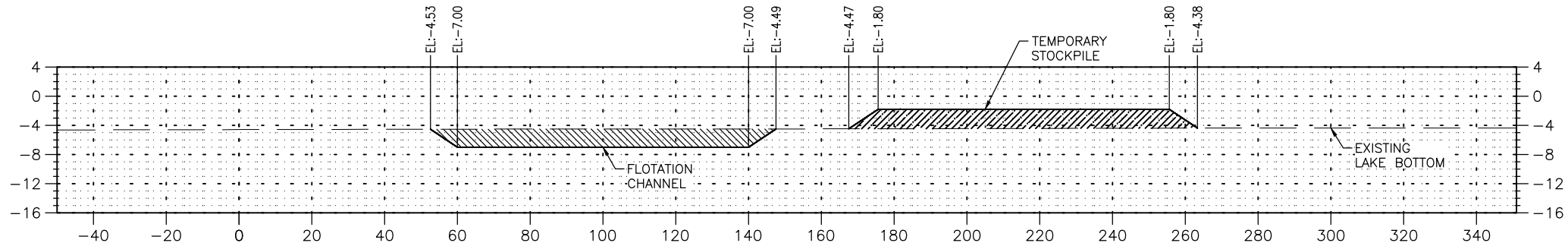
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DWG NAME: 650-1673_14-31_CROSS SECTIONS
PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm



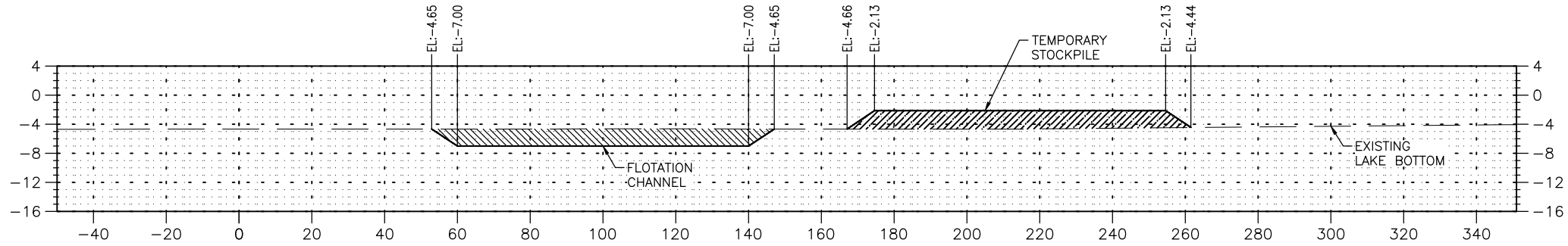
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 424 CU. YDS.
STOCKPILE FILL: 460 CU. YDS.



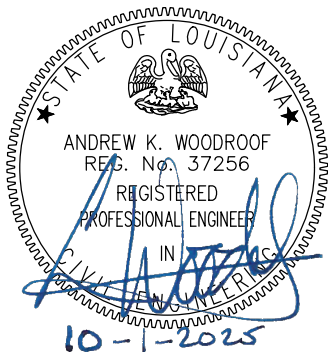
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 412 CU. YDS.
STOCKPILE FILL: 442 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 701 CU. YDS.
STOCKPILE FILL: 1108 CU. YDS.

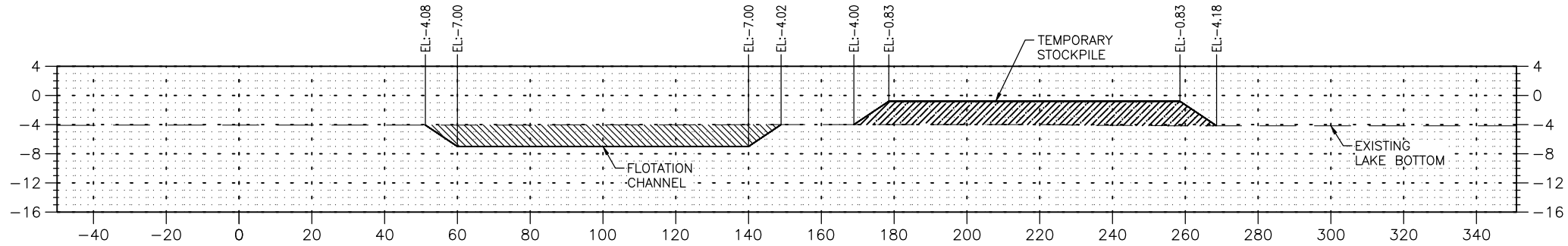


ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 374 CU. YDS.
STOCKPILE FILL: 398 CU. YDS.

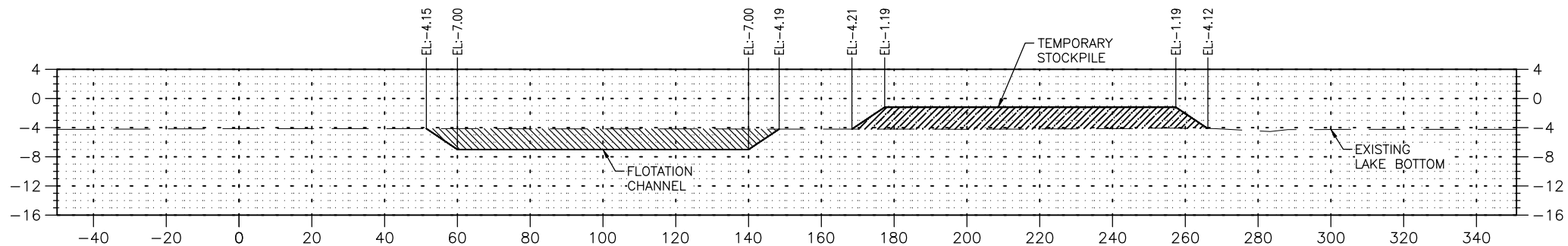


digital engineering DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDEVILLE LA, 70471 PH. (985) 334-4131													
DESIGNED BY: AKW		CHECKED BY: JMS		DRAWN BY: MSC		CHECKED BY: JMS		PROJECT MGR.: AKW		APPROVED BY: AKW			
LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT CROSS SECTIONS													
PROJECT NO.						DV2100012							
DATE						MAY, 2025							
SCALE													
SHEET NO.						23							
						REVISION		DATE		DESCRIPTION			

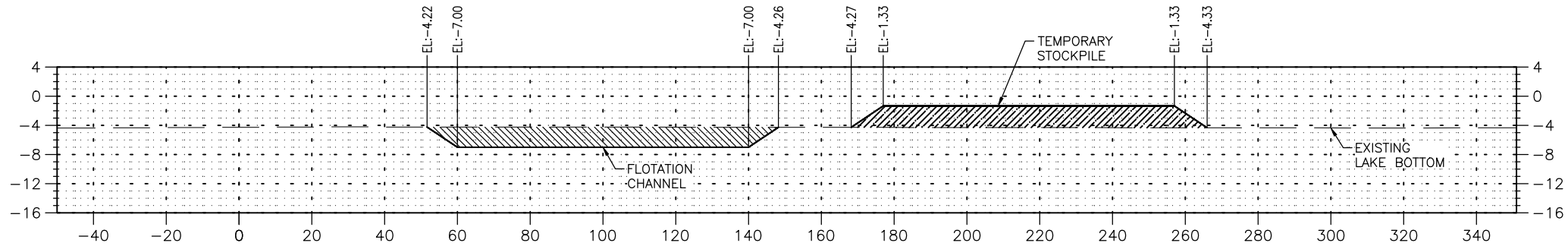
DWG PATH: S:\ 650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater 20 Design\CAV
DWG NAME: 650-1673_14-31_CROSS SECTIONS
PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm
LAYOUT TAB: 24



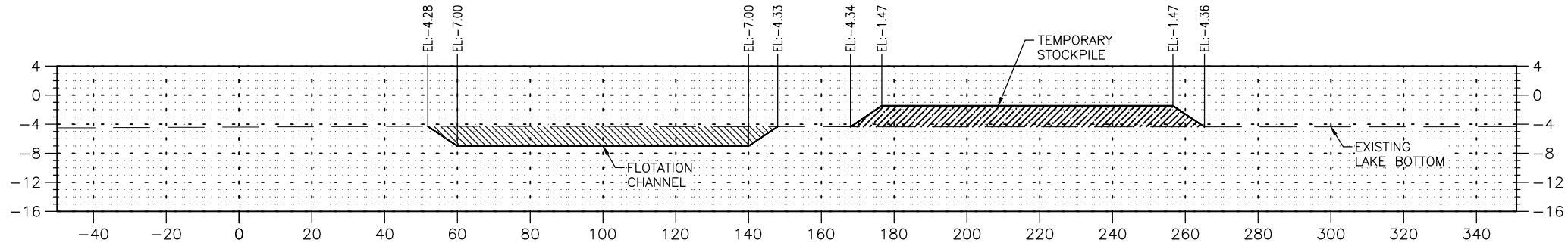
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 475 CU. YDS.
STOCKPILE FILL: 514 CU. YDS.



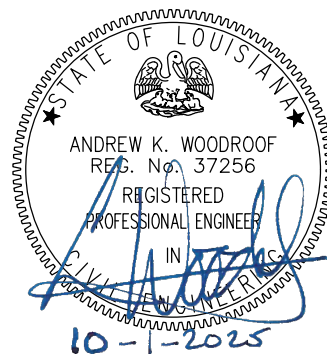
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 459 CU. YDS.
STOCKPILE FILL: 490 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 446 CU. YDS.
STOCKPILE FILL: 482 CU. YDS.

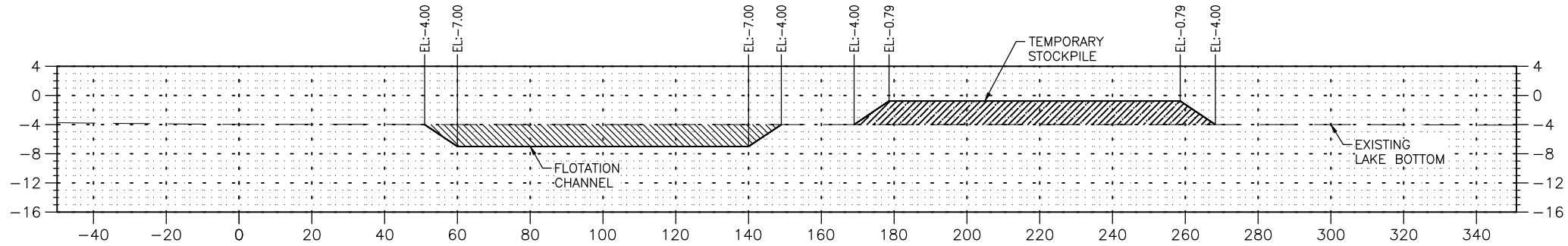


ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 435 CU. YDS.
STOCKPILE FILL: 468 CU. YDS.

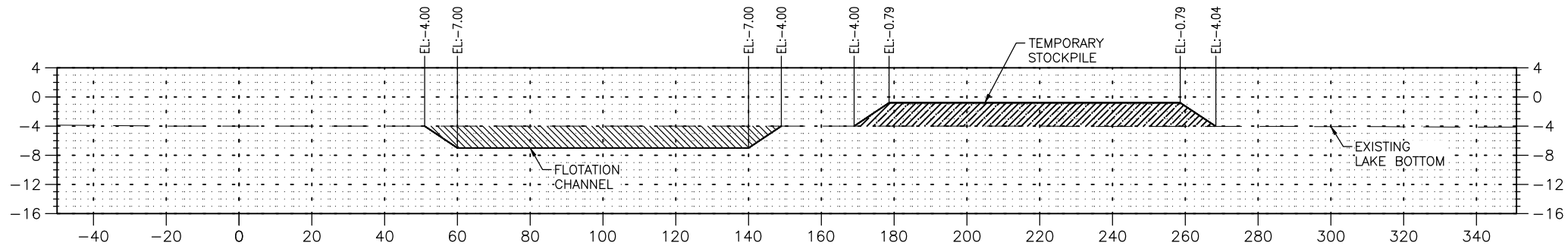


PROJECT NO. DV2100012		DATE MAY, 2025		SCALE		SHEET NO. 24		LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT		DESIGNED BY: AKW CHECKED BY: JMS DRAWN BY: MSC CHECKED BY: JMS PROJECT MGR.: AKW APPROVED BY: AKW		 digital engineering DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER 3500 HWY 190, SUITE 201 MANDEVILLE LA, 70471 PH. (985) 334-4131		 ST. TAMMANY PARISH GOVERNMENT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

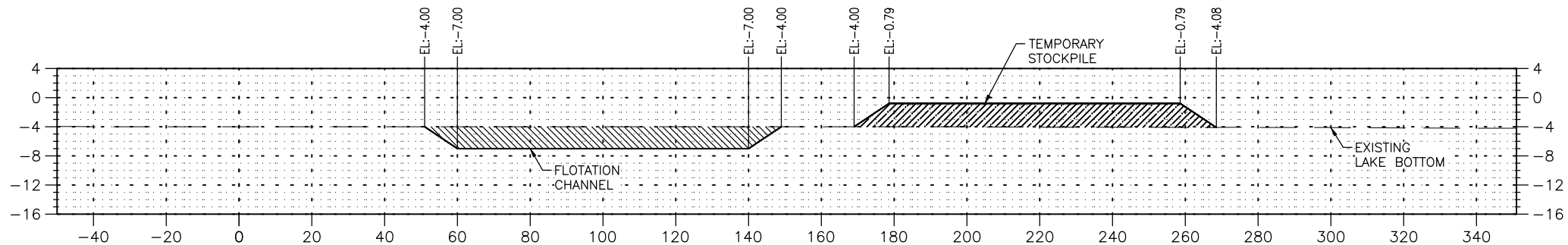
DWG PATH: S:\650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater 20 Design\CA01
DWG NAME: 650-1673_14-31_CROSS SECTIONS
LAYOUT TAB: 25
PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm



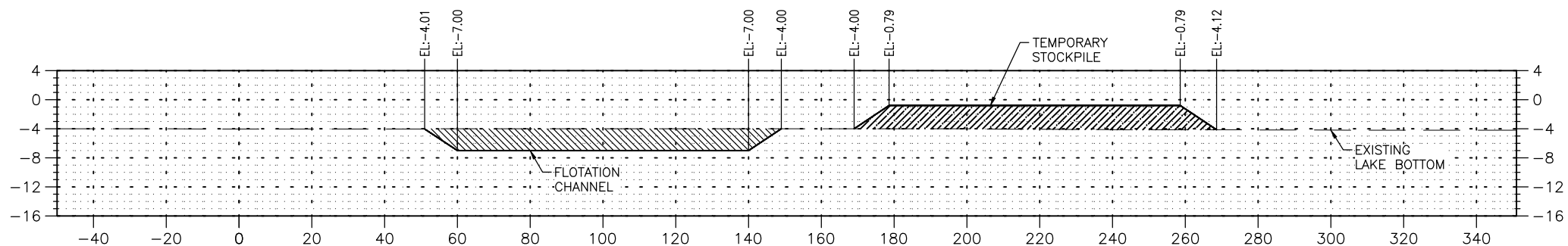
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 495 CU. YDS.
STOCKPILE FILL: 535 CU. YDS.



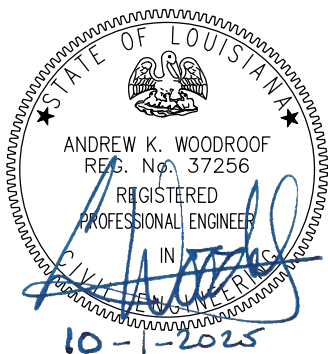
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 495 CU. YDS.
STOCKPILE FILL: 539 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 495 CU. YDS.
STOCKPILE FILL: 542 CU. YDS.

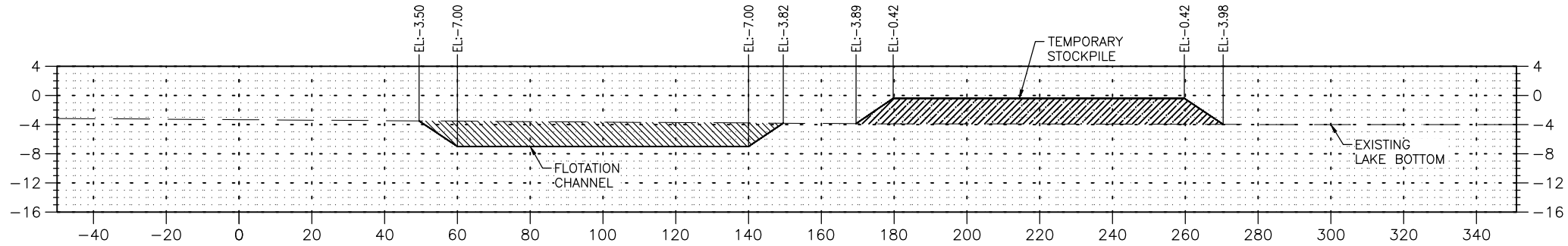


ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 490 CU. YDS.
STOCKPILE FILL: 541 CU. YDS.

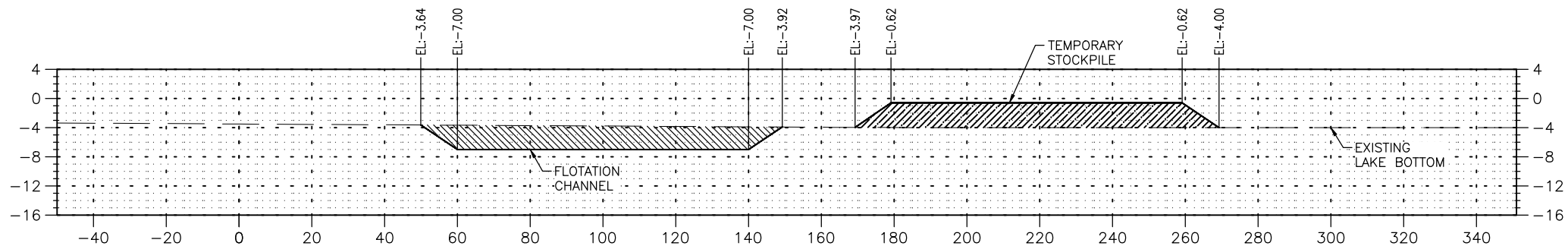


PROJECT NO.			DV2100012												
DATE			MAY, 2025												
SCALE															
SHEET NO.			25												
CROSS SECTIONS						DESIGNED BY: AKW									
LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT						CHECKED BY: JMS									
						DRAWN BY: MSC									
						CHECKED BY: JMS									
						PROJECT MGR.: AKW									
						APPROVED BY: AKW									
						 digital engineering DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDERVILLE LA, 70471 PH. (985) 334-4131									
												REVISION	DATE	DESCRIPTION	BY

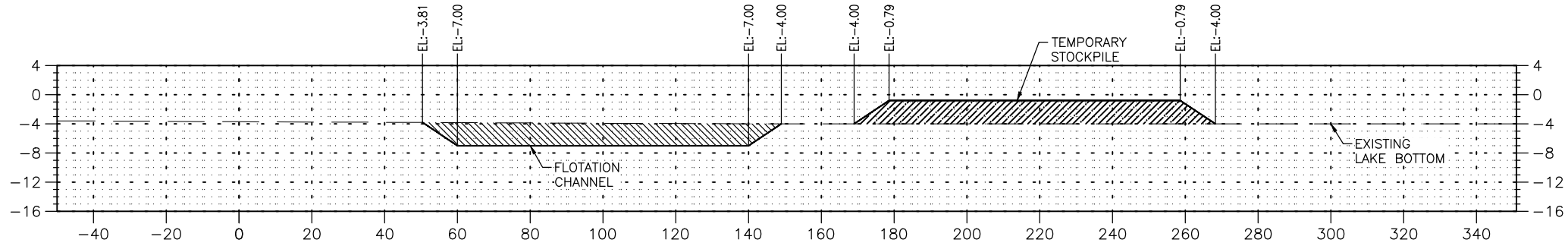
DWG PATH: S:\650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater 20 Design\CA01
DWG NAME: 650-1673_14-31_CROSS SECTIONS
LAYOUT TAB: 26
PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm



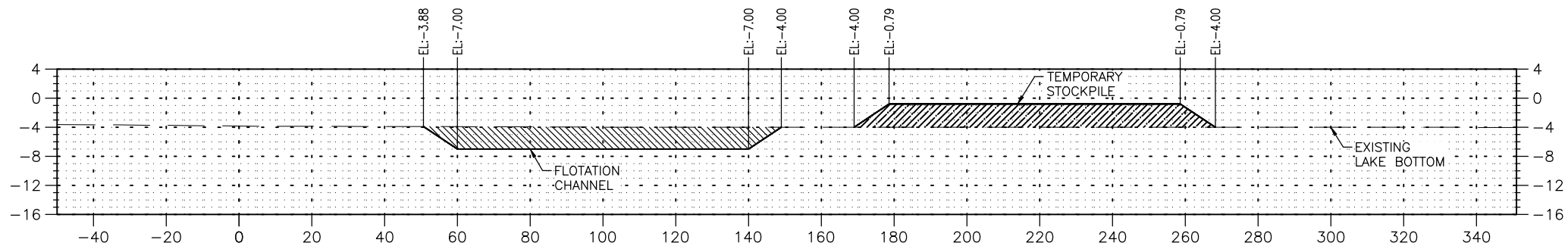
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 546 CU. YDS.
STOCKPILE FILL: 575 CU. YDS.



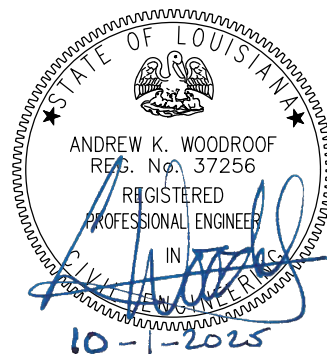
ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 523 CU. YDS.
STOCKPILE FILL: 549 CU. YDS.



ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 506 CU. YDS.
STOCKPILE FILL: 533 CU. YDS.

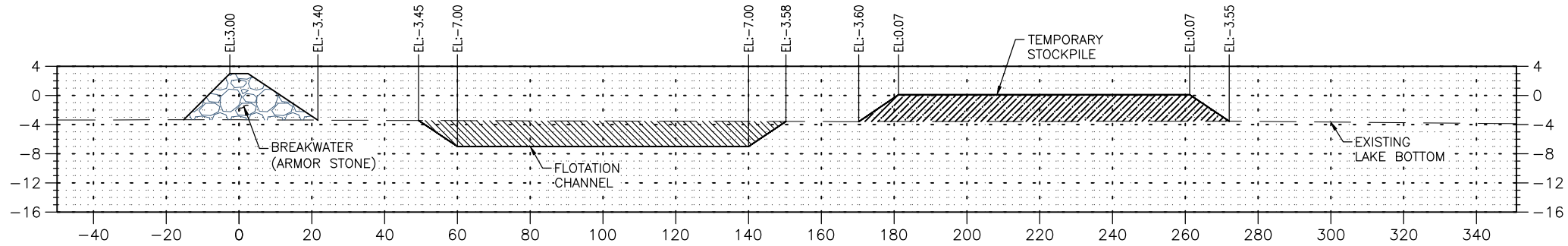


ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 498 CU. YDS.
STOCKPILE FILL: 533 CU. YDS.

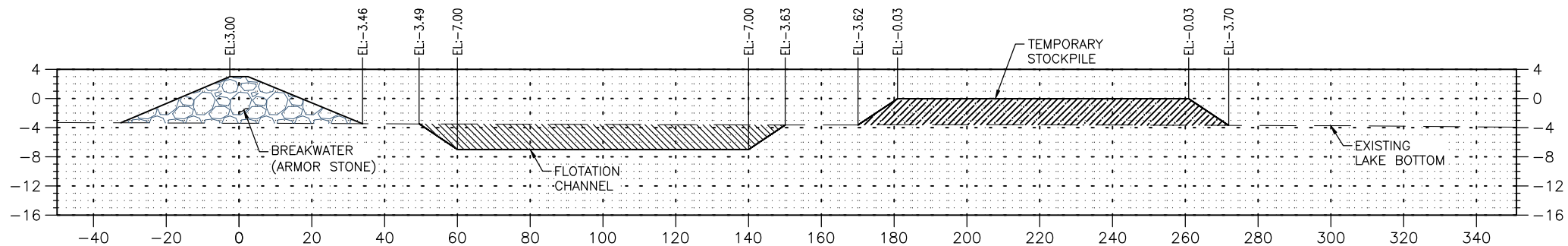


PROJECT NO. DV2100012		DATE MAY, 2025		SCALE		SHEET NO. 26		LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT		DESIGNED BY: AKW CHECKED BY: JMS DRAWN BY: MSC CHECKED BY: JMS PROJECT MGR.: AKW APPROVED BY: AKW		 digital engineering DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER 3500 HWY 190, SUITE 201 MANDEVILLE LA, 70471 PH. (985) 334-4131		 ST. TAMMANY PARISH GOVERNMENT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

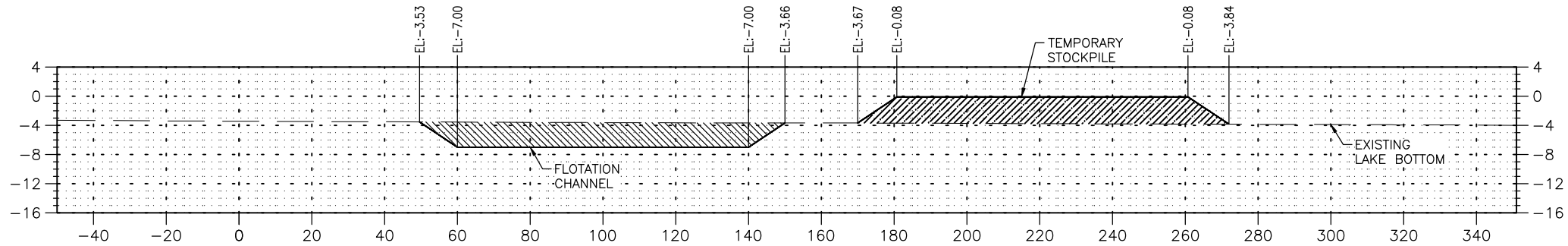
DWG PATH: S:\ 650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater 20 Design\CAV\ PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm
DWG NAME: 650-1673_14-31_CROSS SECTIONS LAYOUT TAB: 27



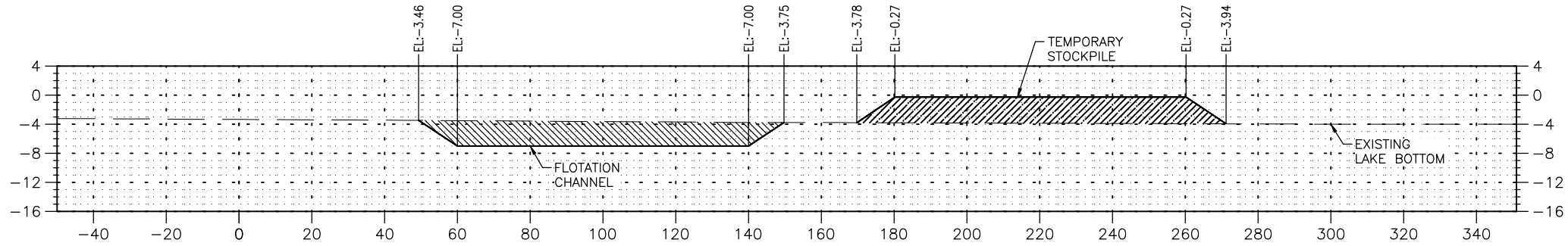
ARMOR FILL: 331 CU. YDS.
CHANNEL CUT: 579 CU. YDS.
STOCKPILE FILL: 610 CU. YDS.



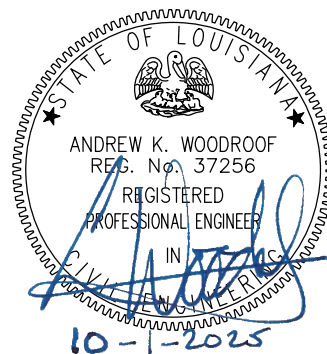
ARMOR FILL: 208 CU. YDS.
CHANNEL CUT: 570 CU. YDS.
STOCKPILE FILL: 613 CU. YDS.



ARMOR FILL: 1 CU. YDS.
CHANNEL CUT: 566 CU. YDS.
STOCKPILE FILL: 611 CU. YDS.

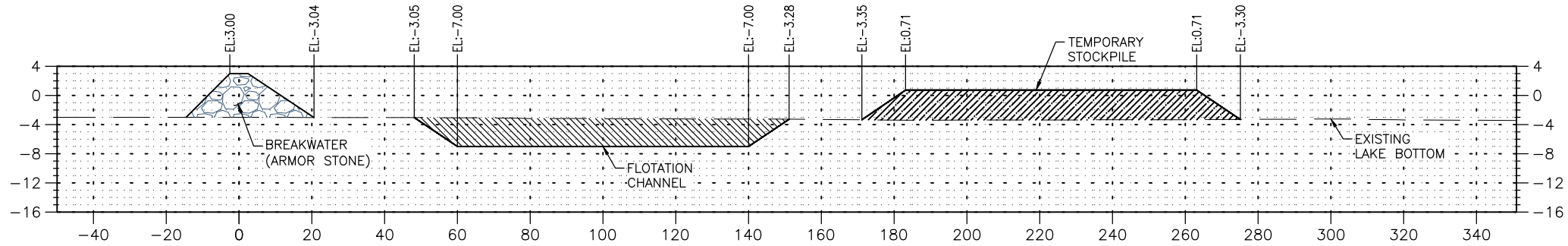


ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 561 CU. YDS.
STOCKPILE FILL: 595 CU. YDS.



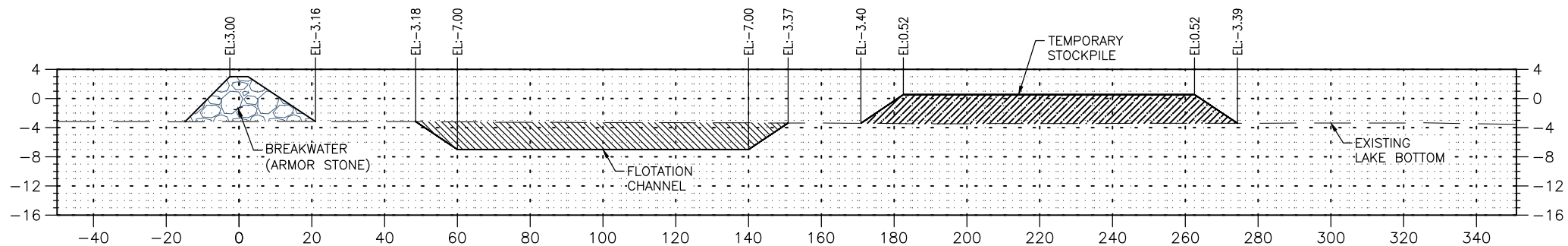
PROJECT NO. DV2100012		DATE MAY, 2025		SCALE		SHEET NO. 27		LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT		CROSS SECTIONS	
DESIGNED BY: AKW		CHECKED BY: JMS		DRAWN BY: MSC		CHECKED BY: JMS		PROJECT MGR.: AKW		APPROVED BY: AKW	
 digital engineering DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER 3500 HWY 190, SUITE 201 MANDEVILLE LA, 70471 PH. (985) 334-4131		 ST. TAMMANY PARISH GOVERNMENT		DESIGNED BY: AKW		CHECKED BY: JMS		DRAWN BY: MSC		CHECKED BY: JMS	
				PROJECT MGR.: AKW		APPROVED BY: AKW					
								REVISION		DATE	
										DESCRIPTION	
										BY	

DWG PATH: S:\650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater 20 Design\CAV
DWG NAME: 650-1673_14-31_CROSS SECTIONS
LAYOUT TAB: 28
PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm



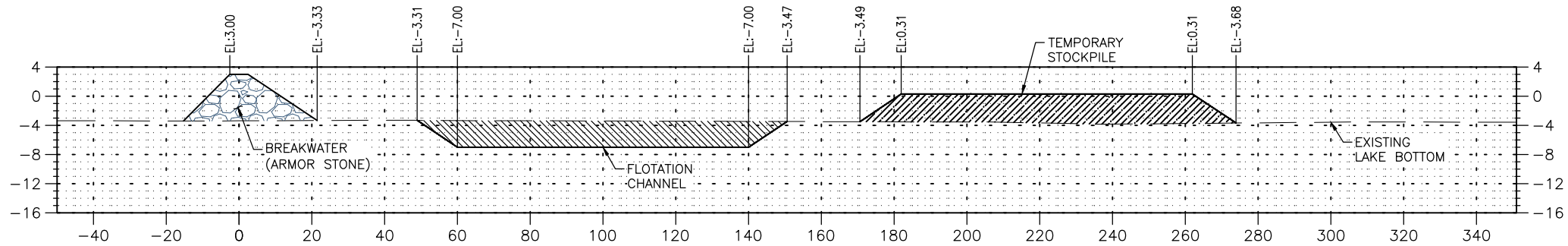
BREAKWATER BL
STA. 126+00

ARMOR FILL: 229 CU. YDS.
CHANNEL CUT: 637 CU. YDS.
STOCKPILE FILL: 684 CU. YDS.



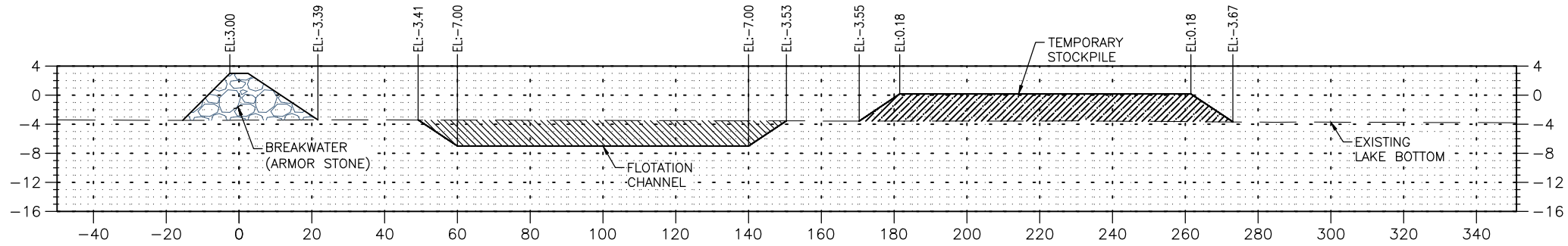
BREAKWATER BL
STA. 125+50

ARMOR FILL: 240 CU. YDS.
CHANNEL CUT: 617 CU. YDS.
STOCKPILE FILL: 674 CU. YDS.



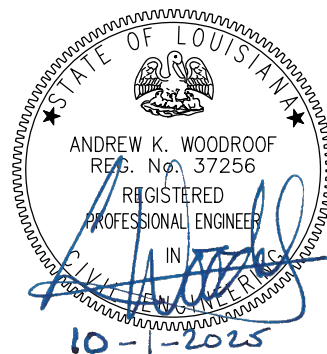
BREAKWATER BL
STA. 125+00

ARMOR FILL: 249 CU. YDS.
CHANNEL CUT: 600 CU. YDS.
STOCKPILE FILL: 655 CU. YDS.



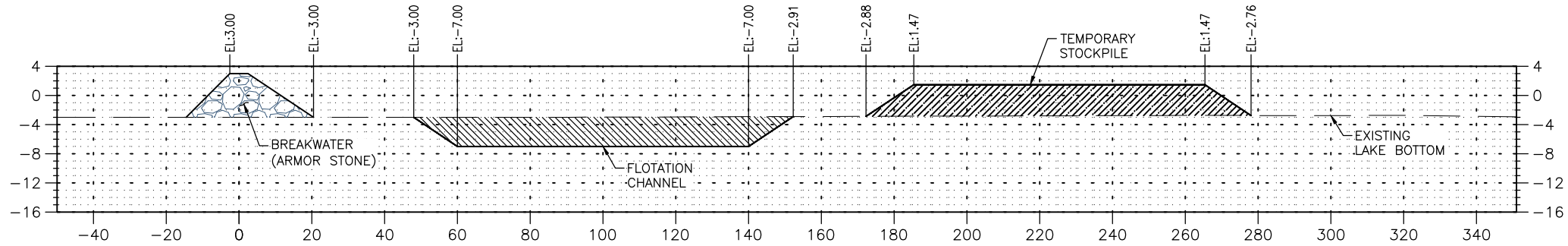
BREAKWATER BL
STA. 124+50

ARMOR FILL: 249 CU. YDS.
CHANNEL CUT: 588 CU. YDS.
STOCKPILE FILL: 624 CU. YDS.

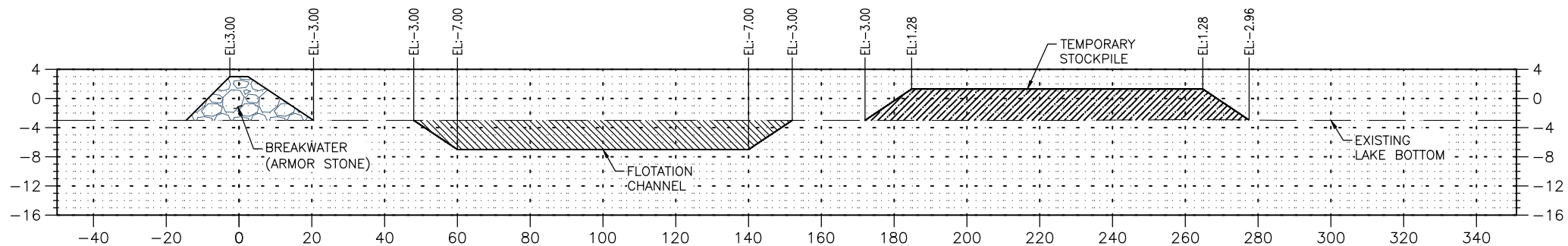


PROJECT NO.		DV2100012
DATE		MAY, 2025
SCALE		
SHEET NO.		28
DESIGNED BY: AKW		CHECKED BY: JMS
DRAWN BY: MSC		CHECKED BY: JMS
PROJECT MGR.: AKW		APPROVED BY: AKW
LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT		CROSS SECTIONS
ST. TAMMANY PARISH GOVERNMENT		DIGITAL engineering DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDERLILLE LA, 70471 PH. (985) 334-4131
		REVISION
		DATE
		DESCRIPTION
		BY

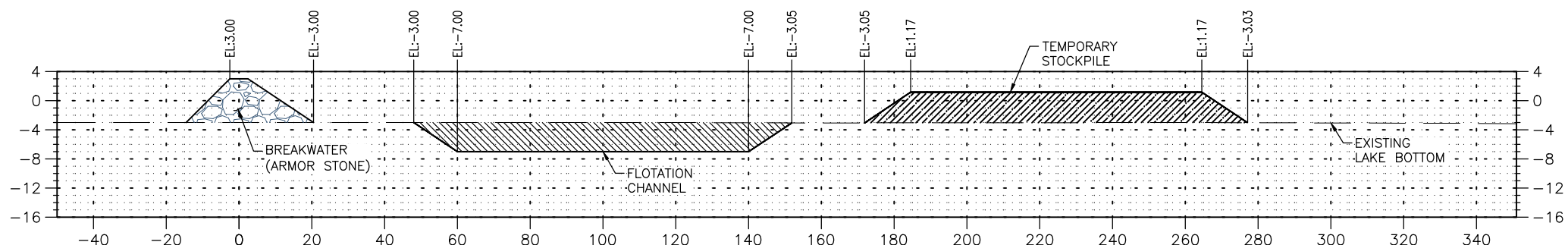
DWG PATH: S:\ 650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater 20 Design\CAV
DWG NAME: 650-1673_14-31_CROSS SECTIONS
LAYOUT TAB: 29
PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm



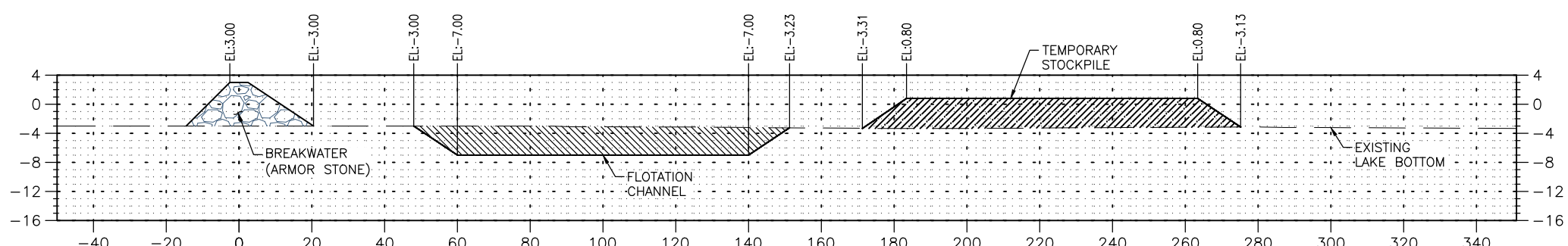
ARMOR FILL: 223 CU. YDS.
CHANNEL CUT: 684 CU. YDS.
STOCKPILE FILL: 733 CU. YDS.



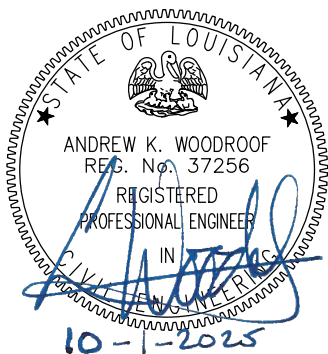
ARMOR FILL: 223 CU. YDS.
CHANNEL CUT: 681 CU. YDS.
STOCKPILE FILL: 725 CU. YDS.



ARMOR FILL: 223 CU. YDS.
CHANNEL CUT: 673 CU. YDS.
STOCKPILE FILL: 706 CU. YDS.



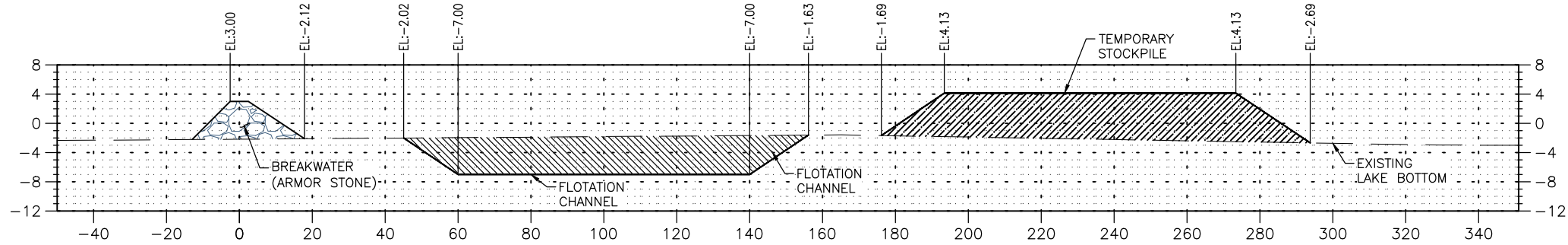
ARMOR FILL: 223 CU. YDS.
CHANNEL CUT: 657 CU. YDS.
STOCKPILE FILL: 693 CU. YDS.



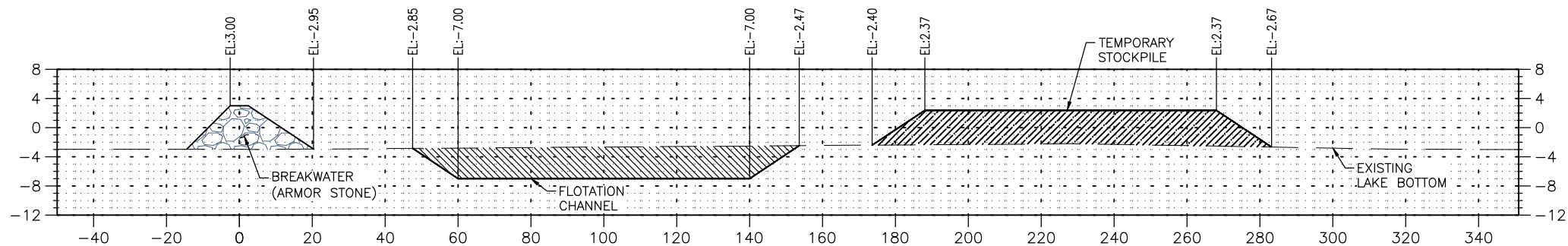
PROJECT NO.		DV2100012	
DATE		MAY, 2025	
SCALE			
SHEET NO.		29	
DESIGNED BY: AKW		CHECKED BY: JMS	
DRAWN BY: MSC		CHECKED BY: JMS	
PROJECT MGR.: AKW		APPROVED BY: AKW	
LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT		CROSS SECTIONS	
		REVISION	DATE
		DESCRIPTION	BY



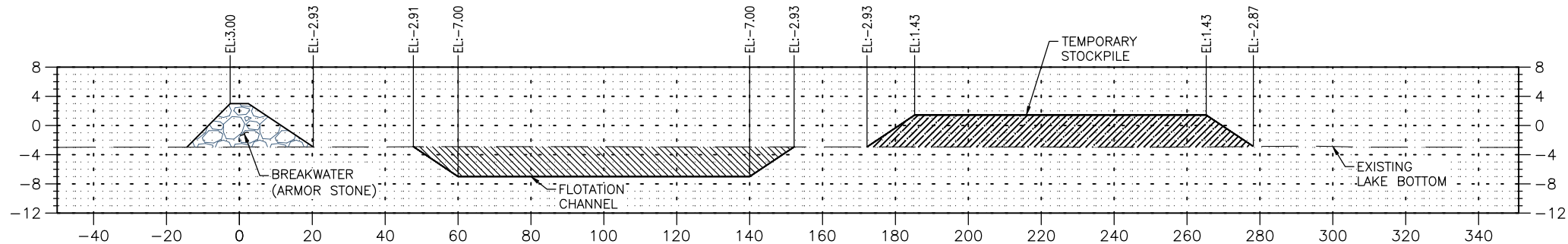
DWG PATH: S:\650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater 20 Design\CAV
DWG NAME: 650-1673_14-31_CROSS SECTIONS
LAYOUT TAB: 30
PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm



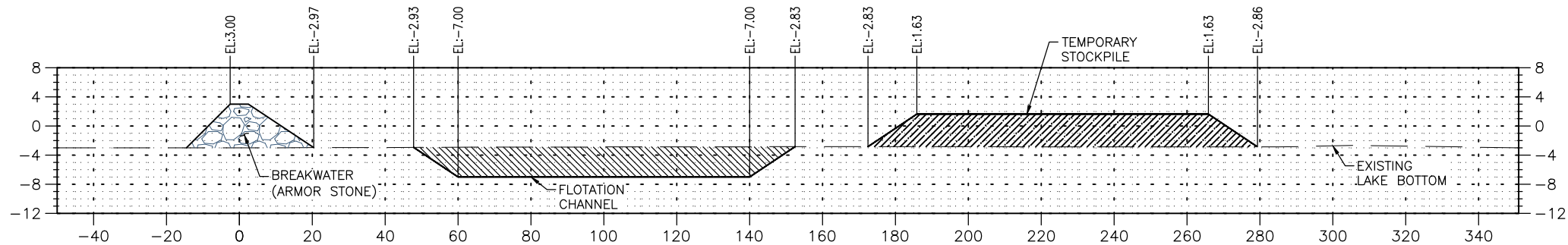
ARMOR FILL: 197 CU. YDS.
CHANNEL CUT: 832 CU. YDS.
STOCKPILE FILL: 991 CU. YDS.



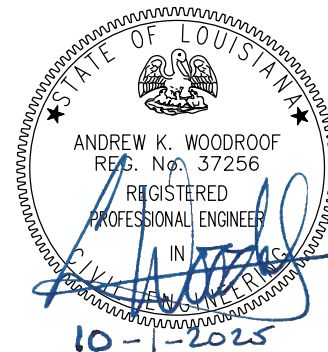
ARMOR FILL: 220 CU. YDS.
CHANNEL CUT: 723 CU. YDS.
STOCKPILE FILL: 791 CU. YDS.



ARMOR FILL: 221 CU. YDS.
CHANNEL CUT: 703 CU. YDS.
STOCKPILE FILL: 764 CU. YDS.



ARMOR FILL: 222 CU. YDS.
CHANNEL CUT: 697 CU. YDS.
STOCKPILE FILL: 755 CU. YDS.



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MANDERLILLE LA, 70471 PH. (985) 334-4131

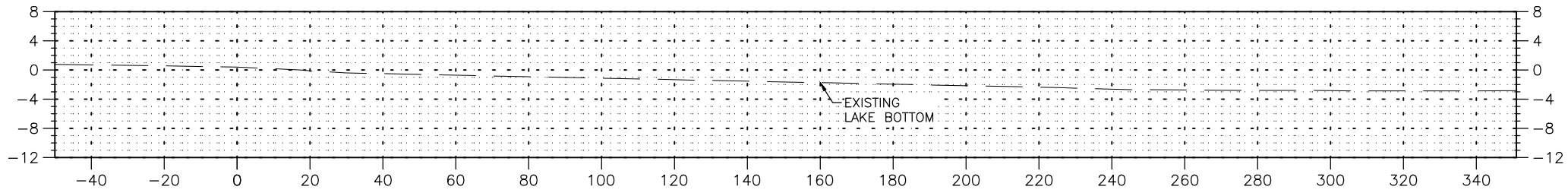
DESIGNED BY: AKW
CHECKED BY: JMS
DRAWN BY: MSC
CHECKED BY: JMS
PROJECT MGR.: AKW
APPROVED BY: AKW

LOWER TCHEFUNCTE RIVER
BREAKWATER PROJECT
CROSS SECTIONS

PROJECT NO.
DV2100012
DATE
MAY, 2025
SCALE
SHEET NO.
30

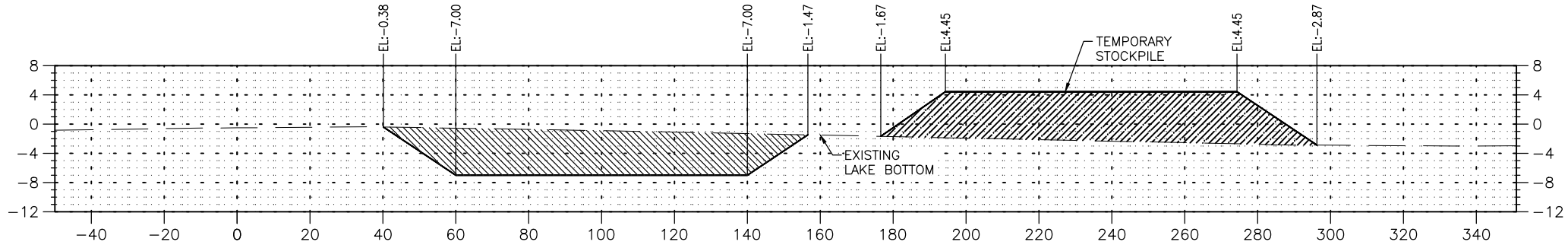
REVISION	DATE	DESCRIPTION	BY

DWG PATH: S:\ 650 - St. Tammany Parish\650-1673 Lower Tchefuncte Breakwater\20 Design\CAV
DWG NAME: 650-1673_14-31_CROSS SECTIONS
LAYOUT TAB: 31
PLOT DATE: Wednesday, October 01, 2025 @ 3:06pm



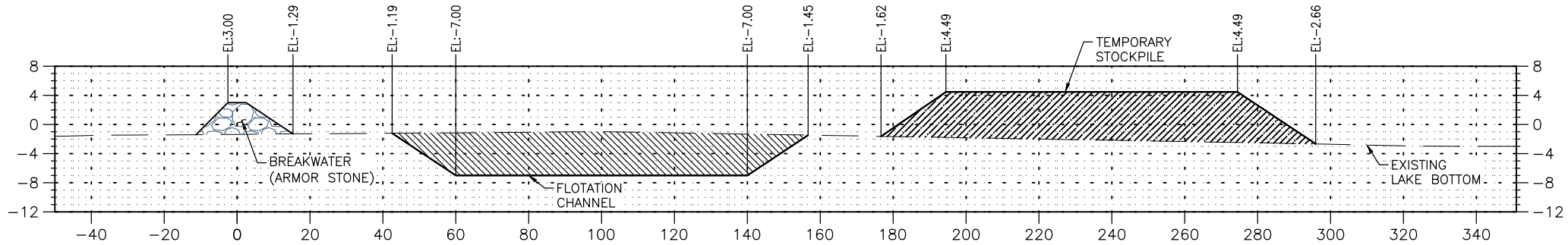
BREAKWATER BL
STA. 131+50

ARMOR FILL: 0 CU. YDS.
CHANNEL CUT: 555 CU. YDS.
STOCKPILE FILL: 623 CU. YDS.



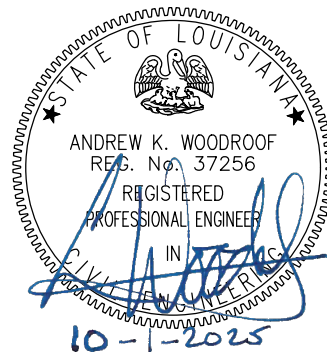
BREAKWATER BL
STA. 131+00

ARMOR FILL: 64 CU. YDS.
CHANNEL CUT: 1083 CU. YDS.
STOCKPILE FILL: 1233 CU. YDS.



BREAKWATER BL
STA. 130+50

ARMOR FILL: 150 CU. YDS.
CHANNEL CUT: 987 CU. YDS.
STOCKPILE FILL: 1187 CU. YDS.



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CHASE CENTER, 3500 HWY 190, SUITE 201
MANDERLILLE LA, 70471 PH: (985) 334-4131

DESIGNED BY: AKW	CHECKED BY: JMS
DRAWN BY: MSC	CHECKED BY: JMS
PROJECT MGR.: AKW	APPROVED BY: AKW

LOWER TCHEFUNCTE RIVER
BREAKWATER PROJECT

CROSS SECTIONS

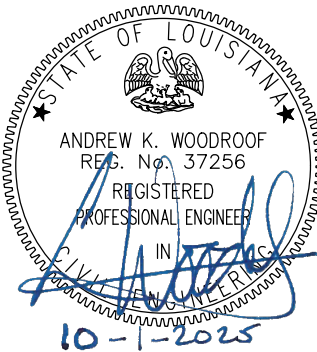
PROJECT NO.	DV2100012
DATE	MAY, 2025
SCALE	
SHEET NO.	31

REVISION	DATE	DESCRIPTION	BY

ARMOR FILL Volume Table			
Station	Area	Volume	Cumulative Volume
96+50.00	0.00	0.00	0.00
97+00.00	0.00	0.00	0.00
97+50.00	0.00	0.00	0.00
98+00.00	0.00	0.00	0.00
98+50.00	0.00	0.00	0.00
99+00.00	0.00	0.00	0.00
99+50.00	0.00	0.00	0.00
100+00.00	0.00	0.00	0.00
100+50.00	0.00	0.00	0.00
101+00.00	0.00	0.00	0.00
101+50.00	0.00	0.00	0.00
102+00.00	0.00	0.00	0.00
102+50.00	0.00	0.00	0.00
103+00.00	0.00	0.00	0.00
103+50.00	0.00	0.00	0.00
104+00.00	0.00	0.00	0.00
104+50.00	0.00	0.00	0.00
105+00.00	0.00	0.00	0.00
105+50.00	0.00	0.00	0.00
106+00.00	0.00	0.00	0.00
106+50.00	0.00	0.00	0.00
107+00.00	0.00	0.00	0.00
107+50.00	0.00	0.00	0.00
108+00.00	0.00	0.00	0.00
108+50.00	0.00	0.00	0.00

Station	Area	Volume	Cumulative Volume
109+00.00	0.00	0.00	0.00
109+50.00	0.00	0.00	0.00
110+00.00	0.00	0.00	0.00
110+50.00	0.00	0.00	0.00
111+00.00	0.00	0.00	0.00
111+50.00	0.00	0.00	0.00
112+00.00	0.00	0.00	0.00
112+50.00	0.00	0.00	0.00
113+00.00	0.00	0.00	0.00
113+50.00	0.00	0.00	0.00
114+00.00	0.00	0.00	0.00
114+50.00	0.00	0.00	0.00
115+00.00	0.00	0.00	0.00
115+50.00	0.00	0.00	0.00
116+00.00	0.00	0.00	0.00
116+50.00	0.00	0.00	0.00
117+00.00	0.00	0.00	0.00
117+50.00	0.00	0.00	0.00
118+00.00	0.00	0.00	0.00
118+50.00	0.00	0.00	0.00
119+00.00	0.00	0.00	0.00
119+50.00	0.00	0.00	0.00
120+00.00	0.00	0.00	0.00
120+50.00	0.00	0.00	0.00
121+00.00	0.00	0.00	0.00

Station	Area	Volume	Cumulative Volume
121+50.00	0.00	0.00	0.00
122+00.00	0.00	0.00	0.00
122+50.00	0.00	0.00	0.00
123+00.00	0.04	0.04	0.04
123+50.00	223.61	207.09	207.12
124+00.00	133.03	330.23	537.35
124+50.00	135.47	248.61	785.97
125+00.00	133.04	248.62	1034.59
125+50.00	125.97	239.83	1274.42
126+00.00	120.55	228.26	1502.68
126+50.00	120.00	222.73	1725.41
127+00.00	120.00	222.22	1947.63
127+50.00	120.01	222.23	2169.87
128+00.00	120.02	222.25	2392.12
128+50.00	119.67	221.94	2614.06
129+00.00	117.98	220.05	2834.10
129+50.00	119.29	219.70	3053.80
130+00.00	92.74	196.32	3250.12
130+50.00	68.62	149.41	3399.53
131+00.00	0.00	63.54	3463.07
131+50.00	0.00	0.00	3463.07



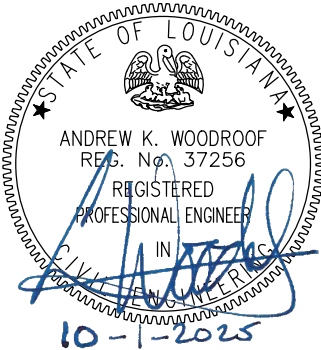
DESIGNED BY: AKW
CHECKED BY: JMS
DRAWN BY: MSC
CHECKED BY: JMS
PROJECT MGR.: AKW
APPROVED BY: AKW

LOWER TCHEFUNCTE RIVER BREAKWATER PROJECT CROSS SECTIONS	PROJECT NO.	DV2100012
	DATE	MAY, 2025
	SCALE	
	SHEET NO.	32

Station	Area	Volume	Cumulative Volume
96+50.00	0.00	0.00	0.00
97+00.00	11.99	11.10	11.10
97+50.00	31.80	40.54	51.64
98+00.00	59.07	84.14	135.78
98+50.00	92.33	140.19	275.97
99+00.00	112.25	189.42	465.39
99+50.00	148.44	241.38	706.77
100+00.00	172.33	297.01	1003.78
100+50.00	182.09	328.17	1331.95
101+00.00	190.68	345.16	1677.11
101+50.00	208.25	369.38	2046.49
102+00.00	195.89	374.20	2420.69
102+50.00	198.28	364.97	2785.66
103+00.00	205.11	373.51	3159.16
103+50.00	203.17	378.04	3537.20
104+00.00	195.43	369.08	3906.28
104+50.00	198.23	364.50	4270.78
105+00.00	200.63	369.32	4640.10
105+50.00	199.42	370.42	5010.51
106+00.00	194.91	365.13	5375.64
106+50.00	197.98	363.79	5739.43
107+00.00	201.97	370.32	6109.76
107+50.00	205.27	377.07	6486.83
108+00.00	209.58	384.12	6870.94
108+50.00	206.97	385.69	7256.63

CHANNEL CUT Volume Table			
Station	Area	Volume	Cumulative Volume
109+00.00	203.89	380.42	7637.05
109+50.00	205.66	379.21	8016.26
110+00.00	205.69	380.88	8397.14
110+50.00	205.63	380.86	8778.01
111+00.00	205.48	380.66	9158.67
111+50.00	205.23	380.28	9538.95
112+00.00	205.99	380.76	9919.71
112+50.00	211.73	386.77	10306.48
113+00.00	208.81	389.38	10695.87
113+50.00	202.13	380.50	11076.37
114+00.00	198.00	370.49	11446.86
114+50.00	205.54	373.65	11820.51
115+00.00	218.54	700.34	12520.85
115+50.00	226.33	411.92	12932.77
116+00.00	231.44	423.86	13356.63
116+50.00	237.51	434.21	13790.84
117+00.00	244.08	445.91	14236.75
117+50.00	250.67	458.10	14694.85
118+00.00	261.70	474.41	15169.26
118+50.00	266.98	489.52	15658.78
119+00.00	267.00	494.43	16153.20
119+50.00	267.00	494.44	16647.65
120+00.00	267.00	494.45	17142.10
120+50.00	270.61	497.79	17639.88
121+00.00	275.52	505.67	18145.55

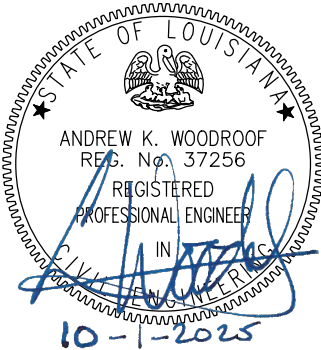
Station	Area	Volume	Cumulative Volume
121+50.00	288.64	522.36	18667.92
122+00.00	300.48	545.48	19213.39
122+50.00	304.76	560.41	19773.80
123+00.00	305.59	565.14	20338.94
123+50.00	309.92	569.92	20908.86
124+00.00	314.71	578.36	21487.23
124+50.00	319.74	587.45	22074.68
125+00.00	327.20	599.01	22673.69
125+50.00	338.12	616.04	23289.73
126+00.00	349.62	636.80	23926.53
126+50.00	359.38	656.48	24583.01
127+00.00	367.21	672.77	25255.78
127+50.00	367.89	680.65	25936.44
128+00.00	370.72	683.90	26620.34
128+50.00	381.30	696.32	27316.66
129+00.00	377.18	702.30	28018.96
129+50.00	403.29	722.65	28741.61
130+00.00	494.44	831.23	29572.84
130+50.00	570.87	986.40	30559.24
131+00.00	598.63	1082.87	31642.10
131+50.00	0.00	554.28	32196.39

[illegible]

Station	Area	Volume	Cumulative Volume
96+50.00	0.00	0.00	0.00
97+00.00	0.00	0.00	0.00
97+50.00	0.00	0.00	0.00
98+00.00	0.00	0.00	0.00
98+50.00	0.00	0.00	0.00
99+00.00	0.00	0.00	0.00
99+50.00	0.00	0.00	0.00
100+00.00	0.00	0.00	0.00
100+50.00	0.00	0.00	0.00
101+00.00	0.00	0.00	0.00
101+50.00	0.00	0.00	0.00
102+00.00	0.00	0.00	0.00
102+50.00	0.00	0.00	0.00
103+00.00	225.62	208.91	208.91
103+50.00	220.38	412.97	621.87
104+00.00	213.69	401.91	1023.79
104+50.00	211.82	393.98	1417.77
105+00.00	220.18	400.00	1817.77
105+50.00	212.04	400.20	2217.97
106+00.00	212.99	393.55	2611.52
106+50.00	212.65	394.11	3005.63
107+00.00	217.84	398.60	3404.23
107+50.00	223.52	408.67	3812.89
108+00.00	229.40	419.37	4232.26
108+50.00	229.42	424.84	4657.10

Station	Area	Volume	Cumulative Volume
109+00.00	227.29	422.88	5079.98
109+50.00	235.33	428.35	5508.33
110+00.00	226.51	427.64	5935.96
110+50.00	226.02	419.01	6354.97
111+00.00	226.88	419.35	6774.32
111+50.00	227.75	420.96	7195.28
112+00.00	225.89	420.04	7615.32
112+50.00	228.84	421.05	8036.37
113+00.00	219.65	415.27	8451.64
113+50.00	208.58	396.51	8848.15
114+00.00	213.08	390.42	9238.57
114+50.00	216.33	397.60	9636.18
115+00.00	230.06	1107.78	10743.95
115+50.00	246.55	441.30	11185.26
116+00.00	249.28	459.10	11644.36
116+50.00	255.78	467.65	12112.01
117+00.00	263.85	481.14	12593.15
117+50.00	264.95	489.62	13082.77
118+00.00	289.94	513.79	13596.56
118+50.00	293.39	540.13	14136.69
119+00.00	291.79	541.84	14678.52
119+50.00	289.39	538.13	15216.65
120+00.00	287.71	534.35	15751.00
120+50.00	287.71	532.80	16283.80
121+00.00	287.71	532.80	16816.60

Station	Area	Volume	Cumulative Volume
121+50.00	304.43	548.28	17364.88
122+00.00	316.55	574.98	17939.87
122+50.00	325.07	594.09	18533.95
123+00.00	334.53	610.74	19144.70
123+50.00	327.20	612.71	19757.41
124+00.00	331.07	609.51	20366.91
124+50.00	342.40	623.58	20990.50
125+00.00	364.29	654.33	21644.83
125+50.00	362.89	673.31	22318.14
126+00.00	374.77	683.02	23001.16
126+50.00	372.81	692.21	23693.37
127+00.00	388.62	705.03	24398.39
127+50.00	394.04	724.68	25123.08
128+00.00	396.72	732.18	25855.26
128+50.00	417.95	754.33	26609.59
129+00.00	406.81	763.67	27373.25
129+50.00	446.87	790.44	28163.69
130+00.00	623.08	990.69	29154.38
130+50.00	658.47	1186.62	30341.00
131+00.00	672.52	1232.40	31573.39
131+50.00	0.00	622.71	32196.10



PROJECT NO. DV21000012		DATE MAY, 2025		SCALE		SHEET NO. 34		DESIGNED BY: AKW		CHECKED BY: JMS		DRAWN BY: MSC		CHECKED BY: JMS		PROJECT MGR.: AKW		APPROVED BY: AKW		 digital engineering DIGITAL ENGINEERING & IMAGING, INC. CHASE CENTER, 3500 HWY 190, SUITE 201 MANDEVILLE LA, 70471 PH. (985) 334-4131																							