

APPENDIX M: ENGINEERING REPORTS

Volume 2 of 4

Contents:

Basis of Design Report -15% Design Appendices as follows:

1. A.1 Survey Data Collection Plan
2. A.2 Additional Survey Cross-Sections & Culvert Crossings
3. A.3 Survey Monument Sheets
4. A.4 Culvert Reports & Photos
5. A.5 Survey Data for Camp on Hope Canal S. of I-10
6. B.1 Geotechnical Data Collection Plan
7. B.2 Geotechnical Data Report

It should be noted that the Engineering Reports were provided by CPRA as standalone documents and in some cases the terminology within may not match the terminology used in the SEIS (e.g. MSP vs. MSA-2 for the selected alternative).



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SURVEY
DATA COLLECTION PLAN
Topographic, Bathymetric,
Magnetometer and other
Professional Land Survey Services

Project:
Maurepas Diversion and West
Shore Lake Pontchartrain
Reaches WSLP-111, -112, & -113

St. John the Baptist Parish, Louisiana

Prepared for:

AECOM

Mr. Clay Loyless, PE

Prepared by:

Ricardo Johnson, PLS
Fenstermaker

December 20, 2019
(Revised May 22, 2020, August 07, 2020)



December 20, 2019 (Rev. May 22, 2020, August 07, 2020)

Clay Loyless, PE
AECOM
1515 Poydras St. Suite 2700
New Orleans, LA 70112

RE: Maurepas Diversion and Reaches WSLP-111, WSLP-112, WSLP-113

Dear Mr. Loyless,

C.H. Fenstermaker & Associates, L.L.C. (Fenstermaker) appreciates the opportunity to submit this survey cost estimate to AECOM in support of the above referenced project. Fenstermaker proposes to provide the required survey services as specified in the Scope of Work dated December 12, 2019 (see Attachment A). Cost Breakdowns for each task of work are located on Attachment B and will be billed as Time and Materials, not to exceed, as per Fenstermaker's CPRA Contract Fee Schedule.

As specified in the Scope of Work, Fenstermaker will provide the required labor, equipment, and materials necessary to assure compliance with CPRA's and USACE New Orleans District requirements for each task performed. The Proposed Scope of Work and Survey Tasks (Attachment A) details Fenstermaker's approach and estimated time to perform each survey task once the Notice to Proceed is issued. A work schedule will be provided upon receipt of the Notice to Proceed.

The horizontal datum to be used for positioning will be NAD83 (2011), Louisiana State Plane (1702) South Zone. Fenstermaker will report water bottom elevations in NAVD88 using Geoid12B vertical datum and Local Mean Sea Level (LMSL).

Fenstermaker would like to thank you in advance for giving our staff the opportunity to meet your survey requirements. If you have any questions, please call my direct line at (337) 443-6475.

Sincerely,

C.H. FENSTERMAKER & ASSOCIATES, L.L.C.



Ricardo M. Johnson, PLS
Director of Coastal Survey Services

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LA Survey Firm Reg. No. VF.0000154. LA Engineering Firm Reg. No. EF.0000311. TX Survey Firm Reg. No. 10028500. TX Engineering Firm Reg. No. F-7855.

Attachment A
Proposed Scope of Work and Survey Work Plan
Maurepas Freshwater Diversion and Reaches WSLP-111, WSLP-112, WSLP-113
Topographic, Bathymetric, Magnetometer and Other Surveying Services
December 12, 2019

1.0 Introduction

AECOM is currently designing the CPRA project “River Reintroduction into Maurepas Swamp” (PO-0029) (Maurepas Diversion) as well as Reaches WSLP-111, WSLP-112, and WSLP-113 of the USACE West Shore Lake Pontchartrain flood protection project (WSLP). Each project is briefly described below. Due to the co-location of the Maurepas Diversion and the WSLP project features in the same alignment corridor, the projects are being designed together.

2.0 Maurepas Diversion Project

The Maurepas Diversion is a proposed 2,000 cubic foot per second (cfs) freshwater diversion from the Mississippi River into the Maurepas Swamp. The intake to the diversion is located at approximately River Mile 144 and the inland features will be located in St. John the Baptist Parish, Louisiana. The basic components are an intake channel in the batture; a gated structure in the Mississippi River levee; a sedimentation basin; a 5½ mile long open conveyance channel; crossings at the Canadian National (CN) and Kansas City Southern (KCS) railroads; crossings at River Road, Airline Highway, and Interstate 10; submerged weirs in Bayou Secret and Bourgeois Canal; embankment cuts in the existing ridge of an old cypress logging trail; and check valves on the northern side of culverts underneath I-10.

AECOM submitted the latest plans and specifications for the Maurepas Diversion to CPRA in September of 2013. Since that time, major changes to both the existing conditions as well as the overall Scope of Work have been made. The primary changes in conditions have been: 1) the development of the Marathon Petroleum Mt. Airy Terminal facilities on land adjacent to the proposed Maurepas Diversion alignment, and 2) the construction of a Marathon Petroleum marine docking facility upstream of the diversion intake. The permitting of a second marine dock facility which will include a pipe-bridge across the intake is currently in process. The primary change to the Scope of Work is the addition of the design of those components of the USACE WSLP flood protection project that parallel the Maurepas Diversion project from the south side of River Road to the north side of Airline Highway, which includes levees, floodwalls, and gates.

3.0 West Shore Lake Pontchartrain Project

The West Shore Lake Pontchartrain (WSLP) project will provide hurricane and storm-damage risk reduction in St. Charles and St. John the Baptist Parishes. The recommended plan includes the construction of a levee system around the communities of Montz, Laplace, Reserve, and Garyville. The system will consist of approximately 18 miles of earthen levees and floodwalls, 4 floodgates, a drainage canal running parallel to the levee, 2 drainage structures, and 4 pump stations along the alignment. The flood protection features of final four reaches of the WSLP project (WSLP-111, WSLP-112, and WSLP-113) are to be constructed parallel to and immediately adjacent to the Maurepas Diversion. The main features of these reaches to be designed include an earthen tie-in to the Mississippi River levee, a gated crossing at River Road, a combination of levees and structural walls throughout the alignment, gated crossings at both the CN and KCS railroads, a raised crossing of Airline Highway, and a tie-in to the flood protection levee at Reach WSLP-110.

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4.0 Compilation of Existing Data

AECOM will gather the existing survey data from all sources relevant to the Maurepas Diversion and Reaches WSLP-111, WSLP-112, WSLP-113 and compile it into a merged electronic format. The compiled data will be submitted to C. H. Fenstermaker & Associates, LLC (Fenstermaker) for review and comment.

5.0 Development of Survey Plan

Based on a review of the existing data and the comments received, Fenstermaker, in conjunction with AECOM, will develop a Draft Survey Data Collection Plan to acquire the survey information needed to perform engineering design on all aspects of the combined Maurepas Diversion and WSLP projects.

This will include surveying the area from the river to north of Airline Highway of the proposed Maurepas Diversion alignment, as the 2003 survey is long out of date and significant changes such as the construction of the Marathon Petroleum landside and the riverside facilities have been made. The area north of Airline Highway is swamp with no development as such a full re-surveying of this area may not be warranted, but the existing data needs to be spot checked and converted to the NAVD88, Epoch 2009.55, Geoid 12B datum. The area where the WSLP features will be constructed along the east side of the Maurepas Diversion has not been surveyed previously, so raw data will need to be collected for this area. In addition to collecting topographic data along the alignments of the two projects, additional data will be required at the road and railroad crossings.

Prior to conducting the planned surveying activities, the Survey Plan shall be submitted to both CPRA and the USACE Engineering Division Surveys Section for review and comment.

6.0 Establishment of Survey Control

Fenstermaker will research NGS, CPRA, and USACE to locate any recently established and up-to-date survey control monuments that may exist with the project area. If survey control monuments cannot be located, Fenstermaker will coordinate with CPRA and USACE to establish first order survey control monuments for the combined Maurepas Diversion and WSLP projects. All surveys shall tie into a minimum of three Permanent Bench Marks, ideally located in the middle and at each end of the project, to ensure the reliability of the project's control. The vertical datum for both projects will be NAVD88, Epoch 2009.55, Geoid 12B. The project elevation data shall also be referenced to Local Mean Sea Level (LMSL). All geospatial data shall contain metadata which defines the relationship between NAVD88 and the LMSL local tidal datum. The horizontal datum for both projects will be NAD83, LA State Plane, South, U.S. Survey ft. Fenstermaker will coordinate the process of converting the existing data to the updated datums.

7.0 Collection of Survey Data

Fenstermaker shall collect the survey data based on the Survey Plan using the control monumentation, to provide sufficient information for engineering design. All surveys shall be conducted in accordance with CEMVN-ED-SS-06-01, "USACE New Orleans District Guide for Minimum Survey Standards for Performing Hydrographic, Topographic, and Geodetic Surveys". GPS static networks shall follow the NGS Publication 58 guidelines for establishing vertical control. All RTK surveying shall be supported with documented ties to the project control for survey Quality Control.

Following the Survey Data Collection Plan, at AECOM's direction, Fenstermaker will collect the information needed for complete the design of the Maurepas Freshwater Diversion and WSLP Flood Protection Projects. Fenstermaker will provide the data collected under the plan, which will include a comprehensive survey (of one type or another) of all project areas from the Mississippi River to north of Interstate 10, including the area for the WSLP project adjacent to the diversion, to AECOM in electronic format. The survey shall be compliant with USACE guidelines, use proper survey monumentation, and be collected on the correct vertical and horizontal datums.

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8.0 General Description of Design Items

Includes all topographic surveying necessary for the design of:

- 1) "River Reintroduction into Maurepas Swamp (PO-0029)" (Maurepas Diversion), which includes:
 - A headworks structure in the Mississippi River mainline Levee (MRL),
 - The relocation of River Road,
 - A sedimentation basin on the north side of River Road,
 - A 5½ mile long conveyance channel from the sedimentation basin to the Maurepas Swamp,
 - A culvert crossing at the CN RR,
 - A bridge crossing at the KCS RR,
 - A culvert crossing at U.S. Hwy 61, and
 - Restoration of the original cross-section of Hope Canal under Interstate 10.
- 2) "West Shore Lake Pontchartrain Flood Protection Project" (WSLP), which includes:
 - A levee tie-in to the MRL on the south side of River Road,
 - A roller gate crossing of River Road,
 - A levee section and I-Wall from River Road to the CN RR,
 - A gate crossing at the CN RR,
 - A levee section between the CN RR and the KCS RR,
 - A gate crossing at the KCS RR,
 - A levee section between the KCS RR and Airline Highway,
 - A 4,000-ft run along Airline Highway (which is to be raised), and
 - A levee section from Airline Highway to the tie-in point at WSLP Reach 15.

Baselines will be established for horizontal control and project benchmarks will be established for vertical control. This survey work will produce base maps for the engineering design of the elements required to create a complete set of construction plans. The topographic data, bathymetric data, cross-sections, and data collected in specific gridded areas will be used for both the design plans and for quantities calculations.

The specific Scope of Work - Survey Tasks, beginning at the Mississippi River and extending to the end of the project are described below along with the expected deliverables for each item.

A boundary survey has not been included in the scope of work stated below. AECOM will provide boundary information to be overlaid within the topographic data collected by Fenstermaker. This information will be for illustrative purposes only and has not been field verified for accuracy. As such, Fenstermaker can not be held liable for any issues that may come from the use of this data outside of its intended means.

9.0 Scope of Work - Survey Tasks (Revised July 31, 2020)

Survey Support for Clearing and Grubbing

Prior to stake-out and magnetometer surveys of geotechnical boring locations, the Surveyor will provide survey support to the clearing and grubbing contractor along the clearing corridor detailed on maps provided by the geotechnical contractor. The survey crew will work in conjunction with clearing activities in an effort to minimize removal of trees and scrub brush beyond the required clearing limits.

Stake and Magnetometer Survey of Geotechnical Boring Locations

Once an area has been cleared of trees and scrub brush, the survey crew will perform pre-boring stakeout for the Geotechnical soils exploration program. The Surveyor will make a due diligence
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effort to clear the boring locations of any hazards by performing a magnetometer survey. Upon completing the stakeout of the proposed boring locations, the results will be tabulated in an Excel spreadsheet with the following information in the required project datums: Boring Number; Latitude; Longitude; Northing; Easting; Elevation; Proposed Boring Depth. This spreadsheet will be provided to the geotechnical team for their reports and be included in the final Survey Report. Due to the limitations of survey equipment*, please be advised that the surveyor cannot 100% ensure that no hazards exist within the boring areas.

Aerial LiDAR Survey using Unmanned Aerial Vehicle (UAV)

An Aerial LiDAR Survey will be performed over the entire project footprint to facilitate in providing the latest Aerial Orthoimagery for design plans and a Digital Surface Model (DSM) of existing infrastructure and ground features. Topographic surveys that will be performed on the ground will serve as ground truthing to validate elevations generated on the DSM. *(Sub-consultant will be utilized for this service)*

Mississippi River Bathymetric Surveys

Note: At the present time, Construction activities are currently underway along the riverfront of the Marathon Facility that may impact the bathymetric survey schedule. Communication with the Marathon Contractor Supervisor or Manager should be made to coordinate survey activities within and adjacent to the Mississippi River to maximize data collection.

Multibeam Survey:

Multibeam lines will be run parallel to the MRL B/L from the east bank of the river to 100-ft beyond the thalweg with a minimum of 50% overlap of the lines. Limits of the multi-beam survey are 1,500-ft upriver to 1,500-ft downriver of the Maurepas Diversion centerline. *(Sub-consultant will be utilized for this service)*

Single Beam Survey:

Single beam lines will be run parallel to the Maurepas Diversion centerline. Limits will be 1,600-ft upriver to 1,600-ft downriver from the diversion centerline. Run sections from edge of water into the shallow water out to a depth that allows at least a 100-foot overlap with the multibeam survey data. The transects shall be spaced at 200-ft intervals.

Magnetometer Survey:

Conduct a magnetometer survey within the Mississippi River to locate any hazards or anomalies, such as pipelines or debris. A minimum of three magnetometer survey lines will be run parallel to the bank-line to the outermost single beam survey transects. Due to the limitations of survey equipment*, please be advised that the surveyor cannot 100% ensure that no hazards exist within the boring areas.

Deliverables:

- Survey results in AutoCAD Civil 3D, including a terrain surface of the combined multibeam and single beam data.
- ASCII files in a XYZ comma delimited format.
- List of Anomalies with Point ID, Coordinates, Gammas, Durations, and Descriptions
- A survey report containing the methodology, field notes, tide information and a listing of survey points.

Mississippi River Levee & Batture

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Recover USACE MRL B/L in the project area, from 1,000-ft upriver of the proposed diversion centerline to 2,500-ft below it. Take shots along the centerline of the levee at 50-foot intervals to create a profile.

Run transects from the River Road R/W, extending 100-ft beyond the MRL bank line to approximately 6-ft water depth such that they will tie into and overlap the multibeam and singlebeam bathymetric data collected in the river by at least 100-ft. Five of the transects shall be at 100-ft intervals centered on the Maurepas Diversion centerline, the remaining transects shall occur at 200-ft intervals. Take survey shots every 20-ft along the transects and at all grade breaks to include top of river bank, levee toes, levee crowns, slope paving, centerline of levee, water's edge, water surface shot, revetment, water bottom, etc. Survey break-lines along the centerline, tops of slope, and toes of slope along the existing MRL. ~~Take break-line elevations at 50-ft intervals.~~

Deliverables:

- An AutoCAD Civil 3D drawing of the levee cross sections including a digital terrain model of the survey.
- Survey report, including survey methodology, field notes, coordinate listings and field data files.

LA Highway 44 (River Road)

Survey LA Highway 44 (River Road), for 1,500-ft in each direction from its intersection with the proposed Maurepas Diversion centerline. Run transects at **200-ft** intervals and centerline profiles of both east-bound and west-bound lanes at 50-ft intervals. Transects shall extend 50-feet beyond the R/W lines on each side of the highway. Locate all monumentation, above-ground utilities, culvert inverts, pipe sizes, manholes, power poles, road crossings, driveways, and other pertinent features.

Deliverables:

- Digital terrain model of survey area
- Utility Reports in DOTD format
- Structure reports in DOTD format
- Survey Report, with methodology, coordinate lists, field notes and survey field data file

Conveyance Channel and WSLP Levee – River Road to CN RR

Survey transects perpendicular to the Maurepas Diversion centerline alignment at 500-ft intervals. The transects shall extend from the eastern R/W to 30-ft beyond the western R/W. Shots along the transects shall be taken every 50-ft and at all grade changes that exceed 0.5-ft in elevation. Side shots, as necessary, shall be taken to pick up variations in topographic features such as ditches, meandering channels, broken marsh areas, or any existing features such as utility lines, power poles, etc. which may affect project design.

Deliverables:

- AutoCAD Civil 3D drawing of conveyance channel transects with a digital terrain model
- Survey report, containing a write up of survey methodology, coordinate files of the survey transect points, and coordinate files of the new survey data and survey field data files.

Canadian National Railroad

Survey **18 transects** perpendicular to the railroad at **200-ft** intervals. Transect limits will be 500-feet beyond Post Office Road/Daffodil Street to the east and 500-feet beyond the Marathon pipe

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rack crossing to the west. Transects shall extend across the railroad R/W and 50-ft beyond, for a total width of 200-ft. Cross-sections will extend north to capture the shoo-fly area. Take survey shots every 20-feet along the transects and at all grade breaks. Pick-up all drainage features and ditches, as well as notable railroad features, including switches, signals, lights, frogs, ballast, etc.

Deliverables:

- AutoCAD Civil 3D drawing of Canadian National RR transects with a digital terrain model
- Survey report, containing a write up of survey methodology, coordinate files of the survey transect points, and coordinate files of the new survey data and survey field data files.

Conveyance Channel and WSLP Levee - CN RR to KCS RR

Survey transects perpendicular to the Maurepas Diversion centerline at 500-ft intervals. The transects shall extend across both the Maurepas Diversion and WSLP rights-of-way, including from the eastern internal railroad track of the Marathon Petroleum facility to 30-ft beyond the eastern R/W of the WSLP. Shots along the transects shall be taken every 50-ft and at all grade changes that exceed 0.5-ft in elevation. Side shots, as necessary, shall be taken to pick up variations in topographic features such as ditches, meandering channels, broken marsh areas, or any existing features such as utility lines, power poles, etc. which may affect project design.

Deliverables:

- AutoCAD Civil 3D drawing of conveyance channel transects with a digital terrain model
- Survey report, containing a write up of survey methodology, coordinate files of the survey transect points, and coordinate files of the new survey data and survey field data files.

Kansas City Southern Railroad

Survey **17 transects** perpendicular to the railroad at **200-ft** intervals. Transect limits will be 500-feet beyond LA 54 to the east and 2,500-feet beyond the LA 54 to the west. Transects shall extend across the railroad R/W and 25-ft beyond, for a total width of 150-ft. Cross-sections will extend north and south to capture the potential shoo-fly areas on each side. 5 cross-sections will be extended to cover the pipeline ROW to the north. Take survey shots every 20-feet along the transects and at all grade breaks. Pick-up all drainage features and ditches, as well as notable railroad features, including switches, signals, lights, frogs, ballast, etc.

Deliverables:

- AutoCAD Civil 3D drawing of Kansas City Southern RR transects with a digital terrain model
- Survey report, containing a write up of survey methodology, coordinate files of the survey transect points, and coordinate files of the new survey data and survey field data files.

LA Highway 54

Survey LA Highway 54, from 500-ft south of KCS RR to the U.S. 61 centerline. Run transects at 200-foot intervals with shots every 20-ft. Transects shall extend 25-feet beyond the R/W lines on each side of the roadway. Locate all above-ground utilities, culvert inverts, pipe sizes, manholes, power poles, road crossings, driveways, and other pertinent features. Also survey the roadway at 50-foot intervals along the centerline and create a profile.

Deliverables:

- Digital terrain model of survey area
- Utility Reports in DOTD format
- Structure reports in DOTD format
- Survey Report, with methodology, coordinate lists, field notes and survey field data files

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Conveyance Channel and WSLP Levee – KCS RR to U.S. Highway 61

Survey transects perpendicular to the Maurepas Diversion centerline at 500-ft intervals. The transects shall extend across both the Maurepas Diversion and WSLP rights-of-way, including 25-ft beyond each R/W boundary line. Shots along the transects shall be taken every 50-ft and at all grade changes that exceed 0.5-ft in elevation. Side shots, as necessary, shall be taken to pick up variations in topographic features such as ditches, meandering channels, broken marsh areas, or any existing features such as utility lines, power poles, etc. which may affect project design. Pick-up the pipeline and utility crossings that occur just south of U.S. Highway 61.

Deliverables:

- AutoCAD Civil 3D drawing of conveyance channel transects with a digital terrain model
- Survey report, containing a write up of survey methodology, coordinate files of the survey transect points, and coordinate files of the new survey data and survey field data files.

U.S. Highway 61 (Airline Highway)

Survey U.S. 61 (Airline Highway) for 2,500-ft on either side of the Maurepas Diversion centerline. Run transects at 200-ft intervals with shots every 20-ft. Transects shall extend 25-ft beyond the R/W lines on each side of the roadway. Locate all above-ground utilities, culvert inverts, pipe sizes, manholes, power poles, road crossings, driveways, and other pertinent features. Also survey the roadway at 50-ft intervals along the centerline and create a profile.

Deliverables:

- Digital terrain model of survey area
- Utility Reports in DOTD format
- Structure reports in DOTD format
- Survey Report, with methodology, coordinate lists, field notes and survey field data files

Conveyance Channel and WSLP Levee – U.S. Highway 61 to WSLP Levee End

Survey transects perpendicular to the Maurepas Diversion centerline at 500-ft intervals. The transects shall extend 25-ft beyond the diversion R/W on each side. Shots along the transects shall be taken every 50-ft and at all grade changes that exceed 0.5-ft in elevation. Side shots, as necessary, shall be taken to pick up variations in topographic features such as ditches, meandering channels, broken marsh areas, or any existing features such as utility lines, power poles, etc. which may affect project design.

Deliverables:

- AutoCAD Civil 3D drawing of conveyance channel transects with a digital terrain model
- Survey report, containing a write up of survey methodology, coordinate files of the survey transect points, and coordinate files of the new survey data and survey field data files.

Conveyance Channel – WSLP Levee End to Interstate 10

Survey transects perpendicular to the Maurepas Diversion centerline at 500-ft intervals. The transects shall extend 25-ft beyond the diversion R/W on each side. Shots along the transects shall be taken every 50-ft and at all grade changes that exceed 0.5-ft in elevation. Side shots, as necessary, shall be taken to pick up variations in topographic features such as ditches, meandering channels, broken marsh areas, or any existing features such as utility lines, power poles, etc. which may affect project design.

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Deliverables:

- AutoCAD Civil 3D drawing of conveyance channel transects with a digital terrain model
- Survey report, containing a write up of survey methodology, coordinate files of the survey transect points, and coordinate files of the new survey data and survey field data files.

Interstate 10

Survey the existing Hope Canal underneath I-10 with hydrographic sections from 10-ft beyond top-of-bank on both sides of the proposed Maurepas Diversion centerline (which is co-linear with the Hope Canal center line at the crossing). The sections shall extend 150-ft upstream of the eastbound lanes to 150-ft downstream of the westbound lanes. Shots shall be taken at 20-ft intervals along the transects. Pick-up all relevant features, including bridge bents, revetment, embankment tops and toes, etc.

Deliverables:

- Digital terrain model of survey area
- Utility Reports in DOTD format
- Structure reports in DOTD format
- Survey Report, with methodology, coordinate lists, field notes and survey field data files

Conveyance Channel – I-10 to Project End

Survey transects perpendicular to the Maurepas Diversion centerline at 500-ft intervals. The transects shall extend 25-ft beyond the diversion R/W on each side. Shots along the transects shall be taken every 50-ft and at all grade changes that exceed 0.5-ft in elevation. Side shots, as necessary, shall be taken to pick up variations in topographic features such as ditches, meandering channels, broken marsh areas, or any existing cadastral features, such as utility lines, power poles, etc. which may affect project design.

Deliverables:

- AutoCAD Civil 3D drawing of conveyance channel transects with a digital terrain model
- Survey report, containing a write up of survey methodology, coordinate files of the survey transect points, and coordinate files of the new survey data and survey field data files.

Existing Pipelines

Prior to locating existing pipelines, LA One Call (811) will be notified to facilitate with marking of existing pipelines. The survey team will perform a magnetometer survey to locate and mark all pipelines. Pipelines will be probed to determine depth of cover at 100-ft intervals within the Maurepas Diversion Corridor. Some existing pipelines have been identified utilizing various **mapping database applications** at the following locations:

1. *Acadian Pipeline: LA Highway 44 (River Road) within the R/W and north of the roadway.*
2. *Acadian, Enterprise, and Gulf South Pipelines: North of and parallel with Canadian National Railroad*
3. *Bengal, Marathon, and Phillips 66 Pipelines: South of and parallel to U.S. Highway 61 (Airline Hwy)*
4. *Ascension Pipeline: North of and parallel to U.S. Highway 61 (Airline Hwy)*
5. *Semgroup, Phillips 66, and Enlink (Bridgeline) Pipelines: 1.45 miles North of and parallel to U.S. Highway 61 (Airline Hwy)*

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Deliverables:

- AutoCAD Civil 3D drawing of located Pipelines
- Survey report, containing a write up of survey methodology, coordinate files of the survey points, field notes and depth of cover.

**When requested, C. H. Fenstermaker & Associates, L.L.C. (Fenstermaker) uses pipeline locating equipment which may include magnetometers and/or gradiometers in an effort to locate underground and underwater pipelines in advance of drilling, construction, or abandonment activity. While reasonable efforts are made to locate all pipelines, the equipment used and the characteristics of pipelines themselves make it impossible to guarantee total success. Accordingly, it is incumbent upon the owners, operators and/or contractors conducting operations including dredging and excavation to conduct their operations with extreme caution and recognize that hazards in addition to those detected and marked by Fenstermaker may exist within the areas of operation in spite of Fenstermaker's most diligent efforts.*

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135 Regency Square | Lafayette, LA 70508 | 337.237.2200 phone | 337.232.3299 fax
www.fenstermaker.com

C. H. Fenstermaker & Associates, L.L.C.

LA Survey Firm Reg. No. VF.0000154. LA Engineering Firm Reg. No. EF.0000311. TX Survey Firm Reg. No. 10028500. TX Engineering Firm Reg. No. F-7855.

Attachment B – Cost Estimate Breakdown

Maurepas Freshwater Diversion and WSLP-111, WSLP-112, and WSLP-113			Estimated No. of Days Proposed	Potential Cost Reduction using UAV	Potential Time Savings using UAV
Task Number	Description	Subtotal			
1.0	Oversite and Management (<i>Invoices, Progress Updates, etc.</i>)	\$19,891.20		na	na
2.0	Staking of Geotechnical Boring Locations	\$14,875.30	3	na	na
2.1	Survey Support for Clearing (Addendum)	\$21,995.60	6	na	na
3.0	Hydrographic Multibeam Survey	\$12,070.30	1	na	na
4.0	Hydrographic Single Beam Survey	\$8,037.70	1	na	na
5.0	Hydrographic Magnetometer Survey	\$7,640.85	1	na	na
6.0	Mississippi River Levee & Batture Survey	\$23,023.00	5	\$4,604.60	1 Day Reduction
7.0	LA 44 Survey (<i>River Road</i>)	\$24,257.20	5	\$4,851.44	1 Day Reduction
8.0	Conveyance Channel and WSLP Levee Survey - River Road to CN RR	\$4,525.40	1	\$452.54	10% Reduction
9.0	Canadian National Railroad Survey	\$20,015.60	4	\$10,007.80	2 Day Reduction
10.0	Conveyance Channel and WSLP Survey- CN RR to KCS RR	\$21,406.00	5	\$4,281.20	1 Day Reduction
11.0	Kansas City Southern Railroad Survey	\$18,342.50	4	\$9,171.25	2 Day Reduction
12.0	Louisiana Highway 54 Survey	\$14,787.30	3	\$4,929.10	1 Day Reduction
13.0	Conveyance Channel and WSLP Levee Survey - KCS to US 61	\$15,474.80	3	\$5,158.27	1 Day Reduction
14.0	US 61 Survey (<i>Airline Highway</i>)	\$26,138.70	4	\$6,534.68	1 Day Reduction
15.0	Conveyance Channel and WSLP Levee Survey - US 61 to WSLP Levee End	\$9,624.56	2	\$1,203.07	0.25 Day Reduction
16.0	Conveyance Channel Survey - WSLP Levee End to I-10	\$38,498.24	8	\$8,421.49	1.75 Day Reduction
17.0	Interstate 10 Survey	\$13,690.60	2	\$0.00	No Reduction
18.0	Conveyance Channel Survey - I-10 to Project End	\$9,303.80	2	\$4,651.90	1 Day Reduction
19.0	Aerial LiDAR Mapping and Orthoimagery	\$23,500.00	2		
Total Project Cost Estimate:		\$347,098.65	62	\$64,267.33	13 Day Reduction
Potential Cost Savings using UAV:		\$64,267.33	13		
Revised Project Cost Estimate (Anticipated) :		\$282,831.32	49		

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REVISED CROSS SECTIONS



Marigold-St

MOUNT AIRY 





Violet-St

Post Office Bldg



61

W Airline Hwy

GEARYVILLE

54

Angelina Ln

Grady Ln

Wekwa Rd

H001 LADH 1979

PO29 SM 02

CARVILLE

DRONE FOOTPRINT

Violet-St

Marigold-St

Marquez-St

Orchid-St

Daffodil-St

MOUNT AIRY

Mt Airy

44



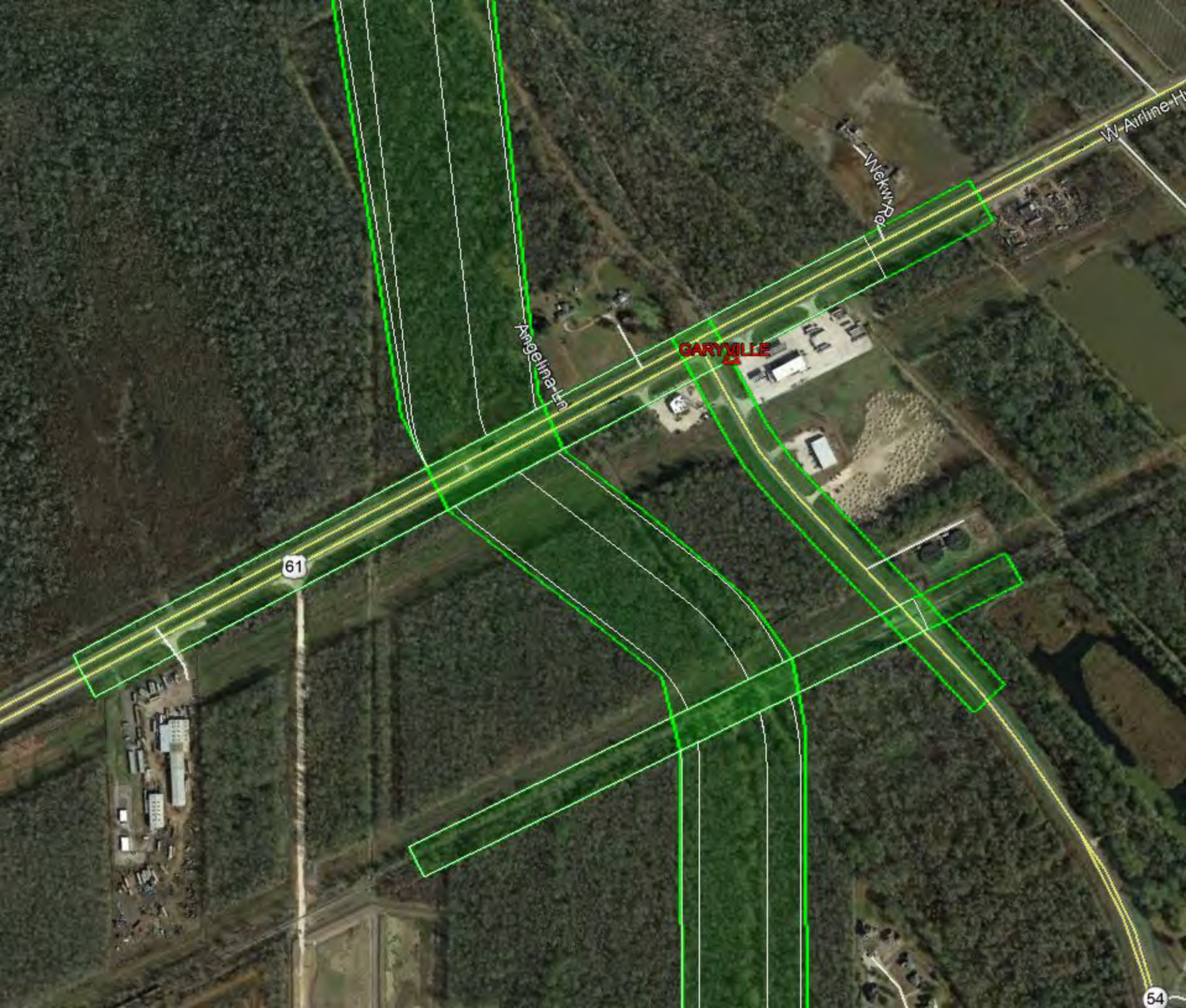
Big-Tree-Bld

Oak

Oak

Post-Office-Rd

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W-Airline-Hwy

Wekiva Rd

GARYVILLE

Angeline Ln

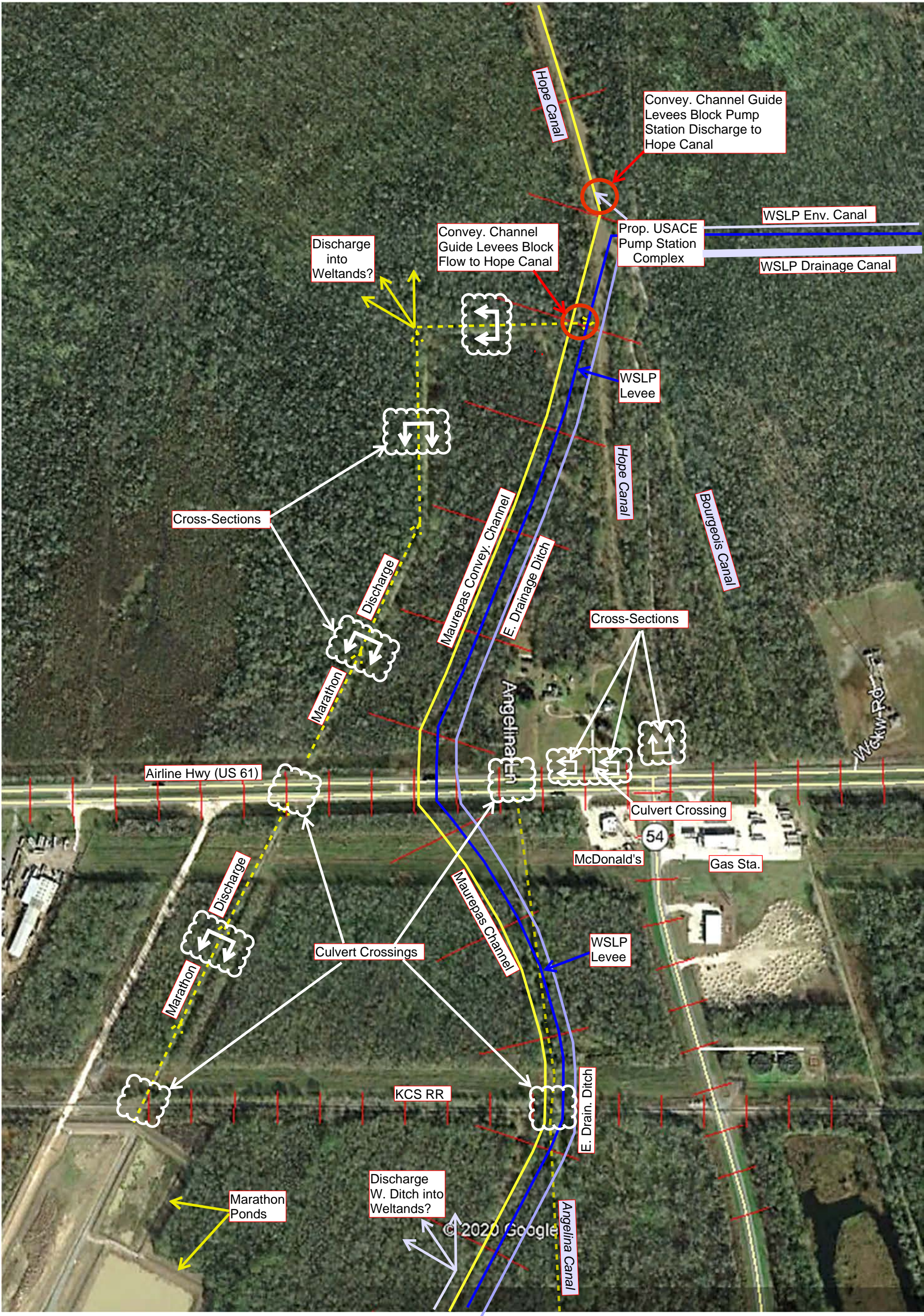
61

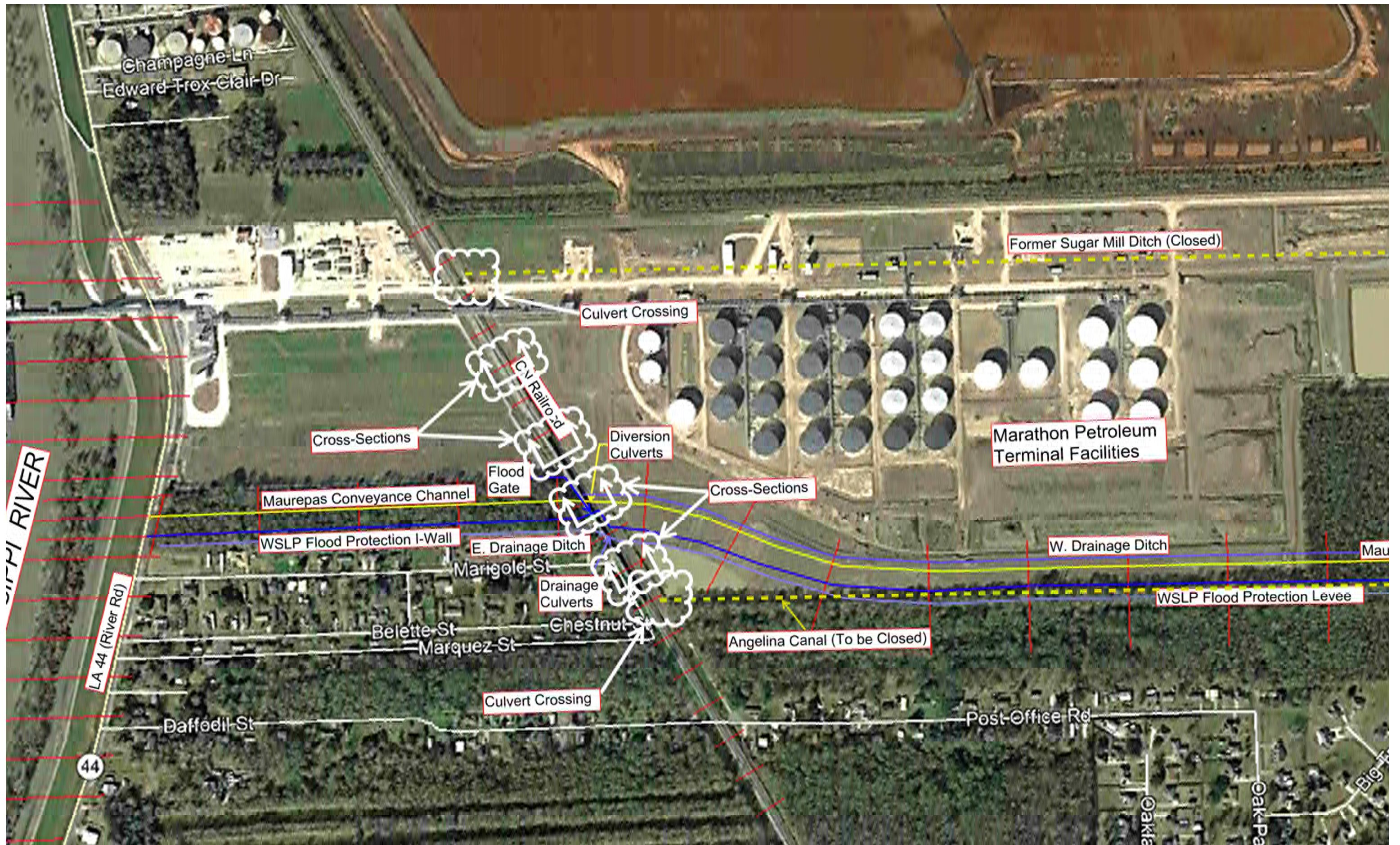
54

48H001 LADH 1979

PO28 SM 02

GARYVILLE





Attachment A – Monument Datasheets

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LA Survey Firm Reg. No. VF.0000154. LA Engineering Firm Reg. No. EF.0000311. TX Survey Firm Reg. No. 10028500. TX Engineering Firm Reg. No. F-7855.

Shared Solution

PID: BBGG69
Designation: MOUNT AIRY
Stamping: MOUNT AIRY 2018
Stability: Most reliable; expected to hold position well
Setting: Stainless steel rod in sleeve (10FT+ or 3.048M+)
Description: BEGINNING AT THE INTERSECTION OF HWY 54 AND HWY 44, HEAD NORTHWEST ALONG HWY 44 A DISTANCE OF A MILE MORE OR LESS TO A POINT. MARK IS 43.6 FT SOUTHWEST OF THE CENTER LINE OF HWY 44, 62 FT WEST OF THE CENTER LINE OF MARIGOLD ST, AND 15 FT OFF THE PROTECTED SIDE TOE OF LEVEE. MARK IS A HALF INCH STAINLESS STEEL ROD DRIVEN TO A DEPTH OF 44 FT ENCASED IN 6 INCH PVC SET IN CONCRETE WITH AN ALUMINUM ACCESS COVER STAMPED MOUNT AIRY 2018.
Observed: 2018-12-13T12:57:00Z
Source: OPUS - page5 1603.24



Close-up View

REF_FRAME: NAD_83(2011)	EPOCH: 2010.0000	SOURCE: NAVD88 (Computed using GEOID12B)	UNITS: m	SET PROFILE	DETAILS
LAT: 30° 3' 6.54782" ± 0.003 m Lon: -90° 38' 21.27210" ± 0.014 m ELL HT: -24.188 ± 0.007 m X: -61644.525 ± 0.014 m Y: -5525017.436 ± 0.004 m Z: 3175335.005 ± 0.006 m ORTHO HT: 2.167 ± 0.021 m			UTM 15 SPC 1702(LA S) NORTHING: 3326876.320m 172212.961m EASTING: 727603.571m 1066930.093m CONVERGENCE: 1.18273611° 0.34705556° POINT SCALE: 1.00023917 0.99992614 COMBINED FACTOR: 1.00024297 0.99992994		

CONTRIBUTED BY

[dtubbs](#)
 ▪ [EMC Inc.](#)



Horizon View



The numerical values for this position solution have satisfied the quality control criteria of the National Geodetic Survey. The contributor has verified that the information submitted is accurate and complete.

Shared Solution

PID: BBGG71
Designation: GARYVILLE
Stamping: GARYVILLE 2018
Stability: Most reliable; expected to hold position well
Setting: Stainless steel rod in sleeve (10FT+ or 3.048M+)
Description: BEGINNING AT THE INTERSECTION OF HWY 54 AND THE EASTBOUND LANE OF HWY 61, HEAD EAST ALONG HWY 61 A DISTANCE OF 108 FT TO A POINT. MARK IS 75 FT SOUTH OF THE CENTER LINE OF THE EASTBOUND LANE OF HWY 61 AND 26.3 FT SOUTHEAST OF A TRAFFIC SIGNAL POST. MARK IS A HALF INCH STAINLESS STEEL ROD DRIVEN TO A DEPTH OF 44 FT ENCASED IN 6 INCH PVC SET IN CONCRETE WITH AN ALUMINUM ACCESS COVER STAMPED GARYVILLE 2018.
Observed: 2018-12-14T17:54:00Z
Source: OPUS - page5 1603.24



Close-up View

REF_FRAME: NAD_83(2011)	EPOCH: 2010.0000	SOURCE: NAVD88 (Computed using GEOID12B)	UNITS: m	SET PROFILE	DETAILS
LAT: 30° 4' 31.73693" ± 0.007 m Lon: -90° 37' 29.46886" ± 0.007 m ELL HT: -24.878 ± 0.012 m X: -60242.582 ± 0.008 m Y: -5523718.108 ± 0.012 m Z: 3177604.947 ± 0.008 m ORTHO HT: 1.524 ± 0.023 m			UTM 15 SPC 1702(LA S) NORTHING: 3329528.337m 174844.407m EASTING: 728936.797m 1068301.442m CONVERGENCE: 1.19080000° 0.35425000° POINT SCALE: 1.00024668 0.99992659 COMBINED FACTOR: 1.00025059 0.99993050		

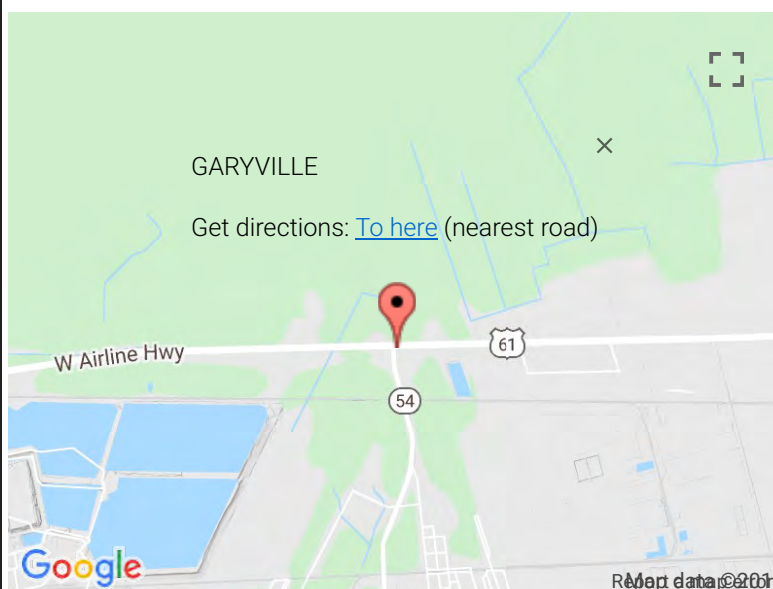
CONTRIBUTED BY

[dtubbs](#)

▪ [EMC Inc.](#)



Horizon View



The numerical values for this position solution have satisfied the quality control criteria of the National Geodetic Survey. The contributor has verified that the information submitted is accurate and complete.



VICINITY MAP

1 inch = 3,000 feet

Reproduced from NAIP Louisiana 2013 1m Aerial Imagery

Station Name: PO29 SM 02

Location: Located approximately 4 miles northeasterly of Gramercy, Louisiana, in the median of Interstate 10, 2.5 miles east of La Highway 641 overpass in St. James Parish, Louisiana.

Monument Description: Monument is a 9/16 steel rod driven to 56 feet to refusal within a 6" PVC sleeve set in concrete with protective metal access cover stamped 'S2'

Stamping: S2

Installation Date: 20030929 **Date of Survey:** 2014

Monument Established By: 3001, Inc.

NAD83 (2011) Epoch 2010.00 Geodetic Position

Lat: 30°07'10.70180"N

Long: 90°38'24.50682"W

NAD83 (2011) Epoch 2010.00 Datum LSZ (1702) Ft

N= 589,663.92'

E= 3,499,986.35'

Adjusted NAVD88 Height

Elevation = 10.86 feet (3.311 mtrs)

Ellipsoid Height (2011.00) = -23.189mtrs.

Geoid12A Height = -26.500 mtrs.

FOR REFERENCE ONLY

LCZ Adjusted NAVD88 Height

Elevation (Geoid09)= N/A

Ellipsoid Height = N/A

Elevation (Geoid03)= N/A

Ellipsoid Height = N/A

Elevation (Geoid99)= 11.35 feet (3.459mtrs.)

Ellipsoid Height = -23.169 mtrs.





VICINITY MAP

1 inch = 3,000 feet

Reproduced from NAIP Louisiana 2013 1m Aerial Imagery

Station Name: 4437+49.06=PLMS 435

Location: Described by 3001, Inc 2003, the station is located in St. John the Baptist Parish at Garyville, La about 1.4 miles southeast of Mt. Airy, La and 4.15 miles east southeast of Gramercy, La ownership- USACE to reach the station from the intersection of State Highway 44 and Highway 3213 (Veterans Memorial Bridge) near Gramercy, La go 3.7 miles east along Highway 44 to Garyville, La and mark on right on top of levee. The station is a US CORP Engineers brass cap 0.6' below ground surface, stamped PLMS 435 1976-4437+49.06, 1.0' south of the f/s crown of levee, 6.6' south of centerline of levee and 125' south of centerline of hwy 44. The survey mark is an old type disk 4' round.

Monument Description: Survey Disk set in concrete monument

Stamping: 4437 49.06 PLMS 435 1976

Installation Date: UNK **Date of Survey:** 20100727

Monument Established By: USACE

NAD83 (2011) Epoch 2010.00 Geodetic Position

Lat: 30°02'14.06307"N

Long: 90°37'17.74628"W

NAD83 (2011) Epoch 2010.00 Datum LSZ (1702) Ft

N= 559,734.48'

E= 3,506,035.28'

Adjusted NAVD88 Height

Elevation = 31.54 feet (9.613 mtrs)

Ellipsoid Height (2011.00) = -16.702mtrs.

Geoid12A Height = -26.315 mtrs.

FOR REFERENCE ONLY

LCZ Adjusted NAVD88 Height

Elevation (Geoid09)= N/A

Ellipsoid Height = N/A

Elevation (Geoid03)= 31.40 feet (9.570mtrs.)

Ellipsoid Height = -16.753 mtrs.

Elevation (Geoid99)= N/A

Ellipsoid Height = N/A



Culvert Hydraulic Survey

Project Number: 2302328.00C

Structure Number: ±1

Date: 11-3-20

Road Name: Airline Hwy / Hwy 61

Cross Sections: Upstream of Structure
Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: _____

Roadway/Deck Width (ft): 36'

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: 48" RCP

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 3' Height (ft): 3' Length (ft): 140.00

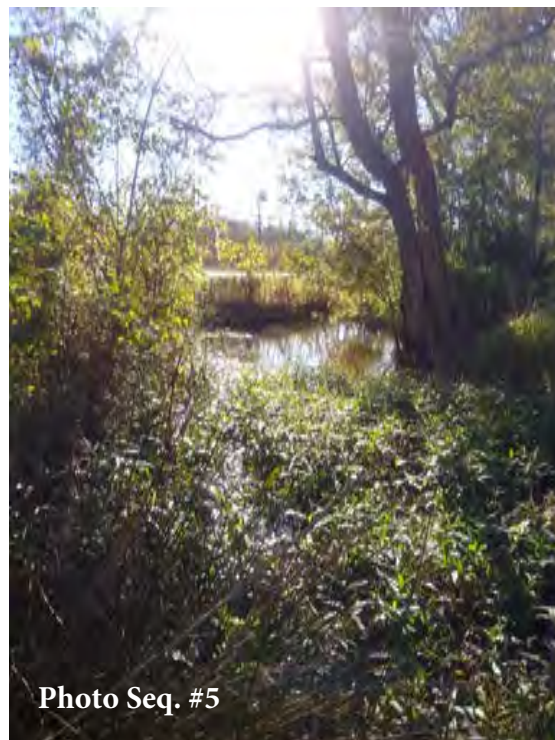
Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
Straight			
<u>Expansion</u>	<div>308-310</div> <div>308-311</div> <div>308-312</div>	<div>308-246</div> <div>308-247</div> <div>308-248</div>	

NOTES: See corresponding geo-referenced culvert positions below

STRUCTURE #1



NAD83 (2011) Louisiana South Zone 1702, NAVD88 GEOID 12B							
POINT	X	Y	INVERT	LAT	LONG	ELLIPSOID	DESCRIPTION
308-246	3503156.44	573617.53	-1.09	N30°04'31.66792"	W90°37'49.53073"	-87.715'	PCUL1 ST
308-247	3503151.58	573617.30	-1.03	N30°04'31.66589"	W90°37'49.58607"	-87.653'	PCUL2 ST
308-248	3503141.78	573616.76	-2.02	N30°04'31.66114"	W90°37'49.69761"	-88.649'	PCUL3 ST
308-310	3503151.75	573756.82	-1.17	N30°04'33.04695"	W90°37'49.574443"	-87.800'	PCUL1
308-311	3503147.04	573756.98	-1.28	N30°04'33.04891"	W90°37'49.62802"	-87.905'	PCUL2
308-312	3503138.14	573756.43	-1.93	N30°04'33.04397"	W90°37'49.72935"	-88.558'	PCUL3

Culvert Hydraulic Survey

Project Number: 2302328.000

Structure Number: #2

Date: 11-3-20

Road Name: Highway 61

Cross Sections: Upstream of Structure
Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: _____

Roadway/Deck Width (ft): 36'

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: 48" ECP

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 3 Height (ft): 3 Length (ft): 140.00

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
<u>Straight</u>	<div>308-433</div> <div>308-432</div>	<div>308-485</div> <div>308-484</div>	
Expansion			

NOTES: See corresponding geo-referenced culvert positions below

STRUCTURE #2

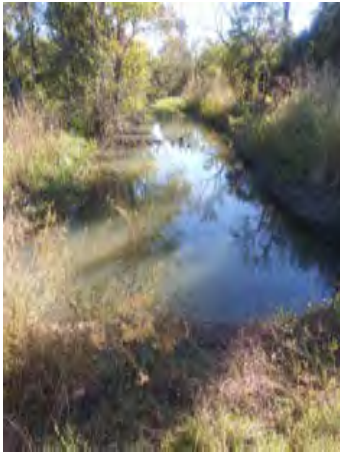


Photo Seq. #2



Photo Seq. #5



Photo Seq. #4



Photo Seq. #1



Photo Seq. #6



Photo Seq. #3

NAD83 (2011) Louisiana South Zone 1702, NAVD88 GEOID 12B							
POINT	X	Y	INVERT	LAT	LONG	ELLIPSOID HEIGHT	DESCRIPTION
308-432	3504182.36	573786.66	-1.14	N30°04'33.27969"	W90°37'37.84220"	-87.768'	PCUL1 ST
308-433	3504190.89	573786.92	-1.27	N30°04'33.28174"	W90°37'37.74509"	-87.897'	PCUL2 ST
308-484	3504186.23	573646.81	-0.98	N30°04'31.89500"	W90°37'37.80800"	-87.604'	PCUL2
308-485	3504195.79	573647	-0.92	N30°04'31.89633"	W90°37'37.69918"	-87.544'	PCUL1

Culvert Hydraulic Survey

Project Number: 2302328.00C
 Date: 11-6-20

Structure Number: #3
 Road Name: Railroad Tracks

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Gravel

Roadway/Deck Width (ft): _____

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 48 Height (ft): _____ Length (ft): 57.0

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
<u>Straight</u>	310-150 310-146		
Expansion			

NOTES: See corresponding geo-referenced culvert positions below

STRUCTURE #3



Photo Seq. #5



Photo Seq. #2



Photo Seq. #4



Photo Seq. #1



Photo Seq. #6



Photo Seq. #3

NAD83 (2011) Louisiana South Zone 1702, NAVD88 GEOID 12B							
POINT	X	Y	INVERT	LAT	LONG	ELLIPSOID HEIGHT	DESCRIPTION
310-146	3502421.15	572218.93	0.19	N30°04'17.86769"	W90°37'57.99694"	-86.412'	PCUL1 ST
310-150	3502433.37	572253.73	0.48	N30°04'18.21147"	W90°37'57.85541"	-86.125'	PCUL1

Culvert Hydraulic Survey

Project Number: 2302328.00C

Structure Number: #14

Date: 11-6-20

Road Name: Railroad Tracks

Cross Sections: Upstream of Structure
Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Grass

Roadway/Deck Width (ft): _____

Culvert/Pipe

Number of Pipes: 1 (2) 3 Other: _____

Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 48 Height (ft): _____ Length (ft): 58.0

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 (75) 50 25 <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
<u>Straight</u>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> 310-1103 310-1104 </div> <div style="text-align: center;"> 310-1100 310-1101 </div> </div>		
Expansion			

NOTES: See corresponding geo-referenced culvert positions below

STRUCTURE #4



Photo Seq. #1



Photo Seq. #2

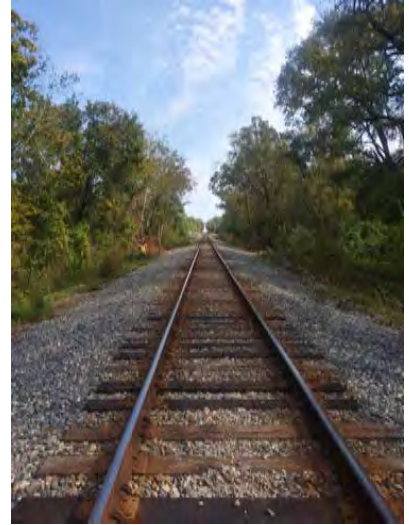


Photo Seq. #3



Photo Seq. #4



Photo Seq. #5



Photo Seq. #6

NAD83 (2011) Louisiana South Zone 1702, NAVD88 GEOID 12B							
POINT	X	Y	INVERT	LAT	LONG	ELLIPSOID HEIGHT	DESCRIPTION
310-1100	3504369.53	572205.66	-2.02	30d04'17.61793"	-90d37'35.82294"	-88.616	PCUL1 ST
310-1101	3504361.80	572204.59	-2.02	30d04'17.60776"	-90d37'35.91094"	-88.614	PCUL2 ST
310-1103	3504372.05	572262.71	-2.24	30d04'18.18245"	-90d37'35.79016"	-88.83	PCUL1
310-1104	3504362.54	572262.02	-2.19	30d04'18.17625"	-90d37'35.89846"	-88.788	PCUL2

Culvert Hydraulic Survey

Project Number: 2202328.00

Structure Number: 25

Date: 10 SEPTEMBER 2020

Road Name: US 61 / AIRLINE Hwy / PRIVATE

Cross Sections: Upstream of Structure
Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete (Asphalt) Timber Metal Other: GRAVEL DRIVEWAY

Roadway/Deck Width (ft): 20'

Culvert/Pipe

Number of Pipes: (1) 2 3 Other: _____

Shape/Type of Pipe: (Circular) Box Arch Ellipse Irregular Other: _____

Material: (Concrete) Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: RCP

Inside Diameter/Width (ft): 36" Height (ft): _____ Length (ft): 32.75'

Entrance Type: (Projecting) Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 (25) <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
<u>(Straight)</u>	254-236 254-237		
Expansion			

NOTES: See corresponding geo-referenced culvert positions below

STRUCTURE #5



NAD83 (2011) Louisiana South Zone 1702, NAVD88 GEOID 12B							
POINT	X	Y	INVERT	LAT	LONG	ELLIPSOID HEIGHT	DESCRIPTION
254-236	3504516.72	573801.72	-2.26	N30°04'33.40829"	W90°37'34.03558"	-88.886'	PCUL1
254-237	3504549.47	573801.73	-3.25	N30°04'33.40638"	W90°37'33.66282"	-89.868'	PCUL1

Culvert Hydraulic Survey

Project Number: 2202528,000 Structure Number: pt 10-11
 Date: 12-15-20 Road Name: N-100

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Dirt

Roadway/Deck Width (ft): _____

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 4' Height (ft): 4' Length (ft): 40.3

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
<u>Straight</u>			
Expansion			

NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.000 Structure Number: 22 12-13
 Date: 12-15-20 Road Name: _____

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: None

Roadway/Deck Width (ft): 10.0

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____


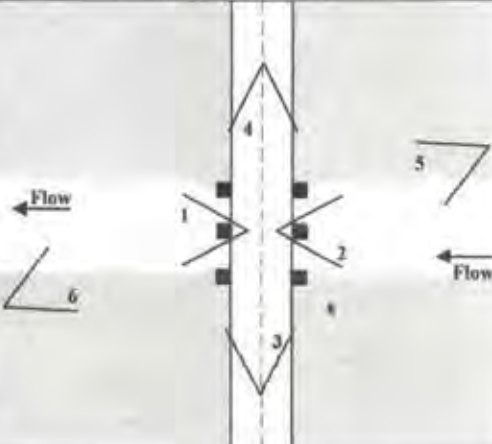

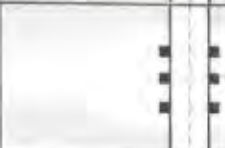
Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 1' Height (ft): 1' Length (ft): 40.7

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
<u>Straight</u>			
Expansion			

NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.00C Structure Number: p + 14-15
 Date: 12-15-20 Road Name: _____

Cross Sections: Upstream of Structure
 Downstream of Structure

**Note- Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Limestone

Roadway/Deck Width (ft): 10.0'

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 1.5 Height (ft): 1.5 Length (ft): 34.5

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
<u>Straight</u>			
Expansion			

NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.000 Structure Number: pt 16-17
 Date: 12-15-20 Road Name: _____

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Limestone

Roadway/Deck Width (ft): 10'

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

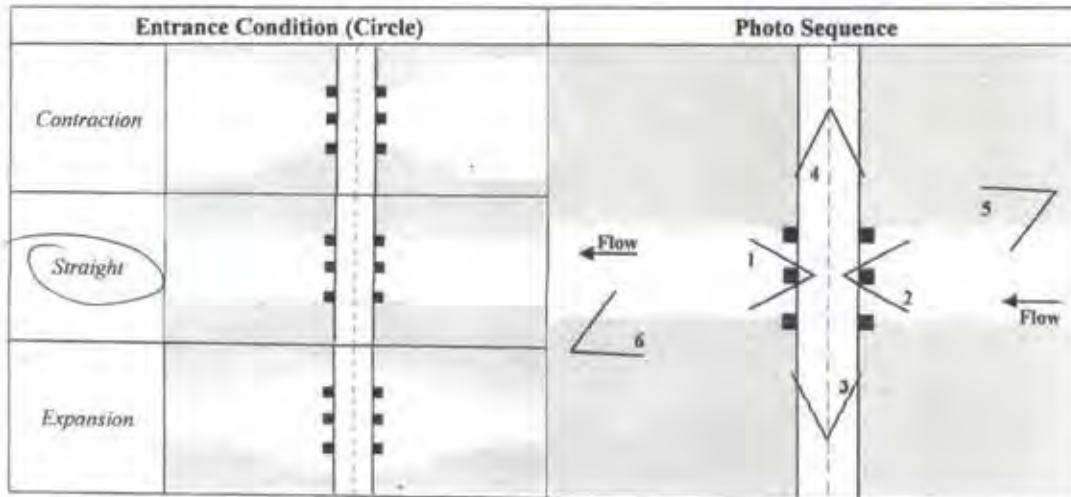
Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 1.5' Height (ft): 1.5' Length (ft): 39.0'

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10



NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.000

Structure Number: 24th 18-19

Date: 12-15-20

Road Name: _____

Cross Sections: Upstream of Structure
Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Limestone

Roadway/Deck Width (ft): 10.0

Culvert/Pipe

Number of Pipes: (1) 2 3 Other: _____


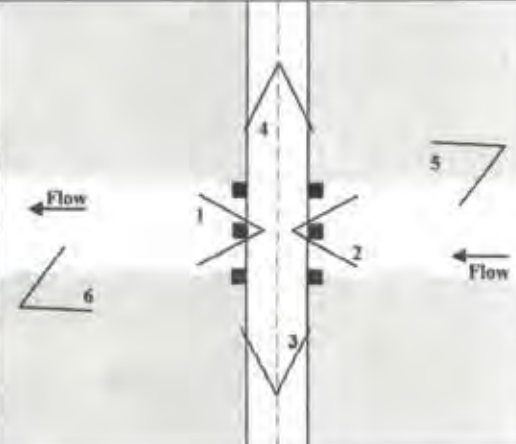

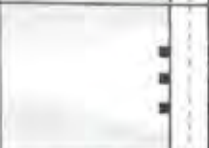
Shape/Type of Pipe: (Circular) Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal (Corrugated Plastic) Smooth Plastic Other: _____

Inside Diameter/Width (ft): 1.5 Height (ft): 1.5 Length (ft): 34.4

Entrance Type: (Projecting) Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 (25) <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
<u>(Straight)</u>			
Expansion			

NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202324.00C Structure Number: p+[±] 20-21
 Date: 12-15-20 Road Name: _____

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Limestone

Roadway/Deck Width (ft): 10.0'

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 1.5 Height (ft): 1.5 Length (ft): 34.0'

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
<u>Straight</u>			
Expansion			

NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.00c Structure Number: 22-23
 Date: 12-15-20 Road Name: _____

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Limestone

Roadway/Deck Width (ft): 10.0

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 1.3 Height (ft): 1.3 Length (ft): 52.0

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
<u>Straight</u>			
Expansion			

NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.000 Structure Number: pt 24-25
 Date: 12-15-20 Road Name: _____

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Limestone

Roadway/Deck Width (ft): 10.0'

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

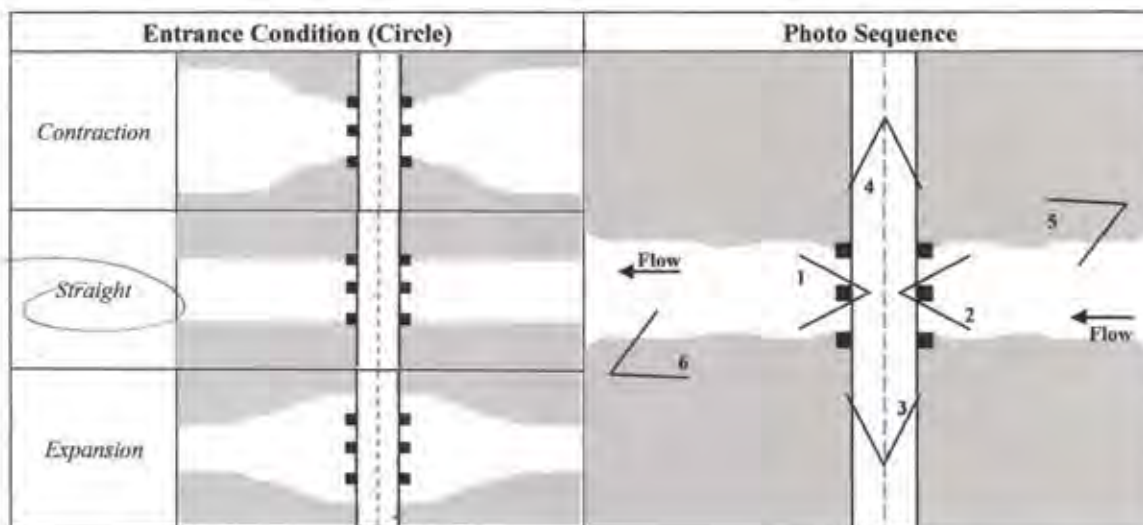
Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 1.5' Height (ft): 1.5' Length (ft): 34.0

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10



NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.000
 Date: 12-15-20

Structure Number: 53-54
 Road Name: RxR Tracks

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Tracks

Roadway/Deck Width (ft): 27.0

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

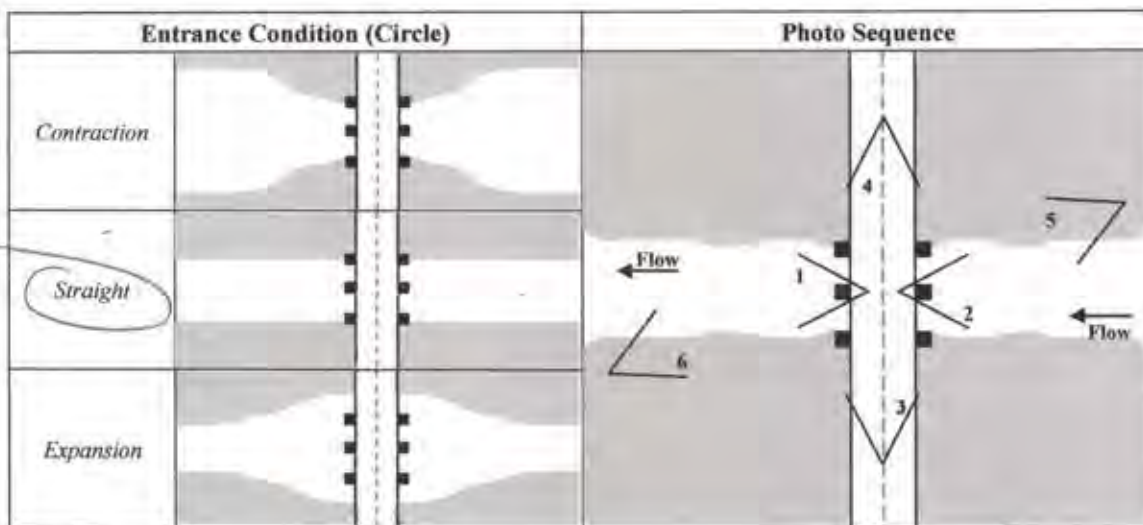
Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 3' Height (ft): 3' Length (ft): 55.0

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10



NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.00C
 Date: 12-15-20

Structure Number: 27 68-69
 Road Name: Argonia St

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement:

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: _____

Roadway/Deck Width (ft): 15.0

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

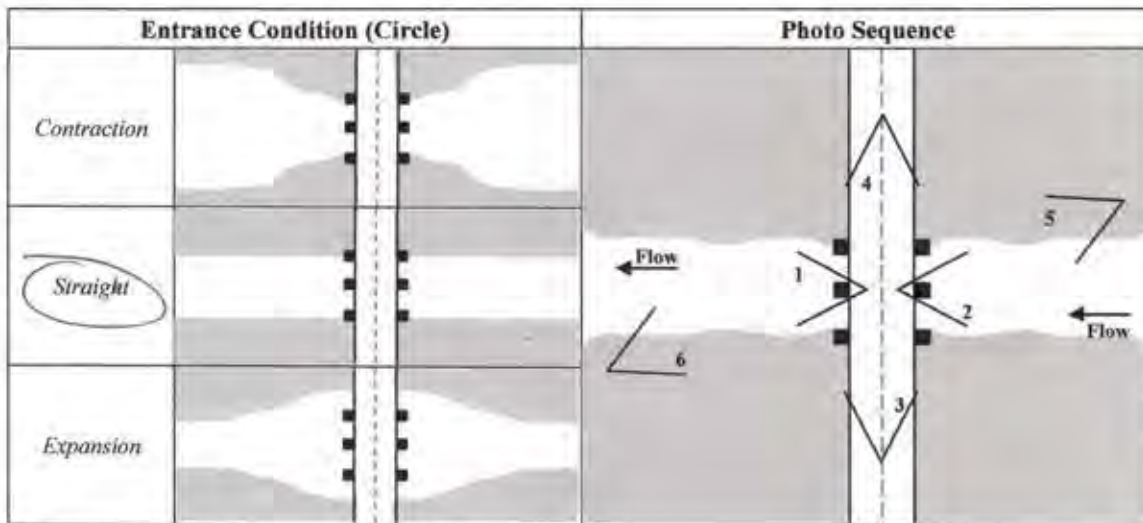
Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 3.5 Height (ft): 3.5 Length (ft): 31.0

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10



NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328-00C
 Date: 12-15-20

Structure Number: pt 55-56
 Road Name: Marigold St

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: _____

Roadway/Deck Width (ft): 20.0

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

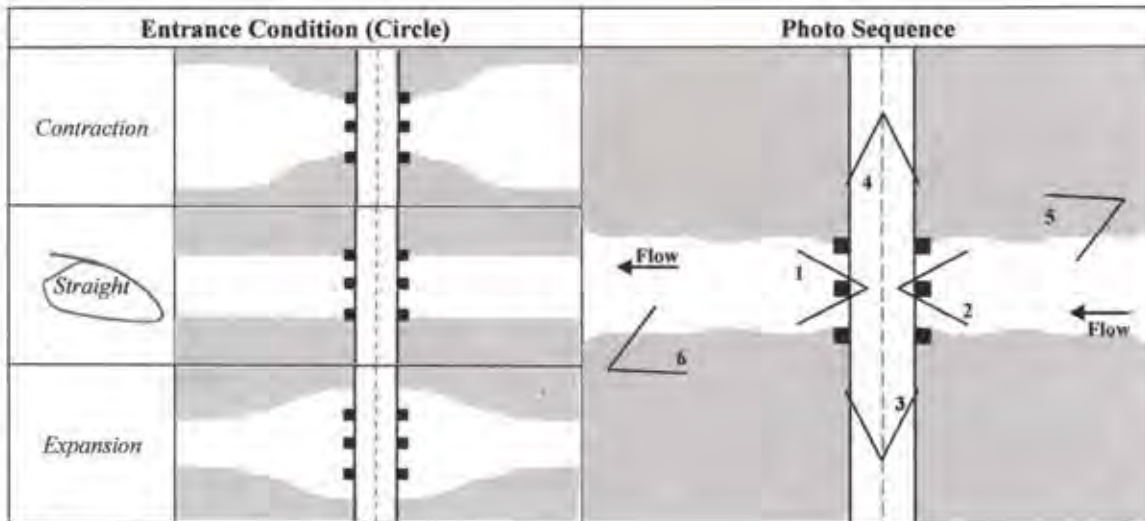
Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 2.5 Height (ft): 2.5 Length (ft): 40.1

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10



NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.000

Structure Number: 79-80

Date: 12-15-20

Road Name: R.R. Tracks

Cross Sections: Upstream of Structure
Downstream of Structure

**Note- Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Tracks

Roadway/Deck Width (ft): 27.0'

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

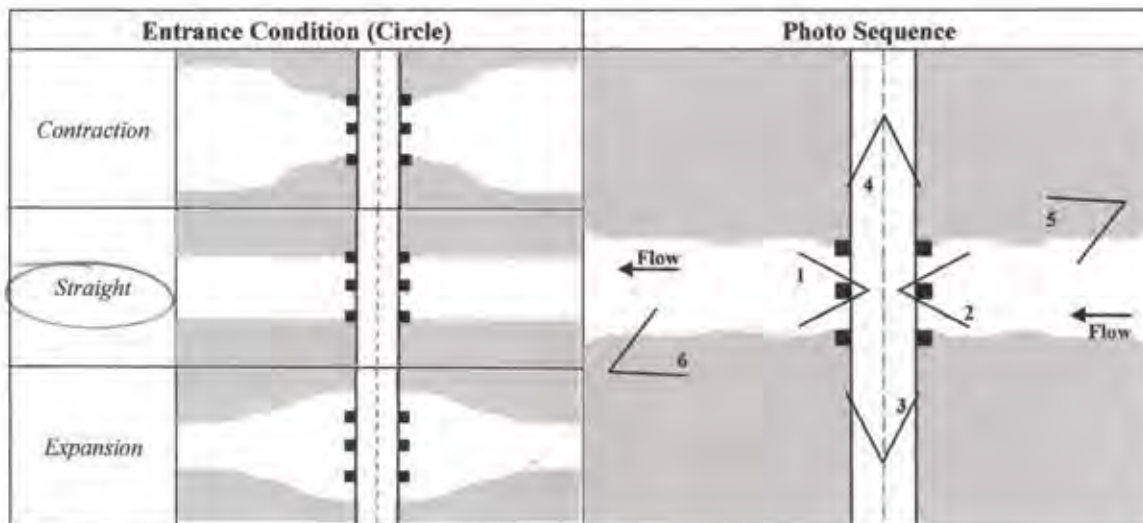
Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 3.5 Height (ft): 3.5' Length (ft): 68-3'

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10



NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.000 Structure Number: 7th 81-82
 Date: 12-15-20 Road Name: Angels Ln St

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: _____

Roadway/Deck Width (ft): 20.0

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 1.5 Height (ft): 1.5 Length (ft): 61.3

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)	Photo Sequence
Contraction	
Straight	
Expansion	

NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.00C

Structure Number: pt 21 92, 96

Date: 12-15-20

Road Name: Angelina St

Cross Sections: Upstream of Structure
Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: _____

Roadway/Deck Width (ft): 20.0

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 1.5' Height (ft): 1.5' Length (ft): 54.7'

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)	Photo Sequence
<i>Contraction</i>	
<u><i>Straight</i></u>	
<i>Expansion</i>	

NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.000 Structure Number: Pt # 97-98
 Date: 12-15-20 Road Name: Argo Rd St

Cross Sections: Upstream of Structure
 Downstream of Structure

**Note- Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: _____

Roadway/Deck Width (ft): 20.0

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

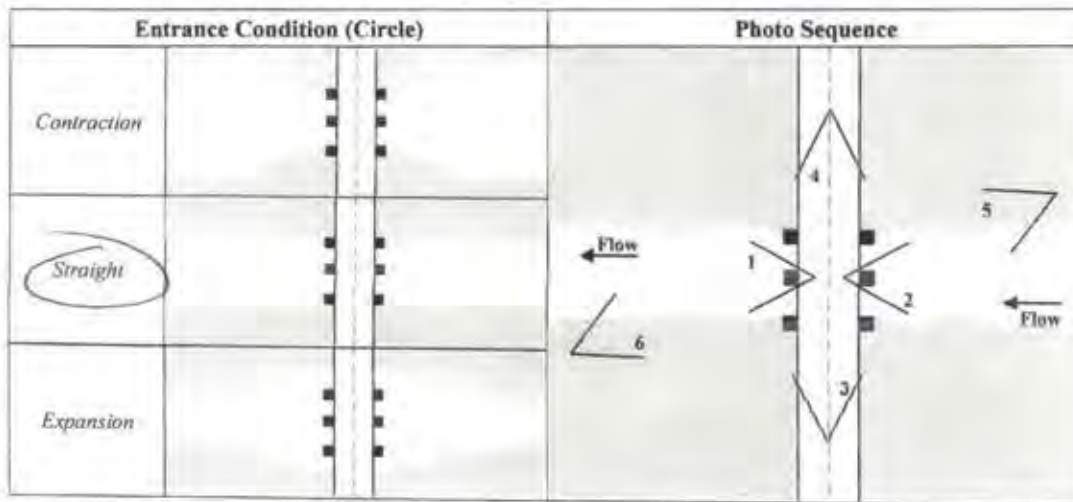
Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 1.5 Height (ft): 1.5 Length (ft): 54.3'

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10



NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.00C

Structure Number: pt 104-109

Date: 12-15-20

Road Name: Age 100 St

Cross Sections: Upstream of Structure
Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: _____

Roadway/Deck Width (ft): 20.0

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 37 Height (ft): 26 Length (ft): 70.5

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
<u>Straight</u>			
Expansion			

NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.00C Structure Number: PT # 110-117
 Date: 12-15-20 Road Name: Rte Tracks

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Trails

Roadway/Deck Width (ft): 27.0

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

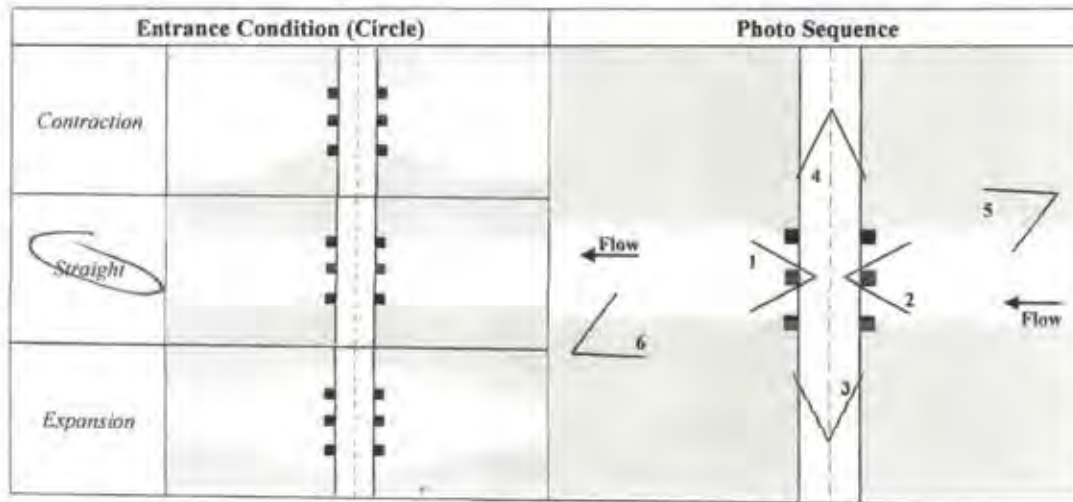
Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 3' Height (ft): 3' Length (ft): 85.5

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10



NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328,000 **Structure Number:** pt 111-116
Date: 12-15-20 **Road Name:** R/L Tracks

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Tracks

Roadway/Deck Width (ft): 27.0

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 3.5 **Height (ft):** 3.5 **Length (ft):** 80.7

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
<u>Straight</u>			
Expansion			

NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202324.006 Structure Number: p^u 112-115
 Date: 12-15-20 Road Name: Tracks

Cross Sections: Upstream of Structure
 Downstream of Structure

**Note- Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Tracks

Roadway/Deck Width (ft): 27.0

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

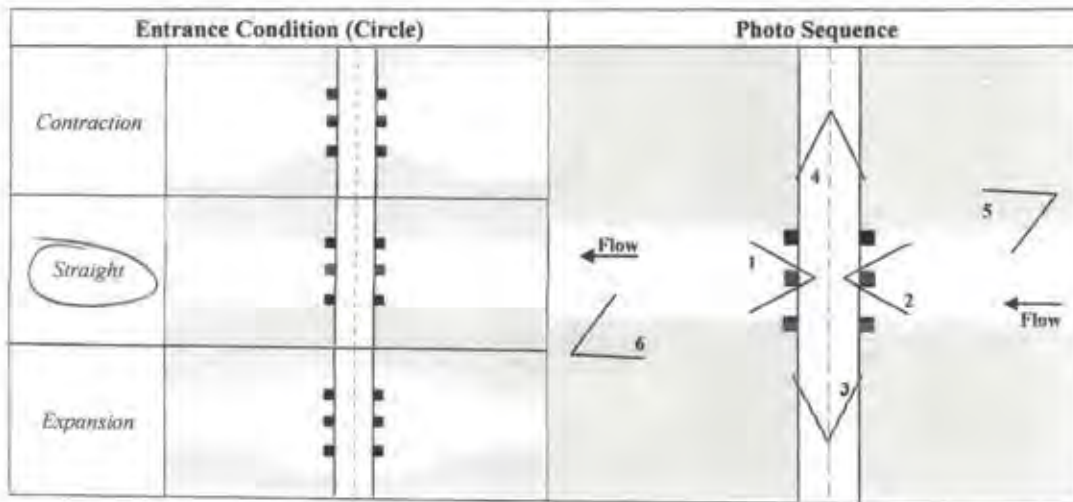
Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 2.5 Height (ft): 2.5 Length (ft): 80.5

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10



NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.00C
 Date: 12-15-20

Structure Number: # 113-114
 Road Name: R.R. Tracks

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Tracks

Roadway/Deck Width (ft): 27.0

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 3 Height (ft): 3 Length (ft): 80.5

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
<u>Straight</u>			
Expansion			

NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.000 Structure Number: 2+118-119
 Date: 12-15-20 Road Name: None

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation
 Channel Invert Elevation at Culvert
 Embankment Side Slope Rate
 Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Dirt

Roadway/Deck Width (ft): _____

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

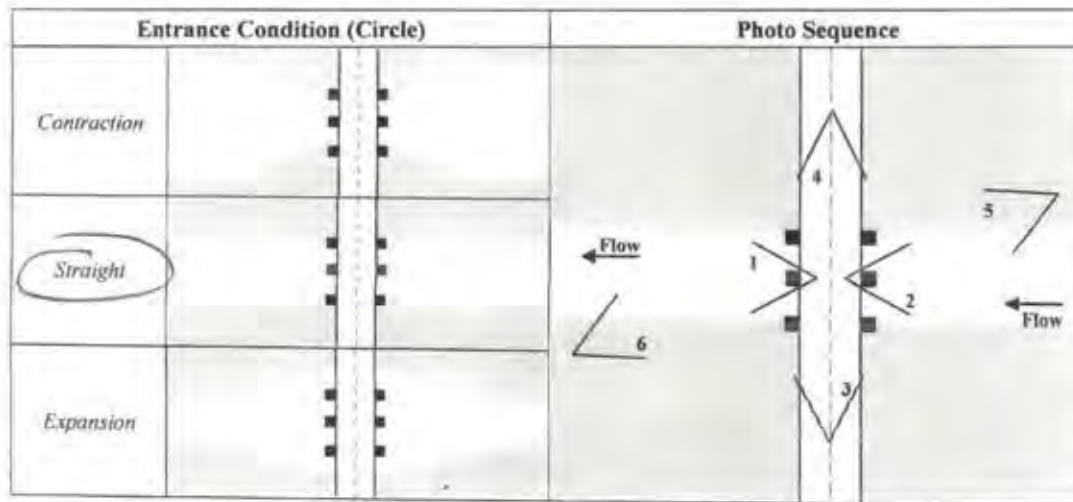
Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 2.5 Height (ft): 2.5 Length (ft): 41.7

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10



NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202325.00C Structure Number: pt # 120-121
 Date: 12-15-20 Road Name: Driveway

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation
 Channel Invert Elevation at Culvert
 Embankment Side Slope Rate
 Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Deck

Roadway/Deck Width (ft): 10.5

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____





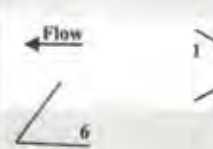

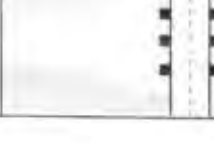


Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 15 Height (ft): 15 Length (ft): 40.7

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)			Photo Sequence		
Contraction					
<u>Straight</u>					
Expansion					

NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.000 Structure Number: pt # 131-132
 Date: 12-15-20 Road Name: Pst Office Rd

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Culvert SAC

Roadway/Deck Width (ft): _____

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

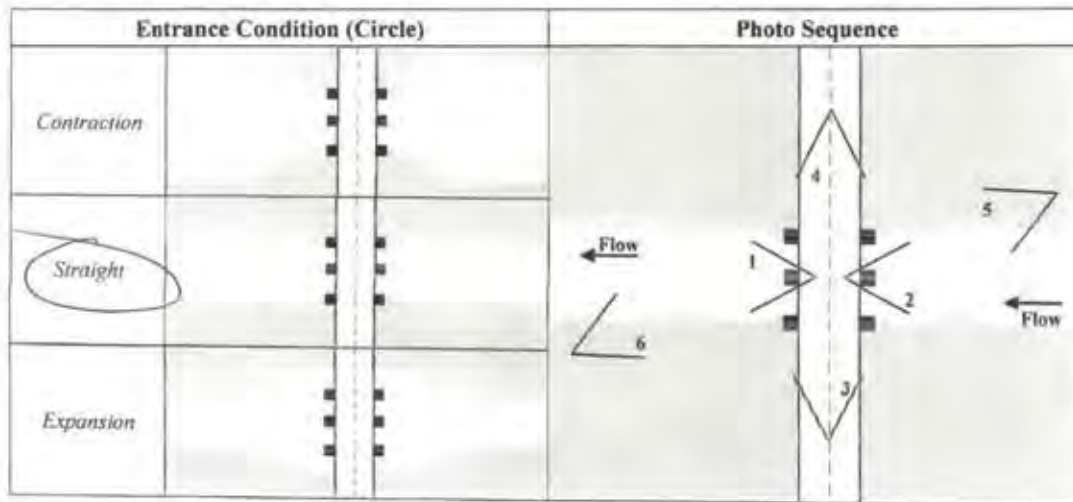
Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 15" Height (ft): 15" Length (ft): ?

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10



NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.000 Structure Number: pt # 158-159
 Date: 12-15-20 Road Name: RxR tracks

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement.

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Track

Roadway/Deck Width (ft): 27.0

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

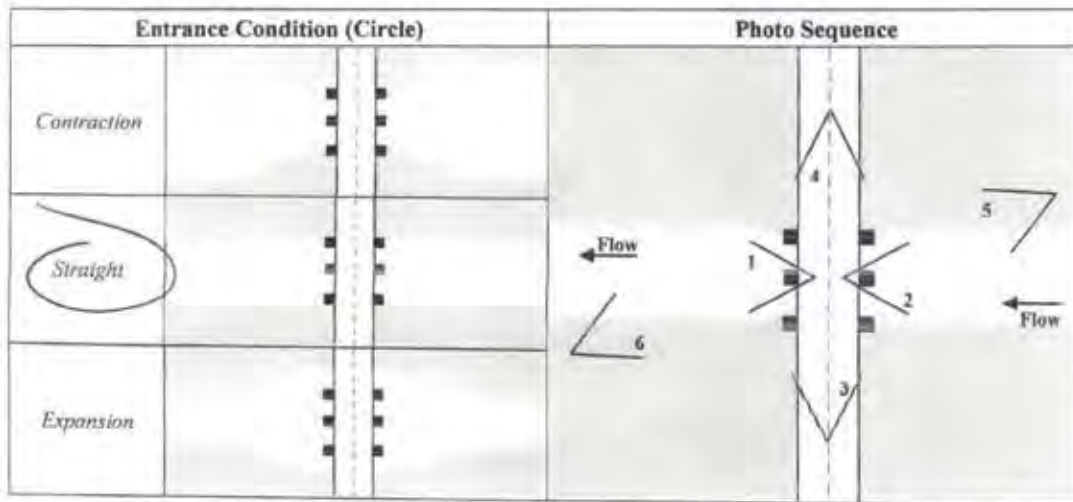
Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 2.5 Height (ft): 2.5 Length (ft): 86.3

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10



NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.00C Structure Number: pt² 160-161
 Date: 12-15-20 Road Name: RR Tracks

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Tracks

Roadway/Deck Width (ft): 27.0

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 2.5 Height (ft): 2.5 Length (ft): 84.5

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
<u>Straight</u>			
Expansion			

NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.00C Structure Number: pt # 162-163
 Date: 12-15-20 Road Name: NONE

Cross Sections: Upstream of Structure
 Downstream of Structure

****Note-** Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Dirt

Roadway/Deck Width (ft): _____

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 1.5 Height (ft): 1.5 Length (ft): 16.2

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10

Entrance Condition (Circle)		Photo Sequence	
Contraction			
<u>Straight</u>			
Expansion			

NOTES: _____

Culvert Hydraulic Survey

Project Number: 2202328.00C Structure Number: pt 324-525
 Date: 12-15-20 Road Name: R.R. Tracks

Cross Sections: Upstream of Structure
 Downstream of Structure

**Note- Cross sections should be located far enough away from road and side ditches to represent natural channel section.

Culvert Invert Elevation

Channel Invert Elevation at Culvert

Embankment Side Slope Rate

Road Shots: Three shots (minimum) along centerline and Edge of Pavement

Roadway/Deck

Type: Concrete Asphalt Timber Metal Other: Tracks

Roadway/Deck Width (ft): 27.0'

Culvert/Pipe

Number of Pipes: 1 2 3 Other: _____

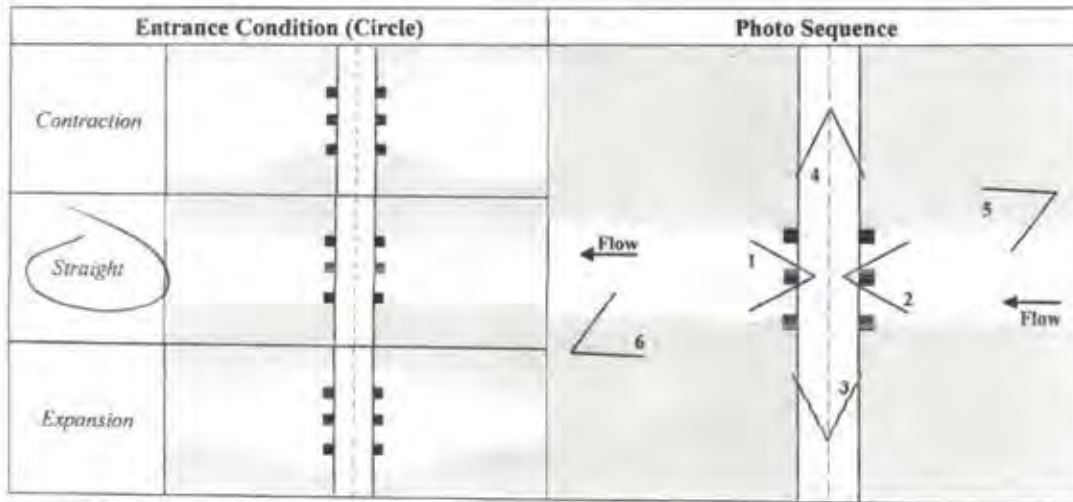
Shape/Type of Pipe: Circular Box Arch Ellipse Irregular Other: _____

Material: Concrete Corrugated Metal Smooth Metal Corrugated Plastic Smooth Plastic Other: _____

Inside Diameter/Width (ft): 4.5' Height (ft): 4.5' Length (ft): 65.2'

Entrance Type: Projecting Flat Headwall Flat Headwall w/ Wingwalls Other: _____

Culvert Opening Clogged (%): 100 75 50 25 <10



NOTES: _____























































































































































































































































































APPENDIX - CAMP ON HOPE CANAL

1600-FT SOUTH OF I-10

OWNERS: JEREMIAH JOHNSON & SHAWN GRADY

PARCEL NO. 9660442737

St. John Parish Assessor 2020 Assessment Listing

Parcel#

9660442737

View on Map (http://atlas.geoportalmaps.com/stjohn_public/q/Parcel?PARCEL_ID=9660442737)**Primary Owner**

JOHNSON, JEREMIAH &

Mailing Address

SHAUN GRADY

97 BIG TREET BLVD

GARYVILLE LA 70051-0000

Ward

WARD 6

Type

Real Estate

Legal

LOT 1.005 ACRES

Physical Address**Parcel Items**

Property Class	Assessed Value	Market Value	Units	Homestead
COUNTRY LOT	700	7,000	1.00	0
TOTAL	700	7,000	1.00	0

Deeds

Deed#	Type	Date	Amount	Book	Page
354986	01-Regular Transfer	11/2/2017	12,000		
353970	04-Succession	9/7/2017	0		

Ownership History

Homestead?	Name	Primary?	% Ownership	% Tax	From	To	Address
NO	JOHNSON, JEREMIAH &	YES	100.0000	100.0000	11/2/2017		
NO	BOGEN, LACIE LIN MICHEL	YES	100.0000	100.0000	9/7/2017	11/2/2017	
NO	MICHEL, FLOYD JR & LINDA	YES	100.0000	100.0000	1/17/2012	9/7/2017	

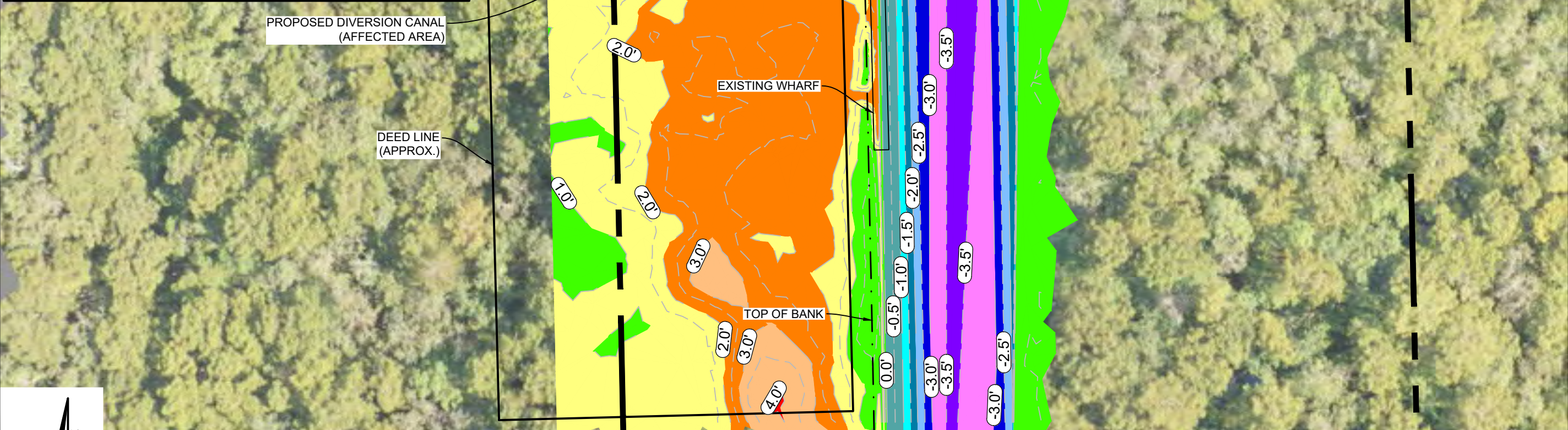
PARISH

Millage	Mills	Taxpayer Tax	Homestead Tax
PARISH WIDE 89.11	89.1100	62.38	0.00
LAW ENFORCE 16.99	16.9900	11.89	0.00
P LEVY 3.53	3.5300	2.47	0.00
LAW ENFORCE 16.00	16.0000	11.20	0.00
TOTALS	125.6300	87.94	0.00



Parcel Number: 9660442737
Owner Name: JOHNSON, JEREMIAH &
SHAWN GRADY

Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	4.000	5.000	
2	3.000	4.000	
3	2.000	3.000	
4	1.000	2.000	
5	0.000	1.000	
6	-1.000	0.000	
7	-1.500	-1.000	
8	-2.000	-1.500	
9	-2.500	-2.000	
10	-3.000	-2.500	
11	-3.500	-3.000	
12	-4.000	-3.500	



NAD 83 LOUISIANA SOUTH ZONE

Scale: 1" = 40'

- NOTE:
- DEED LINES SHOWN WERE OBTAINED FROM THE ST. JOHN THE BAPTIST PARISH TAX ASSESSOR'S WEBSITE AND HAVE NOT BEEN FIELD VERIFIED.
 - THIS DRAWING IS NOT A PROPERTY BOUNDARY SURVEY, AND AS SUCH, DOES NOT COMPLY WITH THE "MINIMUM STANDARDS FOR PROPERTY BOUNDARY SURVEYS" AS ADOPTED BY THE LOUISIANA PROFESSIONAL LAND SURVEYING BOARD. THIS DRAWING IS INTENDED FOR REFERENCE PURPOSES ONLY.
 - ALL ELEVATIONS ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) GEOID 12B.

*Not to be used for construction,
bidding, recordation, conveyance,
sales, or engineering design.*

PRELIMINARY

Ricardo M. Johnson
Professional Land Surveyor
Registration No. 4767

DATE: 12/03/2020		<div>SURVEY DETAIL TOPOGRAPHY & BATHYMETRY</div>		<div>AECOM MAUREPAS DIVERSION CANAL</div>		<div>COASTAL PROTECTION AND RESTORATION AUTHORITY 150 TERRACE AVENUE BATON ROUGE, LOUISIANA 70802</div>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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STATE OF LOUISIANA
COASTAL PROTECTION AND RESTORATION AUTHORITY

**RIVER REINTRODUCTION INTO MAUREPAS SWAMP
WEST SHORE OF LAKE PONTCHARTRAIN FLOOD PROTECTION
STATE PROJECT No. PO-0029**

Geotechnical Data Collection Plan

for



And



AECOM
1515 Poydras Street
New Orleans, LA 70806

July 16, 2020

Rev.	Date	Description	Prep.	Checked	Approved
0	7/8/2020	Initial Draft Pending Adjustments from Site Visit	Eustis Engineering (JMW)		
1	7/16/2020	Revised Plan Based on Agency Review Comments	Eustis Engineering (JMW/SGW/GPS)		
Revisions after Rev. 0 are denoted by a vertical line in the right-hand margin against the revised text.					

Acronyms and Abbreviations

CPRA	Coastal Protection and Restoration Authority
CPTs	Cone Penetration Tests
CUP	Coastal Use Permit
DOTD	Louisiana Department of Transportation and Development
EL	Elevation
GPS	Global Positioning System
HSDRRSDG	Hurricane and Storm Damage Risk Reduction System Design Guidelines
I.D.	Inside Diameter
in.	Inch
JSA	Job Safety Analysis
LFPDG	Louisiana Flood Protection Design Guidelines
LONO	Letter of No Objection
MRL	Mississippi River Levee
O.D.	Outside Diameter
QA/QC	Quality Assurance/Quality Control
ROE	Right of Entry
SPTs	Standard Penetration Tests
USACE	U.S. Army Corps of Engineers
WSLP	West Shore of Lake Pontchartrain

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Appendix

Appendix A – Existing Data Locations

Appendix B – Proposed Exploration Locations

1 PURPOSE

This Geotechnical Data Collection Plan (Revision 1) presents the policy and specific actions that will be implemented for the proposed field exploration associated with the Soil Borings and Cone Penetration Tests (CPTs) for the Maurepas Diversion and West Shore of Lake Pontchartrain (WSLP) Protection project. The goal of the exploration program is to provide additional geotechnical data to support our design. This document presents plans and procedures that Eustis Engineering L.L.C. will implement for access, quality, safety, and consistency of work to be performed by field crews as well as any subcontractors required for the work. This plan will address the means and methods to obtain the samples, perform field testing, and perform laboratory testing. This plan will address requirements for clearing of vegetation and impacts to properties and wetlands where the field crews need access.

2 OVERVIEW

Exploration methods will include 5-in. diameter fixed piston Shelby tube sampling in addition to in-situ testing using CPTs. The scope of the field exploration is itemized below and includes the exploration types, quantities, and depths. The locations of the existing borings and CPTs provided by CPRA and AECOM are provided in Appendix A. Based on the review of this existing data, the design team identified geotechnical data gaps that are required to be filled to meet technical design requirements in addition to the requirements of the USACE's Hurricane and Storm Damage Risk Reduction System Design Guidelines (HSDRRSDG) and CPRA's Louisiana Flood Protection Design Guidelines (LFPDG). The proposed additional borings and CPTs are shown in Appendix B. The locations, types and depths of the exploration points have been carefully considered to meet technical design requirements and various agency design guidelines. The scope of the field exploration is itemized in a summary table included in Appendix B. We note the locations we present in Appendix B have been agreed upon verbally through discussion between Eustis Engineering, AECOM, and CPRA. The proposed plan includes drilling 5-in. diameter borings at approximate 1000-ft intervals along the WSLP alignment to support the design of the WSLP flood protection features with intermediate CPTs. Boring and CPT depths along the levee alignment will be 50 to 60 feet below the existing grade. At structure locations the borings and CPTs will be extended to depths of up to 125 feet. Currently, structural project features include gates, and/or T-wall monoliths at River Road, the KCS railroad, the CN railroad and at the tie-in near Hope Canal (i.e., Four Locations). This Revision of our Geotechnical Plan is based around comments received from CPRA to reduce our exploration plan. We present the revisions herein.

3 PERMITS AND COMMUNICATION WITH LANDOWNERS

In order to perform the borings and CPTs, a permit is required from the Pontchartrain Levee District (PLD), including Letters of No Objection from the Completed Works Branch at the USACE and CPRA. Additional permits include a Coastal Use Permit (CUP) and Section 10/404 permit from the USACE. If a boring is moved into the right of way of U.S. Highway 61, a permit from Louisiana Department of Transportation and Development (DOTD) will also be required, but at this time we do not anticipate this being necessary for the project. We understand right-of-entry (ROE) and permits for this site will be obtained by CPRA

and/or the Pontchartrain Levee District. We assume all other permits, ROE documents, and points of contact will be provided with the notice to proceed (NTP) in time to begin operations on 16 July 2020. Recommendations and restrictions mandated by permitting will be added to this execution plan when they become available. In addition, we will contact LA One Call for location of underground utilities prior to mobilizing to the site to perform the borings/CPTs.

4 ACCESS AND LOCATING EXPLORATION POINTS

A licensed surveyor will need to mark the levee alignment to facilitate the clearing operations. We understand AECOM retained C.H. Fenstermaker & Associates, L.L.C. to perform these surveying operations and provide the limits in conjunction with our clearing efforts. After clearing, a surveyor should also locate and stake all boring and CPT locations. Alternatively, the boring and cone locations can be located using a handheld GPS unit and the proposed coordinates. In the event the boring is offset due to access, safety, or other considerations, we will coordinate approval of the adjustment with AECOM and CPRA. After the borings and CPTs are completed, we will leave a labeled stake at the exploration location for a professional land surveyor to obtain latitude, longitude, and ground surface elevation of the “as-drilled” boring and CPT locations.

In order to gain access to the exploration locations south of the KCS railroad, we have assumed a bulldozer and/or excavator will be used to clear access paths (approximately 20'-25' wide) to provide access to boring/CPT locations. Locations cleared by dozer may be accessed by our track rig. For locations north of the KCS railroad, we assume Marsh equipment such as a Marsh Excavator will be necessary to clear an approximate 50-ft wide access path and complete our field exploration. We intend to use existing clearings/pathways/roads to access the cleared path and boring/CPT locations whenever possible. Potential Access routes are described in Section 6 of this plan. We may elect to use a truck rig when site access allows this alternative such as locations within the Marathon facility.

Tress will be cut at the existing ground surface or waterline. Trees will be felled in place and not removed, only pushed aside. Stump removal to the mudline or ground surface may involve some chipping operations. Permit restrictions or other clearing requirements may require adjustments to our plans. We will not haul away vegetation cleared at the site.

We anticipate having four work areas and sequencing our work in these areas in the following order:

1. Work Area 1: Between River Road (HWY-44) and Canadian National Railroad (CN Rail),
2. Work Area 2: Between CN Rail and Kansas City Southern Railroad,
3. Work Area 3: Between the North side of Airline Highway and the northern extents of the project;
and
4. Work Area 4: Between Kansas City Southern Railroad and south side of Airline Highway (US-61).

Based on discussions had between Eustis Engineering, AECOM, and CPRA, the generalized approach for clearing operations is to begin at River Road and clear a path generally along the future alignment centerline with a track bulldozer until reaching the CN Railroad (Work Area 1). This will provide access to SB-01, SCPT-02, SCPT-03, SB-02, and SB-03. The clearing equipment will backtrack to River Road and be moved to access project Station 1047+00 via Post Office Road. From there the track equipment will clear

a path moving north until reaching the Kansas City Southern Railroad (Work Area 2). This effort will provide access to SCPT-07, SB-05, SB-06, SB-07, SCPT-10, SB-08, SB-09, and SCPT-11. We will backtrack our track equipment to exit via Post Office Road as this allows us to avoid passing heavy equipment overtop known pipeline right of ways, or to require a new railroad crossing.

At this stage, our operations will transition to a cargo buggy mounted excavator system for clearing of Work Areas 3 and 4. We propose using an existing cleared area on the northside of US-61 for use with setting up geotechnical equipment associated with work adjacent to Hope Canal. We will begin north of US-61 by floating equipment north along Hope Canal and then begin clearing for access to SB-13 and then clearing an access path south along the project centerline (towards US-61). This will allow for clearing and access to SB-11, SB-12, SB-13, SCPT-13 and SCPT-14. We will then move all equipment to LA-54 on the south side of US-61 to gain access for clearing operations north of the Kansas City Railroad and to provide access to SCPT-12. This approach and sequence provide the least number of “local moves” of our equipment.

The sequence of work for our exploration plan is to generally follow the clearing plan in which we begin our work in Work Area 1, proceed to Work Area 2, then proceed to Work Area 3, and finish at Work Area 4. All track mounted equipment will be delivered to Work Areas 1 and 2 via a haul truck pulling a lowboy for the project. Notes on depth, clearing equipment, exploration equipment, and ground conditions are provided in the following table.

PROPOSED BORING AND CONE EQUIPMENT AND CLEARING SUMMARY

Boring Location	Depth	Exploration Equipment	Clearing Equipment	Ground Conditions
SB-01	125	Track	Dozer	Land
SB-02	50	Track	Dozer	Land
SB-03	125	Track	Dozer	Land
SB-04	50	Track	None	Land
SB-05	50	Track	Dozer	Land
SB-06	50	Track	Dozer	Land
SB-07	50	Track	Dozer	Land
SB-08	50	Track	Dozer	Land
SB-09	125	Track	Dozer	Land
SB-10	50	M. Buggy	Cargo Ex	--
SB-11	125	M. Buggy	Cargo Exc.	Swamp
SB-12	50	M. Buggy	Cargo Exc.	Swamp
SB-13	50	M. Buggy	Cargo Exc.	Swamp

Cone Location	Depth	Exploration Equipment	Clearing Equipment	
SCPT-01	125	Track	None	--
SCPT-02	125	Track	Dozer	Land
SCPT-03	50	Track	Dozer	Land
SCPT-04	50	Track	Dozer	--
SCPT-05	100	Track	None	--
SCPT-06	50	Track	None	--
SCPT-07	50	Track	Dozer	Land
SCPT-08	50	Track	Dozer	--
SCPT-09	50	Track	Dozer	--
SCPT-10	50	Track	Dozer	Land
SCPT-11	100	Track	Dozer	Land
SCPT-12	50	M. Buggy	Cargo Ex	Swamp
SCPT-13	50	M. Buggy	Cargo Ex	Swamp
SCPT-14	50	M. Buggy	Cargo Ex	Swamp

Note: Strikethroughs for line items in above tables have been discussed between all parties.

5 EQUIPMENT

Eustis Engineering will mobilize its equipment from its Metairie, Louisiana office to execute and support the scope of work. The following equipment will be utilized for borings on land:

- CME-850 Track Mounted Drill Rigs
- 15-Ton Vertek Cone Penetrometer Rigs
- D5 Bulldozer or equivalent excavator
- Bobcat Skid Steer
- Four-Wheel Drive Utility Mules
- Miscellaneous Support Trucks and Trailers

For borings over soft, marsh deposits Eustis Engineering will employ the services of a marine equipment contractor to provide the following additional equipment:

- Marsh Excavators for Clearing
- Cargo Buggies or Swamp Buggies for Drilling and Cone Operations
- Airboats/Support Boats

6 OVERALL SCHEDULE & SEQUENCE

We estimate approximately 5 weeks of clearing operations to provide access to the exploration locations along the entire alignment based on the use of two excavators in the swamp areas, one bulldozer in land-based location, and windrowing of trees for the alignment. Mobilization of equipment will be based on availability but may generally be assumed to occur within two weeks of authorization, surveying, and/or permits, as applicable. Our clearing operations assumes no time necessary for hauling of any cleared trees/vegetation. The field operations for the soil borings are estimated to require 44 crew days, and CPT operations will require 5 crew days. This estimate does not include mobilization/demobilization, local moves, or standby time due to weather or other delays as well as holidays. Our crews will generally operate on five or six-day work weeks. We anticipate finalizing our sequence of work upon receiving all permitting and landowner agreements.

7 CREW DAILY MOBILIZATION AND DEMOBILIZATION

Eustis Engineering will mobilize its crew daily from its Metairie, Louisiana office/geotechnical laboratory in various support trucks with trailers. Once at a given staging area, the crew will access exploration locations on site using a four-wheel drive utility mule or support boat. Soil samples will be transported vertically in specialized racks for 5-in. diameter undisturbed soil samples and daily from the site to our geotechnical laboratory.

8 FIVE-IN. DIAMETER SHELBY TUBE SAMPLING

Five-inch undisturbed samples will be obtained with a 5-in. outside diameter, thin-walled, Shelby tube sampler, continuously pushed with a fixed-piston type sampler (Hvorslev fixed-piston sampler or equivalent) for a penetration of 48 inches. The overall length of the sampling tube is 54 inches. Undisturbed samples are to be taken in accordance with ASTM D1587, "Thin-Walled Tube Sampling of Soils."

Five-inch diameter borings will be obtained for all structures and levee features. This sampling minimizes disturbance and will be supplemented by cone penetrometer tests and existing geotechnical data made available by AECOM and CPRA. Samples will be collected at 4 foot continuous intervals for the duration of the soil boring.

The sampling tube will be advanced in a single-motion push, if possible. The piston rod (inner rod) will be firmly fixed while the tube is advanced. A good mechanical connection, with adequate shear and moment capacity, will be maintained between the drill rig and the outer rod of the sampling head.

Proper mechanical operation of the sampling head will be ensured prior to obtaining a sample. The leather piston rings (seals or packing cups) will be in good condition. The vacuum release system will be functional and the sampling head will be thoroughly cleaned after obtaining a sample.

The piston will be firmly fixed at the bottom of the tube while the tube is being advanced to the next sampling depth by locking the piston rod (inner rod).

The vacuum release mechanism of the sampling head will be activated prior to removing a tube from the sampling head fixture after sampling.

Tubes will be reused if thoroughly cleaned, but dented sampling tubes will be discarded.

Bentonite-based or other approved drilling mud will be used throughout the drilling and sampling process to improve sample recovery and to minimize sample disturbance. The unit weight of the drilling mud will be controlled. The drilling fluid will have a density that maintains a compressive stress at the bottom of

the borehole, to offset the reduction in stress from the excavated soil, and the density of the drilling fluid will be great enough to apply a horizontal stress within the hole to prevent the hole from collapsing.

A 5-7/8" diameter three-winged baffled bit will be utilized during advancement of the boring at the end of the rod string and will divert the bentonite slurry back up the borehole to limit sample disturbance for the next sampling event. Bottom discharge bits will be prohibited.

The sampler for SM- and SP- type soils will be a standard Split Spoon sampler (1 $\frac{3}{8}$ -inch I.D., 2-inch O.D.).

Excessive rotation speeds of the cutting tool during drilling will be avoided. A rotation rate of 70 to 80 rpm is appropriate for area soils.

Once samples have been removed from the bore holes, they will be immediately be sealed within the sampling tube prior to shipment to the laboratory for extrusion, classification, and testing.

The interior ends of the Shelby tube samples will be trimmed, with a tool constructed for that purpose, to a minimum 1.5-inch recess. The tube ends will then be secured with expandable packers. The wing nut of the packer will be tightened with a tool designed for that purpose, so that the O-ring of the packer expands against the interior of the tube. The end will be tested with a pocket penetrometer as a rough indication of consistency. The tube will then be sealed with plastic end caps, and wrapped with three wraps of tape (electrical tape or duct tape) to prevent loss of moisture.

Sample tubes will be shipped to the testing laboratory in an upright position (e.g., in the same orientation as removed from the borehole) and secured and/or padded for protection against jarring or vibration. Rough handling will be avoided. Samples will be protected from extreme temperatures and exposure to moisture by providing shade or cover where necessary to protect the sample tubes. Due to the weight and bulk of the 54-in. tube sample, movement by manual means requires two people.



Figure 1: Typical land-based set up during drilling and sampling (track-mounted rig)



Figure 2. Marsh buggy with drill rig



Figure 3: Five-in. diameter Shelby tube vertical transportation rack

9 CONE PENETRATION TEST OPERATIONS

For the CPT, we will utilize our 2007 Vertek track mounted CPT rig. Two crewmen will be on the CPT rig which includes an operator and a helper. CPT test will be performed with an electronic piezocone and electronic readout. The rig will be positioned over the location of the sounding and leveling jacks are lowered to raise the machines mass off the rigs suspension system. The hydraulic rams of the penetrometer thrust system are set to as near vertical as possible by adjusting the leveling jacks. Once the rig is set level the following will be performed.

Soundings will be in accordance with ASTM D5778. We will use our 2.5 and 5.0-ton tension and subtraction cones depending on observed sensitivity and application. From our experience, these cone capacity limits offer the greatest accuracy and sensitivity to lower strength Holocene soils. CPTs will be correlated to undisturbed borings in some locations and will also be used to correlate existing geotechnical data made available by AECOM and CPRA.

The CPT probe will be saturated with silicon fluid in the field prior to each use. Soundings will be done in the following sequence:

Power up the penetrometer tip and data acquisition system according to the manufacturers recommendations, typically 15 to 30 minutes prior to use.

Obtain initial zero readings for the cone in an unloaded condition at a temperature as close to ground conditions as possible.

Record pertinent information such as project number, date, time, cone id, and starting point of each test.

The cone will be advanced into the soil at a rate of 2 centimeters per second plus or minus 0.5 centimeters. The depth, tip resistance, sleeve friction, pore pressure, and probe inclination are recorded at 5-centimeter intervals.

During the progress of the sounding, tip pressure, sleeve friction, and pore pressure will be continuously monitored for signs of proper operation. Other indicators such as rod rebound and probe inclination will be monitored to ensure damage will not occur if highly resistant layers or obstructions are encountered.

At the end of a sounding the penetrometer will be extracted. A final set of zero readings of the unloaded cone will be obtained and checked against the initial zero readings. Initial and final baselines will be documented.

The cone assembly will be inspected after each sounding for damage. Damaged components will be replaced as needed. In general, we expect CPT soundings to reach planned depths. If CPT soundings do not reach planned depths, alternatives will be discussed.



Figure 4: CPT Operations



Figure 5: CPT rig mounted to buggy

10 WATER MEASUREMENTS

During the course of a given boring, ground water measurements will be made for borings on land. The initial depth and time at which the water table is encountered will be noted on the field log. The crew will let the borehole sit for approximately 15 minutes prior to recording the water level. Crews will measure water level inside borehole at the start of each day before the commencement of drilling, noting depth to the nearest inch, date, and time. Any sudden changes in water level during drilling, such as loss of drilling mud, will be noted. For borings completed in inundated areas, water depth measurements to the mudline will be made.

11 FIELD LOGS

Field logs will be filled out with a scaled log for each 50-ft of soil boring as well as an additional boring information sheet to provide supplemental information. Field Logs will include the following:

- Depth, interval, sample recovery and sample number. All samples will be numbered according to the designated boring number and consecutive numbering sequence for each sample.
- Type of SPT hammer (height, weight, type of drop hammer).
- Number of blows for each 6-in increment of the SPT.
- Visual description, estimate of dilatancy, and preliminary classification of the soil encountered using the Unified Soil Classification System:
- Pocket Penetrometer readings for applicable samples.
- Individual sample collection date and time.
- Depth of groundwater first encountered.
- Daily water level readings.
- Any unusual drilling conditions encountered (e.g. loss of drilling fluids, occurrence of gas, heave of the bottom of the hole).
- Rig, driller, logger
- Activities report of crew personnel, drilling progress, and operational observations.

12 GROUTING PROCEDURES

Upon completion of drilling, all bore holes and CPT soundings will be tremie-backfilled to the ground surface in accordance with the CPRA, USACE, and permit requirements. The grouting procedures are as follows:

A grout slurry with minimum density of 13.3 pounds per gallon (lbs/gal) will be batched. The design grout mix consists of: a) one sack (94 lbs) of Portland Type I/II Cement; b) ten gallons of water; and c) 7 pounds

of bentonite. The batched grout will be weighed and recorded on a backfill record. The maximum grout slurry density is 14.1 lbs/gal.

A tremie pipe (approximately 1-in. diameter) or drill rod will be placed to the bottom of the bore hole or CPT sounding.

The grout slurry will then be pumped using a positive displacement or piston pump to the bottom of the bore hole through the tremie pipe.

Grout placement will be continued until the return at the surface is within ± 0.2 lbs/gal of the initial grout density. The return grout density, along with the backfill quantities, will be recorded on the backfill record.

13 QUALITY CONTROL AND SAFETY

Prior to mobilization, the scope of field work to be accomplished along with safety will be reviewed in a project meeting held with the project manager, field supervisor, drill crew and subcontractors. This meeting will familiarize the field crews with the required work and safety requirements of the project. Quality Control and safety go hand in hand and have a direct relationship to the success of this scope of work. The Quality Control Plan is included in Appendix C –Quality Control Plan for Soil Borings, Laboratory Testing, and Cone Penetration Tests, attached to this document. A separate safety plan has also been submitted.

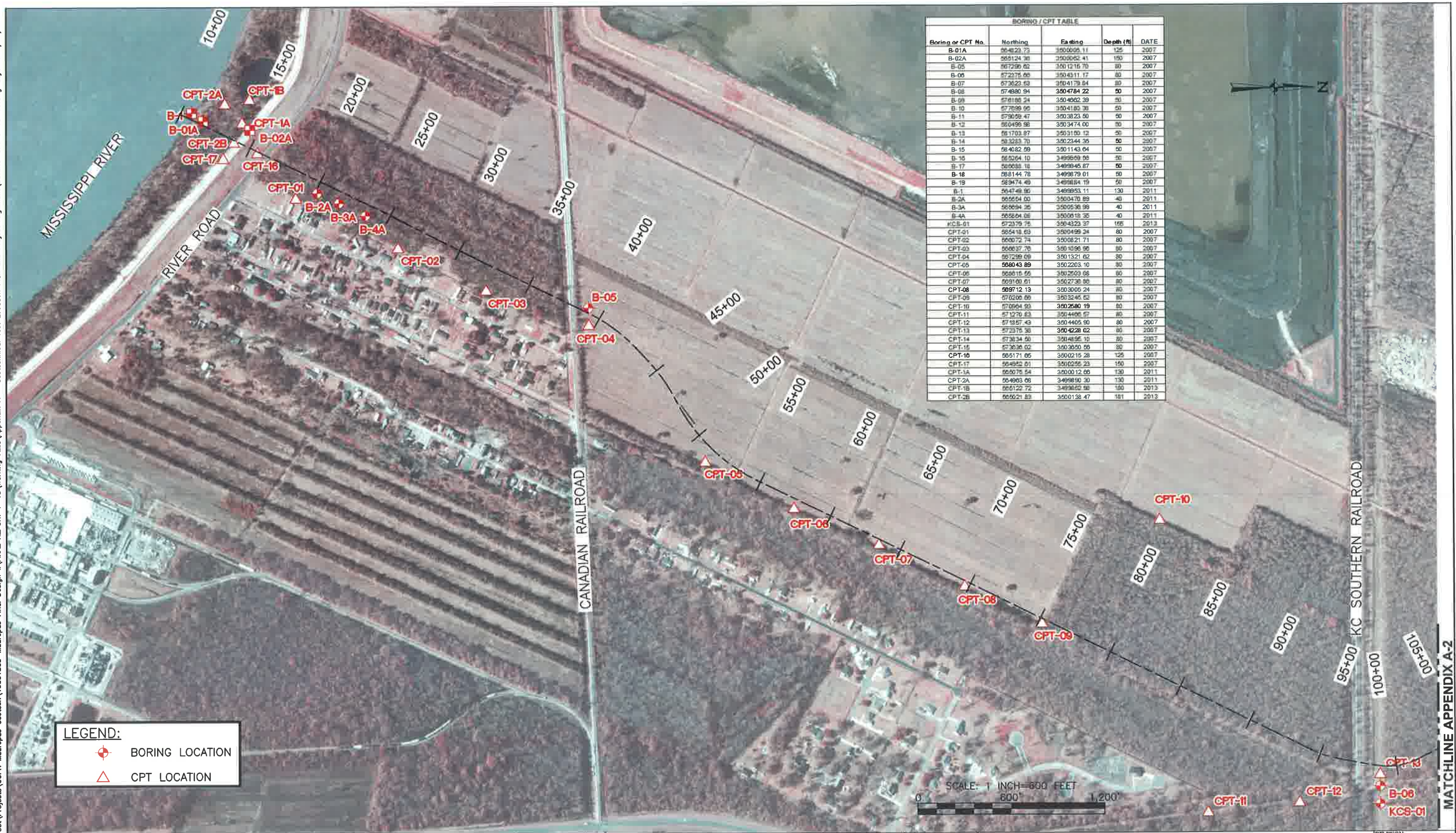
We will have an onsite supervisor on the barge and land that will be coordinating the scope of work with the drill crew. He or she will oversee quality and safety during the course of this scope of work. He or she will provide daily updates to the project manager pertaining to progress, and quality control supervision of the crews.

In addition, the field supervisor will oversee the overall safety of the crews. He will be monitoring any changed conditions as the work progresses.

- A pre-job hazard analysis will be completed and reviewed with the crew.
- Daily tool box safety meeting will be given onsite
- A daily review of the Job Safety Analysis (JSA) will be completed by the entire crew. The JSA will also be reviewed and modified should a changed condition occur
- Crews will be advised of the locations of fire extinguishers, shelter in place points, first-aid kits and all contacts in the event of an emergency
- PPE to be worn at all times will include hard hats, safety glasses, gloves, hearing protection, and steel toe shoes.

APPENDIX A

EXISTING DATA LOCATIONS



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△			
△			
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△			
REV	DESCRIPTION OF REVISION	BY	DATE




URS
7389 Florida Blvd., Suite 300
Baton Rouge, Louisiana 70806
225/922-5700

REFERENCE DRAWINGS

SCALE	AS SHOWN
DESIGNED	IH
DRAWN	ESL
CHECKED	
PEER REVIEWED	
DATE	08/2013

COASTAL PROTECTION AND RESTORATION AUTHORITY
MAUREPAS DIVERSION CANAL

GEOTECHNICAL BORINGS, CPT LOCATIONS AND PROJECT ALIGNMENT

REVISION	
PROJECT	10001863
APPENDIX	A

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MATCHLINE APPENDIX A-1



LEGEND:

- BORING LOCATION
- CPT LOCATION

NOTES:

1. CPT-16 AND CPT-17 REPLACE BORING B-03 AND B-04
2. SEE SHEET A-1 FOR COORDINATES.

REV	DESCRIPTION OF REVISION	BY	DATE



URS

7389 Florida Blvd., Suite 300
Baton Rouge, Louisiana 70806
225/922-5700

REFERENCE DRAWINGS

SCALE	AS SHOWN
DESIGNED	IH
DRAWN	ESL
CHECKED	
PEER REVIEWED	
DATE	08/2013

COASTAL PROTECTION AND RESTORATION AUTHORITY
MAUREPAS DIVERSION CANAL

GEOTECHNICAL BORINGS, CPT LOCATIONS
AND PROJECT ALIGNMENT

REVISION

PROJECT 10001863
APPENDIX A

MATCHLINE APPENDIX A-3

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REV	DESCRIPTION OF REVISION	BY	DATE



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7389 Florida Blvd., Suite 300
Baton Rouge, Louisiana 70806
225/922-5700

REFERENCE DRAWINGS

SCALE
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CHECKED
PEER REVIEWED
DATE
08/2013

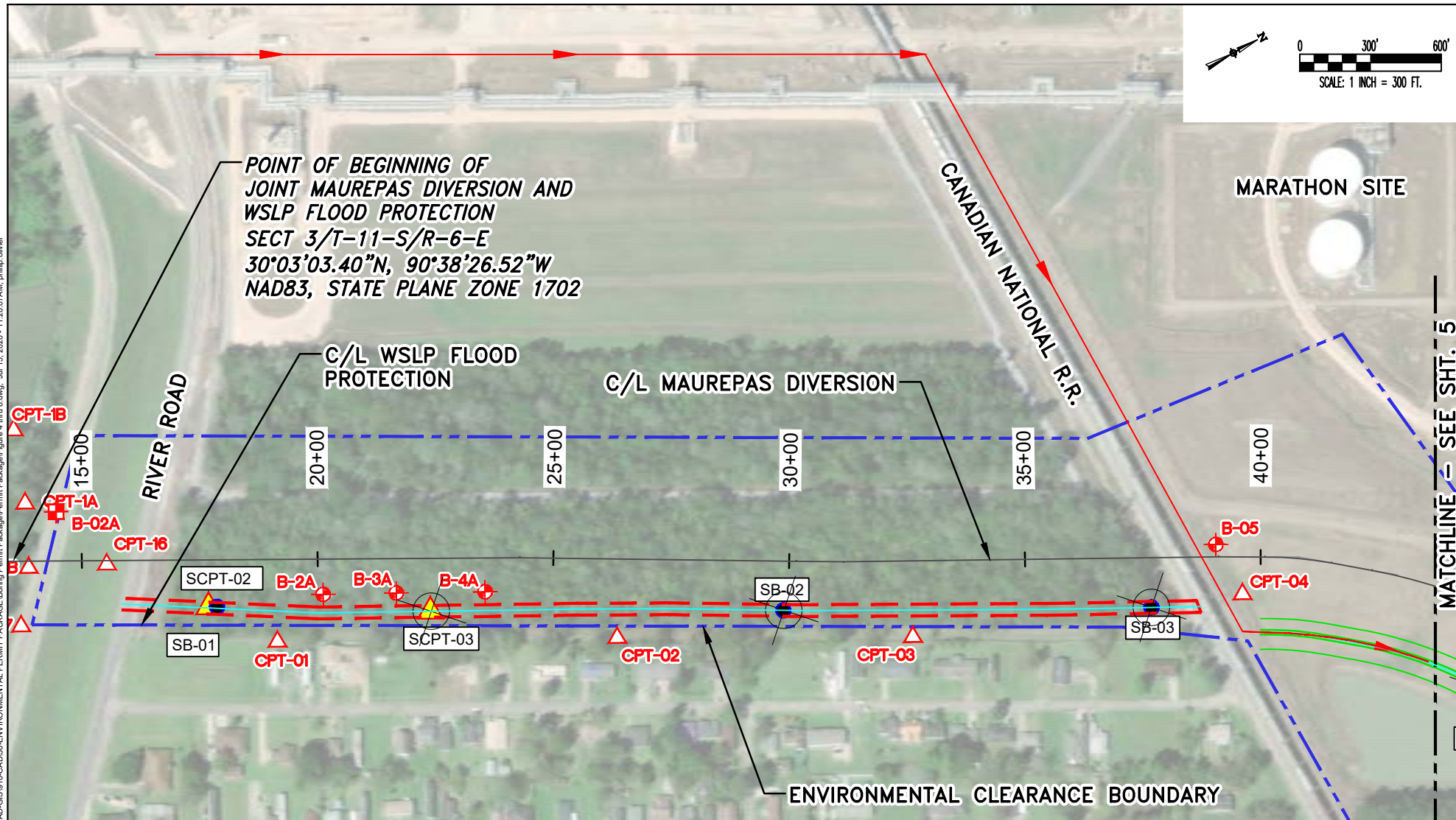
COASTAL PROTECTION AND RESTORATION AUTHORITY MAUREPAS DIVERSION CANAL
GEOTECHNICAL BORINGS, CPT LOCATIONS AND PROJECT ALIGNMENT

REVISION
PROJECT
10001863
APPENDIX
A

APPENDIX B

PROPOSED EXPLORATION LOCATIONS

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LEGEND:

- ENVIRONMENTAL CLEARANCE BOUNDARY
- CLEARING CORRIDOR
(SEE FIGURE 7 FOR LIMITS OF IMPACT)
- ▲ CPT-01 EXISTING CONE PENETROMETER
- ⊗ B-1A EXISTING BORING
- ▲ SCPT-XX SUPPLEMENTAL CPT
- SB-XX SUPPLEMENTAL BORING
- ACCESS ROUTE

AECOM

1515 POYDRAS STREET
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(504) 586-8111



**COASTAL PROTECTION
AND RESTORATION
AUTHORITY**

150 TERRACE STREET
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RIVER REINTRODUCTION
INTO MAUREPAS SWAMP/
WSLP FLOOD PROTECTION
ST. JOHN THE BAPTIST PARISH, LOUISIANA

LOCATION PLAN
GEOTECHNICAL SURVEYS

STATE PROJECT NUMBER: PO-0029

DATE: JUNE, 2019

DRAWN BY: ERIC E. WALTER

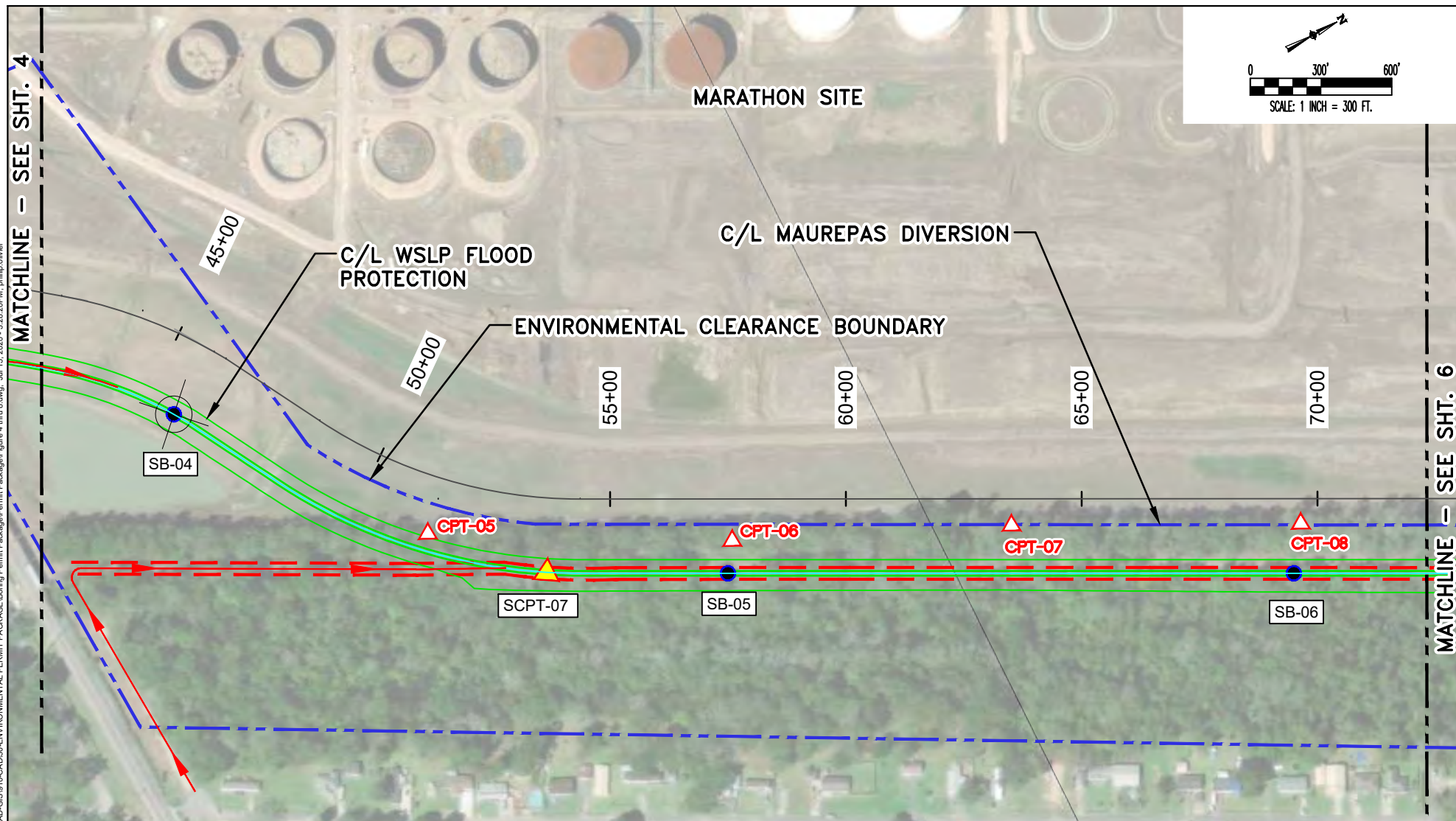
DESIGNED BY: J. CLAY LOYLESS

APPROVED BY: J. CLAY LOYLESS

FEDERAL PROJECT NUMBER: ---

SHEET 4 OF 8

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LEGEND:

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|--|--|--------|----------------------------|---------|---------------------|--|--------------|
| | ENVIRONMENTAL CLEARANCE BOUNDARY | CPT-01 | EXISTING CONE PENETROMETER | SCPT-XX | SUPPLEMENTAL CPT | | ACCESS ROUTE |
| | CLEARING CORRIDOR
(SEE FIGURE 7 FOR LIMITS OF IMPACT) | B-1A | EXISTING BORING | SB-XX | SUPPLEMENTAL BORING | | |

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DRAWN BY: ERIC E. WALTER

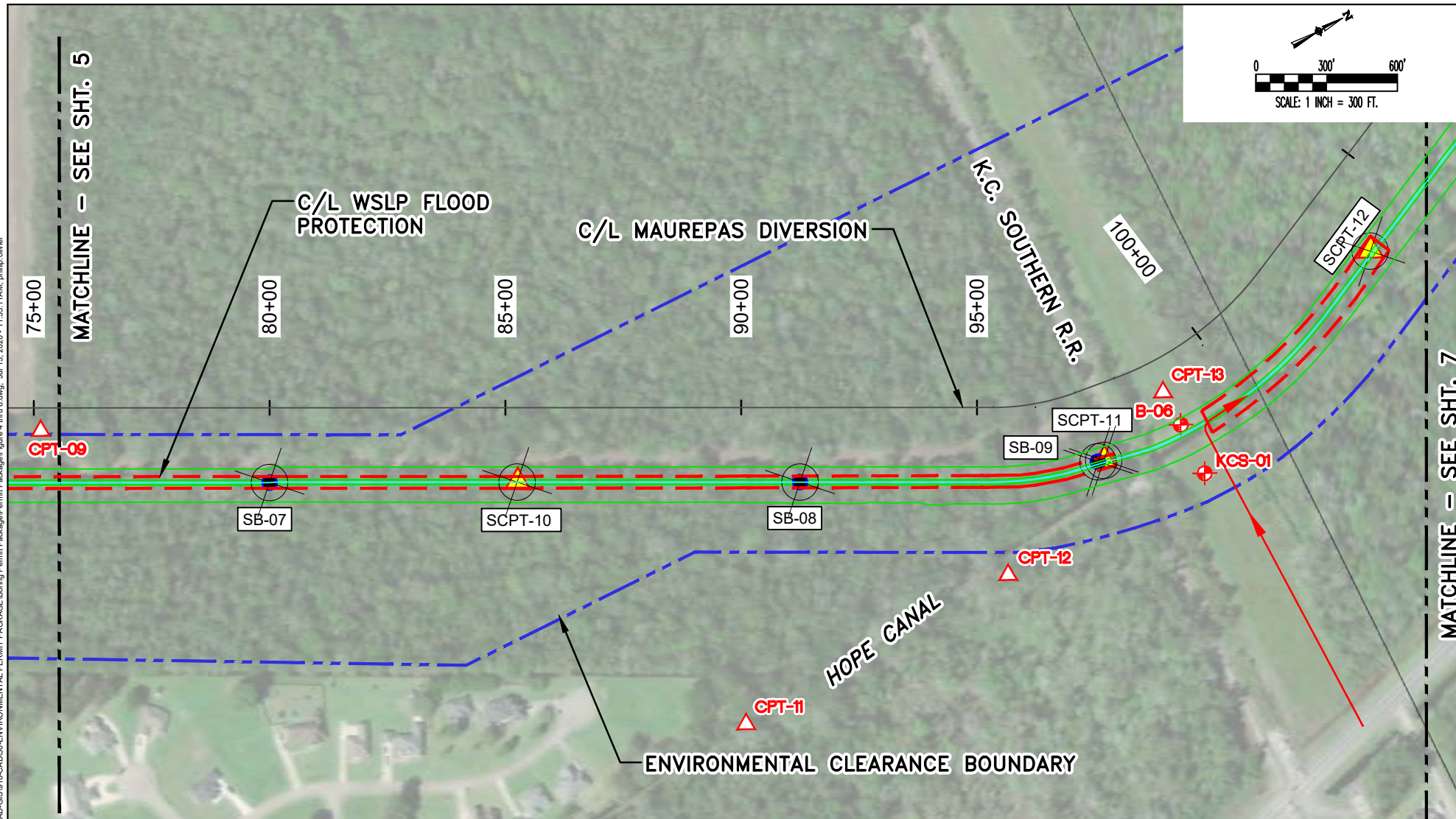
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APPROVED BY: J. CLAY LOYLESS

FEDERAL PROJECT NUMBER: ---

SHEET 5 OF 8

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LEGEND:

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	CLEARING CORRIDOR (SEE FIGURE 7 FOR LIMITS OF IMPACT)	B-1A	EXISTING BORING	SB-XX	SUPPLEMENTAL BORING		

AECOM

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SUITE 2700
NEW ORLEANS, LA 70112
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STATE PROJECT NUMBER: PO-0029

DATE: JUNE, 2019

DRAWN BY: ERIC E. WALTER

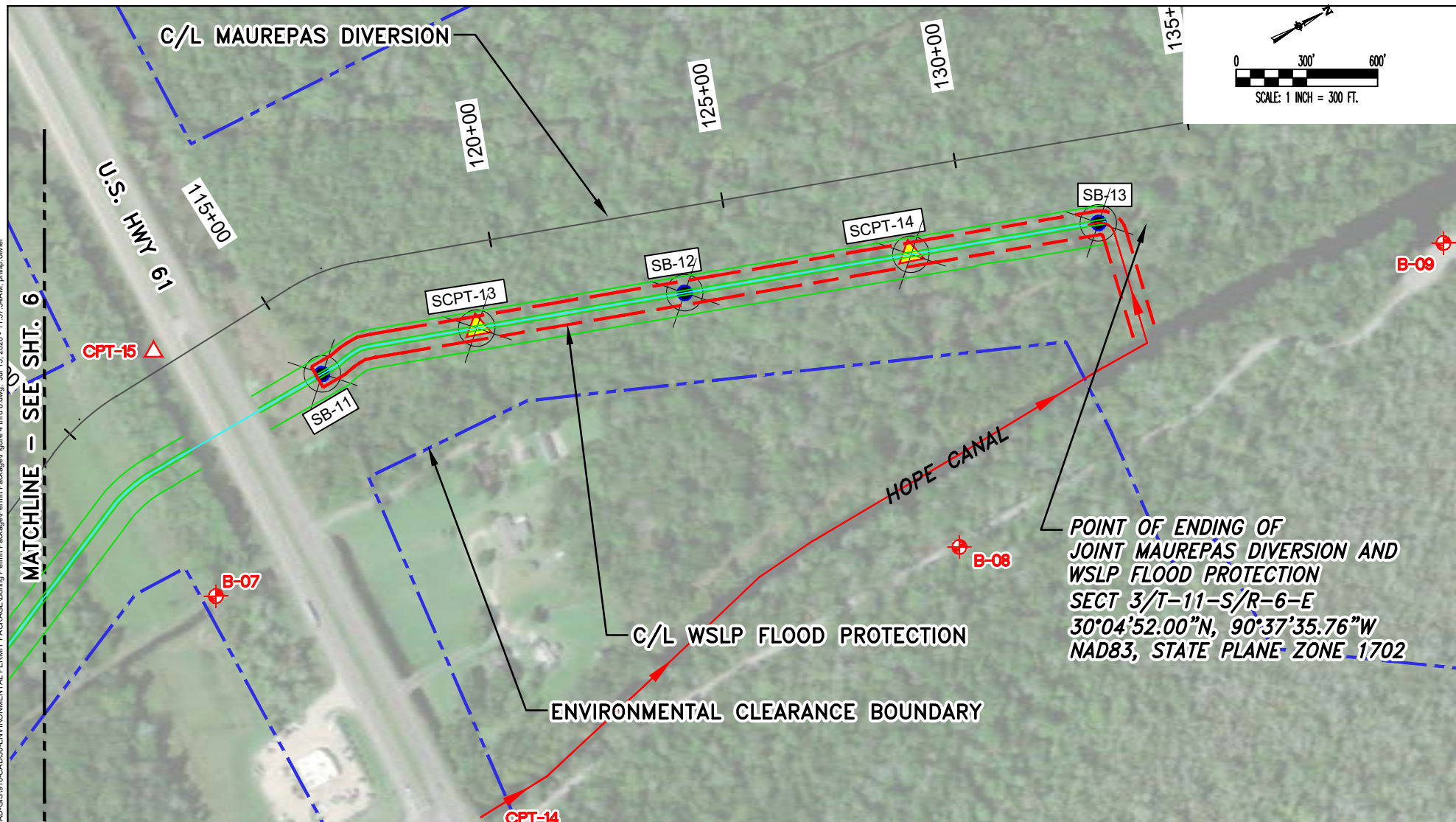
DESIGNED BY: J. CLAY LOYLESS

APPROVED BY: J. CLAY LOYLESS

FEDERAL PROJECT NUMBER: ---

SHEET 6 OF 8

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LEGEND:

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	CLEARING CORRIDOR (SEE FIGURE 7 FOR LIMITS OF IMPACT)		B-1A	EXISTING BORING		SB-XX	SUPPLEMENTAL BORING		

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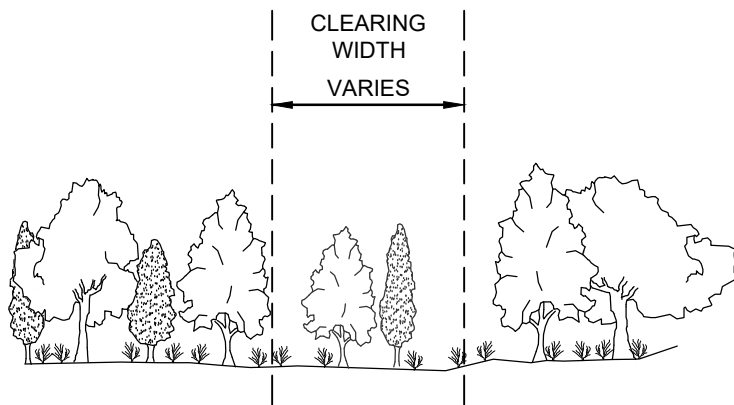
DESIGNED BY: J. CLAY LOYLESS

APPROVED BY: J. CLAY LOYLESS

FEDERAL PROJECT NUMBER: ---

SHEET 7 OF 8

* SUPPLEMENTAL CPT'S SHALL BE DRIVEN TO DESIGNATED DEPTH OR TO REFUSAL, WHICH EVER OCCURS FIRST.

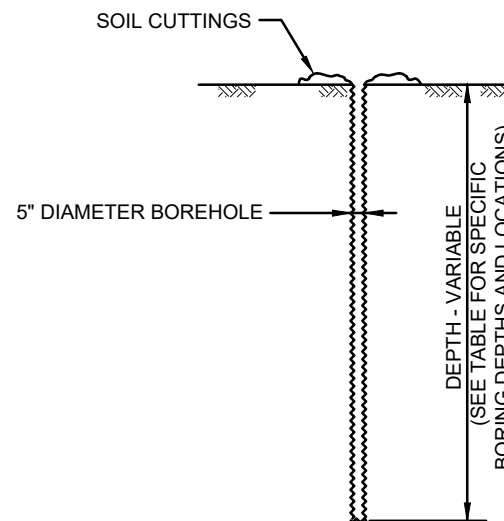


* WIDTH = 25' FROM RIVER RD. TO KCS RR
WIDTH = 50' FOR ALL OTHER AREAS



CLEARING CROSS-SECTION

SUPPLEMENTAL BORING SCHEDULE (SB-XX)					
ITEM No.	DEPTH (FT)	NORTHING	EASTING	LAT.	LONG.
SB-01	125	565322.18	3500388.20	N30° 03' 09.72"	W90° 38' 21.61"
SB-02	50	566414.48	3500934.90	N30° 03' 20.50"	W90° 38' 15.31"
SB-03	125	567115.64	3501275.35	N30° 03' 27.42"	W90° 38' 11.39"
SB-04	50	567671.70	3501742.96	N30° 03' 32.90"	W90° 38' 06.03"
SB-05	50	568574.89	3502566.58	N30° 03' 41.79"	W90° 37' 56.60"
SB-06	50	569650.22	3503099.19	N30° 03' 52.40"	W90° 37' 50.46"
SB-07	50	570591.13	3503565.22	N30° 04' 01.68"	W90° 37' 45.09"
SB-08	50	571599.70	3504063.64	N30° 04' 11.64"	W90° 37' 39.35"
SB-09	125	572183.78	3504310.44	N30° 04' 17.40"	W90° 37' 36.50"
SB-11	125	573933.09	3503858.41	N30° 04' 34.75"	W90° 37' 41.52"
SB-12	50	574699.73	3504045.29	N30° 04' 42.33"	W90° 37' 39.34"
SB-13	50	575551.89	3504301.98	N30° 04' 50.75"	W90° 37' 36.36"

NOTE:
THE WIDTH OF CLEARING SHALL BE KEPT AS NARROW AS POSSIBLE, ONLY ENOUGH TO GET THE SOIL BORING RIG AND SUPPORT EQUIPMENT TO THE SITE. IF NEEDED, THE ACCESS ROUTE MAY VEER FROM A STRAIGHT PATH TO AVOID LARGE TREES OR OTHER ENVIRONMENTAL FEATURES, AS FEASIBLE.



TYPICAL BORING DETAIL

 <p>1515 POYDRAS STREET SUITE 2700 NEW ORLEANS, LA 70112 (504) 586-8111</p>	 <p>COASTAL PROTECTION AND RESTORATION AUTHORITY 150 TERRACE STREET BATON ROUGE, LOUISIANA 70802</p>	<p>COASTAL PROTECTION AND RESTORATION AUTHORITY 150 TERRACE STREET BATON ROUGE, LOUISIANA 70802</p>	<p>RIVER REINTRODUCTION INTO MAUREPAS SWAMP/ WSLP FLOOD PROTECTION ST. JOHN THE BAPTIST PARISH, LOUISIANA</p>	<p>BORING SCHEDULE CROSS SECTIONS BORING DETAILS GEOTECHNICAL SURVEYS</p>
<p>DRAWN BY: ERIC E. WALTER</p>	<p>DESIGNED BY: J. CLAY LOYLESS</p>	<p>APPROVED BY: J. CLAY LOYLESS</p>	<p>STATE PROJECT NUMBER: PO-0029</p>	<p>DATE: JUNE, 2019</p>
<p>DRAWN BY: ERIC E. WALTER</p>	<p>DESIGNED BY: J. CLAY LOYLESS</p>	<p>APPROVED BY: J. CLAY LOYLESS</p>	<p>FEDERAL PROJECT NUMBER: ---</p>	<p>SHEET 8 OF 8</p>

31 December 2020

AECOM Technical Services, Inc.
Suite 2700
1515 Poydras Street
New Orleans, Louisiana 70112

Attention Mr. Clay Loyless, P.E.

Ladies and Gentlemen:

Geotechnical Data Report
State of Louisiana
Coastal Protection and Restoration Authority (CPRA)
15% Design Phase
Maurepas Diversion and West Shore Lake Pontchartrain
St. John the Baptist Parish, Louisiana
S.P. Purchase Order No. 0029
Eustis Engineering Project No. 24384

We are transmitting an electronic copy of our geotechnical data report covering a geotechnical exploration for the subject project. Hard copies are available upon request.

Thank you for asking us to perform these services.

Yours very truly,

EUSTIS ENGINEERING L.L.C.

SEAN G. WALSH, P.E.

SGW:sh

GEOTECHNICAL DATA REPORT

STATE OF LOUISIANA

COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA)

15% DESIGN PHASE

MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

ST. JOHN THE BAPTIST PARISH, LOUISIANA

S.P. PURCHASE ORDER NO. 0029

EUSTIS ENGINEERING PROJECT NO. 24384

FOR
AECOM TECHNICAL SERVICES, INC.
NEW ORLEANS, LOUISIANA

By
Eustis Engineering L.L.C.
Metairie, Louisiana

31 DECEMBER 2020

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AVAILABLE GEOTECHNICAL DATA	2
CURRENT FIELD EXPLORATION	3
LABORATORY TESTING	5
CPT INTERPRETED STRENGTHS	7
SOIL DESIGN REACHES	7
LIMITATIONS	10

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Figure 2, Sheets 4 through 6 – Subsurface Soil Profile; Soil Design Reach “B” – Station 55+00 to 100+00

Figure 2, Sheets 7 through 9 – Subsurface Soil Profile; Soil Design Reach “C” – Station 100+00 to 290+00

Figure 3A, Sheets 1 through 4 – Soil Design Parameters; Soil Design Reach “A” – Station 15+00 to 55+00

Figure 3B, Sheets 1 through 4 – Soil Design Parameters; Soil Design Reach “B” – Station 55+00 to 100+00

Figure 3C, Sheets 1 through 3 – Soil Design Parameters; Soil Design Reach “C” – Station 100+00 to 290+00

Appendix I – Existing Geotechnical Boring Logs

Appendix II – Existing Geotechnical CPT Records

Appendix III – Current Geotechnical Boring Logs

Appendix IV – Current Geotechnical CPT Records

Appendix V – Compilation of Laboratory Testing Report Summaries (SDR-A, SDR-B, and SDR-C)

Appendix VI – Summary of Grain Size Test Data (SDR-A, SDR-B, and SDR-C)

Appendix VII – Summary of Consolidation Data Results (SDR-A, SDR-B, and SDR-C)

Appendix VIII – Compilation of Shear Data Reports (SDR-A, SDR-B, and SDR-C)

Appendix IX – Compilation of Consolidation Test Reports (SDR-A, SDR-B, and SDR-C)

GEOTECHNICAL DATA REPORT
STATE OF LOUISIANA
COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA)
15% DESIGN PHASE
MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN
ST. JOHN THE BAPTIST PARISH, LOUISIANA
S.P. PURCHASE ORDER NO. 0029
EUSTIS ENGINEERING PROJECT NO. 24384

INTRODUCTION

1. This draft geotechnical data report (GDR) presents the results of Eustis Engineering L.L.C.'s field exploration, laboratory testing program, and development of soil design parameters for the subject contract of the West Shore Lake Pontchartrain (WSLP) protection project in St. John the Baptist Parish in Louisiana. A final version of this report will be issued upon completion of agency and internal team reviews.
2. This project is located along the Maurepas Diversion and western shore of Lake Pontchartrain in St. John the Baptist Parish, Louisiana. Our geotechnical services for the project were performed in general accordance with our revised proposal, dated 21 May 2020. Authorization to proceed with these services were provided by AECOM Technical Services, Inc. (AECOM) by MCSS Task / Purchase Order No. 126099, Change Order 01, executed 1 July 2020. AECOM is the project civil and structural engineer. Eustis Engineering is the project geotechnical engineer. C. H. Fenstermaker & Associates, L.L.C.. (Fenstermaker) is the project surveyor. The Coastal Protection and Restoration Authority (CPRA) is the project owner and director for the Maurepas Diversion and the U. S. Army

Corps of Engineers (USACE) is the project sponsor for the future WSLP flood protection system that will be alongside CPRA's diversion.

SCOPE OF SERVICE

3. Based on the furnished Scope of Work (SOW) dated 26 November 2019, we understand project comprises review of existing geotechnical data, development of a geotechnical data collection plan, collection of geotechnical data, laboratory analyses, and geotechnical design. These services were performed to support the 15% design phase for the subject project. This project includes the Maurepas Diversion structure and the WSLP flood protection. The scope of this effort focuses on the portion of the joint project which comprises a diversion structure running parallel the WSLP flood protection. The geotechnical exploration we present in this report was completed to define soil and foundation conditions along the future WSLP levee alignment, but we also include geotechnical information for the diversion beyond the area of the WSLP features. Refer to Sheet 1 of Figure 1 for a site vicinity plan of the alignment.

AVAILABLE GEOTECHNICAL DATA

4. AECOM furnished available historic geotechnical data, analyses, and reports to Eustis Engineering for review. These data include major reports, published in 2008 and 2013, based on obtained geotechnical data consisting of soil borings and cone penetration tests (CPTs) performed throughout the project area at previous times. In addition, select correspondence included written approval from the USACE regarding strength lines on the Mississippi River batture to support a proposed cofferdam design submitted by AECOM in 2013. We present the pertinent soil boring logs and CPT logs from the prior

explorations in Appendix I and Appendix II, respectively. Refer to Table 1 for a summary of field data utilized for this GDR.

TABLE 1: SUMMARY OF AVAILABLE FIELD EXPLORATION DATA

EXPLORATION NAME/DESIGNATION	TYPE
B-05	Boring
B-06	Boring
B-07	Boring
B-08	Boring
B-09	Boring
B-10	Boring
B-11	Boring
B-12	Boring
B-13	Boring
B-14	Boring
B-15	Boring
B-16	Boring
B-17	Boring
B-18	Boring
B-19	Boring
B-2A	Boring
B-3A	Boring
B-4A	Boring
KCS-01	Boring
CPT-03	CPT
CPT-04	CPT
CPT-05	CPT
CPT-06	CPT
CPT-07	CPT
CPT-08	CPT
CPT-09	CPT
CPT-12	CPT
CPT-13	CPT
CPT-15	CPT

CURRENT FIELD EXPLORATION

5. In addition to the furnished data, Eustis Engineering performed additional field explorations to provide current soil conditions at the site at a spacing to achieve HSDRRS requirements for the future levee and structure foundations. The field exploration

consisted of 12 borings and 8 cone penetration tests (CPTs) which were performed between 23 July and 5 November 2020. Refer to Appendix III and Appendix IV for the soil boring logs and CPT logs, respectively, we developed for this exploration. The field exploration done by Eustis Engineering was designated with an “S” before the name/designation to indicate supplemental work. All soil borings drilled in 2020 were 5-in. diameter undisturbed borings and follow the USACE’s format for presentation on the boring logs for consistency with other WSLP geotechnical explorations. Refer to Appendix III and IV for exact dates of completion. Refer to Table 2 for a summary of our current field explorations.

TABLE 2: SUMMARY OF CURRENT FIELD EXPLORATION

EXPLORATION NAME/DESIGNATION	TYPE
SB-01	BORING, 5" UNDISTURBED
SB-02	BORING, 5" UNDISTURBED
SB-03	BORING, 5" UNDISTURBED
SB-04	BORING, 5" UNDISTURBED
SB-05	BORING, 5" UNDISTURBED
SB-06	BORING, 5" UNDISTURBED
SB-07	BORING, 5" UNDISTURBED
SB-08	BORING, 5" UNDISTURBED
SB-09	BORING, 5" UNDISTURBED
SB-11	BORING, 5" UNDISTURBED
SB-12	BORING, 5" UNDISTURBED
SB-13	BORING, 5" UNDISTURBED
SCPT-02	CPT
SCPT-03	CPT
SCPT-07	CPT
SCPT-10	CPT
SCPT-11	CPT
SCPT-12	CPT
SCPT-13	CPT
SCPT-14	CPT

LABORATORY TESTING

6. All 4-ft samples collected from 5-in. diameter borings were extruded in the laboratory after being transported from the field to the laboratory in racks that hold the samples in a vertical orientation. After extruding, dividing, and labeling the samples, each 12-in. segment was visually classified and a moisture content specimen was taken from each segment. A laboratory log of sample numbers, depths, soil classifications, and moisture contents was prepared by Eustis Engineering and shared with AECOM and CPRA to develop soil laboratory testing assignments. The 1-ft sample segments were preserved in moisture proof containers pending laboratory testing. Testing assignments were developed in general accordance with those followed by the USACE for the other portions of the West Shore of Lake Pontchartrain (WSLP) alignments (101 through 109). We did not perform testing in accordance with the LFPDG per instruction from CPRA in July 2020.
7. After development of our preliminary test results, additional test assignments were made comprising unit weight determinations, unconfined compression shear tests (UC), three-point unconsolidated undrained triaxial compression shear tests (UU), and one-point unconsolidated undrained triaxial compression shear tests (OB), and Atterberg liquid and plastic limits determinations. Three-point “UU” tests were performed on three specimens trimmed from a single 5-in. diameter 1-ft segment of the “U” borings. One-point “OB” tests were performed on similar sample sizes as the UU tests as well as from other samples using a larger specimen size of 2.8 inches. To define the compressibility potential of foundation soils, we performed consolidation tests on select samples from Holocene soils along the alignment. We also performed consolidation testing in some instances to assist with assessing shear strengths of a silty clay deposit positioned above the Pleistocene interface because conventional shear testing results of that material produced unexpectedly low strengths. We also performed direct simple shear testing and

hydrometer testing on the same material to aid in strength characterization and material classification. These additional tests were selected through collaboration with CPRA.

8. We present a compilation of laboratory test results for all new borings in Appendix V of this report. The summaries include results of natural moisture content, total unit weight, unconfined compression shear, one-point unconsolidated-undrained shear, three-point unconsolidated-undrained shear, and torvanes. Also shown are the results of percent passing the No. 200 sieve, Atterberg Limits, and percent organic contents. The summary tables identify which samples were tested for sieve analysis and hydrometer analysis. These summaries also show which samples were selected for direct simple shear and consolidation testing. In Appendix VI we present the results of our grain size gradation analyses (sieve and hydrometer). In Appendix VII we present the results of our consolidation tests. In Appendix VIII we present all shear test results. In Appendix IX we present the individual consolidation test results.
9. CPRA requested Eustis Engineering to perform additional testing within the near-surface soils to aid in a preliminary assessment of using on-site soils as a levee borrow source. Tests comprised organic content, percent passing the No. 200 sieve, Atterberg limits, and natural moisture content. All parties are aware that this testing was done to aid in a preliminary assessment of potential suitability of using clays on-site for levee construction. A detailed suitability study is not part of the scope of service for this report and will need to be performed at a future date. The results of this additional testing is shown on the testing summary reports in Appendix V.

CPT INTERPRETED STRENGTHS

10. Interpreted undrained shear strength plots from the CPT data are based on an N_{kt} value of 15. We plan to proceed using a N_{kt} value of 15 for the project alignment based on the results we present on Figure 3. CPT records shown in Appendix IV present soil behavior types based on non-normalized soil behavior types developed by Robertson & Campanella (1986).

SOIL DESIGN REACHES

11. The Maurepas Diversion was separated into three soil design reaches (SDRs). In Figure 2 (Sheets 1 through 9), we present subsurface soil profiles of the soil borings and CPTs. Refer to Table 3 for a summary of soil design “reaches” and station numbers that correspond to individual Sheets in Figure 2.
12. Subsurface Soil Conditions & Design Parameters. We present our interpretation of subsurface soil conditions on the sheets provided in Figure 3. In general, we found a crust of soil overlying compressible soils of the Holocene Epoch and underlain by stiff to very stiff deposits from the Pleistocene Epoch. Of significance to the levee design will be the presence of compressible soils within the Holocene and the depth to which Pleistocene is encountered along the future levee alignment. Based on our review of the subsurface profiles in Figure 2 we prepared three distinct soil design reaches which we present in Table 3 below.

TABLE 3: OUTLINE OF SUBSURFACE SOIL PROFILE FIGURE DESIGNATIONS

FIGURE 2 SHEETS	SOIL DESIGN REACH	STATION NUMBERS
1 through 3	A	15+00 to 55+00
4 through 6	B	55+00 to 100+00
7 through 9	C	100+00 to 290+00

13. SDR-A extends from River Road to Canadian Rail (CN) approximately. This reach has a stiffer crust material but this reach also has the deepest depths to the Pleistocene. We approximated the Pleistocene interface at el -32 for SDR-A. SDR-B generally extends between CN and the south side of US-61 in which the Holocene deposits extend to approximately el -25 (on average). SDR-C then extends from US-61 to the end of the project alignment. Based on our review SDR-C we approximated the interface of the Holocene and Pleistocene at el -15. Particular deposits of interest that we encountered within the Holocene soils are a thicker layer of organic clays and peats at SB-04 (drilled within the adjacent Marathon property) and a deposit of silty clay positioned above the Pleistocene interface that produced relatively low laboratory shear strength results. To aid in finer classifications of the material positioned above the Pleistocene we performed further strength and classification testing (as defined in the laboratory testing paragraph of this report).
14. We present our soil design parameters in Figure 3. On Sheet 1 we present soil design parameters comprising natural moisture content, total unit weight, undrained shear strength (using results from laboratory testing and interpreted CPT strengths), and Soil Behavior Types (I_c) as interpreted from CPT data. On Sheets 2 and 3 we present our settlement and compressibility design parameters comprising natural moisture content, Atterberg limits, compression index (C_c), estimates of initial void ratio (e_0), overconsolidation ratio estimates (OCR), Soil Behavior Types (I_c) from interpreted CPT data, and estimates of the Coefficient of Permeability (C_v). On Sheet 4 we present correlation data from testing performed to correlate a 5-inch diameter undisturbed boring and a CPT for SDR-A and SDR-B. Refer to Table 4 for a summary of soil design reaches (SDR) and station numbers that correspond to each respective Figure.

TABLE 4: OUTLINE OF SOIL DESIGN PARAMETER FIGURE DESIGNATIONS

FIGURE 3 SHEETS	SOIL DESIGN REACH	STATION NUMBERS
3A, Sheets 1 through 4	A	15+00 to 55+00
3B, Sheets 1 through 4	B	55+00 to 100+00
3C, Sheets 1 through 3	C	100+00 to 290+00

15. On Figure 3 we present our estimates of vertical permeability rates (C_v) from consolidation testing and through correlations from the liquid limits of soil samples. Our current plans are to construct wick drain fields for the levee tie-ins at the proposed structures for this contract. Because of this, estimates of time-rate settlement which are governed by C_v , will have less significance on our results because we plan to use ground improvement where C_v will not govern long-term design.
16. Areas of levee construction in the absence of ground improvement will require other consideration. The near-surface swamp and marsh deposits between the Kansas City Railway and Interstate I-10 comprise extremely soft, highly-compressible organic clays and peats and based on our interpretation of the available data the typical correlations values indicate low settlement rates because those correlations are not intended for such swampy/marsh soils. That approach can mislead estimates of settlement if we use correlations. We instead opted to rely on area experience with levee construction on similar soils in which we anticipate settlement to occur rapidly in these very soft near surface soils due to horizontal drainage paths. Further to this, we anticipate localized plastic deformations, during embankment construction, are most likely to manifest resulting in considerable displacements of the near-surface materials (i.e., mudwave propagation).
17. Our preparation of these soil design parameter estimates is based on our assessment of the available geotechnical data for the subject project alignment as included in the Furnished Information and our recent exploration. Consideration of data in adjacent

project reaches (WSLP and nearby Hope Canal Pump Station) may be appropriate to develop geotechnical project reaches. In particular, the use of consolidation data in adjacent project reaches or within similar geologic conditions may provide greater accuracy of the Holocene soils. We understand the development of soil design parameters by multiple parties is on-going for the various WSLP project reaches. We request for the discussion with the USACE (and possibly the other design teams) to assess how our soil design parameter estimates align with the other project reaches. This can ensure our assumptions align with the overall project goals for design and construction. We also understand the State of Louisiana, Office of Coastal Protection and Restoration (CPRA) may have developed an overarching set of design parameters that considers all of the geotechnical data and geologic variations along the entire protection alignment. Thus, CPRA's participation in a meeting(s) is also considered to offer value to these designs. Coordination during this design phase will enable final design plans developed for construction to be more seamless and also facilitate the USACE's plans to combine aspects of the construction testing such as the test pile programs.

LIMITATIONS

18. This report has been prepared in accordance with generally accepted geotechnical engineering practice for the exclusive use of AECOM for specific application to the subject site. In the event of any changes in the nature or location of the proposed features, the information contained in this report shall not be considered valid unless the changes are reviewed and this report is modified and verified in writing. Should these data be used by anyone other than AECOM, the user should contact Eustis Engineering for interpretation of data and to secure any other information pertinent to this project.

19. Our findings in this report are based on selected points of field exploration, laboratory testing, and our understanding of the proposed project. Further variations in soil or ground water conditions could exist between and beyond the exploration points. The nature and extent of these variations may not become evident until construction. Variations in soil or ground water may require additional studies, consultation, and possible revisions to our recommendations.
20. Eustis Engineering has striven to provide our services in accordance with accepted geotechnical engineering practices in this locality at this time. No warranty or guarantee is expressed or implied. The results of the soil borings, CPTs, and laboratory tests contained in Appendices I through IX of this report may be included in the plans and specifications.
21. The scope of our services does not include an environmental assessment or an investigation for the presence or absence of wetlands and hazardous or toxic materials in the soil; surface water; ground water; or air on, below, or adjacent to the subject property. Furthermore, the scope does not include the investigation or detection of biological pollutants at the site. The term “biological pollutants” includes but is not limited to molds, fungi, spores, bacteria, viruses, and the byproducts of any such biological organisms.



SATELLITE IMAGERY DATED: 23 JANUARY 2019

NOT TO SCALE

VICINITY MAP

STATE OF LOUISIANA
COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA)
15% DESIGN PHASE
MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN
ST. JOHN THE BAPTIST PARISH, LOUISIANA
S.P. PO-0029



DRAWN BY: S.T.S.
CHECKED BY: J.M.W.
CADD FILE:
VICINITY.DGN

JOB NO.: 24384
DATE: 30 DEC 2020
FIGURE 1
(SHEET 1 OF 6)



Google Earth

SATELLITE IMAGERY DATED: 23 JANUARY 2019

NOT TO SCALE

BORING AND CPT LOCATION PLAN

STATE OF LOUISIANA
COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA)
15% DESIGN PHASE
MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN
ST. JOHN THE BAPTIST PARISH, LOUISIANA
S.P. PO-0029



DRAWN BY: S.T.S.

JOB NO.: 24384

CHECKED BY: J.M.W.

DATE: 29 DEC 2020

CADD FILE:
LOCATION 1.DGN

FIGURE 1
(SHEET 2 OF 6)

- ⊕ DENOTES LOCATIONS OF UNDISTURBED SOIL BORINGS DRILLED UNDER EUSTIS ENGINEERING PROJECT NO. 24384 BETWEEN 16 OCTOBER AND 2 NOVEMBER 2020
- ▲ DENOTES LOCATIONS OF CONE PENETRATION TESTS PERFORMED UNDER EUSTIS ENGINEERING PROJECT NO. 24384 BETWEEN 23 JULY AND 4 NOVEMBER 2020
- DENOTES LOCATIONS OF UNDISTURBED SOIL BORINGS DRILLED BY COASTAL PROTECTION AND RESTORATION AUTHORITY BETWEEN 1 SEPTEMBER 2007 AND 22 JANUARY 2013
- ▲ DENOTES LOCATIONS OF CONE PENETRATION TESTS PERFORMED BY COASTAL PROTECTION AND RESTORATION AUTHORITY BETWEEN 12 SEPTEMBER 2007 AND 9 APRIL 2013



Google Earth

SATELLITE IMAGERY DATED: 23 JANUARY 2019

NOT TO SCALE

BORING AND CPT LOCATION PLAN

STATE OF LOUISIANA
COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA)
15% DESIGN PHASE
MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN
ST. JOHN THE BAPTIST PARISH, LOUISIANA
S.P. PO-0029



DRAWN BY: S.T.S.

JOB NO.: 24384

CHECKED BY: J.M.W.

DATE: 29 DEC 2020

CADD FILE:
LOCATION 2.DGN

FIGURE 1
(SHEET 3 OF 6)

- ⊕ DENOTES LOCATIONS OF UNDISTURBED SOIL BORINGS DRILLED UNDER EUSTIS ENGINEERING PROJECT NO. 24384 BETWEEN 16 OCTOBER AND 2 NOVEMBER 2020
- ▲ DENOTES LOCATIONS OF CONE PENETRATION TESTS PERFORMED UNDER EUSTIS ENGINEERING PROJECT NO. 24384 BETWEEN 23 JULY AND 4 NOVEMBER 2020
- DENOTES LOCATIONS OF UNDISTURBED SOIL BORINGS DRILLED BY COASTAL PROTECTION AND RESTORATION AUTHORITY BETWEEN 1 SEPTEMBER 2007 AND 22 JANUARY 2013
- ▲ DENOTES LOCATIONS OF CONE PENETRATION TESTS PERFORMED BY COASTAL PROTECTION AND RESTORATION AUTHORITY BETWEEN 12 SEPTEMBER 2007 AND 9 APRIL 2013



Google Earth

SATELLITE IMAGERY DATED: 23 JANUARY 2019

NOT TO SCALE

BORING AND CPT LOCATION PLAN

STATE OF LOUISIANA
COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA)
15% DESIGN PHASE
MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN
ST. JOHN THE BAPTIST PARISH, LOUISIANA
S.P. PO-0029



DRAWN BY: S.T.S.

JOB NO.: 24384

CHECKED BY: J.M.W.

DATE: 29 DEC 2020

CADD FILE:
LOCATION 3.DGN

FIGURE 1
(SHEET 4 OF 6)


- DENOTES LOCATIONS OF UNDISTURBED SOIL BORINGS DRILLED UNDER EUSTIS ENGINEERING PROJECT NO. 24384 BETWEEN 16 OCTOBER AND 2 NOVEMBER 2020
- ▲ DENOTES LOCATIONS OF CONE PENETRATION TESTS PERFORMED UNDER EUSTIS ENGINEERING PROJECT NO. 24384 BETWEEN 23 JULY AND 5 NOVEMBER 2020
- DENOTES LOCATIONS OF UNDISTURBED SOIL BORINGS DRILLED BY COASTAL PROTECTION AND RESTORATION AUTHORITY BETWEEN 1 SEPTEMBER 2007 AND 22 JANUARY 2013
- ▲ DENOTES LOCATIONS OF CONE PENETRATION TESTS PERFORMED BY COASTAL PROTECTION AND RESTORATION AUTHORITY BETWEEN 12 SEPTEMBER 2007 AND 9 APRIL 2013



SATELLITE IMAGERY DATED: 23 JANUARY 2019

NOT TO SCALE

- ⦿ DENOTES LOCATIONS OF UNDISTURBED SOIL BORINGS DRILLED UNDER EUSTIS ENGINEERING PROJECT NO. 24384 BETWEEN 16 OCTOBER AND 2 NOVEMBER 2020
- ▲ DENOTES LOCATIONS OF CONE PENETRATION TESTS PERFORMED UNDER EUSTIS ENGINEERING PROJECT NO. 24384 BETWEEN 23 JULY AND 4 NOVEMBER 2020
- DENOTES LOCATIONS OF UNDISTURBED SOIL BORINGS DRILLED BY COASTAL PROTECTION AND RESTORATION AUTHORITY BETWEEN 1 SEPTEMBER 2007 AND 22 JANUARY 2013
- ▲ DENOTES LOCATIONS OF CONE PENETRATION TESTS PERFORMED BY COASTAL PROTECTION AND RESTORATION AUTHORITY BETWEEN 12 SEPTEMBER 2007 AND 9 APRIL 2013

BORING AND CPT LOCATION PLAN		
STATE OF LOUISIANA COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA) 15% DESIGN PHASE MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN ST. JOHN THE BAPTIST PARISH, LOUISIANA S.P. PO-0029		
	DRAWN BY: S.T.S.	JOB NO.: 24384
	CHECKED BY: J.M.W.	DATE: 29 DEC 2020
	CADD FILE: LOCATION 4.DGN	FIGURE 1 (SHEET 5 OF 6)



SATELLITE IMAGERY DATED: 23 JANUARY 2019

NOT TO SCALE

BORING AND CPT LOCATION PLAN

STATE OF LOUISIANA
COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA)
15% DESIGN PHASE
MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN
ST. JOHN THE BAPTIST PARISH, LOUISIANA
S.P. PO-0029



DRAWN BY: S.T.S.

JOB NO.: 24384

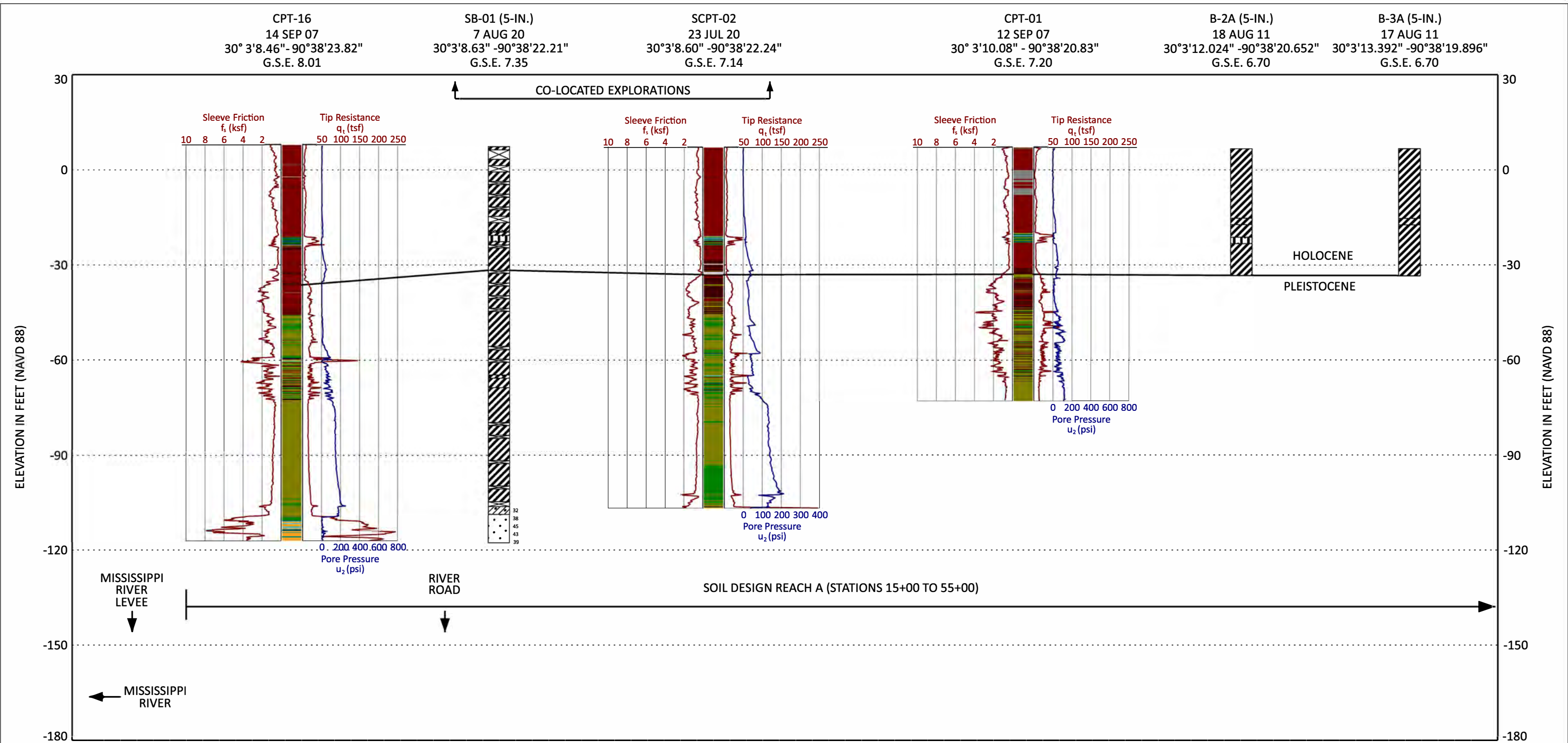
CHECKED BY: J.M.W.

DATE: 29 DEC 2020

CADD FILE:
LOCATION 5.DGN

FIGURE 1
(SHEET 6 OF 6)

- DENOTES LOCATIONS OF UNDISTURBED SOIL BORINGS DRILLED UNDER EUSTIS ENGINEERING PROJECT NO. 24384 BETWEEN 16 OCTOBER AND 2 NOVEMBER 2020
- ▲ DENOTES LOCATIONS OF CONE PENETRATION TESTS PERFORMED UNDER EUSTIS ENGINEERING PROJECT NO. 24384 BETWEEN 23 JULY AND 4 NOVEMBER 2020
- DENOTES LOCATIONS OF UNDISTURBED SOIL BORINGS DRILLED BY COASTAL PROTECTION AND RESTORATION AUTHORITY BETWEEN 1 SEPTEMBER 2007 AND 22 JANUARY 2013
- ▲ DENOTES LOCATIONS OF CONE PENETRATION TESTS PERFORMED BY COASTAL PROTECTION AND RESTORATION AUTHORITY BETWEEN 12 SEPTEMBER 2007 AND 9 APRIL 2013



CPT MATERIAL GRAPHICS

- SENSITIVE FINE GRAINED
- ORGANIC SOILS, PEATS
- CLAY
- SILTY CLAY TO CLAY
- CLAYEY SILT TO SILTY CLAY
- SANDY SILT TO CLAYEY SILT
- SILTY SAND TO SANDY SILT
- SAND TO SILTY SAND
- SAND
- GRAVELLY SAND TO SAND
- VERY STIFF FINE GRAINED (*)
- SAND TO CLAYEY SAND (*)
- * OVERCONSOLIDATED OR CEMENTED
- Robertson et al (1986) q_c vs R_f

BORING MATERIAL GRAPHICS

- CLAY
- SANDY CLAY
- SAND
- CLAYEY SAND
- SANDY SILT
- ORGANIC CLAY
- NO SAMPLE

NOTES:

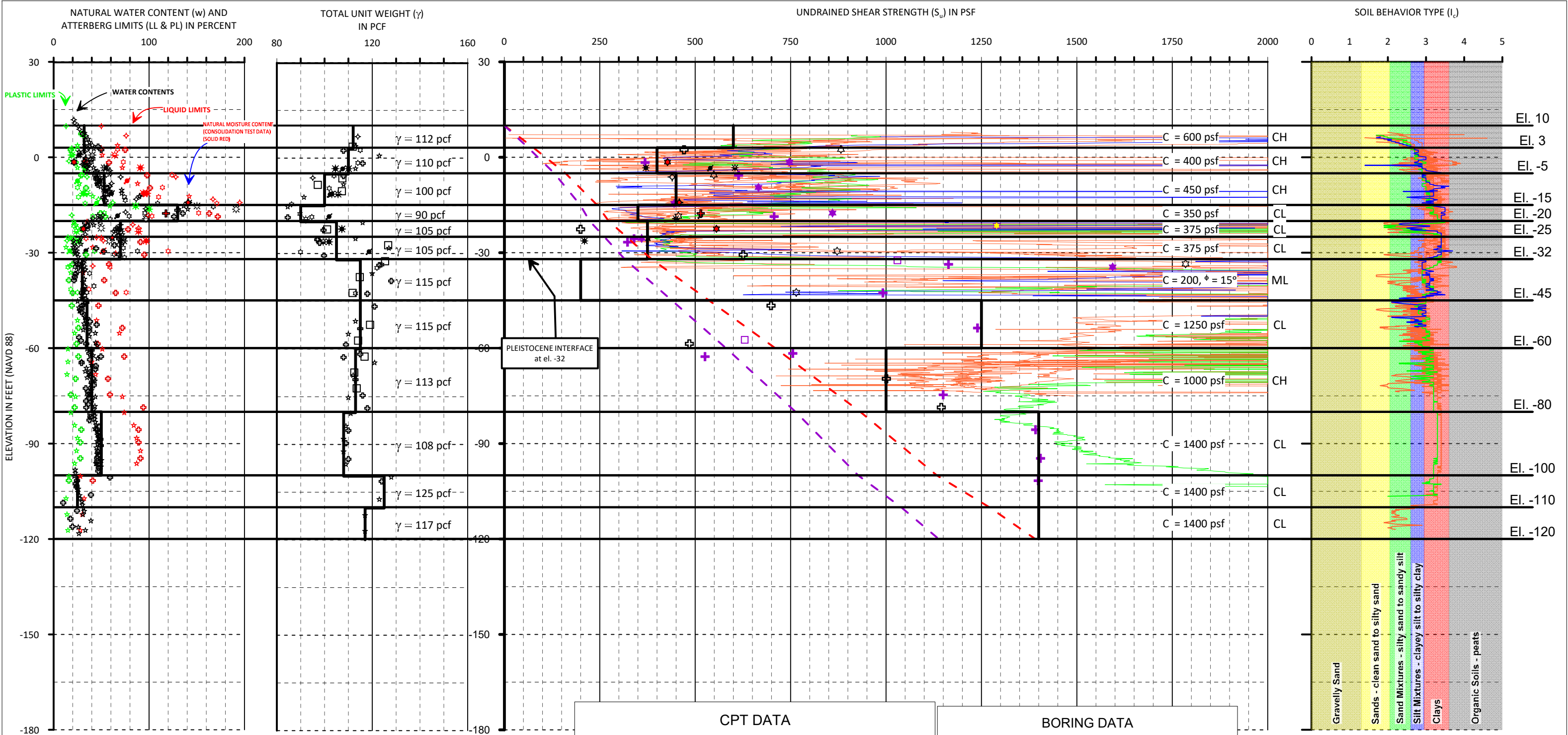
1. THE NUMBERS TO THE RIGHT OF THE BORING REPRESENTS THE RESULTS OF THE STANDARD PENETRATION TEST.
2. G.S.E. = GROUND SURFACE ELEVATION, GROUND SURFACE ELEVATION FURNISHED BY AECOM.
3. BORINGS WITH "SB" DESIGNATION AND CPTs DESIGNATED WITH "S" WERE CONDUCTED BY EUSTIS ENGINEERING.
4. OTHER BORINGS AND CONE PENETRATION TEST COMPLETED BY OTHERS.

SUBSURFACE SOIL PROFILE

STATE OF LOUISIANA
COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA)
15% DESIGN PHASE
MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN
ST. JOHN THE BAPTIST PARISH, LOUISIANA
S.P. PO-0029

EUSTIS
ENGINEERING L.L.C.
SINCE 1946

DRAWN BY: S.T.S.	JOB NO.: 24384
CHECKED BY: P.T.D.	DATE: 29 DEC 2020
CADD FILE: SUBSOIL 1.DGN	FIGURE 2 SHEET 1 OF 9



NOTES:

- LOGS OF SOIL BORINGS AND CONE PENETRATION TESTS ARE PROVIDED IN APPENDIX I THROUGH IV, RESPECTIVELY.
- UNIT WEIGHTS SHOWN ARE TOTAL UNIT WEIGHTS AND MUST BE APPROPRIATELY REDUCED TO ESTIMATE EFFECTIVE STRESS STATES.
- FOR S-CASE PARAMETERS (DRAINED SHEAR STRENGTHS), WE RECOMMEND USING $\phi_i=23^\circ$ FOR ALL CLAY STRATA.
- INTERPRETATIONS OF CPT UNDRAINED SHEAR STRENGTHS ARE BASED ON AN N_{kt} VALUE EQUAL TO 15.
- WATER TABLE ASSUMED TO BE AT THE GROUND SURFACE.
- DESIGN PROFILES SHOWN ABOVE CANNOT FULLY ANTICIPATE OR ACCOUNT FOR ALL PARAMETERS WHICH MAY INFLUENCE SELECTION OF DESIGN VALUES FOR A SPECIFIC ANALYSIS. FOR THIS REASON, THE USER SHOULD CONTACT EUSTIS ENGINEERING, L.L.C. PRIOR TO USE IN ANY ANALYSIS.
- SOIL BEHAVIOR TYPES (I_c) ARE BASED ON INTERPRETATIONS FROM OUR CPTS USING ROBERTSON AND CAMPANELLA'S "NON-NORMALIZED SOIL BEHAVIOR TYPES (1986)"

FOR THE UNDRAINED SHEAR STRENGTH PARAMETER PLOT:
UNCONFINED COMPRESSION TEST (UC) - HOLLOW SYMBOL

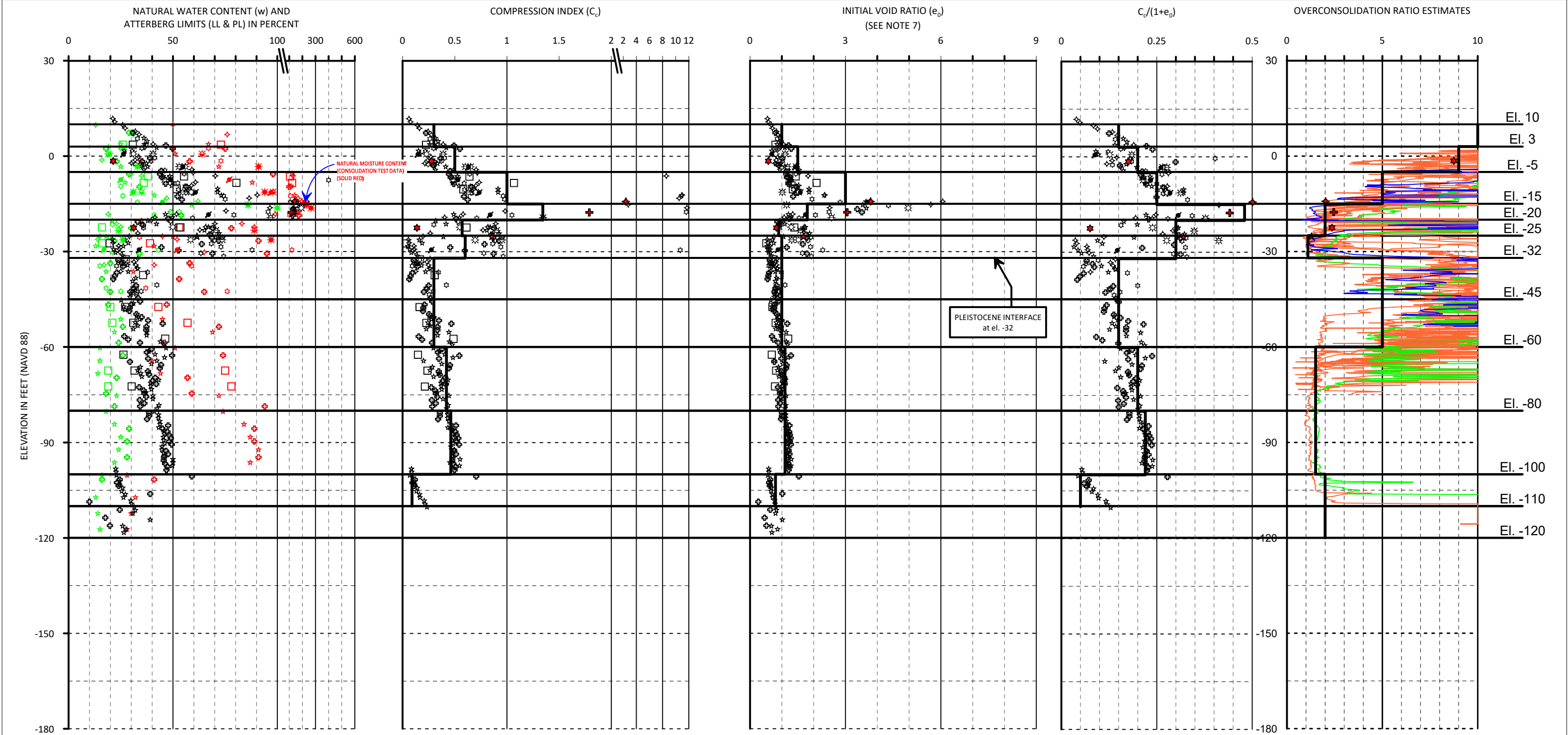
THREE POINT UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TESTS (UU) - SOLID PURPLE SYMBOL

UNDRAINED SHEAR STRENGTH ESTIMATED FOR CONSOLIDATION TEST (CONSOL) - SOLID RED SYMBOL

DIRECT SIMPLE SHEAR STRENGTH TEST (DSS) - SOLID YELLOW SYMBOL

LEGEND FOR STRESS HISTORY

DESIGN LINE
 $c/P'_{o} = 0.18$
 $c/P'_{o} = 0.22$



NOTES:

- LOGS OF SOIL BORINGS AND CONE PENETRATION TESTS ARE PROVIDED IN APPENDIX I THROUGH IV, RESPECTIVELY.
- UNIT WEIGHTS SHOWN ARE TOTAL UNIT WEIGHTS AND MUST BE APPROPRIATELY REDUCED TO ESTIMATE EFFECTIVE STRESS STATES
- INTERPRETATIONS OF CPT OCR(3) VALUES ARE SHOWN ALONGSIDE OCR ESTIMAES FROM CONSOLIDATION TESTING.
- WATER TABLE ASSUMED TO BE AT THE GROUND SURFACE.
- DESIGN PROFILES SHOWN ABOVE CANNOT FULLY ANTICIPATEOR ACCOUNT FOR ALL PARAMETERS WHICH MAY INFLUENCE SELECTION OF DESIGN VALUES FOR A SPECIFIC ANALYSIS. FOR THIS REASON, THE USER SHOULD CONTACT EUSTIS ENGINEERING, L.L.C. PRIOR TO USE IN ANY ANALYSIS.
- CORRELATION ESTIMATES OF COMPRESSION INDEX (C_c) WERE COMPUTED BASED ON TABLE 16 FROM THE STRENGTH AND COMPRESSIBILITY CORRELATIONS FOR NEW ORLEANS AREA SOILS REPORT.
- CORRELATION ESTIMATES OF INITIAL VOID RATIO WERE COMPUTED TO PROVIDE ADDITIONAL DATA FOR SELECTION OF DESIGN PARAMETERS. ESTIMATES WERE COMPUTED BASED ON NATURAL MOISTURE CONTENT, AN ASSUMED SPECIFIC GRAVITY OF 2.6, AND FULLY SATURATED CONDITIONS. ($e=(w*G_s)/S$)

BORING DATA

- SB-01
- SB-02
- SB-03
- SB-04
- B-05
- B-2A
- B-3A
- B-4A

CPT DATA

- CPT-01
- CPT-02
- CPT-03
- CPT-04
- CPT-05
- CPT-16
- SCPT-02
- SCPT-03
- Design Line

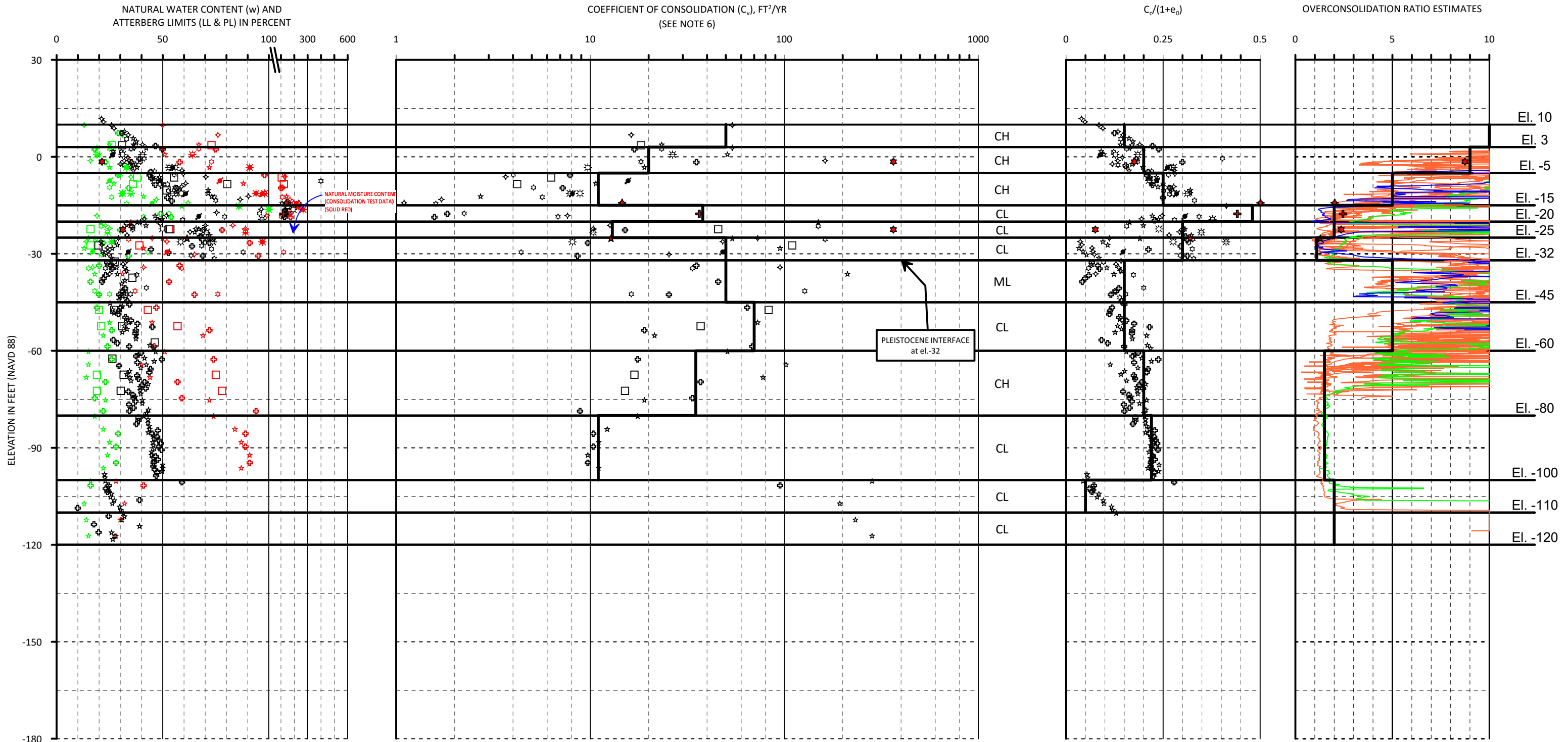
SOIL DESIGN PARAMETERS - CONSOLIDATION
SOIL DESIGN REACH A - STATIONS 15+00 TO 55+00

STATE OF LOUISIANA
COASTAL PROTECTION AND RESTORATION AUTHORITY
15% DESIGN PHASE
MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN
ST. JOHN THE BAPTIST PARISH, LOUISIANA
S.P. PO-0029



DRAWN BY: P.T.D.
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FILE NAME: 24384_Reach 113
CONSOLIDATION PARAMETERS.GRF

JOB NO.: 24384
DATE: 30 DEC 2020
FIGURE 3A
(SHEET 2 OF 4)

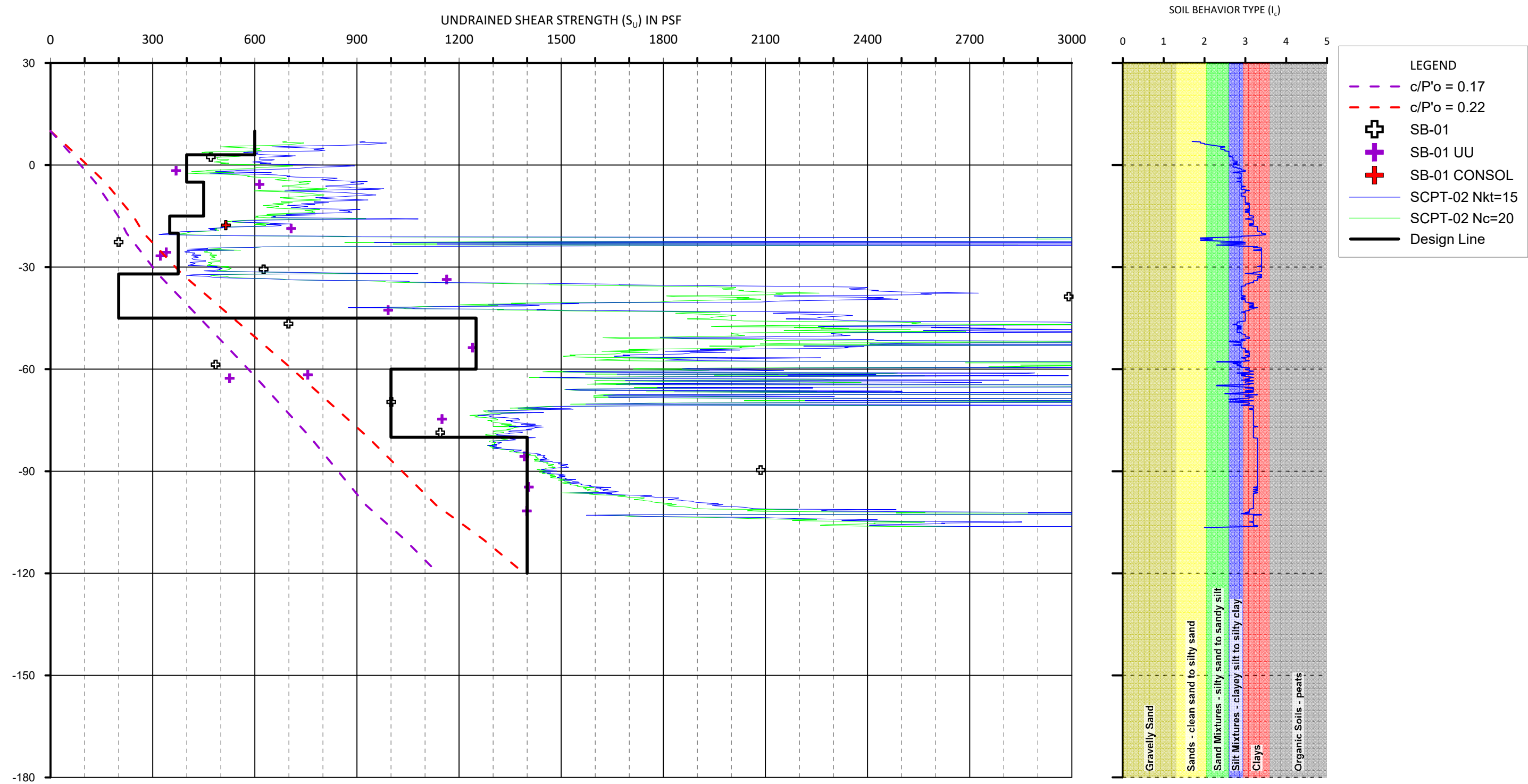


NOTES:
1. LOGS OF SOIL BORINGS AND CONE PENETRATION TESTS ARE PROVIDED IN APPENDIX I THROUGH IV, RESPECTIVELY.
2. UNIT WEIGHTS SHOWN ARE TOTAL UNIT WEIGHTS AND MUST BE APPROPRIATELY REDUCED TO ESTIMATE EFFECTIVE STRESS STATES
3. INTERPRETATIONS OF CPT OCR(3) VALUES ARE SHOWN ALONGSIDE OCR ESTIMATES FROM CONSOLIDATION TESTING.
4. WATER TABLE ASSUMED TO BE AT THE GROUND SURFACE.
5. DESIGN PROFILES SHOWN ABOVE CANNOT FULLY ANTICIPATE OR ACCOUNT FOR ALL PARAMETERS WHICH MAY INFLUENCE SELECTION OF DESIGN VALUES FOR A SPECIFIC ANALYSIS. FOR THIS REASON, THE USER SHOULD CONTACT EUSTIS ENGINEERING, L.L.C. PRIOR TO USE IN ANY ANALYSIS.
6. C_v ESTIMATES WERE COMPUTED USING CORRELATIONS SHOWN ON FIGURE 4 FROM THE NAVFAC SOIL MECHANICS DESIGN MANUAL 7.01.

BORING DATA			
+	SB-01	□	B-05
☆	SB-02	⊗	B-2A
☆	SB-03	⊗	B-3A
⊗	SB-04	⊗	B-4A

CPT DATA	
—	CPT-01
—	CPT-02
—	CPT-03
—	CPT-04
—	CPT-05
—	CPT-16
—	SCPT-02
—	SCPT-03
—	Design Line

SOIL DESIGN PARAMETERS - CONSOLIDATION SOIL DESIGN REACH A - STATIONS 15+00 TO 55+00		
STATE OF LOUISIANA COASTAL PROTECTION AND RESTORATION AUTHORITY 15% DESIGN PHASE MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN ST. JOHN THE BAPTIST PARISH, LOUISIANA S.P. PO-0029		
	DRAWN BY: P.T.D.	JOB NO.: 24384
	CHECKED BY: S.G.W.	DATE: 29 DEC 2020
	FILE NAME: 24384 CONSOLIDATION PARAMETERS SH2.GRF	FIGURE 3A (SHEET 3 OF 4)




NOTES:

- LOGS OF SOIL BORINGS AND CONE PENETRATION TESTS ARE PROVIDED IN APPENDIX I THROUGH IV, RESPECTIVELY.
- INTERPRETATIONS OF CONE PENETRATION TEST SHEAR STRENGTH ESTIMATES ARE COMPUTED WITH $N_{kt}=15$, AND $N_c=20$ FOR COMPARISON. AS SHOWN ON SHEET 2, WE SELECTED $N_{kt}=15$ FOR DESIGN LINE SELECTIONS.
- WATER TABLE ASSUMED TO BE AT THE GROUND SURFACE.
- DESIGN PROFILES SHOWN ABOVE CANNOT FULLY ANTICIPATEOR ACCOUNT FOR ALL PARAMETERS WHICH MAY INFLUENCE SELECTION OF DESIGN VALUES FOR A SPECIFIC ANALYSIS. FOR THIS REASON, THE USER SHOULD CONTACT EUSTIS ENGINEERING, L.L.C. PRIOR TO USE IN ANY ANALYSIS.
- SOIL BEHAVIOR TYPES (I_c) ARE BASED ON INTERPRETATIONS FROM OUR CPTS USING ROBERTSON AND CAMPANELLA'S "NON-NORMALIZED SOIL BEHAVIOR TYPES (1986)"

SOIL DESIGN REACH A
STATION 15+00 TO 55+00

STATE OF LOUISIANA
COASTAL PROTECTION AND RESTORATION AUTHORITY
15% DESIGN PHASE
MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN
ST. JOHN THE BAPTIST PARISH, LOUISIANA
S.P. PO-0029

EUSTIS
ENGINEERING L.L.C.
SINCE 1946

DRAWN BY: P.T.D.

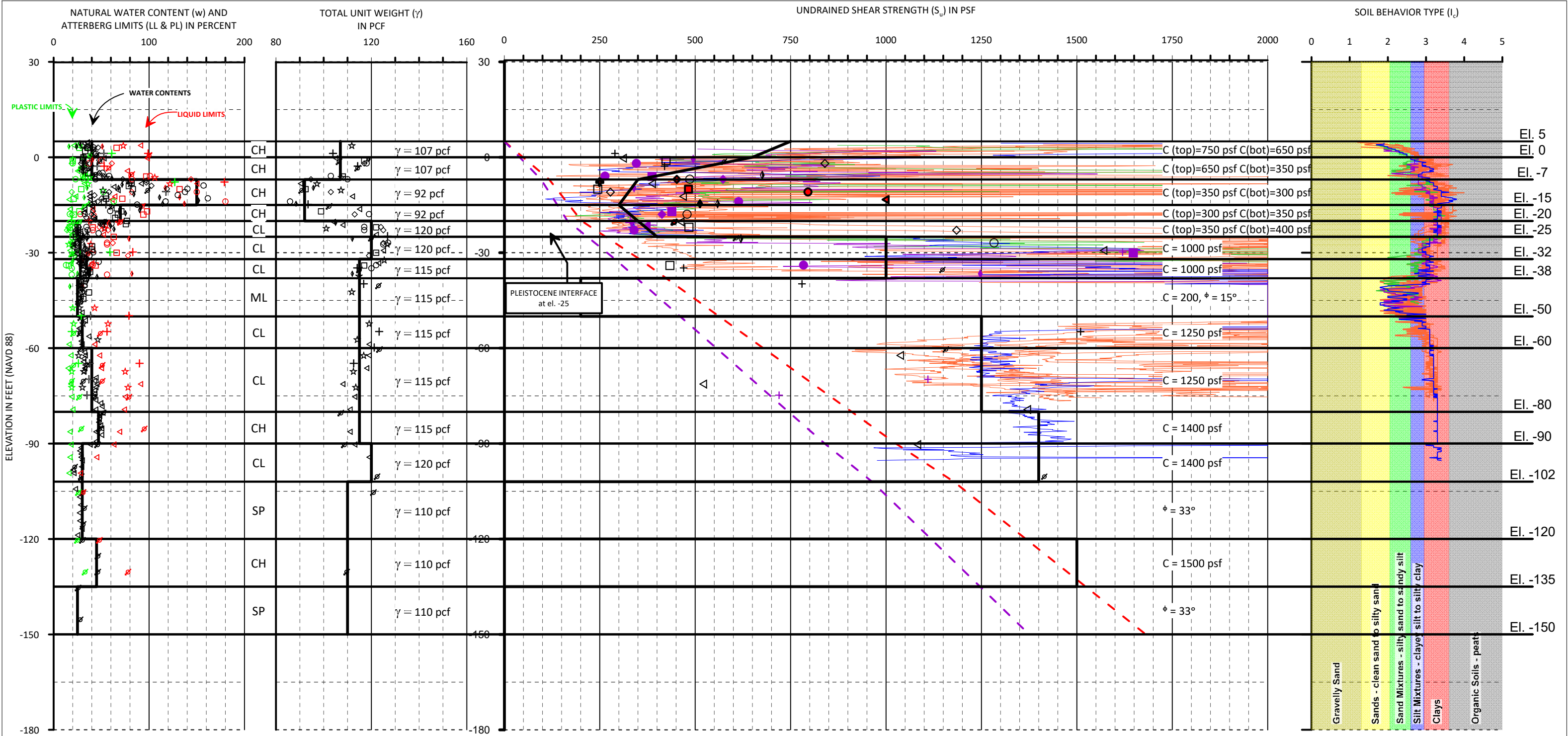
CHECKED BY: S.G.W.

FILE NAME: 24384_REACH 113
CPT CORRELATION.GRF

JOB NO.: 24384

DATE: 30 DEC 2020

FIGURE 3A
(SHEET 4 OF 4)



- NOTES:
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 2. UNIT WEIGHTS SHOWN ARE TOTAL UNIT WEIGHTS AND MUST BE APPROPRIATELY REDUCED TO ESTIMATE EFFECTIVE STRESS STATES.
 3. FOR S-CASE PARAMETERS (DRAINED SHEAR STRENGTHS), WE RECOMMEND USING $\phi_i=23^\circ$ FOR ALL CLAY STRATA.
 4. INTERPRETATIONS OF CPT UNDRAINED SHEAR STRENGTHS ARE BASED ON AN N_{kt} VALUE EQUAL TO 15.
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 6. DESIGN PROFILES SHOWN ABOVE CANNOT FULLY ANTICIPATE OR ACCOUNT FOR ALL PARAMETERS WHICH MAY INFLUENCE SELECTION OF DESIGN VALUES FOR A SPECIFIC ANALYSIS. FOR THIS REASON, THE USER SHOULD CONTACT EUSTIS ENGINEERING, L.L.C. PRIOR TO USE IN ANY ANALYSIS.
 7. SOIL BEHAVIOR TYPES (I_c) ARE BASED ON INTERPRETATIONS FROM OUR CPTS USING ROBERTSON AND CAMPANELLA'S "NON-NORMALIZED SOIL BEHAVIOR TYPES (1986)"

FOR THE UNDRAINED SHEAR
STRENGTH PARAMETER PLOT:
UNCONFINED COMPRESSION
TEST (UC) - HOLLOW SYMBOL

THREE POINT UNCONSOLIDATED
UNDRAINED TRIAXIAL COMPRESSION
TESTS (UU) - SOLID PURPLE SYMBOL

UNDRAINED SHEAR STRENGTH
ESTIMATED FOR CONSOLIDATION TEST
(CONSOL) - SOLID RED SYMBOL

BORING DATA

☆	B-05	□	SB-06
+	B-06	○	SB-07
∅	KCS-01	◇	SB-08
♦	SB-05	△	SB-09

CPT DATA

CPT-06	SCPT-07
CPT-07	SCPT-10
CPT-08	SCPT-11
CPT-09	$c/P'o = 0.22$
CPT-12	$c/P'o = 0.18$
CPT-13	Design Line

SOIL DESIGN PARAMETERS
SOIL DESIGN REACH B - STATIONS 55+00 TO 100+00

STATE OF LOUISIANA
COASTAL PROTECTION AND RESTORATION AUTHORITY
15% DESIGN PHASE
MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN
ST. JOHN THE BAPTIST PARISH, LOUISIANA
S.P. PO-0029



DRAWN BY: P.T.D.

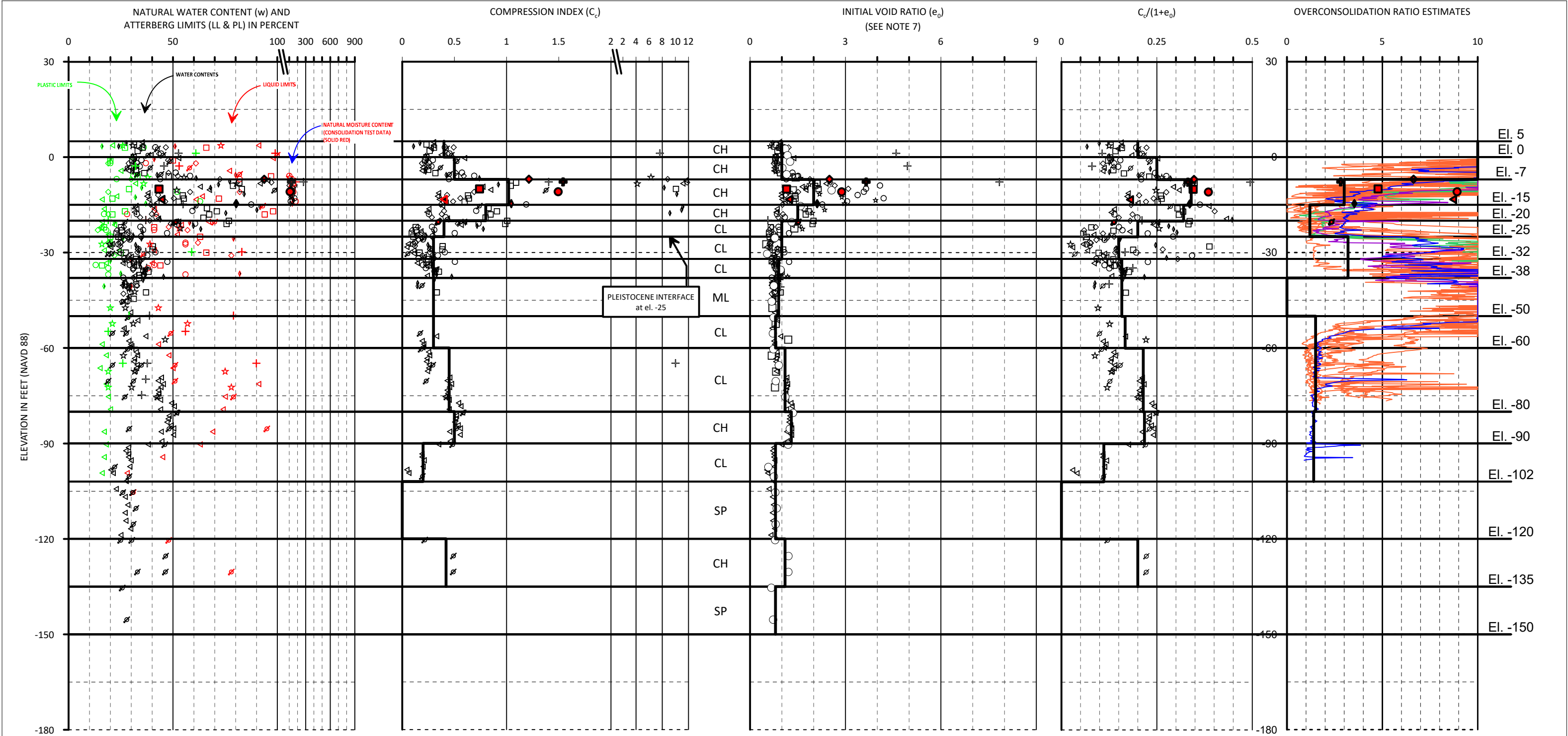
JOB NO.: 24384

CHECKED BY: S.G.W.

DATE: 29 DEC 2020

FILE NAME:
24384_All EE Data.GRF

FIGURE 3B
(SHEET 1 OF 4)



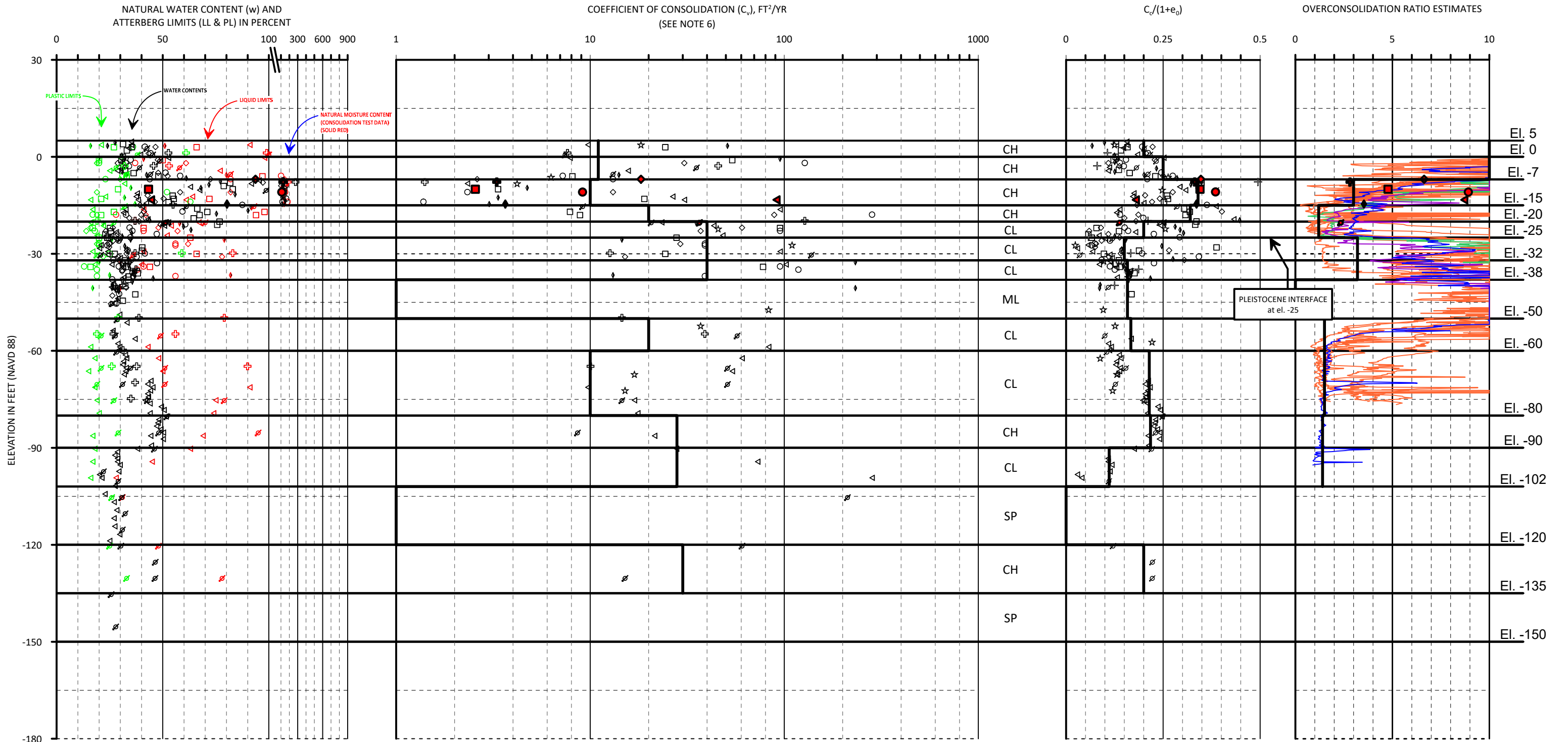
NOTES:

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BORING DATA	
◆	SB-05
□	SB-06
○	SB-07
◇	SB-08
△	SB-09
☆	B-05
+	B-06
∅	KCS-01

CPT DATA			
—	CPT-06	—	CPT-13
—	CPT-07	—	SCPT-07
—	CPT-08	—	SCPT-10
—	CPT-09	—	SCPT-11
—	CPT-12	—	Design Line

SOIL DESIGN PARAMETERS - CONSOLIDATION SOIL DESIGN REACH B - STATIONS 55+00 TO 100+00			
STATE OF LOUISIANA COASTAL PROTECTION AND RESTORATION AUTHORITY 15% DESIGN PHASE MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN ST. JOHN THE BAPTIST PARISH, LOUISIANA S.P. PO-0029			
		DRAWN BY: P.T.D.	JOB NO.: 24384
		CHECKED BY: S.G.W.	DATE: 30 DEC 2020
		FILE NAME: 24384_Reach 111 CONSOLIDATION PARAMETERS.GRF	ENCLOSURE 3B (SHEET 2 OF 4)



- NOTES:
- LOGS OF SOIL BORINGS AND CONE PENETRATION TESTS ARE PROVIDED IN APPENDIX I through IV, RESPECTIVELY.
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CPT DATA			
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<div></div> CPT-07	<div></div> SCPT-07		
<div></div> CPT-08	<div></div> SCPT-10		
<div></div> CPT-09	<div></div> SCPT-11		
<div></div> CPT-12	<div></div> Design Line		

BORING DATA			
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<div></div> SB-07	<div></div> B-06		
<div></div> SB-08	<div></div> KCS-01		

SOIL DESIGN PARAMETERS - CONSOLIDATION

SOIL DESIGN REACH B - STATIONS 55+00 TO 100+00

STATE OF LOUISIANA

COASTAL PROTECTION AND RESTORATION AUTHORITY

15% DESIGN PHASE

MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

ST. JOHN THE BAPTIST PARISH, LOUISIANA

S.P. PO-0029

EUSTIS

ENGINEERING L.L.C.

SINCE 1946

DRAWN BY: P.T.D.

CHECKED BY: S.G.W.

FILE NAME: 24384

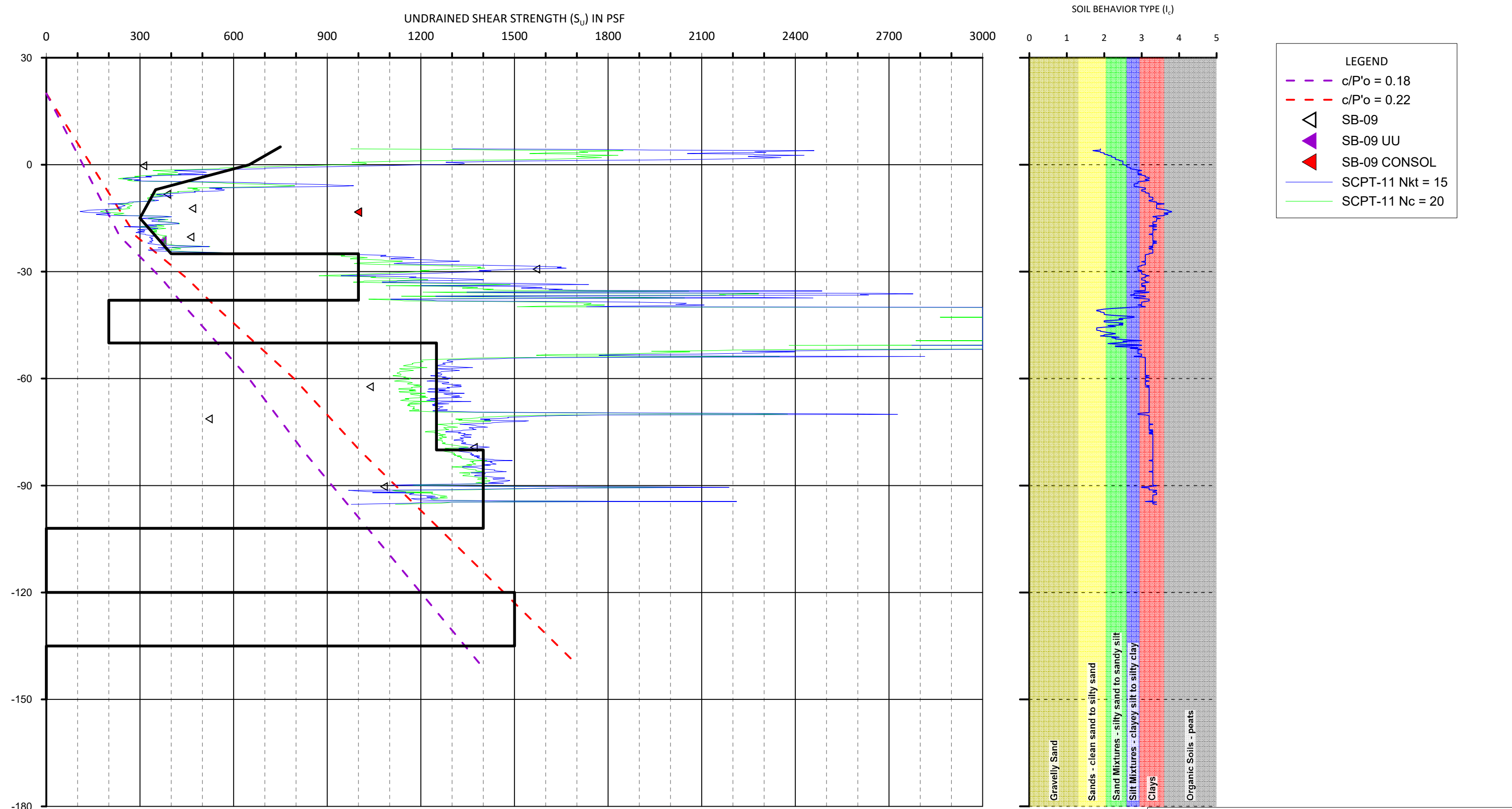
CONSOLIDATION PARAMETERS SH2.GRF

JOB NO.: 24384

DATE: 29 DEC 2020

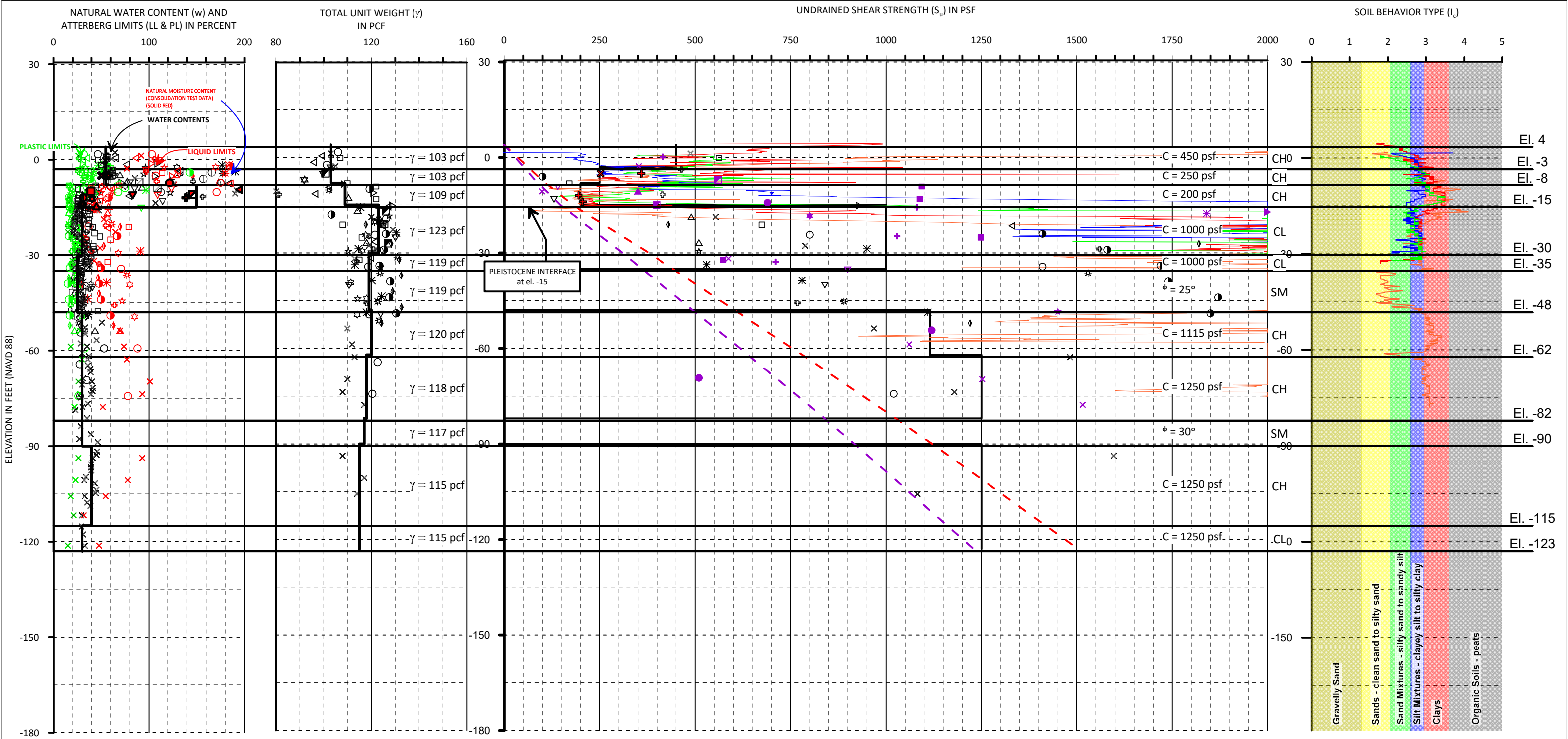
ENCLOSURE 3B

SHEET 3 OF 4



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SOIL DESIGN PARAMETERS		
SOIL DESIGN REACH B - STATIONS 55+00 TO 100+00		
STATE OF LOUISIANA COASTAL PROTECTION AND RESTORATION AUTHORITY 15% DESIGN PHASE MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN ST. JOHN THE BAPTIST PARISH, LOUISIANA S.P. PO-0029		
	DRAWN BY: P.T.D.	JOB NO.: 24384
	CHECKED BY: S.G.W.	DATE: 29 DEC 2020
	FILE NAME: 24384_REACH 112 CPT CORRELATION.GRF	FIGURE 3 (SHEET 4 OF 4)



NOTES:

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FOR THE UNDRAINED SHEAR STRENGTH PARAMETER PLOT:
UNCONFINED COMPRESSION TEST (UC) - HOLLOW SYMBOL

THREE POINT UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION
TESTS (UU) - SOLID PURPLE SYMBOL

UNDRAINED SHEAR STRENGTH ESTIMATED FOR CONSOLIDATION TEST
(CONSOL) - SOLID RED SYMBOL

CPT DATA	
	CPT-15
	SCPT-12
	SCPT-13
	SCPT-14
	Design Line

BORING DATA			
	B-07		B-16
	B-09		B-17
	B-10		B-18
	B-11		B-19
	B-12		SB-11
	B-13		SB-12
	B-14		SB-13
	B-15		

SOIL DESIGN PARAMETERS

SOIL DESIGN REACH C - STATIONS 100+00 TO 290+00

STATE OF LOUISIANA

COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA)

15% DESIGN PHASE

MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

ST. JOHN THE BAPTIST PARISH, LOUISIANA

S.P. PO-0029

EUSTIS
ENGINEERING L.L.C.
SINCE 1946

DRAWN BY: PTD

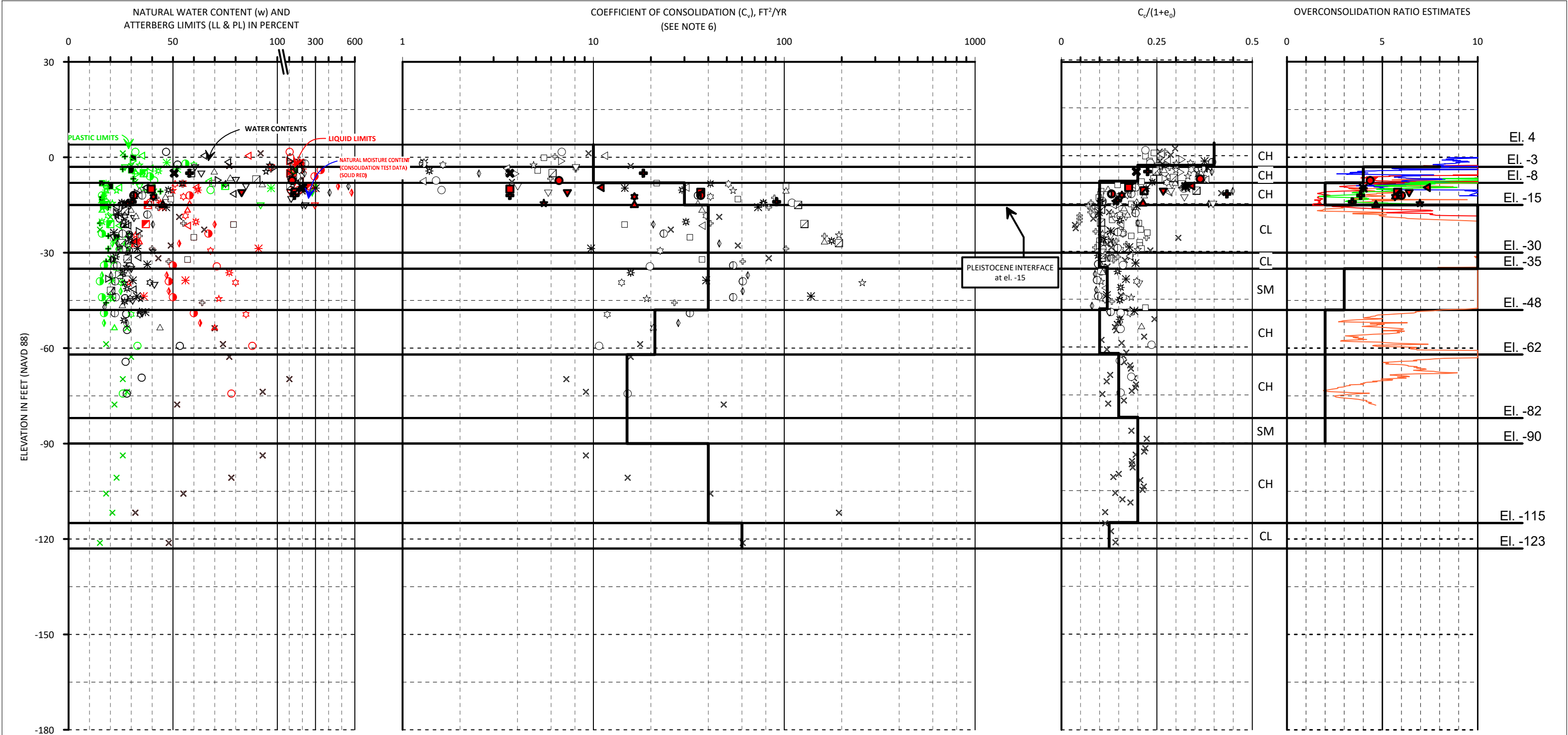
CHECKED BY: S.G.W.

FILE NAME:
24384_All EE Data.GRF

JOB NO.: 24384

DATE: 29 DEC 2020

FIGURE 3C
SHEET 1 OF 3



NOTES:

1. LOGS OF SOIL BORINGS AND CONE PENETRATION TESTS ARE PROVIDED IN APPENDIX I THROUGH IV, RESPECTIVELY.

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CPT DATA

— CPT-15

— SCPT-12

— SCPT-13

— SCPT-14

— Design Line

BORING DATA

○ B-07

△ B-09

▽ B-10

△ B-11

◻ B-12

☆ B-13

☆ B-14

☆ B-15

✱ B-16

✱ B-17

◇ B-18

⊖ B-19

✕ SB-11

⊕ SB-12

□ SB-13

SOIL DESIGN PARAMETERS - CONSOLIDATION

SOIL DESIGN REACH C - STATIONS 100+00 TO 290+00

STATE OF LOUISIANA

COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA)

15% DESIGN PHASE

MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

ST. JOHN THE BAPTIST PARISH, LOUISIANA

S.P. PO-0029



DRAWN BY: PTD

CHECKED BY: S.G.W.

FILE NAME: 24384

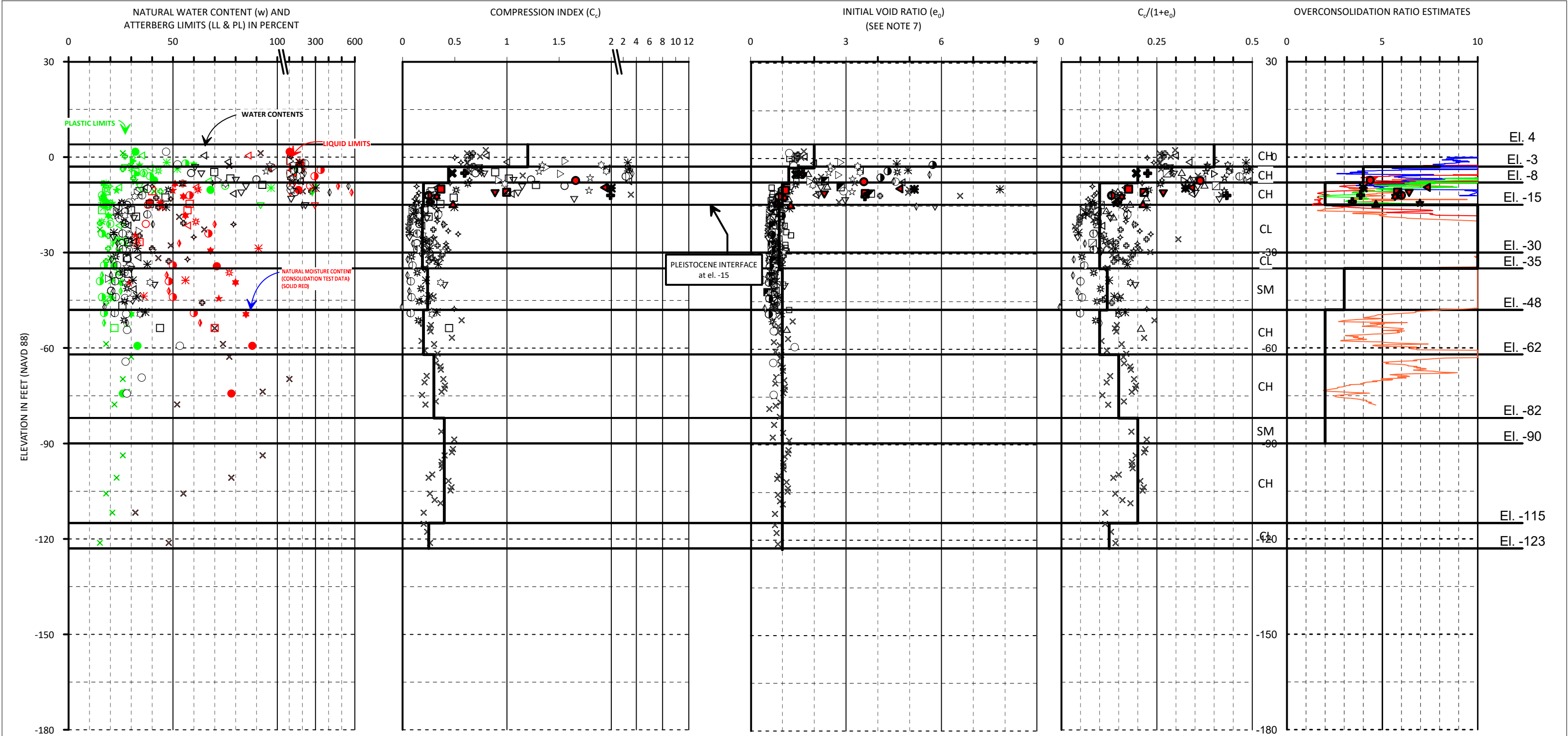
CONSOLIDATION PARAMETERS SH2.GRF

JOB NO.: 24384

DATE: 29 DEC 2020

FIGURE 3C

(SHEET 2 OF 3)



NOTES:

1. LOGS OF SOIL BORINGS AND CONE PENETRATION TESTS ARE PROVIDED IN APPENDIX I THROUGH IV, RESPECTIVELY.

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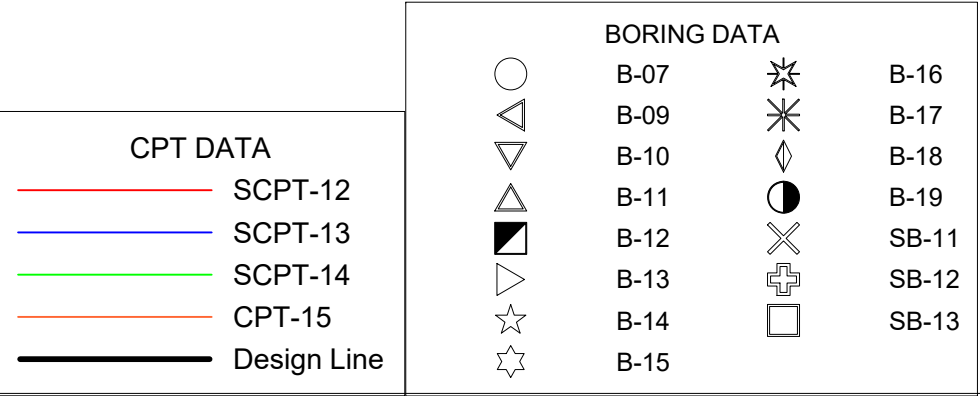
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SOIL DESIGN PARAMETERS - CONSOLIDATION

SOIL DESIGN REACH C- STATIONS 100+00 TO 290+00

STATE OF LOUISIANA

COASTAL PROTECTION AND RESTORATION AUTHORITY

15% DESIGN PHASE

MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

ST. JOHN THE BAPTIST PARISH, LOUISIANA

S.P. PO-0029

EUSTIS ENGINEERING L.L.C.

SINCE 1946

DRAWN BY: PTD

CHECKED BY: S.G.W.

FILE NAME: 24384_Reach 111 CONSOLIDATION PARAMETERS.GRF

JOB NO.: 24384

DATE: 29 DEC 2020

FIGURE 3C SHEET 2 OF 3

APPENDIX I

EXISTING GEOTECHNICAL BORINGS

SOIL BORING LOG AND CPT LOG SHEETS

Project: LDNR Lake Maurepas Project Location: Lake Maurepas Project Number: 10001431.30001	Log of Boring B-01A Sheet 1 of 5
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Date(s) Drilled 8/27/07 - 9/1/07	Logged By K. Gunderson	Checked By M. Shewalla
Drilling Method Rotary Wash 0'-125'	Drill Bit Size/Type 6" Wing Bit	Total Depth Drilled (feet) 125.0
Drill Rig Type CME 750 Buggy	Drilling Contractor FUGRO	Sampler Type(s) Shelby Tube
Groundwater Level and Date Measured Not Recorded	Hammer Data 140 lb Automatic	Approximate Surface Elevation 19.79 '
Location N-564823.73, E3500005.11		Borehole Backfill Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
0	0						Medium, brown SILT with clay (ML)					
		ST-01	37					24	99	0.83	35	9
15	5						Stiff, gray CLAY with trace of organics (CH)					
		ST-02	49				[CIU @ 11.4 psi]	36	81	1.61	67	43
10	10						Stiff, gray CLAY (CH)	38	80		77	52
		ST-03	38									
5	15						Medium to stiff, gray and brown CLAY with silt pockets (CH)					
		ST-04	40				[UU @ 6.6 psi]	33	89	1.02	57	26
0	20						Medium, gray CLAY with silt pockets (CH)					
		ST-05	37				[UU @ 9.0 psi]	41	79	0.77		
-5	25											

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-01A

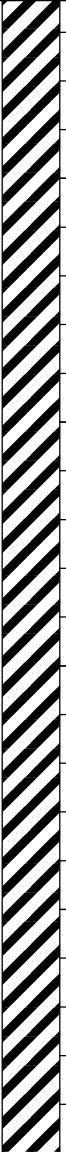
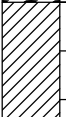
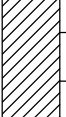
Sheet 2 of 5

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
-10	30		ST-06	45			Medium, gray CLAY with silt pockets (CH) [UU @ 11.0 psi]	38	81	0.79	87	50
-15	35		ST-07	40			Medium, gray CLAY with silt pockets and trace of shells (CH) [UU @ 13.0 psi]	50	70	0.66		
-20	40		ST-08	47			Medium to stiff, gray, dark gray, black and brown CLAY with organics (OH) [UU @ 15.4 psi]	114	41	1.09	222	142
-25	45		ST-09	49			Gray SILTY SAND with trace of clay (SM) [35.6% passing #200 sieve]	30				
-30	50		ST-10	48			Medium to stiff, gray CLAY with shells (CH) [UU @ 19.0 psi]	53	69	0.99	97	60
-35	55		ST-11	37			Stiff, light gray CLAY with trace of silt (CH)	26	97	1.62		

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-01A


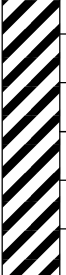

Sheet 3 of 5

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
-40	60	ST-12	44				Very stiff, light gray and greenish gray CLAY with silt (CH) [UU @ 23.4 psi]	21	108	3.10	56	33
-45	65	ST-13	46				Stiff, tan, light gray and brown CLAY with concretions (CH)	30	91	1.17		
-50	70	ST-14	48				Soft, light gray, red and brown CLAY with silt pockets, streaks and layers (CH)	35	88	0.48	61	34
-55	75	ST-15	48				Stiff to very stiff, light gray and brown CLAY (CH) [UU @ 26.9 psi]	32	92	2.03	71	44
-60	80	ST-16	48									
-65	85	ST-17	47				Medium, red, brown, tan and light gray SILTY CLAY with sand layers and lenses (CL)	38	81	0.91		
							Medium to stiff, gray and brown CLAY (CH)					

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-01A

Sheet 4 of 5

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
-70	90		ST-18	48			Medium to stiff, gray and brown CLAY with silty sand and sandy silt lenses (CH) [UU @ 35.4 psi]	42	75	1.10		
-75	95		ST-19	38								
-80	100		ST-20	38			Stiff, gray CLAY with silty sand layers and trace of shells (CH)	38	84	1.85	65	39
-85	105		ST-21	31								
-90	110		ST-22	43			Stiff, gray CLAY with trace of silt (CH) [UU @ 42.6 psi]	38	81	1.68	80	52
-95	115		ST-23	38			Medium, gray CLAY (CH)	34	83	0.81		

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-01A

Sheet 5 of 5

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft						
-100	120		ST-24	48		Stiff, gray CLAY (CH)	37	80	1.81		
-105	125		ST-25	38		Stiff, gray CLAY with silt lenses (CH)	36	83	1.85	72	46
-110	130					Bottom of boring at 125' bgs					
-115	135										
-120	140										
-125	145										

Project: LDNR Lake Maurepas Project Location: Lake Maurepas Project Number: 10001431.30001	Log of Boring B-02A Sheet 1 of 6
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Date(s) Drilled	9/12/07 - 9/15/07	Logged By	K. Gunderson	Checked By	M. Shewalla
Drilling Method	Rotary Wash 0'-125'	Drill Bit Size/Type	6" Wing Bit	Total Depth Drilled (feet)	150.0
Drill Rig Type	CME 750 Buggy	Drilling Contractor	FUGRO	Sampler Type(s)	Shelby Tube
Groundwater Level and Date Measured	Not Recorded	Hammer Data	140 lb Automatic	Approximate Surface Elevation	26.13 '
Location	N-565124.36, E-3500062.41			Borehole Backfill	Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
0							Medium, light tan and brown CLAY with silty clay pockets (CH)					
25		ST-01	21									
5												
20		ST-02	37				Medium, light tan and brown CLAY with silty clay pockets (CH)	38	81	0.51	61	31
10												
15		ST-03	43				Medium, gray CLAY with silt streaks and ferrous nodules (CH) [UU @ 4.2 psi]	45	74	0.56		
15												
10		ST-04	38				Medium, gray CLAY (CH)	39			59	33
20												
5		ST-05	37				Medium, gray CLAY with silt pockets and trace of organics (CH)	35	85	0.59		
25												

Project: LDNR Lake Maurepas
Project Location: Lake Maurepas
Project Number: 10001431.30001

Log of Boring B-02A

Sheet 2 of 6

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
0												
			ST-06	36			Stiff, gray and light gray CLAY with trace of silt (CH) [UU @ 11.0 psi]	31	89	1.12	58	34
30												
-5			ST-07	39			Medium, light gray and brown CLAY with silt and ferrous nodules (CH)	74	65	0.78		
35												
-10			ST-08	37			Stiff to very stiff, light gray and brown CLAY with silt pockets (CH) [CIU @ 15.4 psi]	37	86	2.05	58	36
40												
-15			ST-09	49			Medium, gray CLAY with silt pockets and trace of organics (CH)	43	74	0.58		
45												
-20			ST-10	37			Medium, gray CLAY with organic pockets (CH) [UU @ 19.0 psi]	50	72	0.82		
50												
-25			ST-11	38			Stiff, gray, dark gray and light gray CLAY with organic pockets (CH)	49	78	1.07	65	42
55							Medium, gray SILTY CLAY with trace of shells (CL)	35	69		47	23
-30												

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-02A

Sheet 3 of 6

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
							Medium, gray SILTY CLAY (CL)					
	60	ST-12	46				Medium, gray CLAY with trace of shells (CH)	55	69	0.96	90	57
-35		ST-13	47				Medium, gray CLAY with silt (CH) [UU @ 25.4 psi]	27	97	0.90		
	65	ST-14	45									
-40							Very stiff, light gray and greenish gray SILTY CLAY with calcareous nodules (CL) [UU @ 27.4 psi]	22	107	3.45	49	30
	70	ST-15	45									
-45												
	75	ST-16	48				Medium, tan and light gray SILTY CLAY with clayey silt pockets (CL)	28	100	0.97	35	14
-50												
	80	ST-17	47				Medium, brownish tan and light gray SILTY CLAY with trace of organics (CL) [UU @ 33.0 psi]	29	97	0.70	43	22
-55												
	85											
-60												

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-02A

Sheet 4 of 6

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft	Graphic Log					
			ST-18	48							
						Medium, brownish tan and light gray SILTY CLAY (CL)					
						Very stiff, tan and light gray CLAY with calcerous nodules (CH)	42	78	2.08	90	58
-65	90										
			ST-19	47							
						Medium, light gray SILTY CLAY (CL) [UU @ 37.4 psi]	37	80	0.82	45	20
-70	95										
			ST-20	47							
-75	100										
			ST-21	47							
-80	105										
			ST-22	38							
						Stiff, light gray CLAY (CH) [UU @ 43.0 psi]	35	88	1.53	65	42
-85	110										
			ST-23	47							
-90	115										
						Stiff, light gray CLAY (CH)	46	73	1.84	92	66

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-02A

Sheet 5 of 6

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
			ST-24	48			Stiff, light gray CLAY (CH)					
120												
-95												
			ST-25	39			Stiff, light gray and gray CLAY with shell layers (CH)					
							[UU @ 49.4 psi]	44	76	1.71		
125												
-100												
			ST-26	38								
130												
-105												
			ST-27	48			Stiff, light gray CLAY with silt and ferrous nodules (CH)					
							[UU @ 53.0 psi]	25	97	1.97	51	33
135												
-110												
			ST-28	38			Light gray SILT with sand and clay (ML)					
							[87.6% passing #200 sieve]	22				
140												
-115												
			ST-29	48			Very stiff, light gray SILTY CLAY with trace of sand (CL)					
							[UU @ 57.0 psi]	24	100	2.47	32	13
145												
-120												

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-02A

Sheet 6 of 6

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft						
		ST-30	38			Medium, light gray SILTY CLAY with clayey silt (CL)	25	96	0.93	32	13
150						Bottom of boring at 150' bgs					
-125											
155											
-130											
160											
-135											
165											
-140											
170											
-145											
175											
-150											

Project: LDNR Lake Maurepas
Project Location: Lake Maurepas
Project Number: 10001431.30001

Log of Boring B-05

Sheet 1 of 3

Date(s) Drilled 8/28/07	Logged By J. Pratt	Checked By M. Shewalla
Drilling Method Rotary Mud	Drill Bit Size/Type 3 7/8" Wing Bit	Total Depth Drilled (feet) 80.0
Drill Rig Type BK 66	Drilling Contractor SESI	Sampler Type(s) Shelby Tube/Split Barrel
Groundwater Level and Date Measured Not Recorded	Hammer Data 140 lb Automatic	Approximate Surface Elevation 5.60 '
Location N-567296.62, E-3501215.7		Borehole Backfill Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
5	0						Medium to stiff, tan and light gray CLAY with ferrous and calcareous nodules (CH)					
		ST-01	24"									
		ST-02	13"					31	86	1.05	73	47
0	5	ST-03	14"									
		ST-04	25"									
		ST-05	16"									
-5	10											
		ST-06	20"				Medium, gray and greenish gray CLAY with trace of organics (CH)	55	69	0.64	106	68
							Medium, gray CLAY with organic pockets (CH)					
-10	15	ST-07	21"				[CIU @ 3.0 psi]	80	54	0.52	122	86
		ST-08					Soft, gray CLAY with silt pockets and trace of organics (CH)	52	71	0.29		
-15	20						[UU @ 6.8 psi]					
		ST-09	18"									
-20	25											

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-05

Sheet 2 of 3

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
							Soft, gray CLAY (CH)					
							Soft, light gray CLAY (CH)					
	30	ST-10	24"				[UU @ 11.6 psi]	54	66	0.30		
-25												
							Stiff, light gray and tan CLAY with trace of calcareous nodules (CH)					
	35	ST-11	24"				[UU @ 13.6 psi]	20	106	2.00	53	37
-30												
							Medium to stiff, light gray and tan SILTY CLAY with clay pockets and trace of fine sand (CL)					
	40	ST-12	24"				[UU @ 15.6 psi]	27	98	1.03	39	23
-35												
							Soft, tan and light gray CLAY with silt streaks (CH)					
	45	ST-13					[UU @ 17.6 psi]	36	85	0.49		
-40												
							Medium, tan and light gray CLAY with silt pockets and lenses (CH)					
	50	ST-14					[UU @ 19.6 psi]	32	85	0.95		
-45												
							Medium, tan and light gray SANDY SILT with clay (ML)					
	55	SS-15	22"		30		[73.0% passing #200 sieve]	27				
-50												

Project: LDNR Lake Maurepas Project Location: Lake Maurepas Project Number: 10001431.30001	Log of Boring B-06 Sheet 1 of 3
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Date(s) Drilled 8/29/07	Logged By J. Pratt	Checked By M. Shewalla
Drilling Method Rotary Mud	Drill Bit Size/Type 3 7/8" Wing Bit	Total Depth Drilled (feet) 80.0
Drill Rig Type BK 66	Drilling Contractor SESI	Sampler Type(s) Shelby Tube/Split Barrel
Groundwater Level and Date Measured Not Recorded	Hammer Data 140 lb Automatic	Approximate Surface Elevation 3.20 '
Location N-572375.66, E-3504311.17		Borehole Backfill Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
	0		ST-01	22"								
			ST-02	24"			Soft, gray and brown CLAY (CH)	53	68	0.29	99	61
	5		ST-03	18"								
			ST-04	16"			Soft, gray and greenish gray CLAY with silt pockets (CH)	46	79	0.42	53	32
-5			ST-05	8"								
	10											
			ST-06	24"			Very soft, gray CLAY with organic pockets and organic CLAY (CH) to (OH) [UU @ 4.8 psi]	275	22	0.15	179	127
-10												
	15		ST-07	24"			Soft, gray and dark gray organic CLAY (OH) [UU @ 6.0 psi]	118	35	0.32		
-15												
	20		ST-08				Very soft, gray CLAY with organics (CH) [UU @ 7.6 psi]	55	60	0.19		
-20												
	25		ST-09	20"			Soft, gray CLAY with silt pockets (CL) [UU @ 9.6 psi]	37	84	0.33	37	19

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-06

Sheet 2 of 3

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
							Soft, gray SILTY CLAY (CL)					
-25	30		ST-10	22"			Very stiff, light gray and tan CLAY with trace of silt pockets (CH) [UU @ 11.6 psi]	24	102	2.19		
-30	35		ST-11	23"			Stiff, brown, tan and light gray CLAY with concretions (CH) [UU @ 13.6 psi]	37	84	1.62	83	59
-35	40		ST-12	22"			Soft, tan, brown and light gray CLAY with concretions (CH)	37	83	0.47		
-40	45		ST-13	19"			Medium, light gray and tan CLAY with sandy silt lenses and pockets (CH)	31	89	0.78		
-45	50		ST-15				Medium to dense, tan and light gray SANDY SILT with clay (ML) [79.8% passing #200 sieve]	28				
			SS-14	20"	33							
			SS-16	21"	22							
-50	55		SS-17	24"	16		Stiff, red, tan and light gray CLAY with silt lenses (CH)	39			79	50

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-06

Sheet 3 of 3

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
-55			ST-18	25"			Stiff, CLAY (CH)					
	60						Stiff, light gray and tan CLAY with sandy silt streaks (CH)	27	97	1.51	56	37
-60			ST-19	23"			Stiff, light gray CLAY with trace of silt pockets (CH)					
	65						[UU @ 25.6 psi]	31	92	1.49		
-65			ST-20	22"			Medium to stiff, gray CLAY with shell fragments (CH)					
	70						[UU @ 27.6 psi]	38	82	1.03	90	64
-70			ST-21	24"			Stiff, light gray and greenish gray CLAY with trace of silt pockets (CH)					
	75						[UU @ 29.6 psi]	37	85	1.10		
-75			ST-22	14"			Medium, light gray and greenish gray CLAY (CH)					
	80						[UU @ 31.6 psi]	35	86	0.72		
							Bottom of boring at 80' bgs					
-80												
	85											

Project: LDNR Lake Maurepas
Project Location: Lake Maurepas
Project Number: 10001431.30001

Log of Boring B-07

Sheet 1 of 3










Date(s) Drilled 8/29/07	Logged By J. Pratt	Checked By M. Shewalla
Drilling Method Rotary Mud	Drill Bit Size/Type 3 7/8" Wing Bit	Total Depth Drilled (feet) 80.0
Drill Rig Type BK 66	Drilling Contractor SESI	Sampler Type(s) Shelby Tube/Split Barrel
Groundwater Level and Date Measured Not Recorded	Hammer Data 140 lb Automatic	Approximate Surface Elevation 3.70 '
Location N-573523.53, E-3504179.84		Borehole Backfill Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
0	0		ST-01	16"			Medium, brown and gray CLAY with ferrous nodules (CH) [UU @ 1.2 psi]	47	72	0.64	103	71
			ST-02	14"								
	5		ST-03	20"								
			ST-04	22"								
-5			ST-05	23"			Soft, gray CLAY with organic pockets (CH) [UU @ 2.8 psi]	52	67	0.35		
	10											
			ST-06	24"								
-10												
	15		ST-07	7"			Soft, gray and brown CLAY with organic pockets (CH to OH) [UU @ 4.8 psi]	175	30	0.32	175	134
-15			ST-08	26"			Very soft, gray and brown CLAY with organic pockets (CH to OH) [UU @ 6.0 psi]	112	38	0.16	171	103
	20											
							Medium, light gray SILTY CLAY with trace of fine sand and organics (CL) [UU @ 7.6 psi]	29	95	0.69	39	21
-20			ST-09	23"			Stiff, light gray, greenish gray and tan CLAY with trace of silt (CH) [UU @ 9.6 psi]	25	101	1.95		
	25											

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-07

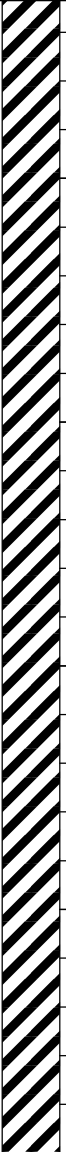
Sheet 2 of 3

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
							Stiff, CLAY (CH)					
-25	30		ST-10	24"			Medium, tan, brown and light gray SILTY CLAY with clayey silt with sand layers (CL)	29	94	0.80		
-30	35		ST-11	24"			Stiff, tan and light gray SANDY SILT with clay pockets (ML) [UU @ 13.6 psi]	29	96	1.29		
-35	40		ST-12	22"			Stiff, light gray and brown CLAY with sandy silt pockets (CH)	29	92	1.41	71	49
			SS-13	14"	24		Medium brown, tan and light gray SANDY SILT with clay (ML) [90.6% passing #200 sieve]	27				
-40	45		ST-14									
			SS-15	14"	14							
-45	50		SS-16	12"	31		Medium to dense, tan SILTY SAND or SANDY SILT with trace of clay (ML) [72.7% passing #200 sieve]	27				
-50	55		ST-17	24"			Stiff, greenish gray, light gray and tan CLAY with silt pockets (CH) [UU @ 21.6 psi]	28	93	1.46		

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-07

Sheet 3 of 3

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
-55	60		ST-18	24"			Stiff, gray CLAY with silt pockets, streaks and shells (CH) [UU @ 23.6 psi]	28	94	1.12		
-60	65		ST-19	0" 5"			Medium, gray and dark gray CLAY with organics (CH)	53			88	55
-65	70		ST-20	22"			Stiff, greenish gray, light gray and tan CLAY (CH) [UU @ 27.6 psi]	27	96	1.75		
-70	75		ST-21	18"			Soft to medium, greenish gray, light gray and tan CLAY with clay and silty sand pockets (CH) [UU @ 29.6 psi]	35	87	0.51		
-75	80		ST-22	22"			Medium to stiff, light gray and bluish gray CLAY with silt pockets (CH)	28	94	1.02	78	56
							Bottom of boring at 80' bgs					
-80	85											

Project: LDNR Lake Maurepas
Project Location: Lake Maurepas
Project Number: 10001431.30001

Log of Boring B-08

Sheet 1 of 2


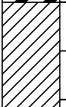
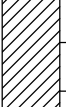
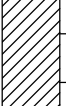
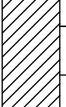
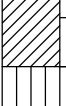





Date(s) Drilled 8/30/07	Logged By J. Pratt	Checked By M. Shewalla
Drilling Method Rotary Mud	Drill Bit Size/Type 3 7/8" Wing Bit	Total Depth Drilled (feet) 50.5
Drill Rig Type BK 66	Drilling Contractor SESI	Sampler Type(s) Shelby Tube/Split Barrel
Groundwater Level and Date Measured Not Recorded	Hammer Data 140 lb Automatic	Approximate Surface Elevation 1.80 '
Location N-574980.94, E-3504784.22		Borehole Backfill Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
0	0		ST-01	15"								
			ST-02	20"			Medium, gray and brown CLAY with trace of organics and ferrous nodules (CH)	44	77	0.78	95	59
	5		ST-03	7"			Medium, gray and brown CLAY with organic pockets (CH)	71			97	56
			ST-04	25"			Soft, gray CLAY with organic pockets (CH)					
-5			ST-05	18"			[UU @ 2.8 psi] Very soft, gray CLAY with organic pockets (CH)	62	63	0.35	79	43
	10		ST-06	24"			[UU @ 3.6 psi] Very soft, gray CLAY with organics and organic clay pockets (CH)	97	52	0.21		
-10			ST-07	22"			[UU @ 4.8 psi] Very soft, gray and brown CLAY with trace of organics (CH)	271	32	0.19		
	15		ST-08	25"			[UU @ 6.0 psi] Stiff, greenish gray and tan CLAY with trace of organics (CH)	168	30	0.13		
-15			ST-09	17"			Stiff, light gray, tan and red CLAY with trace of silt (CH)	28	99	1.27		
	20											
-20												
	25							22	102	1.66		

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-08

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
-25							Tan and red CLAY (CH)					
			ST-10				Medium, tan, red and light gray SILTY CLAY with clay (CL)	27	97	0.87	35	12
-30												
			ST-11	12"								
-35												
			ST-12	24'	37		Medium, tan CLAYEY SILT with clay pockets and trace of sand (ML) [UU @ 15.6 psi]	25	101	0.79		
-40			SS-13									
			ST-14									
-45			SS-15	14'	15		Medium, tan SANDY SILT with clay (ML) [85.3% passing #200 sieve]	26				
			ST-16									
-50			SS-17		36		Dense, tan SANDY SILT with clay (ML) [52.9% passing #200 sieve]	26				
							Bottom of boring at 50.5' bgs					
-55												

Project: LDNR Lake Maurepas
Project Location: Lake Maurepas
Project Number: 10001431.30001

Log of Boring B-09

Sheet 1 of 2

Date(s) Drilled	8/28/07	Logged By	J. Murray	Checked By	M. Shewalla
Drilling Method	Rotary Mud	Drill Bit Size/Type	3 1/2" Wing Bit	Total Depth Drilled (feet)	51.0
Drill Rig Type	Air Boat	Drilling Contractor	ESS	Sampler Type(s)	Shelby Tube
Groundwater Level and Date Measured	Not Recorded	Hammer Data	140 lb Cat Head	Approximate Surface Elevation	2.50 '
Location	N-576186.24, E-3504662.39			Borehole Backfill	Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
0	0	ST-01	24"									
		ST-02	24"				Very soft, gray and dark gray CLAY with silt pockets (CH) [UU @ 1.2 psi]	65	60	0.13	86	51
	5	ST-03	24"				Soft, gray and dark gray CLAY with organic pockets (CH) [UU @ 2.0 psi]	76	54	0.34		
		ST-04	24"				Very soft, gray CLAY with organic pockets (CH) [UU @ 2.8 psi]	133	38	0.21	130	91
	10	ST-05	24"									
		ST-06	24"				Very soft, gray and dark gray CLAY with organic clay and organic pockets (CH to OH) [UU @ 4.4 psi]	183	27	0.11	185	118
	15	ST-07	24"				Very soft, gray CLAY with organic clay layers and silt pockets (CH to OH) [UU @ 5.2 psi]	37	75	0.25	61	37
		ST-08	24"				Soft, gray and brown CLAY with organic pockets and organic clay layers (CH to OH) [UU @ 6.0 psi]	79	54	0.34		
	20	ST-09	NR									
		ST-10	24"				Medium to stiff, greenish gray and light gray CLAY with trace of silt (CH) [UU @ 7.6 psi]	23	103	1.07		
	25	ST-11	20				Stiff, tan and light gray CLAY with calcareous nodules and silty clay pockets (CH)	28	97	1.33	57	37

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-09

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft						
-25											
	30	ST-12	15			Medium, reddish brown and tan SILTY CLAY (CL) [UU @ 12.0 psi]	31	93	0.88		
-30											
	35	ST-13	24"			Alternating layers of medium, reddish brown and light gray CLAY and tan SANDY SILT to SILTY SAND (CH to SM) [UU @ 14.0 psi]	33	90	0.45		
-35											
	40	ST-14	11"								
-40											
	45	ST-15	16"			Tan SANDY SILT with clay lenses (ML) [88.8% passing #200 sieve]	31				
-45											
	50	ST-16	NR								
-50						Bottom of boring at 51' bgs					
	55										

Project: LDNR Lake Maurepas
Project Location: Lake Maurepas
Project Number: 10001431.30001

Log of Boring B-10

Sheet 1 of 2

Date(s) Drilled	8/28/07	Logged By	J. Murray	Checked By	M. Shewalla
Drilling Method	Rotary Mud	Drill Bit Size/Type	3 1/2" Wing Bit	Total Depth Drilled (feet)	50.5
Drill Rig Type	Air Boat	Drilling Contractor	ESS	Sampler Type(s)	Shelby Tube
Groundwater Level and Date Measured	Not Recorded	Hammer Data	140 lb Cat Head	Approximate Surface Elevation	-1.30 '
Location	N-577699.95, E-3504180.38			Borehole Backfill	Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
0												
			ST-01	8"								
			ST-02	20"			Soft, gray CLAY with organic pockets (CH) [UU @ 1.2 psi]	61	64	0.46	97	70
-5							Medium, gray CLAY with organic pockets (CH)					
	5		ST-03	24"			[UU @ 2.0 psi]	64	61	0.66		
			ST-04	20"			Very soft, gray and dark gray CLAY with organic pockets (CH) [UU @ 2.8 psi]	80	51	0.19		
-10			ST-05	24"			Very soft, gray CLAY with organic pockets (CH) [UU @ 3.6 psi]	85	48	0.14	124	90
	10		ST-06	24"			Very soft, gray CLAY with organic pockets (CH)	83			109	73
			ST-07	24"			Very soft, gray and brown CLAY with organic pockets and organic clay layers (CH to OH)	114	42	0.13		
-15			ST-08	24"			Very soft, brown and gray organic CLAY with wood (OH) [UU @ 6.0 psi]	223	23	0.18	295	203
	15		ST-09	24"								
			ST-10	20"			Soft, gray CLAY with silt pockets and trace of organics (CH) [UU @ 2.6 psi]	34	89	0.39		
-20							Medium, light gray SILTY CLAY (CL) [UU @ 7.6 psi]	26	97	0.63		
	20											
-25												
	25		ST-11	24"			Very stiff, greenish gray and light gray CLAY with silt pockets and calcareous nodules (CH)	22	107	2.35		

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-10

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft						
-30	30		ST-12	24"		Medium to stiff, light gray, greenish gray and brown SILTY CLAY with clay pockets (CL) [UU @ 12.0 psi]	28	94	1.08		
-35	35		ST-13	24"		Laminated layers of medium, red, brown and light gray SILTY CLAY, CLAYEY SILT and SANDY SILT (CL) [UU @ 14.0 psi]	30	91	0.90		
-40	40		ST-14	24"		Medium, reddish brown and light gray CLAY (CH)	41	79	0.84		
-45	45		ST-15	24"		Soft, tan SILT with trace of clay and fine sand (ML) [96.8% passing #200 sieve]	31				
-50	50		ST-16	24"		Soft, tan SILT with trace of sand and clay lenses (ML) [UU @ 19.6 psi]	35	92	0.47		
-55	55					Bottom of boring at 50.5' bgs					

Project: LDNR Lake Maurepas
Project Location: Lake Maurepas
Project Number: 10001431.30001

Log of Boring B-11

Sheet 1 of 2

Date(s) Drilled	8/29/07 - 8/31/07	Logged By	J. Murray	Checked By	M. Shewalla
Drilling Method	Rotary Mud	Drill Bit Size/Type	3 1/2" Wing Bit	Total Depth Drilled (feet)	53.0
Drill Rig Type	Air Boat	Drilling Contractor	ESS	Sampler Type(s)	Shelby Tube/Split Spoon
Groundwater Level and Date Measured	Not Recorded	Hammer Data	140 lb Cat Head	Approximate Surface Elevation	-2.70 '
Location	N-579059.47, E-3503823.50			Borehole Backfill	Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
0												
			ST-01	8"								
-5			ST-02	20"			Soft, gray CLAY with organic pockets (CH) [UU @ 1.2 psi]	70	55	0.37	129	97
							Stiff, gray CLAY with organic pockets and 3/4" vertical root					
5			ST-03	21"			[UU @ 2.0 psi]	78	52	1.20		
							Very soft, gray CLAY with organic pockets (CH)					
-10			ST-04	15"			[UU @ 2.8 psi]	93	45	0.22		
							Soft, gray SILTY CLAY with organic pockets (CL)					
			ST-05	24"			[UU @ 3.6 psi]	34	88	0.35	40	22
10			ST-06	24"			Very soft, gray CLAY with trace of silt and organic pockets (CH)	46	76	0.07		
-15			ST-07	24"			Soft, greenish gray and light gray CLAY with trace of organics (CH)	39			58	39
							Soft, greenish gray and light gray CLAY with trace of organics and silt pockets (CH)					
15			ST-08	24"			[UU @ 6.0 psi]	30	88	0.49	57	41
							Soft, greenish gray and light gray CLAY with silt pockets (CH)					
-20			ST-09	10"				32	93	0.49		
			ST-10	24"								
20												
-25												
25			ST-11	15"			Medium, tan SANDY SILT with clay pockets (ML)	29	92	0.51	34	8

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-11

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
-30												
	30	ST-12	8"				Medium, tan SANDY SILT with clay (ML) [70.8% passing #200 sieve]	28				
-35												
	35	SS-13	20"				Medium, tan SANDY SILT with clay (ML) [78.9% passing #200 sieve]	29				
-40												
	40	ST-14	5"									
-45												
	45	SS-15	15"		>50		Very dense, tan fine SAND with silt (SM) [15% passing #200 sieve]	26				
-50												
	50	ST-16	NR"									
		SS-17	22"		19		Very stiff, gray CLAY with shell fragments (CH)	44			70	48
-55												
	55						Bottom of boring at 53' bgs					

Project: LDNR Lake Maurepas
Project Location: Lake Maurepas
Project Number: 10001431.30001

Log of Boring B-12

Sheet 1 of 2

Date(s) Drilled	8/29/07 - 9/1/07	Logged By	J. Murray	Checked By	M. Shewalla
Drilling Method	Rotary Mud	Drill Bit Size/Type	3 1/2" Wing Bit	Total Depth Drilled (feet)	51.0
Drill Rig Type	Air Boat	Drilling Contractor	ESS	Sampler Type(s)	Shelby Tube/Split Spoon
Groundwater Level and Date Measured	Not Recorded	Hammer Data	140 lb Cat Head	Approximate Surface Elevation	-3.00 '
Location	N-580499.98, E-3503474.00			Borehole Backfill	Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
0												
-5			ST-01	22"								
			ST-02	24"			Medium, light gray and greenish gray CLAY with ferrous nodules (CH) [UU @ 1.2 psi]	59	64	0.43	107	71
			ST-03	24"			Medium, gray and dark gray CLAY with organic pockets (CH) [UU @ 3.0 psi]	90	49	0.56		
-10			ST-04	24"			Very soft, gray and dark gray CLAY with organic pockets (CH) [UU @ 2.8 psi]	109	43	0.21		
			ST-05	24"			Soft, brown, black and gray organic CLAY with organic pockets (OH) [UU @ 3.6 psi]	146	34	0.27	259	184
-15			ST-06	5"								
			ST-07	24"			Soft, light gray and gray SILTY CLAY with organic pockets (CL) [UU @ 3.0 psi]	28	93	0.40		
-20			ST-08	24"			Medium, greenish gray and light gray SILTY CLAY with organic pockets (CL) [UU @ 6.0 psi]	27	99	0.66	38	21
			ST-09	5"								
-25			ST-10	24"			Soft to medium, gray, greenish gray and light gray SILTY CLAY with silt pockets (CL) [UU @ 7.6 psi]	27	99	0.49		
			ST-11	15"			Medium to stiff, light gray and greenish gray SILTY CLAY (CL) [UU @ 10.0 psi]	26	101	1.06	37	17

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-12

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
-30							Medium to stiff, light gray and greenish gray SILTY CLAY (CL)					
	30	ST-12	20"				Loose, tan and light gray SANDY SILT with clay (ML)	28			32	7
-35												
	35	SS-13	10"		48		Dense, tan SILTY SAND with trace of clay (SM) [32.0% passing #200 sieve]	24				
-40												
	40	SS-14			>50		Very dense, tan, fine SILTY SAND with trace of clay (SM) [26.6% passing #200 sieve]	20				
-45												
	45	SS-15	18"		>50							
-50												
	50	SS-16	20"		>50							
-55							Bottom of boring at 51' bgs					
	55											

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-13

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
							Tan SANDY SILT with trace of clay (ML)					
	30	SS-12	16"		38		Dense to very dense, tan SILTY SAND (SM) [27.4% passing #200 sieve]	25				
	35	SS-13	6"		51							
	40	SS-14	18"		50 for 5"		Medium to dense, tan fine SAND with silt and clay (SM) [49.3% passing #200 sieve]	19				
	45	SS-15	18"		16							
	50	ST-16	8"									
							Bottom of boring at 51' bgs					
	55											

Project: LDNR Lake Maurepas
Project Location: Lake Maurepas
Project Number: 10001431.30001

Log of Boring B-14

Sheet 1 of 2

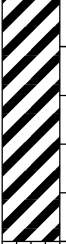




Date(s) Drilled	8/30/07	Logged By	J. Murray	Checked By	M. Shewalla
Drilling Method	Rotary Mud	Drill Bit Size/Type	3 1/2" Wing Bit	Total Depth Drilled (feet)	51.0
Drill Rig Type	Air Boat	Drilling Contractor	ESS	Sampler Type(s)	Shelby Tube
Groundwater Level and Date Measured	Not Recorded	Hammer Data	140 lb Cat Head	Approximate Surface Elevation	-0.50 '
Location	N-583283.70, E-3502344.35			Borehole Backfill	Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
0												
			ST-01	24"								
			ST-02	24"			Soft, gray and dark gray CLAY with organic pockets (CH) Disturbed Sample [UU @ 1.2 psi]	96	45	0.28	116	82
-5							Soft, gray and dark gray CLAY with organic pockets (CH)					
	5		ST-03	20"			Disturbed Sample [UU @ 2.0 psi]	95	45	0.26		
			ST-04	15"			Very soft, gray and brown CLAY with organic pockets and organic clay pockets (CH to OH) Disturbed Sample [UU @ 2.8 psi]	123	34	0.13		
-10			ST-05	10"								
	10		ST-06	20"			Very soft, gray and dark gray CLAY with organic pockets and organic clay pockets (CH to OH) [UU @ 4.4 psi]	123	37	0.18	50	27
			ST-07	21"								
-15			ST-08	24"			Medium, greenish gray and light gray CLAY with organic and silt pockets (CL)	26			44	23
			ST-09	24"								
			ST-10	24"			Stiff, greenish gray and light gray CLAY with silt pockets and ferrous nodules (CH) [UU @ 7.6 psi]	23	103	1.57		
-20												
	20											
-25							Dense, tan SILT with sand and trace of clay (ML)					
	25		ST-11	15"			[96.8% passing #200 sieve]	29			32	4

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-14

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
-30	30		ST-12	12"			Medium, brown, tan and light gray CLAY with sandy silt pockets, streaks and lenses (CH)	40	79	0.51		
-35	35		ST-13	15"			Soft, tan SILT with trace of fine sand and clay (ML) [UU @ 14.0 psi]	28	97	0.46		
-40	40		ST-14	4"			Soft, tan SILT with trace of fine sand and clay (ML)	27			29	3
-45	45		ST-15	24"			Stiff, gray CLAY with trace of organics (CH) [UU @ 18.0 psi]	35	85	1.80	72	51
-50	50		ST-16	24"			Stiff, gray CLAY with shell fragments and trace of organics (CH) [UU @ 17.1 psi]	34	89	1.45		
							Bottom of boring at 51' bgs					
-55	55											

Project: LDNR Lake Maurepas
Project Location: Lake Maurepas
Project Number: 10001431.30001

Log of Boring B-15

Sheet 1 of 2


Date(s) Drilled	8/30/07	Logged By	J. Murray	Checked By	M. Shewalla
Drilling Method	Rotary Mud	Drill Bit Size/Type	3 1/2" Wing Bit	Total Depth Drilled (feet)	51.0
Drill Rig Type	Air Boat	Drilling Contractor	ESS	Sampler Type(s)	Shelby Tube
Groundwater Level and Date Measured	Not Recorded	Hammer Data	140 lb Cat Head	Approximate Surface Elevation	-0.40 '
Location	N-584082.59, E-3501143.64			Borehole Backfill	Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
0	0											
			ST-01	15"								
			ST-02	12"			Very soft, gray CLAY with organic pockets (CH) [UU @ 1.2 psi]	130	37	0.23	170	110
-5	5		ST-03	11"			Very soft, gray CLAY with organic pockets (CH) [UU @ 2.0 psi]	132	34	0.24		
			ST-04	6"								
-10	10		ST-05	20"			Very soft, greenish gray and light gray CLAY with trace of organics (CH) [UU @ 3.6 psi]	75	62	0.11	51	34
			ST-06	22"								
			ST-07	20"			Medium, greenish gray and light gray CLAY with trace of organic pockets (CH)	32			55	38
-15	15		ST-08	15"								
			ST-09	20"								
-20	20		ST-10	24"			Medium, greenish gray and light gray CLAY with calcareous nodules (CH) [UU @ 10.1 psi]	27	100	0.80	56	37
-25	25		ST-11	24"			Stiff, brown, tan and light gray CLAY with trace of silt and ferrous nodules (CH) [UU @ 10.0 psi]	29	91	1.56		

Project: LDNR Lake Maurepas
Project Location: Lake Maurepas
Project Number: 10001431.30001

Log of Boring B-15

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
-30	30		ST-12	20"			Stiff, tan and light gray CLAY with silt pockets and ferrous nodules (CH) [UU @ 12.0 psi]	28	91	1.31	68	44
-35	35		ST-13	20"								
-40	40		ST-14	24"			Medium to stiff, light gray and tan CLAY with trace of silt pockets and ferrous nodules (CH)	39	80	1.04	80	55
-45	45		ST-15	24"			Stiff, light gray and tan CLAY with trace of silt pockets and ferrous nodules (CH)	30	91	1.29		
-50	50		ST-16	24"			Stiff, light gray and tan CLAY with trace of silt pockets and ferrous nodules (CH)	34	85	1.45	85	55
							Bottom of boring at 51' bgs					
-55	55											

Project: LDNR Lake Maurepas
Project Location: Lake Maurepas
Project Number: 10001431.30001

Log of Boring B-16

Sheet 1 of 2

Date(s) Drilled	8/30/07	Logged By	J. Murray	Checked By	M. Shewalla
Drilling Method	Rotary Mud	Drill Bit Size/Type	3 1/2" Wing Bit	Total Depth Drilled (feet)	51.0
Drill Rig Type	Air Boat	Drilling Contractor	ESS	Sampler Type(s)	Shelby Tube
Groundwater Level and Date Measured	Not Recorded	Hammer Data	140 lb Cat Head	Approximate Surface Elevation	-2.30 '
Location	N-585264.10, E-3499959.56			Borehole Backfill	Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
0												
			ST-01	5"								
-5			ST-02	4"			Very soft, gray and dark gray CLAY with organics (CH to OH)	177			180	137
	5		ST-03	NR			Very soft, gray and dark gray CLAY with organics (CH)					
-10			ST-04	10"			Soft, greenish gray and light gray CLAY with vertical root masses (CH)	54			55	37
	10		ST-05	20"			[UU @ 3.6 psi]	48	69	0.36	62	44
			ST-06	15"								
-15			ST-07	18"			Stiff, greenish gray and light gray SILTY CLAY with vertical root masses (CL)	25			44	28
	15		ST-08	20"								
-20			ST-09	6"								
	20		ST-10	24"			Medium, greenish gray and light gray CLAY with trace of organics (CH)	27	96	0.55	61	45
							[UU @ 7.6 psi]					
-25												
	25		ST-11	10"			Stiff, brown and tan SILTY CLAY with trace of fine sand (CL)	30			33	10

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-16

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft						
-30											
	30		ST-12	15"		Stiff, tan and light gray SILTY CLAY (CL) [UU @ 12.0 psi]	23	107	1.24		
-35											
	35		ST-13	20"		Stiff, tan and light gray CLAY with silt pockets (CH)	26	98	1.53		
-40											
	40		ST-14	24"		Stiff to very stiff, light gray and tan CLAY with silt pockets (CH) [UU @ 13.5 psi]	28	98	2.81	77	53
-45											
	45		ST-15	8"		Medium, tan, brown and light gray SILTY CLAY with trace of fine sand and ferrous nodules (CL)	27	97	0.89		
-50											
	50		ST-16	20"		Stiff, tan and light gray CLAY with silty clay layers (CH) [UU @ 20.0 psi]	27	97	1.59		
-55						Bottom of boring at 51' bgs					
	55										

Project: LDNR Lake Maurepas
Project Location: Lake Maurepas
Project Number: 10001431.30001

Log of Boring B-17

Sheet 1 of 2






Date(s) Drilled	9/3/07	Logged By	J. Murray	Checked By	M. Shewalla
Drilling Method	Rotary Mud	Drill Bit Size/Type	3 1/2" Wing Bit	Total Depth Drilled (feet)	51.0
Drill Rig Type	Air Boat	Drilling Contractor	ESS	Sampler Type(s)	Shelby Tube
Groundwater Level and Date Measured	Not Recorded	Hammer Data	140 lb Cat Head	Approximate Surface Elevation	0.30 '
Location	N-586688.18, E-3499945.87			Borehole Backfill	Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
0	0											
			ST-01	10"			Very Soft, Greenish Gray and Brown CLAY with organics (CH to OH)					
			ST-02	11"				177			184	137
							Very Soft, Gray and Dark Gray Muck CLAY with organics (CH to OH)					
			ST-03	12"				190			203	151
			ST-04	8"								
			ST-05	15"								
-10	10						Very Soft, Organic CLAY with clay and organics (OH)					
			ST-06	14"				302			285	188
			ST-07	20"								
			ST-08	21"								
-15	15						Very Soft, Light Gray and Dark Gray SILTY CLAY with organic pockets (CL)					
			ST-09	24"				47	79	0.18	45	28
							Stiff, Greenish Gray and Light Gray SILTY CLAY with clay (CL)					
			ST-10	24"				24	104	1.84		
-20	20											
							Very stiff, Greenish Gray and Light Gray CLAY with trace of silt pockets (CH)					
			ST-11	24"				22	107	2.16		
-25	25											

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-17

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
-30	30		ST-12	24"			Medium, Light Green and Light Gray CLAY with calcareous nodules (CH)	33	86	0.95	91	63
-35	35		ST-13	21"			Medium, Greenish Gray and Light Gray CLAY with calcareous nodules (CH)	38	82	0.53		
-40	40		ST-14	18"			Stiff, Greenish Gray and Light Gray CLAY with calcareous nodules (CH)	31	92	0.78	56	35
-45	45		ST-15	20"			Soft, Tan and Light Gray SILTY CLAY with silt (CL) [UU @ 18.0 psi]	33	94	0.26	36	16
-50	50		ST-16	24"			Stiff, Tan and Light Gray CLAY with calcareous nodules and silt pockets (CH)	37	86	1.10		
							Bottom of boring at 51' bgs					
-55	55											

Project: LDNR Lake Maurepas
Project Location: Lake Maurepas
Project Number: 10001431.30001

Log of Boring B-18

Sheet 1 of 2

Date(s) Drilled	9/3/07	Logged By	J. Murray	Checked By	M. Shewalla
Drilling Method	Rotary Mud	Drill Bit Size/Type	3 1/2" Wing Bit	Total Depth Drilled (feet)	51.0
Drill Rig Type	Air Boat	Drilling Contractor	ESS	Sampler Type(s)	Shelby Tube
Groundwater Level and Date Measured	Not Recorded	Hammer Data	140 lb Cat Head	Approximate Surface Elevation	-3.10 '
Location	N-588144.78, E-3499879.01			Borehole Backfill	Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
0												
-5			ST-01	10"			Very Soft, Gray and Black CLAY with organic pockets and organic clay (CH/OH)	217			146	110
			ST-02	8"								
5			ST-03	10"			Very Soft, Gray and Black CLAY with organic pockets and Organic CLAY (CH/OH) [UU @ 2.0 psi]	173	19	0.18		
-10			ST-04	12"			Very Soft, Gray and Black Organic CLAY and CLAY with organics (OH)	552			472	170
			ST-05	21"			Very Soft, Brown and Black Organic CLAY with organics (OH)	408			575	300
-15			ST-06	18"			Very Soft, Gray, Brown and Black Organic CLAY with organics (OH) [UU @ 5.2 psi]	200	26	0.07		
			ST-07	24"								
15			ST-08	24"			Soft, Greenish Gray and Light Gray CLAY (CH)	40	84	0.43	70	51
-20			ST-09	24"								
			ST-10	24"								
-25							Stiff, Greenish Gray and Light Gray CLAY (CH)	23	104	1.82	53	32
25			ST-11	24"								

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-18

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft						
-30											
	30		ST-12	24"		Very Stiff, Greenish Gray and Light Gray CLAY (CH)	21	109	3.45		
-35											
	35		ST-13	24"		Very Stiff, Greenish Gray and Light Gray SILTY CLAY (CL)	20	110	3.06	47	31
-40											
	40		ST-14	24"		Very Stiff, Greenish Gray and Light Gray SILTY CLAY (CL)	21	106	2.91	48	23
-45											
	45		ST-15	20"		Very Stiff, Greenish Gray, Tan and Light Gray SILTY CLAY (CL)	17	113	3.82		
-50											
	50		ST-16	22"		Stiff, Greenish Gray and Light Gray CLAY with calcareous nodules (CH)	28	97	1.22	63	46
-55						Bottom of boring at 51' bgs					
	55										

Project: LDNR Lake Maurepas
Project Location: Lake Maurepas
Project Number: 10001431.30001

Log of Boring B-19

Sheet 1 of 2

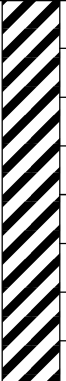
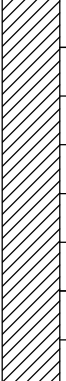
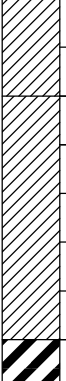
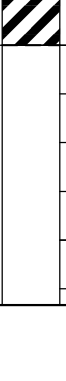

Date(s) Drilled	9/3/07	Logged By	J. Murray	Checked By	M. Shewalla
Drilling Method	Rotary Mud	Drill Bit Size/Type	3 1/2" Wing Bit	Total Depth Drilled (feet)	51.0
Drill Rig Type	Air Boat	Drilling Contractor	ESS	Sampler Type(s)	Shelby Tube
Groundwater Level and Date Measured	Not Recorded	Hammer Data	140 lb Cat Head	Approximate Surface Elevation	0.00 '
Location	N-589474.49, E-3499884.19			Borehole Backfill	Grout full depth

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
0	0											
			ST-01	12"			Very Soft, Gray and Black Organic CLAY with organics (OH)					
			ST-02	5"			Very Soft, Black and Brown Organic CLAY with organics (OH)	220			185	129
-5	5		ST-03	15"			Very Soft, Gray CLAY and Black and Brown Organic Clay with organics (CH/OH)	166	27	0.09	340	197
			ST-04	11"				157	32	0.10	293	254
			ST-05	20"								
-10	10		ST-06	21"			Soft, Gray, Light Gray and Dark Gray CLAY with organics, silt pockets and vertical roots (CH) [UU @ 4.4 psi]	38	87	0.33		
			ST-07	24"			Medium, Greenish Gray and Light Gray CLAY with silt and organics (CH)	35			58	42
-15	15		ST-08	24"								
			ST-09	21"								
			ST-10	24"			Very Soft, Greenish Gray and Light Gray CLAY with silt and organic pockets (CH) [UU @ 7.6 psi]	38	75	0.19		
-20	20											
-25	25		ST-11	24"			Stiff, Greenish Gray and Light Gray CLAY with trace of silt (CH)	26	100	1.41	67	51

Project: LDNR Lake Maurepas
 Project Location: Lake Maurepas
 Project Number: 10001431.30001

Log of Boring B-19

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	Compressive Strength, tsf	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft							
-30	30		ST-12	20"			Stiff, Greenish Gray and Light Gray CLAY with trace of silt and roots (CH)	26	100	1.58		
-35	35		ST-13	18"			Stiff, Greenish Gray and Light Gray SILTY CLAY with roots (CL)	23	100	1.72	50	33
-40	40		ST-14	24"			Stiff, Greenish Gray and Light Gray SILTY CLAY with silt pockets (CL)	22	105	1.74	48	33
-45	45		ST-15	24"			Stiff, Greenish Gray and Light Gray CLAY with trace of silt (CL)	23	104	1.87	50	34
-50	50		ST-16	24"			Stiff, Greenish Gray and Light Gray CLAY with trace of silt (CH)	22	107	1.85	60	43
							Bottom of boring at 51' bgs					
-55	55											

Project: LAKE MAUREPAS DIVERSION
Project Location: GARYVILLE, LOUISIANA
Project Number: 19229541.00001

Log of Boring B-1

Sheet 1 of 5

Date(s) Drilled	8/4/11 - 8/9/11	Logged By	Bukkapatnam, Ananth	Checked By	Shewalla, Mahendra
Drilling Method	Solid Stem/ Rotary Wash Drilling	Drill Bit Size/Type	5.5" Wing Bit	Total Depth Drilled (feet)	130.0
Drill Rig Type	Diedrich D-50	Drilling Contractor	SESI	Sampler Type(s)	Shelby Tube/ Split Spoon
Groundwater Level and Date Measured	8.0' after 15 min	Hammer Data	140 lbs, 30 inch drop	Approximate Surface Elevation	8.9'
Location	N564749.90,E3499953.11			Borehole Backfill	Cement Bentonite Grout

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft	Graphic Log							
0	0												
				16	2				17				
				14	2				30				
5													
	5			43					36				
									35				
									33			33	9
									32				
0				43				0.50	32				
	10								32				
									38				
									34				
				26				0.50	29				
-5									29				
	15											NP	NP
				48				0.50	31				
									38				
-10									38				
	20												
				46				0.75	31				
									30				
									28				
-15													
	25			45				0.50	33				
									34				

Project: LAKE MAUREPAS DIVERSION
Project Location: GARYVILLE, LOUISIANA
Project Number: 19229541.00001

Log of Boring B-1

Sheet 2 of 5

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft								
						[UU @ 17.8psi; 20.4psi and 31.1psi][Consolidation Test]			36	84	0.47	47	28
						Soft; Gray LEAN CLAY (CL)			35				
-20	30		45			Soft; Gray LEAN CLAY (CL) w/ silt lenses [3.1% Sand; 55.1% Silt; 41.8% Clay]		0.50	66				
									65				
									37	84	0.41	46	26
									42				
-25	35		46			Soft; Gray CLAY (CH) w/ silt strata and lenses Gray CLAY (CH) w/ organic pockets [2.4% Organic Content]		1.00	58				
									44				
									56				
									62				
			44					0.75	111				
									111				
-30	40		45			Medium; Dark Gray CLAY (CH) w/ organics [UU @ 22.6psi; 34.2psi and 35.9psi][9.6% Organic Content][Consolidation Test]			96	46	0.94	161	118
									79				
						Medium; Gray CLAY (CH)		0.75	38				
									32				
									35				
-35	45		47			Gray SILT (ML) w/ sand and clay pockets [28.1% Sand; 64.1% Silt; 7.8% Clay] Stiff; Gray CLAY (CH)		1.25	38			NP	NP
									47				
						Medium; Gray CLAY (CH) w/ shell pockets			50				
									42	65	0.88		
									51				
-40	50		47			Stiff; Gray CLAY (CH)		1.50	39				
									44				
						Gray CLAY (CH) w/ shell fragments [Consolidation Test]			52			86	62
									37				
			39					1.75	25				
									36				
-45	55					Stiff; Greenish Gray LEAN CLAY (CL) w/ concretions [UU @ 29.0psi; 40.6psi and 42.3psi]			25	104	1.05		
						NO RECOVERY							

Project: LAKE MAUREPAS DIVERSION
Project Location: GARYVILLE, LOUISIANA
Project Number: 19229541.00001

Log of Boring B-1

Sheet 3 of 5

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft	Graphic Log							
-50	60		24			Greenish Gray and Light Gray LEAN CLAY (CL) w/ silt [1.7% Sand; 65.5% Silt; 32.8% Clay]		1.25	22				
						NO RECOVERY			23			39	22
						NO RECOVERY							
-55	65		47			Stiff; Gray LEAN CLAY (CL)		2.25	26				
						Stiff; Tan and Light Gray LEAN CLAY (CL) w/ sandy silt pockets			27				
						[UU @ 32.2psi; 43.8psi and 45.5psi]			27	97	1.26	40	23
									27				
-60	70		48			Stiff; Tan, Light Gray and Brown CLAY (CH)		1.25	37				
						Stiff; Tan and Light Gray CLAY (CH), jointed			37				
									42	83	1.20		
									30				
									24				
-65	75		48			Alternating Layers of Tan, Brown and Light Gray LEAN CLAY (CL) and SANDY SILT (ML)		2.25	34				
						NO RECOVERY			39			35	15
			48			Very Stiff; Tan and Light Gray CLAY (CH) w/ silt pockets and streaks		2.00	31				
						[UU @ 37.0psi; 48.6psi and 50.3psi]			30				
-70	80					NO RECOVERY			33	86	2.39		
			47			Stiff; Tan, Brown and Light Gray CLAY (CH)		2.50	39				
									46				
									39				
									40				
-75	85		48			Stiff; Light Brown LEAN CLAY (CL) w/ sandy silt layers and pockets		2.50	26				
						[UU @ 40.2psi; 51.8psi and 53.5psi]			34				
									35	84	1.15	48	31
									42				
			47			Tan, SANDY SILT (ML)		2.00	27				
						Alternating Layers of Gray CLAY (CH) and SILT (ML)			33				

Project: LAKE MAUREPAS DIVERSION
Project Location: GARYVILLE, LOUISIANA
Project Number: 19229541.00001

Log of Boring B-1

Sheet 4 of 5

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft									
							Medium; Gray CLAY (CH) w/ silt lenses and layers [UU @ 42.2psi; 53.8psi and 55.5psi]			37				
							Gray LEAN CLAY (CL)			40	79	0.95	52	33
-80			47						1.25	34				
	90						Alternating Layers of Gray CLAY (CH) and Tan LEAN CLAY (CL)			34				
										35			77	55
										42				
			48				Stiff; Gray CLAY (CH) w/ sand strata and lenses		1.50	38				
-85										48				
							Stiff; Gray CLAY (CH) w/ silt lenses and pockets [UU @ 45.0psi; 56.6psi and 58.3psi]			38	85	1.09		
	95									34				
			48				Stiff; Gray CLAY (CH) w/ sand strata and lenses		1.25	35				
										36				
							Gray CLAY (CH) w/ silt lenses			39			64	42
-90							Stiff; Gray CLAY (CH) w/ silt pockets and lenses [UU @ 47.0psi; 58.6psi and 82.0psi]			36	84	1.67		
	100						Stiff; Gray CLAY (CH) w/ sand strata and lenses		1.25	39				
			48							33				
							Stiff; Gray CLAY (CH) w/ shells and silt lenses [UU @ 48.2psi; 59.8psi and 61.5psi]			33	90	1.63		
-95										34				
			48				Stiff; Light Gray CLAY (CH) w/ silt strata and lenses		1.25	40				
	105									37				
							Gray CLAY (CH)			37			65	42
										44				
-100			48						1.25	47				
										46				
	110						Stiff; Gray CLAY (CH)			47	74	1.69		
										49				
			48				Stiff; Gray CLAY (CH)		1.50	49				
-105										50				
							Gray CLAY (CH)			48			87	59
	115									48				
			47						1.25	48				

Project: LAKE MAUREPAS DIVERSION
Project Location: GARYVILLE, LOUISIANA
Project Number: 19229541.00001

Log of Boring B-1

Sheet 5 of 5

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft	Graphic Log							
-110	120		47			Stiff; Gray CLAY (CH) [UU @ 54.6psi; 66.2psi and 67.9psi]			46				
						Stiff; Gray CLAY (CH)		1.25	47	76	1.68		
						Gray CLAY (CH)			44			89	62
-115	125		48			Very Stiff; Gray CLAY (CH) w/ silt pockets		1.50	44				
						Stiff; Gray CLAY (CH)			42	79	2.13		
-120	130		48			Gray CLAY (CH)		1.50	44				
									45			82	54
-125	135					Bottom of Hole @ 130.0' bgs Note 1: All samples were collected using a 48" long Piston Sampler Note 2: Strength's shown are average values of 3-point UU test							
-130	140												
-135	145												

Project: LAKE MAUREPAS DIVERSION
Project Location: GARYVILLE, LOUISIANA
Project Number: 19229541.00001

Log of Boring B-2A

Sheet 1 of 2

Date(s) Drilled	8/18/11 - 8/18/11	Logged By	Bukkapatnam, Ananth	Checked By	Shewalla, Mahendra
Drilling Method	Solid Stem/ Rotary Wash Drilling	Drill Bit Size/Type	5.5" Wing Bit	Total Depth Drilled (feet)	40.0
Drill Rig Type	Diedrich D-50	Drilling Contractor	SESI	Sampler Type(s)	Shelby Tube/ Split Spoon
Groundwater Level and Date Measured	6.7' after 15 min	Hammer Data	140 lbs, 30 inch drop	Approximate Surface Elevation	6.7'
Location	N565554.00, E3500470.89			Borehole Backfill	Cement Bentonite Grout

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft									
0							Stiff; Brown and Gray CLAY (CH)			27				
5										27				
										27				
			46				Stiff; Brown and Gray CLAY (CH)		2.25	34				
	5									43				
										41				
0							Medium; Gray and Brown CLAY (CH) w/ ferrous nodules [1.7% Sand; 39.7% Silt; 58.6% Clay] [2.4% Organic Content]			41			64	45
			41						0.50	39				
							Soft; Gray CLAY (CH) w/ silt strata or lenses			36				
	10									35				
			36				Medium; Gray and Brown CLAY (CH), jointed [98.4% passing #200 sieve][3.0% Organic Content] [11' - 12' - No Sample Recovered]		1.00	53	72	0.60		
-5							Medium; Gray CLAY (CH)			53				
										43				
	15						Gray CLAY (CH), jointed [2.6% Organic Content]			46				
			48						1.25	53				
-10							Medium; Gray CLAY (CH) w/ organics			55				
										58				
							Medium; Gray CLAY (CH), jointed [UU @ 10.1psi; 21.8psi and 23.4psi]			55	68	0.74	98	63
	20								0.75	57				
			41				Soft; Gray and Dark Gray CLAY (CH) w/ organics			75				
-15										93				
			35				Soft; Black and Dark Gray ORGANIC CLAY (OH) w/ organics [17.7% Organic Content] [23' - 24' - No Sample Recovered]		0.50	150			231	145
	25						Soft; Gray and Dark Gray CLAY (CH) w/ organics			77				
										63				

Project: LAKE MAUREPAS DIVERSION
Project Location: GARYVILLE, LOUISIANA
Project Number: 19229541.00001

Log of Boring B-2A

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft	Graphic Log							
-20				37		Soft; Dark Gray and Black CLAY (CH) w/ organics [27' - 28' - No Sample Recovered]		0.50	97	47	0.45		
						Gray SANDY SILT (ML) w/ clay strata or lenses			39				
	30								36				
-25				47		Soft; Gray CLAY (CH) w/ silt and shells			71			89	65
						Soft; Gray CLAY (CH) w/ silt strata or lenses		0.50	70				
						Soft; Gray CLAY (CH) w/ shell fragments [UU @ 16.1psi; 27.8psi and 29.4psi]			71				
	35								74	57	0.36		
				47					71				
						Soft; Gray CLAY (CH) w/ silt strata or lenses		1.25	66				
-30									65				
						Stiff; Greenish Gray and Gray CLAY (CH) w/ silt strata or lenses			59				
				45					28				
	40							1.25	25				
-35						Bottom of Hole @ 40.0' bgs Note 1: All samples were collected using a 48" long Piston Sampler Note 2: Strength's shown are average values of 3-point UU test							
	45												
-40													
	50												
-45													
	55												

Project: LAKE MAUREPAS DIVERSION	Log of Boring B-3A
Project Location: GARYVILLE, LOUISIANA	Sheet 1 of 2
Project Number: 19229541.00001	

Date(s) Drilled 8/17/11 - 8/17/11	Logged By Bukkapatnam, Ananth	Checked By Shewalla, Mahendra
Drilling Method Solid Stem/ Rotary Wash Drilling	Drill Bit Size/Type 5.5" Wing Bit	Total Depth Drilled (feet) 40.0
Drill Rig Type Diedrich D-50	Drilling Contractor SESI	Sampler Type(s) Shelby Tube/ Split Spoon
Groundwater Level and Date Measured 8.3' after 15 min	Hammer Data 140 lbs, 30 inch drop	Approximate Surface Elevation 6.7'
Location N565694.35, E3500536.99		Borehole Backfill Cement Bentonite Grout

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft									
0							Very Stiff; Brown and Light Gray CLAY (CH) w/ silt strata and streaks			21				
5							Stiff; Brown and Light Gray CLAY (CH) w/ silt strata and streaks			28				
				46			Medium; Gray and Brown CLAY (CH) w/ wood	2.50		35				
	5									30				
										53				
										51				
0							Light Gray and Tan CLAY (CH) w/ ferrous nodules, silt [2.6% Organic Content]			30				
				43					0.75	40				
							Soft; Gray CLAY (CH) w/ silt strata and streaks			42				
	10									49				
							Soft; Gray CLAY (CH), jointed [8.1% Silt; 91.9% Clay][2.5% Organic Content]			56	67	0.37	91	58
-5				46					1.00	53				
							Soft; Gray CLAY (CH) w/ silt strata and streaks			50				
										52				
	15									47				
				45					0.75	48				
-10							Soft; Gray CLAY (CH) w/ silt strata and streaks, wood			59				
										74				
							Medium; Gray CLAY (CH), jointed [99.0%passing #200 sieve][2.8% Organic Content] [UU @ 10.8psi; 22.5psi and 24.1psi]			59	65	0.58	94	63
	20								1.25	55				
							Soft; Gray CLAY (CH) w/ organics			78				
-15										272				
							Medium; Black and Dark Gray ORGANIC CLAY (OH) w/ clay strata and streaks			109				
				47			PEAT and ORGANICS w/ clay [20.2% Organic Content]		0.50	191			266	166
	25						Soft; Gray CLAY (CH) w/ organics, silt strata and streaks			79				
										81				

Project: LAKE MAUREPAS DIVERSION
Project Location: GARYVILLE, LOUISIANA
Project Number: 19229541.00001

Log of Boring B-3A

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft	Graphic Log							
-20									51				
			46					0.50	56				
						Soft; Gray CLAY (CH) w/ silt strata and streaks, organics			56				
	30					Soft; Gray CLAY (CH) w/ silt lenses and layers [UU @ 15.2psi; 26.9psi and 28.5psi]			50	72	0.31		
									47				
-25			48					0.50	68				
						Soft; Gray CLAY (CH) w/ slickensides, silt strata and streaks			77				
						Very Soft; Gray CLAY (CH) w/ shell fragments			59	64	0.21	97	71
	35		48					0.50	43				
						Soft; Gray CLAY (CH) w/ slickensides, silt strata and streaks			65				
									76				
						Stiff; Greenish Gray and Light Gray CLAY (CH) w/ silt strata and streaks			62				
									28				
-30			47					2.00	22				
	40					Bottom of Hole @ 40.0' bgs Note 1: All samples were collected using a 48" long Piston Sampler Note 2: Strength's shown are average values of 3-point UU test							
-35													
	45												
-40													
	50												
-45													
	55												

Project: LAKE MAUREPAS DIVERSION	Log of Boring B-4A
Project Location: GARYVILLE, LOUISIANA	Sheet 1 of 2
Project Number: 19229541.00001	

Date(s) Drilled 8/16/11 - 8/16/11	Logged By Bukkapatnam, Ananth	Checked By Shewalla, Mahendra
Drilling Method Solid Stem/ Rotary Wash Drilling	Drill Bit Size/Type 5.5" Wing Bit	Total Depth Drilled (feet) 41.0
Drill Rig Type Diedrich D-50	Drilling Contractor SESI	Sampler Type(s) Shelby Tube/ Split Spoon
Groundwater Level and Date Measured 14.2' after 15 min	Hammer Data 140 lbs, 30 inch drop	Approximate Surface Elevation 6.6'
Location N565864.08, E3500618.35		Borehole Backfill Cement Bentonite Grout

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft								
0	0					Stiff; Brown and Gray CLAY (CH) w/ sand strata and lenses, silt strata and lenses			23				
5									22				
									19				
			42					4.25	25				
5						Stiff; Gray and Brown CLAY (CH) w/ sand strata and lenses, silt strata and lenses			41				
									31				
0						Gray and Brown CLAY (CH) w/ silt, ferrous nodules [2.9% Organic Content]			28				
			48					1.25	32				
						Stiff; Gray CLAY (CH) w/ silt strata and lenses			41				
10						Stiff; Gray and Tan CLAY (CH) w/ silt strata and lenses			38				
						Medium; Light Gray and Brown CLAY (CH), jointed [2.5% Organic Content]			55	70	0.54		
-5			42					0.75	52				
						Stiff; Gray CLAY (CH) w/ silt strata and lenses			52				
									49				
15						Gray CLAY (CH), jointed [16.6% Silt; 83.4% Clay][2.3% Organic Content]			49			77	52
			42						57				
-10						Soft; Gray CLAY (CH) w/ silt strata and lenses, organics		0.75	62				
									56				
						Medium; Gray CLAY (CH) w/ organic pockets, calcium nodules, jointed [99.1% passing #200 sieve] [UU @ 13.4psi; 25.0psi and 26.7psi]			61	64	0.65	97	66
20			43					0.75	60				
						Medium; Gray and Dark Gray ORGANIC CLAY (OH) w/ organics			188				
-15						ORGANICS w/ clay			142			216	171
						Medium; Gray CLAY (CH) w/ silt strata and lenses			57				
			43					0.50	60				
25						Soft; Gray CLAY (CH) w/ silt strata and lenses			61				
						Soft; Gray CLAY (CH) w/ organic pockets			67	61	0.51		

Project: LAKE MAUREPAS DIVERSION
Project Location: GARYVILLE, LOUISIANA
Project Number: 19229541.00001

Log of Boring B-4A

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft								
-20													
			47			Gray SANDY SILT (ML)		0.25	62				
			24	WOH		Medium; Gray CLAY (CH) w/ silt strata and lenses			25				
30									52				
									65				
-25									69				
			47					0.50	61				
						Soft; Gray CLAY (CH) w/ slickensides			50				
35						Soft; Gray ORGANIC CLAY (OH) w/ organics			43				
									69				
-30			48			Medium; Gray CLAY (CH) w/ silt pockets [UU @ 20.6psi; 32.2psi and 33.9psi]			34	89	0.62	52	35
						Stiff; Gray CLAY (CH) w/ silt strata and lenses		1.25	28				
									29				
40			35						22				
								2.50	22				
-35						Bottom of Hole @ 41.0' bgs Note 1: All samples were collected using a 48" long Piston Sampler Note 2: Strength's shown are average values of 3-point UU test							
45													
-40													
50													
-45													
55													

Project: Lake Maurepas - KCS Railroad**Project Location: Garyville, LA****Project Number: 10001863****Log of Boring KCS-01**

Sheet 1 of 6

Date(s) Drilled	1/22/13 - 1/24/13	Logged By	M. Shewalla	Checked By	A. Bukkapatnam
Drilling Method	Auger 0' to 10'; Rotary Wash 10' to 155'	Drill Bit Size/Type	4" Auger	Total Depth Drilled (feet)	155.0
Drill Rig Type	SIMCO 2800	Drilling Contractor	APS Testing	Sampler Type(s)	Shelby Tube/Split Spoon
Groundwater Level and Date Measured	7.0' at 0 Mins; 5.0' after 15 Mins	Hammer Data	140 lbs	Approximate Surface Elevation	2.6'
Location	N572379.75, E3504323.37			Borehole Backfill	Cement and Betonite Grout

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft									
0	0	ST-1	20				Light Gray CLAY (CH) w/ Fe Nodules		1.00	43				
0		ST-2	17				Light Gray to Brown CLAY (CH) w/ Fe Nodules		0.50	45			100	62
5		ST-3	14				Medium, Light Gray to Brow CLAY (CH) w/ Fe Nodules		0.50	49	72	0.58		
-5		ST-4	22				Medium, Light Gray to Brow CLAY (CH) w/ Fe Nodules [UU @5.0psi]		0.25	39	82	0.52	58	30
		ST-5	10				Gray CLAY (CH) w/ Fe Nodules and tree roots		1.25	44			82	49
-10														
		ST-6	22				Soft, Gray CLAY (CH) w/ organic content [UU @7.8psi]		0.25	99	46	0.32		
-15														
		ST-7	23				Soft, Gray CLAY (CH) w/ organic content [UU @9.8psi]		0.25	61	64	0.40	93	61
-20														
		ST-8	17				Gray CLAY (CH) w/ organic content		0.25	50			70	43
-25														

Project: Lake Maurepas - KCS Railroad

Project Location: Garyville, LA

Project Number: 10001863

Log of Boring KCS-01

Sheet 2 of 6

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft								
-25													
		ST-9	22			Medium, Light Gray CLAY (CH)		0.50	30	92	0.61		
-30													
		ST-10	23			Gray SILTY CLAY (CL) w/ sand lenses		1.50	21			36	17
-35													
		ST-11	20			Stiff, Tan and Light Gray to Brown CLAY (CH)		1.75	37	84	1.15		
-40													
		ST-12	16			Stiff, Light Gray to Brown CLAY (CH) w/ sand pockets [UU @19.8psi]		1.25	29	96	1.75		
-45													
		SS-13	17		32	Very Firm, Brown SILT (ML) w/ sand			26				
-50													
		SS-14	12		24	Firm, Brown SILT (ML) w/ sand			29				
-55													

Project: Lake Maurepas - KCS Railroad

Project Location: Garyville, LA

Project Number: 10001863

Log of Boring KCS-01

Sheet 3 of 6

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft									
-55		SS-15	14		13		Stiff, Light Gray to Brown SILTY CLAY (CL)			28			49	28
-60														
-65		ST-16	16				Stiff, Gray to Brown CLAY (CH) w/ silt pockets		1.25	28	96	1.16		
-70		ST-17	13				Gray to Brown CLAY (CH) w/ silt/sand lenses		1.00	35			51	30
-75		ST-18	14				Gray to Brown CLAY (CH) w/ shells		1.00	31			51	32
-80		ST-19	18				Gray to Brown CLAY (CH)		1.00	43			79	52
-85		ST-20	20				Stiff, Gray CLAY (CH)		1.25	52	71	1.40		
							[UU @35.8psi]							

Project: Lake Maurepas - KCS Railroad

Project Location: Garyville, LA

Project Number: 10001863

Log of Boring KCS-01

Sheet 4 of 6

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft									
-85														
		ST-21	21				Gray CLAY (CH)		1.00	48			95	66
-90														
		ST-22	20				Very Stiff, Gray CLAY (CH) w/ sand lenses [UU @39.8psi]		1.25	46	74	2.27		
-95														
-100														
		SS-23	13		17		Firm, Gray SANDY SILT (ML)			22				
-105														
		ST-24	19				Stiff, Gray CLAY (CH) w/ sand lenses		1.50	30	95	1.42		
-110														
		ST-25	13				Firm, Gray SILT (ML) w/ clay [UU @45.8psi]		1.00	31	93	1.63	31	5
-115														
		SS-26	14		36		Very Firm, SILT (ML) w/ sand			32				

Project: Lake Maurepas - KCS Railroad

Project Location: Garyville, LA

Project Number: 10001863

Log of Boring KCS-01

Sheet 5 of 6

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft								
-115		SS-27	15		17	Firm, Gray SILT (ML) [92.7% passing #200 Sieve]			31				
120													
-120		SS-28	13		14	Stiff, Gray SILTY CLAY (CL) w/ shells			30			48	23
125													
-125		ST-29	16			Gray CLAY (CH) w/ shells		1.00	47				
130													
-130		ST-30	21			Very Stiff, CLAY (CH) w/ silt lenses		1.50	47	75	2.02	78	45
135													
-135		ST-31	7			Gray SAND (SP) w/ silt [5.2% passing #200 Sieve]			26				
140													
-140		SS-32	14		45	Very Dense, Gray SILTY SAND (SM)							
145													

Project: Lake Maurepas - KCS Railroad
 Project Location: Garyville, LA
 Project Number: 10001863

Log of Boring KCS-01

Sheet 6 of 6

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Torvane (tsf)	Hand Penetrometer (tsf)	Water Content, %	Dry Unit Weight, pcf	Cohesion (ksf)	Liquid Limit, %	Plastic Index, %
		Type	Number	Recovery, in.	Sampling Resistance, blows / ft									
-145		⊗	SS-33	9	43		Dense, Gray SILTY SAND to SAND (SP-SM)			28				
150														
-150														
		○	SS-34	NR	>50		Very Dense, Gray SILTY SAND to SAND (SP-SM)							
155														
							Bottom of Hole - 155' bgs							
-155														
160														
-160														
165														
-165														
170														
-170														
175														
-175														

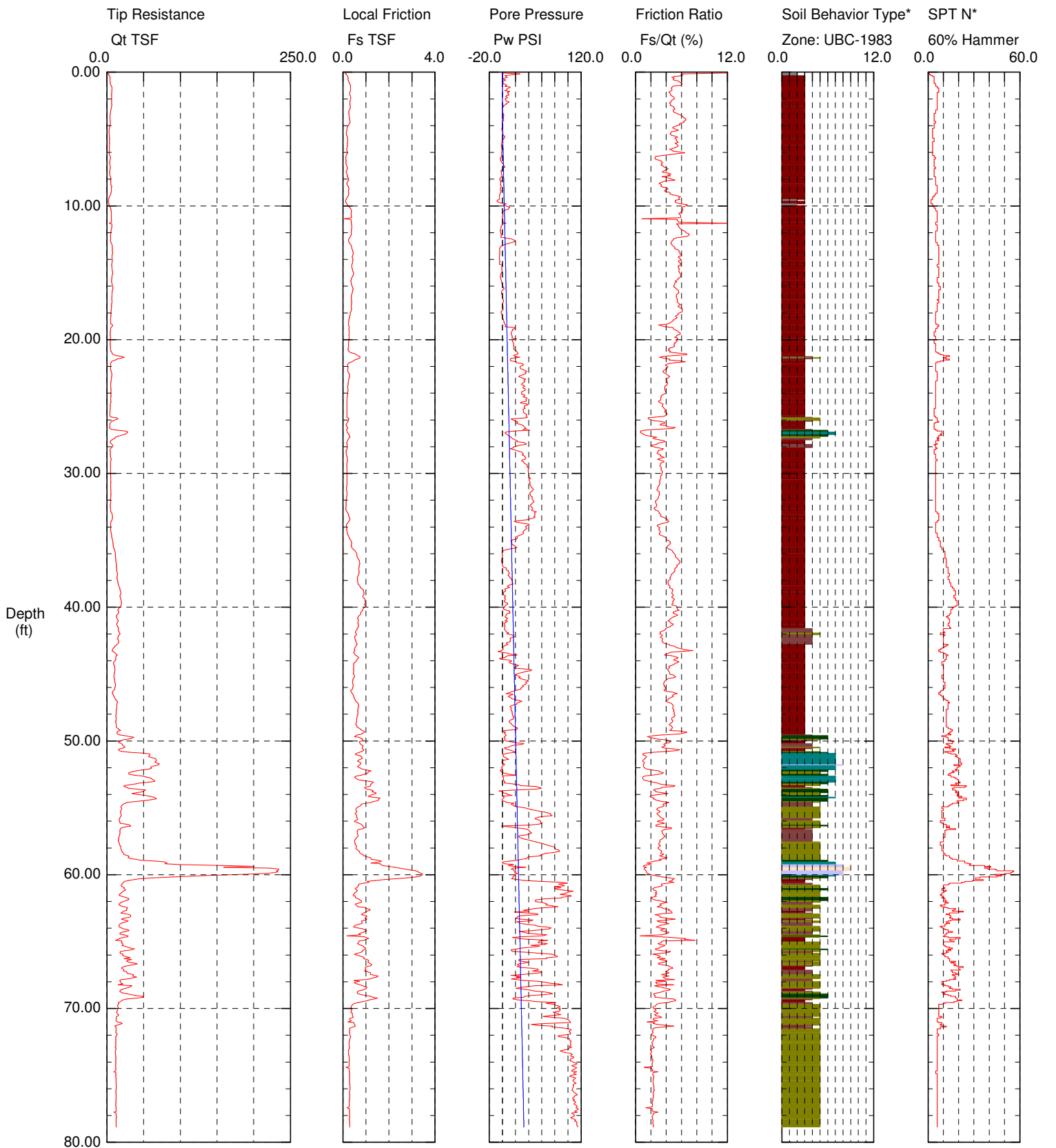
APPENDIX II

EXISTING GEOTECHNICAL CPTS

Southern Earth Sciences, Inc.

Operator: TTC
Sounding: CPT-03 ELEV. 6.00 ft
Cone Used: DDG0899

CPT Date/Time: 9/14/2007 10:43:49 AM
Location: LAKE MAUREPAS
Job Number: B07-163



Maximum Depth = 78.87 feet

Depth Increment = 0.00 feet

- | | | | |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay | 7 silty sand to sandy silt | 10 gravelly sand to sand |
| 2 organic material | 5 clayey silt to silty clay | 8 sand to silty sand | 11 very stiff fine grained (*) |
| 3 clay | 6 sandy silt to clayey silt | 9 sand | 12 sand to clayey sand (*) |

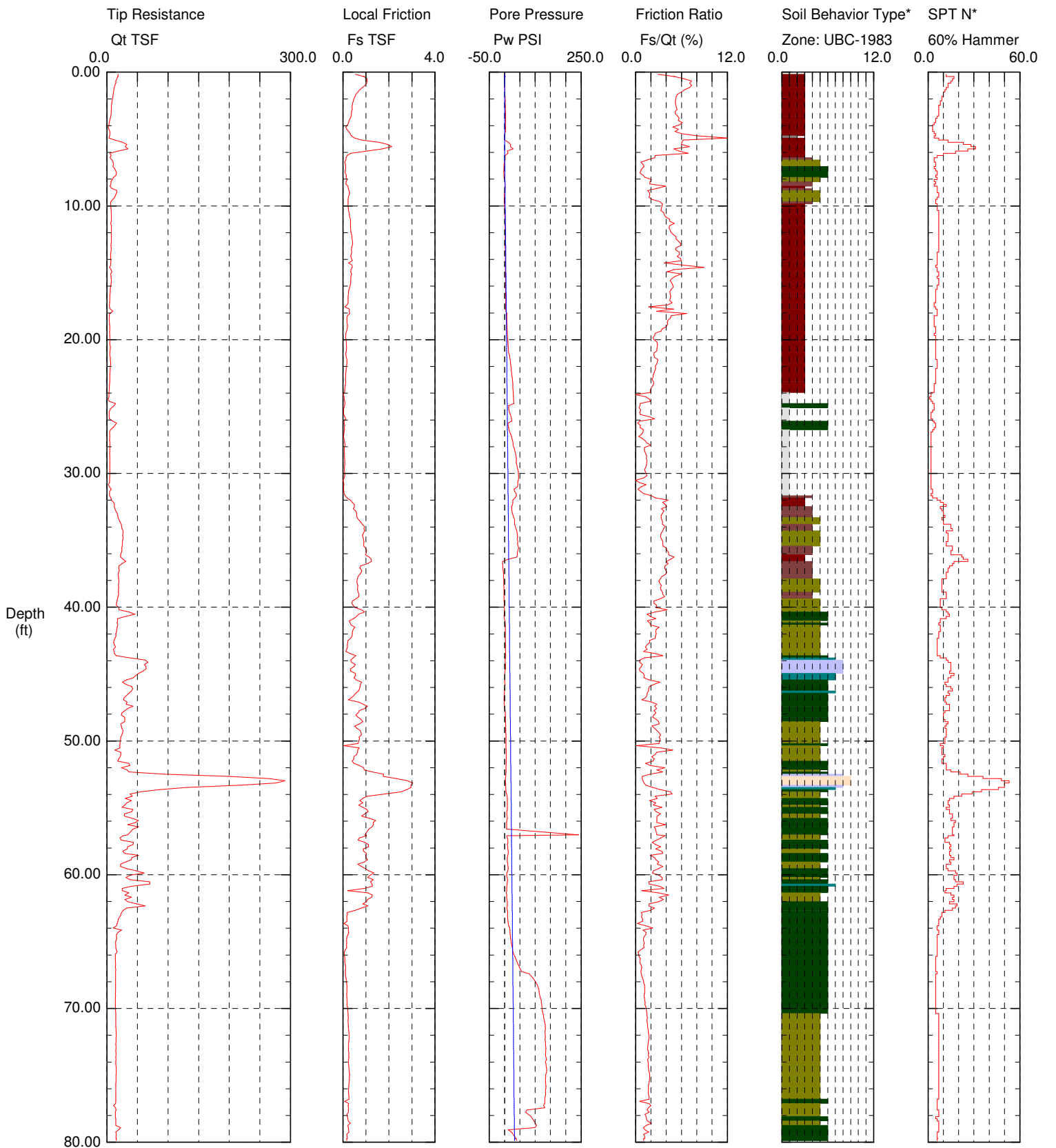
B - 64

Ground water measured at 3 ft

Southern Earth Sciences, Inc

Operator: Mike Wright
Sounding: CPT-04 ELEV. 5.00 ft
Cone Used: DSG0780

CPT Date/Time: 8/16/2007 3:37:40 PM
Location: DNR Maurepas Diversion
Job Number: B07-163



Maximum Depth = 80.05 feet

Depth Increment = 0.00 feet

1 sensitive fine grained
2 organic material
3 clay

4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt

7 silty sand to sandy silt
8 sand to silty sand
9 sand

10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

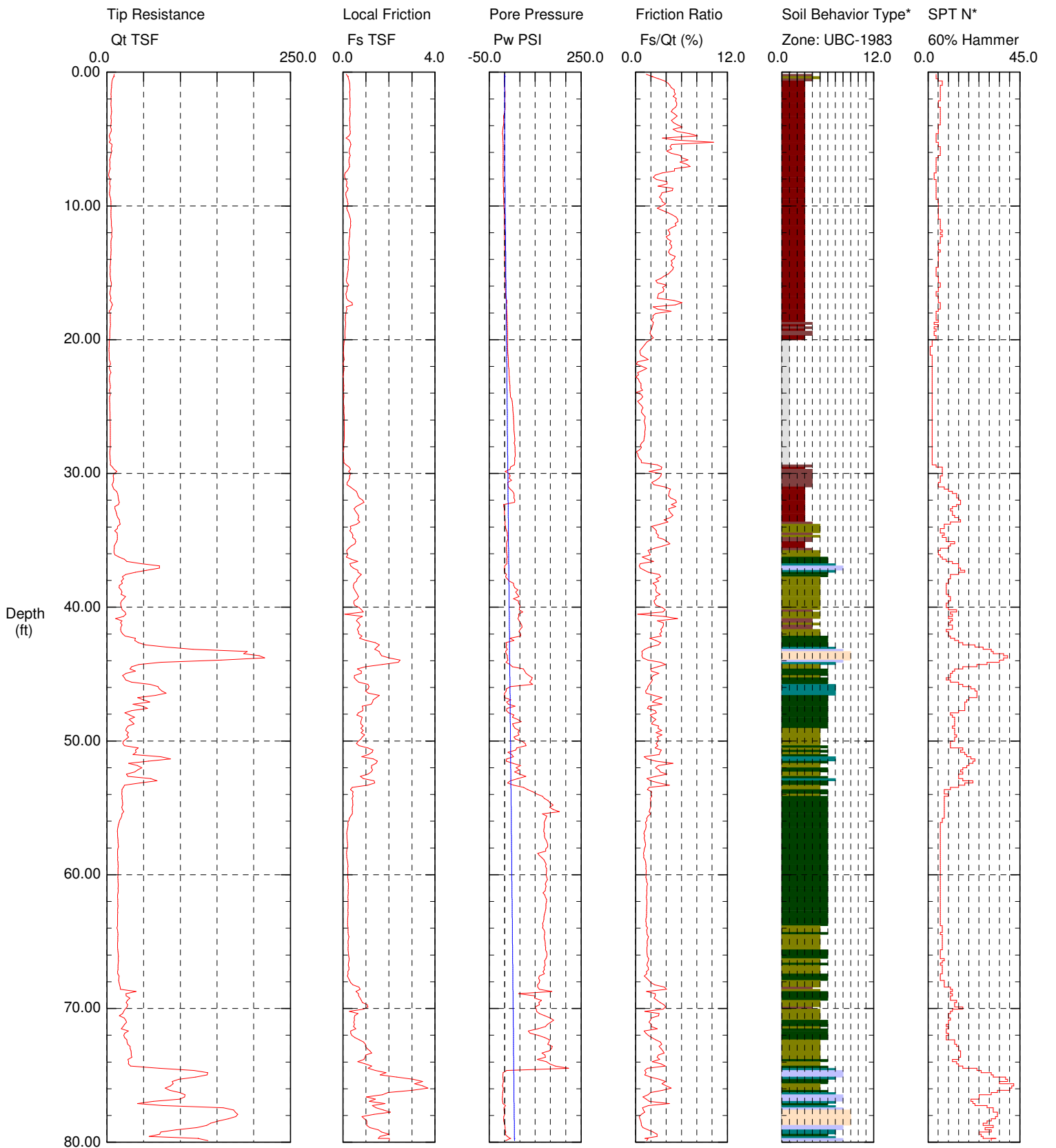
Ground water measured at 5.0'

B - 65

Southern Earth Sciences, Inc

Operator: Mike Wright
Sounding: CPT-05 ELEV. 6.30 ft
Cone Used: DSG0780

CPT Date/Time: 8/17/2007 7:55:26 AM
Location: DNR Maurepas Diversion
Job Number: B07-163



Maximum Depth = 80.05 feet

Depth Increment = 0.00 feet

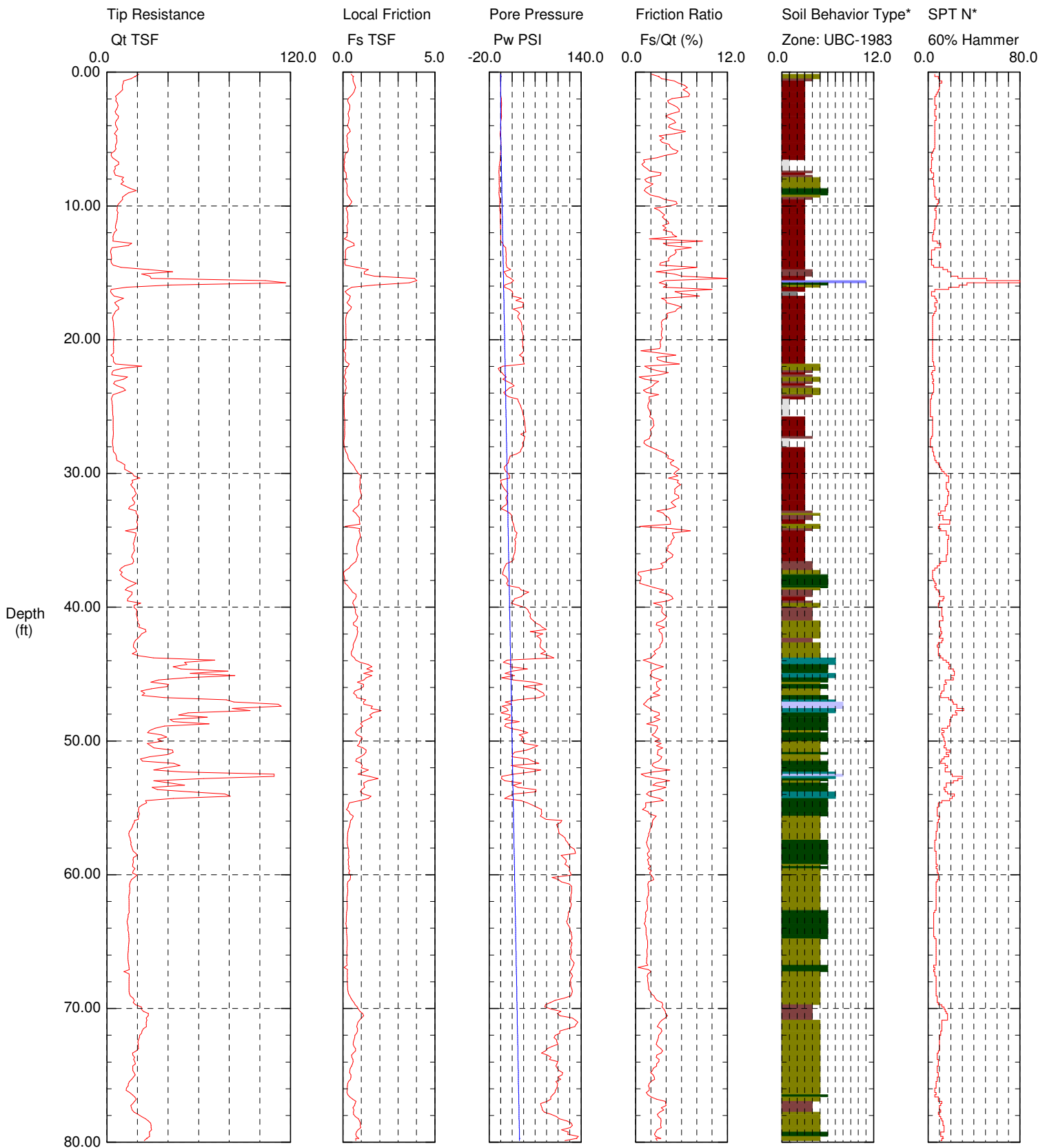
- | | | | |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay | 7 silty sand to sandy silt | 10 gravelly sand to sand |
| 2 organic material | 5 clayey silt to silty clay | 8 sand to silty sand | 11 very stiff fine grained (*) |
| 3 clay | 6 sandy silt to clayey silt | 9 sand | 12 sand to clayey sand (*) |

Ground water measured at 5.4'

Southern Earth Sciences, Inc

Operator: Mike Wright
Sounding: CPT-06 ELEV. 4.50 ft
Cone Used: DSG0780

CPT Date/Time: 8/17/2007 8:52:37 AM
Location: DNR Maurepas Diversion
Job Number: B07-163



Maximum Depth = 80.05 feet

Depth Increment = 0.00 feet

- | | | | |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay | 7 silty sand to sandy silt | 10 gravelly sand to sand |
| 2 organic material | 5 clayey silt to silty clay | 8 sand to silty sand | 11 very stiff fine grained (*) |
| 3 clay | 6 sandy silt to clayey silt | 9 sand | 12 sand to clayey sand (*) |

Sounding collapsed at 4.4'

B - 67

Southern Earth Sciences, Inc

Operator: Mike Wright

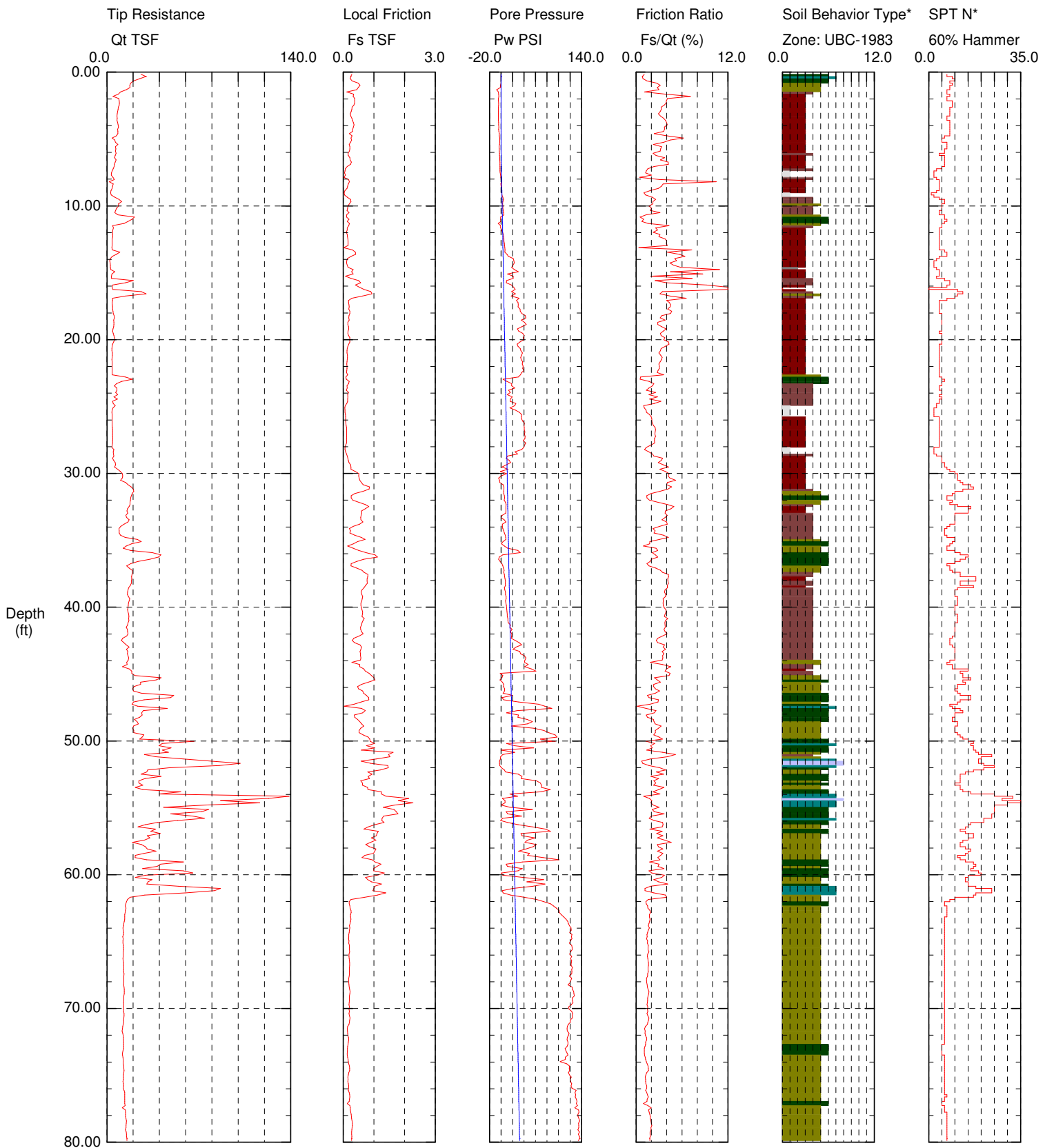
Sounding: CPT-07 ELEV. 5.10 ft

Cone Used: DSG0780

CPT Date/Time: 8/16/2007 9:54:21 AM

Location: DNR Maurepas Diversion

Job Number: B07-163



1 sensitive fine grained
2 organic material
3 clay

4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt

7 silty sand to sandy silt
8 sand to silty sand
9 sand

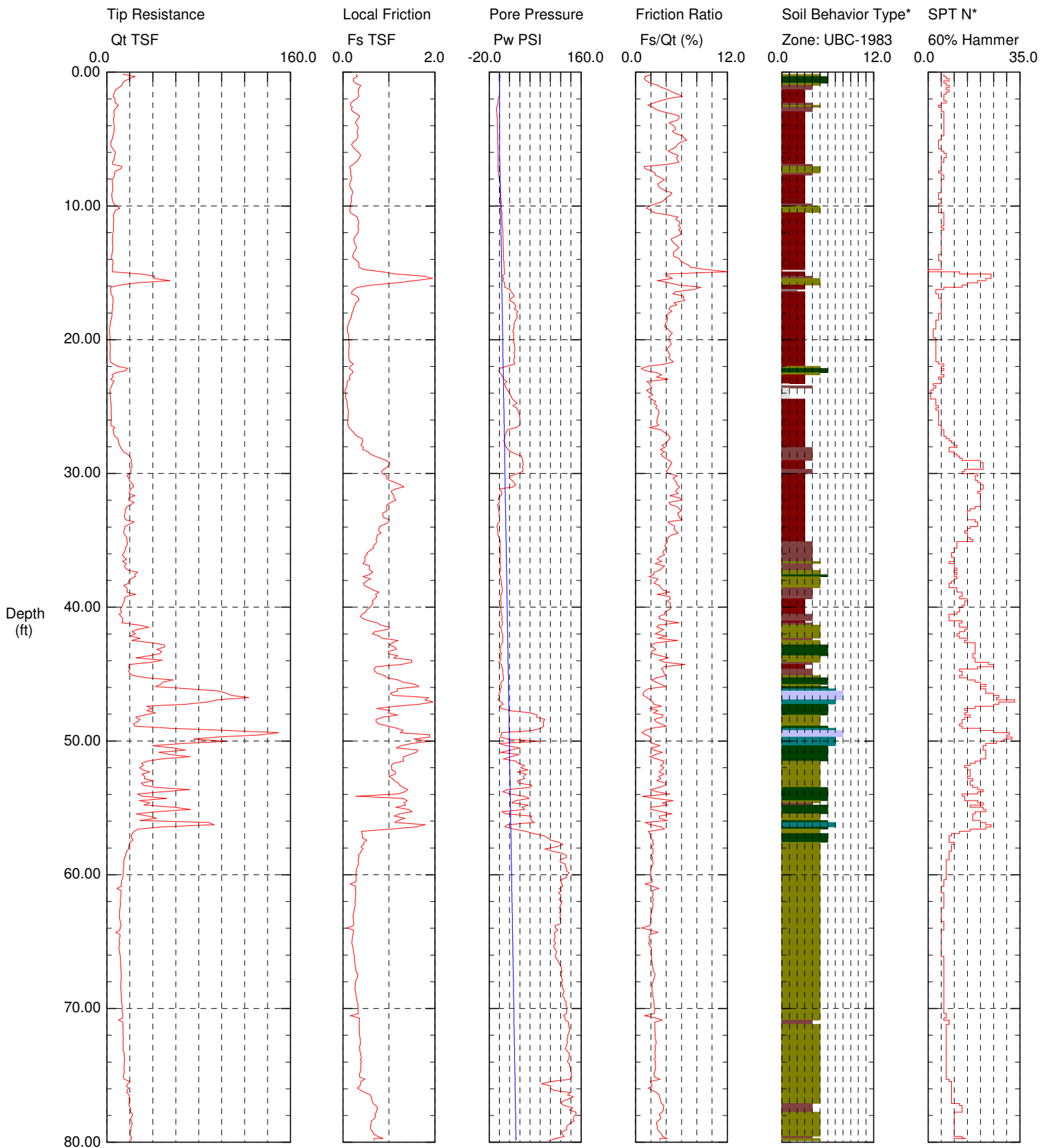
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

Ground water measured at 5.7'

Southern Earth Sciences, Inc

Operator: Mike Wright
Sounding: CPT-08 ELEV. 4.40 ft
Cone Used: DSG0780

CPT Date/Time: 8/16/2007 8:52:55 AM
Location: DNR Maurepas Diversion
Job Number: B07-163



Maximum Depth = 80.05 feet

Depth Increment = 0.00 feet

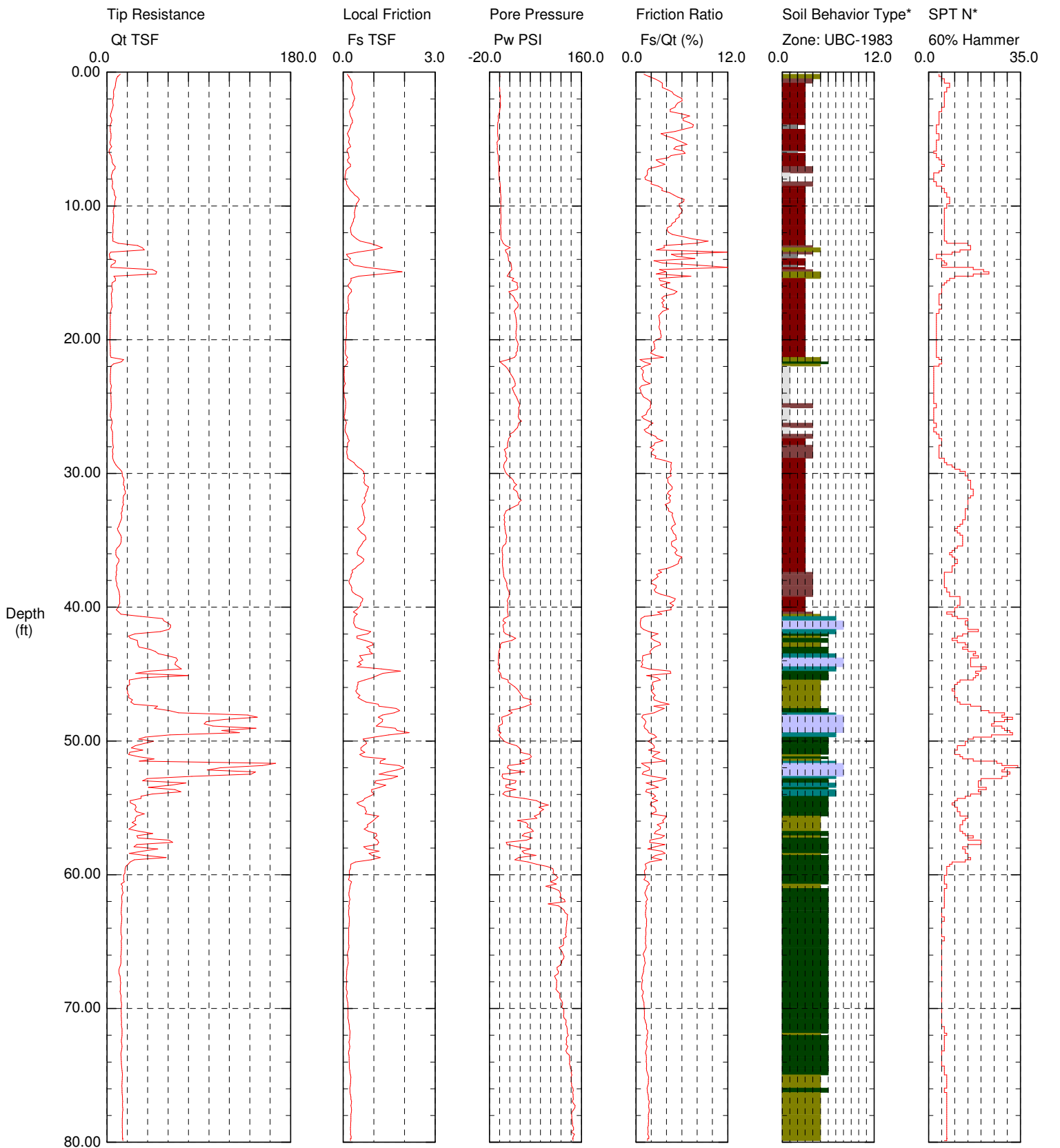
- | | | | |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay | 7 silty sand to sandy silt | 10 gravelly sand to sand |
| 2 organic material | 5 clayey silt to silty clay | 8 sand to silty sand | 11 very stiff fine grained (*) |
| 3 clay | 6 sandy silt to clayey silt | 9 sand | 12 sand to clayey sand (*) |

Ground water measured at 5.2'

Southern Earth Sciences, Inc

Operator: Mike Wright
Sounding: CPT-09 ELEV. 3.40 ft
Cone Used: DSG0780

CPT Date/Time: 8/16/2007 7:34:08 AM
Location: DNR Maurepas Diversion
Job Number: B07-163



Maximum Depth = 80.05 feet

Depth Increment = 0.00 feet

- | | | | |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay | 7 silty sand to sandy silt | 10 gravelly sand to sand |
| 2 organic material | 5 clayey silt to silty clay | 8 sand to silty sand | 11 very stiff fine grained (*) |
| 3 clay | 6 sandy silt to clayey silt | 9 sand | 12 sand to clayey sand (*) |

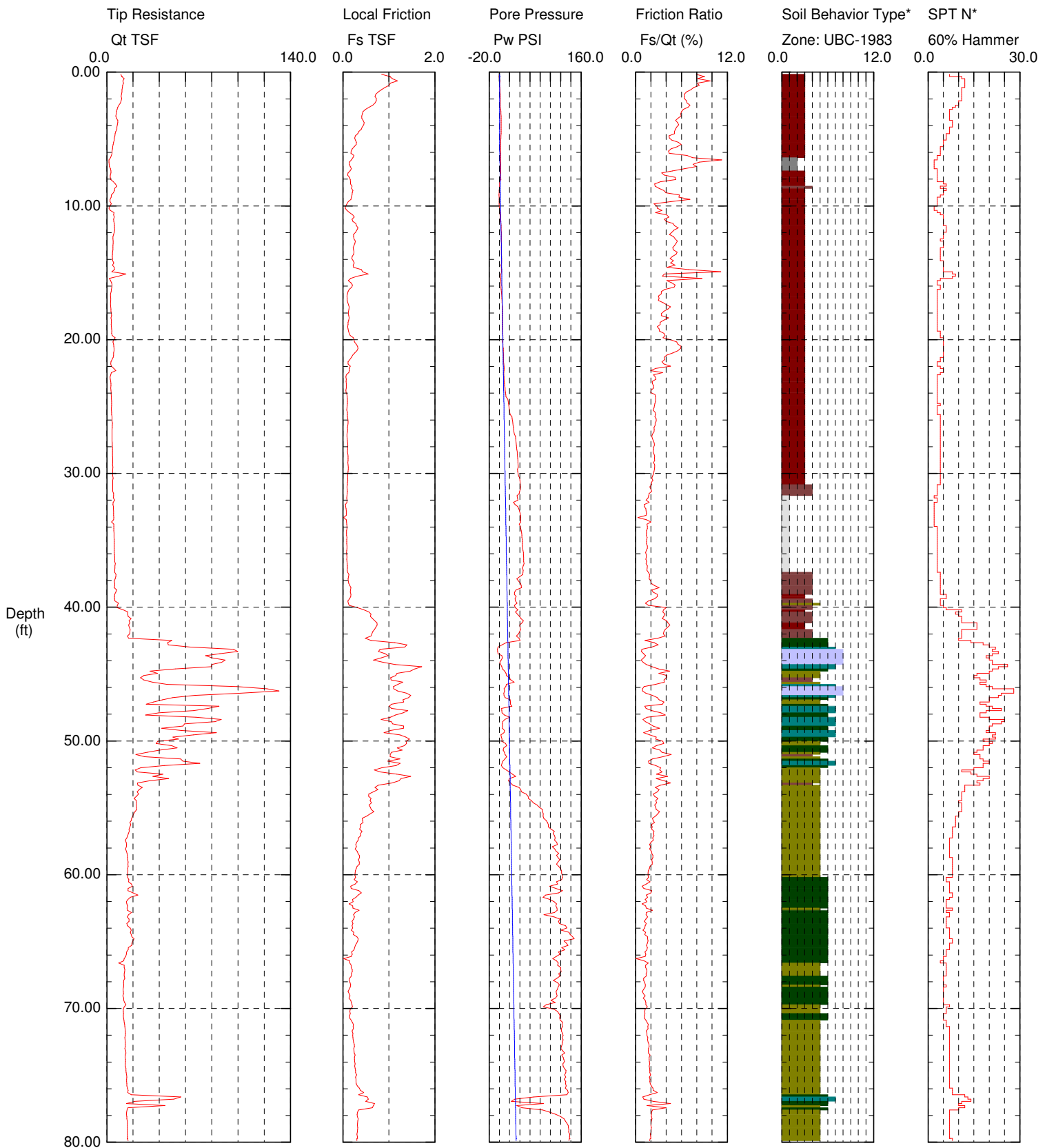
Ground water not measured due to collapsed hole

B - 70

Southern Earth Sciences, Inc

Operator: Mike Wright
Sounding: CPT-12 ELEV. 4.30 ft
Cone Used: DSG0780

CPT Date/Time: 8/21/2007 9:10:11 AM
Location: DNR Maurepas Diversion
Job Number: B07-163



1 sensitive fine grained
2 organic material
3 clay

4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt

7 silty sand to sandy silt
8 sand to silty sand
9 sand

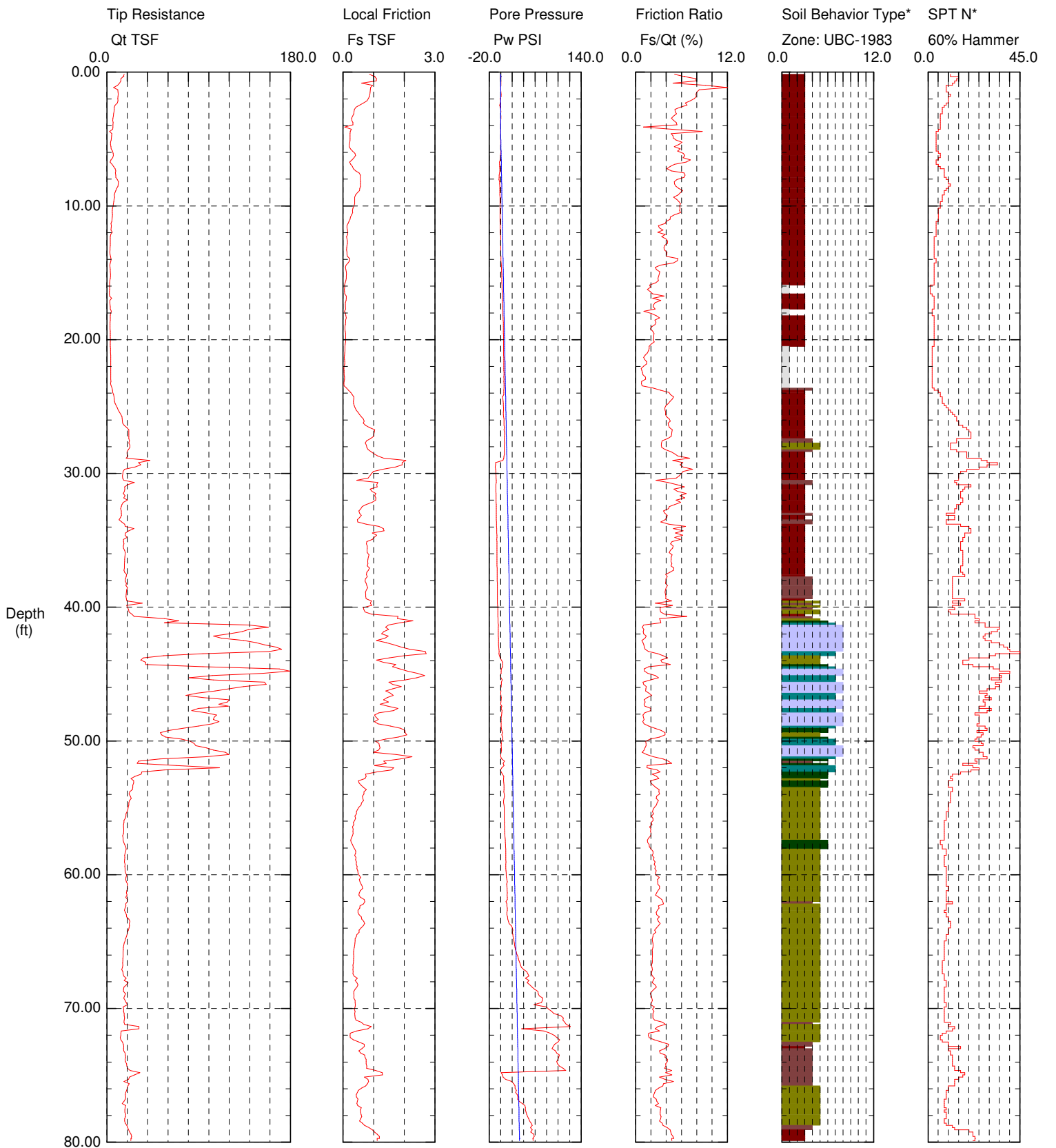
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

Ground water measured at 4.8'

Southern Earth Sciences, Inc

Operator: Mike Wright
Sounding: CPT-13 ELEV. 3.40 ft
Cone Used: DSG0780

CPT Date/Time: 8/21/2007 3:39:55 PM
Location: DNR Maurepas Diversion
Job Number: B07-163



1 sensitive fine grained
2 organic material
3 clay

4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt

7 silty sand to sandy silt
8 sand to silty sand
9 sand

10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

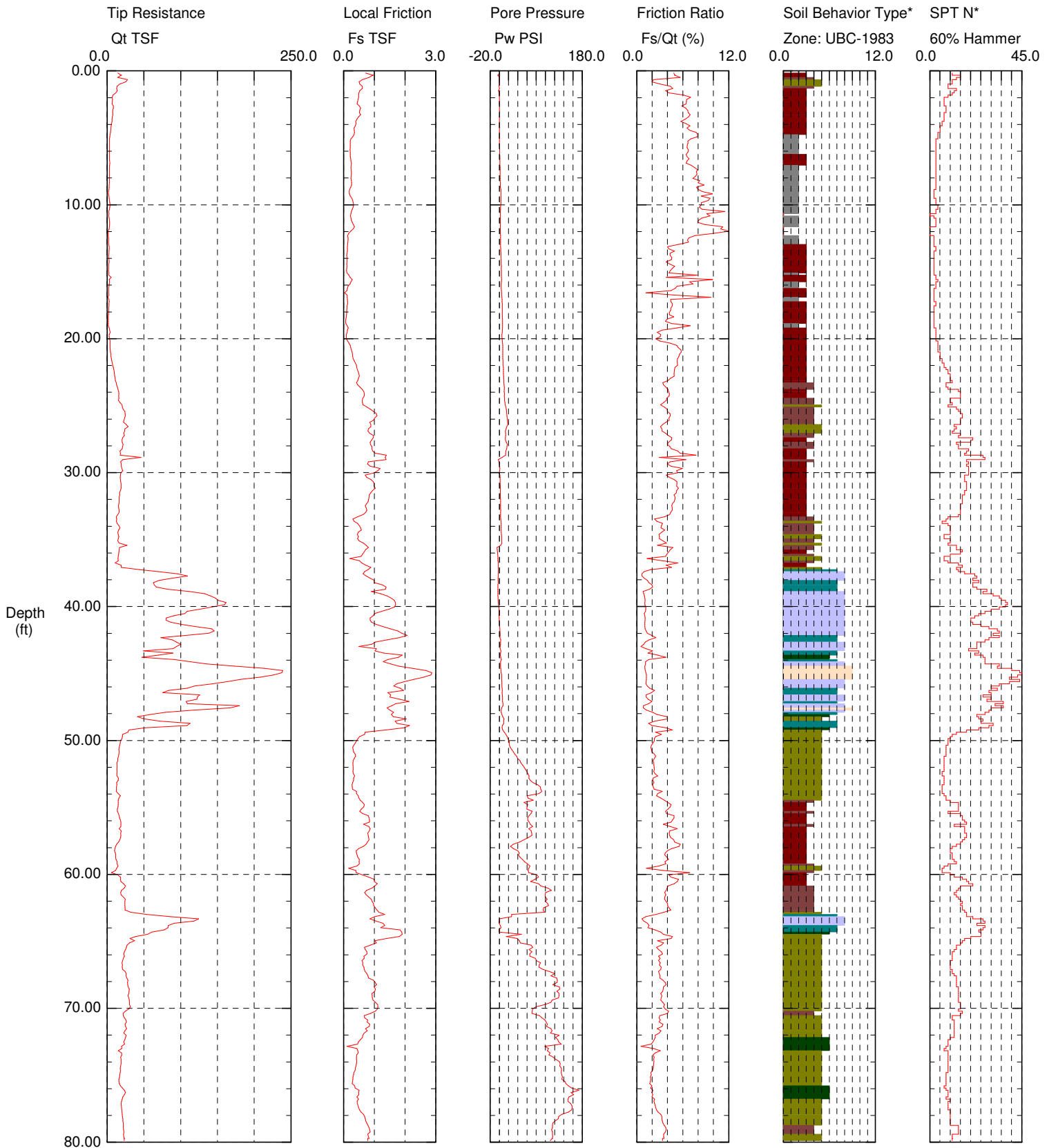
Ground water measured at 4.6'

B - 74

Southern Earth Sciences, Inc

Operator: Mike Wright
Sounding: CPT-15 ELEV. 2.10 ft
Cone Used: DSG0780

CPT Date/Time: 8/21/2007 2:10:50 PM
Location: DNR Maurepas Diversion
Job Number: B07-163



1 sensitive fine grained
2 organic material
3 clay

4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt

7 silty sand to sandy silt
8 sand to silty sand
9 sand

10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

Sounding collapsed at surface.

Southern Earth Sciences, Inc

Operator: Mike Wright

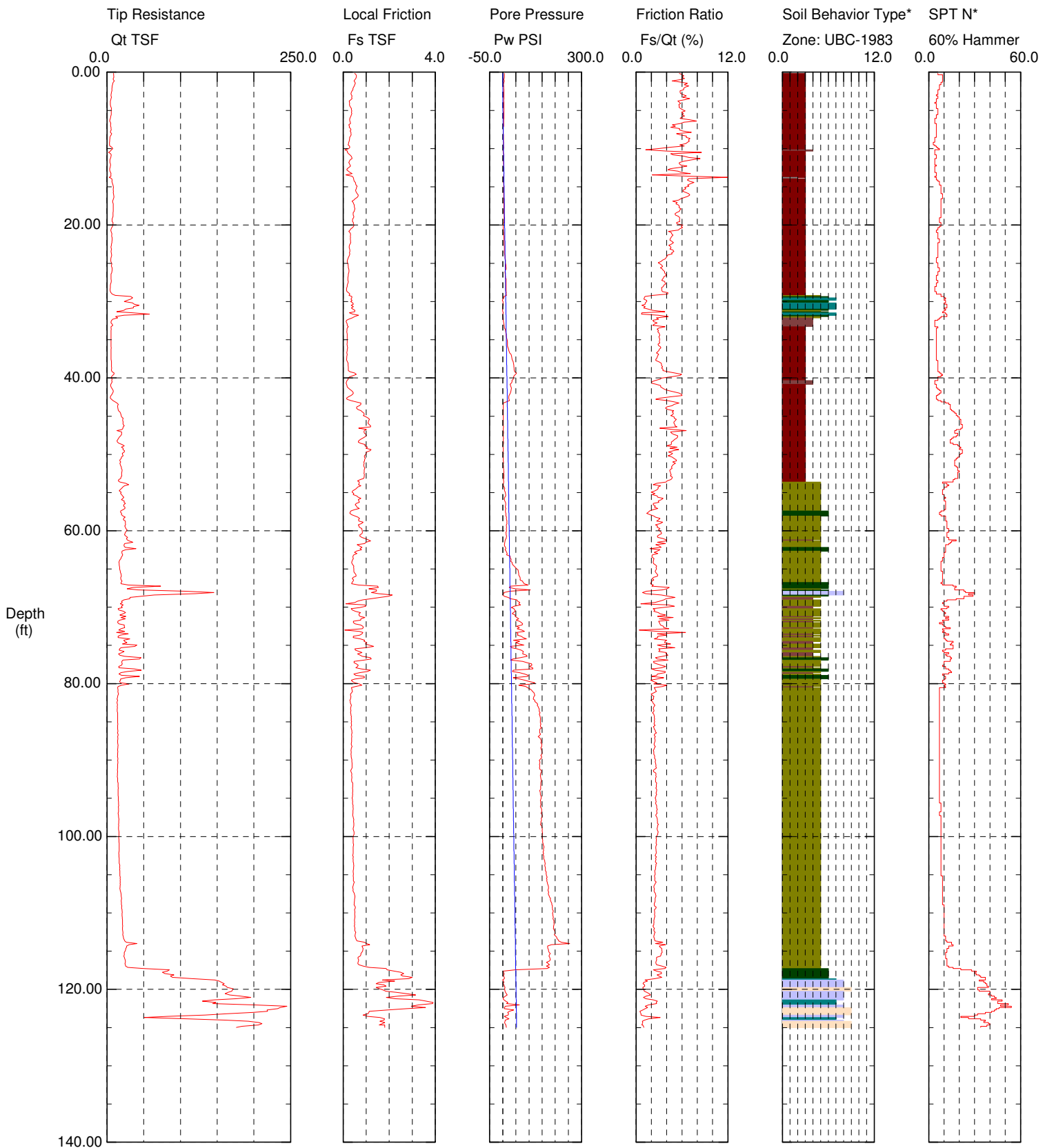
Sounding: CPT-16 ELEV. 8.01 ft

Cone Used: DSG0780

CPT Date/Time: 9/14/2007 1:52:25 PM

Location: Lake Maurepas

Job Number: B07-163



1 sensitive fine grained
2 organic material
3 clay

4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt

7 silty sand to sandy silt
8 sand to silty sand
9 sand

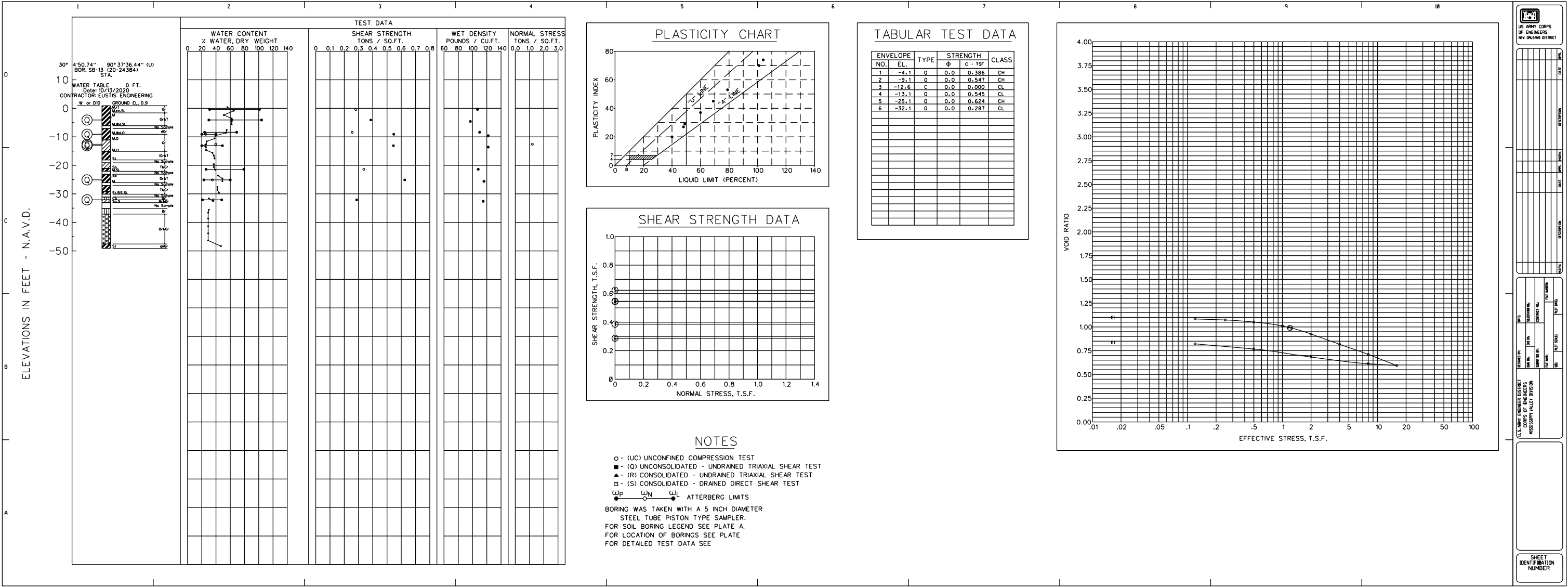
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

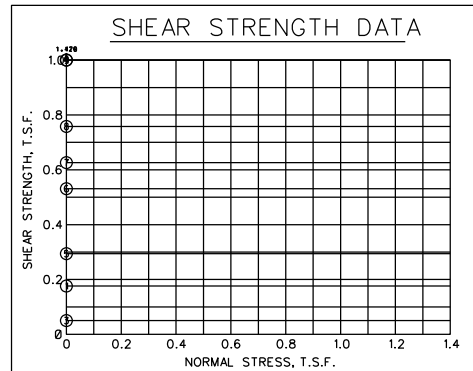
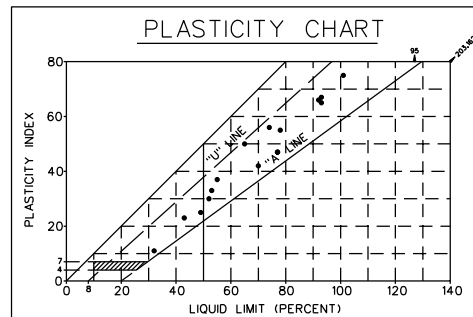
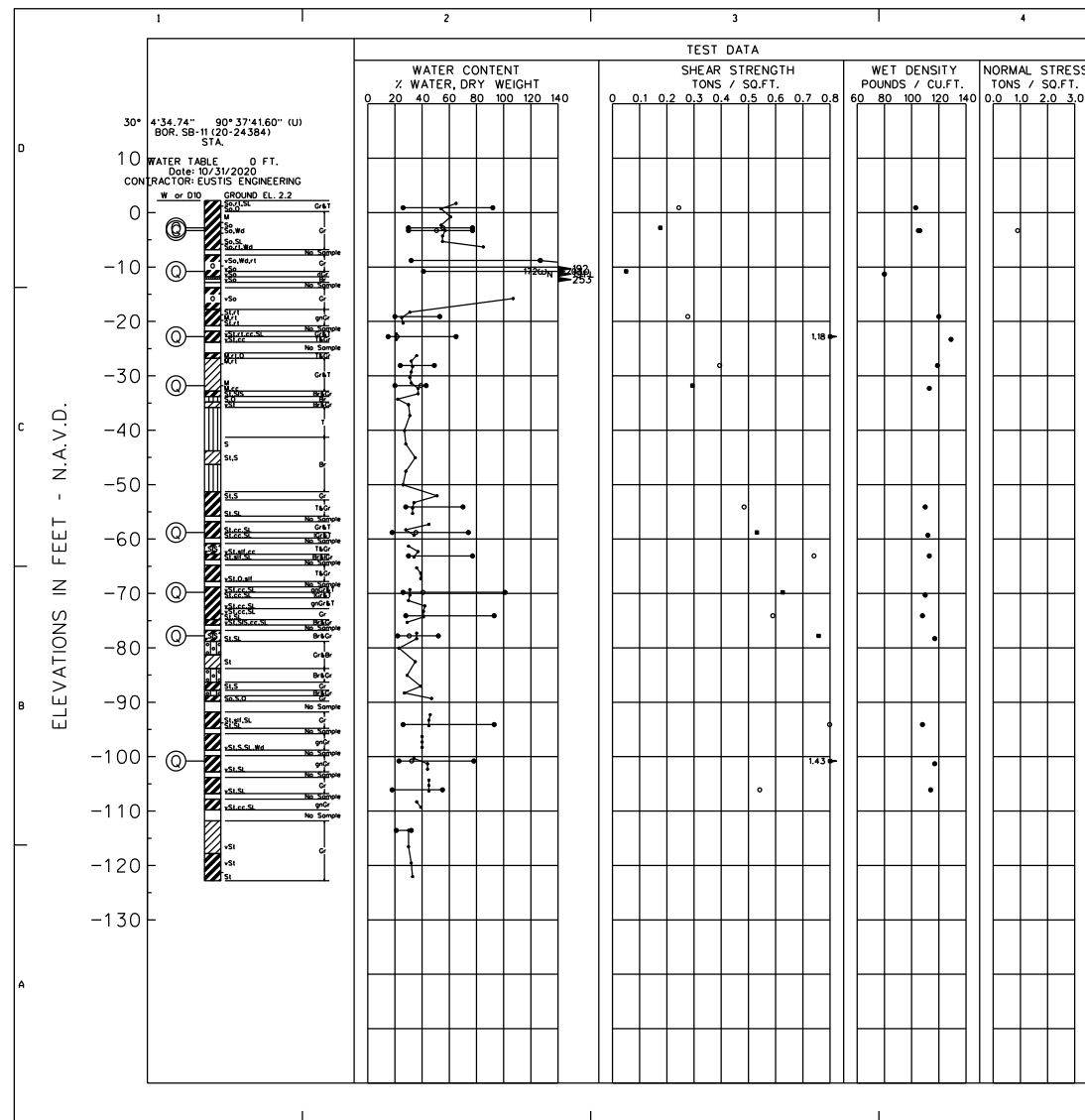
Ground water measured at 3.3'

B - 77

APPENDIX III

GEOTECHNICAL BORINGS – CURRENT EXPLORATION





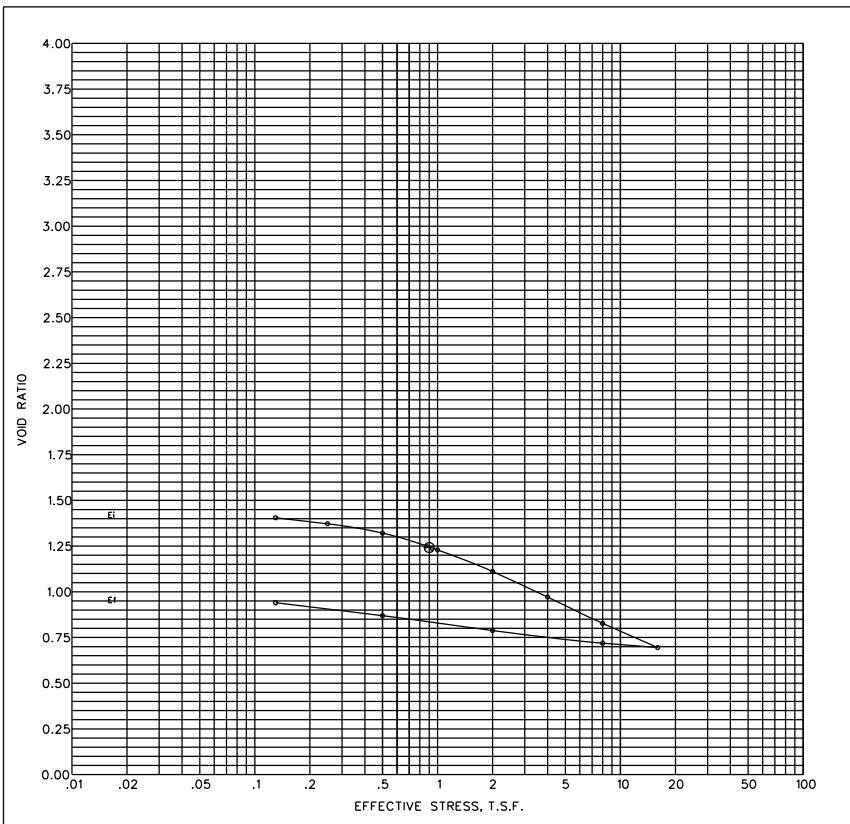
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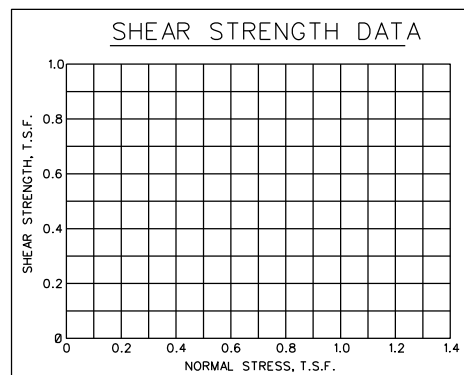
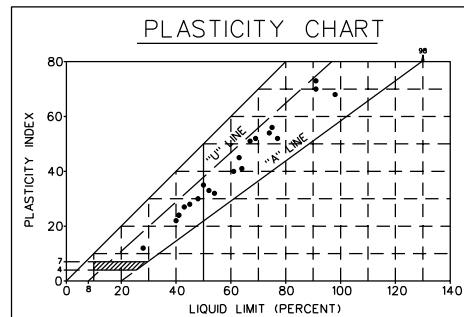
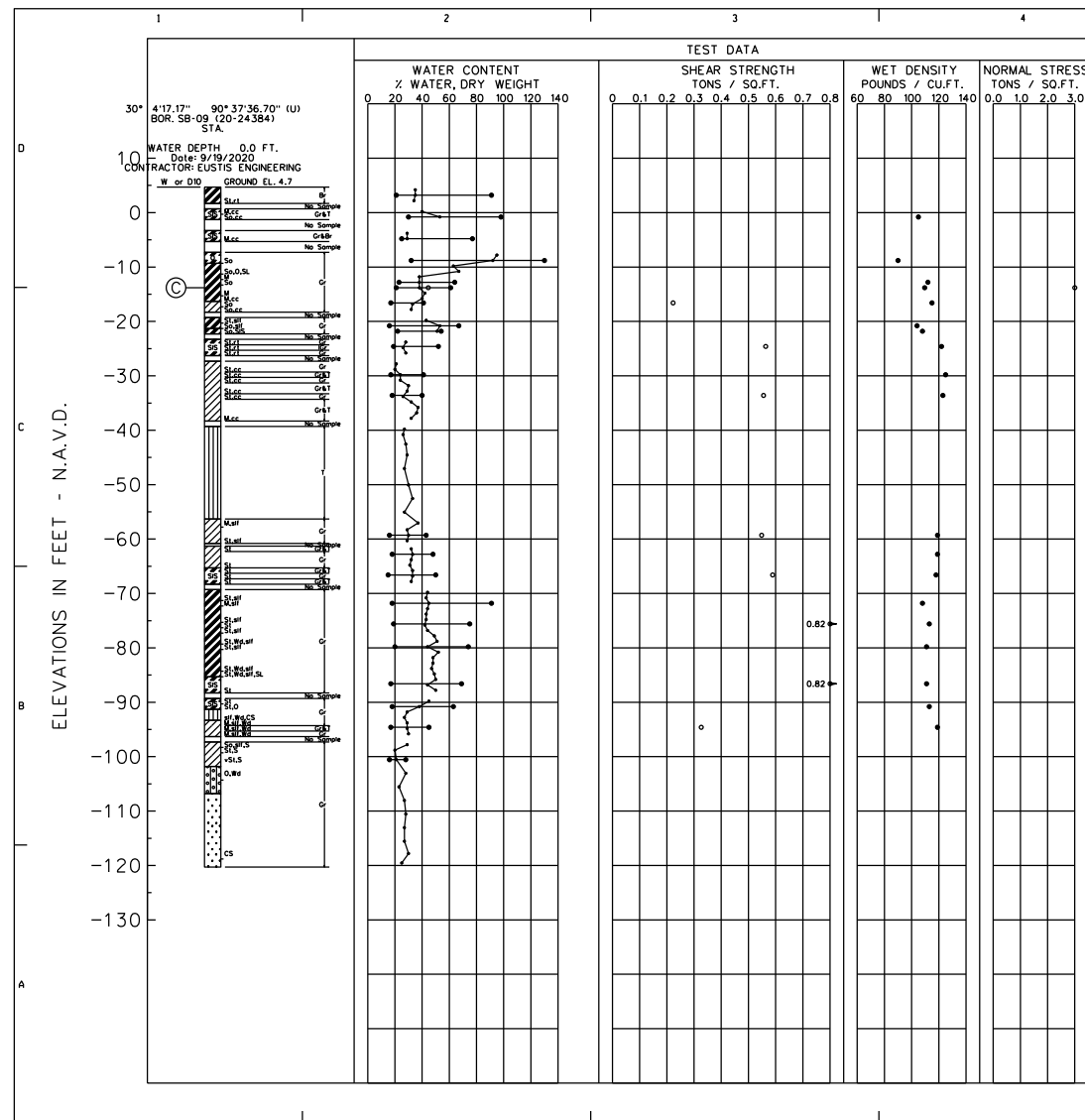
- - (UC) UNCONFINED COMPRESSION TEST
- - (U) UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST
- ▲ - (R) CONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST
- - (S) CONSOLIDATED - DRAINED DIRECT SHEAR TEST

ω_p ————— ω_L ATTERBERG LIMITS

ω_N

BORING WAS TAKEN WITH A 5 INCH DIAMETER
STEEL TUBE PISTON TYPE SAMPLER.
FOR SOIL BORING LEGEND SEE PLATE A.
FOR LOCATION OF BORINGS SEE PLATE
FOR DETAILED TEST DATA SEE

[illegible][illegible]

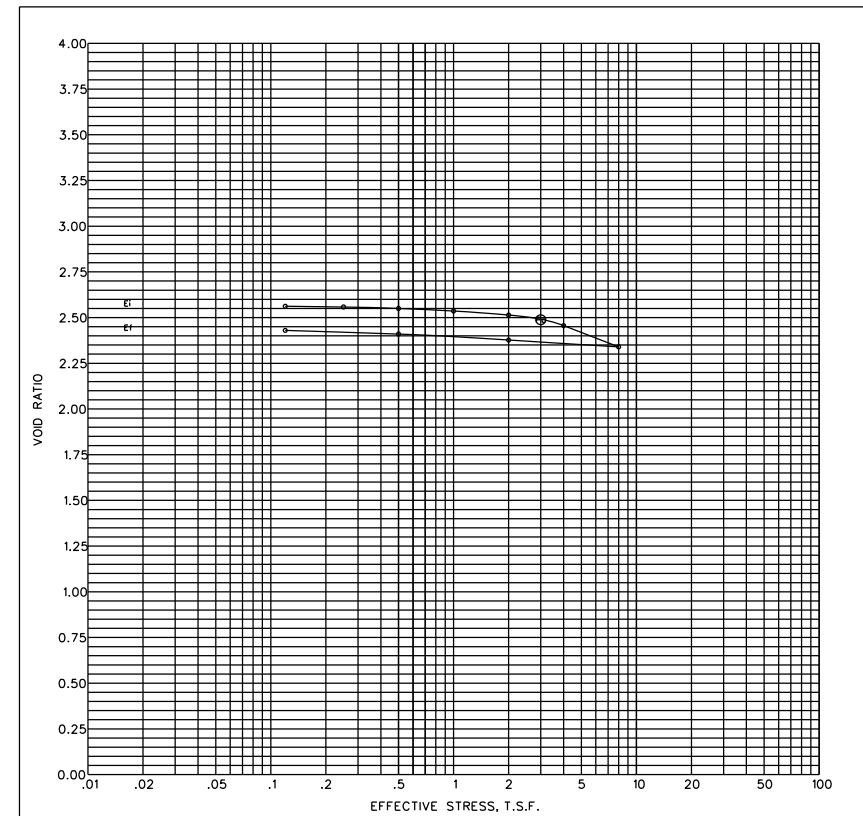


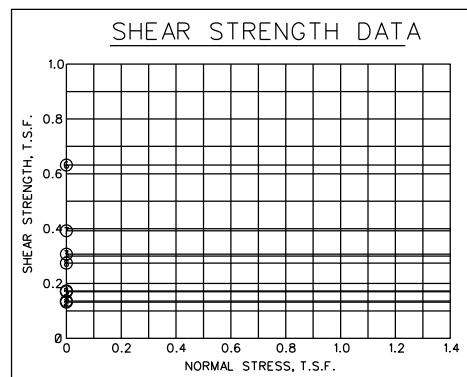
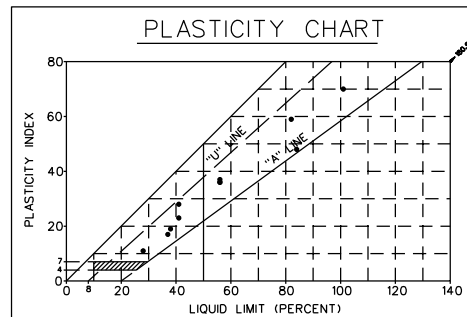
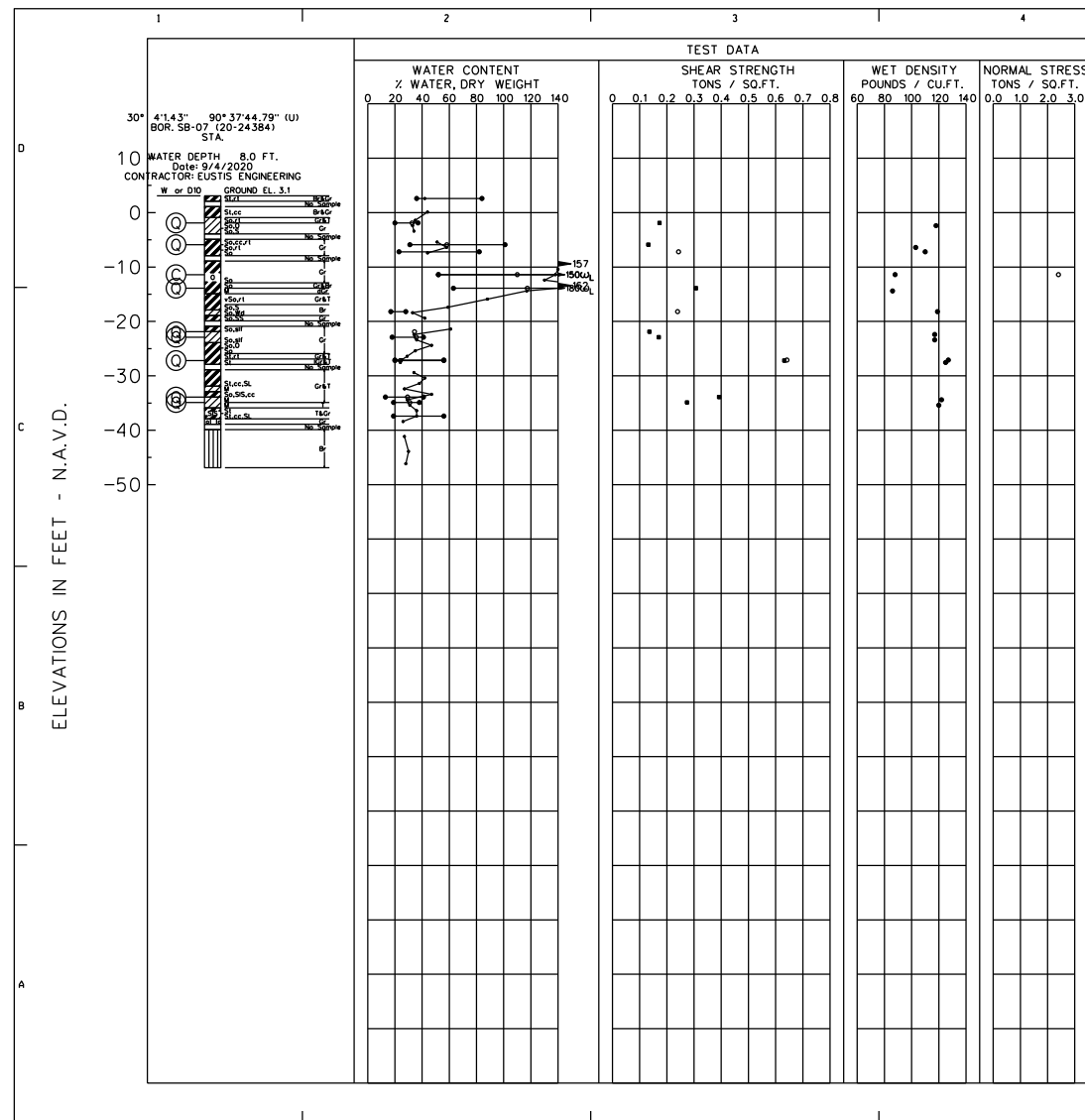
NOTES

- - (UC) UNCONFINED COMPRESSION TEST
 - - (Q) UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST
 - - (R) CONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST
 - - (S) CONSOLIDATED - DRAINED DIRECT SHEAR TEST
- ω_p ω_N ω_L **ATTERBERG LIMITS**

BORING WAS TAKEN WITH A 5 INCH DIAMETER
STEEL TUBE PISTON TYPE SAMPLER.
FOR SOIL BORING LEGEND SEE PLATE A.
FOR LOCATION OF BORINGS SEE PLATE
FOR DETAILED TEST DATA SEE

TABULAR TEST DATA

[illegible]

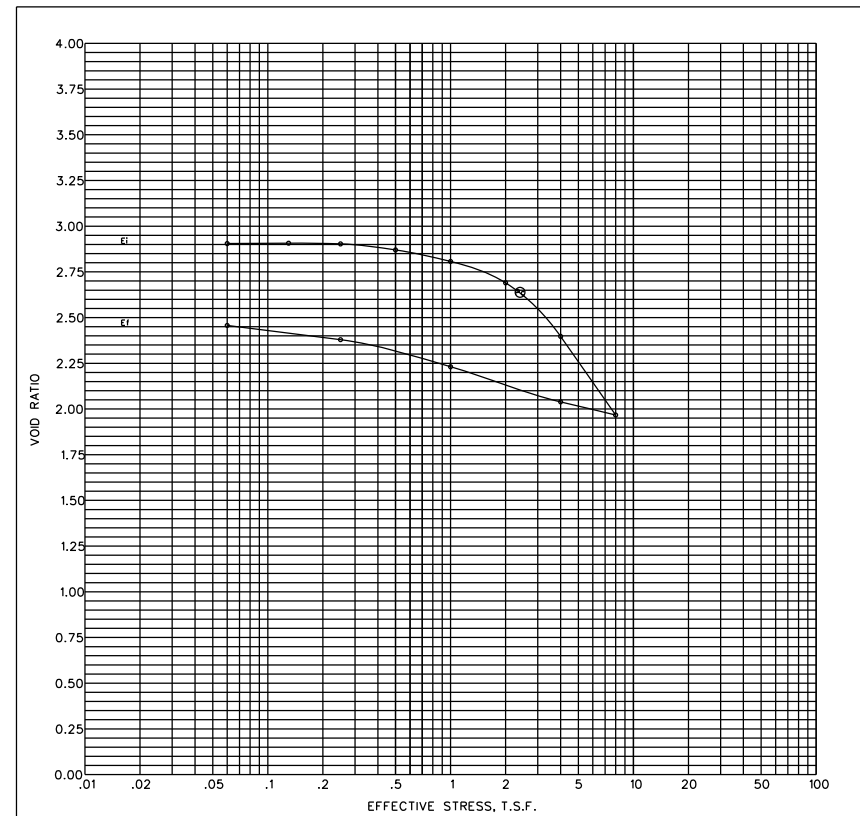


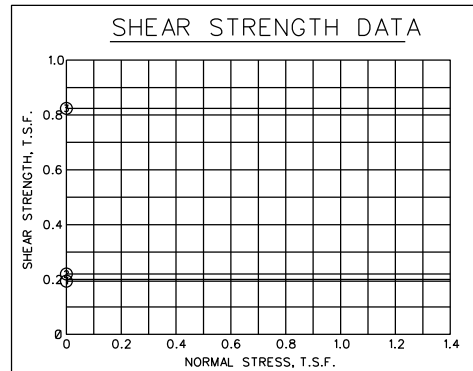
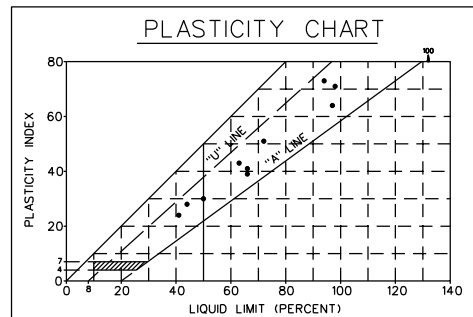
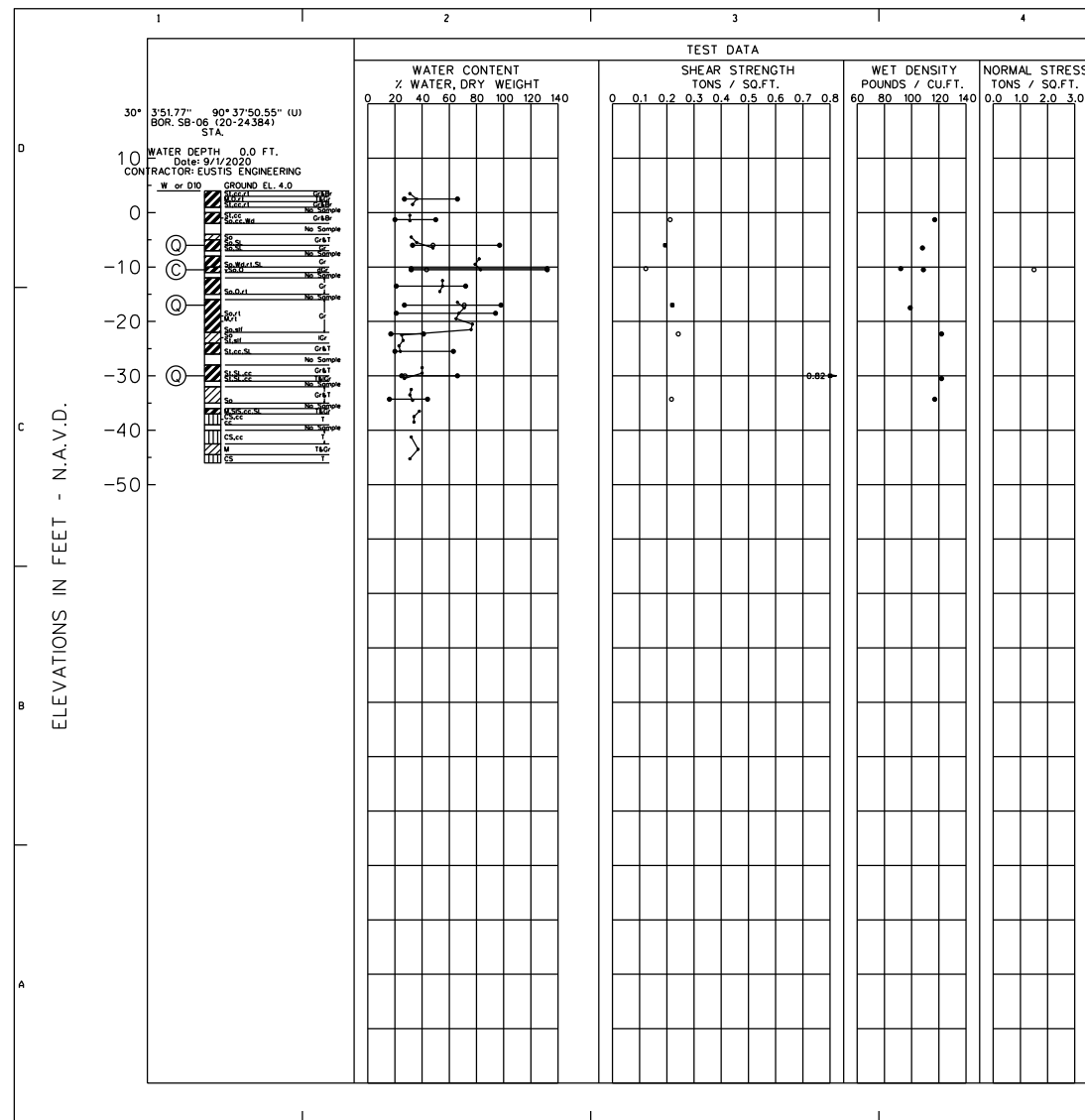
NOTES

- - (UC) UNCONFINED COMPRESSION TEST
- - (Q) UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST
- ▲ - (R) CONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST
- - (S) CONSOLIDATED - DRAINED DIRECT SHEAR TEST

BORING WAS TAKEN WITH A 5 INCH DIAMETER
STEEL TUBE PISTON TYPE SAMPLER.
FOR SOIL BORING LEGEND SEE PLATE A.
FOR LOCATION OF BORINGS SEE PLATE
FOR DETAILED TEST DATA SEE

TABULAR TEST DATA

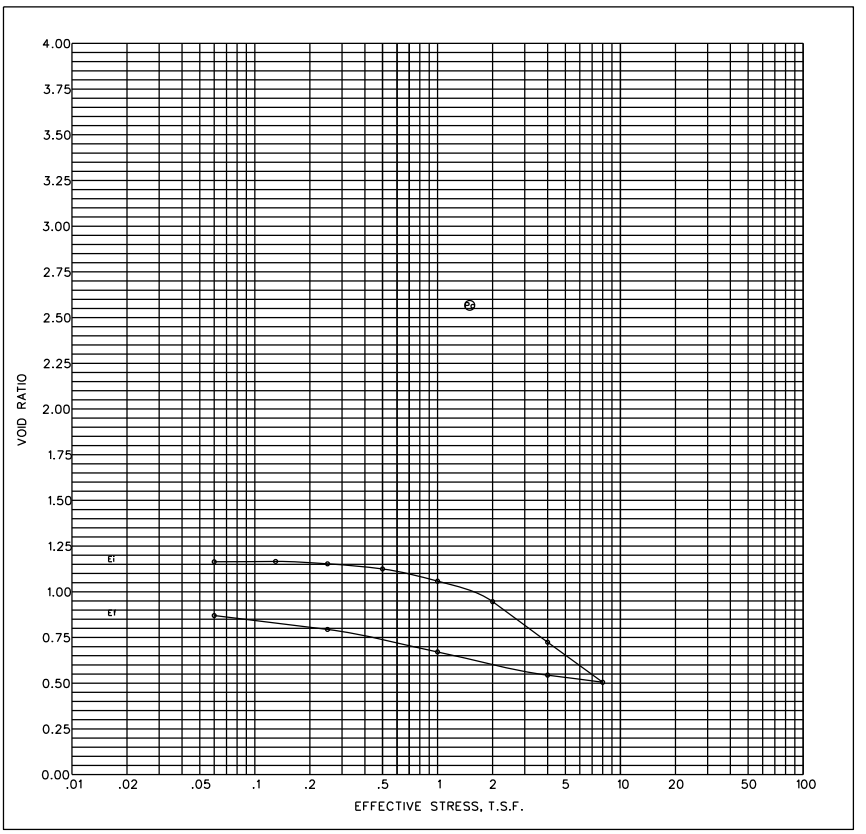
[illegible][illegible]

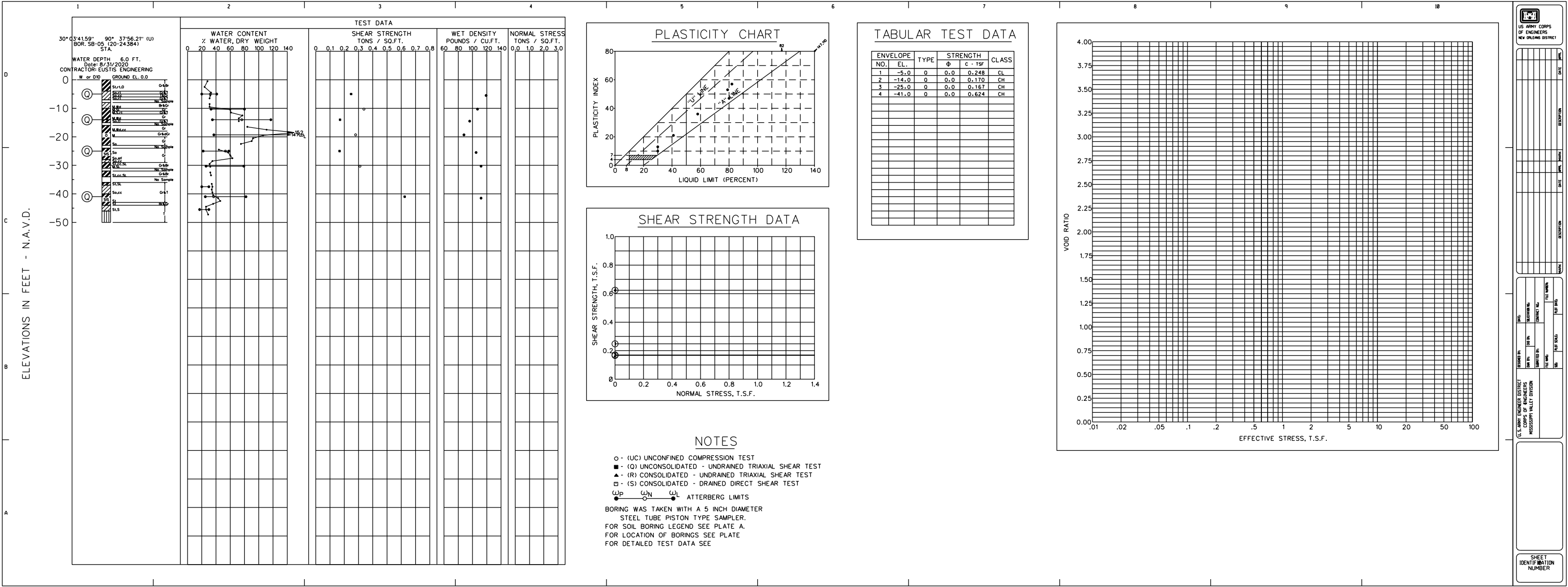


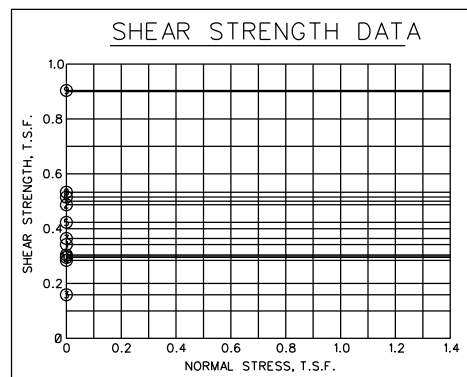
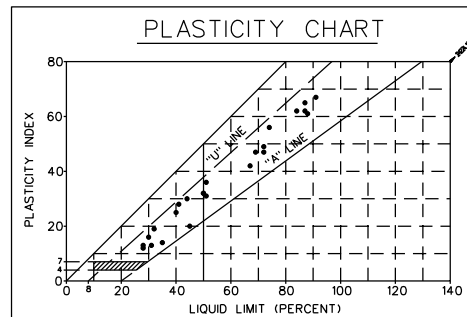
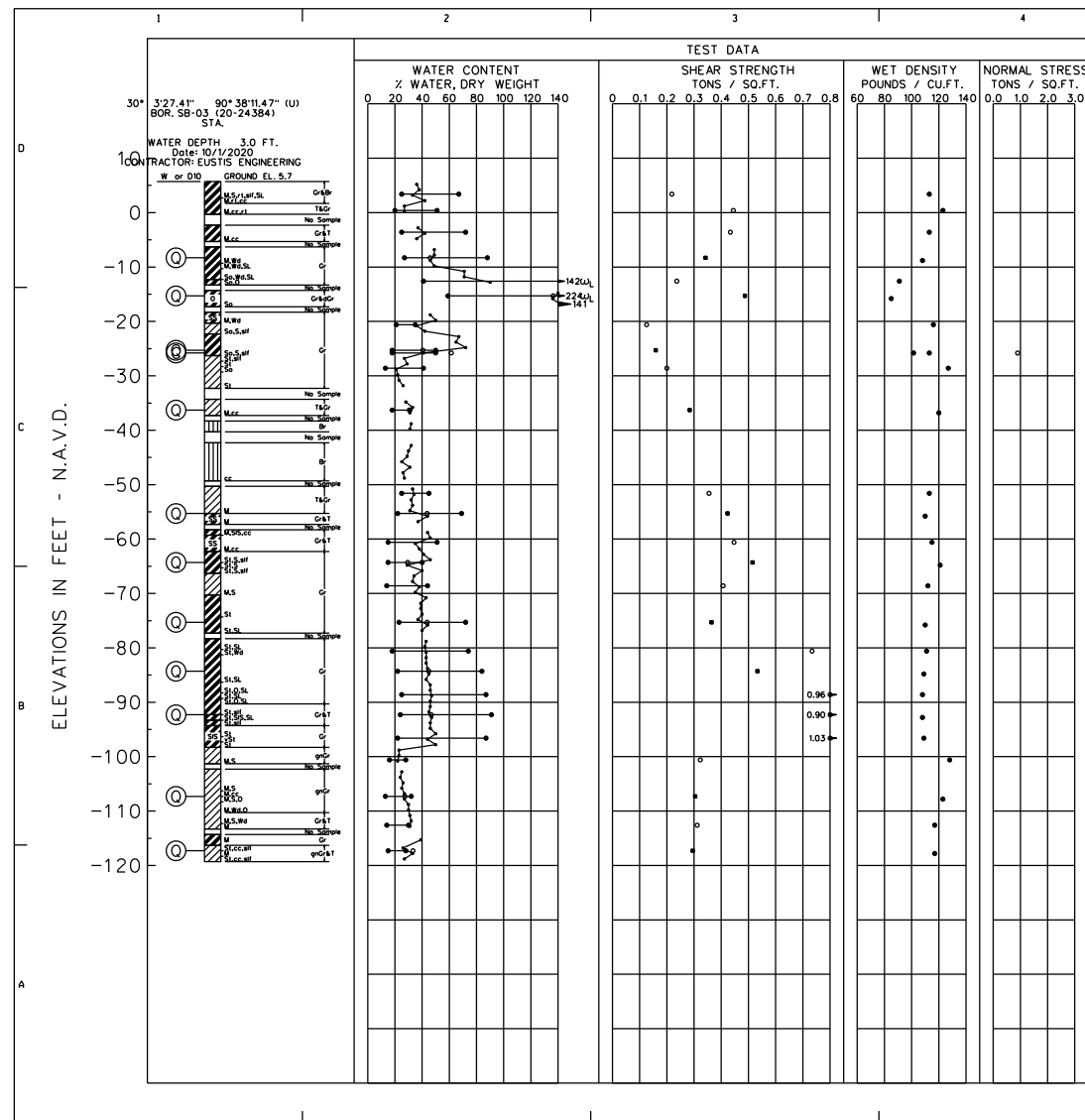
NOTES

- - (UC) UNCONFINED COMPRESSION TEST
 - - (Q) UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST
 - △ - (R) CONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST
 - - (S) CONSOLIDATED - DRAINED DIRECT SHEAR TEST
- ω_p ω_N ω_L **ATTERBERG LIMITS**

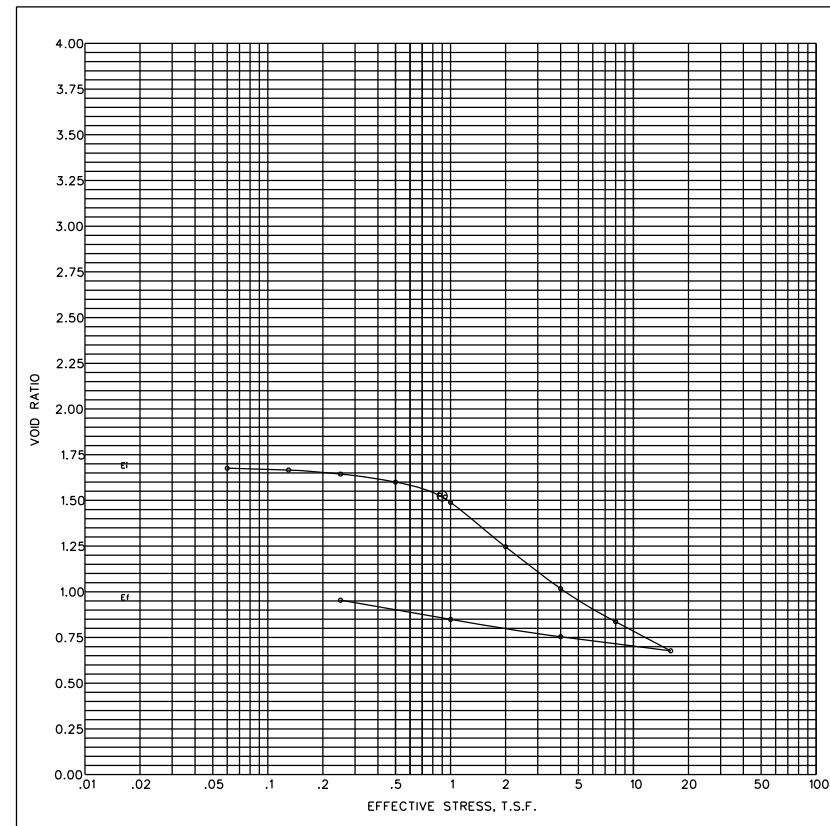
BORING WAS TAKEN WITH A 5 INCH DIAMETER
STEEL TUBE PISTON TYPE SAMPLER.
FOR SOIL BORING LEGEND SEE PLATE A.
FOR LOCATION OF BORINGS SEE PLATE
FOR DETAILED TEST DATA SEE

[illegible][illegible]





TABULAR TEST DATA

[illegible]

NOTES

- - (UC) UNCONFINED COMPRESSION TEST
 - - (Q) UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST
 - - (R) CONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST
 - ▣ - (S) CONSOLIDATED - DRAINED DIRECT SHEAR TEST
- ω_p ω_N ω_L **ATTERBERG LIMITS**

BORING WAS TAKEN WITH A 5 INCH DIAMETER
STEEL TUBE PISTON TYPE SAMPLER.
FOR SOIL BORING LEGEND SEE PLATE A.
FOR LOCATION OF BORINGS SEE PLATE
FOR DETAILED TEST DATA SEE

APPENDIX IV

GEOTECHNICAL CPTS – CURRENT EXPLORATION

	1 - SENSITIVE FINE GRAINED
	2 - ORGANIC MATERIAL
	3 - CLAY
	4 - SILTY CLAY TO CLAY
	5 - CLAYEY SILT TO SILTY CLAY
	6 - SANDY SILT TO CLAYEY SILT
	7 - SILTY SAND TO SANDY SILT
	8 - SAND TO SILTY SAND
	9 - SAND
	10 - GRAVELLY SAND TO SAND
	11 - VERY STIFF FINE GRAINED (*)
	12 - SAND TO CLAYEY SAND (*)

*OVERCONSOLIDATED OR CEMENTED



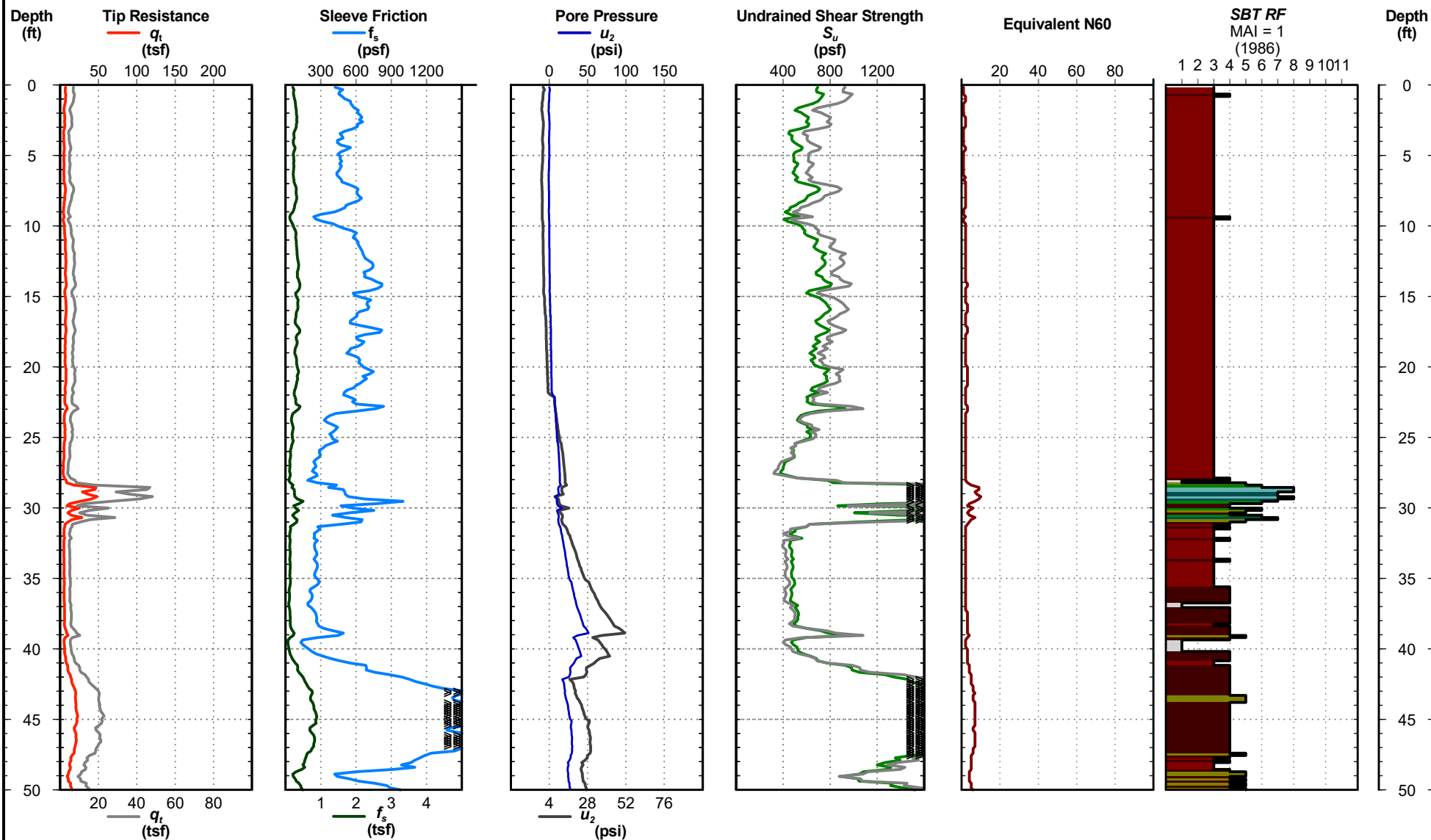
State of Louisiana
Coastal Protection and Restoration
Authority (CPRA)
15% Design Phase
St. John the Baptist Parish, Louisiana

CONE PENETRATION TEST

SCPT-02

Project No: 24384
Date: 07/23/2020
Latitude:
Longitude:
CPT ID: DSA1082

Est. Water Depth: 0.0 ft
Total Depth: 113.9 ft
Operator: G. Reitmeyer



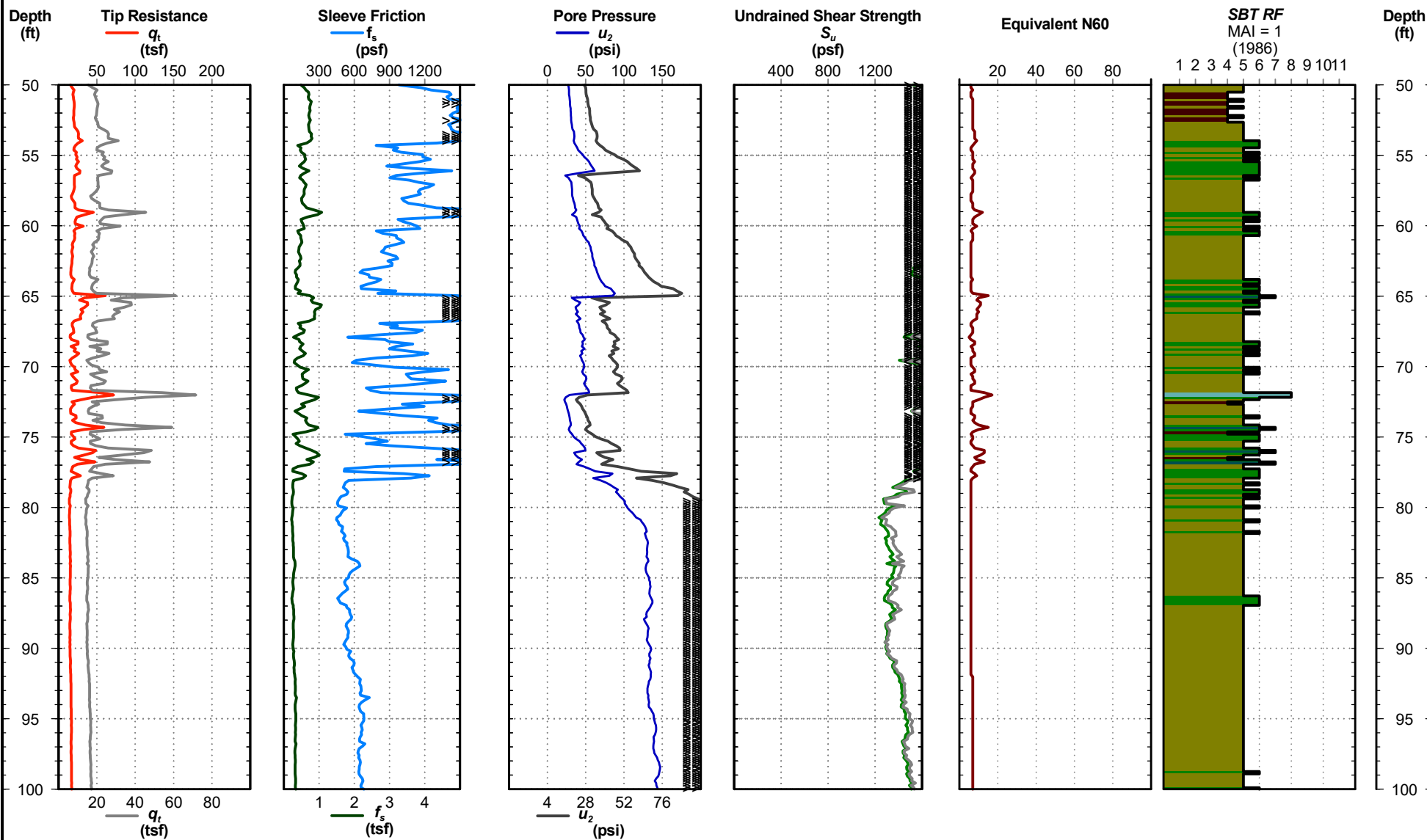
Notes: Soil behavior type was determined using friction ratio classification chart (after Robertson *et al.*, 1986).
Test performed in general accordance with ASTM D5778-12.

CONE PENETRATION TEST

SCPT-02

Project No: 24384
Date: 07/23/2020
Latitude:
Longitude:
CPT ID: DSA1082

Est. Water Depth: 0.0 ft
Total Depth: 113.9 ft
Operator: G. Reitmeyer



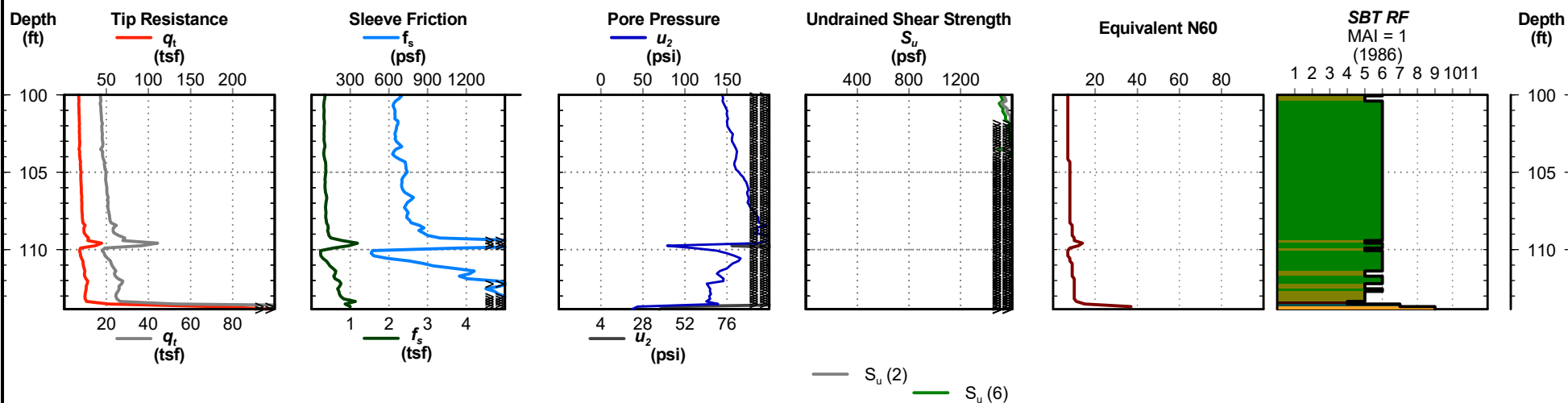
Notes: Soil behavior type was determined using friction ratio classification chart (after Robertson *et al.*, 1986).
Test performed in general accordance with ASTM D5778-12.

CONE PENETRATION TEST

SCPT-02

Project No: 24384
Date: 07/23/2020
Latitude:
Longitude:
CPT ID: DSA1082

Est. Water Depth: 0.0 ft
Total Depth: 113.9 ft
Operator: G. Reitmeyer





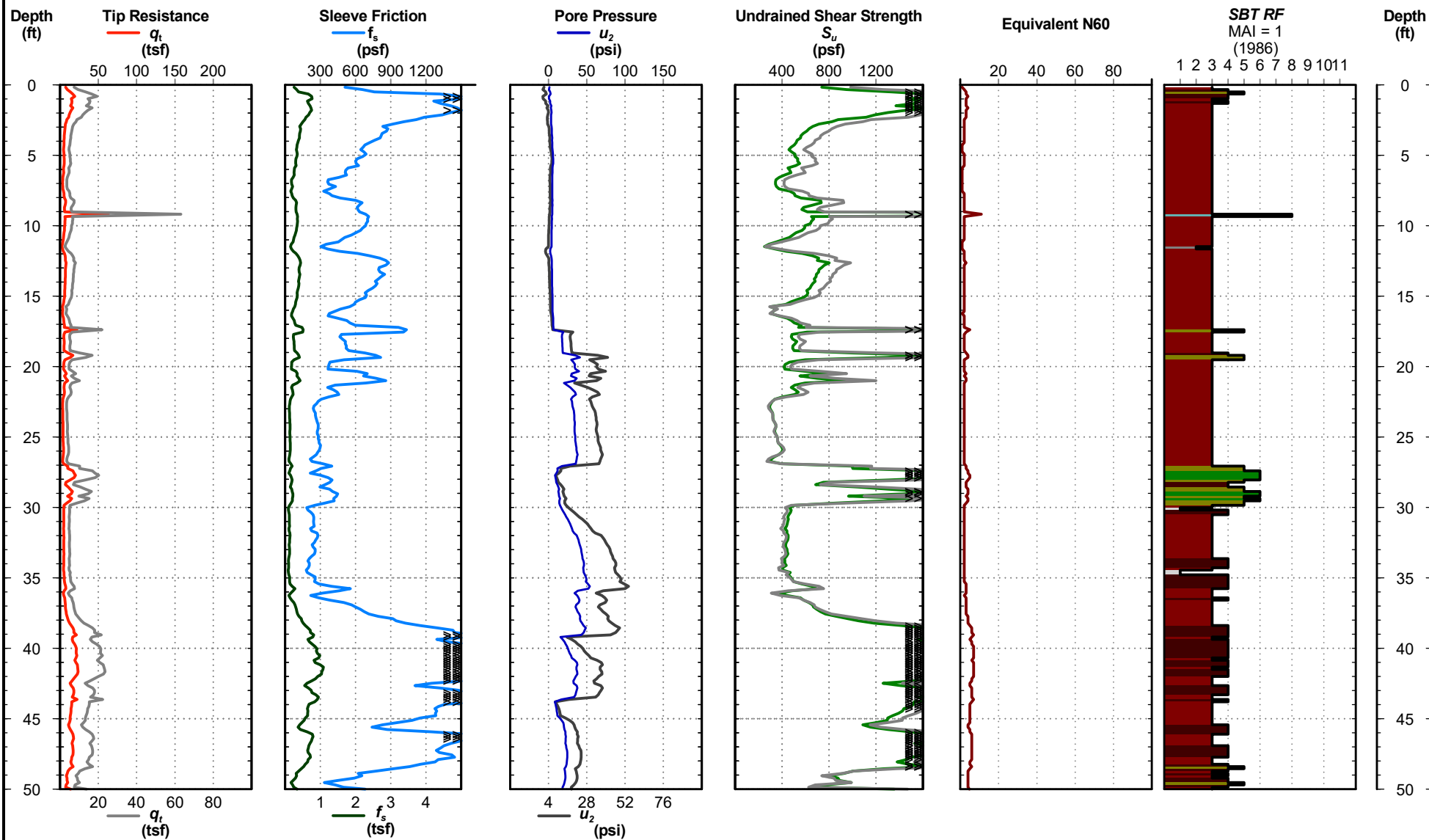
State of Louisiana
Coastal Protection and Restoration
Authority (CPRA)
15% Design Phase
St. John the Baptist Parish, Louisiana

CONE PENETRATION TEST

SCPT-03

Project No: 24384
Date: 07/23/2020
Latitude:
Longitude:
CPT ID: DSA1082

Est. Water Depth: 0.0 ft
Total Depth: 60.2 ft
Operator: G. Reitmeyer



Notes: Soil behavior type was determined using friction ratio classification chart (after Robertson *et al.*, 1986).
Test performed in general accordance with ASTM D5778-12.



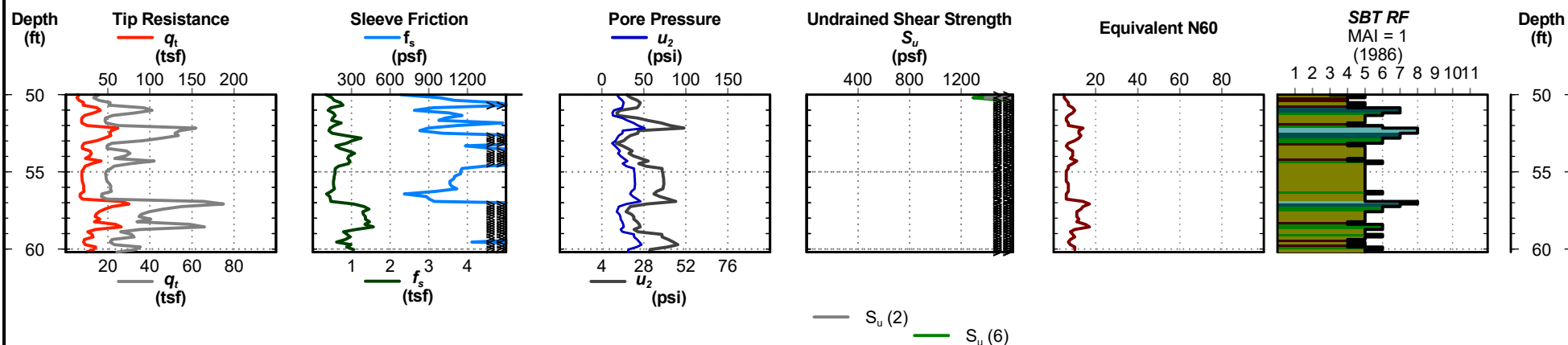
State of Louisiana
Coastal Protection and Restoration
Authority (CPRA)
15% Design Phase
St. John the Baptist Parish, Louisiana

CONE PENETRATION TEST

SCPT-03

Project No: 24384
Date: 07/23/2020
Latitude:
Longitude:
CPT ID: DSA1082

Est. Water Depth: 0.0 ft
Total Depth: 60.2 ft
Operator: G. Reitmeyer



Notes: Soil behavior type was determined using friction ratio classification chart (after Robertson *et al.*, 1986).
Test performed in general accordance with ASTM D5778-12.



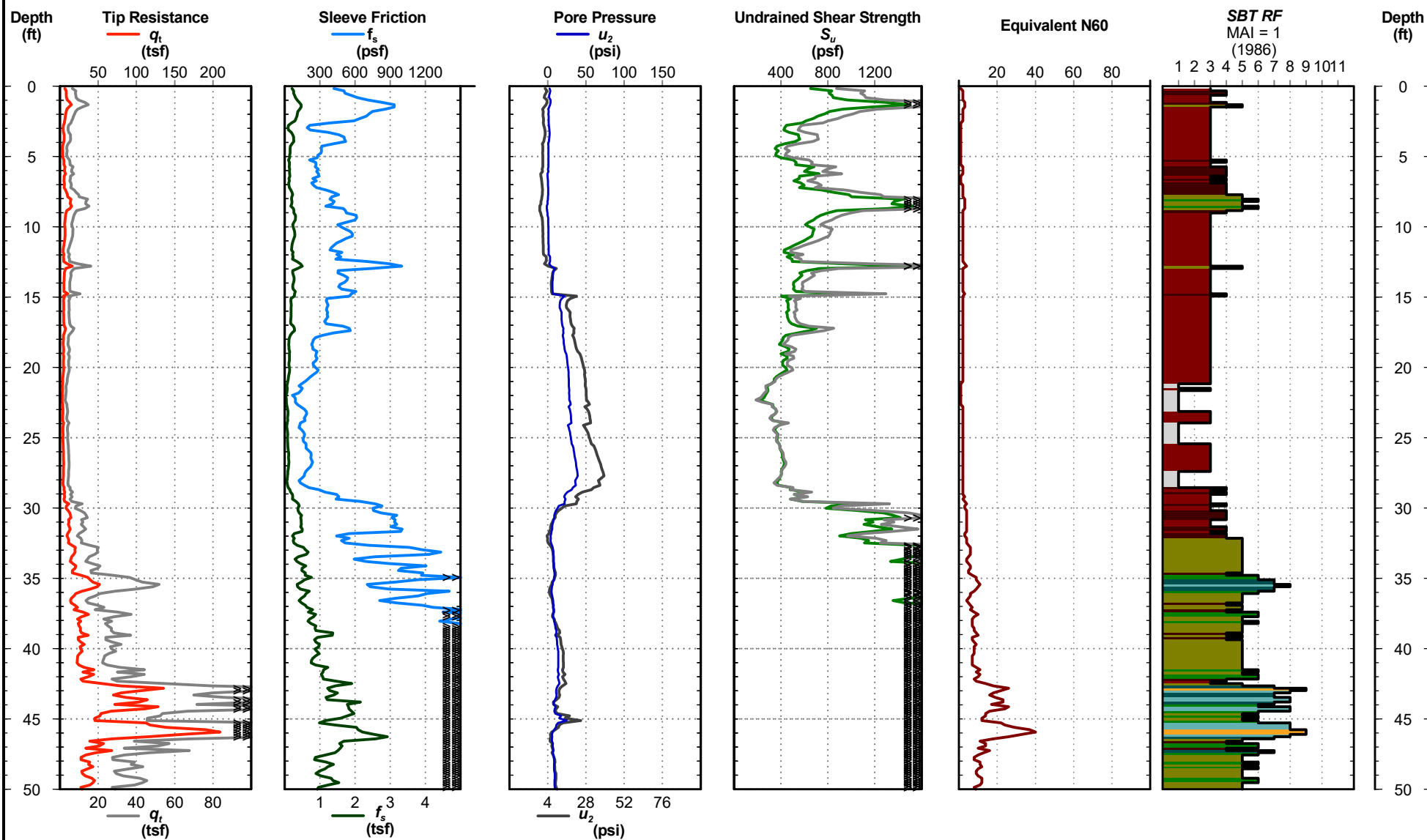
State of Louisiana
Coastal Protection and Restoration
Authority (CPRA)
15% Design Phase
St. John the Baptist Parish, Louisiana

CONE PENETRATION TEST

SCPT-07x

Project No: 24384
Date: 07/28/2020
Latitude:
Longitude:
CPT ID: DSA1082

Est. Water Depth: 0.0 ft
Total Depth: 50.0 ft
Operator: G. Reitmeyer



Notes: Soil behavior type was determined using friction ratio classification chart (after Robertson *et al.*, 1986).
Test performed in general accordance with ASTM D5778-12.



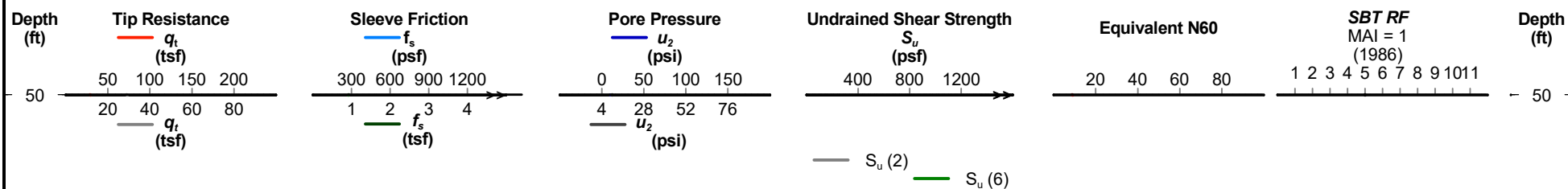
State of Louisiana
Coastal Protection and Restoration
Authority (CPRA)
15% Design Phase
St. John the Baptist Parish, Louisiana

CONE PENETRATION TEST

SCPT-07x

Project No: 24384
Date: 07/28/2020
Latitude:
Longitude:
CPT ID: DSA1082

Est. Water Depth: 0.0 ft
Total Depth: 50.0 ft
Operator: G. Reitmeyer



Notes: Soil behavior type was determined using friction ratio classification chart (after Robertson *et al.*, 1986).
Test performed in general accordance with ASTM D5778-12.



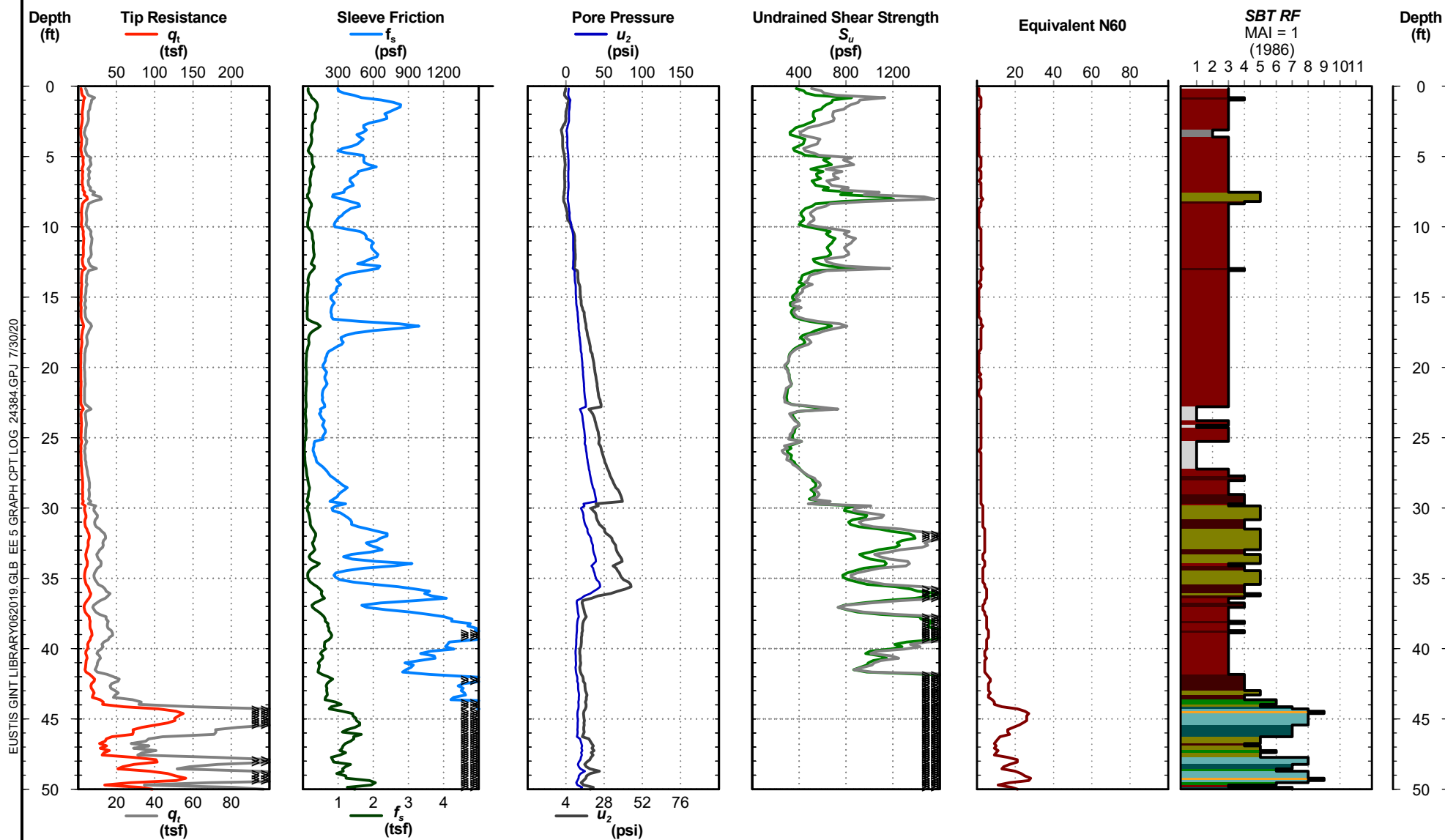
State of Louisiana
Coastal Protection and Restoration
Authority (CPRA)
15% Design Phase
St. John the Baptist Parish, Louisiana

CONE PENETRATION TEST

SCPT-10

Project No: 24384
Date: 07/28/2020
Latitude:
Longitude:
CPT ID: DSA1082

Est. Water Depth: 0.0 ft
Total Depth: 50.4 ft
Operator: G. Reitmeyer



Notes: Soil behavior type was determined using friction ratio classification chart (after Robertson *et al.*, 1986).
Test performed in general accordance with ASTM D5778-12.



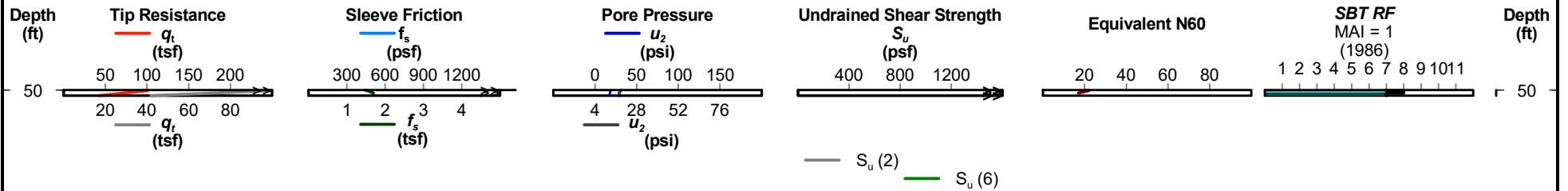
State of Louisiana
Coastal Protection and Restoration
Authority (CPRA)
15% Design Phase
St. John the Baptist Parish, Louisiana

CONE PENETRATION TEST

SCPT-10

Project No: 24384
Date: 07/28/2020
Latitude:
Longitude:
CPT ID: DSA1082

Est. Water Depth: 0.0 ft
Total Depth: 50.4 ft
Operator: G. Reitmeyer



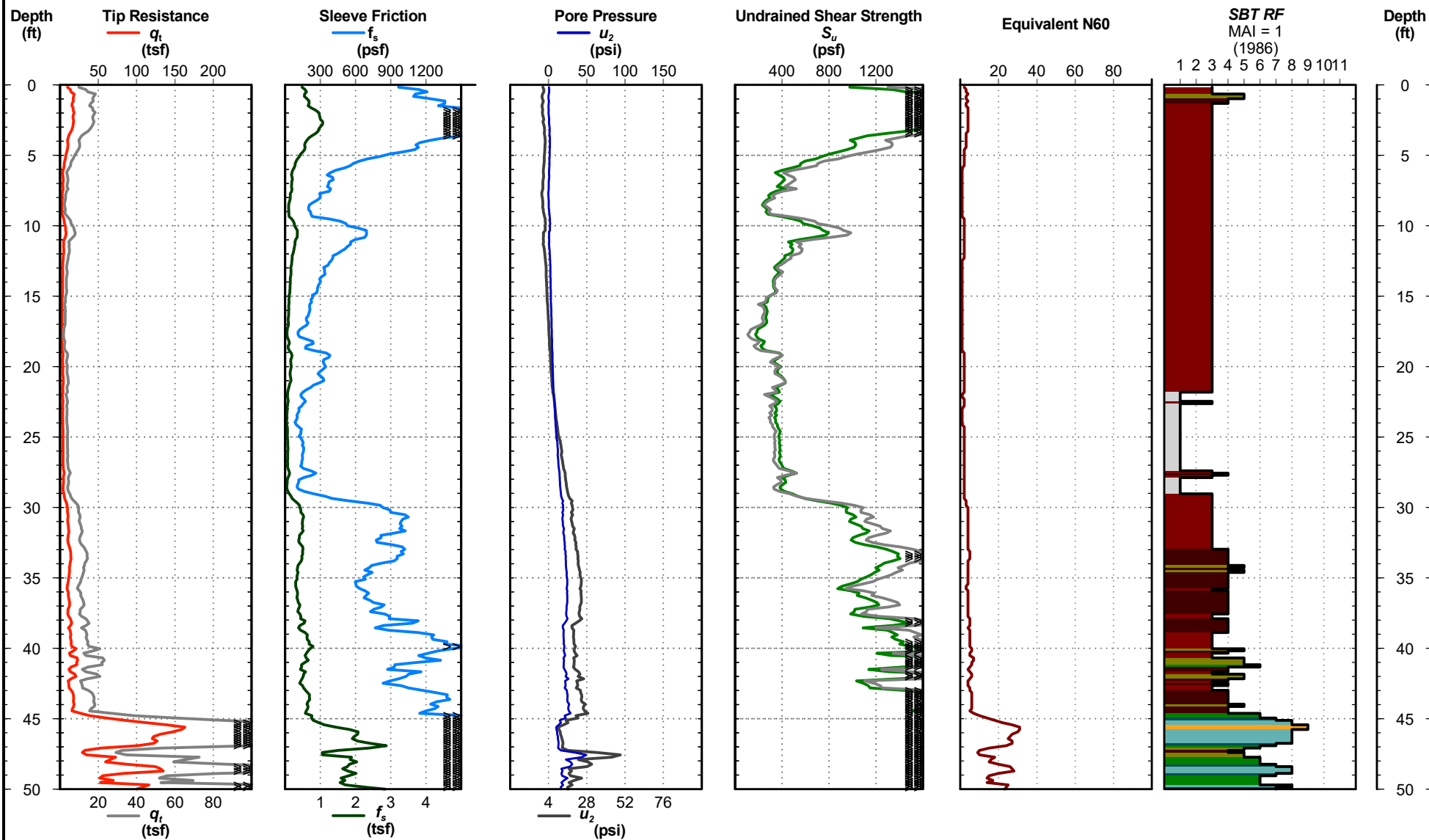
Notes: Soil behavior type was determined using friction ratio classification chart (after Robertson *et al.*, 1986).
Test performed in general accordance with ASTM D5778-12.

CONE PENETRATION TEST

SCPT-11

Project No: 24384
Date: 07/29/2020
Latitude:
Longitude:
CPT ID: DSA1082

Est. Water Depth: 0.0 ft
Total Depth: 99.9 ft
Operator: G. Reitmeyer



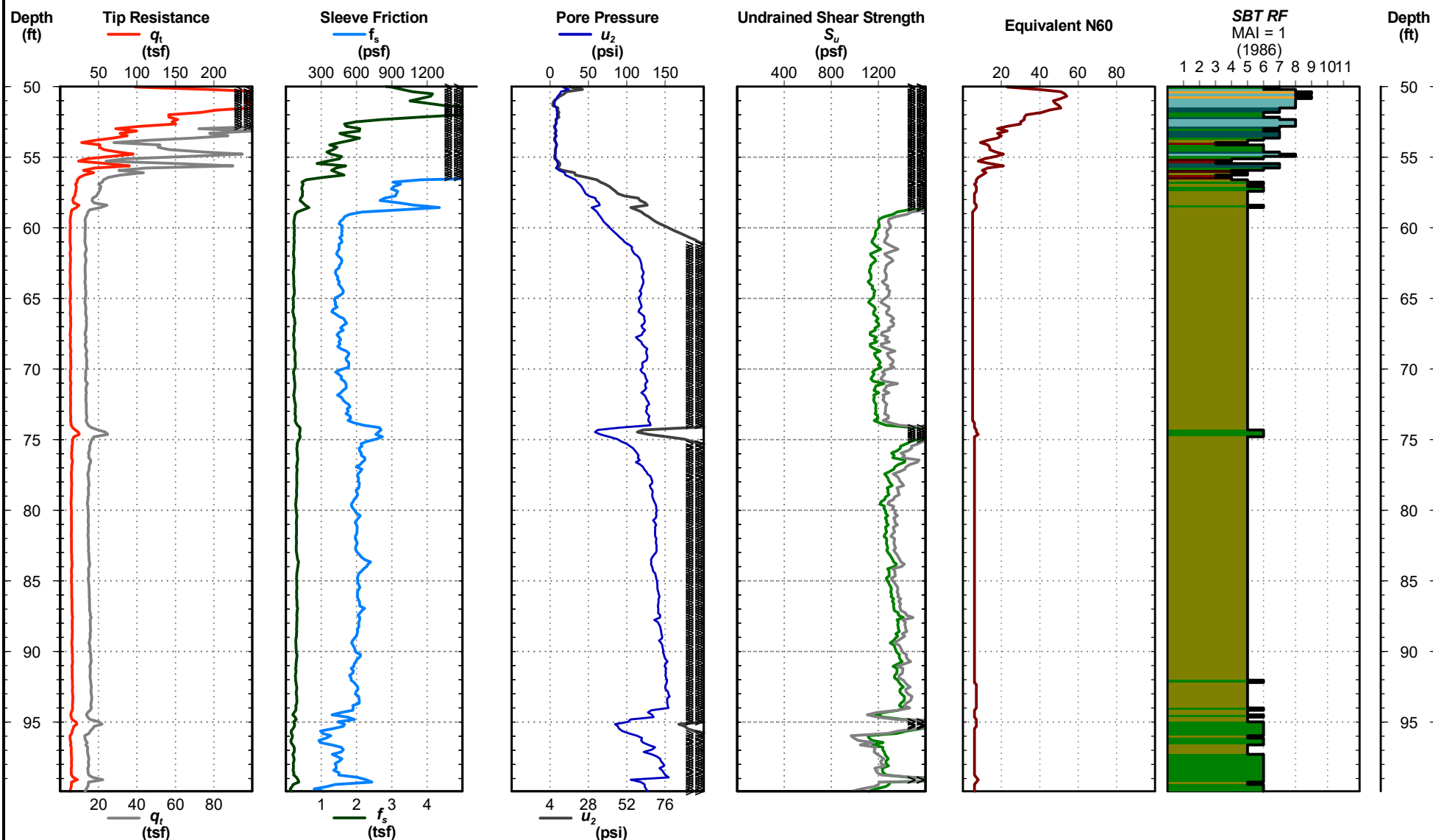
Notes: Soil behavior type was determined using friction ratio classification chart (after Robertson *et al.*, 1986).
Test performed in general accordance with ASTM D5778-12.

CONE PENETRATION TEST

SCPT-11

Project No: 24384
Date: 07/29/2020
Latitude:
Longitude:
CPT ID: DSA1082

Est. Water Depth: 0.0 ft
Total Depth: 99.9 ft
Operator: G. Reitmeyer



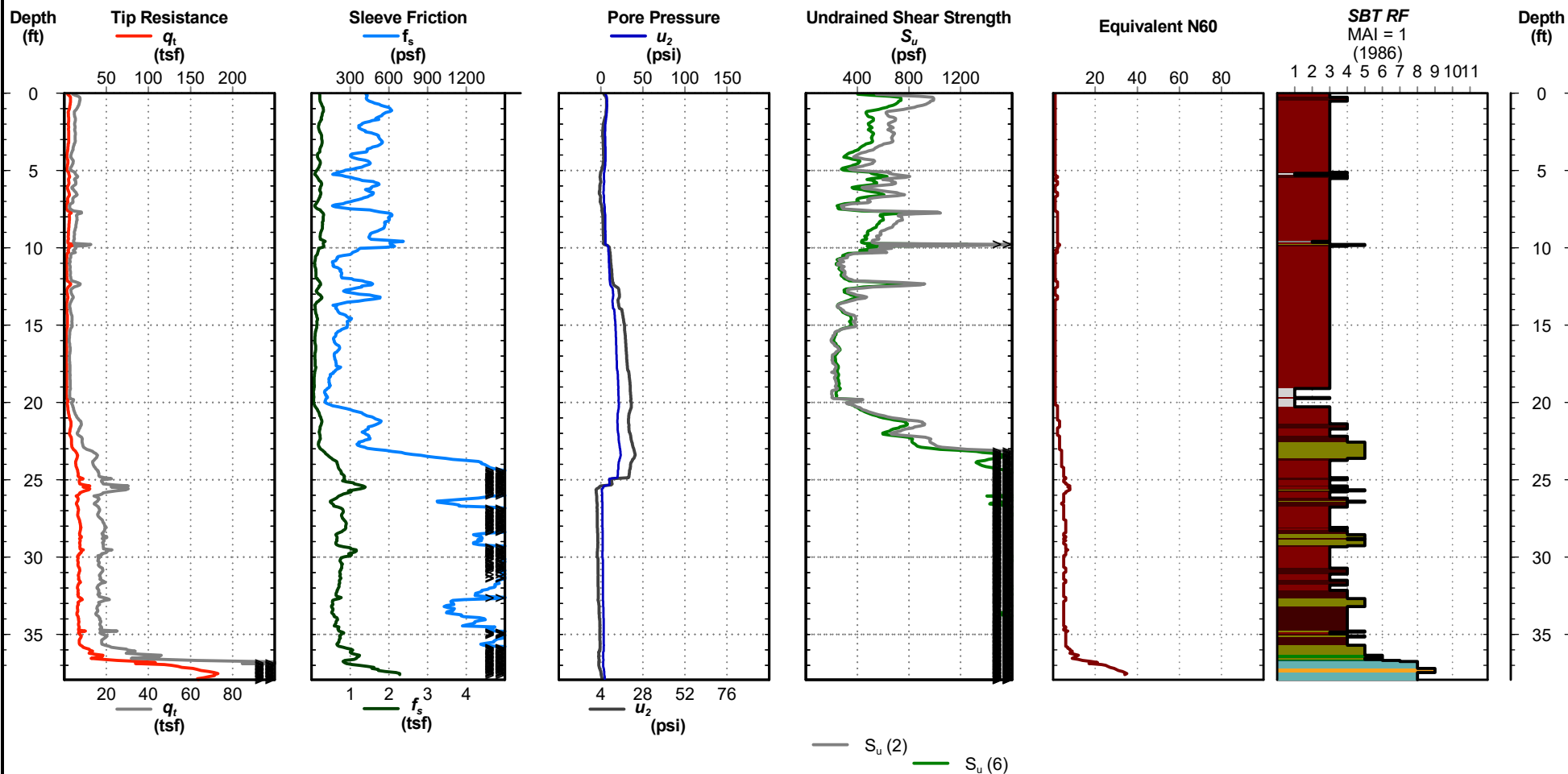
Notes: Soil behavior type was determined using friction ratio classification chart (after Robertson *et al.*, 1986).
Test performed in general accordance with ASTM D5778-12.

CONE PENETRATION TEST

SCPT-12

Project No: 24384
Date: 11/05/2020
Latitude: 30.07351°
Longitude: -90.62723°
CPT ID: 5389

Est. Water Depth: 0.0 ft
Total Depth: 37.9 ft
Operator: GRR



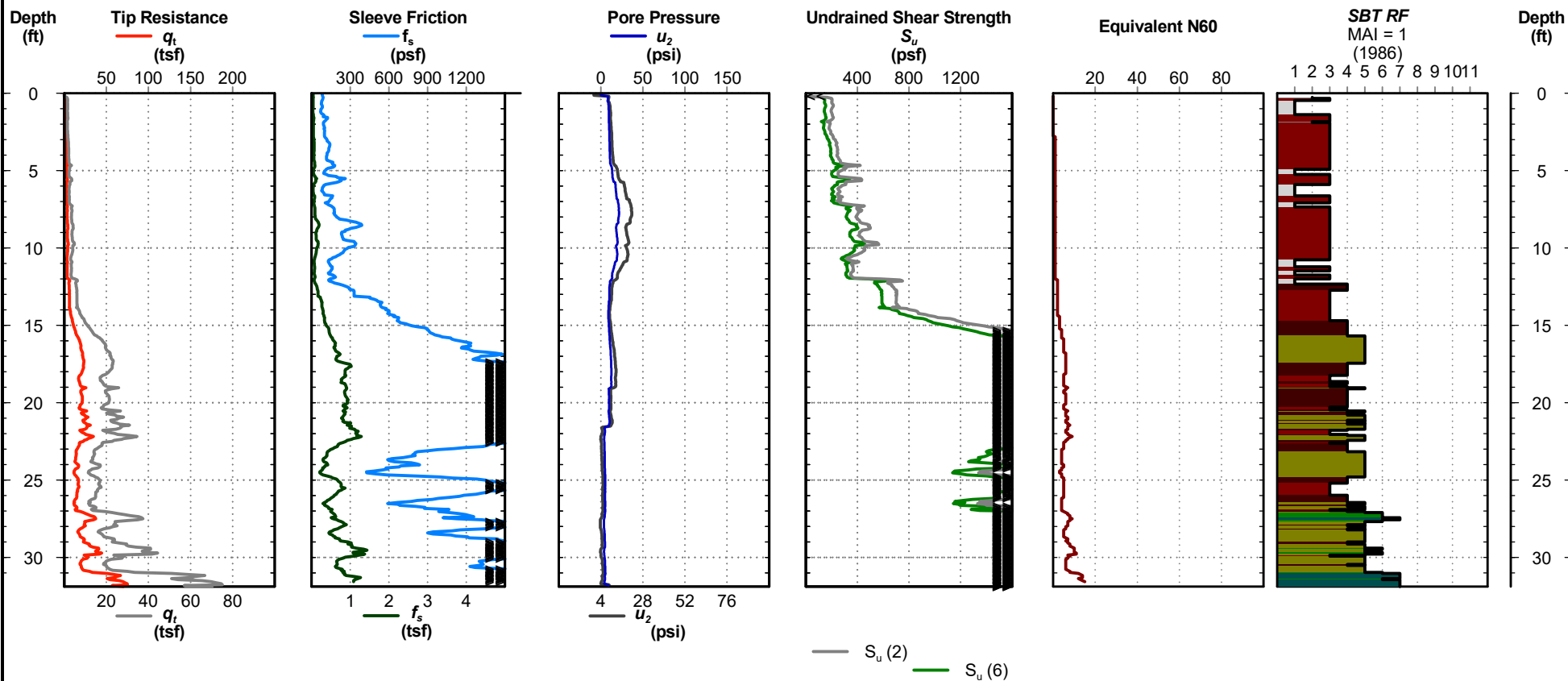
Notes: Soil behavior type was determined using friction ratio classification chart (after Robertson *et al.*, 1986).
Test performed in general accordance with ASTM D5778-12.

CONE PENETRATION TEST

SCPT-13

Project No: 24384
Date: 11/04/2020
Latitude: 30.07725°
Longitude: -90.62805°
CPT ID: 5389

Est. Water Depth: 0.0 ft
Total Depth: 31.9 ft
Operator: GRR



Notes: Soil behavior type was determined using friction ratio classification chart (after Robertson *et al.*, 1986).
Test performed in general accordance with ASTM D5778-12.



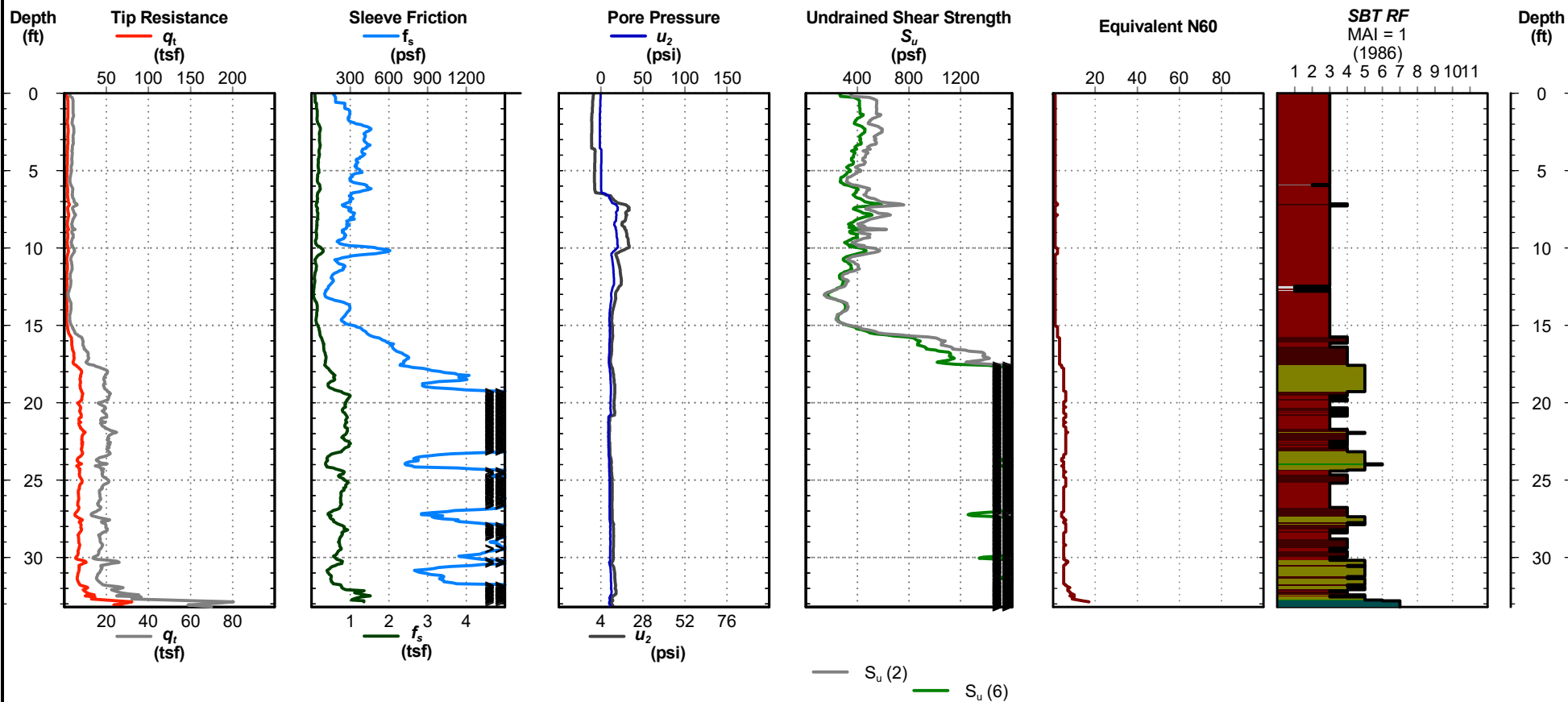
State of Louisiana
Coastal Protection and Restoration
Authority (CPRA)
15% Design Phase
St. John the Baptist Parish, Louisiana

CONE PENETRATION TEST

SCPT-14

Project No: 24384
Date: 11/04/2020
Latitude: 30.07977°
Longitude: -90.62709°
CPT ID: 5389

Est. Water Depth: 0.0 ft
Total Depth: 33.2 ft
Operator: GRR



Notes: Soil behavior type was determined using friction ratio classification chart (after Robertson *et al.*, 1986).
Test performed in general accordance with ASTM D5778-12.

CPT Correlations

References are in parenthesis next to the appropriate equation.

General

p_a =atmospheric pressure (for unit normalization)

q_t =corrected cone tip resistance (tsf)

f_s =friction sleeve resistance (tsf)

$R_f = 100\% \cdot (f_s/q_t)$

u_2 =pore pressure behind cone tip (tsf)

u_0 =hydrostatic pressure

$$B_q = (u_2 - u_0) / (q_t - \sigma_{vo})$$

$$Q_t = (q_t - \sigma_{vo}) / \sigma'_{vo}$$

$$F_r = 100\% \cdot f_s / (q_t - \sigma_{vo})$$

$$I_c = ((3.47 - \log Q_t)^2 + (\log F_r + 1.22)^2)^{0.5} \quad 2$$

$$I_{SBT} = ((3.47 - \log(q_c/p_a))^2 + (\log F_r + 1.22)^2)^{0.5} \quad 23$$

$$I_{cJ\&D} = \sqrt{\{3 - \log(Q_t \cdot (1 - B_q))\}^2 + [1.5 + 1.3 \cdot \log(F_r)]^2} \quad 27$$

$$I_{cJ\&B} = \sqrt{\{3 - \log(Q_t \cdot (1 - B_q) + 1)\}^2 + [1.5 + 1.3 \cdot \log(F_r)]^2} \quad 28$$

K_o

$$K_o(1) \quad K_o = (1 - \sin \phi) OCR^{\sin \phi}$$

$$K_o(2) \quad K_o = 0.1(Q_t) \quad 1$$

Stress History

$$OCR = \sigma_p' / \sigma'_{vo}$$

$$OCR(1) \quad \sigma_p' = 0.33(q_t - \sigma_{vo}) - \text{clays} \quad 8$$

$$OCR(2) \quad \sigma_p' = 0.53(u_2 - u_0) - \text{clays} \quad 9$$

$$OCR(3) \quad \sigma_p' = 0.60(q_t - u_2) - \text{clays} \quad 9$$

$$OCR(4) \quad OCR = 0.25 Q_t^{1.25} - \text{clays} \quad 37$$

$$OCR(5) \quad OCR = \left[\frac{0.192 \cdot (q_t/p_a)^{0.22}}{(1 - \sin(\phi')) \cdot (\sigma'_{vo}/p_a)^{0.31}} \right]^{\frac{1}{\sin(\phi') - 0.27}} - \text{sands} \quad 35$$

$$OCR(6) \quad \sigma_p' = .101 \cdot p_a^{0.102} \cdot G_{max}^{0.478} \cdot \sigma'_{vo}{}^{0.420} - \text{all soils} \quad 36$$

N-Value

$$N_{60} = (q_t/p_a) / [8.5(1 - I_c/4.6)] \quad 6$$

Undrained Shear Strength

$$S_u(1) \quad S_u = (u_2 - u_0)/N_u \quad \text{where } 7 \leq N_u \leq 9 \quad 10$$

$$S_u(2) \quad S_u = (q_t - \sigma_{vo})/N_{kT} \quad \text{where } 15 \leq N_{kT} \leq 20 \quad 11$$

$$S_u(3) \quad S_u = 0.091 \cdot ((\sigma'_{vo})^{0.2}) \cdot (q_t - \sigma_{vo})^{0.8} \quad 21$$

$$S_u(4) \quad S_u = (q_c - \sigma_{vo})/N_k \quad \text{where } 15 \leq N_k \leq 20 \quad 11$$

$$S_u(5) \quad S_u = q_t/N_c \quad \text{where } XXX \leq N_c \leq YYY$$

$$S_u(6) \quad S_u = q_c/N_c \quad \text{where } XXX \leq N_c \leq YYY$$

Effective Cohesion

$$c' = 0.02 \cdot \sigma_p' \quad 38$$

Drained Friction Angle

$\phi' (1)$	$\phi' = 17.6 + 11.0 \log[q_t/(\sigma_{vo}')^{0.5}]$	1
$\phi' (2)$	$\phi' = \arctan[0.1 + 0.38 \log(q_t/\sigma_{vo}')]$	13
$\phi' (3)$	$\phi' = 30.8 \log[(f_s/\sigma_{vo}') + 1.26]$ (for clays or sands)	14
$\phi' (4)$	$\phi' = 29.5 B_q^{0.121} (0.256 + 0.33 B_q + \log(Q_t))$	24

Unit Weight

$$\rho = \gamma/\gamma_w$$

$$\rho = 0.8 \log(V_s) \quad V_s \text{ in m/sec} \quad 17$$

Relative Density and Void Ratio

$D_R (1)$	$D_R = 100(q_{c1}/305)^{1/2}$	where, $q_{c1} = q_c/(\sigma_{vo}')^{1/2}$	1
$D_R (2)$	$D_R = -1.292 + 0.268 \ln(q_c \cdot (\sigma_{vo}')^{-0.5})$		18
$D_R (3)$	$D_R = (1/2.41) \cdot \ln(q_{c1}/15.7)$		3
$D_R (4)$	$D_R = 1/2.91 \cdot \ln((q_c/(61 \cdot \sigma_{vo}')^{0.71})) \cdot 100$		20
$D_R (5)$	$D_R = 100 \cdot (0.268 \cdot \ln((q_t/p_a)/(\sigma_{vo}'/p_a)^{0.5}) - 0.675)$		34

$$e_o = 1.099 - 0.204 \log(q_{c1}) \quad 1$$

$$E_D = 5 q_t \quad I_D = 2.0 - 0.14(R_f) \quad K_D = E_D/(34.7 \cdot I_D \cdot \sigma_{vo}')$$

Compressibility

$$M (1) = R_m E_D \text{ where } R_m = \text{function}(I_D, K_D) \text{ see the following table} \quad 22$$

$I_D \leq 0.6$	$R_M = 0.14 + 2.36 \log K_D$
$I_D \geq 3$	$R_M = 0.5 + 2 \log K_D$
$0.6 < I_D < 3$	$R_M = R_{M,D} + (2.5 - R_{M,D}) \log K_D$
	$R_{M,D} = 0.14 + 0.15(I_D - 0.6)$
$K_D > 10$	$R_M = 0.32 + 2.18 \log K_D$
$R_M < 0.85$	$R_M = 0.85$

$M (2)$	$M = q_c \cdot 10^{(1.09 - 0.0075 D_R)}$	<i>sands</i>	1
$M (3)$	$M = 8.25 (q_t - \sigma_{vo})$	<i>clays</i>	1
$M (4)$	$M = \alpha \cdot G_{max}$	where $0.02 < \alpha < 2$ and G_{max} is from V_s	33

Rigidity Index

$$I_R = \exp \left[\left(\frac{1.5}{M} + 2.925 \right) \cdot \left(\frac{q_t - \sigma_{vo}}{q_t - u_2} \right) - 2.925 \right] \text{ where } M = 6 \sin \phi' / (3 - \sin \phi') \quad 39$$

Sensitivity

$S_t (1)$	$S_t = 7.5/R_f$	2
$S_t (2)$	$S_t = (q_t - \sigma_{vo})/(15 \cdot f_s)$	2

Fines Content

$FC = [(3.58 - \log(q_t))^2 + (1.43 + \log(R_f))^2]^{1.8}$	4
$FC = [5.31(I_{cfs})^{2.31}] + 9.61$, where $I_{cfs} = [(1.95 - \log Q_t)^2 + (\log F_r + 1.78)^2]^{0.5}$	

Shear Wave Velocity

$$V_s(1) = 277 \cdot q_t^{0.13} \cdot \sigma'_{vo}{}^{0.27} \quad (\text{sands}) - \text{m/s and MPa} \quad 29$$

$$V_s(2) = 1.75 \cdot q_t^{0.627} \quad (\text{clays}) - \text{m/s and kPa} \quad 30$$

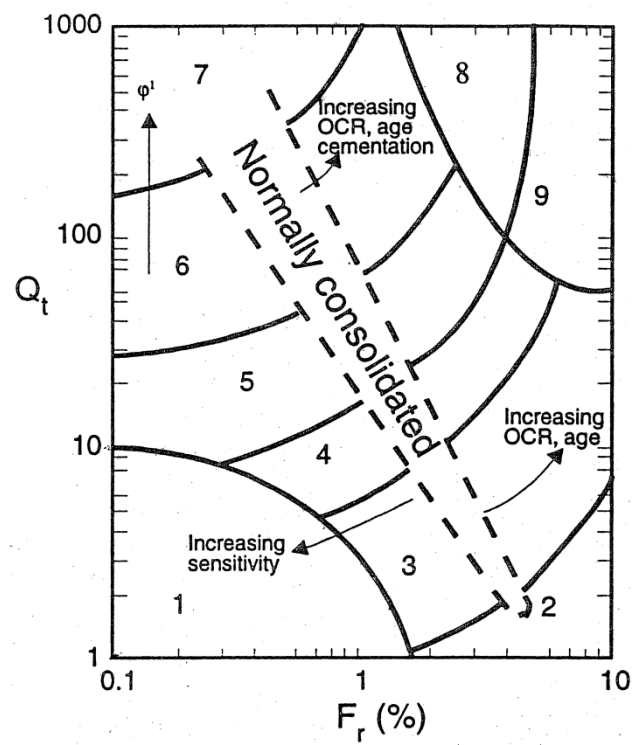
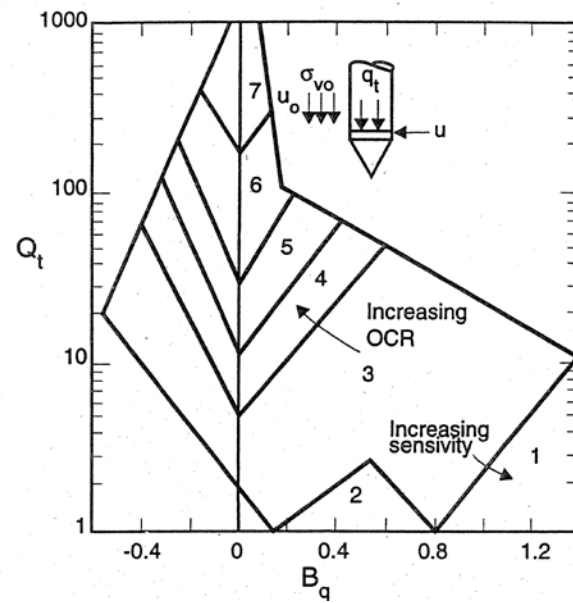
$$V_s(3) = (10.1 \cdot \log q_t - 11.4)^{1.67} \cdot \left(\frac{f_s}{q_t} \cdot 100\right)^{0.3} \quad (\text{all soils}) - \text{m/s and kPa} \quad 31$$

$$V_s(4) = 118.8 \cdot \log f_s + 18.5 \quad (\text{all soils}) - \text{m/s and kPa} \quad 32$$
$$G_{max} = \rho V_s^2$$

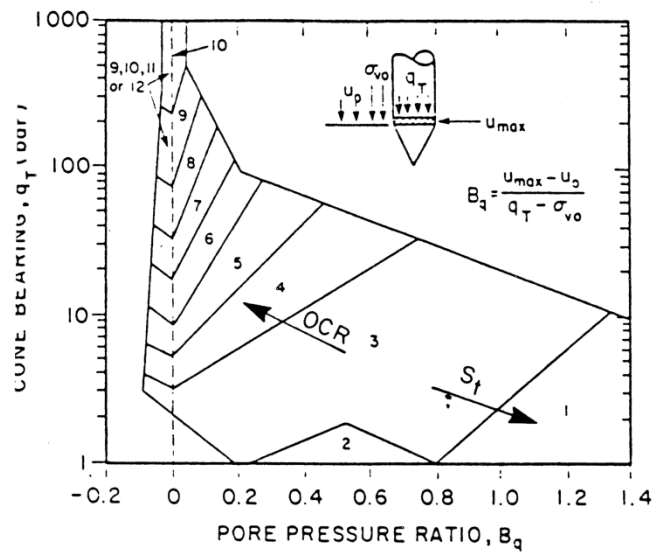
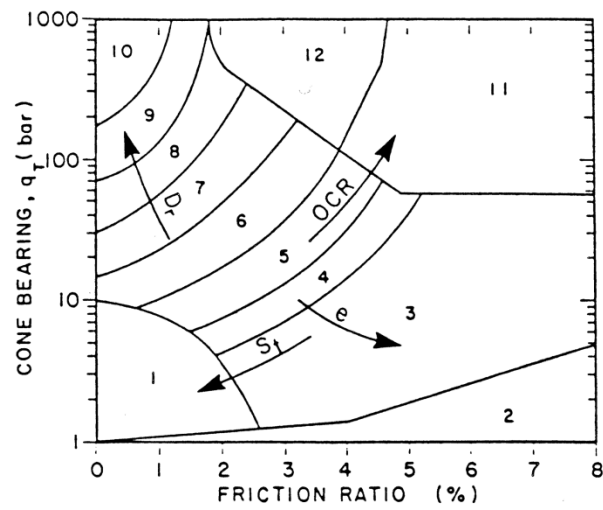
Hydraulic Conductivity

Lookup based on SBT and SBTn (1986 and 1990) 40

Normalized Soil Behavior Types - Robertson & Campanella (1990)



Non-Normalized Soil Behavior Types – Robertson & Campanella (1986)



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APPENDIX V

COMPILATION OF LABORATORY TESTING REPORT SUMMARIES (SDR-A, SDR-B, SDR-C)

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-01

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
1A	0	VST BR & GR CH3	CH3		30.8								62	25	37		
NS	1	NO SAMPLE	NS		--												
2A	4	SO GR & T CH3 W/ ARS ML, RT, CC	CH3		46.6												
2B	5	SO GR & T CH3 W/ ARS ML, RT	CH3	9	49.9	72.0	108	100	UC	--	471	942	75	25	50	0.375	ORG = 5.5%
NS	6	NO SAMPLE	NS		--												
3A	8	M GR & T CH2 W/ ARS ML, RT, SL	CH2		39.0												
3B	9	SO GR & T CH2 W/ ARS ML, CC, SL	CH2	9	35.2	85.9	116	99	UU	0	334	738	58	23	35	0.200	ORG% = 2.69%
3C	10	M GR & T CH2 W/ ARS ML, RT, SL	CH2		34.8												
NS	11	NO SAMPLE	NS		--												
4A	12	M GR & T CH4 W/ ARS ML, CC, SL	CH4		44.4												
4B	13	M GR & T CH4 W/ ARS ML, CC, SL	CH4	14	43.8	75.4	108	95	UU	0	614		98	29	69	0.375	ORG% = 3.72%
4C	14	M GR & T CH4 W/ ARS ML, CC, SL	CH4		44.7												
NS	15	NO SAMPLE	NS		--												
5A	16	M GR CH4 W/ ARS ML, WD, SL	CH4		46.5												
5B	17	M GR CH4 W/ ARS ML, WD, SL	CH4		56.5								101	34	67		ORG% = 4.33%
5C	18	M GR CH4 W/ ARS ML, WD, SL	CH4		57.8												
NS	19	NO SAMPLE	NS		--												
6A	20	M GR CH4 W/ ARS ML, SL	CH4		52.2												
6B	21	M GR CH4 W/ ARS ML, WD, SL	CH4		54.3												
NS	22	NO SAMPLE	NS		--												
7A	24	SO GR & BR CHOB	CHOB		129.7												
7B	25	SO GR & BR CHOB	CHOB		135.4								163	49	114		CONS, ORG = 20.7%
7C	26	M GR & BR CHOB	CHOB	4	126.2	37.4	84.6	98	UU	0	707		172	54	118	0.250	
7D	27	SO GR CH3 W/ ARS & LNS ML, WD	CH3		47.7												
8A	28	GR ML W/ SIF	ML		33.1												SV
8B	29	GR ML W/ SIF	ML		35.6												
8C	30	SO GR CH4 W/ ARS & LNS SM, O, SIF, SL	CH4	6	69.1	58.9	99.6	100	UC	--	200	401	78	30	48	0.110	
NS	31	NO SAMPLE	NS		--												
9A	32	SO GR CH4 W/ ARS ML, SIF	CH4		67.6												
9B	33	SO GR CH3 W/ ARS ML, SIF	CH3	3	68.7	57.5	97.0	96	UU	0	340					0.150	
9C	34	SO GR CH4 W/ ARS ML, SIF, SL	CH4	3	72.0	57.0	98.0	99	UU	0	323		91	22	69	0.200	

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-01

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
9D	35	SO GR CH4 W/ ARS ML, SIF, SL	CH4		63.8												
10A	36	M GR CH4 W/ ARS ML, SIF	CH4		44.5												
10B	37	M GR CH4 W/ ARS ML, SIF	CH4		52.7												
10C	38	M GR CH4 W/ ARS ML, SIF	CH4	3	68.9	59.1	99.8	100	UC	--	626	1253	95	34	61	0.250	
NS	39	NO SAMPLE	NS		--												
11A	40	ST GNG CH2 W/ ARS ML	CH2		23.9												
11B	41	ST GNG CH2 W/ ARS ML	CH2	15	25.6	98.0	123	96	UU	0	1164		58	20	38	0.500	
11C	42	ST GNG CH2 W/ ARS ML	CH2		26.1												
NS	43	NO SAMPLE	NS		--												
12A	44	VST GNG CH2 W/ ARS ML	CH2		23.1												
12B	45	VST GNG CH2 W/ ARS ML	CH2		22.1												
12C	46	VST GNG CH2 W/ ARS ML	CH2	15	21.4	106	128	97	UC	--	2991	5982	53	16	37	0.875	
NS	47	NO SAMPLE	NS		--												
13A	48	M GNG & T CH3 W/ ARS ML, SL	CH3		32.3												
13B	49	M GNG & T CH3 W/ ARS ML, SL	CH3		31.3												
13C	50	M GNG & T CH3 W/ ARS ML, SL	CH3	9	29.6	90.8	118	93	UU	0	992		65	20	45	1.000	
NS	51	NS	NS		--												
14A	52	M T & GR CL6	CL6		33.3												
14B	53	M T & GR CL6 W/ CC	CL6		34.3												
14C	54	M T & GR CL6	CL6	3	30.0	93.0	121	100	UC	--	699	1398	47	19	28	0.625	
14D	55	M T & GR CL6	CL6		29.3												
15A	56	M T & GR CL6	CL6		29.1												
15B	57	ST GNG & T CH3 W/ ARS ML, CC, SL	CH3		32.5												
15C	58	ST GNG & T CH3 W/ ARS ML, CC, SL	CH3		35.0												
15D	59	ST GNG & T CH3 W/ ARS ML, CC, SL	CH3		38.1												
16A	60	ST BR & GR CH3 W/ ARS & LNS ML, CC, SL	CH3		45.1												
16B	61	ST BR & GR CH3 W/ ARS & LNS ML, SL	CH3	5	37.3	83.7	115	99	UU	0	1240		72	26	46	1.250	
16C	62	ST BR & GR CH3 W/ ARS & LNS ML, CC, SL	CH3		37.2												
NS	63	NS	NS		--												
17A	64	ST BR & GR CL4	CL4		26.7												
17B	65	ST BR & GR CL4	CL4		28.6												
17C	66	SO GR & BR CL6	CL6	3	34.2	75.6	109	97	UC	--	485	970	46	24	22	0.625	
NS	67	NS	NS		--												
18A	68	M GR CH2 W/ ARS & LNS ML	CH2		39.8												
18B	69	M GR CH2 W/ ARS & LNS ML	CH2	12	37.5	83.4	115	99	UU	0	736					0.250	
18C	70	M GR & T CH3 W/ ARS & LNS ML	CH3	4	49.6	72.3	108	100	UU	0	526		74	26	48	0.375	
18D	71	M GR & T CH3 W/ ARS & LNS ML	CH3		38.1												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-01

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
19A	72	GR SC	SC		29.4												
19B	73	M GR CL6 W/ ARS SP	CL6		44.3												
19C	74	M GR CL6 W/ ARS SP	CL6		43.7												
19D	75	M GR CL6 W/ ARS SP	CL6		38.0												
20A	76	ST GR & T CH3 W/ ARS & LNS ML	CH3		38.5												
20B	77	ST GR & T CH3 W/ ARS & LNS ML	CH3	7	41.5	79.8	113	100	UC	--	1001	2002	57	23	34	0.375	
20C	78	ST GR & T CH3 W/ ARS & LNS ML	CH3		40.2												
20D	79	ST GR & T CH3 W/ ARS & LNS ML	CH3		42.0												
21A	80	ST GR CH3 W/ ARS ML, SL	CH3		33.8												
21B	81	ST GR CH3 W/ ARS ML, SL	CH3		36.0												
21C	82	ST GR CH3 W/ ARS ML, SIF, SL	CH3	4	36.3	85.1	116	99	UU	0	1150		59	18	41	0.500	
21D	83	ST GR CH3 W/ ARS ML, SL	CH3		37.2												
22A	84	ST GR CH4 W/ ARS ML, SL	CH4		34.1												
22B	85	ST GR CH4 W/ ARS ML, SL	CH4		36.3												
22C	86	ST GR CH4 W/ ARS ML, SL	CH4	4	34.3	87.8	118	100	UC	--	1145	2289	94	22	72	0.400	
NS	87	NS	NS		--												
23A	88	VST GNG CH3 W/ ARS ML, SL	CH3		38.6												
23B	89	VST GNG CH3 W/ ARS ML, SL	CH3		38.6												
23C	90	VST GNG CH3 W/ ARS ML, SL	CH3		37.6												
NS	91	NS	NS		--												
24A	92	ST GR CH4 W/ ARS ML, SL	CH4		47.7												
24B	93	ST GR CH4 W/ ARS ML, SL	CH4	2	45.0	76.1	110	99	UU	0	1392		89	29	60	0.400	
24C	94	ST GR CH4 W/ ARS ML, SL	CH4		47.4												
24D	95	ST GR CH4 W/ ARS ML, SL	CH4		48.1												
25A	96	VST GR CH4 W/ ARS & LNS ML	CH4		49.0												
25B	97	VST GR CH4 W/ ARS & LNS ML	CH4	3	48.2	73.5	109	100	UC	--	2086	4172	89	28	61	0.500	
25C	98	VST GR CH4 W/ ARS & LNS ML	CH4		49.4												
NS	99	NS	NS		--												
26A	100	ST GR CH4 W/ SL	CH4		46.7												
26B	101	ST GR CH4 W/ SL	CH4		47.7												
26C	102	ST GR CH4 W/ ARS ML	CH4	2	45.7	75.7	110	100	UU	0	1405		91	28	63	0.400	
26D	103	ST GR CH4 W/ SL	CH4		45.6												
27A	104	ST GR CH4 W/ SIF, SL	CH4		46.2												
27B	105	ST GR CH4 W/ SIF, SL	CH4		47.4												
27C	106	ST GR CH4 W/ SIF, SL	CH4		46.9												
NS	107	NS	NS		--												
28A	108	ST GR & BR CH4	CH4		59.1												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-01

[illegible]

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

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EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-02

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
1A	0	ST BR & GR CH3 W/ ARS ML, RT	CH3		33.0												
NS	1	NS	NS		--												
2A	2	M GR & T CH3 W/ ARS ML, CC	CH3		37.2												
2B	3	M GR & T CH3 W/ ARS ML, CC, SL	CH3	15	35.1	85.4	115	97	UC	--	882		67	25	42	0.750	
2C	4	M GR & T CH2 W/ ARS ML	CH2		30.5												
NS	5	NS	NS		--												
3A	6	M GR & T CH3 W/ ARS ML, CC	CH3		41.3												
3B	7	M GR & T CH3 W/ ARS ML, CC	CH3	14	39.5	81.6	114	99	UU	0	747		73	21	52	0.625	-#200 = 98.5% ORG% = 5.05%
3C	8	M BR & GR CH2 W/ ARS ML, CC	CH2		32.0												
NS	9	NS	NS		--												
4A	10	M GR CH4 W/ ARS ML, SL	CH4		46.1												
4B	11	M GR CH4 W/ ARS ML, SL	CH4	2	55.4	66.8	104	98	UC	--	549	1098	104	30	74	0.625	-#200 = 98.9%
4C	12	M GR CH4 W/ ARS ML, SL	CH4		45.4												
PB-4B	13	BR WD	WD		400.3												
5A	14	M GNG CH4 W/ ARS ML, WD, SL	CH4		52.3												
5B	15	M GR & T CH4 W/ ARS ML, SL, WD, RT	CH4	5	55.8	65.8	102	96	UU	0	665		94	25	69	0.375	-#200 = 98.6% ORG% = 7.20%
5C	16	M GNG CH4 W/ ARS ML, WD, SL	CH4		52.6												
5D	17	M GNG CH4 W/ ARS ML, WD, SL	CH4		56.2												
6A	18	SO GNG CH4 W/ ARS ML, WD, SL	CH4		74.3								100	26	74		-#200 = 93.3% ORG% = 10.69%
6B	19	SO GNG CH4 W/ ARS ML, WD, SL	CH4		75.0												
6C	20	SO GR & BR CHOB W/ WD	CHOB	5	109	41.2	86.2	95	UU	0	445		171	53	118	0.625	ORG% = 13.27%
6D	21	SO BR & GR CHOC	CHOC		167.4												
7A	22	SO BR & GR CHOB	CHOB		131.0												
7B	23	M BR & GR CHOA	CHOA	5	95.6	45.9	89.7	96	UU	0	860		152	53	99	0.625	ORG% = 12.83%
7C	24	SO BR & GR CH4 W/ ARS ML, O	CH4	5	79.2	52.8	94.7	97	UC	--	456	912	103	41	62	0.500	
7D	25	M GR & BR CH4 W/ ARS ML, RT	CH4		59.4												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-02

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
8A	26	SO GR CL4 W/ ARS SP, SIF	CL4		48.9												
8B	27	SO GR CL4 W/ ARS SP, SIF	CL4		35.2								35	21	14		
8C	28	GR ML W/ ARS CH, SP, SIF	ML		35.9								NP	NP			MINI VANE = 517 TSF
NS	29	NS	NS		--												
9A	30	M GR CH4 W/ ARS & LNS ML, SIF	CH4		68.3												
9B	31	SO GR CH3 W/ ARS ML, SIF	CH3	2	73.6	56.0	97.2	98	UU	0	360		76	25	51	0.200	
9C	32	M GR CH4 W/ ARS & LNS ML, SIF	CH4		70.0												
9D	33	M GR CH4 W/ ARS & LNS ML, SIF	CH4		68.4												
10A	34	M GR & DGR CH4 W/ ARS ML, SIF, O	CH4		73.0												
10B	35	M GR & BR CHOA W/ WD	CHOA	4	87.9	47.9	89.9	94	UC	--	872	1744	120	43	77	0.750	
10C	36	M GR & DGR CH4 W/ ARS ML, SIF, O	CH4		63.4												
10D	37	M GR & DGR CH4 W/ ARS ML, SIF, O	CH4		74.3												
11A	38	ST GR CH3 W/ ARS ML, CC	CH3		27.3												
11B	39	ST GR & T CH3 W/ ARS ML	CH3	14	23.8	100	124	93	UC	--	1735	3569				1.000	
11C	40	ST GR & T CH3 W/ ARS ML	CH3	14	23.0	99.3	122	88	UU	0	1594		59	15	44	0.875	
NS	41	NS	NS		--												
PB-12	42	M GR & T CH3 W/ ARS ML	CH3		37.8												
13A	46	M GR & T CH3 W/ ARS ML, CC	CH3		42.3												
13B	47	M T & GR CL4 W/ CC	CL4		30.8								37	18	19		-#200 = 97.1%
13C	48	M T & GR CL4 W/ CC	CL4	4	34.8	83.6	113	93	UC	--	765	1530	34	20	14	0.150	
13D	49	ST T & GR CL4 W/ CC	CL4		32.6												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

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EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-03

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
1A	0	M GR & BR CH3 W/ ARS SP, RT, SIF, SL	CH3		36.1												
1B	1	M GR & BR CH3 W/ ARS SP, RT, SIF, SL	CH3		37.6												
1C	2	M GR & BR CH3 W/ ARS SP, RT, SIF, SL	CH3	3	32.9	85.2	113	90	UC	--	437	874	67	25	42	0.375	-#200 = 87.6%; ORG = 4.5%
1D	3	M GR & BR CH3 W/ ARS ML, RT, CC	CH3		42.2												
2A	4	M T & GR CH2 W/ CC, RT	CH2		26.6												
2B	5	M T & GR CH2 W/ CC, RT	CH2	12	27.4	96.4	123	98	UC	--	889	1778	51	20	31	0.500	ORG = 2.8%
NS	6	NS	NS		--												
3A	8	M GR & T CH3 W/ ARS ML, CC	CH3		37.3												
3B	9	M GR & T CH3 W/ ARS ML, CC	CH3	7	41.9	79.4	113	100	UC	--	867	1734	72	25	47	0.500	ORG = 8.2%
3C	10	M GR & T CH3 W/ ARS ML, CC	CH3		36.1												
NS	11	NS	NS		--												
4A	12	M GR CH4 W/ ARS ML, WD	CH4		48.5												
4B	13	M GR CH4 W/ ARS ML, WD	CH4		48.7												
4C	14	M GR CH4 W/ ARS ML, WD	CH4	9	45.9	73.9	108	96	UU	0	683		88	27	61	0.625	-#200 = 90.7%; ORG = 4.7%
4D	15	M GR CH4 W/ ARS ML, WD, SL	CH4		49.4												
5A	16	SO GR CH4 W/ ARS ML, WD, SL	CH4		71.4												
5B	17	SO GR CH4 W/ ARS ML, WD, SL	CH4		71.4												
5C	18	SO GR CHOA	CHOA	3	89.8	48.2	91.4	97	UC	--	473	946	142	41	101	0.375	ORG = 4.4%
NS	19	NS	NS		--												
6A	20	M GR & DGR CHOC	CHOC		140.3												
6B	21	M GR & DGR CHOC	CHOC	6	136.4	35.8	84.6	99	UU	0	974		224	59	165	0.375	ORG = 19.0%
6C	22	M GR & DGR CHOC	CHOC		140.6												
NS	23	NS	NS		--												
7A	24	M GR CH3 W/ ARS & LNS SP, WD	CH3		46.4												
7B	25	M GR CH3 W/ ARS & LNS SP, WD	CH3		49.7												
7C	26	SO GR CL4 W/ ARS SP, SIF	CL4	11	36.3	85.2	116	100	UC	--	251	501	35	21	14	0.200	
7D	27	SO GR CL6 W/ ARS SP, SIF	CL6		42.1												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

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EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-03

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
8A	28	SO GR CH3 W/ ARS SP, SIF	CH3		67.0												
8B	29	SO GR CH3 W/ ARS SP, SIF	CH3		65.1												
8C	30	SO GR CH3 W/ ARS SP, SIF	CH3		72.1												
8D	31	SO GR CH2 W/ ARS SP, SIF	CH2	6	40.6	80.7	113	100	UU	0	317		50	18	32	0.150	
9A	32	ST GNG CL6 W/ SIF	CH3		27.1												
9B	33	ST GNG CL6	CL6		28.6												
9C	34	SO GNG CL6	CL6	3	20.6	105	127	92	UC	--	400	800	41	13	28	0.150	
9D	35	ST GNG CL6	CL6		21.6												
10A	36	ST GNG CL6	CL6		22.5												
10B	37	ST GNG CL6	CL6		25.9												
NS	38	NS	NS		--												
11A	40	M T & GR CL4 W/ CC	CL4		28.3												
11B	41	M T & GR CL4 W/ CC	CL4		33.1												
11C	42	M T & GR CL4 W/ CC	CL4	14	30.6	91.9	120	99	UU	0	567		31	18	13	0.150	
NS	43	NS	NS		--												
12A	44	BR ML	ML		32.2												
12B	45	BR ML	ML		30.7												-#200 = 90.5%
NS	46	NS	NS		--												
13A	48	BR ML W/ CC	ML		31.9												
13B	49	BR ML W/ CC	ML		29.8												
13C	50	BR ML W/ CC	ML		29.4												-#200 = 67.0%
13D	51	BR ML W/ CC	ML		25.2												
14A	52	BR ML W/ CC	ML		31.1												
14B	53	BR ML W/ CC	ML		26.4												
14C	54	BR ML W/ CC	ML		27.1												
NS	55	NS	NS		--												
15A	56	M T & GR CL6	CL6		32.6												
15B	57	M T & GR CL6	CL6	5	33.9	84.5	113	92	UC	--	710	1420	45	25	20	0.500	
15C	58	M T & GR CL6	CL6		31.9												
15D	59	M T & GR CL6	CL6		33.2												
16A	60	M T & GR CL6	CL6		31.0												
16B	61	M GR & T CH3 W/ ARS & LNS SM	CH3	15	43.7	76.3	110	97	UU	0	845		69	22	47	0.625	
16C	62	M GR & T CH3 W/ LNS & LYS SM	CH3		37.4												
NS	63	NS	NS		--												
17A	64	M GR & T CH3 W/ ARS & LNS ML, CC	CH3		44.0												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

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EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-03

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
17B	65	M GR & T CH3 W/ ARS & LNS ML, CC	CH3		45.6												
17C	66	M GR & T CH3 W/ ARS & LNS ML, CC	CH3	3	35.0	85.5	115	97	UC	--	894	1788	51	15	36	0.500	
17D	67	M GR & T CH3 W/ ARS & LNS ML, CC	CH3		38.4												
18A	68	ST GR CH3 W/ ARS SM, SIF	CH3		41.4												
18B	69	ST GR CH3 W/ ARS SM, SIF	CH3		46.0												
18C	70	ST GR CL6 W/ ARS SM	CL6	8	29.4	93.2	121	97	UU	0	1030		40	15	25	0.625	
18D	71	ST GR CL6 W/ ARS SM, SIF	CL6		39.7												
19A	72	M GR CL6 W/ ARS SM	CL6		34.4												
19B	73	M GR CL6 W/ ARS SM	CL6		33.1												
19C	74	M GR CL6 W/ ARS SM	CL6	3	38.1	81.2	112	95	UC	--	814	1629	44	14	30	0.700	
19D	75	M GR CL6 W/ ARS SM	CL6		35.1												
20A	76	ST GR CH3 W/ ARS ML	CH3		43.2												
20B	77	ST GR CH3 W/ ARS ML	CH3		39.3												
20C	78	ST GR CH3 W/ ARS ML	CH3		39.4												
20D	79	ST GR CH3 W/ ARS ML	CH3		39.7												
21A	80	ST GR CH3 W/ ARS ML, SL	CH3		37.1												
21B	81	ST GR CH3 W/ ARS ML, SL	CH3	2	43.7	76.6	110	98	UU	0	728		72	23	49	0.700	
21C	82	ST GR CH3 W/ ARS ML, SL	CH3		40.4												
NS	83	NS	NS		--												
22A	84	ST GR CH4 W/ ARS ML, SL	CH4		43.3												
22B	85	ST GR CH4 W/ ARS ML, SL	CH4		42.4												
22C	86	ST GR CH4 W/ ARS ML, WD	CH4	2	42.7	77.5	111	98	UC	--	1468	2936	74	18	56	0.625	
22D	87	ST GR CH4 W/ ARS ML, SL	CH4		43.1												
23A	88	ST GR CH4 W/ ARS ML, SL	CH4		43.0												
23B	89	ST GR CH4 W/ ARS ML, SL	CH4		43.7												
23C	90	ST GR CH4 W/ ARS ML, SL	CH4	1	44.9	75.1	109	97	UU	0	1065		84	22	62	0.625	
23D	91	ST GR CH4 W/ ARS ML, SL	CH4		43.2												
24A	92	ST GR CH4 W/ ARS ML, O, SL	CH4		45.8												
24B	93	ST GR CH4 W/ ARS ML, O, SL	CH4		45.8												
24C	94	ST GR CH4 W/ ARS ML, SL	CH4	3	47.3	73.1	108	97	UC	--	1929	3859	87	25	62	0.625	
24D	95	ST GR CH4 W/ ARS ML, O, SL	CH4		45.6												
25A	96	ST GR & T CH4 W/ ARS ML, SIF	CH4		46.1												
25B	97	ST GR & T CH4 W/ ARS ML, SIF	CH4		44.8												
25C	98	ST GR CH4 W/ ARS & LNS ML, SL	CH4	2	46.7	73.4	108	97	UU	0	1808		91	24	67	0.625	
25D	99	ST GR & T CH4 W/ ARS ML, SIF	CH4		45.5												
26A	100	ST GR CH4 W/ ARS & LNS ML	CH4		45.8												
26B	101	ST GR CH4 W/ ARS & LNS ML	CH4		50.0												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

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File Name: 24384

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Current Date: 12/31/2020

Checked by: RR
File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-04

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
1A	0	ST BR & GR CH2 W/ ARS SP, SIF, RT	CH2		21.2												
1B	1	ST GR CH2 W/ ARS SP, SIF, RT	CH2		22.1												
1C	2	ST GR CH2 W/ ARS SP, SIF, RT	CH2		25.9								50	13	37		-#200 = 91.7% ORG% = 3.91%
1D	3	ST GR CH2 W/ ARS SP, SIF, RT	CH2		27.1												
2A	4	VST GR CH3 W/ ARS SP, SIF, RT	CH3		32.0												
2B	5	VST GR & T CH3 W/ ARS ML, WD	CH3	10	33.8	85.0	114	92	UC	--	2024	4047	76	31	45	0.750	-#200 = 89.7% ORG% = 7.31%
NS	6	NS	NS		--												
3A	8	M GR & T CH2 W/ ARS ML, RT, SIF	CH2		40.5												
3B	9	M GR & T CH2 W/ ARS ML, RT, SIF	CH2		36.6								50	19	31		-#200 = 95.2% ORG% = 3.52%
NS	10	NS	NS		--												
4A	12	M GR & BR CL4 W/ CC	CL4		33.6												
4B	13	M GR & T CL4 W/ CC	CL4	14	30.3	90.3	118	95	UU	0	796		34	16	18	0.200	-#200 = 90.7%
4C	14	M GR & BR CL4 W/ CC	CL4		30.1												
4D	15	M GR & BR CL4 W/ CC	CL4		35.0												
5A	16	SO GR CH4 W/ ARS ML, SL	CH4		59.1												
5B	17	SO GR CH4 W/ ARS ML, SL	CH4		59.7												
5C	18	SO GR CHOA W/ RT	CHOA	3	70.3	55.9	95.1	94	UC	--	440	881	128	35	93	0.200	-#200 = 97.5% ORG% = 9.47%
NS	19	NS	NS		--												
6A	20	M GR CH4 W/ ARS ML, RT, SL	CH4		60.8												
6B	21	M GR CH4 W/ ARS ML, RT, SL	CH4		58.9												
NS	22	NS	NS		--												
7A	24	M GR CHOA W/ WD, RT	CHOA		90.4												
7B	25	M GR & BR CHOB	CHOB	4	101.0	43.7	87.9	96	UU	0	532		167	47	120	0.150	ORG% = 15.14%
7C	26	M BR & GR CHOC	CHOC	6	131.1	35.4	81.7	94	UU	0	926		195	62	133	0.200	ORG% =

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

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File Name: 24384

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Checked by: RR
File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-05

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
1A	0	ST GR & BR CH2 W/ ARS ML, RT, O	CH2		27.6												
PB-1A	1	ST GR & BR CH2 W/ ARS ML, RT, O	CH2		24.0								51	16	35		
2A	4	ST GR & BR CH2 W/ ARS ML, CC	CH2		30.8												ORG = 3.1%
2B	5	SO T & GR CL4 W/ CC	CL4	15	32.1	90.2	119	100	UU	0	495		41	20	21	0.625	
2C	6	SO T & GR CL4 W/ CC	CL4		30.9												
NS	7	NS	NS		--												
3A	8	M BR & GR CL6 W/ WD	CL6		31.3												
3B	9	M BR & GR CL6 W/ WD	CL6		30.9												
3C	10	M T & GR CH4 W/ ARS ML, CC	CH4	7	42.4	72.6	107	97	UC	--	677	1353	80	33	47	0.750	ORG = 3.7%
3D	11	M GR & T CH4 W/ ARS SP, RTS	CH4		61.1												
4A	12	M GR CH4 W/ ARS ML, WD	CH4		77.2												
4B	13	M GR CH4 W/ ARS ML, WD	CH4		71.8												
4C	14	SO GR & T CHOA	CHOA	11	68.0	54.3	95.7	98	UU	0	340		117	35	82	0.500	ORG = 7.1%
NS	15	NS	NS		--												
5A	16	M GR CHOA W/ WD, CC	CHOA		84.1												
5B	17	M GR CHOA W/ WD, CC	CHOA		111.0								132	32	100		
5C	18	M GR & DGR CHOA	CHOA		151.9												ORG = 21.5%
5D	19	M GR & DGR CHOA	CHOA	8	114.3	41.3	88.4	100	UC	--	559	1119	137	37	100	0.625	ORG = 14.3%
6A	20	SO GR CHOA	CHOA		91.7												
6B	21	SO GR CHOA	CHOA		90.2												
6C	22	SO GR CHOA	CHOA		75.3												
NS	23	NS	NS		--												
7A	24	SO GR CH2 W/ ARS & LNS ML	CH2		43.9												
7B	25	SO GR CH3 W/ ARS & LNS ML	CH3	3	53.2	68.8	105	98	UU	0	334		58	22	36	0.375	
7C	26	SO GR CH3 W/ ARS & LNS ML, SIF	CH3		59.8												
7D	27	SO GR CH3 W/ ARS & LNS ML, SIF	CH3		63.3												
8A	28	SO GR CL6 W/ CC	CL6		35.4												
8B	29	ST GR & BR CH3 W/ ARS ML, CC, SL	CH3		30.9												
8C	30	M GR & BR CH3 W/ ARS ML, SL	CH3	2	34.9	82.8	112	90	UC	--	620	1240	79	26	53	0.500	
NS	31	NS	NS		--												
9A	32	ST GR & BR CH3 W/ ARS ML, CC, SL	CH3		32.1												
9B	33	ST GR & BR CH3 W/ ARS ML, CC, SL	CH3		33.3												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Current Date: 12/31/2020

[illegible]

Checked by: RR

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-06

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
1A	0	ST GR & BR CH2 W/ CC, RT	CH2		31.3												
1B	1	M T & GR CH3 W/ ARS ML, O RT	CH3		35.5								66	27	39		ORG = 5.4%
1C	2	ST GR & BR CH2 W/ CC, RT	CH2		33.1												
NS	3	NS	NS		--												
2A	4	ST GR & BR CH2 W/ CC	CH2		31.2												
2B	5	SO GR & BR CH2 W/ CC, WD	CH2	6	30.5	89.8	117	93	UC	--	424	848	50	20	30	0.500	
NS	6	NS	NS		--												
3A	8	SO GR & T CL4	CL4		32.3												
3B	9	SO GR & T CH3 W/ ARS ML, SL	CH3		36.3												
3C	10	SO GR CH4 W/ ARS ML, SL	CH4	4	48.0	73.0	108	98	UU	0	387		97	33	64	0.625	
NS	11	NS	NS		--												
4A	12	SO GR CH4 W/ ARS ML, WD, RT, SL	CH4		81.8												
4B	13	SO GR CH4 W/ ARS ML, WD, RT, SL	CH4		78.8												
4C	14	VSO DGR CH0A	CH0A	8	83.0	47.5	92.4	100	UC	--	245	490	132	32	100	0.150	ORG = 9.2%
NS	15	NS	NS		--												
5A	16	SO GR CH4 W/ ARS ML, O, RT	CH4		54.7												
5B	17	SO GR CH4 W/ ARS ML, O, RT	CH4		55.2								72	21	51		
5C	18	SO GR CH4 W/ ARS ML, O, RT	CH4		52.8												
NS	19	NS	NS		--												
6A	20	SO GR CH4 W/ ARS ML, RT	CH4		66.3												
6B	21	SO GR CH4 W/ ARS ML, RT	CH4	5	71.0	57.8	98.9	100	UU	0	439		98	27	71	0.150	
6C	22	SO GR CH4 W/ ARS ML, RT	CH4		67.4								94	21	73		
6D	23	M GR CH4 W/ ARS ML, RT	CH4		64.6												
7A	24	SO GR CH4 W/ ARS ML, SIF	CH4		76.8												
7B	25	SO GR CH4 W/ ARS ML, SIF	CH4		75.7												
7C	26	SO LGR CL6	CL6	5	25.2	97.1	122	93	UC	--	484	968	41	17	24	0.625	
7D	27	ST LGR CL6 W/ SIF	CL6		25.6												
8A	28	ST GR & T CH3 W/ ARS ML, CC, SL	CH3		23.0												
8B	29	ST GR & T CH3 W/ ARS ML, CC, SL	CH3		23.9								63	20	43		
NS	30	NS	NS		--												
9A	32	ST GR & T CH3 W/ ARS ML, SL CC	CH3		40.4												
9B	33	ST GR & T CH3 W/ ARS ML, SL CC	CH3		40.2												
9C	34	ST T & LGR CH4 W/ ARS ML, SL, CC	CH3	11	27.4	95.6	122	96	UU	0	1648		66	25	41	1.000	
NS	35	NS	NS		--												
10A	36	SO GR & T CL4	CL6		32.3												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Boring: SB-06

Current Date: 12/31/2020

[illegible]

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-07

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
1A	0	ST BR & GR CH4 W/ ARS ML, RT	CH4		41.6								84	36	48		
NS	1	NS	NS		--												
PB-1A	2	ST BR & GR CH3 W/ ARS ML, CC	CH3		44.3												
2A	4	SO GR & T CL4 W/ RT	CL4		34.9												
2B	5	SO GR CL4 W/ O	CL4	14	32.6	88.6	118	98	UU	0	346		37	20	17	0.150	ORG = 3.4%
2C	6	SO GR CL6 W/ ARS SP	CL4		34.1												
NS	7	NS	NS		--												
3A	8	SO GR CH4 W/ ARS ML, CC, RT	CH4		51.3												
3B	9	SO GR CH4 W/ ARS ML, RT	CH4	8	58.2	65.3	103	99	UU	0	264		101	31	70	0.500	ORG% = 6.70%
3C	10	SO GR CH4 W/ ARS ML	CH4	2	43.9	76.2	110	97	UC	--	486	972	82	23	59	0.625	
NS	11	NS	NS		--												
4A	12	SO GR CHOB	CHOB		157.1												
4B	13	SO GR CHOB	CHOB		140.3												
4C	14	SO GR CHOA	CHOA		137.7								150	52	98		ORG% = 17.72%
4D	15	SO GR CHOB	CHOB		130.1												
5A	16	SO GR & BR CHOC	CHOC		161.6												
5B	17	M DGR CHOB	CHOB	4	117.4	39.5	85.9	98	UU	0	614		180	63	117	0.375	ORG% = 20.83%
PB-5B	18	VSO GR & T CH3 W/ ARS ML, RT	CH3		87.5												
6A	20	SO BR CH3 W/ ARS SP	CH3		59.3												
6B	21	SO GR CL4 W/ WD	CL4	7	32.7	89.5	119	100	UC	--	479	959	28	17	11	0.450	
6C	22	SO GR CH3 W/ ARS & LNS SP	CH3		42.1												
NS	23	NS	NS		--												
7A	24	SO GR CH3 W/ ARS ML, SIF	CH3		60.6												
7B	25	SO GR CL6 W/ SIF	CL6	15	34.4	87.4	117	100	OB	0	272					0.150	
7C	26	SO GR CL6 W/ SIF	CL6	14	35.7	85.9	117	100	UU	0	340		41	18	23	0.150	
7D	27	SO GR CH3 W/ ARS ML, O	CH3		47.2												
8A	28	SO GR CH3 W/ ARS ML	CH3		34.8												
8B	29	ST GR & T CH3 W/ ARS ML, RT	CH3		29.3												
8C1	30	ST LGR & T CH3 W/ ARS ML	CH3	13	24.7	102	127	100	UC	--	1283	2566	56	20	36	0.750	
8C2	30.3	ST LGR & T CH3 W/ ARS ML	CH3	15	23.9	101	125	95	OB	0	1263		56	20	36	0.775	
NS	31	NS	NS		--												
9A	32	ST GR & T CH3 W/ ARS ML, CC, SL	CH3		33.5												
9B	33	ST GR & T CH3 W/ ARS ML, CC, SL	CH3		41.6												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-07

[illegible]

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-08

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
1A	0	VST GR & T CH4 W/ ARS ML, CC, SL, WD	CH4		46.6								98	30	68		ORG% = 6.67%
NS	1	NS	NS		--												
PB-1B	2	ST GR & T CH3 W/ ARS ML, CC, SL	CH3		43.4												
2A	4	ST GR & T CH3 W/ ARS ML, RT, SL	CH3		47.7												
2B	5	M GR & T CH3 W/ ARS ML, RT, SL	CH3	4	28.8	90.9	117	90	UC	--	840	1679	61	19	42	0.750	ORG% = 3.95%
PB-2B	6	SO GR & T CL4 W/ CC	CL4		32.5												
3A	8	M GR & T CH4 W/ ARS ML, CC, SL	CH4		47.9												
3B	9	M GR CH4 W/ ARS ML, SL	CH4		52.3												
3C	10	M GR & BR CH0A	CHOA	9	72.5	54.9	94.7	94	UU	0	573		144	45	99	0.750	CONS ORG% = 10.12%
3D	11	M GR & BR CHOA	CHOA		97.2												
4A	12	M DGR CHOA W/ WD	CHOA		102.5												
4B	13	M DGR CHOA W/ WD	CHOA		118.8												ORG% = 17.4%
4C	14	SO GR CH4 W/ ARS ML, SL	CH4	4	58.2	65.0	103	98	UC	--	278	558	82	19	63	0.500	
4D	15	M GR CH3 W/ ARS SM, O	CH3		42.9												
5A	16	M GR CH3 W/ ARS ML, WD	CH3		50.4												
5B	17	M GR CH3 W/ ARS ML, WD	CH3		46.3								61	18	43		
5C	18	M GR CH3 W/ ARS ML, WD	CH3		39.3												
NS	19	NS	NS		--												
6A	20	SO GR CL6 W/ ARS SP	CL6		41.2												
6B	21	SO GR CL6 W/ ARS SP	CL6	15	39.9	81.0	113	100	UU	0	413		42	19	23	0.150	
6C	22	SO GR CL6 W/ ARS SP	CL6		34.3												
6D	23	SO GR CL6 W/ ARS SP	CL6		38.9												
7A	24	SO GR CH3 W/ ARS SP, SIF	CL6		49.0												
7B	25	SO GR & T CL6 W/ CC	CL6	9	26.5	97.6	124	98	OB	0	407	814	48	16	32	0.750	
7C	26	ST LGR & T CH2 W/ ARS ML	CH2	11	23.2	101	125	93	UC	--	1185	2370	57	20	37	0.875	
7D	27	ST GNG & T CH3 W/ ARS & LNS ML, CC, SL	CH3		28.8												
8A	28	ST GNG & T CH3 W/ ARS & LNS ML, SIF, SL	CH3		25.7												
8B	29	ST GNG & T CH3 W/ ARS & LNS ML, SIF, SL	CH3		26.7												
8C	30	VST LTG & T CH3 W/ ARS ML, CC, SL	CH3	15	25.1	100	125	98	UU	0	2133		62	19	43	1.000	
8D	31	ST GNG & T CH3 W/ ARS & LNS ML, SIF, SL	CH3		24.8												
9A	32	ST GR & T CL6 W/ CC	CL6		33.2												
9B	33	ST GR & T CL6 W/ CC	CL6		33.0												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Boring: SB-08

Current Date: 12/31/2020

[illegible]

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

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EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-09

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
1A	0	ST BR CH4 W/ RT	CH4		35.2												
1B	1	ST BR CH4 W/ RT	CH4		35.2								91	21	70		ORG% = 5.88%
1C	2	ST BR CH4 W/ RT	CH4		33.9												
NS	3	NS	NS		--												
2A	4	M GR & T CH4 W/ ARS & LNS ML CC	CH4		39.5												
2B	5	SO GR & T CH4 W/ ARS & LNS ML, CC	CH4	14	52.7	69.1	105	98	UU	0	311		98	30	68	0.625	ORG% = 2.12%
NS	6	NS	NS		--												
3A	8	M GR & BR CH4 W/ ARS & LNS ML, CC	CH4		29.1												
3B	9	M GR & BR CH4 W/ ARS & LNS ML, CC	CH4		28.7								77	25	52		
NS	10	NS	NS		--												
4A	12	SO GR CHOA	CHOA		95.4												
4B	13	SO GR CHOA	CHOA	10	91.7	47.1	90.3	96	UU	0	387		130	32	98	0.375	ORG% = 12.01%
4C	14	SO GR CH3 W/ ARS ML, O, SL	CH3		63.0												
4D	15	SO GR CH3 W/ ARS ML, O, SL	CH3		67.4												
5A	16	M GR CH3 W/ ARS ML	CH3		38.0												
5B	17	SO GR CH3 W/ ARS ML	CH3	13	37.5	81.1	112	93	UU	0	468		64	23	41	0.150	
5C	18	M GR CH3 W/ ARS ML	CH3		38.4								61	21	40		-#200 = 88.3% ORG% = 3.31%
5D	19	M GR CH3 W/ ARS ML	CH3		42.3												
6A	20	M GR CH2 W/ CC, ARS ML	CH2		40.3												
6B	21	SO GR CL4	CL4	7	32.6	86.4	115	92	UC	--	446	893	41	17	24	0.500	
6C	22	SO GR CL4 W/ CC	CL4		31.5												
NS	23	NS	NS		--												
7A	24	ST GR CH3 W/ ARS ML, SIF	CH3		43.0												
7B	25	SO GR CH3 W/ ARS ML, SIF	CH3	4	52.7	68.0	104	96	UU	0	462		67	16	51	0.500	PD
7C	26	SO GR CH2 W/ ARS & LNS ML	CH2	11	50.8	71.3	108	100	OB	0	374	747	54	22	32	0.200	PD
NS	27	NS	NS		--												
8A	28	ST GR CH2 W/ ARS & LNS ML, RT	CH2		28.1												
8B	29	ST LGR CH2 W/ ARS & LNS ML, RT	CH2	15	25.9	96.6	122	94	UC	--	1127	2253	52	19	33	0.750	PD
8C	30	ST GR CH2 W/ ARS & LNS ML, RT	CH2		27.9												
NS	31	NS	NS		--												
9A	32	ST GR CL4 W/ CC	CL4		20.9												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-09

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
9B	33	ST GR CL4 W/ CC	CL4		20.2												
9C	34	ST GR & T CL4 W/ CC	CL4	15	24.1	100	125	96	UU	0	1570		41	17	24	0.875	
9D	35	ST GR CL4 W/ CC	CL4		24.2												
10A	36	ST GR & T CL4 W/ CC	CL4		30.0												
10B	37	ST GR & T CL4 W/ CC	CL4		29.3												
10C	38	ST GR CL4 W/ CC	CL4	12	26.0	97.5	123	96	UC	--	1111	2221	40	18	22	0.875	
10D	39	M GR & T CL6 W/ CC	CL6		31.5												
11A	40	M GR & T CL6 W/ CC	CL6		36.6												
11B	41	M GR & T CL6 W/ CC	CL6		36.0												
11C	42	M GR & T CL6 W/ CC	CL6		31.7												
NS	43	NS	NS		--												
12A	44	T ML	ML		26.7												
12B	45	T ML	ML		25.8												
PB-12B	46	T ML	ML		28.3												-#200 = 80.2%
PB-13	48.5	T ML	ML		28.8												
PB-14	50	T ML	ML		27.4												
PB-15	53.5	T ML	ML		29.7												
PB-16	56	T ML	ML		33.1												-#200 = 74.3%
PB-17	58.5	T ML	ML		26.5												
PB-18	61	M GR CL6 W/ SIF	CL6		36.9												
19A	62.5	ST GR CL6 W/ SIF	CL6		28.8												
19B	63.5	ST GR CL6 W/ SIF	CL6	4	29.7	92.1	119	96	UC	--	1097	2193	43	16	27	0.500	
19C	64.5	ST GR CL6 W/ SIF	CL6		29.1												
NS	65.5	NS	NS		--												
20A	66	ST GR & T CL6	CL6		32.4												
20B	67	ST GR CL6	CL6	7	33.0	89.4	119	100	UU	0	1037		48	18	30	0.500	
20C	68	ST GR CL6	CL6		31.5												
20D	69	ST GR CL6	CL6		31.2												
21A	70	ST GR & T CH2 W/ ARS & LNS ML	CH2		32.8												
21B	71	ST GR CH2 W/ ARS & LNS ML	CH2	8	32.5	88.8	118	97	UC	--	1178	2357	50	15	35	0.500	
21C	72	ST GR & T CH2 W/ ARS & LNS ML	CH2		31.8												
NS	73	NS	NS		--												
22A	74	ST GR CH4 W/ ARS ML, SIF	CH4		44.4												
22B	75	ST GR CH4 W/ ARS ML, SIF	CH4		42.9												
22C	76	M GR CH4 W/ ARS ML, SIF	CH4	5	45.3	74.2	108	96	UU	0	521		91	18	73	0.625	

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-09

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
22D	77	ST GR CH4 W/ ARS ML, SIF	CH4		44.2												
23A	78	ST GR CH4 W/ SIF	CH4		42.9												
23B	79	ST GR CH4 W/ SIF	CH4		43.2												
23C	80	ST GR CH4 W/ ARS ML	CH4	3	41.8	79.4	113	100	UC	--	1633	3266	75	19	56	0.625	
23D	81	ST GR CH4 W/ SIF	CH4		44.0												
24A	82	ST GR CH4 W/ ARS ML, WD, SIF	CH4		49.3												
24B	83	ST GR CH4 W/ ARS ML, WD, SIF	CH4		50.6												
24C	84	ST GR CH4 W/ ARS ML, SIF	CH4	3	44.0	77.2	111	100	UU	0	1370		74	20	54	0.625	
24D	85	ST GR CH4 W/ ARS ML, WD, SIF	CH4		51.6												
25A	86	ST GR CH4 W/ ARS ML, WD, SIF	CH4		48.1												
25B	87	ST GR CH4 W/ ARS ML, WD, SIF	CH4		47.7												
25C	88	ST GR CH4 W/ ARS ML, WD, SIF	CH4		47.1												
25D	89	ST GR CH4 W/ ARS ML, WD, SIF, SL	CH4		49.1												
26A	90	ST GR CH3 W/ ARS & LNS ML	CH3		50.3												
26B	91	ST GR CH3 W/ ARS & LNS ML	CH3	2	44.3	76.9	111	100	UC	--	1631	3263	69	17	52	0.500	
26C	92	ST GR CH3 W/ ARS & LNS ML	CH3		50.2												
NS	93	NS	NS		--												
27A	94	ST GR CH4 W/ ARS & LNS ML	CH4		44.6												
27B	95	ST GR CH3 W/ ARS & LNS ML, O	CH3	4	38.1	81.9	113	96	UU	0	1082		63	18	45	0.500	
27C	96	GR ML W/ SIF, WD, ARS CH	ML		28.6												
27D	97	GR ML W/ SIF, WD, ARS CH	ML		27.4												-#200 = 52.3%
28A	98	M GR CL6 W/ SIF, WD	CL6		28.7												
28B	99	M GR & T CL6 W/ SIF, WD	CL6	9	28.7	92.5	119	94	UC	--	653	1306	45	17	28	0.625	
28C	100	M GR CL6 W/ SIF, WD	CL6		29.9												
NS	101	NS	NS		--												
29A	102	SO GR CL4 W/ SIF, ARS SP	CL4		29.3												
30A	103	ST GR CL4 W/ ARS SP	CL4		20.2												
PB-31	104	VST GR CL4 W/ ARS SP	CL4		21.3								28	16	12		-#200 = 68.2%
PB-32	106.5	GR SM W/ O, WD	SM		27.5												
PB-33	109	GR SM	SM		22.8												
PB-34	111.5	GR SP	SP		27.1												
PB-35	114	GR SP	SP		28.3												
PB-36	116.5	GR SP	SP		27.0												
PB-37	119	GR SP W/ ARS CH	SP		27.4												
PB-38	121.5	GR SP W/ ARS CH	SP		29.7												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-09

[illegible]

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN
EUSTIS ENGINEERING L.L.C.

Checked by: RR
File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-11

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
1A	0	SO GR & T CH4 W/ ARS ML, RT, SL	CH4		64.5												
1B	1	SO GR & T CH4 W/ ARS ML, O	CH4	6	54.0	67.0	103	96	UC	--	488	976	92	26	66	0.500	ORG% = 6.07%
PB-2	2	M GR CH4 W/ ARS ML	CH4		61.3												
3A	4	SO GR CH4 W/ ARS ML	CH4		54.0												
3B	5	SO GR & T CH4 W/ ARS ML, WD	CH4	15	55.3	67.6	105	100	UU	0	352		77	30	47	0.500	CONS -#200 = 97.3%
3C	6	SO GR CH4 W/ ARS ML, SL	CH4		54.8												
3D	7	SO GR CH4 W/ ARS ML, SL	CH4		55.0												
4A	8	SO GR CH4 W/ ARS ML, RT, WD	CH4		85.3												
NS	9	NS	NS		--												
PB-5	10	VSO GR CHOA W/ WD, RT	CHOA		126.0								127	32	95		ORG% = 15.68%
6A	12	VSO GR CHOC	CHOC		191.8												
6B	13	VSO DGR CHOC	CHOC	13	172.3	29.5	80.2	99	UU	0	99		203	41	162	0.120	ORG% = 16.59%
6C	14	VSO BR PT	PT		253.4												
NS	15	NS	NS		--												
PB-7	16	VSO GR CHOA	CHOA		106.8												ORG% = 9.63%
8A	20	ST GNG CH2 W/ ARS ML, RT	CH2		30.8												
8B	21	M GNG CH2 W/ ARS ML, RT	CH2	15	27.3	94.4	120	94	UC	--	554	1108	53	20	33	0.700	ORG% = 3.13% -#200 = 99.4%
8C	22	ST GNG CH2 W/ ARS ML, RT	CH2		25.8												
NS	23	NS	NS		--												
9A	24	VST GR & T CH3 W/ ARS ML, RT, CC, SL	CH3		20.8												
9B	25	VST T & G CH3 W/ ARS ML, CC	CH3	14	21.6	106	129	97	UU	0	2351		65	15	50	1.250	
NS	26	NS	NS		--												
10A	28	SO T & GR CH3 W/ ARS ML, RT, O	CH3		35.6												
10B	29	M GR & T CL6 W/ RT	CL6		31.5												
10C	30	M GR & T CL6	CL6	10	30.0	91.7	119	96	UC	--	788	1576	49	24	25	0.500	
10D	31	M GR & T CL6	CL6		31.6												
11A	32	M GR & T CL6	CL6		31.3												
11B	33	M GR & T CL6	CL6		31.9												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-11

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
11C	34	M GR & T CL6 W/ CC	CL6	8	39.1	81.0	113	98	UU	0	587		43	20	23	0.500	
11D	35	ST BR & GR CH2 W/ ARS & LNS ML	CH2		36.7												
12A	36	BR ML W/ ARS SP, O	ML		21.5												
12B	37	VST BR & GR CL6	CL6		30.3												
PB-13	38	T ML	ML		30.6												#200 = 75.2%
PB-14	41	T ML	ML		26.6												
PB-15	43.5	BR ML W/ ARS SP	ML		28.1												
PB-16	46	ST BR CL4 W/ ARS SP	CL4		35.1												
PB-17	48.5	BR ML	ML		27.6												SV
PB-18	51	BR ML	ML		26.3												
PB-19	53.5	ST GR CH3 W/ ARS SM	CH3		50.9												
20A	55	ST T & GR CH3 W/ ARS ML, SL	CH3		33.6												
20B	56	ST T & GR CH3 W/ SL, ARS ML	CH3	2	37.2	80.1	110	90	UC	--	968	1936	70	28	42	0.750	
20C	57	ST T & GR CH3 W/ ARS ML, SL	CH3		33.4												
NS	58	NS	NS		--												
21A	59	ST GR & T CH4 W/ ARS ML, CC, SL	CH4		45.4												
21B	60	ST GR & T CH4 W/ ARS ML, CC, SL	CH4		28.3												
21C	61	ST LGR & T CH4 W/ CONC, SL	CH4	15	35.4	82.9	112	92	UU	0	1061		74	18	56	0.750	
NS	62	NS	NS		--												
22A	63	VST T & GR CH4 W/ ARS & LNS ML, SIF, CC	CH4		30.1												
22B	64	VST T & GR CH4 W/ ARS & LNS ML, SIF, CC	CH4		37.3												
22C	65	ST BR & LGR CH4 W/ SIF, SL	CH4	4	36.1	83.3	113	95	UC	--	1482	2964	77	30	47	1.000	
NS	66	NS	NS		--												
23A	67	VST T & GR CH4 W/ ARS ML, O, SIF	CH4		36.4												
23B	68	VST T & GR CH4 W/ ARS ML, O, SIF	CH4		38.9												
23C	69	VST T & GR CH4 W/ ARS ML, O, SIF	CH4		39.2												
NS	70	NS	NS		--												
24A	71	VST GNG & T CH4 W/ ARS ML, CC, SL	CH4		31.2												
24B	72	ST LGR & T CH4 W/ CONC, SL	CH4	11	40.6	78.1	110	94	UU	0	1252		101	26	75	1.125	
24C	73	VST GNG & T CH4 W/ ARS ML, CC, SL	CH4		30.0												
24D	74	VST GNG & T CH4 W/ ARS ML, CC, SL	CH4		41.5												
25A	75	VST GR CH4 W/ ARS ML, CC, SL	CH4		41.2												
25B	76	ST LGR CH4 W/ SL	CH4	1	39.6	77.6	108	91	UC	--	1179	2359	93	28	65	1.000	
25C	77	VST BR & GR CH3 W/ ARS & LNS ML, CC, SL	CH3		28.6												
NS	78	NS	NS		--												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-11

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
26A	79	ST BR & GR CH2 W/ ARS & LNS ML, SL	CH2		36.3												
26B	80	ST BR & GR CH2 W/ ARS & LNS ML, SL	CH2	9	30.5	89.7	117	93	UU	0	1516		52	22	30	0.875	
PB-27	81	BR & GR SM	SM		22.7												
PB-28	83.5	BR & GR CL6 W/ ARS SP	CL6		35.4												SV
PB-29	86	GR & BR SM	SM		28.5												
PB-30	88.5	ST GR CH3 W/ ARS SM	CH3		39.4												
31A	90	BR & GR SM	SM		26.9												
31B	91	SO GR CH3 W/ ARS SM, O	CH3		46.7												-#200 = 40.8%
NS	92	NS	NS		--												
32A	94	ST GR CH4 W/ ARS ML, SIF, SL	CH4		46.0												
32B	95	ST GR CH4 W/ ARS ML, SIF, SL	CH4		45.4												
32C	96	ST GR CH4 W/ SL	CH4	2	41.3	76.5	108	92	UC	--	1597	3194	93	26	67	1.250	
NS	97	NS	NS		--												
33A	98	VST GNG CH4 W/ ARS SM, SL, WD	CH4		39.7												
33B	99	VST GNG CH4 W/ ARS SM, SL, WD	CH4		39.6												
33C	100	VST GNG CH4 W/ ARS SM, SL, WD	CH4		40.0												
NS	101	NS	NS		--												
34A	102	VST GNG CH4 W/ ARS ML, SL	CH4		34.3												
34B	103	VST GNG CH4 W/ SL	CH4	2	32.3	88.4	117	95	UU	0	2857		78	23	55	1.375	
34C	104	VST GNG CH4 W/ ARS ML, SL	CH4		43.5												
NS	105	NS	NS		--												
35A	106	VST GR CH2 W/ ARS ML, SL	CH2		45.2												
35B	107	VST GR CH2 W/ ARS ML, SL	CH2		44.6												
35C	108	ST GNG CH2 W/ ARS ML, SL	CH2	3	33.0	85.9	114	93	UC	--	1083	2167	55	18	37	0.750	
NS	109	NS	NS		--												
36A	110	VST GNG CH3 W/ ARS ML, CC, SL	CH3		35.7												
36B	111	VST GNG CH3 W/ ARS ML, CC, SL	CH3		39.0												
NS	112	NS	NS		--												
PB-37	114	VST GR CL4	CL4		29.5								32	21	11		-#200 = 98.9%
PB-38	117.5	VST GR CL4	CL4		29.5												
PB-39	120	VST GR CH2	CH2		31.5												
PB-40	123.5	ST GR CL6	CL6		33.1								48	15	33		-#200 = 99.4%

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-12

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
1A	0	SO GR & T CH4 W/ ARS ML, RT	CH4		57.3												
1B	1	SO GR & T CH4 W/ ARS ML, RT	CH4	12	56.5	65.9	103	98	UU	0	416		100	27	73	0.375	ORG% = 7.06%
PB-2	2	SO GR & T CH3 W/ ARS ML	CH4		54.3												
3A	4	SO GR & T CH3 W/ ASR ML, WD, RT	CH4		57.8												
3B	5	SO GR & T CH4 W/ ARS ML, RT	CH4	8	60.5	64.2	103	100	UC	--	464	929	97	26	71	0.375	
NS	6	NS	NS		--												
PB-4	8	SO GR & DGR CHOA W/ WD	CHOA		146.5								118	31	87		ORG% = 8.75%
5A	12	SO DGR CHOC	CHOC		142.5								268	44	224		ORG% = 27.08%
5B	13	SO DGR & BR CHOB	CHOB	4	156.6	31.7	81.3	98	UC	--	415	831				0.375	PD
5C	14	M GR & DGR CL6 W/ O	CL6	10	26.0	98.6	124	98	UU		739		42	16	26	0.350	ORG% = 2.67%
NS	15	NS	NS		--												
6A	16	ST GNG CL6 W/ WD	CL6		25.1												
6B	17	ST GNG & T CL6 W/ WD	CL6	14	24.3	98.6	123	92	UU	0	1082		43	19	24	0.625	
6C	18	ST GNG CL6 W/ WD	CL6		25.2												
6D	19	ST GNG CL6 W/ WD	CL6		25.0												
7A	20	VST GR & T CH2 W/ ARS & LNS ML, CC	CH2		22.0												
7B	21	VST GR & T CH2 W/ ARS & LNS ML, CC	CH2		22.0												
7C	22	VST GR & T CH2 W/ ARS & LNS ML	CH2	8	21.9	102	125	90	UC	--	2207	4413	55	21	34	0.750	
NS	23	NS	NS		--												
8A	24	ST T & GR CL6 W/ CC	CL6		35.0												
8B	25	ST T & GR CL6 W/ CC	CL6		26.5												
8C	26	ST T & GR CL6 W/ CC	CL6	15	28.2	93.0	119	94	UU	0	1029		43	19	24	0.375	
8D	27	ST T & GR CL6 W/ CC	CL6		30.7												
9A	28	ST T & GR CL6	CL6		33.3												
9B	29	ST T & GR CL6	CL6		37.3												
9C	30	ST T & GR CL6	CL6	4	26.4	95.9	121	93	UC	--	1559	3117	40	19	21	0.500	
NS	31	NS	NS		--												
10A	32	M GR & T CL6 W/ CC	CL6		40.0												
10B	33	M GR & T CL6 W/ CC	CL6		34.0												
10C	34	M GR & T CL6 W/ CC	CL6	14	32.4	86.2	114	91	UU	0	706		48	18	30	0.375	
NS	35	NS	NS		--												
PB-11	36	T ML	ML		29.6												
PB-12	39.5	T ML	ML		29.1												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-12

[illegible]

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Current Date: 12/31/2020

Boring: SB-13

Sample Number	Depth	Visual Classification	USCS	E(f)	W%	Dry Dens (pcf)	Wet Dens (pcf)	Sat %	Shear Test Type	Angle	Cohesion (psf)	Unconf. Comp. Str.	LL	PL	PI	TORVANE (tsf)	Other Tests
1A	0	M GR CH4 W/ ARS ML, RT	CH4		55.6												
1B	1	M GR & T CH4 W/ ARS ML, CC, SL	CH4	6	47.0	72.7	107	96	UC	--	562	1124	101	31	70	0.375	
PB-2	2.5	M GR & T CH4 W/ ARS ML	CH4		50.5												ORG% = 6.58% -#200 = 96.4%
3A	4	M GR & T CH4 W/ ARS ML, WD, SL	CH4		62.2												
3B	5	M GR & T CH4 W/ ARS ML, WD, SL	CH4	5	62.5	59.7	97.0	92	UU	0	771		104	30	74		
3C	6	M GR & T CH4 W/ ARS ML, WD, SL	CH4		62.2												
NS	7	NS	NS		--												
4A	8	M DGR CH3 W/ WD, O	CH3		55.4												ORG% = 6.77% -#200 = 97.7%
4B	9	M DGR CH3 W/ WD, O	CH3	15	44.4	76.5	110	99	UC	--	511	1023	69	24	45	0.375	
4C	10	ST GR CL6 W/ O	CL6	15	25.5	97.6	122	94	UU	0	1094		40	20	20	0.375	
4D	11	ST GR CL6 W/ O	CL6		37.7												
5A	12	ST GR CL6 W/ RT	CL6		26.8												
5B	13	ST GR CL6 W/ RT	CL6		25.9												
5C	14	ST GR CL6 W/ RT	CL6	15	24.3	98.2	122	92	UU	0	1089		49	20	29	0.375	
5D	15	ST GR CL6 W/ RT	CL6		25.7												
6A	16	ST LGR & T CH3 W/ ARS ML	CH3		34.8												
6B	17	ST LGR & T CH3 W/ ARS ML	CH3		36.6												
6C	18	ST LGR & T CH3 W/ ARS ML	CH3		38.2												
NS	19	NS	NS		--												
7A	20	SO T & GR CL4	CL4		37.4												
7B	21	SO T & GR CL4	CL4		37.1												
7C	22	M T & GR CH4 W/ ARS ML, SL	CH4	2	41.3	76.6	108	92	UC	--	675	1350	79	26	53	0.375	
NS	23	NS	NS		--												
8A	24	SO GR & T CH3 W/ ARS ML	CH3		43.3												
8B	25	M T & GR CH3 W/ ARS ML	CH3		48.9												
8C	26	ST T & GR CH3 W/ ARS ML	CH3	15	34.9	85.9	116	97	UU	0	1248		60	23	37	0.500	
NS	27	NS	NS		--												
9A	28	ST T & GR CH3 W/ ARS & LNS ML, SL	CH3		42.1												
9B	29	ST T & GR CH3 W/ ARS & LNS ML, SL	CH3		42.2												
9C	30	ST T & GR CH3 W/ ARS & LNS ML, SL	CH3		43.5												
NS	31	NS	NS		--												

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

Checked by: RR

EUSTIS ENGINEERING L.L.C.

File Name: 24384

SUMMARY OF LABORATORY TEST RESULTS

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION

Assigned By: _____

Project Number: 24384

Boring: SB-13

Current Date: 12/31/2020

[illegible]

Remarks: MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN

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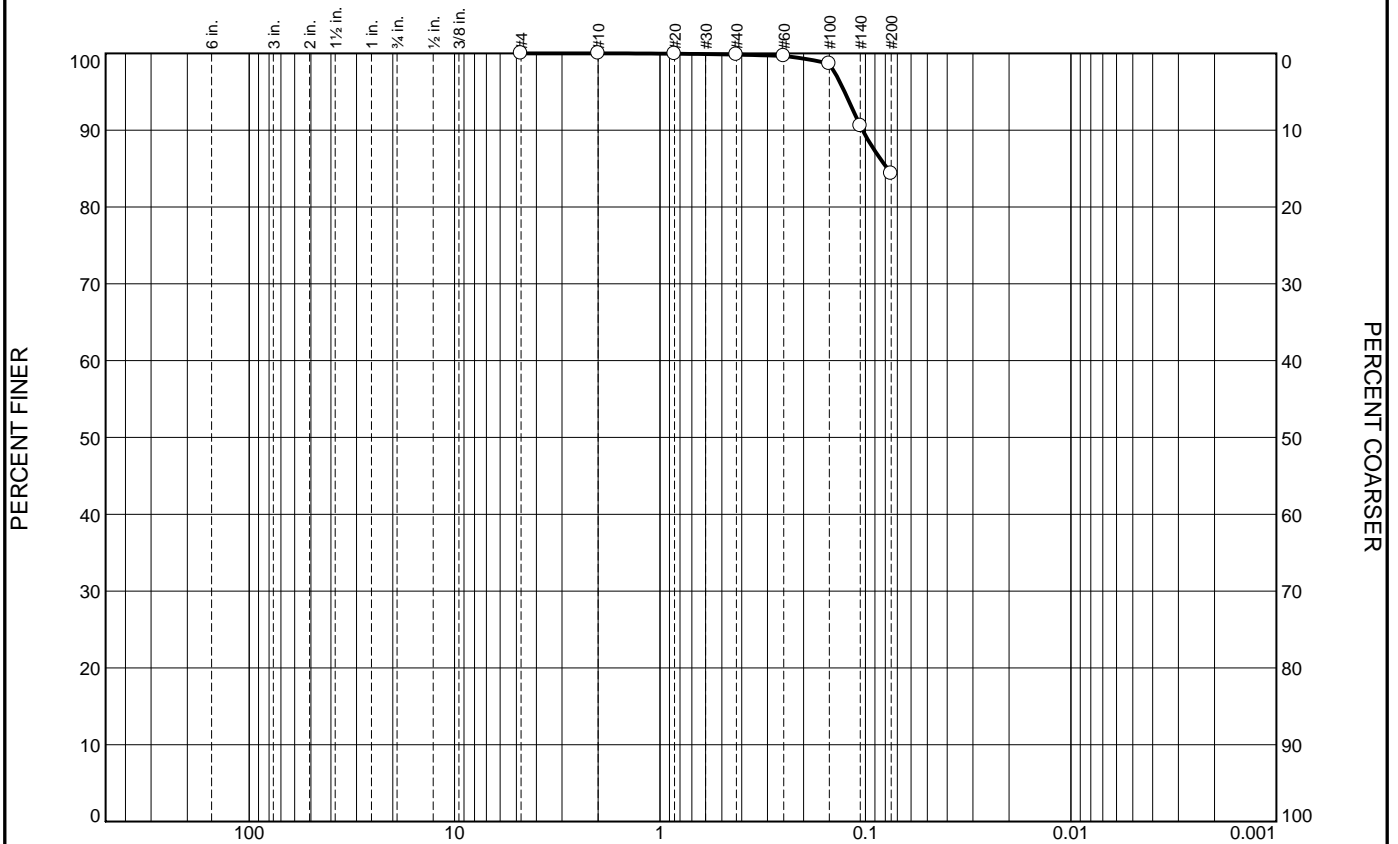
Checked by: RR

File Name: 24384

APPENDIX VI

SUMMARY OF GRAIN SIZE TEST DATA (SDR-A, SDR-B, SDR-C)


Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>	0.0		0.0	0.0	0.0	0.2	15.4	84.4		
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>			0.0782							

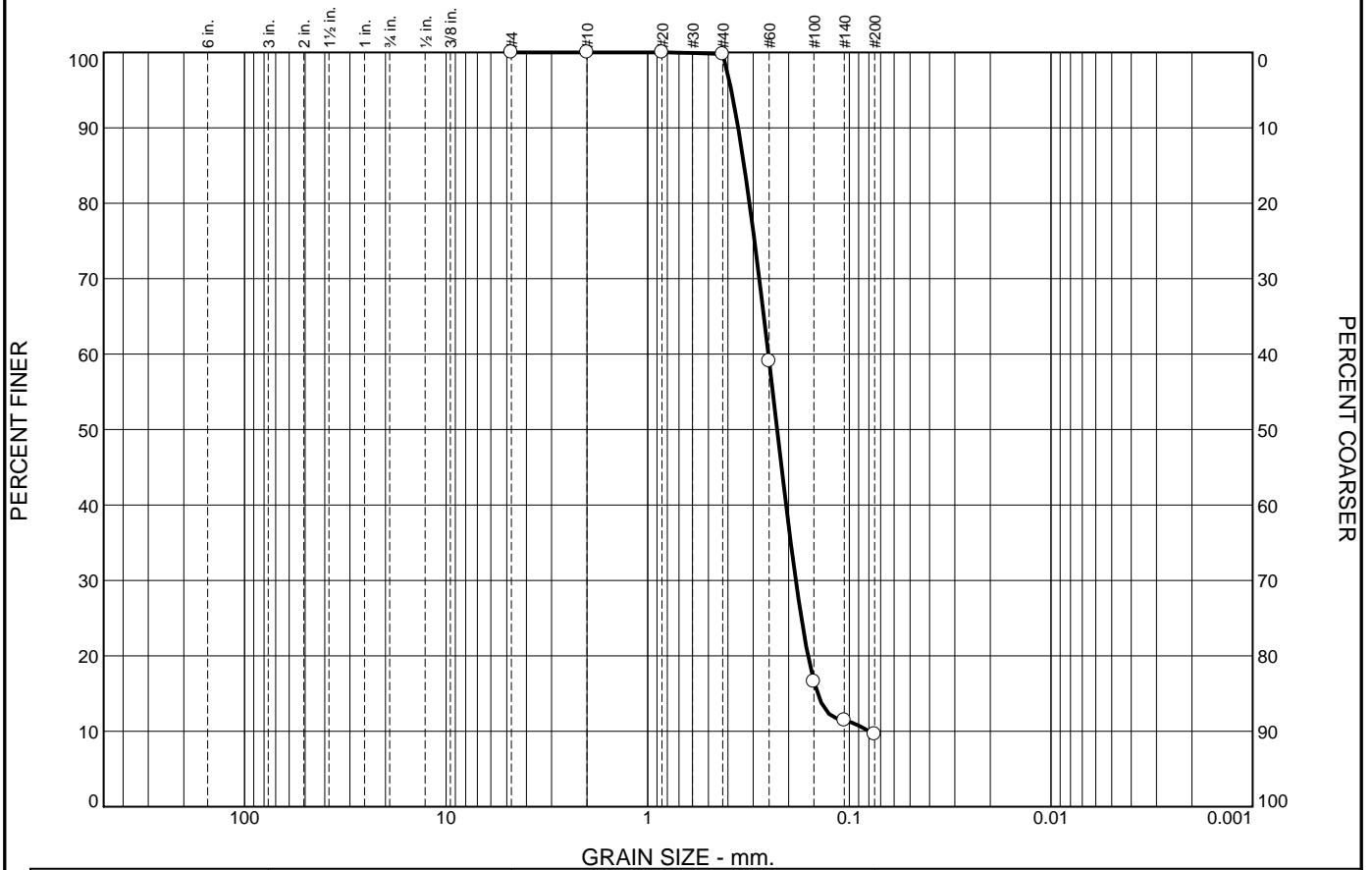
Material Description							USCS	AASHTO
<input type="radio"/> GR ML W/ SIF							ML	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-01 Depth: 28 Sample Number: 8A	Remarks:
	

Figure

Tested By: TC Checked By: RR


Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.2	90.2	9.6	

LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
		0.3327	0.2523	0.2283	0.1844	0.1438	0.0796	1.69	3.17

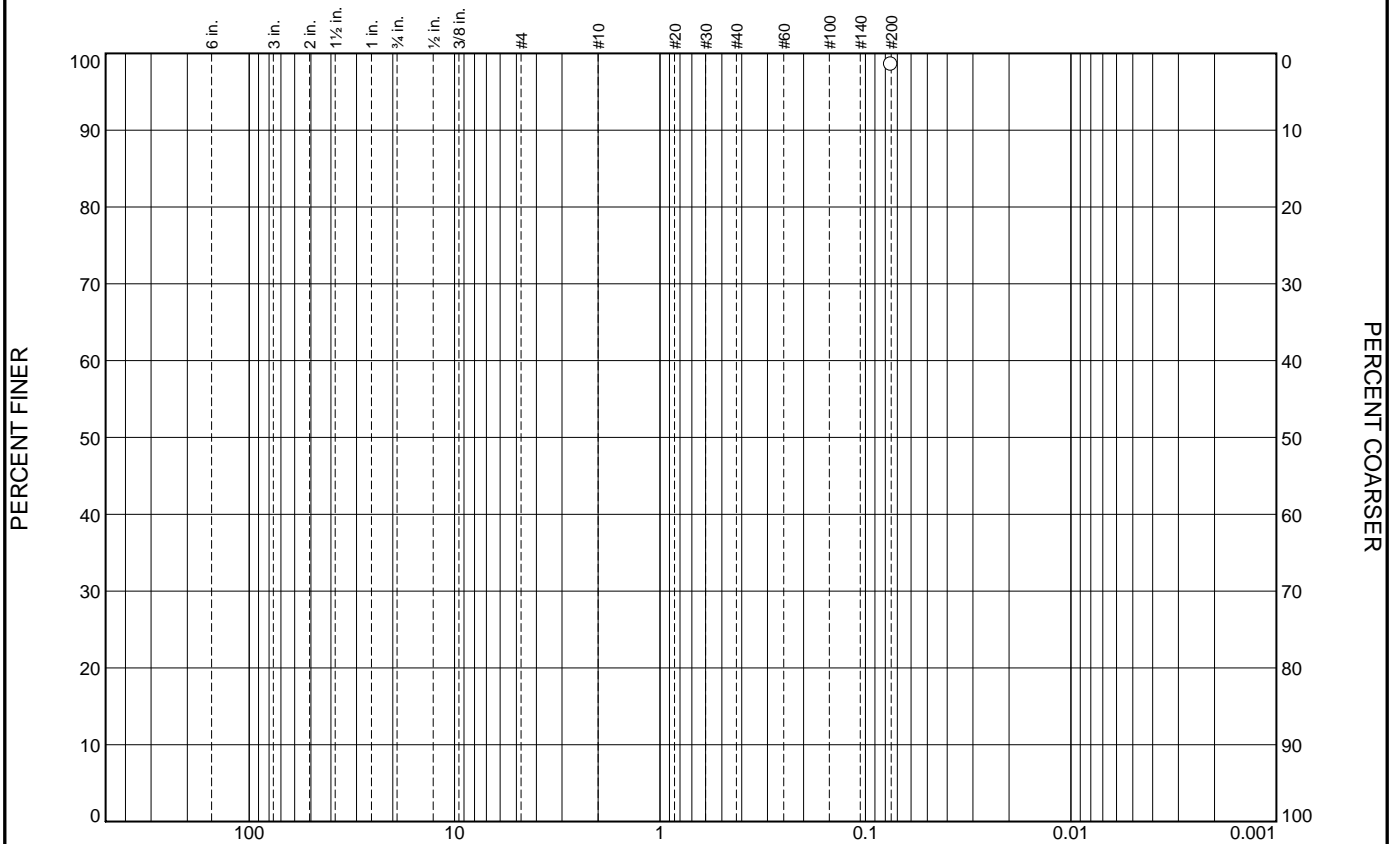
Material Description							USCS	AASHTO
GR SP							SP	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), Source of Sample: SB-01 Depth: 116 Sample Number: PB-30	Remarks:
	

Figure

Tested By: TC Checked By: RR


Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"	% Gravel		% Sand			% Fines		C _c	C _u
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>							98.5			
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀		
<input type="radio"/>	73	21								

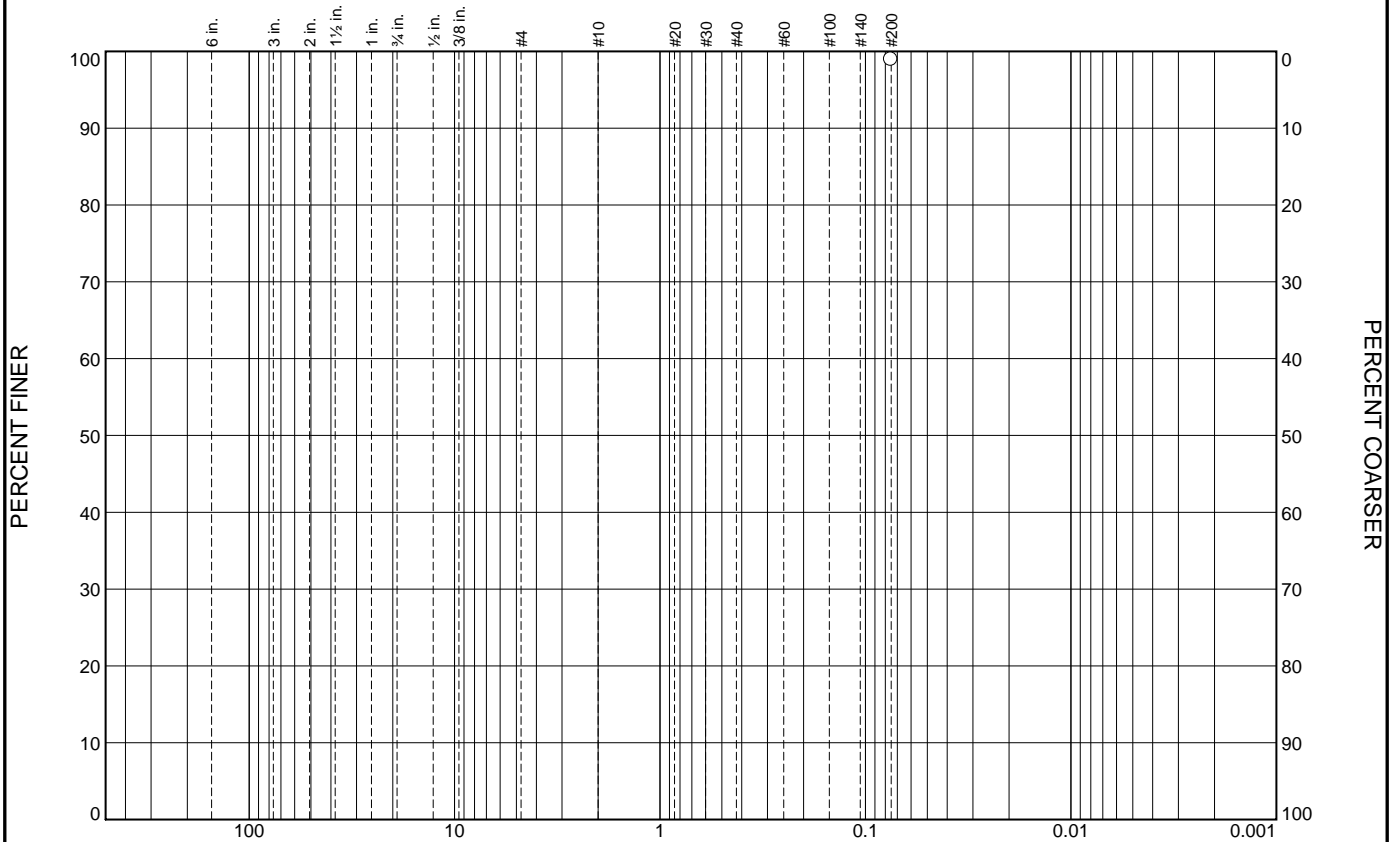
Material Description							USCS	AASHTO
○ M GR & T CH3 W/ ARS ML, CC							CH3	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), ○ Source of Sample: SB-02 Depth: 7 Sample Number: 3B	Remarks:
	

Figure

Tested By: MS Checked By: RR


Particle Size Distribution Report



GRAIN SIZE - mm.

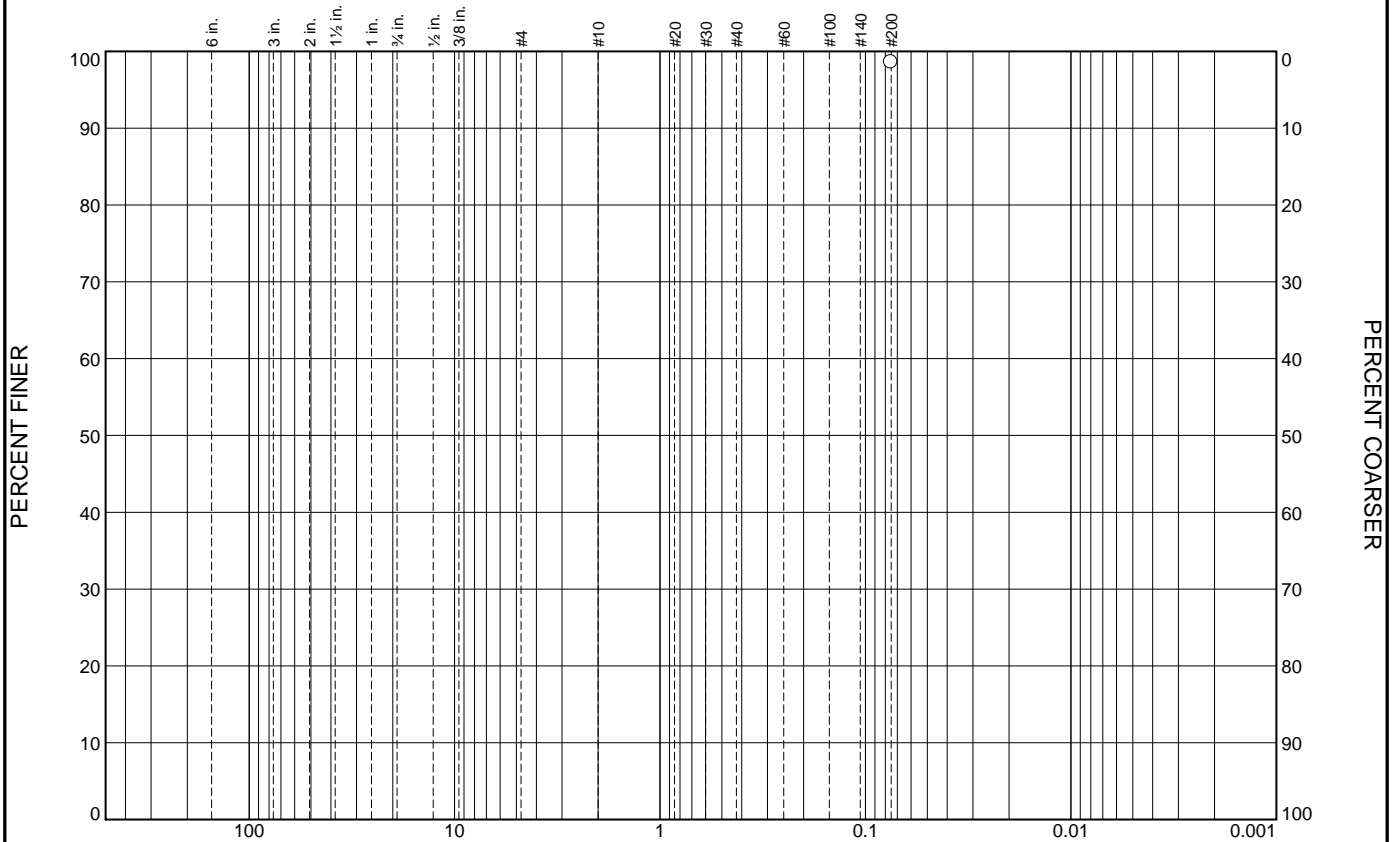
	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>								98.9		
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
<input type="radio"/>	104	30								


Material Description								USCS	AASHTO
<input type="radio"/> M GR CH4 W/ ARS ML, SL								CH4	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-02 Depth: 11 Sample Number: 4B	Remarks: <div>Figure</div>
	

Tested By: MS Checked By: RR

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>							98.6			
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
<input type="radio"/>	94	25								
Material Description								USCS	AASHTO	
○ M GR & T CH4 W/ ARS ML, SL, WD, RT								CH4		
Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), Source of Sample: SB-02 Depth: 15 Sample Number: 5B								Remarks:		
										
								Figure		

Tested By: MS Checked By: RR

PERCENT FINER

[illegible]

AASHTO

CH4

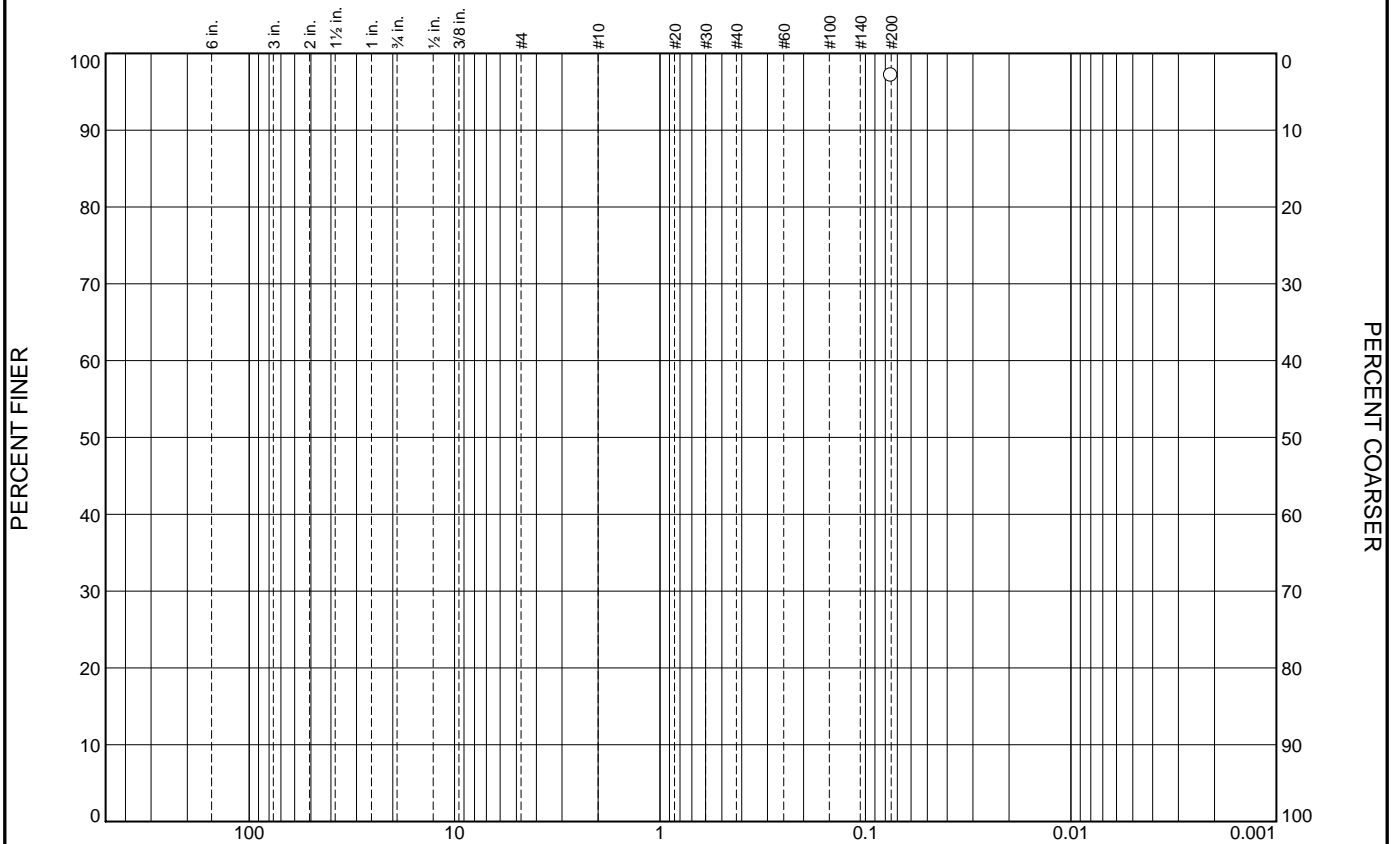
Remarks:



Figure

Tested By: MS **Checked By:** RR


Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>								97.1			
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu	
<input type="radio"/>	37	18									

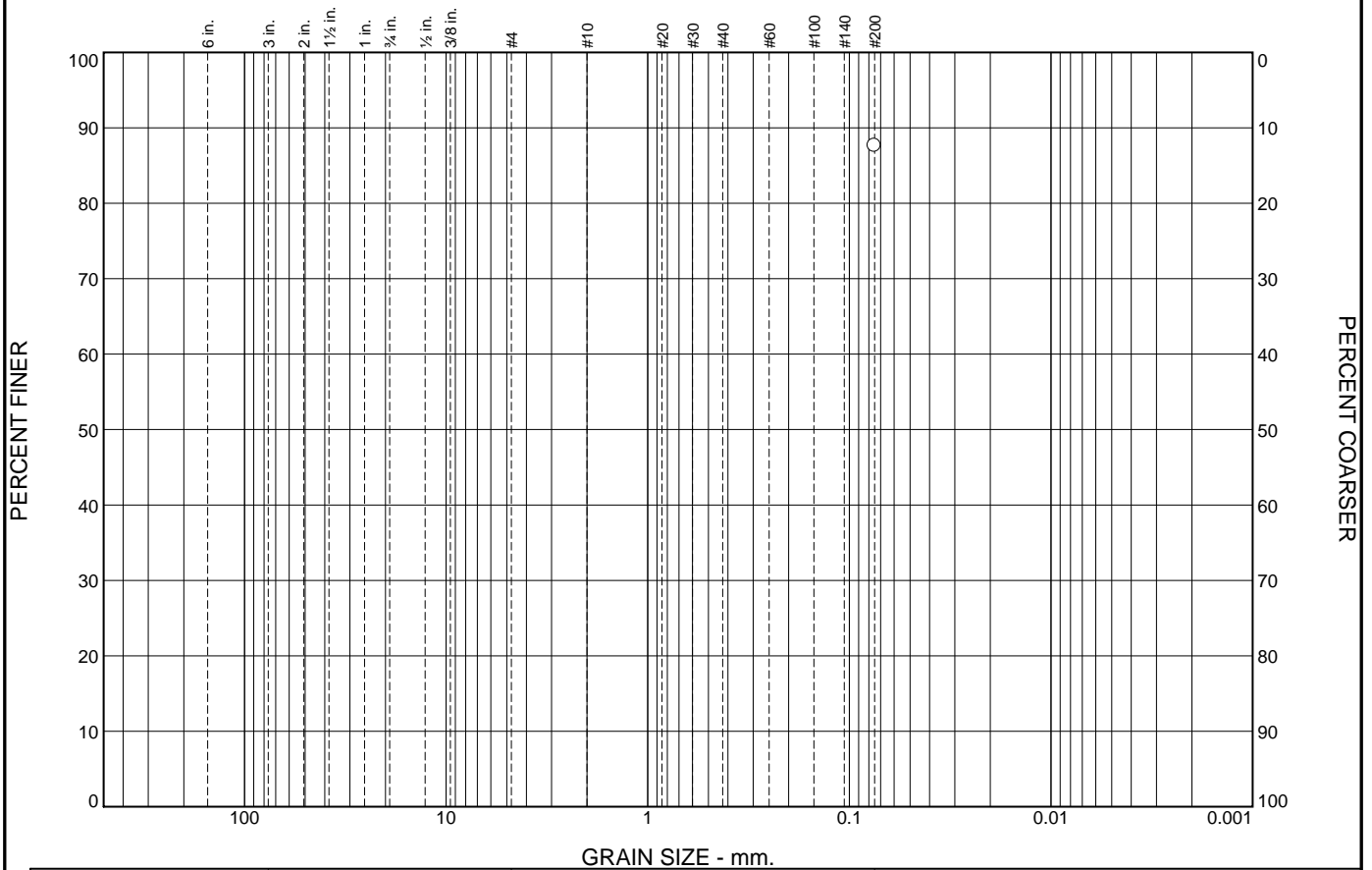
Material Description								USCS	AASHTO
<input type="radio"/> M T & GR CL4 W/ CC								CL4	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-02 Depth: 47 Sample Number: 13B	Remarks:
	

Figure


Tested By: MS Checked By: RR

Particle Size Distribution Report



	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>								87.6		
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
<input type="radio"/>	67	25								

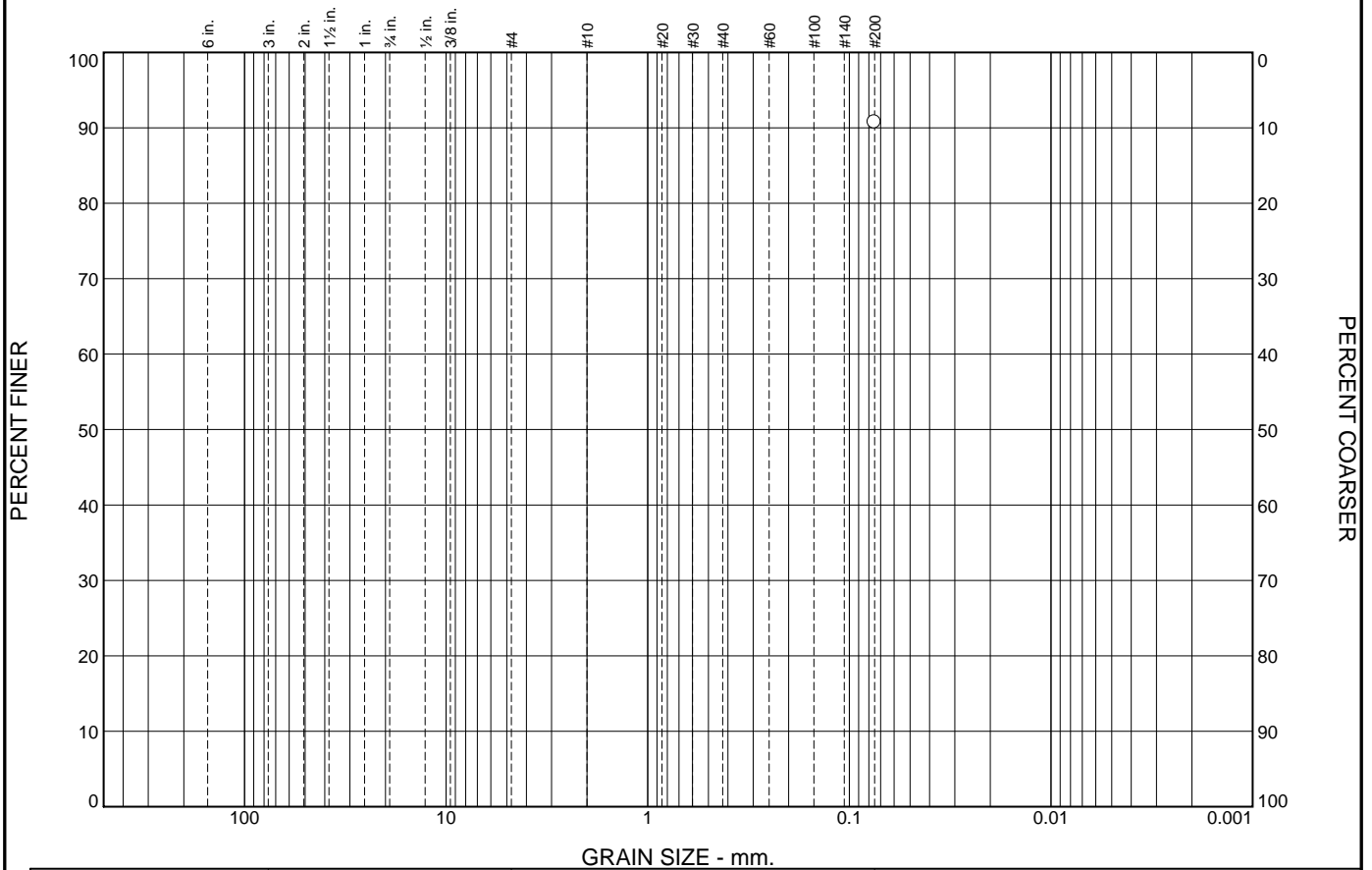
Material Description							USCS	AASHTO
<input type="radio"/> M GR & BR CH3 W/ ARS SP, RT, SIF, SL							CH3	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-03 Depth: 2 Sample Number: 1C	Remarks:
	

Figure


Tested By: MS Checked By: CD

Particle Size Distribution Report



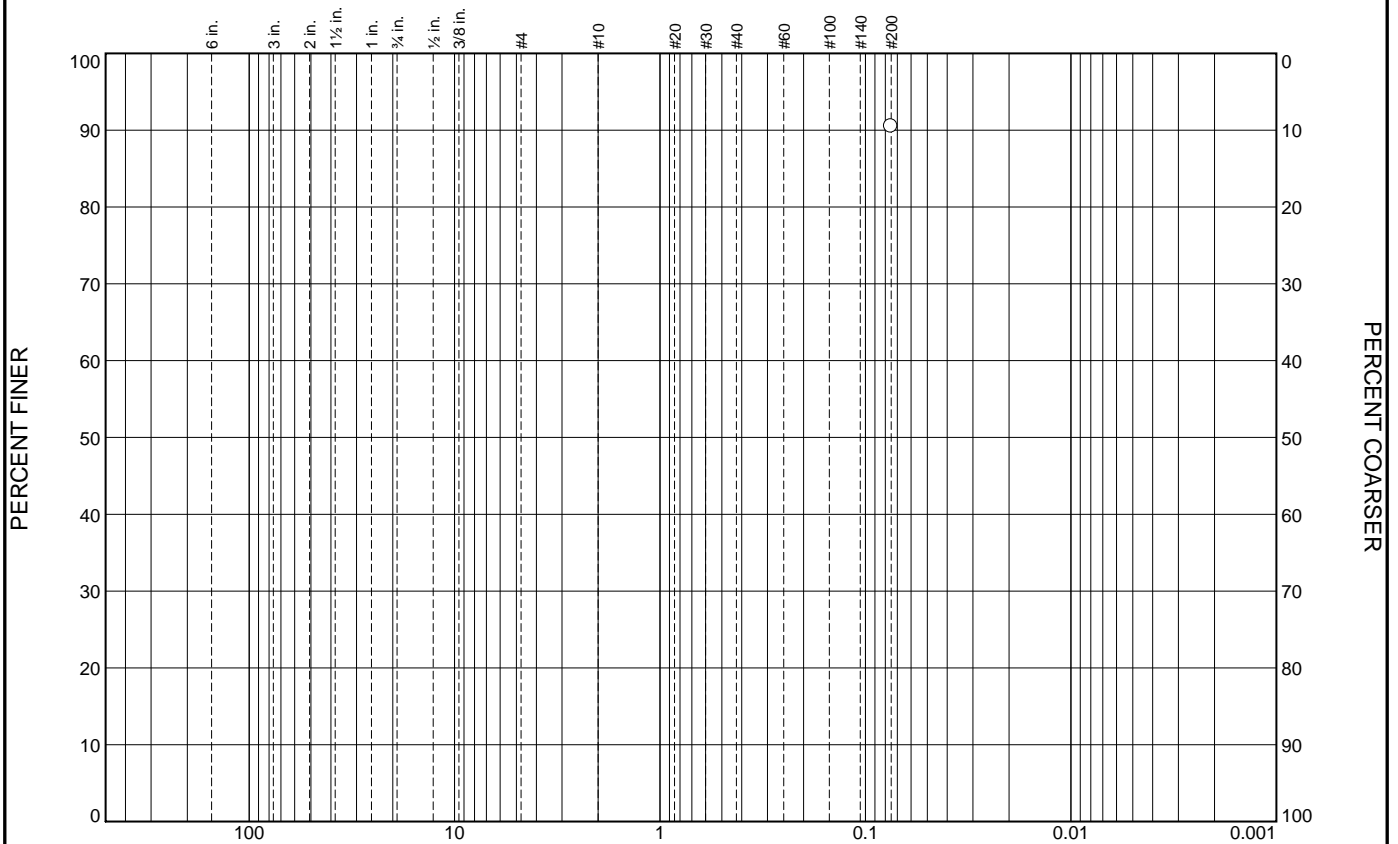
	% +3"	% Gravel		% Sand			% Fines		C _c	C _u
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>							90.7			
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀		
<input type="radio"/>	88	27								

Material Description							USCS	AASHTO
<input type="radio"/> M GR CH4 W/ ARS ML, WD							CH4	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-03 Depth: 14 Sample Number: 4C	Remarks: <div>Figure</div>
	

Tested By: MS Checked By: CD


Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>								90.5		
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>										

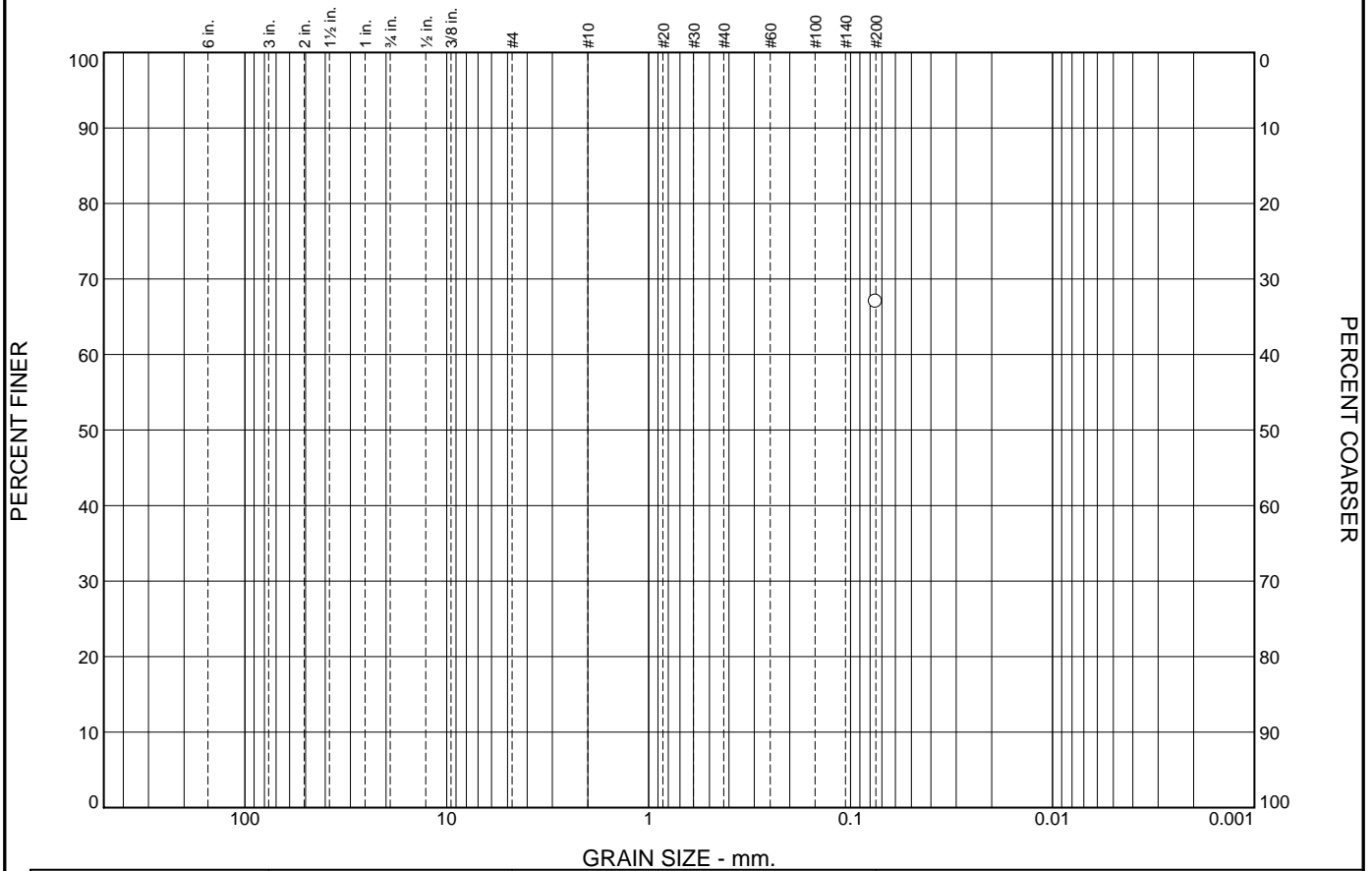
Material Description							USCS	AASHTO
<input type="radio"/> BR ML							ML	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-03 Depth: 45 Sample Number: 12B	Remarks:
<div style="text-align: center;">  </div>	

Figure


Tested By: MS Checked By: CD

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>							67.0	
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10
<input type="radio"/>								
<input type="radio"/>								
<input type="radio"/>								

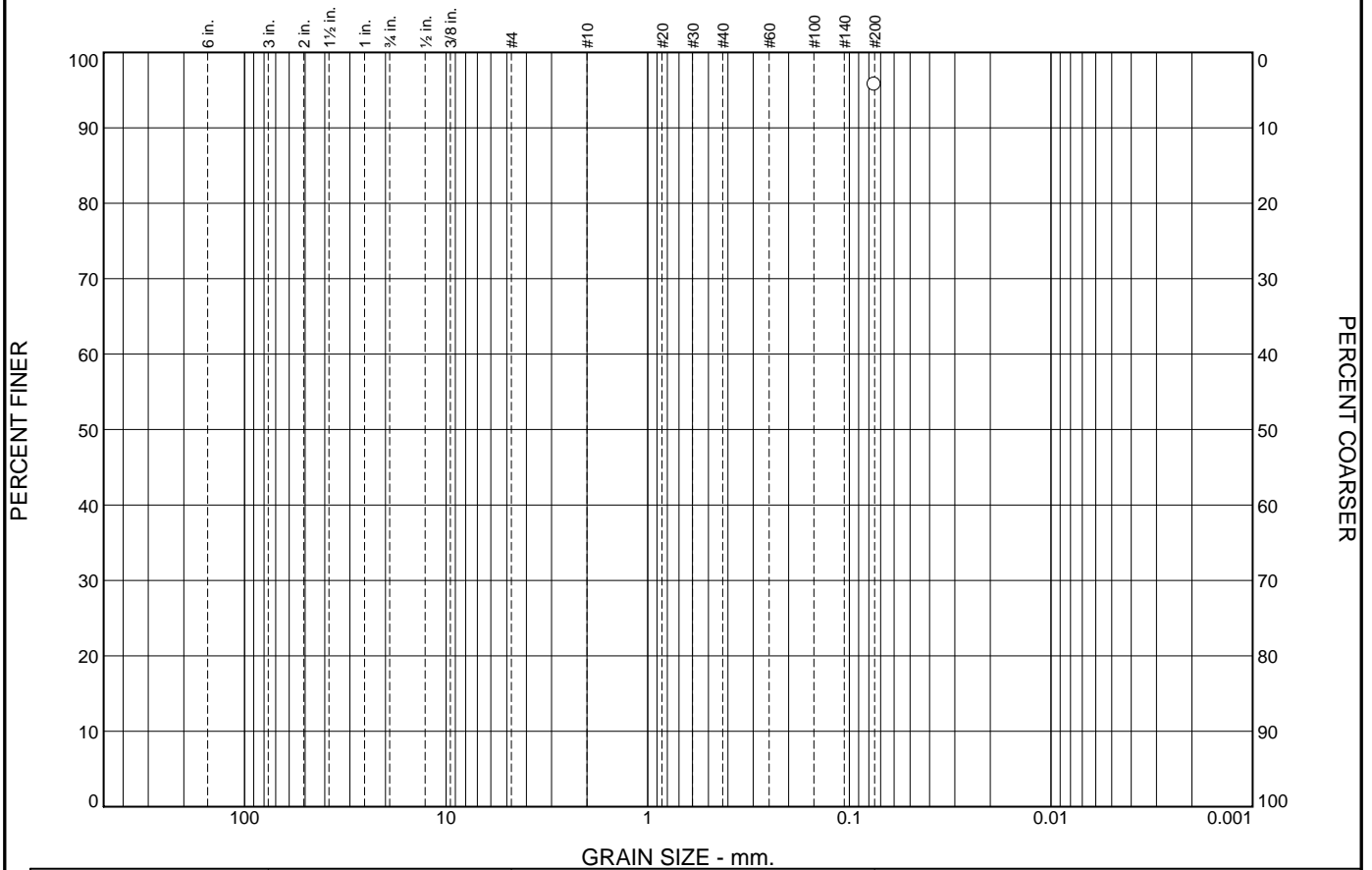
Material Description							USCS	AASHTO
<input type="radio"/> BR ML W/ CC							ML	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-03 Depth: 50 Sample Number: 13C	Remarks:
	

Figure


Tested By: MS Checked By: CD

Particle Size Distribution Report



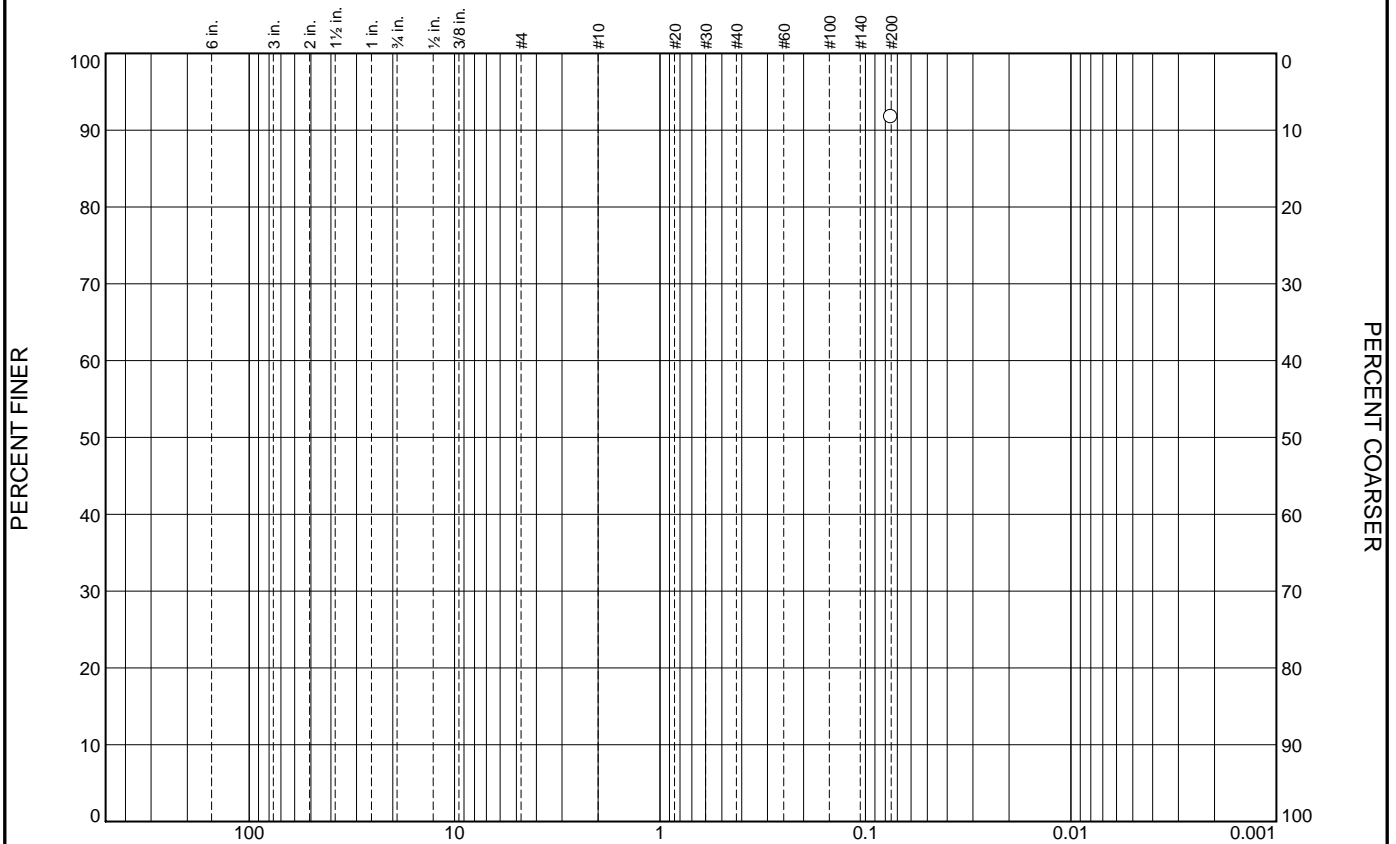
	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>								95.7		
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
<input type="radio"/>	30	14								

Material Description							USCS	AASHTO
<input type="radio"/> M GR & T CL4							CL4	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-03 Depth: 118 Sample Number: 30C	Remarks: <div>Figure</div>
	

Tested By: MS Checked By: CD


Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"	% Gravel		% Sand			% Fines		C _c	C _u
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>							91.7			
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀		
<input type="radio"/>	50	13								

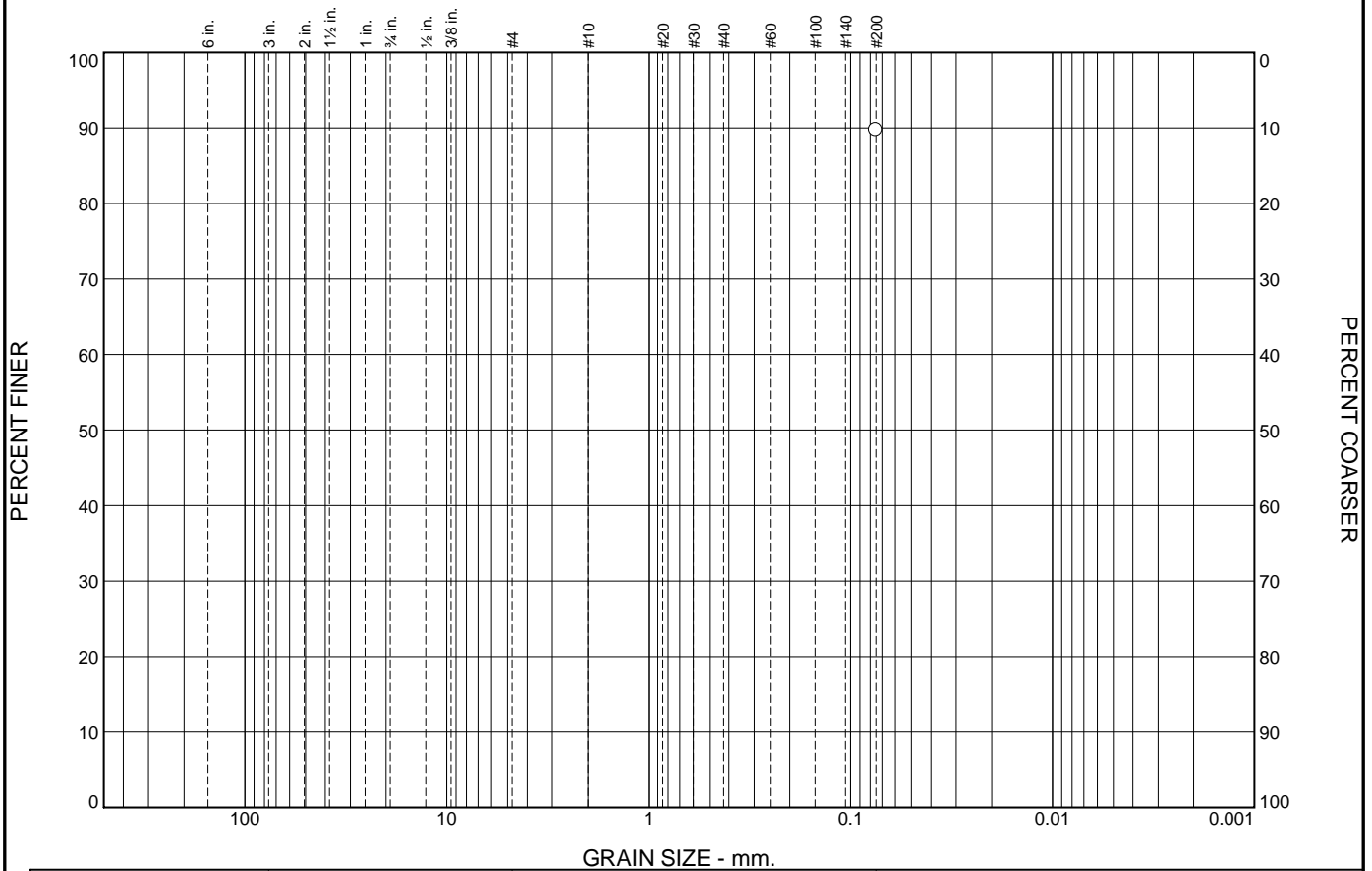
Material Description							USCS	AASHTO
<input type="radio"/> ST GR CH2 W/ ARS SP, SIF, RT							CH2	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-04 Depth: 2 Sample Number: 1C	Remarks:
	

Figure

Tested By: MS Checked By: RR


Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						89.7	

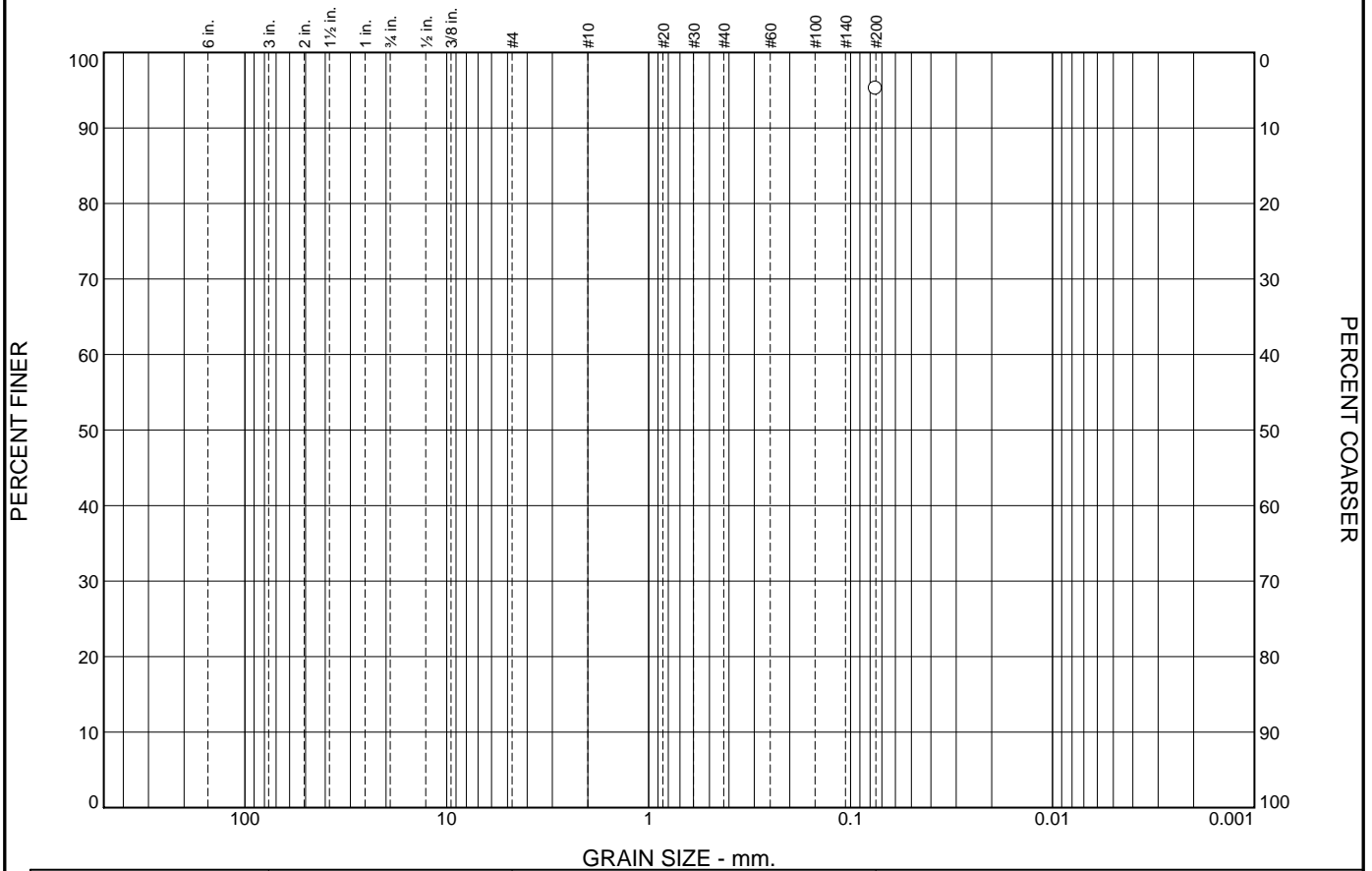
×	LL	PL	D85	D60	D50	D30	D15	D10	C _c	C _u
○	76	31								

Material Description								USCS	AASHTO
○ VST GR & T CH3 W/ ARS ML, WD								CH3	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), Source of Sample: SB-04 Depth: 5 Sample Number: 2B	Remarks: <div style="text-align: right;">Figure</div>
	

Tested By: MS Checked By: RR


Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>							95.2	

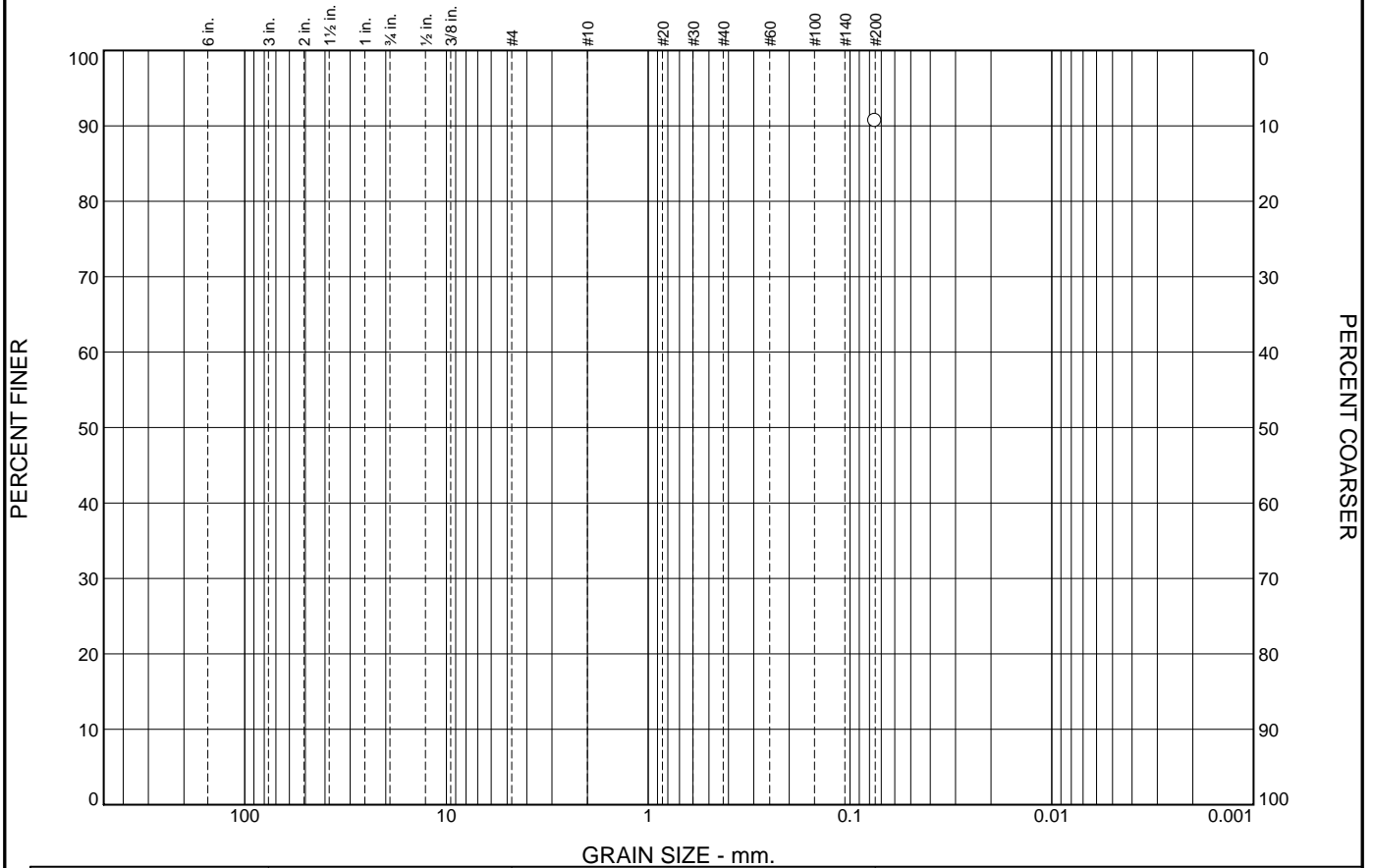
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>	50	19								

Material Description								USCS	AASHTO
<input type="radio"/> M GR & T CH2 W/ ARS ML, RT, SIF								CH2	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-04 Depth: 9 Sample Number: 3B	Remarks: <div style="text-align: right;">Figure</div>
	


Tested By: MS Checked By: RR

Particle Size Distribution Report



	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>								90.7		
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
<input type="radio"/>	34	16								

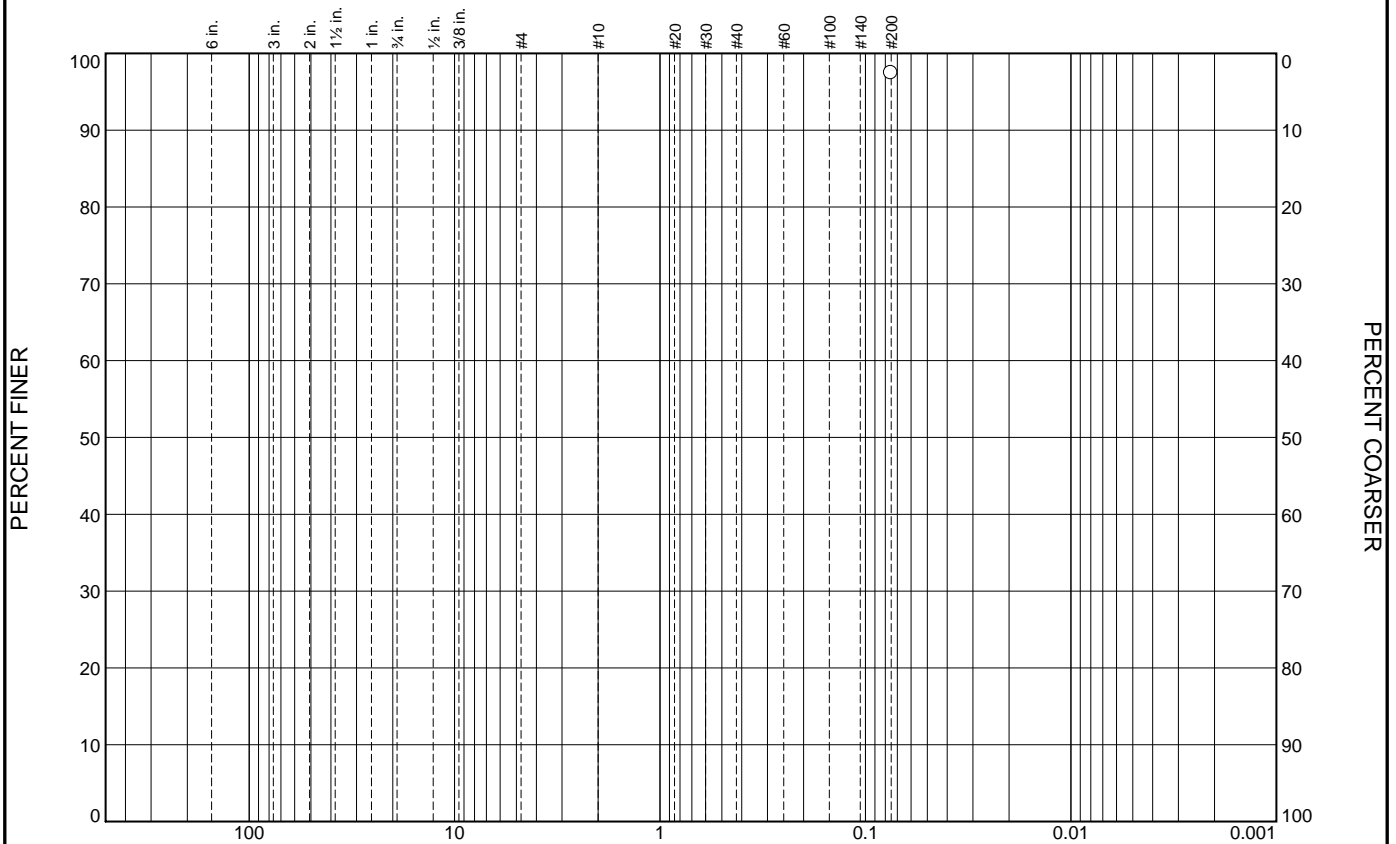
Material Description							USCS	AASHTO
<input type="radio"/> M GR & T CL4 W/ CC							CL4	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-04 Depth: 13 Sample Number: 4B	Remarks:
	

Figure

Tested By: MS Checked By: RR


Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>								97.5		
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
<input type="radio"/>	128	35								

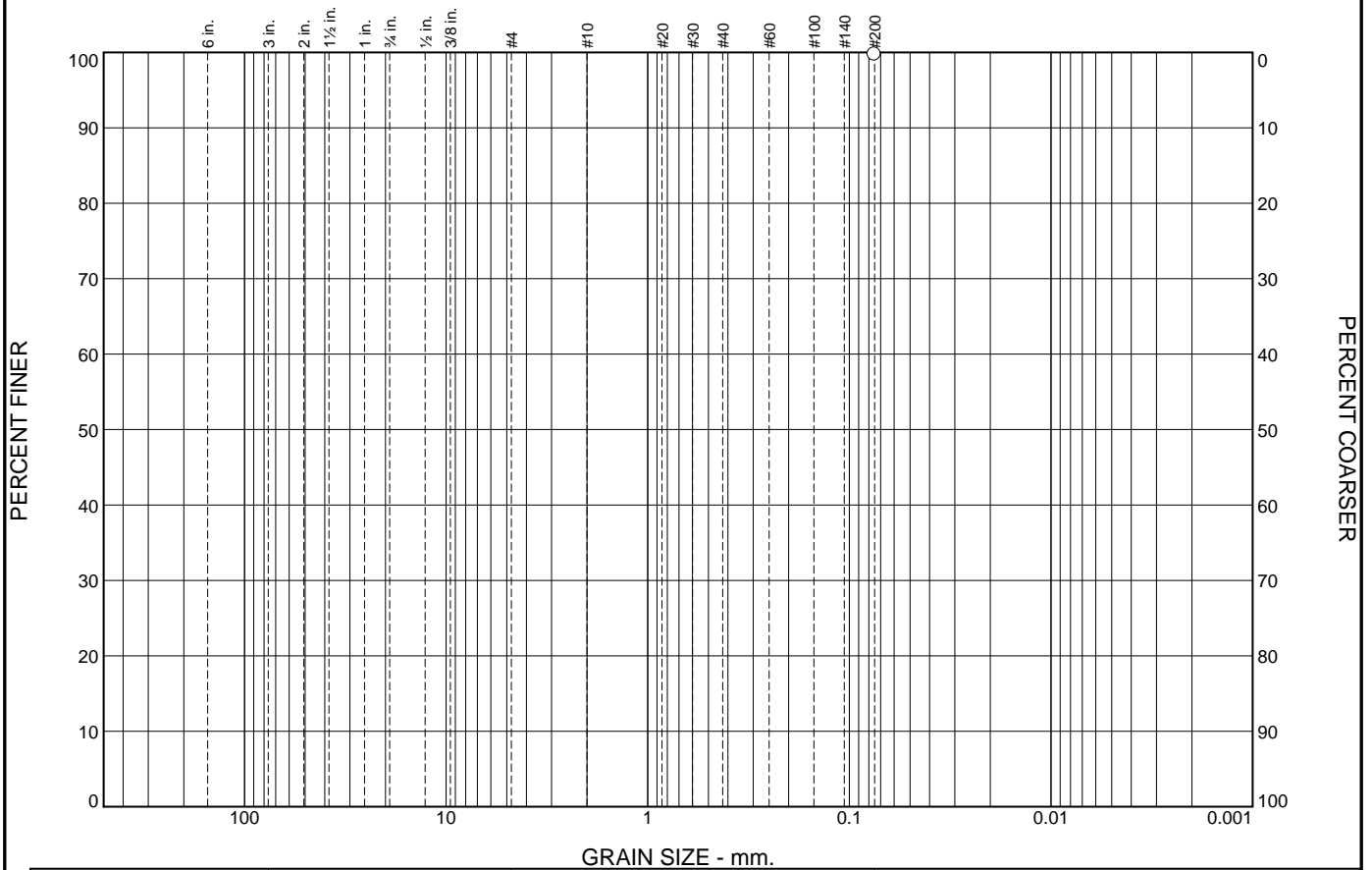
Material Description							USCS	AASHTO
<input type="radio"/> SO GR CHOA W/ RT							CHOA	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-04 Depth: 18 Sample Number: 5C	Remarks:
	

Figure


Tested By: MR Checked By: RR

Particle Size Distribution Report



GRAIN SIZE - mm.										
% +3"	% Gravel		% Sand			% Fines				
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay			
<input type="radio"/>						99.7				
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
<input type="radio"/>	45	15								

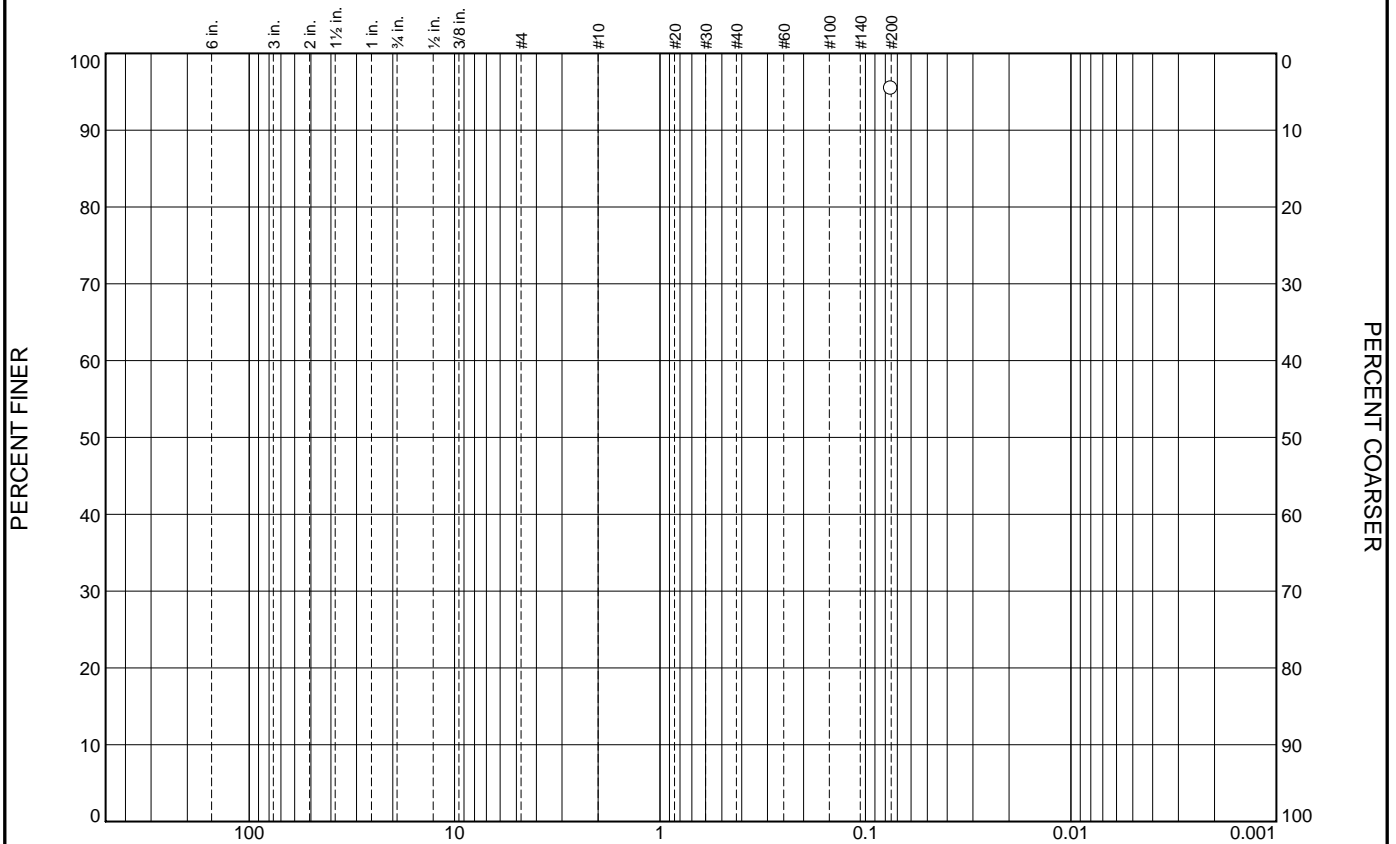
Material Description							USCS	AASHTO
<input type="radio"/> M GR CL6 W/ SIF							CL6	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-04 Depth: 37 Sample Number: 10B	Remarks:
	

Figure

Tested By: MS Checked By: RR


Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>								95.4		
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
<input type="radio"/>	30	20								

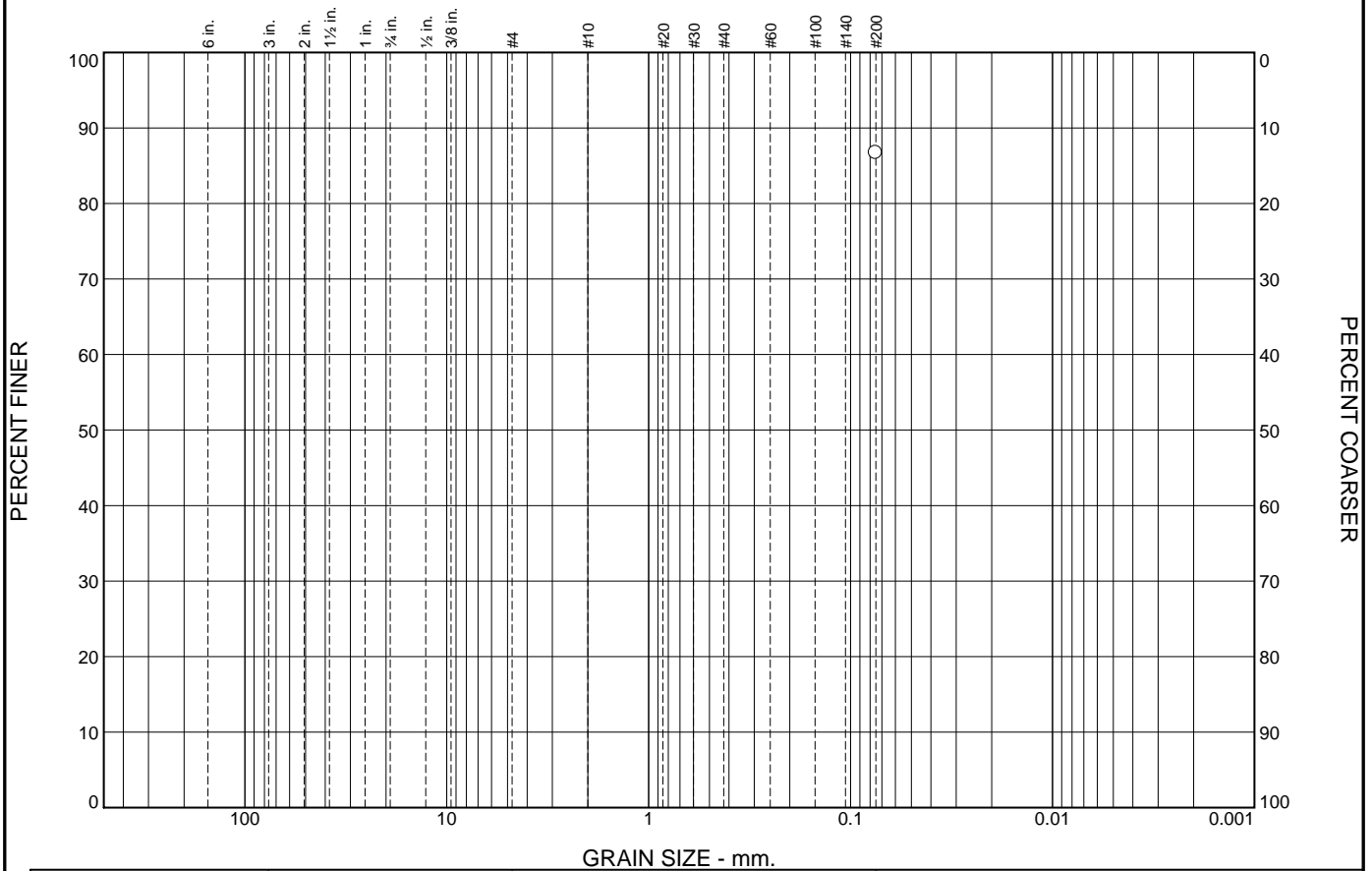
Material Description								USCS	AASHTO
SO GR & T CL4 W/ CC								CL4	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-05 Depth: 37 Sample Number: 10B	Remarks:
	

Figure


Tested By: SR Checked By: RR

Particle Size Distribution Report



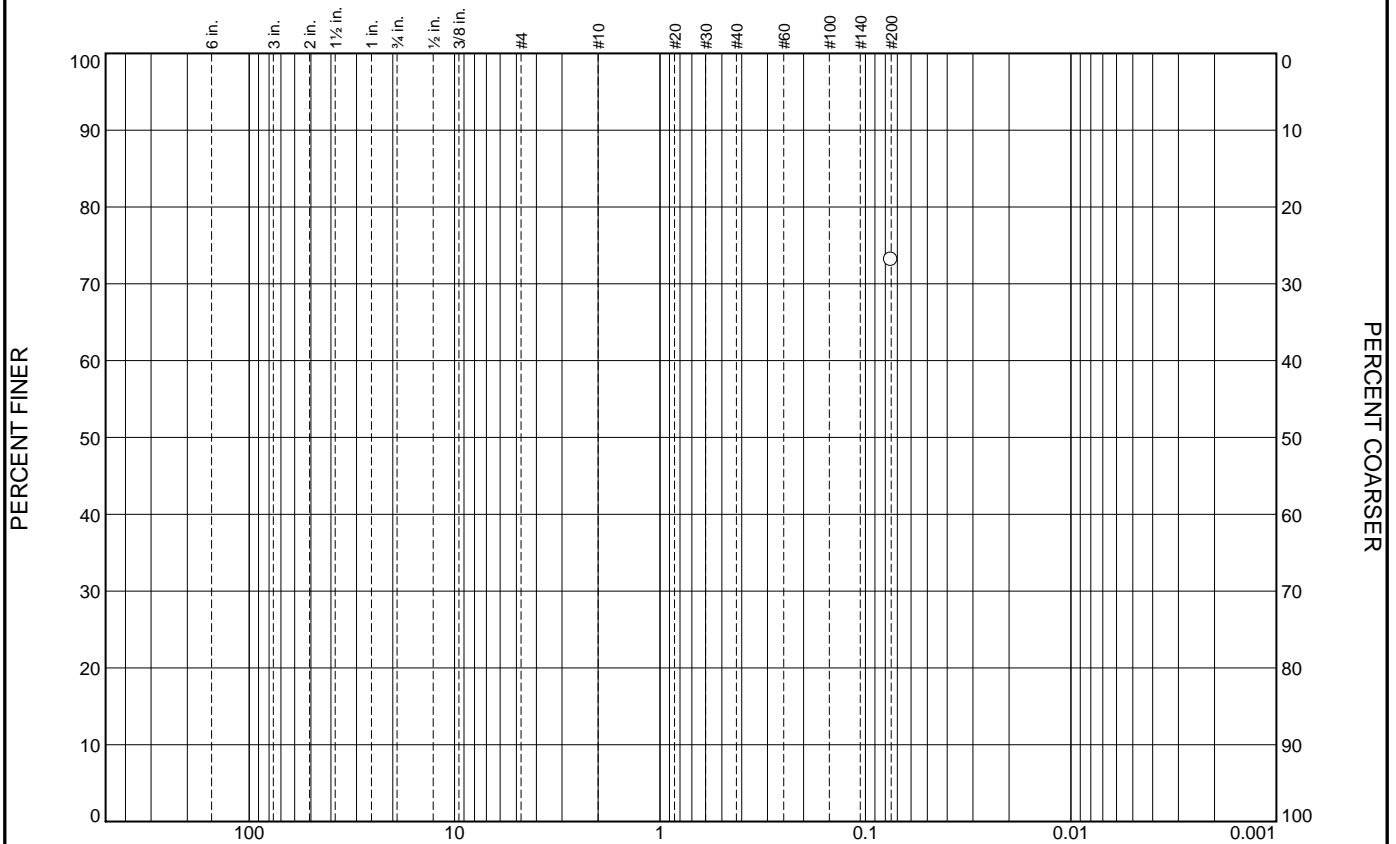
	% +3"		% Gravel		% Sand			% Fines			
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay	
<input type="radio"/>								86.7			
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu	
<input type="radio"/>	30	17									

Material Description								USCS	AASHTO
<input type="radio"/> ST T CL4 W/ ARS SP								CL4	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-05 Depth: 45 Sample Number: 12B	Remarks: <div>Figure</div>
	

Tested By: SR Checked By: RR

Particle Size Distribution Report




GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>						73.2	

<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>	NP	NP								

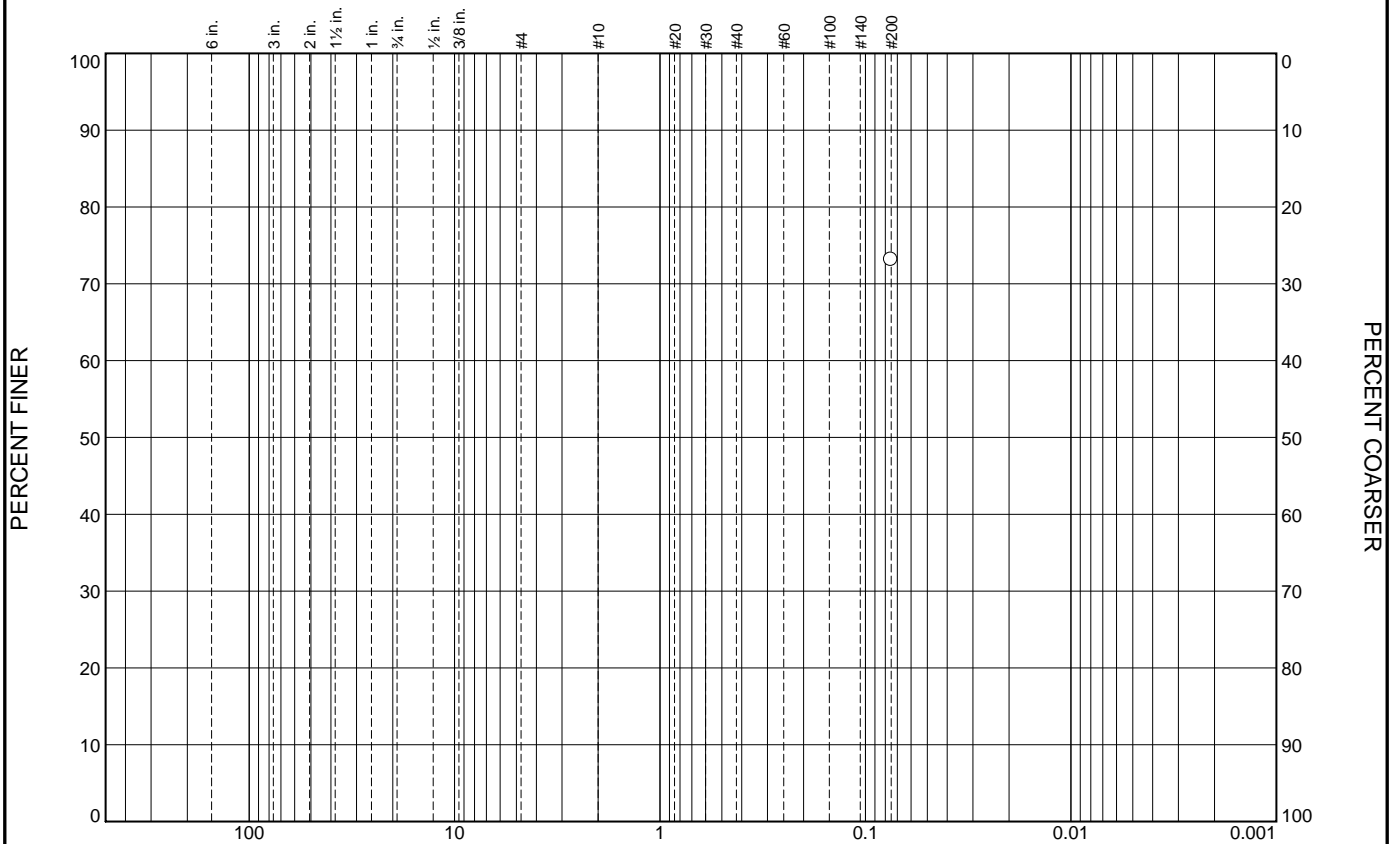
Material Description								USCS	AASHTO
<input type="radio"/> T ML W/ CC								ML	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-06 Depth: 42 Sample Number: 11C	Remarks:
	

Figure

Tested By: SR Checked By: RR


Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"	% Gravel		% Sand			% Fines		C _c	C _u
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>							73.2			
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀		
<input type="radio"/>	NP	NP								

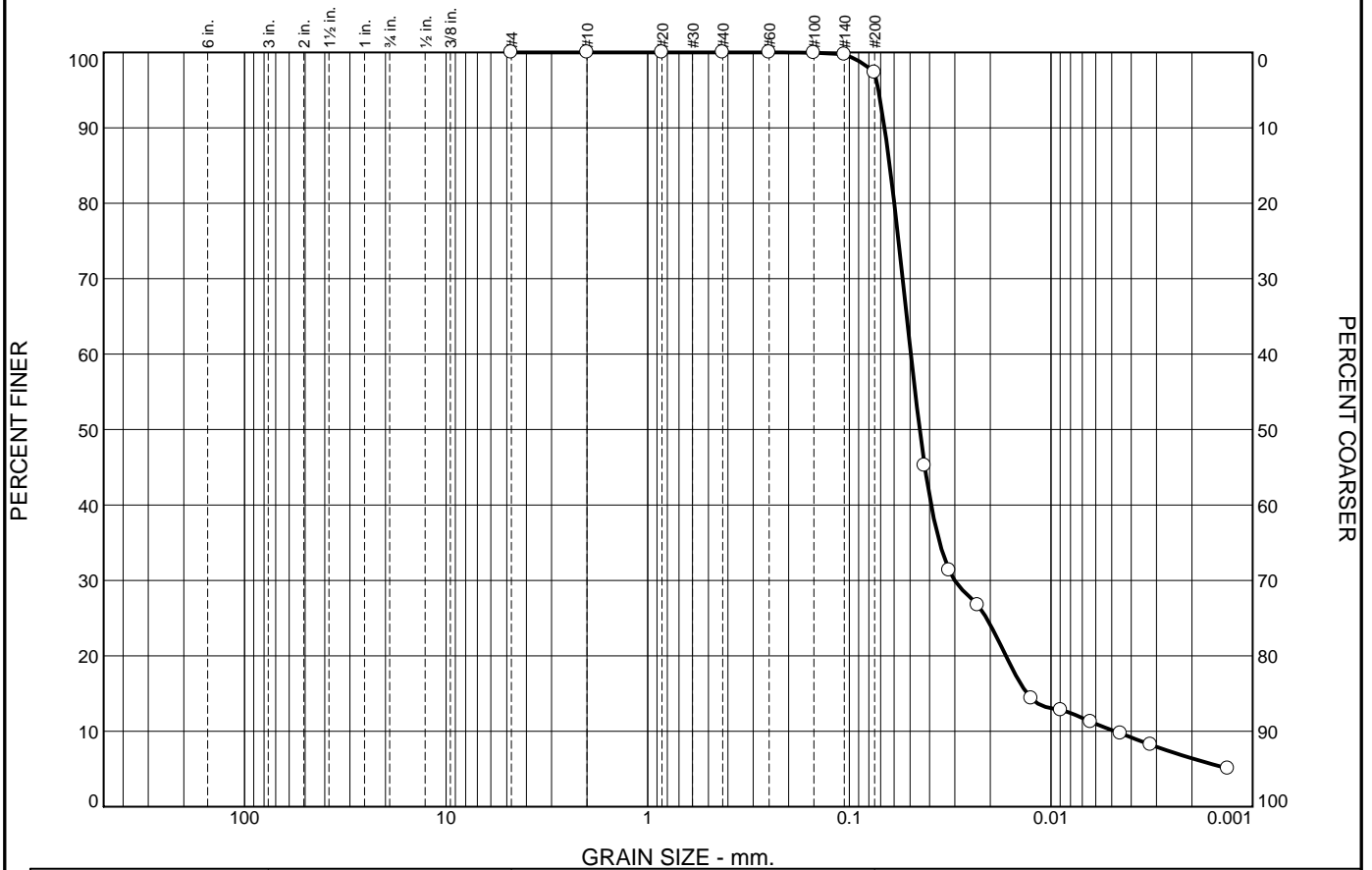
Material Description								USCS	AASHTO
<input type="radio"/> T ML W/ CC								ML	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-06 Depth: 42 Sample Number: 11C	Remarks:
	

Figure

Tested By: SR Checked By: RR


Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.0	2.7	87.1	10.2

×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○	41	13	0.0631	0.0496	0.0448	0.0300	0.0131	0.0048	3.78	10.29

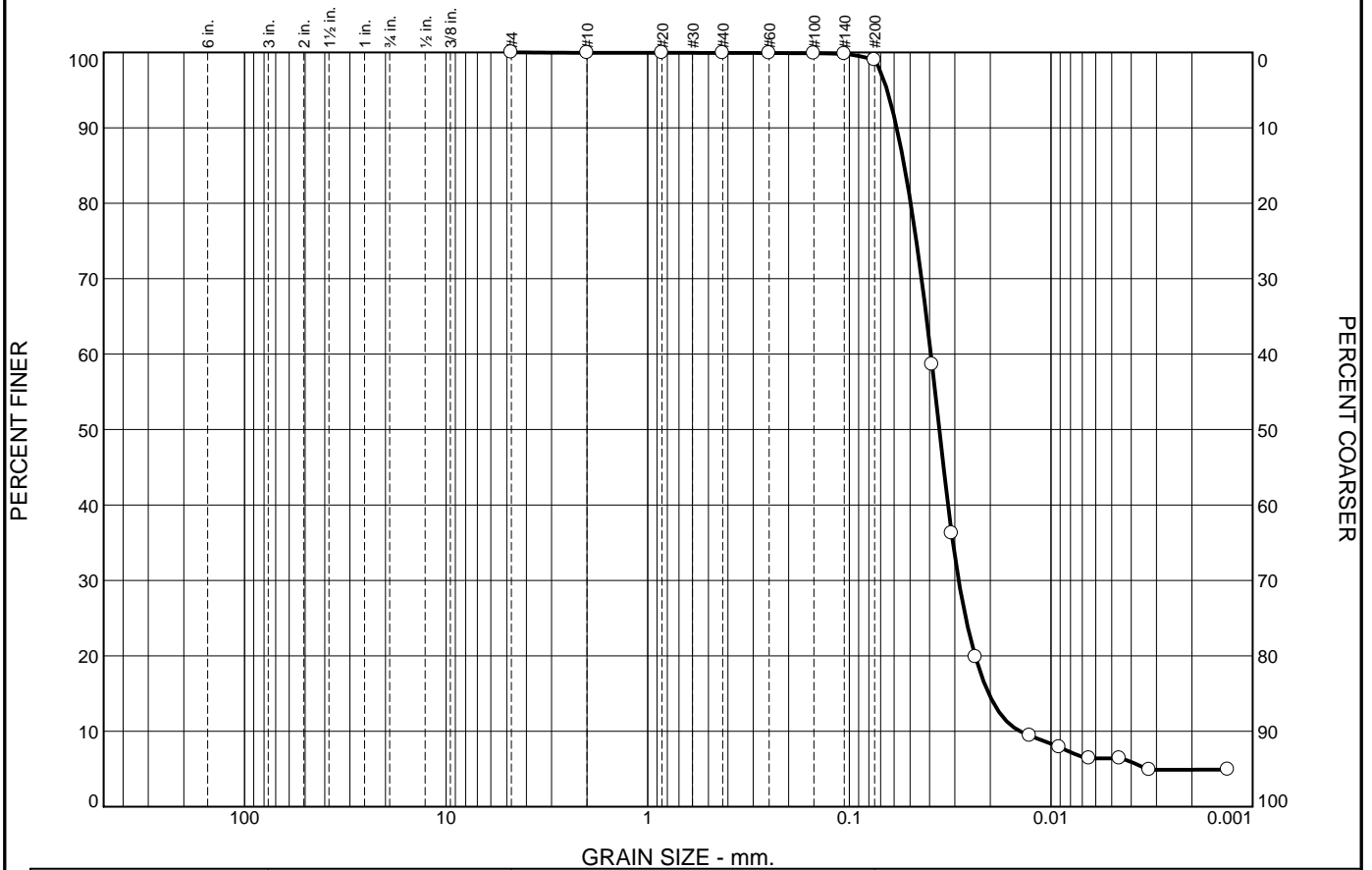
Material Description								USCS	AASHTO
○ M GR & T CL6								CL6	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), Source of Sample: SB-07 Depth: 37 Sample Number: 10B	Remarks:
	

Figure

Tested By: BH Checked By: RR


Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.1	0.0	0.9	92.6	6.4

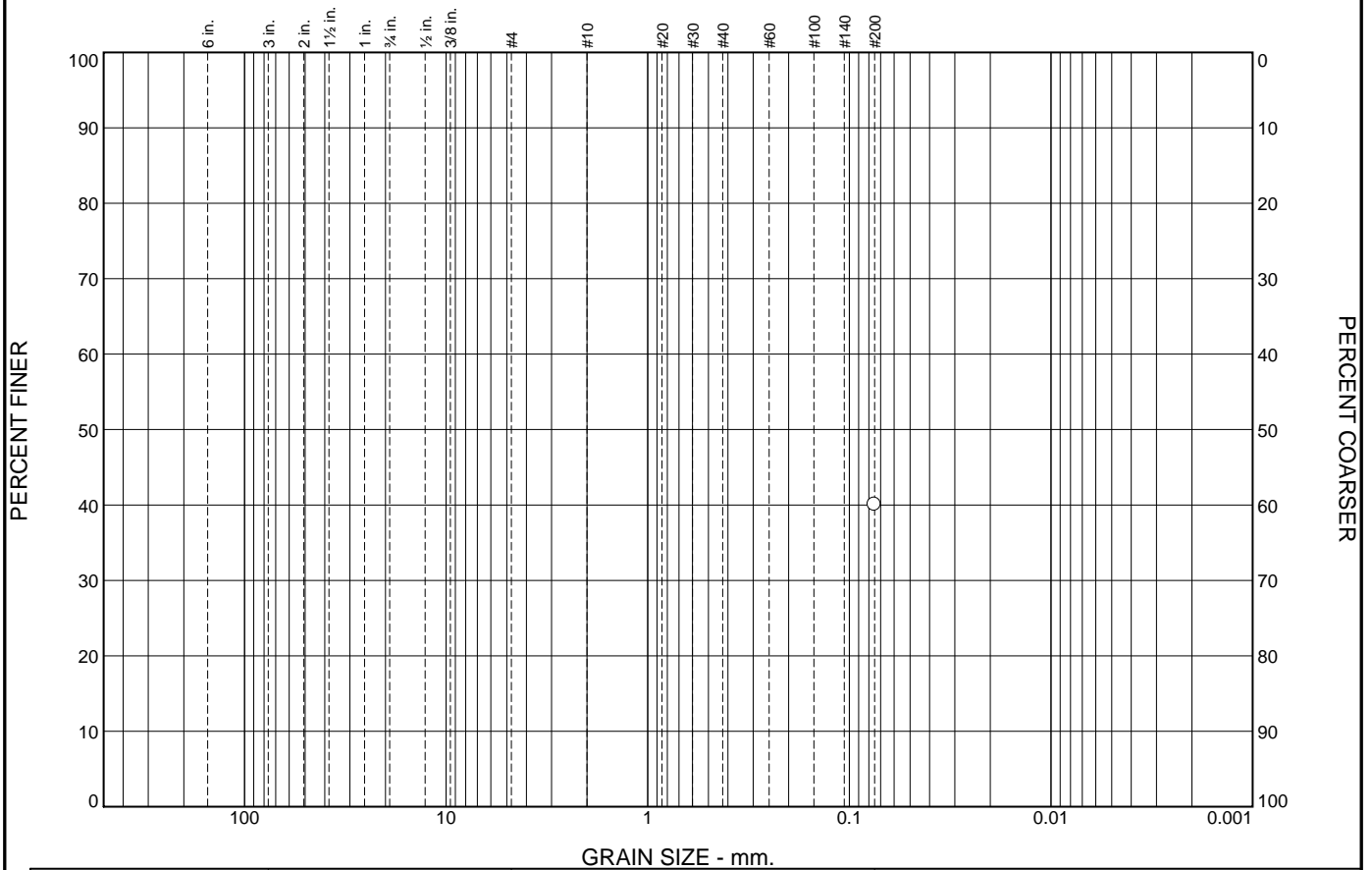
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○	38	19	0.0534	0.0394	0.0358	0.0287	0.0204	0.0142	1.47	2.77

Material Description								USCS	AASHTO
○ M T CL4								CL4	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), Source of Sample: SB-07 Depth: 38 Sample Number: 10C	Remarks: <div style="text-align: right;">Figure</div>
	

Tested By: BH Checked By: RR


Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>						40.1	

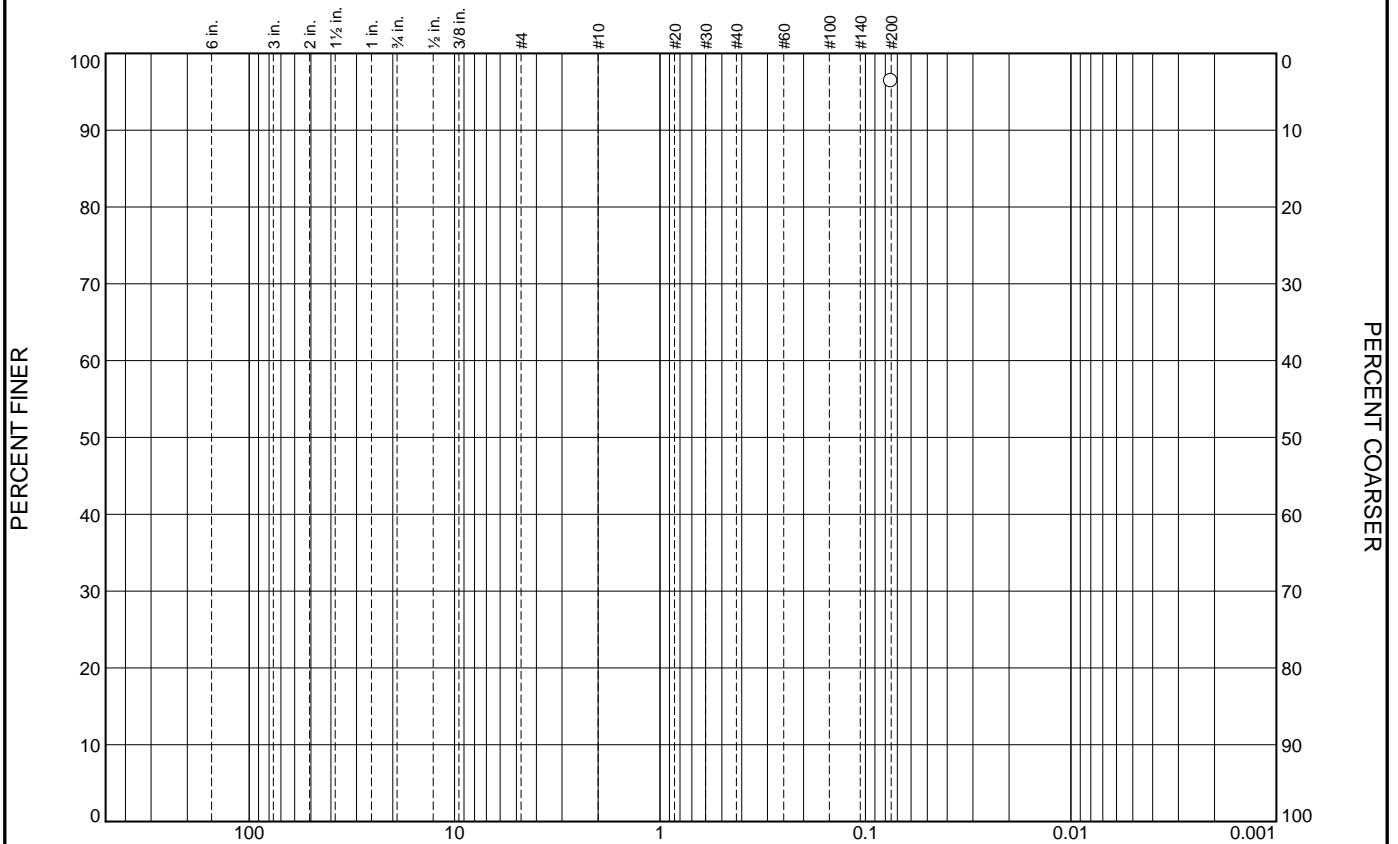
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
<input type="radio"/>	NP	NP								

Material Description								USCS	AASHTO
<input type="radio"/> BR SM								SM	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-07 Depth: 41 Sample Number: 11B	Remarks: <div>Figure</div>
	

Tested By: SR Checked By: RR

Particle Size Distribution Report




GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>						96.4	

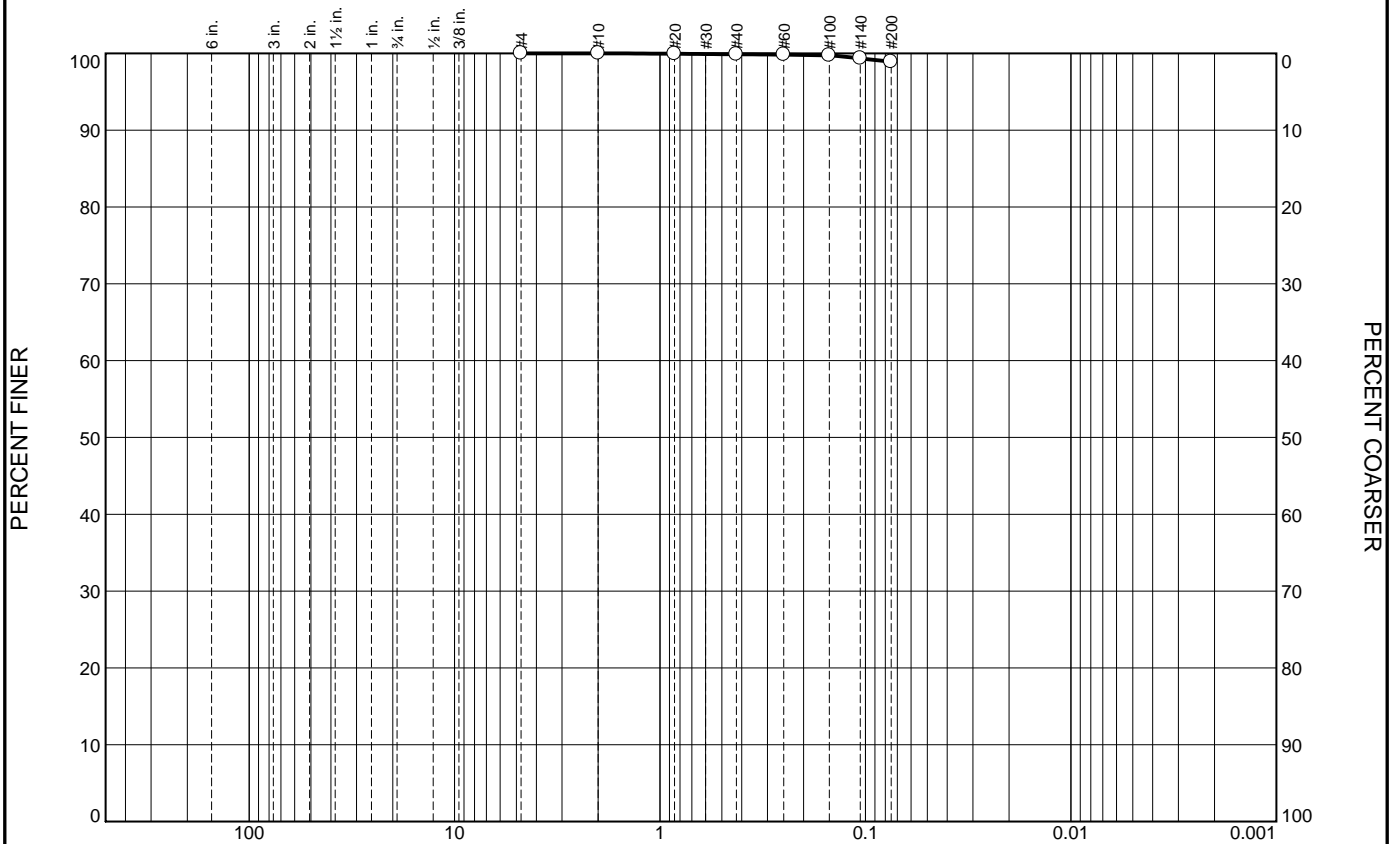
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>	NP	NP								

Material Description								USCS	AASHTO
<input type="radio"/> T ML W/ ARS CH								ML	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-08 Depth: 36 Sample Number: PB-10	Remarks: <div>Figure</div>
	


Tested By: MS Checked By: RR

Particle Size Distribution Report



GRAIN SIZE - mm.										
	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>	0.0		0.0	0.0	0.0	0.1	1.0	98.9		
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
<input type="radio"/>										

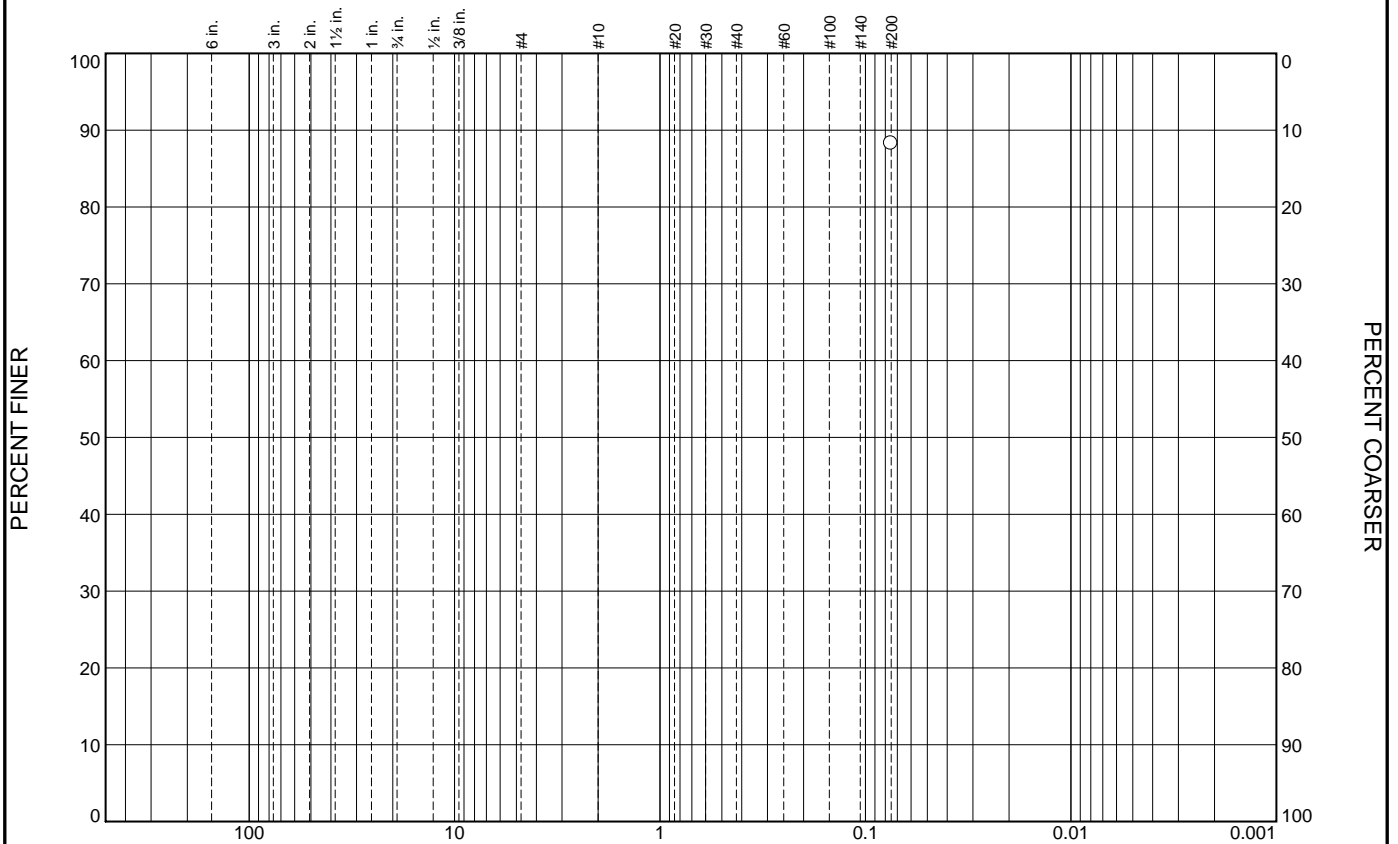
Material Description							USCS	AASHTO
<input type="radio"/> T ML W/ ARS CH							ML	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-08 Depth: 46 Sample Number: PB-14	Remarks:
	

Figure

Tested By: JMP Checked By: RR


Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"	% Gravel		% Sand			% Fines		C _c	C _u
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>							88.3			
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀		
<input type="radio"/>	61	21								

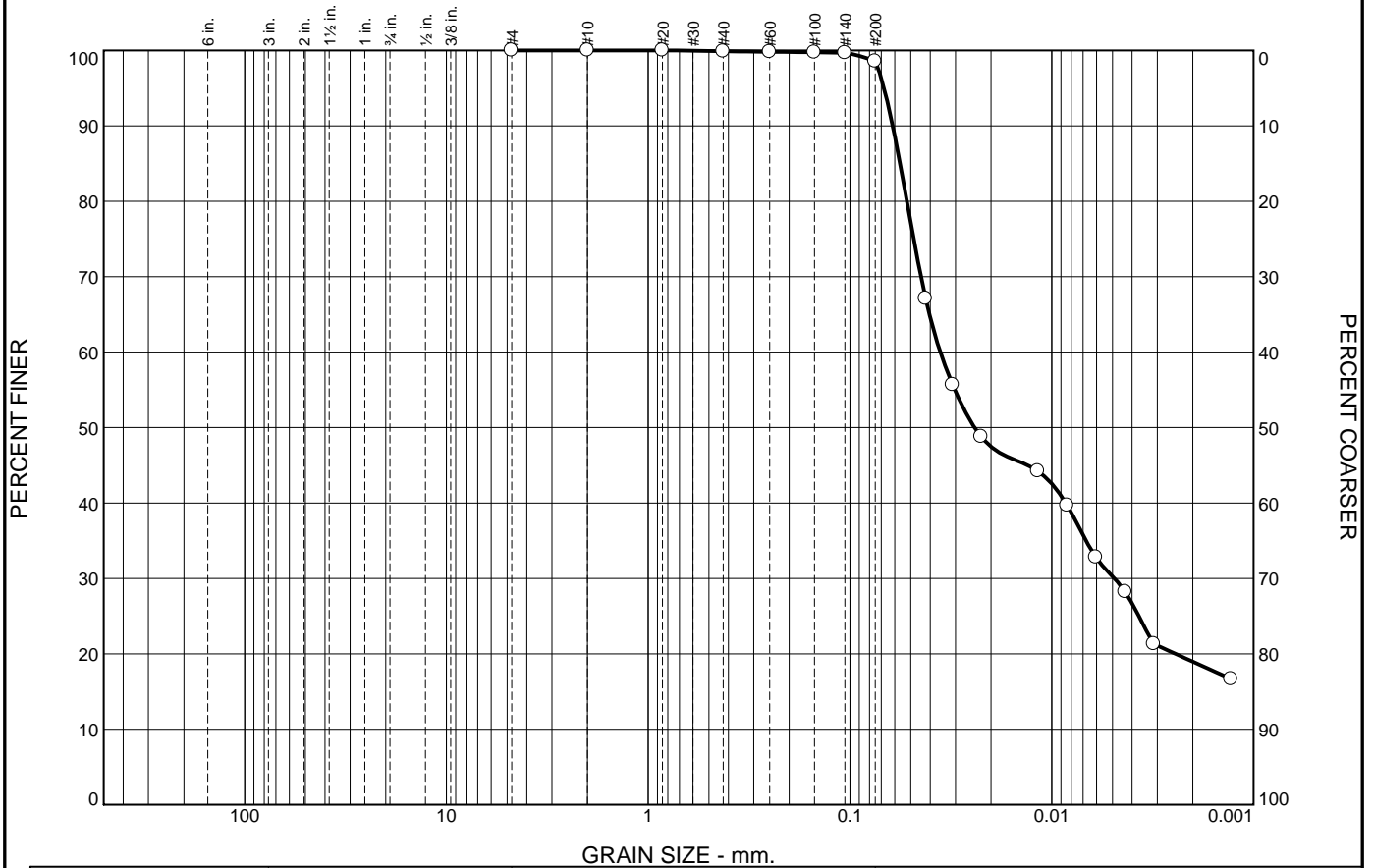
Material Description								USCS	AASHTO
M GR CH3 W/ ARS ML									

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-09 Depth: 18 Sample Number: 5C	Remarks:
	

Figure

Tested By: MS Checked By: RR


Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.1	1.3	68.3	30.3

×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○	67	16	0.0565	0.0357	0.0241	0.0049				

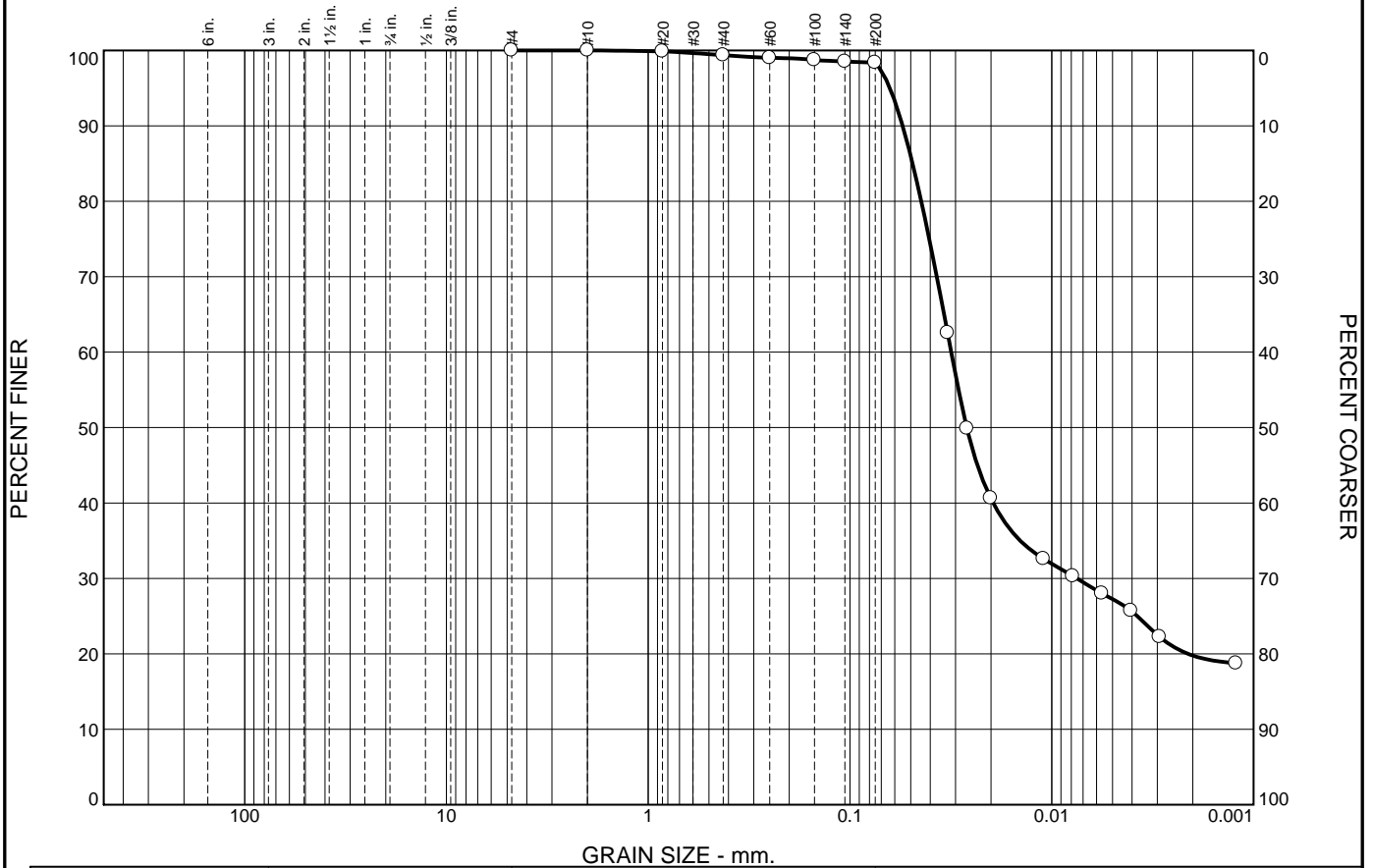
Material Description								USCS	AASHTO
○ SO GR CH3 W/ ARS ML, SIF								CH	A-7-6(56)

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), Source of Sample: SB-09 Depth: 25 Sample Number: 7B	Remarks:
	

Figure

Tested By: BH Checked By: RR


Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.6	1.0	71.1	27.3

×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○	54	22	0.0490	0.0315	0.0264	0.0075				

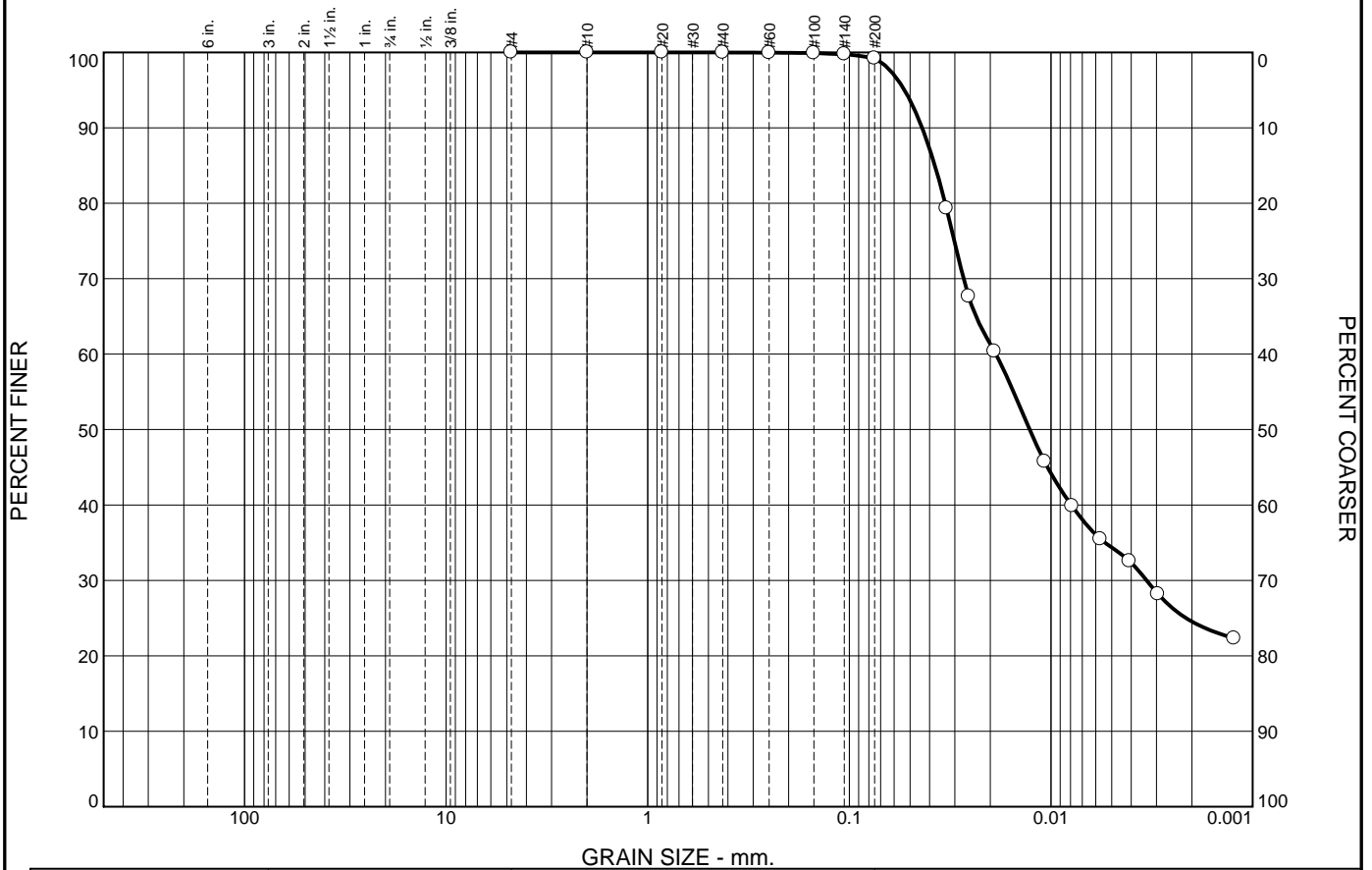
Material Description								USCS	AASHTO
○ SO GR CH2 W/ ARS & LNS ML								CH	A-7-6(35)

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), Source of Sample: SB-09 Depth: 26 Sample Number: 7C	Remarks:
	

Figure

Tested By: BH Checked By: RR


Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.0	0.8	64.8	34.4

×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○	52	19	0.0377	0.0188	0.0128	0.0034				

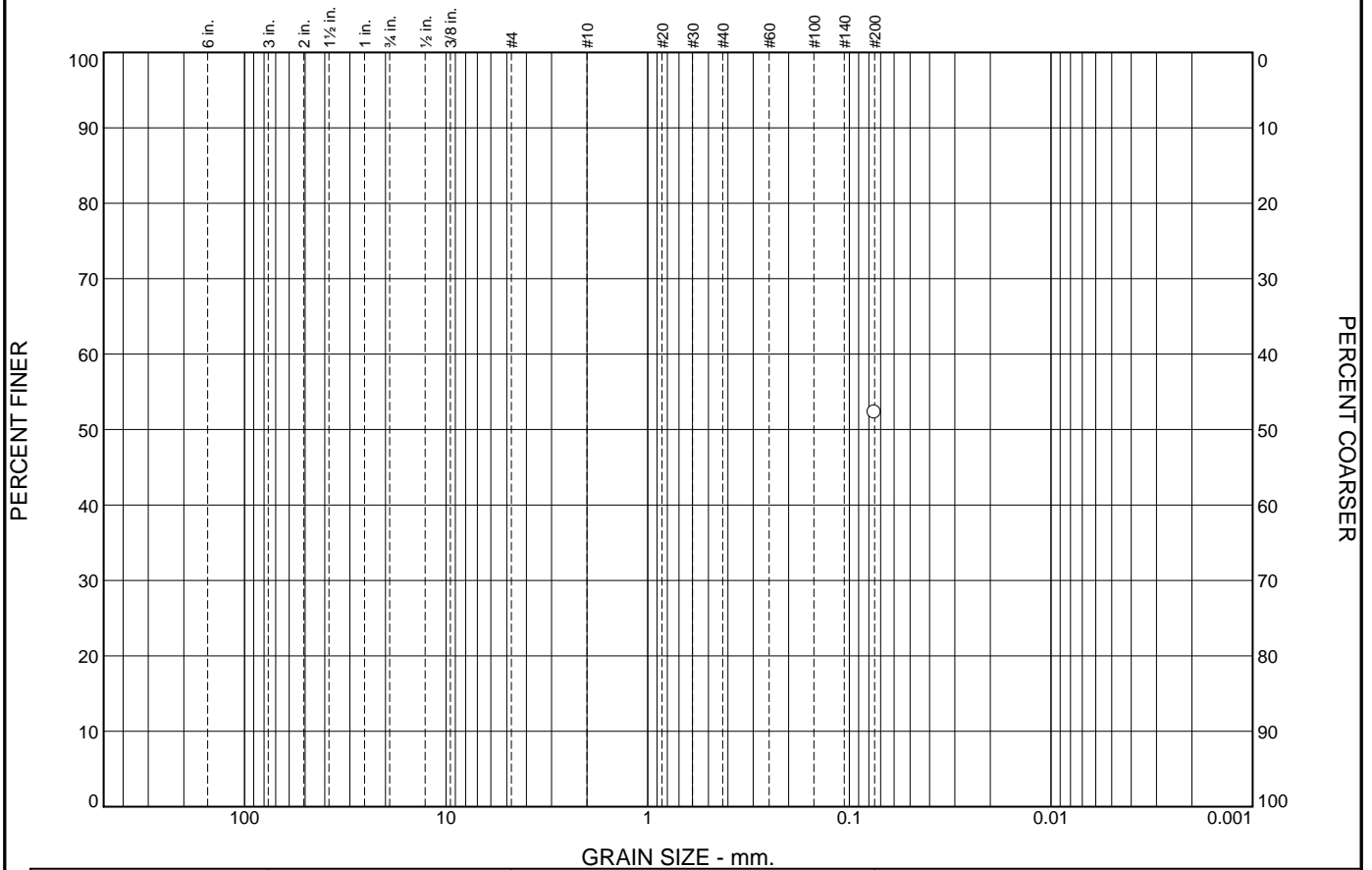
Material Description								USCS	AASHTO
○ ST LGR CH2 W/ ARS & LNS ML, RT								CH	A-7-6(36)

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), Source of Sample: SB-09 Depth: 29 Sample Number: 8B	Remarks:
	

Figure

Tested By: BH Checked By: RR


Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>						52.3	

<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>										

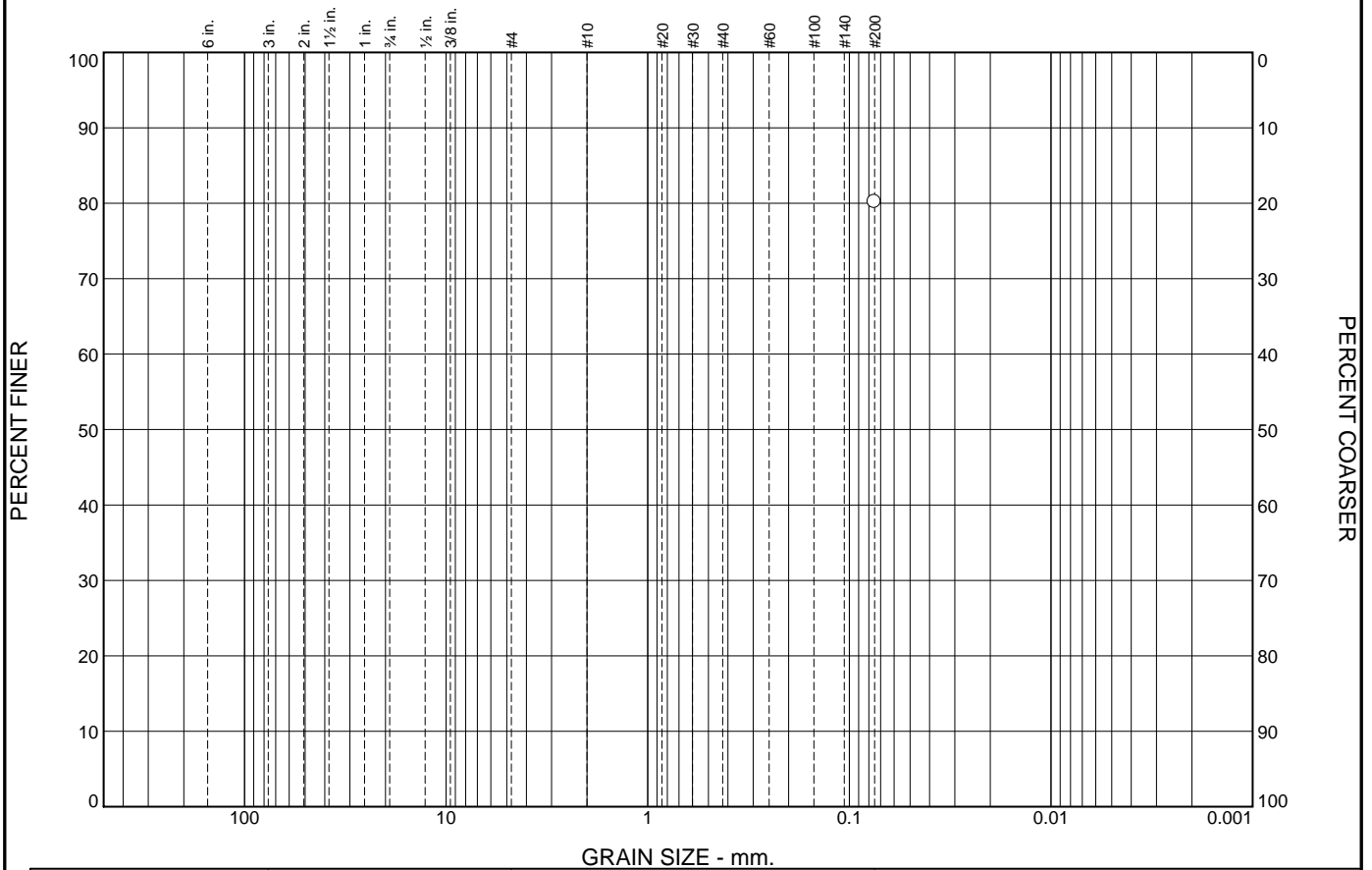
Material Description								USCS	AASHTO
<input type="radio"/> GR ML W/ SIF, WD, ARS CH									

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-09 Depth: 97 Sample Number: 27D	Remarks:
	

Figure

Tested By: MS Checked By: RR


Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>						80.2	

<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>										

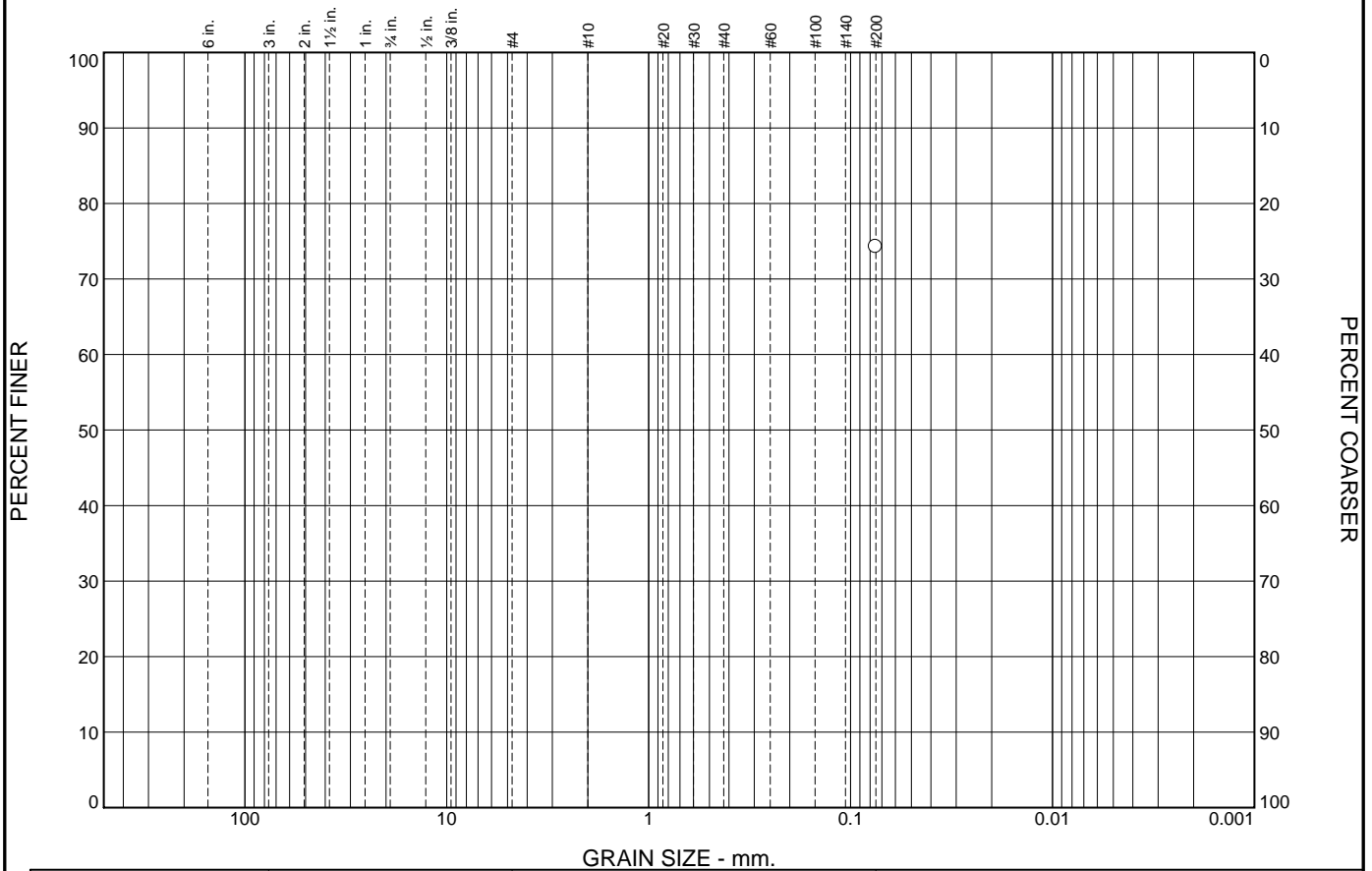
Material Description								USCS	AASHTO
<input type="radio"/> T ML									

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-09 Depth: 46 Sample Number: PB-12B	Remarks:
	

Figure

Tested By: MS Checked By: RR


Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>							74.3	

<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>										

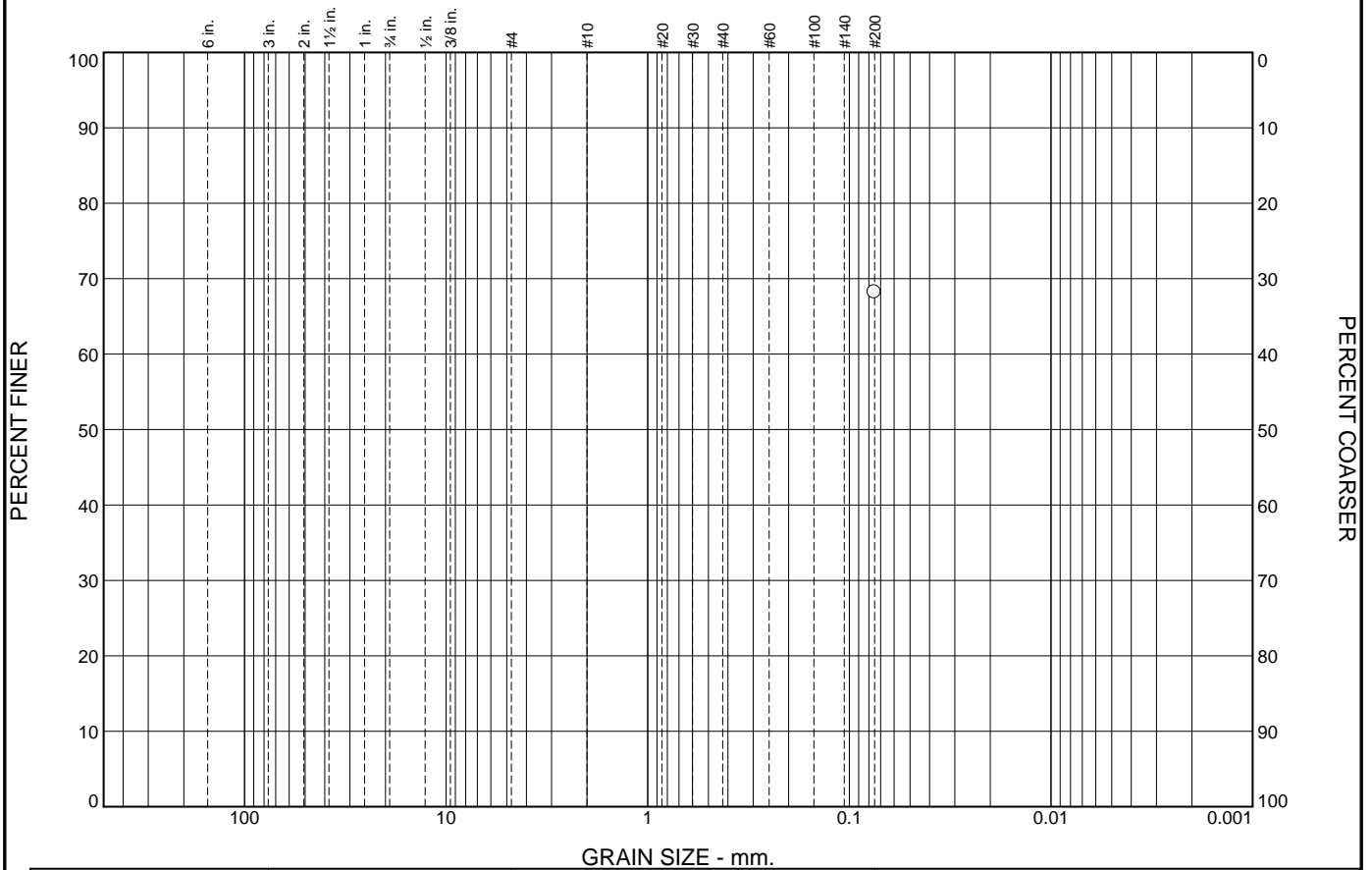
Material Description								USCS	AASHTO
<input type="radio"/> T ML									

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-09 Depth: 56 Sample Number: PB-16	Remarks:
<div style="text-align: center;">  </div>	

Figure

Tested By: MS Checked By: RR


Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>						68.2	

<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>	28	16								

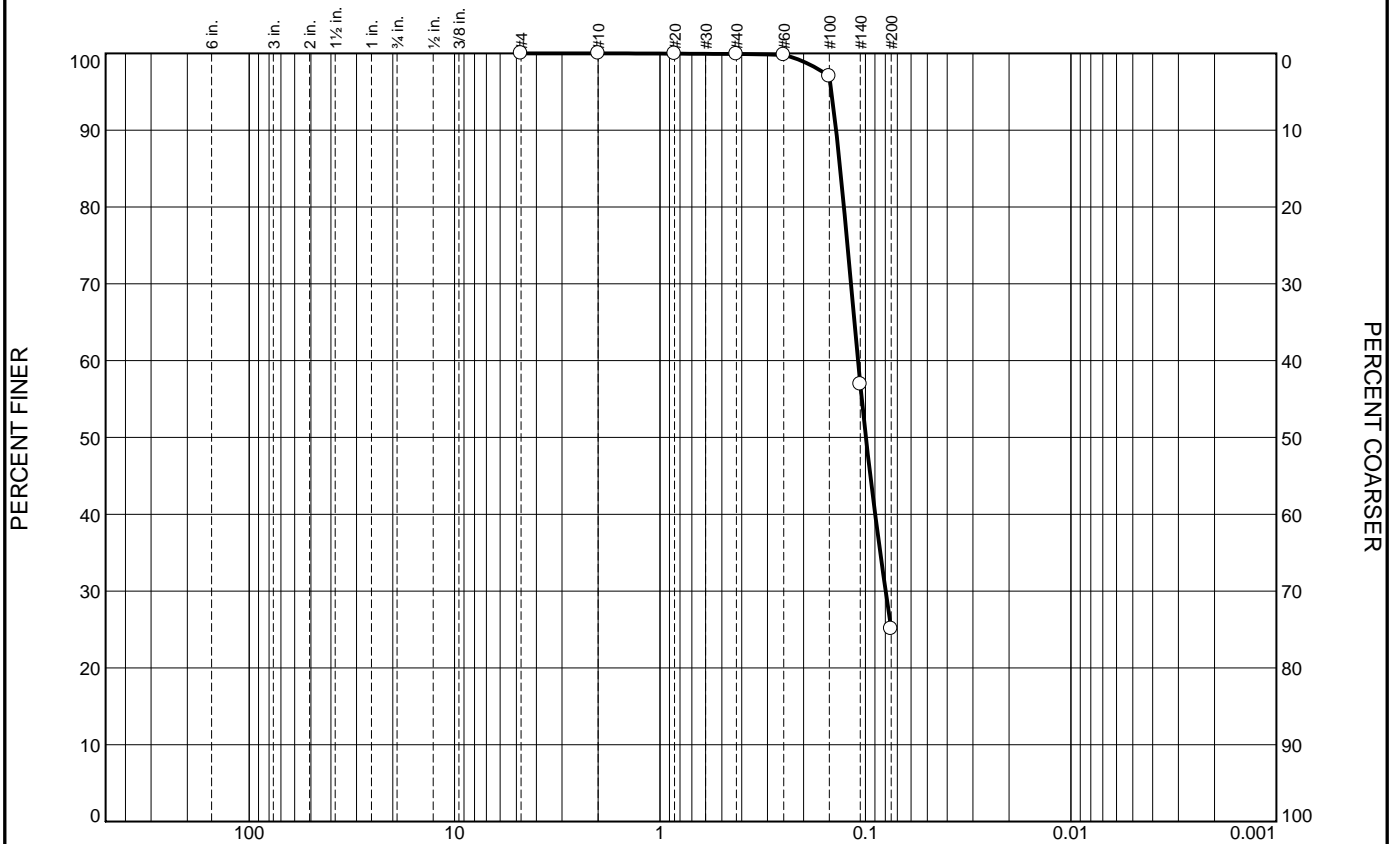
Material Description								USCS	AASHTO
<input type="radio"/> VST GR CL4 W/ ARS SP									

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-09 Depth: 104 Sample Number: PB-31	Remarks:
	

Figure

Tested By: MS Checked By: RR


Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>	0.0		0.0	0.0	0.0	0.1	74.8	25.1		
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>			0.1327	0.1088	0.0996	0.0797				

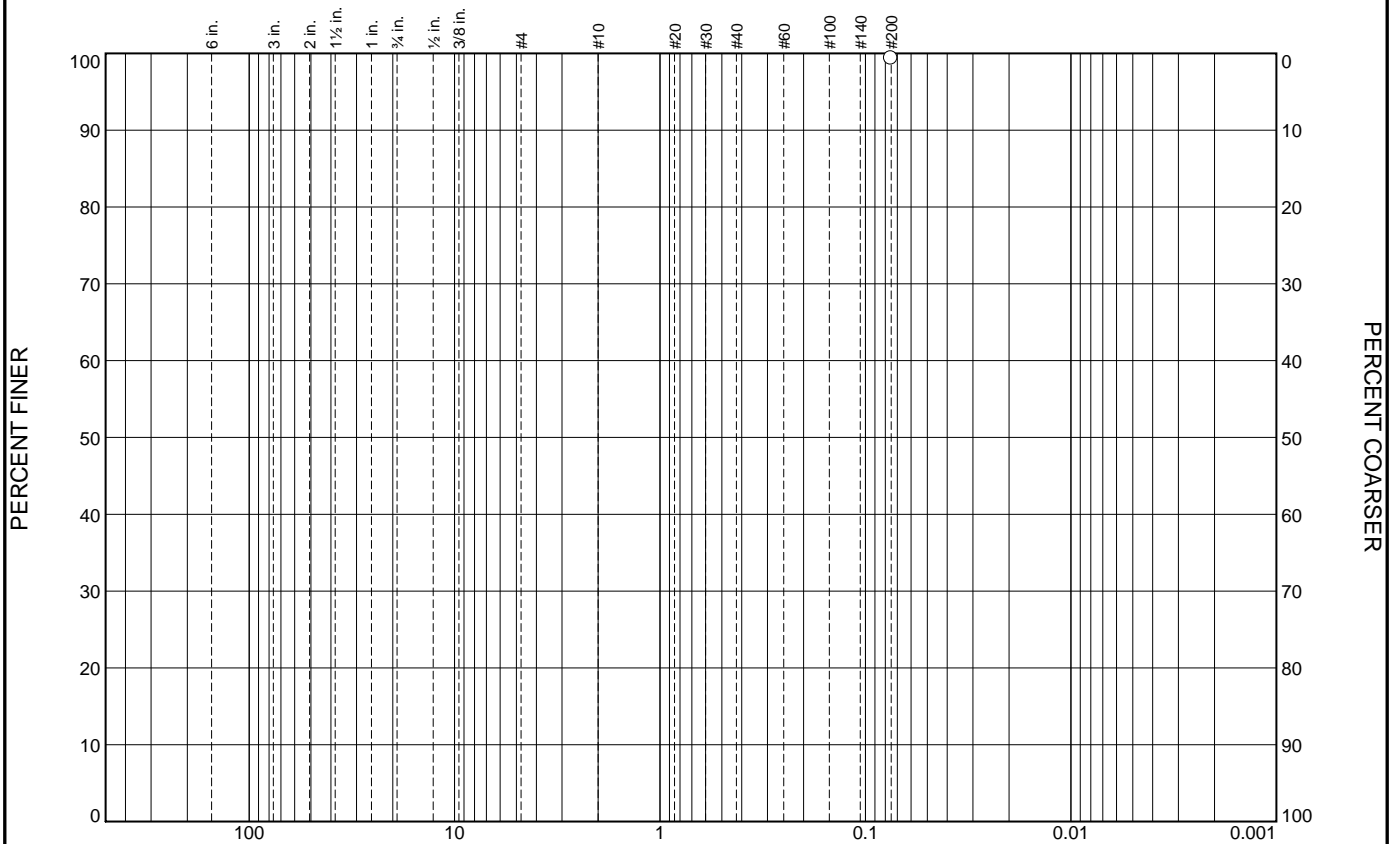
Material Description							USCS	AASHTO
<input type="radio"/> GR SP								

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-09 Depth: 116.5 Sample Number: PB-36	Remarks:
	

Figure

Tested By: EM Checked By: RR


Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>								99.4		
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
<input type="radio"/>	53	20								

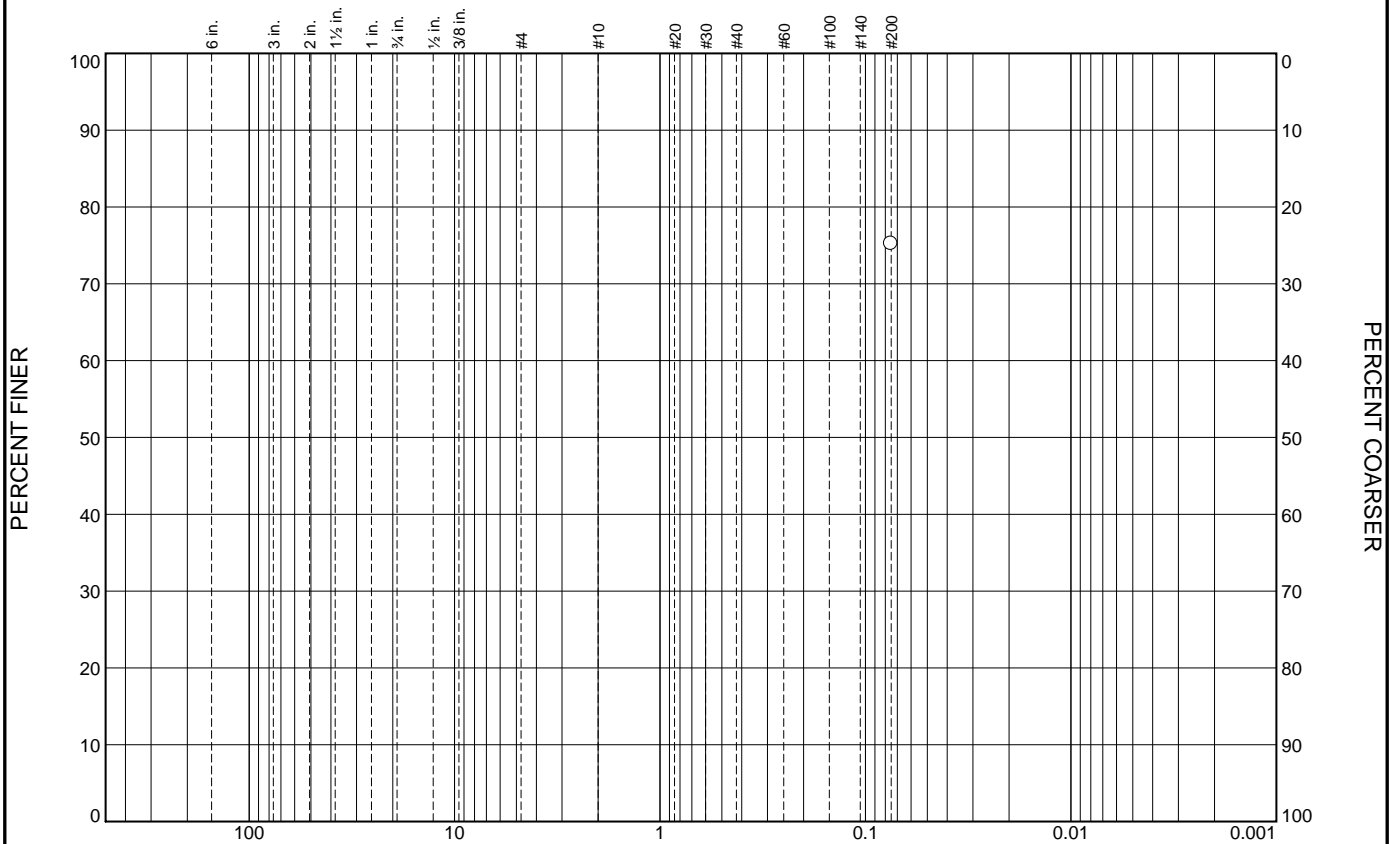
Material Description								USCS	AASHTO
M GNG CH2 W/ ARS ML, RT									

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-11 Depth: 21 Sample Number: 8B	Remarks:
	

Figure


Tested By: EM Checked By: RR

Particle Size Distribution Report



GRAIN SIZE - mm.										
	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>								75.2		
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
<input type="radio"/>										

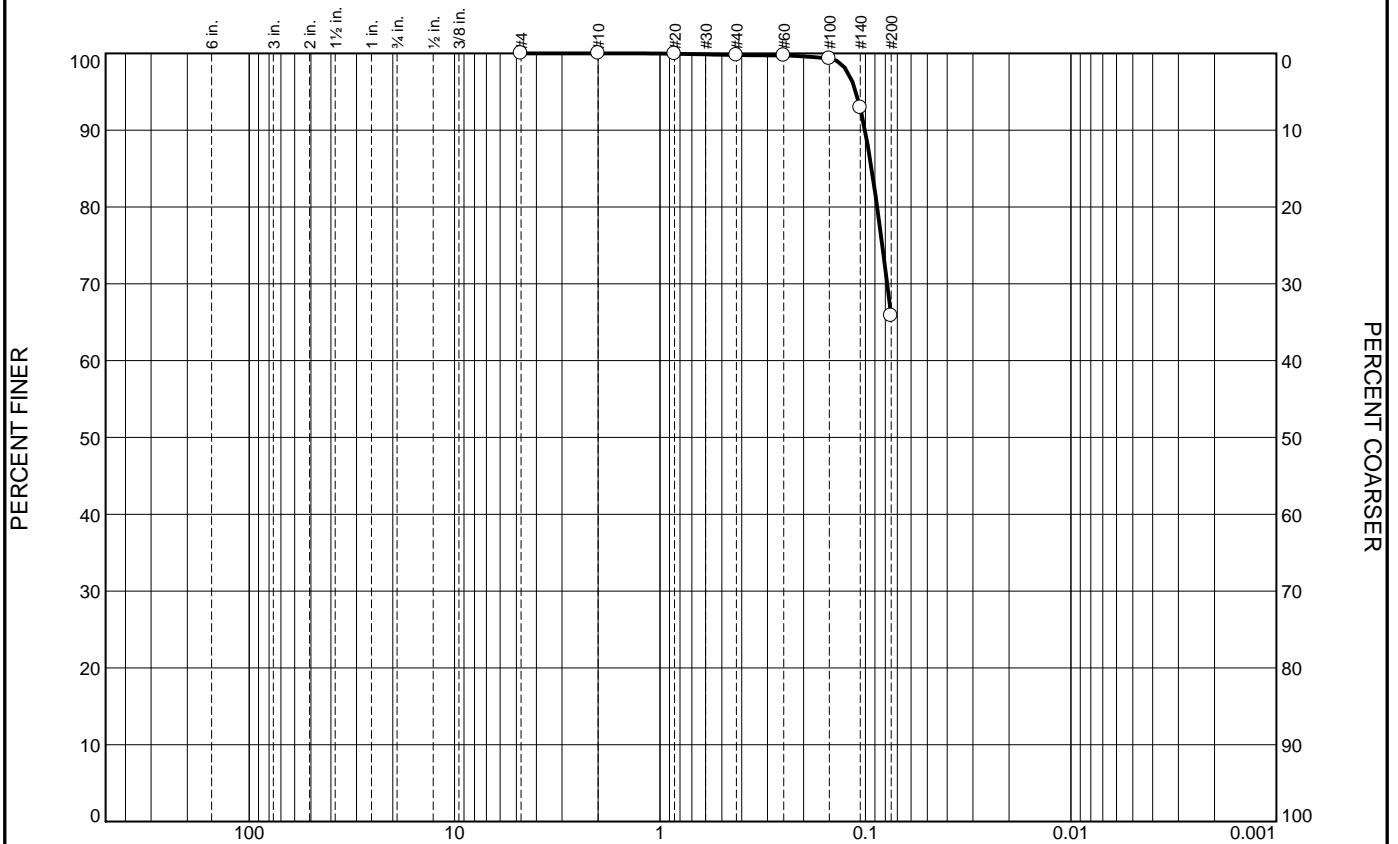
Material Description							USCS	AASHTO
<input type="radio"/> T ML								

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-11 Depth: 38 Sample Number: PB-13	Remarks:
	

Figure

Tested By: EM Checked By: RR

Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>	0.0		0.0	0.0	0.0	0.2	33.9	65.9		
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>			0.0934							

Material Description

USCS

AASHTO

☐ BR ML

Project No. 24384 **Client:** AECOM, NEW ORLEANS, LOUISIANA
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
☐ **Source of Sample:** SB-11 **Depth:** 48.5 **Sample Number:** PB-17

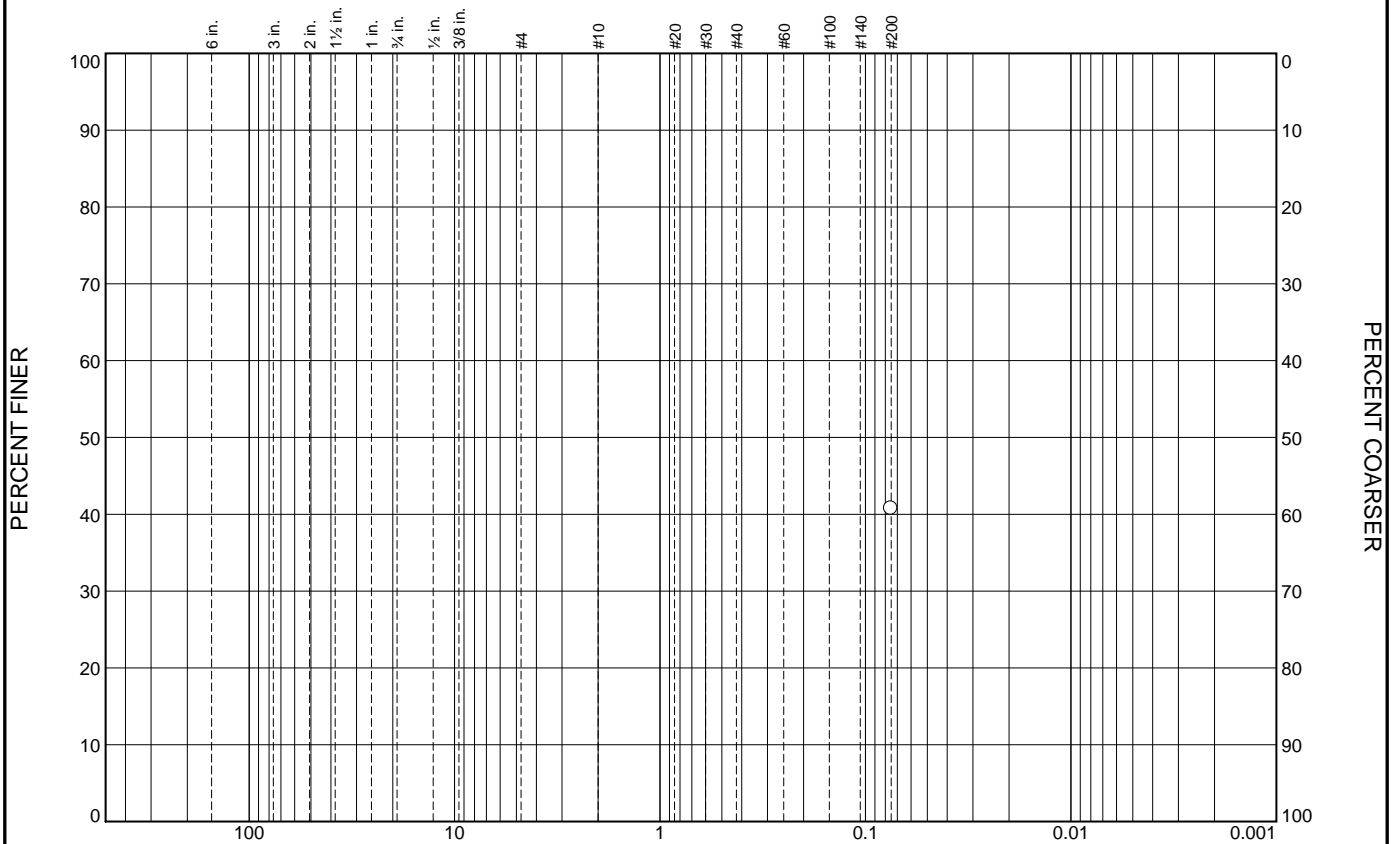
Remarks:



Figure

Tested By: EM Checked By: RR


Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>								40.8		
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>										

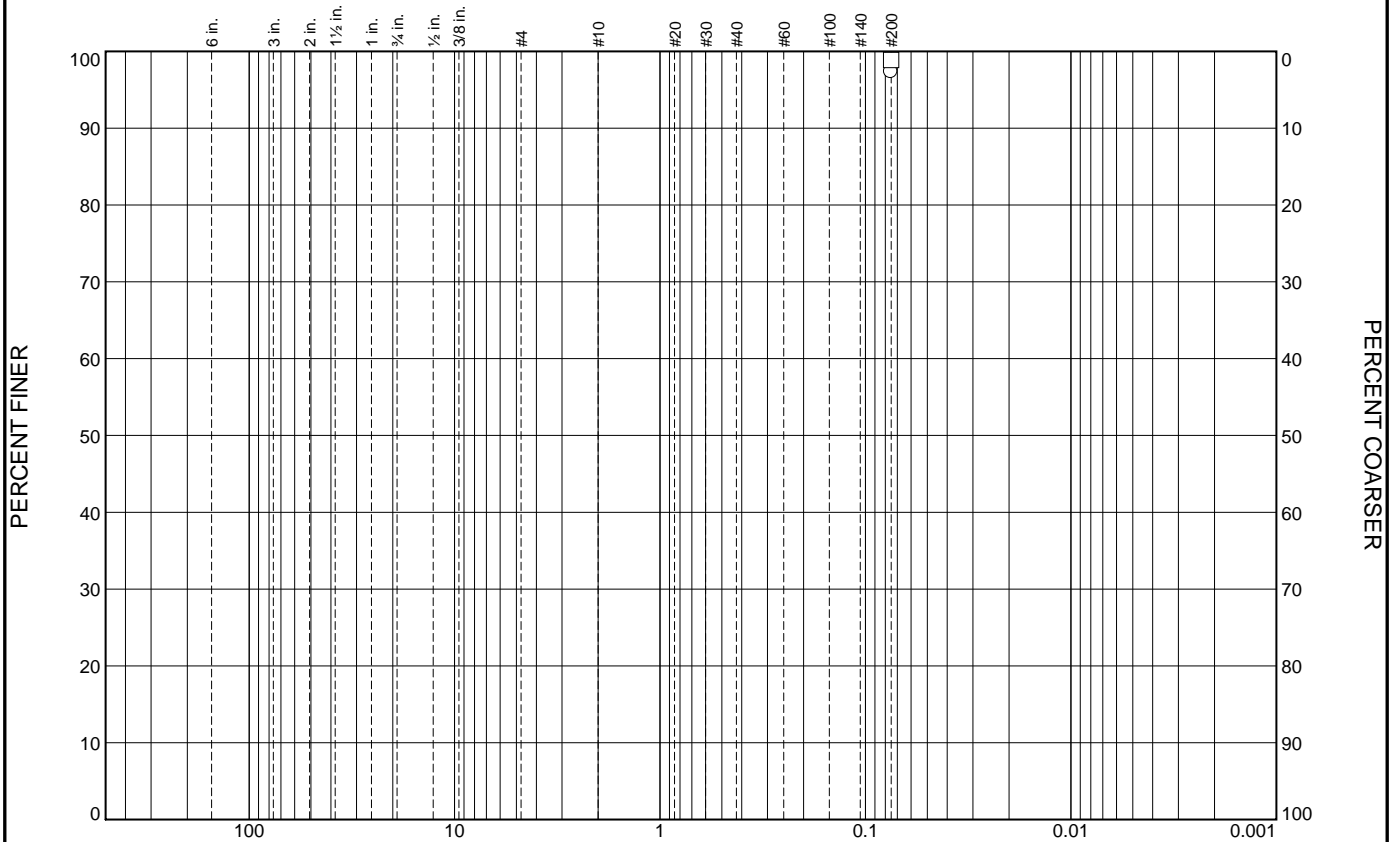
Material Description	USCS	AASHTO
<input type="radio"/> SO GR CH3 W/ ARS SM, O		

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-11 Depth: 91 Sample Number: 31B	Remarks:
	

Figure

Tested By: EM Checked By: RR

Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"	% Gravel		% Sand			% Fines		C _c	C _u
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>							97.3			
<input type="checkbox"/>							98.9			
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀		
<input type="radio"/>	77	30								
<input type="checkbox"/>	32	21								

Material Description

USCS

AASHTO

☐ SO GR & T CH4 W/ ARS ML, WD

☐ VST GR CL4

Project No. 24384 **Client:** AECOM, NEW ORLEANS, LOUISIANA
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
☐ **Source of Sample:** SB-11 **Depth:** 5 **Sample Number:** 3B
☐ **Source of Sample:** SB-11 **Depth:** 114 **Sample Number:** PB-37

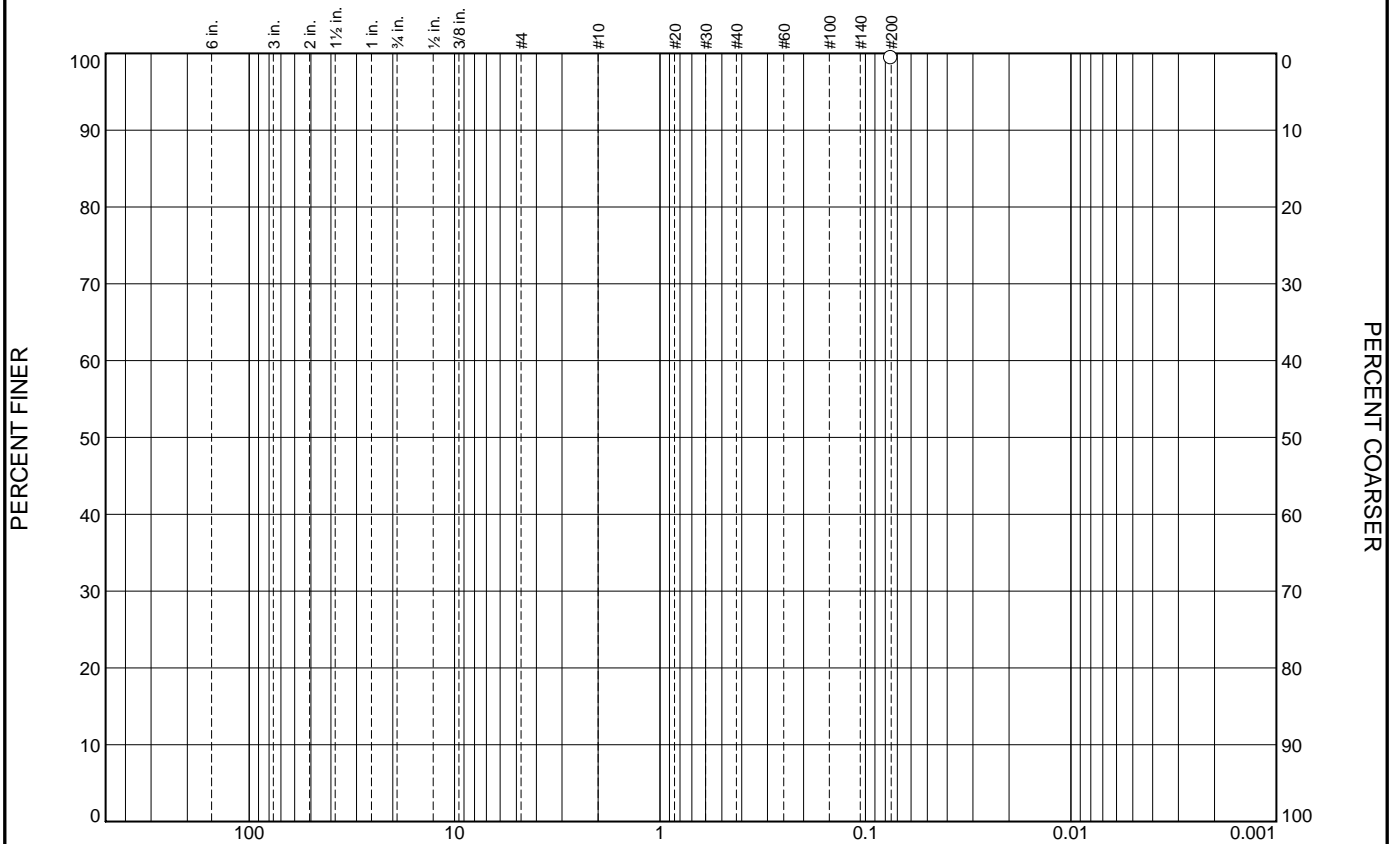
Remarks:



Figure

Tested By: ☐ EM ☐ BH Checked By: RR


Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"	% Gravel		% Sand			% Fines		C _c	C _u
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
<input type="radio"/>							99.4			
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀		
<input type="radio"/>	48	15								

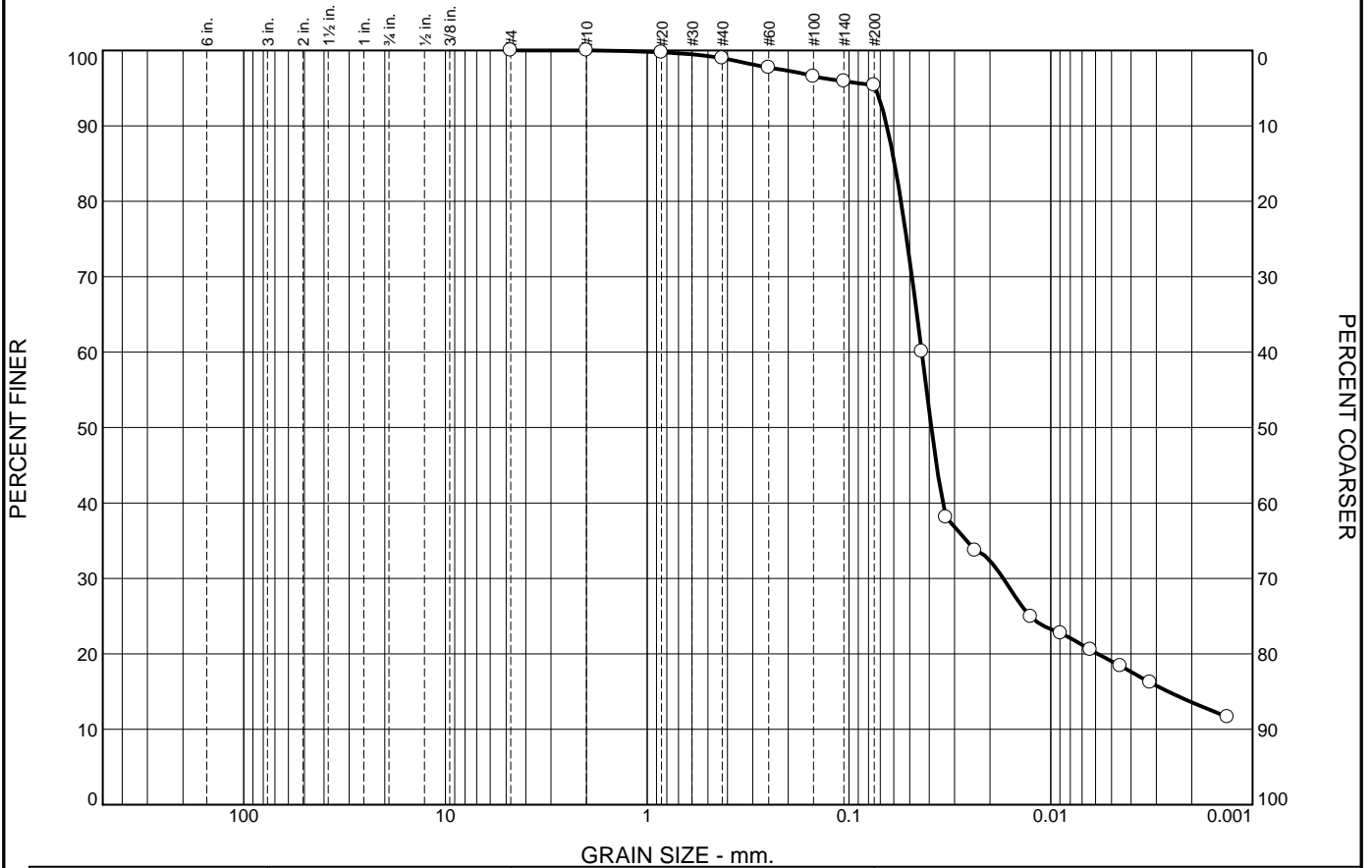
Material Description							USCS	AASHTO
<input type="radio"/> ST GR CL6								

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-11 Depth: 123.5 Sample Number: PB-40	Remarks:
	

Figure

Tested By: BH Checked By: RR


Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
<input type="radio"/>	0.0	0.0	0.0	0.0	1.0	3.6	76.4	19.0

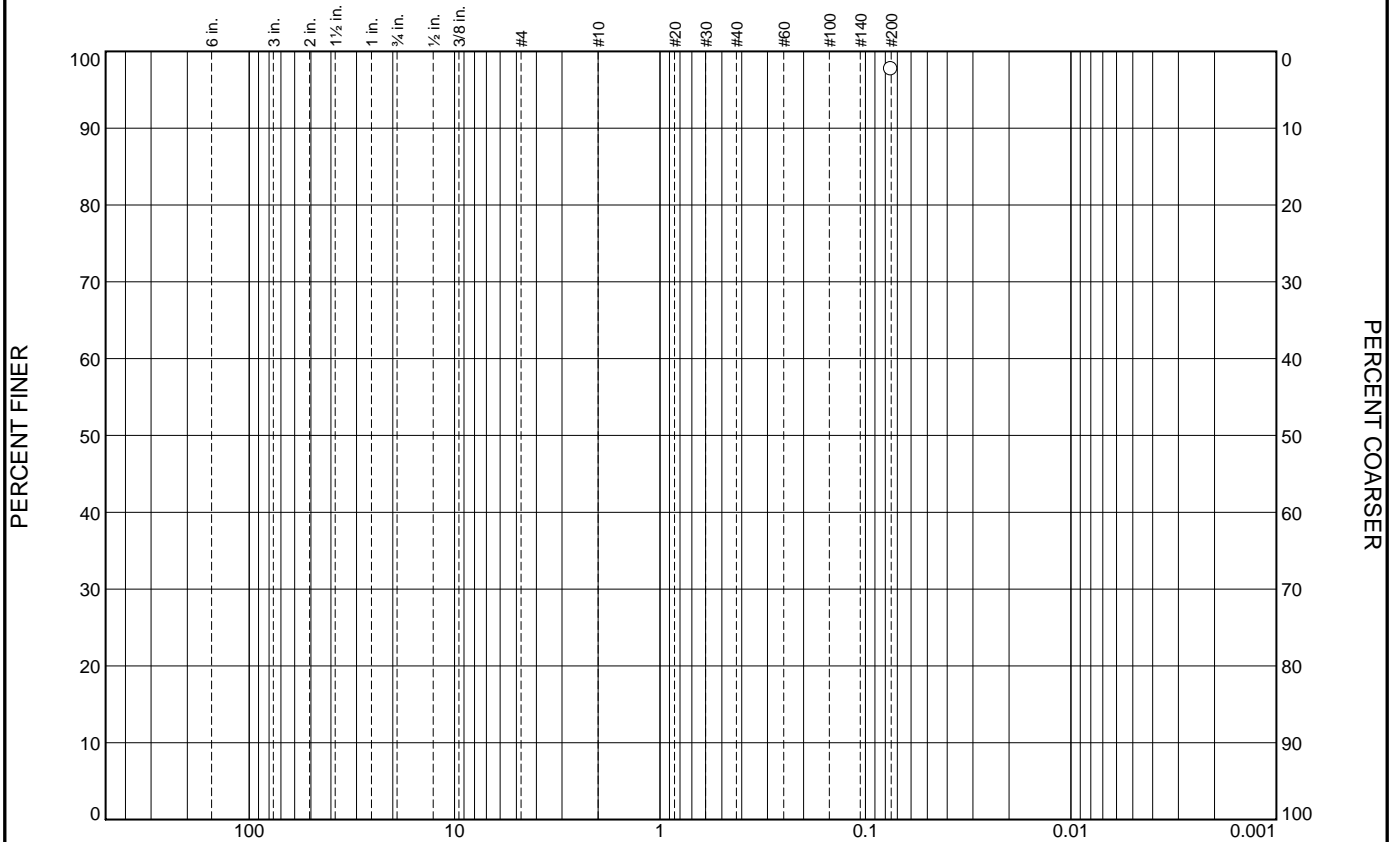
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>			0.0594	0.0436	0.0391	0.0172	0.0026			

Material Description							USCS	AASHTO
SO DGR & BR CHOB							CHOB	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-12 Depth: 13 Sample Number: 5B	Remarks: <div>Figure</div>
	

Tested By: EM Checked By: RR


Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>								97.7		
<input checked="" type="checkbox"/>	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
<input type="radio"/>										

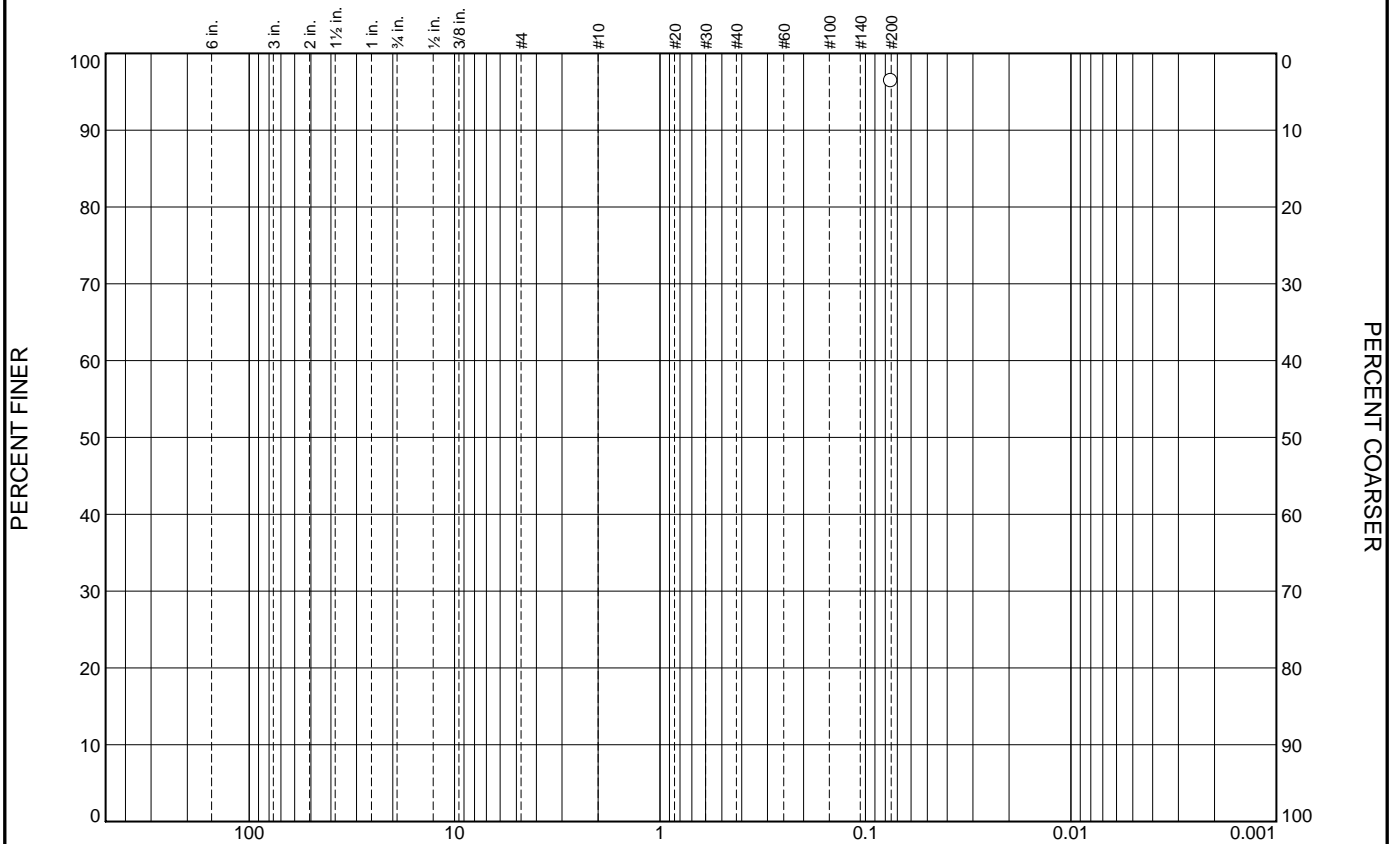
Material Description						USCS	AASHTO
<input type="radio"/> M DGR CH3 W/ WD, O						CH3	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), <input type="radio"/> Source of Sample: SB-13 Depth: 8 Sample Number: 4A	Remarks:
	

Figure


Tested By: EM Checked By: RR

Particle Size Distribution Report



GRAIN SIZE - mm.										
	% +3"		% Gravel		% Sand			% Fines		
			Coarse	Fine	Coarse	Medium	Fine	Silt		Clay
<input type="radio"/>								96.4		
<input checked="" type="checkbox"/>	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
<input type="radio"/>										

Material Description							USCS	AASHTO
○ M GR & T CH4 W/ ARS ML							CH4	

Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), ○ Source of Sample: SB-13 Depth: 2.5 Sample Number: PB-2	Remarks: <div>Figure</div>
	

Tested By: EM Checked By: RR

APPENDIX VII

SUMMARY OF CONSOLIDATION DATA RESULTS (SDR-A, SDR-B, SDR-C)

EE 24384 - Maurepas
Consolidation Test Data Summary

Soil Reach No.	Boring No.	Top of Boring El. (NAVD 88)	Sample El. (NAVD 88)	USACE Soil Class.	Liquid Limit	Plasticity Index	Moisture Content (%)	Initial Wet Density (pcf)	Compression Index Cc	Recompression Index Cr	Initial Void Ratio eo	Compression Ratio Cce	Recompression Ratio Cre	In Situ Effective Vertical Stress Po (tsf)	Preconsolidation Pressure Pc (tsf)	Over Consolidation Ratio OCR	Shansep Su (psf) $S_u = 0.22 \frac{P_c^{0.80}}{P_o}$
Reach C	B-05A	5.6	-6.4	CH	106	68	51.6	107.3	0.498	0.049	1.423	0.206	0.020	0.29	2.00	6.92	598
Reach B	B-6	3.2	-7.8	CH	179	127	126.6	83.6	1.542	0.193	3.652	0.331	0.041	0.25	0.70	2.82	250
Reach A	B-07A	3.7	-7.3	CH	175	134	121.9	83.4	1.658	0.221	3.560	0.364	0.048	0.14	0.60	4.36	197
Reach A	B-9	2.5	-9.5	CH	185	118	194.4	77.7	1.931	0.209	4.677	0.340	0.037	0.15	1.10	7.33	325
Reach A	B-10	-1.3	-11.3	CH	109	73	82.9	94.6	0.886	0.125	2.320	0.267	0.038	0.13	0.80	6.40	243
Reach A	B-11	-2.7	-14.7	CH	58	39	45.2	110.1	0.484	0.319	1.264	0.214	0.141	0.15	0.70	4.67	226
Reach A	B-12	-3.0	-11.0	OH	259	184	146.0	80.0	0.997	0.216	3.607	0.216	0.047	0.10	0.58	5.80	180
Reach A	B-14	-0.5	-14.5	CL	44	23	28.4	120.4	0.260	0.038	0.831	0.142	0.021	0.18	1.22	6.97	364
Reach A	B-15	-0.4	-12.4	CH	55	38	40.7	116.5	0.328	0.039	1.074	0.158	0.019	0.15	0.85	5.67	264
Reach A	B-17	0.3	-9.7	OH	285	188	203.5	74.1	2.000	0.400	5.151	0.325	0.065	0.13	0.50	4.00	167
Reach A	B-19	0.0	-12.0	CH	58	16	31.2	119.9	0.246	0.031	0.879	0.131	0.016	0.15	0.90	6.00	277
Reach B	KCS-01	2.6	-20.4	CH	70	44	51.3	105.2	0.346	0.118	1.514	0.138	0.047	0.51	0.38	0.74	177
Reach C	SB-01	7.4	-17.7	CHOB	163	114	117.8	85.2	1.790	0.384	3.056	0.441	0.095	0.57	1.40	2.45	515
Reach C	SB-02	5.5	-1.5	CH3	73	52	21.4	129.3	0.277	0.091	0.576	0.176	0.058	0.17	1.50	8.75	428
Reach C	SB-02	5.5	-22.5	ML	NP	NP	31.2	119.0	0.138	0.022	0.831	0.075	0.012	0.64	1.50	2.36	556
Reach C	SB-03	5.7	-25.3	CH2	50	32	61.5	100.6	0.856	0.230	1.676	0.320	0.086	0.70	0.90	1.29	377
Reach C	SB-04	11.8	-14.2	CHOC	195	133	141.0	81.2	2.400	0.443	3.791	0.501	0.092	0.59	1.20	2.03	458
Reach B	SB-05	4.4	-14.6	CHOA	137	100	80.3	93.0	1.045	0.300	2.111	0.336	0.096	0.42	1.50	3.54	513
Reach B	SB-06	4.0	-10.0	CHOA	132	100	43.3	107.9	0.741	0.187	1.148	0.345	0.087	0.31	1.50	4.78	483
Reach B	SB-07	3.1	-10.9	CHOA	150	98	110.0	87.2	1.495	0.255	2.883	0.385	0.066	0.31	2.80	8.92	795

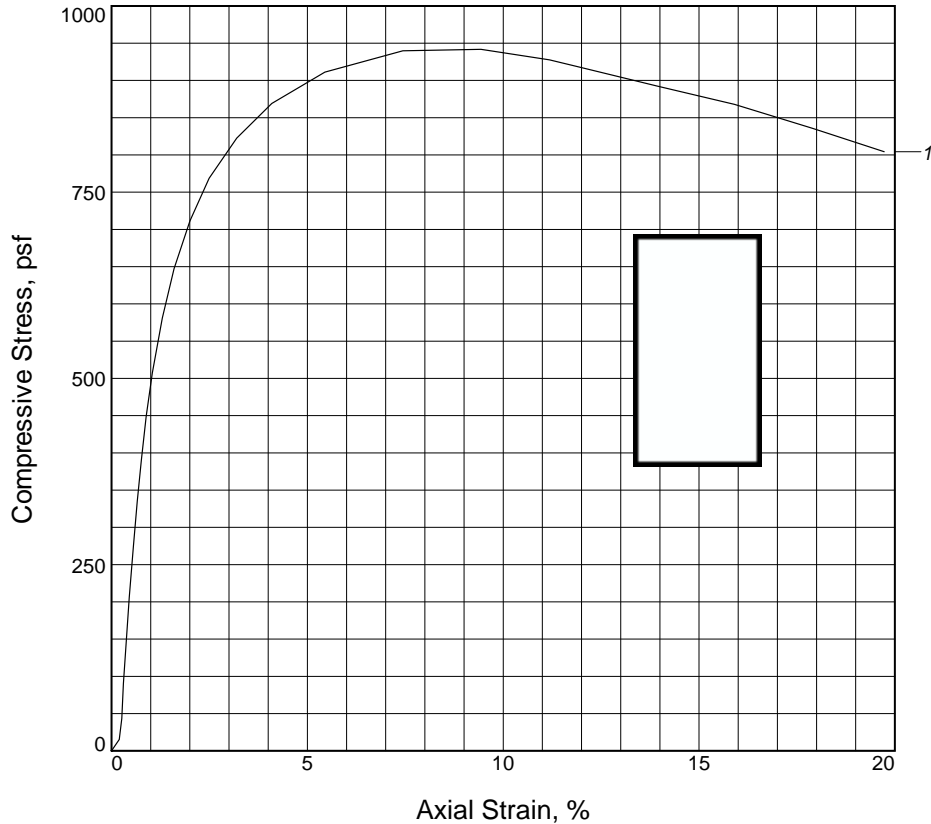
EE 24384 - Maurepas
Consolidation Test Data Summary

Soil Reach No.	Boring No.	Top of Boring El. (NAVD 88)	Sample El. (NAVD 88)	USACE Soil Class.	Liquid Limit	Plasticity Index	Moisture Content (%)	Initial Wet Density (pcf)	Compression Index Cc	Recompression Index Cr	Initial Void Ratio eo	Compression Ratio Cce	Recompression Ratio Cre	In Situ Effective Vertical Stress Po (tsf)	Preconsolidation Pressure Pc (tsf)	Over Consolidation Ratio OCR	Shansep Su (psf) $S_u = 0.22 \frac{P_c^{0.80}}{P_o}$
Reach B	SB-08	3.1	-6.9	CHOA	144	99	93.7	88.9	1.214	0.257	2.495	0.347	0.074	0.23	1.50	6.64	452

APPENDIX VIII

COMPILATION OF SHEAR DATA REPORTS (SDR-A, SDR-B, SDR-C)

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	941.9			
Undrained shear strength, psf	470.9			
Failure strain, %	9.4			
Strain rate, %/min.	1.00			
Water content, %	49.9			
Wet density, pcf	108.0			
Dry density, pcf	72.0			
Saturation, %	100.0			
Void ratio	1.3580			
Specimen diameter, in.	1.395			
Specimen height, in.	2.776			
Height/diameter ratio	1.99			

Description: SO GR & T CH3 W/ ARS ML, RT

LL = 75 **PL = 25** **PI = 50** **Assumed GS= 2.72** **Type: UNDISTURBED**

Project No.: 24384

Date Sampled: 9/10/20

Remarks:

TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01

Depth: 5

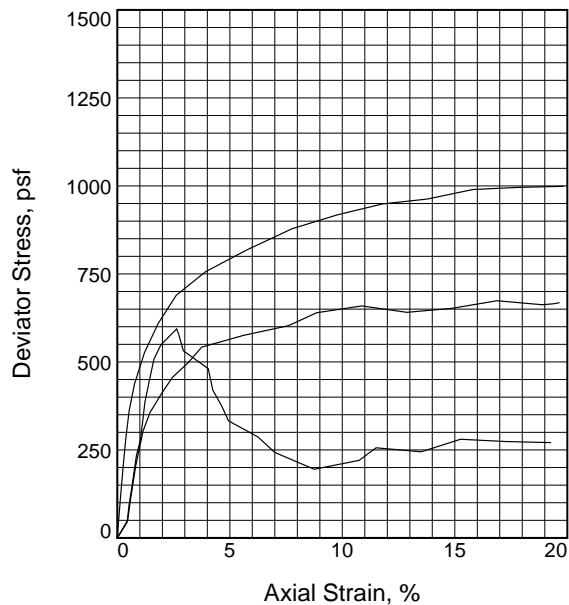
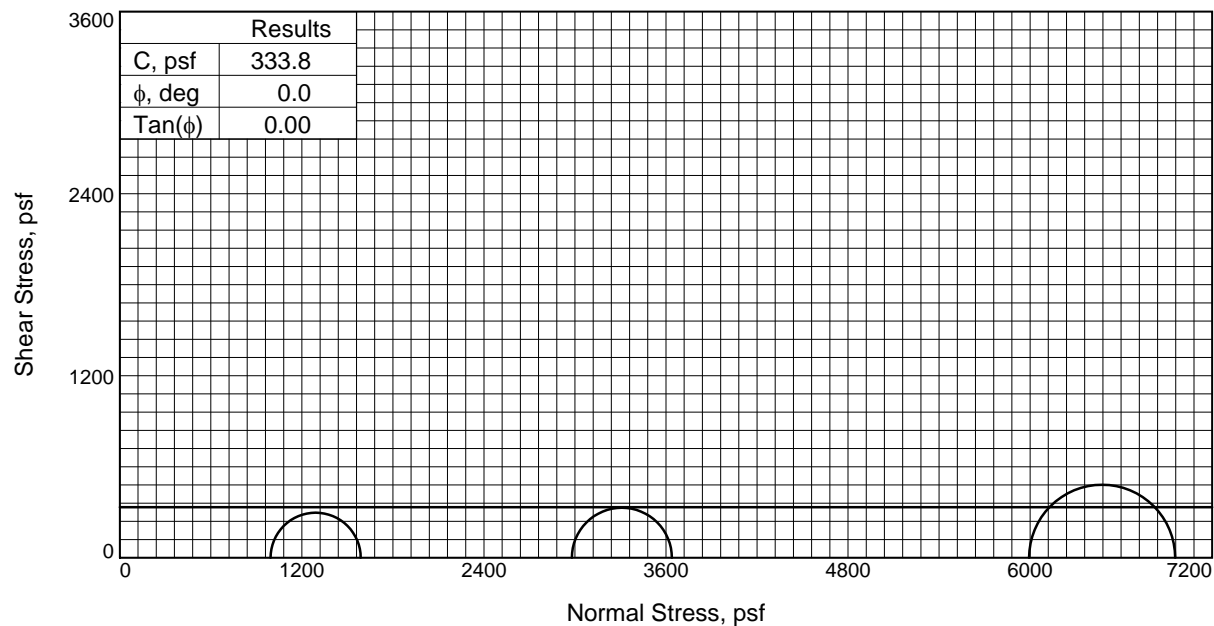
Sample Number: 2B

Figure ASTM D2166



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Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	35.1	35.8	34.7
	Dry Density, pcf	86.7	83.9	87.1
	Saturation, %	100.2	95.8	100.4
	Void Ratio	0.9450	1.0093	0.9342
	Diameter, in.	1.405	1.385	1.387
	Height, in.	2.741	2.754	2.761
At Test	Water Content, %	35.1	35.8	34.7
	Dry Density, pcf	86.7	83.9	87.1
	Saturation, %	100.2	95.8	100.4
	Void Ratio	0.9450	1.0093	0.9342
	Diameter, in.	1.405	1.385	1.387
	Height, in.	2.741	2.754	2.761
Strain rate, %/min.		0.50	0.50	0.50
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.900	20.690	41.620
Fail. Stress, psf		594.1	659.4	962.8
Ult. Stress, psf		244.8	641.1	962.8
σ_1 Failure, psf		1587.7	3638.7	6956.1
σ_3 Failure, psf		993.6	2979.4	5993.3

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR & T CH2 W/ ARS ML, CC, SL

LL= 58 PL= 23 PI= 35

Assumed Specific Gravity= 2.7

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 9

Sample Number: 3B

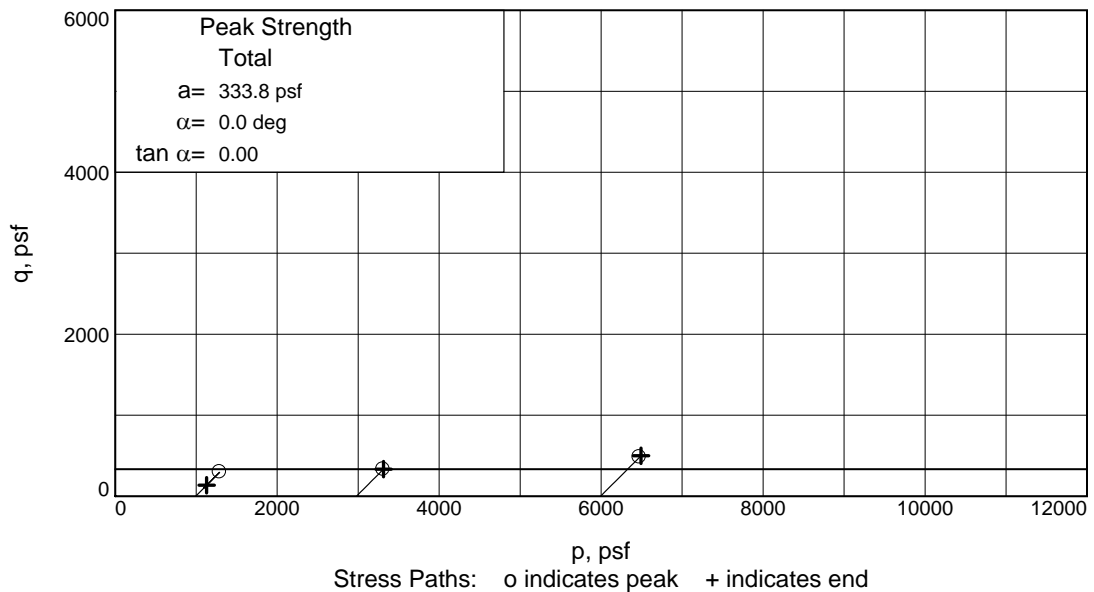
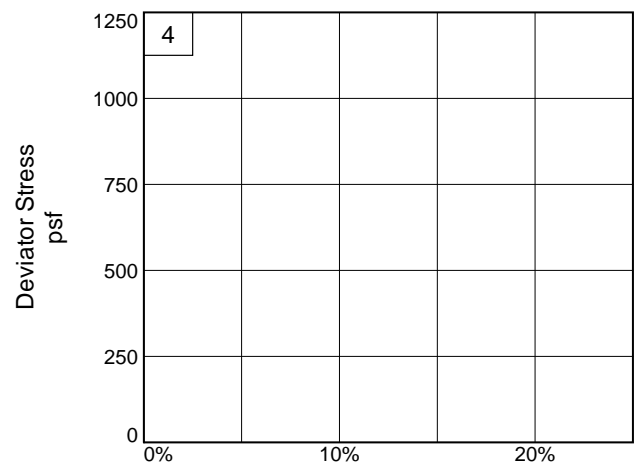
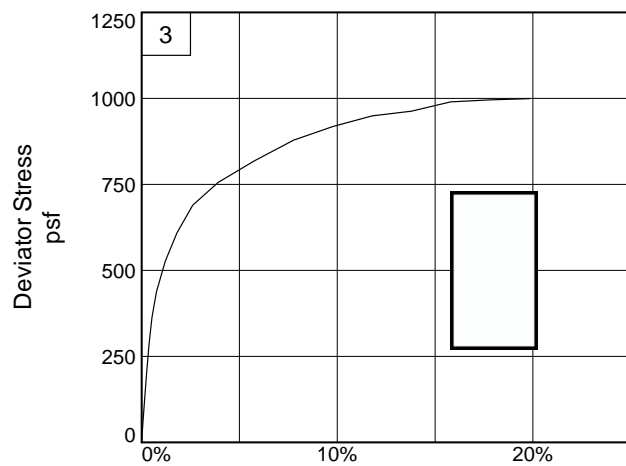
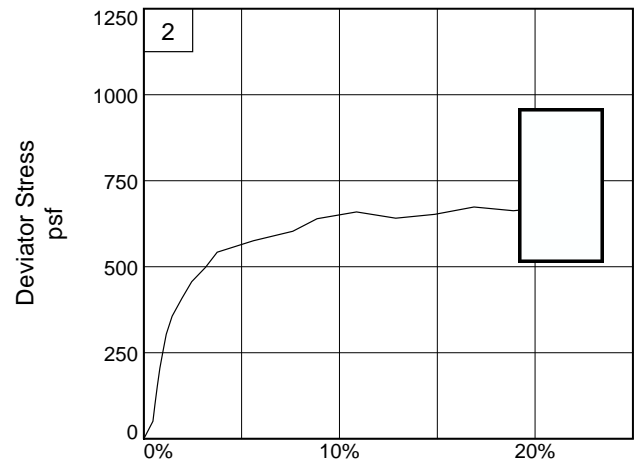
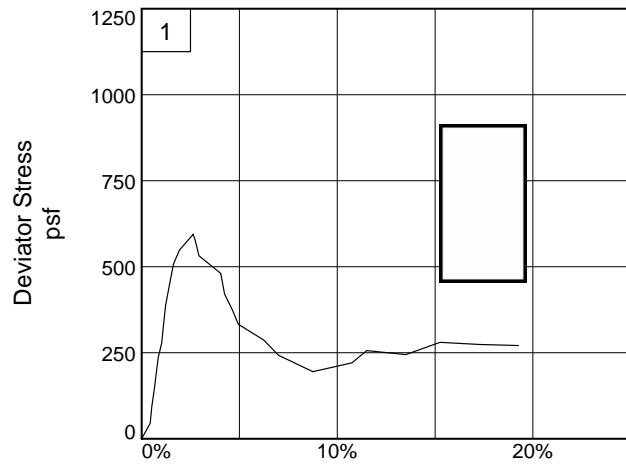
Proj. No.: 24384

Date Sampled: 9/10/20

Figure ASTM D2850



Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01

Depth: 9

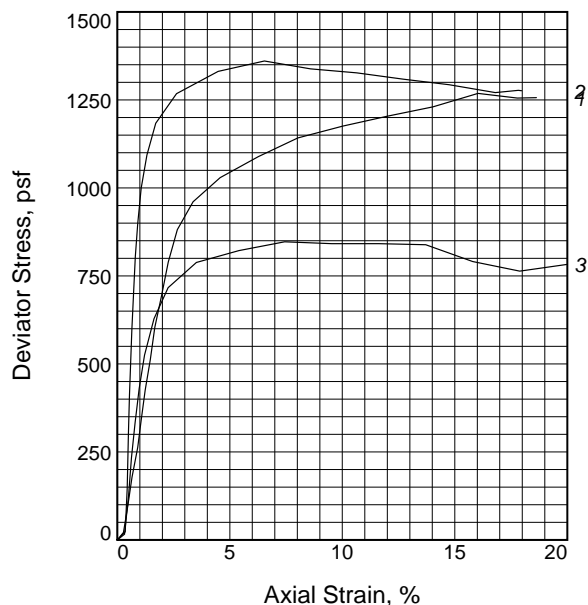
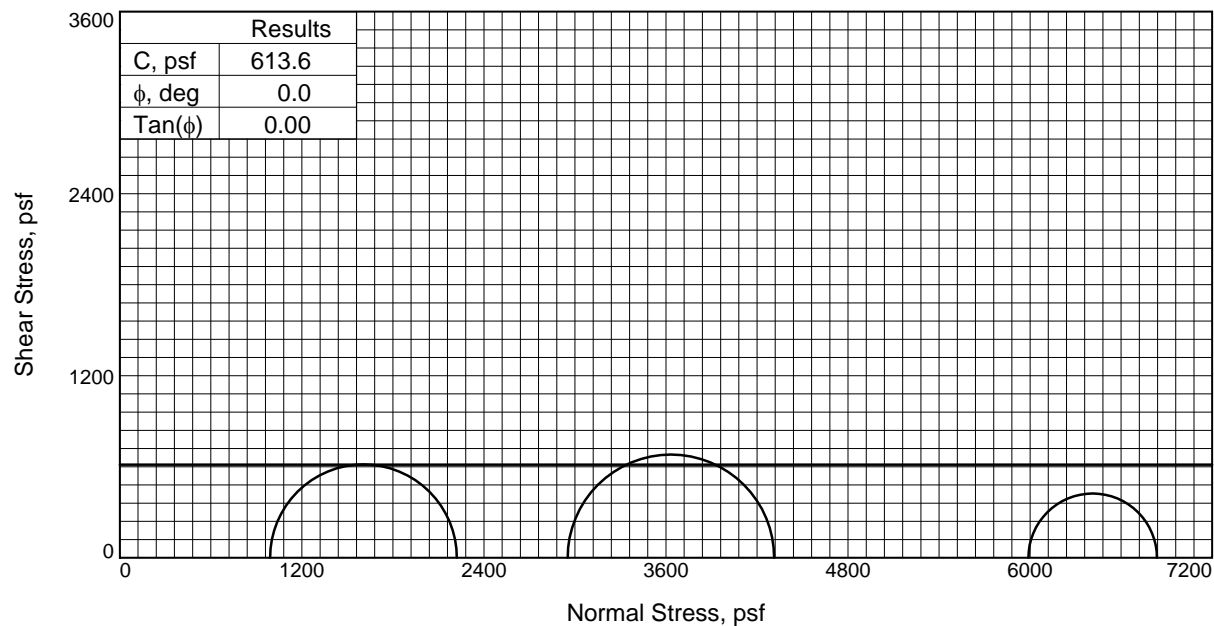
Sample Number: 3B

Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	43.8	44.1	45.1
	Dry Density, pcf	75.4	73.7	72.9
	Saturation, %	95.1	92.0	92.3
	Void Ratio	1.2521	1.3047	1.3294
	Diameter, in.	1.394	1.392	1.395
	Height, in.	2.812	2.752	2.733
At Test	Water Content, %	46.0	48.0	48.9
	Dry Density, pcf	75.4	73.7	72.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.2521	1.3047	1.3294
	Diameter, in.	1.394	1.392	1.395
	Height, in.	2.812	2.752	2.733
Strain rate, %/min.		0.30	0.30	0.30
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.880	20.500	41.590
Fail. Stress, psf		1230.4	1360.8	847.2
Strain, %		14.0	6.5	7.4
Ult. Stress, psf		1230.4	1293.2	838.7
Strain, %		14.0	14.8	13.7
σ_1 Failure, psf		2221.2	4312.8	6836.2
σ_3 Failure, psf		990.7	2952.0	5989.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR & T CH4 W/ ARS ML, CC, SL

LL= 98 **PL=** 29 **PI=** 69

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 13

Sample Number: 4B

Proj. No.: 24384

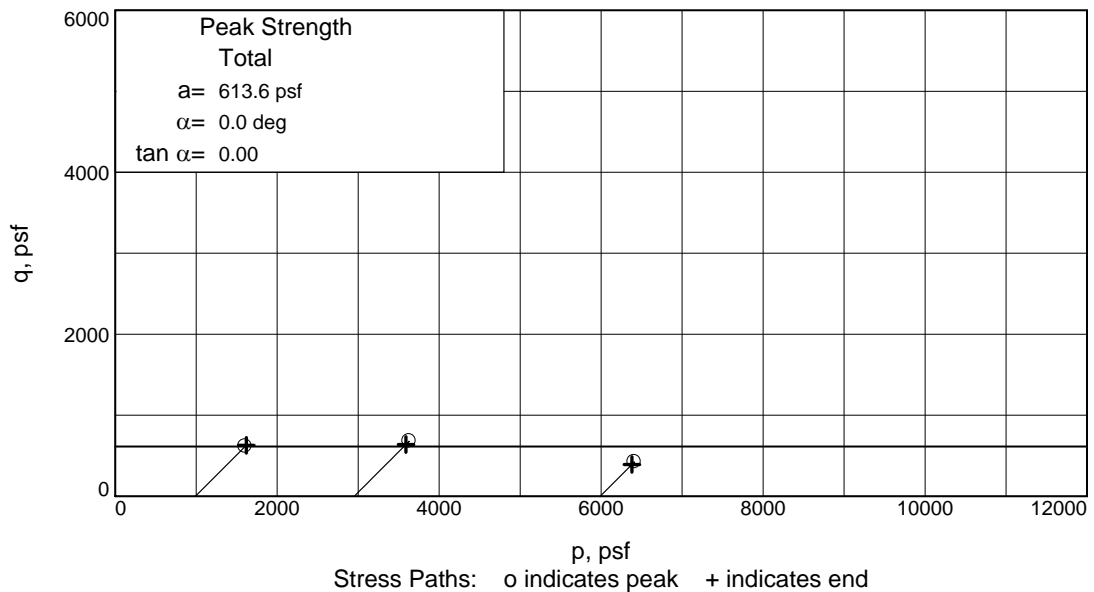
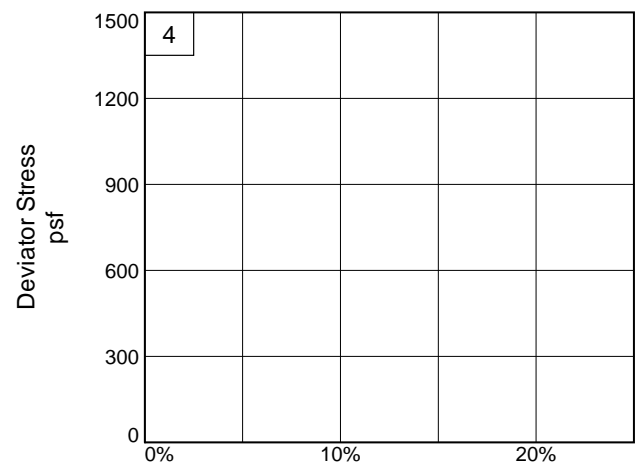
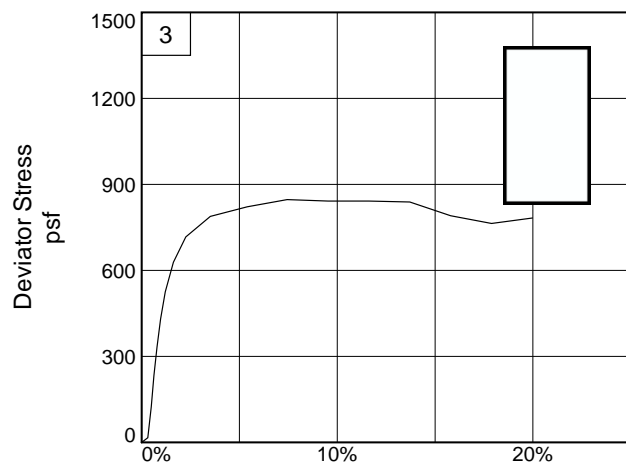
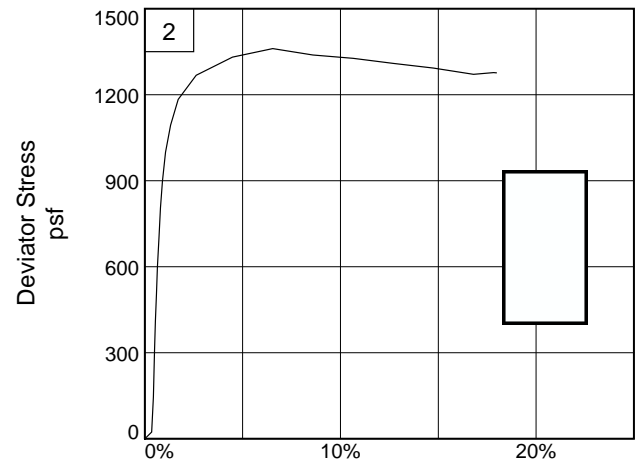
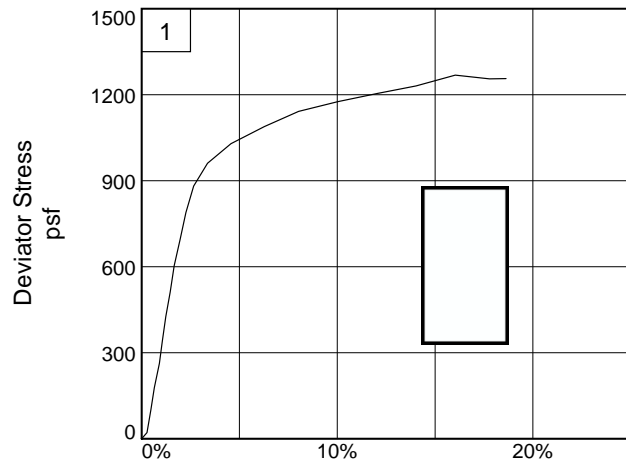
Date Sampled: 9/10/20



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Figure ASTM D2850

Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01

Depth: 13

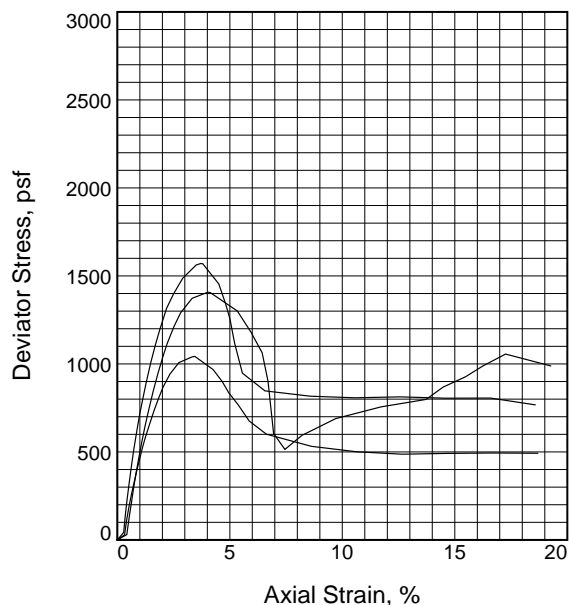
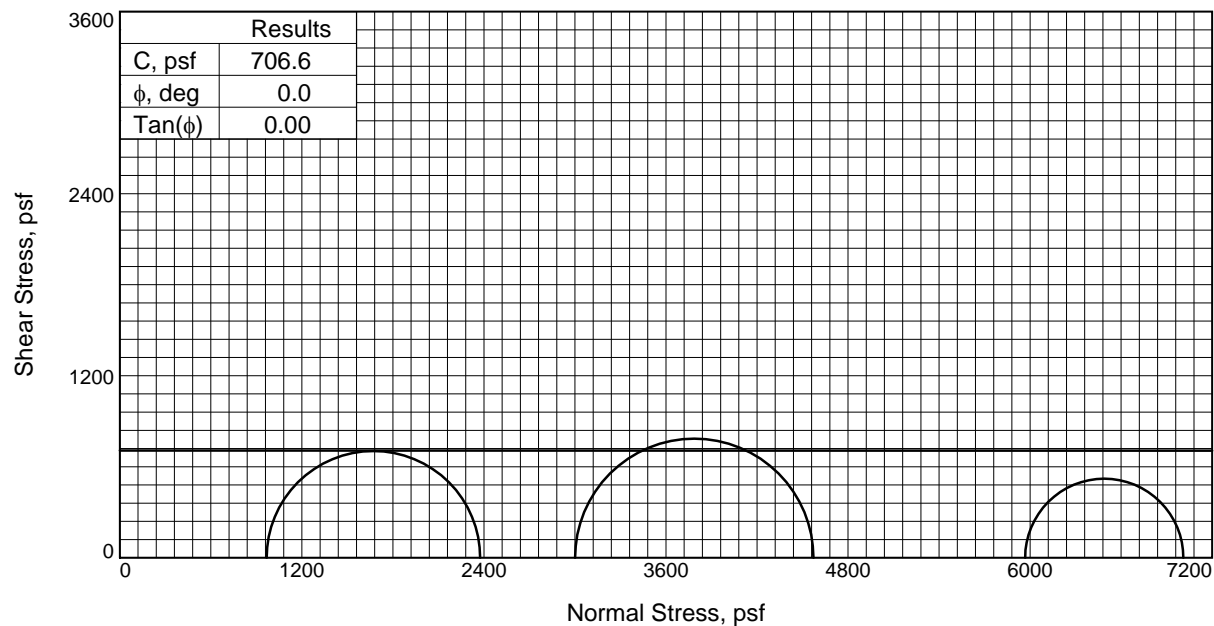
Sample Number: 4B

Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	128.7	122.9	126.9
	Dry Density, pcf	36.6	38.8	36.9
	Saturation, %	96.8	99.8	96.5
	Void Ratio	3.5236	3.2633	3.4870
	Diameter, in.	1.414	1.392	1.420
	Height, in.	2.755	2.765	2.753
At Test	Water Content, %	133.0	123.1	131.6
	Dry Density, pcf	36.6	38.8	36.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	3.5236	3.2633	3.4870
	Diameter, in.	1.414	1.392	1.420
	Height, in.	2.755	2.765	2.753
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.720	20.840	41.440
Fail. Stress, psf		1407.5	1570.9	1042.7
Strain, %		4.0	3.7	3.4
Ult. Stress, psf		514.8	805.7	487.3
Strain, %		7.5	14.6	12.7
σ_1 Failure, psf		2375.2	4571.8	7010.1
σ_3 Failure, psf		967.7	3001.0	5967.4

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR & BR CHOB

LL= 172 **PL=** 54 **PI=** 118

Assumed Specific Gravity= 2.65

Remarks: TORVANE = 0.250 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 26

Sample Number: 7C

Proj. No.: 24384

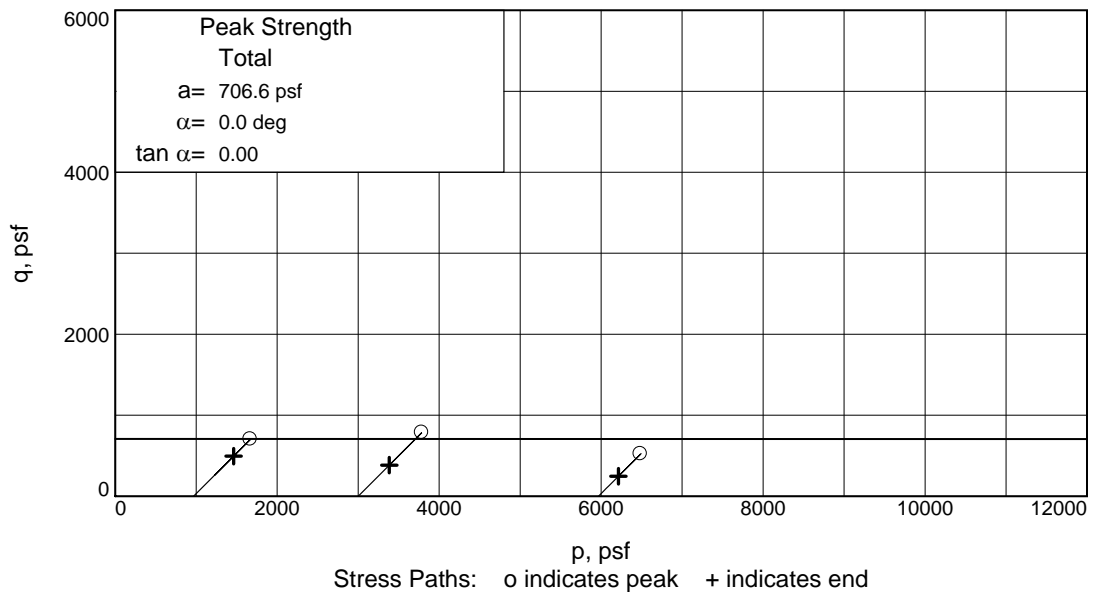
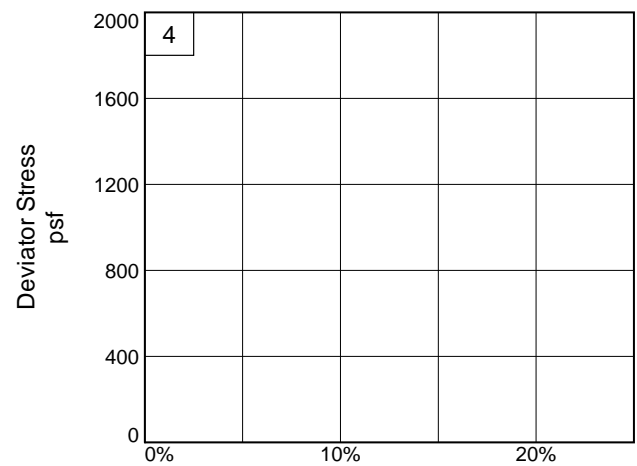
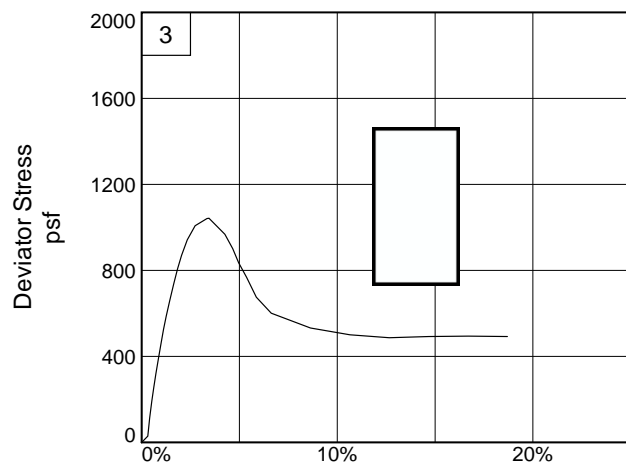
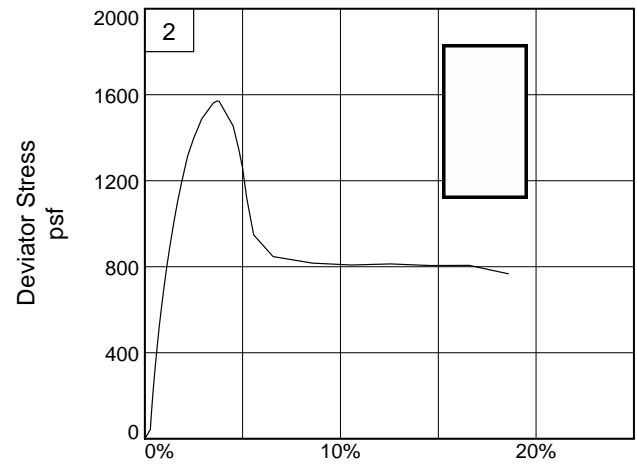
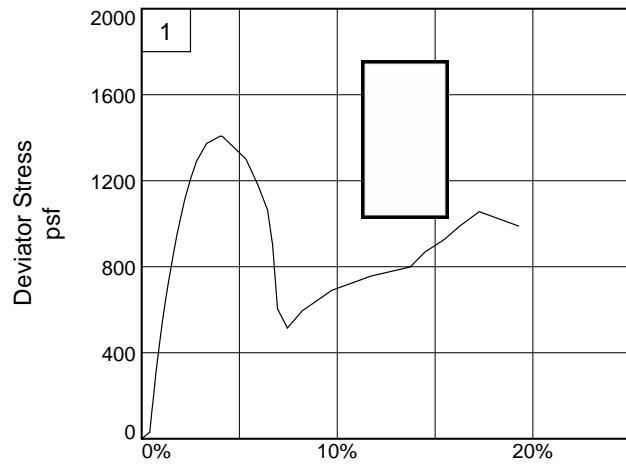
Date Sampled: 9/10/20



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Figure ASTM D2850

Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01

Depth: 26

Sample Number: 7C

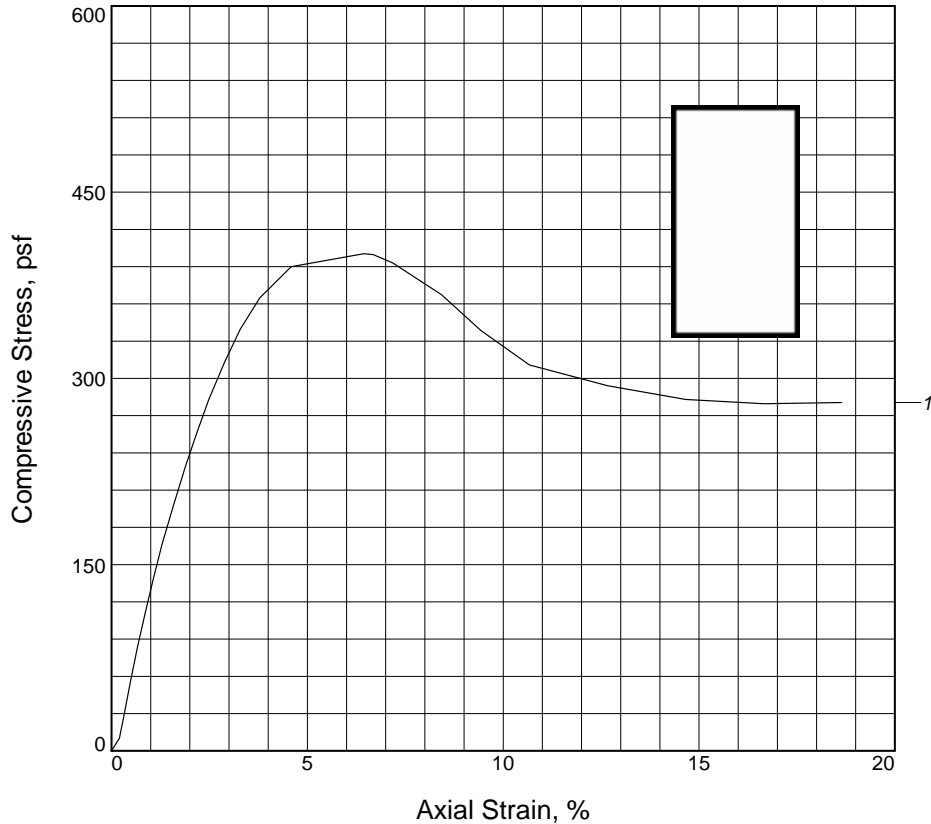
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	400.5			
Undrained shear strength, psf	200.2			
Failure strain, %	6.4			
Strain rate, %/min.	1.00			
Water content, %	69.1			
Wet density, pcf	99.6			
Dry density, pcf	58.9			
Saturation, %	99.8			
Void ratio	1.8825			
Specimen diameter, in.	1.413			
Specimen height, in.	2.719			
Height/diameter ratio	1.92			

Description: SO GR CH4 W/ ARS & LNS SM, O, SIF, SL

LL = 78 **PL = 30** **PI = 48** **Assumed GS= 2.72** **Type: UNDISTURBED**

Project No.: 24384

Date Sampled: 9/10/20

Remarks:

TORVANE = 0.110 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 30

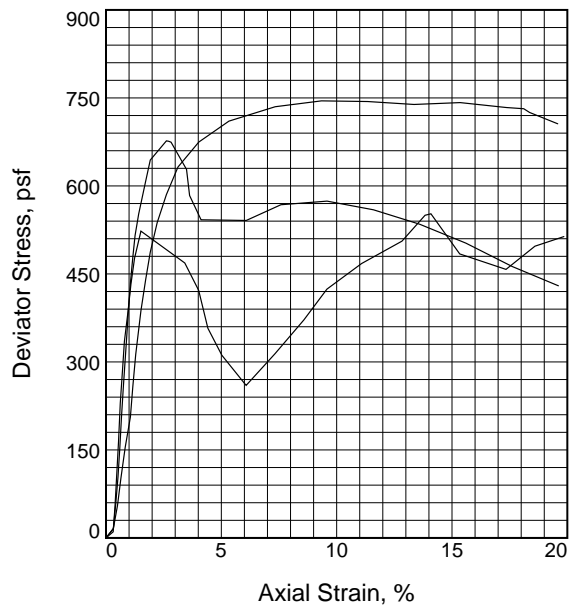
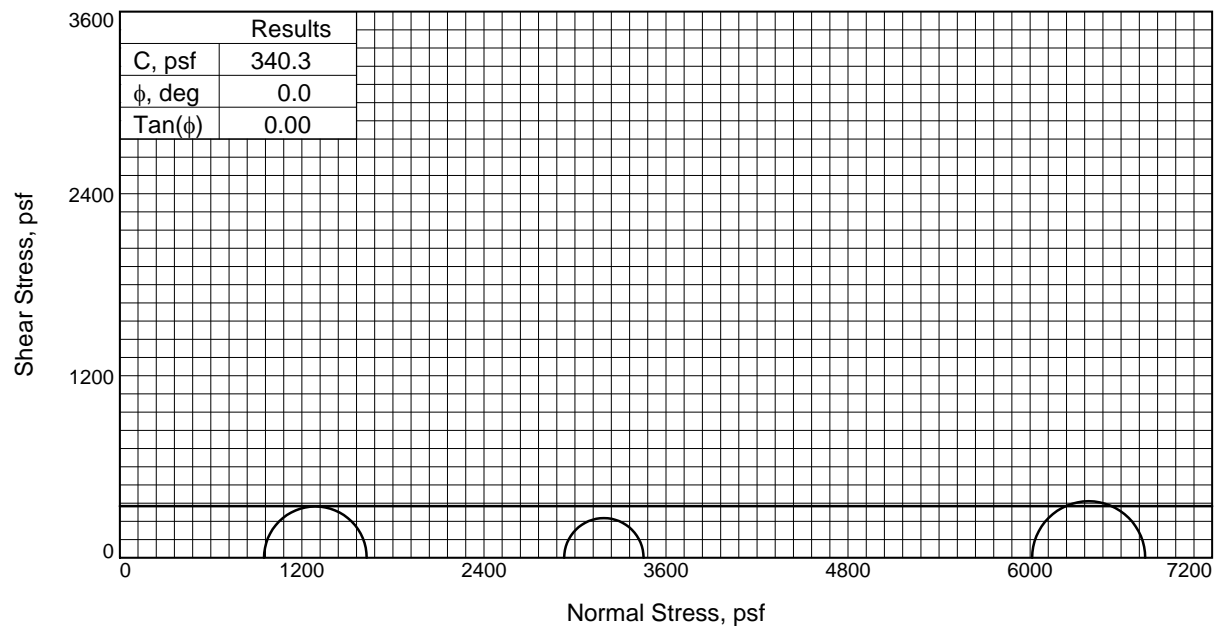
Sample Number: 8C

Figure ASTM D2166



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Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	69.6	69.1	67.3
	Dry Density, pcf	57.7	57.0	57.8
	Saturation, %	97.5	94.8	94.4
	Void Ratio	1.9423	1.9813	1.9381
	Diameter, in.	1.405	1.419	1.383
	Height, in.	2.753	2.765	2.761
At Test	Water Content, %	71.4	72.8	71.3
	Dry Density, pcf	57.7	57.0	57.8
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.9423	1.9813	1.9381
	Diameter, in.	1.405	1.419	1.383
	Height, in.	2.753	2.765	2.761
Strain rate, %/min.		0.50	0.50	0.50
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.600	20.340	41.760
Fail. Stress, psf		676.8	523.1	745.1
Ult. Stress, psf		534.8	260.1	738.8
σ_1 Failure, psf		1627.2	3452.1	6758.5
σ_3 Failure, psf		950.4	2929.0	6013.4

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CH3 W/ ARS ML, SIF

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.150 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 33

Sample Number: 9B

Proj. No.: 24384

Date Sampled: 9/21/20

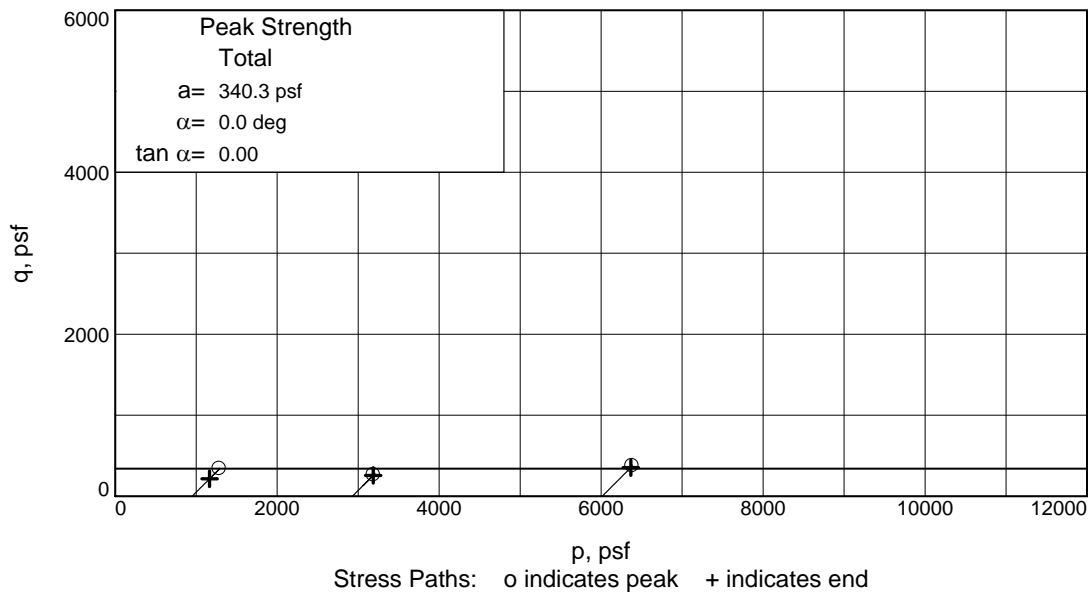
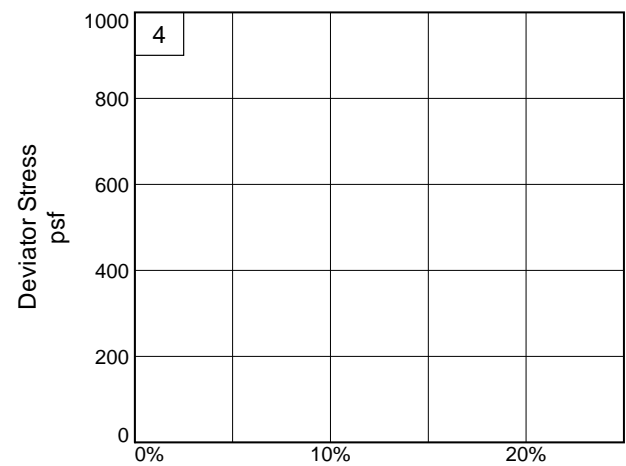
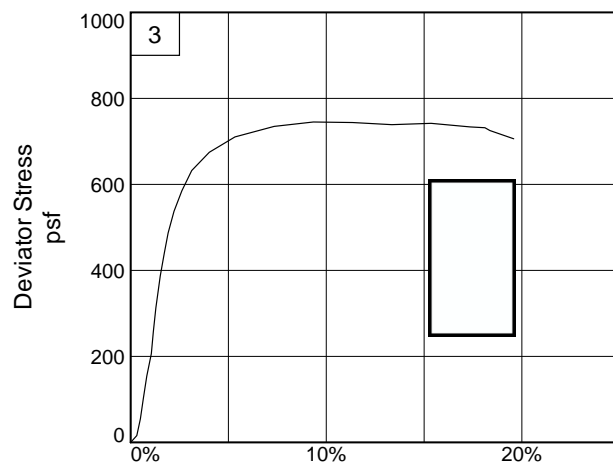
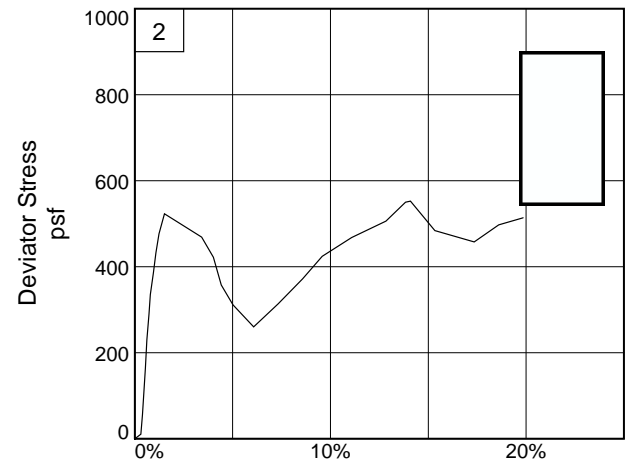
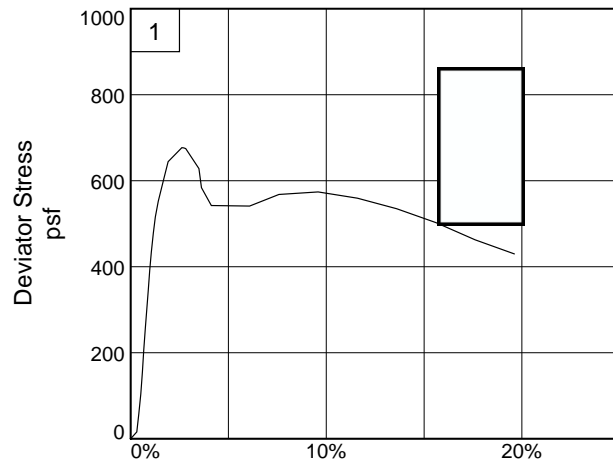


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Figure ASTM D2850

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01

Depth: 33

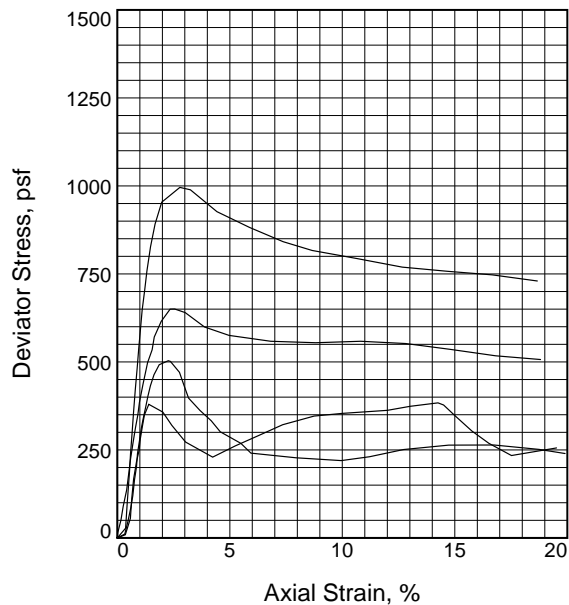
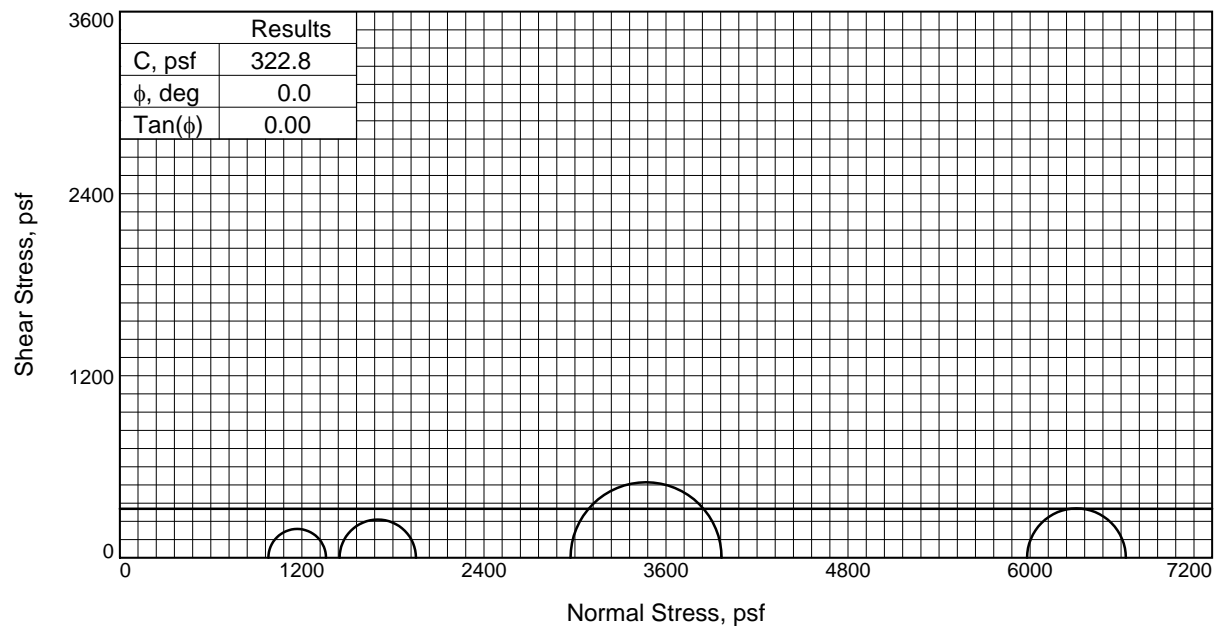
Sample Number: 9B

Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE _____ **Checked By:** RR _____



Specimen No.		1	2	3	4
Initial	Water Content, %	72.3	72.0	71.9	72.2
	Dry Density, pcf	57.2	57.4	57.3	56.2
	Saturation, %	99.9	99.9	99.7	97.2
	Void Ratio	1.9676	1.9585	1.9616	2.0199
	Diameter, in.	1.399	1.395	1.426	1.405
	Height, in.	2.778	2.765	2.763	2.763
At Test	Water Content, %	72.3	72.0	72.1	74.3
	Dry Density, pcf	57.2	57.4	57.3	56.2
	Saturation, %	100.0	100.0	100.0	100.0
	Void Ratio	1.9676	1.9585	1.9616	2.0199
	Diameter, in.	1.399	1.395	1.426	1.405
	Height, in.	2.778	2.765	2.763	2.763
Strain rate, %/min.		1.00	1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000	0.000
Cell Pressure, psi		6.800	20.630	41.530	10.060
Fail. Stress, psf		379.8	995.9	650.6	503.4
Strain, %		1.4	2.8	2.5	2.3
Ult. Stress, psf		229.8	757.7	535.6	219.6
Strain, %		4.2	14.7	14.8	10.0
σ_1 Failure, psf		1359.0	3966.6	6630.9	1952.0
σ_3 Failure, psf		979.2	2970.7	5980.3	1448.6

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CH4 W/ ARS ML, SIF, SL

LL= 91 **PL=** 22 **PI=** 69

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.200 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 34

Sample Number: 9C

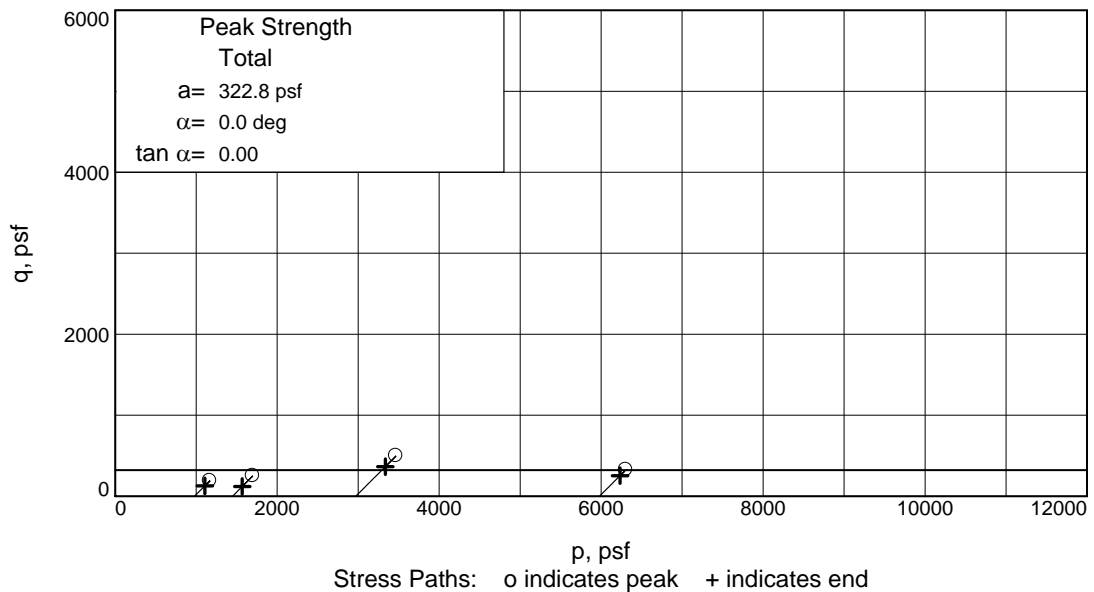
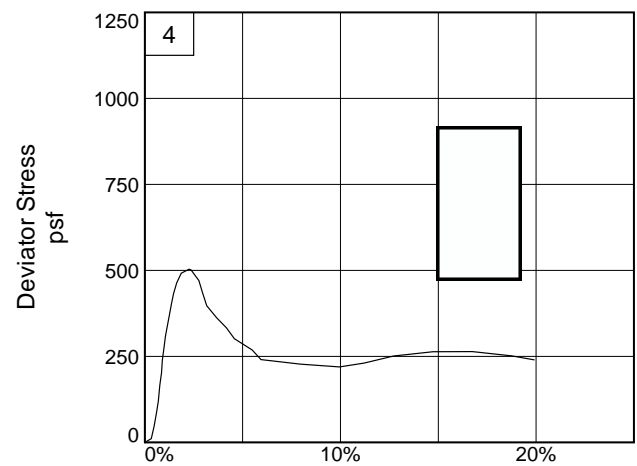
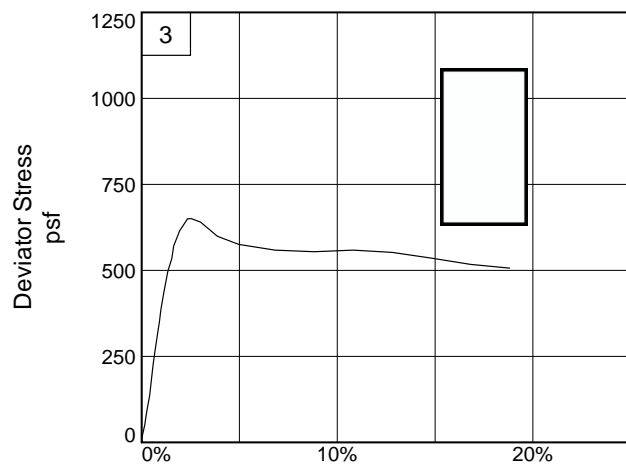
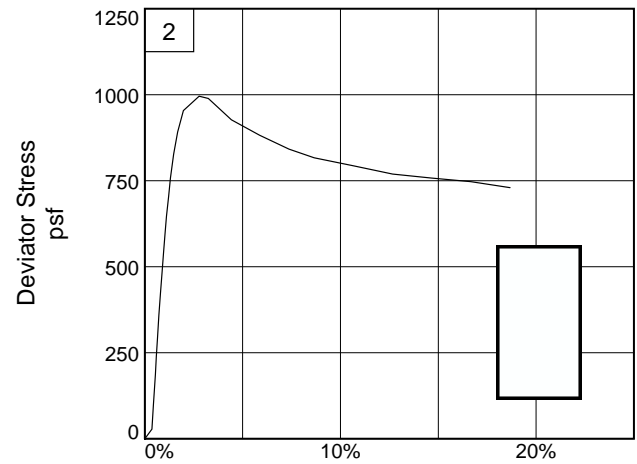
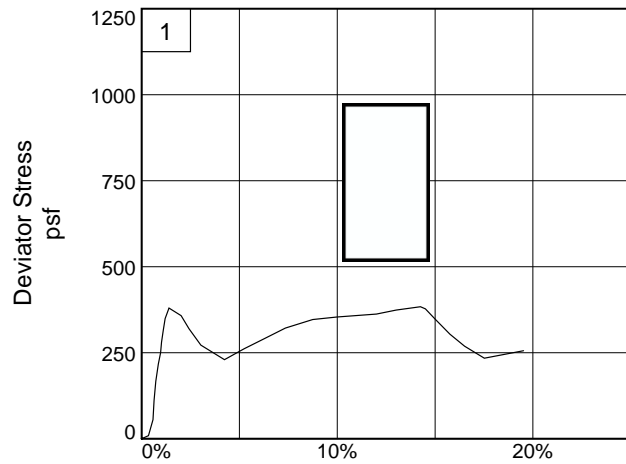
Proj. No.: 24384

Date Sampled: 9/10/20

Figure ASTM D2850



Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01

Depth: 34

Sample Number: 9C

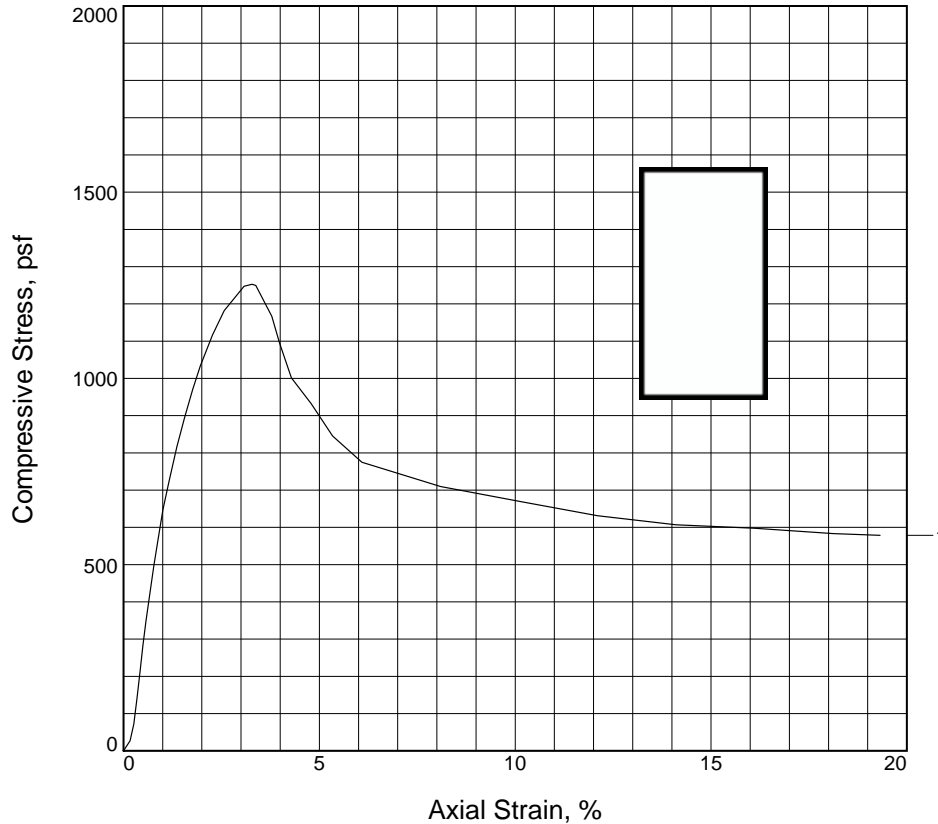
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	1252.7			
Undrained shear strength, psf	626.4			
Failure strain, %	3.3			
Strain rate, %/min.	1.00			
Water content, %	68.9			
Wet density, pcf	99.8			
Dry density, pcf	59.1			
Saturation, %	100.0			
Void ratio	1.8749			
Specimen diameter, in.	1.392			
Specimen height, in.	2.753			
Height/diameter ratio	1.98			

Description: M GR CH4 W/ ARS ML, SIF

LL = 95 **PL = 34** **PI = 61** **Assumed GS= 2.72** **Type: UNDISTURBED**

Project No.: 24384

Date Sampled: 9/10/20

Remarks:

TORVANE = 0.250 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 38

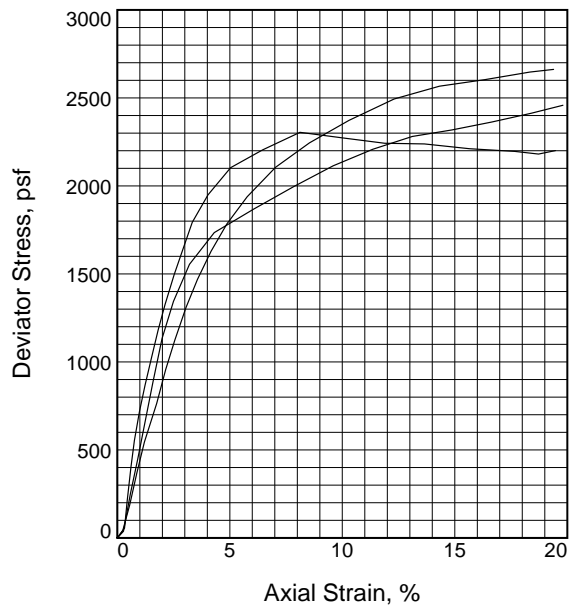
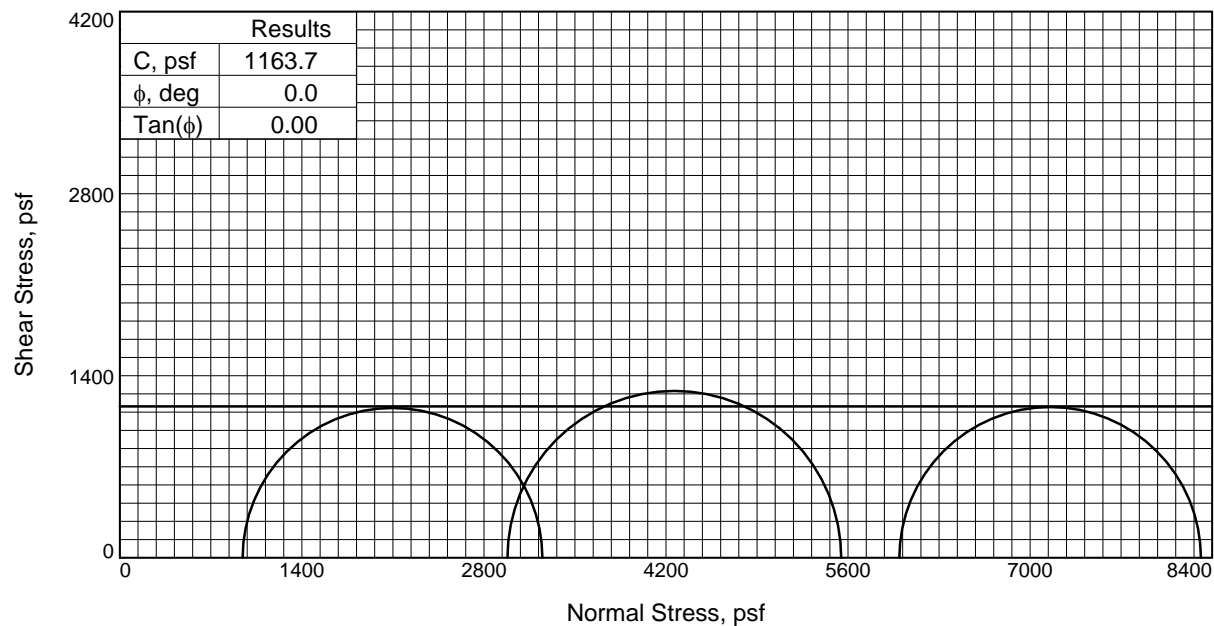
Sample Number: 10C

Figure ASTM D2166



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Tested By: MS **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	25.4	25.2	26.3
	Dry Density, pcf	98.4	99.8	95.7
	Saturation, %	96.2	98.6	93.5
	Void Ratio	0.7126	0.6890	0.7613
	Diameter, in.	1.393	1.385	1.384
	Height, in.	2.843	2.826	2.875
At Test	Water Content, %	26.4	25.5	28.2
	Dry Density, pcf	98.4	99.8	95.7
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7126	0.6890	0.7613
	Diameter, in.	1.393	1.385	1.384
	Height, in.	2.843	2.826	2.875
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.560	20.700	41.630
Fail. Stress, psf		2304.6	2566.7	2318.6
Strain, %		8.1	14.3	14.9
Ult. Stress, psf		2238.7	2566.7	2318.6
Strain, %		13.6	14.3	14.9
σ_1 Failure, psf		3249.2	5547.5	8313.3
σ_3 Failure, psf		944.6	2980.8	5994.7

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GNG CH2 W/ ARS ML

LL= 58 **PL=** 20 **PI=** 38

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 41

Sample Number: 11B

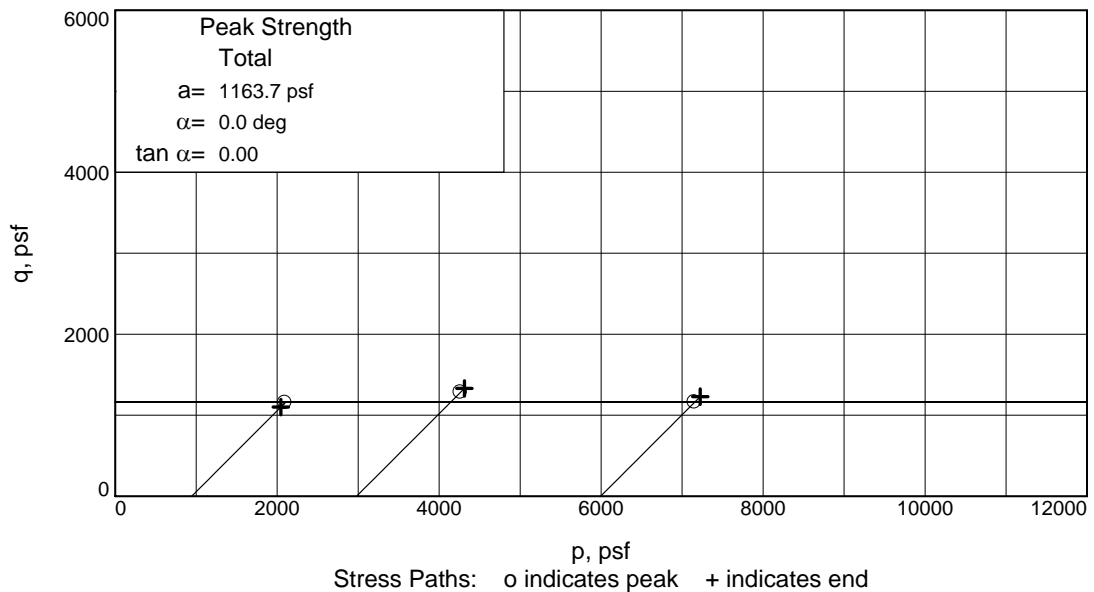
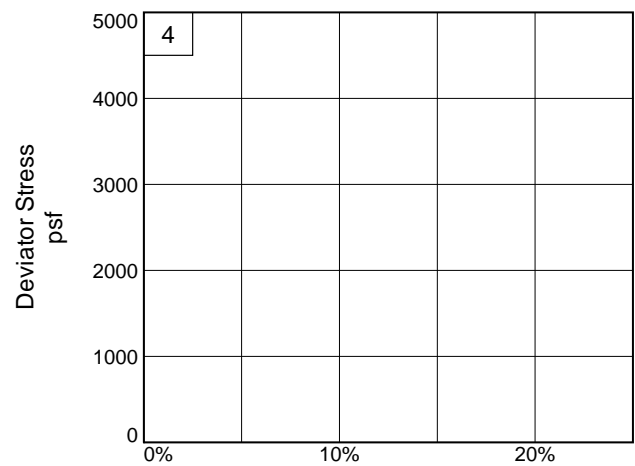
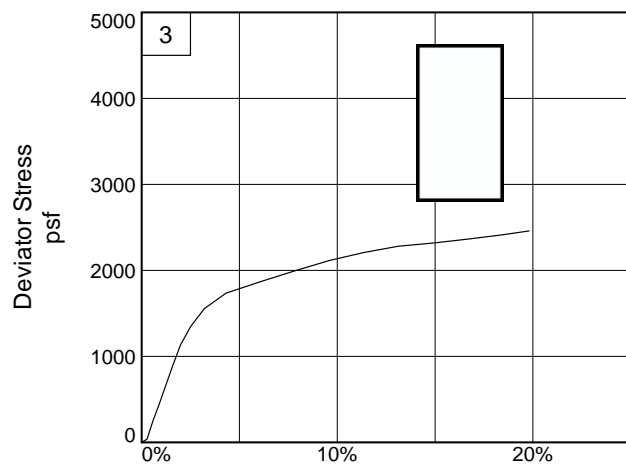
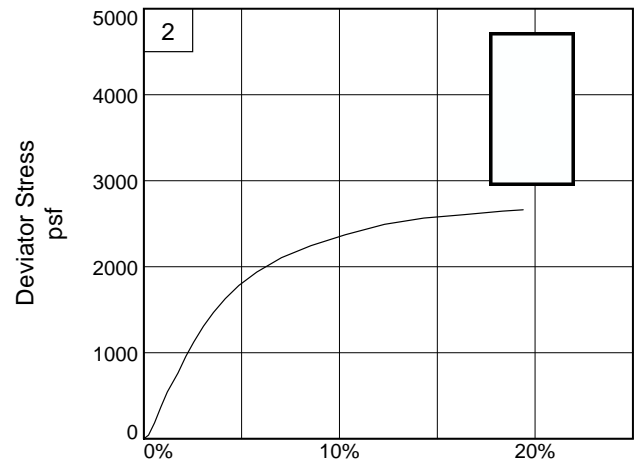
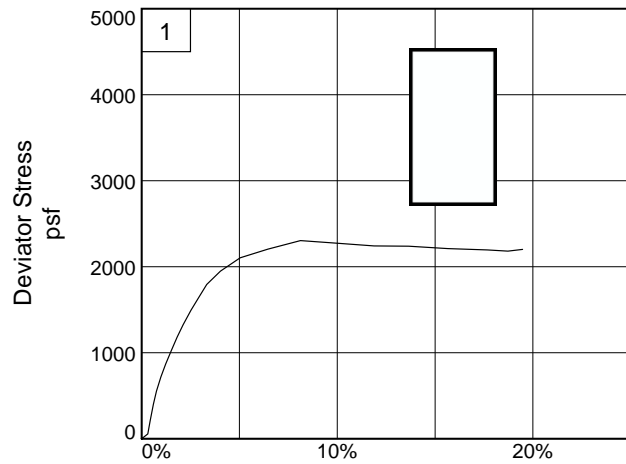
Proj. No.: 24384

Date Sampled: 9/10/20

Figure ASTM D2850



Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01

Depth: 41

Sample Number: 11B

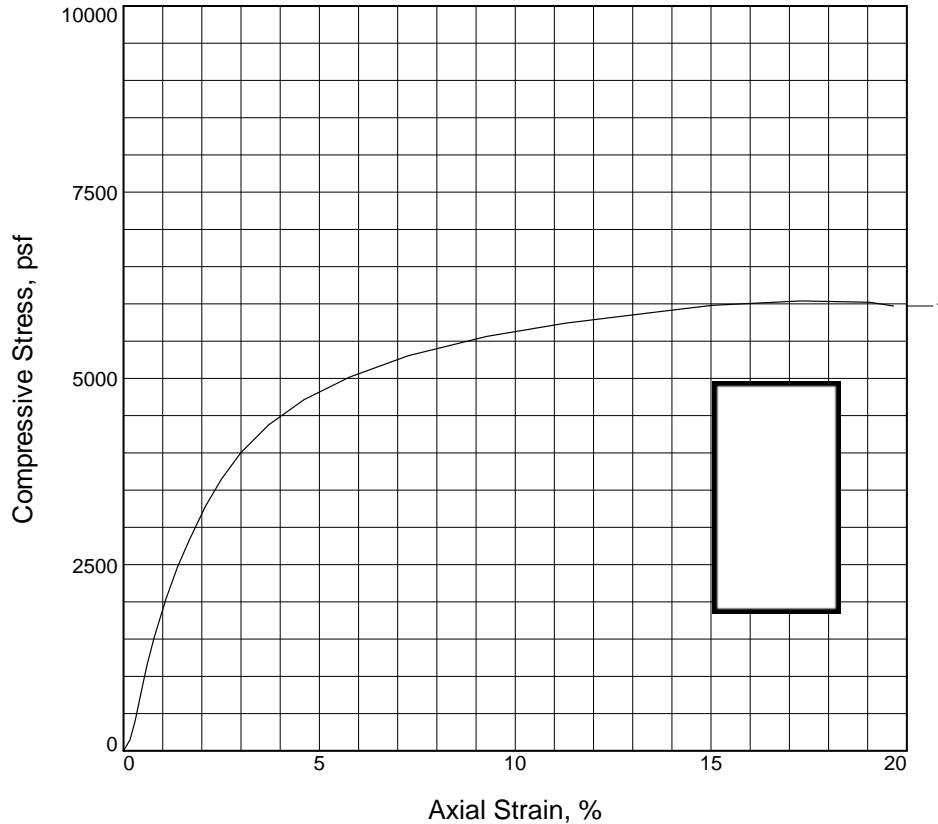
Project No.: 24384

Figure ASTM D2850

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Tested By: DE **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	5981.8			
Undrained shear strength, psf	2990.9			
Failure strain, %	15.0			
Strain rate, %/min.	1.00			
Water content, %	21.4			
Wet density, pcf	128.3			
Dry density, pcf	105.7			
Saturation, %	97.0			
Void ratio	0.5949			
Specimen diameter, in.	1.389			
Specimen height, in.	2.757			
Height/diameter ratio	1.98			

Description: VST GNG CH2 W/ ARS ML

LL = 53 **PL = 16** **PI = 37** **Assumed GS= 2.70** **Type: UNDISTURBED**

Project No.: 24384

Date Sampled: 9/10/20

Remarks:

TORVANE = 0.875 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 46

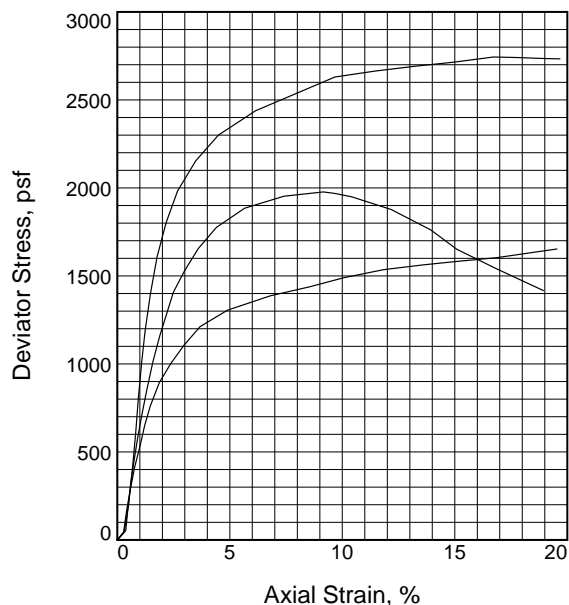
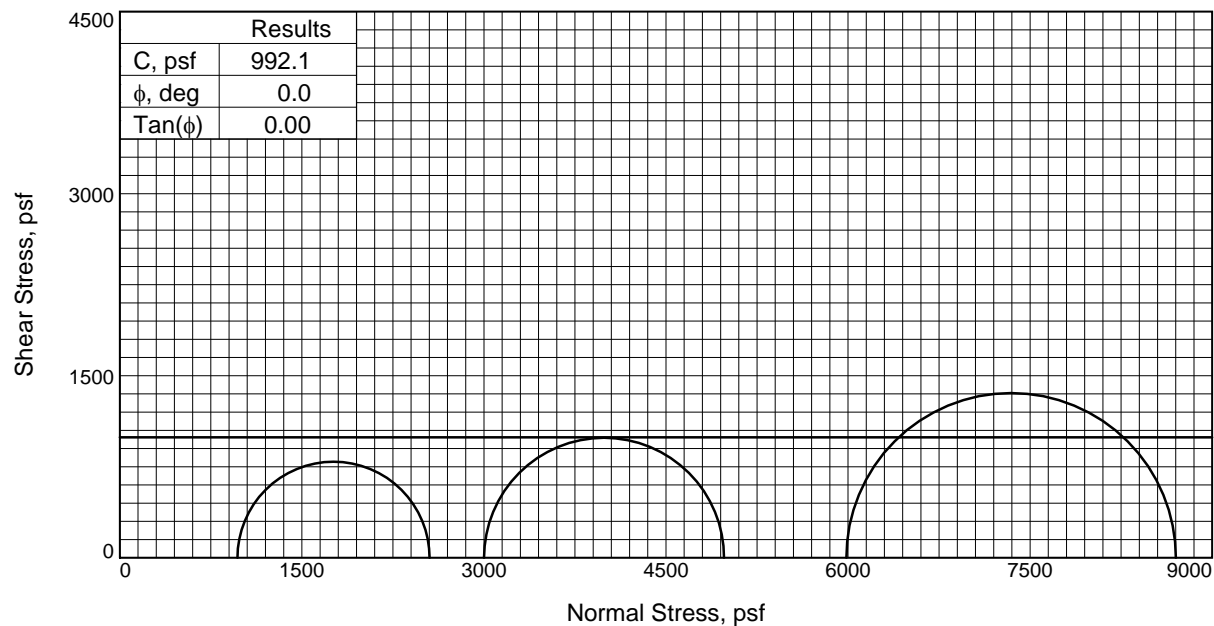
Sample Number: 12C

Figure ASTM D2166



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Tested By: MS **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	31.0	29.0	28.9
	Dry Density, pcf	87.9	91.9	92.5
	Saturation, %	90.4	93.0	94.0
	Void Ratio	0.9323	0.8485	0.8359
	Diameter, in.	1.394	1.394	1.393
	Height, in.	2.863	2.866	2.868
At Test	Water Content, %	34.3	31.2	30.7
	Dry Density, pcf	87.9	91.9	92.5
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.9323	0.8485	0.8359
	Diameter, in.	1.394	1.394	1.393
	Height, in.	2.863	2.866	2.868
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.730	20.840	41.570
Fail. Stress, psf		1582.8	1977.5	2714.8
Strain, %		15.1	9.2	14.9
Ult. Stress, psf		1582.8	1651.4	2714.8
Strain, %		15.1	15.1	14.9
σ_1 Failure, psf		2552.0	4978.5	8700.9
σ_3 Failure, psf		969.1	3001.0	5986.1

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GNG & T CH3 W/ ARS ML, SL

LL= 65 **PL=** 20 **PI=** 45

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 1.000 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 50

Sample Number: 13C

Proj. No.: 24384

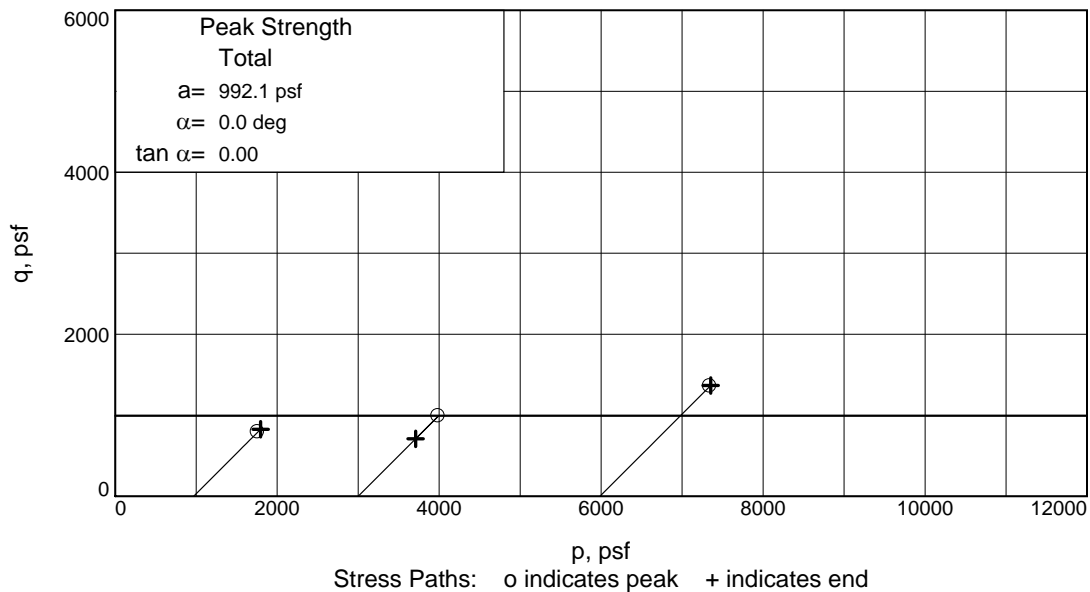
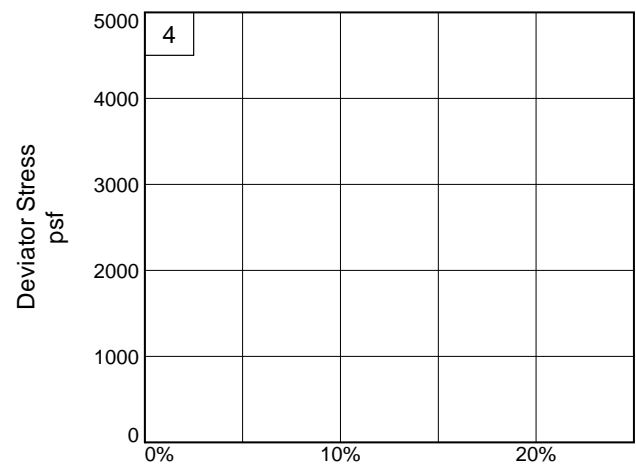
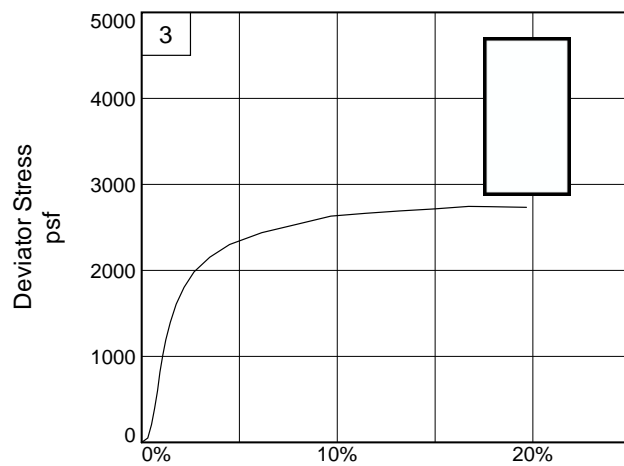
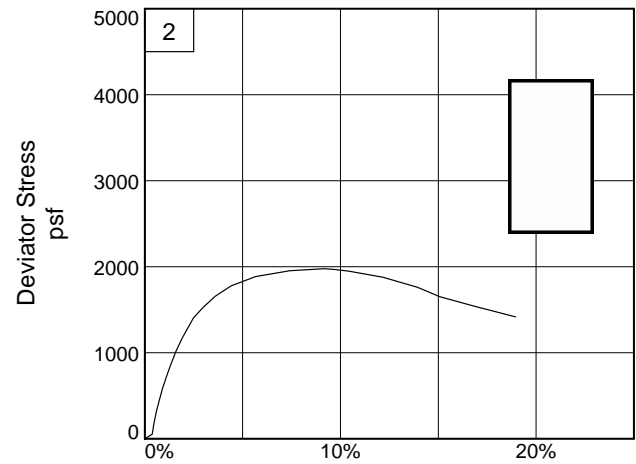
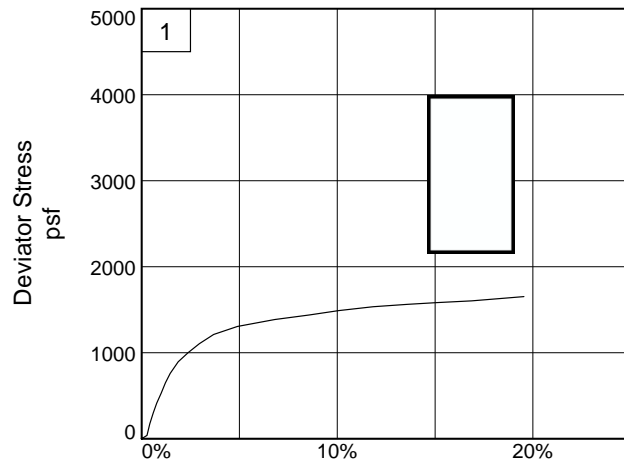
Date Sampled: 9/10/20



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SINCE 1946

Figure ASTM D2850

Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01

Depth: 50

Sample Number: 13C

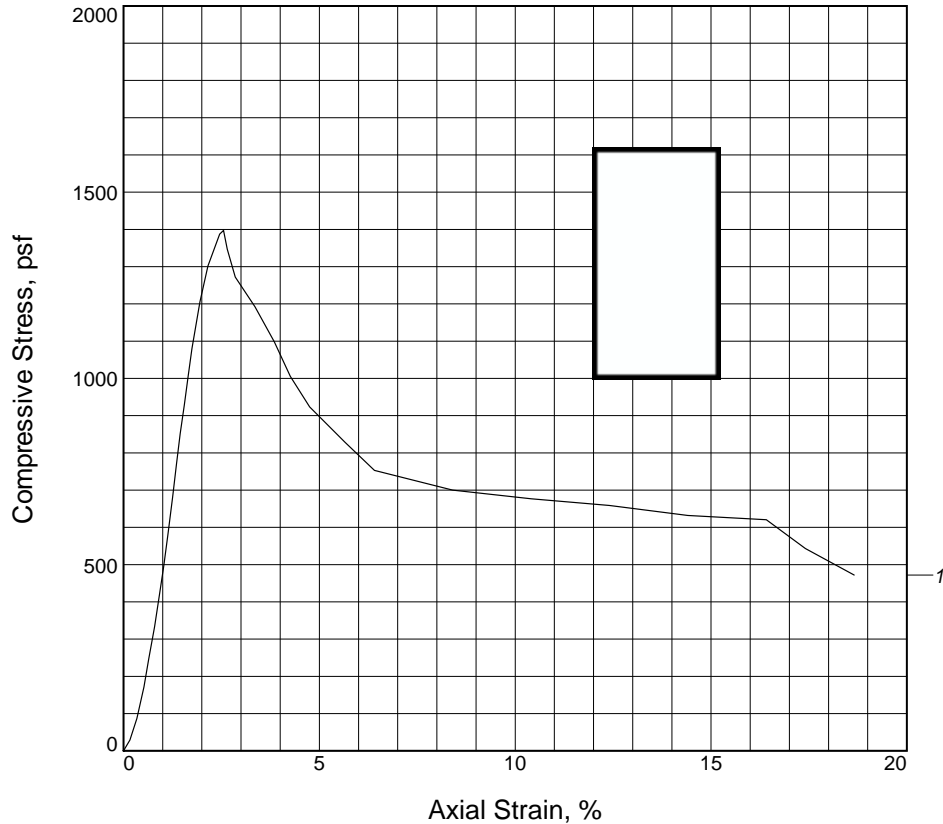
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE _____ **Checked By:** RR _____

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	1397.5			
Undrained shear strength, psf	698.8			
Failure strain, %	2.6			
Strain rate, %/min.	1.00			
Water content, %	30.0			
Wet density, pcf	121.0			
Dry density, pcf	93.0			
Saturation, %	99.9			
Void ratio	0.8119			
Specimen diameter, in.	1.383			
Specimen height, in.	2.746			
Height/diameter ratio	1.99			

Description: M T & GR CL6

LL = 47 **PL** = 19 **PI** = 28 **Assumed GS**= 2.70 **Type:** UNDISTURBED

Project No.: 24384

Date Sampled: 9/10/20

Remarks:

TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 54

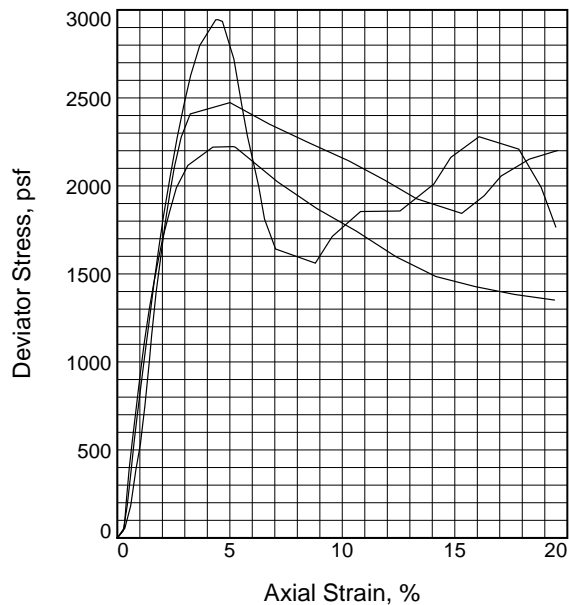
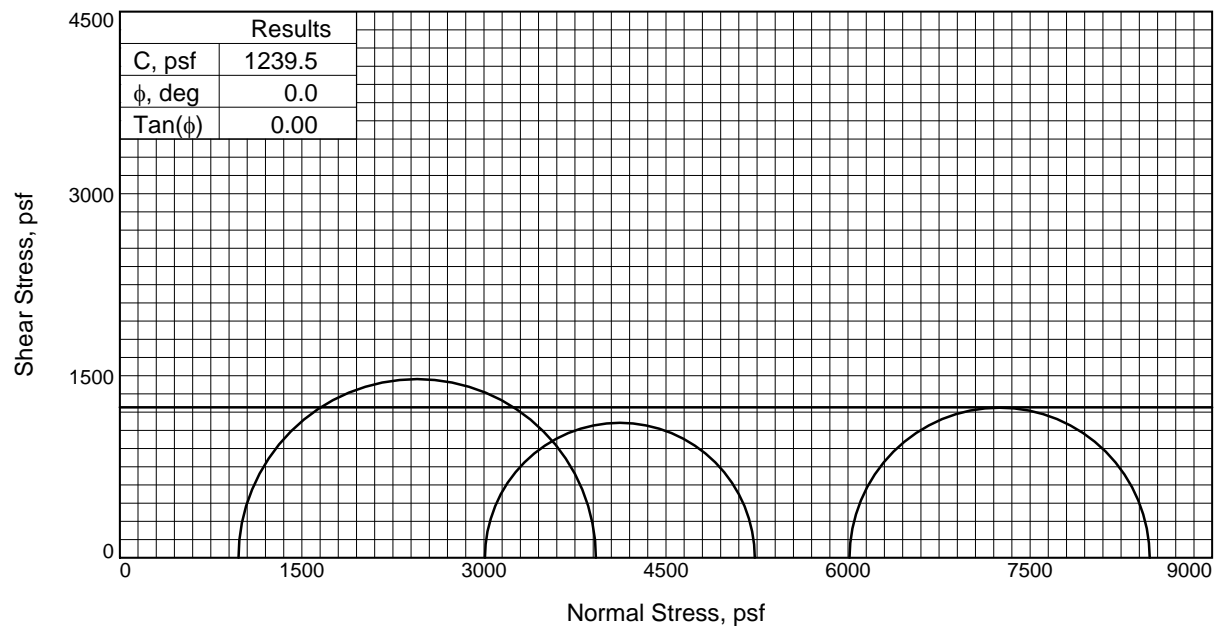
Sample Number: 14C

Figure ASTM D2166



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Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	37.6	36.9	37.4
	Dry Density, pcf	82.5	84.4	84.1
	Saturation, %	96.7	99.1	100.0
	Void Ratio	1.0584	1.0118	1.0183
	Diameter, in.	1.404	1.401	1.398
	Height, in.	2.868	2.864	2.851
At Test	Water Content, %	38.9	37.2	37.4
	Dry Density, pcf	82.5	84.4	84.1
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.0584	1.0118	1.0183
	Diameter, in.	1.404	1.401	1.398
	Height, in.	2.868	2.864	2.851
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.790	20.890	41.750
Fail. Stress, psf		2944.5	2223.5	2473.4
Strain, %		4.5	5.2	5.0
Ult. Stress, psf		1561.2	1486.1	1843.8
Strain, %		8.8	14.2	15.3
σ_1 Failure, psf		3922.2	5231.6	8485.4
σ_3 Failure, psf		977.8	3008.2	6012.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST BR & GR CH3 W/ ARS & LNS ML,
SL

LL= 72 **PL=** 26 **PI=** 46

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 1.250 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND
RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 61

Sample Number: 16B

Proj. No.: 24384

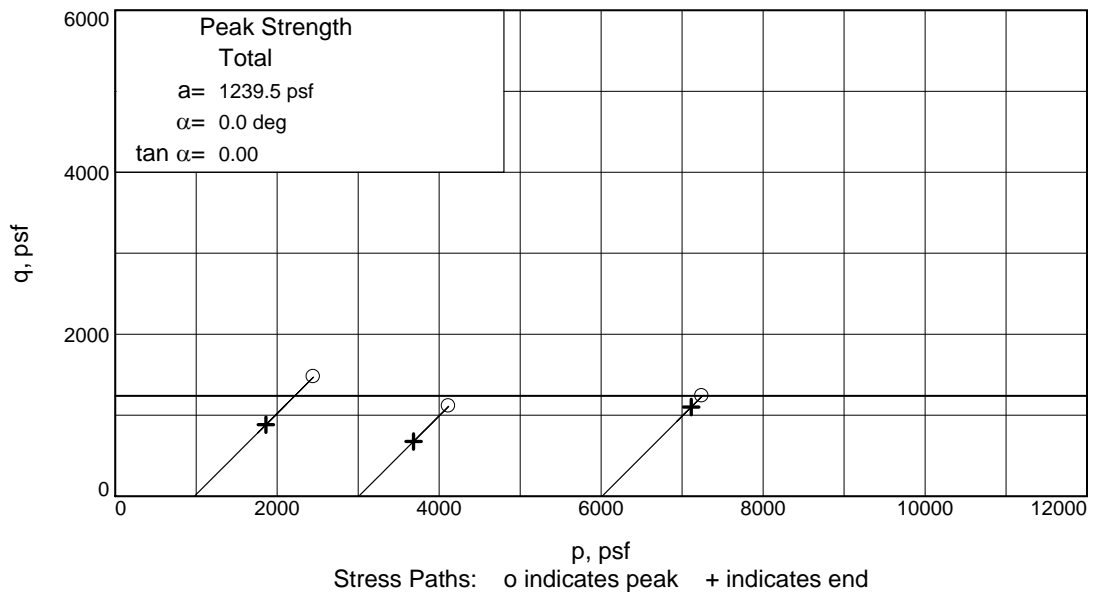
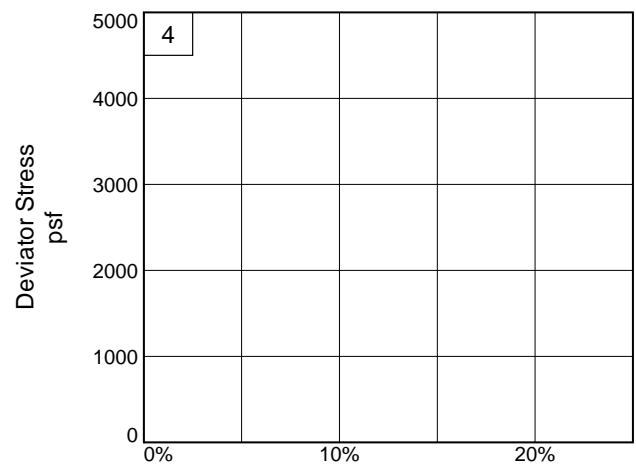
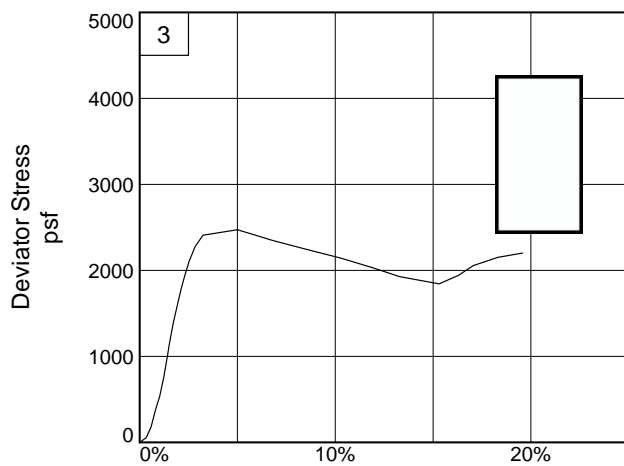
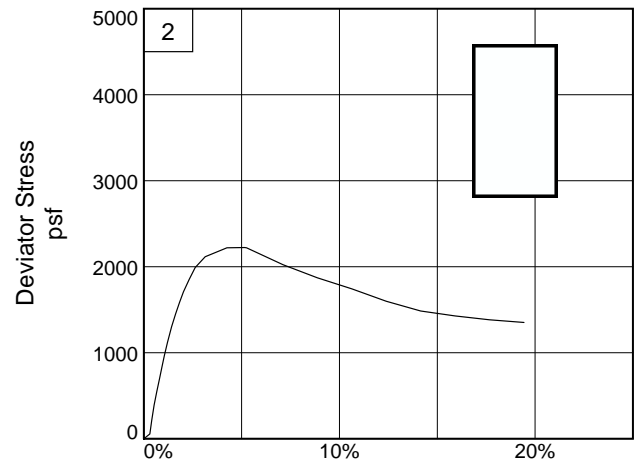
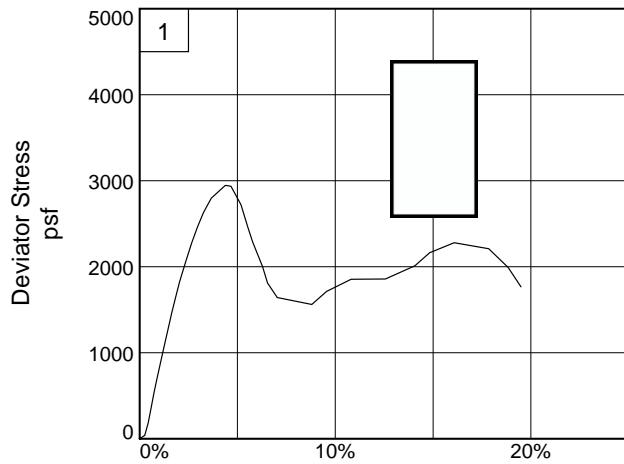
Date Sampled: 9/10/20



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Figure ASTM D2850

Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01

Depth: 61

Sample Number: 16B

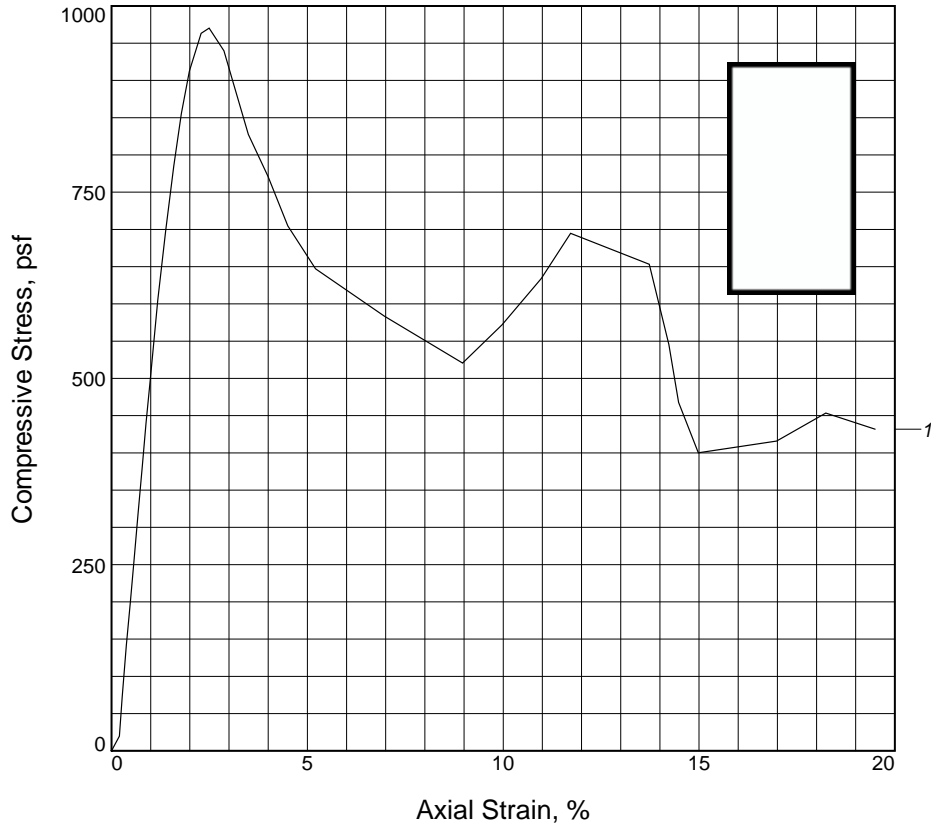
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE _____ **Checked By:** RR _____

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	970.3			
Undrained shear strength, psf	485.1			
Failure strain, %	2.5			
Strain rate, %/min.	1.00			
Water content, %	44.2			
Wet density, pcf	109.1			
Dry density, pcf	75.6			
Saturation, %	97.1			
Void ratio	1.2288			
Specimen diameter, in.	1.395			
Specimen height, in.	2.837			
Height/diameter ratio	2.03			

Description: SO GR & BR CL6

LL = 46 **PL** = 24 **PI** = 22 **Assumed GS**= 2.70 **Type:** UNDISTURBED

Project No.: 24384

Date Sampled: 9/10/20

Remarks:

TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 66

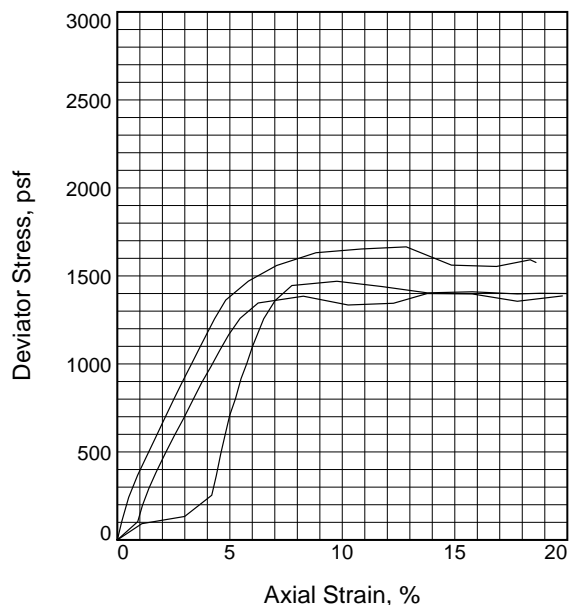
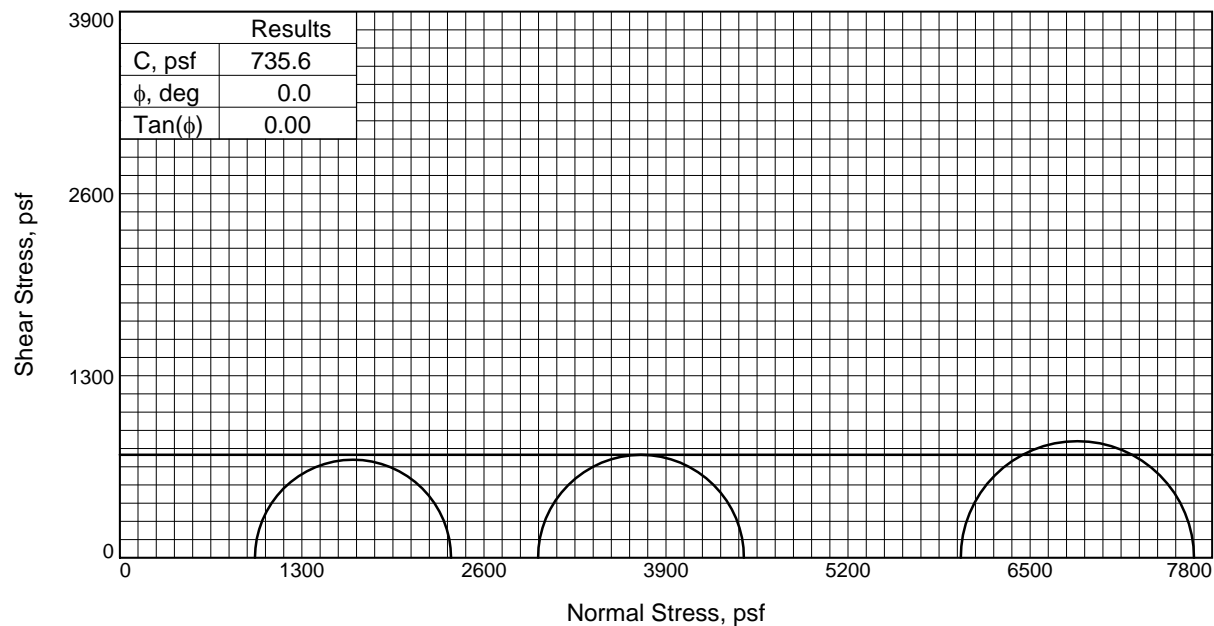
Sample Number: 17C

Figure ASTM D2166



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SINCE 1946

Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	38.5	36.0	37.9
	Dry Density, pcf	82.8	83.9	83.4
	Saturation, %	100.4	96.2	100.3
	Void Ratio	1.0345	1.0098	1.0200
	Diameter, in.	1.381	1.430	1.387
	Height, in.	2.749	2.753	2.746
At Test	Water Content, %	38.3	37.4	37.8
	Dry Density, pcf	82.8	83.9	83.4
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.0345	1.0098	1.0200
	Diameter, in.	1.381	1.430	1.387
	Height, in.	2.749	2.753	2.746
Strain rate, %/min.		0.50	0.50	0.50
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.700	20.740	41.700
Fail. Stress, psf		1400.4	1469.9	1665.6
Ult. Stress, psf		1400.4	1403.6	1665.6
σ_1 Failure, psf		2365.2	4456.5	7670.4
σ_3 Failure, psf		964.8	2986.6	6004.8

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR CH2 W/ ARS & LNS ML

Assumed Specific Gravity= 2.7

Remarks: TORVANE = 0.250 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 69

Sample Number: 18B

Proj. No.: 24384

Date Sampled: 9/17/20

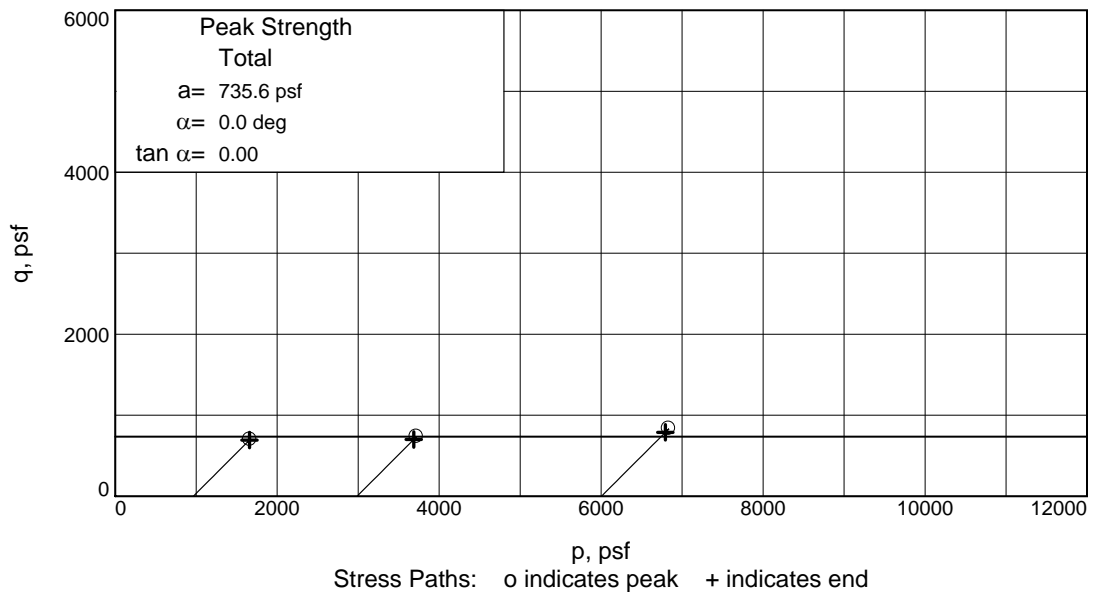
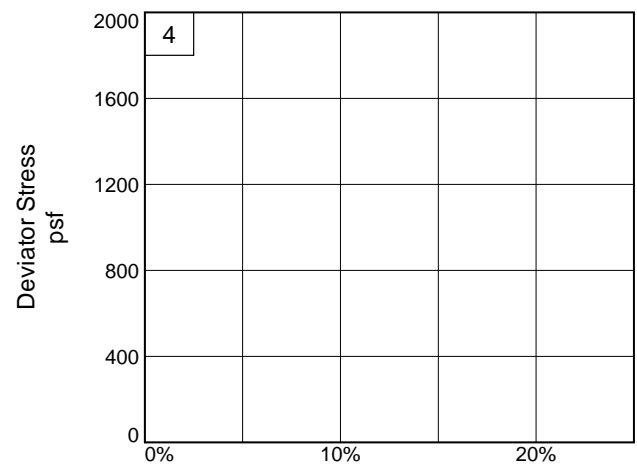
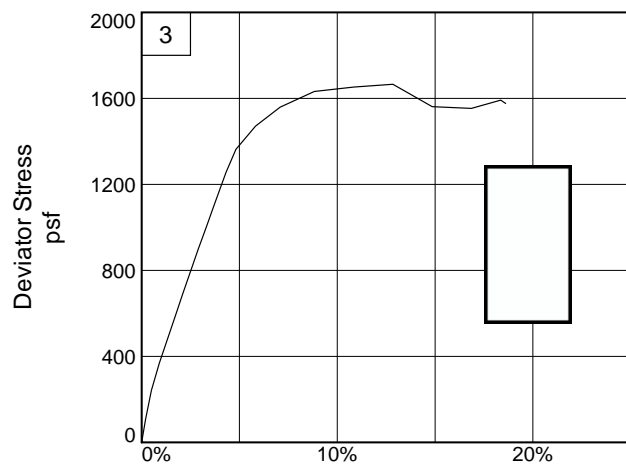
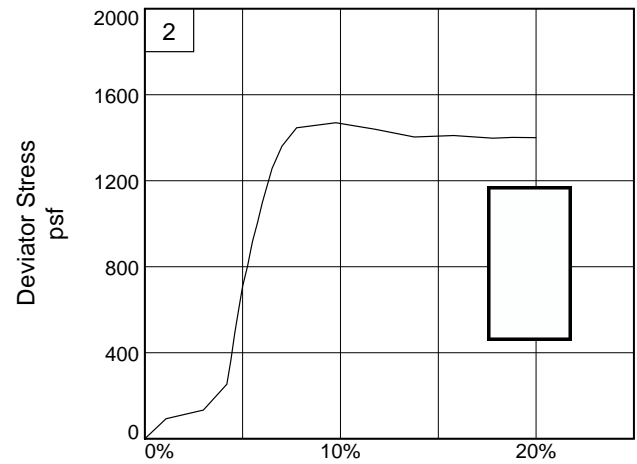
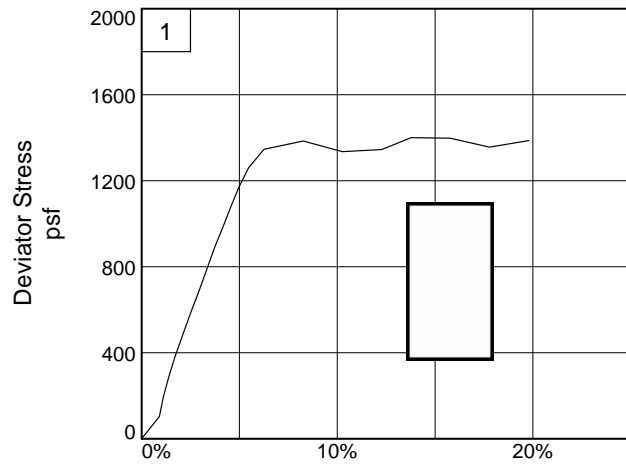


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Figure ASTM D2850

Tested By: CC

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01

Depth: 69

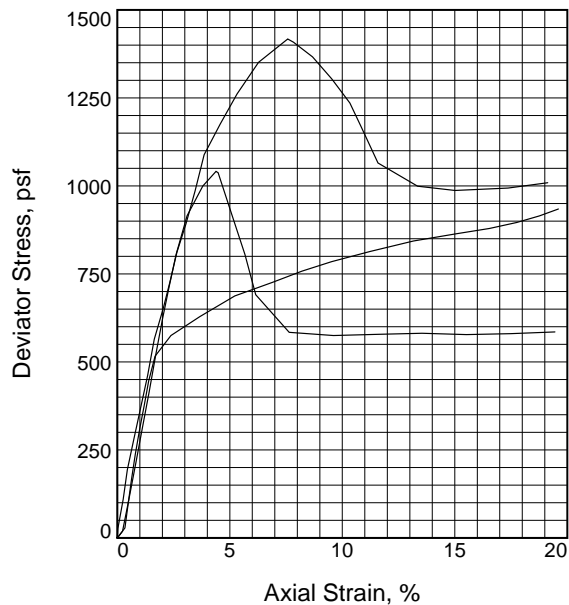
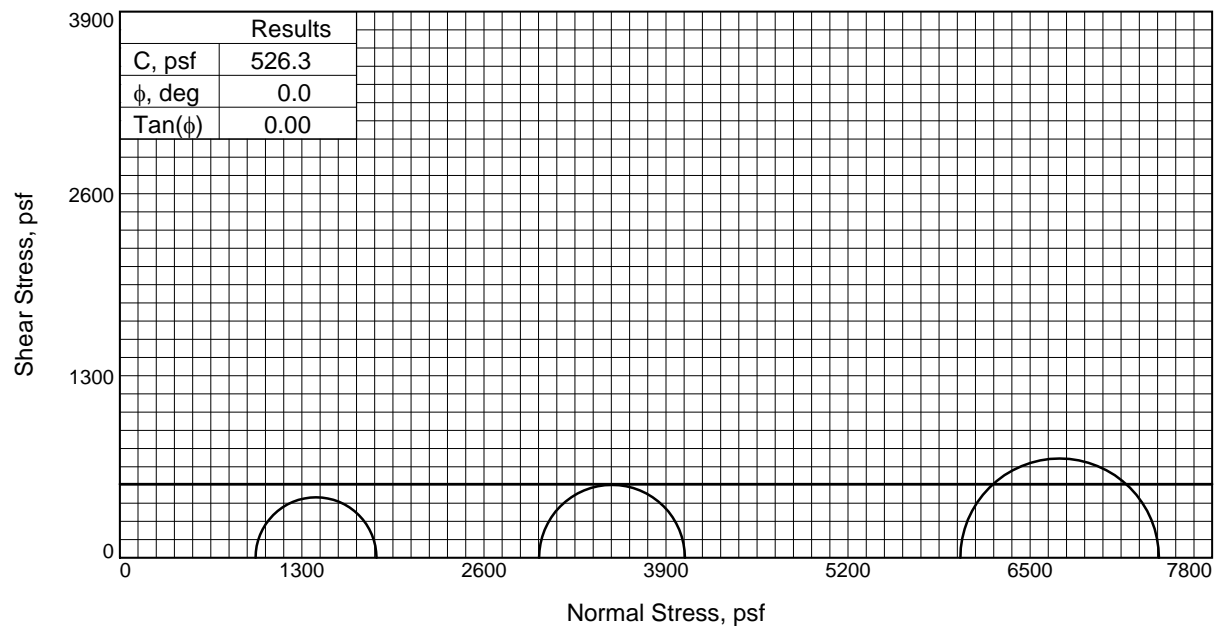
Sample Number: 18B

Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: CC **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	50.6	48.8	49.3
	Dry Density, pcf	71.5	73.0	72.5
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.3760	1.3261	1.3418
	Diameter, in.	1.419	1.411	1.419
	Height, in.	2.849	2.805	2.844
At Test	Water Content, %	50.6	48.8	49.3
	Dry Density, pcf	71.5	73.0	72.5
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.3760	1.3261	1.3418
	Diameter, in.	1.419	1.411	1.419
	Height, in.	2.849	2.805	2.844
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.730	20.790	41.680
Fail. Stress, psf		863.6	1041.3	1417.7
Strain, %		15.0	4.4	7.6
Ult. Stress, psf		863.6	575.1	987.1
Strain, %		15.0	9.6	15.0
σ_1 Failure, psf		1832.7	4035.0	7419.6
σ_3 Failure, psf		969.1	2993.8	6001.9

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR & T CH3 W/ ARS & LNS ML

LL= 74 **PL=** 26 **PI=** 48

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 70

Sample Number: 18C

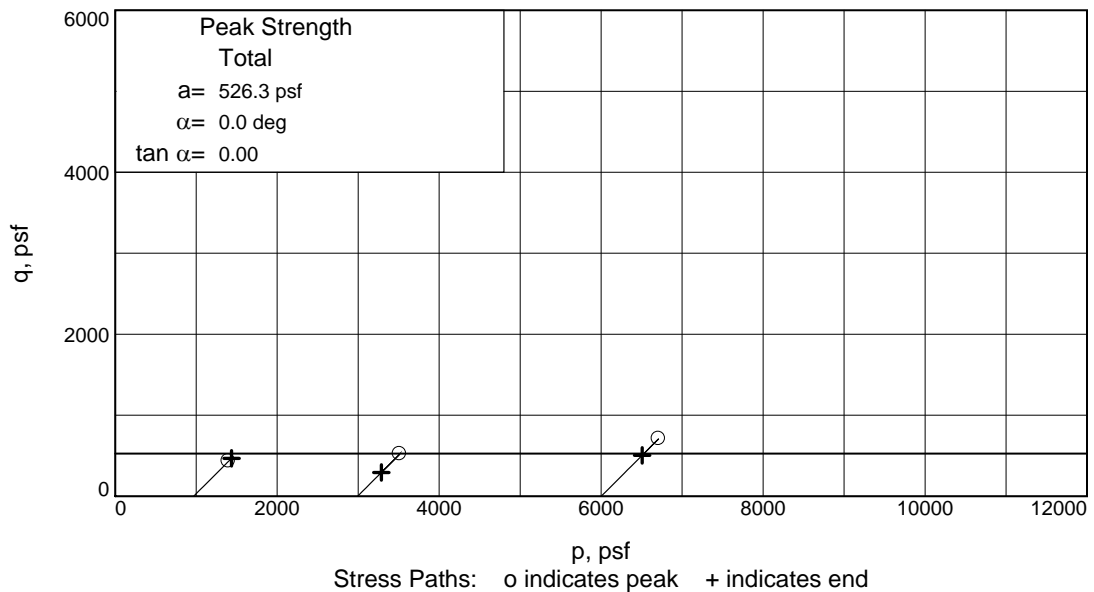
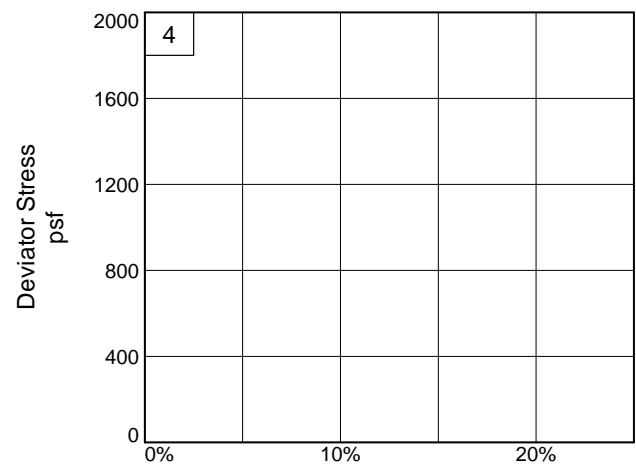
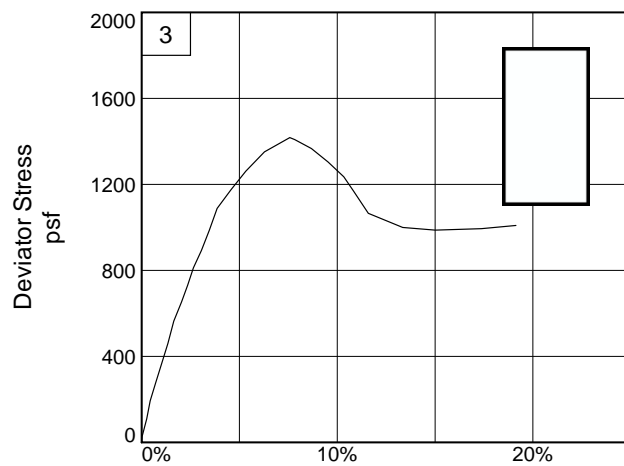
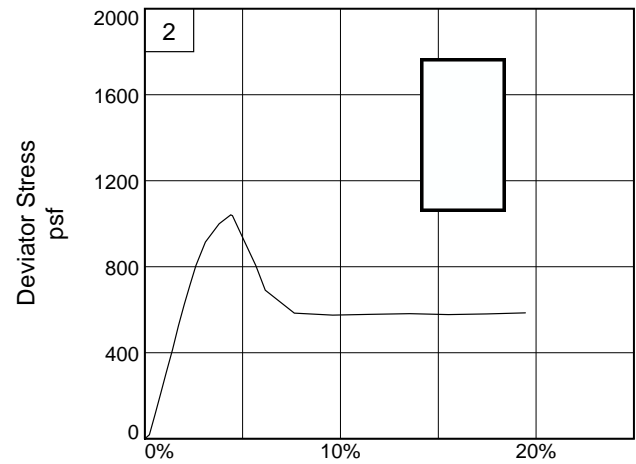
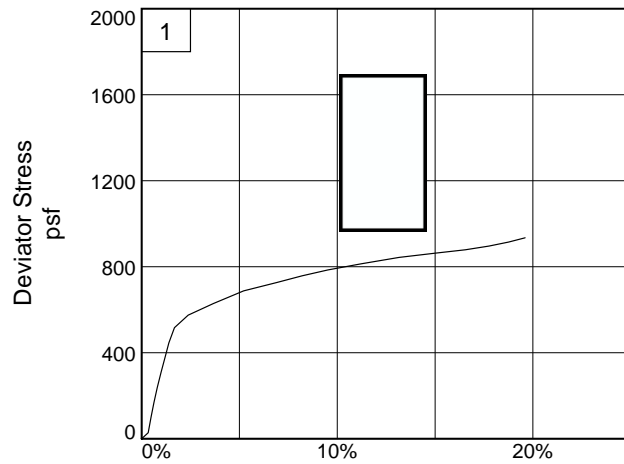
Proj. No.: 24384

Date Sampled: 9/10/20

Figure ASTM D2850



Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01

Depth: 70

Sample Number: 18C

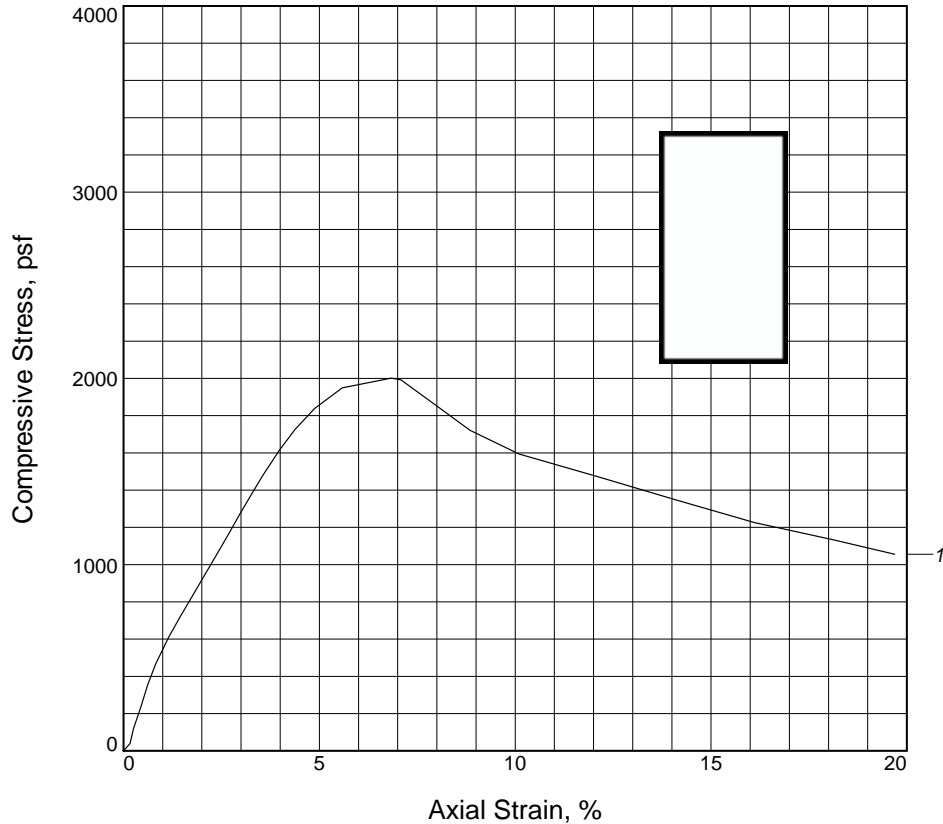
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	2001.5			
Undrained shear strength, psf	1000.7			
Failure strain, %	6.8			
Strain rate, %/min.	1.00			
Water content, %	41.5			
Wet density, pcf	112.9			
Dry density, pcf	79.8			
Saturation, %	100.1			
Void ratio	1.1278			
Specimen diameter, in.	1.403			
Specimen height, in.	2.764			
Height/diameter ratio	1.97			

Description: ST GR & T CH3 W/ ARS & LNS ML

LL = 57 **PL** = 23 **PI** = 34 **Assumed GS**= 2.72 **Type:** UNDISTURBED

Project No.: 24384

Date Sampled: 9/10/20

Remarks:

TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 77

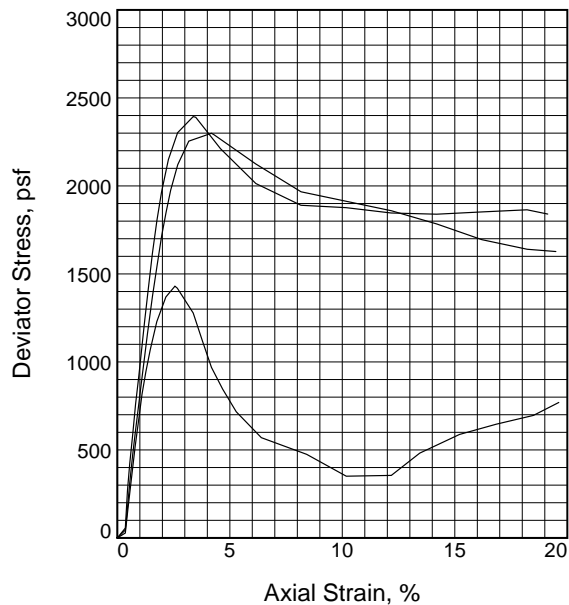
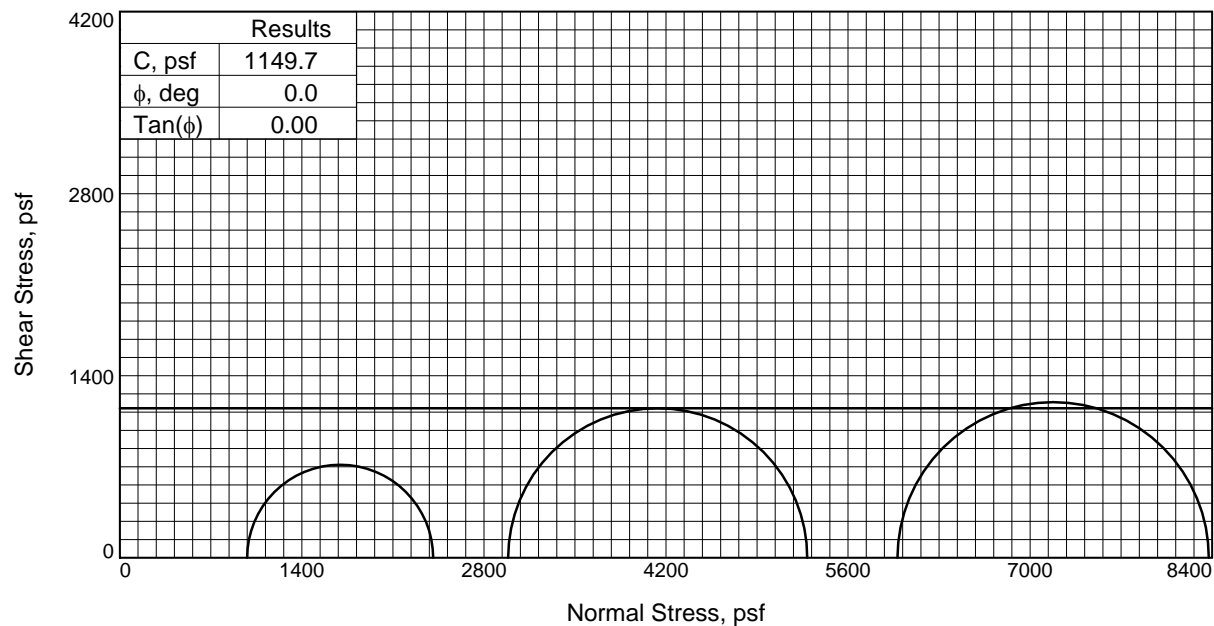
Sample Number: 20B

Figure ASTM D2166



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Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	36.7	36.8	35.3
	Dry Density, pcf	84.4	84.2	86.6
	Saturation, %	98.6	98.4	99.7
	Void Ratio	1.0128	1.0170	0.9617
	Diameter, in.	1.397	1.394	1.385
	Height, in.	2.753	2.754	2.754
At Test	Water Content, %	37.2	37.4	35.4
	Dry Density, pcf	84.4	84.2	86.6
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.0128	1.0170	0.9617
	Diameter, in.	1.397	1.394	1.385
	Height, in.	2.753	2.754	2.754
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.800	20.740	41.530
Fail. Stress, psf		1430.4	2299.6	2394.0
Strain, %		2.6	4.2	3.4
Ult. Stress, psf		351.3	1784.4	1839.3
Strain, %		10.2	14.2	14.2
σ_1 Failure, psf		2409.6	5286.2	8374.3
σ_3 Failure, psf		979.2	2986.6	5980.3

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR CH3 W/ ARS ML, SIF, SL

LL= 59 **PL=** 18 **PI=** 41

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 82

Sample Number: 21C

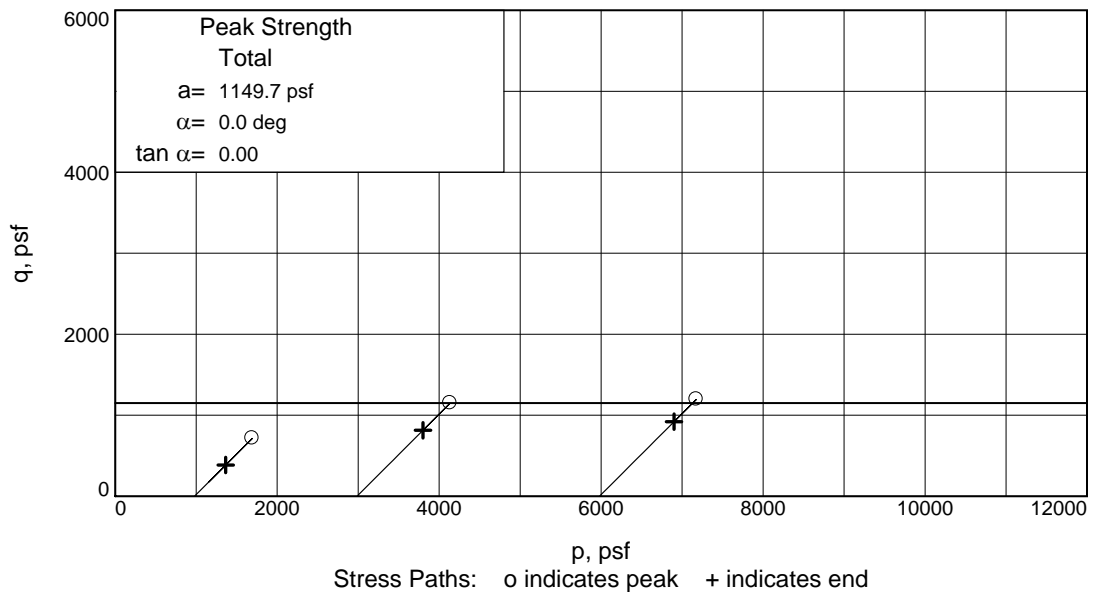
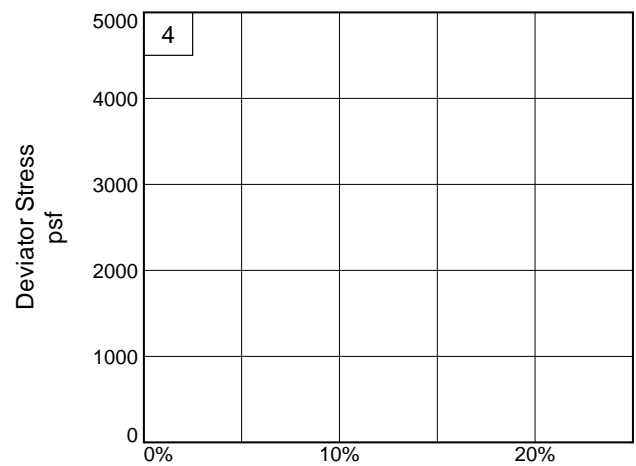
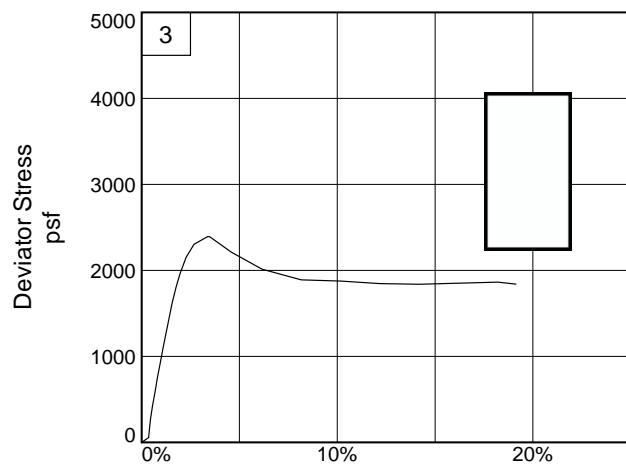
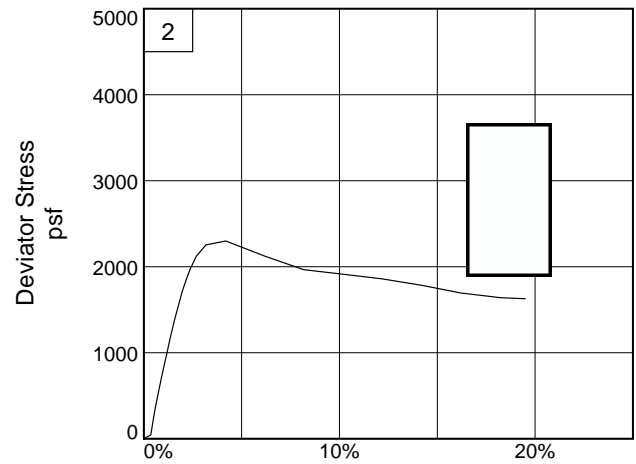
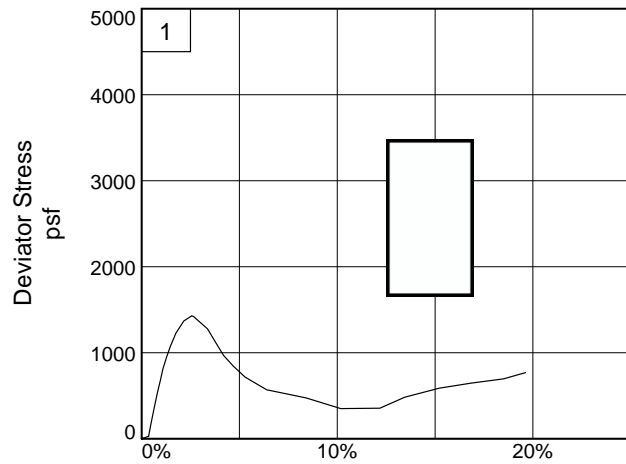
Proj. No.: 24384

Date Sampled: 9/10/20

Figure ASTM D2850



Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01

Depth: 82

Sample Number: 21C

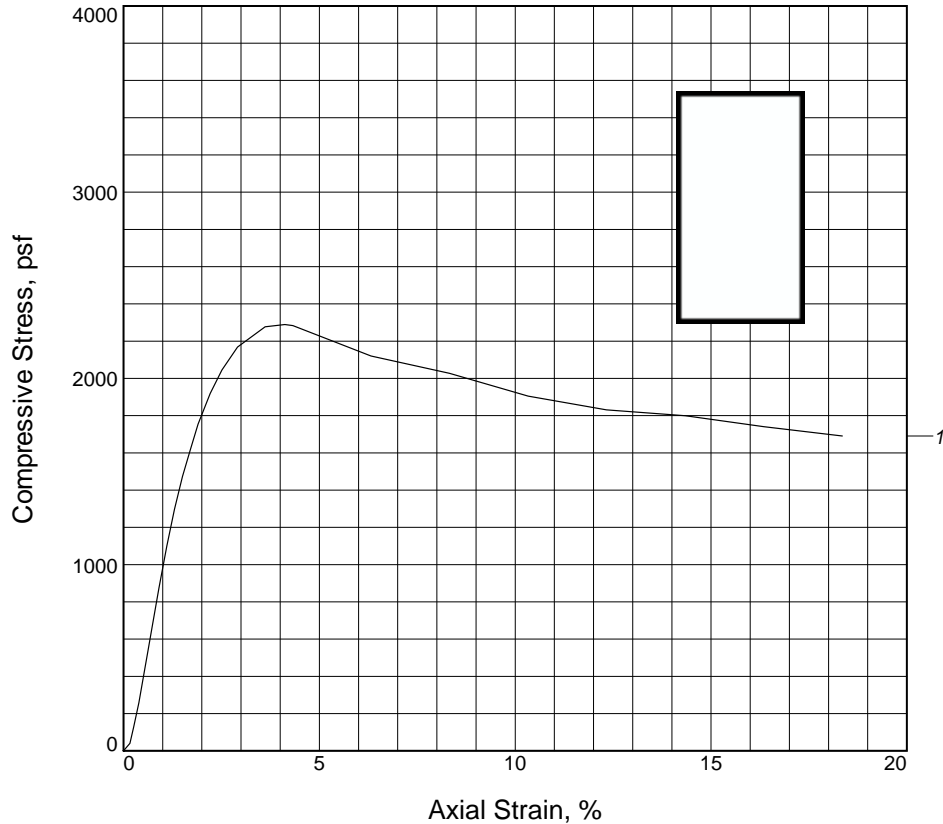
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	2289.0			
Undrained shear strength, psf	1144.5			
Failure strain, %	4.1			
Strain rate, %/min.	1.00			
Water content, %	34.3			
Wet density, pcf	117.9			
Dry density, pcf	87.8			
Saturation, %	99.9			
Void ratio	0.9345			
Specimen diameter, in.	1.395			
Specimen height, in.	2.760			
Height/diameter ratio	1.98			

Description: ST GR CH4 W/ ARS ML, SL

LL = 94 **PL** = 22 **PI** = 72 **Assumed GS**= 2.72 **Type:** UNDISTURBED

Project No.: 24384

Date Sampled: 9/10/20

Remarks:
TORVANE = 0.400 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

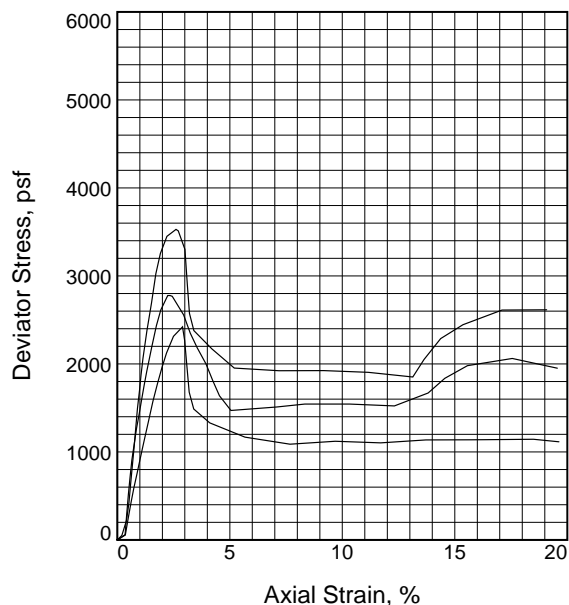
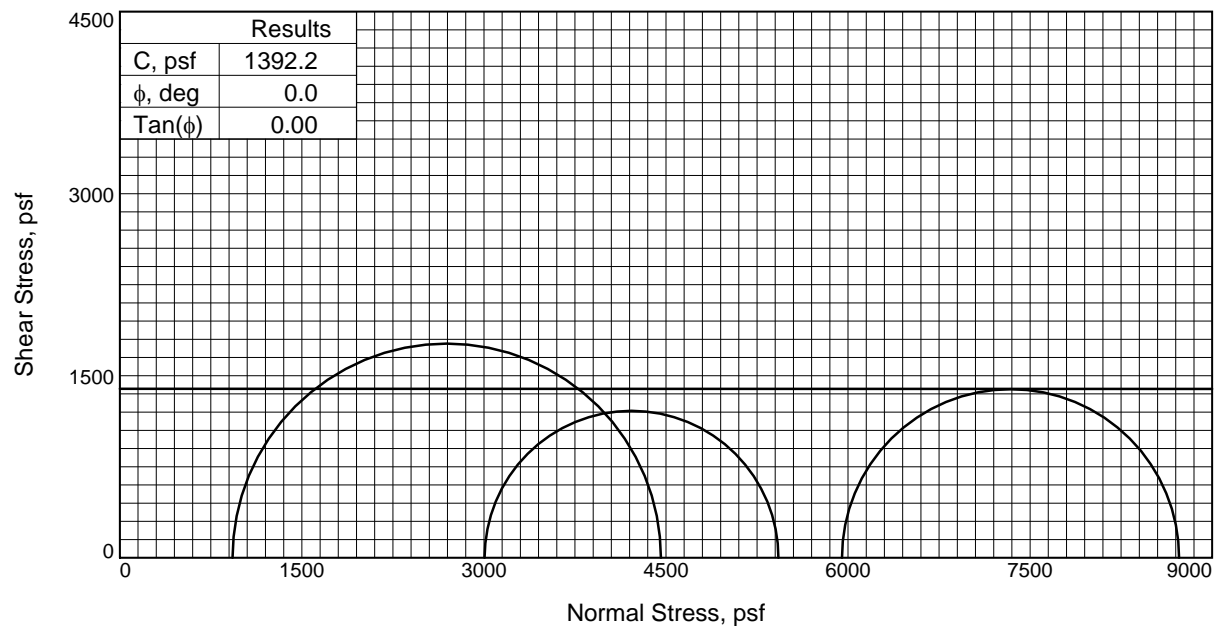
Source of Sample: SB-01 **Depth:** 86

Sample Number: 22C

Figure ASTM D2166



Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	44.8	43.4	46.7
	Dry Density, pcf	76.2	77.2	74.8
	Saturation, %	99.3	98.4	100.0
	Void Ratio	1.2279	1.1996	1.2708
	Diameter, in.	1.398	1.393	1.393
	Height, in.	2.787	2.774	2.786
At Test	Water Content, %	45.1	44.1	46.7
	Dry Density, pcf	76.2	77.2	74.8
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.2279	1.1996	1.2708
	Diameter, in.	1.398	1.393	1.393
	Height, in.	2.787	2.774	2.786
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.450	20.870	41.320
Fail. Stress, psf		3529.7	2421.4	2777.8
Strain, %		2.6	2.9	2.3
Ult. Stress, psf		1852.0	1089.0	1471.0
Strain, %		13.1	7.7	5.0
σ_1 Failure, psf		4458.5	5426.7	8727.9
σ_3 Failure, psf		928.8	3005.3	5950.1

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR CH4 W/ ARS ML, SL

LL= 89 **PL=** 29 **PI=** 60

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.400 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 93

Sample Number: 24B

Proj. No.: 24384

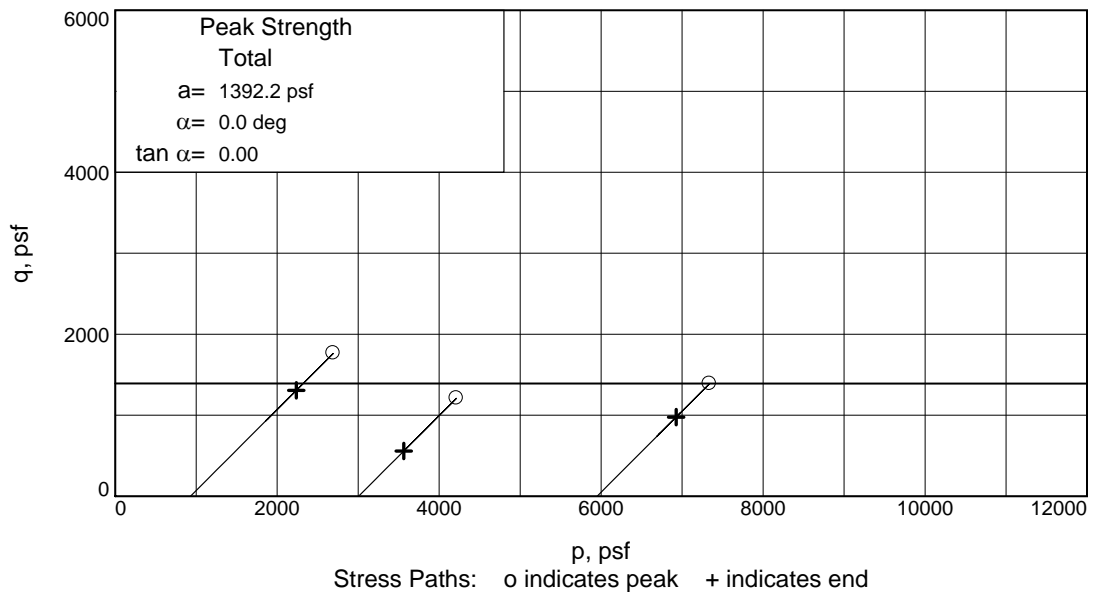
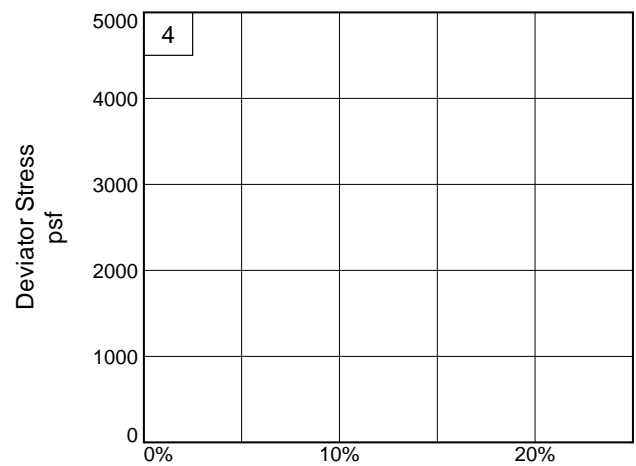
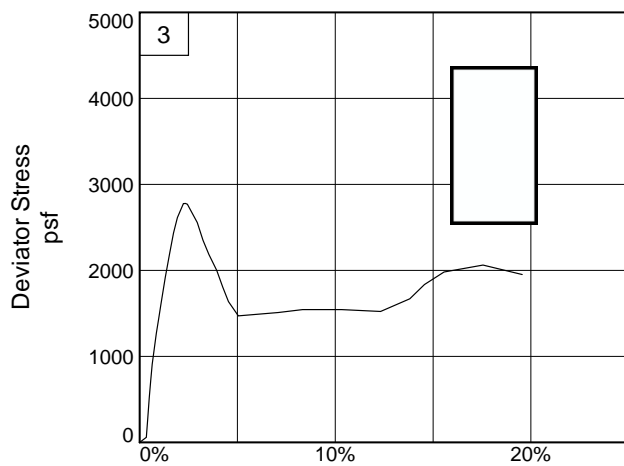
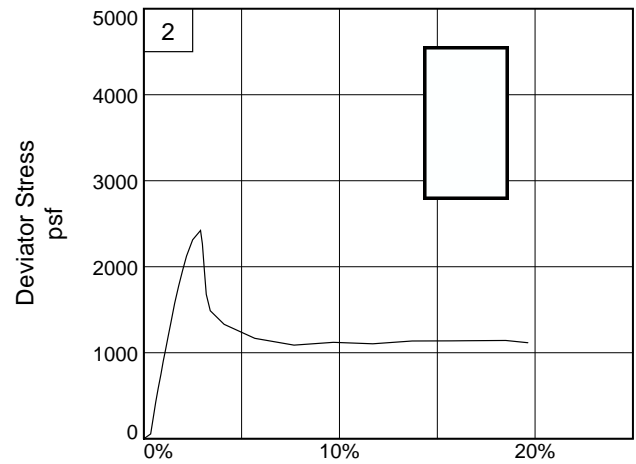
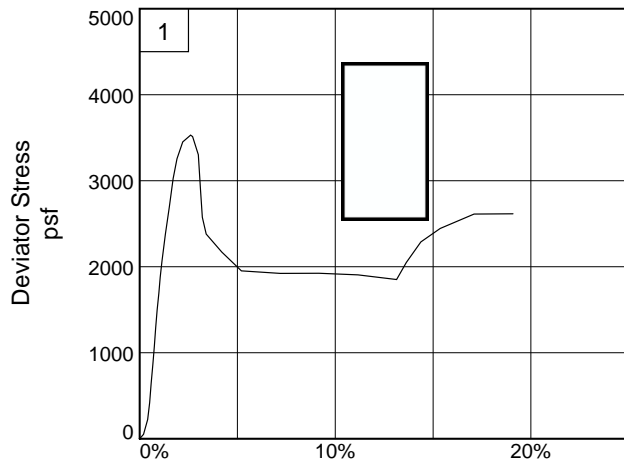
Date Sampled: 9/10/20

Figure ASTM D2850



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SINCE 1946

Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01

Depth: 93

Sample Number: 24B

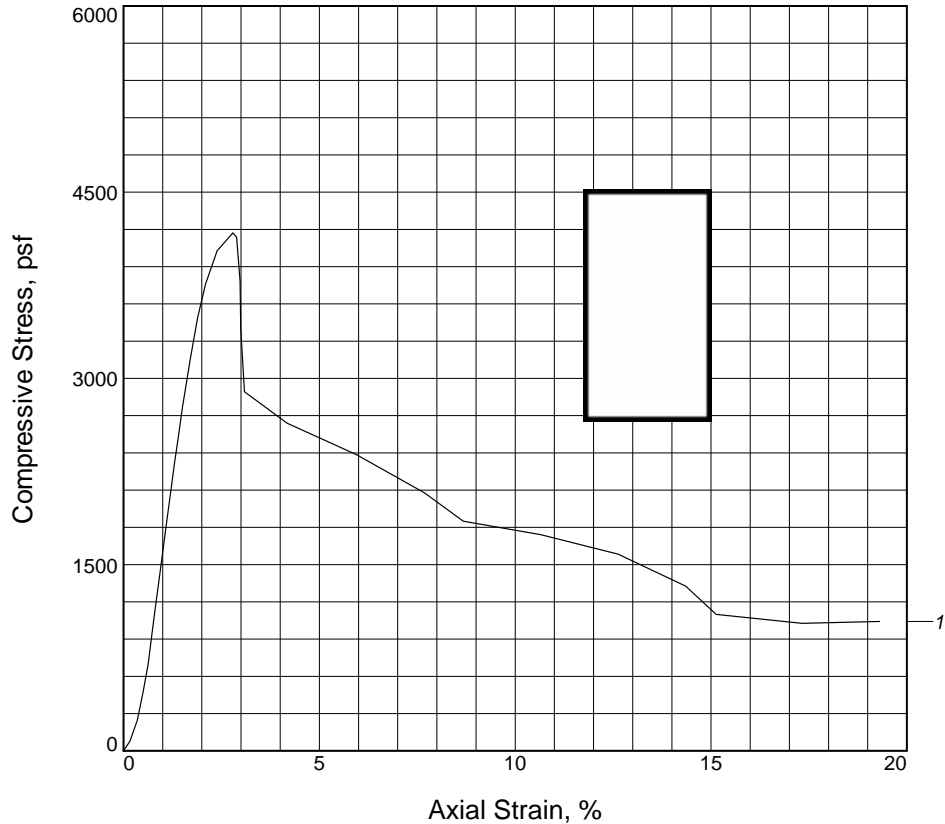
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	4171.5			
Undrained shear strength, psf	2085.7			
Failure strain, %	2.8			
Strain rate, %/min.	1.00			
Water content, %	48.2			
Wet density, pcf	108.9			
Dry density, pcf	73.5			
Saturation, %	100.0			
Void ratio	1.3109			
Specimen diameter, in.	1.396			
Specimen height, in.	2.796			
Height/diameter ratio	2.00			

Description: VST GR CH4 W/ ARS & LNS ML

LL = 89 **PL** = 28 **PI** = 61 **Assumed GS**= 2.72 **Type:** UNDISTURBED

Project No.: 24384

Date Sampled: 9/10/20

Remarks:

TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 97

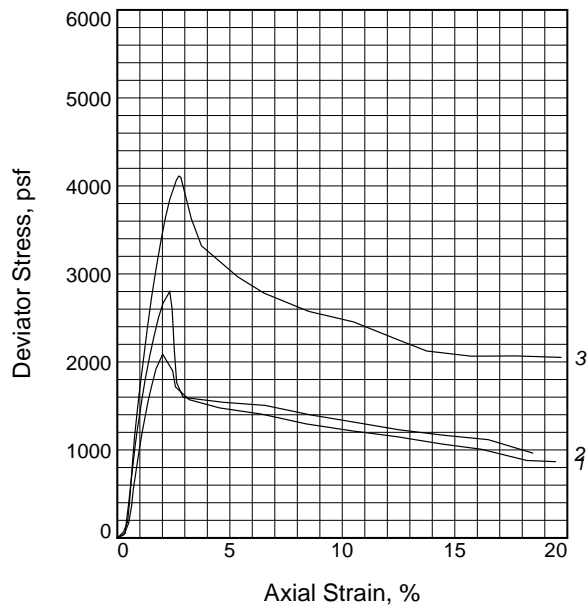
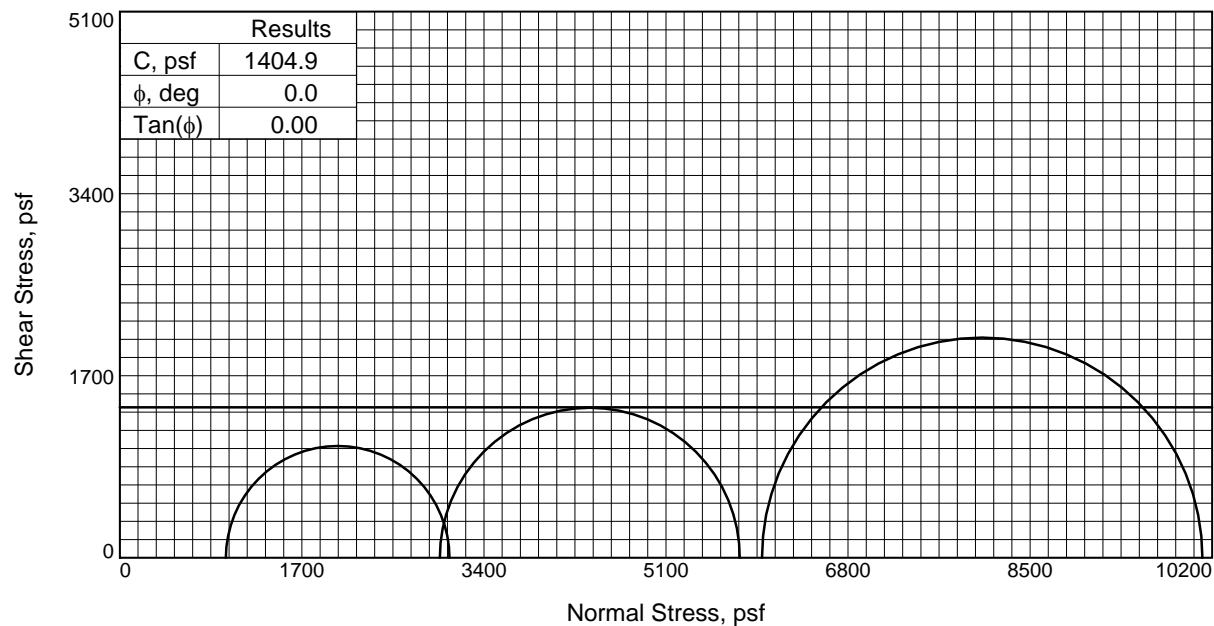
Sample Number: 25B

Figure ASTM D2166



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Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	46.0	45.9	45.3
	Dry Density, pcf	75.4	75.6	76.1
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.2517	1.2476	1.2322
	Diameter, in.	1.398	1.396	1.394
	Height, in.	2.768	2.798	2.788
At Test	Water Content, %	46.0	45.9	45.3
	Dry Density, pcf	75.4	75.6	76.1
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.2517	1.2476	1.2322
	Diameter, in.	1.398	1.396	1.394
	Height, in.	2.768	2.798	2.788
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.880	20.750	41.640
Fail. Stress, psf		2087.7	2801.0	4112.4
Strain, %		2.0	2.3	2.7
Ult. Stress, psf		1067.5	1167.9	2124.1
Strain, %		14.4	14.5	13.8
σ_1 Failure, psf		3078.4	5789.0	10108.6
σ_3 Failure, psf		990.7	2988.0	5996.2

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR CH4 W/ ARS ML

LL= 91 **PL=** 28 **PI=** 63

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.400 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 102

Sample Number: 26C

Proj. No.: 24384

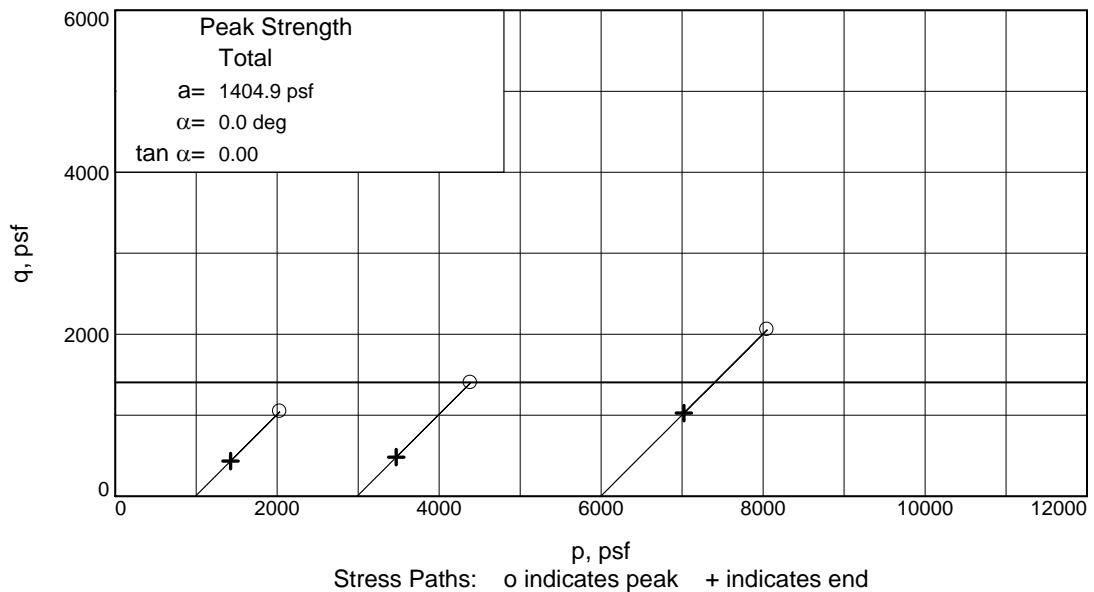
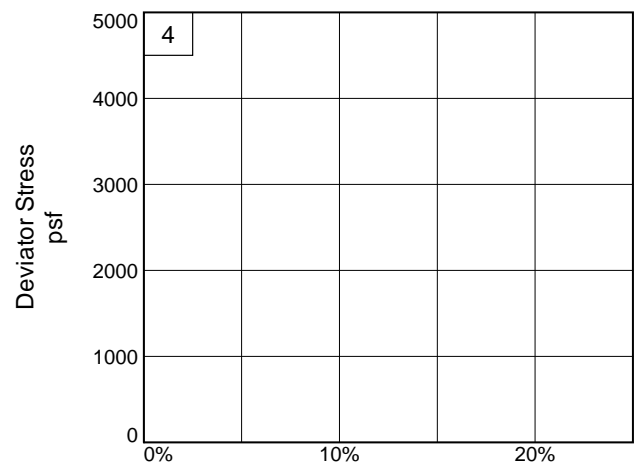
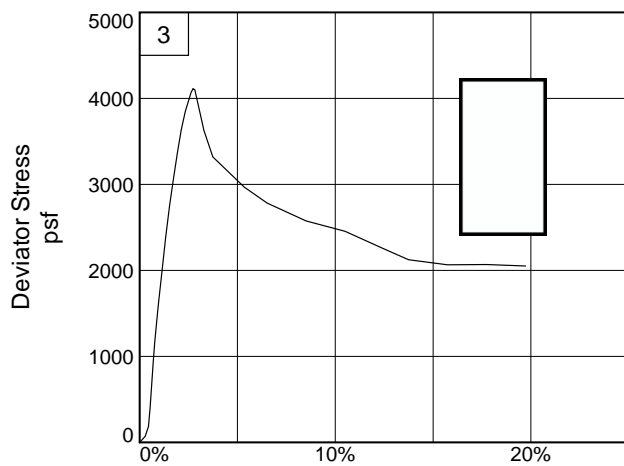
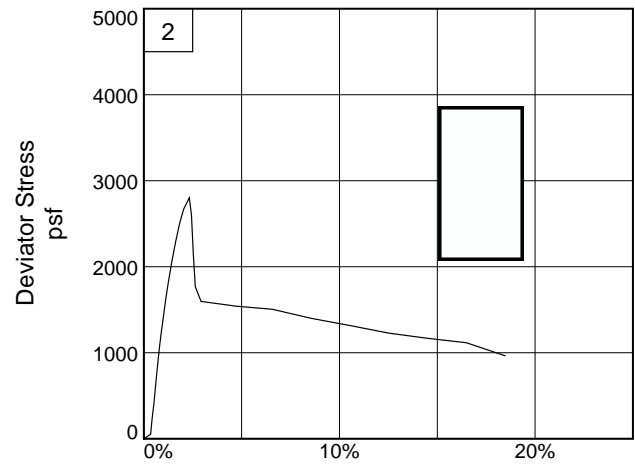
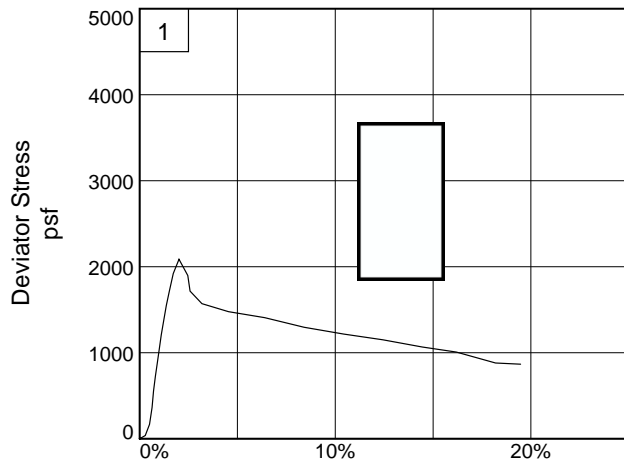
Date Sampled: 9/10/20

Figure ASTM D2850



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Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01

Depth: 102

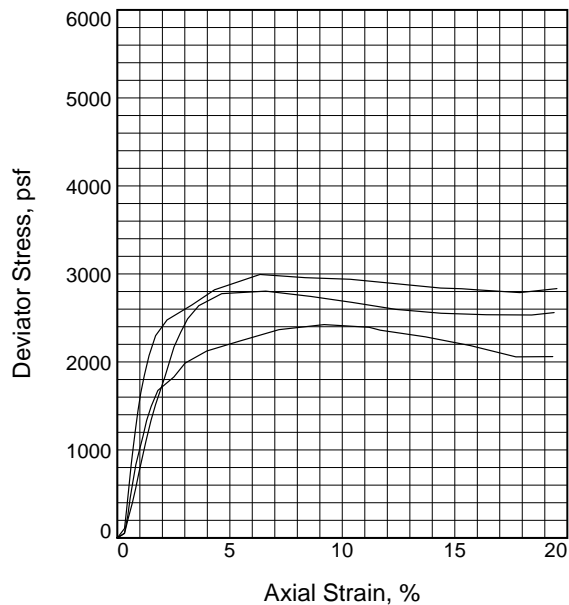
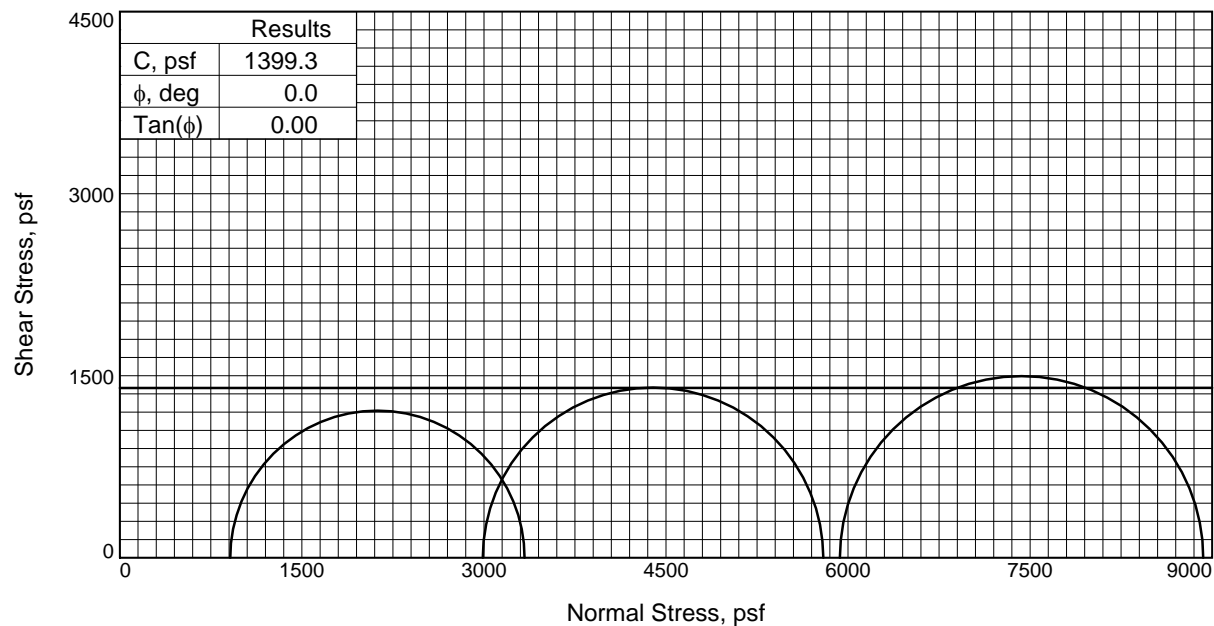
Sample Number: 26C

Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	24.4	24.3	24.7
	Dry Density, pcf	101.0	99.8	99.1
	Saturation, %	97.2	94.5	94.2
	Void Ratio	0.6818	0.7011	0.7132
	Diameter, in.	1.373	1.396	1.394
	Height, in.	2.763	2.753	2.757
At Test	Water Content, %	25.1	25.8	26.2
	Dry Density, pcf	101.0	99.8	99.1
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.6818	0.7011	0.7132
	Diameter, in.	1.373	1.396	1.394
	Height, in.	2.763	2.753	2.757
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.320	20.770	41.200
Fail. Stress, psf		2424.4	2805.0	2993.9
Strain, %		9.2	6.6	6.3
Ult. Stress, psf		2285.1	2553.5	2832.7
Strain, %		13.7	14.4	15.3
σ_1 Failure, psf		3334.5	5795.9	8926.7
σ_3 Failure, psf		910.1	2990.9	5932.8

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR CL6 W/ WD, RT

LL= 41 **PL=** 16 **PI=** 25

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01 **Depth:** 109

Sample Number: 28B

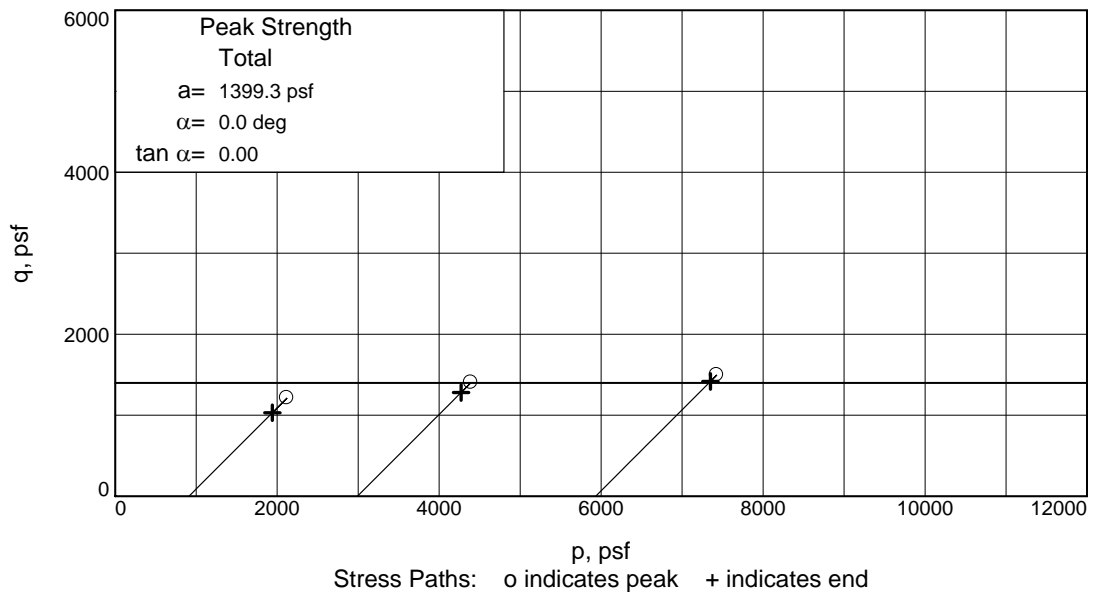
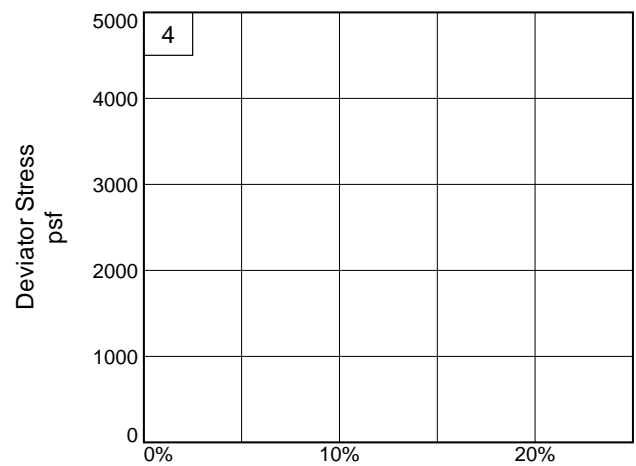
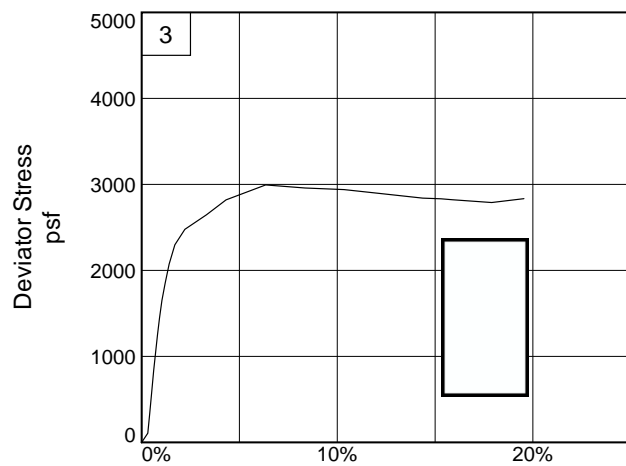
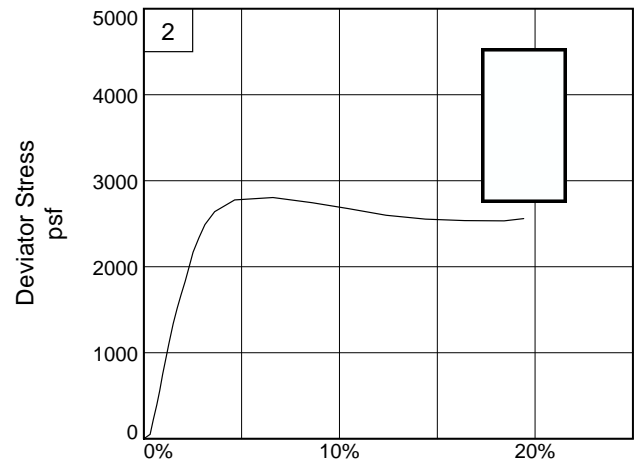
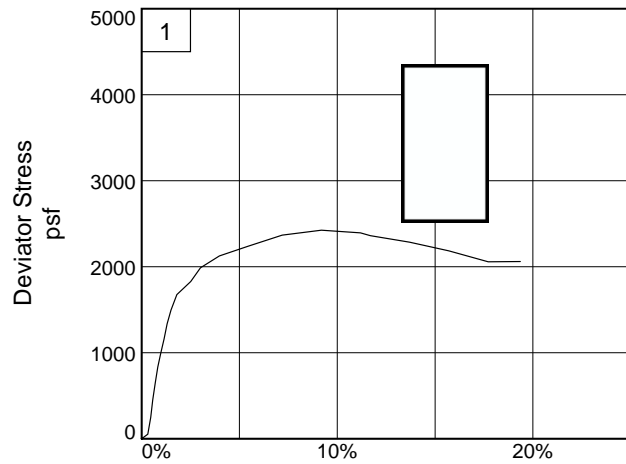
Proj. No.: 24384

Date Sampled: 9/10/20

Figure ASTM D2850



Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-01

Depth: 109

Sample Number: 28B

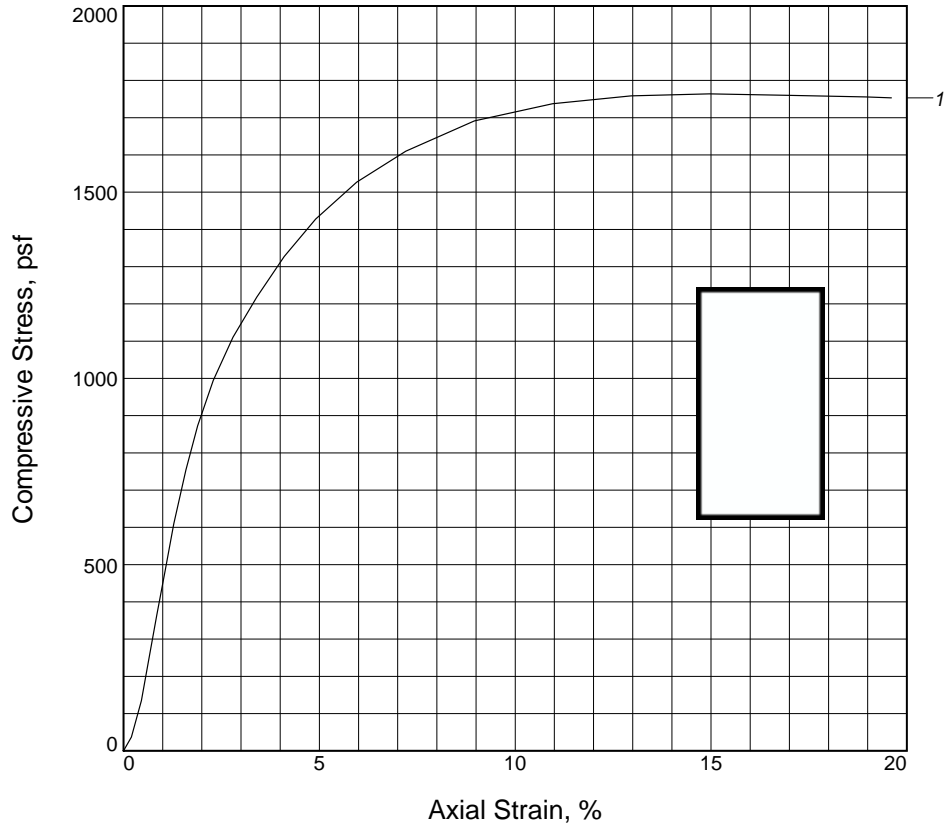
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	1764.1			
Undrained shear strength, psf	882.1			
Failure strain, %	15.0			
Strain rate, %/min.	1.00			
Water content, %	35.1			
Wet density, pcf	115.3			
Dry density, pcf	85.4			
Saturation, %	96.5			
Void ratio	0.9895			
Specimen diameter, in.	1.377			
Specimen height, in.	2.761			
Height/diameter ratio	2.01			

Description: M GR & T CH3 W/ ARS ML, CC, SL

LL = 67 **PL** = 25 **PI** = 42 **Assumed GS**= 2.72 **Type:** UNDISTURBED

Project No.: 24384

Date Sampled: 10/7/20

Remarks:

TORVANE = 0.750 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02 **Depth:** 3

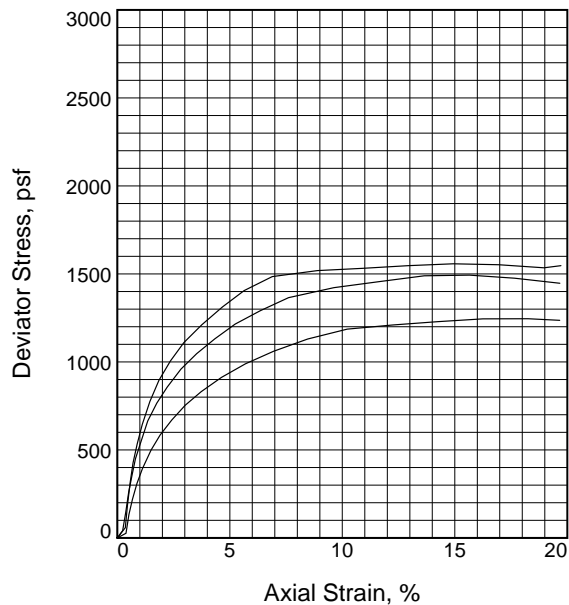
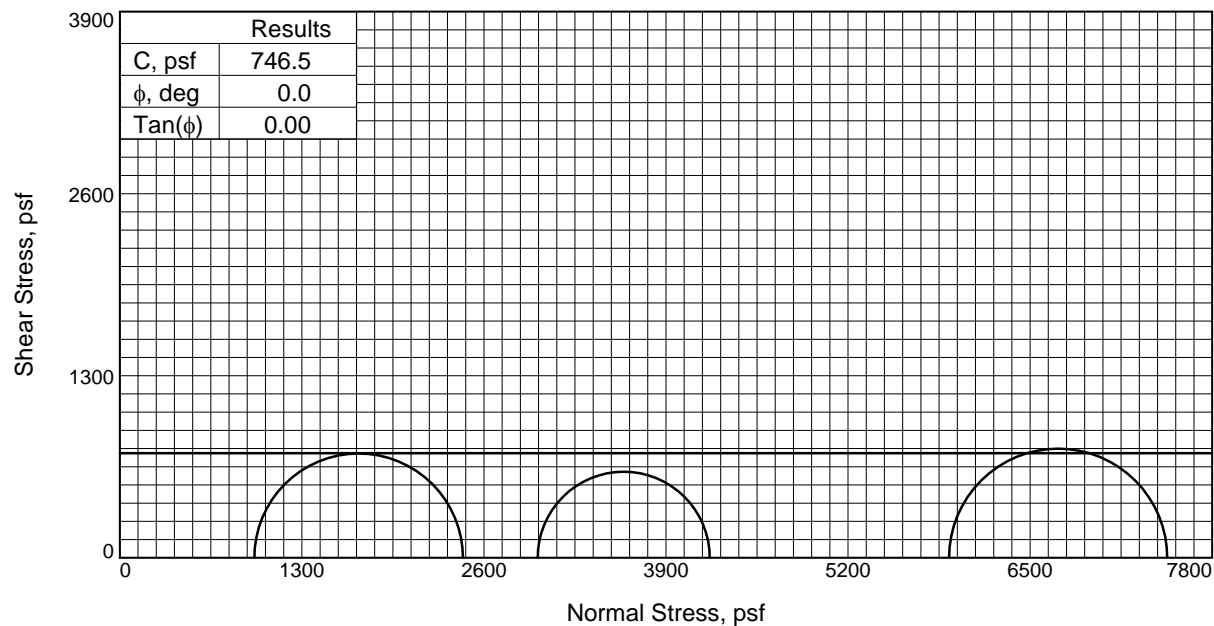
Sample Number: 2B

Figure ASTM D2166



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Tested By: CC **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	40.0	38.9	39.6
	Dry Density, pcf	81.2	82.4	81.2
	Saturation, %	99.8	99.7	98.8
	Void Ratio	1.0903	1.0616	1.0904
	Diameter, in.	1.420	1.400	1.396
	Height, in.	2.759	2.753	2.760
At Test	Water Content, %	40.1	39.0	40.1
	Dry Density, pcf	81.2	82.4	81.2
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.0903	1.0616	1.0904
	Diameter, in.	1.420	1.400	1.396
	Height, in.	2.759	2.753	2.760
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.670	20.720	41.120
Fail. Stress, psf		1489.2	1228.9	1558.1
Strain, %		13.6	14.2	14.9
Ult. Stress, psf		1489.2	1228.9	1558.1
Strain, %		13.6	14.2	14.9
σ_1 Failure, psf		2449.7	4212.6	7479.4
σ_3 Failure, psf		960.5	2983.7	5921.3

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR & T CH3 W/ ARS ML, CC

LL= 73 **PL=** 21 **PI=** 52

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02 **Depth:** 7

Sample Number: 3B

Proj. No.: 24384

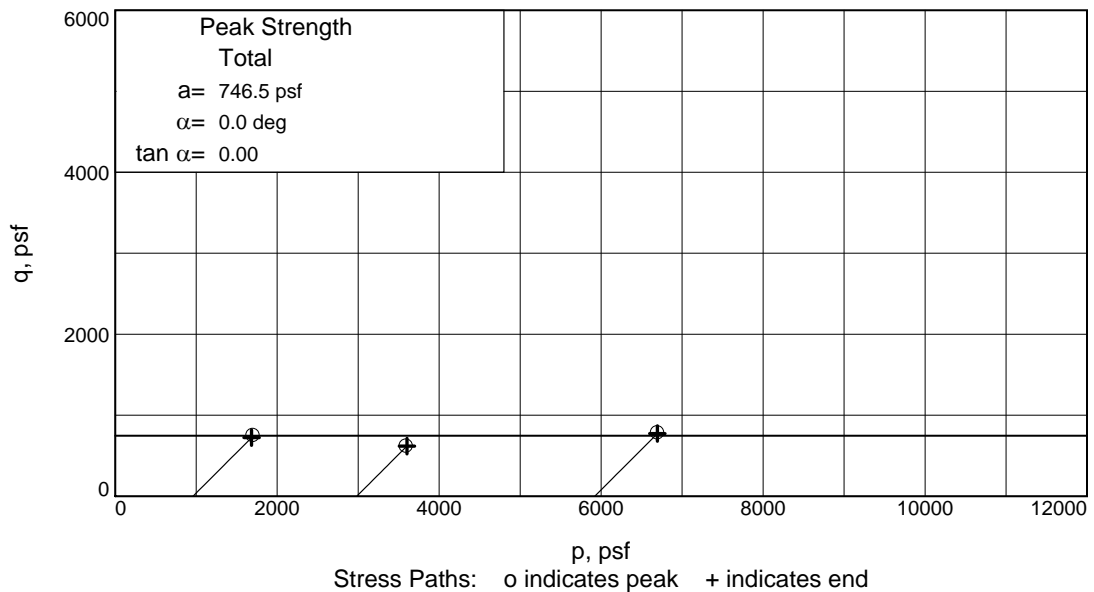
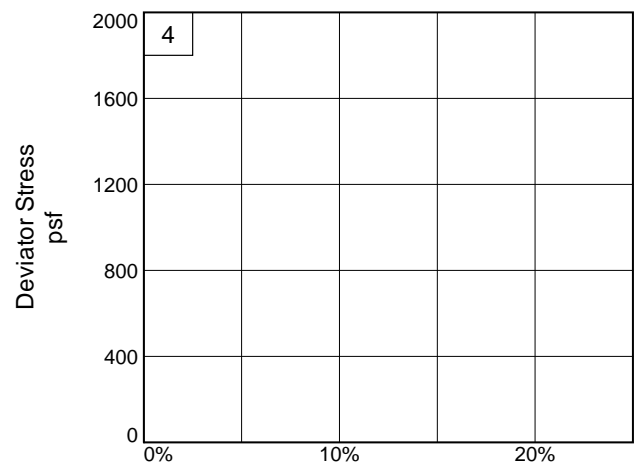
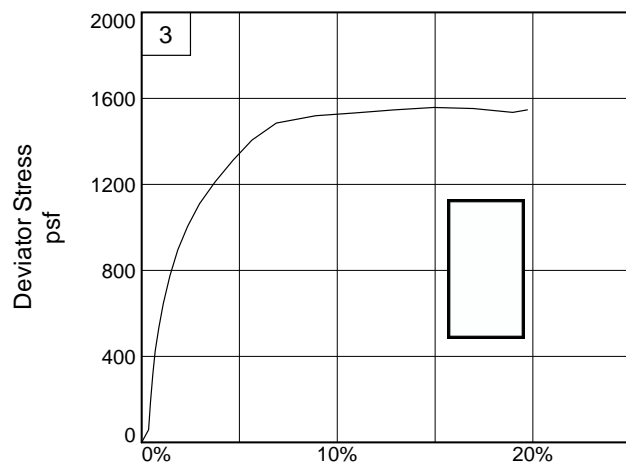
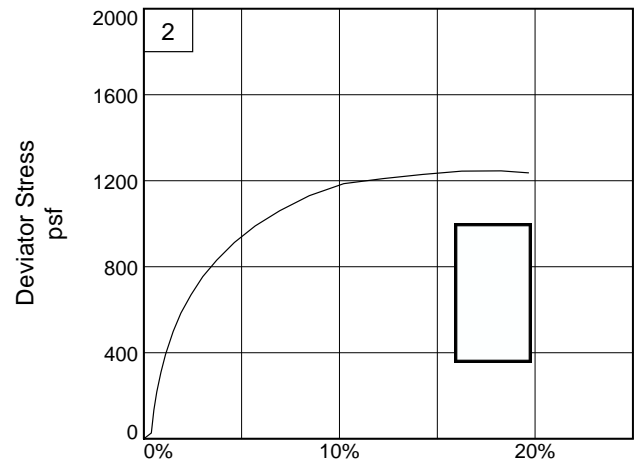
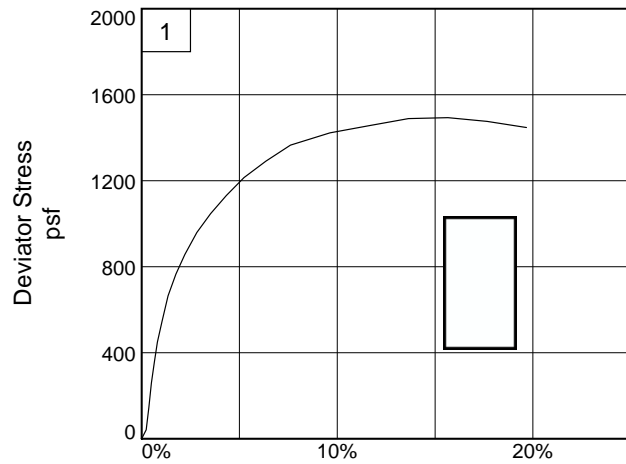
Date Sampled: 10/7/20



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SINCE 1948

Figure ASTM D2850

Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02

Depth: 7

Sample Number: 3B

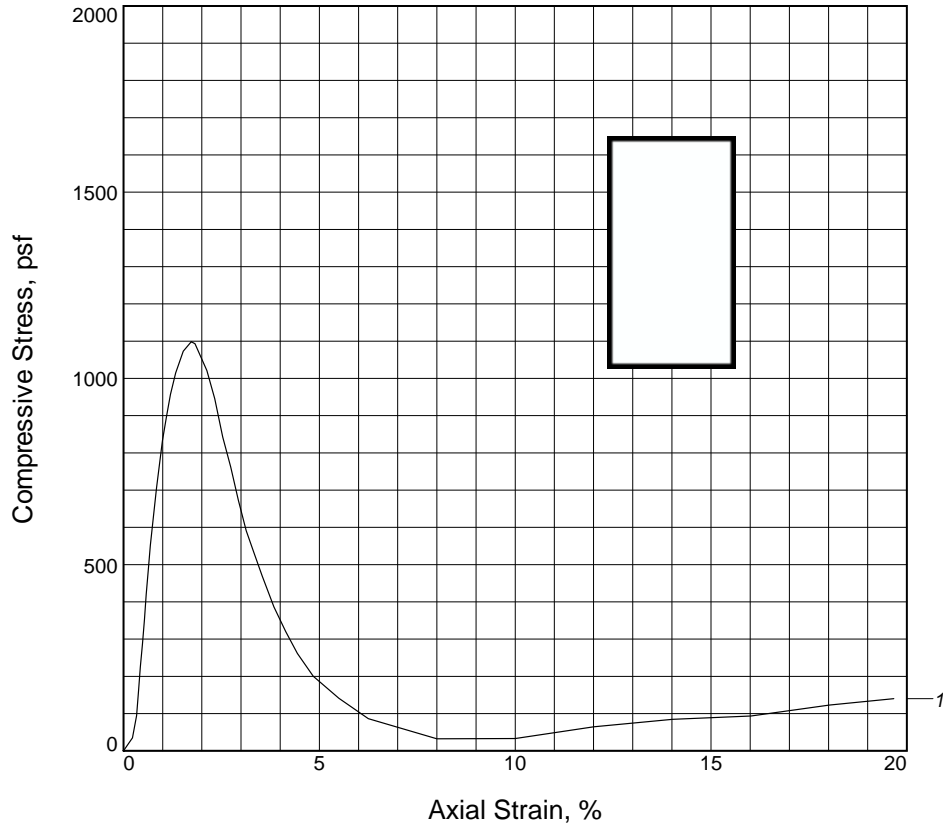
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	1098.4			
Undrained shear strength, psf	549.2			
Failure strain, %	1.7			
Strain rate, %/min.	1.00			
Water content, %	55.4			
Wet density, pcf	103.8			
Dry density, pcf	66.8			
Saturation, %	97.6			
Void ratio	1.5433			
Specimen diameter, in.	1.390			
Specimen height, in.	2.755			
Height/diameter ratio	1.98			

Description: M GR CH4 W/ ARS ML, SL

LL = 104

PL = 30

PI = 74

Assumed GS= 2.72

Type: UNDISTURBED

Project No.: 24384

Date Sampled: 10/7/20

Remarks:

TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02

Depth: 11

Sample Number: 4B

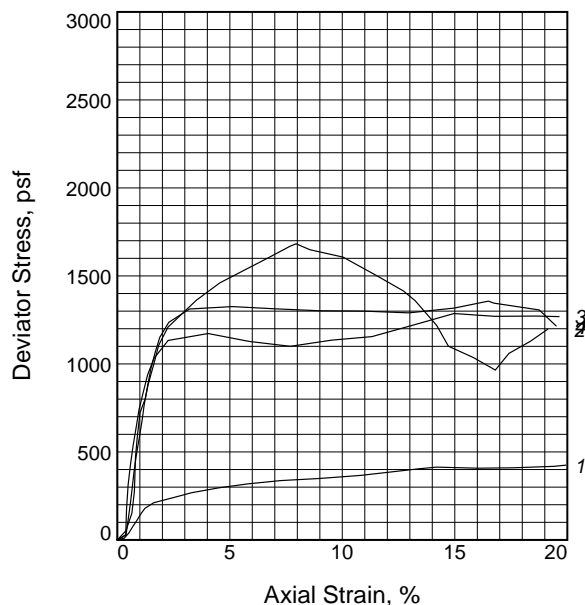
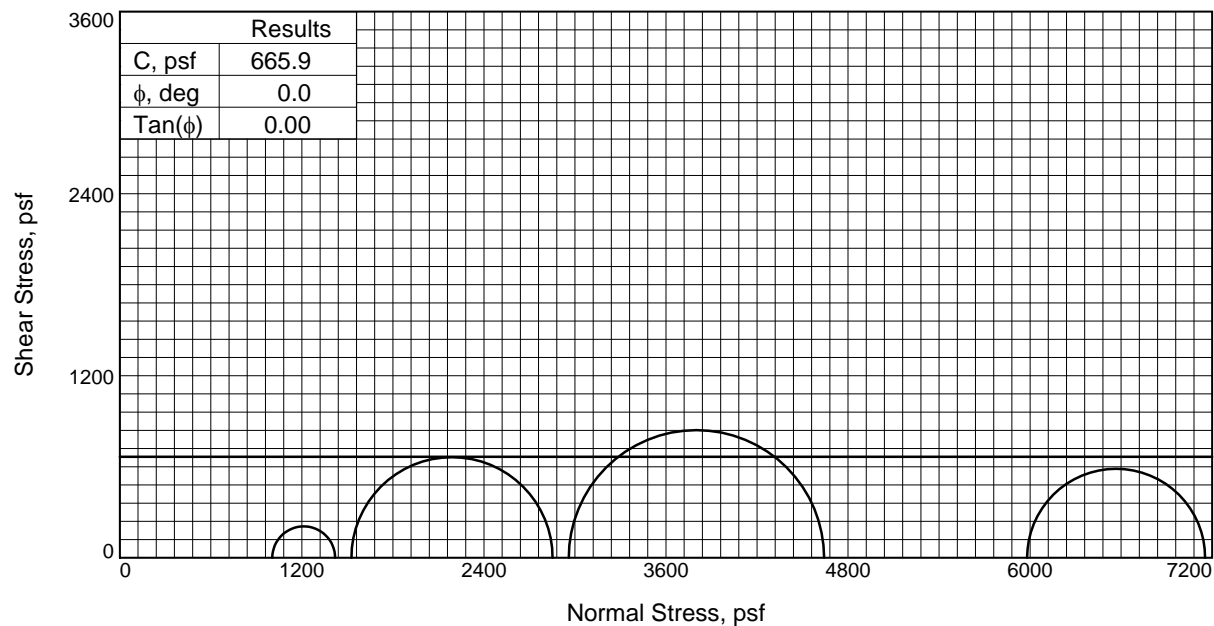
Figure ASTM D2166



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SINCE 1946

Tested By: CC

Checked By: RR



Specimen No.		1	2	3	4
Initial	Water Content, %	56.3	58.4	54.7	54.3
	Dry Density, pcf	64.3	63.8	66.6	66.9
	Saturation, %	93.3	95.6	96.0	96.0
	Void Ratio	1.6413	1.6612	1.5506	1.5386
	Diameter, in.	1.406	1.422	1.418	1.396
	Height, in.	2.844	2.868	2.859	2.755
At Test	Water Content, %	60.3	61.1	57.0	56.6
	Dry Density, pcf	64.3	63.8	66.6	66.9
	Saturation, %	100.0	100.0	100.0	100.0
	Void Ratio	1.6413	1.6612	1.5506	1.5386
	Diameter, in.	1.406	1.422	1.418	1.396
	Height, in.	2.844	2.868	2.859	2.755
Strain rate, %/min.		1.00	1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000	0.000
Cell Pressure, psi		6.980	20.550	41.530	10.600
Fail. Stress, psf		413.9	1682.9	1173.3	1326.0
Strain, %		14.2	7.9	4.0	5.1
Ult. Stress, psf		413.9	1101.3	1100.2	1290.2
Strain, %		14.2	14.7	7.7	13.0
σ_1 Failure, psf		1419.0	4642.1	7153.6	2852.4
σ_3 Failure, psf		1005.1	2959.2	5980.3	1526.4

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR & T CH4 W/ ARS ML, SL, WD, RT

LL= 94 **PL=** 25 **PI=** 69

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02 **Depth:** 15

Sample Number: 5B

Proj. No.: 24384

Date Sampled: 10/7/20

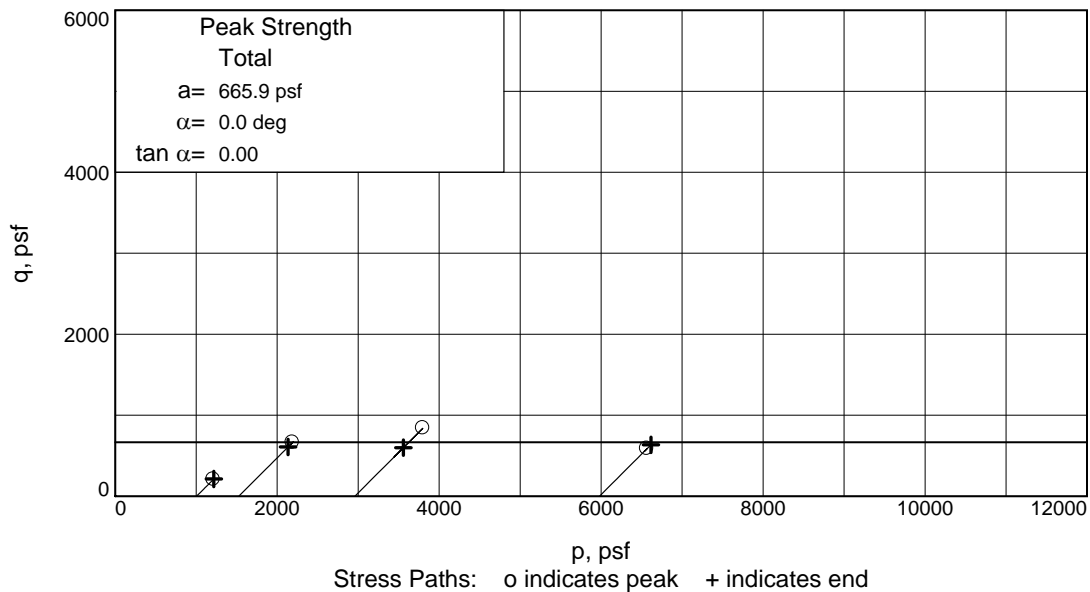
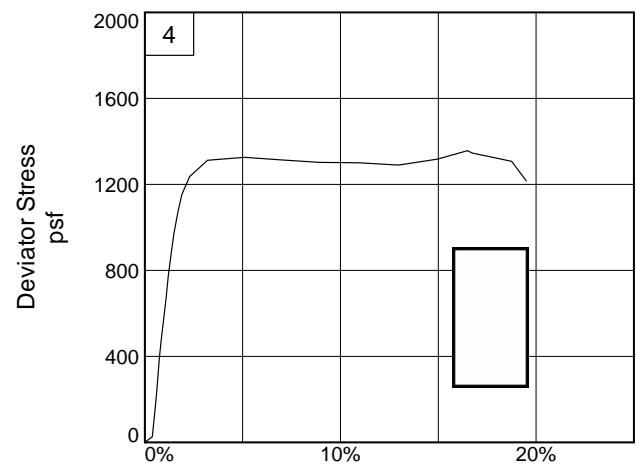
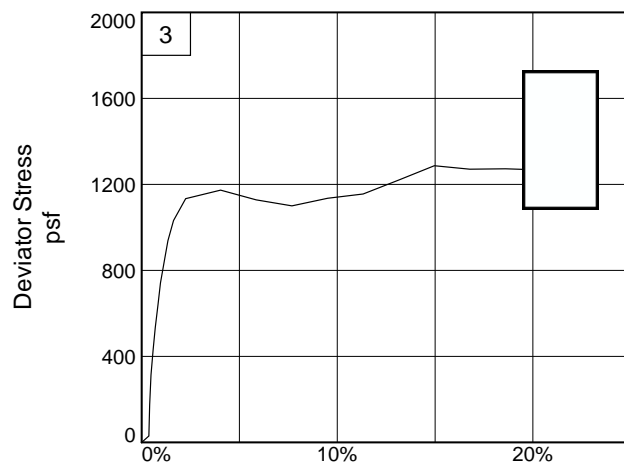
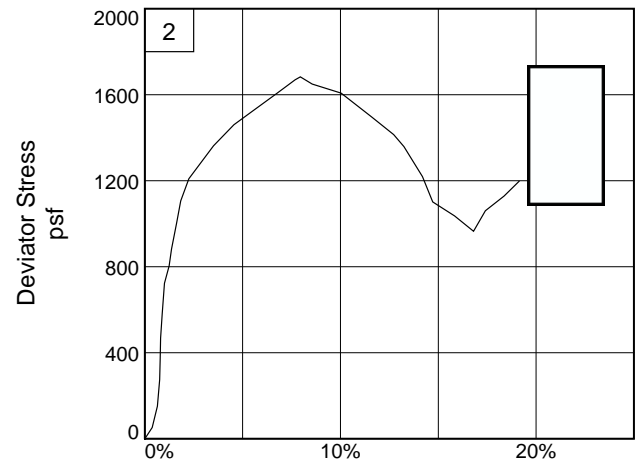
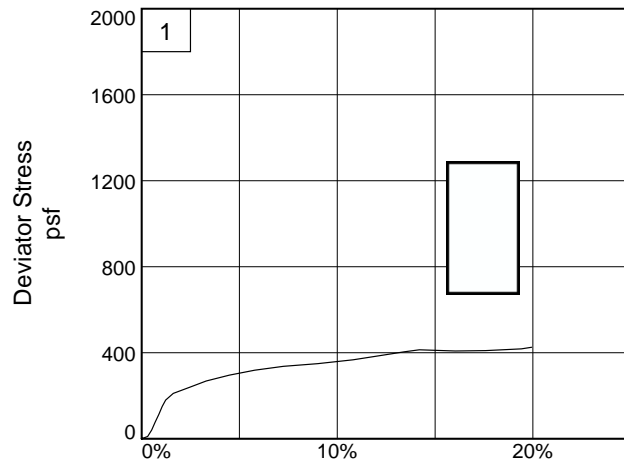


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Figure ASTM D2850

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02

Depth: 15

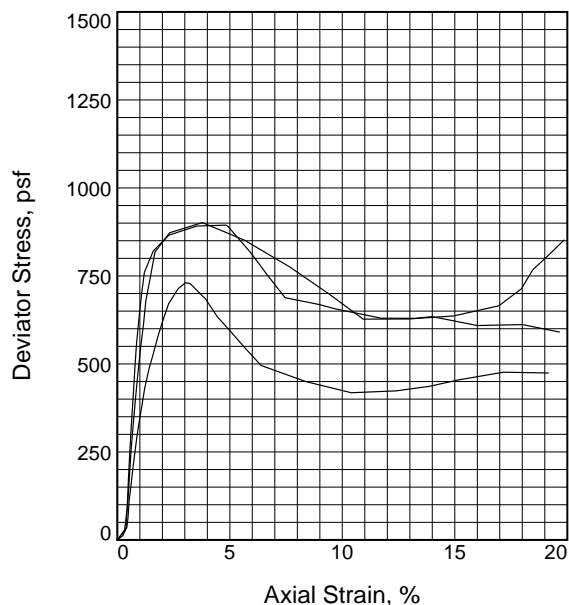
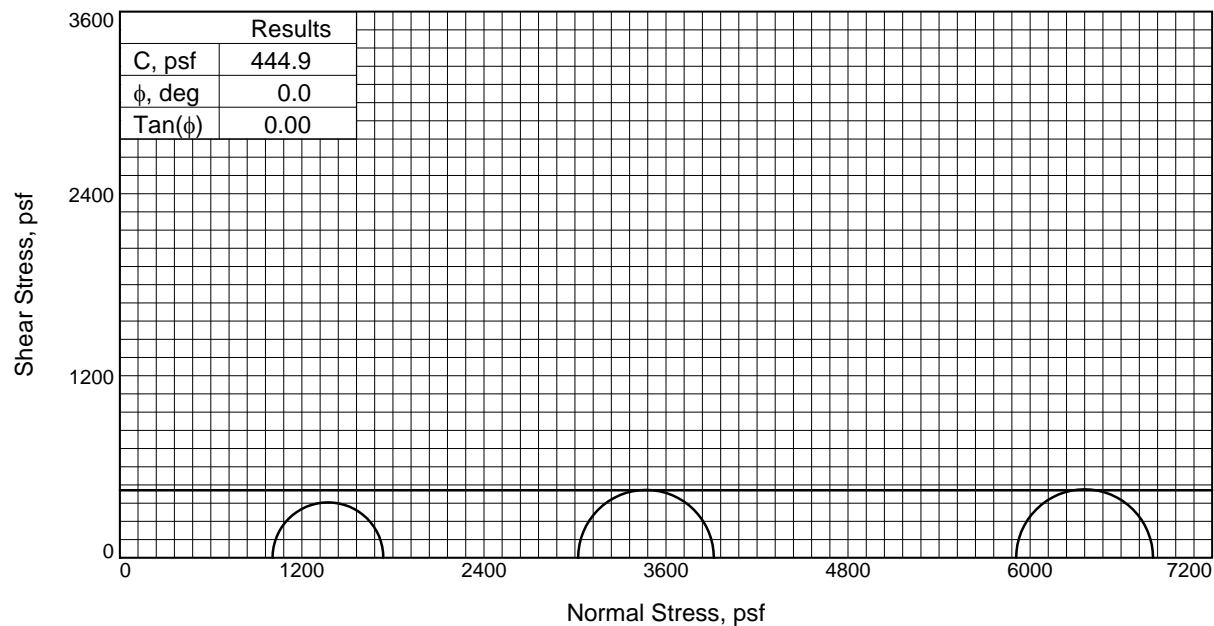
Sample Number: 5B

Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	110.2	108.0	109.0
	Dry Density, pcf	40.5	41.9	41.2
	Saturation, %	94.0	96.2	95.1
	Void Ratio	3.1891	3.0519	3.1183
	Diameter, in.	1.409	1.392	1.421
	Height, in.	2.771	2.760	2.765
At Test	Water Content, %	117.2	112.2	114.6
	Dry Density, pcf	40.5	41.9	41.2
	Saturation, %	100.0	100.0	100.0
	Void Ratio	3.1891	3.0519	3.1183
	Diameter, in.	1.409	1.392	1.421
	Height, in.	2.771	2.760	2.765
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.990	20.980	41.030
Fail. Stress, psf		730.6	894.3	901.8
Strain, %		3.0	4.8	3.8
Ult. Stress, psf		418.2	629.5	627.5
Strain, %		10.4	13.2	10.9
σ_1 Failure, psf		1737.2	3915.4	6810.1
σ_3 Failure, psf		1006.6	3021.1	5908.3

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR & BR CHOB W/ WD

LL= 171 **PL=** 53 **PI=** 118

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02 **Depth:** 20

Sample Number: 6C

Proj. No.: 24384

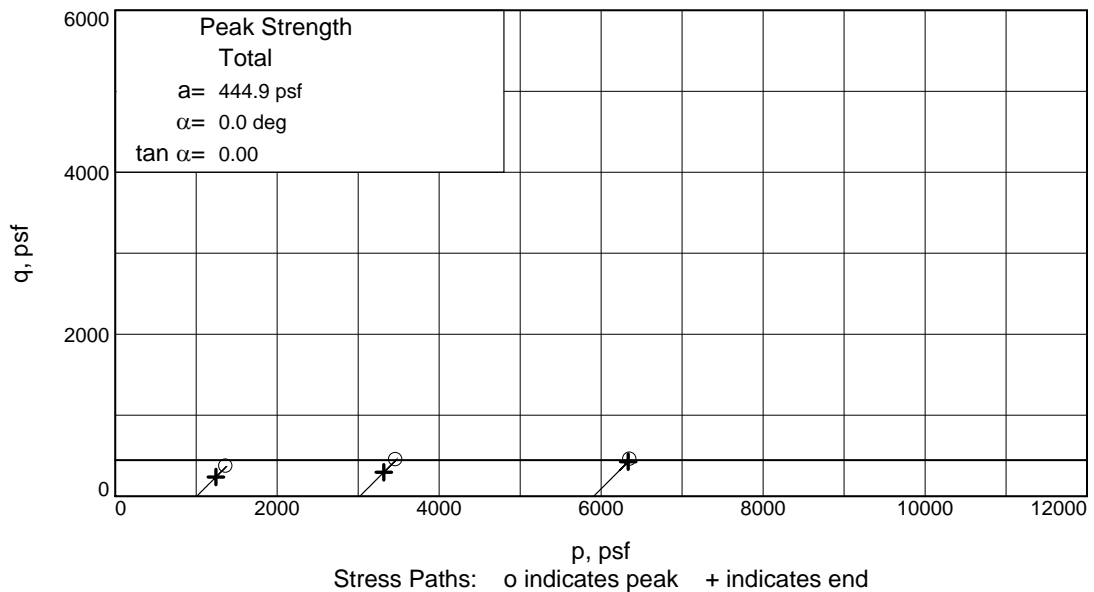
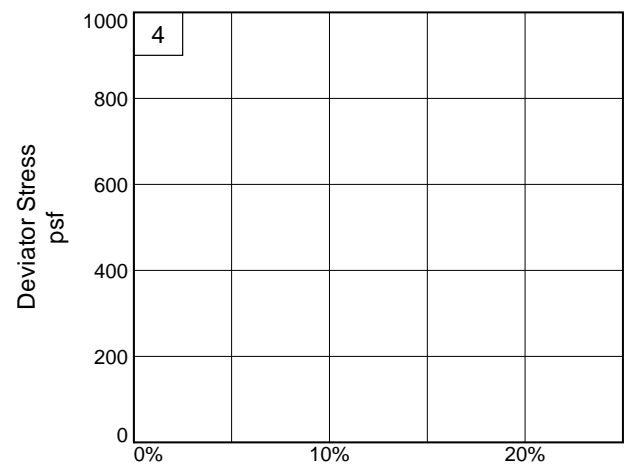
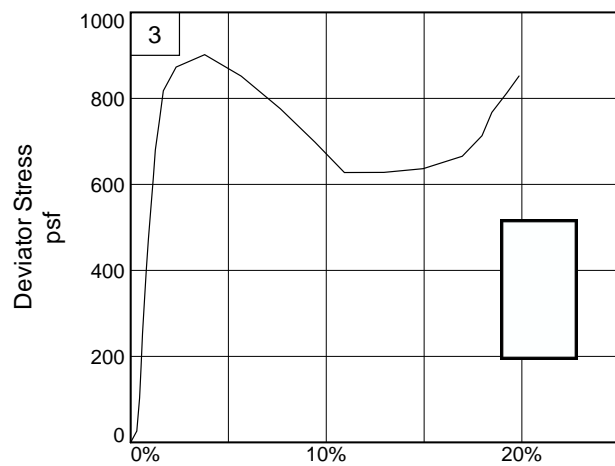
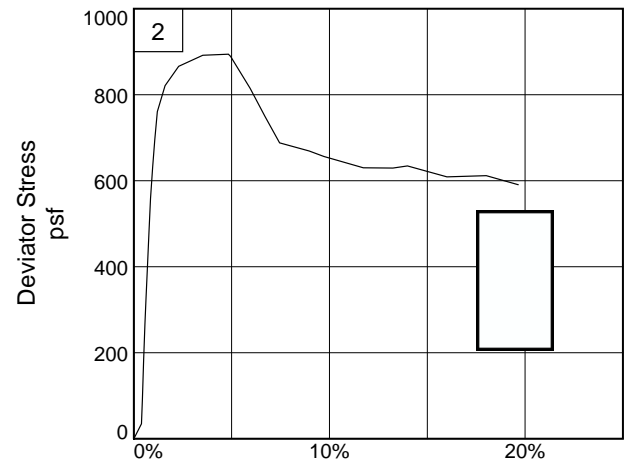
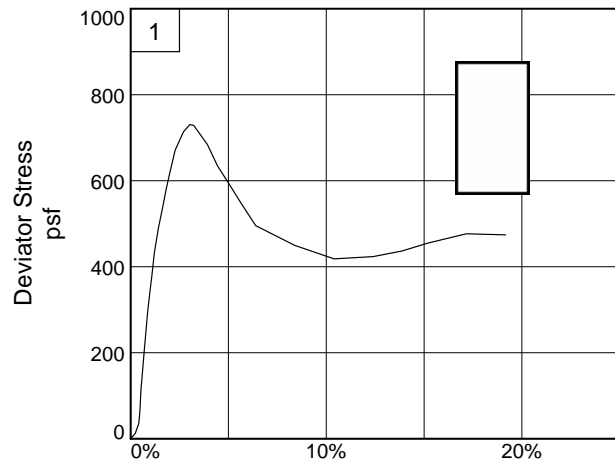
Date Sampled: 10/7/20



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Figure ASTM D2850

Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02

Depth: 20

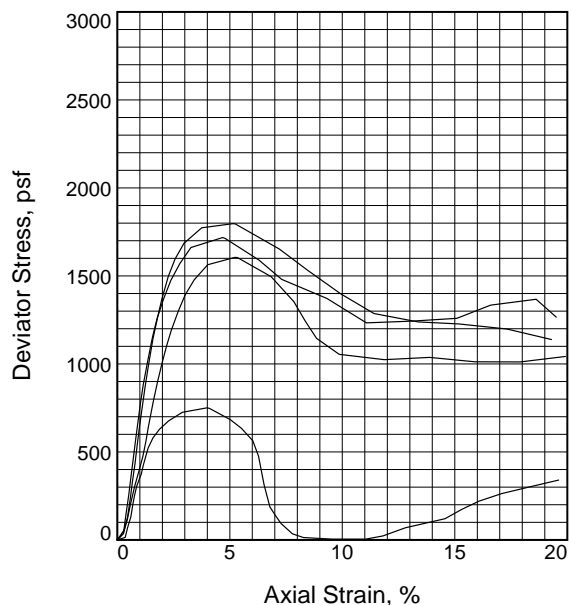
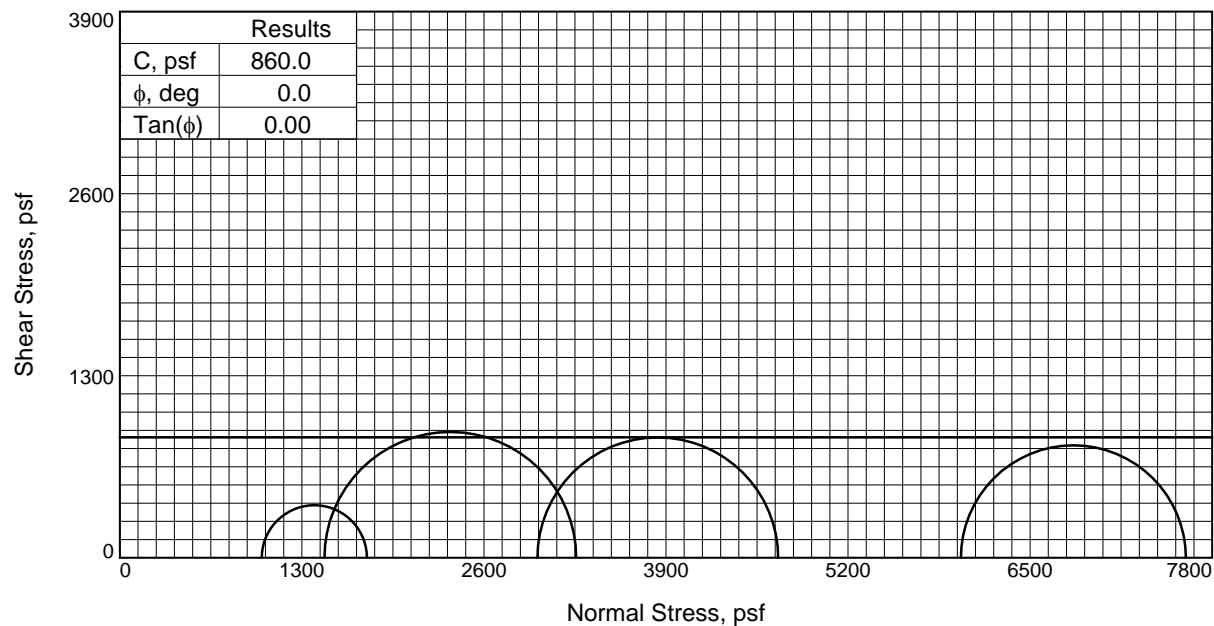
Sample Number: 6C

Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE _____ **Checked By:** RR _____



Specimen No.		1	2	3	4
Initial	Water Content, %	95.3	96.0	96.7	94.0
	Dry Density, pcf	45.6	45.5	45.4	46.8
	Saturation, %	95.3	95.7	96.2	97.4
	Void Ratio	2.6982	2.7081	2.7141	2.6045
	Diameter, in.	1.414	1.417	1.403	1.402
	Height, in.	2.753	2.766	2.758	2.804
At Test	Water Content, %	99.9	100.3	100.5	96.5
	Dry Density, pcf	45.6	45.5	45.4	46.8
	Saturation, %	100.0	100.0	100.0	100.0
	Void Ratio	2.6982	2.7081	2.7141	2.6045
	Diameter, in.	1.414	1.417	1.403	1.402
	Height, in.	2.753	2.766	2.758	2.804
Strain rate, %/min.		0.99	1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000	0.000
Cell Pressure, psi		7.040	20.710	41.710	10.150
Fail. Stress, psf		750.6	1718.7	1605.8	1796.8
Strain, %		4.0	4.7	5.2	5.1
Ult. Stress, psf		5.1	1233.3	1024.3	1227.3
Strain, %		11.0	11.1	11.9	15.2
σ_1 Failure, psf		1764.4	4700.9	7612.1	3258.4
σ_3 Failure, psf		1013.8	2982.2	6006.2	1461.6

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M BR & GR CHOA

LL= 152 **PL=** 53 **PI=** 99

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02 **Depth:** 23

Sample Number: 7B

Proj. No.: 24384

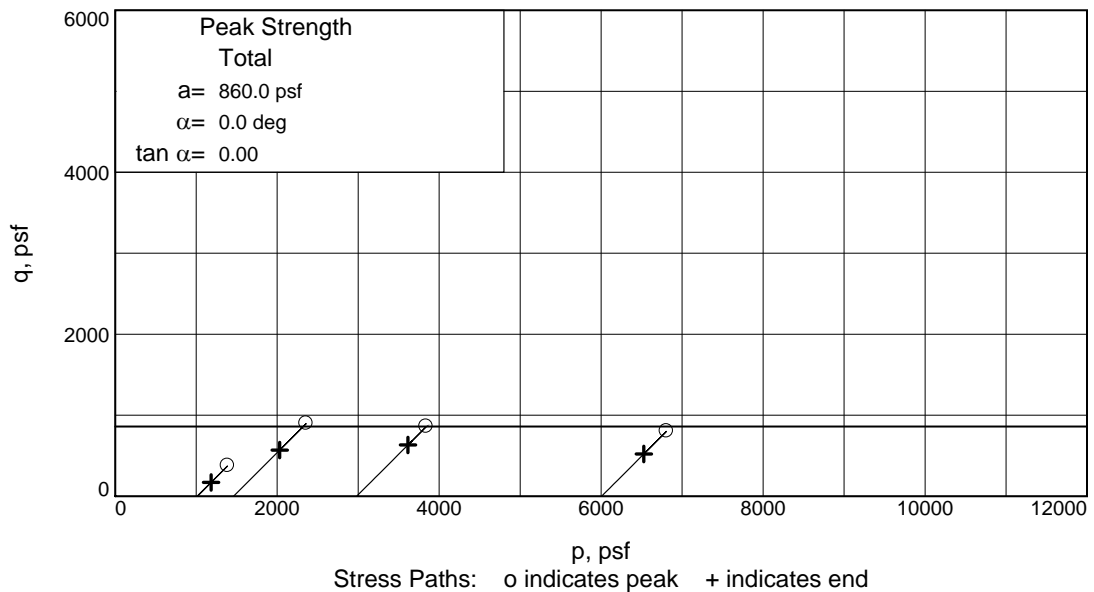
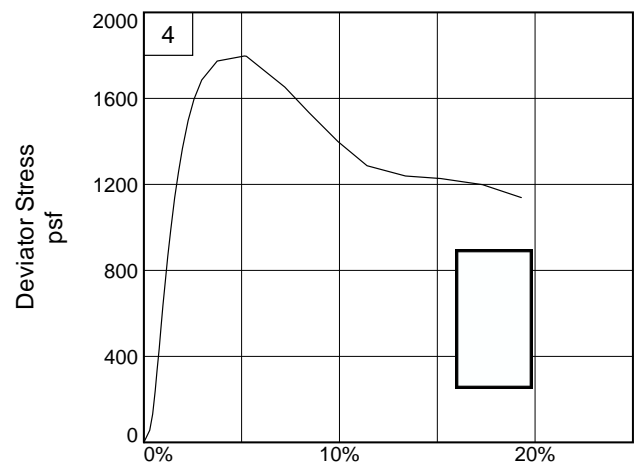
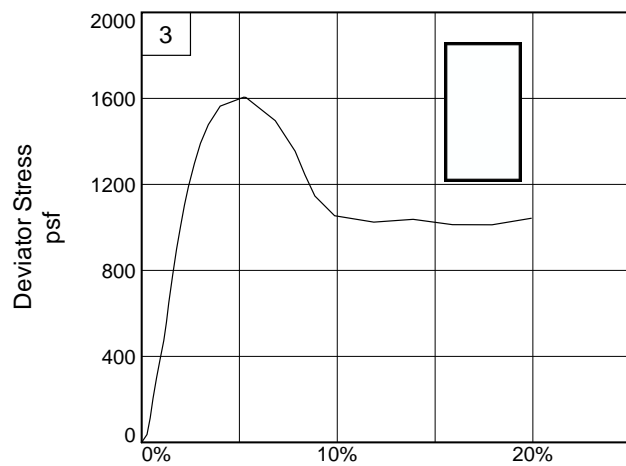
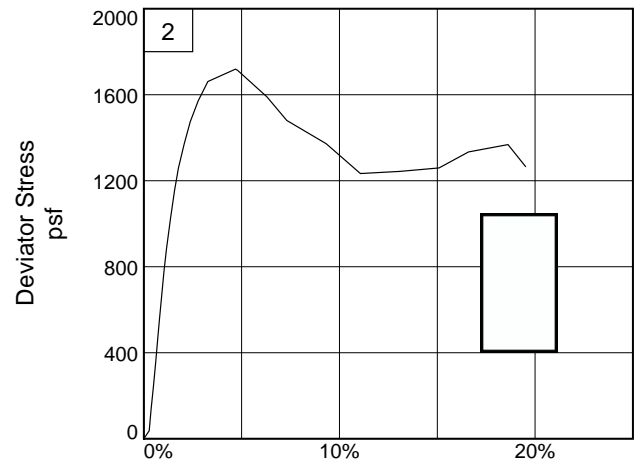
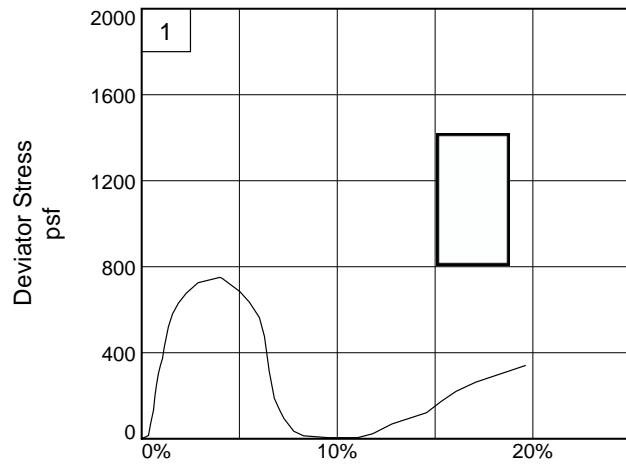
Date Sampled: 10/7/20



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Figure ASTM D2850

Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02

Depth: 23

Sample Number: 7B

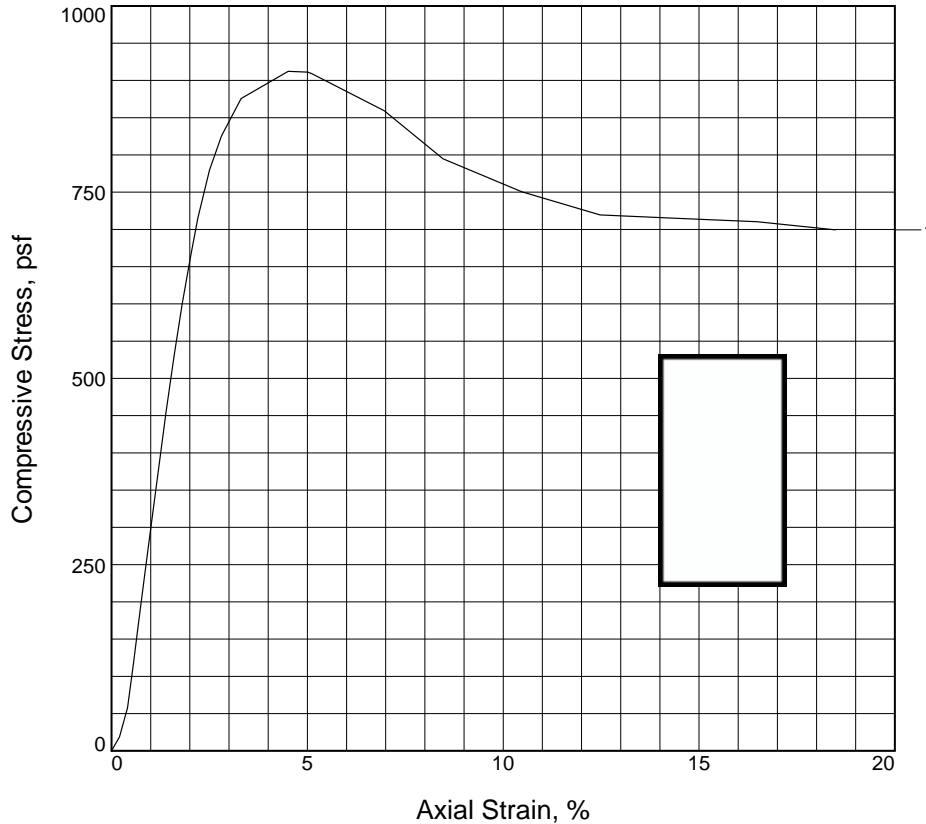
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	912.3			
Undrained shear strength, psf	456.1			
Failure strain, %	4.5			
Strain rate, %/min.	1.00			
Water content, %	79.2			
Wet density, pcf	94.7			
Dry density, pcf	52.8			
Saturation, %	97.3			
Void ratio	2.2154			
Specimen diameter, in.	1.390			
Specimen height, in.	2.766			
Height/diameter ratio	1.99			

Description: SO BR & GR CH4 W/ ARS ML, O

LL = 103 **PL** = 41 **PI** = 62 **Assumed GS**= 2.72 **Type:** UNDISTURBED

Project No.: 24384

Date Sampled: 10/7/20

Remarks:
TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02 **Depth:** 24

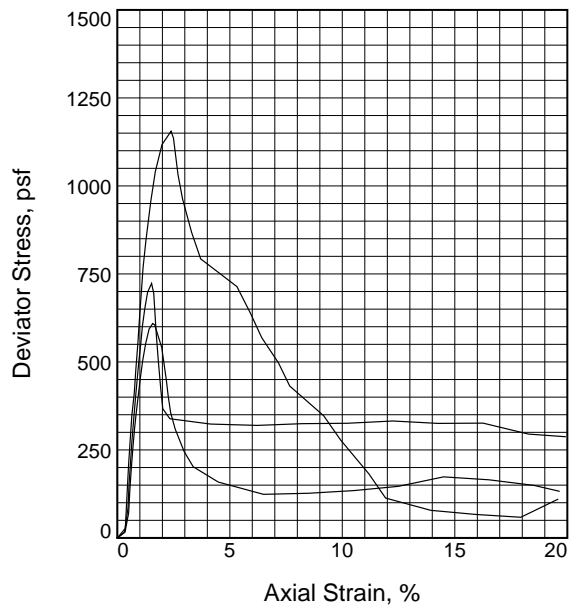
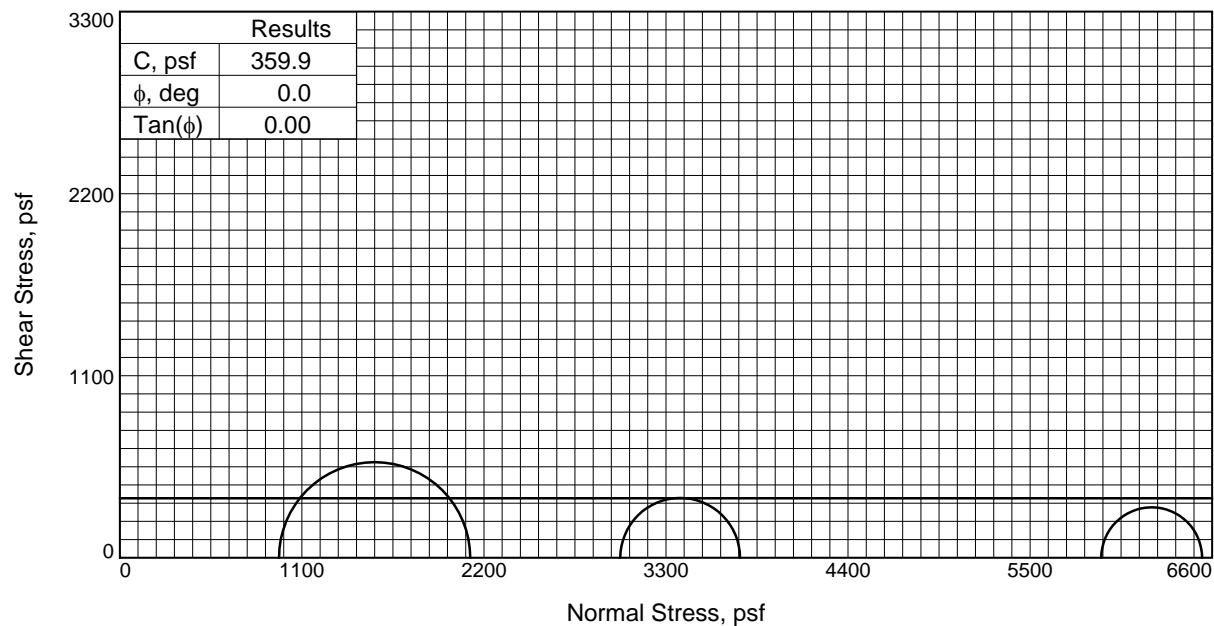
Sample Number: 7C

Figure ASTM D2166



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Tested By: CC **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	73.6	73.7	73.4
	Dry Density, pcf	55.8	55.5	56.7
	Saturation, %	98.0	97.4	99.9
	Void Ratio	2.0435	2.0579	1.9972
	Diameter, in.	1.402	1.403	1.397
	Height, in.	2.763	2.760	2.769
At Test	Water Content, %	75.1	75.7	73.4
	Dry Density, pcf	55.8	55.5	56.7
	Saturation, %	100.0	100.0	100.0
	Void Ratio	2.0435	2.0579	1.9972
	Diameter, in.	1.402	1.403	1.397
	Height, in.	2.763	2.760	2.769
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.680	21.000	41.180
Fail. Stress, psf		1155.4	723.1	609.3
Strain, %		2.4	1.5	1.6
Ult. Stress, psf		78.5	319.9	123.8
Strain, %		13.9	6.2	6.5
σ_1 Failure, psf		2117.3	3747.1	6539.2
σ_3 Failure, psf		961.9	3024.0	5929.9

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CH3 W/ ARS ML, SIF

LL= 76 **PL=** 25 **PI=** 51

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.200 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02 **Depth:** 31

Sample Number: 9B

Proj. No.: 24384

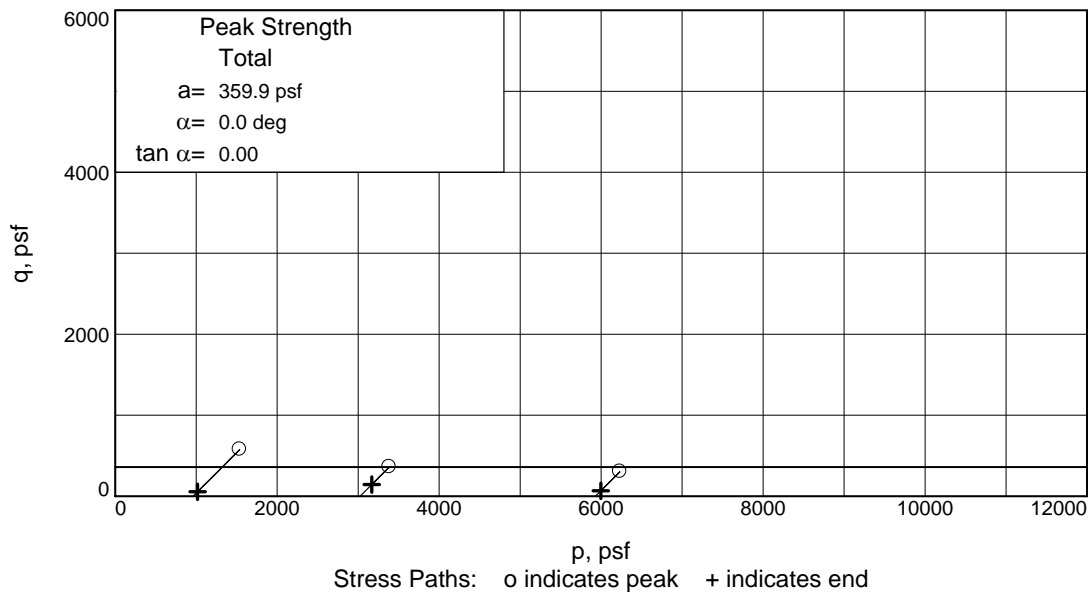
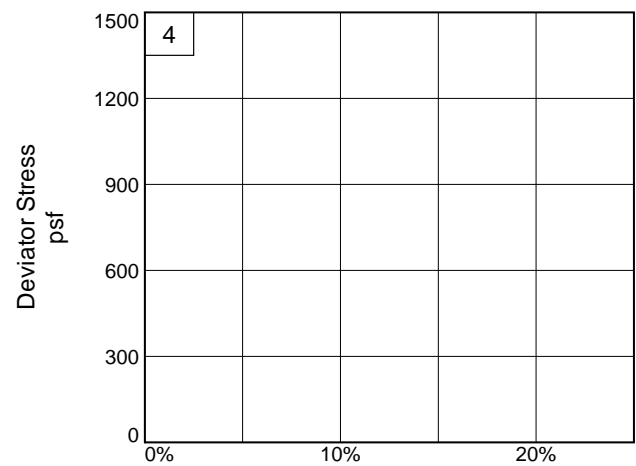
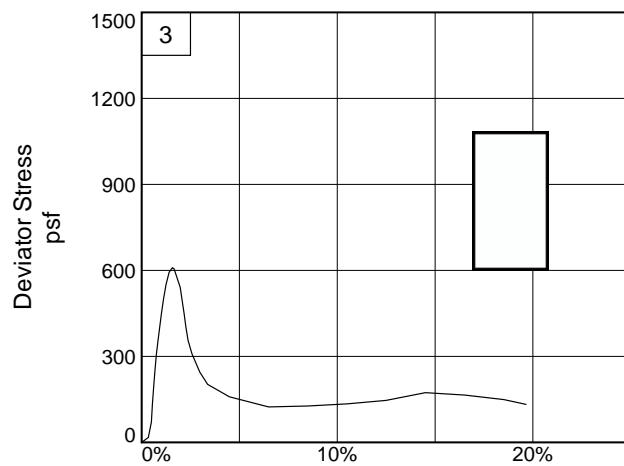
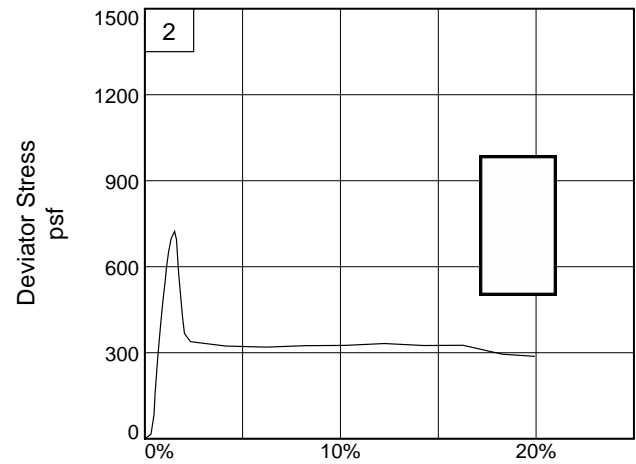
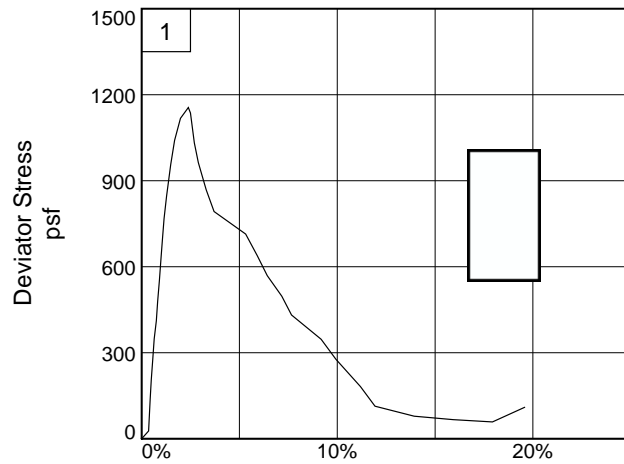
Date Sampled: 10/4/20

Figure ASTM D2850



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Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02

Depth: 31

Sample Number: 9B

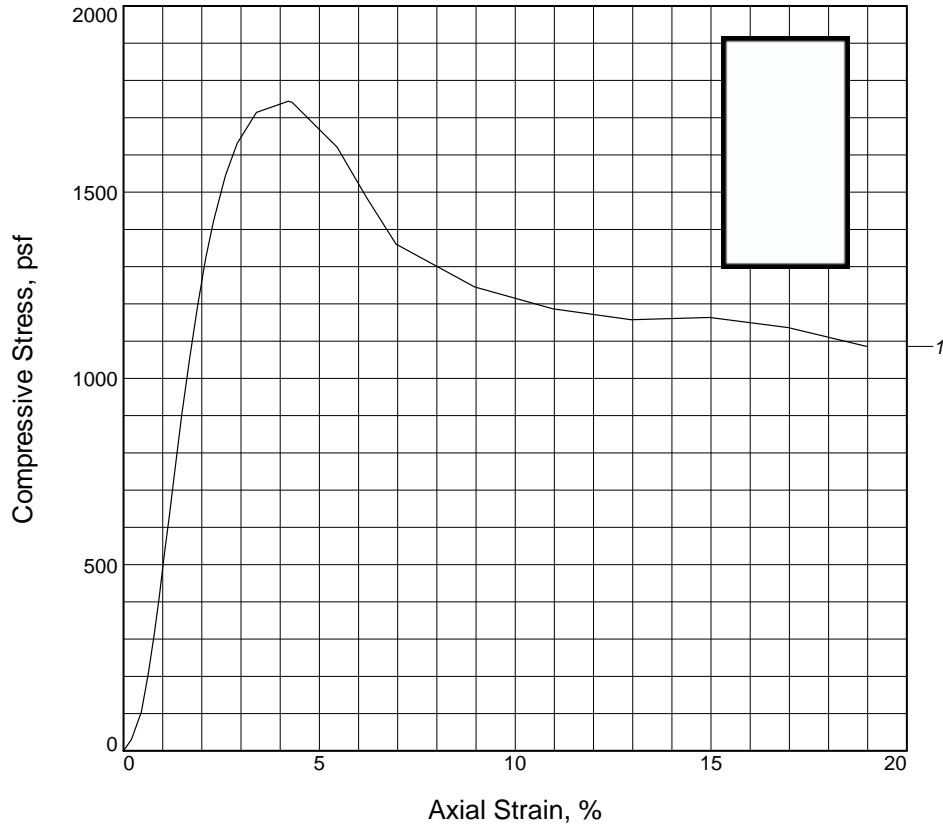
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	1744.2		
Undrained shear strength, psf	872.1		
Failure strain, %	4.2		
Strain rate, %/min.	1.00		
Water content, %	87.9		
Wet density, pcf	89.9		
Dry density, pcf	47.9		
Saturation, %	93.8		
Void ratio	2.5475		
Specimen diameter, in.	1.424		
Specimen height, in.	2.760		
Height/diameter ratio	1.94		

Description: M GR & BR CHOA W/ WD

LL = 120 **PL** = 43 **PI** = 77 **Assumed GS**= 2.72 **Type:** UNDISTURBED

Project No.: 24384
Date Sampled: 10/7/20
Remarks:
 TORVANE = 0.750 TSF

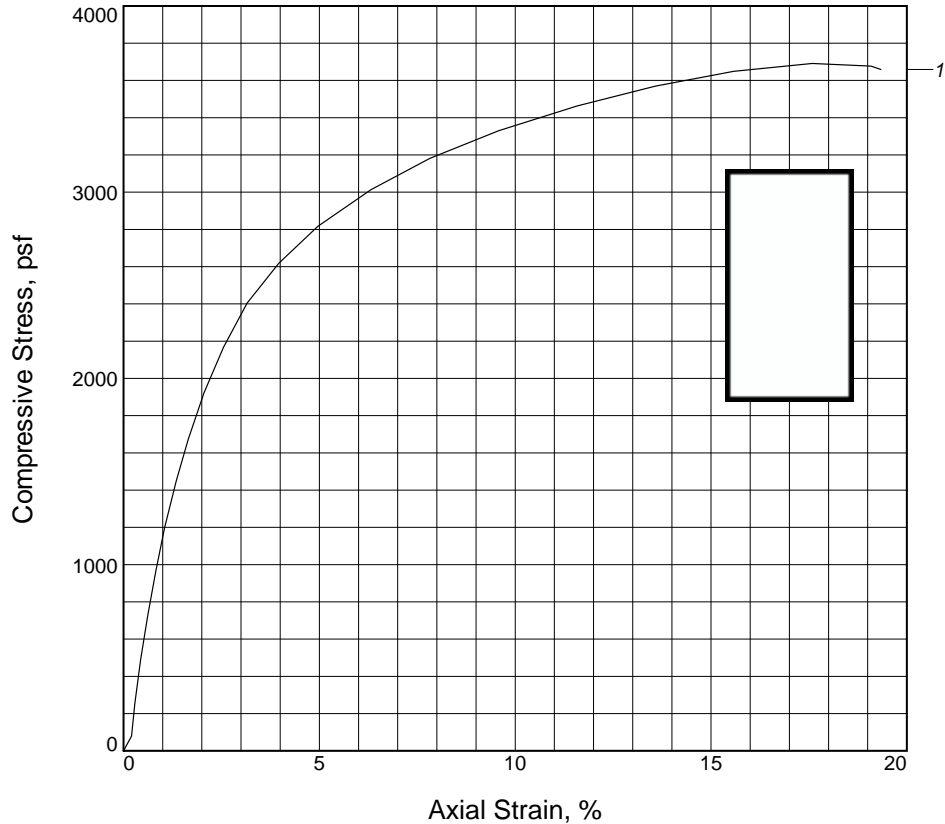
Client: AECOM, NEW ORLEANS, LOUISIANA
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
Source of Sample: SB-02 **Depth:** 35
Sample Number: 10B

Figure ASTM D2166



Tested By: CC **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	3569.3			
Undrained shear strength, psf	1784.6			
Failure strain, %	13.6			
Strain rate, %/min.	1.00			
Water content, %	23.8			
Wet density, pcf	124.2			
Dry density, pcf	100.3			
Saturation, %	93.4			
Void ratio	0.6930			
Specimen diameter, in.	1.398			
Specimen height, in.	2.742			
Height/diameter ratio	1.96			

Description: ST GR & T CH3 W/ ARS ML

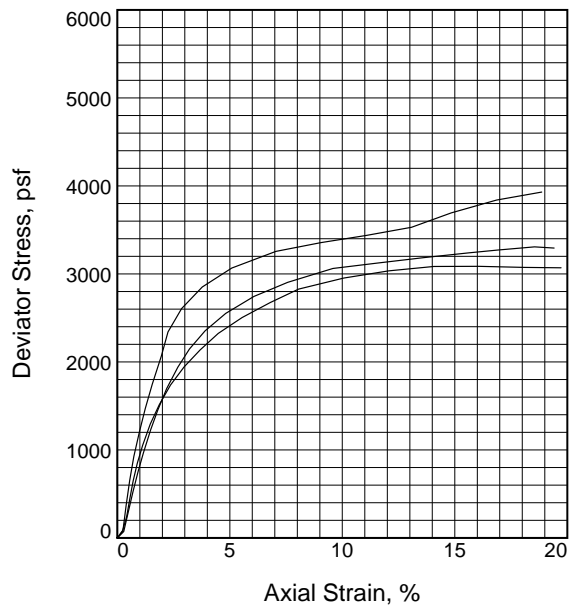
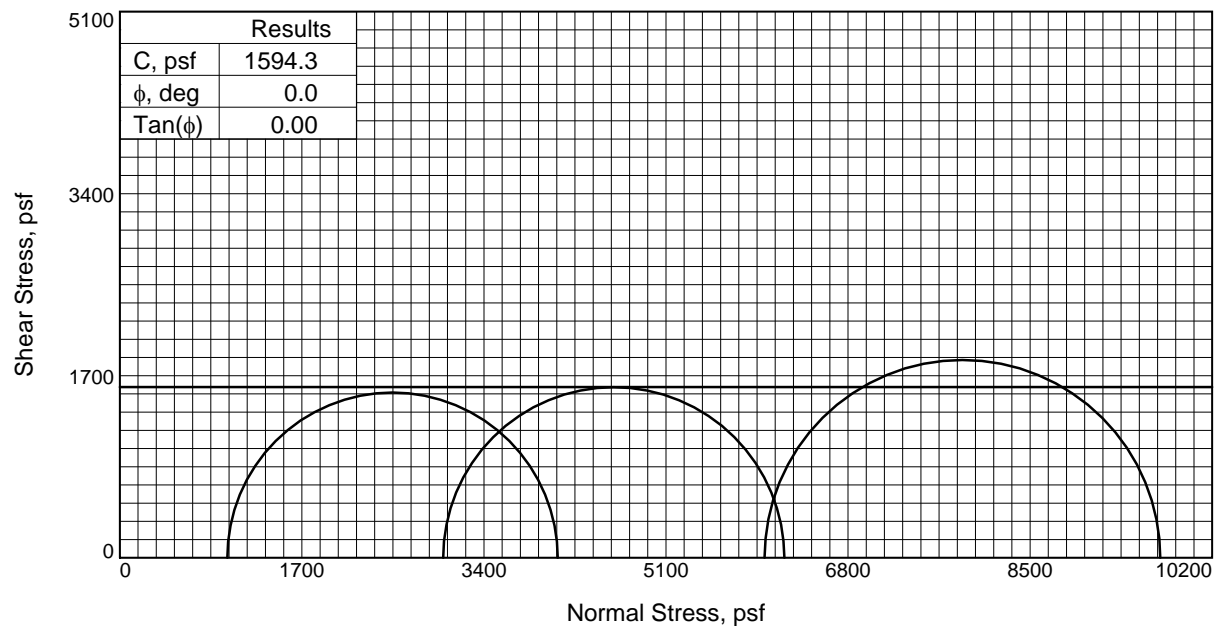
LL =	PL =	PI =	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384 Date Sampled: 10/7/20 Remarks: TORVANE = 1.000 TSF	Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), Source of Sample: SB-02 Depth: 39 Sample Number: 11B
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Figure ASTM D2166



Tested By: CC Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	23.5	23.0	22.4
	Dry Density, pcf	99.1	99.2	99.7
	Saturation, %	89.5	88.0	86.7
	Void Ratio	0.7134	0.7116	0.7035
	Diameter, in.	1.419	1.399	1.417
	Height, in.	2.770	2.752	2.753
At Test	Water Content, %	26.2	26.2	25.9
	Dry Density, pcf	99.1	99.2	99.7
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7134	0.7116	0.7035
	Diameter, in.	1.419	1.399	1.417
	Height, in.	2.770	2.752	2.753
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.970	20.970	41.810
Fail. Stress, psf		3085.0	3185.4	3694.7
Strain, %		14.1	13.6	14.8
Ult. Stress, psf			3185.4	3694.7
Strain, %			13.6	14.8
σ_1 Failure, psf		4088.6	6205.1	9715.4
σ_3 Failure, psf		1003.7	3019.7	6020.6

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR & T CH3 W/ ARS ML

LL= 59 **PL=** 15 **PI=** 44

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.875 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02 **Depth:** 40

Sample Number: 11C

Proj. No.: 24384

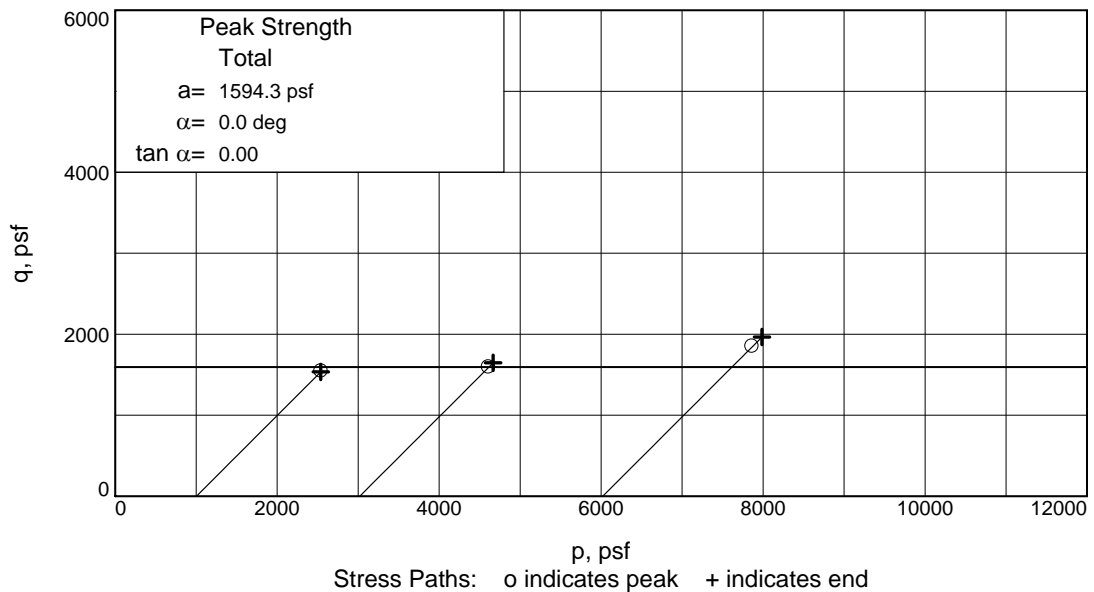
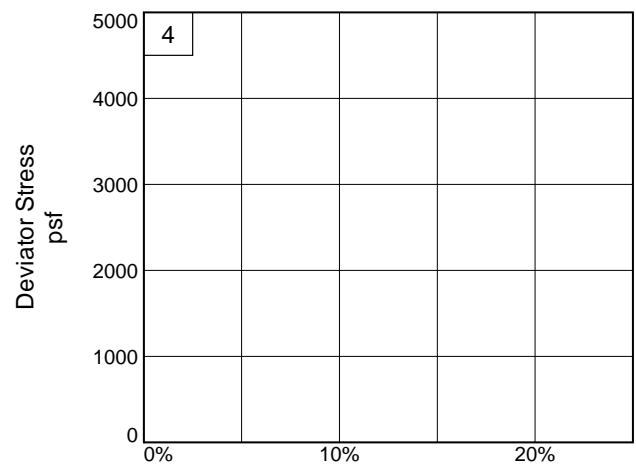
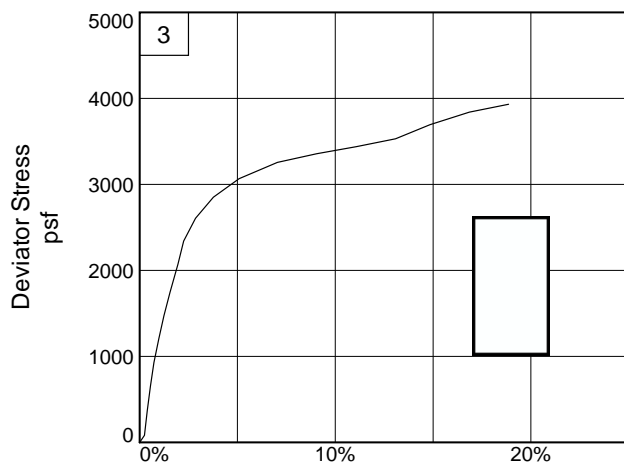
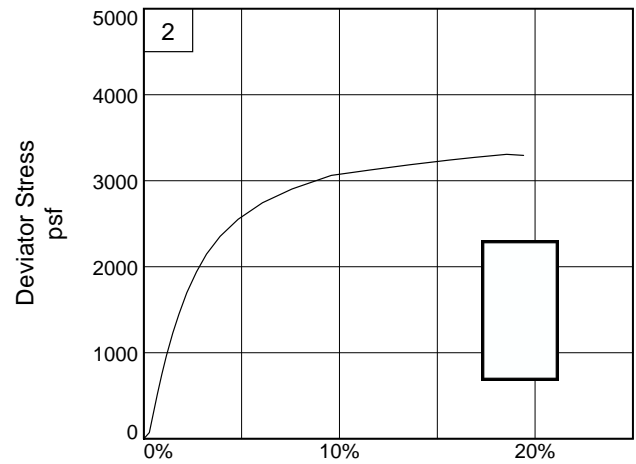
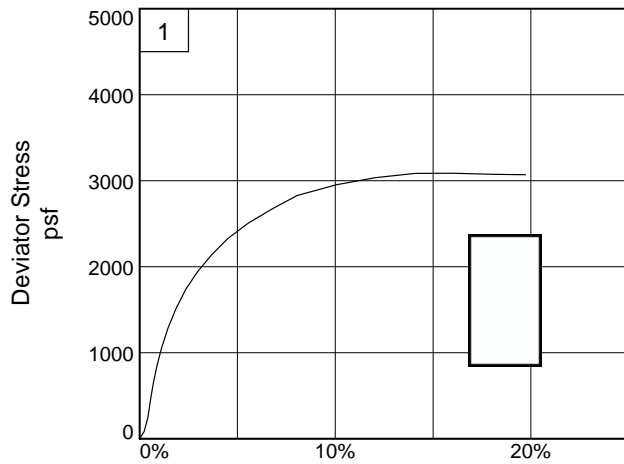
Date Sampled: 10/7/20



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SINCE 1946

Figure ASTM D2850

Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02

Depth: 40

Sample Number: 11C

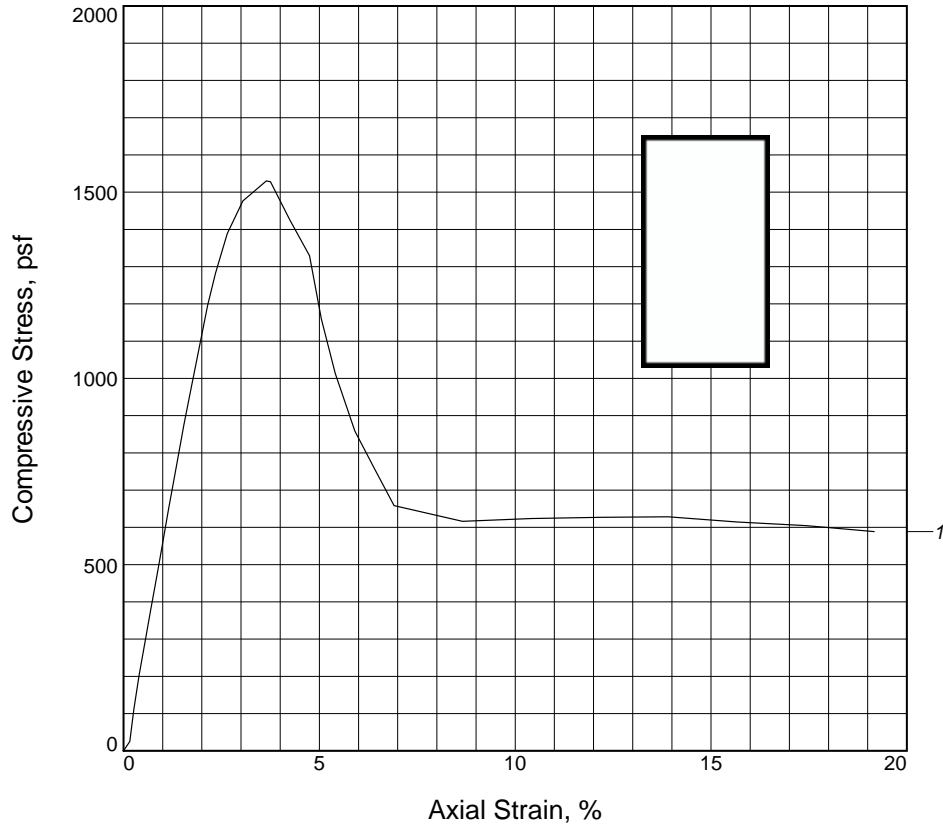
Project No.: 24384

Figure ASTM D2850

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Tested By: DE **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	1530.1			
Undrained shear strength, psf	765.1			
Failure strain, %	3.6			
Strain rate, %/min.	1.00			
Water content, %	34.8			
Wet density, pcf	112.7			
Dry density, pcf	83.6			
Saturation, %	92.5			
Void ratio	1.0159			
Specimen diameter, in.	1.412			
Specimen height, in.	2.895			
Height/diameter ratio	2.05			

Description: M T & GR CL4 W/ CC

LL = 34 **PL** = 20 **PI** = 14 **Assumed GS**= 2.70 **Type:** UNDISTURBED

Project No.: 24384
Date Sampled: 10/7/20
Remarks:
 TORVANE = 0.150 TSF

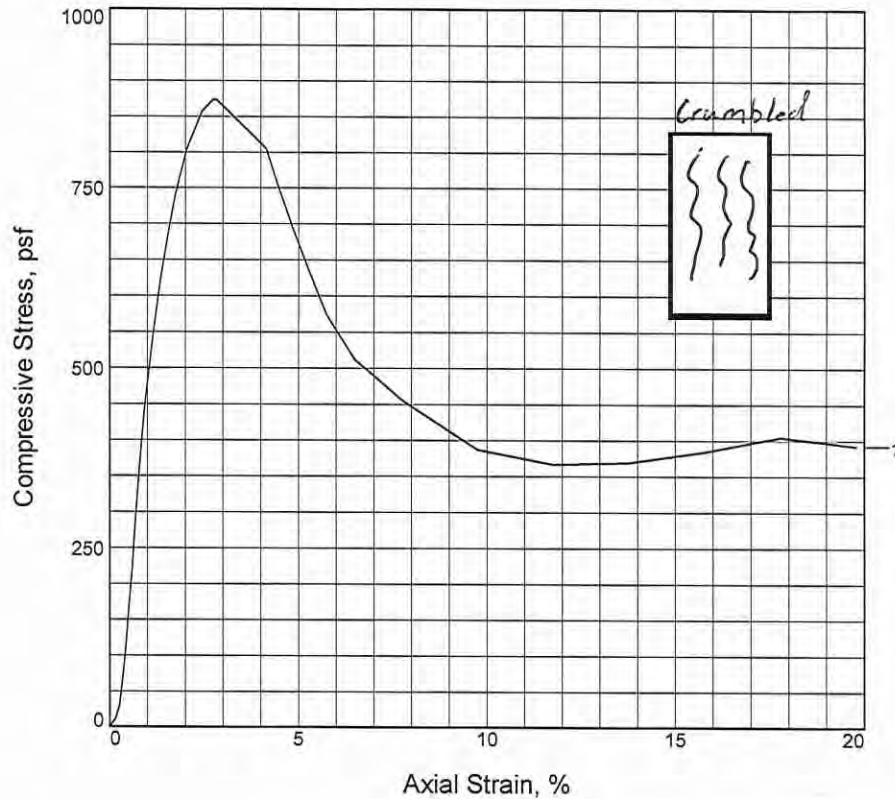
Client: AECOM, NEW ORLEANS, LOUISIANA
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
Source of Sample: SB-02 **Depth:** 48
Sample Number: 13C

Figure ASTM D2166



Tested By: CC **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	874.3		
Undrained shear strength, psf	437.2		
Failure strain, %	2.7		
Strain rate, %/min.	1.00		
Water content, %	32.9		
Wet density, pcf	113.2		
Dry density, pcf	85.2		
Saturation, %	90.1		
Void ratio	0.9941		
Specimen diameter, in.	1.391		
Specimen height, in.	2.761		
Height/diameter ratio	1.98		

Description: M GR & BR CH3 W/ ARS SP, RT, SIF, SL

LL = 67	PL = 25	PI = 42	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384
Date Sampled: 10/20/20
Remarks:
 TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
Source of Sample: SB-03 **Depth:** 2
Sample Number: 1C

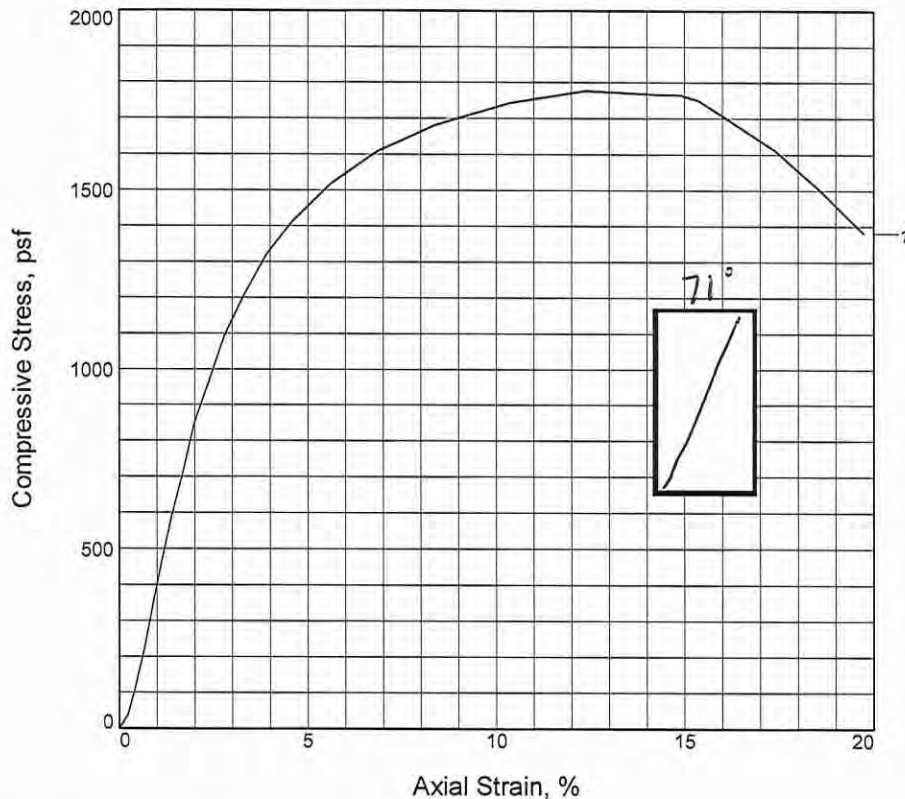
Figure ASTM D2166



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Tested By: CC **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	1777.5			
Undrained shear strength, psf	888.7			
Failure strain, %	12.4			
Strain rate, %/min.	1.00			
Water content, %	27.4			
Wet density, pcf	122.8			
Dry density, pcf	96.4			
Saturation, %	97.7			
Void ratio	0.7616			
Specimen diameter, in.	1.402			
Specimen height, in.	2.769			
Height/diameter ratio	1.98			

Description: M T & GR CH2 W/ CC, RT

LL = 51	PL = 20	PI = 31	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 10/20/20

Remarks:

TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 5

Sample Number: 2B

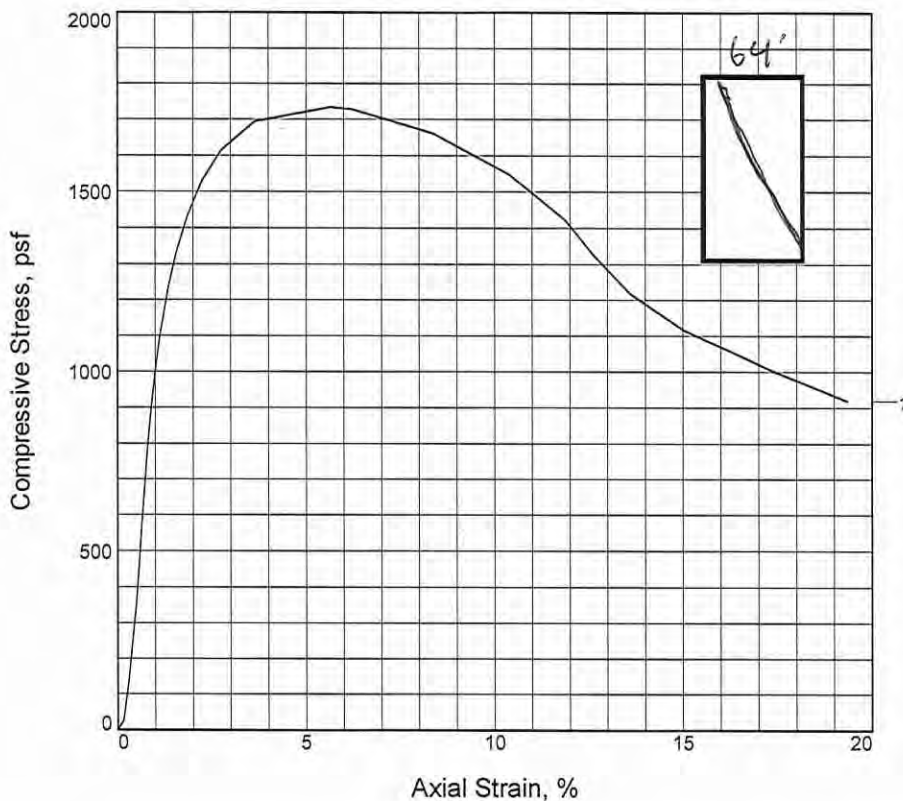
Figure ASTM D2166



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Tested By: DE Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	1733.9			
Undrained shear strength, psf	867.0			
Failure strain, %	5.6			
Strain rate, %/min.	1.00			
Water content, %	41.9			
Wet density, pcf	112.6			
Dry density, pcf	79.4			
Saturation, %	100.0			
Void ratio	1.1388			
Specimen diameter, in.	1.406			
Specimen height, in.	2.784			
Height/diameter ratio	1.98			

Description: M GR & T CH3 W/ ARS ML, CC

LL = 72	PL = 25	PI = 47	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384
Date Sampled: 10/20/20
Remarks:
 TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

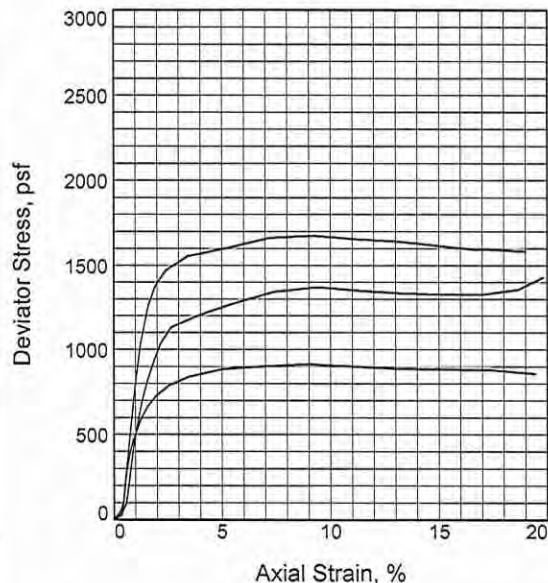
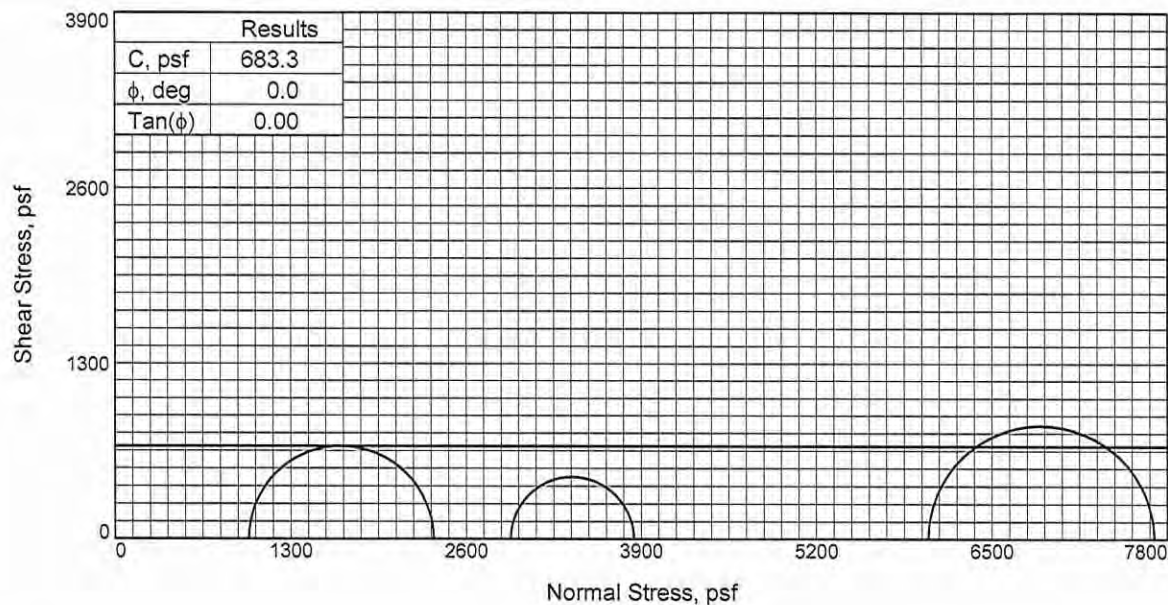
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
Source of Sample: SB-03 **Depth:** 9
Sample Number: 3B

Figure ASTM D2166



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Tested By: EM Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	45.9	46.9	45.0
	Dry Density, pcf	74.7	72.1	75.0
	Saturation, %	98.1	94.1	96.1
	Void Ratio	1.2735	1.3565	1.2654
	Diameter, in.	1.403	1.386	1.395
	Height, in.	2.762	2.783	2.753
At Test	Water Content, %	46.8	49.9	46.5
	Dry Density, pcf	74.7	72.1	75.0
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.2735	1.3565	1.2654
	Diameter, in.	1.403	1.386	1.395
	Height, in.	2.762	2.783	2.753
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.870	20.350	41.860
Fail. Stress, psf		1369.1	914.8	1675.2
Strain, %		9.4	8.9	9.2
Ult. Stress, psf		1327.4	885.4	1613.6
Strain, %		15.1	14.9	15.2
σ_1	Failure, psf	2358.4	3845.2	7703.1
σ_3	Failure, psf	989.3	2930.4	6027.8

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR CH4 W/ ARS ML, WD

LL= 88

PL= 27

PI= 61

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 14

Sample Number: 4C

Proj. No.: 24384

Date Sampled: 10/20/20

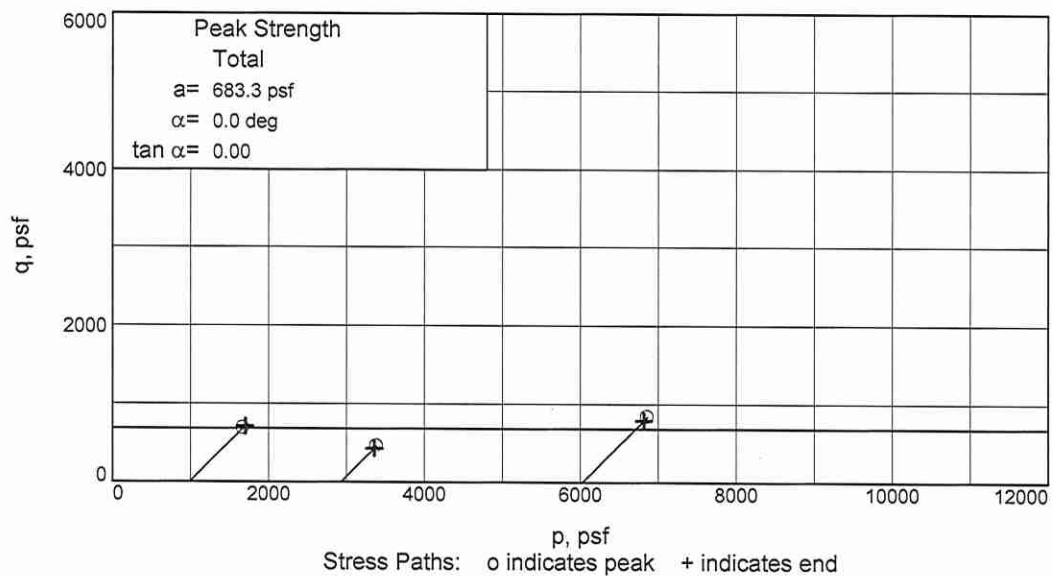
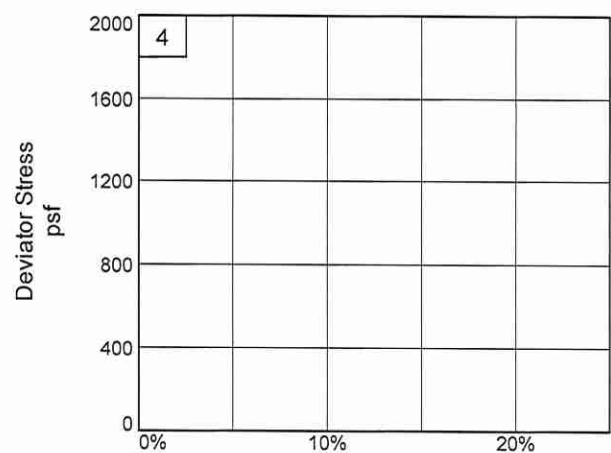
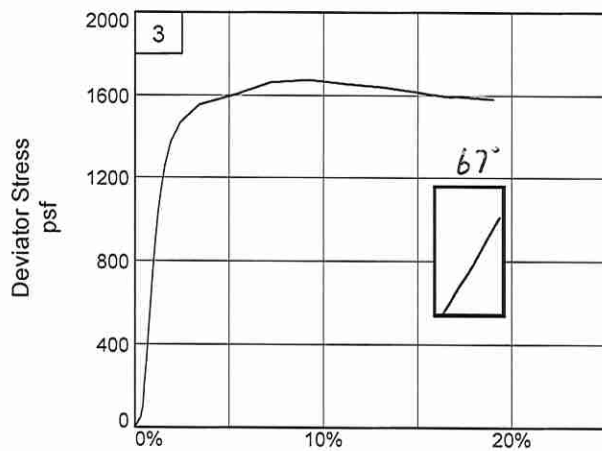
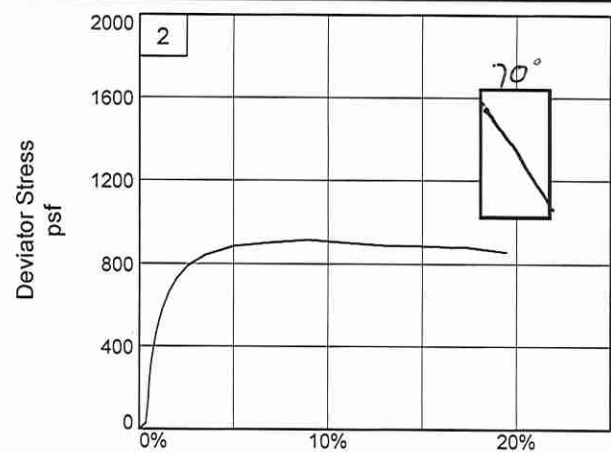
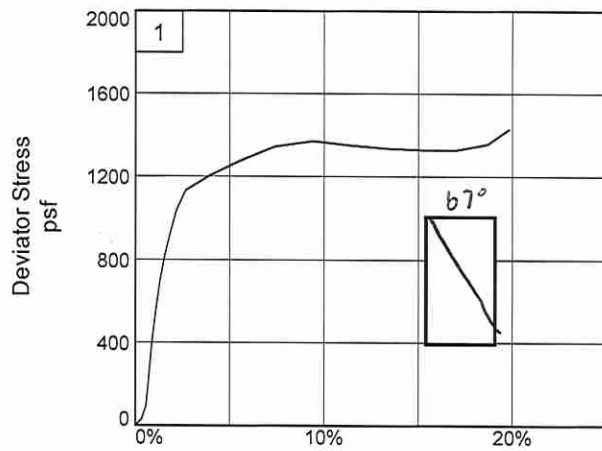


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SINCE 1946

Figure ASTM D2850

Tested By: MS

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 14

Sample Number: 4C

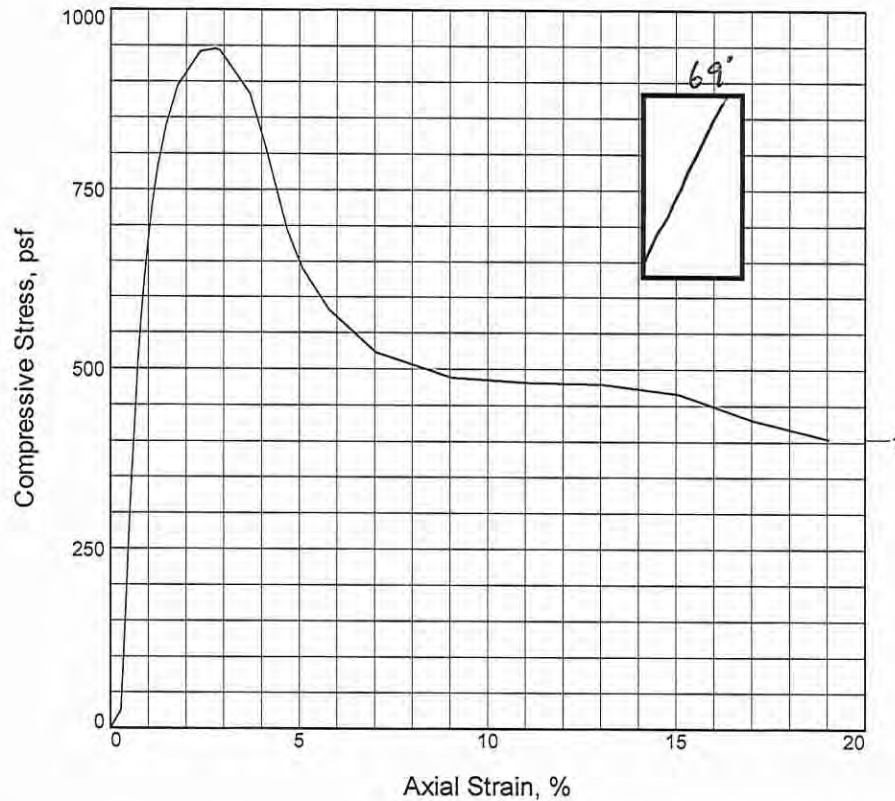
Project No.: 24384

Figure ASTM D2850

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Tested By: MS _____ Checked By: RR _____

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	946.0		
Undrained shear strength, psf	473.0		
Failure strain, %	2.8		
Strain rate, %/min.	1.00		
Water content, %	89.8		
Wet density, pcf	91.4		
Dry density, pcf	48.2		
Saturation, %	96.8		
Void ratio	2.5249		
Specimen diameter, in.	1.409		
Specimen height, in.	2.766		
Height/diameter ratio	1.96		

Description: SO GR CHOA

LL = 142	PL = 41	PI = 101	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384
Date Sampled: 10/20/20

Remarks:
 TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03 **Depth:** 18

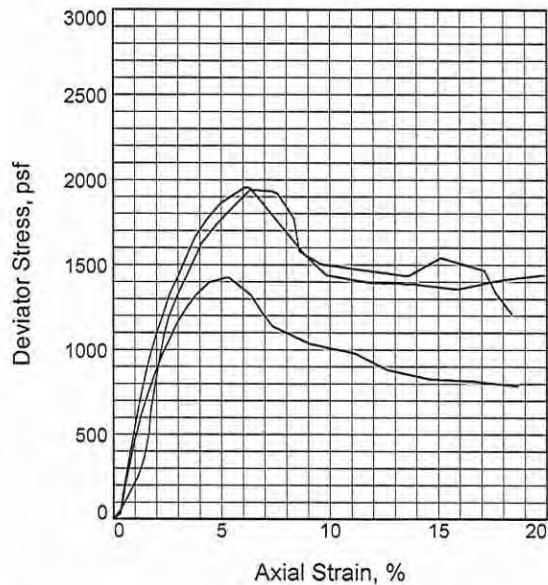
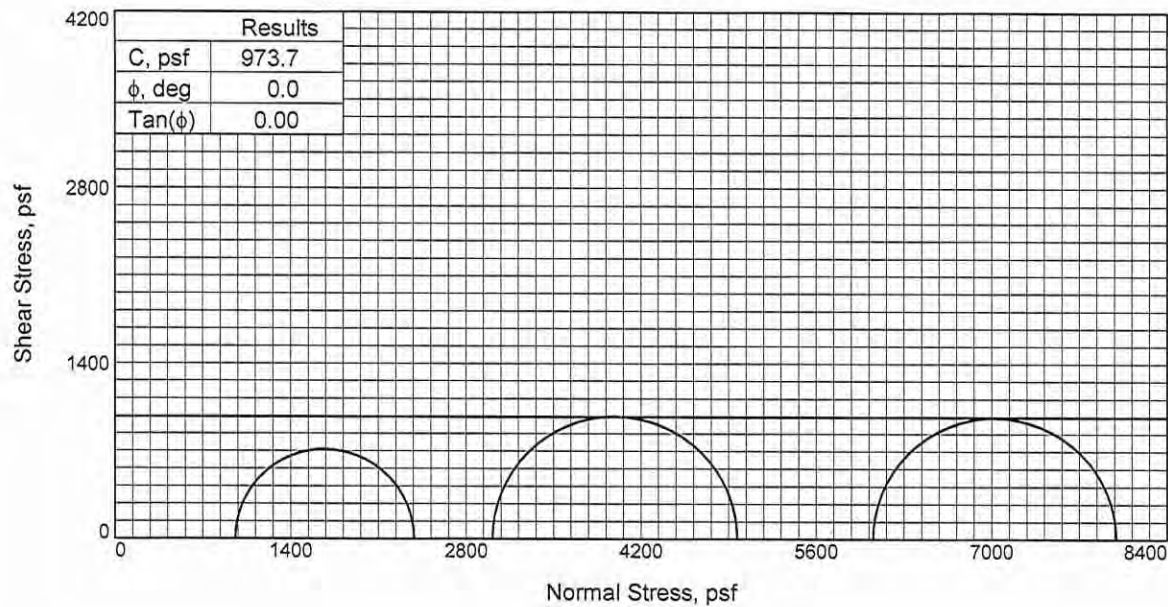
Sample Number: 5C

Figure ASTM D2166



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Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	135.7	142.1	131.5
	Dry Density, pcf	35.6	34.7	37.0
	Saturation, %	98.3	99.6	99.9
	Void Ratio	3.7304	3.8509	3.5533
	Diameter, in.	1.409	1.408	1.405
	Height, in.	2.757	2.747	2.750
At Test	Water Content, %	138.2	142.6	131.6
	Dry Density, pcf	35.6	34.7	37.0
	Saturation, %	100.0	100.0	100.0
	Void Ratio	3.7304	3.8509	3.5533
	Diameter, in.	1.409	1.408	1.405
	Height, in.	2.757	2.747	2.750
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.660	20.920	42.040
Fail. Stress, psf		1426.0	1956.6	1940.5
Strain, %		5.3	6.1	6.3
Ult. Stress, psf		826.2	1385.5	1433.7
Strain, %		14.6	13.9	13.6
σ_1 Failure, psf		2385.1	4969.1	7994.2
σ_3 Failure, psf		959.0	3012.5	6053.8

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR & DGR CHOC

LL= 224 PL= 59 PI= 165

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03 **Depth:** 21

Sample Number: 6B

Proj. No.: 24384

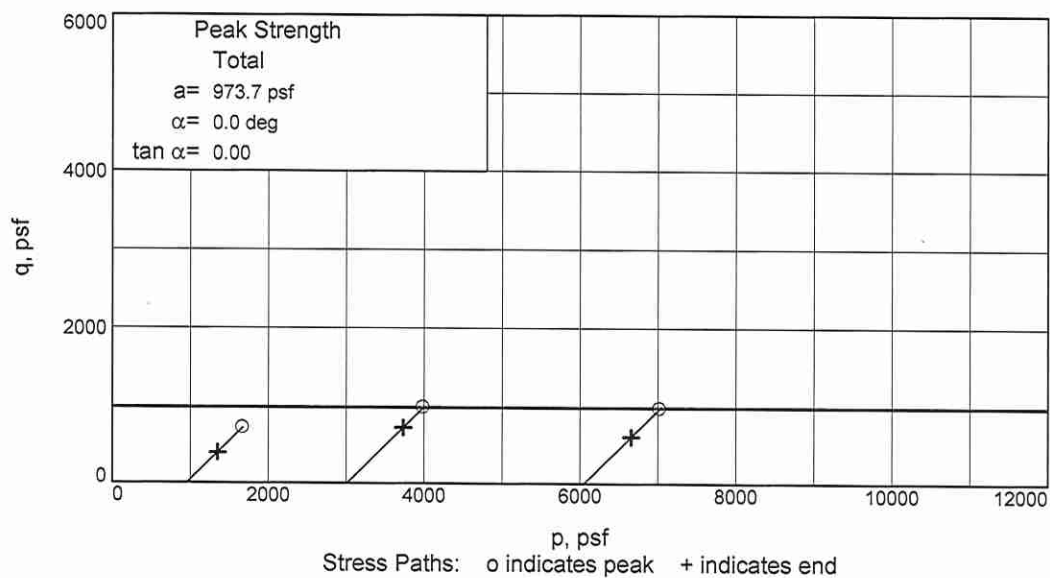
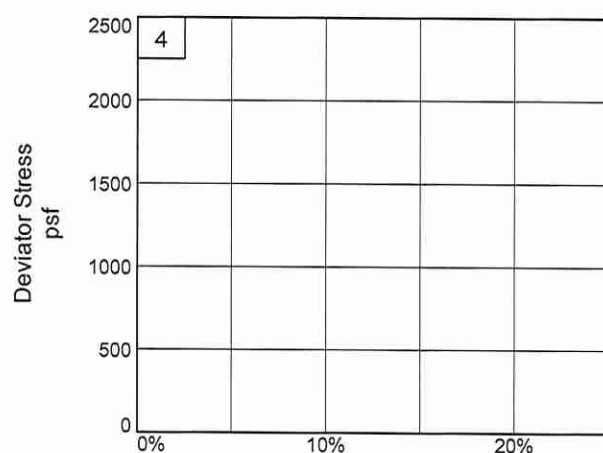
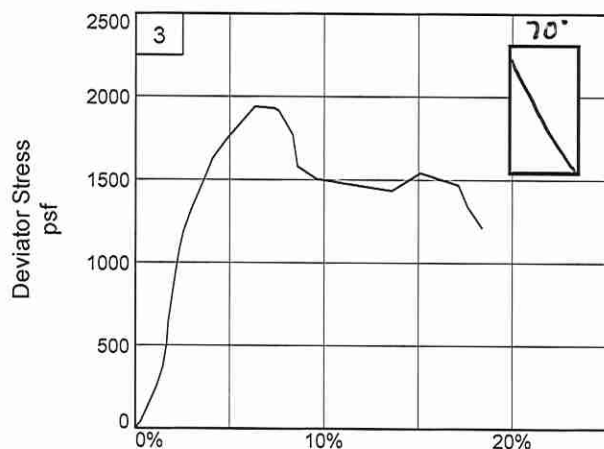
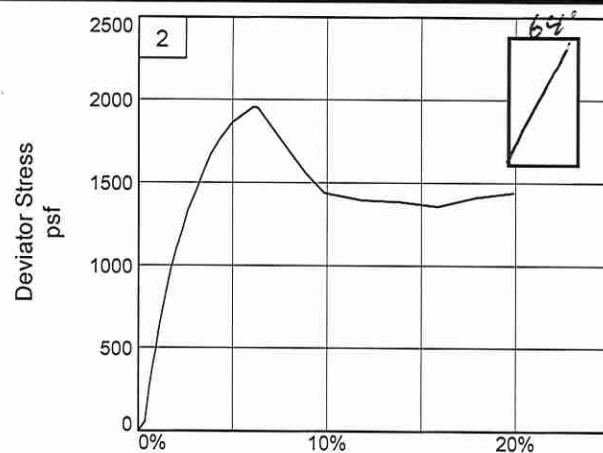
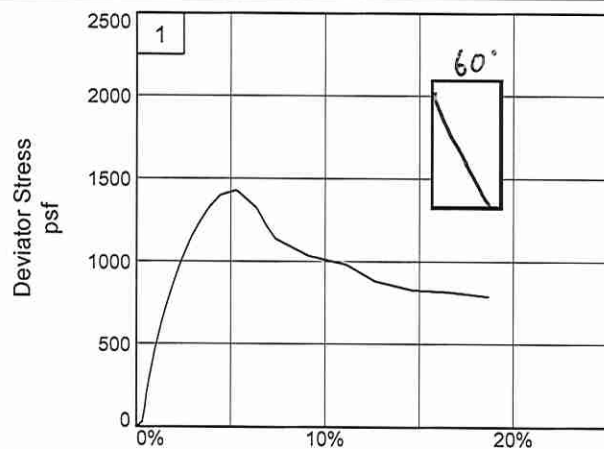
Date Sampled: 10/20/20



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Figure ASTM D2850

Tested By: MS Checked By: CD



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 21

Sample Number: 6B

Project No.: 24384

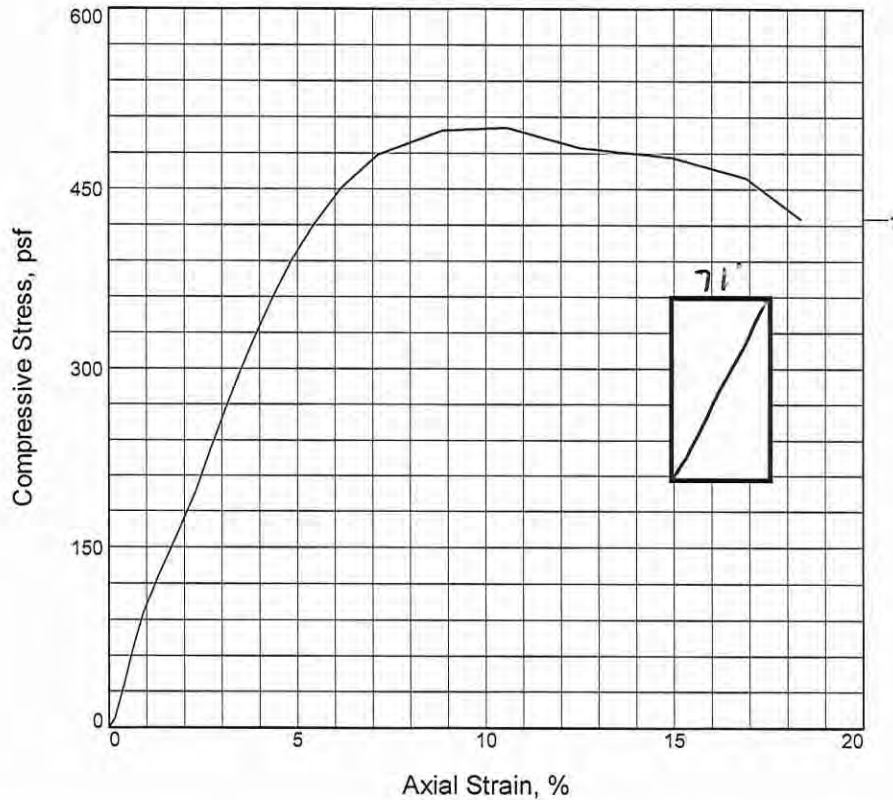
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: MS

Checked By: CD

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	501.3			
Undrained shear strength, psf	250.6			
Failure strain, %	10.6			
Strain rate, %/min.	1.00			
Water content, %	36.3			
Wet density, pcf	116.1			
Dry density, pcf	85.2			
Saturation, %	100.0			
Void ratio	0.9787			
Specimen diameter, in.	1.390			
Specimen height, in.	2.789			
Height/diameter ratio	2.01			

Description: SO GR CL4 W/ ARS SP, SIF

LL = 35	PL = 21	PI = 14	Assumed GS= 2.70	Type: UNDISTURBED
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Project No.: 24384
Date Sampled: 10/20/20
Remarks:
 TORVANE = 0.200 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

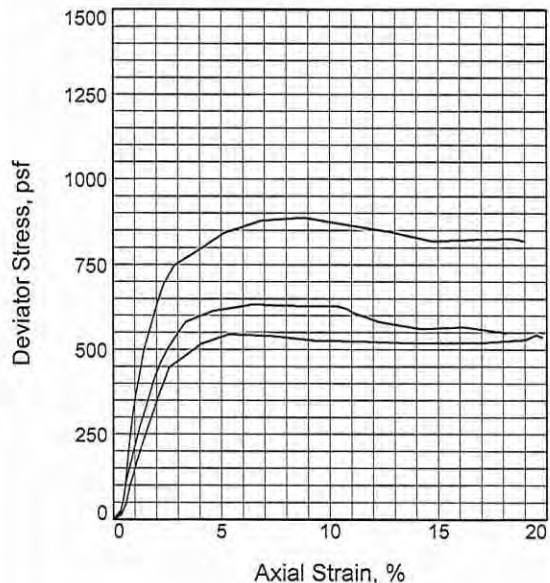
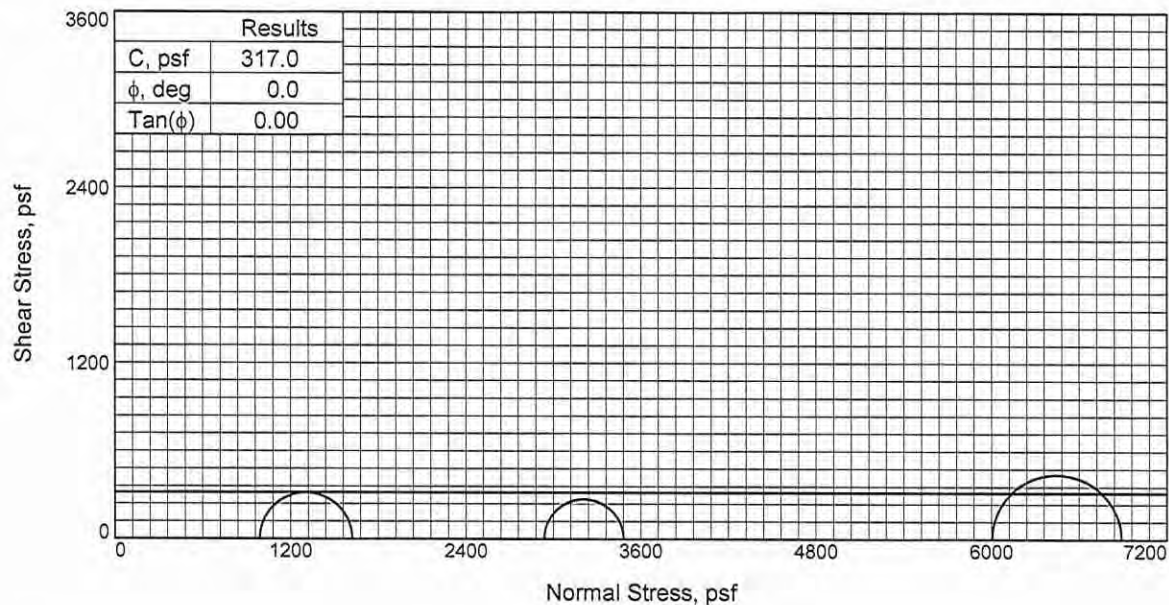
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
Source of Sample: SB-03 **Depth:** 26
Sample Number: 7C

Figure ASTM D2166



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Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	40.9	40.6	40.2
	Dry Density, pcf	80.4	80.7	81.1
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.1129	1.1046	1.0945
	Diameter, in.	1.392	1.403	1.401
	Height, in.	2.835	2.818	2.804
At Test	Water Content, %	40.9	40.6	40.2
	Dry Density, pcf	80.4	80.7	81.1
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.1129	1.1046	1.0945
	Diameter, in.	1.392	1.403	1.401
	Height, in.	2.835	2.818	2.804
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.870	20.400	41.690
Fail. Stress, psf		633.1	544.4	886.7
Strain, %		6.4	5.3	8.8
Ult. Stress, psf		560.3	519.6	818.6
Strain, %		14.2	15.1	14.7
σ_1 Failure, psf		1622.4	3482.0	6890.0
σ_3 Failure, psf		989.3	2937.6	6003.4

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CH2 W/ ARS SP, SIF

LL= 50

PL= 18

PI= 32

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.150 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 31

Sample Number: 8D

Proj. No.: 24384

Date Sampled: 10/20/20

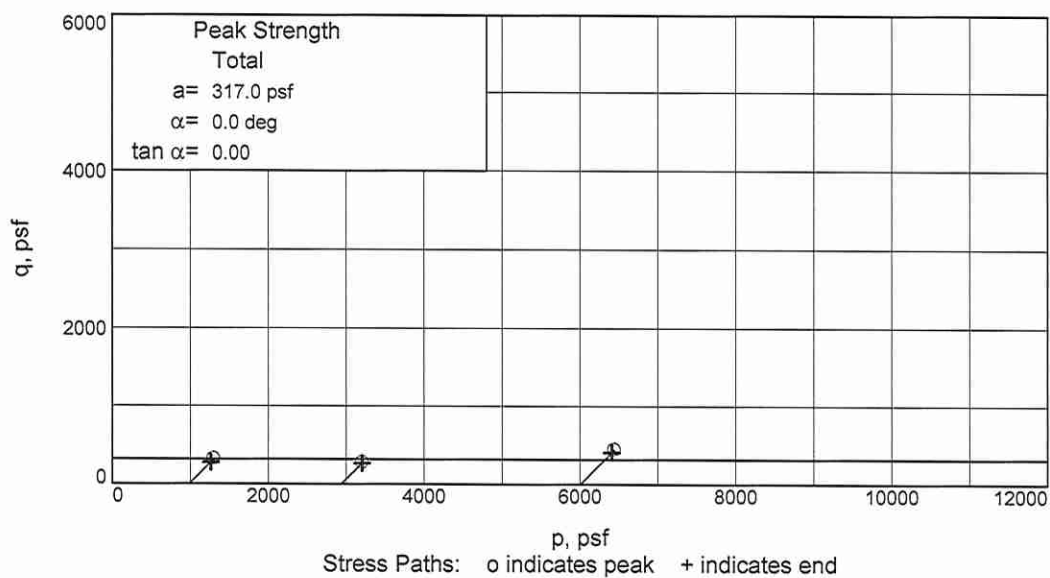
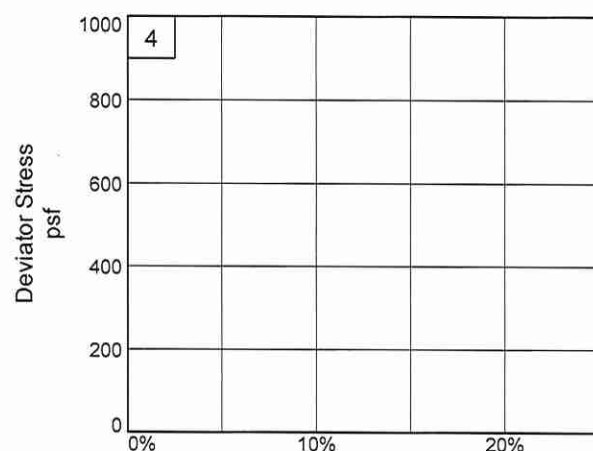
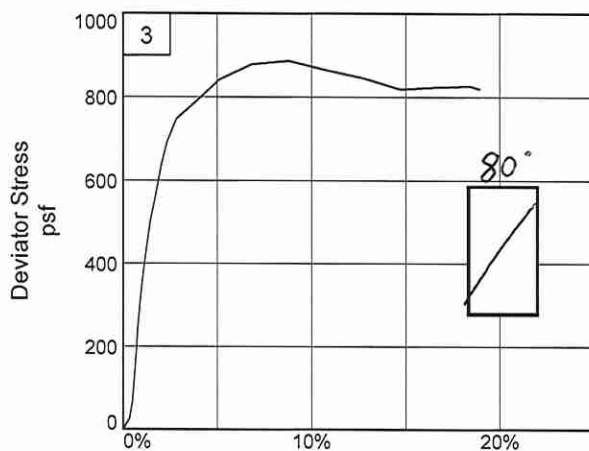
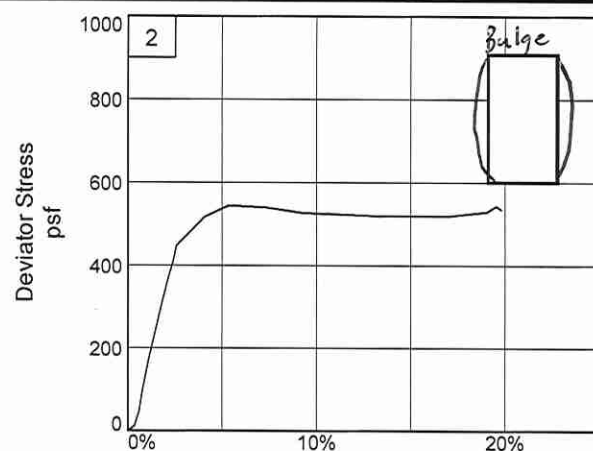
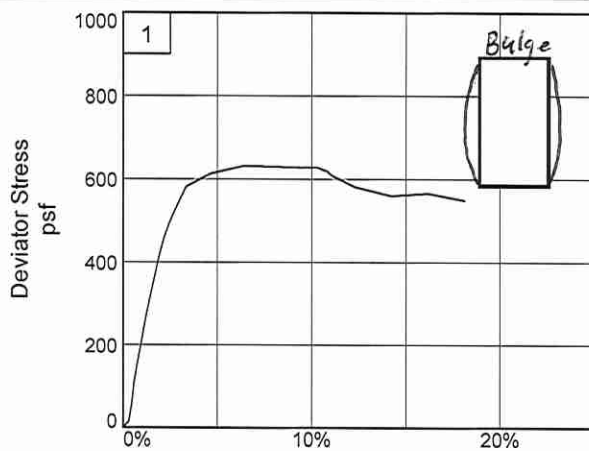


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Figure ASTM D2850

Tested By: MS

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 31

Sample Number: 8D

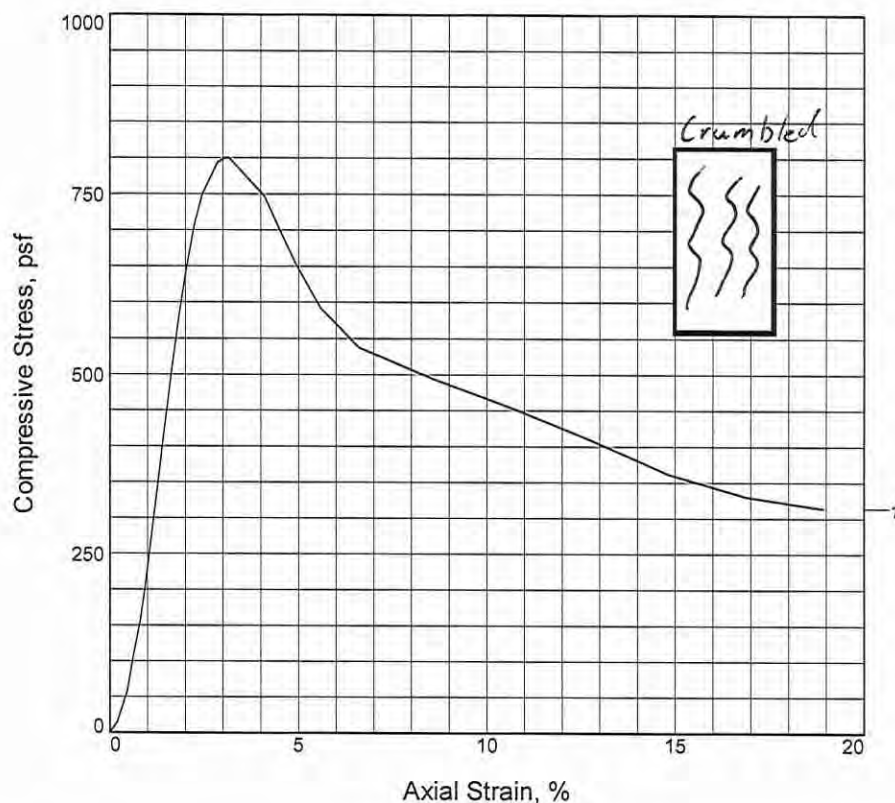
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: MS Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	800.3			
Undrained shear strength, psf	400.1			
Failure strain, %	3.1			
Strain rate, %/min.	1.00			
Water content, %	20.6			
Wet density, pcf	126.7			
Dry density, pcf	105.1			
Saturation, %	92.1			
Void ratio	0.6042			
Specimen diameter, in.	1.382			
Specimen height, in.	2.759			
Height/diameter ratio	2.00			

Description: SO GNG CL6

LL = 41	PL = 13	PI = 28	Assumed GS= 2.70	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 10/20/20

Remarks:

TORVANE = 0.150 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03 **Depth:** 34

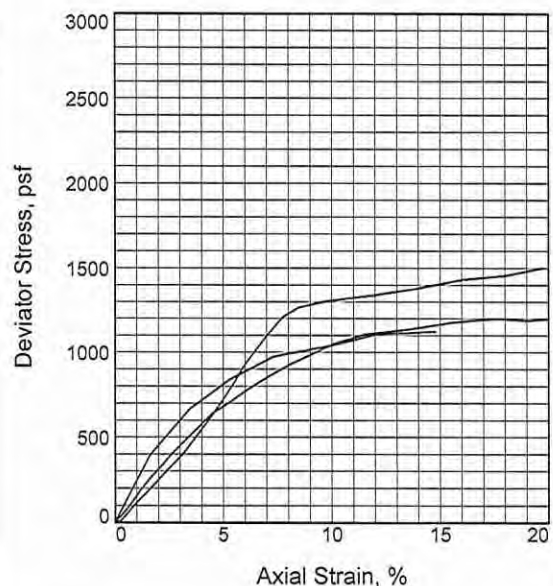
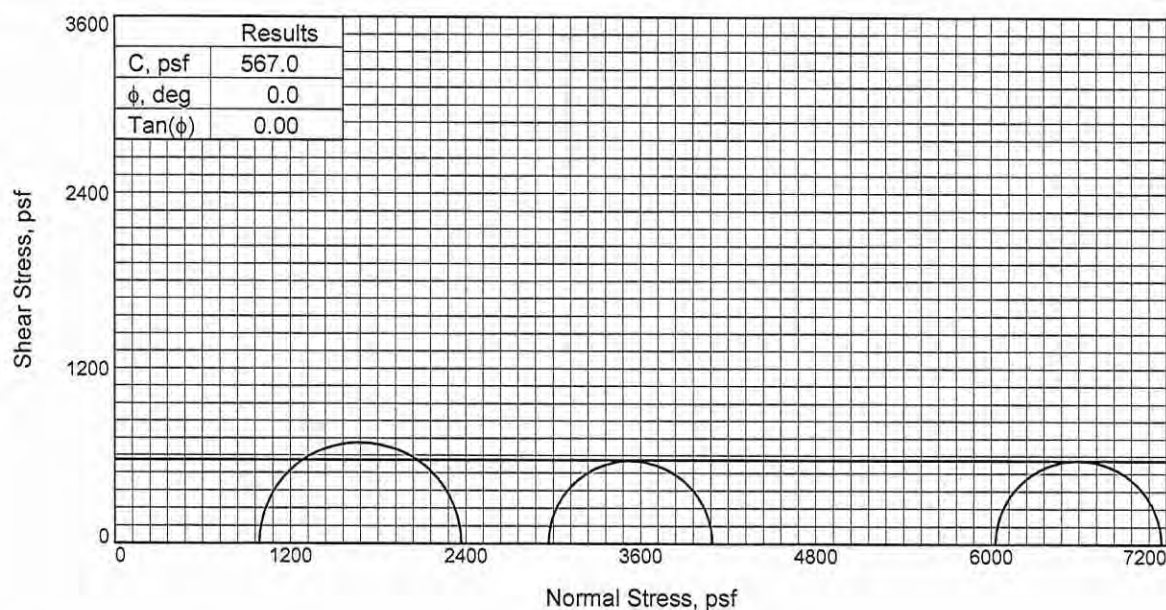
Sample Number: 9C



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Figure ASTM D2166

Tested By: EM Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	28.9	30.3	32.6
	Dry Density, pcf	93.3	92.6	89.7
	Saturation, %	96.6	99.8	100.0
	Void Ratio	0.8070	0.8193	0.8799
	Diameter, in.	1.441	1.392	1.406
	Height, in.	2.696	2.791	2.766
At Test	Water Content, %	29.9	30.3	32.6
	Dry Density, pcf	93.3	92.6	89.7
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.8070	0.8193	0.8799
	Diameter, in.	1.441	1.392	1.406
	Height, in.	2.696	2.791	2.766
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.860	20.610	41.860
Fail. Stress, psf		1381.3	1123.2	1136.2
Strain, %		14.0	14.8	13.6
Ult. Stress, psf		1381.3	1123.2	1136.2
Strain, %		14.0	14.8	13.6
σ_1 Failure, psf		2369.1	4091.0	7164.0
σ_3 Failure, psf		987.8	2967.8	6027.8

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M T & GR CL4 W/ CC

LL= 31

PL= 18

PI= 13

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.150 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 42

Sample Number: 11C

Proj. No.: 24384

Date Sampled: 10/20/20

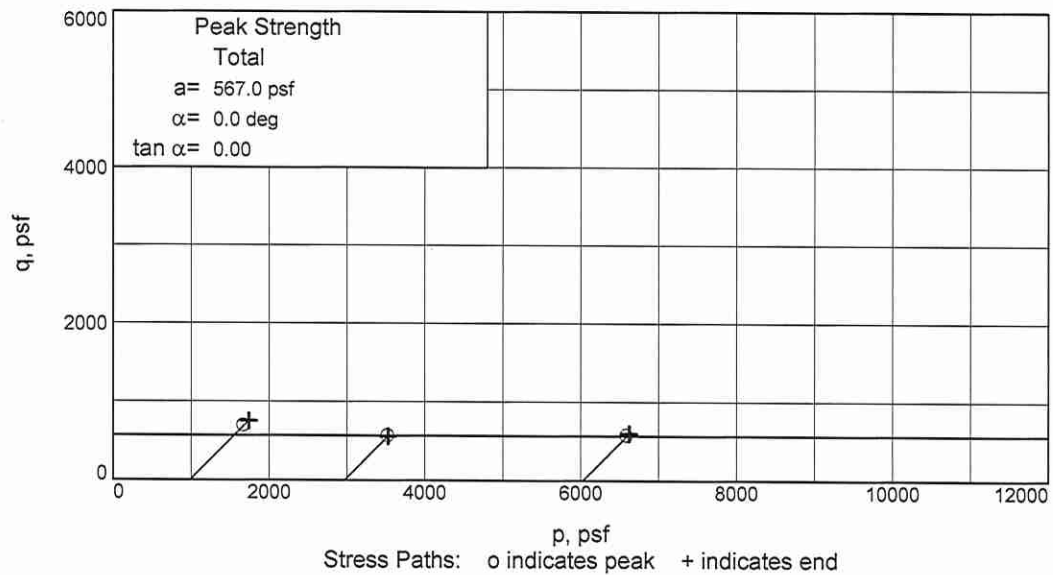
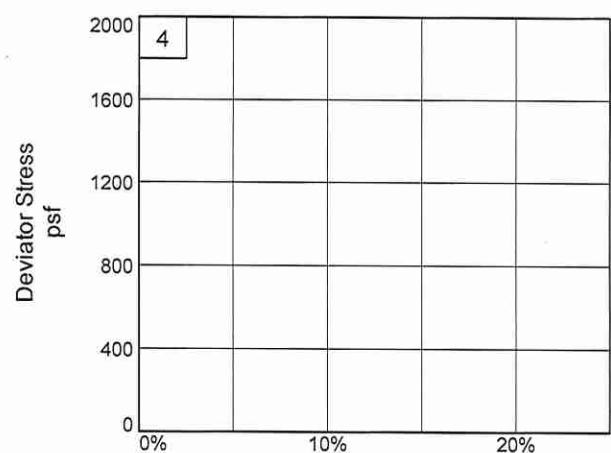
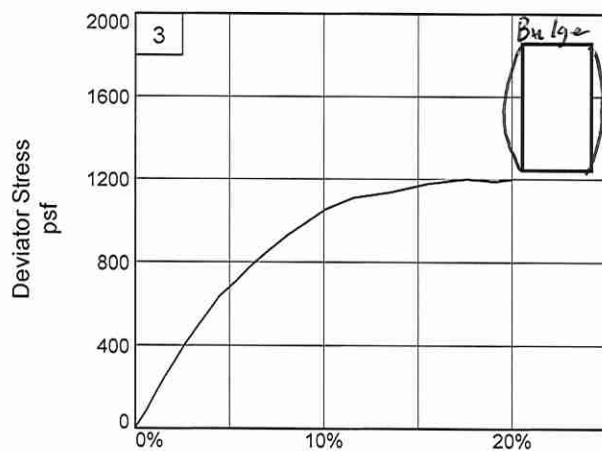
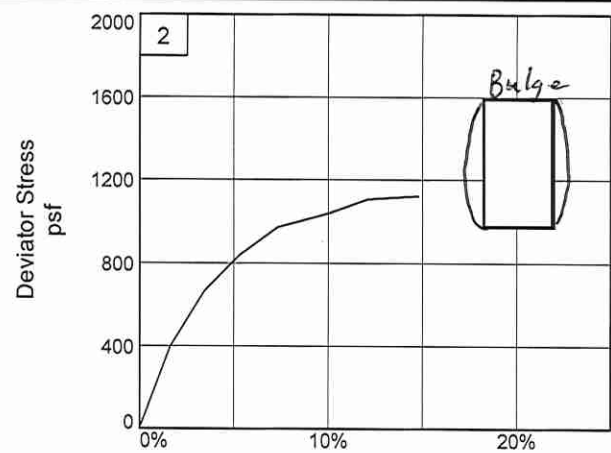
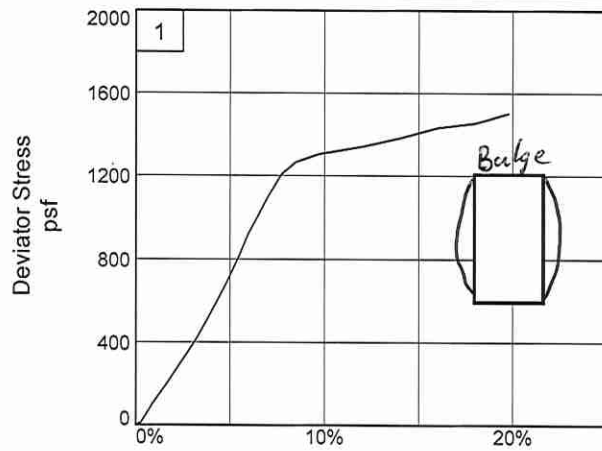


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SINCE 1946

Figure ASTM D2850

Tested By: MS

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 42

Sample Number: 11C

Project No.: 24384

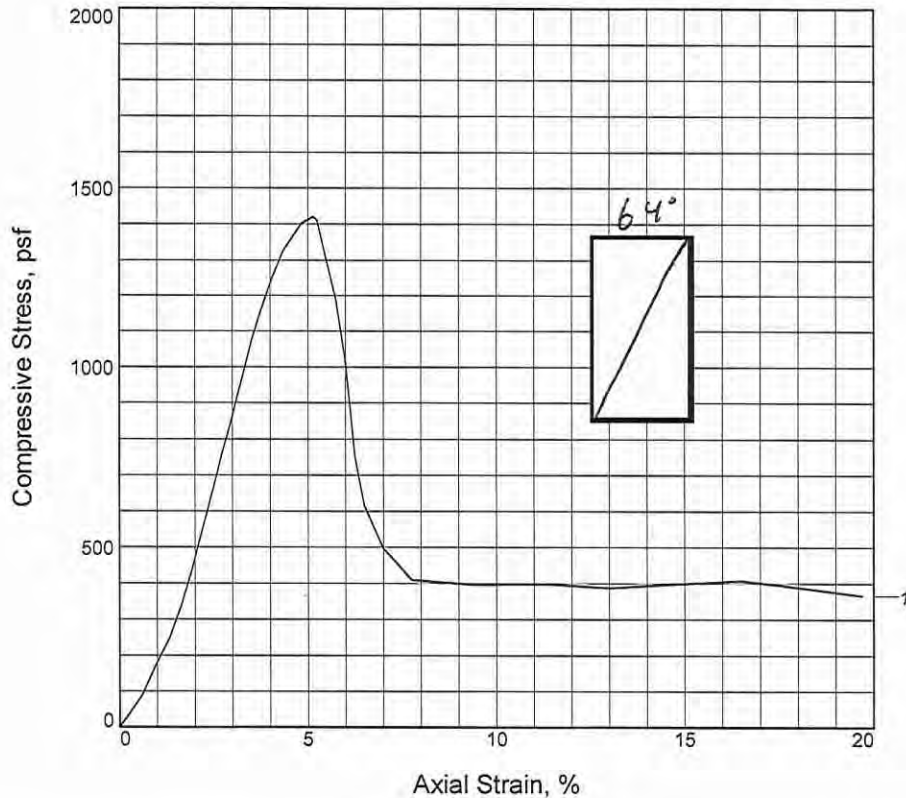
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: MS

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	1419.9			
Undrained shear strength, psf	710.0			
Failure strain, %	5.1			
Strain rate, %/min.	1.00			
Water content, %	33.9			
Wet density, pcf	113.2			
Dry density, pcf	84.5			
Saturation, %	92.0			
Void ratio	0.9940			
Specimen diameter, in.	1.412			
Specimen height, in.	2.884			
Height/diameter ratio	2.04			

Description: M T & GR CL6

LL = 45	PL = 25	PI = 20	Assumed GS= 2.70	Type: UNDISTURBED
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Project No.: 24384
Date Sampled: 10/20/20
Remarks:
 TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03 **Depth:** 57

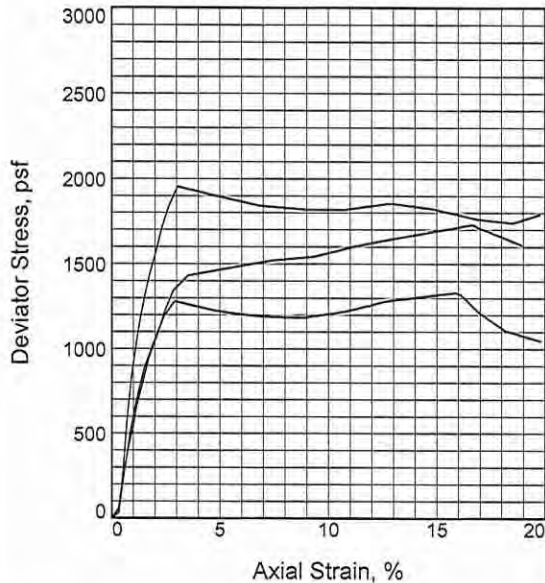
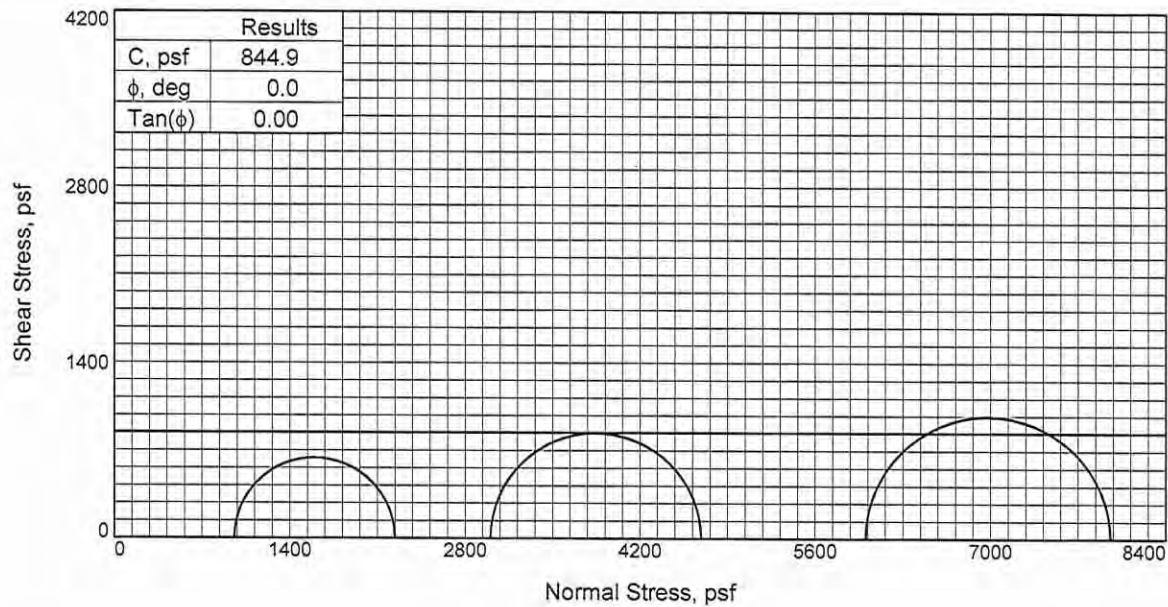
Sample Number: 15B

Figure ASTM D2166



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Tested By: EM **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	43.8	44.7	42.6
	Dry Density, pcf	76.9	75.0	77.0
	Saturation, %	98.6	96.1	96.0
	Void Ratio	1.2076	1.2653	1.2061
	Diameter, in.	1.421	1.415	1.410
	Height, in.	2.752	2.764	2.759
At Test	Water Content, %	44.4	46.5	44.3
	Dry Density, pcf	76.9	75.0	77.0
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.2076	1.2653	1.2061
	Diameter, in.	1.421	1.415	1.410
	Height, in.	2.752	2.764	2.759
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.650	20.860	41.690
Fail. Stress, psf		1281.0	1684.1	1954.3
Strain, %		2.9	14.6	3.0
Ult. Stress, psf		1184.2	1684.1	1819.4
Strain, %		8.9	14.6	8.9
σ_1 Failure, psf		2238.6	4688.0	7957.7
σ_3 Failure, psf		957.6	3003.8	6003.4

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR & T CH3 W/ ARS & LNS SM

LL= 69

PL= 22

PI= 47

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03 **Depth:** 61

Sample Number: 16B

Proj. No.: 24384

Date Sampled: 10/20/20

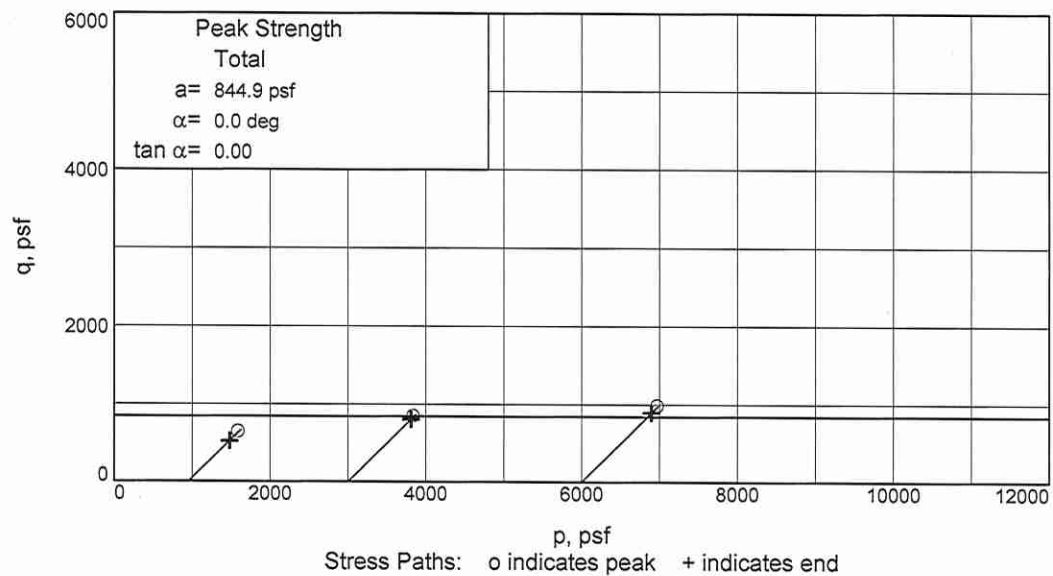
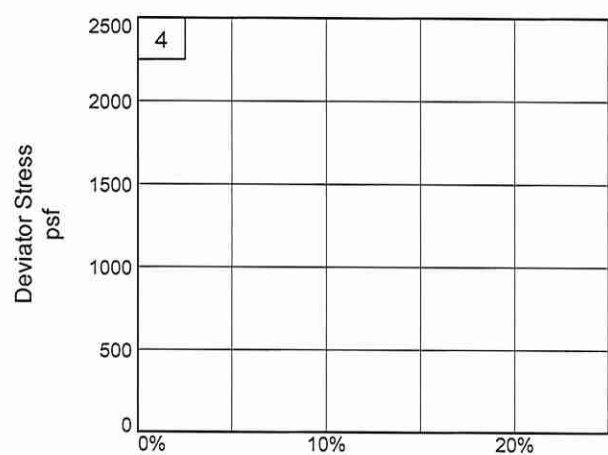
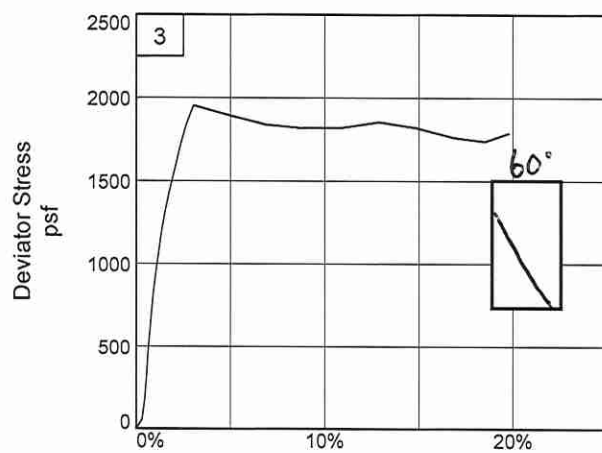
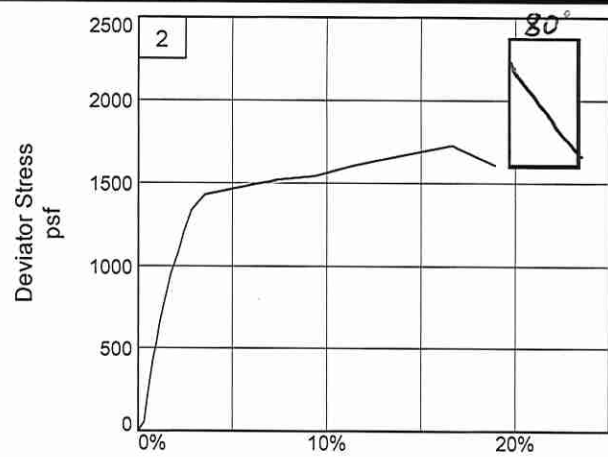
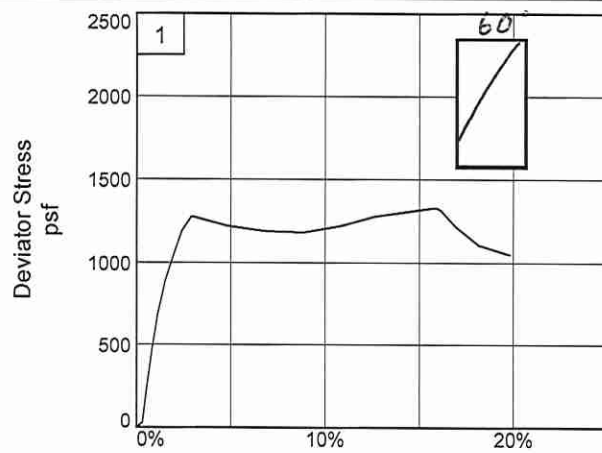
Figure ASTM D2850



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Tested By: MS

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 61

Sample Number: 16B

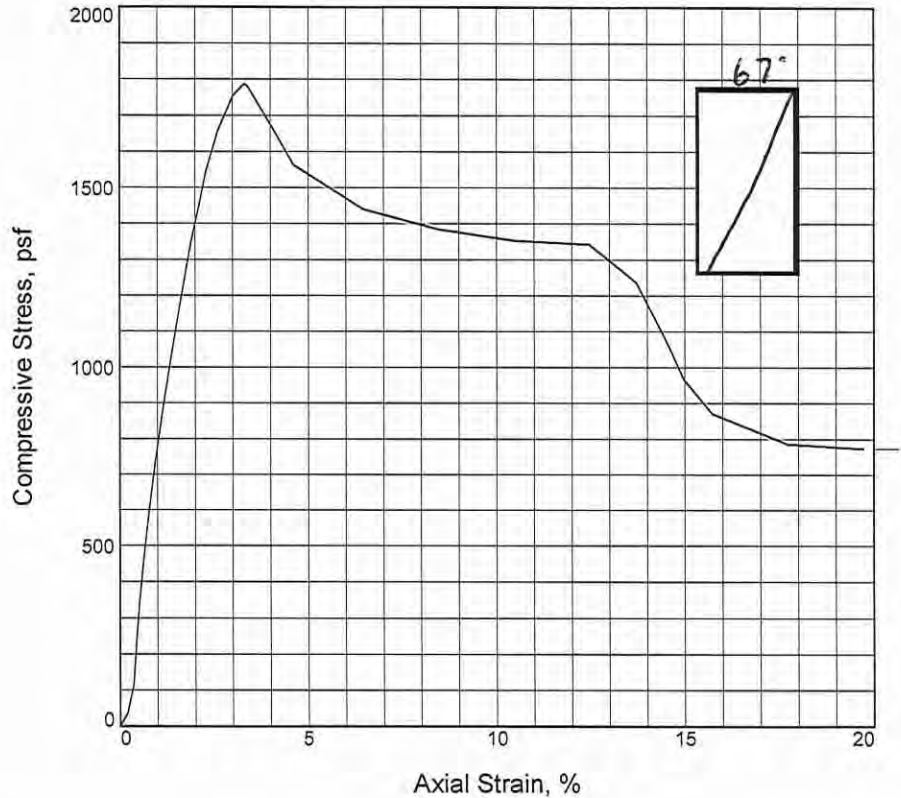
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: MS Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	1787.6			
Undrained shear strength, psf	893.8			
Failure strain, %	3.3			
Strain rate, %/min.	1.00			
Water content, %	35.0			
Wet density, pcf	115.4			
Dry density, pcf	85.5			
Saturation, %	96.5			
Void ratio	0.9868			
Specimen diameter, in.	1.401			
Specimen height, in.	2.759			
Height/diameter ratio	1.97			

Description: M GR & T CH3 W/ ARS & LNS ML, CC

LL = 51	PL = 15	PI = 36	Assumed GS= 2.72	Type: UNDISTURBED
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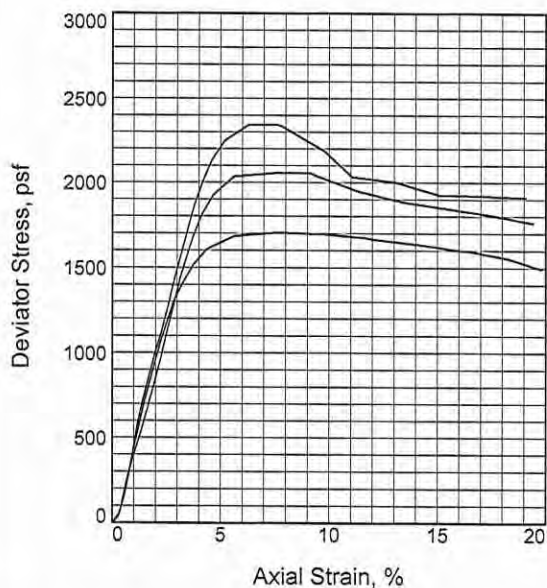
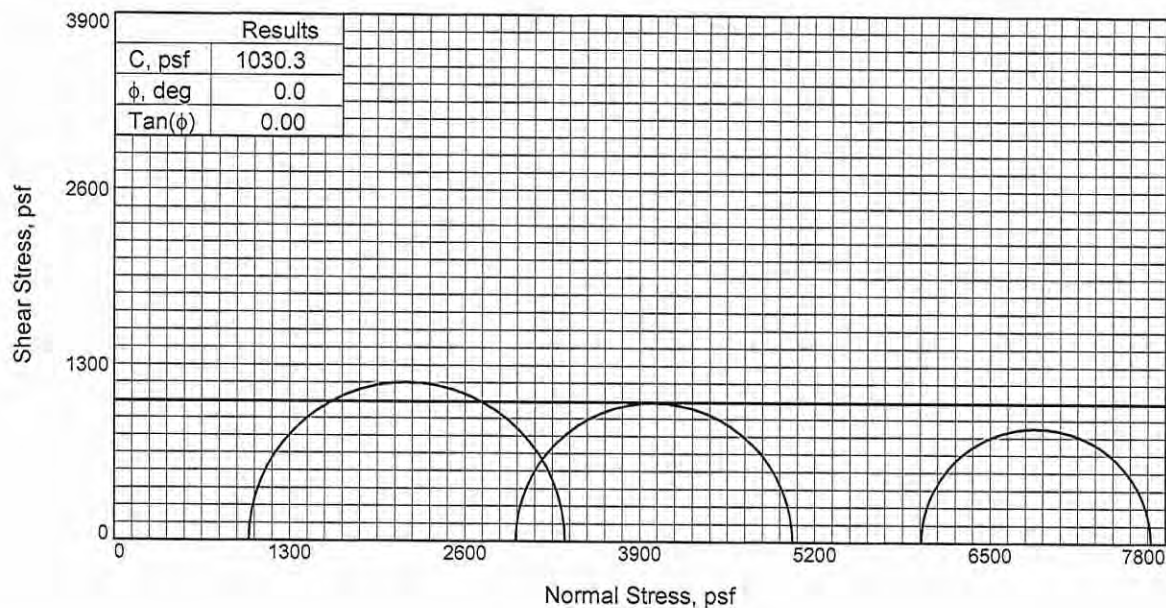
Project No.: 24384
Date Sampled: 10/20/20
Remarks:
 TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
Source of Sample: SB-03 **Depth:** 66
Sample Number: 17C

Figure ASTM D2166



Tested By: EM Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	29.8	28.7	29.6
	Dry Density, pcf	91.8	94.2	93.5
	Saturation, %	95.4	97.4	98.7
	Void Ratio	0.8505	0.8017	0.8167
	Diameter, in.	1.415	1.413	1.402
	Height, in.	2.757	2.742	2.763
At Test	Water Content, %	31.3	29.5	30.0
	Dry Density, pcf	91.8	94.2	93.5
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.8505	0.8017	0.8167
	Diameter, in.	1.415	1.413	1.402
	Height, in.	2.757	2.742	2.763
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.930	20.680	41.590
Fail. Stress, psf		2346.1	2055.7	1703.7
Strain, %		7.6	7.6	7.6
Ult. Stress, psf		1925.0	1854.1	1635.5
Strain, %		15.1	15.0	14.1
σ_1 Failure, psf		3344.0	5033.6	7692.7
σ_3 Failure, psf		997.9	2977.9	5989.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR CL6 W/ ARS SM

LL= 40 PL= 15 PI= 25

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03 **Depth:** 70

Sample Number: 18C

Proj. No.: 24384

Date Sampled: 10/20/20

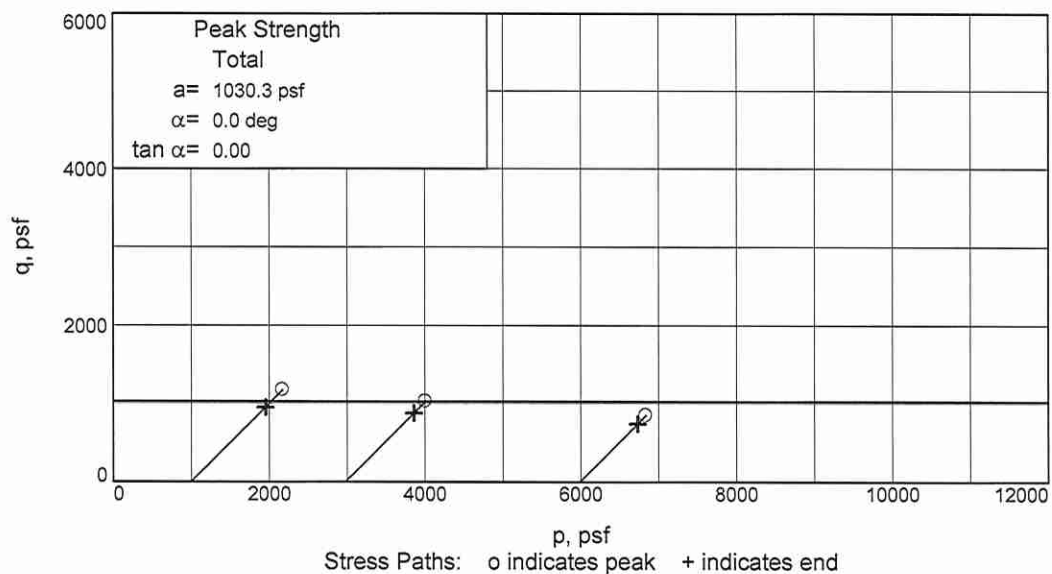
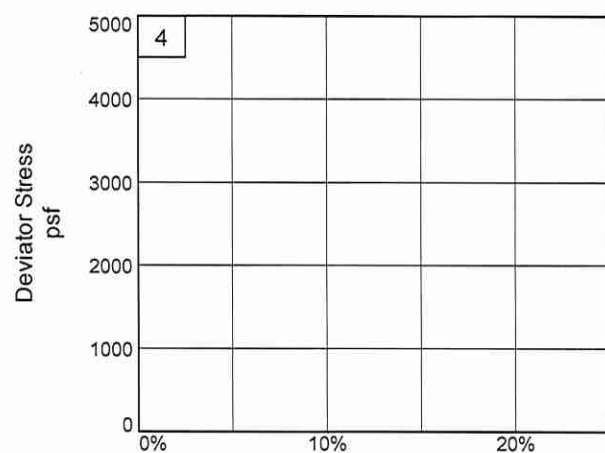
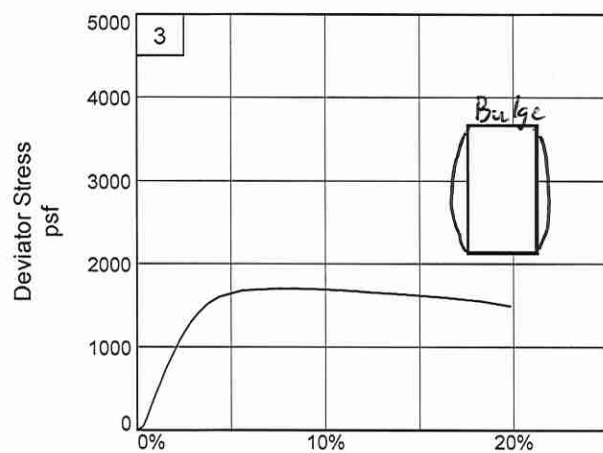
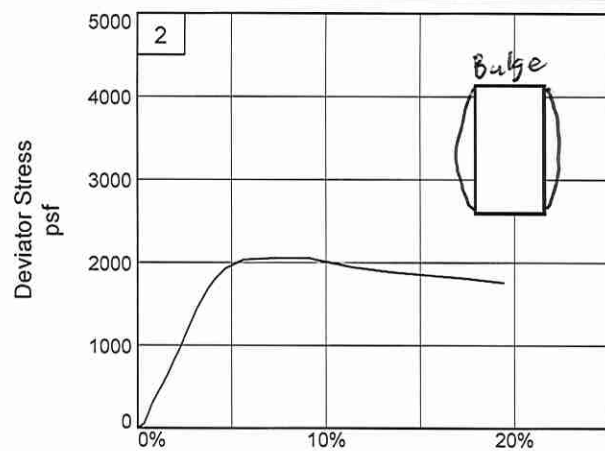
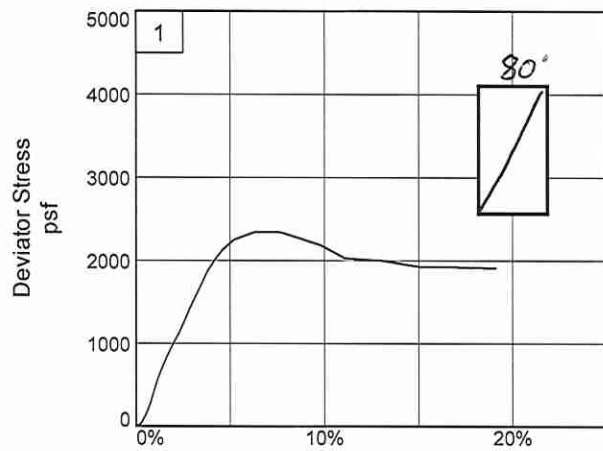
Figure ASTM D2850



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Tested By: MS

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 70

Sample Number: 18C

Project No.: 24384

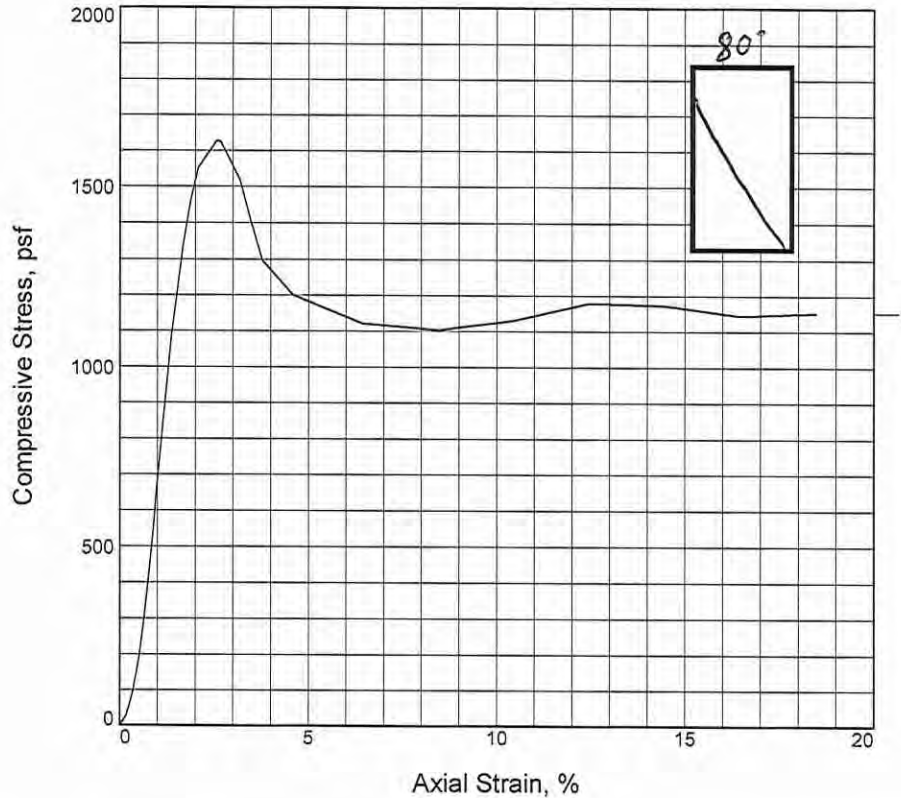
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: MS

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	1628.6		
Undrained shear strength, psf	814.3		
Failure strain, %	2.6		
Strain rate, %/min.	1.00		
Water content, %	38.1		
Wet density, pcf	112.2		
Dry density, pcf	81.2		
Saturation, %	95.0		
Void ratio	1.0901		
Specimen diameter, in.	1.418		
Specimen height, in.	2.753		
Height/diameter ratio	1.94		

Description: M GR CL6 W/ ARS SM

LL = 44	PL = 14	PI = 30	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 10/20/20

Remarks:

TORVANE = 0.700 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 74

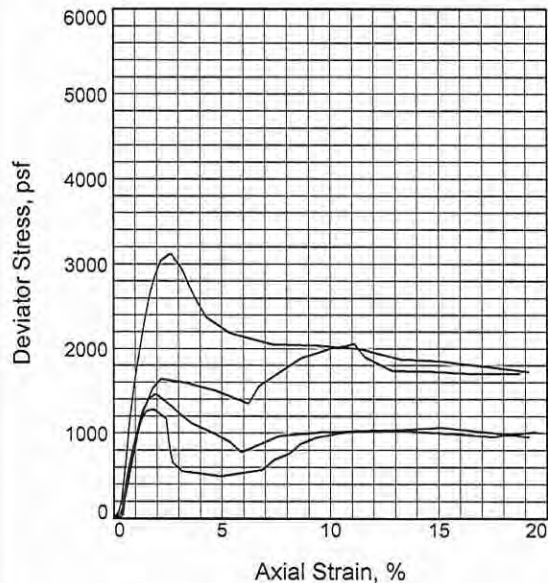
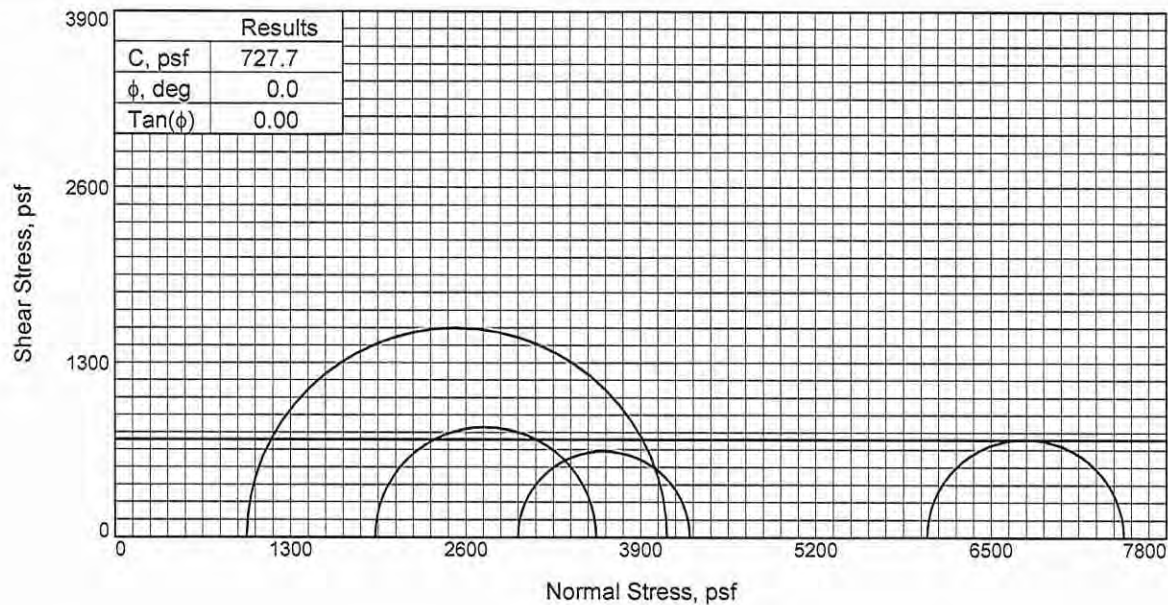
Sample Number: 19C

Figure ASTM D2166



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Tested By: DE Checked By: RR



Specimen No.		1	2	3	4
Initial	Water Content, %	43.3	43.2	44.5	43.5
	Dry Density, pcf	77.6	76.4	76.1	77.3
	Saturation, %	99.2	96.2	98.4	98.8
	Void Ratio	1.1873	1.2215	1.2302	1.1967
	Diameter, in.	1.414	1.406	1.418	1.405
	Height, in.	2.804	2.759	2.785	2.805
At Test	Water Content, %	43.7	44.9	45.2	44.0
	Dry Density, pcf	77.6	76.4	76.1	77.3
	Saturation, %	100.0	100.0	100.0	100.0
	Void Ratio	1.1873	1.2215	1.2302	1.1967
	Diameter, in.	1.414	1.406	1.418	1.405
	Height, in.	2.804	2.759	2.785	2.805
Strain rate, %/min.		1.00	1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000	0.000
Cell Pressure, psi		6.780	20.750	41.840	13.390
Fail. Stress, psf		3118.2	1276.4	1459.1	1640.5
Strain, %		2.6	1.8	1.9	2.2
Ult. Stress, psf		1849.4	494.5	775.3	1345.4
Strain, %		15.0	5.0	5.9	6.2
σ_1 Failure, psf		4094.6	4264.4	7484.1	3568.7
σ_3 Failure, psf		976.3	2988.0	6025.0	1928.2

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR CH3 W/ ARS ML, SL

LL= 72

PL= 23

PI= 49

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.700 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 81

Sample Number: 21B

Proj. No.: 24384

Date Sampled: 10/20/20

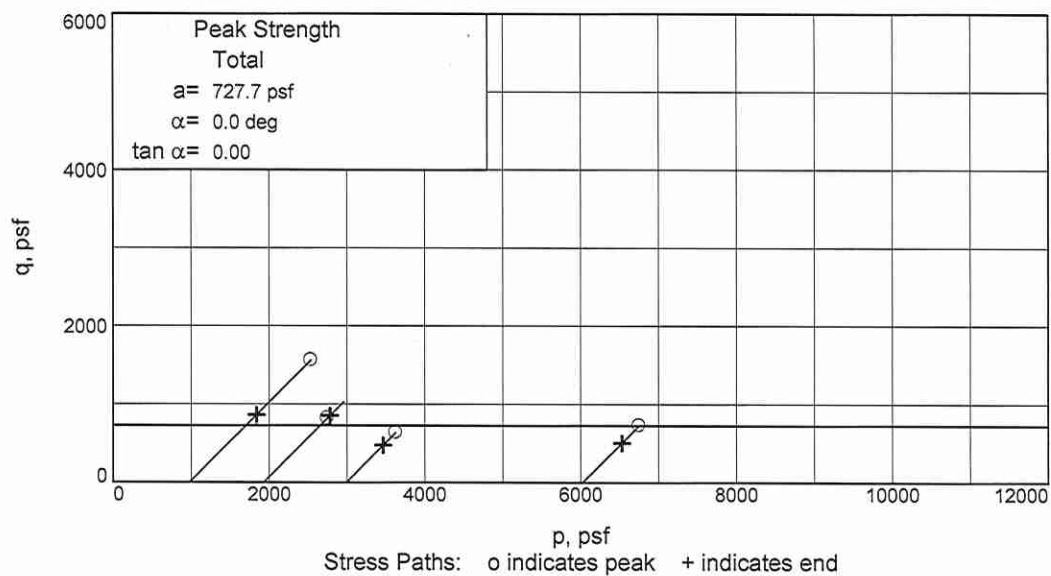
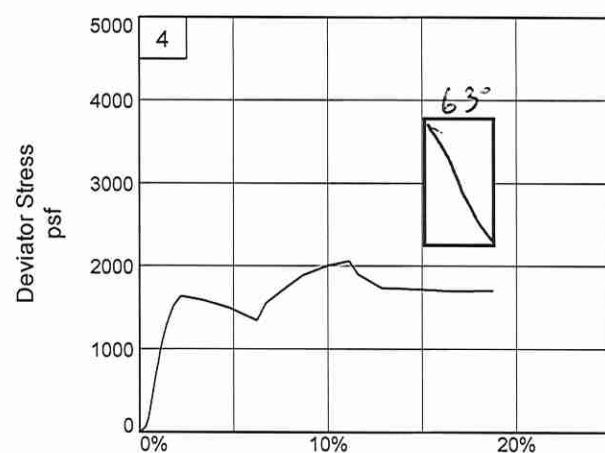
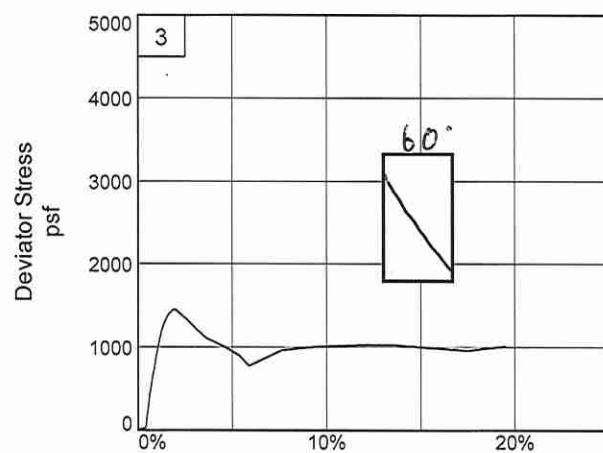
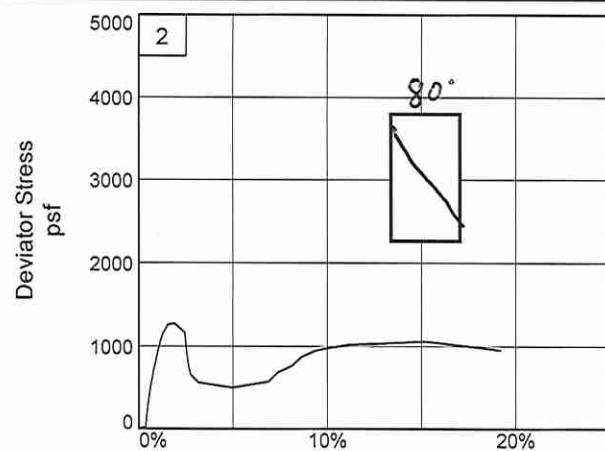
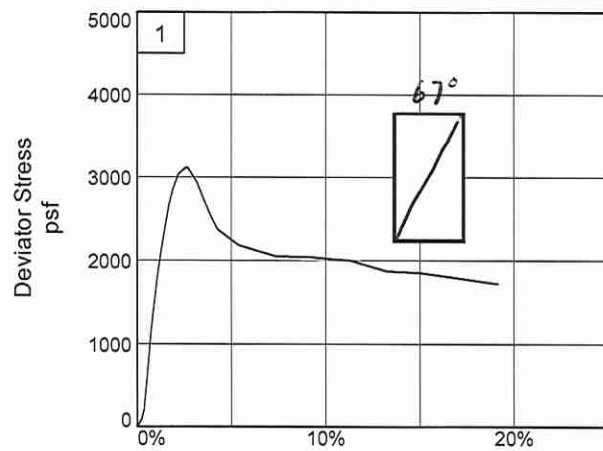


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Figure ASTM D2850

Tested By: MS

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 81

Sample Number: 21B

Project No.: 24384

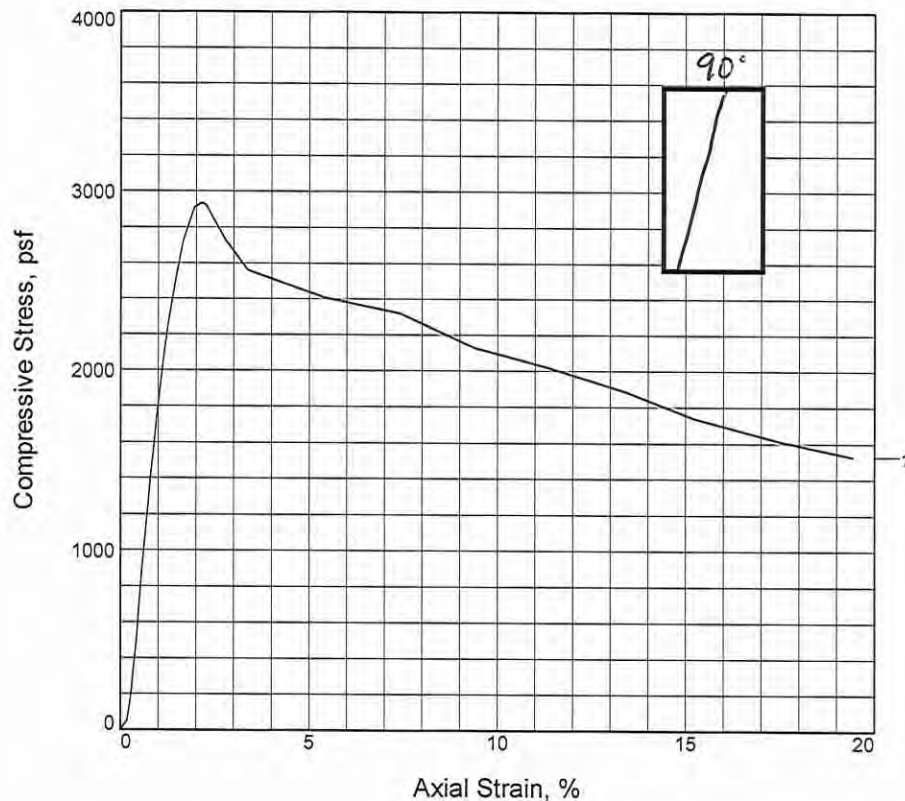
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: MS

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	2935.5		
Undrained shear strength, psf	1467.7		
Failure strain, %	2.2		
Strain rate, %/min.	1.00		
Water content, %	42.7		
Wet density, pcf	110.6		
Dry density, pcf	77.5		
Saturation, %	97.6		
Void ratio	1.1899		
Specimen diameter, in.	1.413		
Specimen height, in.	2.769		
Height/diameter ratio	1.96		

Description: ST GR CH4 W/ ARS ML, WD

LL = 74	PL = 18	PI = 56	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 10/20/20

Remarks:

TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03 **Depth:** 86

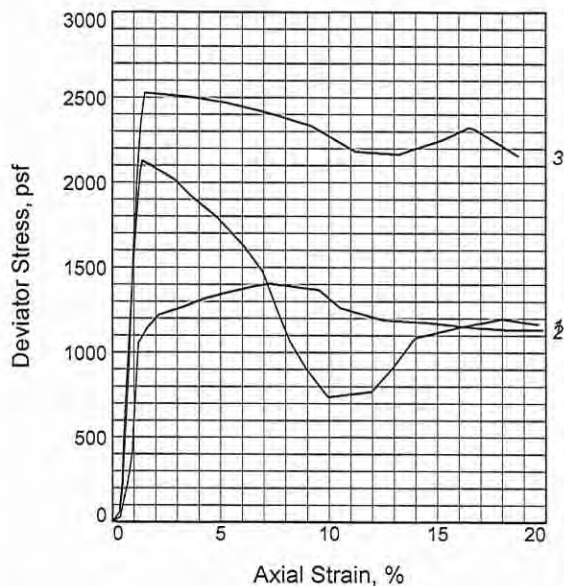
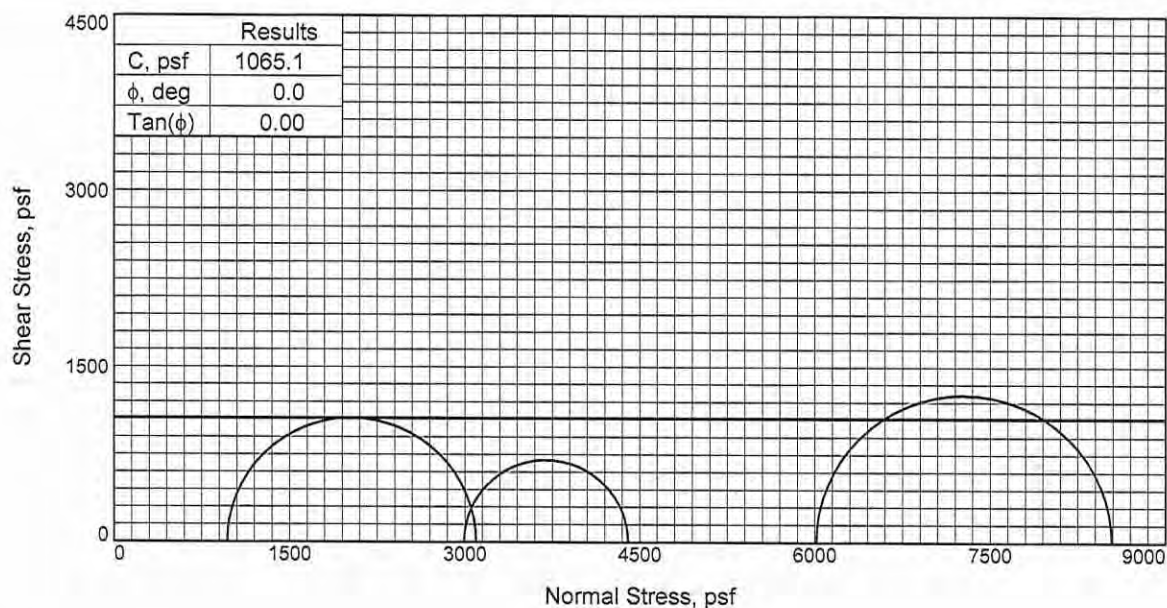
Sample Number: 22C

Figure ASTM D2166



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SINCE 1946

Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	45.0	44.6	45.1
	Dry Density, pcf	75.3	75.7	74.4
	Saturation, %	97.6	97.5	95.7
	Void Ratio	1.2551	1.2428	1.2830
	Diameter, in.	1.401	1.392	1.419
	Height, in.	2.753	2.761	2.750
At Test	Water Content, %	46.1	45.7	47.2
	Dry Density, pcf	75.3	75.7	74.4
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.2551	1.2428	1.2830
	Diameter, in.	1.401	1.392	1.419
	Height, in.	2.753	2.761	2.750
Strain rate, %/min.		1.00	0.20	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.720	20.790	41.750
Fail. Stress, psf		2128.6	1405.8	2528.5
Strain, %		1.4	7.3	1.5
Ult. Stress, psf		738.0	1176.7	2167.0
Strain, %		10.0	14.5	13.2
σ_1 Failure, psf		3096.3	4399.6	8540.5
σ_3 Failure, psf		967.7	2993.8	6012.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR CH4 W/ ARS ML, SL

LL= 84

PL= 22

PI= 62

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03 **Depth:** 90

Sample Number: 23C

Proj. No.: 24384

Date Sampled: 10/20/20

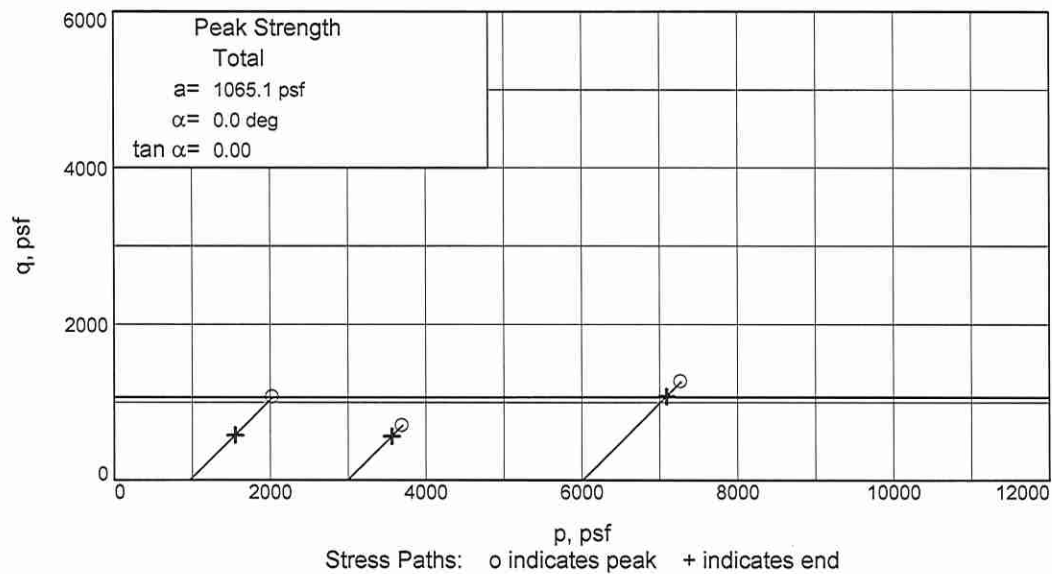
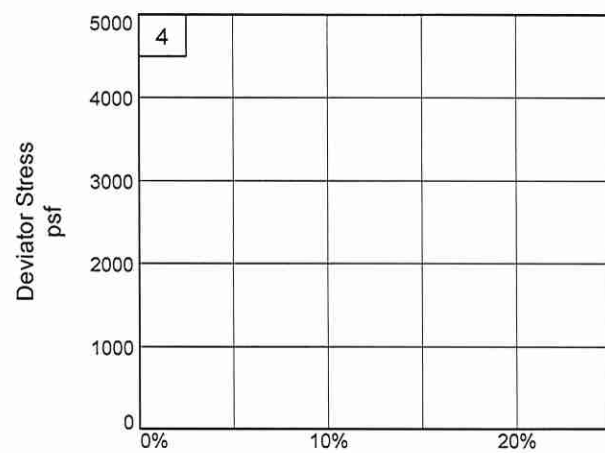
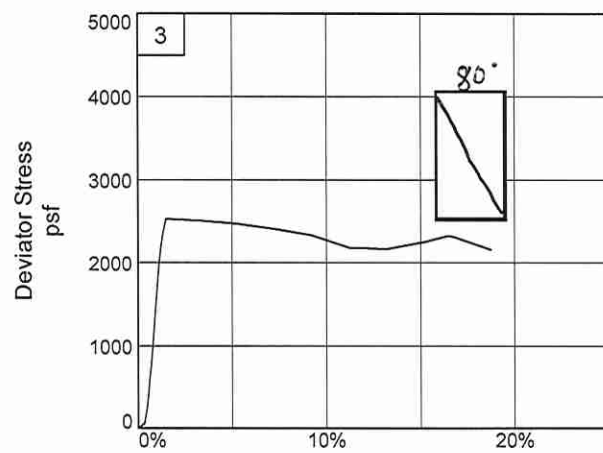
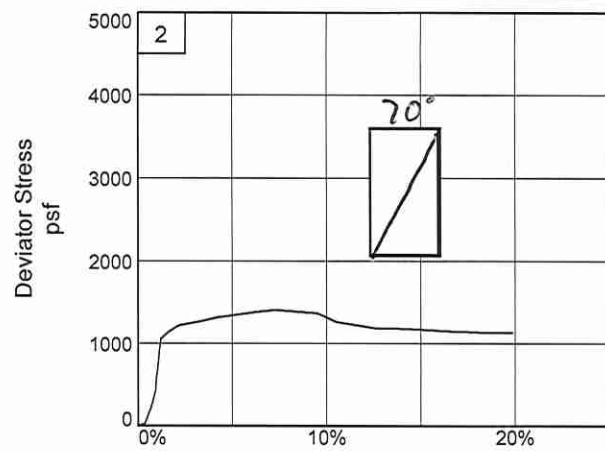
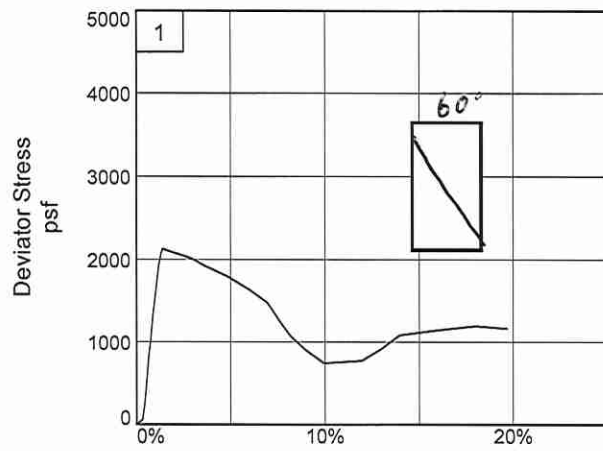
Figure ASTM D2850



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SINCE 1946

Tested By: MS

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 90

Sample Number: 23C

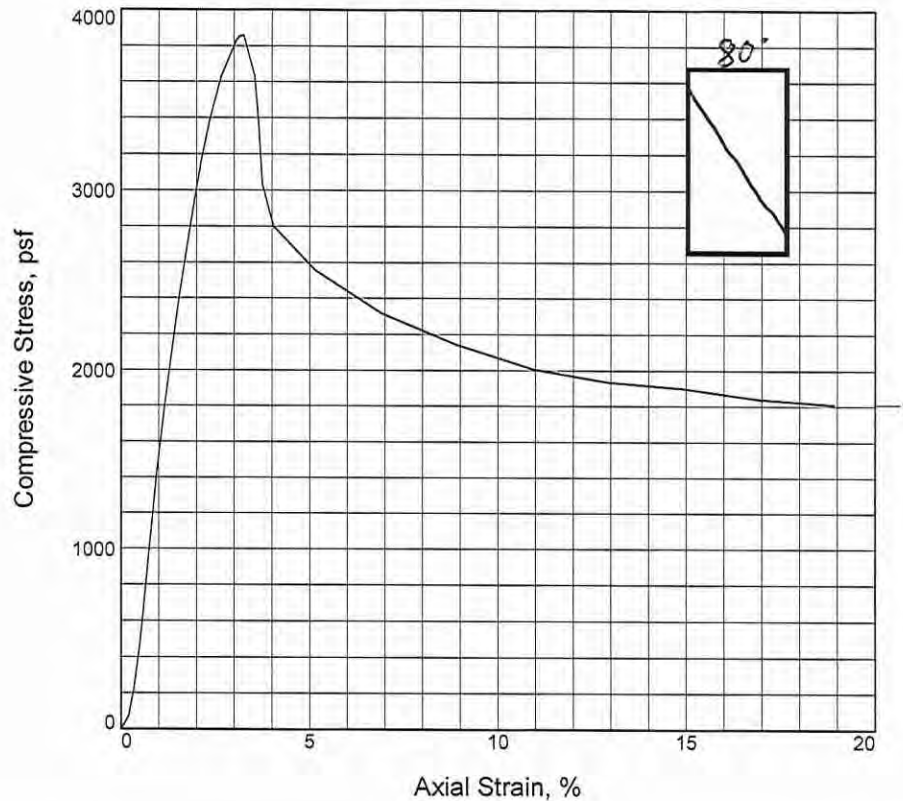
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: MS Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	3858.5		
Undrained shear strength, psf	1929.3		
Failure strain, %	3.2		
Strain rate, %/min.	1.00		
Water content, %	47.3		
Wet density, pcf	107.7		
Dry density, pcf	73.1		
Saturation, %	97.2		
Void ratio	1.3230		
Specimen diameter, in.	1.404		
Specimen height, in.	2.769		
Height/diameter ratio	1.97		

Description: ST GR CH4 W/ ARS ML, SL

LL = 87	PL = 25	PI = 62	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 10/20/20

Remarks:

TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 94

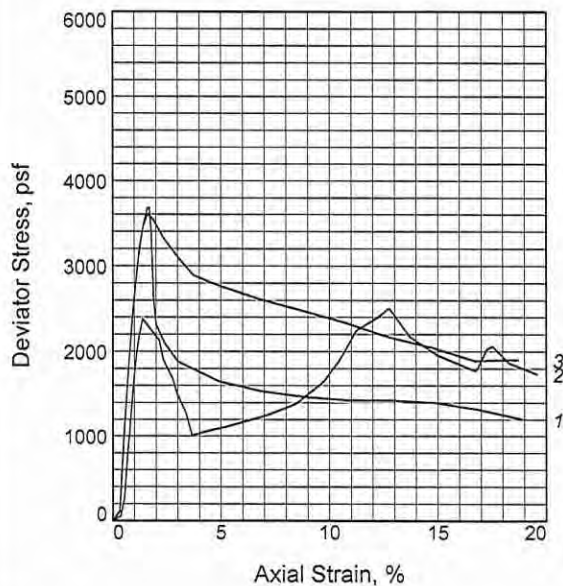
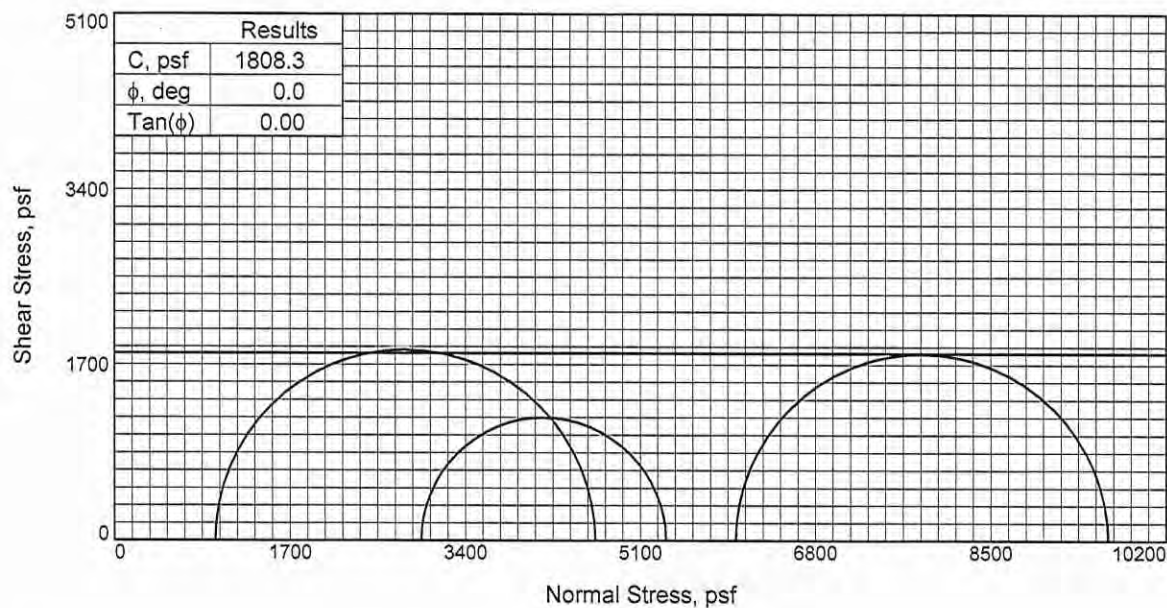
Sample Number: 24C

Figure ASTM D2166



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Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	47.1	46.9	46.1
	Dry Density, pcf	73.0	73.0	74.2
	Saturation, %	96.4	96.3	97.4
	Void Ratio	1.3275	1.3247	1.2871
	Diameter, in.	1.413	1.422	1.411
	Height, in.	2.759	2.760	2.781
At Test	Water Content, %	48.8	48.7	47.3
	Dry Density, pcf	73.0	73.0	74.2
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.3275	1.3247	1.2871
	Diameter, in.	1.413	1.422	1.411
	Height, in.	2.759	2.760	2.781
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.780	20.640	41.850
Fail. Stress, psf		3685.3	2377.1	3610.1
Strain, %		1.7	1.4	1.6
Ult. Stress, psf		1400.4	1011.4	2047.8
Strain, %		14.9	3.7	14.7
σ_1 Failure, psf		4661.6	5349.3	9636.5
σ_3 Failure, psf		976.3	2972.2	6026.4

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR CH4 W/ ARS & LNS ML, SL

LL= 91

PL= 24

PI= 67

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 98

Sample Number: 25C

Proj. No.: 24384

Date Sampled: 10/20/20

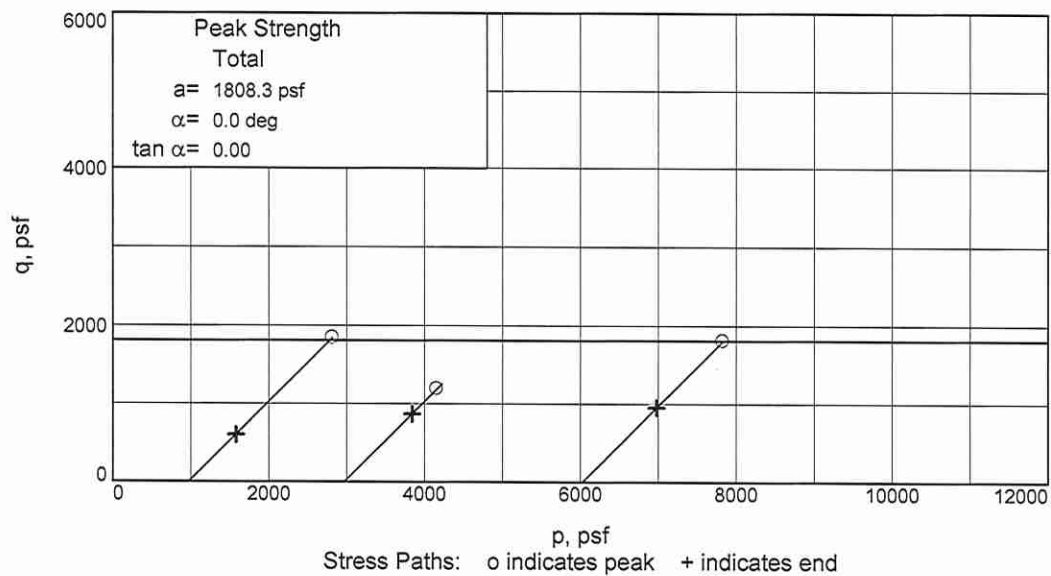
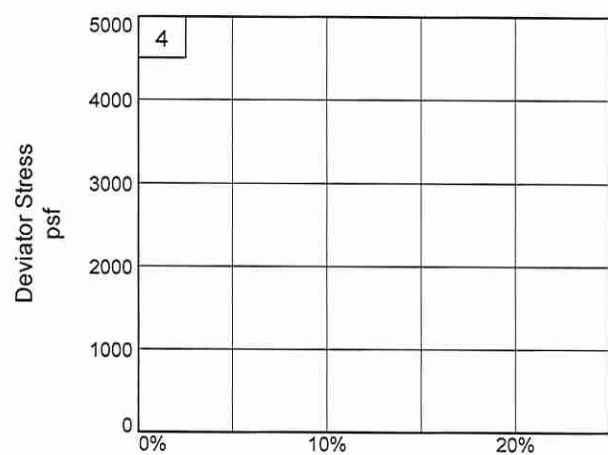
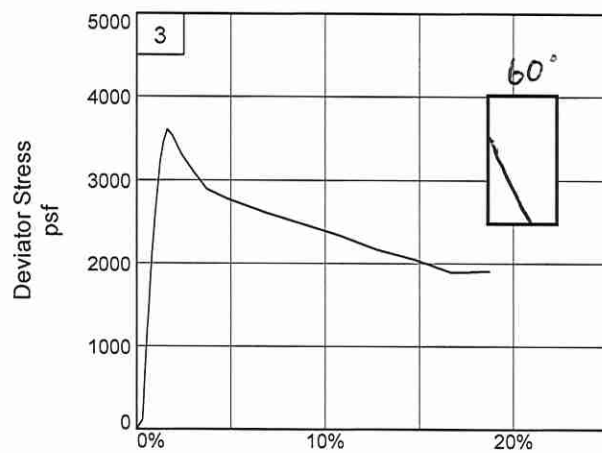
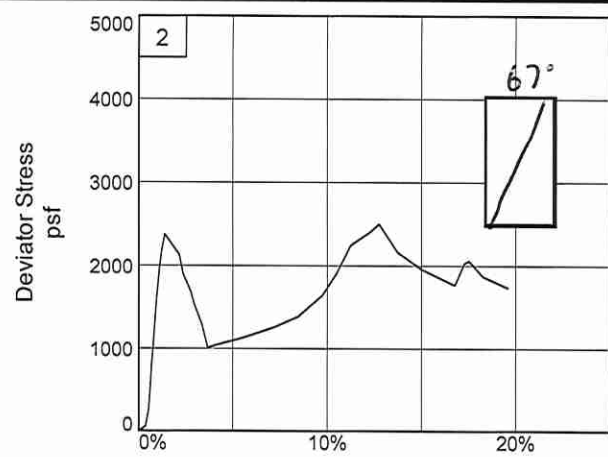
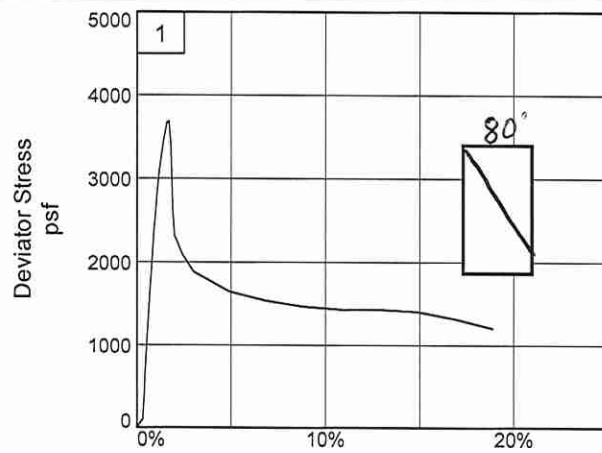


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SINCE 1946

Figure ASTM D2850

Tested By: MS

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 98

Sample Number: 25C

Project No.: 24384

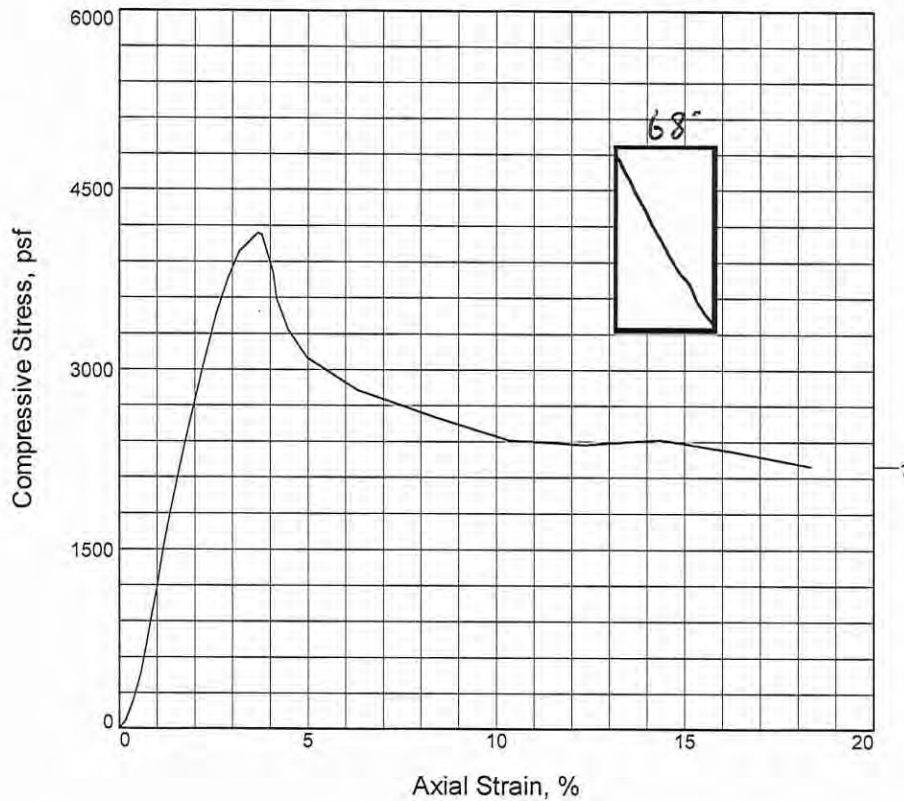
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: MS

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	4138.4			
Undrained shear strength, psf	2069.2			
Failure strain, %	3.7			
Strain rate, %/min.	1.00			
Water content, %	44.3			
Wet density, pcf	108.7			
Dry density, pcf	75.3			
Saturation, %	96.1			
Void ratio	1.2542			
Specimen diameter, in.	1.411			
Specimen height, in.	2.767			
Height/diameter ratio	1.96			

Description: VST GR CH4 W/ ARS & LNS ML

LL = 87	PL = 22	PI = 65	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384
Date Sampled: 10/20/20

Remarks:
 TORVANE = 0.750 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03 **Depth:** 102

Sample Number: 26C

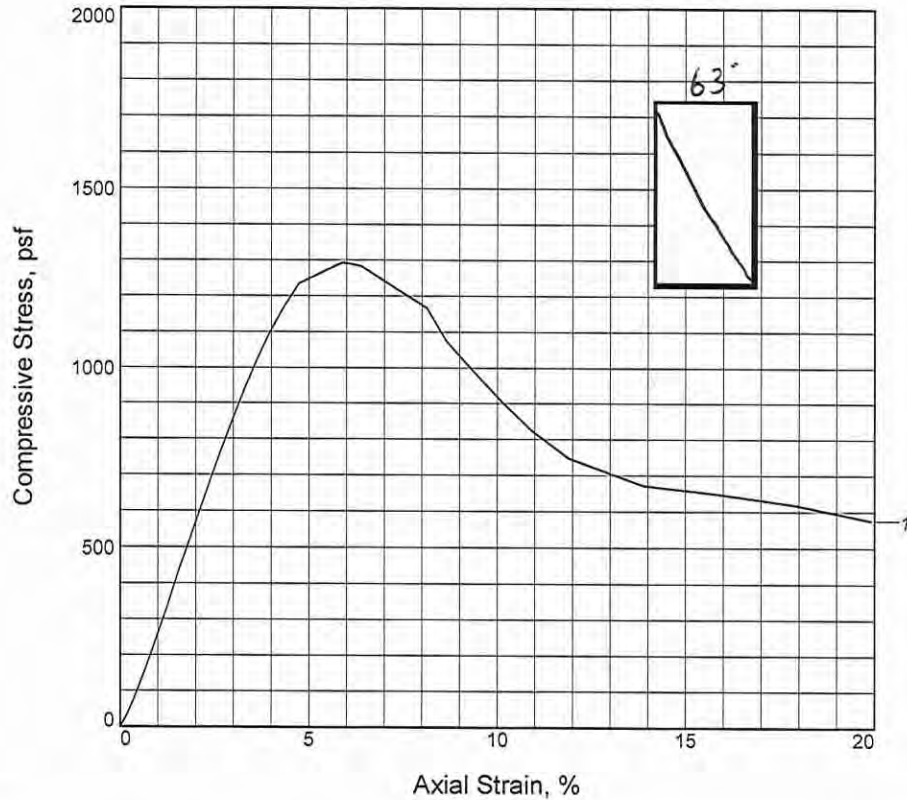


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Figure ASTM D2166

Tested By: MS Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	1292.0		
Undrained shear strength, psf	646.0		
Failure strain, %	5.9		
Strain rate, %/min.	1.00		
Water content, %	21.6		
Wet density, pcf	128.3		
Dry density, pcf	105.5		
Saturation, %	97.6		
Void ratio	0.5981		
Specimen diameter, in.	1.407		
Specimen height, in.	2.749		
Height/diameter ratio	1.95		

Description: M GNG CL4 W/ ARS SP

LL = 28	PL = 16	PI = 12	Assumed GS= 2.70	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 10/20/20

Remarks:

TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03 **Depth:** 106

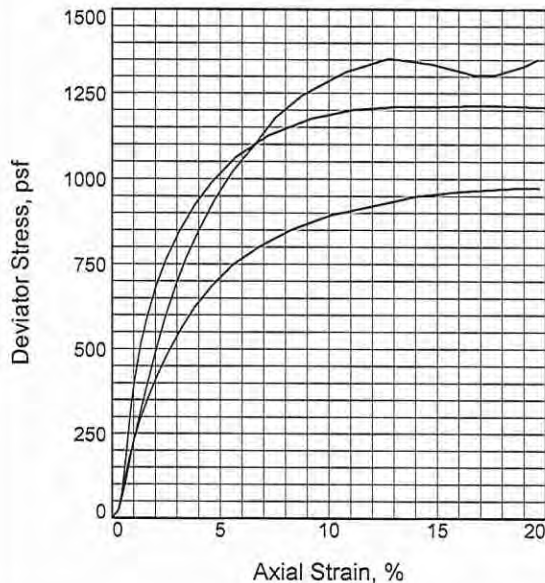
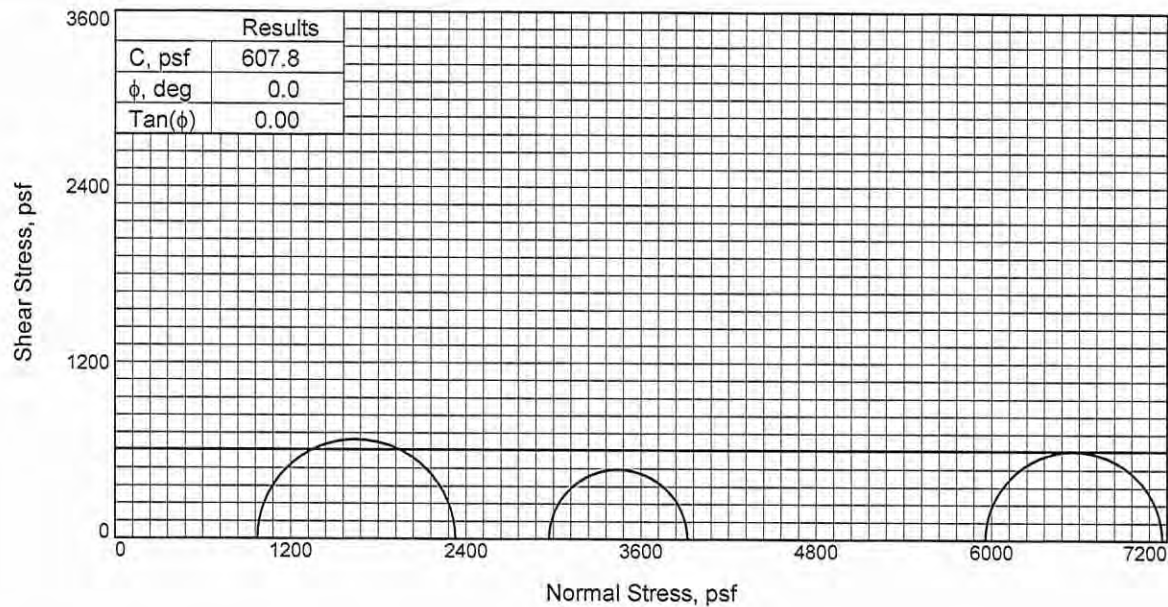
Sample Number: 27C

Figure ASTM D2166



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Tested By: MS Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	27.5	27.2	27.6
	Dry Density, pcf	96.7	97.2	96.6
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7424	0.7338	0.7447
	Diameter, in.	1.405	1.405	1.404
	Height, in.	2.789	2.775	2.773
At Test	Water Content, %	27.5	27.2	27.6
	Dry Density, pcf	96.7	97.2	96.6
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7424	0.7338	0.7447
	Diameter, in.	1.405	1.405	1.404
	Height, in.	2.789	2.775	2.773
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.760	20.620	41.370
Fail. Stress, psf		1353.8	949.4	1211.0
Strain, %		12.8	14.1	13.2
Ult. Stress, psf		1336.6	949.4	1210.5
Strain, %		14.7	14.1	15.2
σ_1 Failure, psf		2327.2	3918.7	7168.3
σ_3 Failure, psf		973.4	2969.3	5957.3

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GNG CL4 W/ ASR SP, O

LL= 32

PL= 13

PI= 19

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03 Depth: 113

Sample Number: 29B

Proj. No.: 24384

Date Sampled: 10/20/20

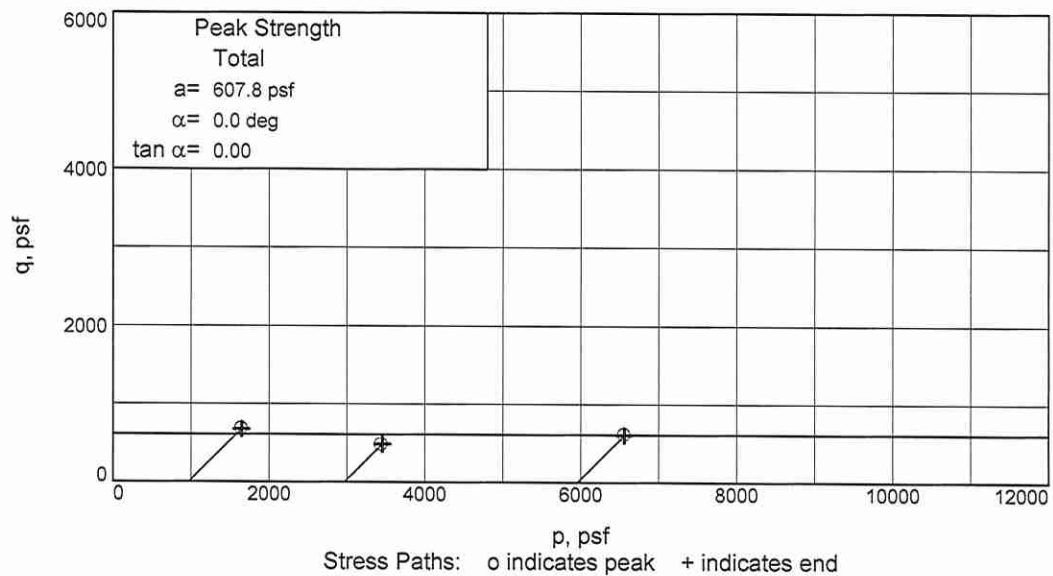
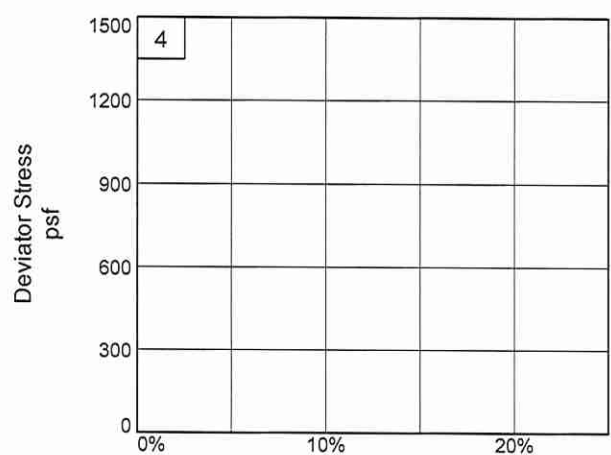
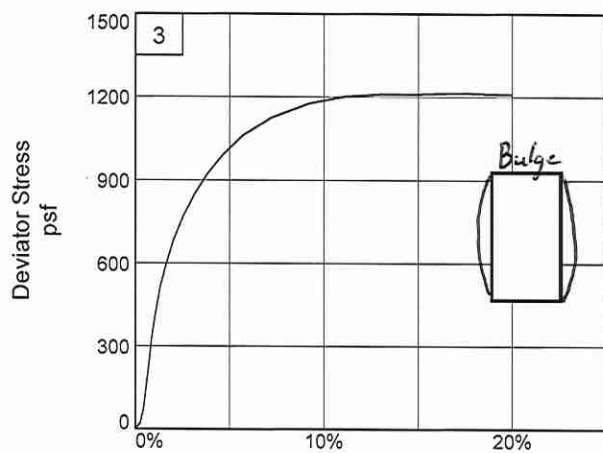
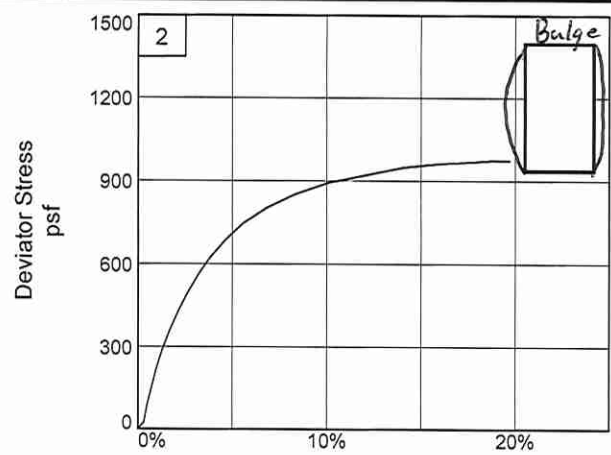
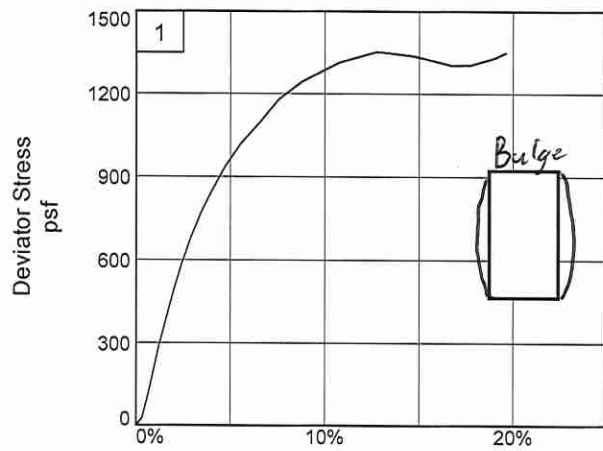


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Figure ASTM D2850

Tested By: MS

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 113

Sample Number: 29B

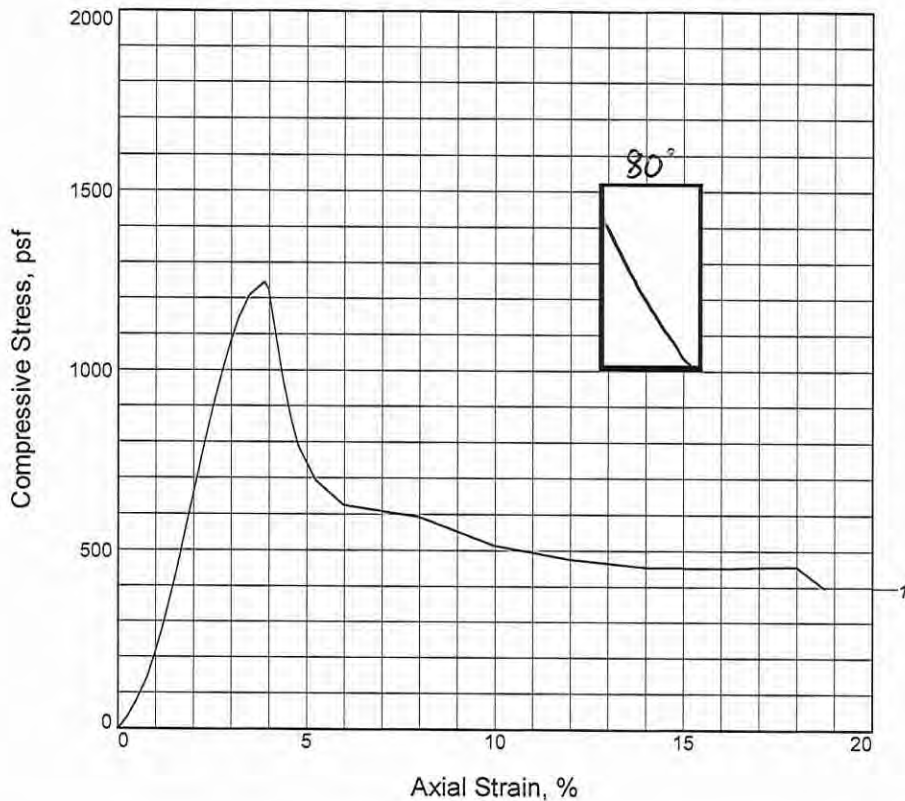
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: MS Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	1245.1		
Undrained shear strength, psf	622.6		
Failure strain, %	3.9		
Strain rate, %/min.	1.00		
Water content, %	30.8		
Wet density, pcf	117.3		
Dry density, pcf	89.7		
Saturation, %	94.6		
Void ratio	0.8787		
Specimen diameter, in.	1.401		
Specimen height, in.	2.802		
Height/diameter ratio	2.00		

Description: M GR & T CL4

LL = 30	PL = 14	PI = 16	Assumed GS= 2.70	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 10/20/20

Remarks:

TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03 **Depth:** 118

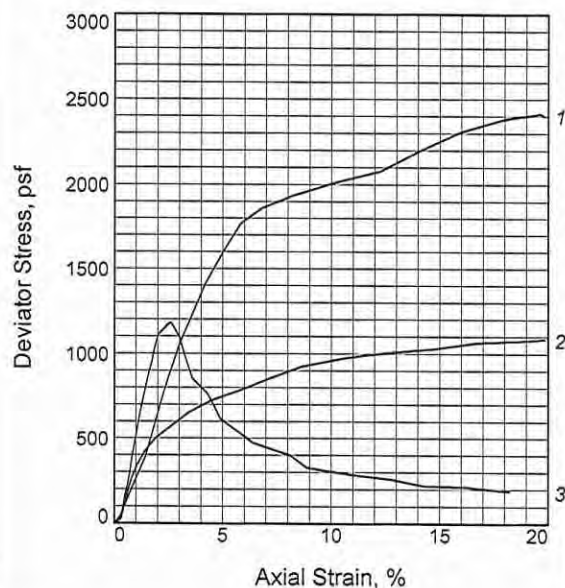
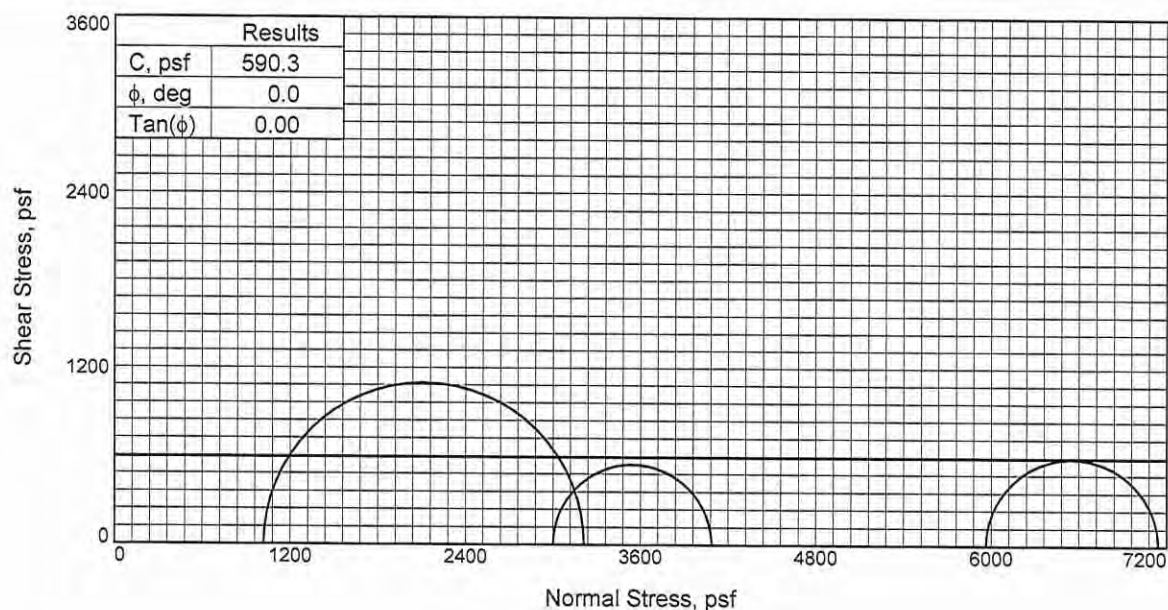
Sample Number: 30C

Figure ASTM D2166



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Tested By: DE **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	33.1	34.1	32.7
	Dry Density, pcf	88.1	86.9	88.9
	Saturation, %	99.1	99.0	99.7
	Void Ratio	0.8920	0.9187	0.8747
	Diameter, in.	1.425	1.415	1.409
	Height, in.	2.862	2.727	2.830
At Test	Water Content, %	33.4	34.4	32.8
	Dry Density, pcf	88.1	86.9	88.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.8920	0.9187	0.8747
	Diameter, in.	1.425	1.415	1.409
	Height, in.	2.862	2.727	2.830
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		7.080	20.840	41.410
Fail. Stress, psf		2193.0	1086.0	1179.4
Strain, %		14.0	19.8	2.6
Ult. Stress, psf		2193.0		221.0
Strain, %		14.0		14.3
σ_1 Failure, psf		3212.5	4086.9	7142.5
σ_3 Failure, psf		1019.5	3001.0	5963.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GNG & T CL4

LL= 28

PL= 15

PI= 13

Assumed Specific Gravity= 2.67

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 123

Sample Number: 32B

Proj. No.: 24384

Date Sampled: 11/3/20

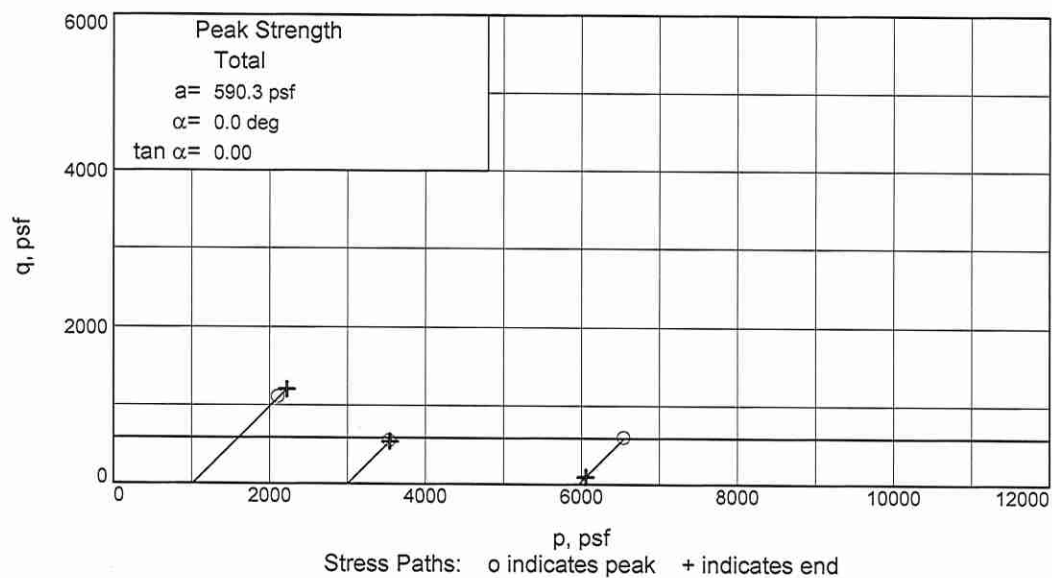
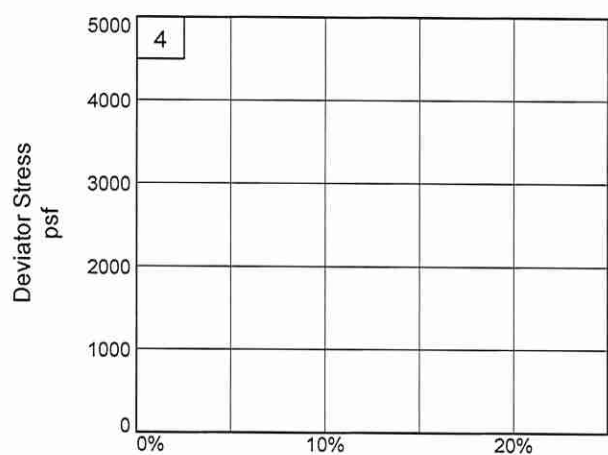
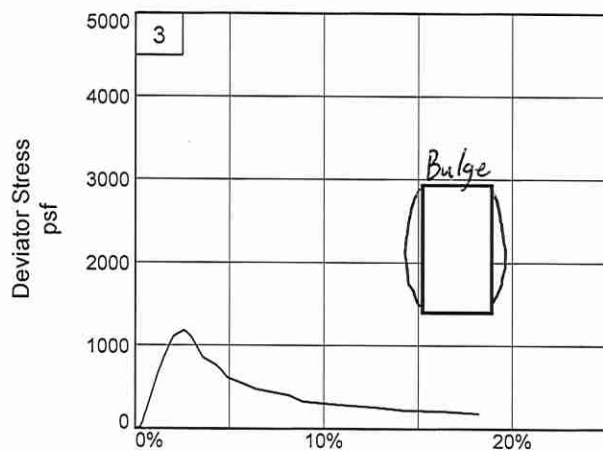
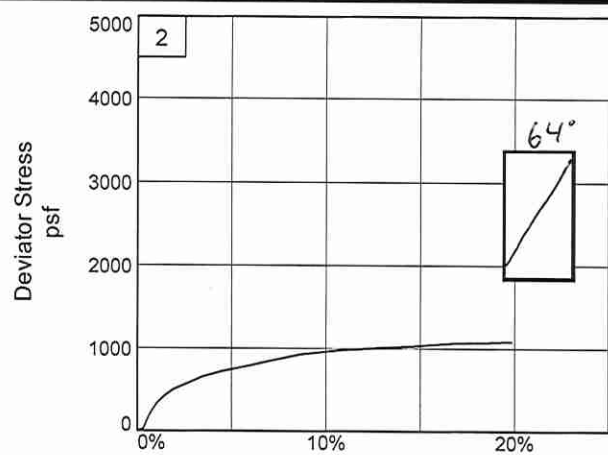
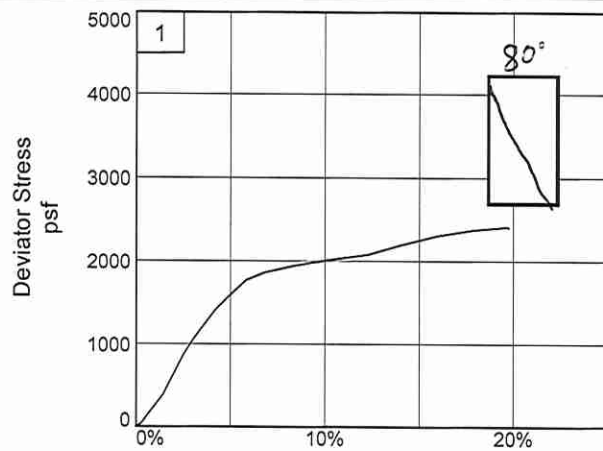
Figure ASTM D2850



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SINCE 1946

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-03

Depth: 123

Sample Number: 32B

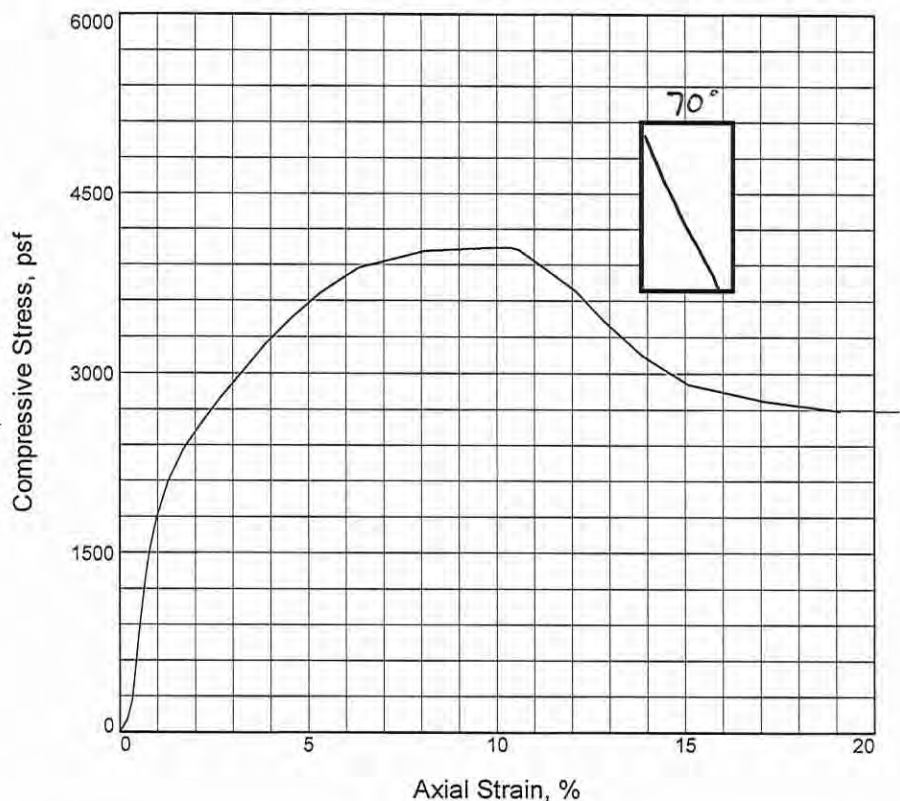
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE _____ Checked By: RR _____

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	4046.9			
Undrained shear strength, psf	2023.5			
Failure strain, %	10.1			
Strain rate, %/min.	1.00			
Water content, %	33.8			
Wet density, pcf	113.7			
Dry density, pcf	85.0			
Saturation, %	92.0			
Void ratio	0.9984			
Specimen diameter, in.	1.397			
Specimen height, in.	2.765			
Height/diameter ratio	1.98			

Description: VST GR & T CH3 W/ ARS ML, WD

LL = 76	PL = 31	PI = 45	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 10/7/20

Remarks:

TORVANE = 0.750 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-04 **Depth:** 5

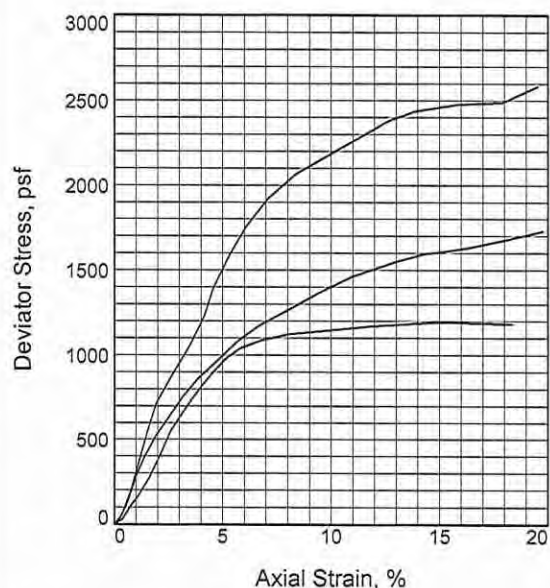
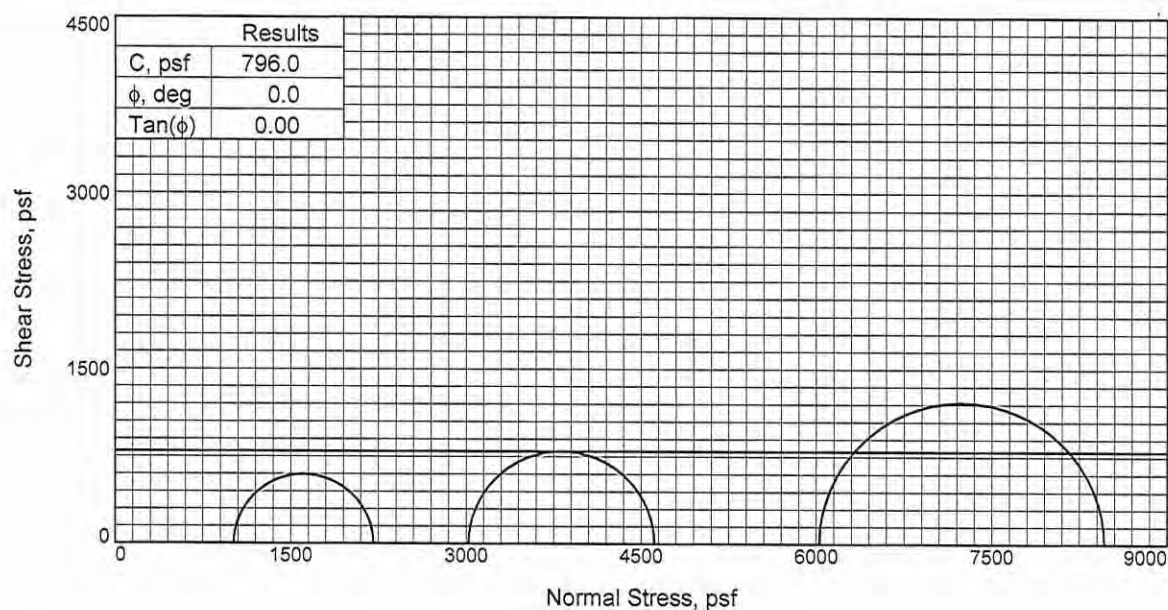
Sample Number: 2B

Figure ASTM D2166



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Tested By: CC Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	30.3	31.0	31.3
	Dry Density, pcf	90.3	87.6	86.8
	Saturation, %	94.5	90.5	89.6
	Void Ratio	0.8664	0.9241	0.9425
	Diameter, in.	1.412	1.429	1.431
	Height, in.	2.783	2.721	2.753
At Test	Water Content, %	32.1	34.2	34.9
	Dry Density, pcf	90.3	87.6	86.8
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.8664	0.9241	0.9425
	Diameter, in.	1.412	1.429	1.431
	Height, in.	2.783	2.721	2.753
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		7.040	20.980	41.840
Fail. Stress, psf		1192.8	1592.5	2437.0
Strain, %		15.0	14.2	13.9
Ult. Stress, psf		1192.8	1592.5	2437.0
Strain, %		15.0	14.2	13.9
σ_1	Failure, psf	2206.5	4613.6	8462.0
σ_3	Failure, psf	1013.8	3021.1	6025.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR & T CL4 W/ CC

LL= 34

PL= 16

PI= 18

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.200 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-04

Depth: 13

Sample Number: 4B

Proj. No.: 24384

Date Sampled: 10/7/20

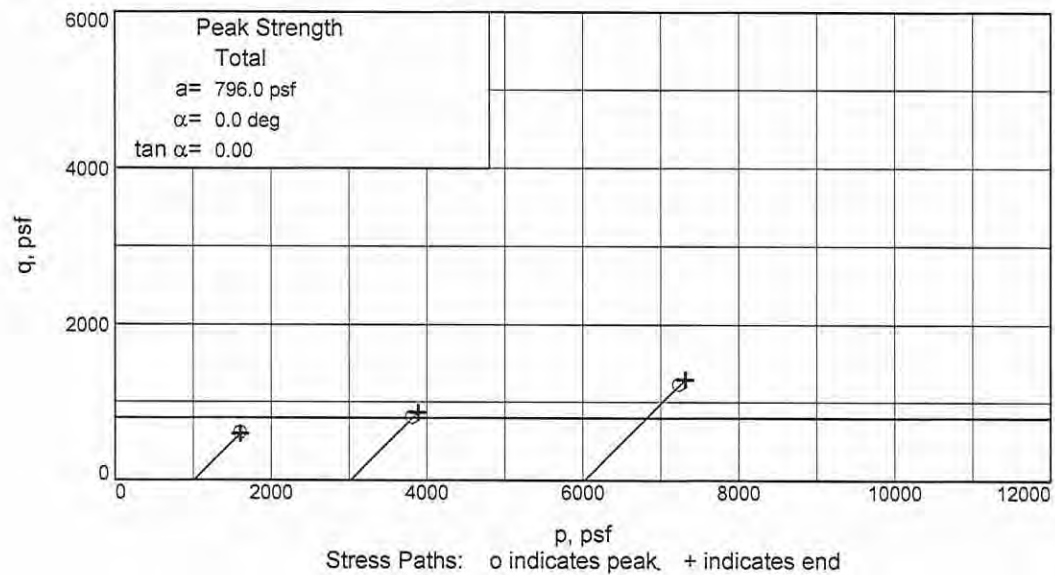
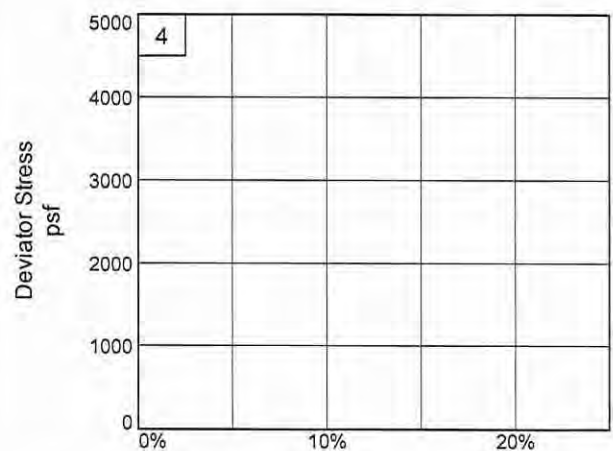
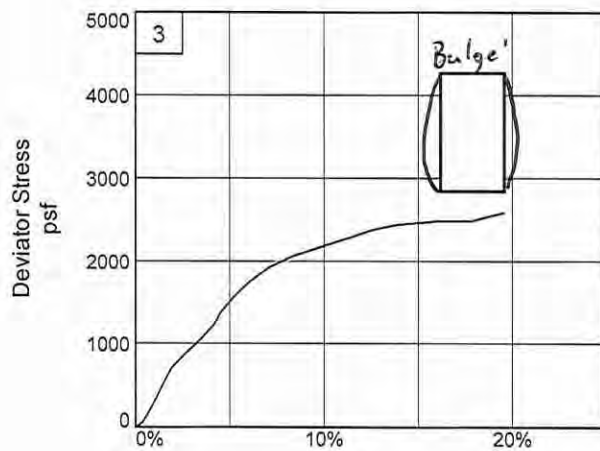
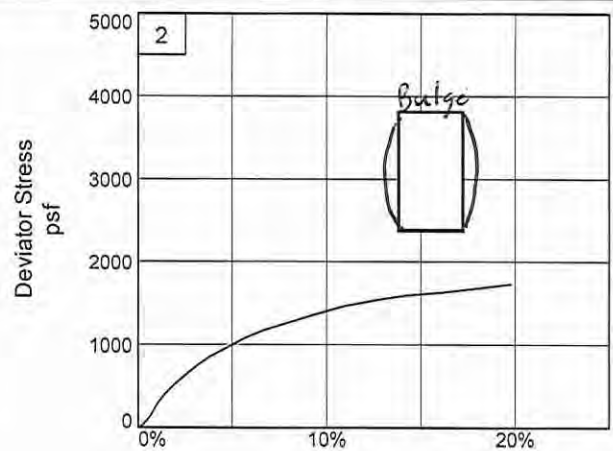
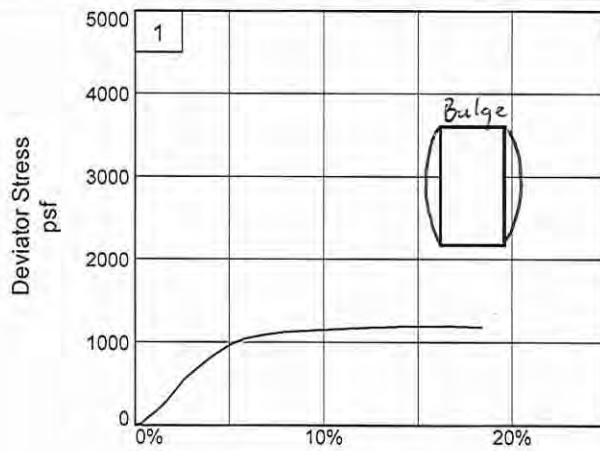


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Figure ASTM D2850

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-04

Depth: 13

Sample Number: 4B

Project No.: 24384

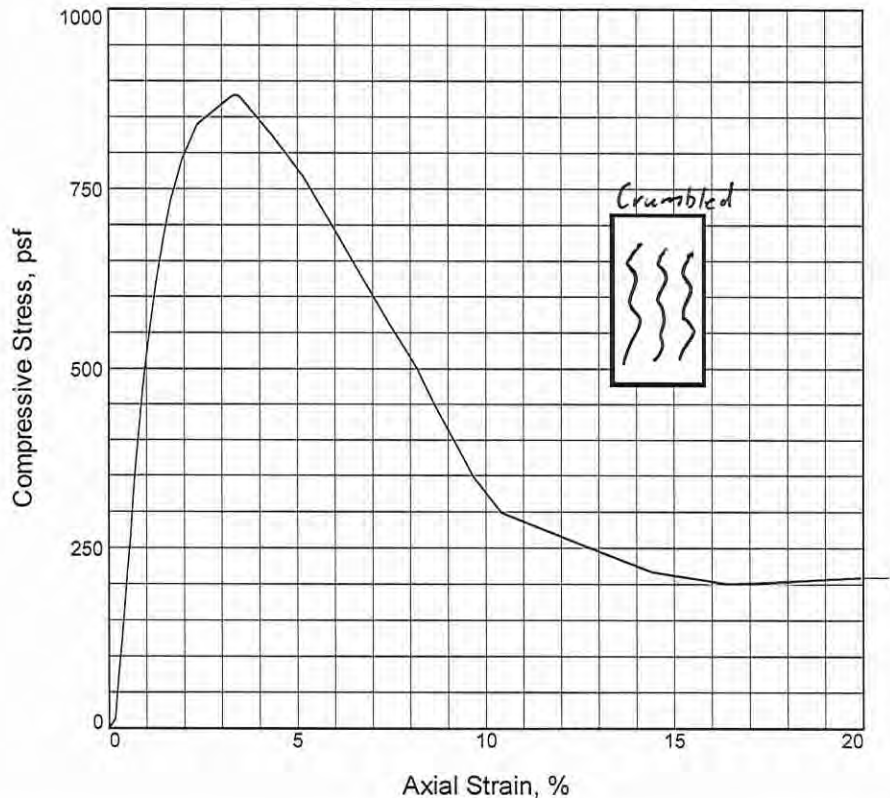
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	880.5		
Undrained shear strength, psf	440.3		
Failure strain, %	3.4		
Strain rate, %/min.	1.00		
Water content, %	70.3		
Wet density, pcf	95.1		
Dry density, pcf	55.9		
Saturation, %	93.7		
Void ratio	2.0390		
Specimen diameter, in.	1.413		
Specimen height, in.	2.777		
Height/diameter ratio	1.97		

Description: SO GR CHOA W/ RT

LL = 128	PL = 35	PI = 93	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 10/7/20

Remarks:

TORVANE = 0.200 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-04 **Depth:** 18

Sample Number: 5C

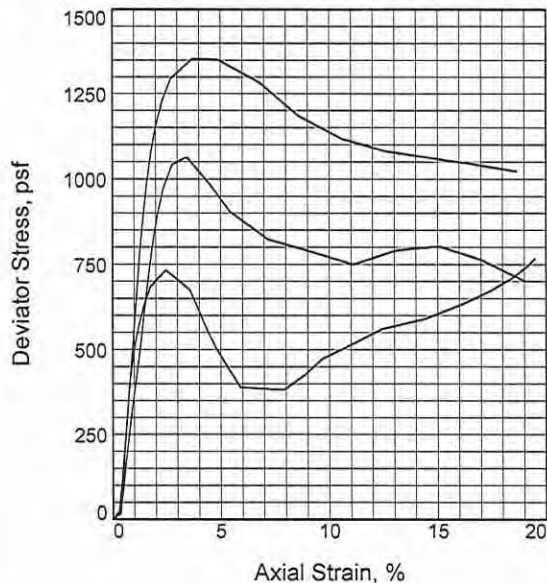
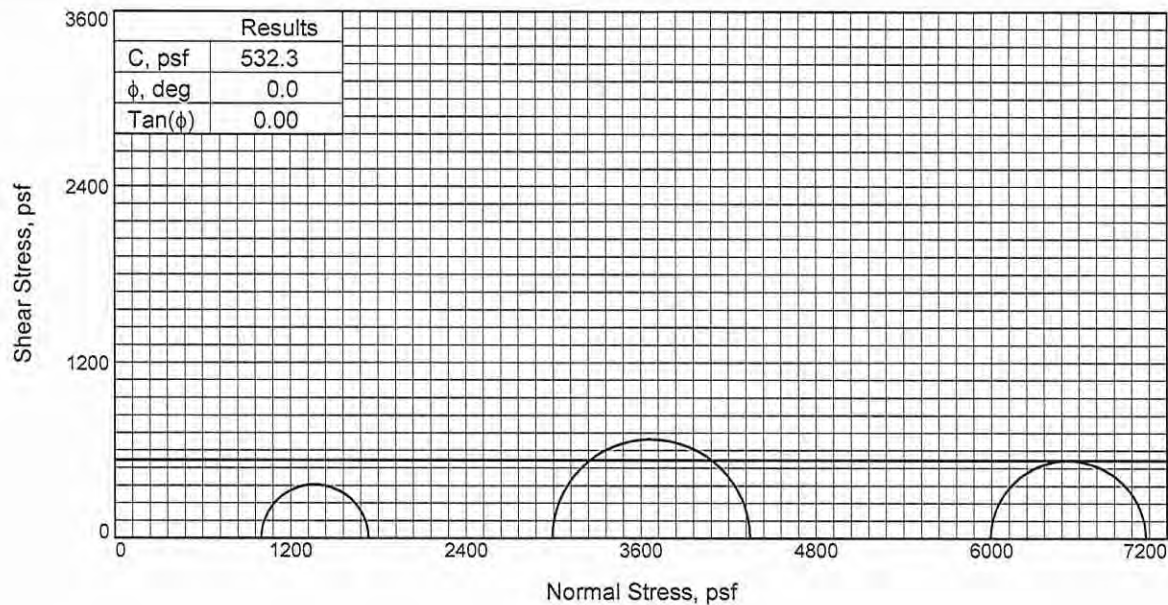
Figure ASTM D2166



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SINCE 1946

Tested By: CC

Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	101.6	101.0	100.3
	Dry Density, pcf	43.2	43.2	44.8
	Saturation, %	94.7	94.1	97.9
	Void Ratio	2.8974	2.8999	2.7663
	Diameter, in.	1.390	1.402	1.402
	Height, in.	2.760	2.760	2.803
At Test	Water Content, %	107.3	107.4	102.5
	Dry Density, pcf	43.2	43.2	44.8
	Saturation, %	100.0	100.0	100.0
	Void Ratio	2.8974	2.8999	2.7663
	Diameter, in.	1.390	1.402	1.402
	Height, in.	2.760	2.760	2.803
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.940	20.780	41.620
Fail. Stress, psf		733.0	1355.0	1061.9
Strain, %		2.5	3.7	3.5
Ult. Stress, psf		382.2	1062.7	750.2
Strain, %		7.9	14.6	11.1
σ_1 Failure, psf		1732.4	4347.3	7055.1
σ_3 Failure, psf		999.4	2992.3	5993.3

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR & BR CHOB

LL= 167 PL= 47 PI= 120

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.150 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-04 **Depth:** 25

Sample Number: 7B

Proj. No.: 24384

Date Sampled: 10/7/20

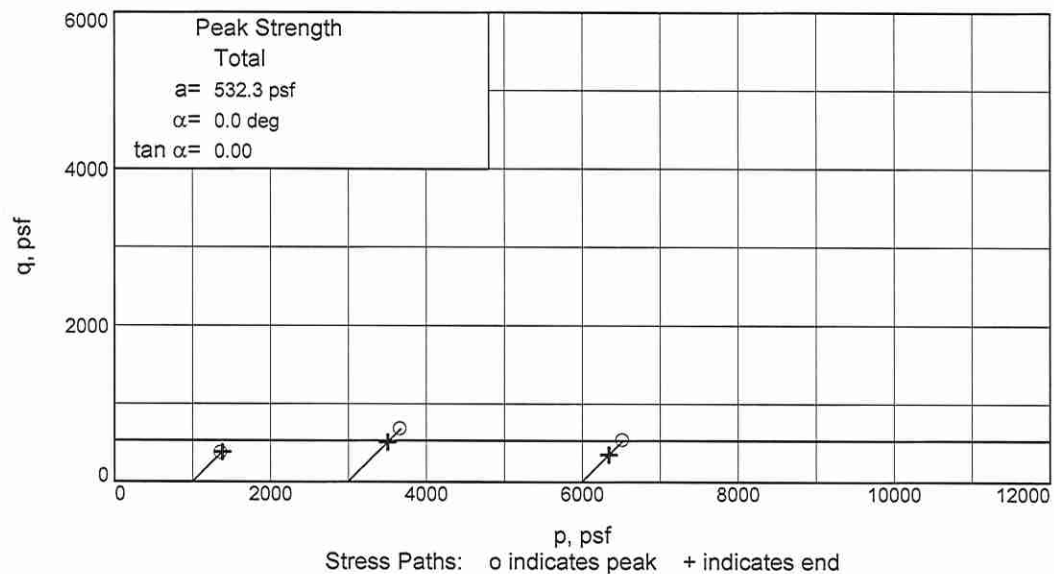
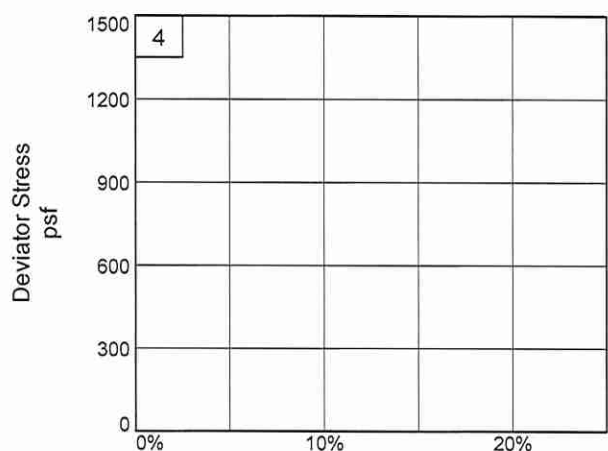
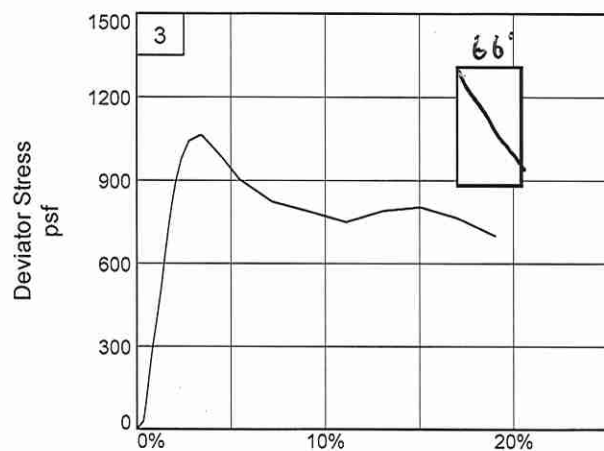
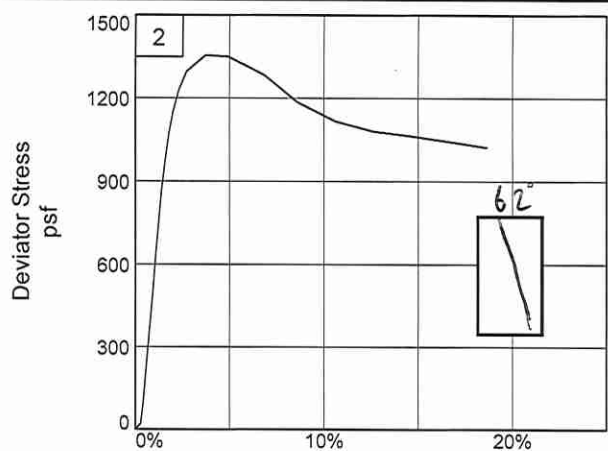
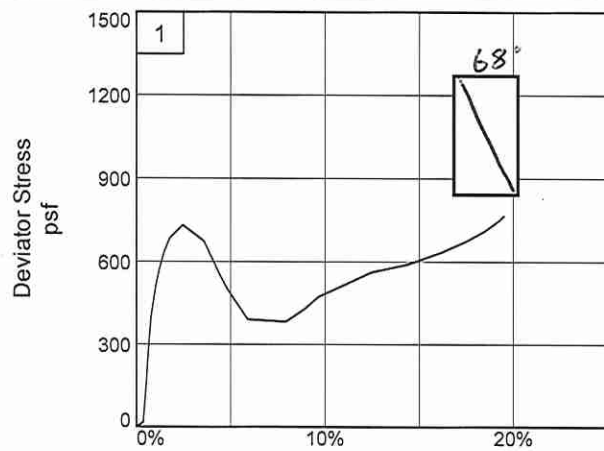
Figure ASTM D2850



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Tested By: CC

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-04

Depth: 25

Sample Number: 7B

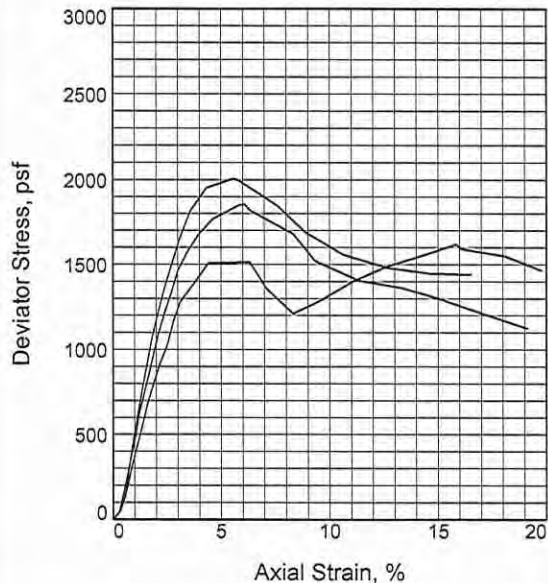
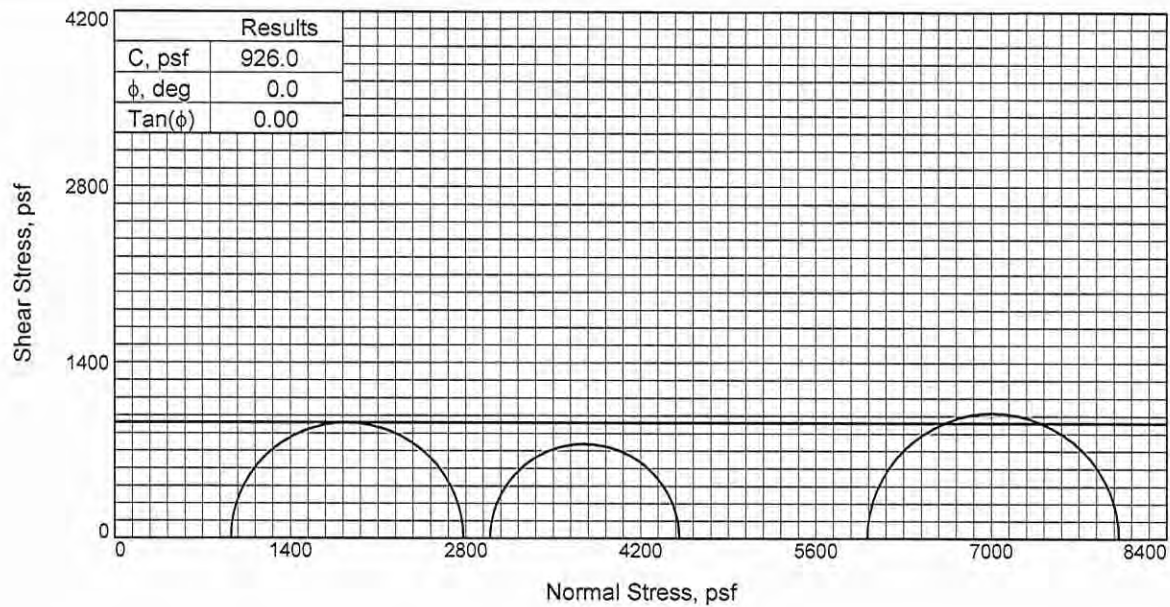
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: CC

Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	124.8	133.4	135.2
	Dry Density, pcf	36.4	35.2	34.5
	Saturation, %	93.4	95.5	94.3
	Void Ratio	3.5414	3.7030	3.8011
	Diameter, in.	1.404	1.402	1.388
	Height, in.	2.760	2.762	2.765
At Test	Water Content, %	133.6	139.7	143.4
	Dry Density, pcf	36.4	35.2	34.5
	Saturation, %	100.0	100.0	100.0
	Void Ratio	3.5414	3.7030	3.8011
	Diameter, in.	1.404	1.402	1.388
	Height, in.	2.760	2.762	2.765
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.430	20.800	41.740
Fail. Stress, psf		1855.3	1513.3	2007.9
Strain, %		6.1	6.3	5.6
Ult. Stress, psf		1300.9	1210.3	1446.5
Strain, %		15.0	8.3	14.7
σ_1 Failure, psf		2781.2	4508.5	8018.4
σ_3 Failure, psf		925.9	2995.2	6010.6

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M BR & GR CHOC

LL= 195 PL= 62 PI= 133

Assumed Specific Gravity= 2.65

Remarks: TORVANE = 0.200 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-04 **Depth:** 26

Sample Number: 7C

Proj. No.: 24384

Date Sampled: 10/7/20

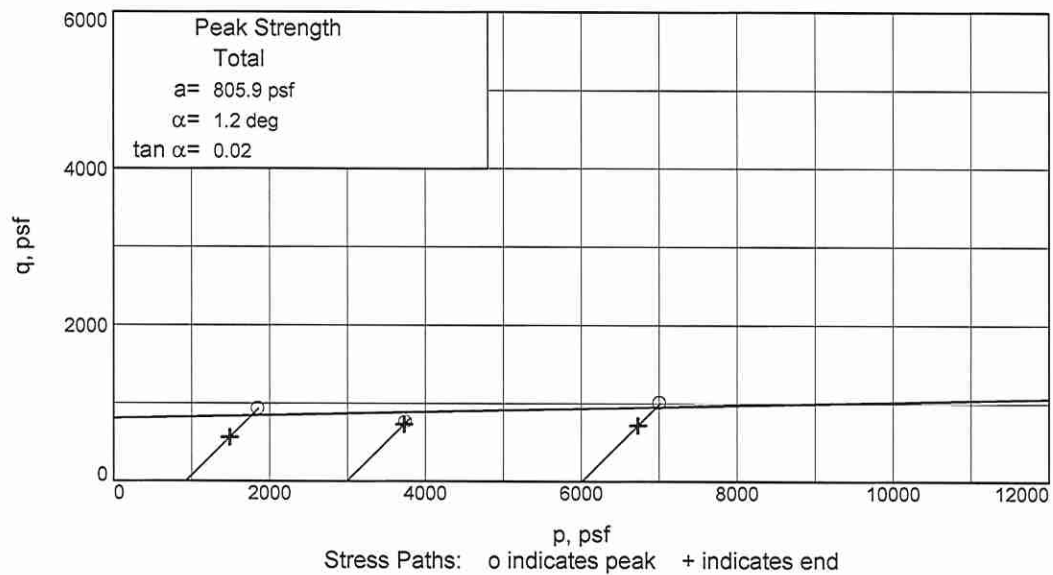
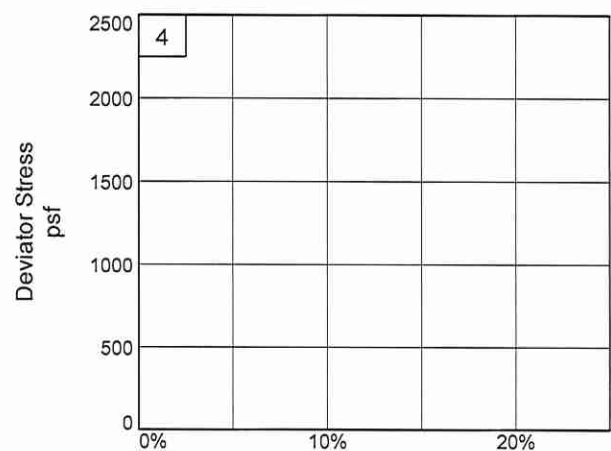
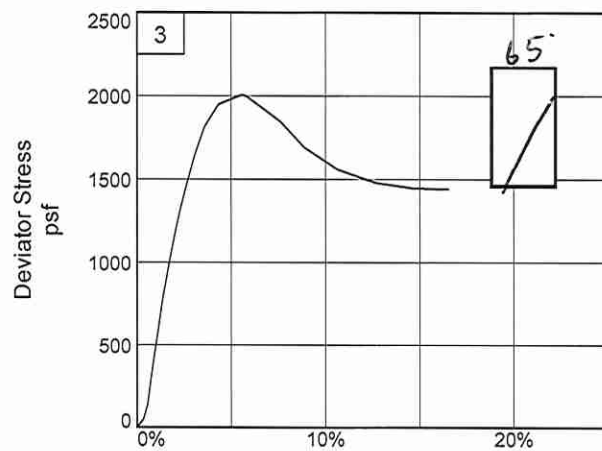
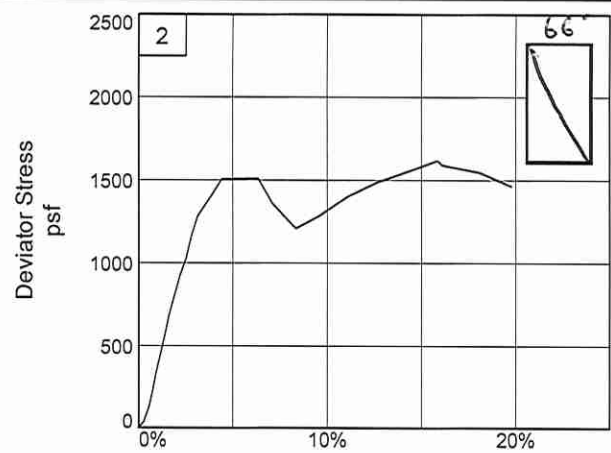
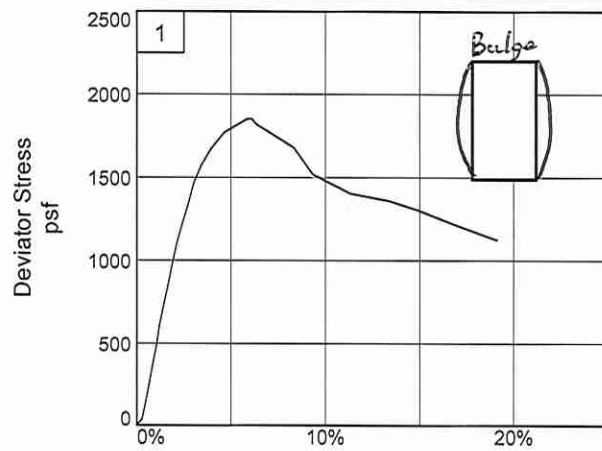
Figure ASTM D2850



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Tested By: CC

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-04

Depth: 26

Sample Number: 7C

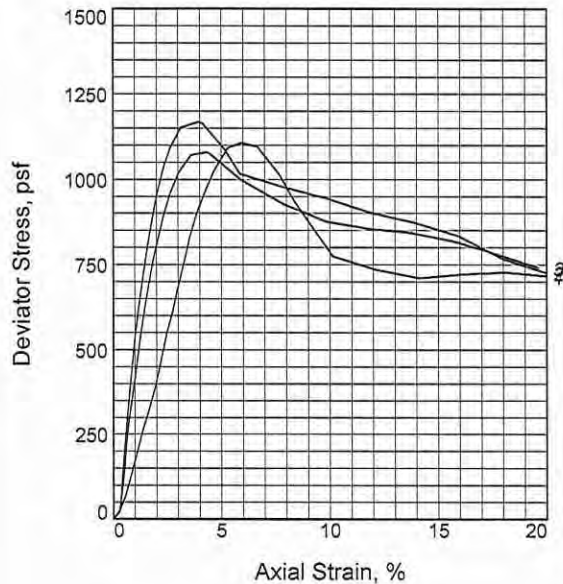
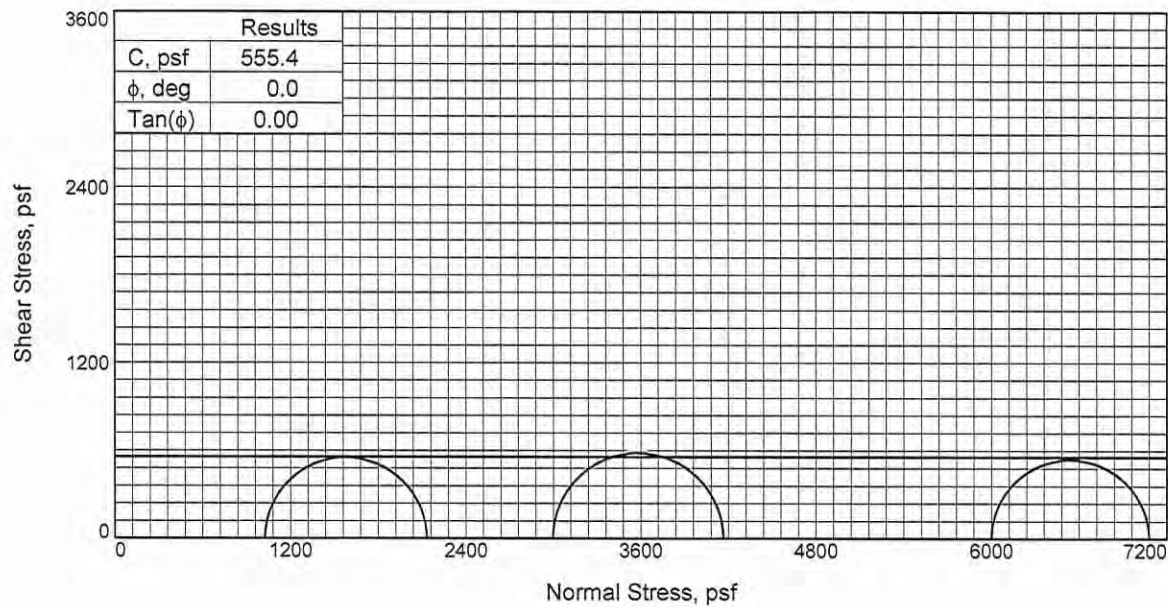
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: CC

Checked By: RR



Specimen No.	1	2	3
Initial			
Water Content, %	69.6	73.8	75.8
Dry Density, pcf	58.5	55.9	55.4
Saturation, %	99.5	98.5	99.8
Void Ratio	1.9014	2.0387	2.0675
Diameter, in.	1.388	1.401	1.401
Height, in.	2.778	2.746	2.815
At Test			
Water Content, %	69.9	75.0	76.0
Dry Density, pcf	58.5	55.9	55.4
Saturation, %	100.0	100.0	100.0
Void Ratio	1.9014	2.0387	2.0675
Diameter, in.	1.388	1.401	1.401
Height, in.	2.778	2.746	2.815
Strain rate, %/min.	1.00	1.00	1.00
Back Pressure, psi	0.000	0.000	0.000
Cell Pressure, psi	7.120	20.810	41.660
Fail. Stress, psf	1106.8	1168.0	1079.5
Strain, %	5.9	3.9	4.3
Ult. Stress, psf	710.0	872.7	842.8
Strain, %	14.1	13.9	13.8
σ_1 Failure, psf	2132.1	4164.6	7078.5
σ_3 Failure, psf	1025.3	2996.6	5999.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR CH4 W/ ARS & LNS ML, RT

LL= 99

PL= 29

PI= 70

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.200 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-04

Depth: 30

Sample Number: 8C

Proj. No.: 24384

Date Sampled: 10/7/20

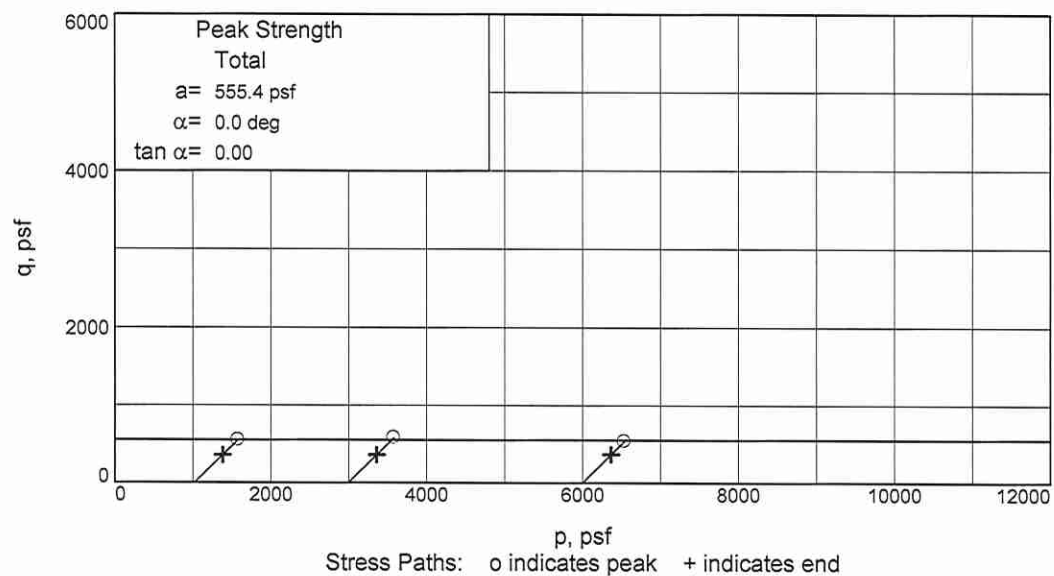
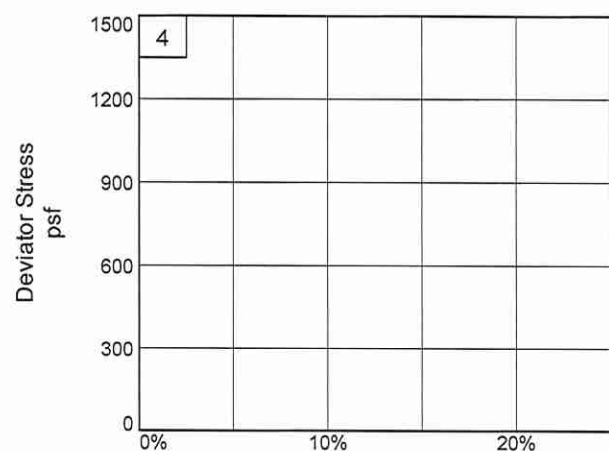
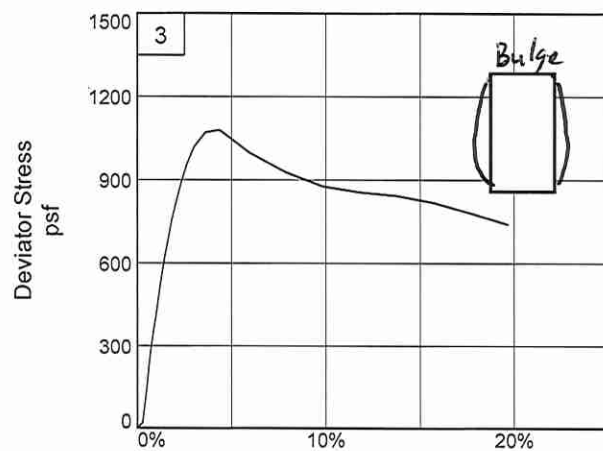
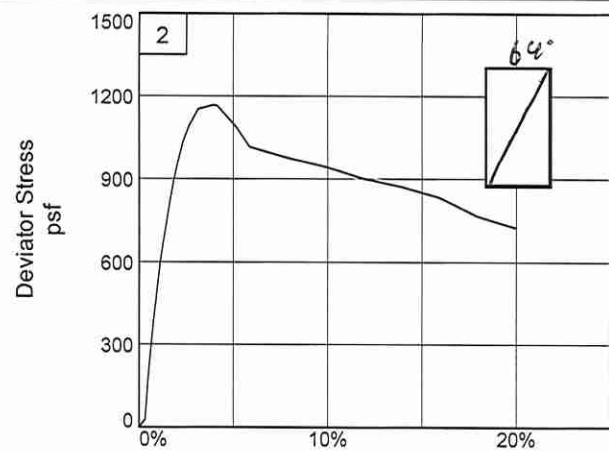
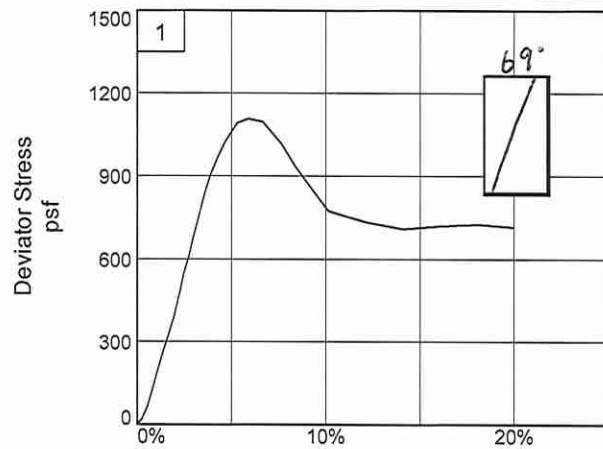
Figure ASTM D2850



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SINCE 1946

Tested By: CC

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-04

Depth: 30

Sample Number: 8C

Project No.: 24384

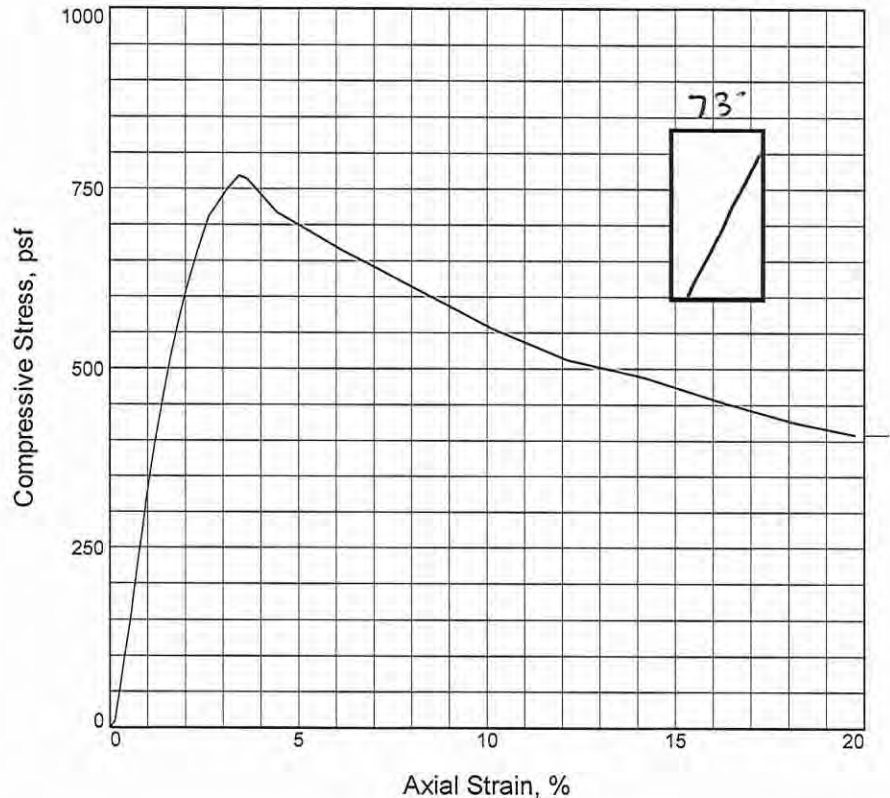
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: CC

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	768.2		
Undrained shear strength, psf	384.1		
Failure strain, %	3.4		
Strain rate, %/min.	1.00		
Water content, %	63.1		
Wet density, pcf	98.0		
Dry density, pcf	60.1		
Saturation, %	94.1		
Void ratio	1.8256		
Specimen diameter, in.	1.411		
Specimen height, in.	2.765		
Height/diameter ratio	1.96		

Description: SO GR CH4 W/ ARS & LNS SP, RT

LL = 83	PL = 23	PI = 60	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 10/7/20

Remarks:

TORVANE = 0.200 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-04 **Depth:** 33

Sample Number: 9B

Figure ASTM D2166

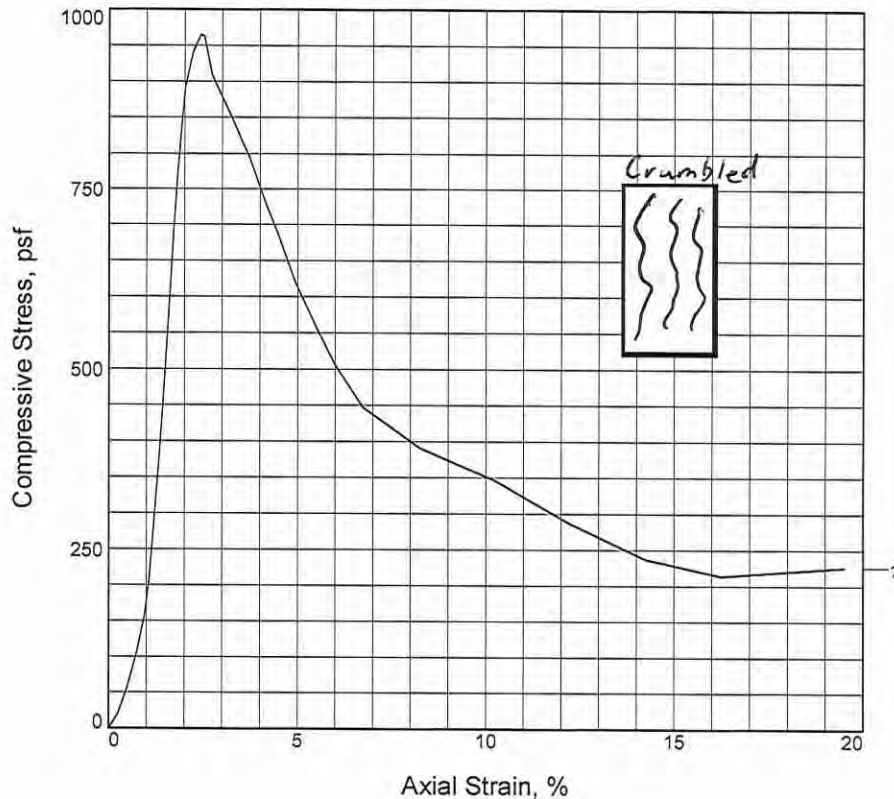


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Tested By: CC

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	965.2		
Undrained shear strength, psf	482.6		
Failure strain, %	2.4		
Strain rate, %/min.	1.00		
Water content, %	20.7		
Wet density, pcf	128.6		
Dry density, pcf	106.6		
Saturation, %	94.7		
Void ratio	0.5935		
Specimen diameter, in.	1.403		
Specimen height, in.	2.753		
Height/diameter ratio	1.96		

Description: SO GR & T CH2 W/ ARS ML, SL

LL = 52	PL = 20	PI = 32	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 10/7/20

Remarks:

TORVANE = 0.750 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-04 **Depth:** 38

Sample Number: 10C

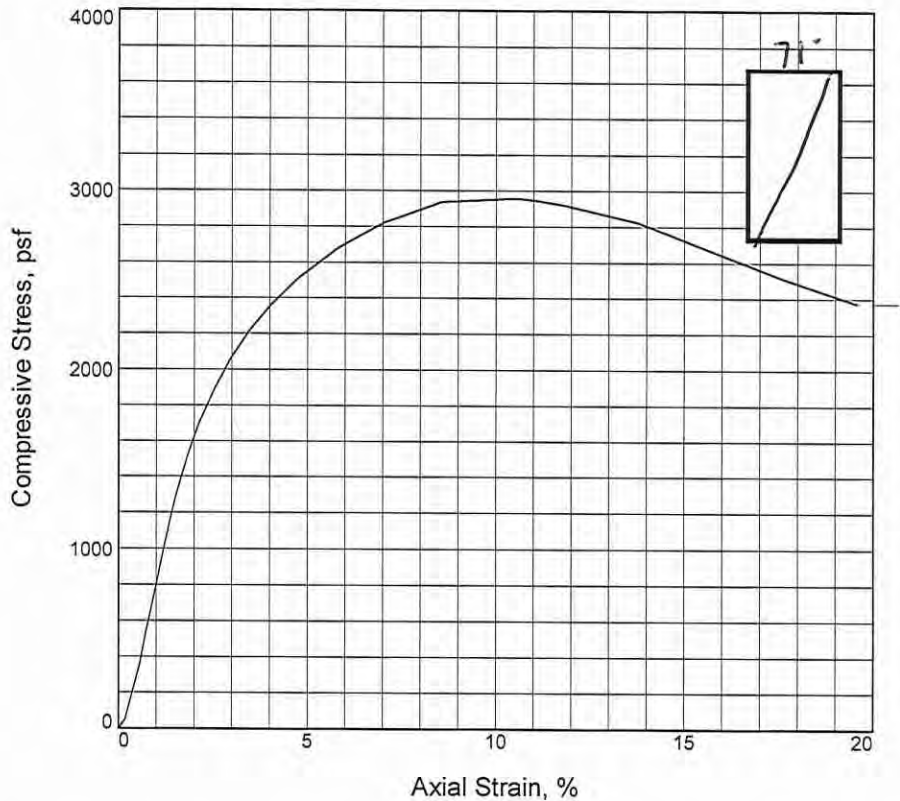
Figure ASTM D2166



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Tested By: CC Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	2957.8			
Undrained shear strength, psf	1478.9			
Failure strain, %	10.6			
Strain rate, %/min.	1.00			
Water content, %	28.8			
Wet density, pcf	119.1			
Dry density, pcf	92.5			
Saturation, %	93.6			
Void ratio	0.8365			
Specimen diameter, in.	1.408			
Specimen height, in.	2.742			
Height/diameter ratio	1.95			

Description: ST LGR & T CH3 W/ ARS ML, CC, SL

LL = 65	PL = 21	PI = 44	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 10/7/20

Remarks:

TORVANE = 1.000 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-04 **Depth:** 42

Sample Number: 11C

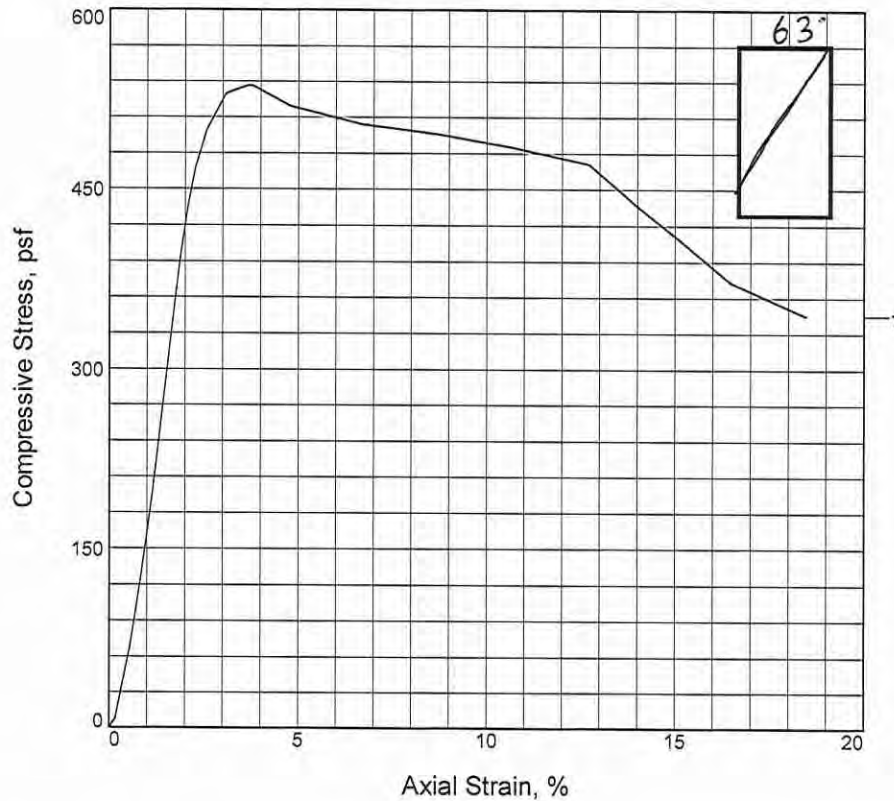
Figure ASTM D2166



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Tested By: CC Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	536.9			
Undrained shear strength, psf	268.4			
Failure strain, %	3.7			
Strain rate, %/min.	1.00			
Water content, %	32.9			
Wet density, pcf	118.7			
Dry density, pcf	89.3			
Saturation, %	100.0			
Void ratio	0.8869			
Specimen diameter, in.	1.400			
Specimen height, in.	2.782			
Height/diameter ratio	1.99			

Description: SO GR & T CL6

LL = 41	PL = 17	PI = 24	Assumed GS= 2.70	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 10/7/20

Remarks:

TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-04 **Depth:** 46

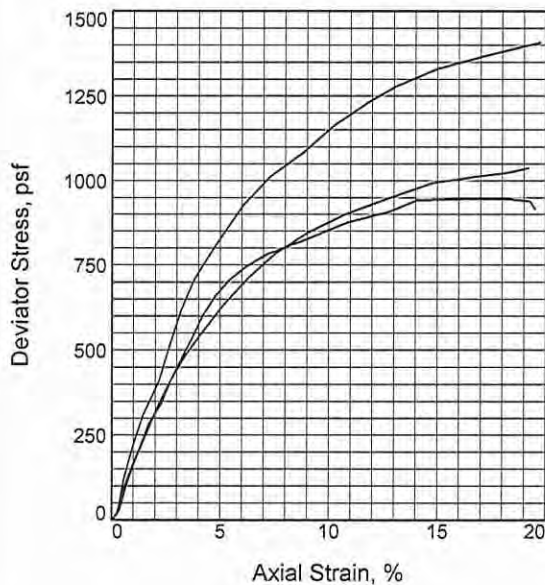
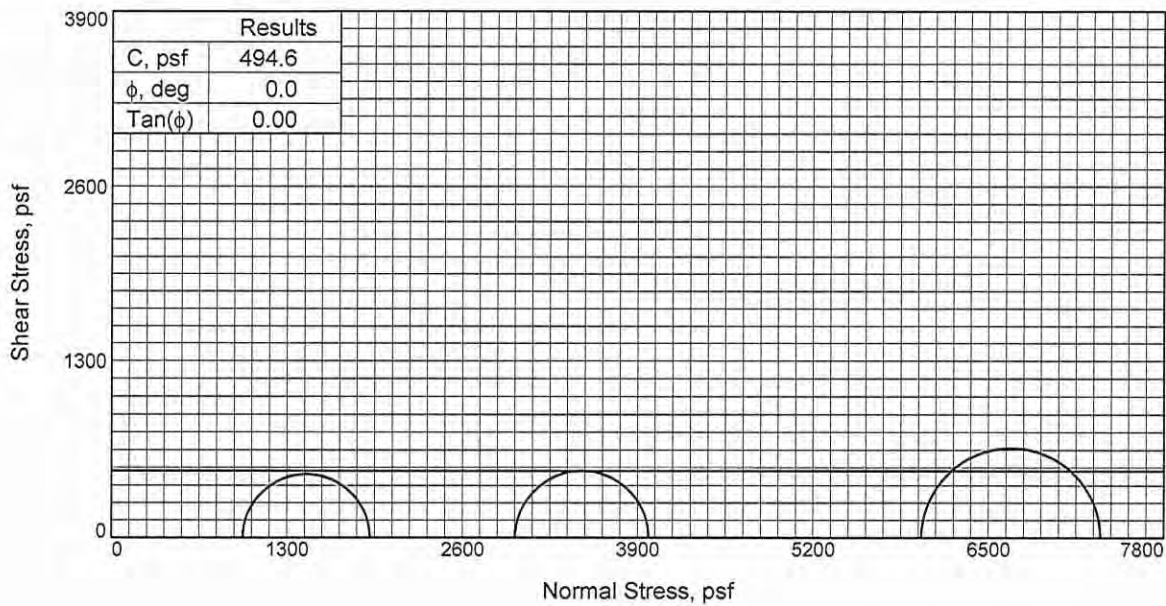
Sample Number: 12C

Figure ASTM D2166



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SINCE 1966

Tested By: CC Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	32.8	31.7	31.9
	Dry Density, pcf	89.4	90.8	90.3
	Saturation, %	100.0	100.0	99.4
	Void Ratio	0.8861	0.8566	0.8666
	Diameter, in.	1.407	1.414	1.406
	Height, in.	2.780	2.775	2.753
At Test	Water Content, %	32.8	31.7	32.1
	Dry Density, pcf	89.4	90.8	90.3
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.8861	0.8566	0.8666
	Diameter, in.	1.407	1.414	1.406
	Height, in.	2.780	2.775	2.753
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.750	20.760	41.670
Fail. Stress, psf		942.3	992.4	1329.8
Strain, %		14.1	14.7	15.0
Ult. Stress, psf		942.3	992.4	1329.8
Strain, %		14.1	14.7	15.0
σ_1 Failure, psf		1914.3	3981.8	7330.3
σ_3 Failure, psf		972.0	2989.4	6000.5

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO T & GR CL4 W/ CC

LL= 41 PL= 20 PI= 21

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-05 **Depth:** 5

Sample Number: 2B

Proj. No.: 24384

Date Sampled: 9/14/20

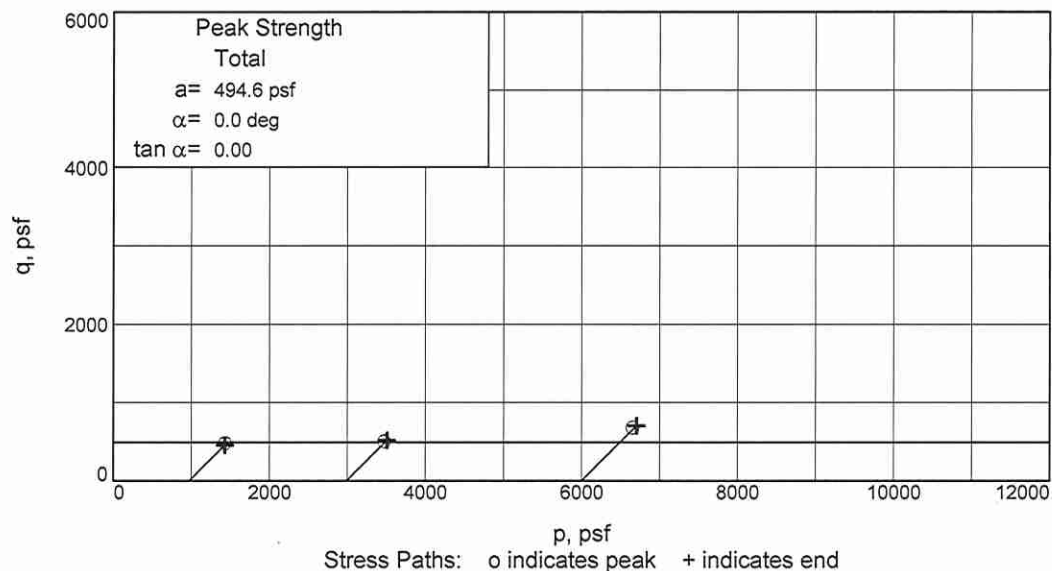
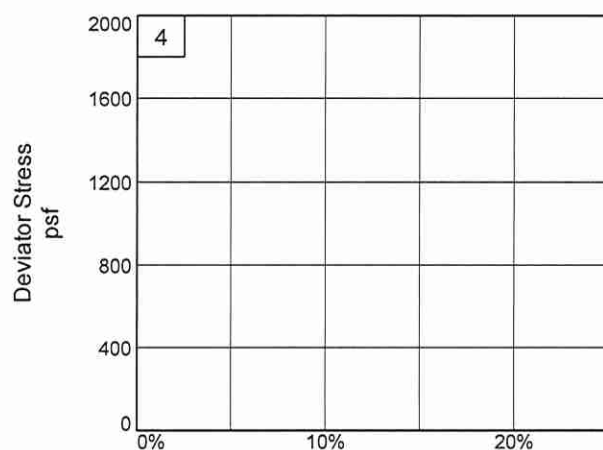
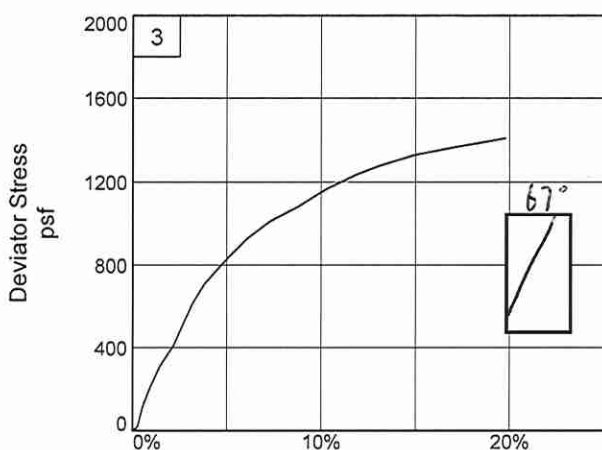
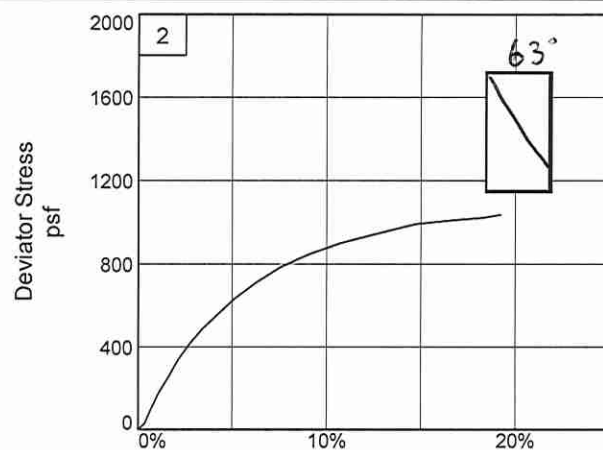
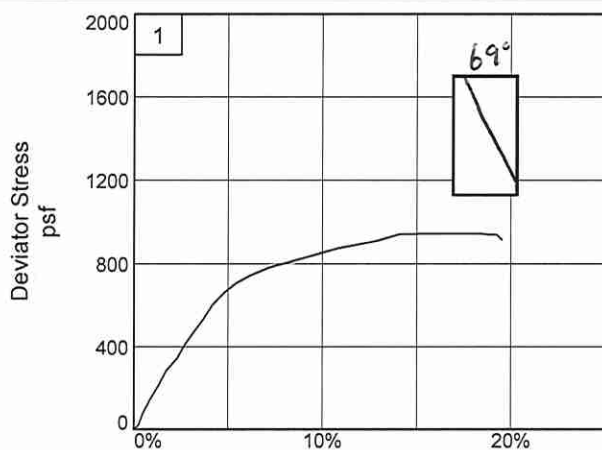


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Figure ASTM D2850

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-05

Depth: 5

Sample Number: 2B

Project No.: 24384

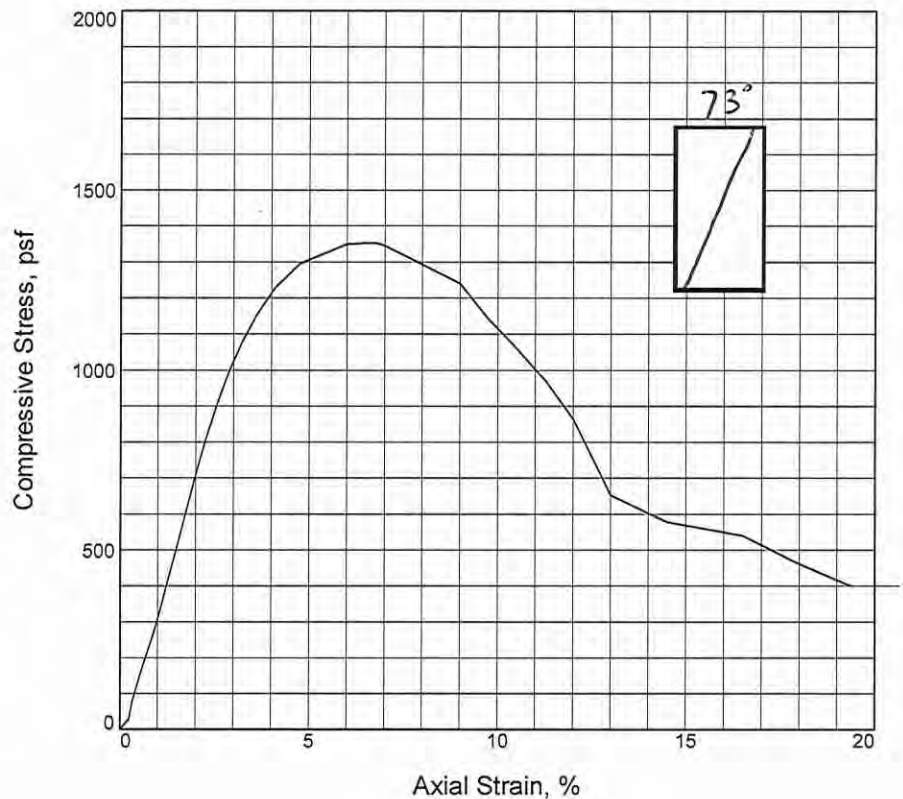
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	1352.9		
Undrained shear strength, psf	676.5		
Failure strain, %	6.7		
Strain rate, %/min.	0.50		
Water content, %	47.8		
Wet density, pcf	107.3		
Dry density, pcf	72.6		
Saturation, %	97.1		
Void ratio	1.3391		
Specimen diameter, in.	1.409		
Specimen height, in.	2.755		
Height/diameter ratio	1.96		

Description: M T & GR CH4 W/ ARS ML, CC

LL = 80	PL = 33	PI = 47	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 9/17/20

Remarks:

TORVANE = 0.750 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-05 **Depth:** 10

Sample Number: 3C

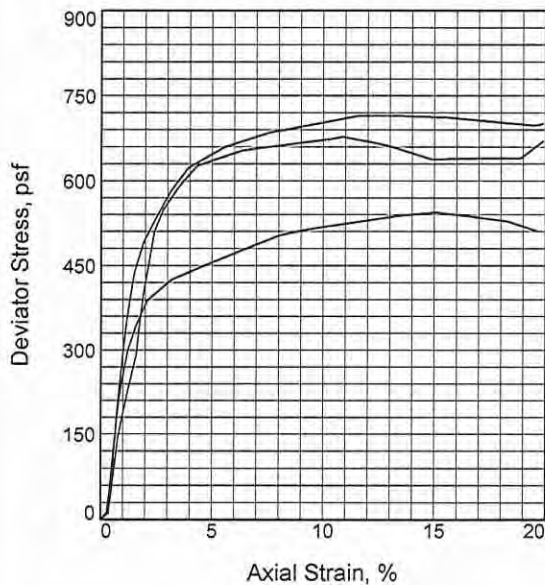
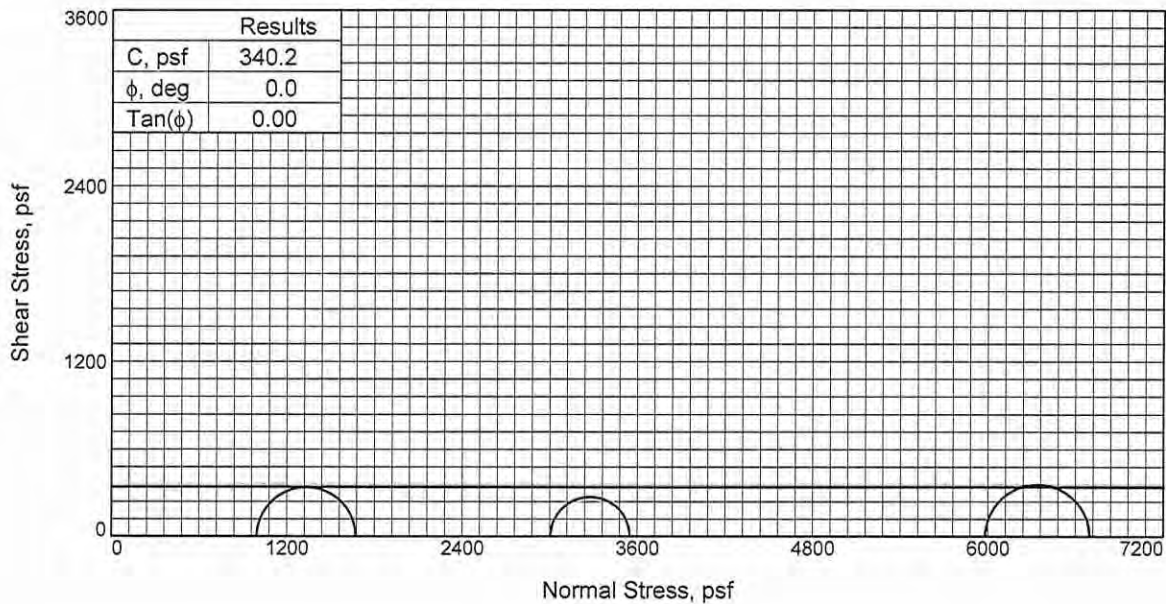
Figure ASTM D2166



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Tested By: CC

Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	76.3	75.3	77.0
	Dry Density, pcf	54.4	55.0	53.6
	Saturation, %	97.8	98.1	96.6
	Void Ratio	2.1217	2.0877	2.1678
	Diameter, in.	1.423	1.413	1.414
	Height, in.	2.753	2.754	2.765
At Test	Water Content, %	78.0	76.8	79.7
	Dry Density, pcf	54.4	55.0	53.6
	Saturation, %	100.0	100.0	100.0
	Void Ratio	2.1217	2.0877	2.1678
	Diameter, in.	1.423	1.413	1.414
	Height, in.	2.753	2.754	2.765
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.900	20.860	41.530
Fail. Stress, psf		677.8	544.2	715.3
Strain, %		10.9	15.0	11.6
Ult. Stress, psf		637.9	544.2	714.3
Strain, %		14.9	15.0	13.6
σ_1 Failure, psf		1671.4	3548.0	6695.6
σ_3 Failure, psf		993.6	3003.8	5980.3

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR & T CHOA

LL= 117 PL= 35 PI= 82

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-05 **Depth:** 14

Sample Number: 4C

Proj. No.: 24384

Date Sampled: 9/14/20

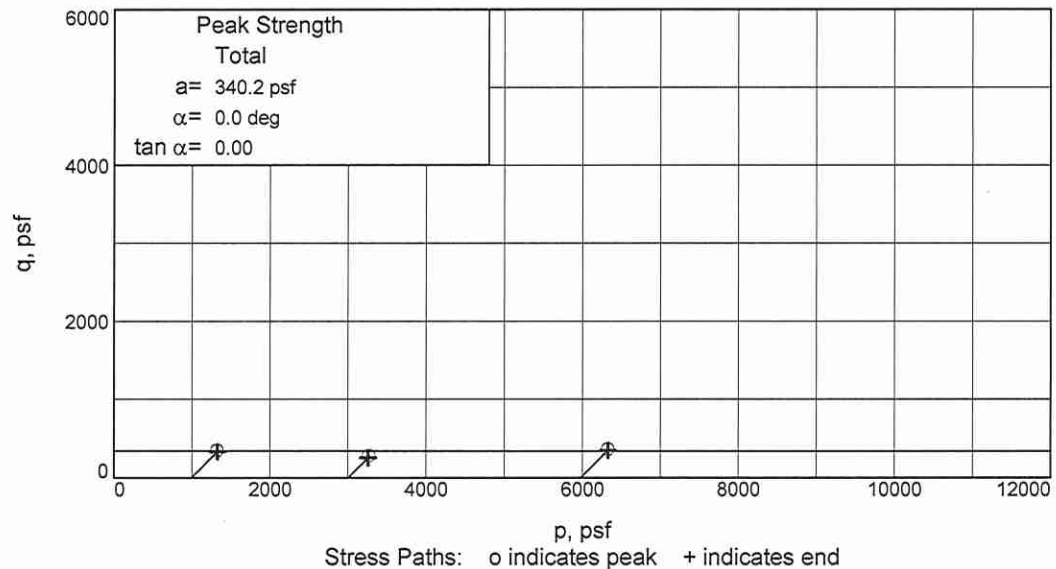
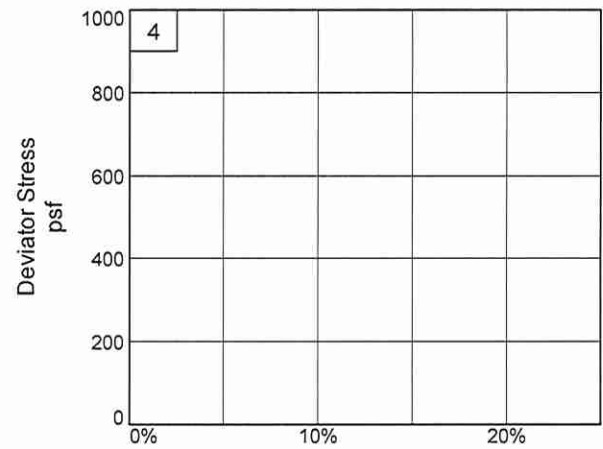
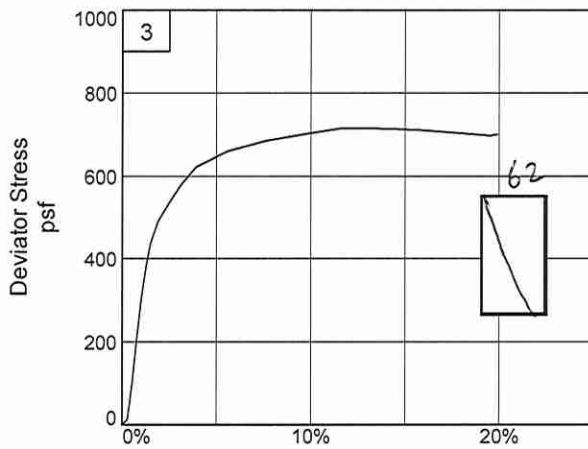
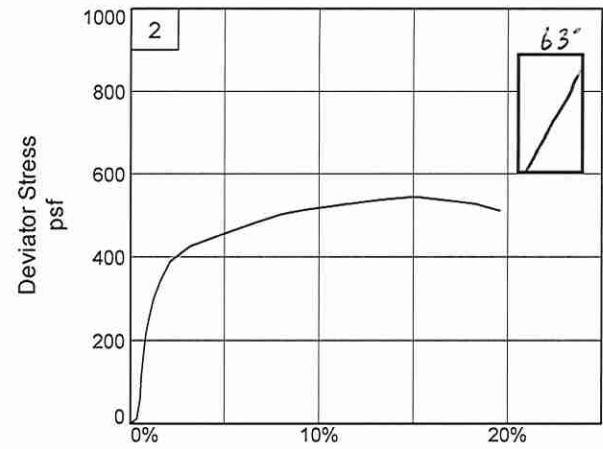
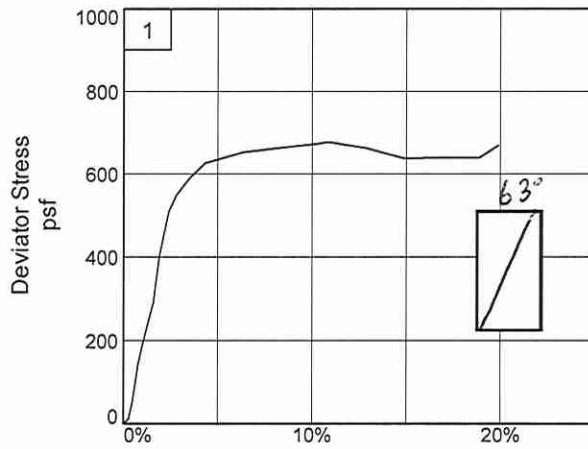


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SINCE 1946

Figure ASTM D2850

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-05

Depth: 14

Sample Number: 4C

Project No.: 24384

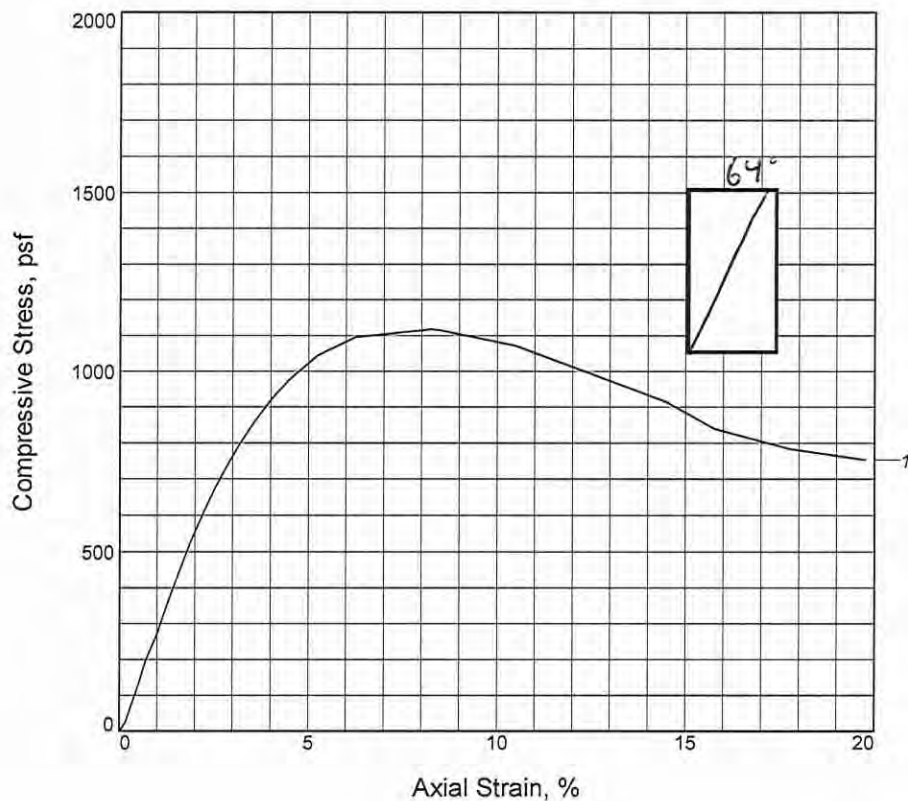
Figure ASTM D2850

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Tested By: DE

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	1118.7			
Undrained shear strength, psf	559.3			
Failure strain, %	8.2			
Strain rate, %/min.	1.00			
Water content, %	114.3			
Wet density, pcf	88.4			
Dry density, pcf	41.3			
Saturation, %	100.0			
Void ratio	3.0861			
Specimen diameter, in.	1.394			
Specimen height, in.	2.760			
Height/diameter ratio	1.98			

Description: M GR & DGR CHOA

LL = 137 PL = 37 PI = 100 Assumed GS= 2.70 Type: UNDISTURBED

Project No.: 24384

Date Sampled: 9/14/20

Remarks:

TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-05 **Depth:** 19

Sample Number: 5D

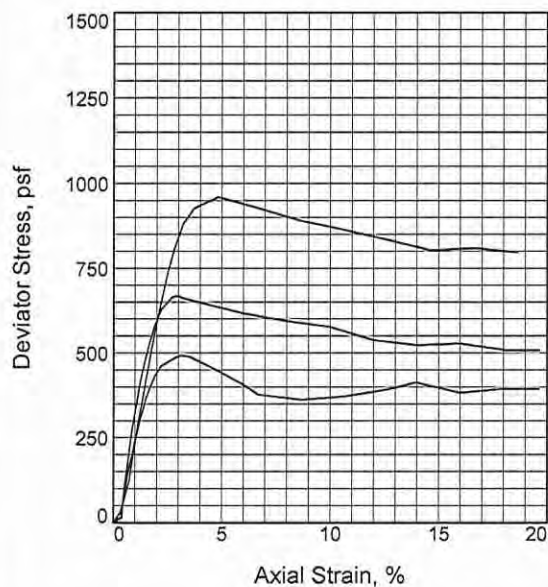
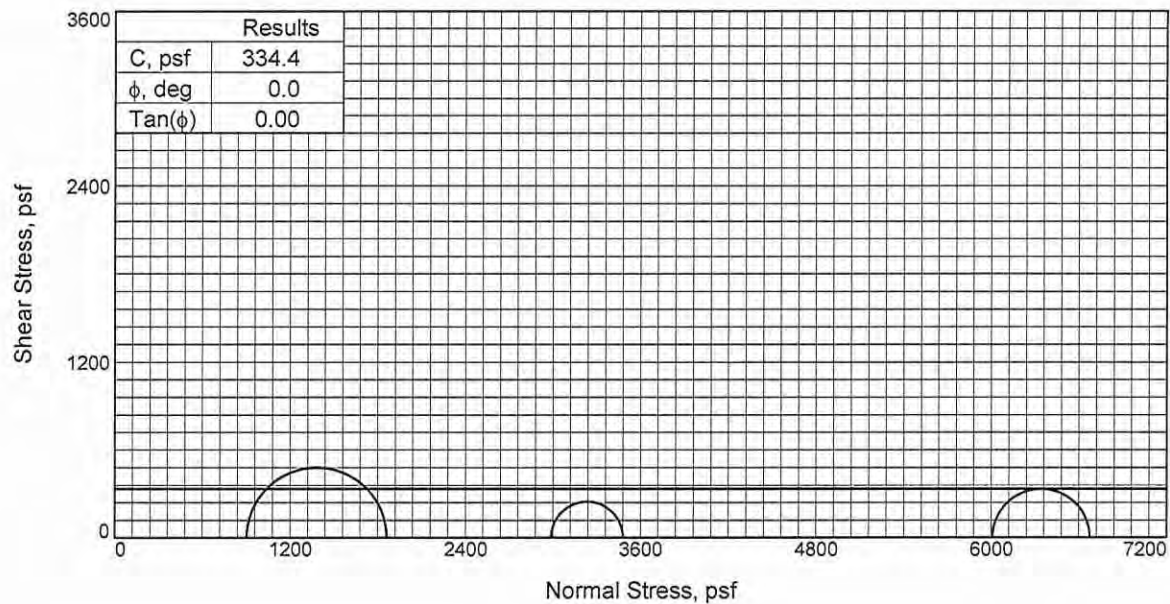
Figure ASTM D2166



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SINCE 1946

Tested By: DE

Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	51.0	52.9	55.6
	Dry Density, pcf	70.9	69.6	65.9
	Saturation, %	99.6	99.9	95.8
	Void Ratio	1.3934	1.4399	1.5772
	Diameter, in.	1.399	1.397	1.414
	Height, in.	2.737	2.751	2.763
At Test	Water Content, %	51.2	52.9	58.0
	Dry Density, pcf	70.9	69.6	65.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.3934	1.4399	1.5772
	Diameter, in.	1.399	1.397	1.414
	Height, in.	2.737	2.751	2.763
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.260	20.740	41.710
Fail. Stress, psf		960.1	493.1	668.0
Strain, %		4.8	3.1	3.0
Ult. Stress, psf		802.7	362.0	523.4
Strain, %		14.6	8.7	14.0
σ_1 Failure, psf		1861.5	3479.6	6674.3
σ_3 Failure, psf		901.4	2986.6	6006.2

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CH3 W/ ARS & LNS ML

LL= 58

PL= 22

PI= 36

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-05

Depth: 25

Sample Number: 7B

Proj. No.: 24384

Date Sampled: 9/14/20

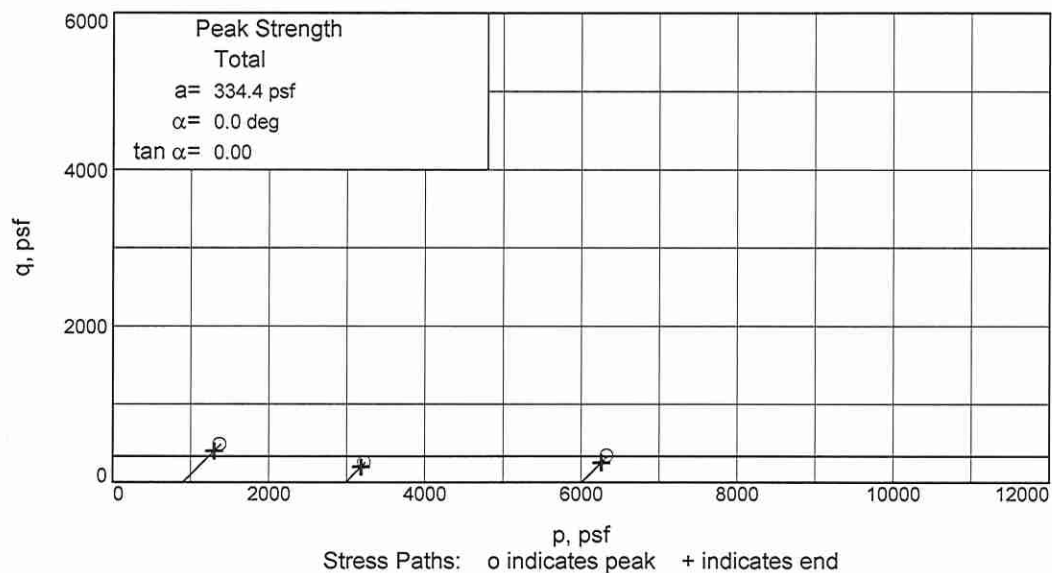
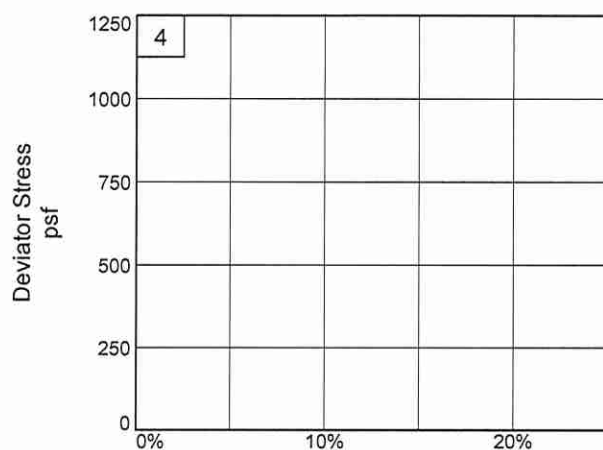
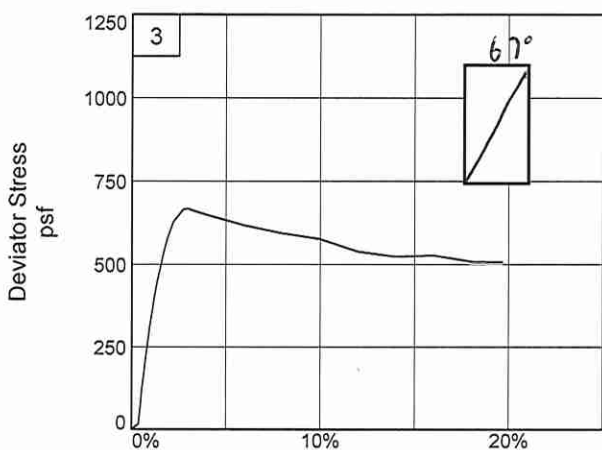
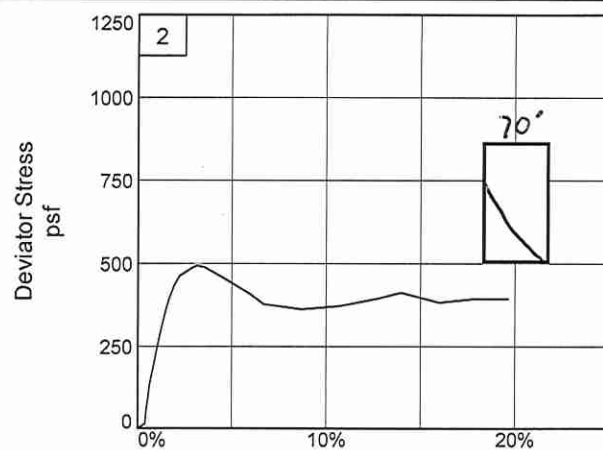
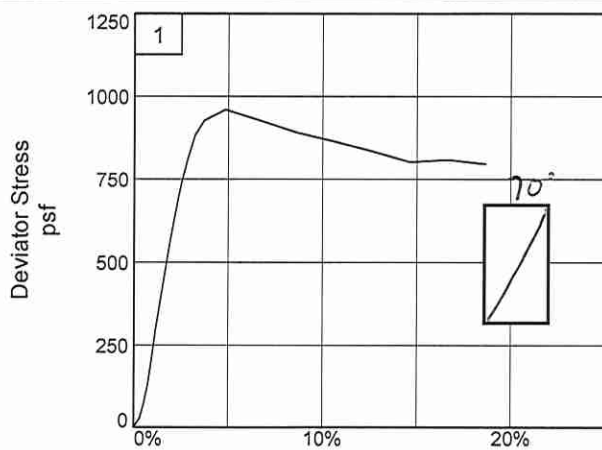


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Figure ASTM D2850

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-05

Depth: 25

Sample Number: 7B

Project No.: 24384

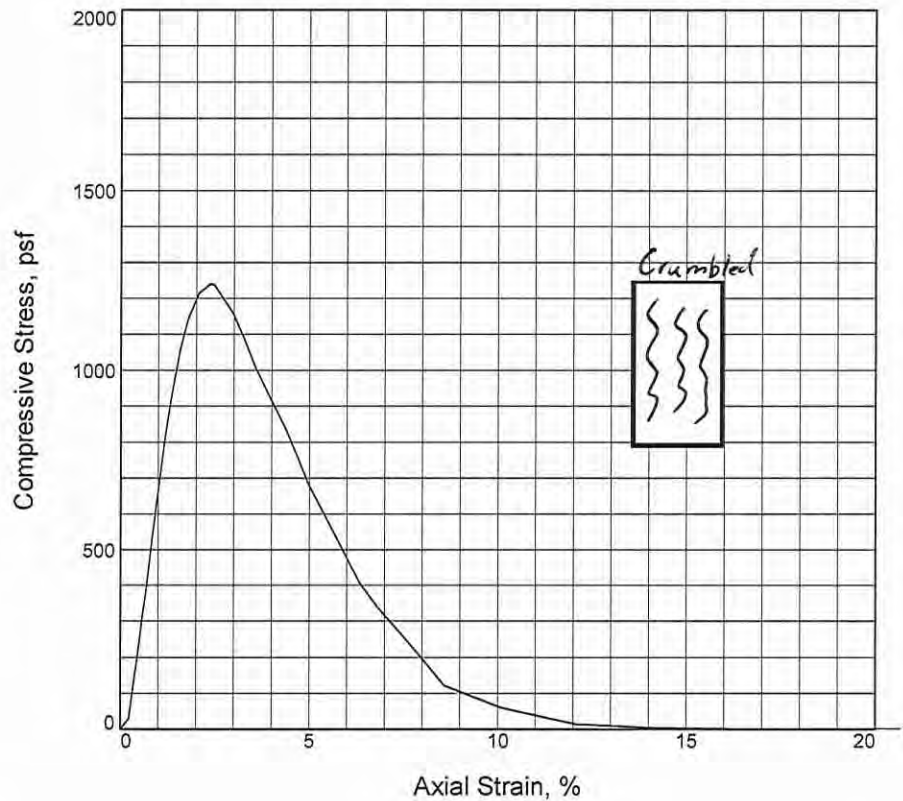
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	1240.2		
Undrained shear strength, psf	620.1		
Failure strain, %	2.4		
Strain rate, %/min.	0.50		
Water content, %	34.9		
Wet density, pcf	111.7		
Dry density, pcf	82.8		
Saturation, %	90.4		
Void ratio	1.0508		
Specimen diameter, in.	1.390		
Specimen height, in.	2.755		
Height/diameter ratio	1.98		

Description: M GR & BR CH3 W/ ARS ML, SL

LL = 79	PL = 26	PI = 53	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 9/17/20

Remarks:

TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-05

Depth: 30

Sample Number: 8C

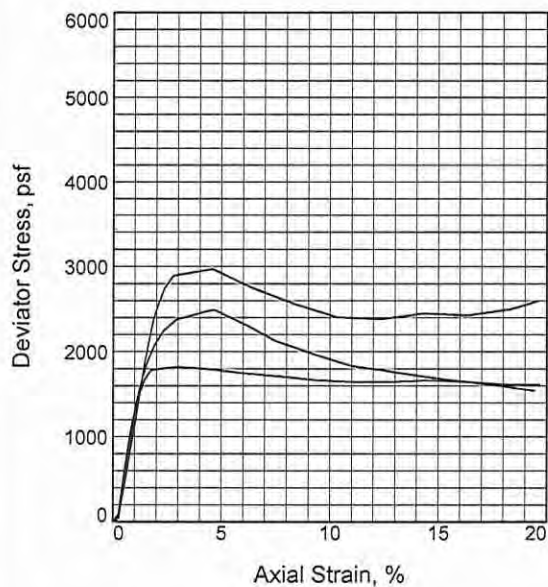
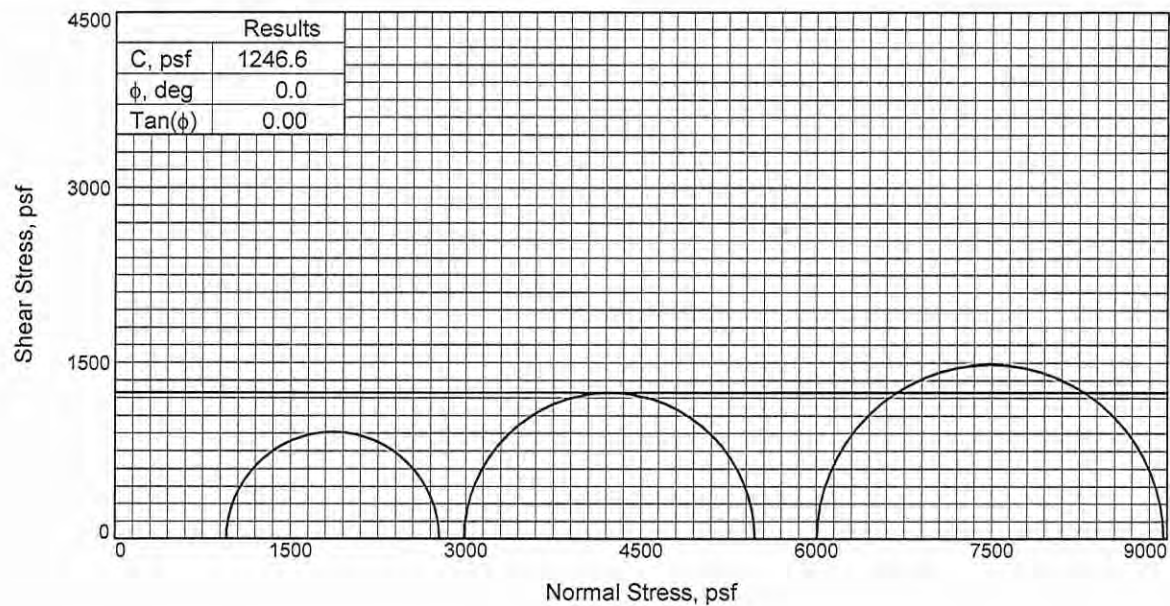
Figure ASTM D2166



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Tested By: CC

Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	37.2	37.2	35.6
	Dry Density, pcf	80.3	82.0	83.0
	Saturation, %	90.7	94.5	92.5
	Void Ratio	1.1150	1.0703	1.0466
	Diameter, in.	1.404	1.405	1.412
	Height, in.	2.763	2.981	2.764
At Test	Water Content, %	41.0	39.3	38.5
	Dry Density, pcf	80.3	82.0	83.0
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.1150	1.0703	1.0466
	Diameter, in.	1.404	1.405	1.412
	Height, in.	2.763	2.981	2.764
Strain rate, %/min.		0.30	0.30	0.30
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.600	20.730	41.680
Fail. Stress, psf		1824.3	2487.9	2968.4
Strain, %		2.9	4.5	4.6
Ult. Stress, psf		1639.4	1703.2	2382.7
Strain, %		11.3	14.5	12.3
σ_1 Failure, psf		2774.7	5473.0	8970.4
σ_3 Failure, psf		950.4	2985.1	6001.9

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR & T CH4 W/ ARS & LNS ML

LL= 82 PL= 25 PI= 57

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-05 **Depth:** 41

Sample Number: 11B

Proj. No.: 24384

Date Sampled: 9/14/20

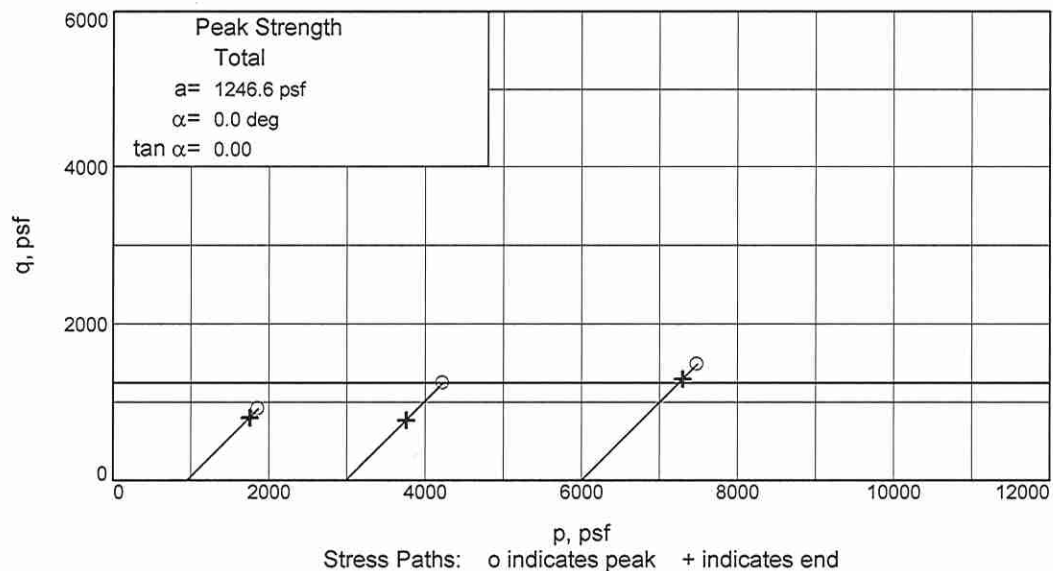
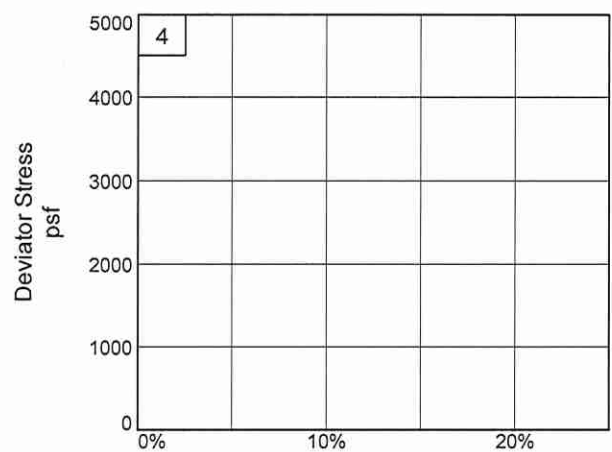
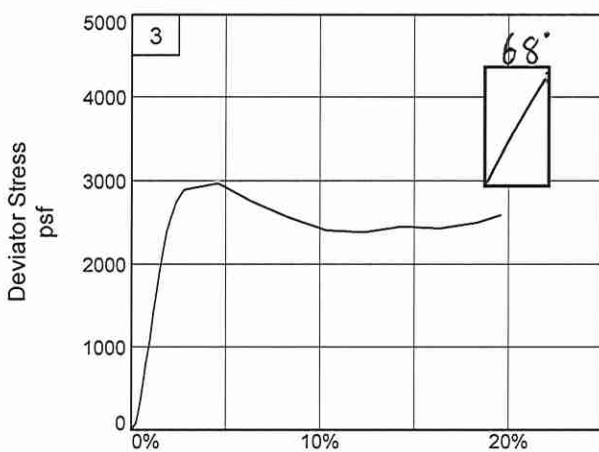
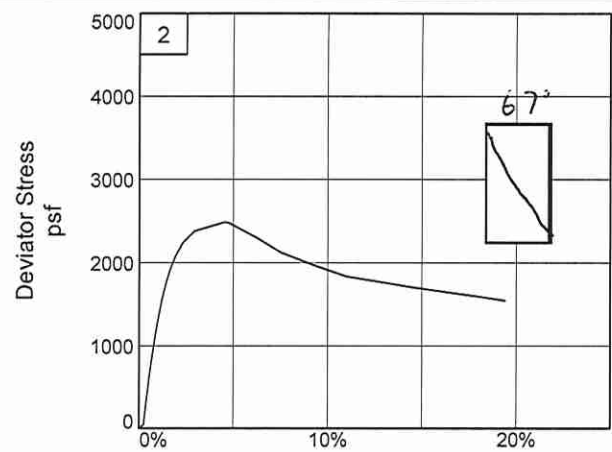
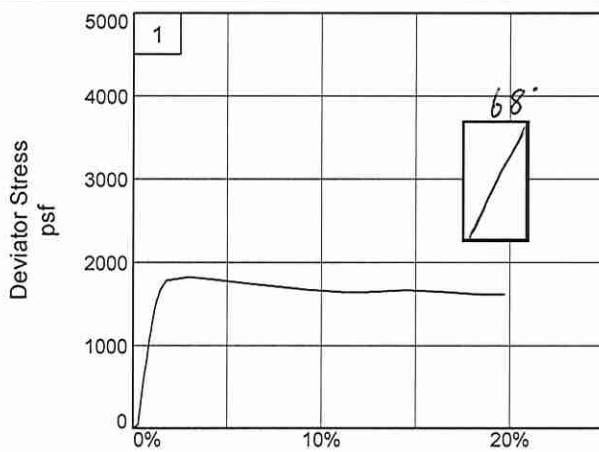


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Figure ASTM D2850

Tested By: MS

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-05

Depth: 41

Sample Number: 11B

Project No.: 24384

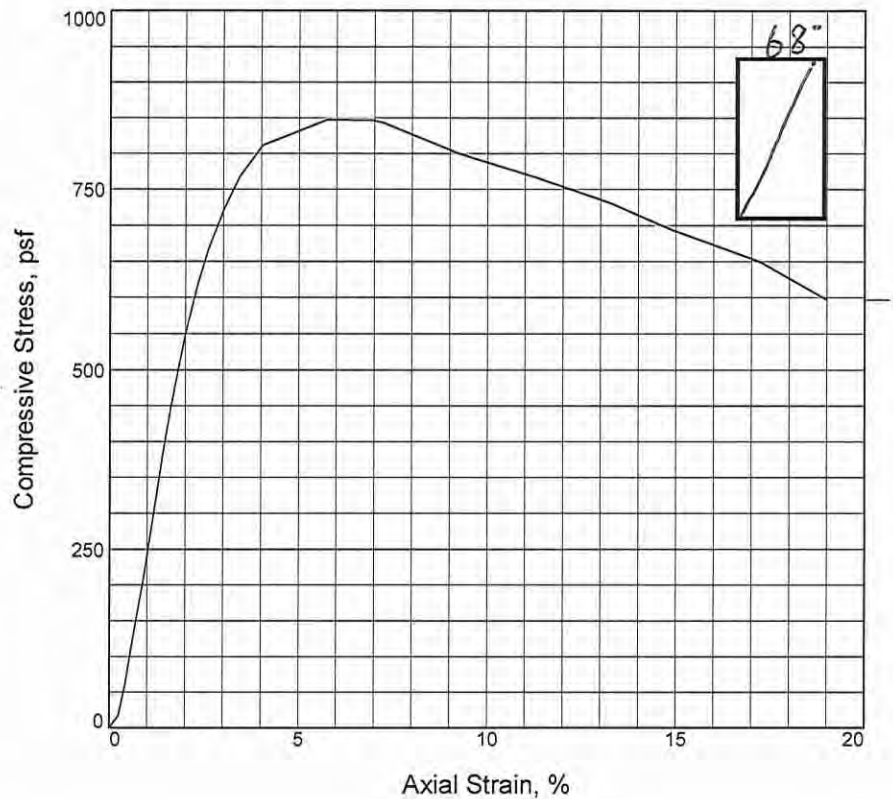
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: MS

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	847.6			
Undrained shear strength, psf	423.8			
Failure strain, %	5.7			
Strain rate, %/min.	1.00			
Water content, %	30.5			
Wet density, pcf	117.2			
Dry density, pcf	89.8			
Saturation, %	93.1			
Void ratio	0.8915			
Specimen diameter, in.	1.400			
Specimen height, in.	2.756			
Height/diameter ratio	1.97			

Description: SO GR & BR CH2 W/ CC, WD

LL = 50

PL = 20

PI = 30

Assumed GS= 2.72

Type: UNDISTURBED

Project No.: 24384

Date Sampled: 9/15/20

Remarks:

TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-06

Depth: 5

Sample Number: 2B

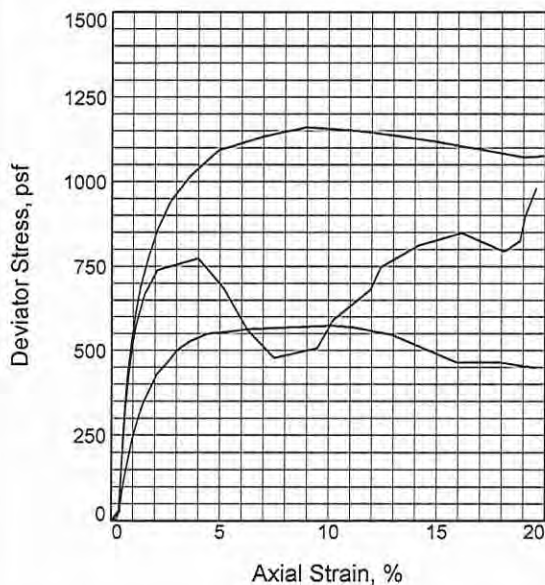
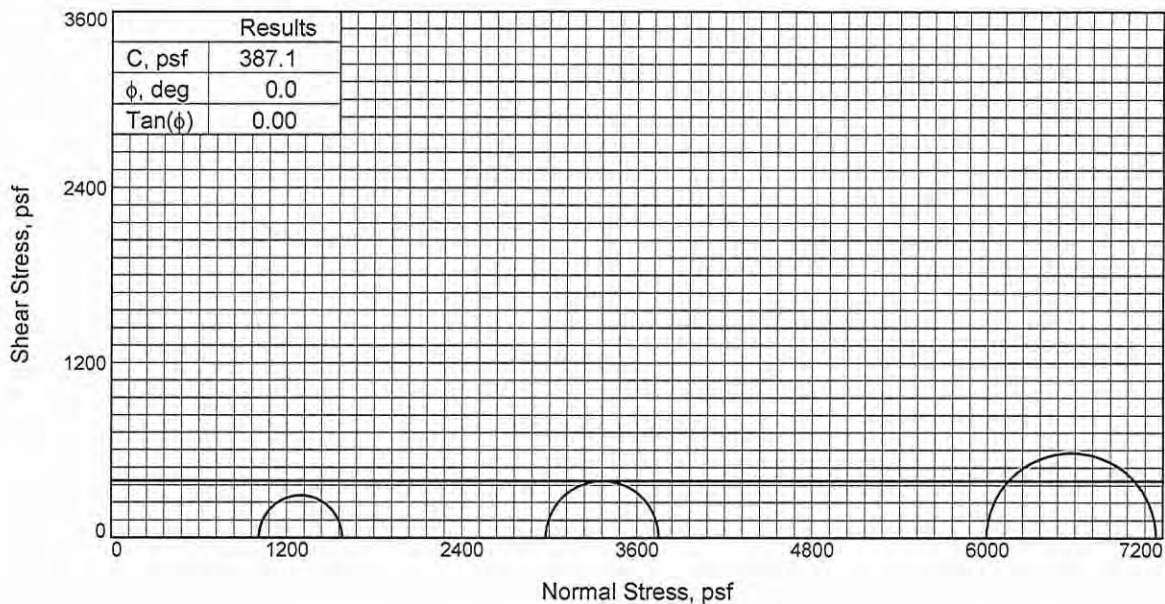
Figure ASTM D2166



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Tested By: CC

Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	50.3	46.8	47.0
	Dry Density, pcf	71.2	74.2	73.5
	Saturation, %	98.9	98.6	97.5
	Void Ratio	1.3837	1.2898	1.3118
	Diameter, in.	1.402	1.403	1.410
	Height, in.	2.801	2.797	2.765
At Test	Water Content, %	50.9	47.4	48.2
	Dry Density, pcf	71.2	74.2	73.5
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.3837	1.2898	1.3118
	Diameter, in.	1.402	1.403	1.410
	Height, in.	2.801	2.797	2.765
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		7.000	20.660	41.620
Fail. Stress, psf		573.6	773.8	1161.1
Strain, %		10.2	4.0	9.0
Ult. Stress, psf		504.9	477.8	1117.9
Strain, %		14.4	7.5	15.0
σ_1 Failure, psf		1581.6	3748.8	7154.4
σ_3 Failure, psf		1008.0	2975.0	5993.3

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CH4 W/ ARS ML, SL

LL= 97 PL= 33 PI= 64

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-06 **Depth:** 10

Sample Number: 3C

Proj. No.: 24384

Date Sampled: 9/15/20

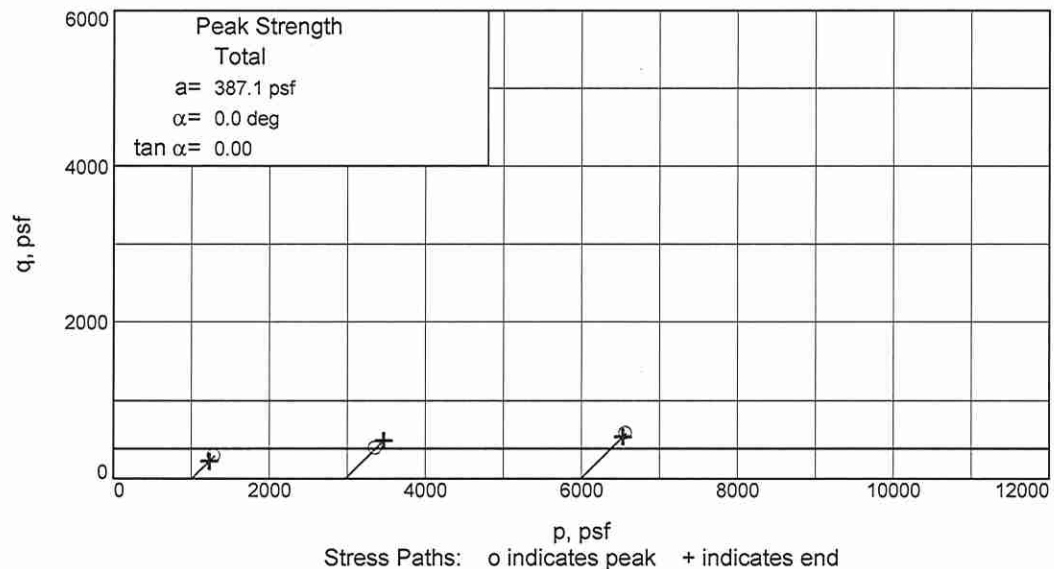
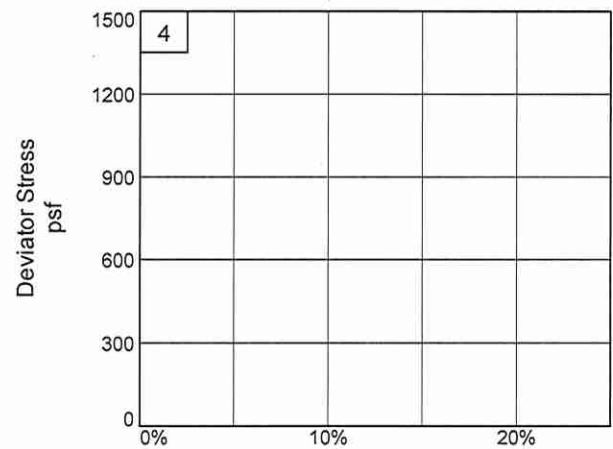
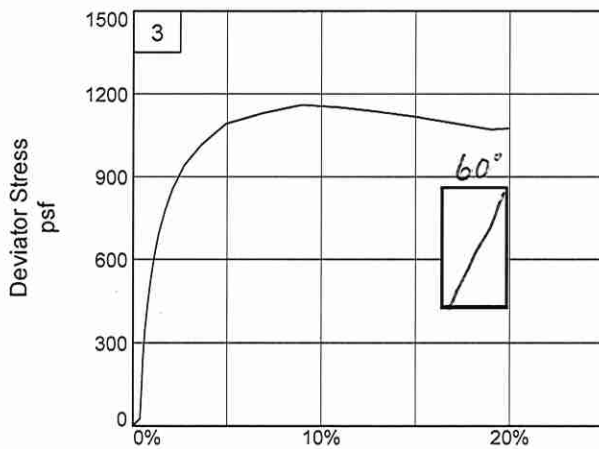
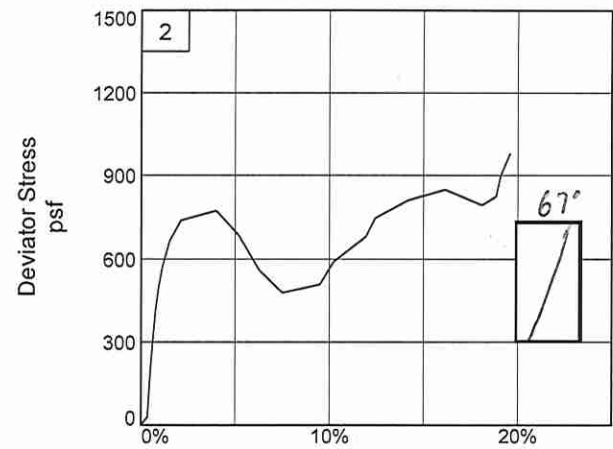
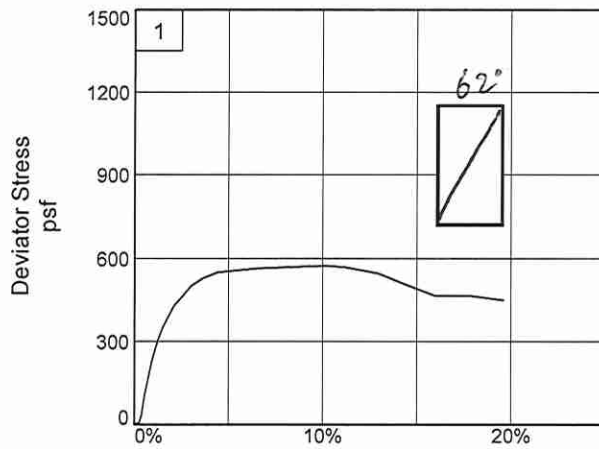


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SINCE 1946

Figure _____

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-06

Depth: 10

Sample Number: 3C

Project No.: 24384

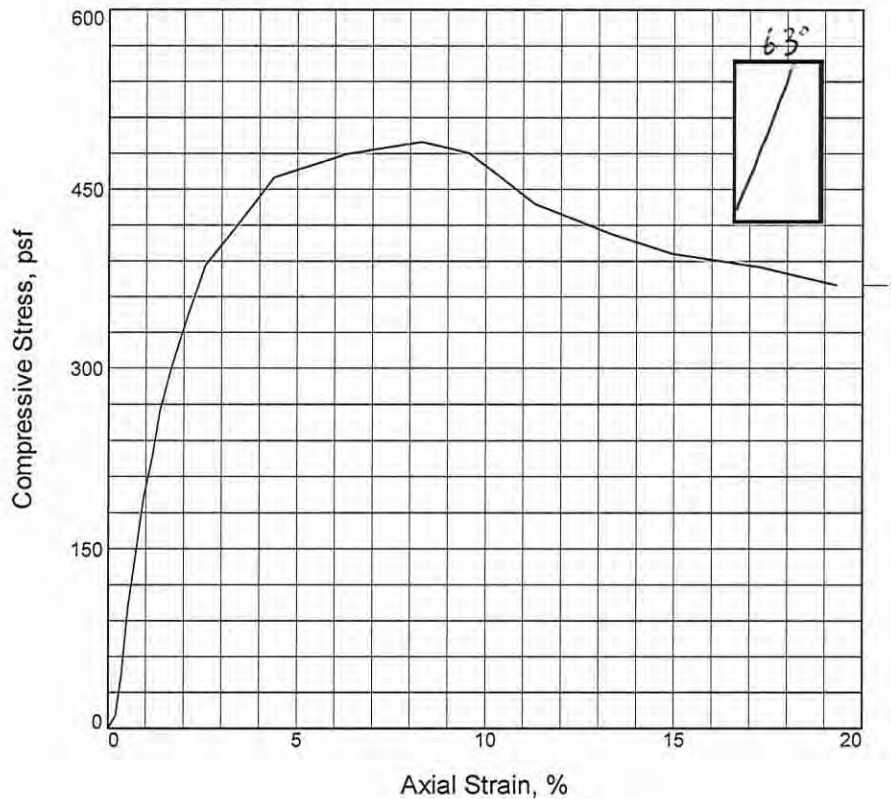
Figure _____

Eustis Engineering L.L.C.

Tested By: DE

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	489.6			
Undrained shear strength, psf	244.8			
Failure strain, %	8.3			
Strain rate, %/min.	1.00			
Water content, %	94.5			
Wet density, pcf	92.4			
Dry density, pcf	47.5			
Saturation, %	99.9			
Void ratio	2.5753			
Specimen diameter, in.	1.375			
Specimen height, in.	2.767			
Height/diameter ratio	2.01			

Description: VSO GR CH4 W/ ARS ML, WD, RT, SL

LL = 132	PL = 32	PI = 100	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 9/15/20

Remarks:

TORVANE = 0.150 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-06

Depth: 14

Sample Number: 4C

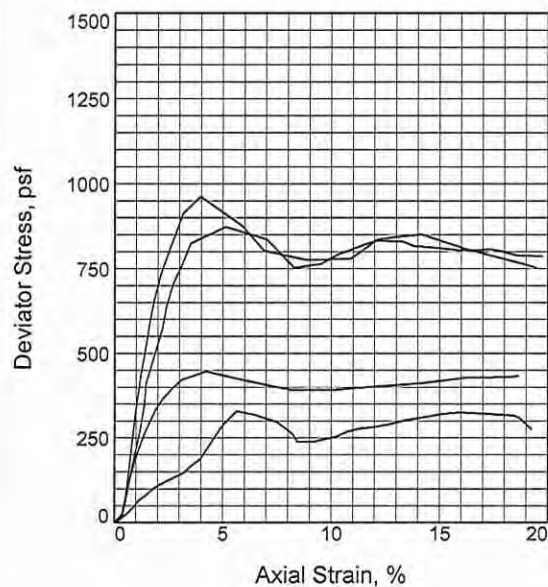
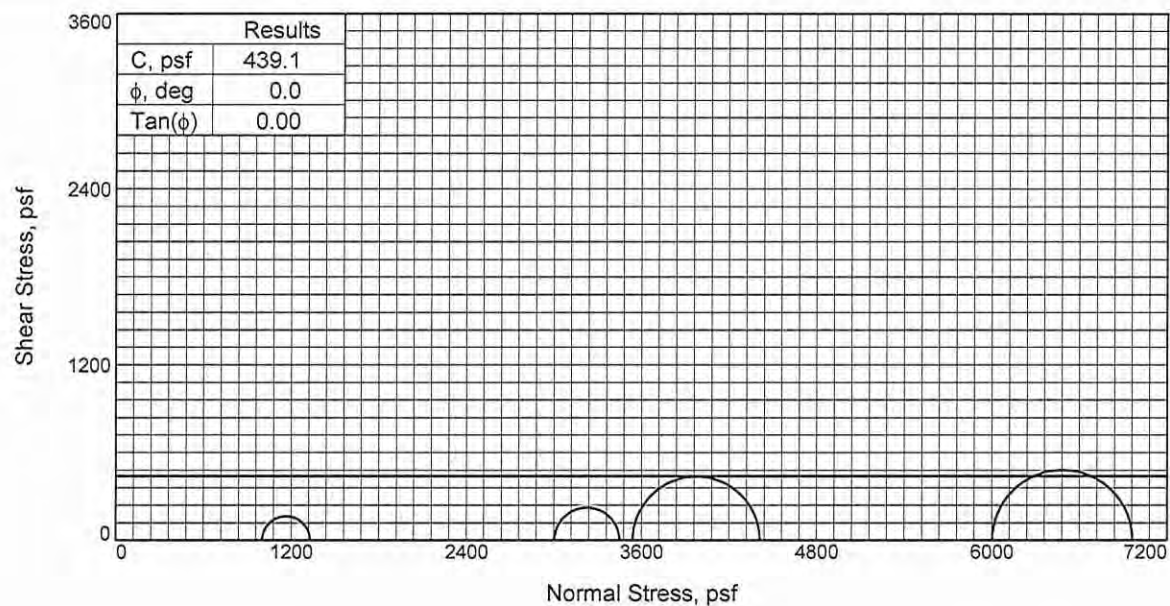
Figure ASTM D2166



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Tested By: CC

Checked By: RR



Specimen No.		1	2	3	4
Initial	Water Content, %	70.4	70.0	71.8	70.1
	Dry Density, pcf	57.5	58.5	57.4	58.2
	Saturation, %	98.0	100.1	99.7	99.6
	Void Ratio	1.9522	1.9035	1.9594	1.9152
	Diameter, in.	1.399	1.399	1.397	1.394
	Height, in.	2.746	2.735	2.756	2.767
At Test	Water Content, %	71.8	70.0	72.0	70.4
	Dry Density, pcf	57.5	58.5	57.4	58.2
	Saturation, %	100.0	100.0	100.0	100.0
	Void Ratio	1.9522	1.9035	1.9594	1.9152
	Diameter, in.	1.399	1.399	1.397	1.394
	Height, in.	2.746	2.735	2.756	2.767
Strain rate, %/min.		1.00	1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000	0.000
Cell Pressure, psi		6.950	20.850	41.670	24.570
Fail. Stress, psf		329.0	446.5	962.3	873.0
Strain, %		5.6	4.2	4.0	5.1
Ult. Stress, psf		238.4	391.5	775.6	753.1
Strain, %		8.4	10.1	8.9	8.3
σ_1 Failure, psf		1329.8	3448.9	6962.8	4411.0
σ_3 Failure, psf		1000.8	3002.4	6000.5	3538.1

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CH4 W/ ARS ML, RT

LL= 98

PL= 27

PI= 71

Assumed Specific Gravity= 2.72

Remarks: TORVANE =0.150 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-06

Depth: 21

Sample Number: 6B

Proj. No.: 24384

Date Sampled: 9/15/20

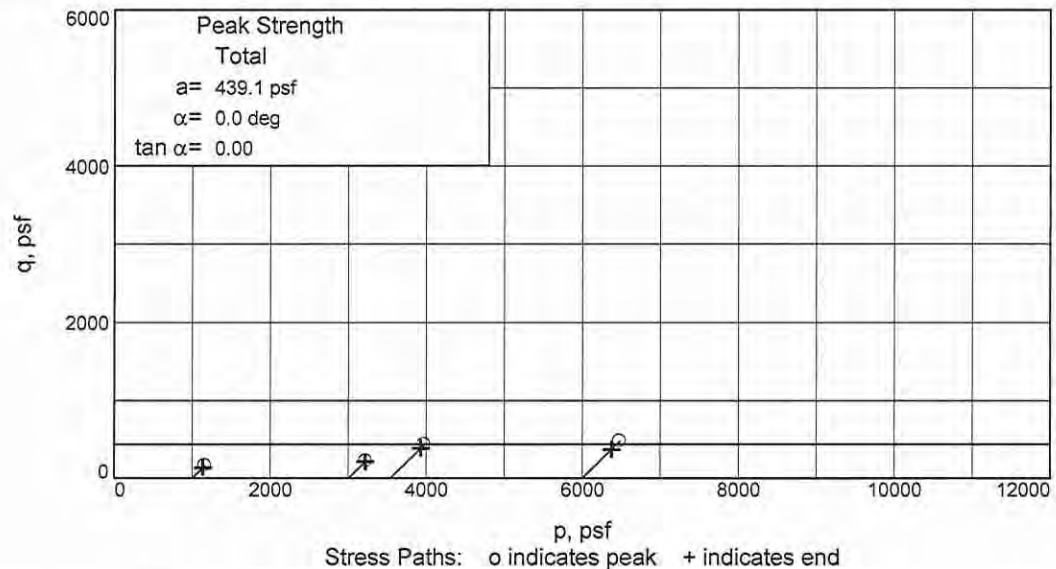
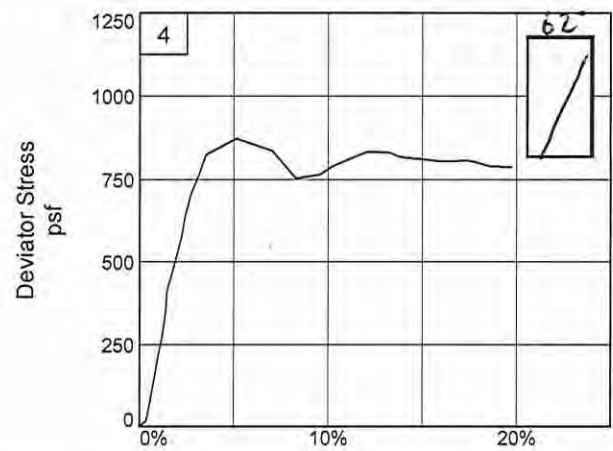
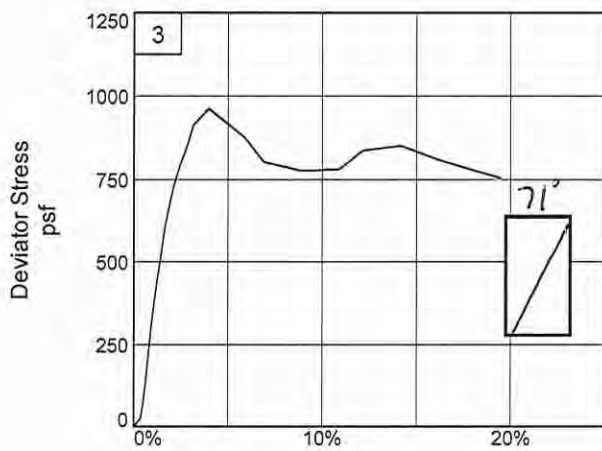
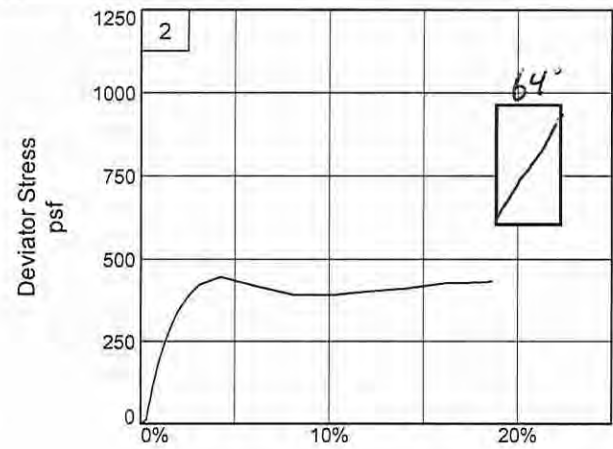
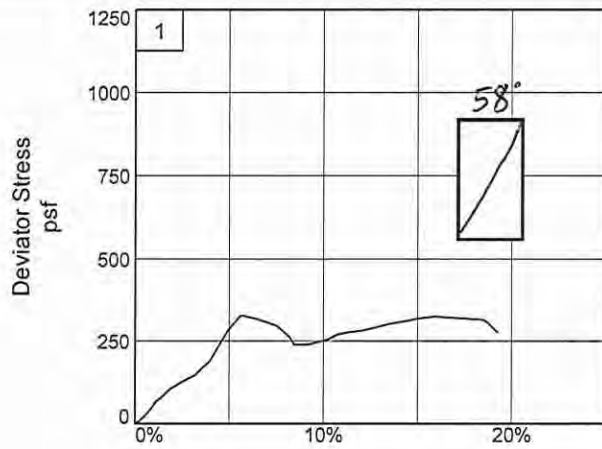


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Figure ASTM D2850

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-06

Depth: 21

Sample Number: 6B

Project No.: 24384

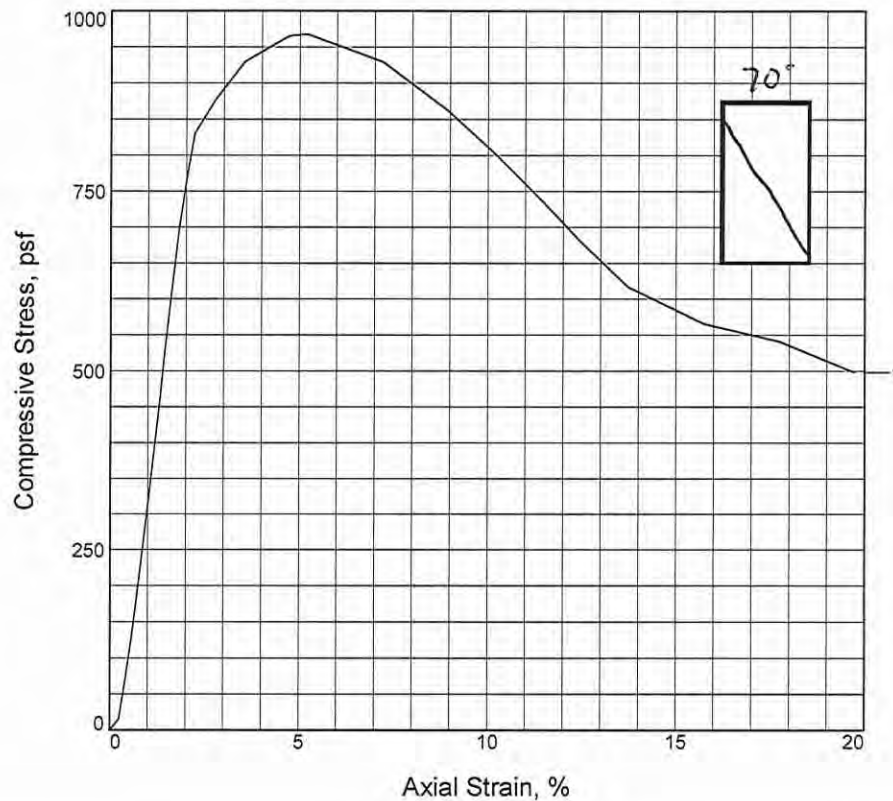
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	967.8		
Undrained shear strength, psf	483.9		
Failure strain, %	5.2		
Strain rate, %/min.	1.00		
Water content, %	25.2		
Wet density, pcf	121.6		
Dry density, pcf	97.1		
Saturation, %	92.5		
Void ratio	0.7361		
Specimen diameter, in.	1.389		
Specimen height, in.	2.760		
Height/diameter ratio	1.99		

Description: SO LGR CL6

LL = 41	PL = 17	PI = 24	Assumed GS= 2.70	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 9/15/20

Remarks:

TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-06

Depth: 26

Sample Number: 7C

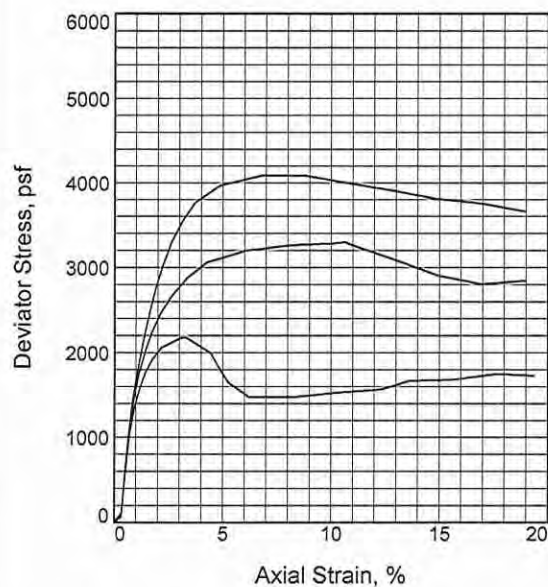
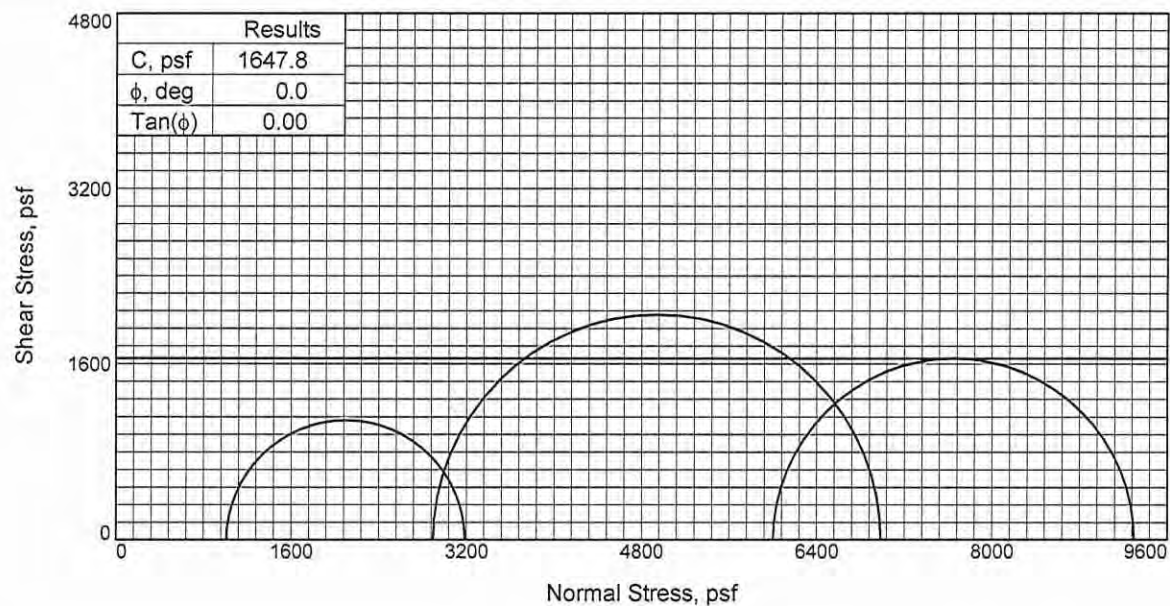
Figure ASTN D2166



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Tested By: CC

Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	27.4	26.6	28.2
	Dry Density, pcf	95.4	96.0	95.3
	Saturation, %	95.4	94.0	98.0
	Void Ratio	0.7803	0.7694	0.7817
	Diameter, in.	1.396	1.403	1.395
	Height, in.	2.736	2.762	2.755
At Test	Water Content, %	28.7	28.3	28.7
	Dry Density, pcf	95.4	96.0	95.3
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7803	0.7694	0.7817
	Diameter, in.	1.396	1.403	1.395
	Height, in.	2.736	2.762	2.755
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		7.000	20.100	41.660
Fail. Stress, psf		2178.7	4090.7	3298.6
Strain, %		3.3	6.9	10.7
Ult. Stress, psf		1474.7	3806.2	2907.0
Strain, %		8.2	14.9	14.9
σ_1 Failure, psf		3186.7	6985.1	9297.6
σ_3 Failure, psf		1008.0	2894.4	5999.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST T & LGR CH4 W/ ARS ML, SL, CC

LL= 66 PL= 25 PI= 41

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 1.000 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-06 **Depth:** 34

Sample Number: 9C

Proj. No.: 24384

Date Sampled: 9/15/20

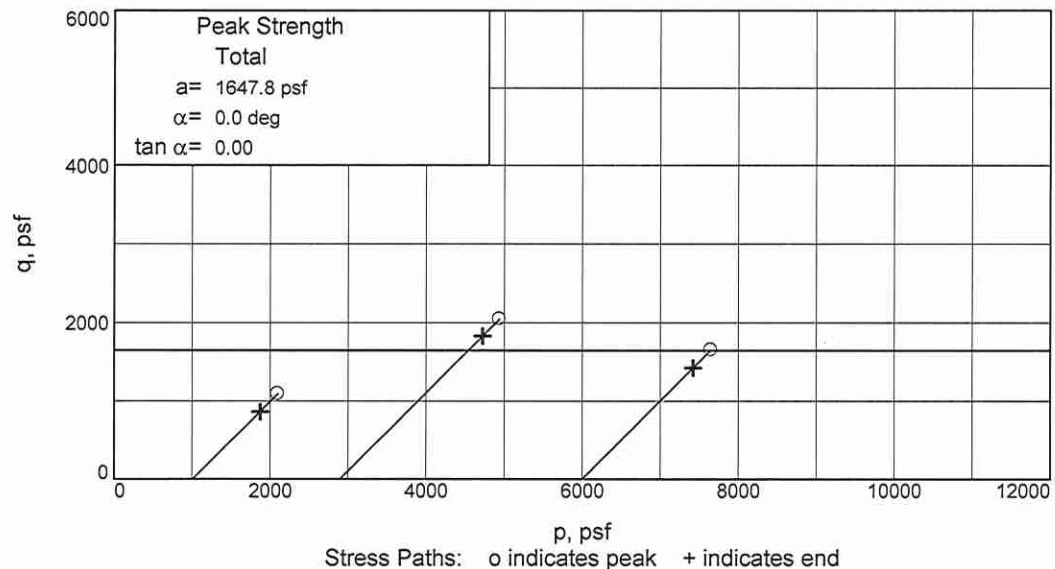
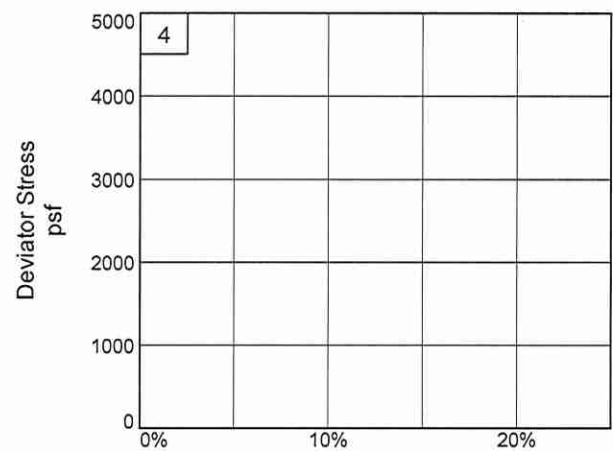
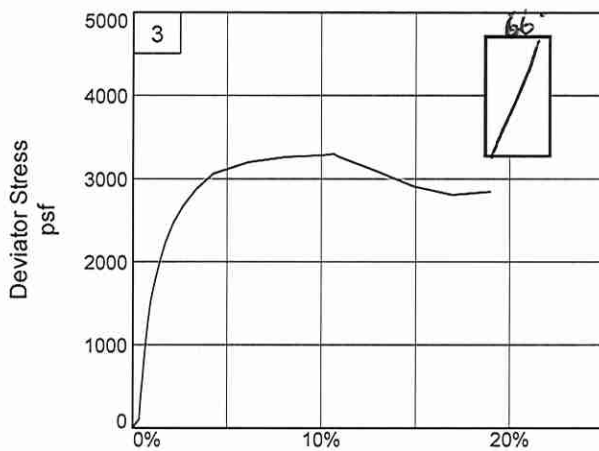
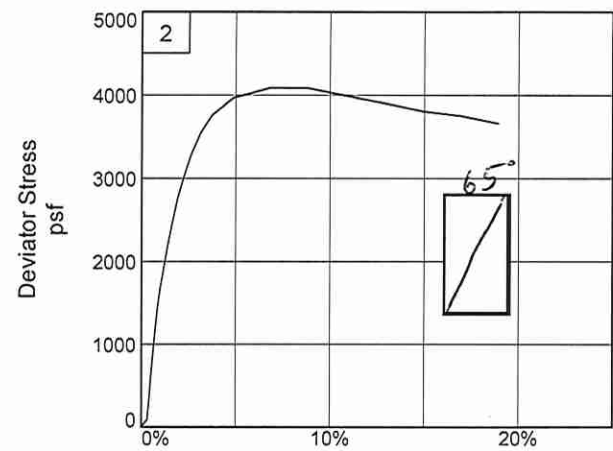
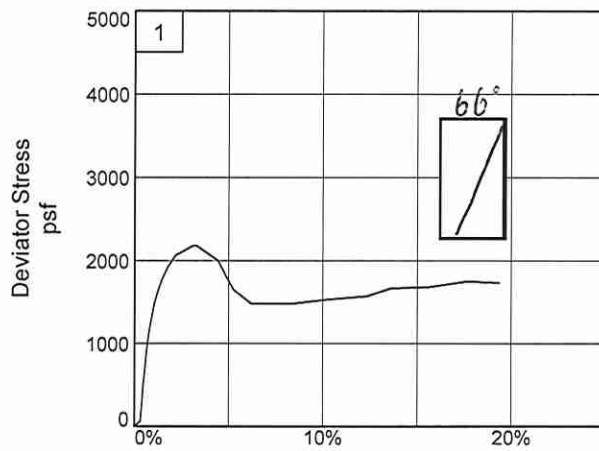


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Figure ASTN D2850

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-06

Depth: 34

Sample Number: 9C

Project No.: 24384

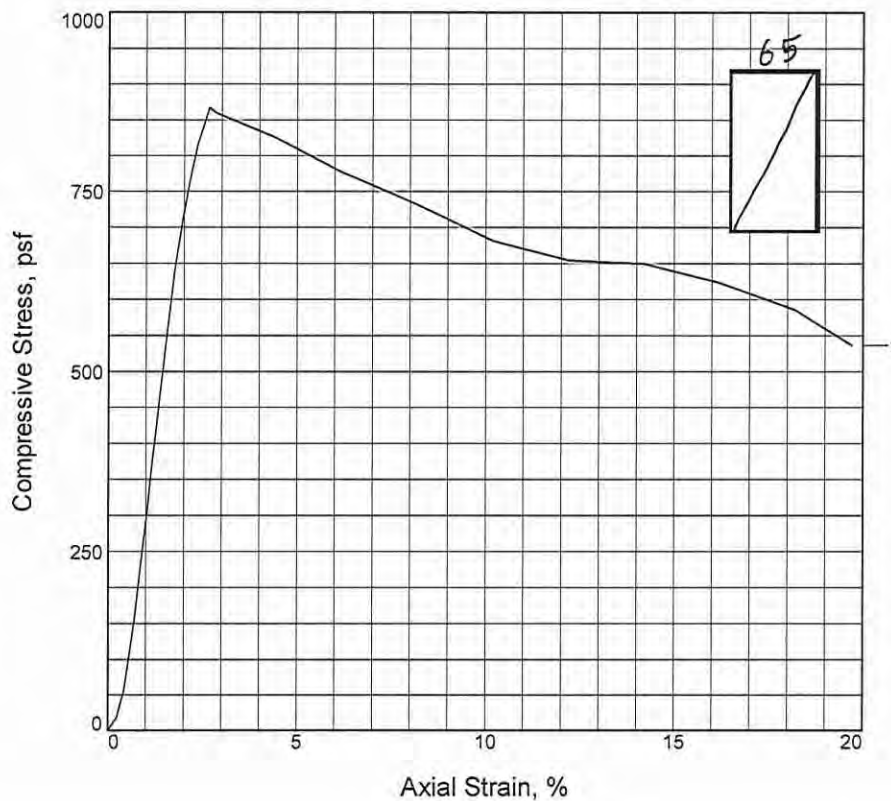
Figure ASTM D2850

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Tested By: DE

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	867.2		
Undrained shear strength, psf	433.6		
Failure strain, %	2.7		
Strain rate, %/min.	1.00		
Water content, %	32.7		
Wet density, pcf	117.3		
Dry density, pcf	88.4		
Saturation, %	97.4		
Void ratio	0.9070		
Specimen diameter, in.	1.423		
Specimen height, in.	2.750		
Height/diameter ratio	1.93		

Description: SO GR & T CL6

LL = 44	PL = 16	PI = 28	Assumed GS= 2.70	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 9/15/20

Remarks:

TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-06 **Depth:** 38

Sample Number: 10C

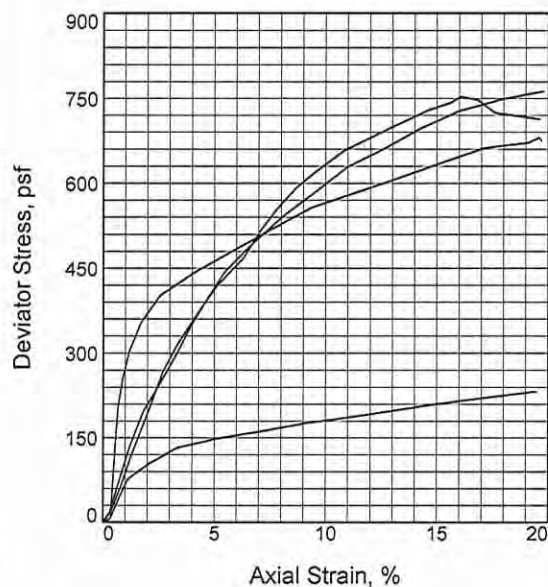
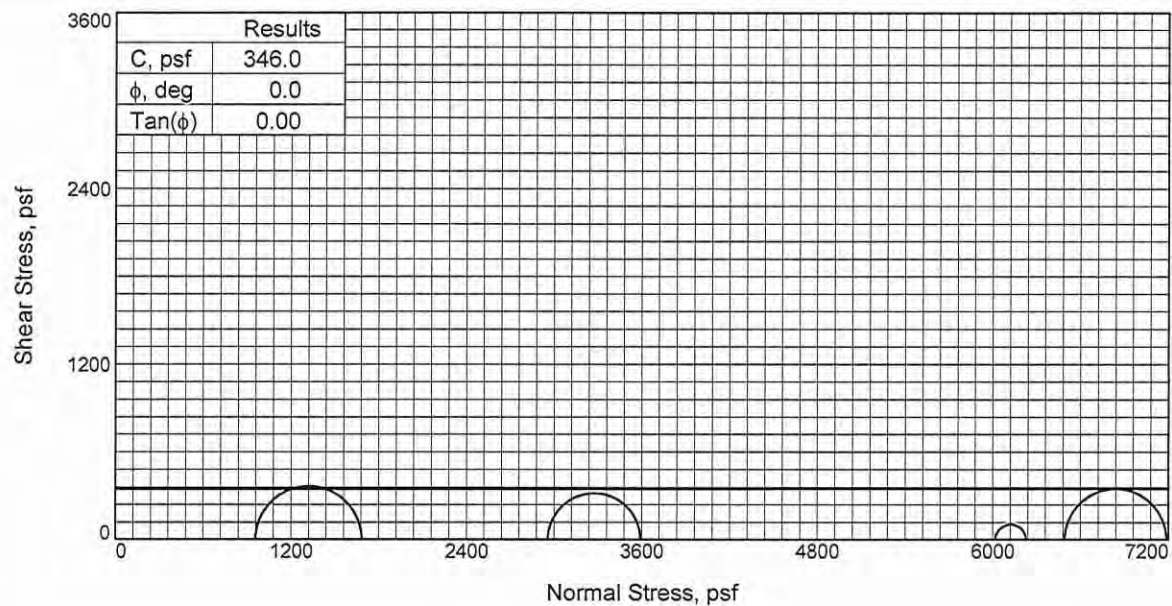
Figure ASTM D2166



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Tested By: CC

Checked By: RR



Specimen No.		1	2	3	4
Initial	Water Content, %	33.2	32.8	32.9	31.9
	Dry Density, pcf	88.0	87.9	86.8	90.0
	Saturation, %	97.8	96.3	94.3	98.7
	Void Ratio	0.9151	0.9185	0.9411	0.8722
	Diameter, in.	1.408	1.406	1.388	1.412
	Height, in.	2.742	2.833	2.759	2.820
At Test	Water Content, %	33.9	34.0	34.9	32.3
	Dry Density, pcf	88.0	87.9	86.8	90.0
	Saturation, %	100.0	100.0	100.0	100.0
	Void Ratio	0.9151	0.9185	0.9411	0.8722
	Diameter, in.	1.408	1.406	1.388	1.412
	Height, in.	2.742	2.833	2.759	2.820
Strain rate, %/min.		1.00	1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000	0.000
Cell Pressure, psi		6.630	20.530	41.780	45.070
Fail. Stress, psf		729.5	634.5	210.4	696.1
Strain, %		14.6	15.1	15.0	14.3
Ult. Stress, psf		729.5	634.5	210.4	696.1
Strain, %		14.6	15.1	15.0	14.3
σ_1 Failure, psf		1684.2	3590.8	6226.7	7186.2
σ_3 Failure, psf		954.7	2956.3	6016.3	6490.1

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CL4 W/ O

LL= 37

PL= 20

PI= 17

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.150 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07 **Depth:** 5

Sample Number: 2B

Proj. No.: 24384

Date Sampled: 9/15/20

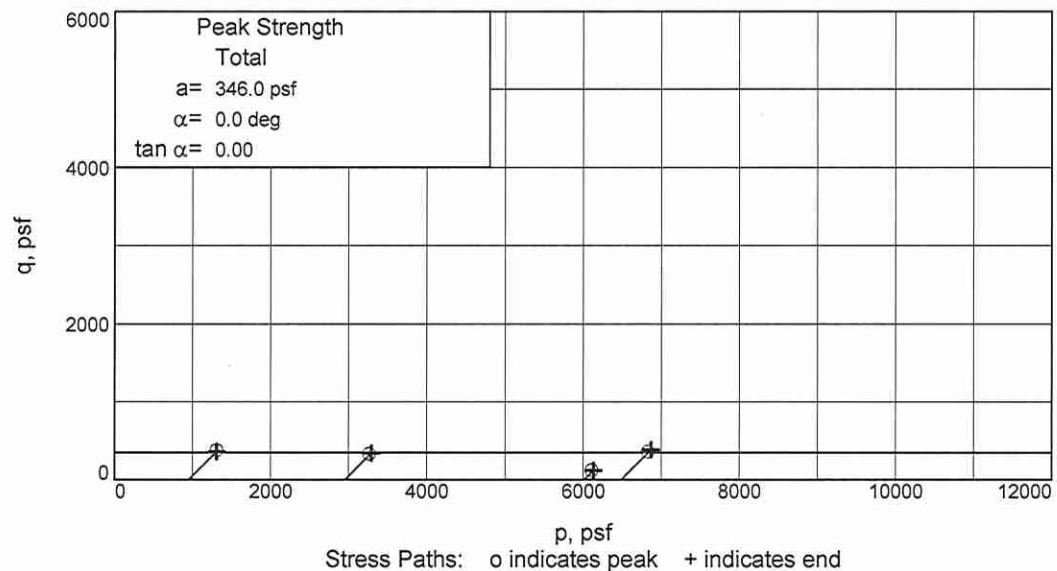
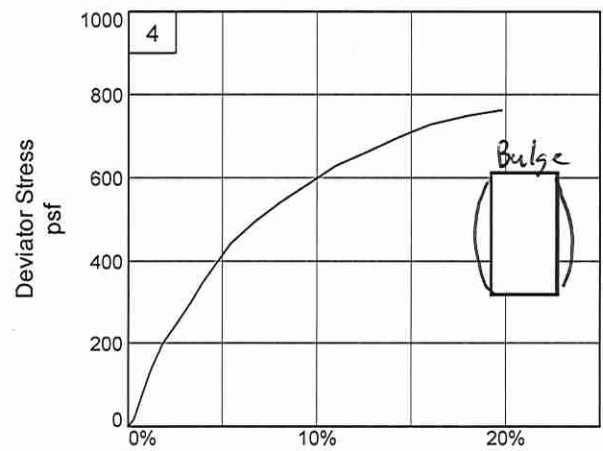
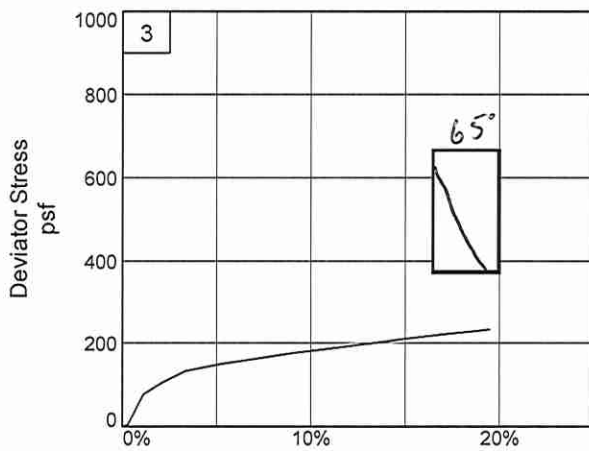
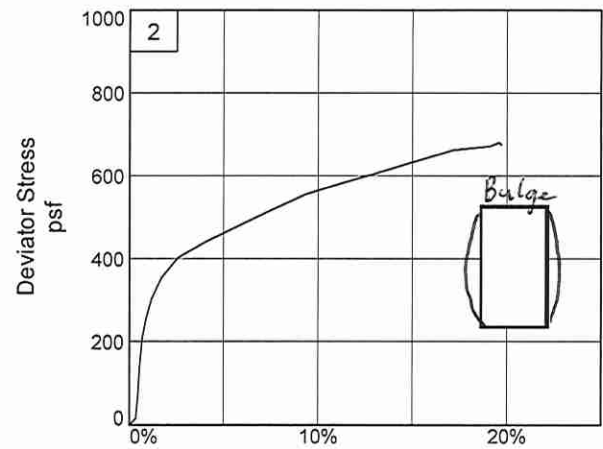
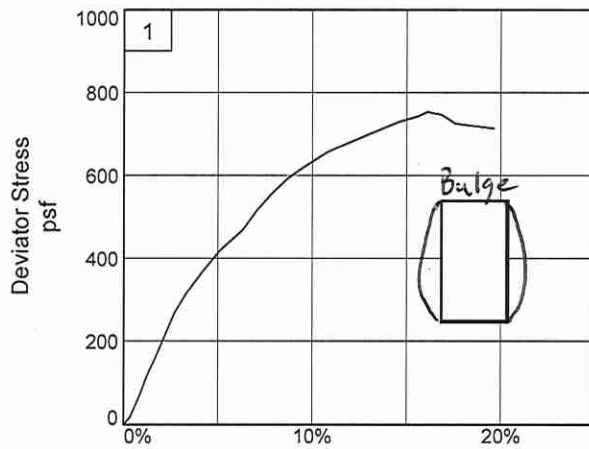


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Figure ASTM D2850

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07

Depth: 5

Sample Number: 2B

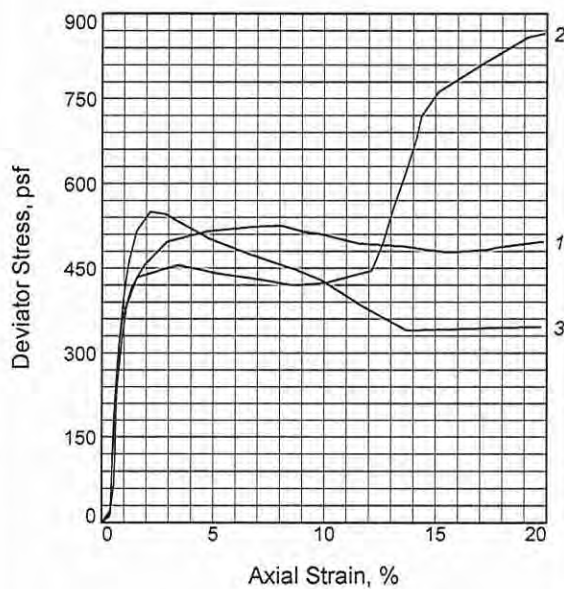
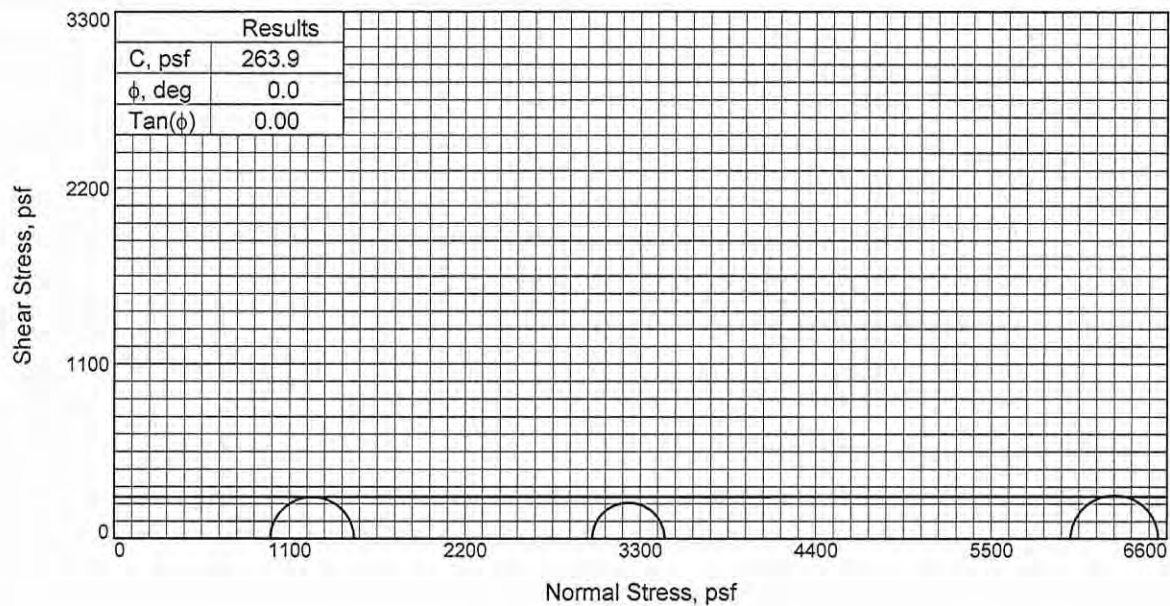
Project No.: 24384

Figure ASTM D2850

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Tested By: DE

Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	58.4	58.2	58.1
	Dry Density, pcf	65.0	65.8	65.2
	Saturation, %	98.4	100.0	98.6
	Void Ratio	1.6133	1.5821	1.6036
	Diameter, in.	1.433	1.388	1.429
	Height, in.	2.766	2.758	2.736
At Test	Water Content, %	59.3	58.2	59.0
	Dry Density, pcf	65.0	65.8	65.2
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.6133	1.5821	1.6036
	Diameter, in.	1.433	1.388	1.429
	Height, in.	2.766	2.758	2.736
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.800	20.810	41.640
Fail. Stress, psf		525.4	455.5	550.1
Strain, %		8.0	3.4	2.2
Ult. Stress, psf		488.4	419.7	339.6
Strain, %		13.6	8.6	13.7
σ_1 Failure, psf		1504.6	3452.1	6546.2
σ_3 Failure, psf		979.2	2996.6	5996.2

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CH4 W/ ARS ML, RT

LL= 101 PL= 31 PI= 70

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07 **Depth:** 9

Sample Number: 3B

Proj. No.: 24384

Date Sampled: 9/21/20

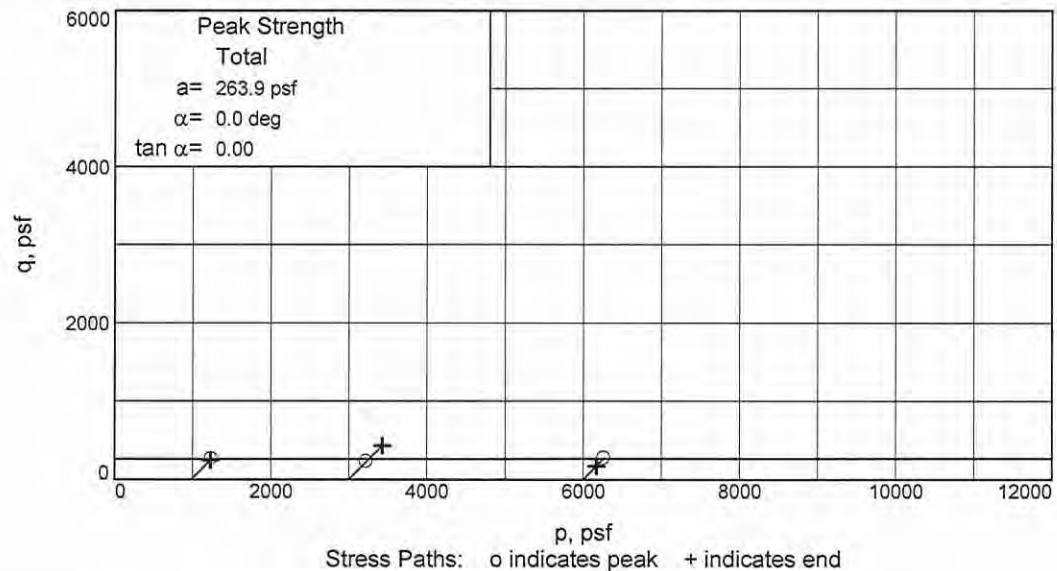
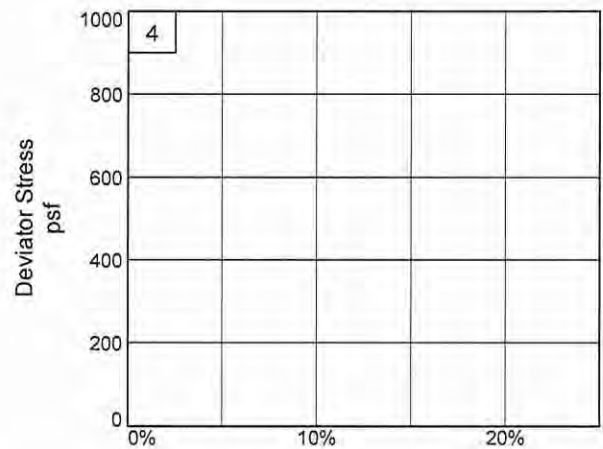
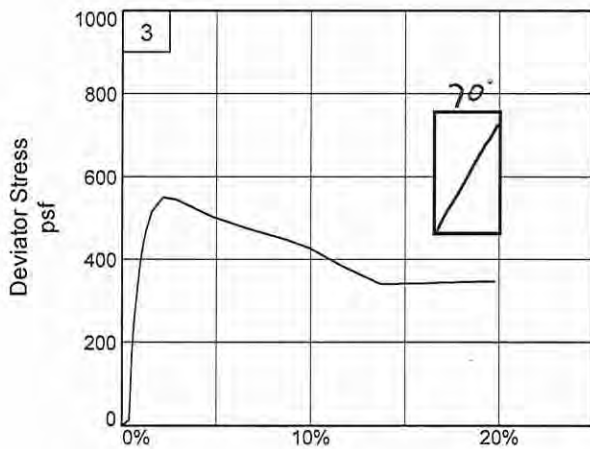
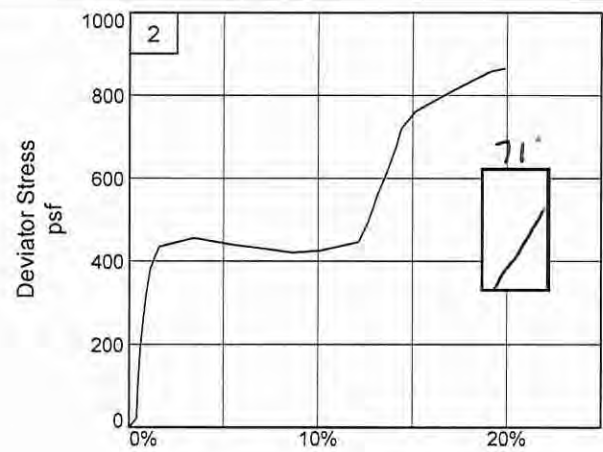
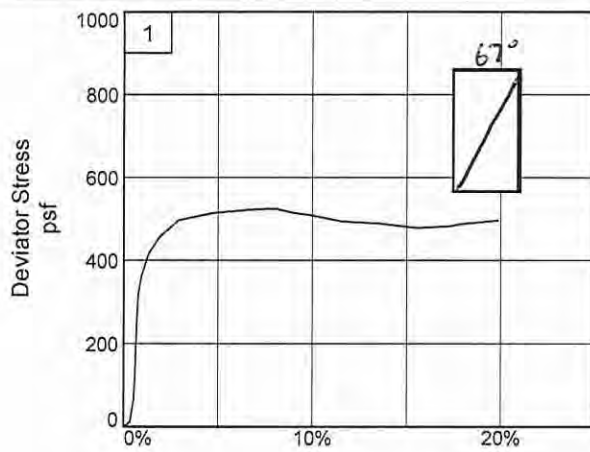
Figure ASTM D2850



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Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07

Depth: 9

Sample Number: 3B

Project No.: 24384

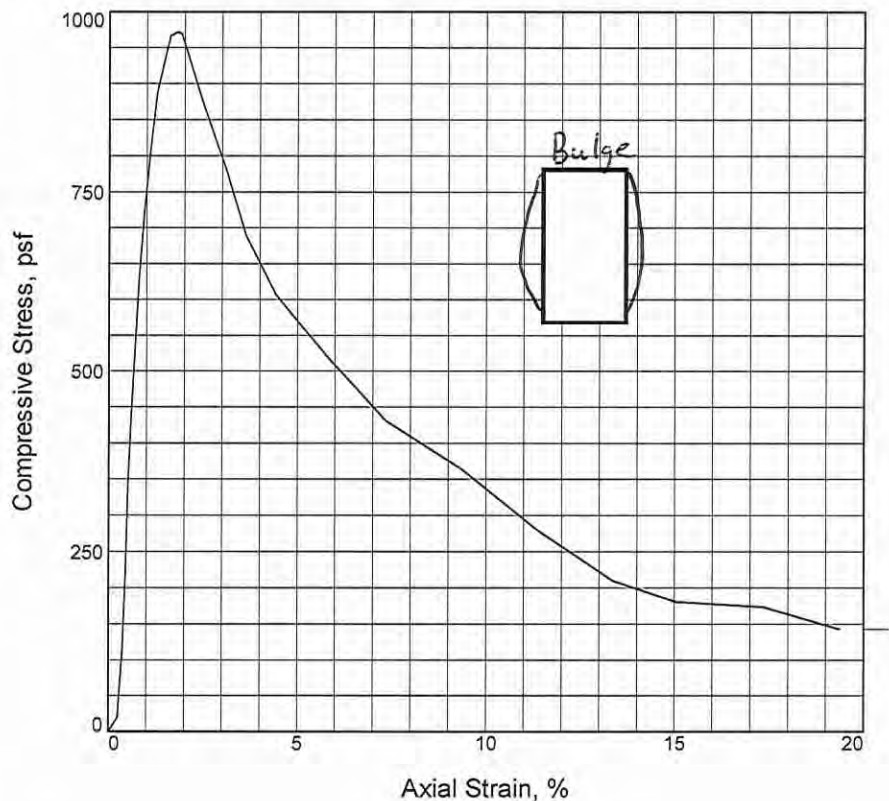
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	971.7			
Undrained shear strength, psf	485.8			
Failure strain, %	1.8			
Strain rate, %/min.	1.00			
Water content, %	43.9			
Wet density, pcf	109.7			
Dry density, pcf	76.2			
Saturation, %	97.3			
Void ratio	1.2284			
Specimen diameter, in.	1.400			
Specimen height, in.	2.752			
Height/diameter ratio	1.97			

Description: SO GR CH4 W/ ARS ML

LL = 82	PL = 23	PI = 59	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 9/15/20

Remarks:

TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07 **Depth:** 10

Sample Number: 3C

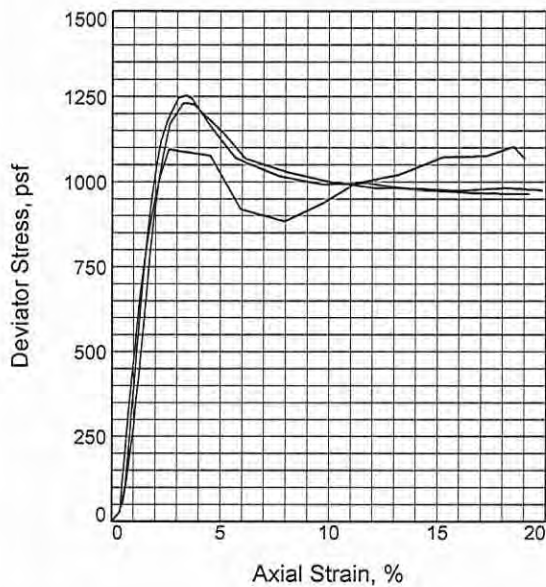
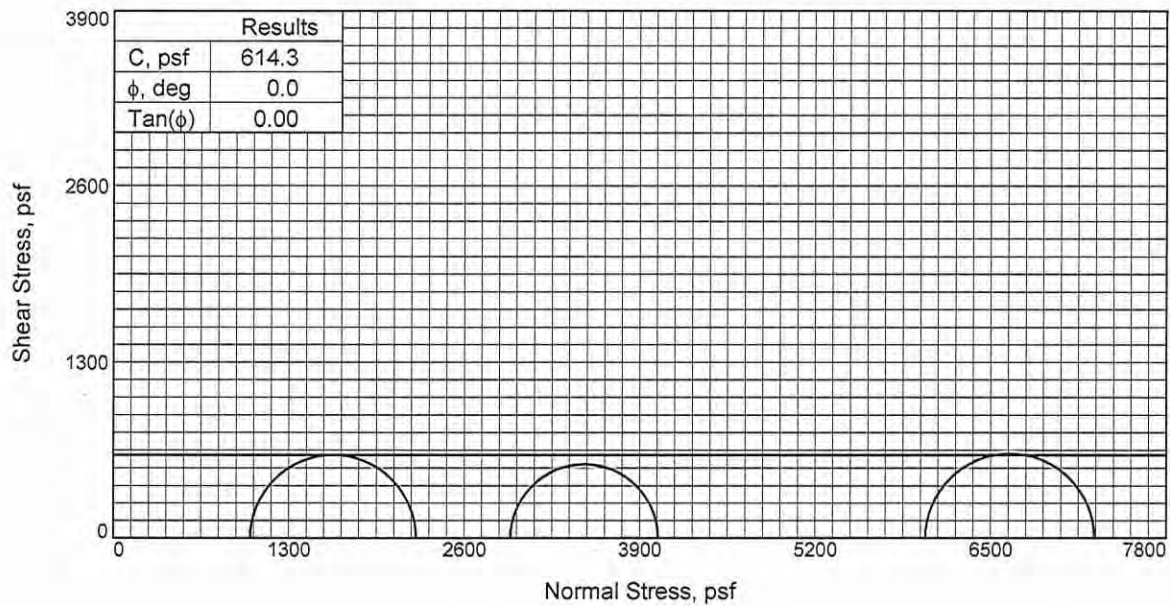
Figure ASTM D2166



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Tested By: CC

Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	117.9	117.5	116.7
	Dry Density, pcf	40.1	39.4	39.1
	Saturation, %	99.9	97.3	95.6
	Void Ratio	3.1277	3.2025	3.2342
	Diameter, in.	1.370	1.387	1.396
	Height, in.	2.765	2.753	2.749
At Test	Water Content, %	118.0	120.9	122.0
	Dry Density, pcf	40.1	39.4	39.1
	Saturation, %	100.0	100.0	100.0
	Void Ratio	3.1277	3.2025	3.2342
	Diameter, in.	1.370	1.387	1.396
	Height, in.	2.765	2.753	2.749
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		7.030	20.430	41.770
Fail. Stress, psf		1231.2	1094.1	1253.0
Strain, %		3.5	2.6	3.4
Ult. Stress, psf		980.1	883.0	974.2
Strain, %		14.2	8.0	14.5
σ_1 Failure, psf		2243.5	4036.1	7267.8
σ_3 Failure, psf		1012.3	2941.9	6014.9

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M DGR CHOB

LL= 180

PL= 63

PI= 117

Assumed Specific Gravity= 2.65

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07

Depth: 17

Sample Number: 5B

Proj. No.: 24384

Date Sampled: 9/15/20

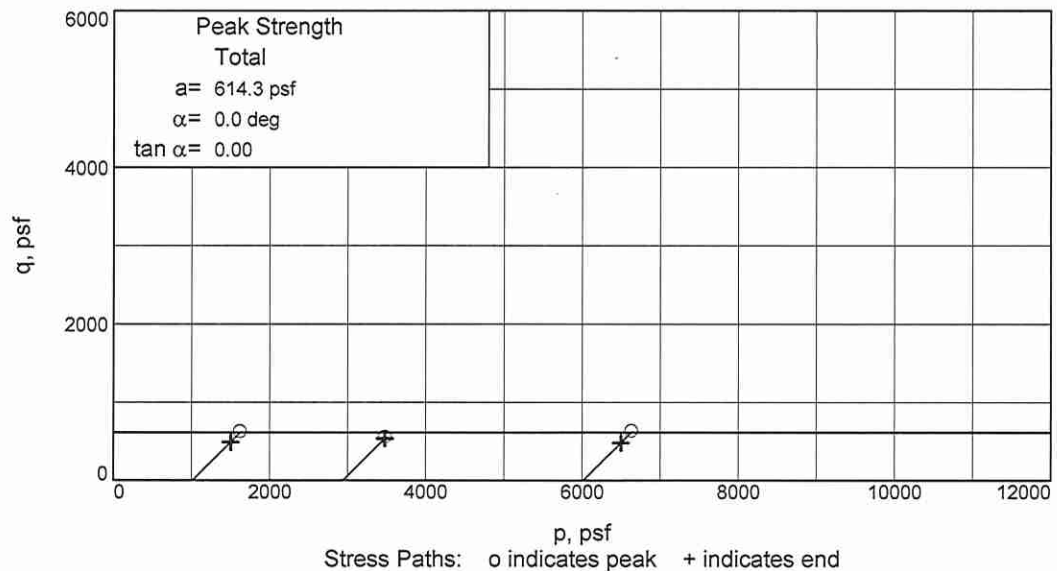
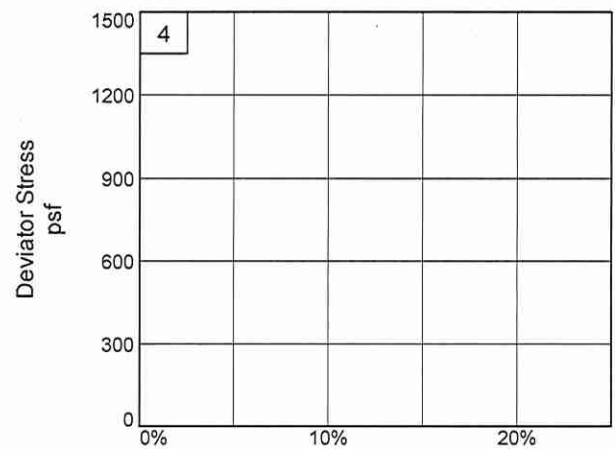
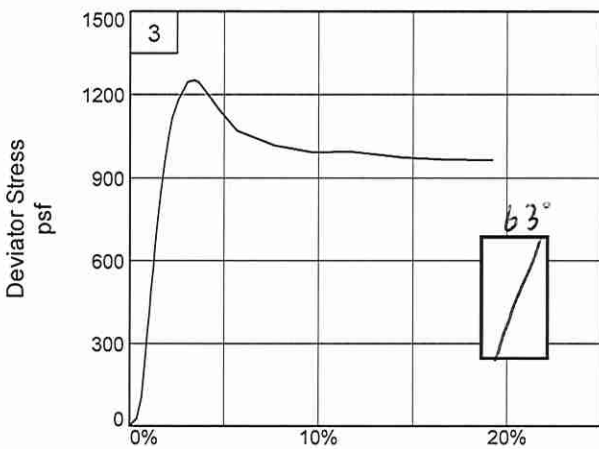
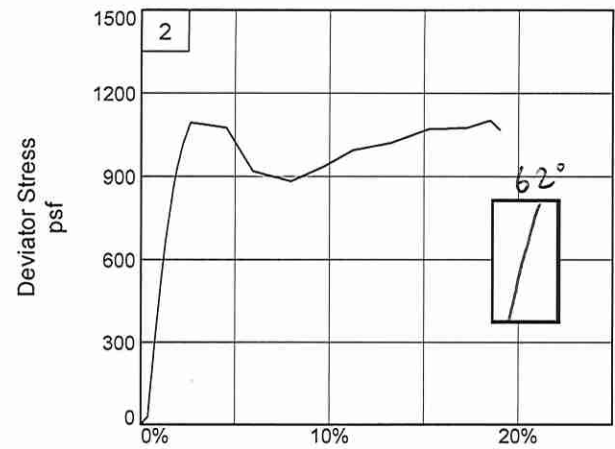
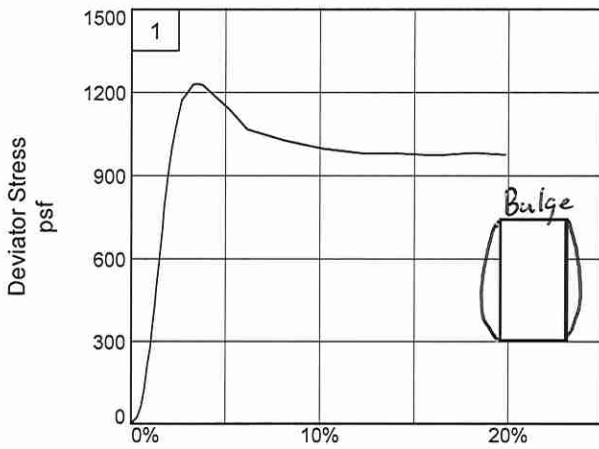


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Figure ASTM D2850

Tested By: CC

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07

Depth: 17

Sample Number: 5B

Project No.: 24384

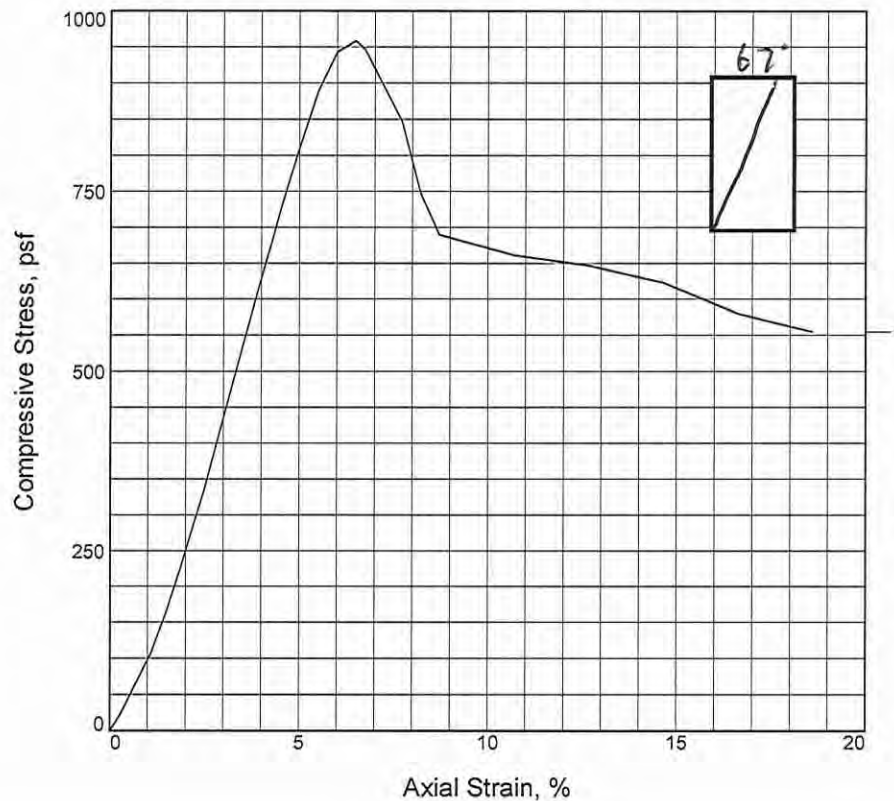
Figure ASTM D2850

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Tested By: CC

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	958.5		
Undrained shear strength, psf	479.3		
Failure strain, %	6.5		
Strain rate, %/min.	1.00		
Water content, %	32.7		
Wet density, pcf	118.8		
Dry density, pcf	89.5		
Saturation, %	100.0		
Void ratio	0.8830		
Specimen diameter, in.	1.376		
Specimen height, in.	2.754		
Height/diameter ratio	2.00		

Description: SO GR CL4 W/ WD

LL = 28	PL = 17	PI = 11	Assumed GS= 2.70	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 9/15/20

Remarks:

TORVANE = 0.450 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07 **Depth:** 21

Sample Number: 6B

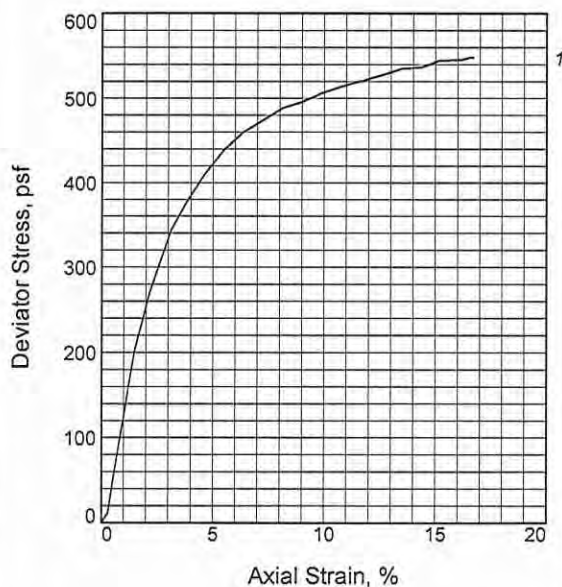
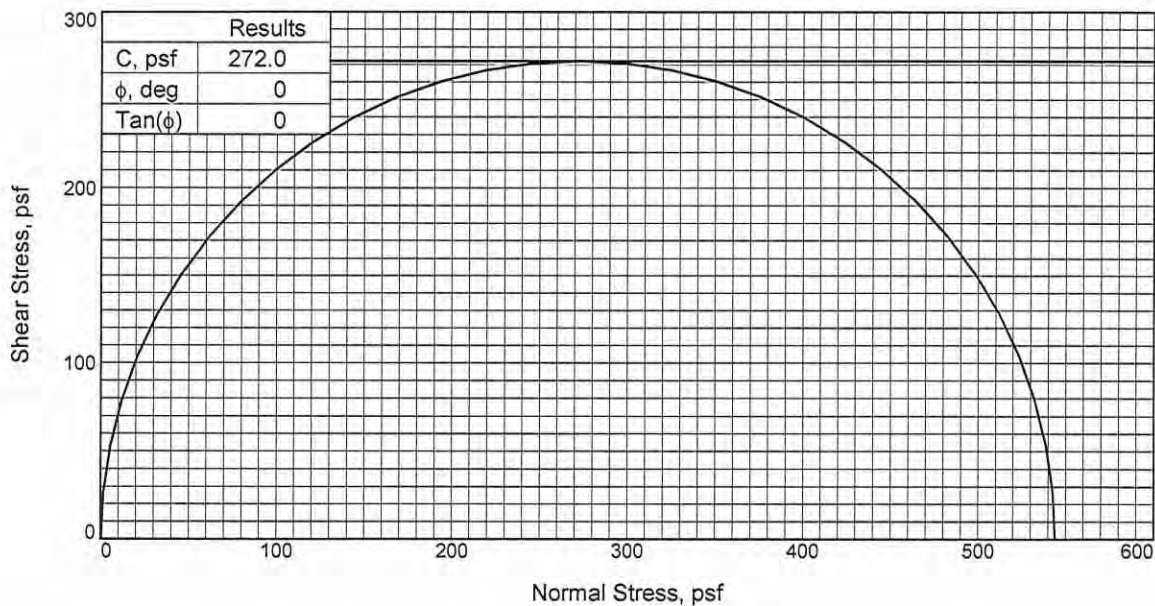
Figure ASTM D2166



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Tested By: CC

Checked By: RR



Specimen No.		1
Initial	Water Content, %	34.4
	Dry Density, pcf	87.4
	Saturation, %	99.9
	Void Ratio	0.9285
	Diameter, in.	2.882
	Height, in.	5.683
At Test	Water Content, %	34.4
	Dry Density, pcf	87.4
	Saturation, %	100.0
	Void Ratio	0.9285
	Diameter, in.	2.882
	Height, in.	5.683
Strain rate, %/min.		0.50
Back Pressure, psi		0.000
Cell Pressure, psi		0.000
Fail. Stress, psf		544.0
Strain, %		15.1
Ult. Stress, psf		544.0
Strain, %		15.1
σ_1 Failure, psf		544.0
σ_3 Failure, psf		0.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CL6 W/ SIF

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.150 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07 **Depth:** 25

Sample Number: 7B

Proj. No.: 24384

Date Sampled: 9/17/20

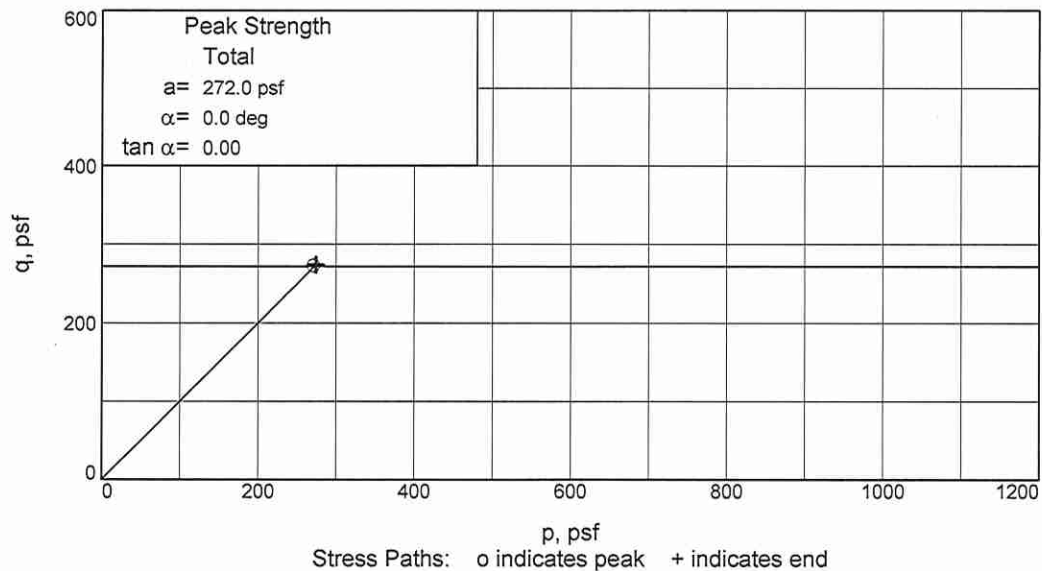
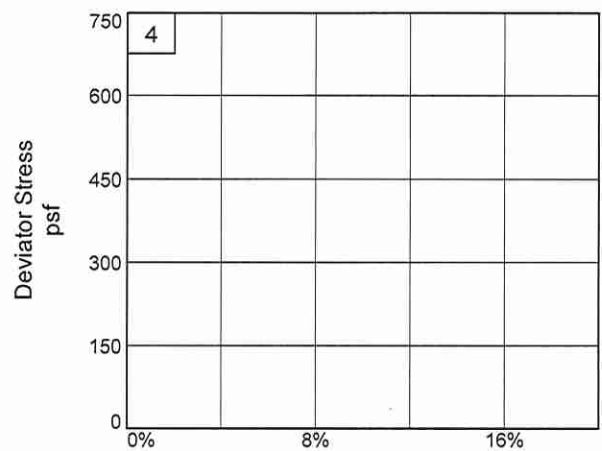
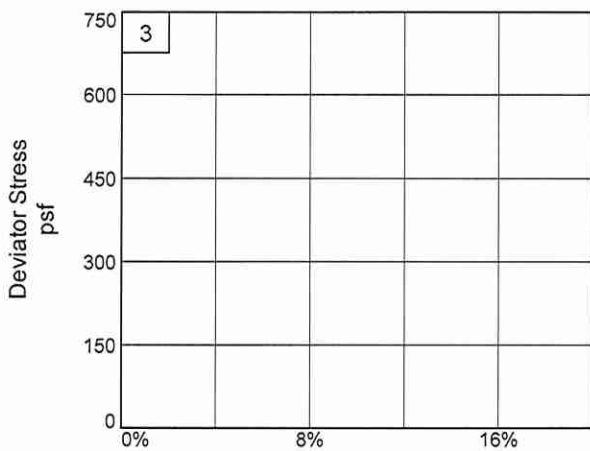
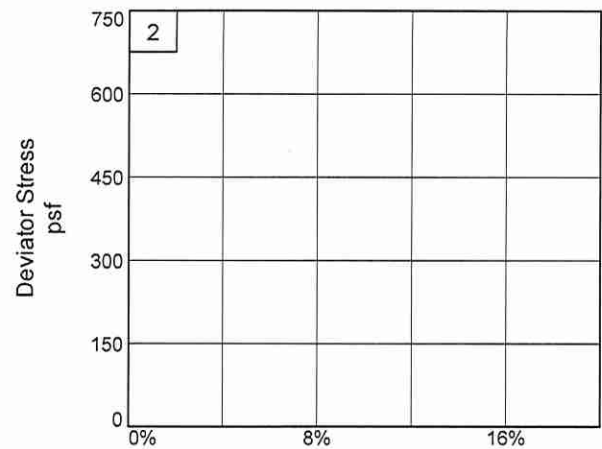
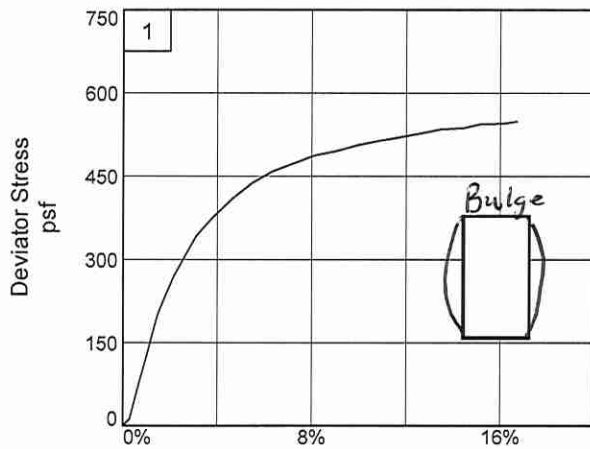
Figure ASTM D2850



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SINCE 1946

Tested By: BH

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07

Depth: 25

Sample Number: 7B

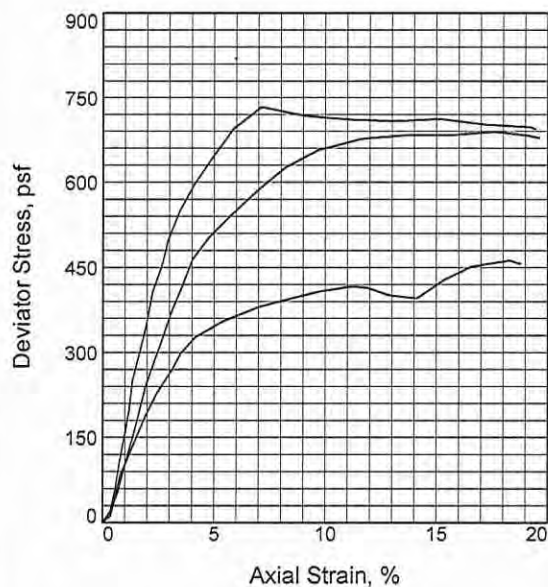
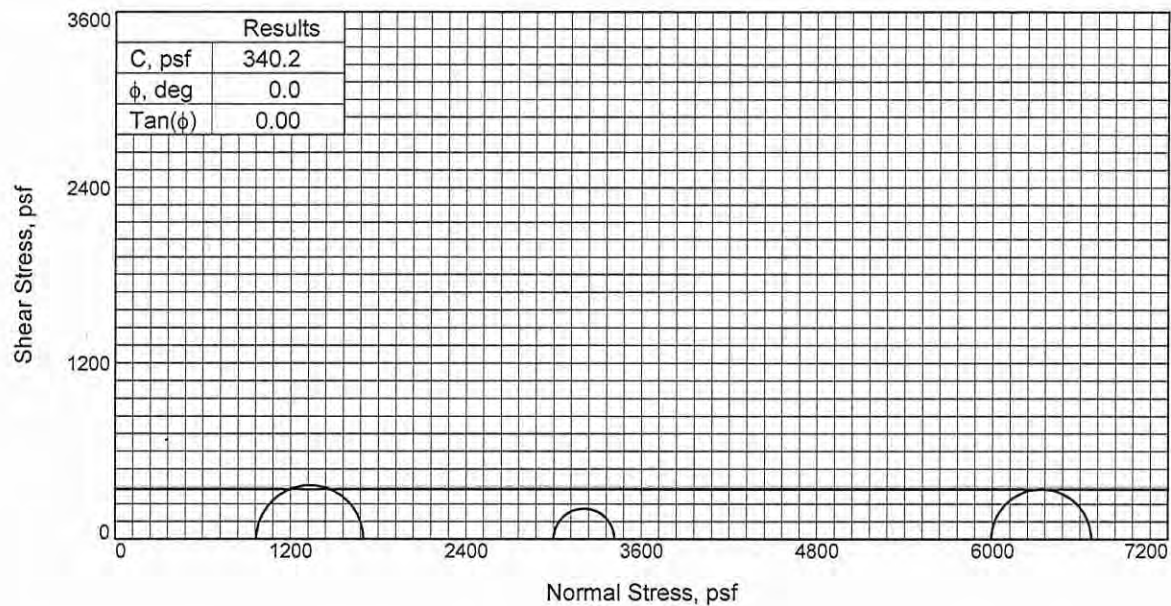
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: BH

Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	37.0	35.2	34.8
	Dry Density, pcf	84.3	86.4	86.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.9997	0.9502	0.9391
	Diameter, in.	1.388	1.392	1.385
	Height, in.	2.740	2.766	2.774
At Test	Water Content, %	37.0	35.2	34.8
	Dry Density, pcf	84.3	86.4	86.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.9997	0.9502	0.9391
	Diameter, in.	1.388	1.392	1.385
	Height, in.	2.740	2.766	2.774
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.700	20.820	41.610
Fail. Stress, psf		733.2	416.6	683.3
Strain, %		7.1	11.2	13.7
Ult. Stress, psf		708.4	395.6	683.3
Strain, %		13.2	14.1	13.7
σ_1 Failure, psf		1698.0	3414.7	6675.1
σ_3 Failure, psf		964.8	2998.1	5991.8

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CL6 W/ SIF

LL= 41

PL= 18

PI= 23

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.150 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07

Depth: 26

Sample Number: 7C

Proj. No.: 24384

Date Sampled: 9/15/20

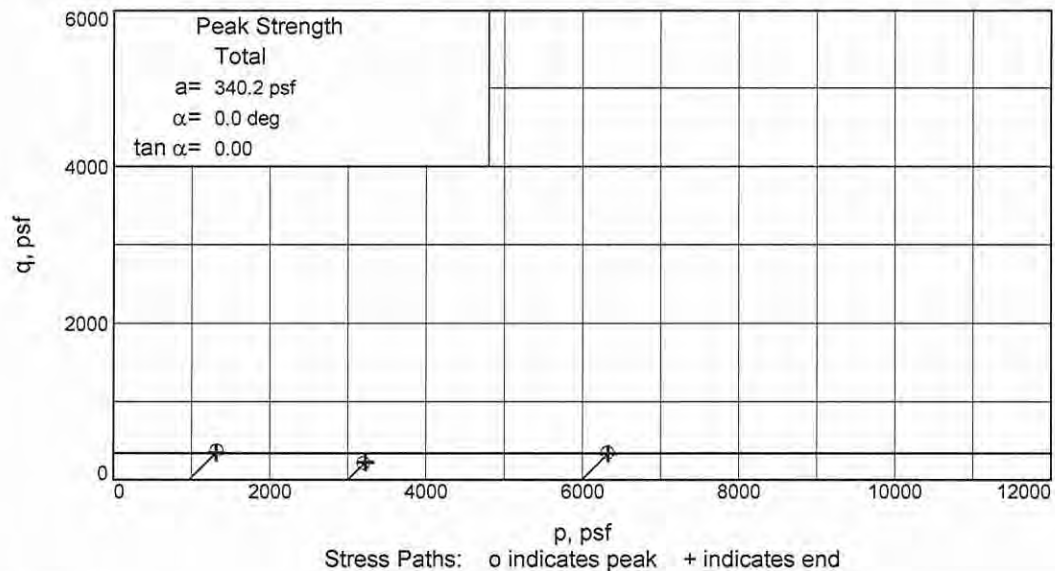
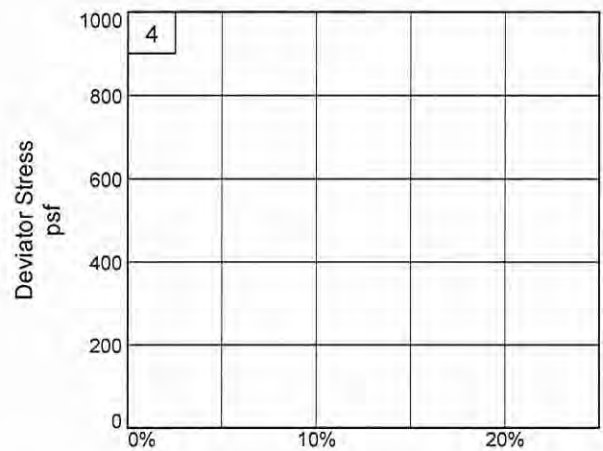
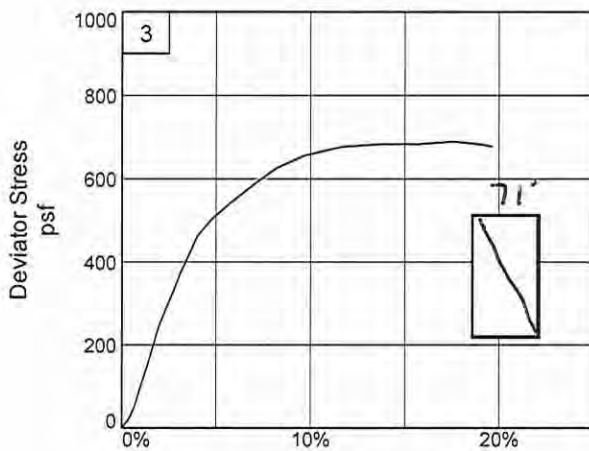
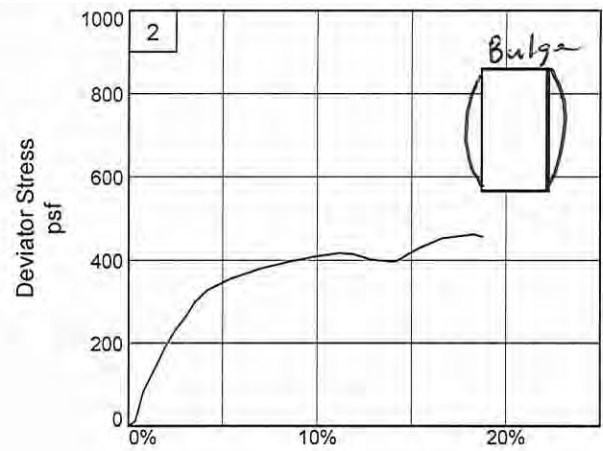
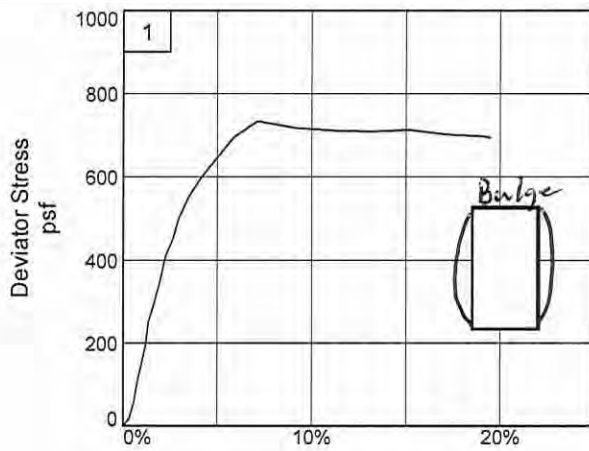


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Figure ASTM D2850

Tested By: CC

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07

Depth: 26

Sample Number: 7C

Project No.: 24384

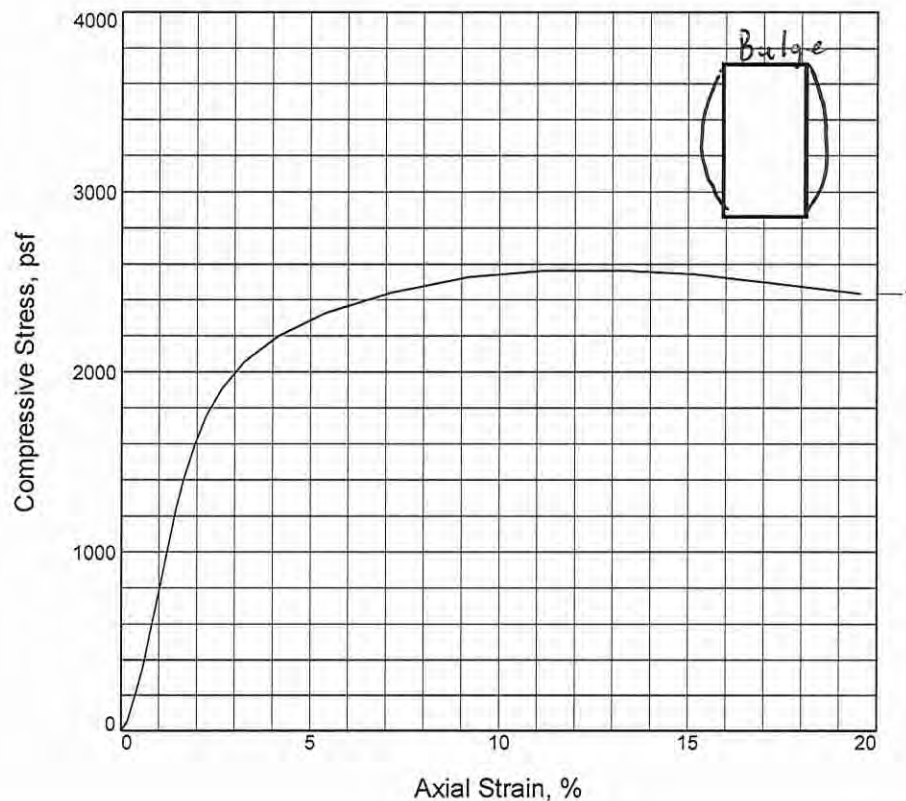
Figure ASTM D2850

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Tested By: CC

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	2566.0			
Undrained shear strength, psf	1283.0			
Failure strain, %	13.2			
Strain rate, %/min.	1.00			
Water content, %	24.7			
Wet density, pcf	126.6			
Dry density, pcf	101.5			
Saturation, %	100.1			
Void ratio	0.6725			
Specimen diameter, in.	1.386			
Specimen height, in.	2.726			
Height/diameter ratio	1.97			

Description: ST LGR & T CH3 W/ ARS ML

LL = 56	PL = 20	PI = 36	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 9/17/20

Remarks:

TORVANE = 0.750 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07 **Depth:** 30

Sample Number: 8C1

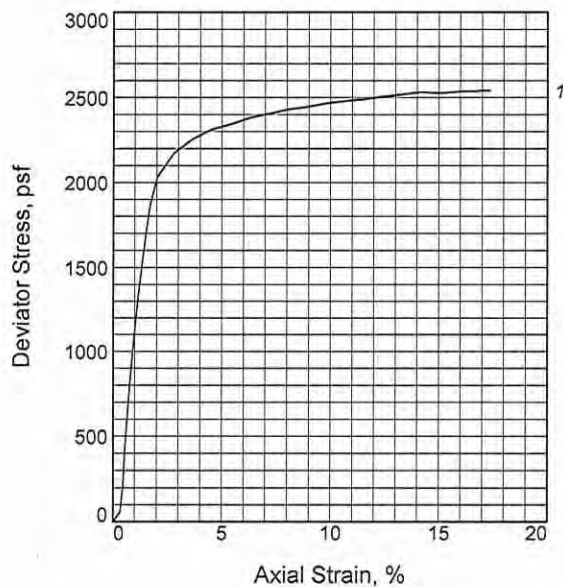
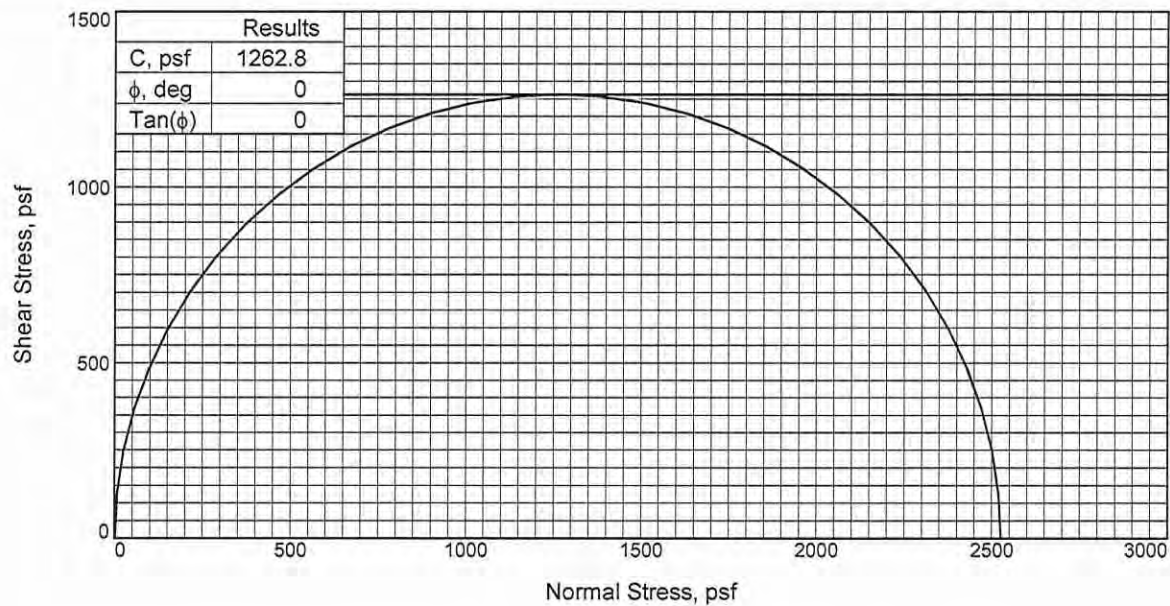
Figure ASTM D2166



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Tested By: CC

Checked By: RR



Specimen No.		1
Initial	Water Content, %	23.9
	Dry Density, pcf	100.9
	Saturation, %	95.0
	Void Ratio	0.6836
	Diameter, in.	2.858
	Height, in.	5.772
At Test	Water Content, %	25.1
	Dry Density, pcf	100.9
	Saturation, %	100.0
	Void Ratio	0.6836
	Diameter, in.	2.858
	Height, in.	5.772
Strain rate, %/min.		0.50
Back Pressure, psi		0.000
Cell Pressure, psi		0.000
Fail. Stress, psf		2525.6
Strain, %		15.1
Ult. Stress, psf		2525.6
Strain, %		15.1
σ_1 Failure, psf		2525.6
σ_3 Failure, psf		0.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST LGR & T CH3 W/ ARS ML

LL= 56

PL= 20

PI= 36

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.775 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07 **Depth:** 30.3

Sample Number: 8C2

Proj. No.: 24384

Date Sampled: 9/17/20

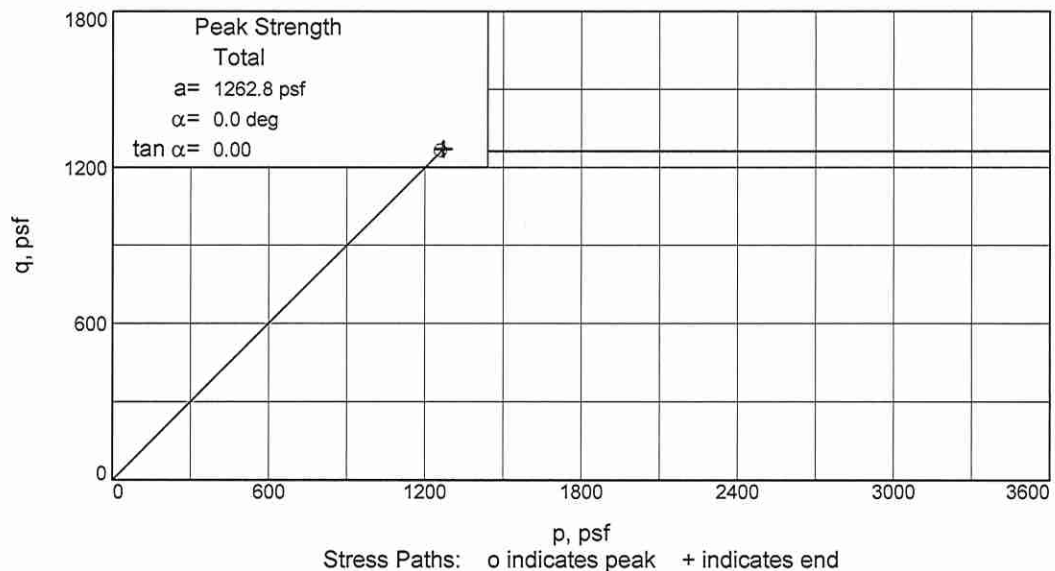
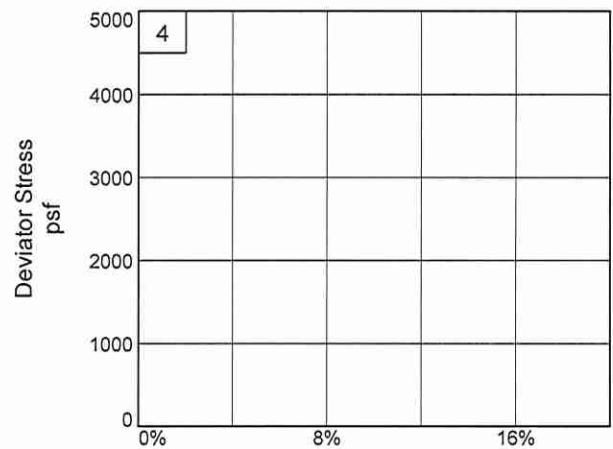
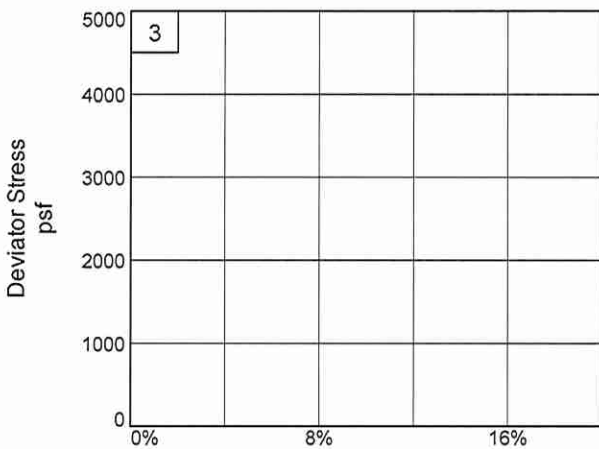
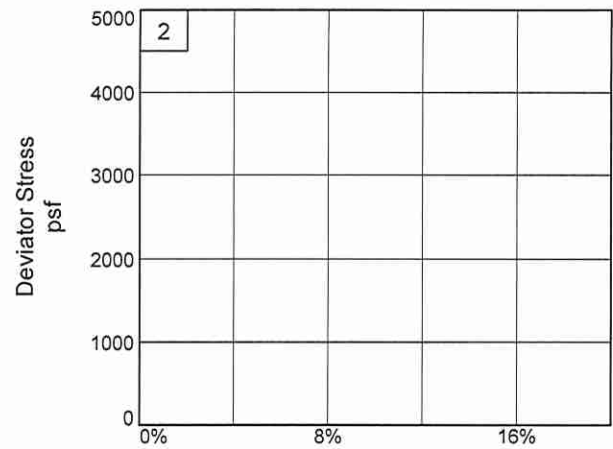
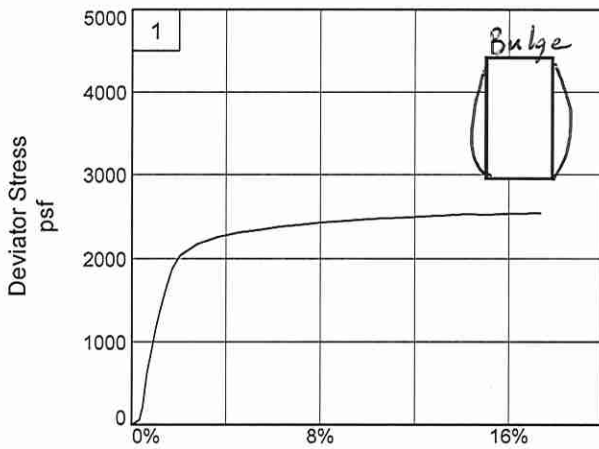
Figure ASTM D2850



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Tested By: BH

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07

Depth: 30.3

Sample Number: 8C2

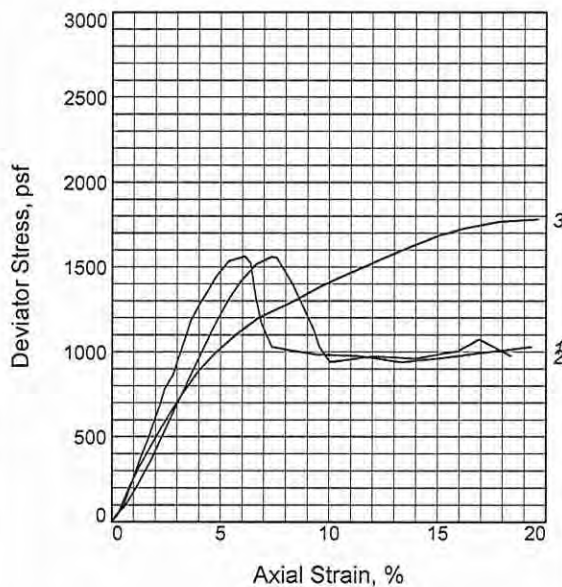
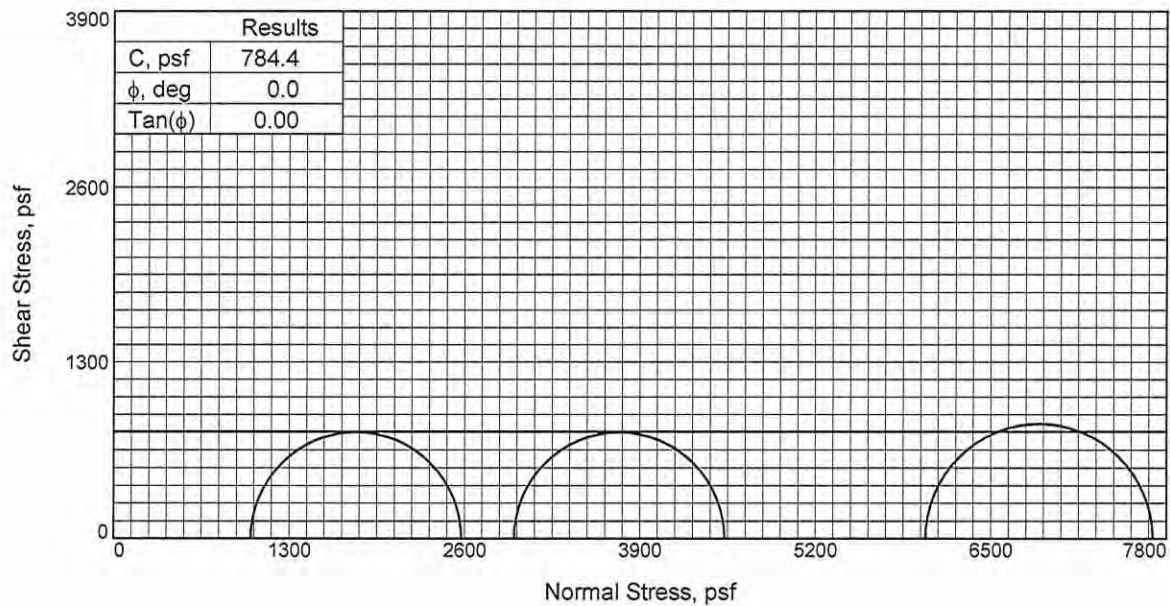
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: BH

Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	28.1	29.7	30.0
	Dry Density, pcf	95.9	93.5	93.2
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7581	0.8022	0.8091
	Diameter, in.	1.394	1.380	1.383
	Height, in.	2.743	2.783	2.727
At Test	Water Content, %	28.1	29.7	30.0
	Dry Density, pcf	95.9	93.5	93.2
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7581	0.8022	0.8091
	Diameter, in.	1.394	1.380	1.383
	Height, in.	2.743	2.783	2.727
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		7.040	20.590	41.760
Fail. Stress, psf		1562.5	1560.2	1684.3
Strain, %		6.1	7.4	15.0
Ult. Stress, psf		940.4	940.4	1684.3
Strain, %		13.3	10.0	15.0
σ_1 Failure, psf		2576.3	4525.1	7697.8
σ_3 Failure, psf		1013.8	2965.0	6013.4

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR & T CL6

LL= 41

PL= 13

PI= 28

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07

Depth: 37

Sample Number: 10B

Proj. No.: 24384

Date Sampled: 9/15/20

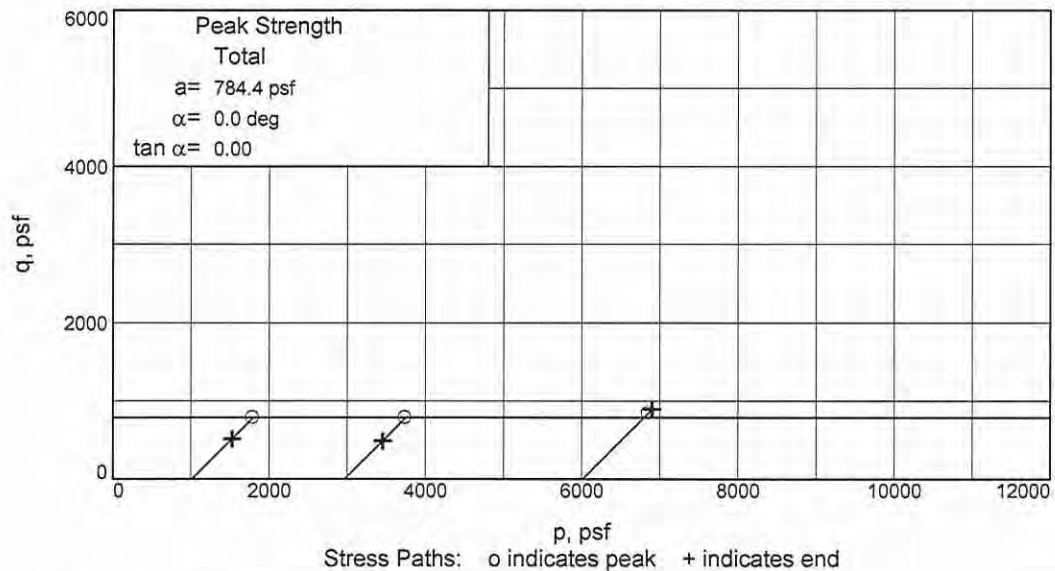
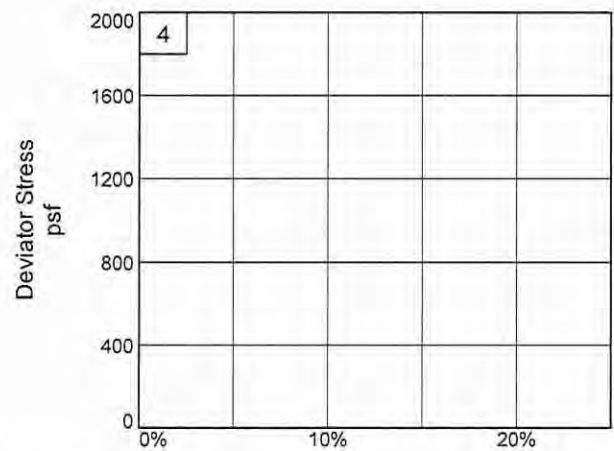
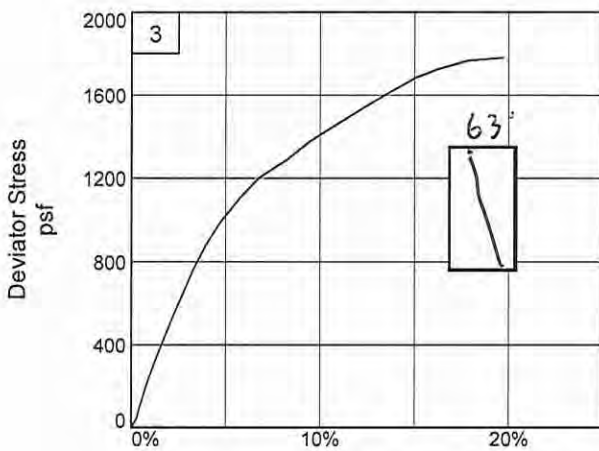
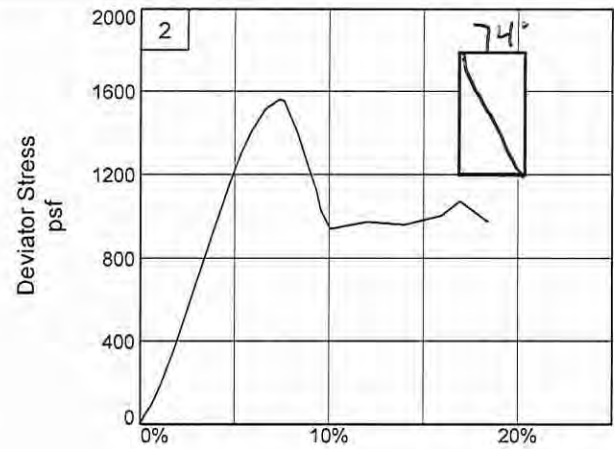
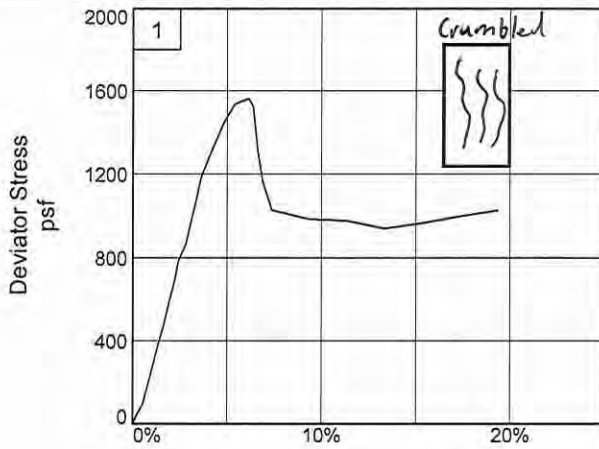


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Figure ASTM D2850

Tested By: CC

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07

Depth: 37

Sample Number: 10B

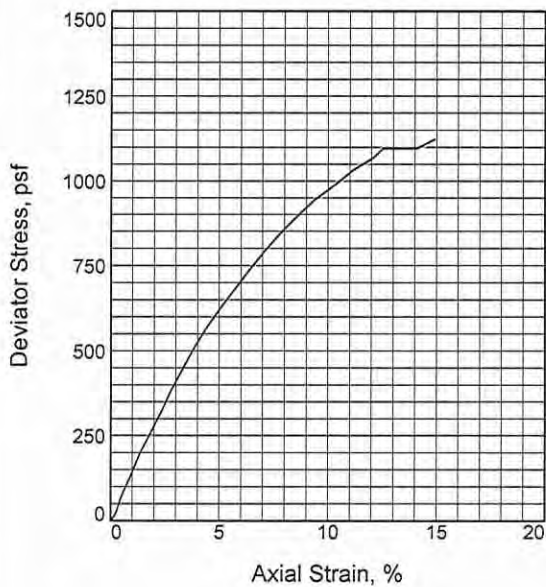
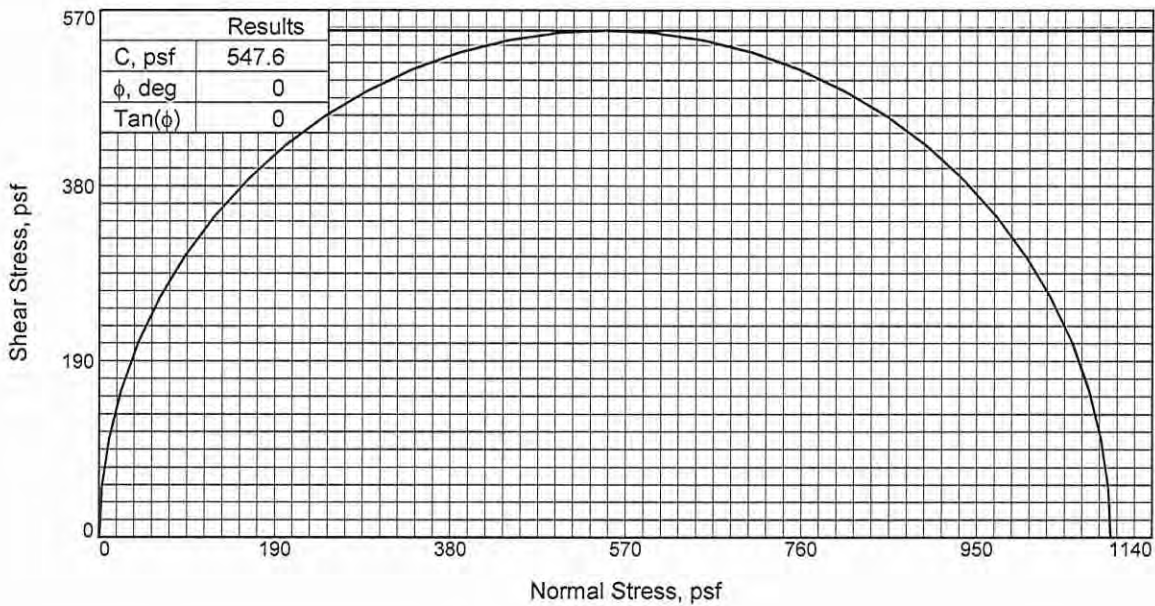
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: CC

Checked By: RR



Specimen No.		1
Initial	Water Content, %	30.9
	Dry Density, pcf	91.5
	Saturation, %	98.9
	Void Ratio	0.8429
	Diameter, in.	2.879
	Height, in.	5.750
At Test	Water Content, %	31.2
	Dry Density, pcf	91.5
	Saturation, %	100.0
	Void Ratio	0.8429
	Diameter, in.	2.879
	Height, in.	5.750
Strain rate, %/min.		0.50
Back Pressure, psi		0.000
Cell Pressure, psi		0.000
Fail. Stress, psf		1095.2
Strain, %		12.5
Ult. Stress, psf		1095.2
Strain, %		12.5
σ_1 Failure, psf		1095.2
σ_3 Failure, psf		0.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M T CL4

LL= 38

PL= 19

PI= 19

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.350 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07

Depth: 38

Sample Number: 10C

Proj. No.: 24384

Date Sampled: 10/7/20

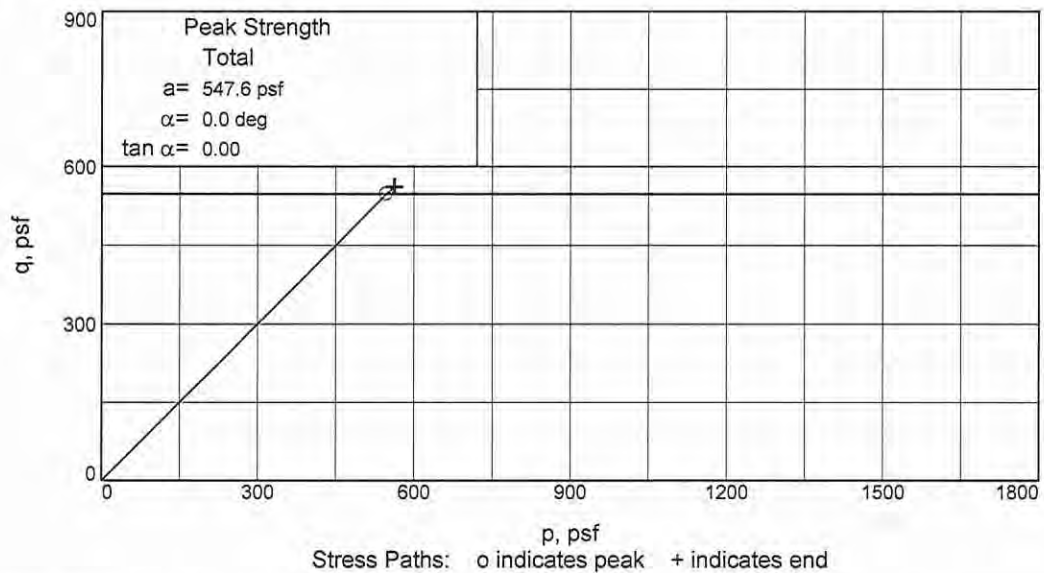
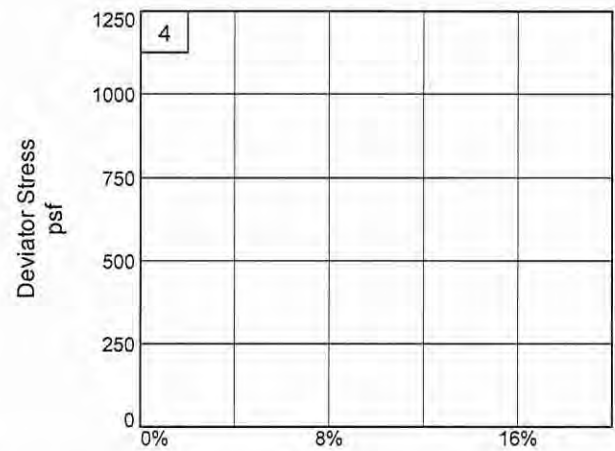
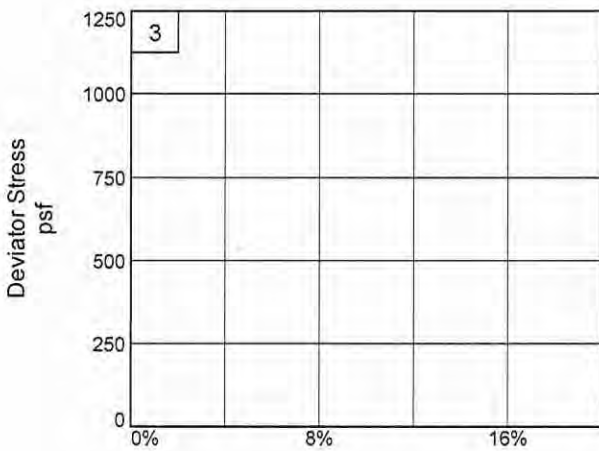
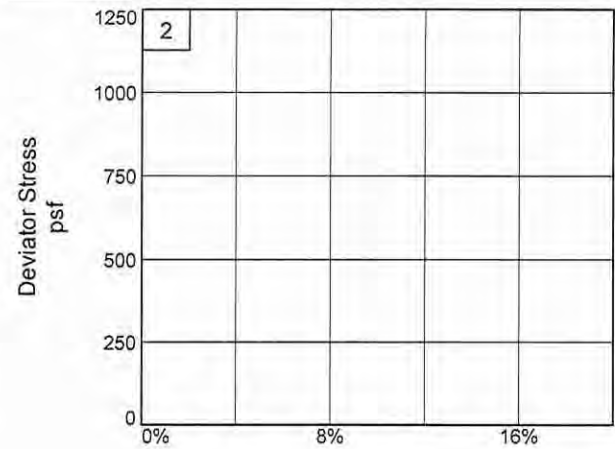
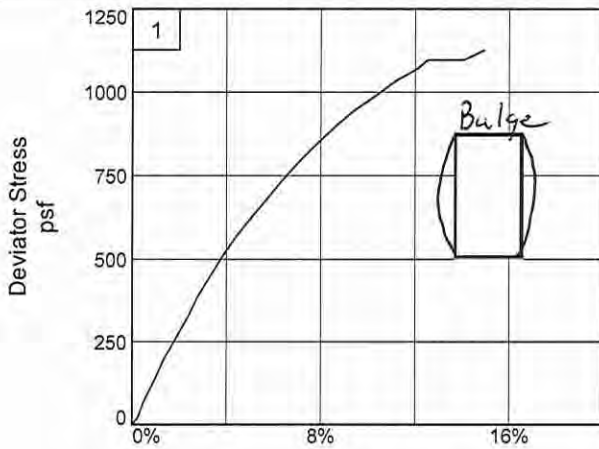
Figure ASTM D2850



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Tested By: BH

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-07

Depth: 38

Sample Number: 10C

Project No.: 24384

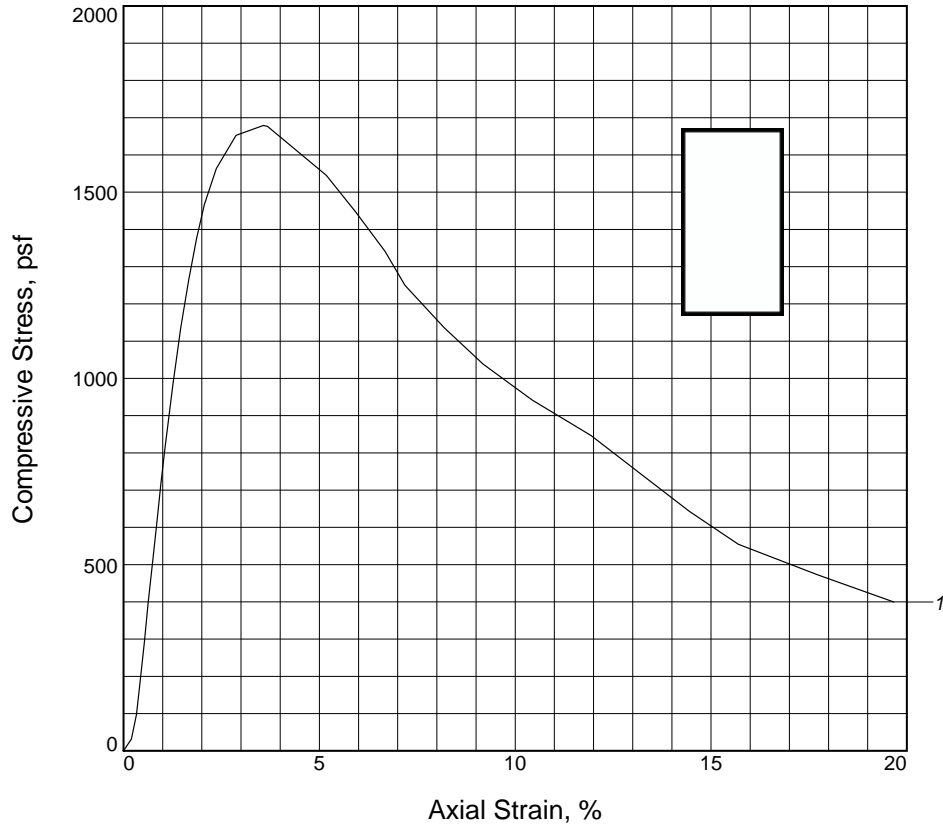
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: BH

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	1679.0			
Undrained shear strength, psf	839.5			
Failure strain, %	3.6			
Strain rate, %/min.	1.00			
Water content, %	28.8			
Wet density, pcf	117.0			
Dry density, pcf	90.9			
Saturation, %	90.2			
Void ratio	0.8685			
Specimen diameter, in.	1.393			
Specimen height, in.	2.769			
Height/diameter ratio	1.99			

Description: M GR & T CH3 W/ ARS ML, RT, SL

LL = 61 **PL** = 19 **PI** = 42 **Assumed GS**= 2.72 **Type:** UNDISTURBED

Project No.: 24384

Date Sampled: 9/21/20

Remarks:

TORVANE = 0.750 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-08

Depth: 5

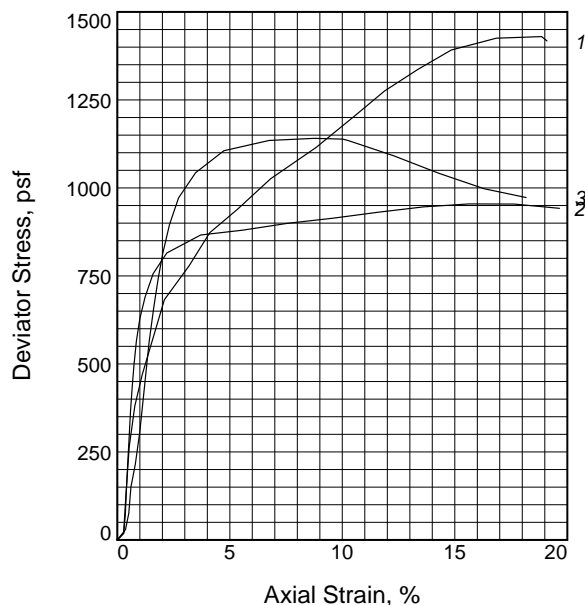
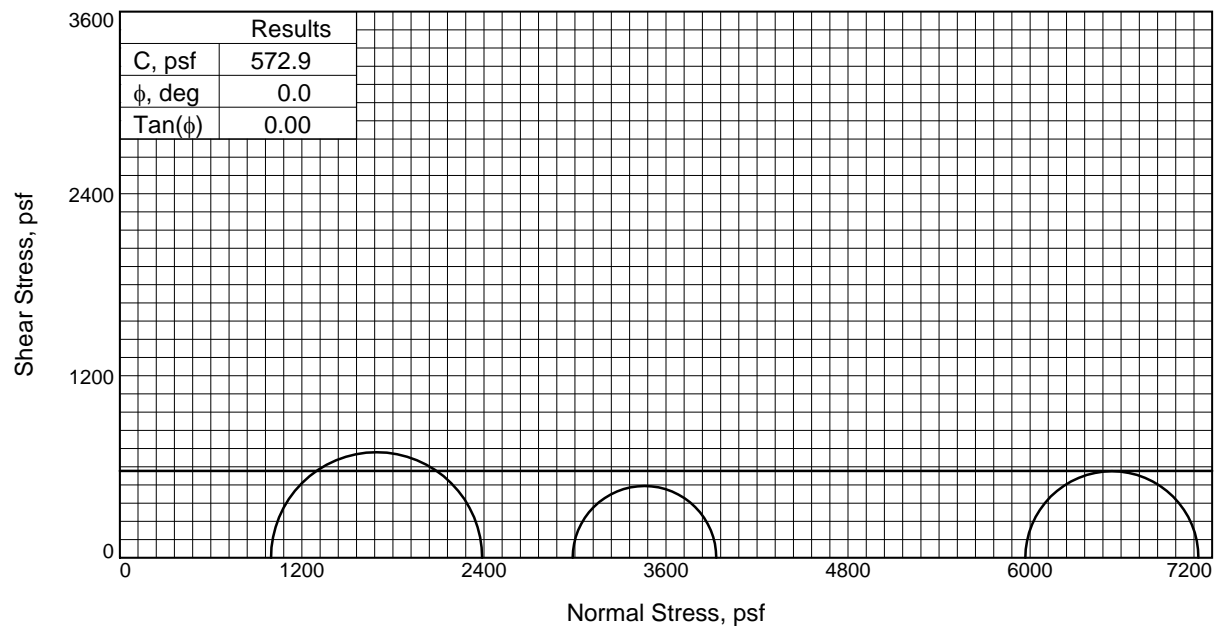
Sample Number: 2B

Figure ASTM D2166



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Tested By: CC **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	71.8	74.8	70.8
	Dry Density, pcf	55.5	53.9	55.4
	Saturation, %	94.6	94.3	92.9
	Void Ratio	2.0809	2.1746	2.0890
	Diameter, in.	1.403	1.400	1.399
	Height, in.	2.754	2.757	2.761
At Test	Water Content, %	75.9	79.4	76.2
	Dry Density, pcf	55.5	53.9	55.4
	Saturation, %	100.0	100.0	100.0
	Void Ratio	2.0809	2.1746	2.0890
	Diameter, in.	1.403	1.400	1.399
	Height, in.	2.754	2.757	2.761
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.920	20.730	41.450
Fail. Stress, psf		1391.6	946.2	1140.9
Strain, %		14.8	13.6	8.8
Ult. Stress, psf		1391.6	946.2	1041.8
Strain, %		14.8	13.6	14.3
σ_1 Failure, psf		2388.1	3931.3	7109.7
σ_3 Failure, psf		996.5	2985.1	5968.8

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR & BR CH0A

LL= 144 **PL=** 45 **PI=** 99

Assumed Specific Gravity= 2.74

Remarks: TORVANE = 0.750 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-08 **Depth:** 10

Sample Number: 3C

Proj. No.: 24384

Date Sampled: 9/21/20

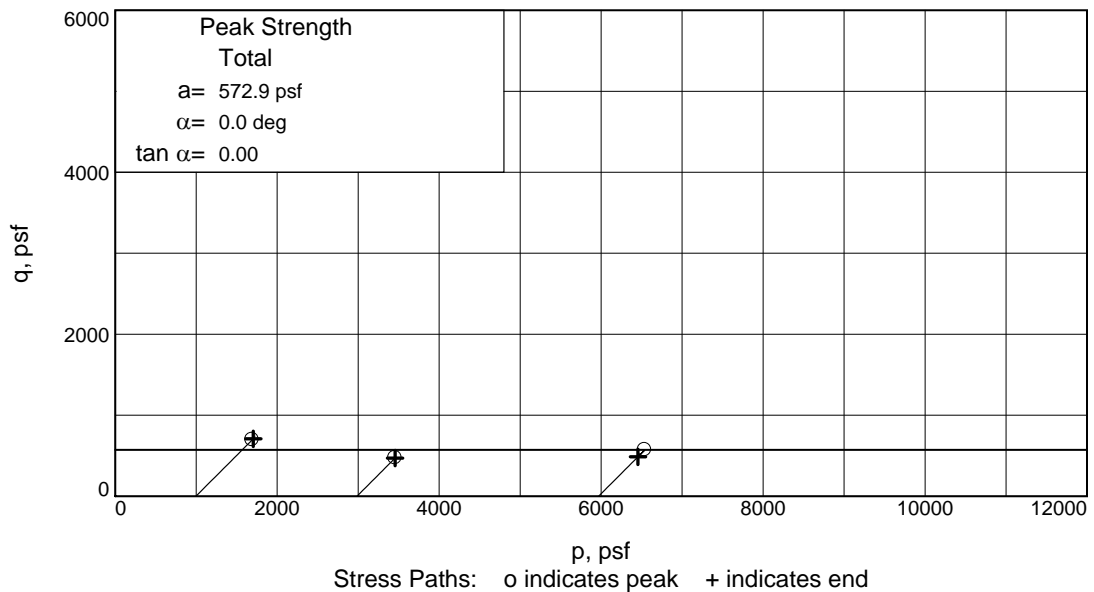
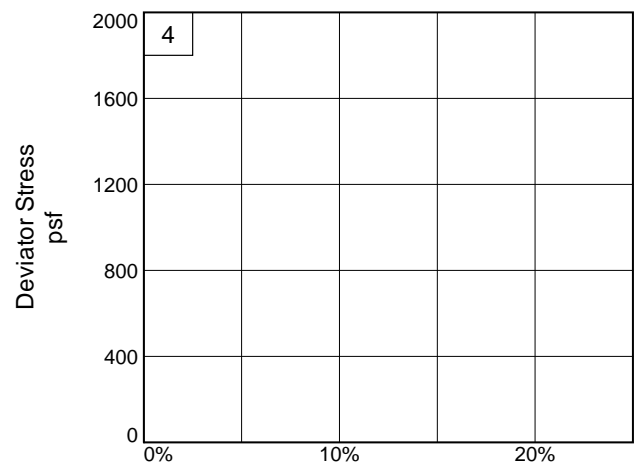
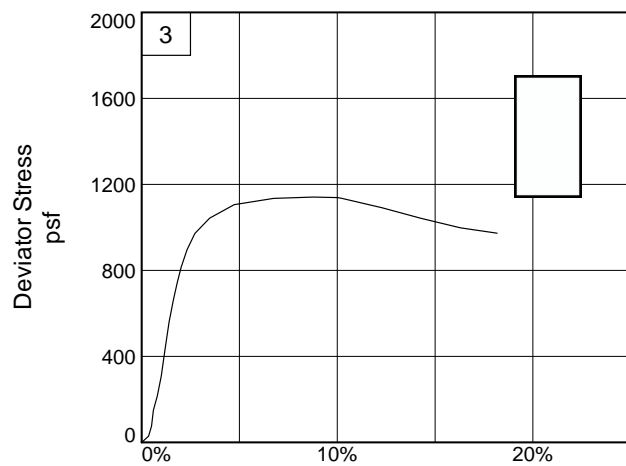
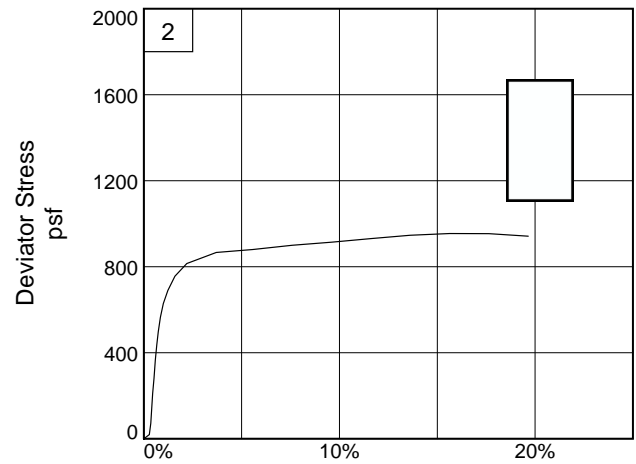
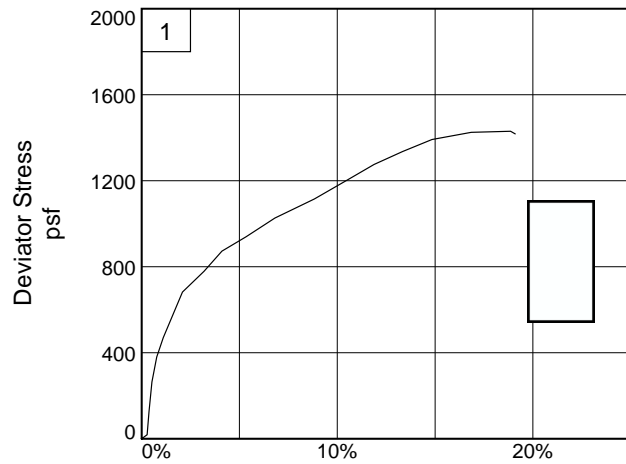


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Figure ASTM D2850

Tested By: CC

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-08

Depth: 10

Sample Number: 3C

Project No.: 24384

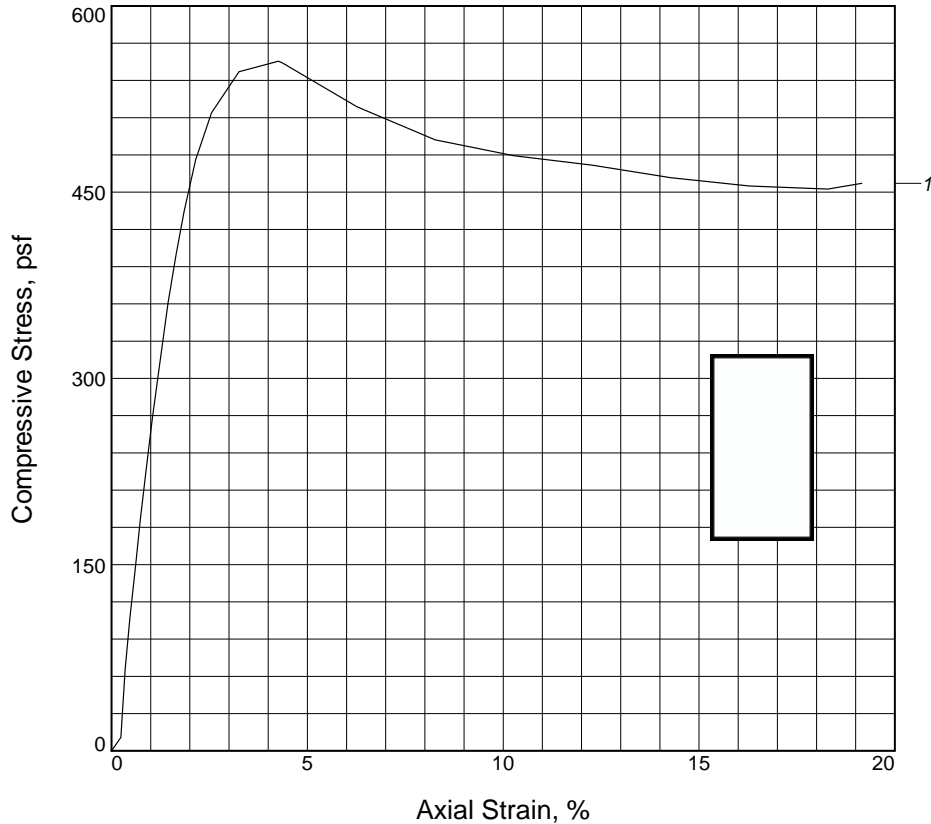
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: CC

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	555.5			
Undrained shear strength, psf	277.7			
Failure strain, %	4.3			
Strain rate, %/min.	1.00			
Water content, %	58.2			
Wet density, pcf	102.9			
Dry density, pcf	65.0			
Saturation, %	98.3			
Void ratio	1.6111			
Specimen diameter, in.	1.397			
Specimen height, in.	2.761			
Height/diameter ratio	1.98			

Description: SO GR CH4 W/ ARS ML, SL

LL = 82 **PL** = 19 **PI** = 63 **Assumed GS**= 2.72 **Type:** UNDISTURBED

Project No.: 24384

Date Sampled: 9/21/20

Remarks:
TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-08 **Depth:** 14

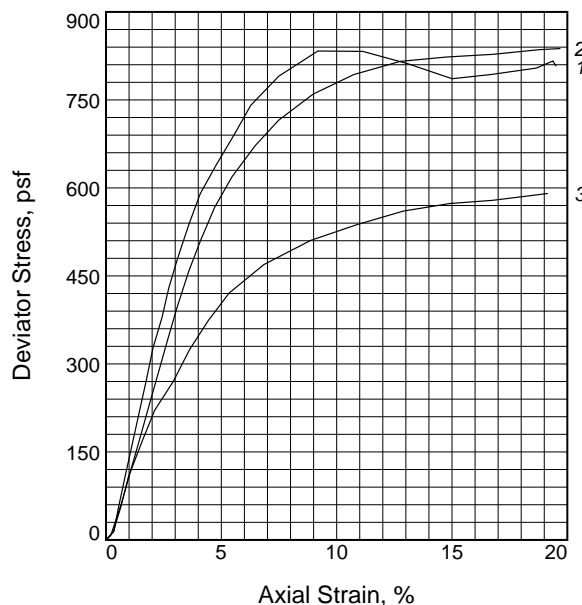
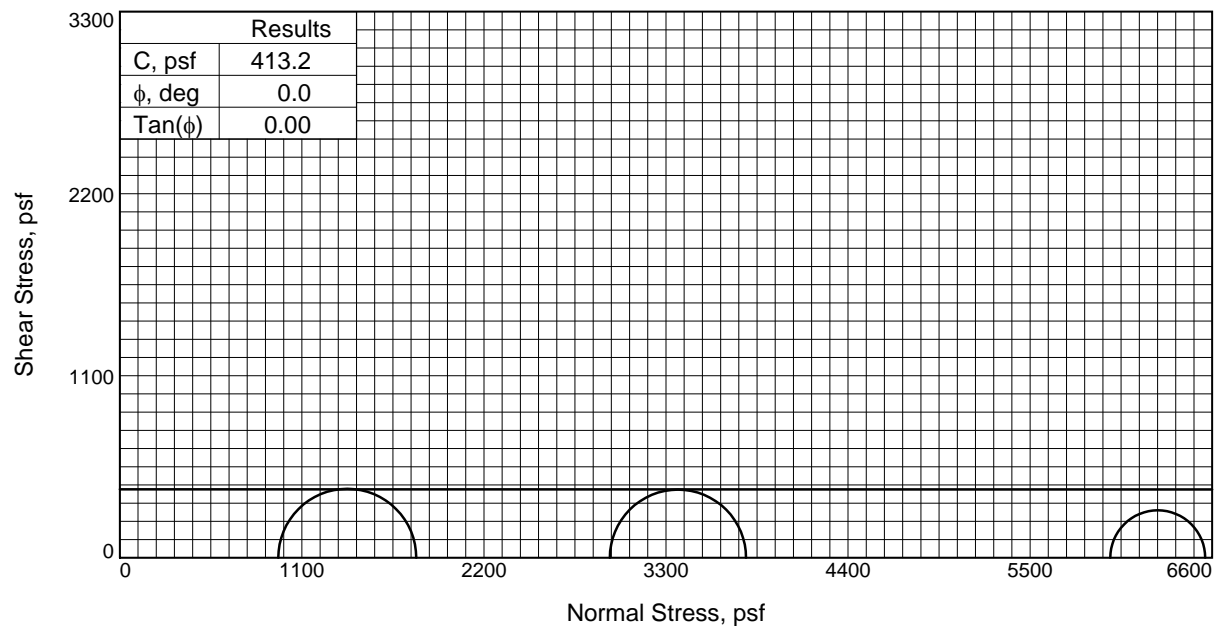
Sample Number: 4C

Figure ASTM D2166



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Tested By: CC **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	39.6	40.0	40.2
	Dry Density, pcf	81.3	80.8	80.8
	Saturation, %	99.6	99.2	99.9
	Void Ratio	1.0727	1.0872	1.0855
	Diameter, in.	1.412	1.386	1.395
	Height, in.	2.779	2.763	2.763
At Test	Water Content, %	39.7	40.3	40.2
	Dry Density, pcf	81.3	80.8	80.8
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.0727	1.0872	1.0855
	Diameter, in.	1.412	1.386	1.395
	Height, in.	2.779	2.763	2.763
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.650	20.560	41.560
Fail. Stress, psf		833.5	823.2	573.5
Strain, %		9.2	14.8	14.9
Ult. Stress, psf		786.1	823.2	573.5
Strain, %		15.0	14.8	14.9
σ_1 Failure, psf		1791.1	3783.8	6558.1
σ_3 Failure, psf		957.6	2960.6	5984.6

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CL6 W/ ARS SP

LL= 42 **PL=** 19 **PI=** 23

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.150 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-08 **Depth:** 21

Sample Number: 6B

Proj. No.: 24384

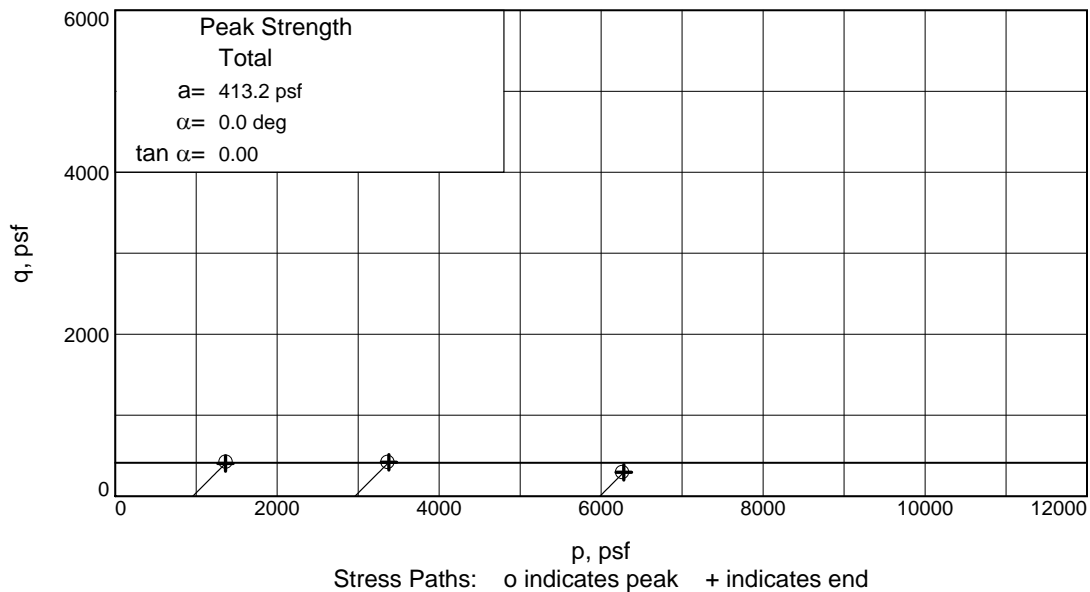
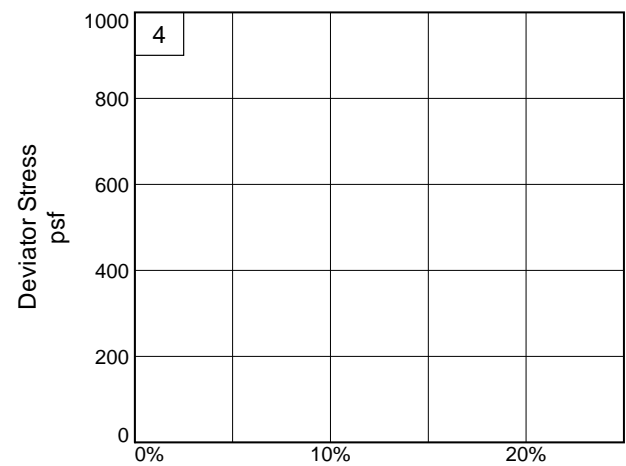
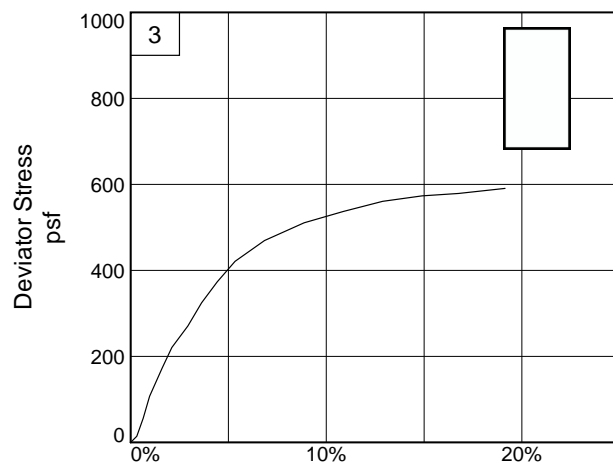
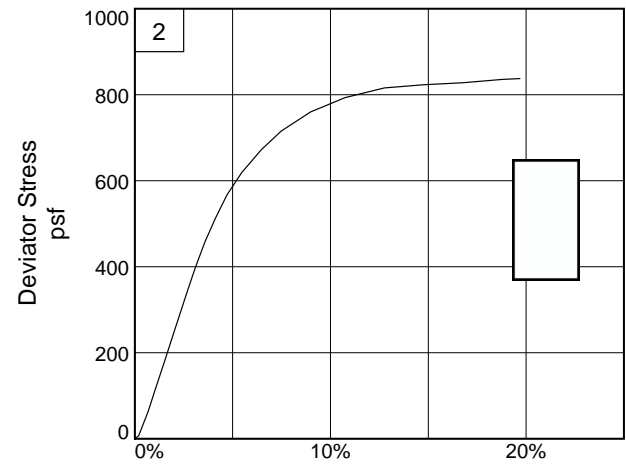
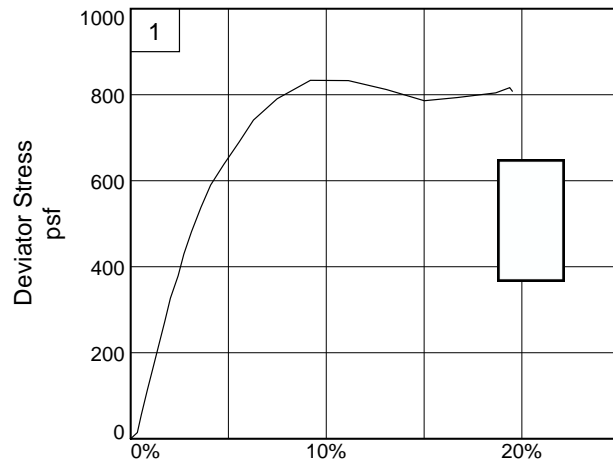
Date Sampled: 10/8/20

Figure ASTM D2850



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SINCE 1948

Tested By: CC **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-08

Depth: 21

Sample Number: 6B

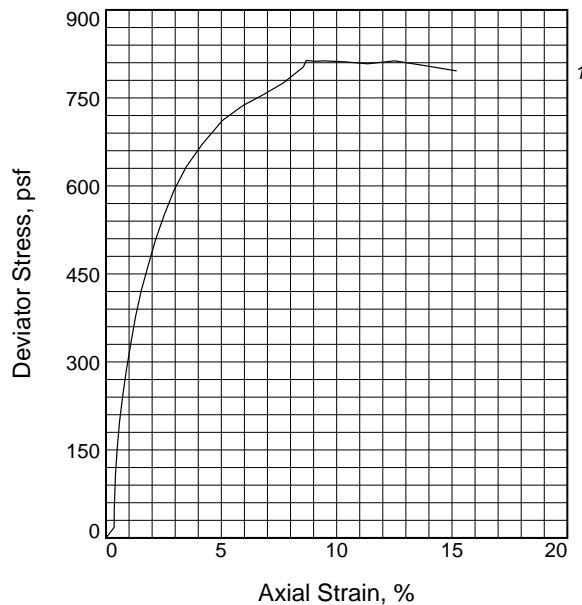
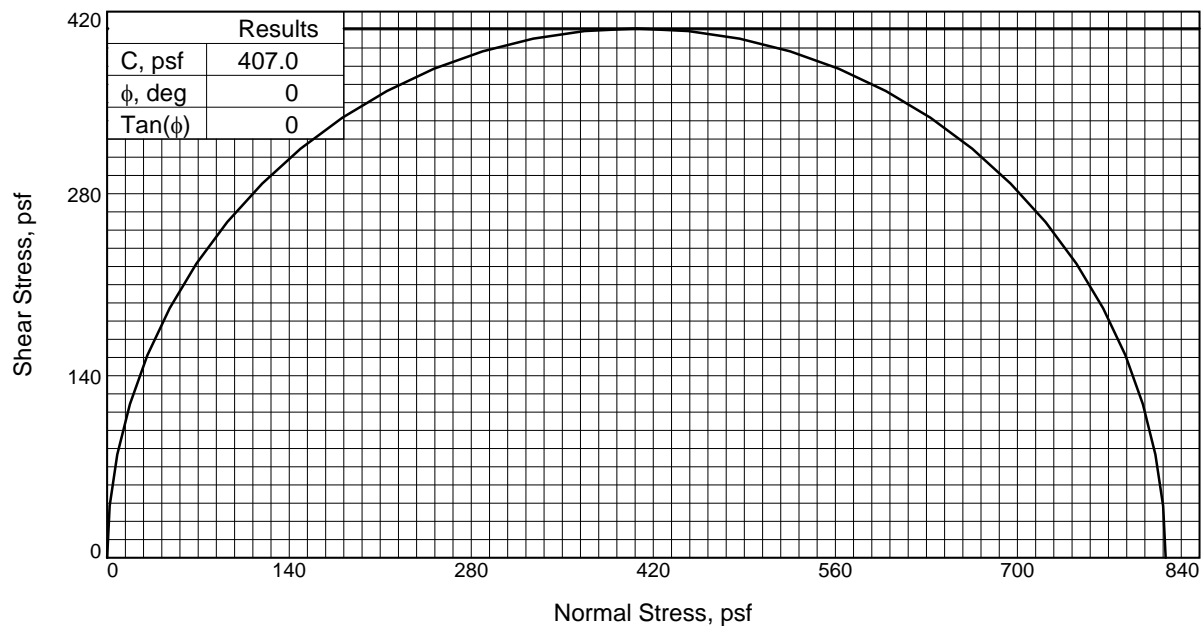
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: CC

Checked By: RR



Specimen No.		1
Initial	Water Content, %	26.5
	Dry Density, pcf	97.6
	Saturation, %	97.5
	Void Ratio	0.7389
	Diameter, in.	2.854
	Height, in.	5.770
At Test	Water Content, %	27.2
	Dry Density, pcf	97.6
	Saturation, %	100.0
	Void Ratio	0.7389
	Diameter, in.	2.854
	Height, in.	5.770
Strain rate, %/min.		0.50
Back Pressure, psi		0.000
Cell Pressure, psi		0.000
Fail. Stress, psf		814.0
Strain, %		8.7
Ult. Stress, psf		814.0
Strain, %		8.7
σ_1 Failure, psf		814.0
σ_3 Failure, psf		0.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR & T CL6 W/ CC

LL= 48 **PL=** 16 **PI=** 32

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.750 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-08 **Depth:** 25

Sample Number: 7B

Proj. No.: 24384

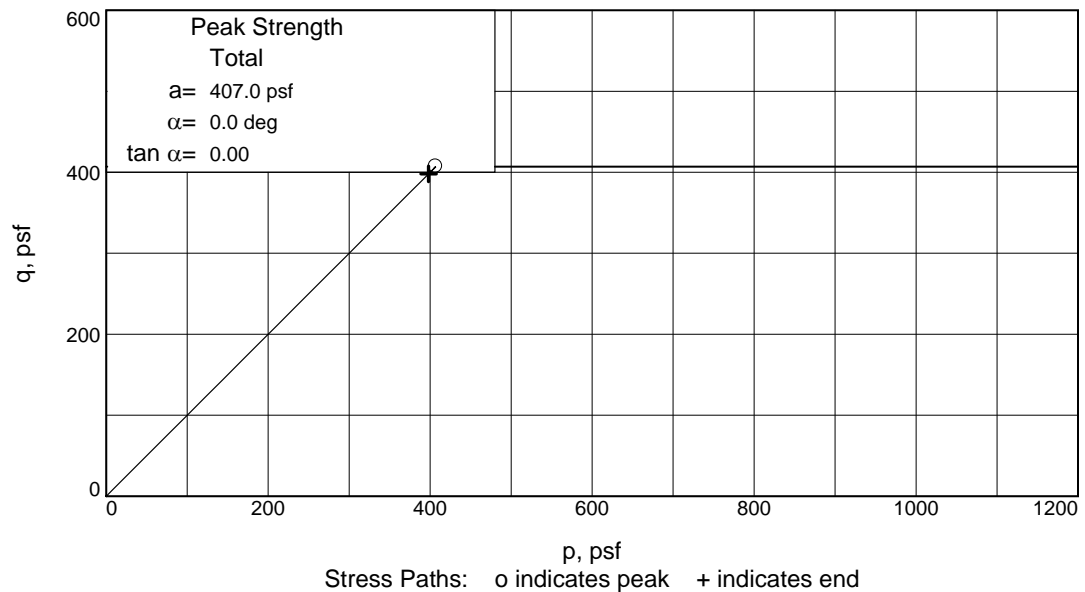
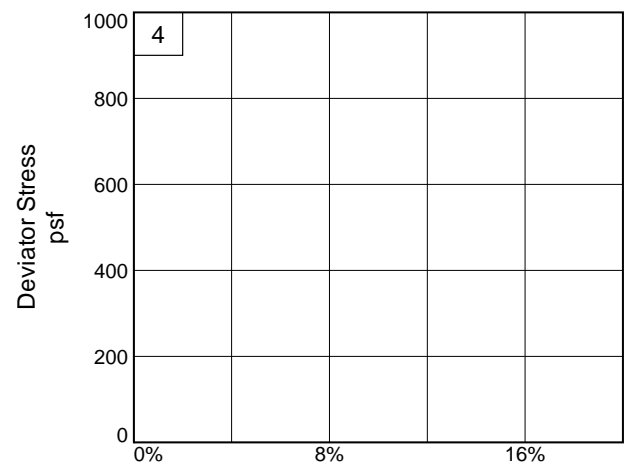
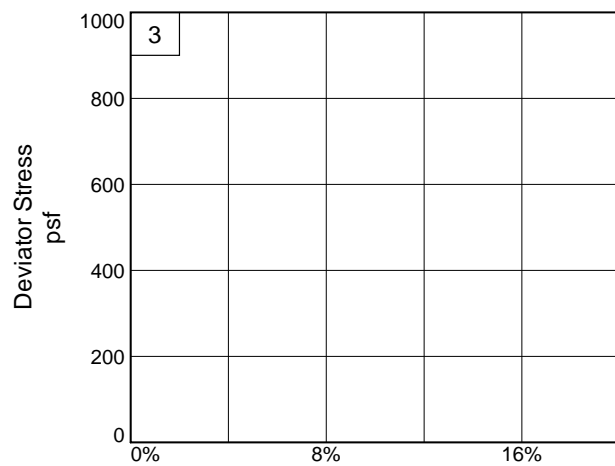
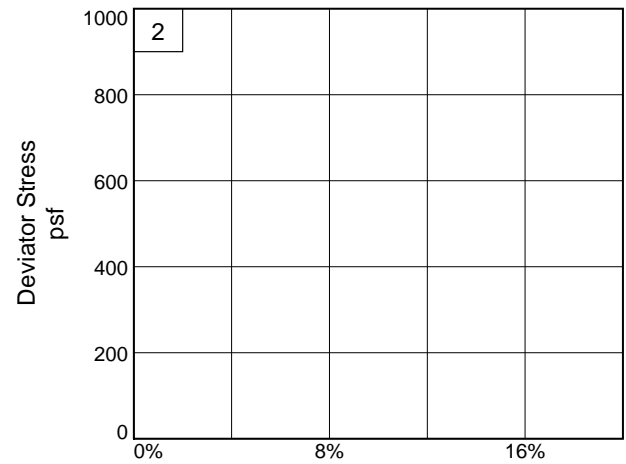
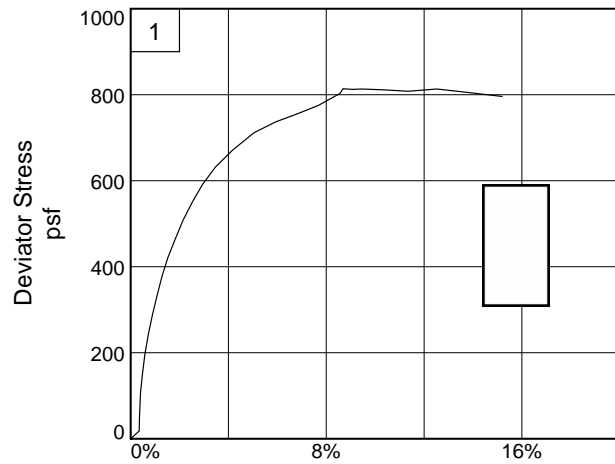
Date Sampled: 10/7/20

Figure ASTM D2850



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Tested By: BH **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-08

Depth: 25

Sample Number: 7B

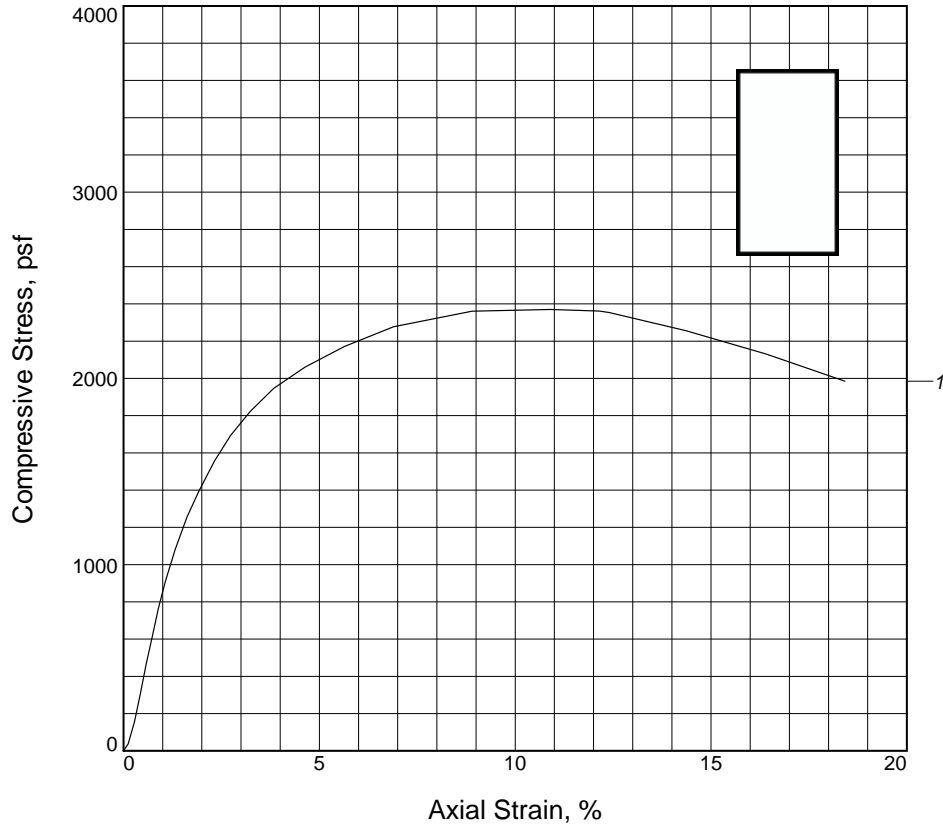
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: BH **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	2370.2			
Undrained shear strength, psf	1185.1			
Failure strain, %	10.9			
Strain rate, %/min.	1.00			
Water content, %	23.2			
Wet density, pcf	124.7			
Dry density, pcf	101.2			
Saturation, %	93.1			
Void ratio	0.6774			
Specimen diameter, in.	1.383			
Specimen height, in.	2.766			
Height/diameter ratio	2.00			

Description: ST LGR & T CH2 W/ ARS ML

LL = 57 **PL = 20** **PI = 37** **Assumed GS= 2.72** **Type: UNDISTURBED**

Project No.: 24384

Date Sampled: 9/21/20

Remarks:

TORVANE = 0.875 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-08 **Depth:** 26

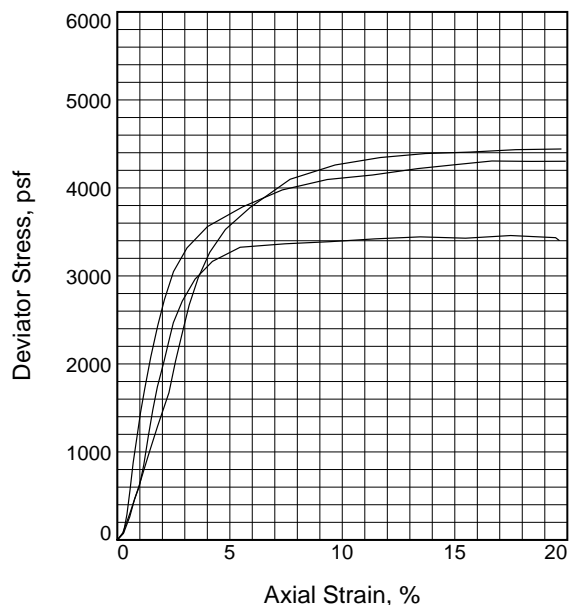
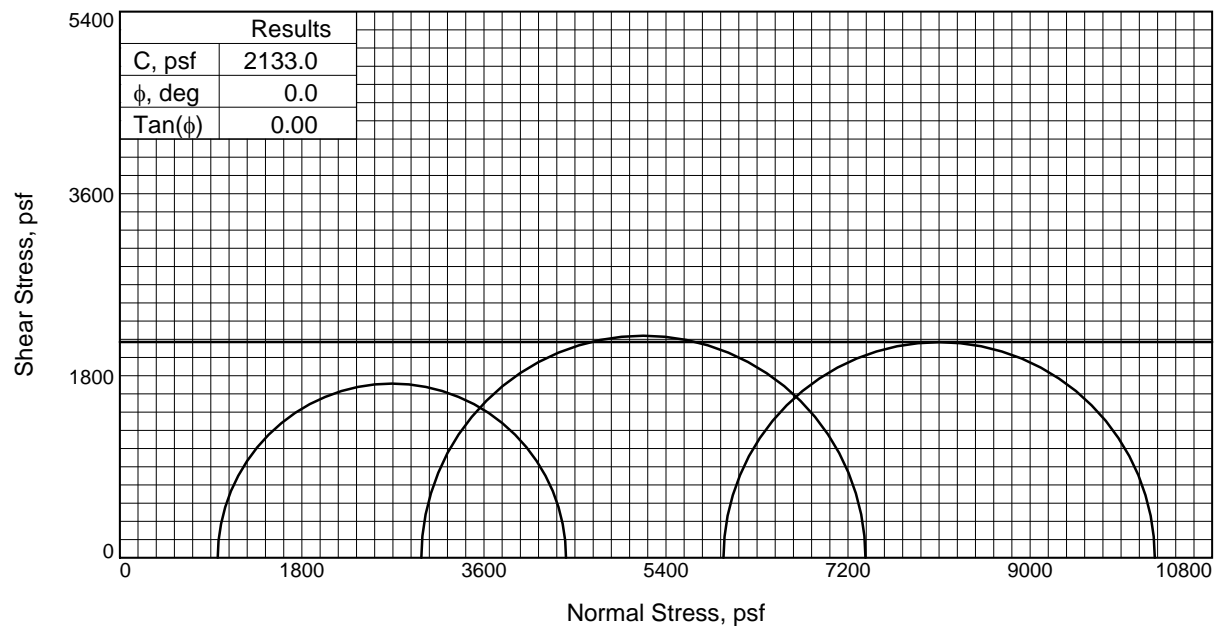
Sample Number: 7C

Figure ASTM D2166



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Tested By: CC **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	24.6	25.3	25.4
	Dry Density, pcf	99.7	100.7	100.2
	Saturation, %	95.2	100.1	99.2
	Void Ratio	0.7028	0.6864	0.6955
	Diameter, in.	1.395	1.389	1.390
	Height, in.	2.736	2.765	2.758
At Test	Water Content, %	25.8	25.2	25.6
	Dry Density, pcf	99.7	100.7	100.2
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7028	0.6864	0.6955
	Diameter, in.	1.395	1.389	1.390
	Height, in.	2.736	2.765	2.758
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.720	20.700	41.450
Fail. Stress, psf		3444.1	4391.0	4264.0
Strain, %		13.5	13.7	15.0
Ult. Stress, psf		3444.1	4391.0	4264.0
Strain, %		13.5	13.7	15.0
σ_1 Failure, psf		4411.8	7371.8	10232.8
σ_3 Failure, psf		967.7	2980.8	5968.8

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: VST LTG & T CH3 W/ ARS ML, CC, SL

LL= 62 **PL=** 19 **PI=** 43

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 1.000 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-08 **Depth:** 30

Sample Number: 8C

Proj. No.: 24384

Date Sampled: 9/21/20

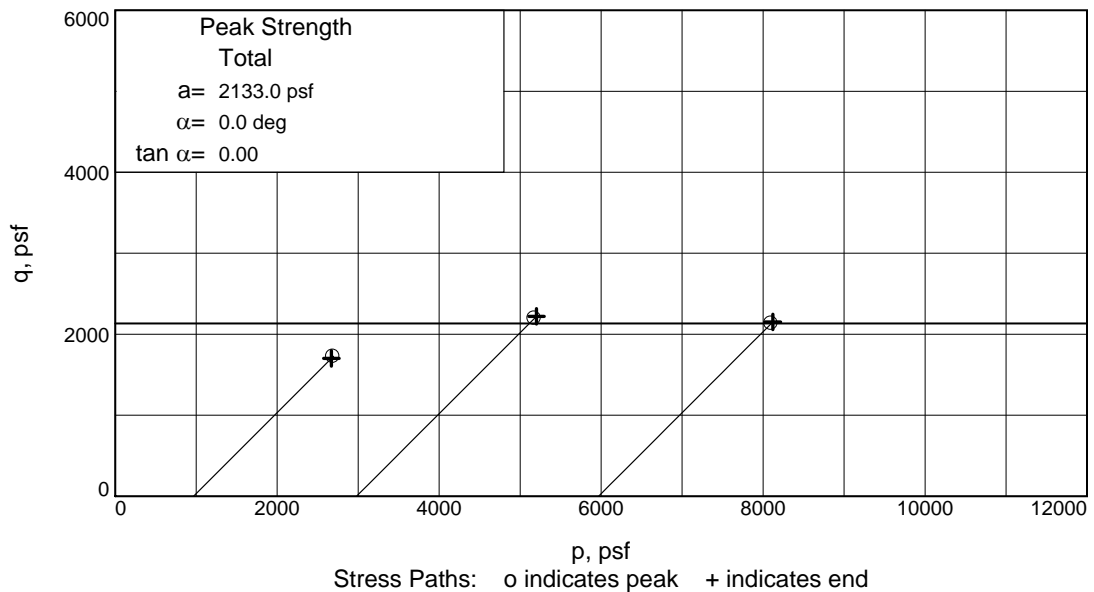
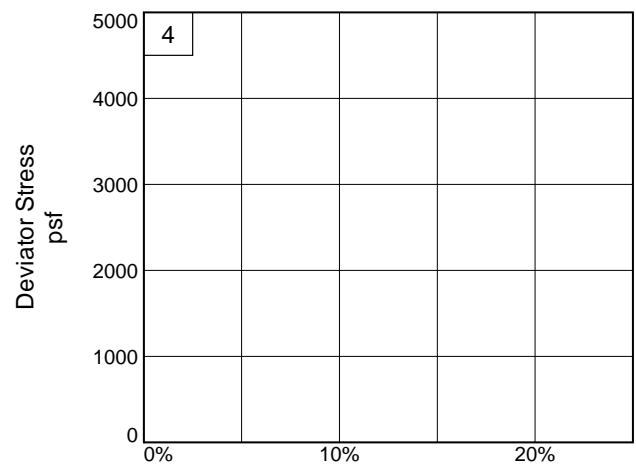
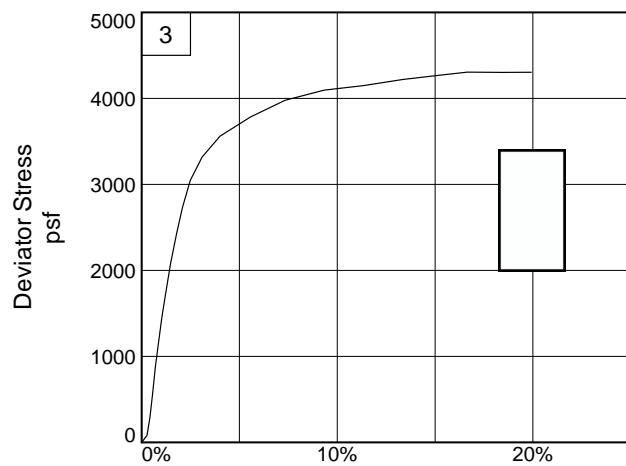
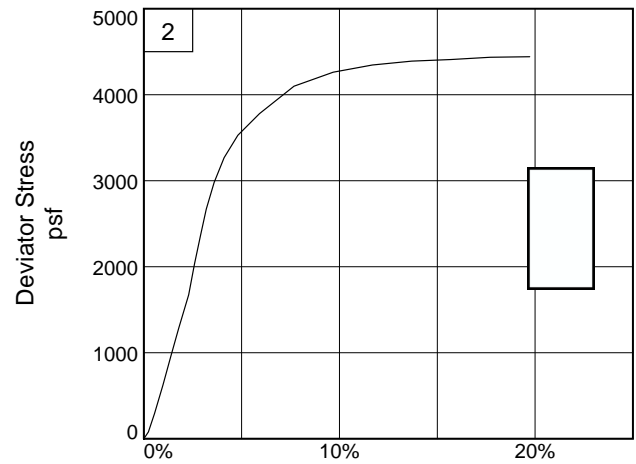
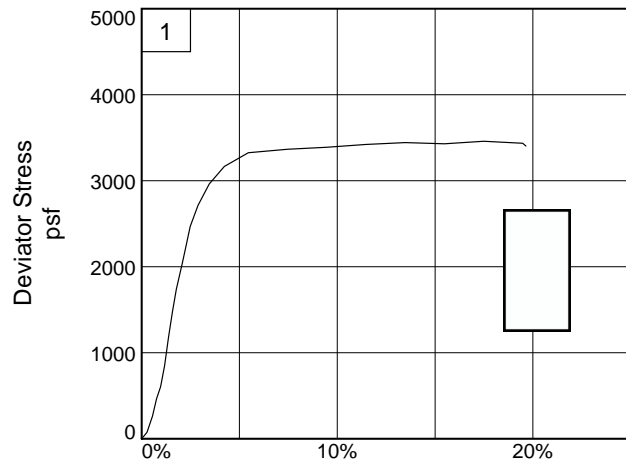


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Figure ASTM D2850

Tested By: CC

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-08

Depth: 30

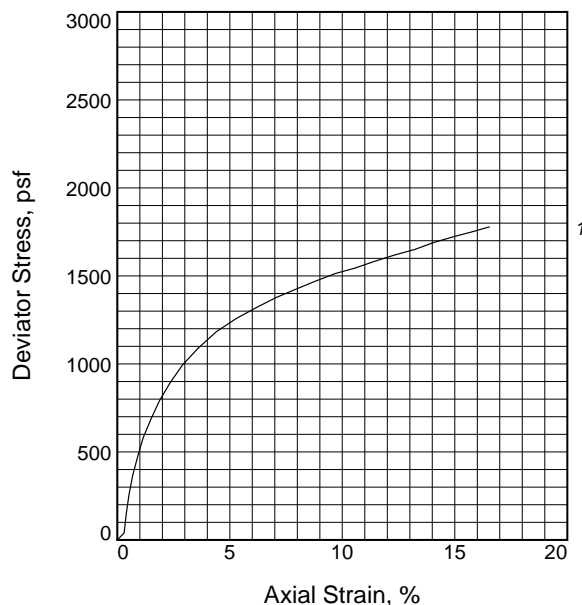
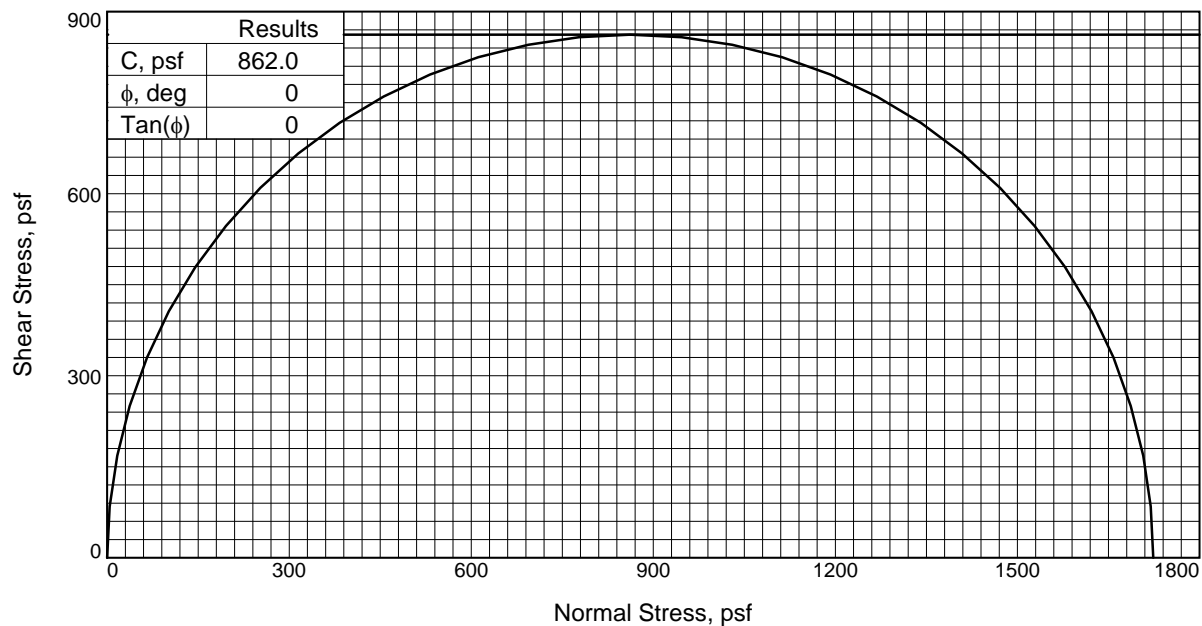
Sample Number: 8C

Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: CC **Checked By:** RR



Specimen No.		1
Initial	Water Content, %	29.0
	Dry Density, pcf	92.1
	Saturation, %	93.7
	Void Ratio	0.8431
	Diameter, in.	2.853
	Height, in.	5.737
At Test	Water Content, %	31.0
	Dry Density, pcf	92.1
	Saturation, %	100.0
	Void Ratio	0.8431
	Diameter, in.	2.853
	Height, in.	5.737
Strain rate, %/min.		0.50
Back Pressure, psi		0.000
Cell Pressure, psi		0.000
Fail. Stress, psf		1723.9
Strain, %		15.0
Ult. Stress, psf		1723.9
Strain, %		15.0
σ_1 Failure, psf		1723.9
σ_3 Failure, psf		0.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M T & GR CH4 W/ ARS & LNS ML, CC

LL= 78 **PL=** 22 **PI=** 56

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.750 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-08 **Depth:** 34

Sample Number: 9C

Proj. No.: 24384

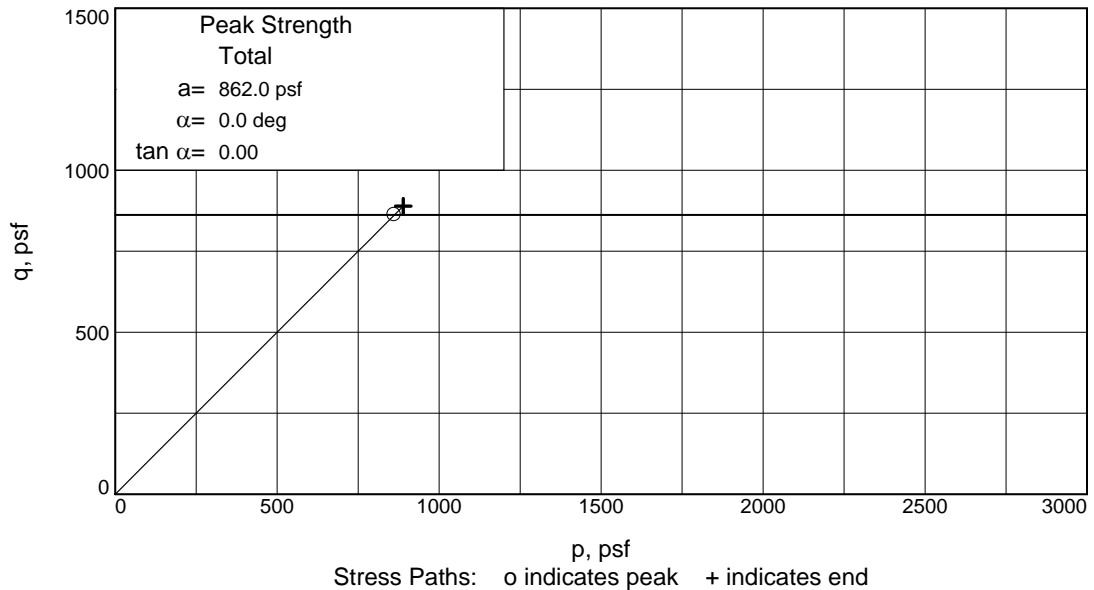
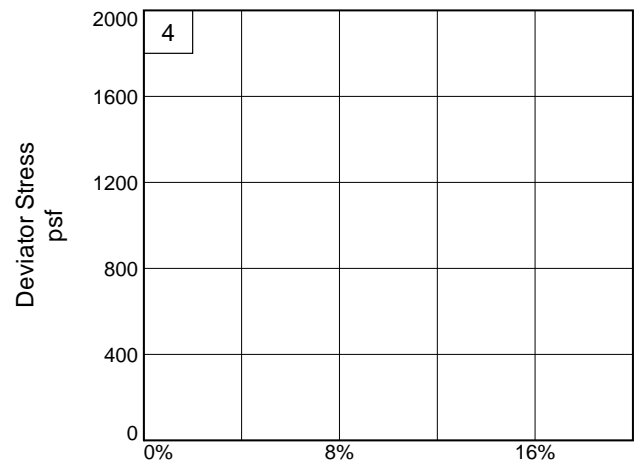
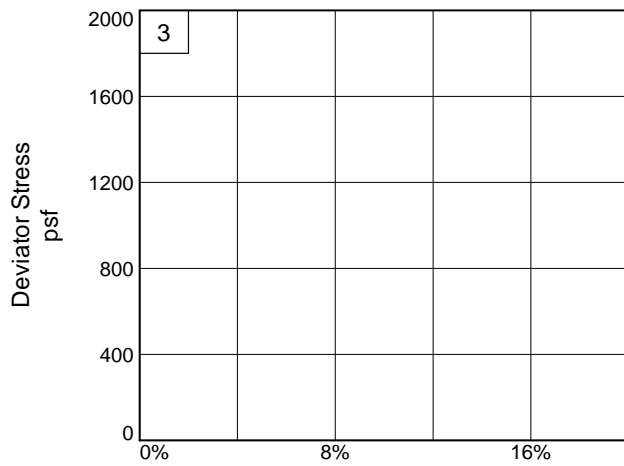
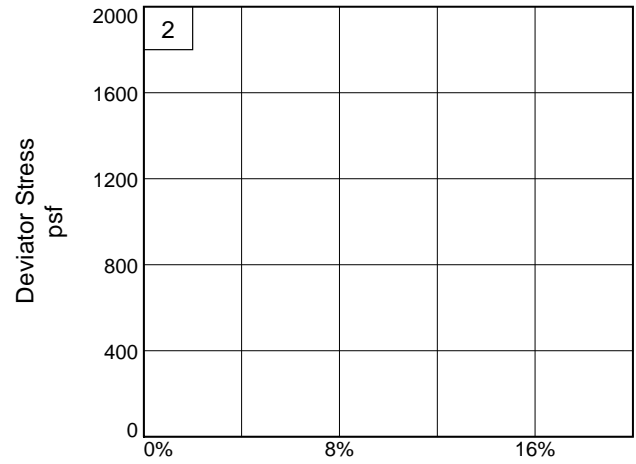
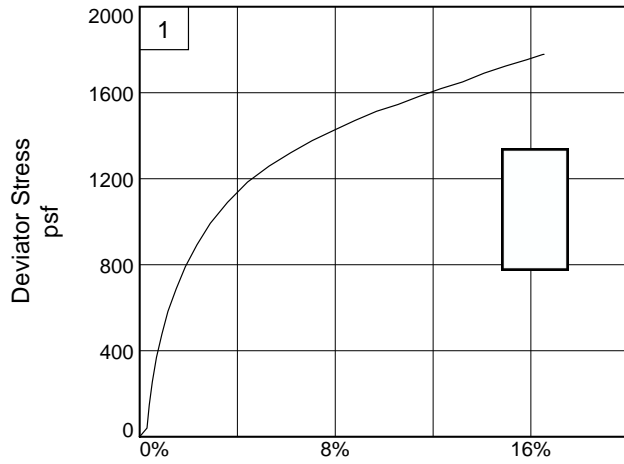
Date Sampled: 10/7/20

Figure ASTM D2850



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Tested By: BH **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-08

Depth: 34

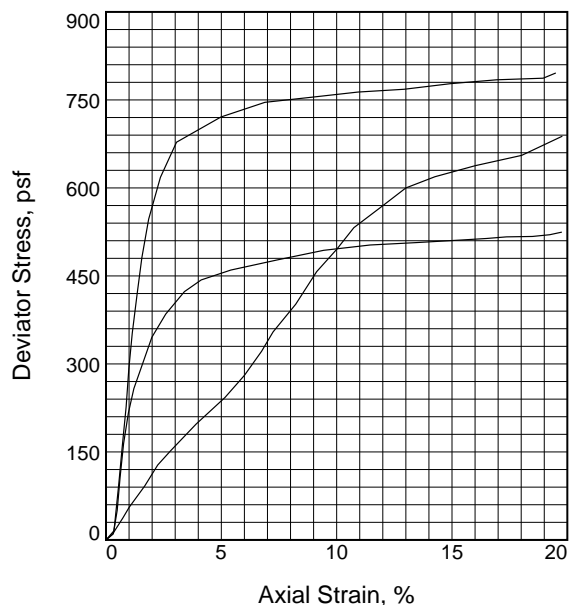
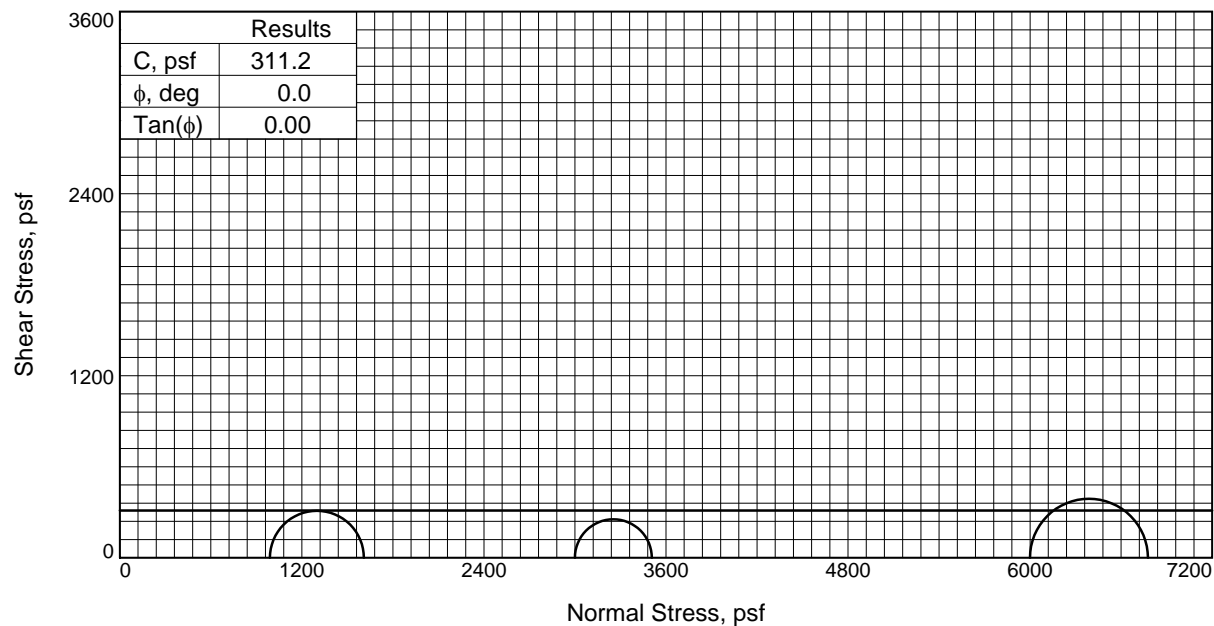
Sample Number: 9C

Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: BH **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	51.5	53.5	53.0
	Dry Density, pcf	70.3	68.8	68.1
	Saturation, %	98.9	99.2	96.4
	Void Ratio	1.4169	1.4675	1.4952
	Diameter, in.	1.403	1.384	1.385
	Height, in.	2.757	2.773	2.753
At Test	Water Content, %	52.1	54.0	55.0
	Dry Density, pcf	70.3	68.8	68.1
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.4169	1.4675	1.4952
	Diameter, in.	1.403	1.384	1.385
	Height, in.	2.757	2.773	2.753
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.870	20.830	41.660
Fail. Stress, psf		619.2	507.0	777.7
Strain, %		14.3	13.5	14.9
Ult. Stress, psf		619.2	507.0	777.7
Strain, %		14.3	13.5	14.9
σ_1 Failure, psf		1608.5	3506.5	6776.7
σ_3 Failure, psf		989.3	2999.5	5999.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR & T CH4 W/ ARS & LNS ML, CC

LL= 98 **PL=** 30 **PI=** 68

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09 **Depth:** 5

Sample Number: 2B

Proj. No.: 24384

Date Sampled: 9/21/20

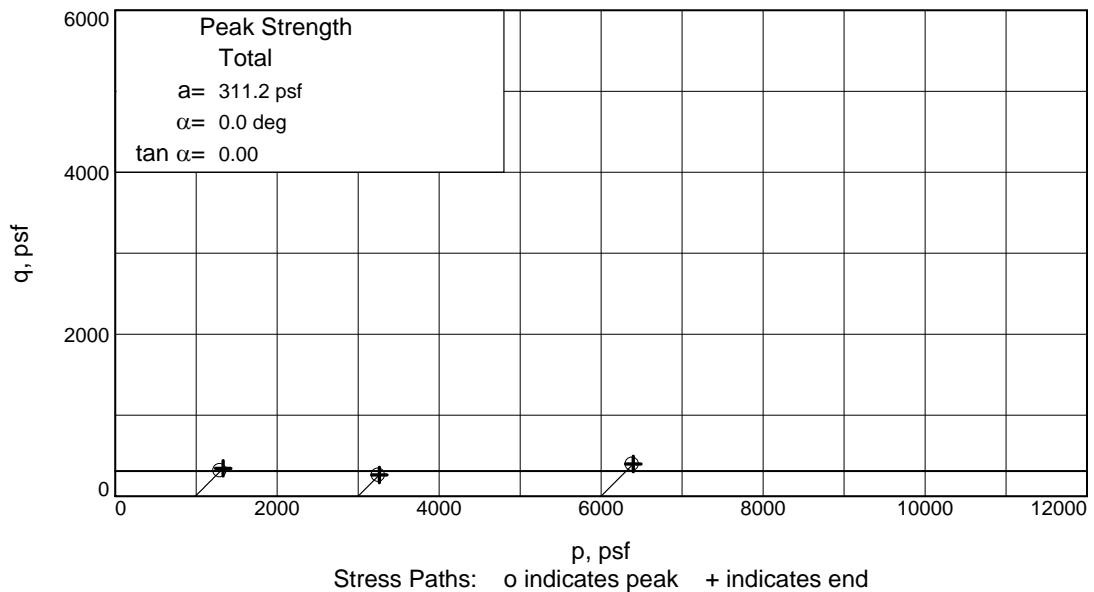
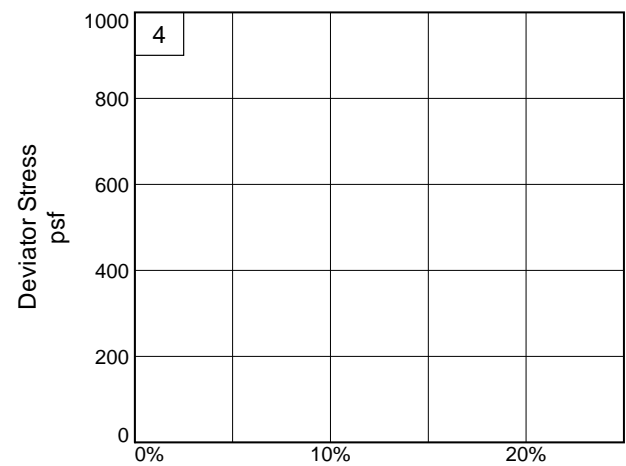
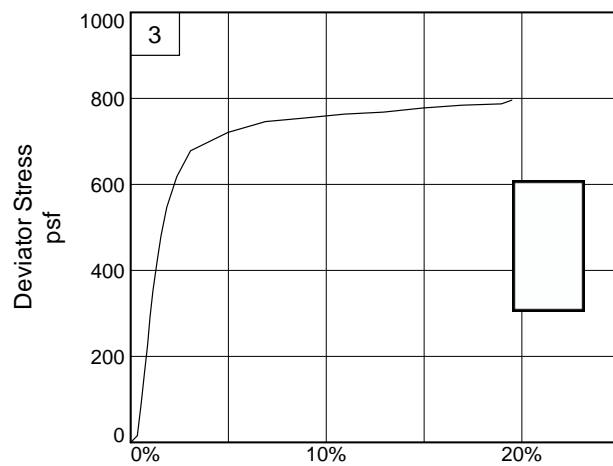
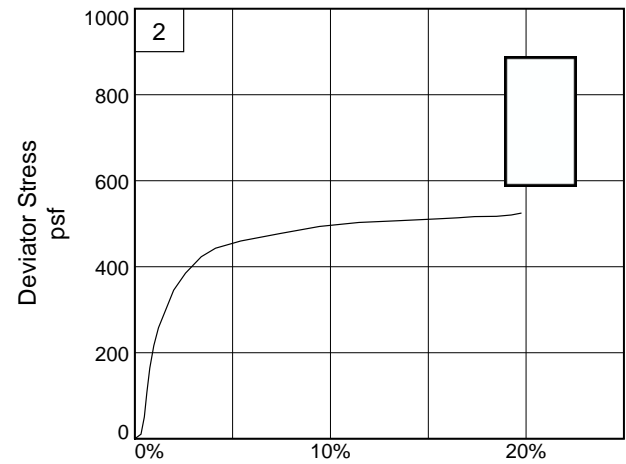
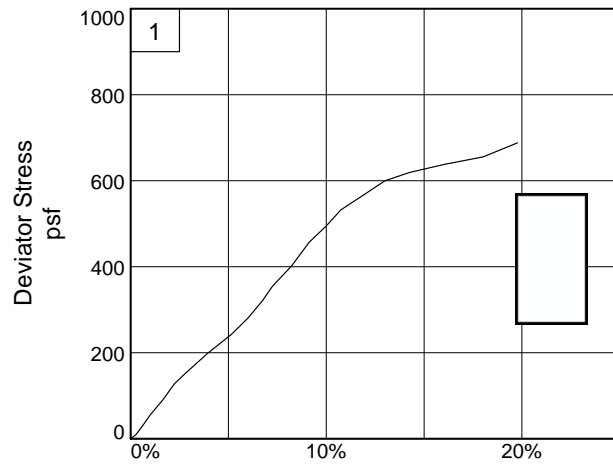


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Figure ASTM D2850

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09

Depth: 5

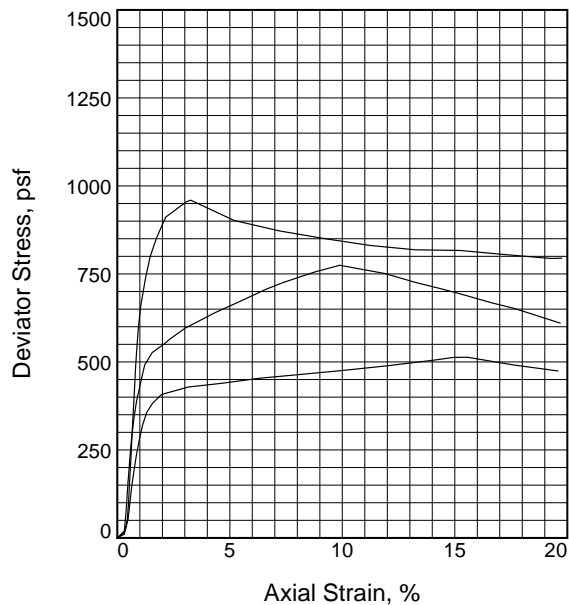
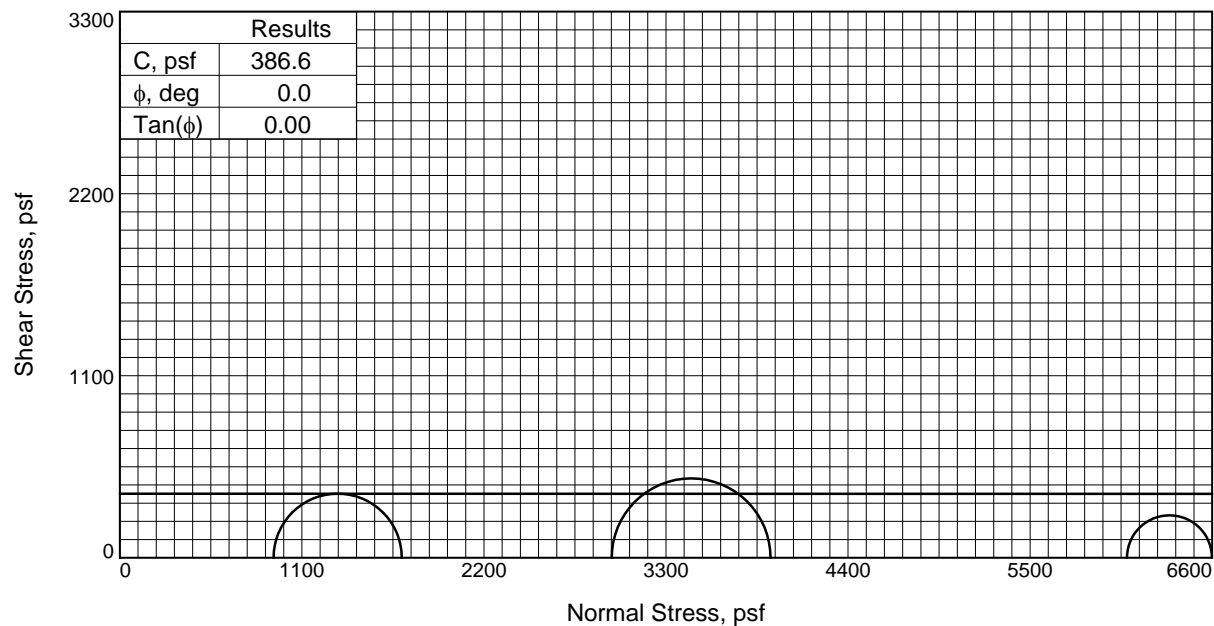
Sample Number: 2B

Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE _____ **Checked By:** RR _____



Specimen No.		1	2	3
Initial	Water Content, %	91.2	93.9	89.9
	Dry Density, pcf	46.9	46.5	47.9
	Saturation, %	94.8	96.4	96.2
	Void Ratio	2.6179	2.6494	2.5442
	Diameter, in.	1.437	1.412	1.424
	Height, in.	2.754	2.755	2.755
At Test	Water Content, %	96.2	97.4	93.5
	Dry Density, pcf	46.9	46.5	47.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	2.6179	2.6494	2.5442
	Diameter, in.	1.437	1.412	1.424
	Height, in.	2.754	2.755	2.755
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.450	20.640	42.260
Fail. Stress, psf		774.7	959.4	513.0
Strain, %		9.9	3.3	14.9
Ult. Stress, psf		695.1	816.7	513.0
Strain, %		15.2	15.2	14.9
σ_1 Failure, psf		1703.5	3931.6	6598.4
σ_3 Failure, psf		928.8	2972.2	6085.4

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CHO A

LL= 130 **PL=** 32 **PI=** 98

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09 **Depth:** 13

Sample Number: 4B

Proj. No.: 24384

Date Sampled: 10/8/20

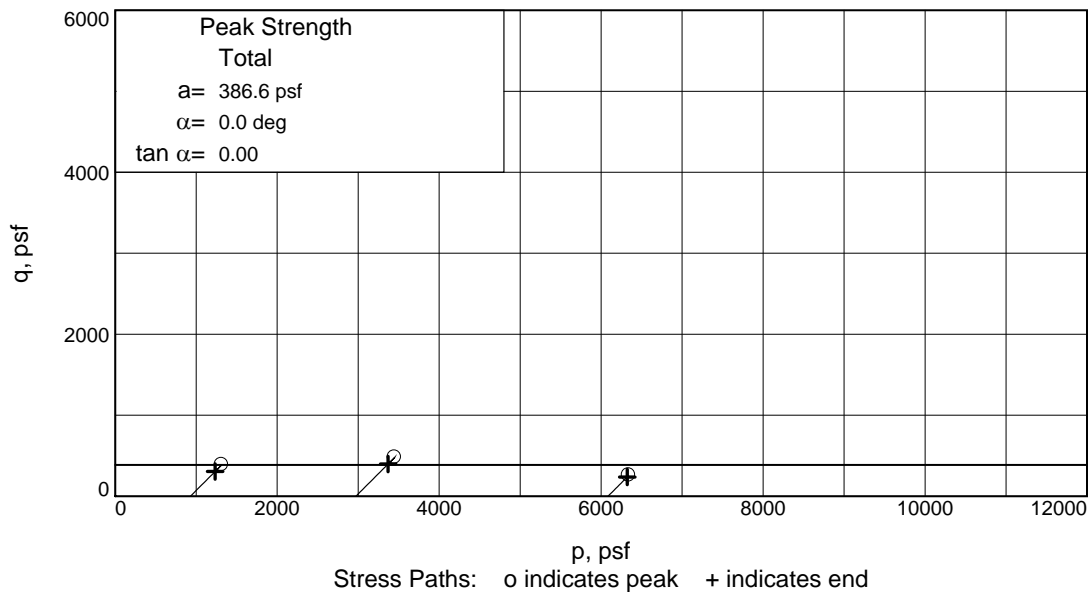
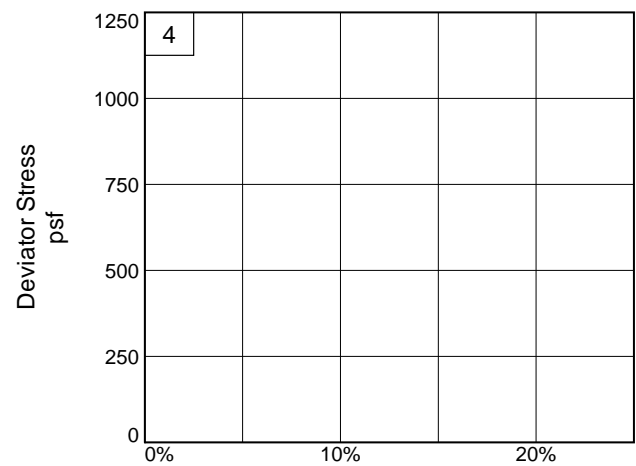
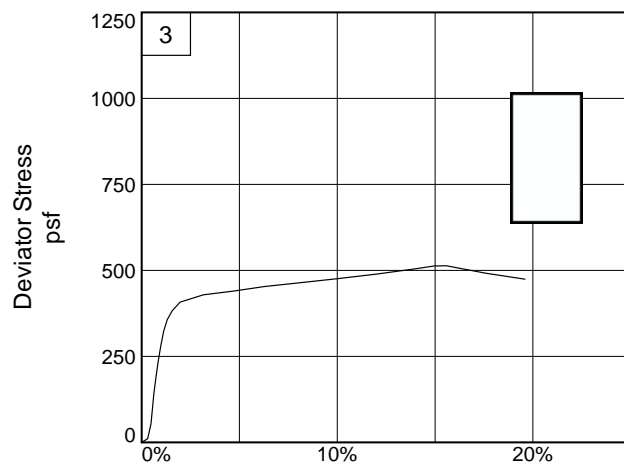
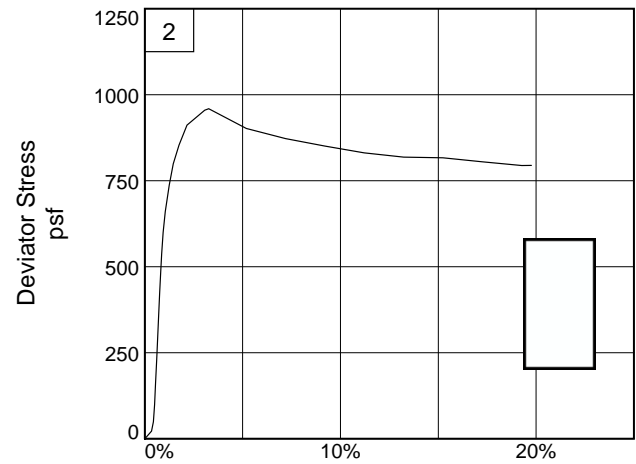
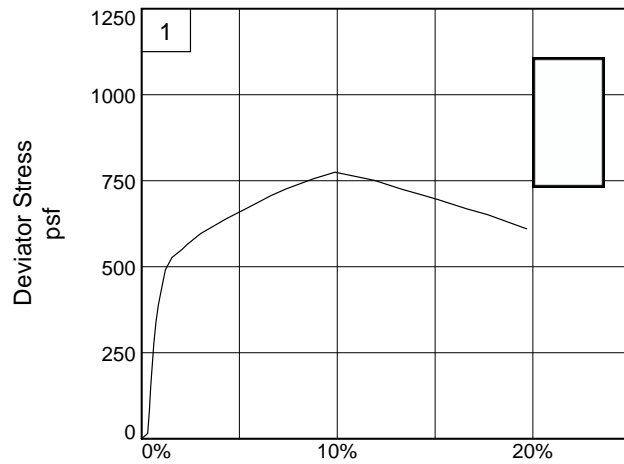


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Figure ASTM D2850

Tested By: BH

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09

Depth: 13

Sample Number: 4B

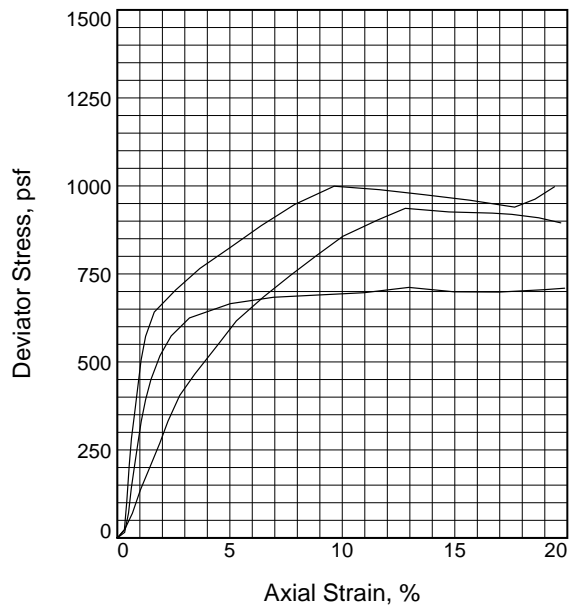
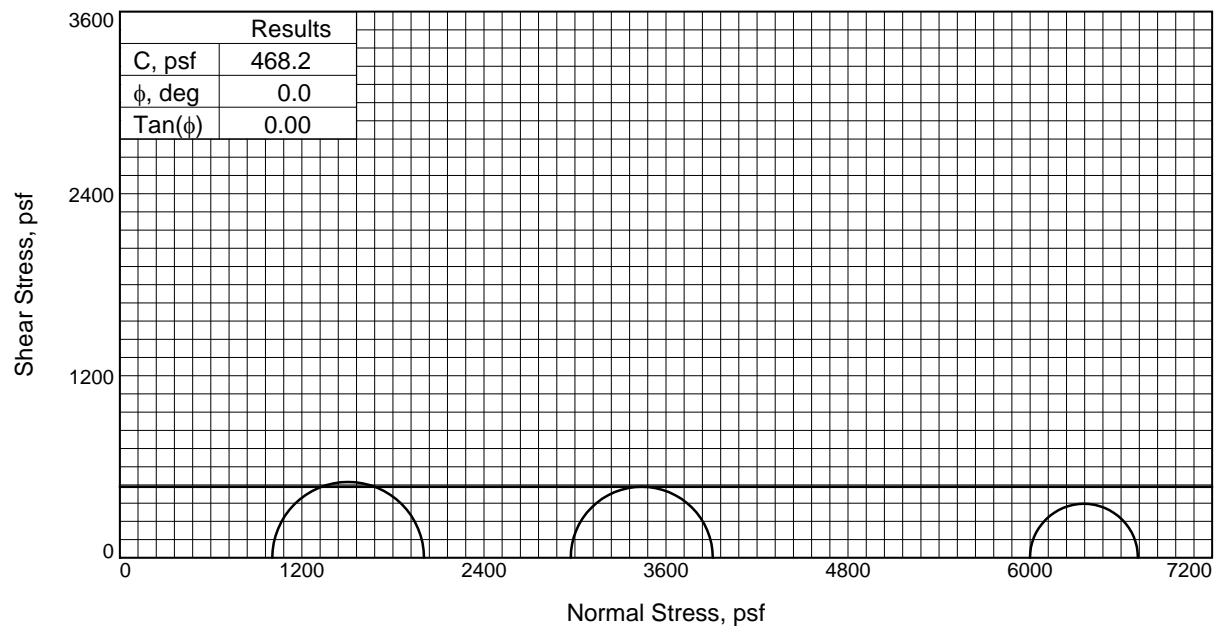
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: BH

Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	37.6	36.2	38.6
	Dry Density, pcf	80.8	84.1	78.4
	Saturation, %	93.0	96.4	90.1
	Void Ratio	1.1011	1.0203	1.1659
	Diameter, in.	1.424	1.408	1.435
	Height, in.	2.734	2.746	2.766
At Test	Water Content, %	40.5	37.5	42.9
	Dry Density, pcf	80.8	84.1	78.4
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.1011	1.0203	1.1659
	Diameter, in.	1.424	1.408	1.435
	Height, in.	2.734	2.746	2.766
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.980	20.640	41.660
Fail. Stress, psf		999.5	936.4	711.6
Strain, %		9.6	12.8	13.0
Ult. Stress, psf		974.9	926.4	699.2
Strain, %		13.6	14.7	15.0
σ_1 Failure, psf		2004.6	3908.5	6710.7
σ_3 Failure, psf		1005.1	2972.2	5999.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CH3 W/ ARS ML

LL= 64 **PL=** 23 **PI=** 41

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.150 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09 **Depth:** 17

Sample Number: 5B

Proj. No.: 24384

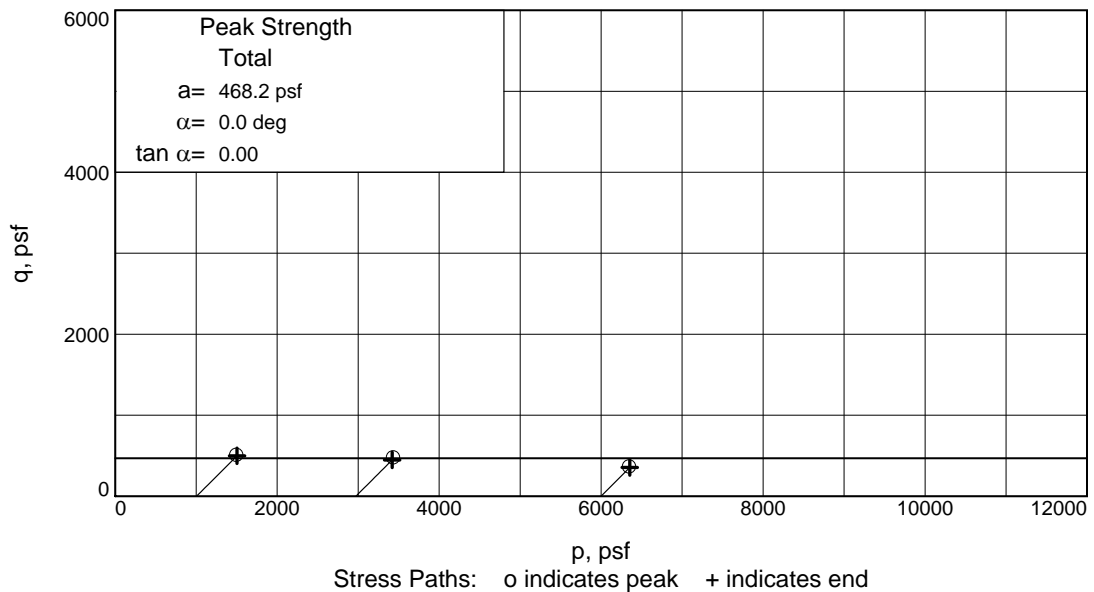
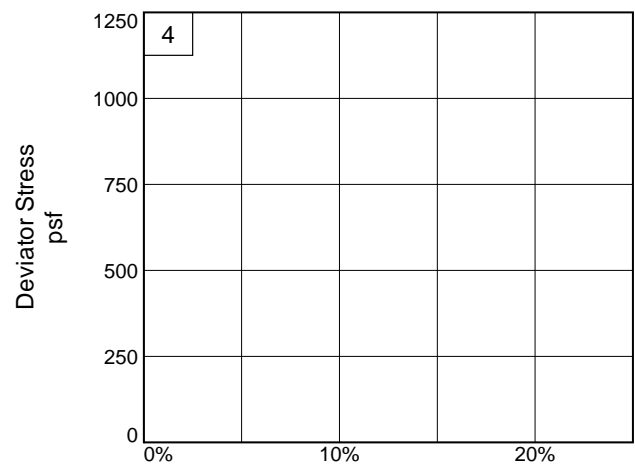
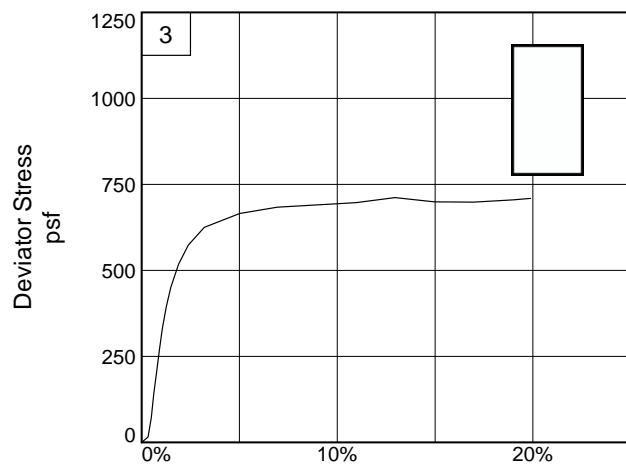
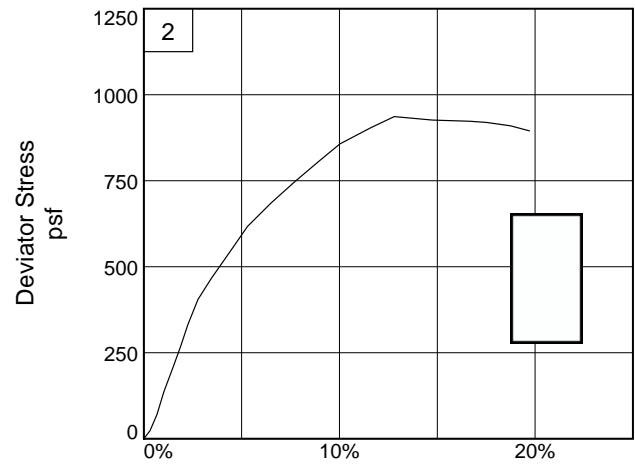
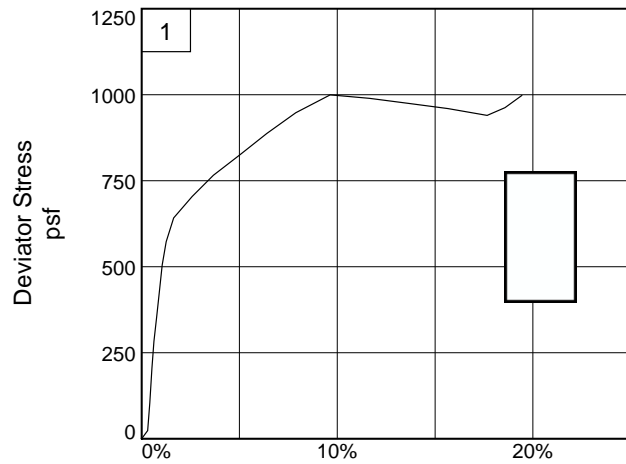
Date Sampled: 9/21/20



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Figure ASTM D2850

Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09

Depth: 17

Sample Number: 5B

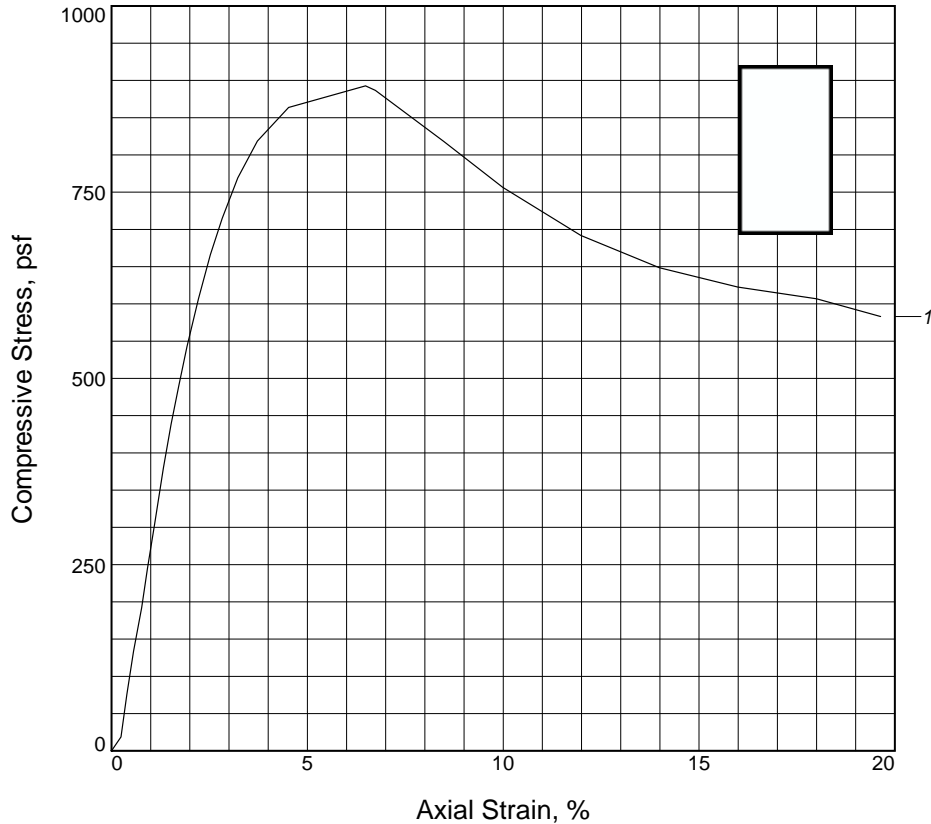
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	892.7			
Undrained shear strength, psf	446.4			
Failure strain, %	6.5			
Strain rate, %/min.	1.00			
Water content, %	32.6			
Wet density, pcf	114.5			
Dry density, pcf	86.4			
Saturation, %	91.8			
Void ratio	0.9661			
Specimen diameter, in.	1.414			
Specimen height, in.	2.747			
Height/diameter ratio	1.94			

Description: SO GR CL4

LL = 41 **PL** = 17 **PI** = 24 **Assumed GS**= 2.72 **Type:** UNDISTURBED

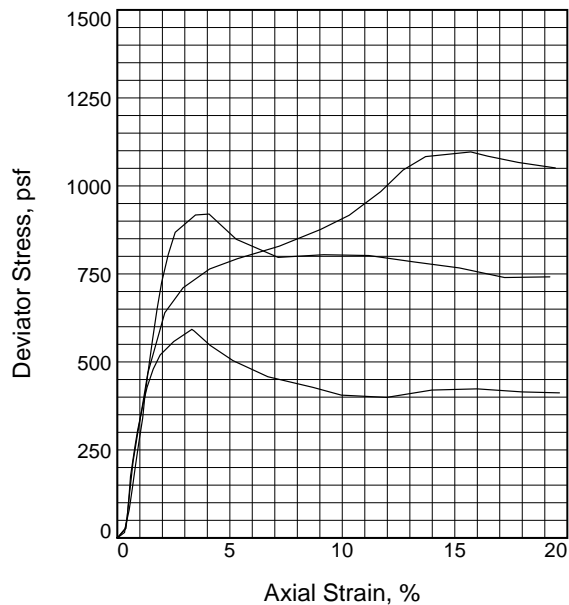
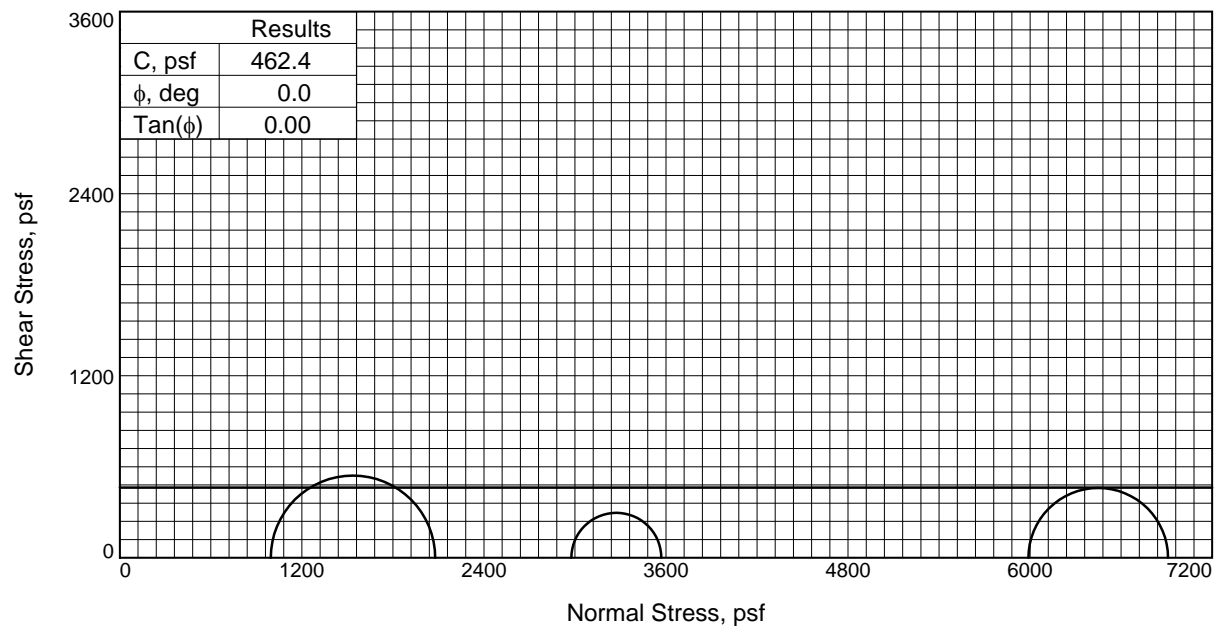
Project No.: 24384
Date Sampled: 9/21/20
Remarks:
 TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
Source of Sample: SB-09 **Depth:** 21
Sample Number: 6B

Figure ASTM D2166



Tested By: CC **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	53.5	51.1	53.6
	Dry Density, pcf	66.8	69.5	67.8
	Saturation, %	94.4	96.1	97.0
	Void Ratio	1.5436	1.4446	1.5035
	Diameter, in.	1.411	1.406	1.385
	Height, in.	2.754	2.756	2.784
At Test	Water Content, %	56.8	53.1	55.3
	Dry Density, pcf	66.8	69.5	67.8
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.5436	1.4446	1.5035
	Diameter, in.	1.411	1.406	1.385
	Height, in.	2.754	2.756	2.784
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.910	20.670	41.590
Fail. Stress, psf		1083.5	592.6	920.2
Strain, %		13.7	3.3	4.1
Ult. Stress, psf		1083.5	399.3	767.3
Strain, %		13.7	12.0	15.2
σ_1 Failure, psf		2078.5	3569.1	6909.1
σ_3 Failure, psf		995.0	2976.5	5989.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CH3 W/ ARS ML, SIF

LL= 67 **PL=** 16 **PI=** 51

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09 **Depth:** 25

Sample Number: 7B

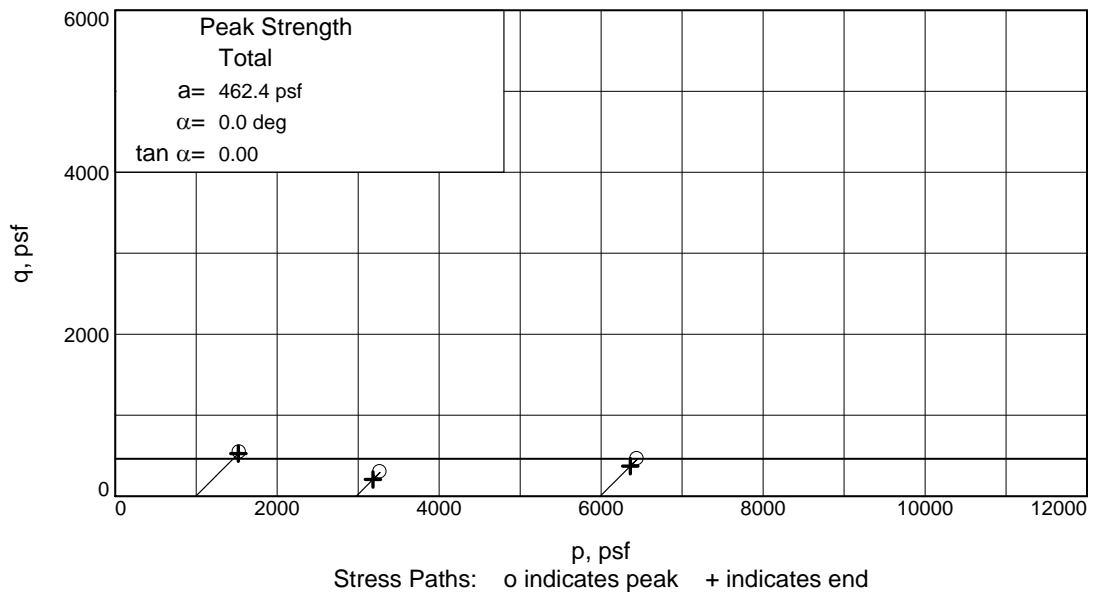
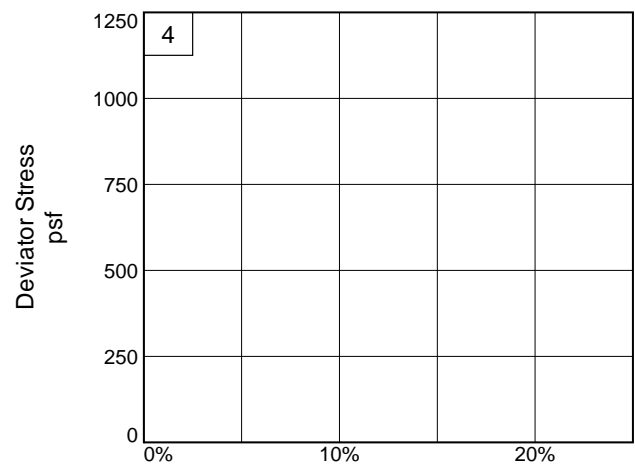
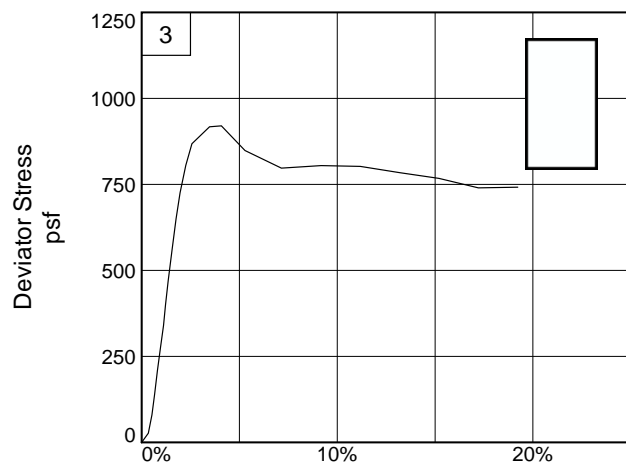
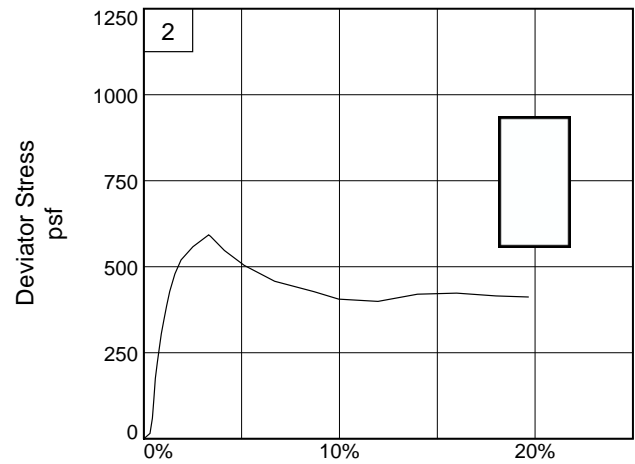
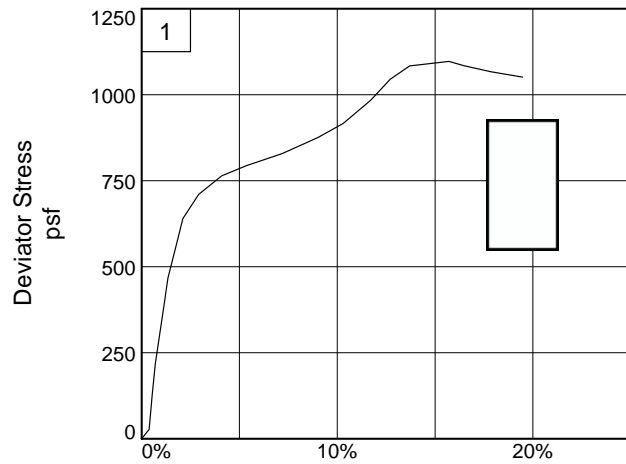
Proj. No.: 24384

Date Sampled: 9/21/20

Figure ASTM D2850



Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09

Depth: 25

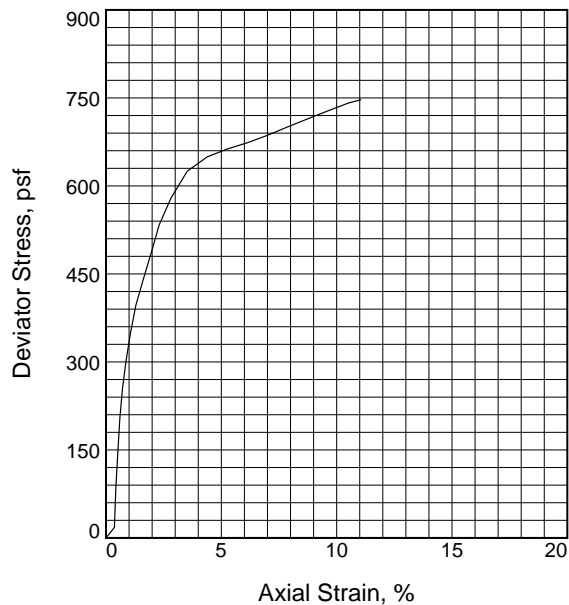
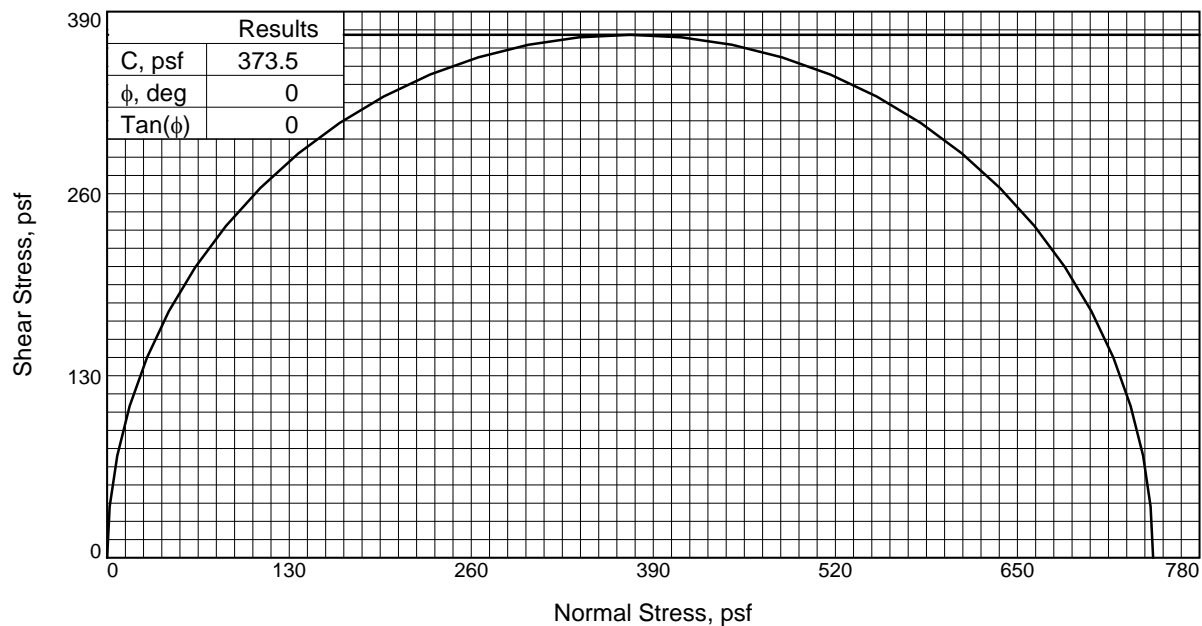
Sample Number: 7B

Project No.: 24384

Figure ASTM D2850

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Tested By: DE _____ **Checked By:** RR _____



Specimen No.		1
Initial	Water Content, %	50.8
	Dry Density, pcf	71.3
	Saturation, %	100.0
	Void Ratio	1.3822
	Diameter, in.	2.850
	Height, in.	5.784
At Test	Water Content, %	50.8
	Dry Density, pcf	71.3
	Saturation, %	100.0
	Void Ratio	1.3822
	Diameter, in.	2.850
	Height, in.	5.784
Strain rate, %/min.		0.50
Back Pressure, psi		0.000
Cell Pressure, psi		0.000
Fail. Stress, psf		746.9
Strain, %		11.0
Ult. Stress, psf		746.9
Strain, %		11.0
σ_1 Failure, psf		746.9
σ_3 Failure, psf		0.0

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR CH2 W/ ARS & LNS ML

LL= 54 **PL=** 22 **PI=** 32

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.200 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09 **Depth:** 26

Sample Number: 7C

Proj. No.: 24384

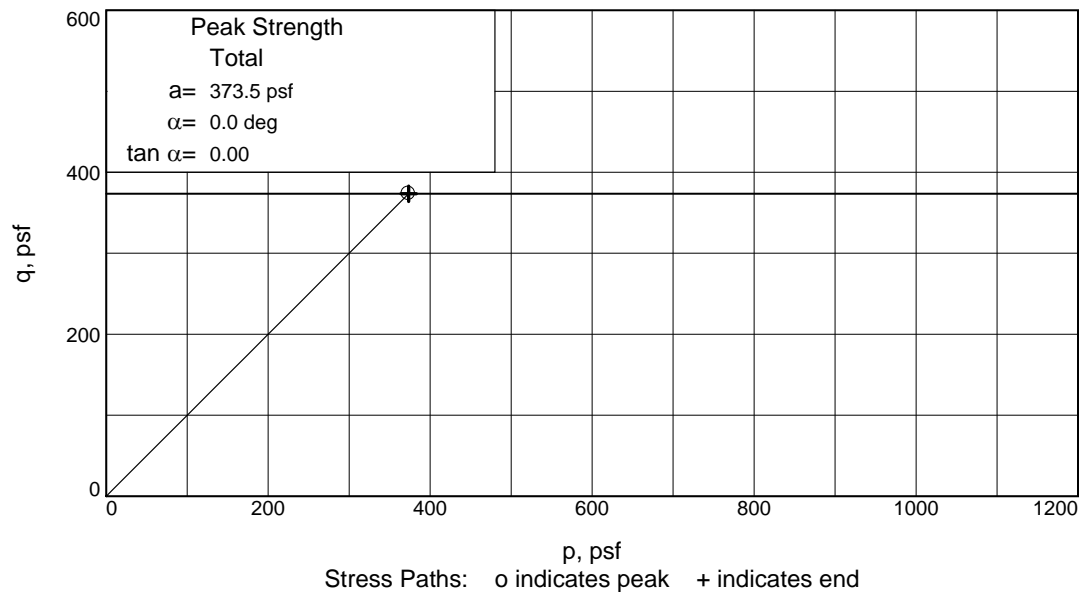
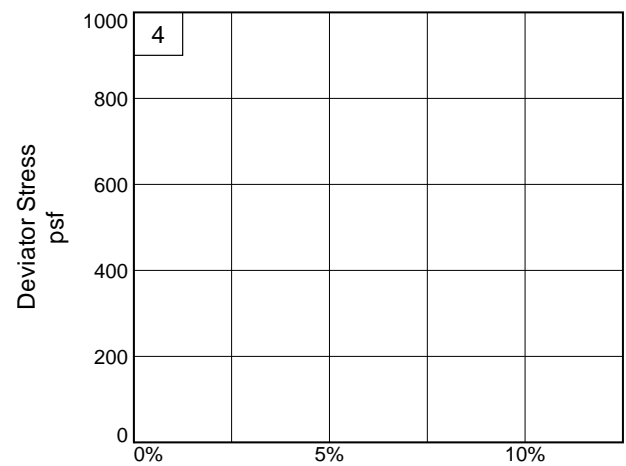
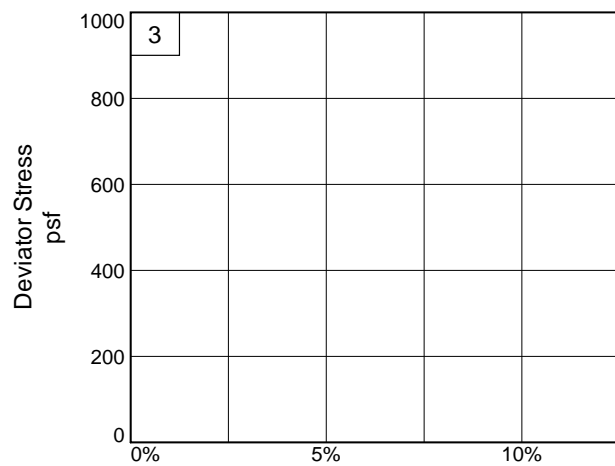
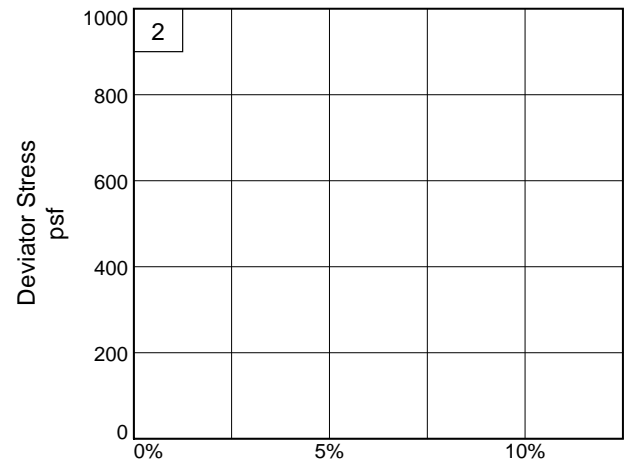
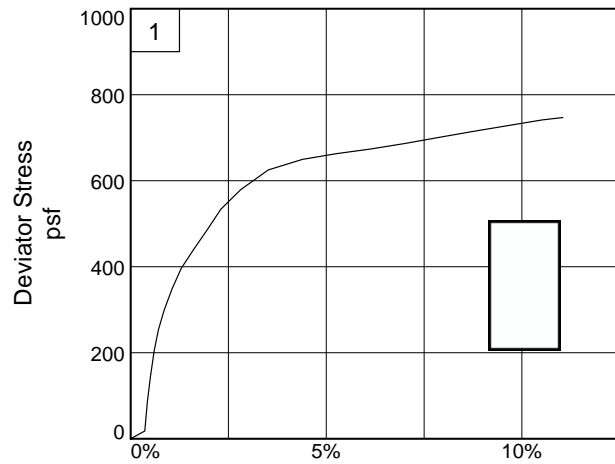
Date Sampled: 10/7/20



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Figure ASTM D2850

Tested By: BH **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09

Depth: 26

Sample Number: 7C

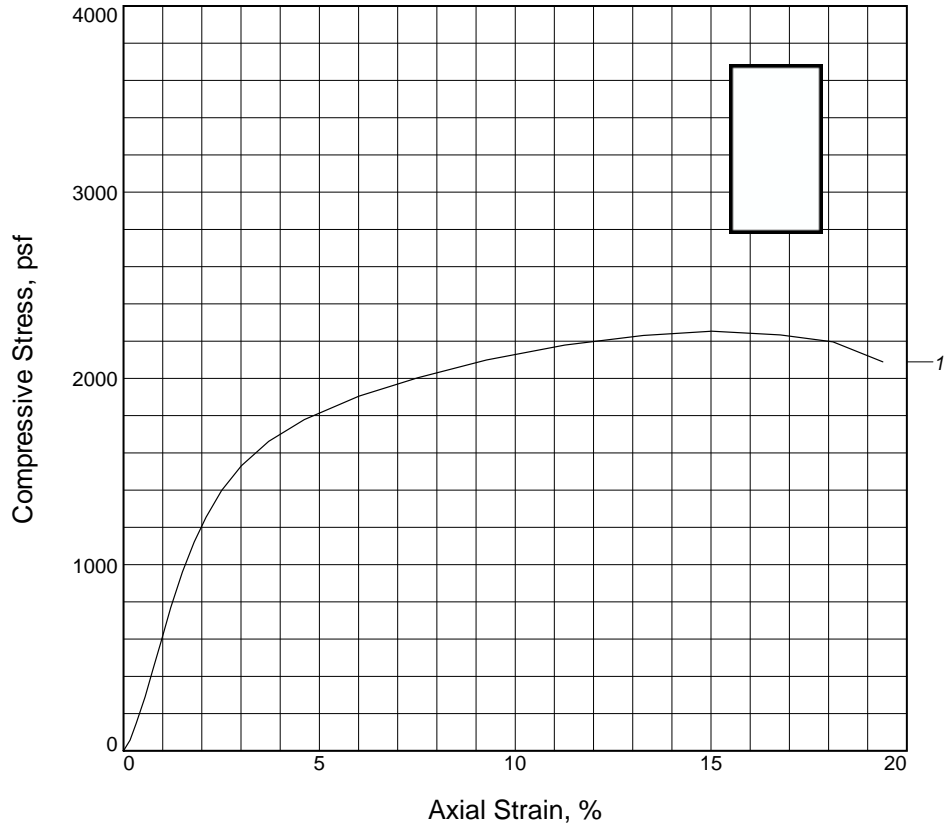
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: BH **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	2253.2			
Undrained shear strength, psf	1126.6			
Failure strain, %	15.0			
Strain rate, %/min.	1.00			
Water content, %	25.9			
Wet density, pcf	121.6			
Dry density, pcf	96.6			
Saturation, %	93.8			
Void ratio	0.7447			
Specimen diameter, in.	1.396			
Specimen height, in.	2.756			
Height/diameter ratio	1.97			

Description: ST LGR CH2 W/ ARS & LNS ML, RT

LL = 52 **PL = 19** **PI = 33** **Assumed GS= 2.70** **Type: UNDISTURBED**

Project No.: 24384

Date Sampled: 9/21/20

Remarks:

TORVANE = 0.750 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09 **Depth:** 29

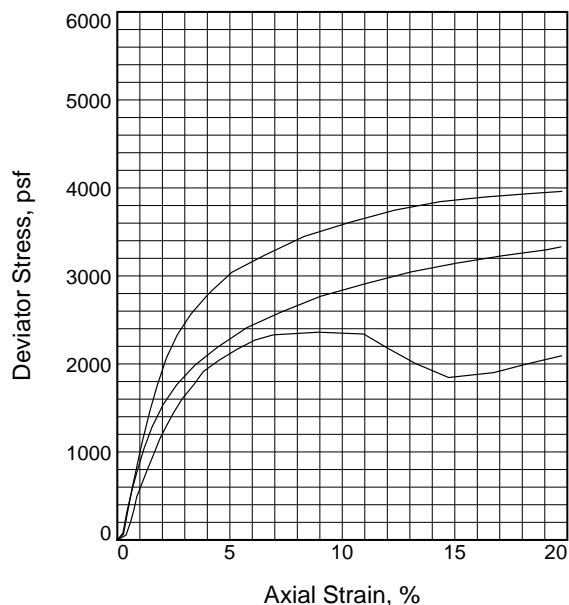
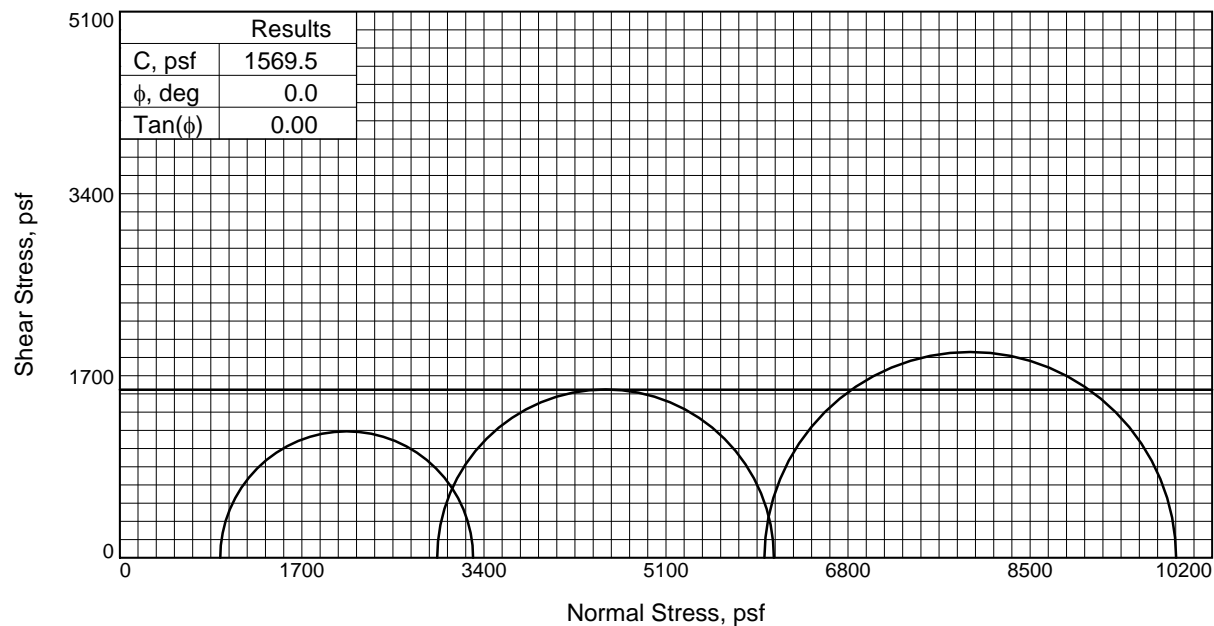
Sample Number: 8B

Figure ASTM D2166



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Tested By: CC **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	24.6	23.8	23.9
	Dry Density, pcf	100.4	99.5	101.0
	Saturation, %	97.9	92.5	96.4
	Void Ratio	0.6786	0.6940	0.6684
	Diameter, in.	1.398	1.397	1.396
	Height, in.	2.763	2.759	2.764
At Test	Water Content, %	25.1	25.7	24.8
	Dry Density, pcf	100.4	99.5	101.0
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.6786	0.6940	0.6684
	Diameter, in.	1.398	1.397	1.396
	Height, in.	2.763	2.759	2.764
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.510	20.580	41.800
Fail. Stress, psf		2361.2	3143.9	3843.8
Strain, %		8.9	15.1	14.3
Ult. Stress, psf		1845.9	3143.9	3843.8
Strain, %		14.7	15.1	14.3
σ_1 Failure, psf		3298.6	6107.4	9863.0
σ_3 Failure, psf		937.4	2963.5	6019.2

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR & T CL4 W/ CC

LL= 41 **PL=** 17 **PI=** 24

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.875 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09 **Depth:** 34

Sample Number: 9C

Proj. No.: 24384

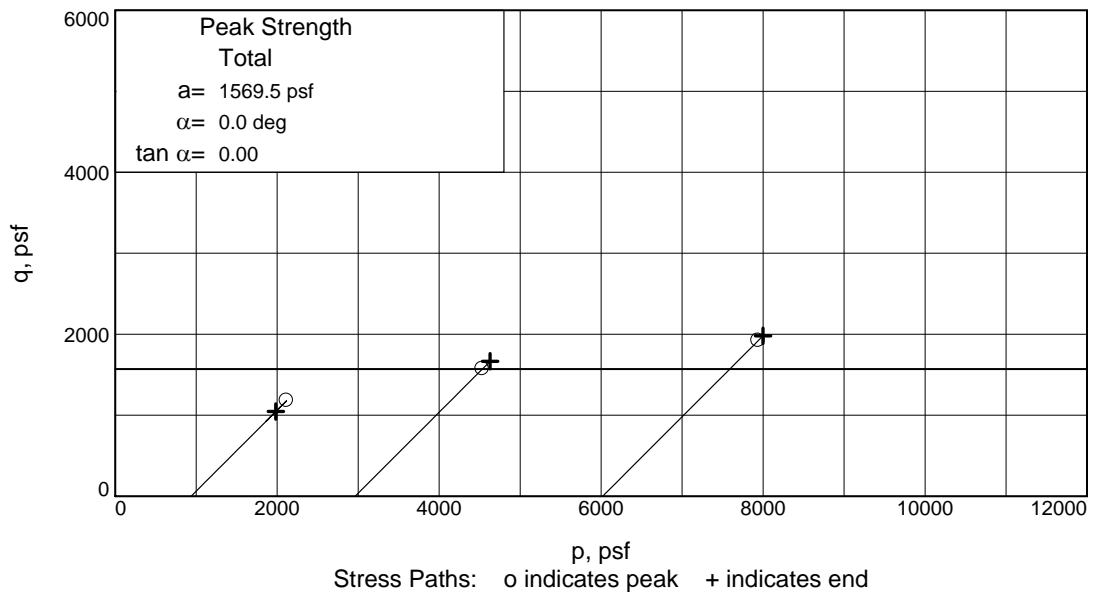
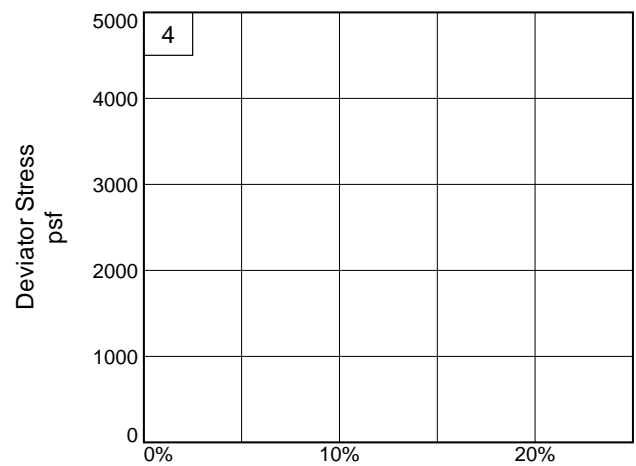
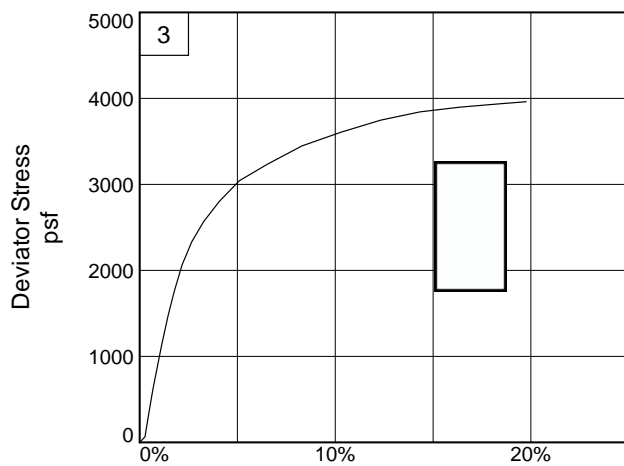
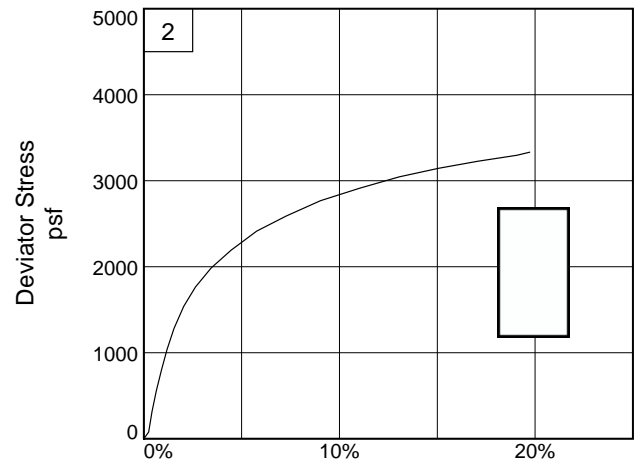
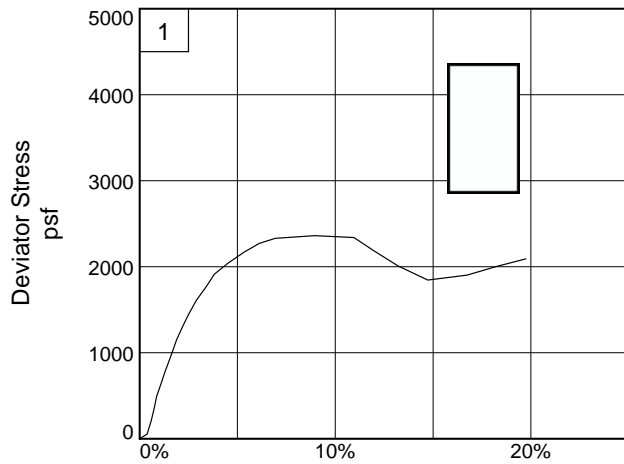
Date Sampled: 9/21/20



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Figure ASTM D2850

Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09

Depth: 34

Sample Number: 9C

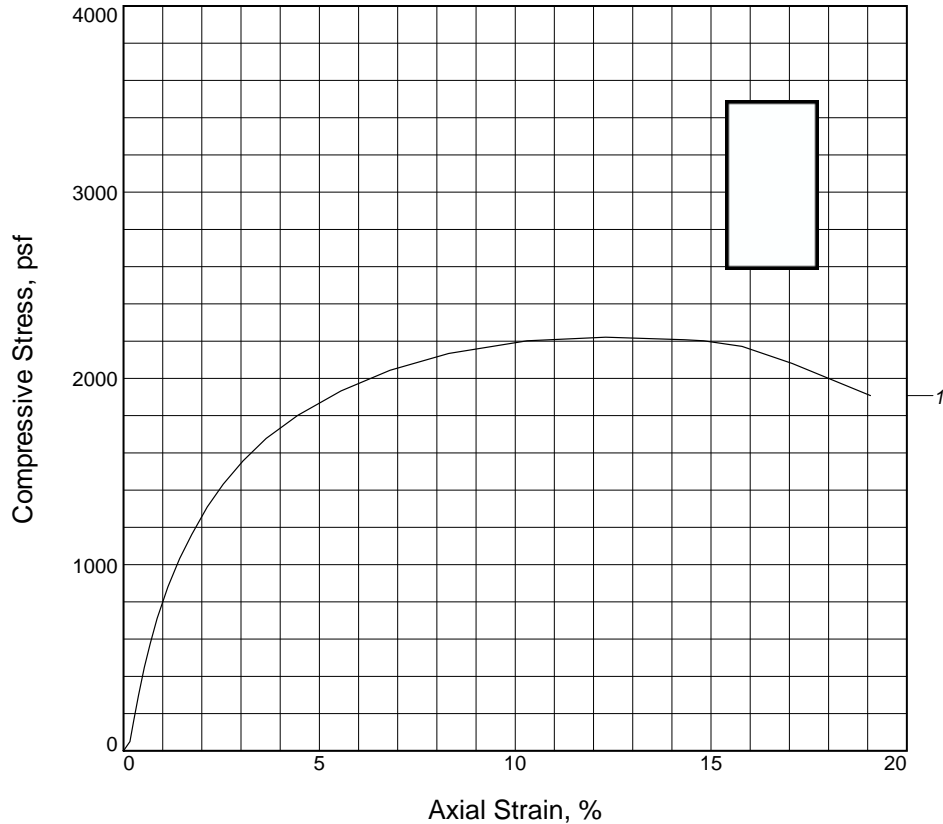
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE _____ **Checked By:** RR _____

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	2221.3			
Undrained shear strength, psf	1110.6			
Failure strain, %	12.3			
Strain rate, %/min.	1.00			
Water content, %	26.0			
Wet density, pcf	122.8			
Dry density, pcf	97.5			
Saturation, %	96.3			
Void ratio	0.7295			
Specimen diameter, in.	1.398			
Specimen height, in.	2.761			
Height/diameter ratio	1.97			

Description: ST GR CL4 W/ CC

LL = 40 **PL = 18** **PI = 22** **Assumed GS= 2.70** **Type: UNDISTURBED**

Project No.: 24384
Date Sampled: 9/21/20
Remarks:
 TORVANE = 0.875 TSF

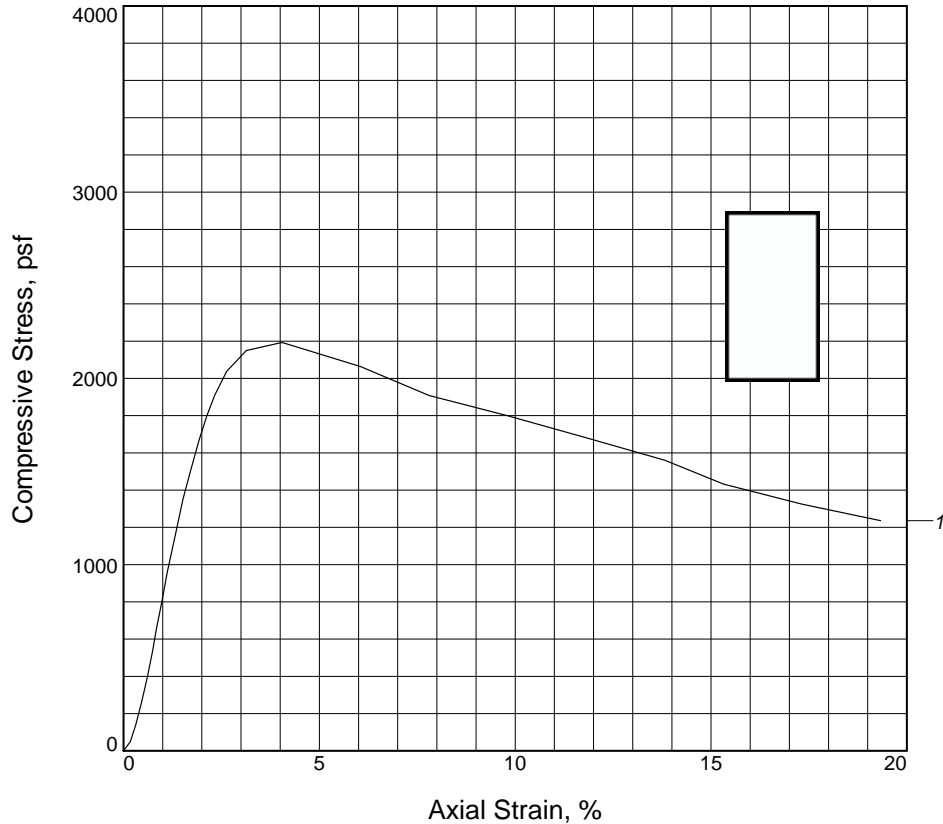
Client: AECOM, NEW ORLEANS, LOUISIANA
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
Source of Sample: SB-09 **Depth:** 38
Sample Number: 10C

Figure ASTM D2166



Tested By: CC **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	2193.0			
Undrained shear strength, psf	1096.5			
Failure strain, %	4.0			
Strain rate, %/min.	1.00			
Water content, %	29.7			
Wet density, pcf	119.4			
Dry density, pcf	92.1			
Saturation, %	95.6			
Void ratio	0.8442			
Specimen diameter, in.	1.393			
Specimen height, in.	2.786			
Height/diameter ratio	2.00			

Description: ST GR CL6 W/ SIF

LL = 43 **PL** = 16 **PI** = 27 **Assumed GS**= 2.72 **Type:** UNDISTURBED

Project No.: 24384

Date Sampled: 10/6/20

Remarks:

TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09 **Depth:** 63.5

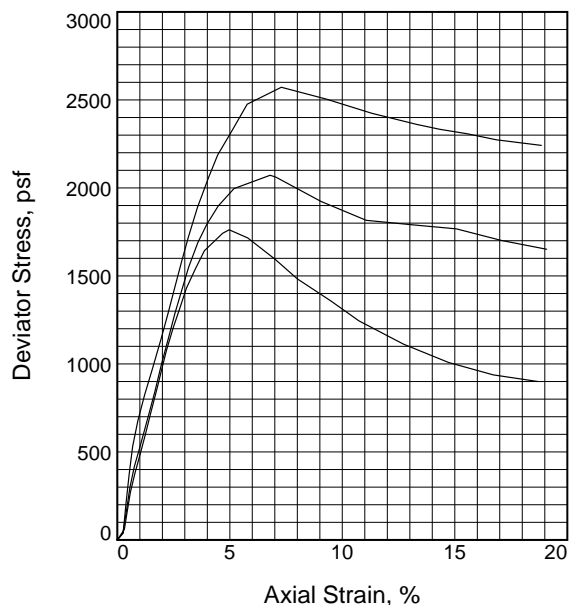
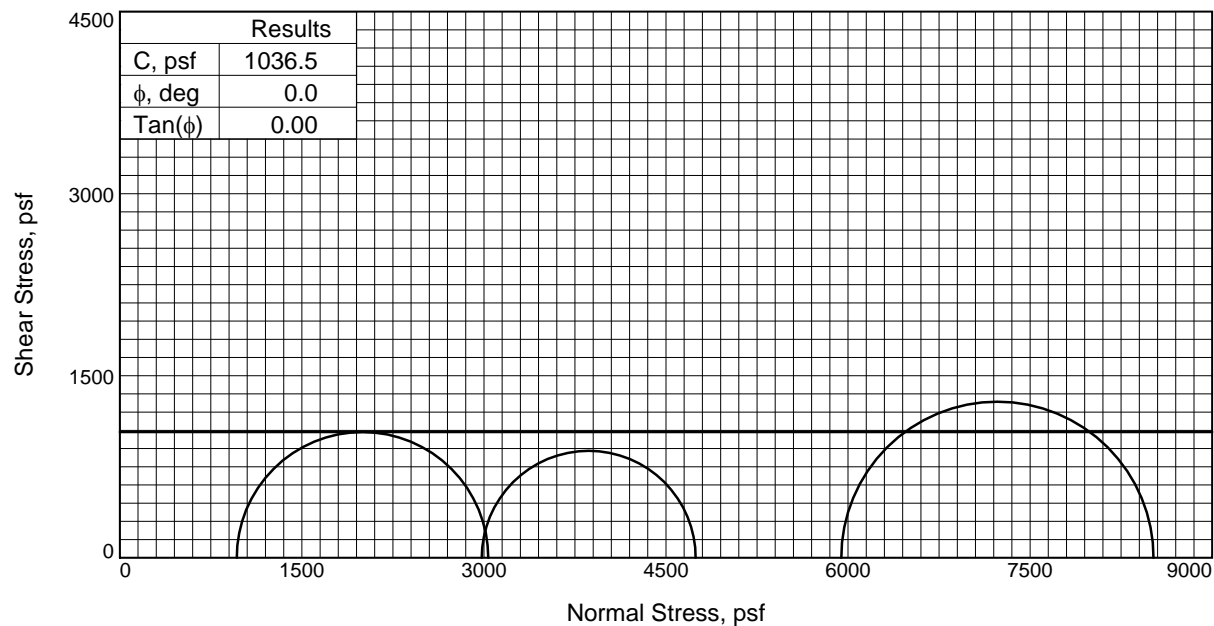
Sample Number: 19B

Figure ASTM D2166



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Tested By: CC **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	32.2	34.8	32.0
	Dry Density, pcf	90.3	87.2	90.7
	Saturation, %	99.4	99.9	99.9
	Void Ratio	0.8808	0.9467	0.8713
	Diameter, in.	1.412	1.412	1.399
	Height, in.	2.756	2.782	2.769
At Test	Water Content, %	32.4	34.8	32.0
	Dry Density, pcf	90.3	87.2	90.7
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.8808	0.9467	0.8713
	Diameter, in.	1.412	1.412	1.399
	Height, in.	2.756	2.782	2.769
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.690	20.710	41.280
Fail. Stress, psf		2072.1	1762.3	2572.4
Strain, %		6.8	5.0	7.3
Ult. Stress, psf		1767.4	1008.2	2333.5
Strain, %		15.1	14.7	14.3
σ_1 Failure, psf		3035.4	4744.5	8516.7
σ_3 Failure, psf		963.4	2982.2	5944.3

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR CL6

LL= 48 **PL=** 18 **PI=** 30

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09 **Depth:** 67

Sample Number: 20B

Proj. No.: 24384

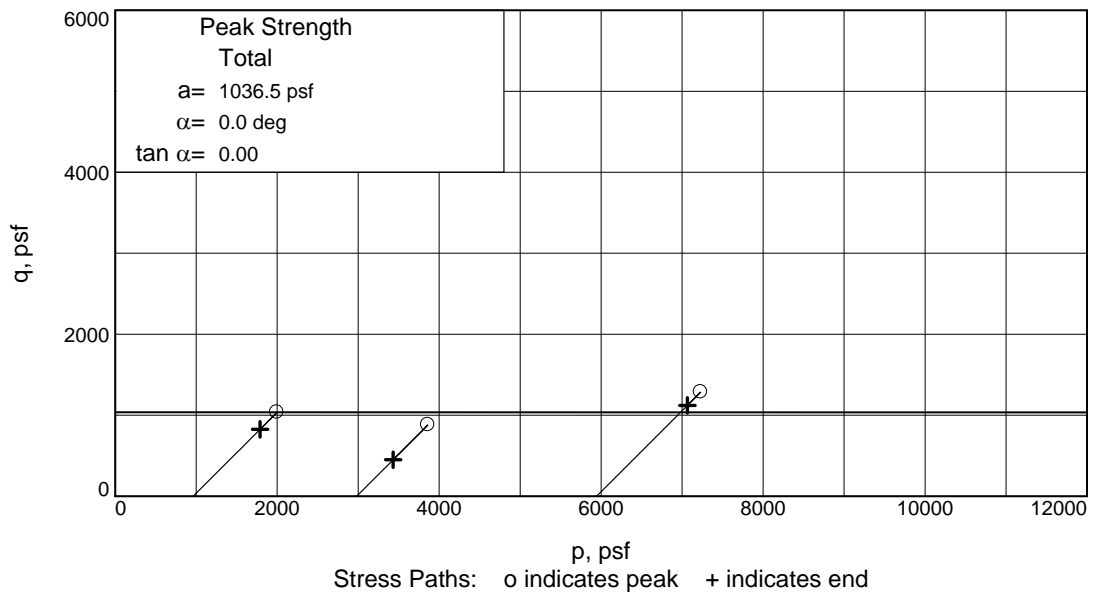
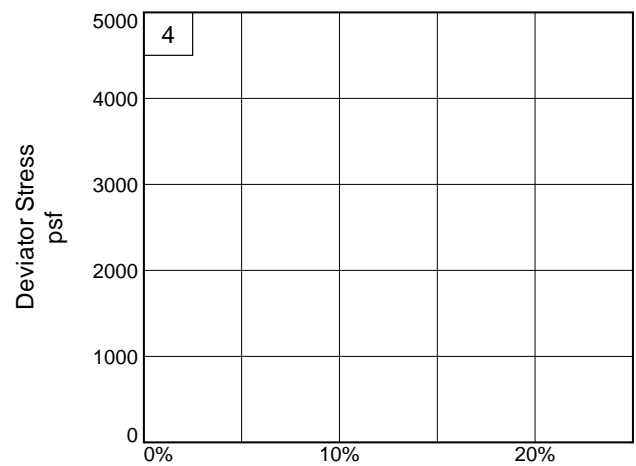
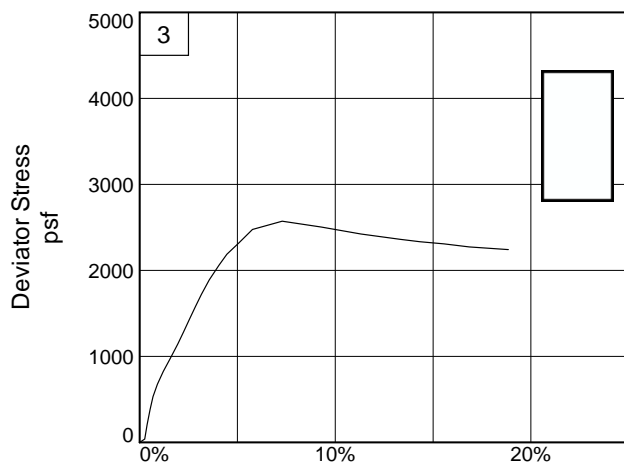
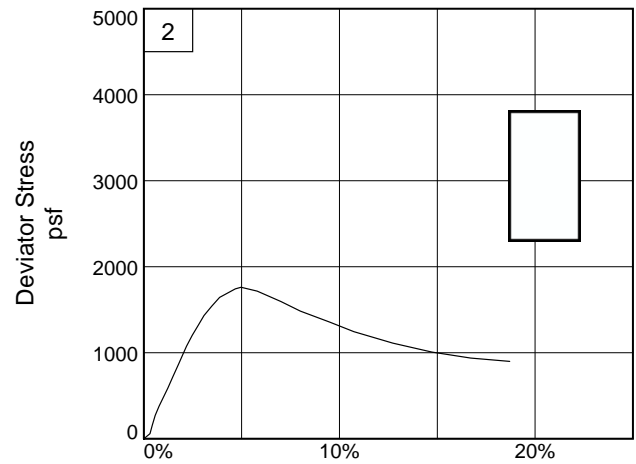
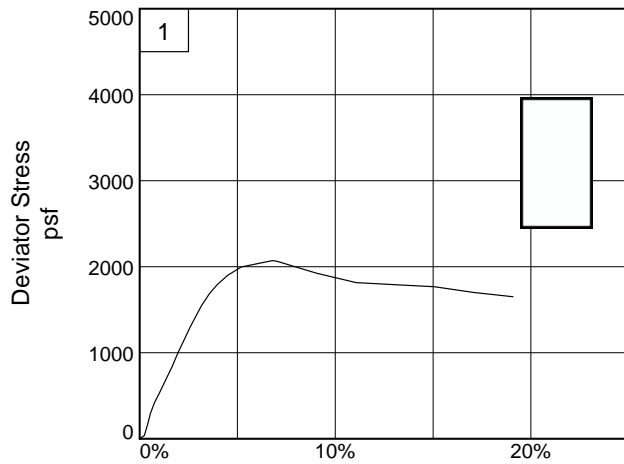
Date Sampled: 10/6/20



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Figure ASTM D2850

Tested By: DE **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09

Depth: 67

Sample Number: 20B

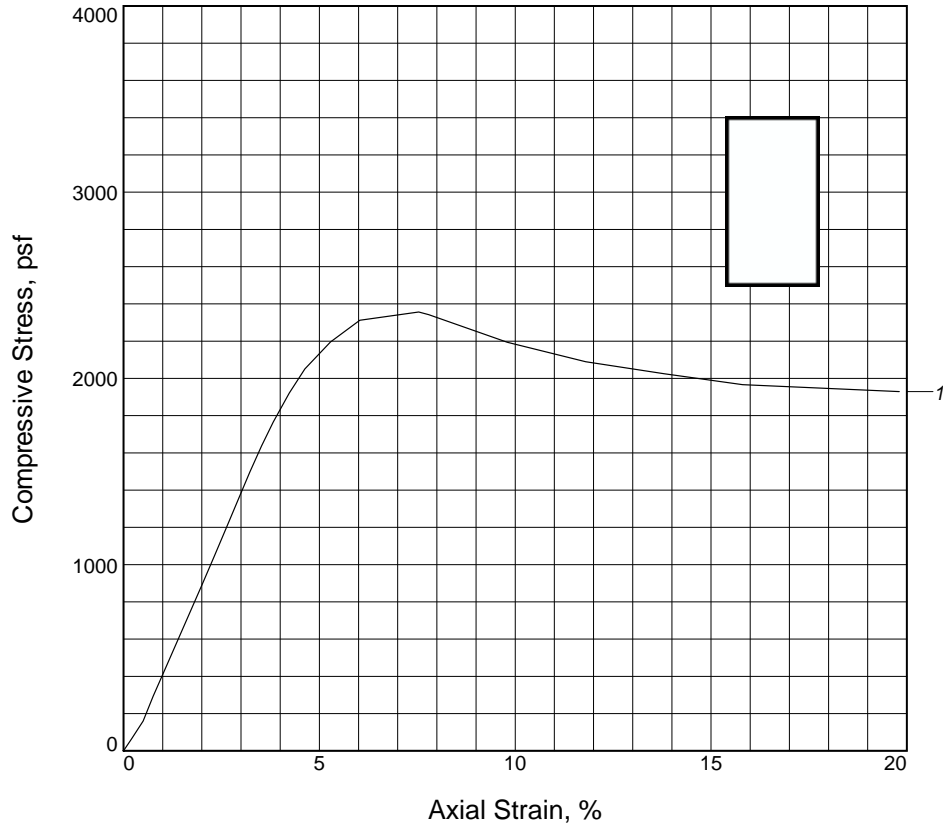
Project No.: 24384

Figure ASTM D2850

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Tested By: DE _____ **Checked By:** RR _____

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	2356.8			
Undrained shear strength, psf	1178.4			
Failure strain, %	7.5			
Strain rate, %/min.	1.00			
Water content, %	32.5			
Wet density, pcf	117.7			
Dry density, pcf	88.8			
Saturation, %	97.0			
Void ratio	0.9119			
Specimen diameter, in.	1.413			
Specimen height, in.	2.751			
Height/diameter ratio	1.95			

Description: ST GR CH2 W/ ARS & LNS ML

LL = 50 **PL** = 15 **PI** = 35 **Assumed GS**= 2.72 **Type:** UNDISTURBED

Project No.: 24384

Date Sampled: 10/6/20

Remarks:

TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09 **Depth:** 71

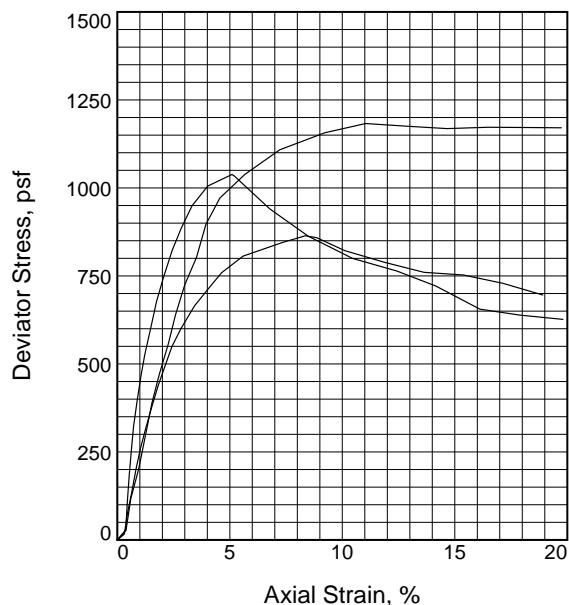
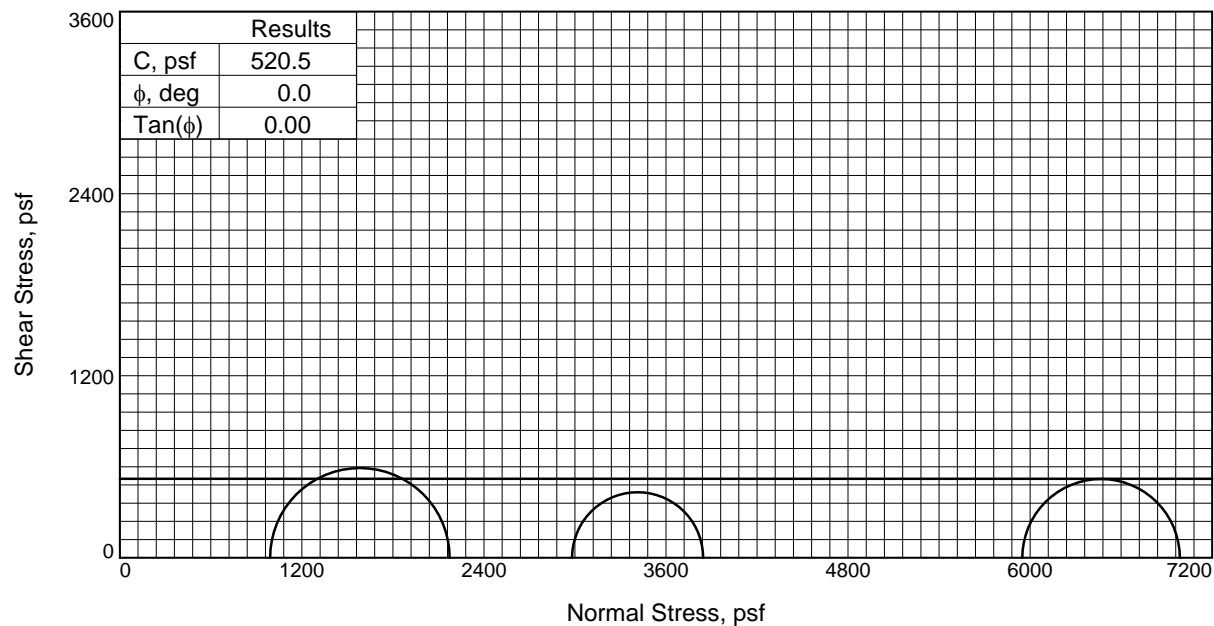
Sample Number: 21B

Figure ASTM D2166



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Tested By: CC **Checked By:** RR



Specimen No.	1	2	3
Initial			
Water Content, %	45.3	43.5	46.6
Dry Density, pcf	74.2	76.6	74.4
Saturation, %	95.7	97.1	99.0
Void Ratio	1.2893	1.2181	1.2812
Diameter, in.	1.399	1.381	1.401
Height, in.	2.805	2.878	2.889
At Test			
Water Content, %	47.4	44.8	47.1
Dry Density, pcf	74.2	76.6	74.4
Saturation, %	100.0	100.0	100.0
Void Ratio	1.2893	1.2181	1.2812
Diameter, in.	1.399	1.381	1.401
Height, in.	2.805	2.878	2.889
Strain rate, %/min.	1.00	1.00	1.00
Back Pressure, psi	0.000	0.000	0.000
Cell Pressure, psi	6.880	20.700	41.310
Fail. Stress, psf	1183.0	864.1	1038.3
Strain, %	11.0	8.4	5.1
Ult. Stress, psf	1168.7	752.6	721.3
Strain, %	14.7	15.4	14.2
σ_1 Failure, psf	2173.7	3844.9	6986.9
σ_3 Failure, psf	990.7	2980.8	5948.6

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR CH4 W/ ARS ML, SIF

LL= 91 **PL=** 18 **PI=** 73

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09 **Depth:** 76

Sample Number: 22C

Proj. No.: 24384

Date Sampled: 10/6/20

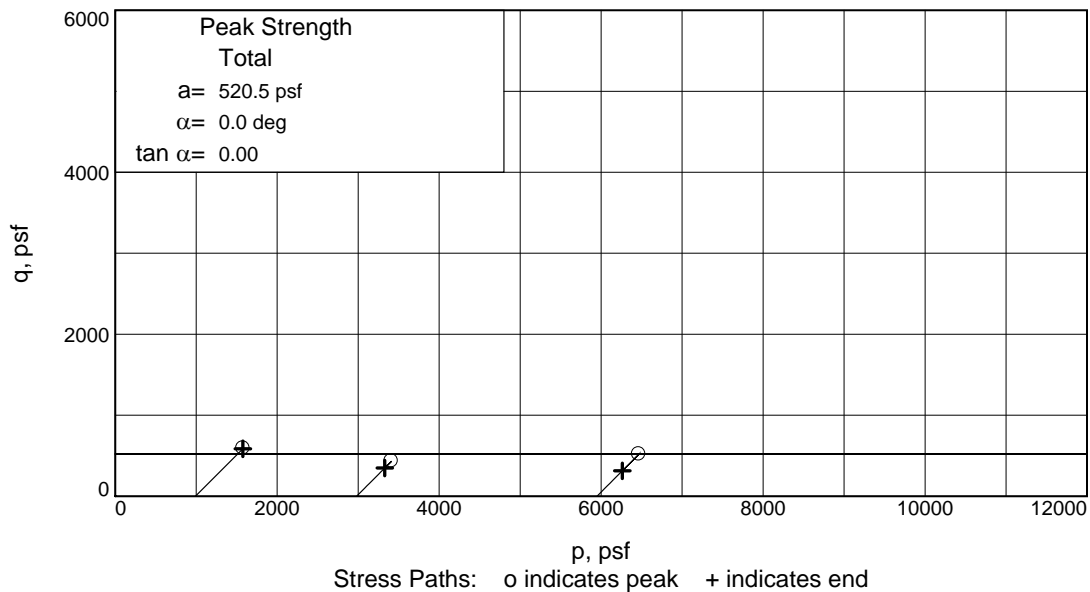
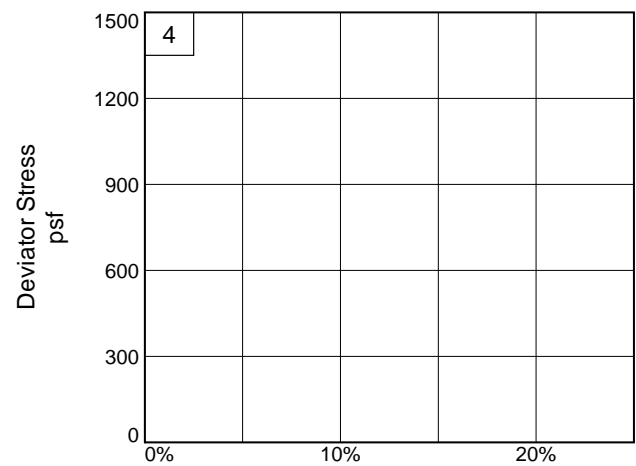
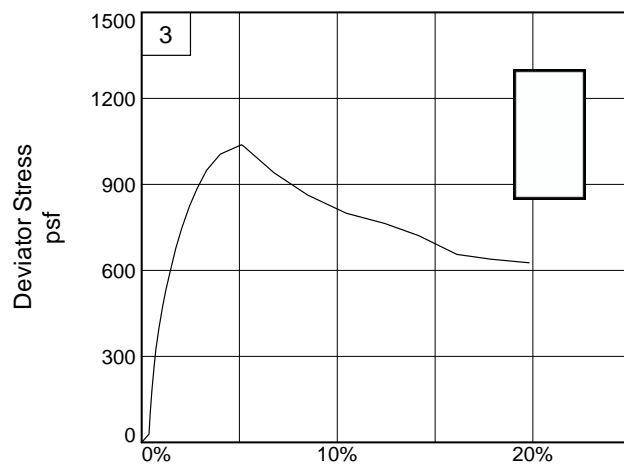
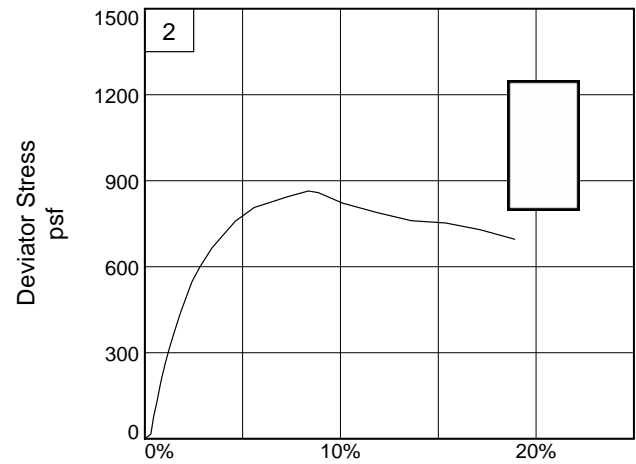
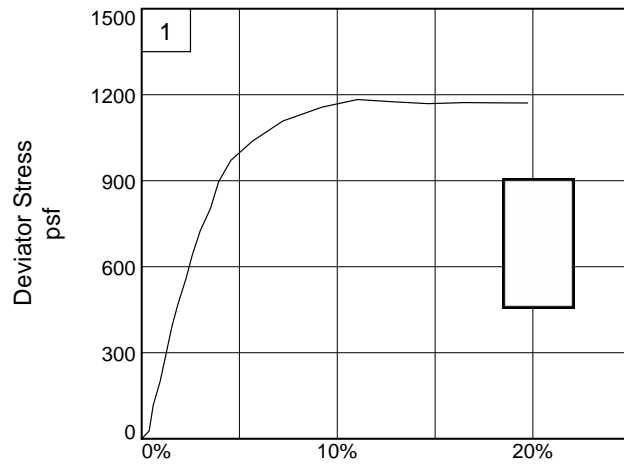


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Figure ASTM D2850

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09

Depth: 76

Sample Number: 22C

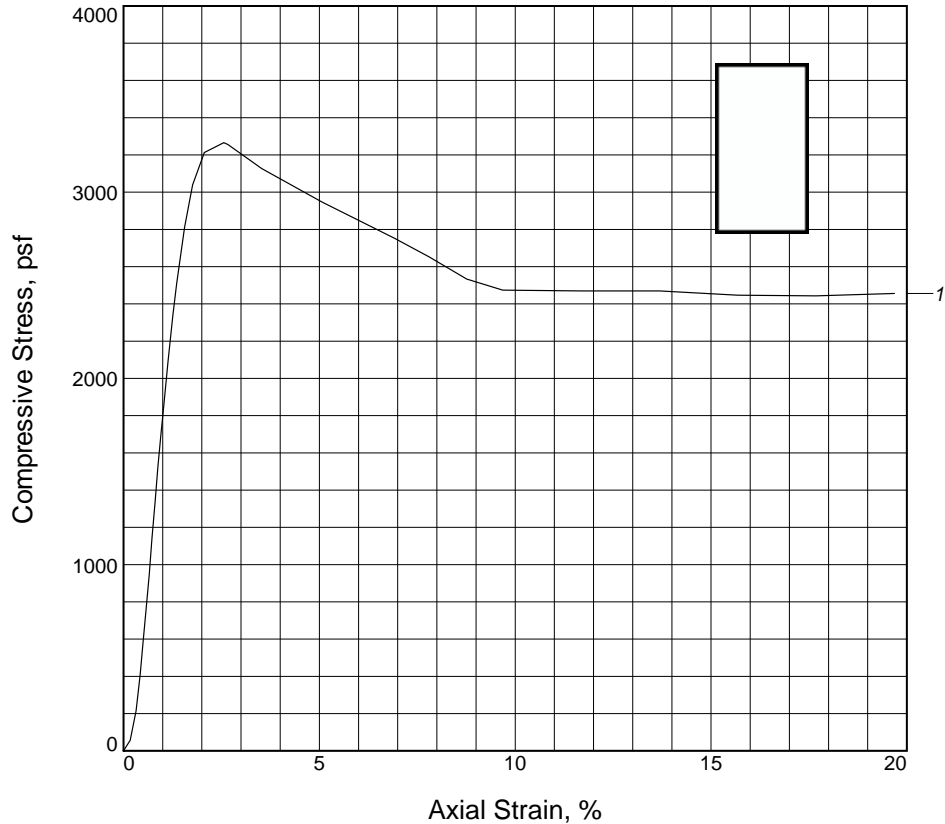
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE _____ **Checked By:** RR _____

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	3266.1			
Undrained shear strength, psf	1633.1			
Failure strain, %	2.6			
Strain rate, %/min.	1.00			
Water content, %	41.8			
Wet density, pcf	112.6			
Dry density, pcf	79.4			
Saturation, %	99.8			
Void ratio	1.1385			
Specimen diameter, in.	1.391			
Specimen height, in.	2.756			
Height/diameter ratio	1.98			

Description: ST GR CH4 W/ ARS ML

LL = 75 **PL** = 19 **PI** = 56 **Assumed GS**= 2.72 **Type:** UNDISTURBED

Project No.: 24384

Date Sampled: 10/6/20

Remarks:

TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09 **Depth:** 80

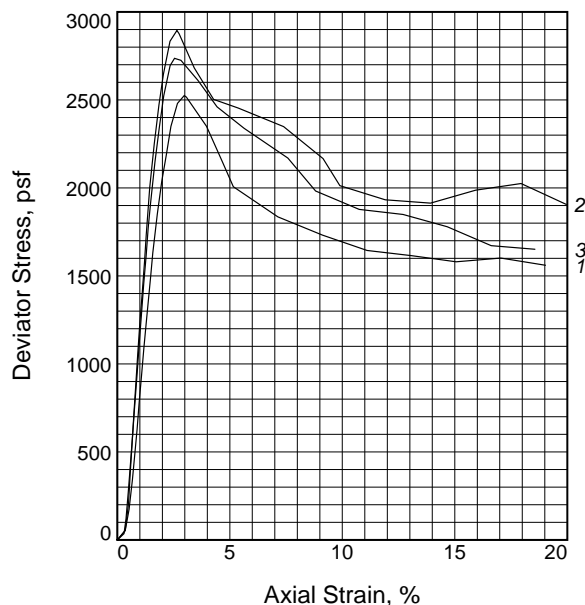
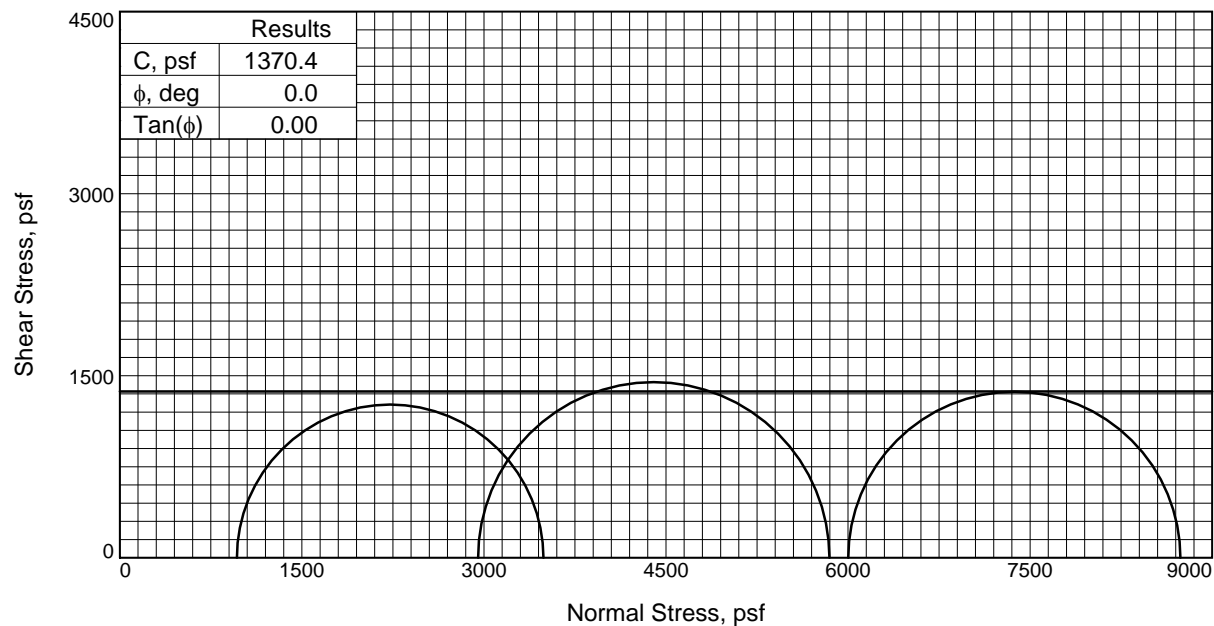
Sample Number: 23C

Figure ASTM D2166



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Tested By: CC **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	43.3	43.7	45.0
	Dry Density, pcf	78.0	77.4	76.3
	Saturation, %	100.0	99.7	100.0
	Void Ratio	1.1780	1.1927	1.2246
	Diameter, in.	1.392	1.401	1.391
	Height, in.	2.795	2.755	2.830
At Test	Water Content, %	43.3	43.8	45.0
	Dry Density, pcf	78.0	77.4	76.3
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.1780	1.1927	1.2246
	Diameter, in.	1.392	1.401	1.391
	Height, in.	2.795	2.755	2.830
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.700	20.500	41.680
Fail. Stress, psf		2525.2	2894.7	2736.4
Strain, %		3.0	2.7	2.5
Ult. Stress, psf		1580.4	1914.0	1779.8
Strain, %		15.1	13.9	14.7
σ_1 Failure, psf		3490.0	5846.7	8738.3
σ_3 Failure, psf		964.8	2952.0	6001.9

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR CH4 W/ ARS ML, SIF

LL= 74 **PL=** 20 **PI=** 54

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09 **Depth:** 84

Sample Number: 24C

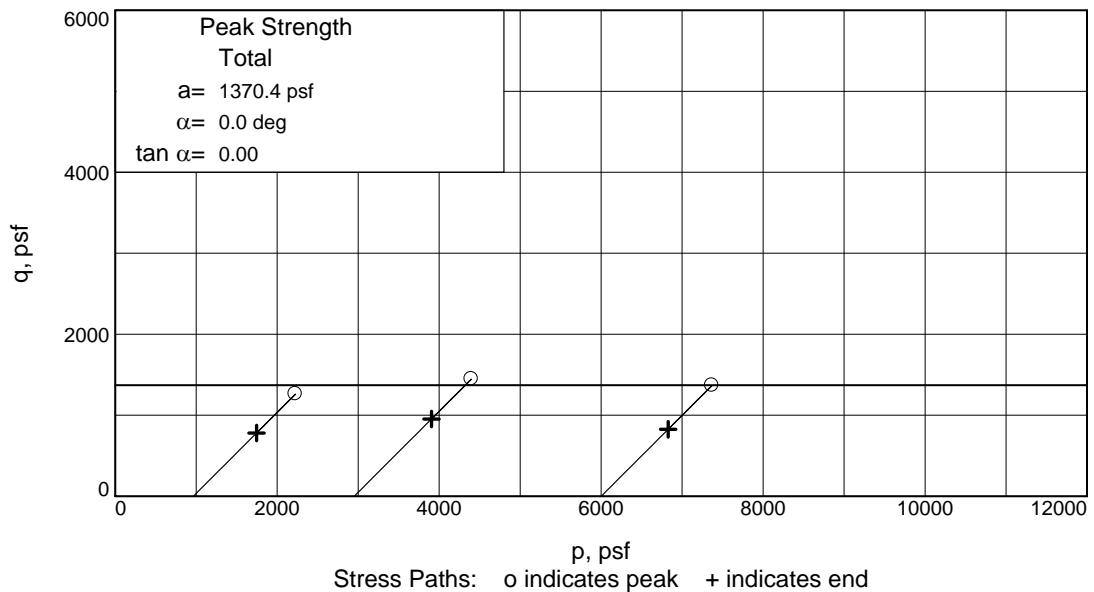
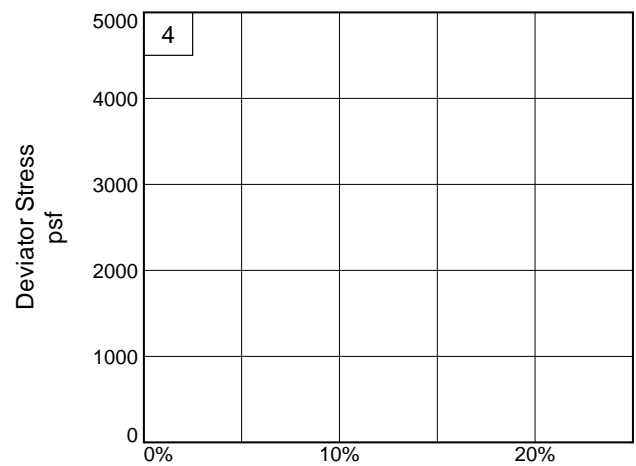
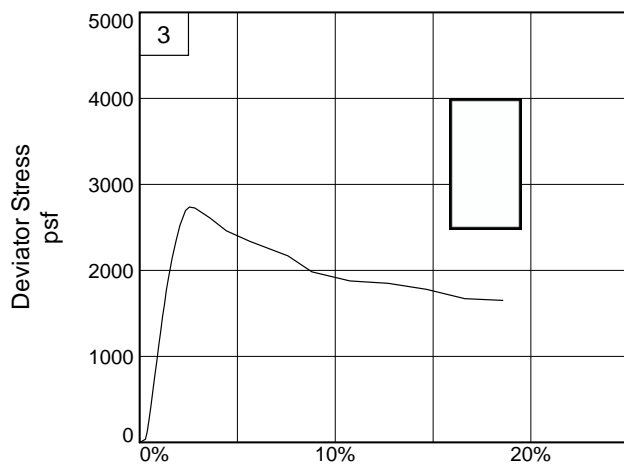
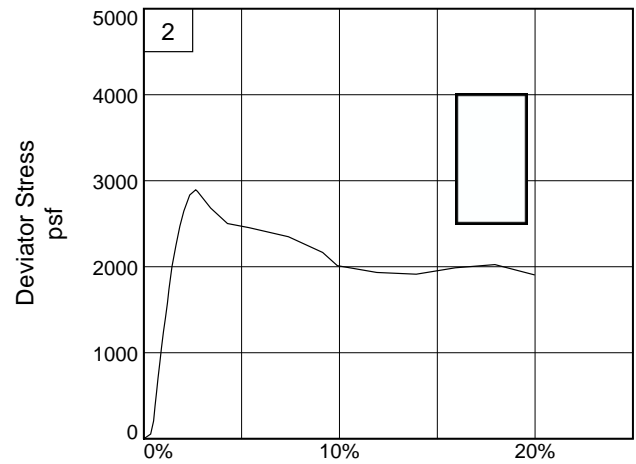
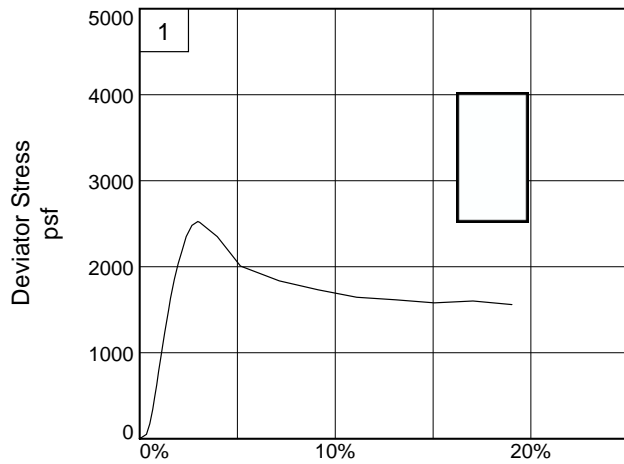
Proj. No.: 24384

Date Sampled: 10/6/20

Figure ASTM D2850



Tested By: CC **Checked By:** RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09

Depth: 84

Sample Number: 24C

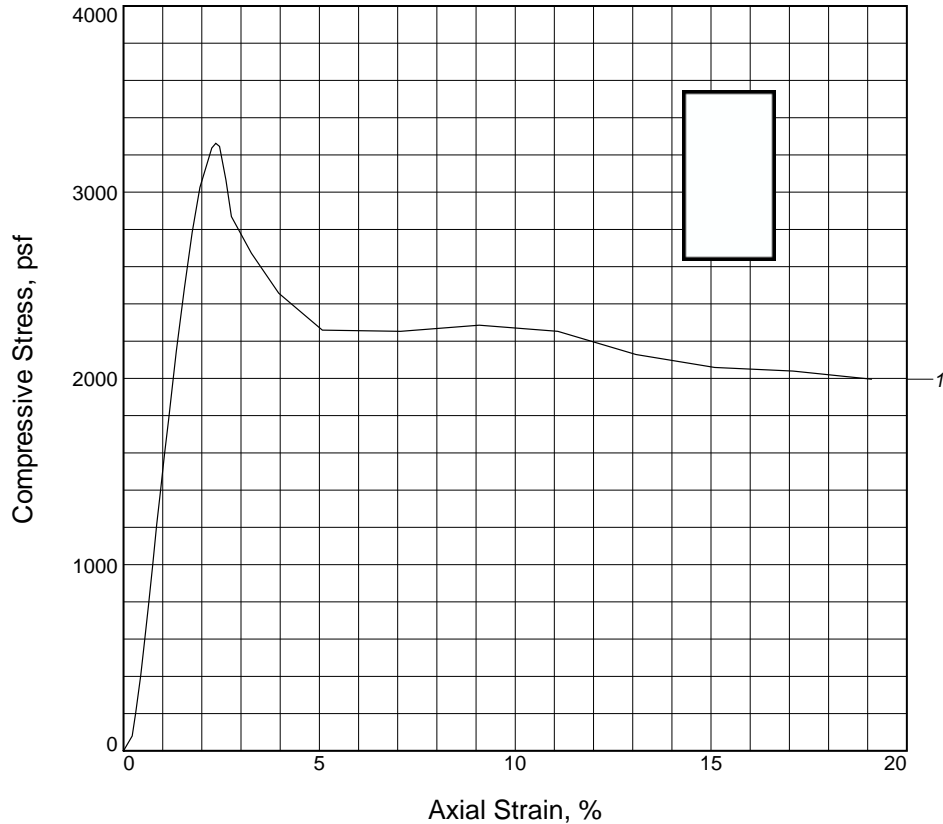
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: CC **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	3262.5			
Undrained shear strength, psf	1631.2			
Failure strain, %	2.4			
Strain rate, %/min.	1.00			
Water content, %	44.3			
Wet density, pcf	111.0			
Dry density, pcf	76.9			
Saturation, %	99.8			
Void ratio	1.2071			
Specimen diameter, in.	1.395			
Specimen height, in.	2.757			
Height/diameter ratio	1.98			

Description: ST GR CH3 W/ ARS & LNS ML

LL = 69 **PL** = 17 **PI** = 52 **Assumed GS**= 2.72 **Type:** UNDISTURBED

Project No.: 24384

Date Sampled: 10/6/20

Remarks:

TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09 **Depth:** 91

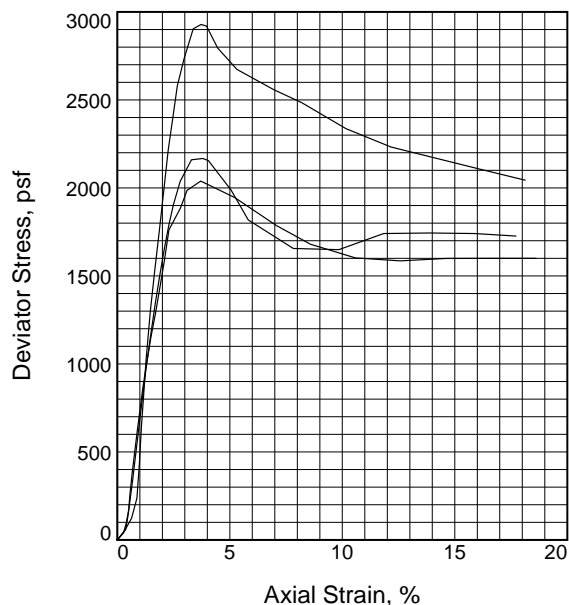
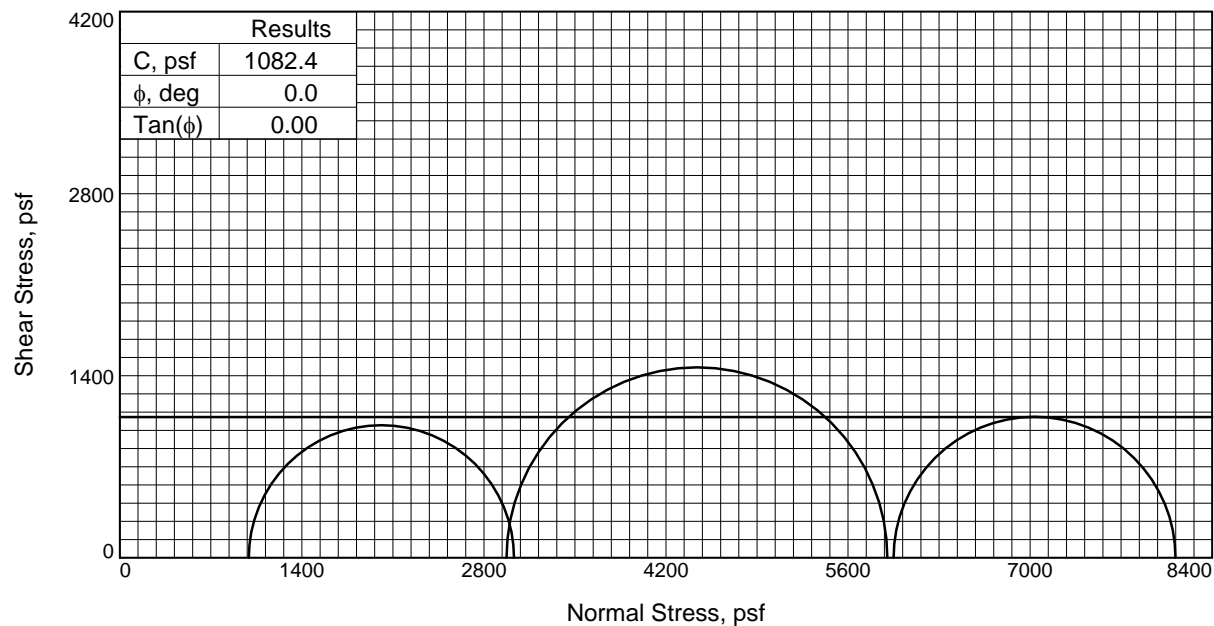
Sample Number: 26B

Figure ASTM D2166



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Tested By: CC **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	36.0	39.6	38.7
	Dry Density, pcf	83.6	80.5	81.6
	Saturation, %	94.9	96.9	97.4
	Void Ratio	1.0308	1.1104	1.0822
	Diameter, in.	1.403	1.406	1.391
	Height, in.	2.755	2.781	2.760
At Test	Water Content, %	37.9	40.8	39.8
	Dry Density, pcf	83.6	80.5	81.6
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.0308	1.1104	1.0822
	Diameter, in.	1.403	1.406	1.391
	Height, in.	2.755	2.781	2.760
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.890	20.650	41.320
Fail. Stress, psf		2038.7	2928.7	2167.8
Strain, %		3.7	3.7	3.8
Ult. Stress, psf		1585.5	2169.3	1649.1
Strain, %		12.6	14.2	9.8
σ_1 Failure, psf		3030.9	5902.3	8117.9
σ_3 Failure, psf		992.2	2973.6	5950.1

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR CH3 W/ ARS & LNS ML, O

LL= 63 **PL=** 18 **PI=** 45

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09 **Depth:** 95

Sample Number: 27B

Proj. No.: 24384

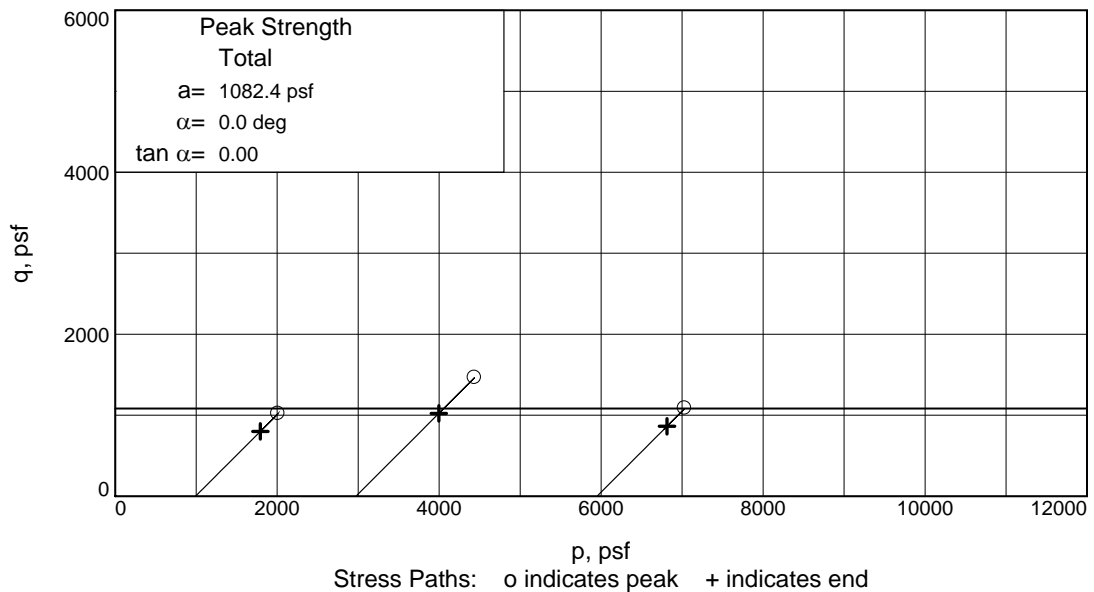
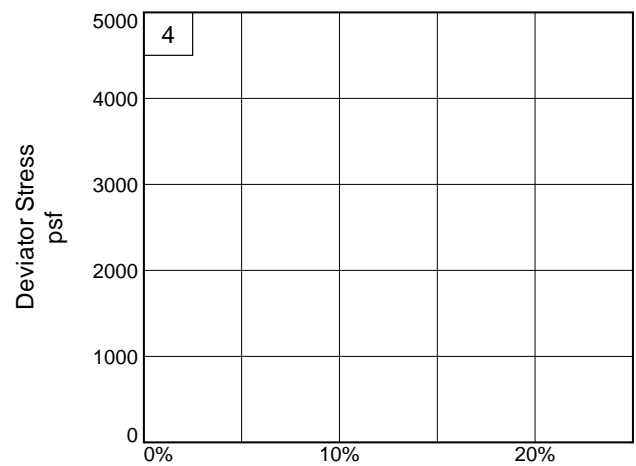
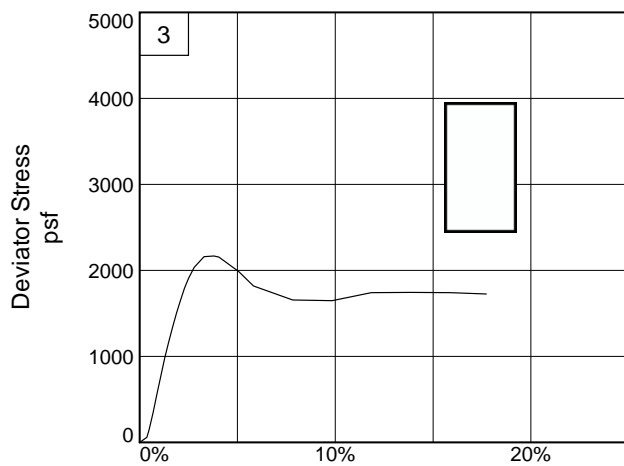
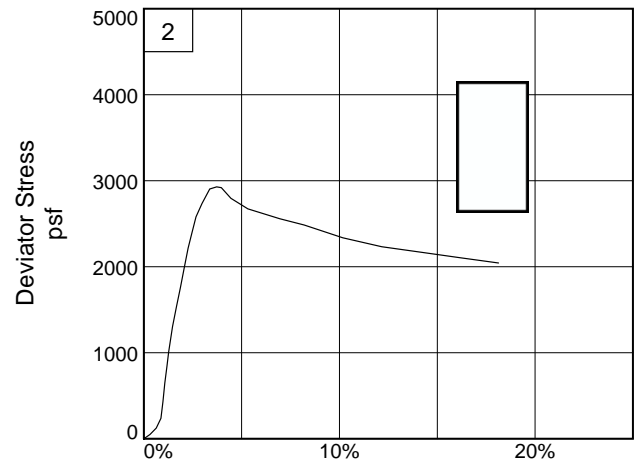
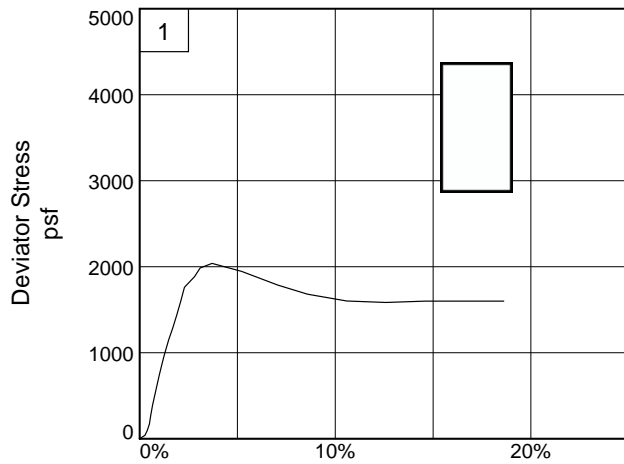
Date Sampled: 10/6/20

Figure ASTM D2850



Tested By: CC

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-09

Depth: 95

Sample Number: 27B

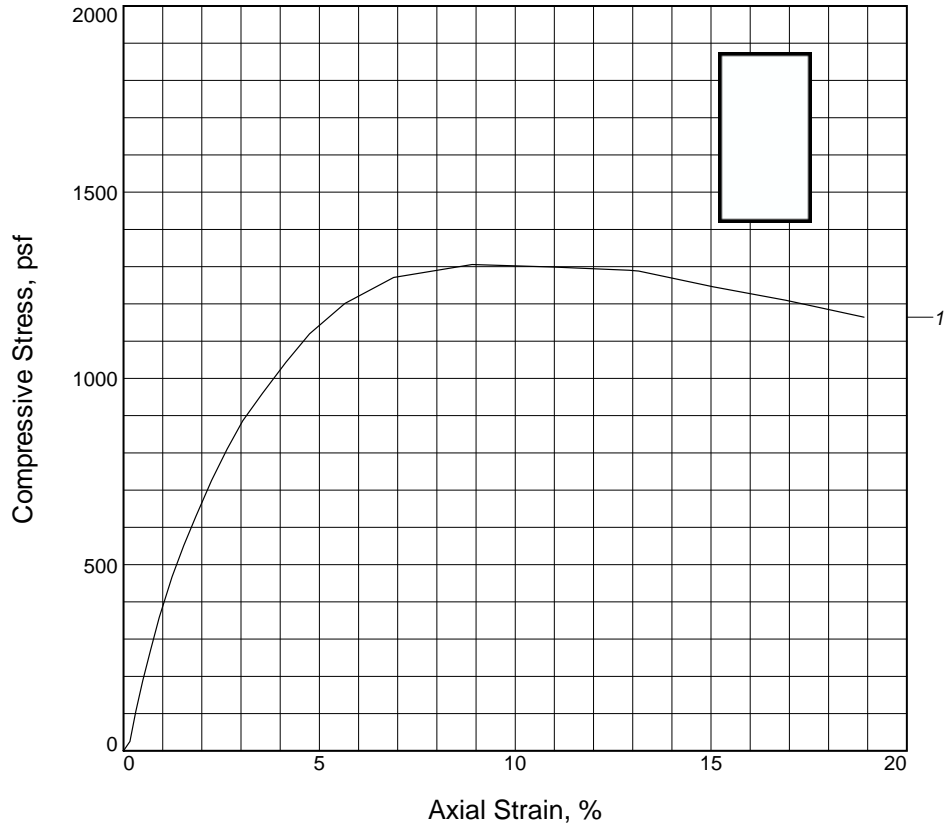
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: CC **Checked By:** RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	1305.9			
Undrained shear strength, psf	652.9			
Failure strain, %	8.9			
Strain rate, %/min.	1.00			
Water content, %	28.7			
Wet density, pcf	119.1			
Dry density, pcf	92.5			
Saturation, %	93.6			
Void ratio	0.8358			
Specimen diameter, in.	1.391			
Specimen height, in.	2.749			
Height/diameter ratio	1.98			

Description: M GR & T CL6 W/ SIF, WD

LL = 45 **PL** = 17 **PI** = 28 **Assumed GS**= 2.72 **Type:** UNDISTURBED

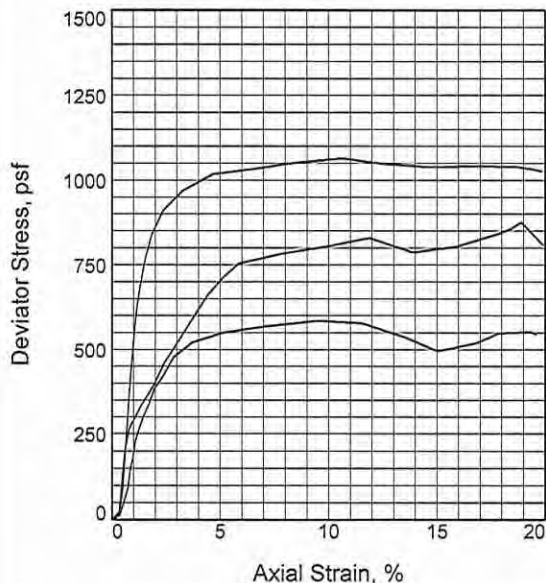
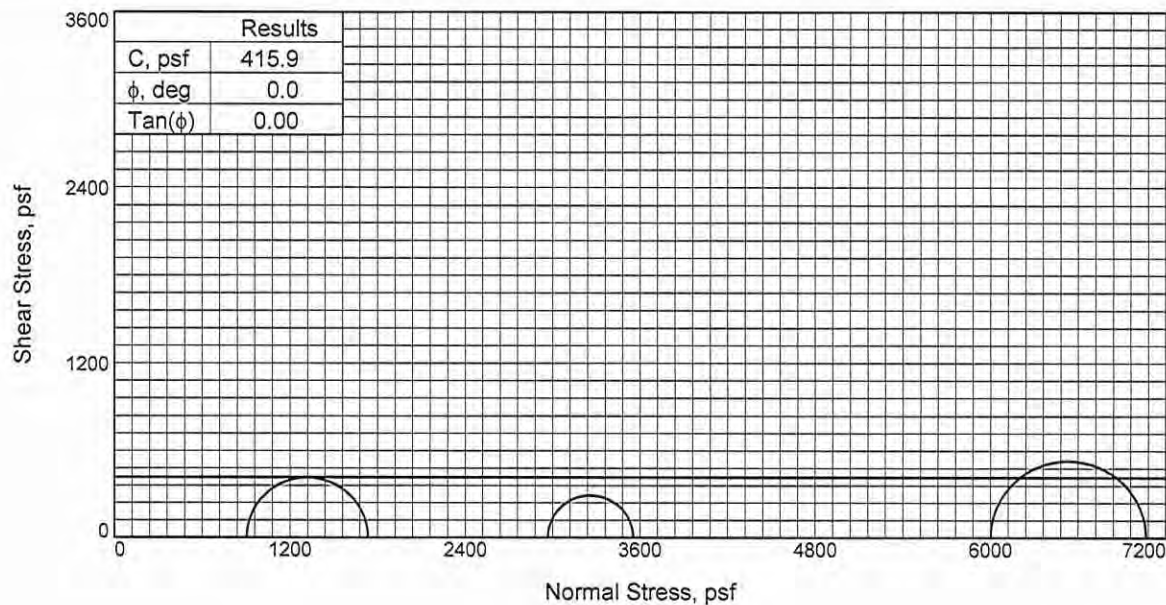
Project No.: 24384
Date Sampled: 10/6/20
Remarks:
 TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
Source of Sample: SB-09 **Depth:** 99
Sample Number: 28B

Figure ASTM D2166



Tested By: CC **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	55.6	58.2	55.7
	Dry Density, pcf	66.0	65.7	65.9
	Saturation, %	96.2	100.0	96.2
	Void Ratio	1.5728	1.5844	1.5752
	Diameter, in.	1.374	1.364	1.387
	Height, in.	2.757	2.745	2.752
At Test	Water Content, %	57.8	58.2	57.9
	Dry Density, pcf	66.0	65.7	65.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.5728	1.5844	1.5752
	Diameter, in.	1.374	1.364	1.387
	Height, in.	2.757	2.745	2.752
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.280	20.610	41.670
Fail. Stress, psf		829.8	585.1	1064.2
Strain, %		11.9	9.6	10.6
Ult. Stress, psf		786.8	496.1	1038.8
Strain, %		13.9	15.0	14.7
σ_1 Failure, psf		1734.1	3552.9	7064.7
σ_3 Failure, psf		904.3	2967.8	6000.5

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: SO GR & T CH4 W/ ARS ML, RT

LL= 100 PL= 27 PI= 73

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-12 **Depth:** 1

Sample Number: 1B

Proj. No.: 24384

Date Sampled: 11/11/20

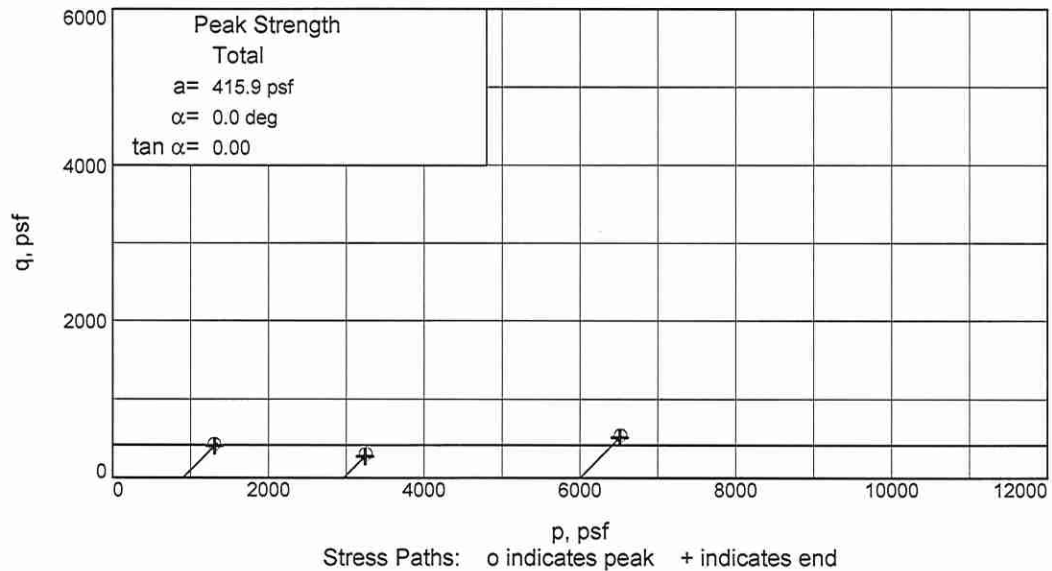
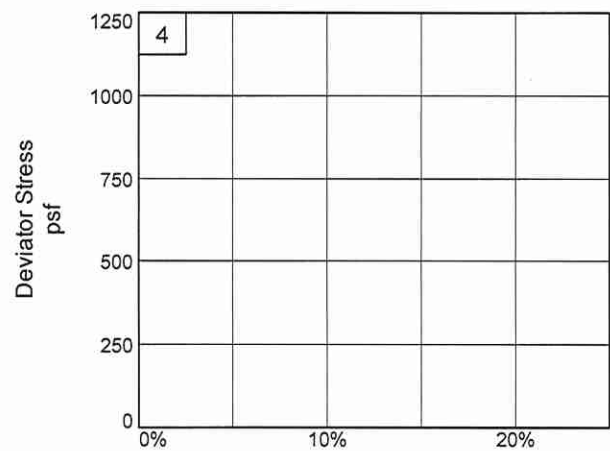
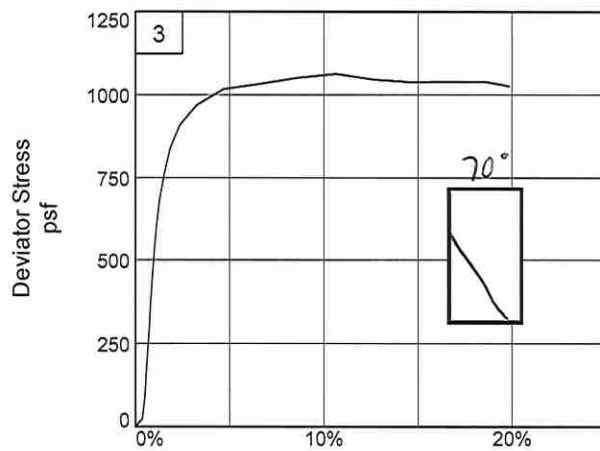
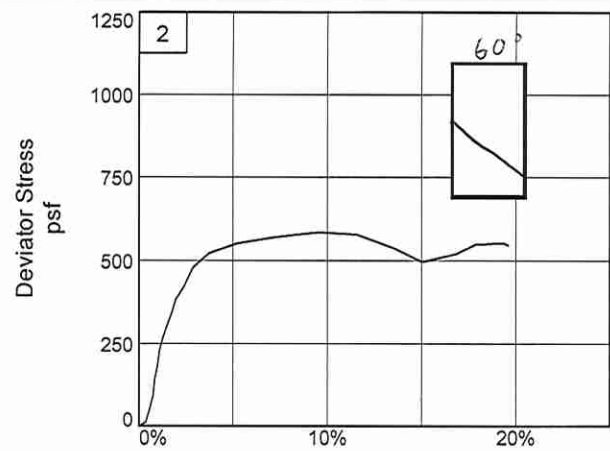
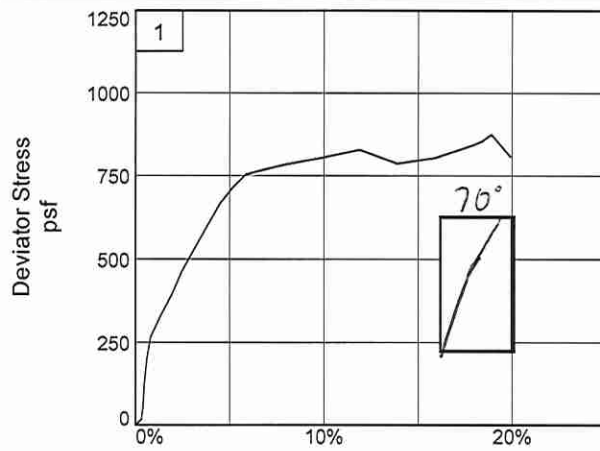
Figure ASTM D2850



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Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-12

Depth: 1

Sample Number: 1B

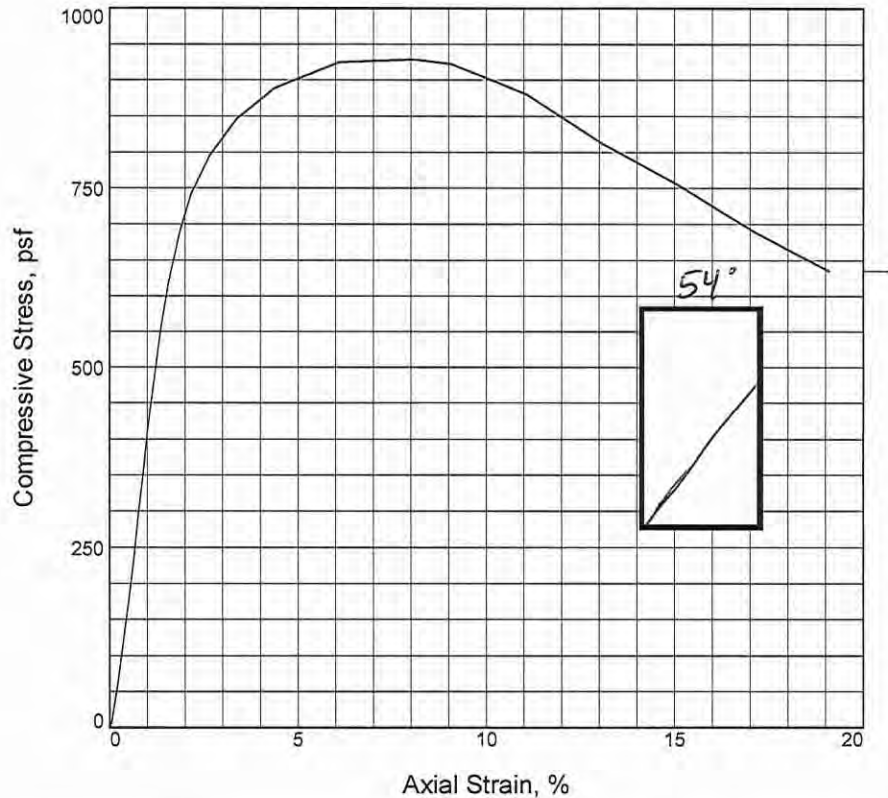
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	928.8			
Undrained shear strength, psf	464.4			
Failure strain, %	8.1			
Strain rate, %/min.	1.00			
Water content, %	60.5			
Wet density, pcf	103.1			
Dry density, pcf	64.2			
Saturation, %	100.1			
Void ratio	1.6438			
Specimen diameter, in.	1.365			
Specimen height, in.	2.764			
Height/diameter ratio	2.02			

Description: SO GR & T CH4 W/ ARS ML, RT

LL = 97	PL = 26	PI = 71	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 11/11/20

Remarks:

TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-12 **Depth:** 5

Sample Number: 3B

Figure ASTM D2166

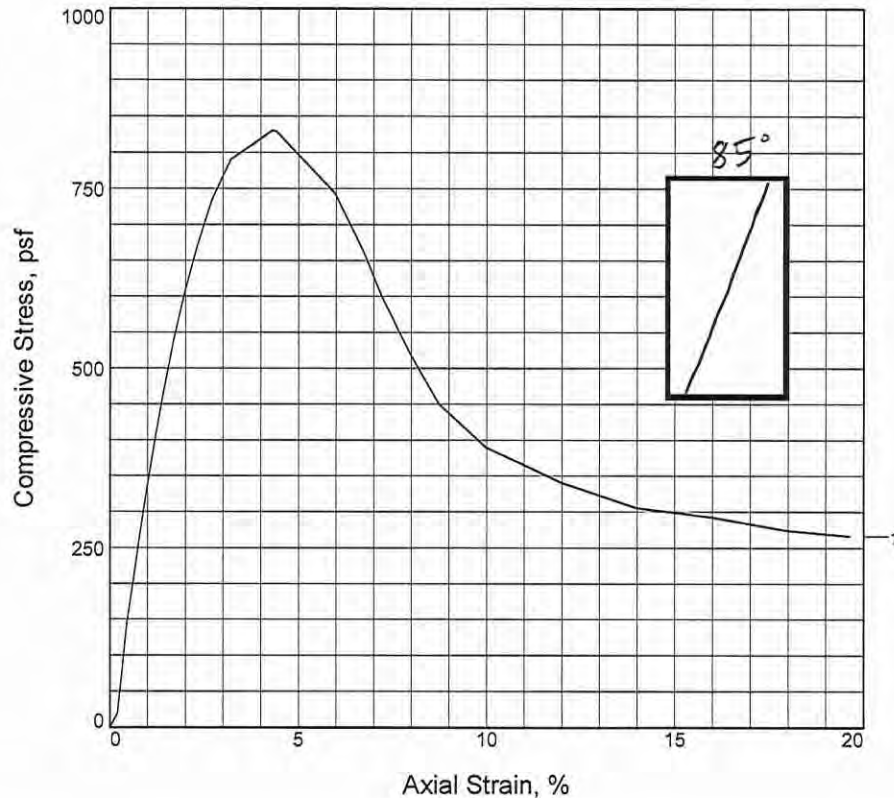


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SINCE 1986

Tested By: CC

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	830.6			
Undrained shear strength, psf	415.3			
Failure strain, %	4.3			
Strain rate, %/min.	1.00			
Water content, %	156.6			
Wet density, pcf	81.3			
Dry density, pcf	31.7			
Saturation, %	98.3			
Void ratio	4.2231			
Specimen diameter, in.	1.389			
Specimen height, in.	2.742			
Height/diameter ratio	1.97			

Description: SO DGR & BR CHOB

LL =	PL =	PI =	Assumed GS= 2.65	Type: UNDISTURBED
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Project No.: 24384
Date Sampled: 11/16/20
Remarks:
 TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

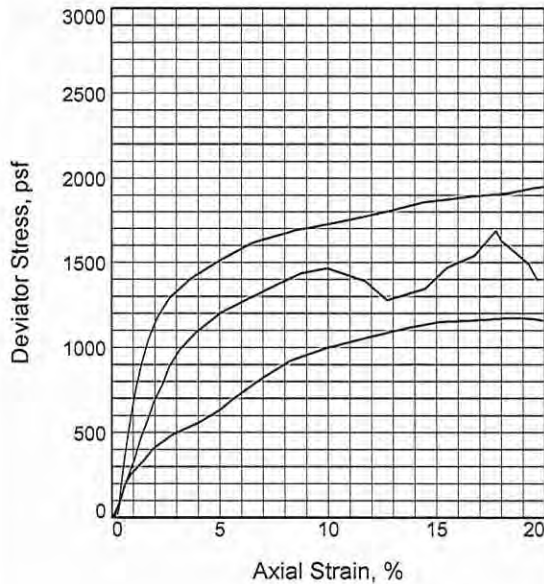
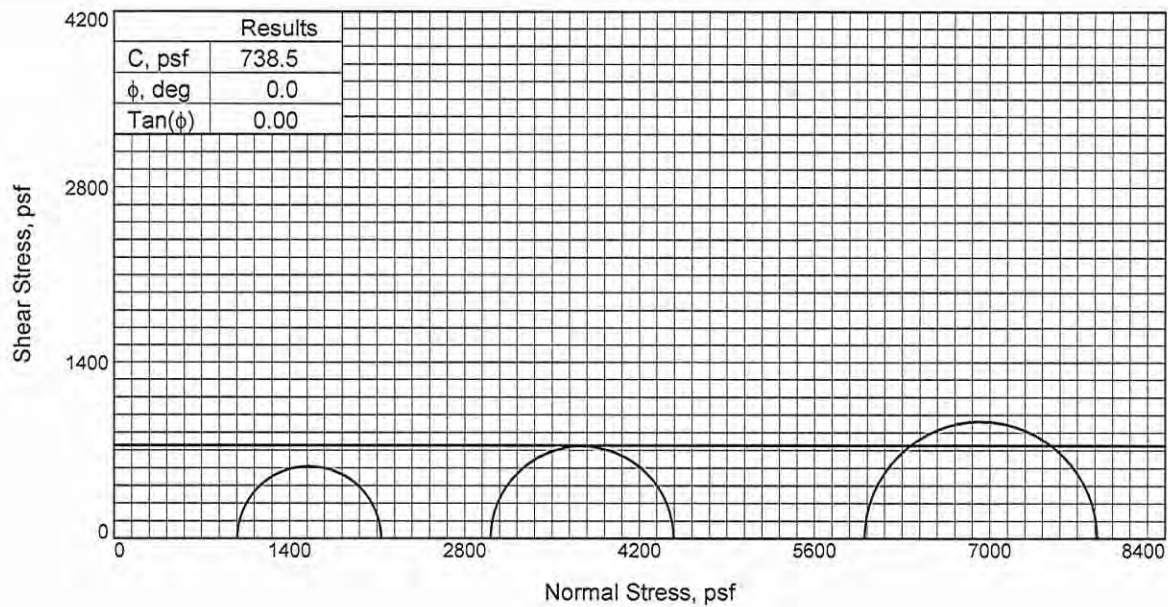
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
Source of Sample: SB-12 **Depth:** 13
Sample Number: 5B

Figure ASTM D2166



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Tested By: EM Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	25.7	26.2	26.2
	Dry Density, pcf	99.3	98.5	98.1
	Saturation, %	98.4	98.5	97.6
	Void Ratio	0.7101	0.7246	0.7303
	Diameter, in.	1.421	1.412	1.393
	Height, in.	2.859	2.883	2.782
At Test	Water Content, %	26.1	26.6	26.8
	Dry Density, pcf	99.3	98.5	98.1
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7101	0.7246	0.7303
	Diameter, in.	1.421	1.412	1.393
	Height, in.	2.859	2.883	2.782
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.830	20.890	41.670
Fail. Stress, psf		1149.2	1465.6	1857.2
Strain, %		15.1	10.0	14.4
Ult. Stress, psf		1149.2	1276.1	1857.2
Strain, %		15.1	12.7	14.4
σ_1 Failure, psf		2132.8	4473.8	7857.7
σ_3 Failure, psf		983.5	3008.2	6000.5

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR & DGR CL6 W/ O

LL= 42

PL= 16

PI= 26

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.350 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-12 **Depth:** 14

Sample Number: 5C

Proj. No.: 24384

Date Sampled: 11/11/20

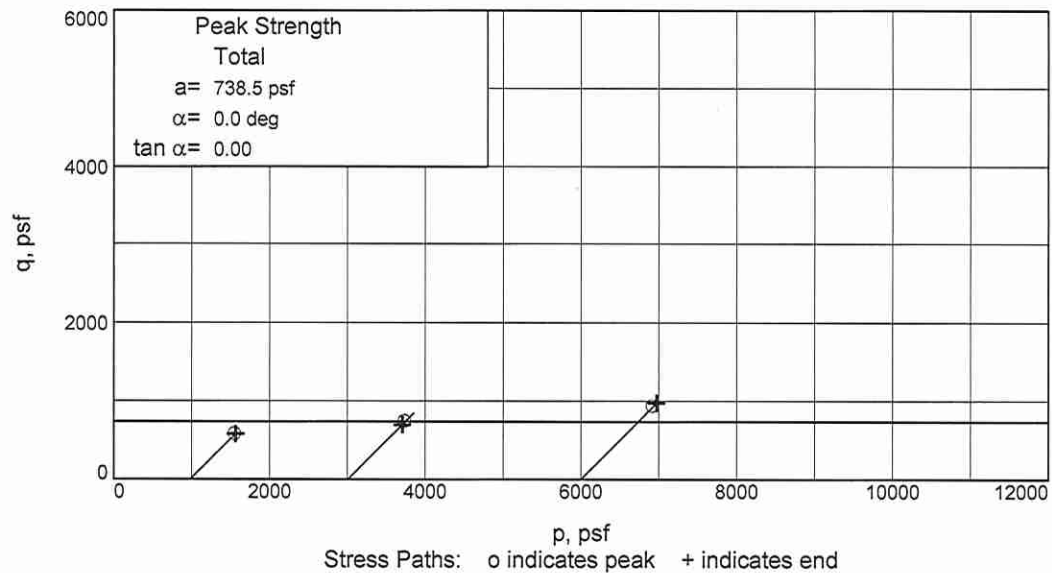
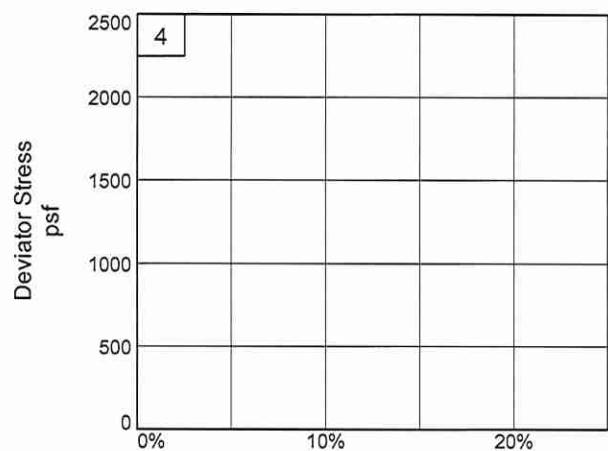
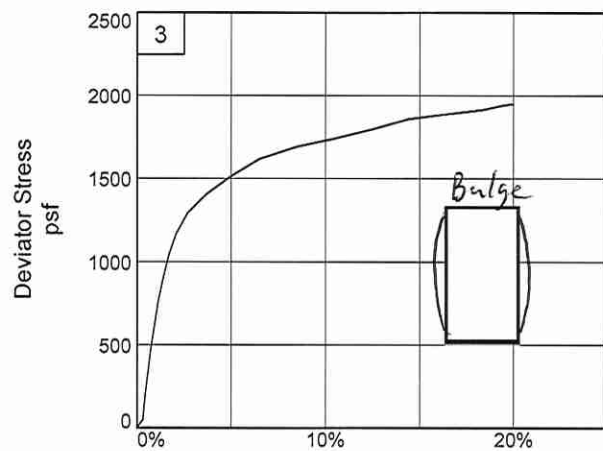
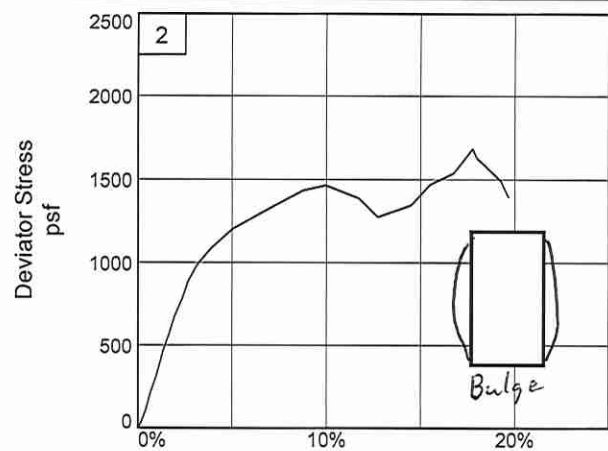
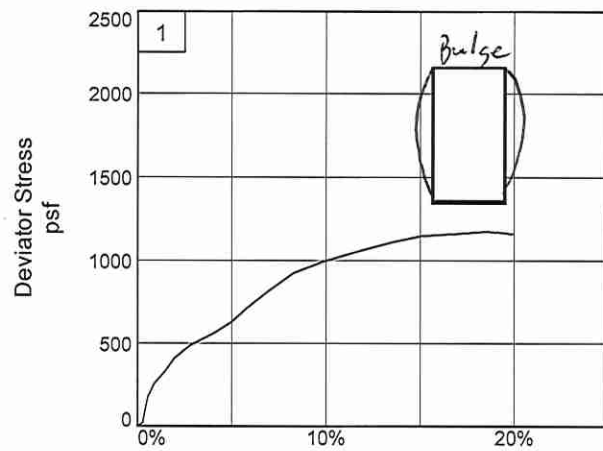
Figure ASTM D2850



EUSTIS
ENGINEERING
SINCE 1938

Tested By: EM

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-12

Depth: 14

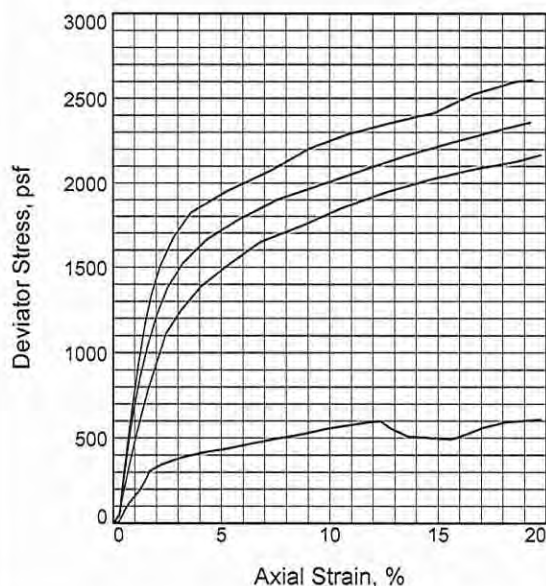
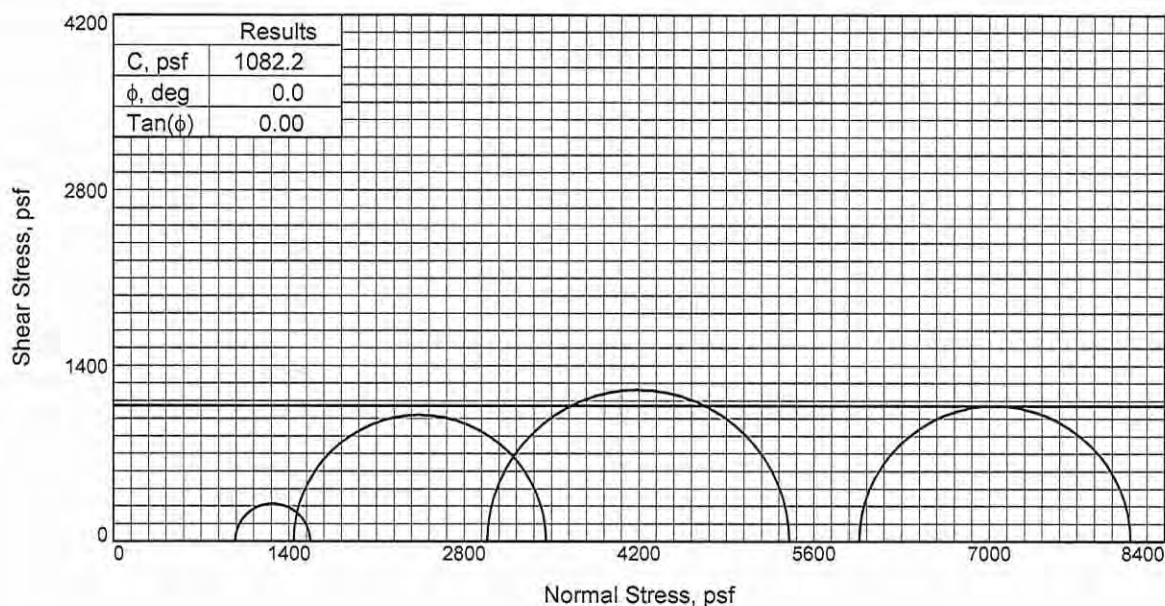
Sample Number: 5C

Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: EM Checked By: RR



Specimen No.		1	2	3	4
Initial	Water Content, %	25.9	24.3	24.3	24.4
	Dry Density, pcf	96.1	98.9	98.4	98.5
	Saturation, %	91.7	92.2	91.1	91.5
	Void Ratio	0.7666	0.7170	0.7256	0.7245
	Diameter, in.	1.414	1.404	1.406	1.385
	Height, in.	2.754	2.755	2.752	2.748
At Test	Water Content, %	28.2	26.4	26.7	26.6
	Dry Density, pcf	96.1	98.9	98.4	98.5
	Saturation, %	100.0	100.0	100.0	100.0
	Void Ratio	0.7666	0.7170	0.7256	0.7245
	Diameter, in.	1.414	1.404	1.406	1.385
	Height, in.	2.754	2.755	2.752	2.748
Strain rate, %/min.		1.00	1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000	0.000
Cell Pressure, psi		6.750	20.740	41.400	9.990
Fail. Stress, psf		598.7	2416.1	2166.0	2017.8
Strain, %		12.3	14.9	13.6	14.6
Ult. Stress, psf		510.6	2416.1	2166.0	2017.8
Strain, %		13.6	14.9	13.6	14.6
σ_1 Failure, psf		1570.7	5402.6	8127.6	3456.4
σ_3 Failure, psf		972.0	2986.6	5961.6	1438.6

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GNG & T CL6 W/ WD

LL= 43 PL= 19 PI= 24

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-12 **Depth:** 17

Sample Number: 6B

Proj. No.: 24384

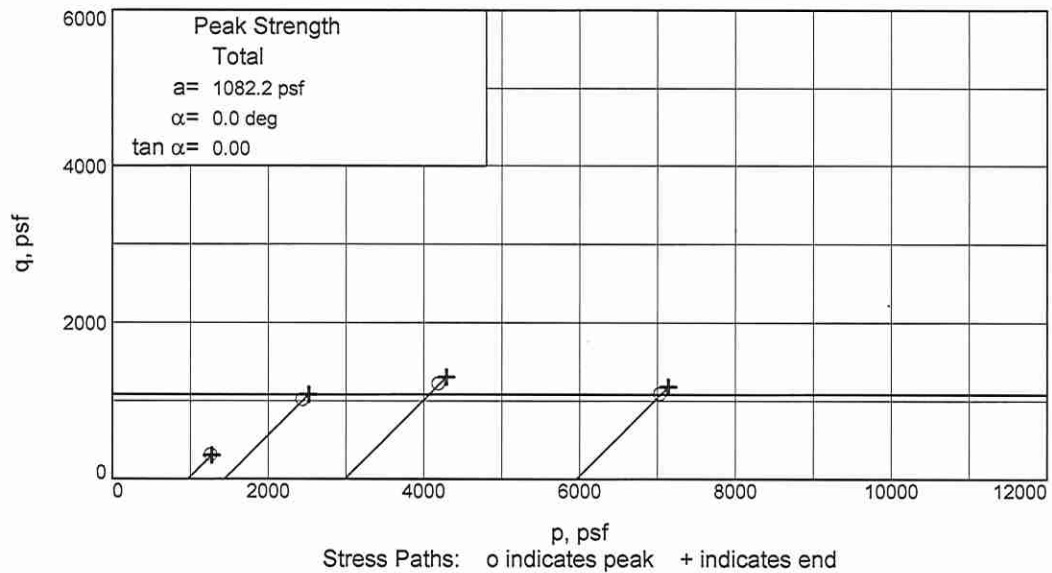
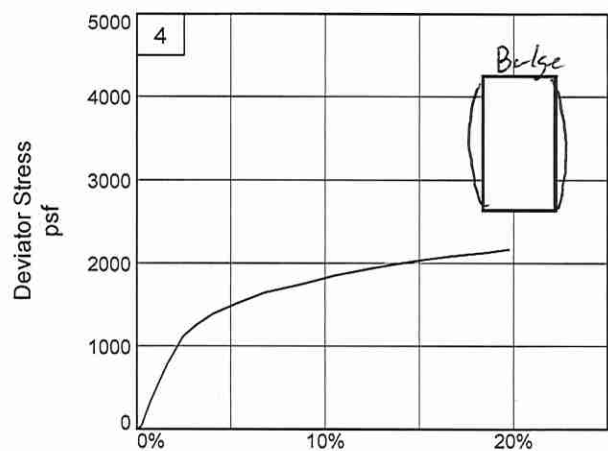
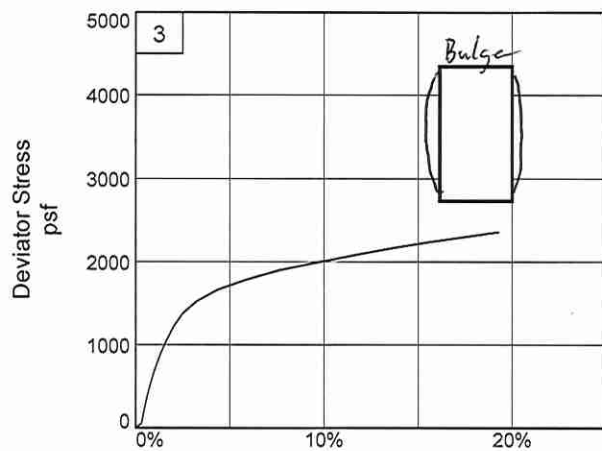
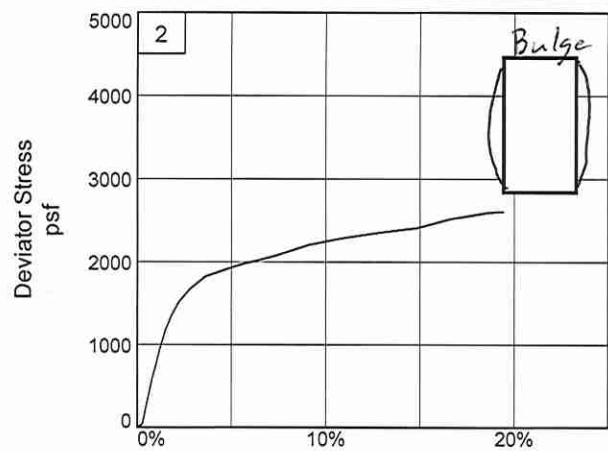
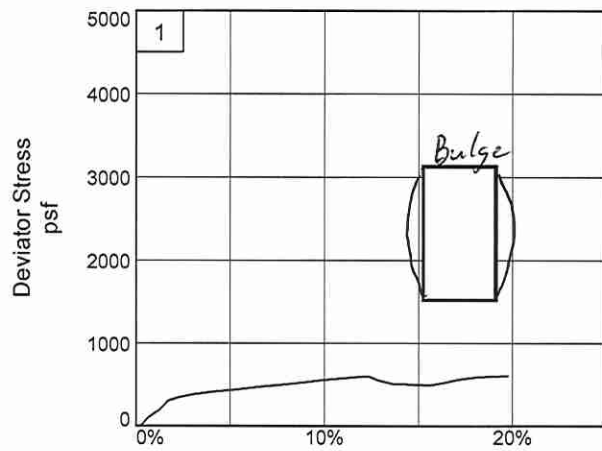
Date Sampled: 11/11/20

Figure ASTM D2850



EUSTIS
ENGINEERING
SINCE 1956

Tested By: DE Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-12

Depth: 17

Sample Number: 6B

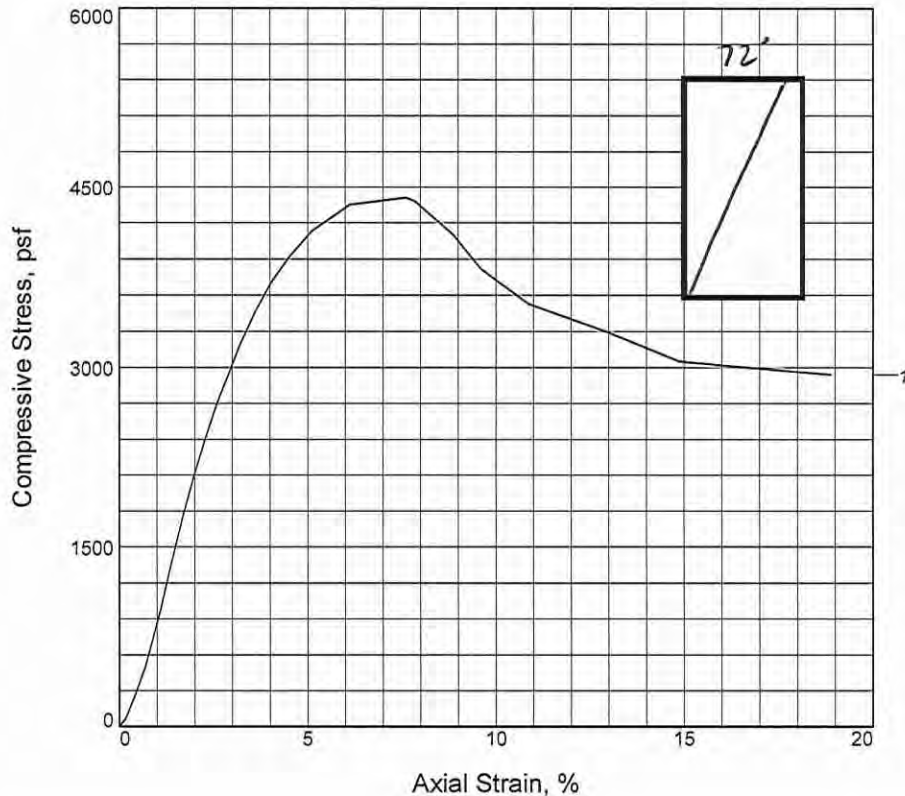
Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	4413.0			
Undrained shear strength, psf	2206.5			
Failure strain, %	7.6			
Strain rate, %/min.	1.00			
Water content, %	21.9			
Wet density, pcf	124.6			
Dry density, pcf	102.2			
Saturation, %	90.1			
Void ratio	0.6612			
Specimen diameter, in.	1.395			
Specimen height, in.	2.765			
Height/diameter ratio	1.98			

Description: VST GR & T CH2 W/ ARS & LNS ML

LL = 55 PL = 21 PI = 34 Assumed GS= 2.72 Type: UNDISTURBED

Project No.: 24384
Date Sampled: 11/11/20
Remarks:
 TORVANE = 0.750 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

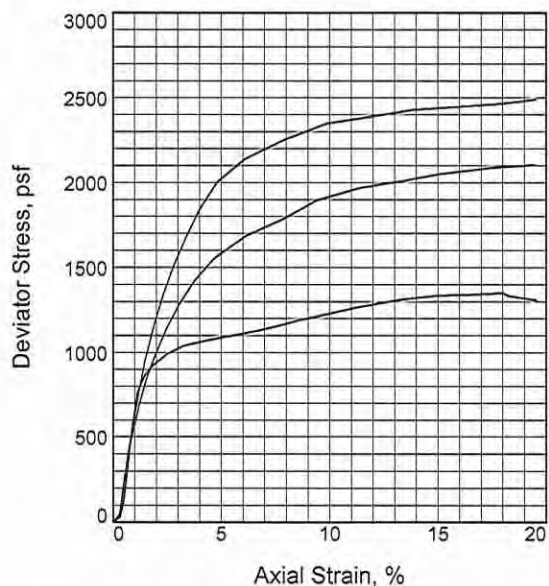
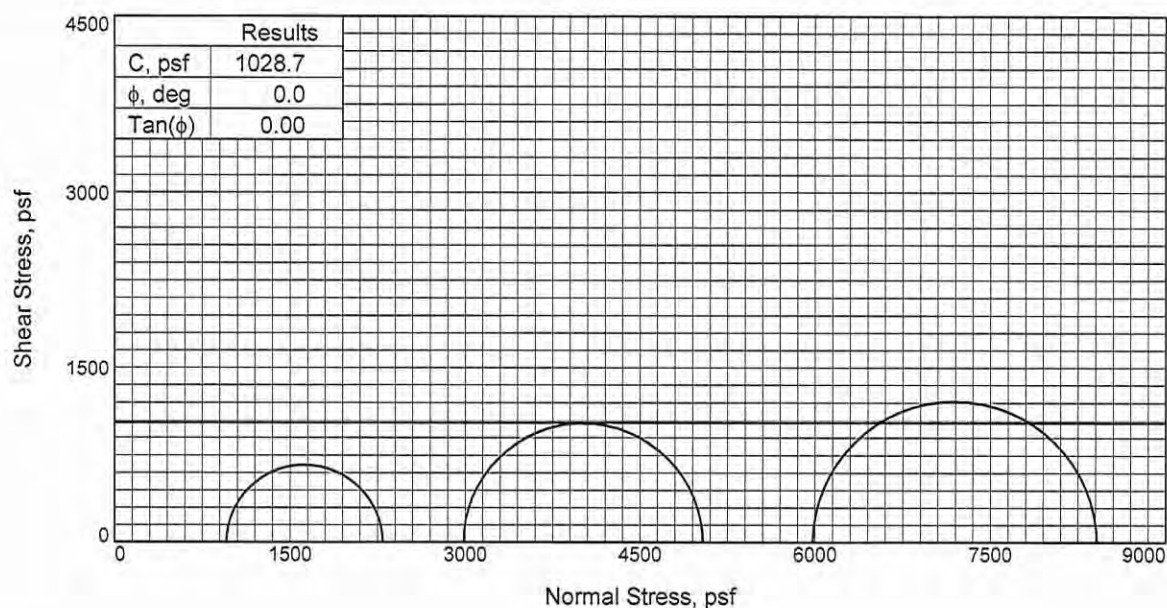
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
Source of Sample: SB-12 **Depth:** 22
Sample Number: 7C

Figure ASTM D2166



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 ENGINEERING
SINCE 1948

Tested By: CC Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	28.4	27.6	28.6
	Dry Density, pcf	92.6	94.4	92.1
	Saturation, %	93.3	94.7	93.0
	Void Ratio	0.8204	0.7863	0.8306
	Diameter, in.	1.393	1.395	1.388
	Height, in.	2.755	2.757	2.751
At Test	Water Content, %	30.4	29.1	30.8
	Dry Density, pcf	92.6	94.4	92.1
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.8204	0.7863	0.8306
	Diameter, in.	1.393	1.395	1.388
	Height, in.	2.755	2.757	2.751
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.650	20.740	41.530
Fail. Stress, psf		1335.2	2051.1	2429.0
Strain, %		15.0	15.1	13.9
Ult. Stress, psf		1335.2	2051.1	2429.0
Strain, %		15.0	15.1	13.9
σ_1 Failure, psf		2292.8	5037.7	8409.4
σ_3 Failure, psf		957.6	2986.6	5980.3

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST T & GR CL6 W/ CC

LL= 43

PL= 19

PI= 24

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-12 **Depth:** 26

Sample Number: 8C

Proj. No.: 24384

Date Sampled: 11/11/20

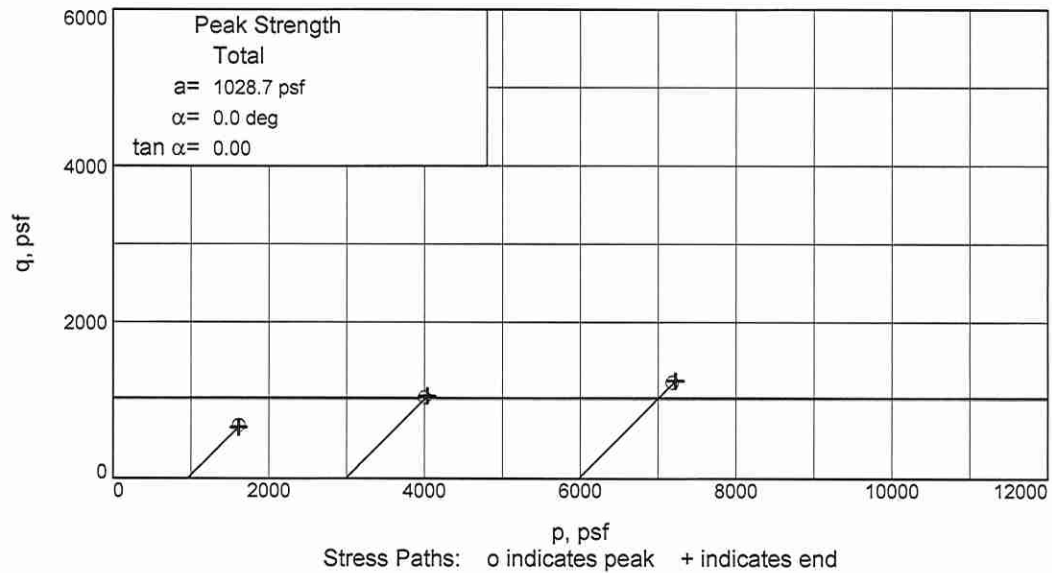
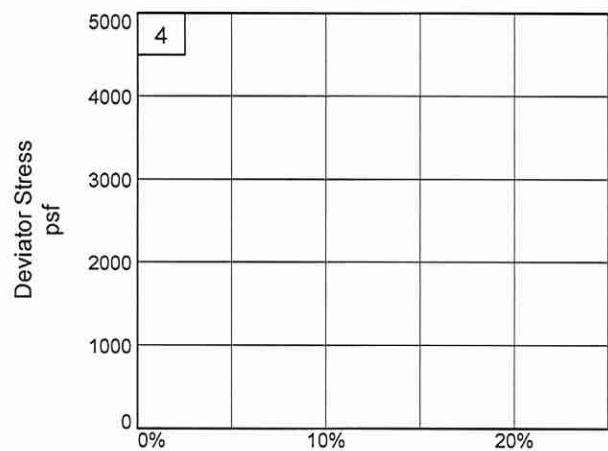
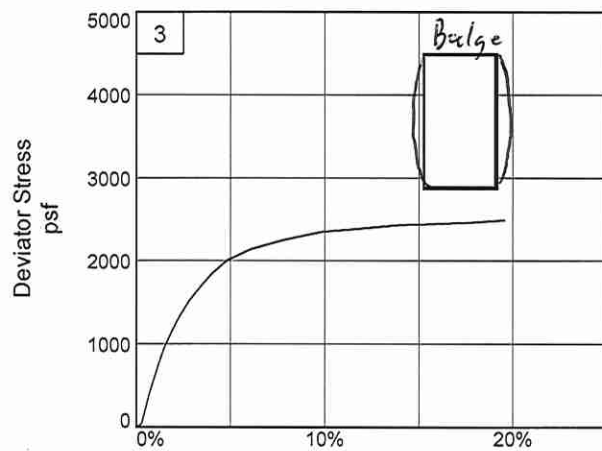
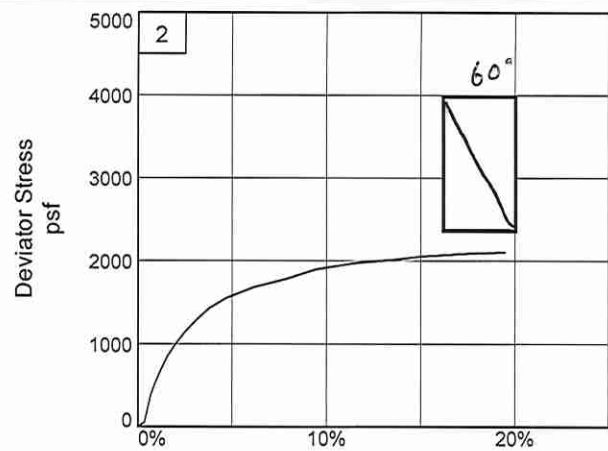
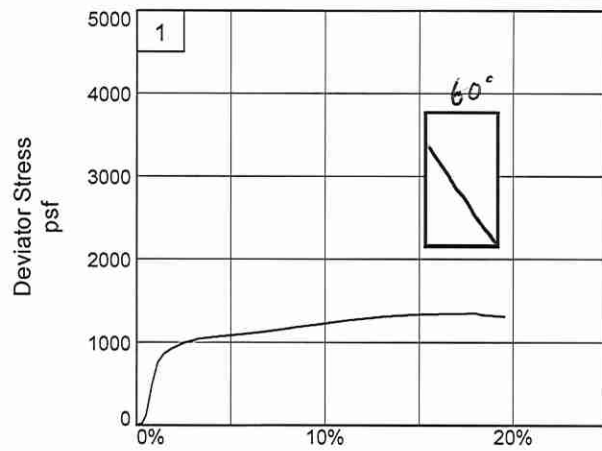
Figure ASTM D2850



EUSTIS
ENGINEERING
SINCE 1944

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-12

Depth: 26

Sample Number: 8C

Project No.: 24384

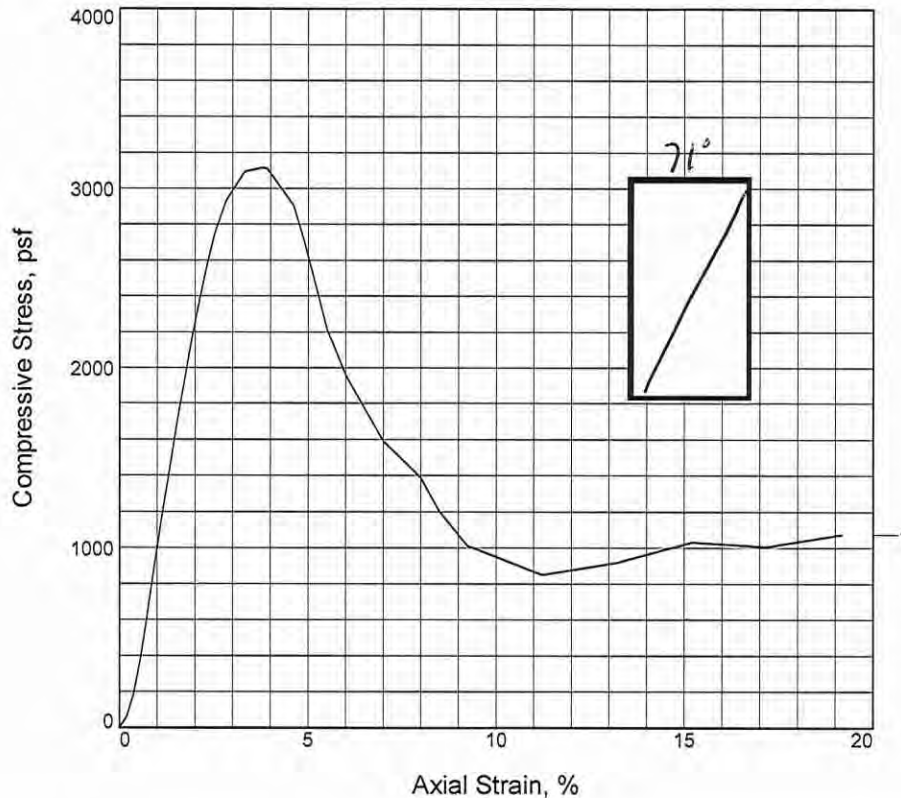
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	3117.3		
Undrained shear strength, psf	1558.7		
Failure strain, %	3.8		
Strain rate, %/min.	1.00		
Water content, %	26.4		
Wet density, pcf	121.2		
Dry density, pcf	95.9		
Saturation, %	93.3		
Void ratio	0.7707		
Specimen diameter, in.	1.404		
Specimen height, in.	2.765		
Height/diameter ratio	1.97		

Description: ST T & GR CL6

LL = 40	PL = 19	PI = 21	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 11/11/20

Remarks:
TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-12 **Depth:** 30

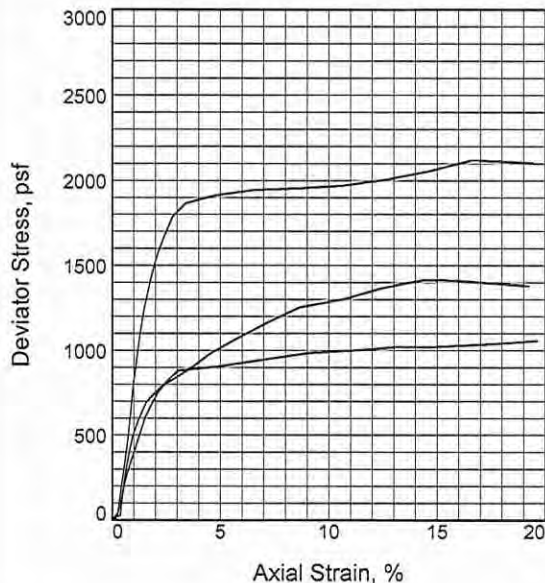
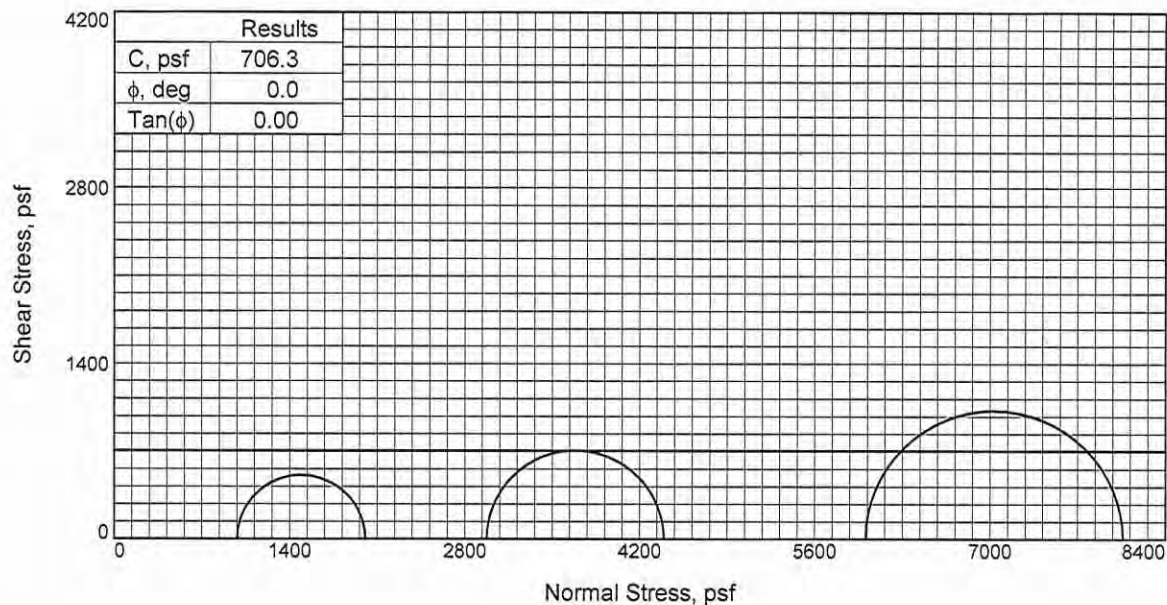
Sample Number: 9C

Figure ASTM D2166



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SINCE 1946

Tested By: CC **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	32.4	30.0	31.8
	Dry Density, pcf	86.2	89.7	87.8
	Saturation, %	91.4	92.3	93.4
	Void Ratio	0.9559	0.8787	0.9192
	Diameter, in.	1.392	1.385	1.395
	Height, in.	2.754	2.783	2.794
At Test	Water Content, %	35.4	32.5	34.0
	Dry Density, pcf	86.2	89.7	87.8
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.9559	0.8787	0.9192
	Diameter, in.	1.392	1.385	1.395
	Height, in.	2.754	2.783	2.794
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.820	20.670	41.710
Fail. Stress, psf		1022.5	1417.5	2054.8
Strain, %		15.0	14.4	14.6
Ult. Stress, psf		1022.5	1417.5	2054.8
Strain, %		15.0	14.4	14.6
σ_1 Failure, psf		2004.6	4394.0	8061.1
σ_3 Failure, psf		982.1	2976.5	6006.2

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR & T CL6 W/ CC

LL= 48 PL= 18 PI= 30

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-12 **Depth:** 34

Sample Number: 10C

Proj. No.: 24384

Date Sampled: 11/11/20

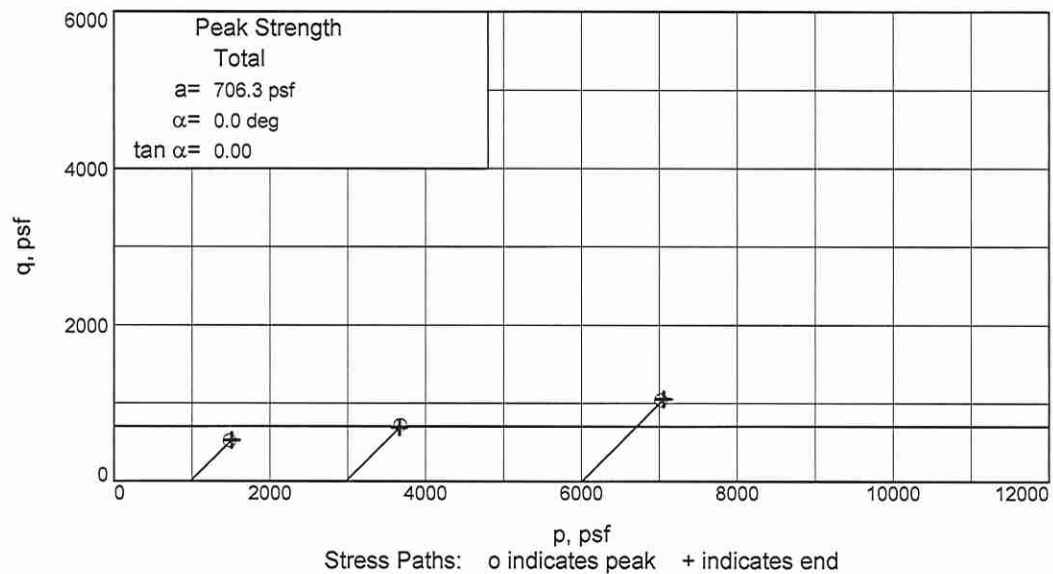
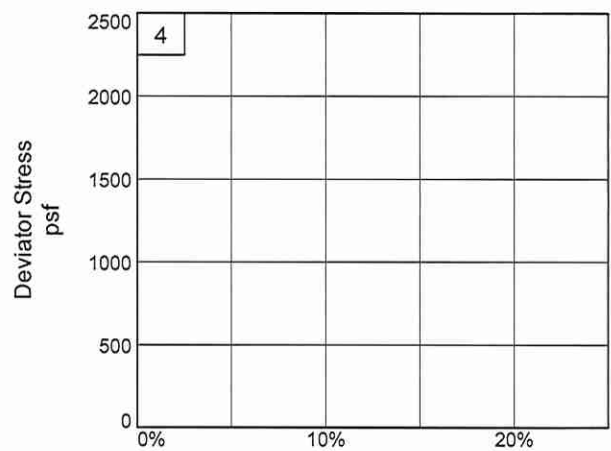
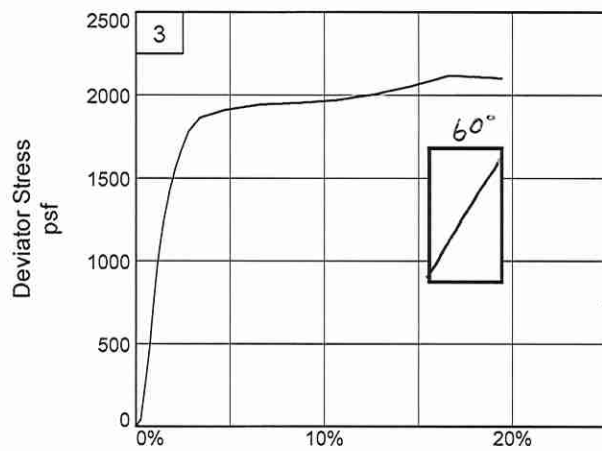
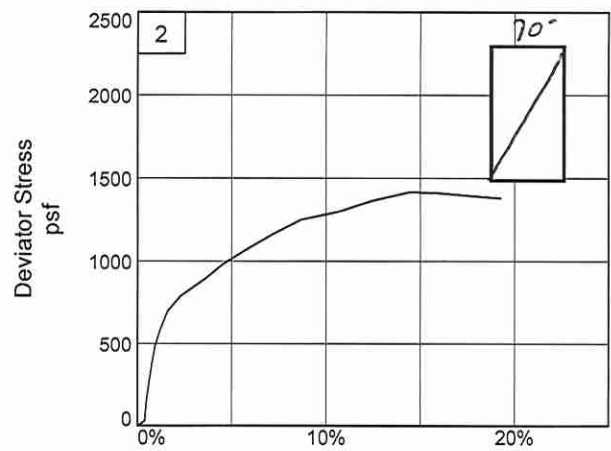
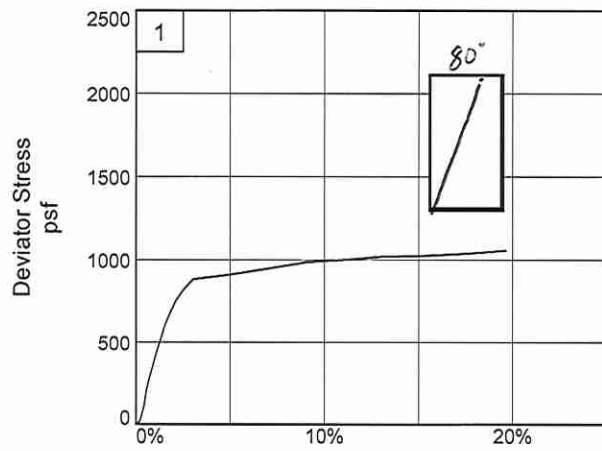
Figure ASTM D2850



EUSTIS
ENGINEERING
SINCE 1946

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-12

Depth: 34

Sample Number: 10C

Project No.: 24384

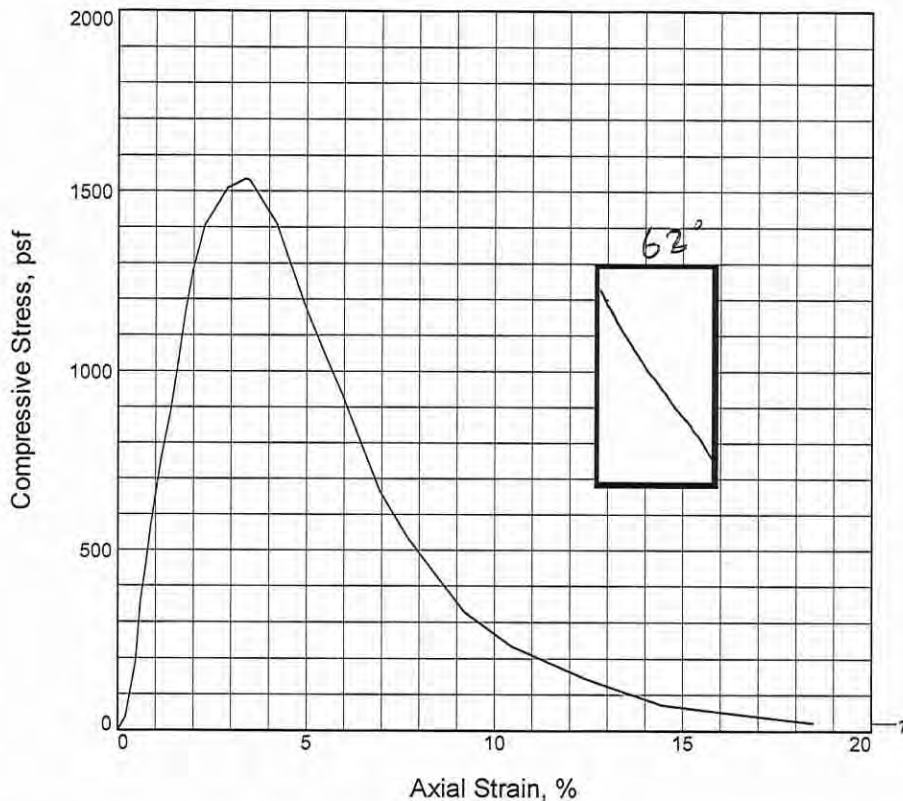
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	1535.4			
Undrained shear strength, psf	767.7			
Failure strain, %	3.4			
Strain rate, %/min.	1.00			
Water content, %	31.8			
Wet density, pcf	117.9			
Dry density, pcf	89.5			
Saturation, %	96.4			
Void ratio	0.8978			
Specimen diameter, in.	1.384			
Specimen height, in.	2.745			
Height/diameter ratio	1.98			

Description: ST GR & T CH3 W/ ARS ML, SL

LL = 64	PL = 18	PI = 46	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 11/11/20

Remarks:

TORVANE = 0.625 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-12 **Depth:** 47

Sample Number: 15B

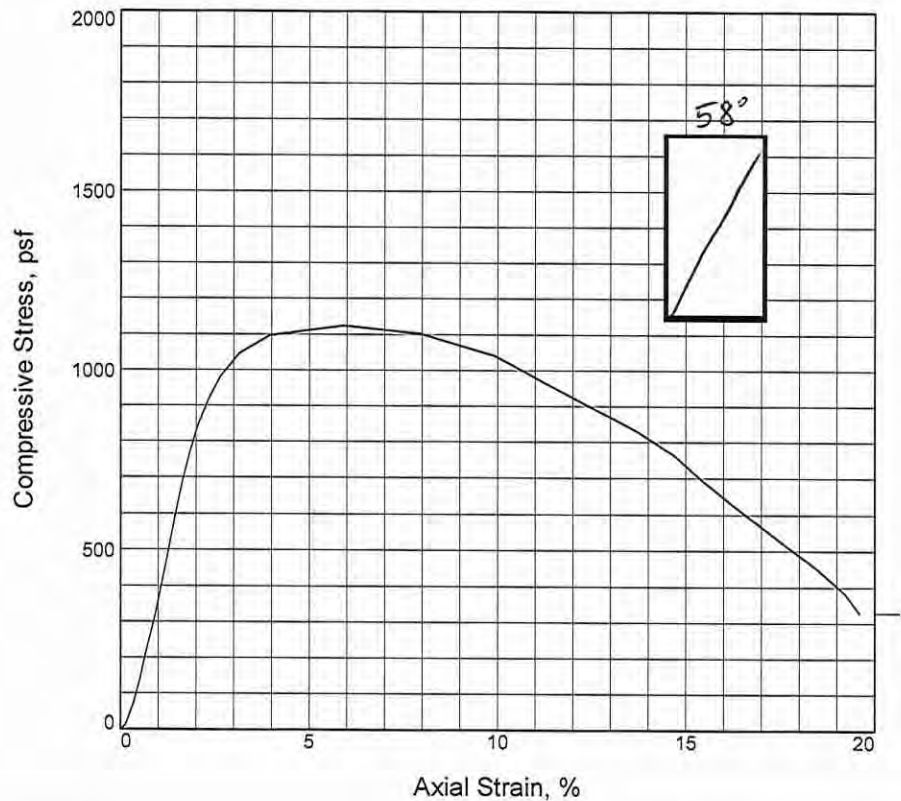
Figure ASTM D2166



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ENGINEERING
SINCE 1946

Tested By: CC Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	1124.4		
Undrained shear strength, psf	562.2		
Failure strain, %	5.9		
Strain rate, %/min.	1.00		
Water content, %	47.0		
Wet density, pcf	106.8		
Dry density, pcf	72.7		
Saturation, %	95.7		
Void ratio	1.3359		
Specimen diameter, in.	1.408		
Specimen height, in.	2.755		
Height/diameter ratio	1.96		

Description: M GR & T CH4 W/ ARS ML, CC, SL

LL = 101	PL = 31	PI = 70	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 11/11/20

Remarks:

TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-13 **Depth:** 1

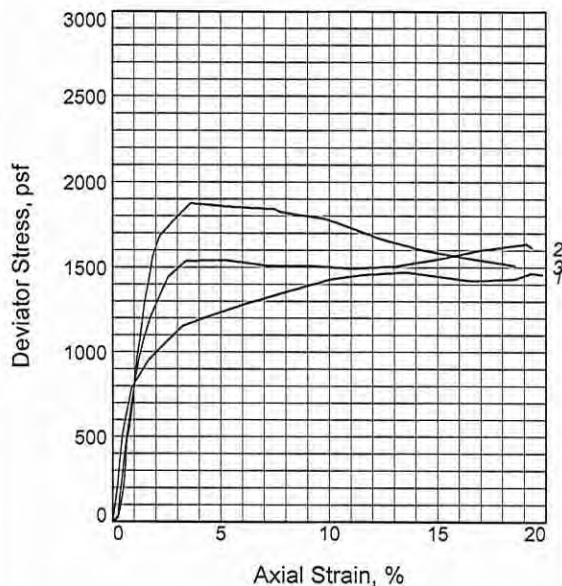
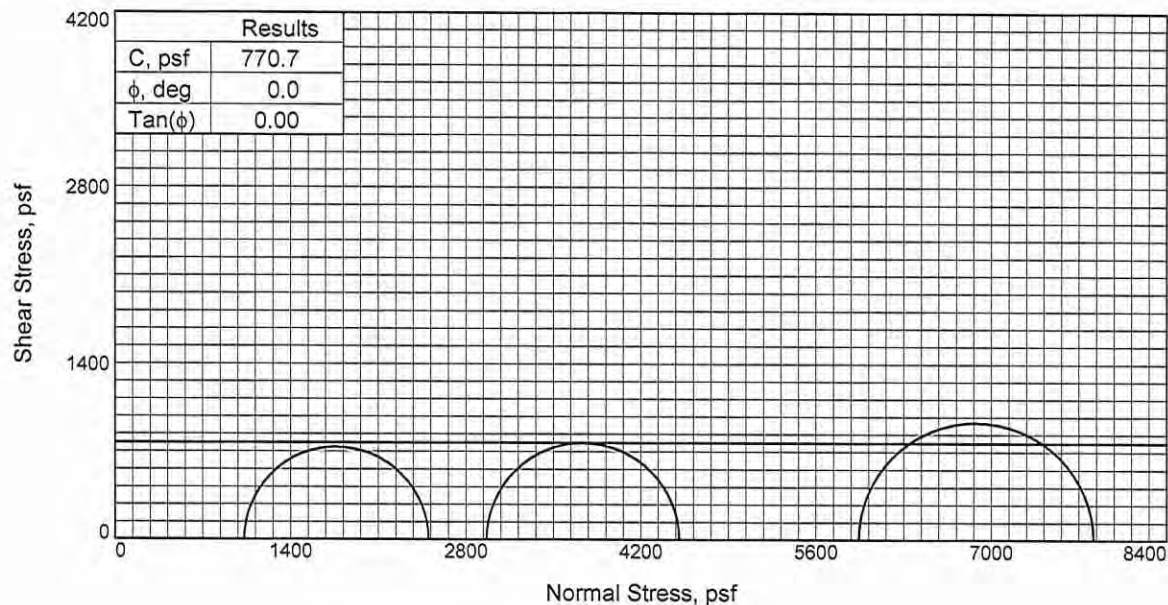
Sample Number: 1B

Figure ASTM D2166



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SINCE 1946

Tested By: CC **Checked By:** RR



Specimen No.		1	2	3
Initial	Water Content, %	64.6	59.1	63.8
	Dry Density, pcf	57.9	63.3	58.0
	Saturation, %	91.1	95.6	90.0
	Void Ratio	1.9304	1.6828	1.9285
	Diameter, in.	1.392	1.425	1.371
	Height, in.	2.765	2.765	2.700
At Test	Water Content, %	71.0	61.9	70.9
	Dry Density, pcf	57.9	63.3	58.0
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.9304	1.6828	1.9285
	Diameter, in.	1.392	1.425	1.371
	Height, in.	2.765	2.765	2.700
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		7.150	20.600	41.260
Fail. Stress, psf		1472.1	1540.8	1874.0
Strain, %		13.6	5.2	3.6
Ult. Stress, psf		1472.1	1493.5	1595.4
Strain, %		13.6	11.1	14.4
σ_1 Failure, psf		2501.7	4507.2	7815.5
σ_3 Failure, psf		1029.6	2966.4	5941.4

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR & T CH4 W/ ARS ML, WD, SL

LL= 104

PL= 30

PI= 74

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-13

Depth: 5

Sample Number: 3B

Proj. No.: 24384

Date Sampled: 11/16/20

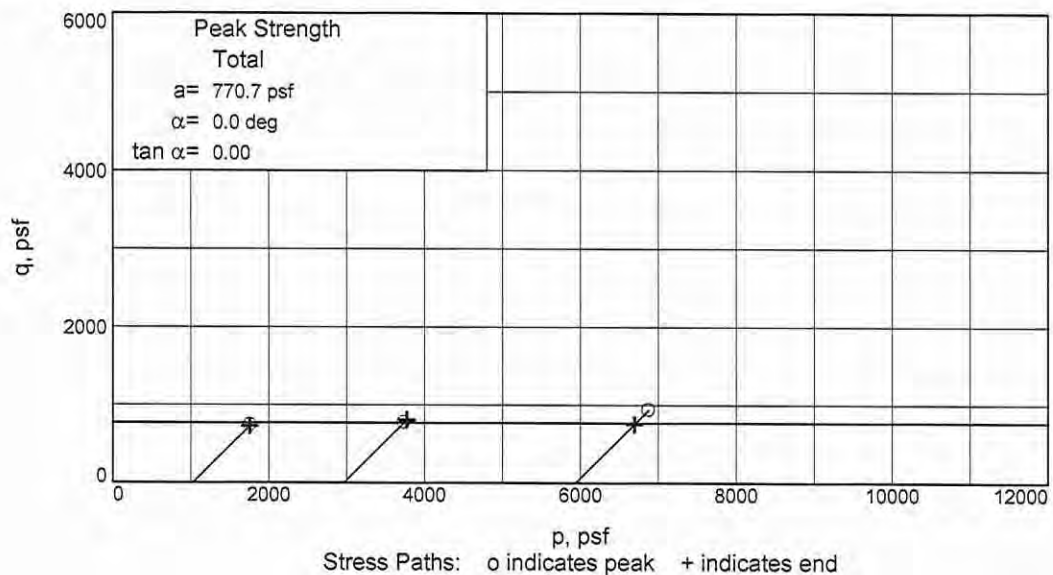
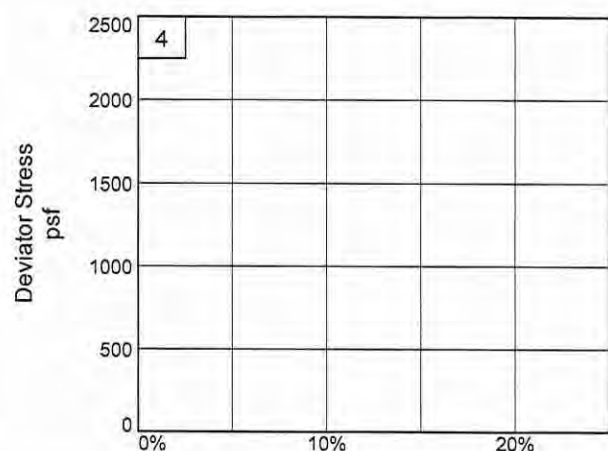
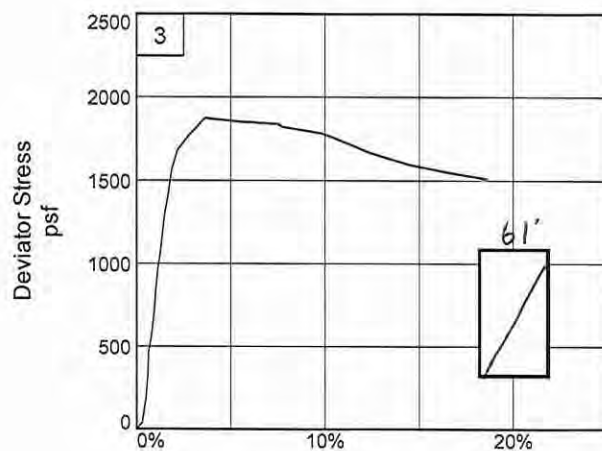
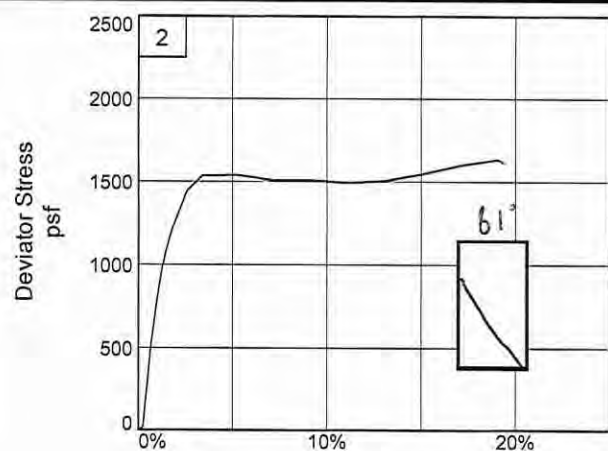
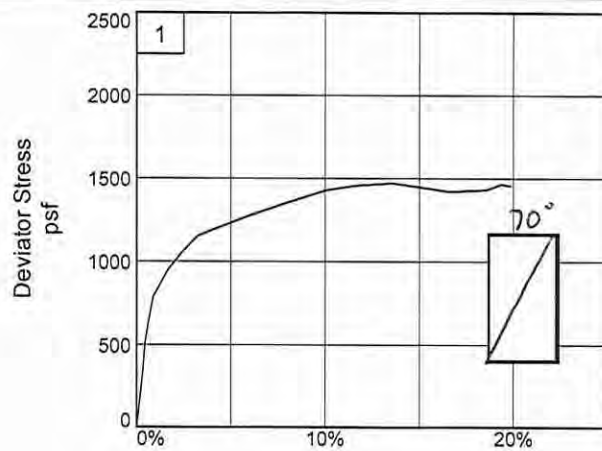


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ENGINEERING
SINCE 1946

Figure ASTM D2850

Tested By: EM

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-13

Depth: 5

Sample Number: 3B

Project No.: 24384

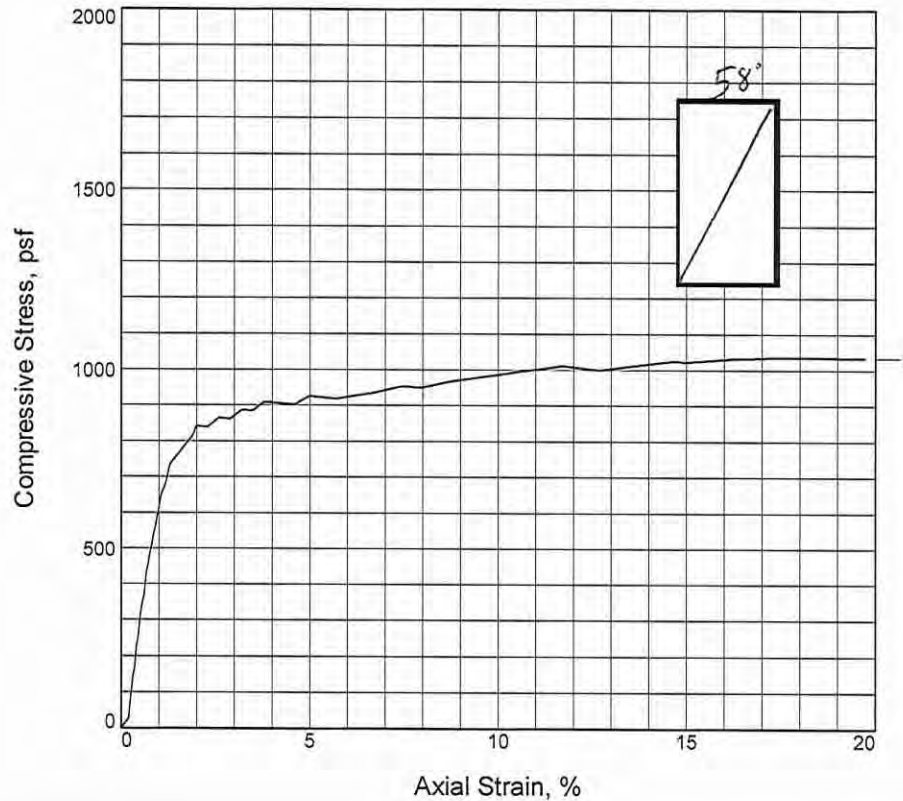
Figure ASTM D 2850

Eustis Engineering L.L.C.

Tested By: EM

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1		
Unconfined strength, psf	1022.7		
Undrained shear strength, psf	511.4		
Failure strain, %	15.0		
Strain rate, %/min.	1.00		
Water content, %	44.4		
Wet density, pcf	110.4		
Dry density, pcf	76.5		
Saturation, %	98.8		
Void ratio	1.2211		
Specimen diameter, in.	1.386		
Specimen height, in.	2.753		
Height/diameter ratio	1.99		

Description: M DGR CH3 W/ WD, O

LL = 69	PL = 24	PI = 45	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 11/11/20

Remarks:

TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-13 **Depth:** 9

Sample Number: 4B

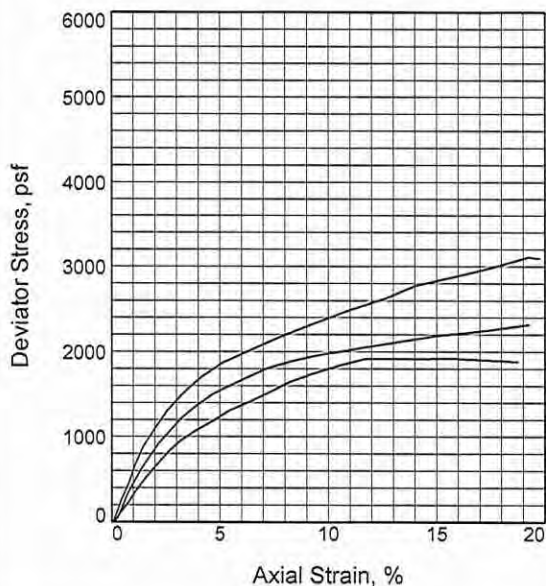
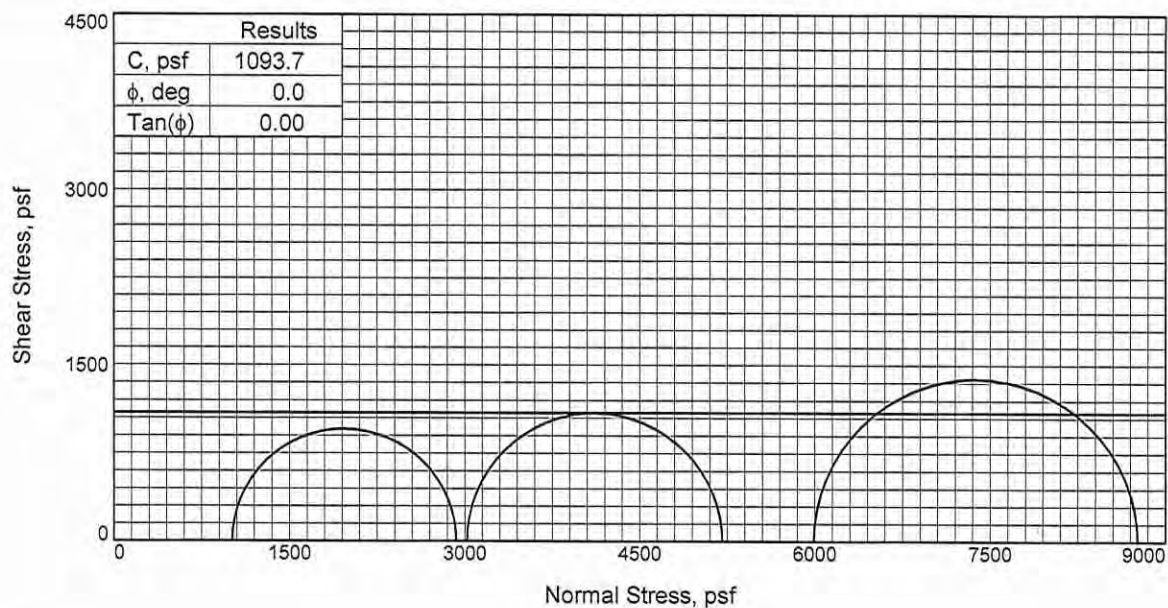
Figure ASTM D2166



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Tested By: CC

Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	26.0	24.9	25.5
	Dry Density, pcf	96.9	98.7	97.1
	Saturation, %	94.2	94.2	92.4
	Void Ratio	0.7515	0.7199	0.7490
	Diameter, in.	1.382	1.401	1.415
	Height, in.	2.744	2.742	2.760
At Test	Water Content, %	27.6	26.5	27.5
	Dry Density, pcf	96.9	98.7	97.1
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7515	0.7199	0.7490
	Diameter, in.	1.382	1.401	1.415
	Height, in.	2.744	2.742	2.760
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		7.020	20.970	41.600
Fail. Stress, psf		1916.8	2186.5	2770.7
Strain, %		11.7	15.0	14.0
Ult. Stress, psf		1914.3	2186.5	2770.7
Strain, %		13.7	15.0	14.0
σ_1 Failure, psf		2927.7	5206.1	8761.1
σ_3 Failure, psf		1010.9	3019.7	5990.4

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR CL6 W/ O

LL= 40

PL= 20

PI= 20

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-13 **Depth:** 10

Sample Number: 4C

Proj. No.: 24384

Date Sampled: 11/11/20

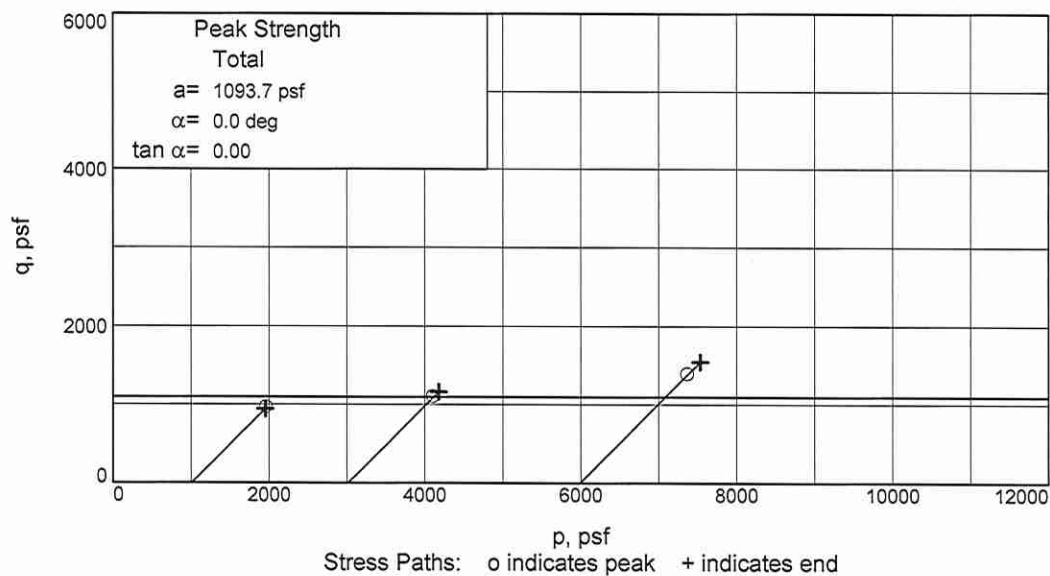
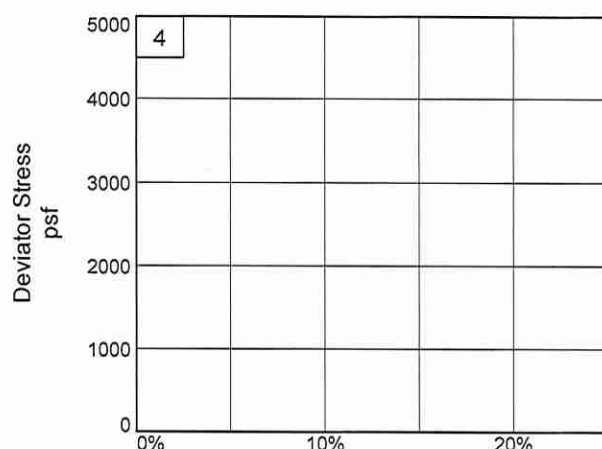
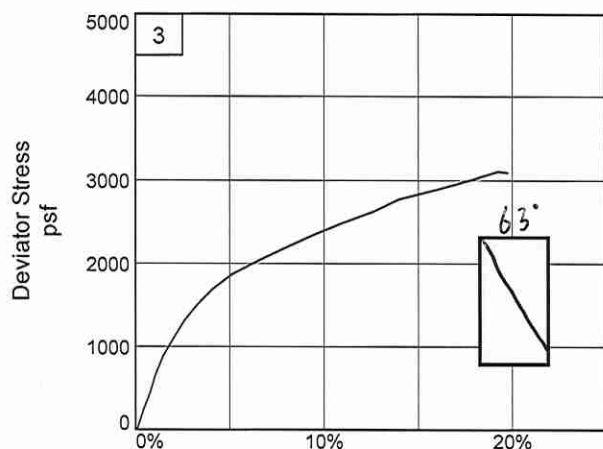
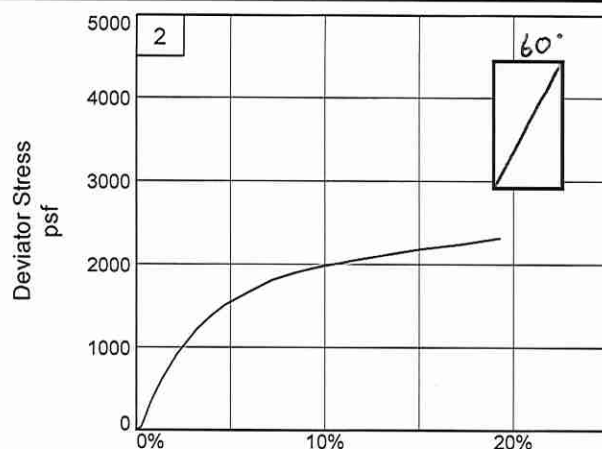
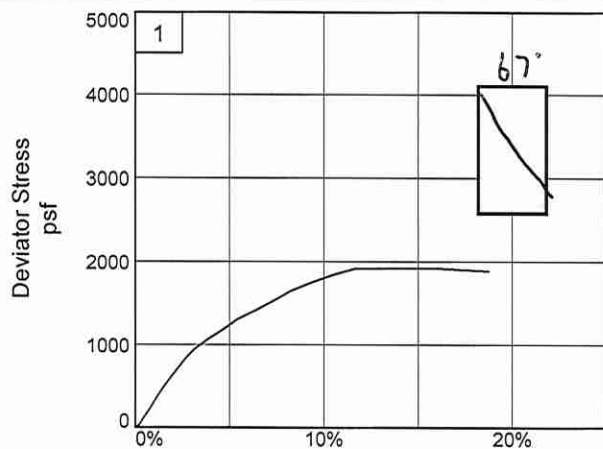


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Figure ASTM D2850

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-13

Depth: 10

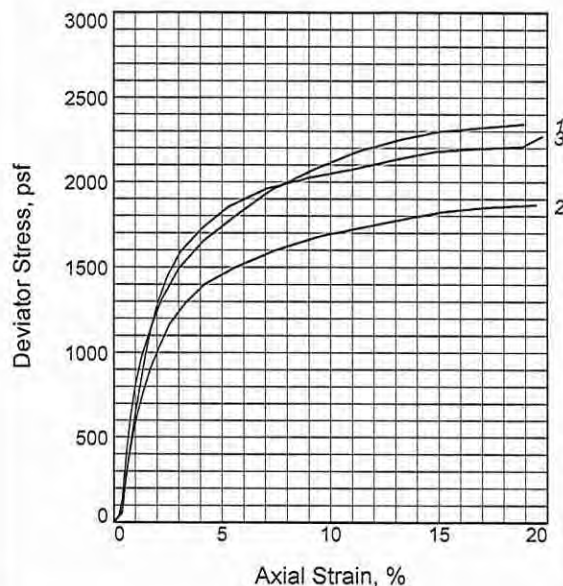
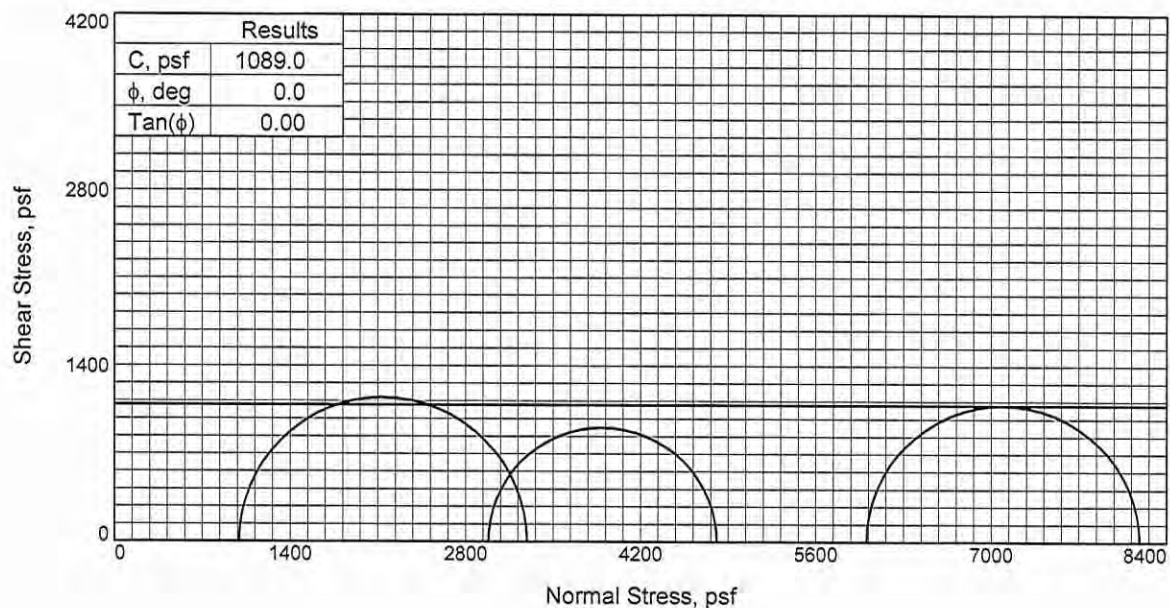
Sample Number: 4C

Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE _____ Checked By: RR _____



Specimen No.		1	2	3
Initial	Water Content, %	23.2	25.3	24.3
	Dry Density, pcf	99.6	97.1	97.9
	Saturation, %	90.5	92.9	91.0
	Void Ratio	0.6928	0.7361	0.7211
	Diameter, in.	1.374	1.396	1.394
	Height, in.	2.713	2.732	2.755
At Test	Water Content, %	25.7	27.3	26.7
	Dry Density, pcf	99.6	97.1	97.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.6928	0.7361	0.7211
	Diameter, in.	1.374	1.396	1.394
	Height, in.	2.713	2.732	2.755
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		6.900	20.720	41.700
Fail. Stress, psf		2297.7	1824.6	2179.2
Strain, %		15.0	15.1	14.8
Ult. Stress, psf		2297.7	1824.6	2179.2
Strain, %		15.0	15.1	14.8
σ_1 Failure, psf		3291.3	4808.3	8184.0
σ_3 Failure, psf		993.6	2983.7	6004.8

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST GR CL6 W/ RT

LL= 49

PL= 20

PI= 29

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-13 Depth: 14

Sample Number: 5C

Proj. No.: 24384

Date Sampled: 11/11/20

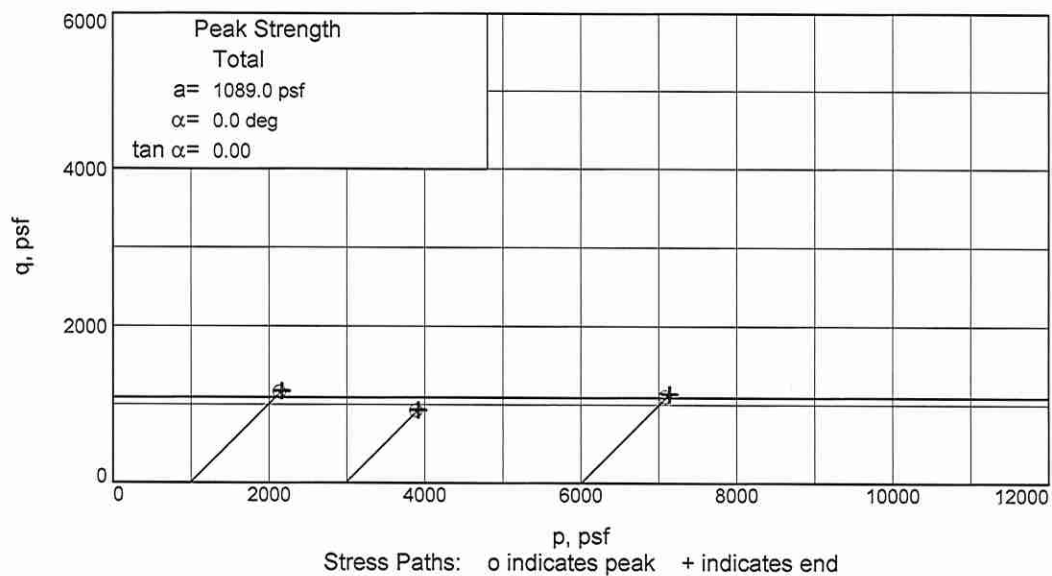
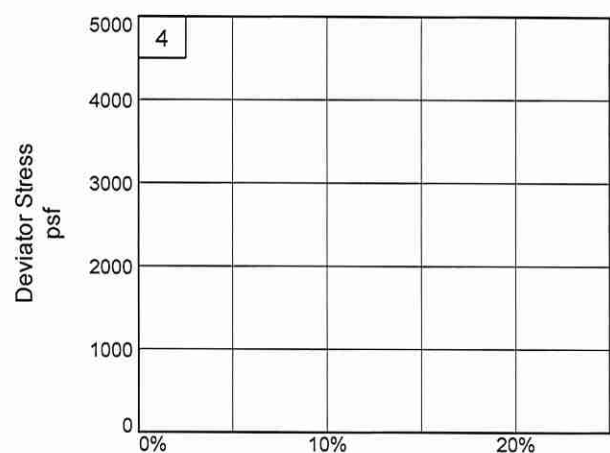
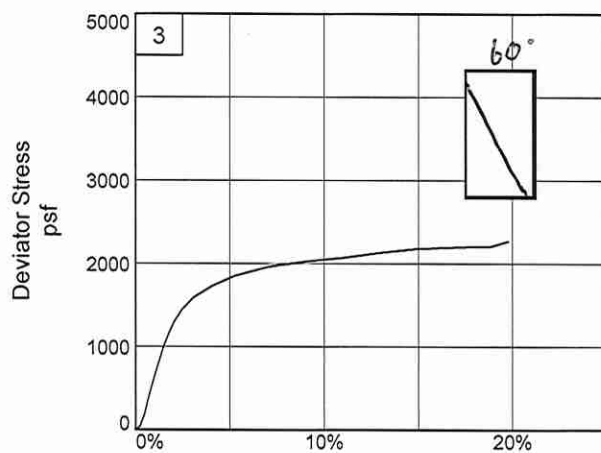
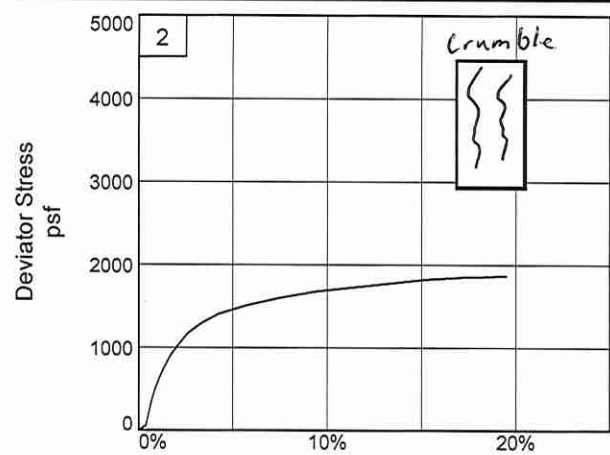
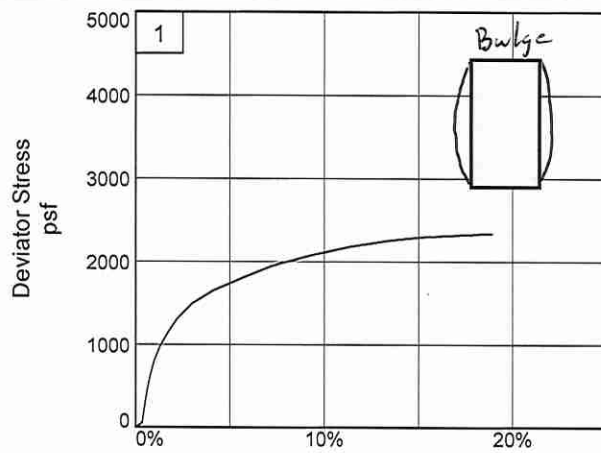
Figure ASTM D2850



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Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-13

Depth: 14

Sample Number: 5C

Project No.: 24384

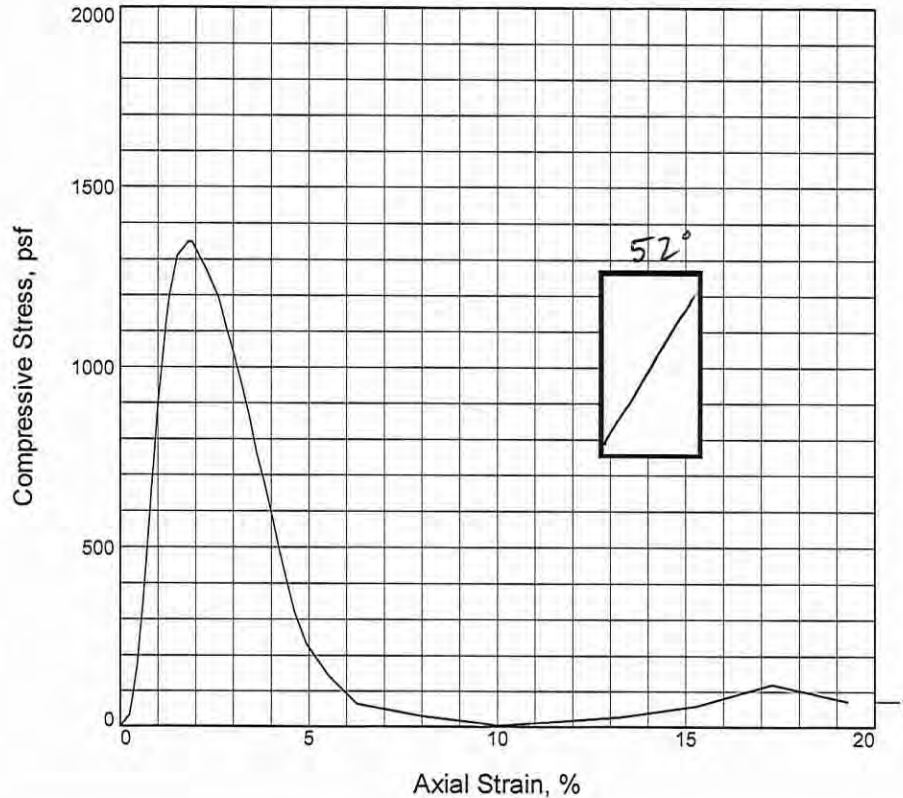
Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE

Checked By: RR

UNCONFINED COMPRESSION TEST



Specimen No.	1			
Unconfined strength, psf	1349.7			
Undrained shear strength, psf	674.9			
Failure strain, %	1.8			
Strain rate, %/min.	1.00			
Water content, %	41.3			
Wet density, pcf	108.2			
Dry density, pcf	76.6			
Saturation, %	92.3			
Void ratio	1.2160			
Specimen diameter, in.	1.415			
Specimen height, in.	2.742			
Height/diameter ratio	1.94			

Description: M T & GR CH4 W/ ARS ML, SL

LL = 79	PL = 26	PI = 53	Assumed GS= 2.72	Type: UNDISTURBED
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Project No.: 24384

Date Sampled: 11/11/20

Remarks:

TORVANE = 0.375 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-13

Depth: 22

Sample Number: 7C

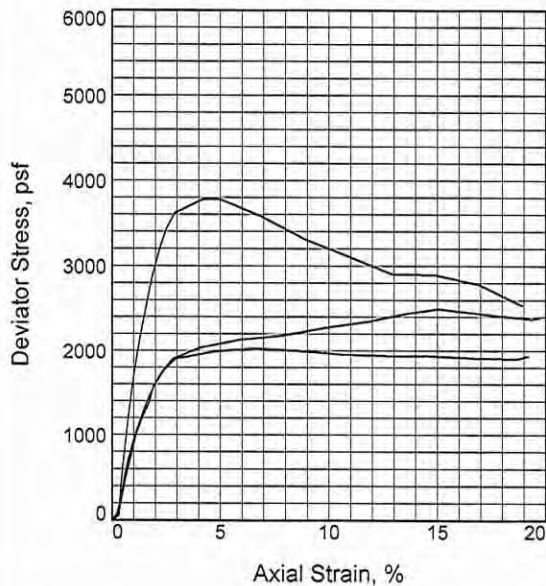
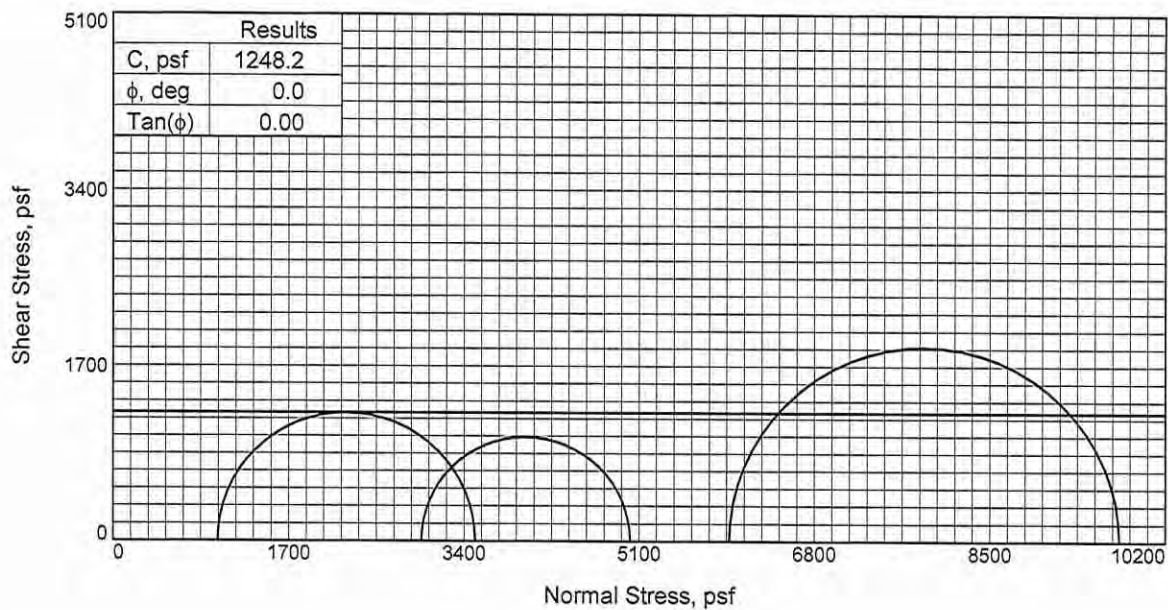
Figure ASTM D2166



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Tested By: CC

Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	35.9	34.3	34.4
	Dry Density, pcf	85.3	85.4	87.0
	Saturation, %	98.8	94.4	98.4
	Void Ratio	0.9897	0.9886	0.9509
	Diameter, in.	1.405	1.395	1.385
	Height, in.	2.805	2.763	2.752
At Test	Water Content, %	36.4	36.3	35.0
	Dry Density, pcf	85.3	85.4	87.0
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.9897	0.9886	0.9509
	Diameter, in.	1.405	1.395	1.385
	Height, in.	2.805	2.763	2.752
Strain rate, %/min.		1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000
Cell Pressure, psi		7.030	20.740	41.490
Fail. Stress, psf		2495.6	2025.7	3779.3
Strain, %		15.0	6.6	4.2
Ult. Stress, psf		2495.6	1935.7	2893.9
Strain, %		15.0	14.7	14.9
σ_1 Failure, psf		3507.9	5012.3	9753.8
σ_3 Failure, psf		1012.3	2986.6	5974.6

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: ST T & GR CH3 W/ ARS ML

LL= 60

PL= 23

PI= 37

Assumed Specific Gravity= 2.72

Remarks: TORVANE = 0.500 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-13

Depth: 26

Sample Number: 8C

Proj. No.: 24384

Date Sampled: 11/11/20

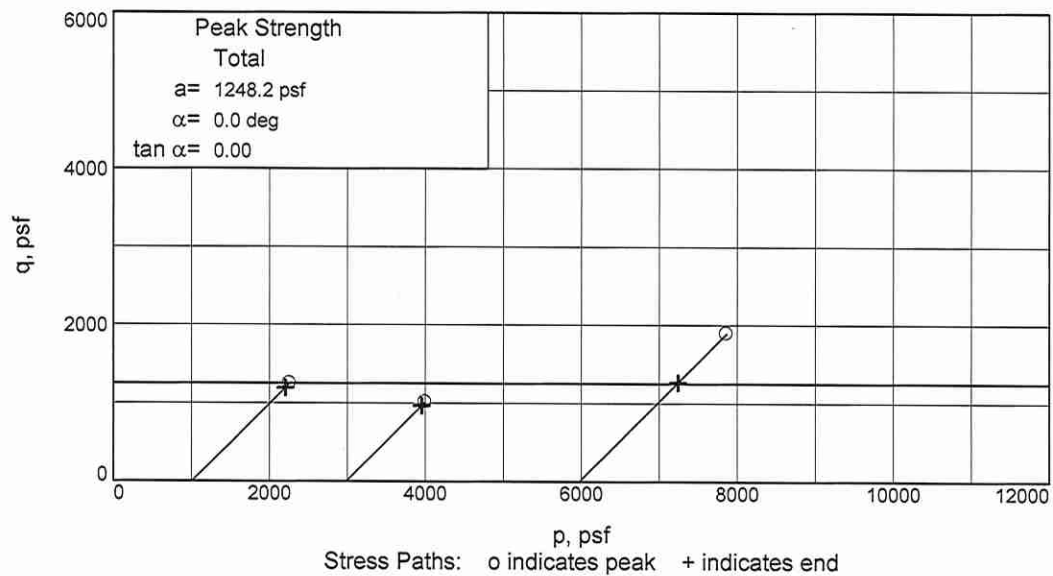
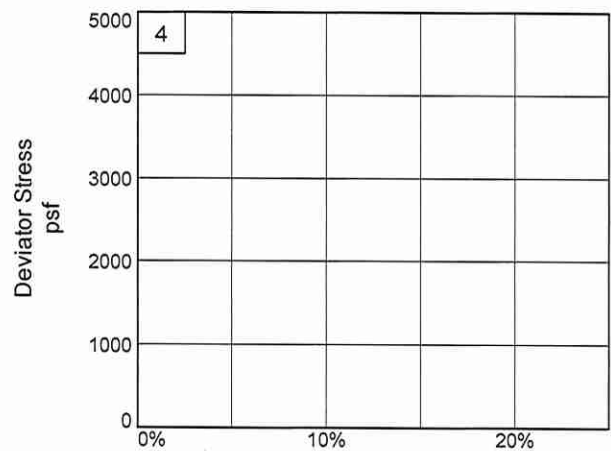
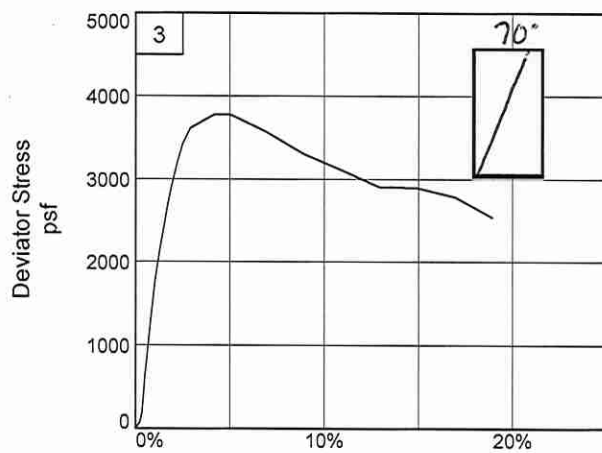
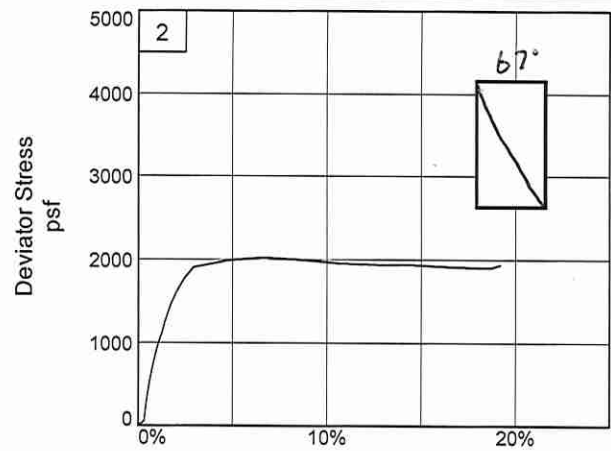
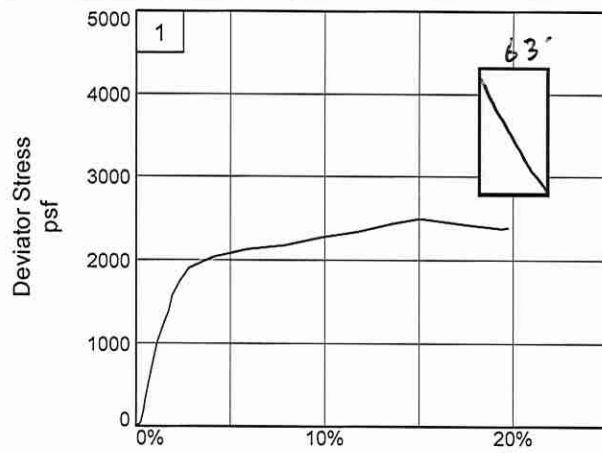
Figure ASTM D2850



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Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-13

Depth: 26

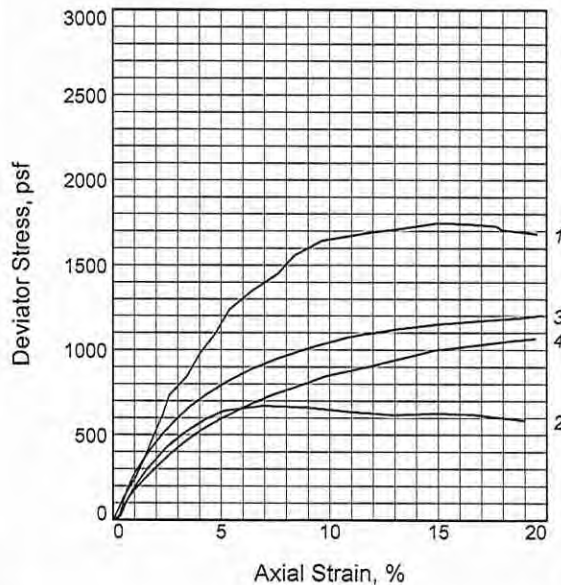
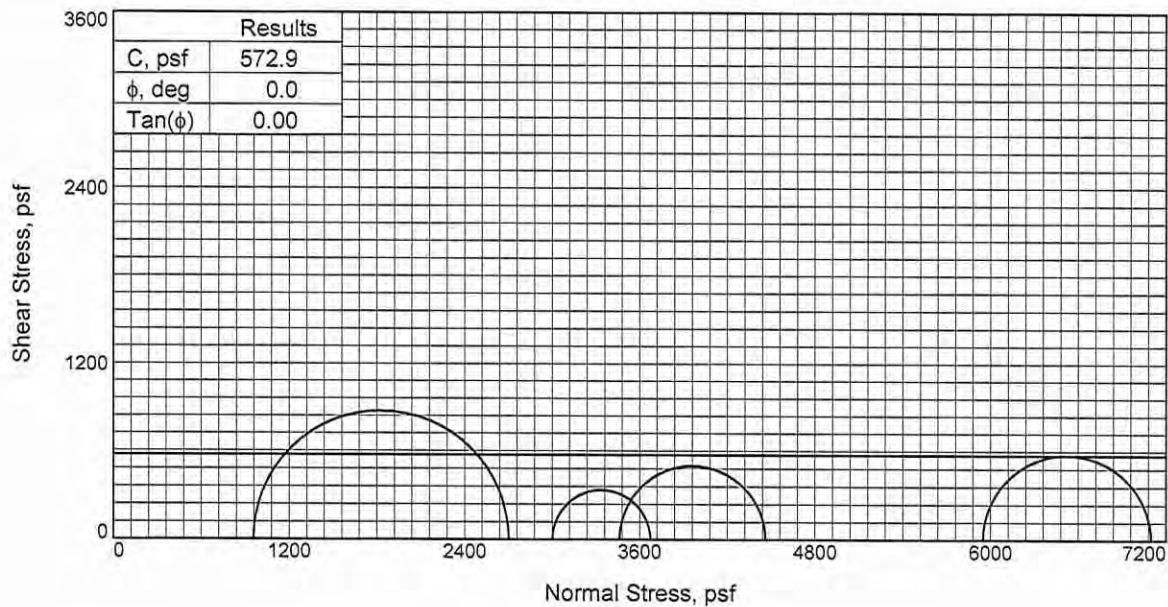
Sample Number: 8C

Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE _____ Checked By: RR _____



Specimen No.		1	2	3	4
Initial	Water Content, %	35.7	36.7	36.4	35.6
	Dry Density, pcf	84.5	83.5	84.0	85.3
	Saturation, %	97.1	97.2	97.7	98.4
	Void Ratio	0.9939	1.0193	1.0059	0.9761
	Diameter, in.	1.435	1.435	1.415	1.424
	Height, in.	2.662	2.695	2.705	2.879
At Test	Water Content, %	36.8	37.8	37.3	36.2
	Dry Density, pcf	84.5	83.5	84.0	85.3
	Saturation, %	100.0	100.0	100.0	100.0
	Void Ratio	0.9939	1.0193	1.0059	0.9761
	Diameter, in.	1.435	1.435	1.415	1.424
	Height, in.	2.662	2.695	2.705	2.879
Strain rate, %/min.		1.00	1.00	1.00	1.00
Back Pressure, psi		0.000	0.000	0.000	0.000
Cell Pressure, psi		6.640	20.850	41.300	24.040
Fail. Stress, psf		1746.8	671.1	1150.4	999.4
Strain, %		15.0	6.9	14.9	14.9
Ult. Stress, psf		1746.8	617.1	1150.4	999.4
Strain, %		15.0	12.9	14.9	14.9
σ_1 Failure, psf		2702.9	3673.5	7097.6	4461.2
σ_3 Failure, psf		956.2	3002.4	5947.2	3461.8

Type of Test:

Unconsolidated Undrained

Sample Type: UNDISTURBED

Description: M GR CL6 W/ ARS SP

LL= 48 PL= 21 PI= 27

Assumed Specific Gravity= 2.70

Remarks: TORVANE = 0.150 TSF

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-13 **Depth:** 33

Sample Number: 10B

Proj. No.: 24384

Date Sampled: 11/11/20

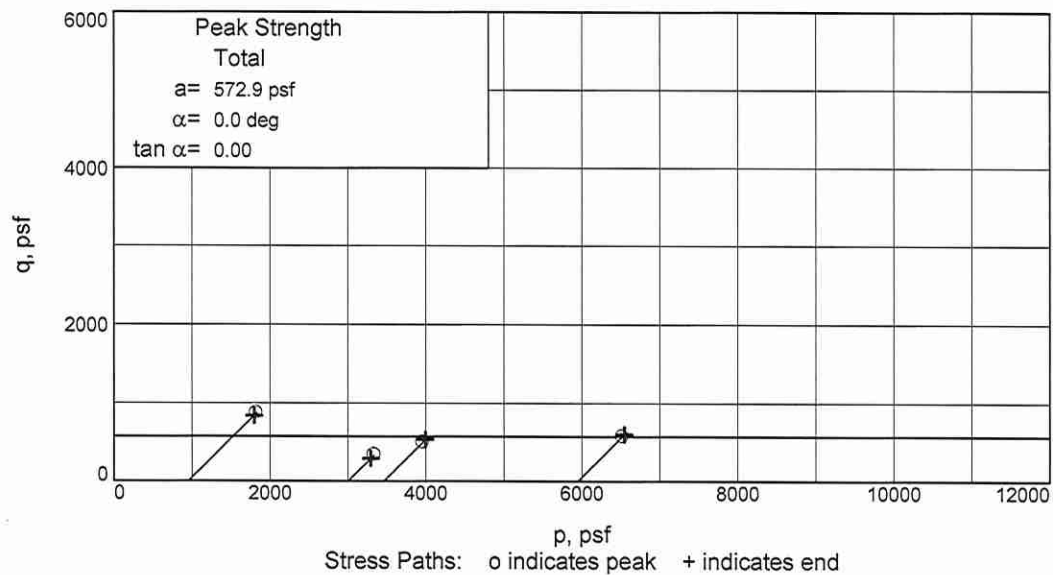
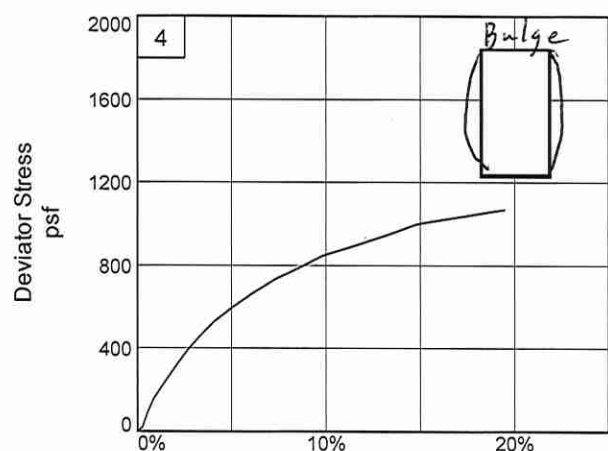
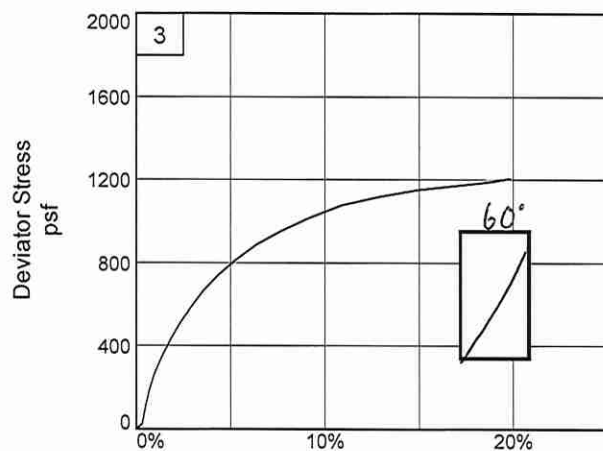
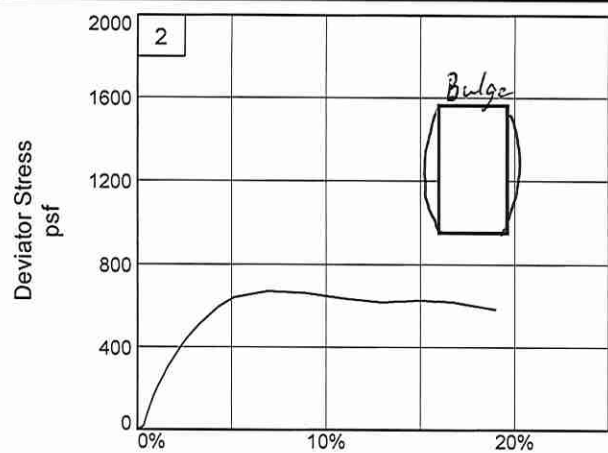
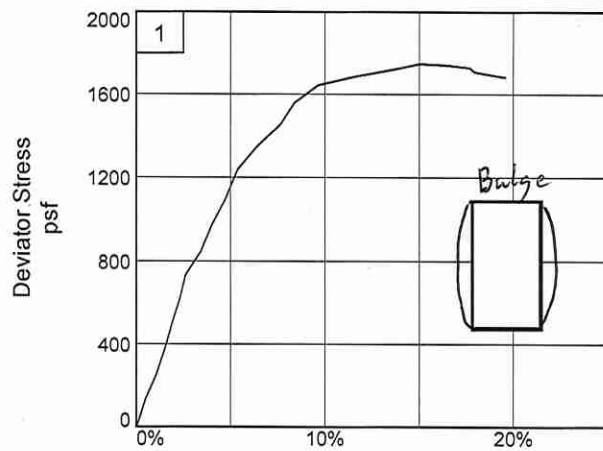


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Figure ASTM D2850

Tested By: DE

Checked By: RR



Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-13

Depth: 33

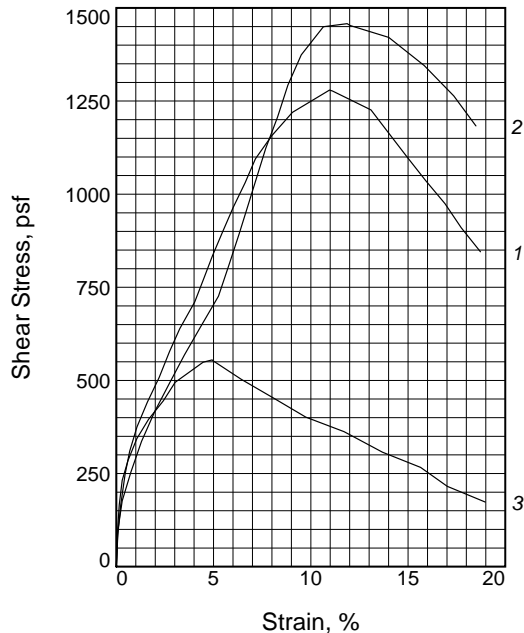
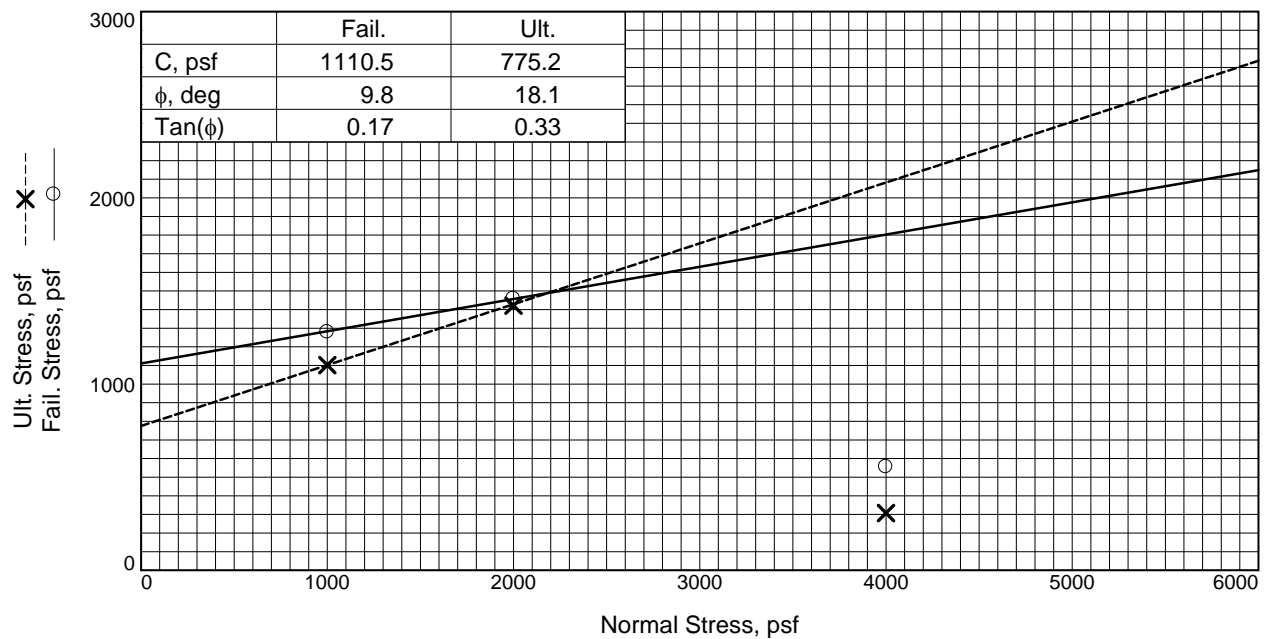
Sample Number: 10B

Project No.: 24384

Figure ASTM D2850

Eustis Engineering L.L.C.

Tested By: DE Checked By: RR



Specimen No.		1	2	3
Initial	Water Content, %	21.3	21.2	21.3
	Dry Density, pcf	90.6	90.5	90.5
	Saturation, %	66.9	66.5	66.7
	Void Ratio	0.8608	0.8620	0.8622
	Diameter, in.	2.612	2.610	2.610
	Height, in.	0.772	0.774	0.774
At Test	Water Content, %	21.3	21.2	21.3
	Dry Density, pcf	90.6	90.5	90.5
	Saturation, %	66.9	66.5	66.7
	Void Ratio	0.8608	0.8620	0.8622
	Diameter, in.	2.612	2.610	2.610
	Height, in.	0.772	0.774	0.774
Normal Stress, psf		1000.0	2000.0	4000.0
Fail. Stress, psf		1279.4	1458.0	555.1
Strain, %		11.0	11.9	4.9
Ult. Stress, psf		1102.0	1420.9	307.4
Strain, %		14.9	14.0	13.7
Strain rate, %/min.		0.42	0.42	0.42

Sample Type: UNDISTURBED
Description: SO GR CL4 W/ ARS SP, SIF

Assumed Specific Gravity= 2.7

Remarks:

Figure _____

Client: AECOM, NEW ORLEANS, LOUISIANA

Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),

Source of Sample: SB-02 **Depth:** 28.5

Sample Number: 8B

Proj. No.: 24384

Date Sampled:



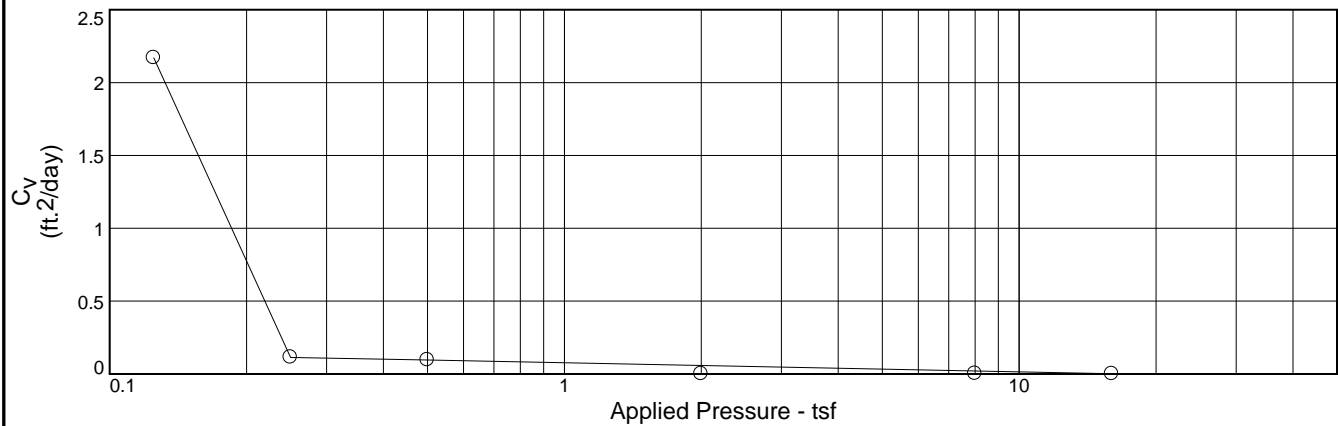
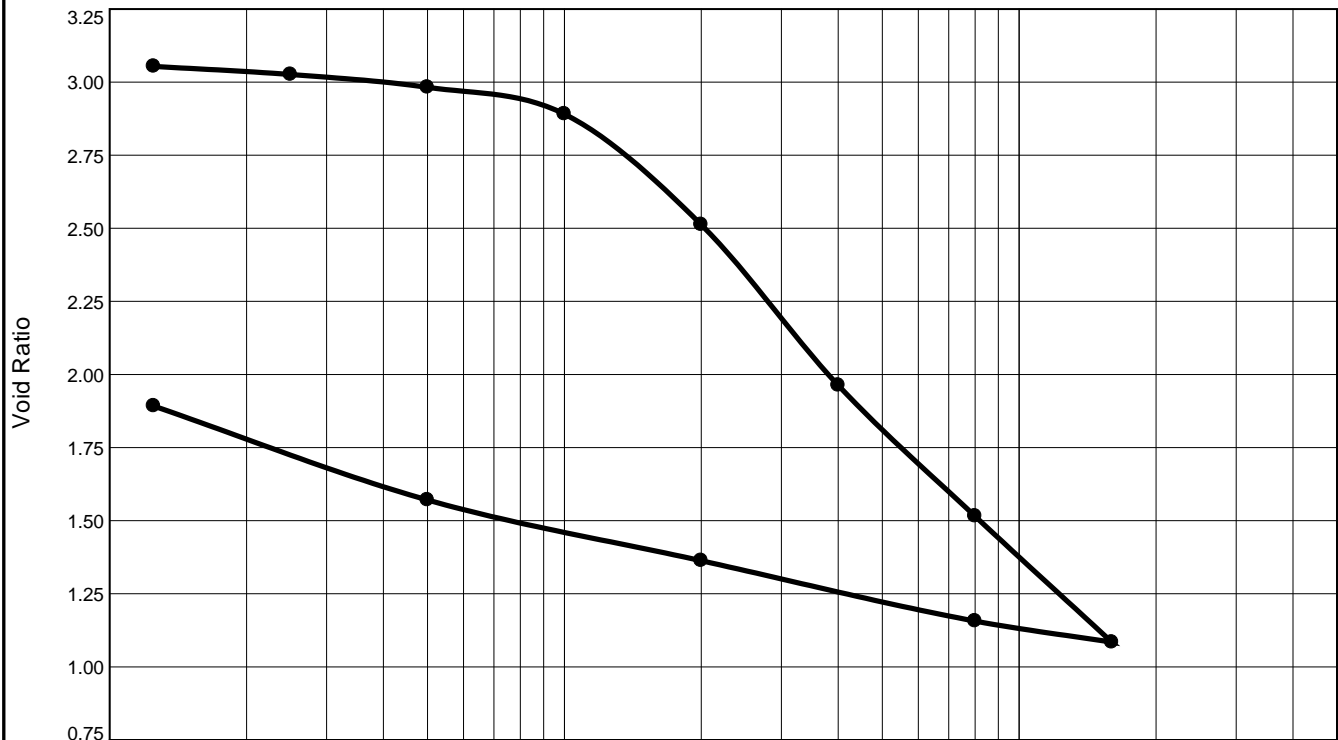
Tested By: ASR

Checked By: ASR

APPENDIX IX


COMPILATION OF CONSOLIDATION TEST REPORTS (SDR-A, SDR-B, SDR-C)

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _c (tsf)	C _c	Initial Void Ratio
Saturation	Moisture							
97.9 %	117.8 %	39.1	163	114	2.54	1.3	1.80	3.056

MATERIAL DESCRIPTION							USCS	AASHTO
SO GR & BR CHOB							CHOB	

Project No. 24384			Client: AECOM, NEW ORLEANS, LOUISIANA			Remarks:
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),						
Source of Sample: SB-01		Depth: 25		Sample Number: 7B		
<div><div>EUSTIS ENGINEERING SINCE 1946</div></div>						Figure

Tested By: BH _____ Checked By: RR _____

CONSOLIDATION TEST DATA

11/18/2020

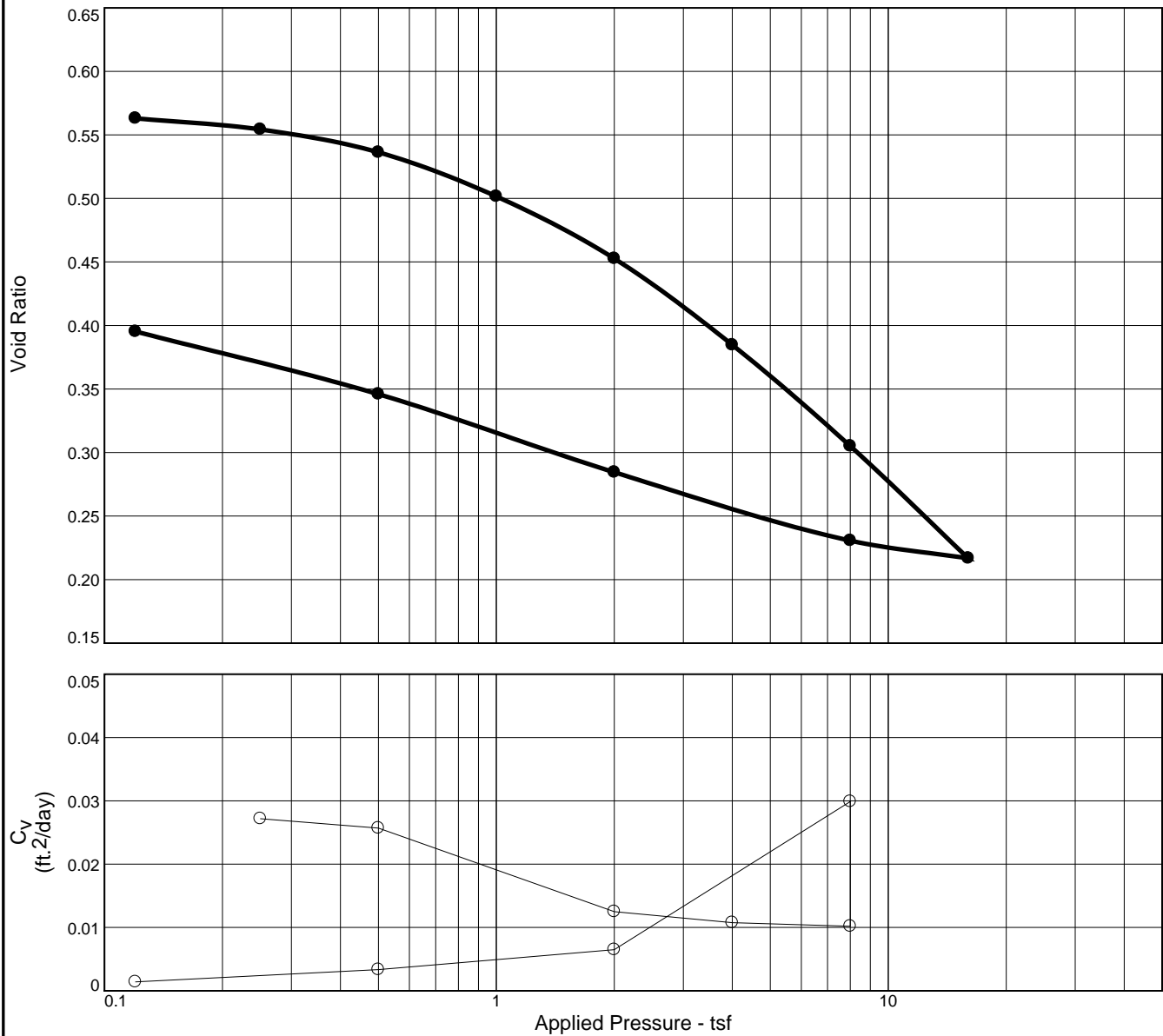
Client: AECOM, NEW ORLEANS, LOUISIANA**Project:** LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
15% DESIGN PHASE, MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN,
ST. JOHN THE BAPTIST PARISH, LOUISIANA. S.P. PO-0029**Project Number:** 24384**Location:** SB-01**Depth:** 25**Sample Number:** 7B**Material Description:** SO GR & BR CHOB**Liquid Limit:** 163**Plasticity Index:** 114**USCS:** CHOB**Tested by:** BH**Checked by:** RR**Test Specimen Data**

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t	= 279.98 g.	Spec. Gr.	= 2.54	Wet w+t	= 364.00 g.
Dry w+t	= 128.57 g.	Est. Ht. Solids	= 0.246 in.	Dry w+t	= 260.84 g.
Tare Wt.	= 0.00 g.	Init. V.R.	= 3.056	Tare Wt.	= 132.27 g.
Moisture	= 117.8 %	Init. Sat.	= 97.9 %	Moisture	= 80.2 %
UNIT WEIGHT		TEST START		Dry Wt. = 128.57* g.	
Height	= 0.998 in.	Height	= 0.998 in.		
Diameter	= 3.998 in.	Diameter	= 3.998 in.		
Weight	= 279.98 g.				
Dry Dens.	= 39.1 pcf	* Final dry weight used as mineral solids weight			

End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C_v (ft.2/day)	C_α	Void Ratio	% Strain
start	1.98515	0.00000			3.056	
0.13	1.98571	0.00056	2.170	0.000	3.054	0.1 Compr.
0.25	1.99256	0.00741	0.113	0.002	3.026	0.7 Compr.
0.50	2.00335	0.01820	0.096	0.005	2.982	1.8 Compr.
1.00	2.02581	0.04066		0.019	2.891	4.1 Compr.
2.00	2.11900	0.13385		0.188	2.512	13.4 Compr.
4.00	2.25410	0.26895		0.273	1.963	26.9 Compr.
8.00	2.36426	0.37911		0.174	1.515	38.0 Compr.
16.00	2.47029	0.48514	0.001	0.105	1.084	48.6 Compr.
8.00	2.45249	0.46734	0.003		1.157	46.8 Compr.
2.00	2.40171	0.41656	0.001		1.363	41.7 Compr.
0.50	2.35060	0.36545			1.571	36.6 Compr.
0.13	2.27158	0.28643			1.892	28.7 Compr.
Compression index (C_c), tsf = 1.80 Preconsolidation pressure (P_p), tsf = 1.3 Void ratio at P_p (e_m) = 2.780						


CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _c (tsf)	C _c	Initial Void Ratio
Saturation	Moisture							
100.0 %	21.4 %	106.5	73	52	2.69	1.3	0.29	0.576

MATERIAL DESCRIPTION							USCS	AASHTO
M GR & T CH3 W/ ARS ML, CC							CH3	

Project No. 24384	Client: AECOM, NEW ORLEANS, LOUISIANA	Remarks:
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),		
Source of Sample: SB-02	Depth: 7	
Sample Number: 3B		


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Figure

Tested By: BH _____ Checked By: RR _____

CONSOLIDATION TEST DATA

11/18/2020

Client: AECOM, NEW ORLEANS, LOUISIANA**Project:** LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
15% DESIGN PHASE, MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN,
ST. JOHN THE BAPTIST PARISH, LOUISIANA. S.P. PO-0029**Project Number:** 24384**Location:** SB-02**Depth:** 7**Sample Number:** 3B**Material Description:** M GR & T CH3 W/ ARS ML, CC**Liquid Limit:** 73**Plasticity Index:** 52**USCS:** CH3**Tested by:** BH**Checked by:** RR**Test Specimen Data**

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t	= 299.80 g.	Spec. Gr.	= 2.69	Wet w+t	= 450.98 g.
Dry w+t	= 246.90 g.	Est. Ht. Solids	= 0.446 in.	Dry w+t	= 402.12 g.
Tare Wt.	= 0.00 g.	Init. V.R.	= 0.576	Tare Wt.	= 155.22 g.
Moisture	= 21.4 %	Init. Sat.	= 100.0 %	Moisture	= 19.8 %
UNIT WEIGHT		TEST START		Dry Wt. = 246.90* g.	
Height	= 0.703 in.	Height	= 0.703 in.		
Diameter	= 3.999 in.	Diameter	= 3.999 in.		
Weight	= 299.80 g.				
Dry Dens.	= 106.5 pcf	* Final dry weight used as mineral solids weight			

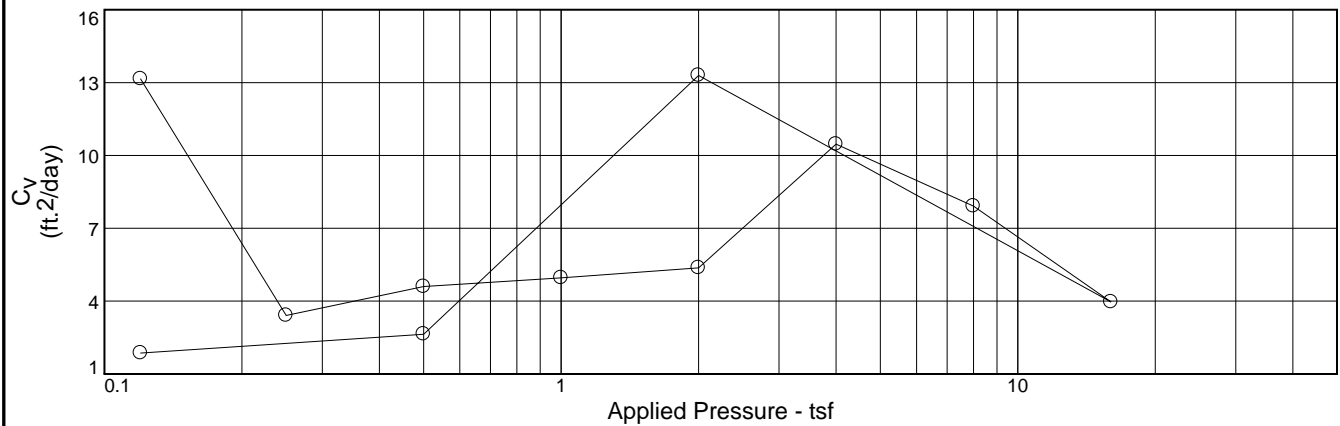
End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Machine Defl. (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	0.00590		0.00000			0.576	
0.12	0.01280	0.00090	0.00600		0.000	0.563	0.9 Compr.
0.25	0.01910	0.00330	0.00990	0.027	0.001	0.554	1.4 Compr.
0.50	0.02950	0.00570	0.01790	0.026	0.003	0.536	2.5 Compr.
1.00	0.04690	0.00760	0.03340		0.006	0.502	4.8 Compr.
2.00	0.07050	0.00940	0.05520	0.013	0.007	0.453	7.9 Compr.
4.00	0.10250	0.01110	0.08550	0.011	0.008	0.385	12.2 Compr.
8.00	0.13990	0.01300	0.12100	0.010	0.011	0.305	17.2 Compr.
16.00	0.18150	0.01520	0.16040		0.014	0.217	22.8 Compr.
8.00	0.17240	0.01230	0.15420	0.030		0.231	21.9 Compr.
2.00	0.14620	0.01010	0.13020	0.006	0.000	0.284	18.5 Compr.
0.50	0.11750	0.00880	0.10280	0.003		0.346	14.6 Compr.
0.12	0.09260	0.00590	0.08080	0.001		0.395	11.5 Compr.
Compression index (C _c), tsf = 0.29		Preconsolidation pressure (P _p), tsf = 1.3		Void ratio at P _p (e _m) = 0.483			

Figure 10 is a line graph showing the relationship between Void Ratio (Y-axis) and the ratio of vertical to horizontal stresses (σ_v/σ_h) (X-axis). The Y-axis ranges from 0.575 to 0.825, and the X-axis ranges from 0 to 1.0. Two curves are plotted, representing different values of the parameter n :

- The upper curve, labeled $n=0.5$, starts at a void ratio of approximately 0.805 at $\sigma_v/\sigma_h = 0$ and decreases to approximately 0.605 at $\sigma_v/\sigma_h = 1.0$.
- The lower curve, labeled $n=1.0$, starts at a void ratio of approximately 0.648 at $\sigma_v/\sigma_h = 0$ and decreases to approximately 0.605 at $\sigma_v/\sigma_h = 1.0$.

Both curves show a decreasing trend as the stress ratio increases, eventually leveling off at a void ratio of approximately 0.605.



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _C (tsf)	C _C	Initial Void Ratio
Saturation	Moisture							
99.7 %	31.2 %	90.7	NP	NP	2.66	1.0	0.13	0.831

MATERIAL DESCRIPTION	USCS	AASHTO
GR ML W/ ARS CH, SP, SIF	ML	

Project No. 24384	Client: AECOM, NEW ORLEANS, LOUISIANA	
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),		
Source of Sample: SB-02	Depth: 28	Sample Number: 8C

Remarks:



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Figure

Tested By: BH **Checked By:** RR

CONSOLIDATION TEST DATA

11/18/2020

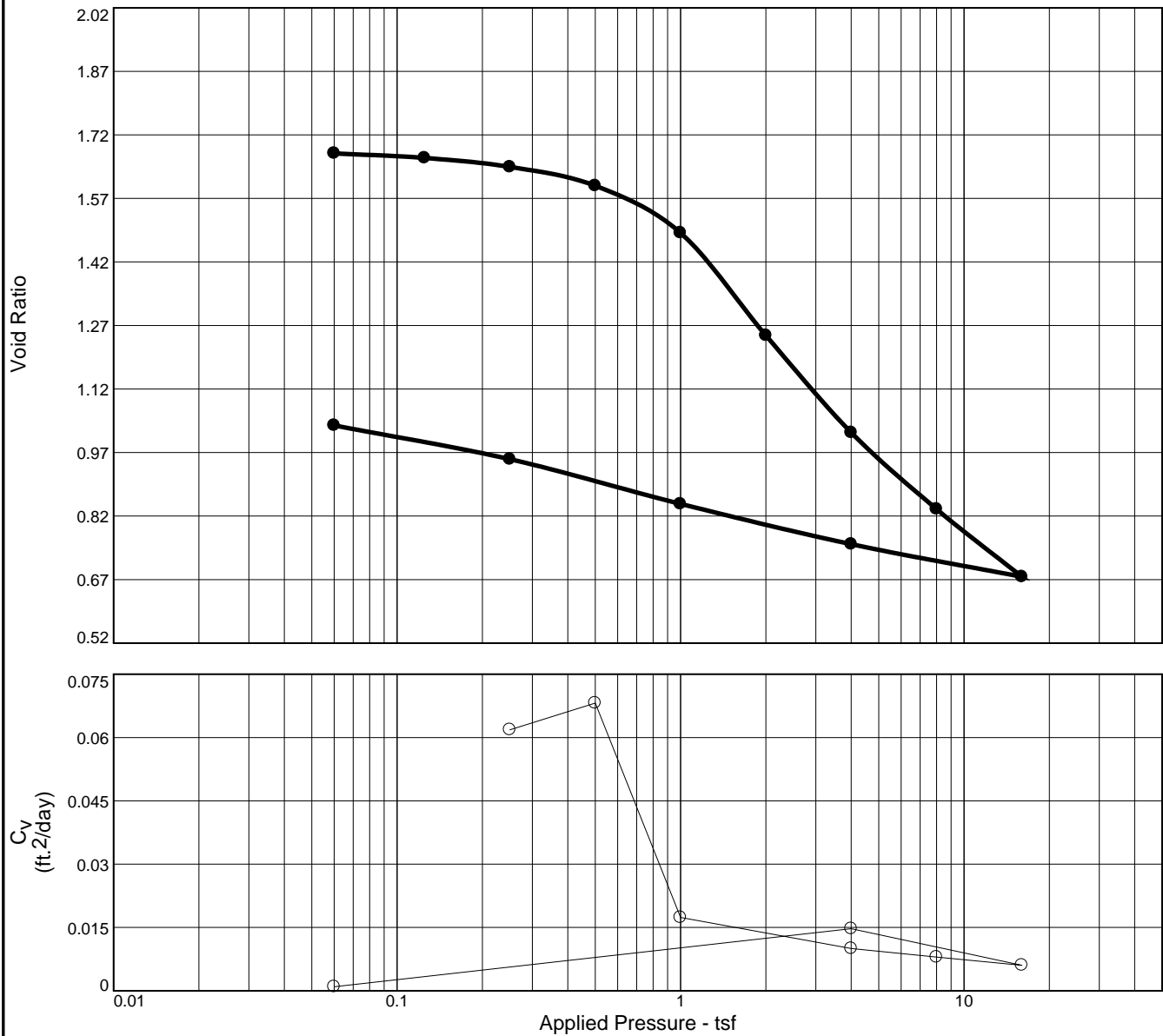
Client: AECOM, NEW ORLEANS, LOUISIANA**Project:** LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
15% DESIGN PHASE, MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN,
ST. JOHN THE BAPTIST PARISH, LOUISIANA. S.P. PO-0029**Project Number:** 24384**Location:** SB-02**Depth:** 28**Sample Number:** 8C**Material Description:** GR ML W/ ARS CH, SP, SIF**Liquid Limit:** NP**Plasticity Index:** NP**USCS:** ML**Tested by:** BH**Checked by:** RR**Test Specimen Data**


NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t	= 294.96 g.	Spec. Gr.	= 2.66	Wet w+t	= 476.64 g.
Dry w+t	= 224.87 g.	Est. Ht. Solids	= 0.411 in.	Dry w+t	= 410.17 g.
Tare Wt.	= 0.00 g.	Init. V.R.	= 0.831	Tare Wt.	= 185.30 g.
Moisture	= 31.2 %	Init. Sat.	= 99.7 %	Moisture	= 29.6 %
UNIT WEIGHT		TEST START		Dry Wt. = 224.87* g.	
Height	= 0.753 in.	Height	= 0.753 in.		
Diameter	= 3.997 in.	Diameter	= 3.997 in.		
Weight	= 294.96 g.				
Dry Dens.	= 90.7 pcf	* Final dry weight used as mineral solids weight			

End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Machine Defl. (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	0.00030		0.00000			0.831	
0.12	0.01330	0.00090	0.01210	13.150		0.802	1.6 Compr.
0.25	0.02100	0.00330	0.01740	3.407		0.789	2.3 Compr.
0.50	0.03030	0.00570	0.02430	4.600		0.772	3.2 Compr.
1.00	0.04150	0.00760	0.03360	4.959		0.750	4.5 Compr.
2.00	0.05400	0.00940	0.04430	5.370		0.724	5.9 Compr.
4.00	0.06960	0.01110	0.05820	10.464		0.690	7.7 Compr.
8.00	0.08780	0.01300	0.07450	7.914		0.650	9.9 Compr.
16.00	0.10840	0.01520	0.09290	3.963		0.606	12.3 Compr.
8.00	0.10500	0.01230	0.09240			0.607	12.3 Compr.
2.00	0.09840	0.01010	0.08800	13.293		0.617	11.7 Compr.
0.50	0.09060	0.00880	0.08150	2.636		0.633	10.8 Compr.
0.12	0.08180	0.00590	0.07560	1.859		0.648	10.0 Compr.
Compression index (C _c), tsf = 0.13		Preconsolidation pressure (P _p), tsf = 1.0		Void ratio at P _p (e _m) = 0.749			

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _c (tsf)	C _c	Initial Void Ratio
Saturation	Moisture							
97.9 %	61.5 %							
MATERIAL DESCRIPTION							USCS	AASHTO
SO GR CH2 W/ ARS SP, SIF							CH2	
Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA), Source of Sample: SB-03 Depth: 31 Sample Number: 8D							Remarks:	
								
							Figure	

Tested By: BH Checked By: RR

CONSOLIDATION TEST DATA

11/19/2020

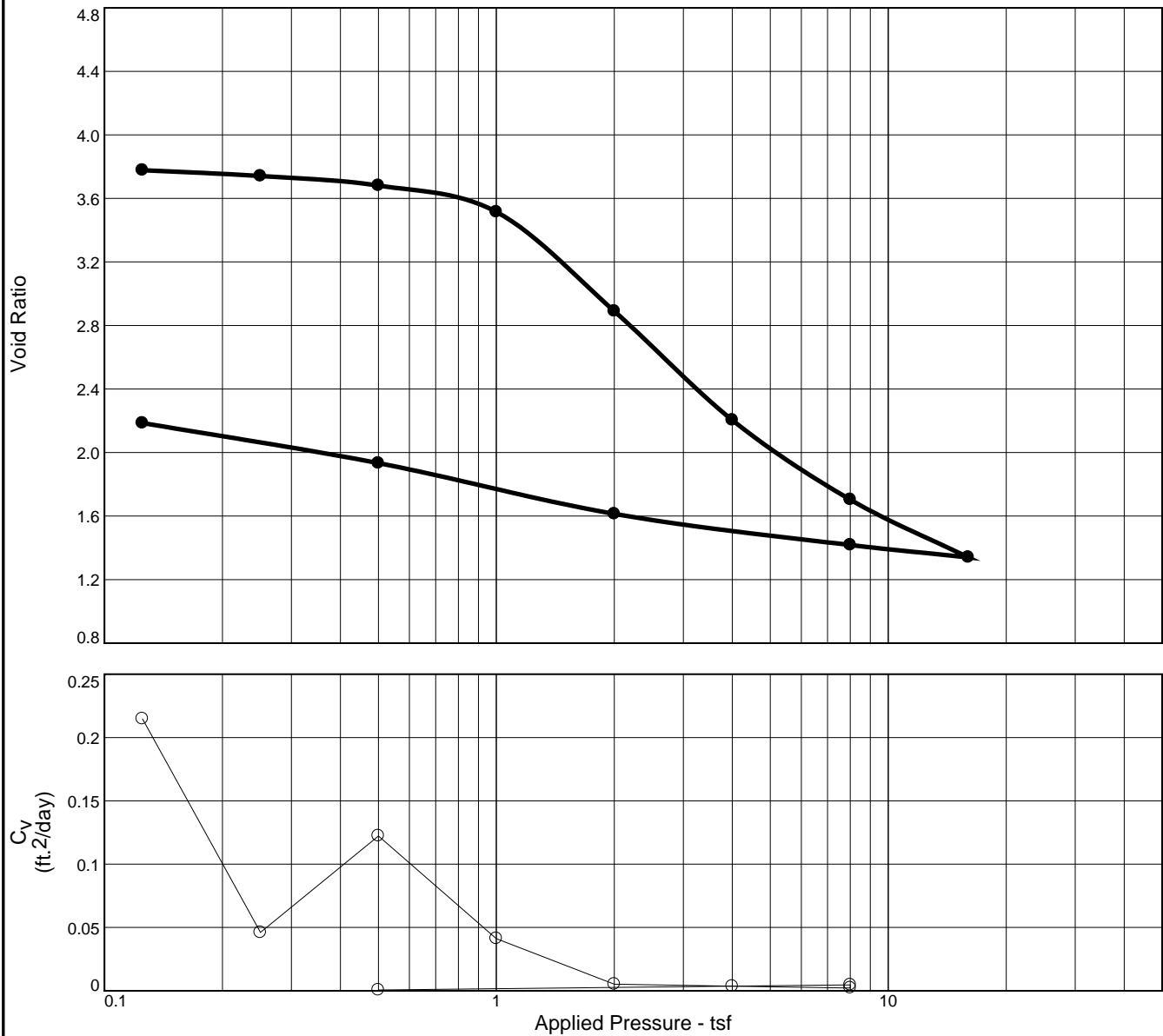
Client: AECOM, NEW ORLEANS, LOUISIANA**Project:** LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
15% DESIGN PHASE, MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN,
ST. JOHN THE BAPTIST PARISH, LOUISIANA. S.P. PO-0029**Project Number:** 24384**Location:** SB-03**Depth:** 31**Sample Number:** 8D**Material Description:** SO GR CH2 W/ ARS SP, SIF**Plasticity Index:** 32**Liquid Limit:** 50**USCS:** CH2**Tested by:** BH**Checked by:** RR**Test Specimen Data**


NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t	= 332.06 g.	Spec. Gr.	= 2.67	Wet w+t	= 603.99 g.
Dry w+t	= 205.67 g.	Est. Ht. Solids	= 0.373 in.	Dry w+t	= 519.15 g.
Tare Wt.	= 0.00 g.	Init. V.R.	= 1.676	Tare Wt.	= 313.48 g.
Moisture	= 61.5 %	Init. Sat.	= 97.9 %	Moisture	= 41.3 %
UNIT WEIGHT		TEST START		Dry Wt. = 205.67* g.	
Height	= 0.997 in.	Height	= 0.997 in.		
Diameter	= 4.008 in.	Diameter	= 4.008 in.		
Weight	= 332.06 g.				
Dry Dens.	= 62.3 pcf	* Final dry weight used as mineral solids weight			

End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	1.99763	0.00000			1.676	
0.06	1.99749	-0.00014			1.676	0.0 Swell
0.13	2.00151	0.00388		0.001	1.666	0.4 Compr.
0.25	2.00939	0.01176	0.062	0.002	1.644	1.2 Compr.
0.50	2.02599	0.02836	0.068	0.008	1.600	2.8 Compr.
1.00	2.06745	0.06982	0.017	0.026	1.489	7.0 Compr.
2.00	2.15768	0.16005		0.060	1.246	16.1 Compr.
4.00	2.24307	0.24544	0.010	0.038	1.017	24.6 Compr.
8.00	2.31041	0.31278	0.008	0.033	0.836	31.4 Compr.
16.00	2.36991	0.37228	0.006	0.020	0.677	37.3 Compr.
4.00	2.34127	0.34364	0.015		0.754	34.5 Compr.
1.00	2.30582	0.30819		0.003	0.849	30.9 Compr.
0.25	2.26652	0.26889			0.954	27.0 Compr.
0.06	2.23683	0.23920	0.001		1.034	24.0 Compr.
Compression index (C _c), tsf = 0.79			Preconsolidation pressure (P _p), tsf = 0.9		Void ratio at P _p (e _m) = 1.524	

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _c (tsf)	C _c	Initial Void Ratio
Saturation	Moisture							
96.3 %	141.0 %							
		33.7	195	133	2.59	1.1	2.29	3.791
MATERIAL DESCRIPTION							USCS	AASHTO
M BR & GR CHOC							CHOC	
Project No. 24384 Client: AECOM, NEW ORLEANS, LOUISIANA						Remarks:		
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),								
Source of Sample: SB-04 Depth: 26 Sample Number: 7C								
						Figure		

Tested By: BH Checked By: RR

CONSOLIDATION TEST DATA

11/19/2020

Client: AECOM, NEW ORLEANS, LOUISIANA**Project:** LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
15% DESIGN PHASE, MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN,
ST. JOHN THE BAPTIST PARISH, LOUISIANA. S.P. PO-0029**Project Number:** 24384**Location:** SB-04**Depth:** 26**Sample Number:** 7C**Material Description:** M BR & GR CHOC**Plasticity Index:** 133**Liquid Limit:** 195**USCS:** CHOC**Tested by:** BH**Checked by:** RR**Test Specimen Data**

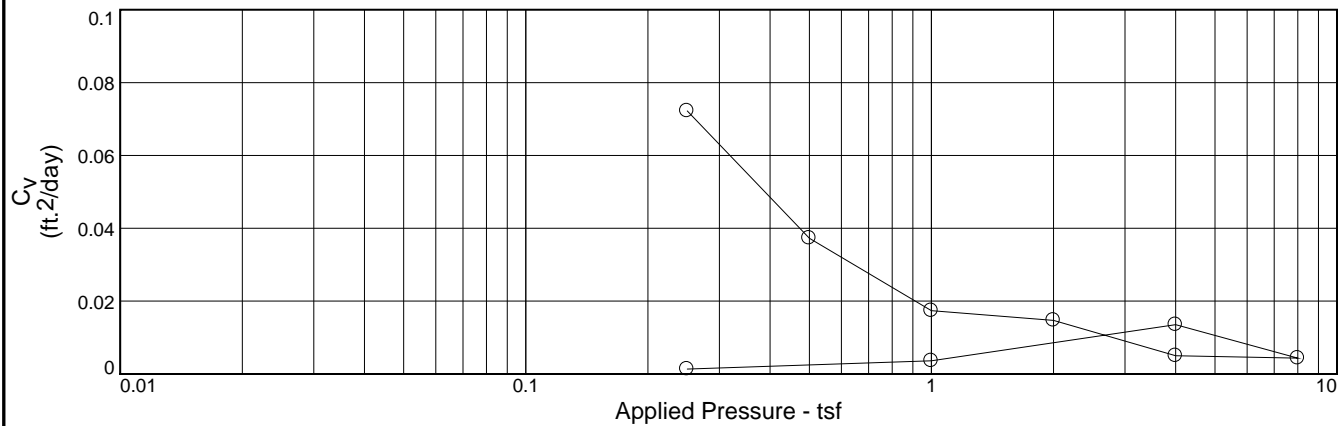
NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t	= 267.71 g.	Spec. Gr.	= 2.59	Wet w+t	= 396.91 g.
Dry w+t	= 111.10 g.	Est. Ht. Solids	= 0.208 in.	Dry w+t	= 297.64 g.
Tare Wt.	= 0.00 g.	Init. V.R.	= 3.791	Tare Wt.	= 186.54 g.
Moisture	= 141.0 %	Init. Sat.	= 96.3 %	Moisture	= 89.4 %
UNIT WEIGHT		TEST START		Dry Wt. = 111.10* g.	
Height	= 0.998 in.	Height	= 0.998 in.		
Diameter	= 4.000 in.	Diameter	= 4.000 in.		
Weight	= 267.71 g.				
Dry Dens.	= 33.7 pcf	* Final dry weight used as mineral solids weight			

End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft.2/day)	C _α	Void Ratio	% Strain
start	1.81857	0.00000			3.791	
0.13	1.82129	0.00272	0.215	0.006	3.778	0.3 Compr.
0.25	1.82899	0.01042	0.046	0.004	3.741	1.0 Compr.
0.50	1.84151	0.02294	0.122	0.010	3.681	2.3 Compr.
1.00	1.87600	0.05743	0.041	0.045	3.515	5.8 Compr.
2.00	2.00626	0.18769	0.005	0.119	2.890	18.8 Compr.
4.00	2.14909	0.33052	0.004	0.118	2.204	33.1 Compr.
8.00	2.25342	0.43485	0.002	0.141	1.703	43.6 Compr.
16.00	2.32911	0.51054		0.109	1.340	51.2 Compr.
8.00	2.31293	0.49436	0.005		1.418	49.5 Compr.
2.00	2.27205	0.45348			1.614	45.4 Compr.
0.50	2.20551	0.38694	0.001		1.933	38.8 Compr.
0.13	2.15290	0.33433			2.186	33.5 Compr.
Compression index (C _c), tsf = 2.29			Preconsolidation pressure (P _p), tsf = 1.1		Void ratio at P _p (e _m) = 3.478	

Figure 10 is a graph showing the relationship between Void Ratio (Y-axis) and Logarithm of Pressure (X-axis) for two samples of sand. The Y-axis ranges from 0.90 to 2.40, and the X-axis ranges from 1.0 to 4.0. Two curves are plotted, representing the compression behavior of the sand samples. The upper curve (Sample 1) starts at a void ratio of approximately 2.11 at a logarithm of pressure of 1.0 and decreases to about 1.19 at a logarithm of pressure of 4.0. The lower curve (Sample 2) starts at a void ratio of approximately 1.73 at a logarithm of pressure of 1.0 and decreases to about 1.19 at a logarithm of pressure of 4.0. Both curves show a characteristic decrease in void ratio as pressure increases, with Sample 1 having a higher void ratio than Sample 2 for any given pressure.

Logarithm of Pressure	Void Ratio (Sample 1)	Void Ratio (Sample 2)
1.0	2.11	1.73
1.5	2.11	1.65
2.0	2.10	1.58
2.5	1.99	1.50
3.0	1.96	1.42
3.5	1.81	1.33
4.0	1.19	1.19



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _C (tsf)	C _C	Initial Void Ratio
Saturation	Moisture							
97.7 %	80.3 %	51.6	137	100	2.57	1.3	1.11	2.111

MATERIAL DESCRIPTION	USCS	AASHTO
M GR & DGR CHOA	CHOA	

Project No. 24384	Client: AECOM, NEW ORLEANS, LOUISIANA	
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),		
Source of Sample: SB-05	Depth: 19	Sample Number: 5D

Remarks:



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Figure

Tested By: BH **Checked By:** RR

CONSOLIDATION TEST DATA

11/19/2020

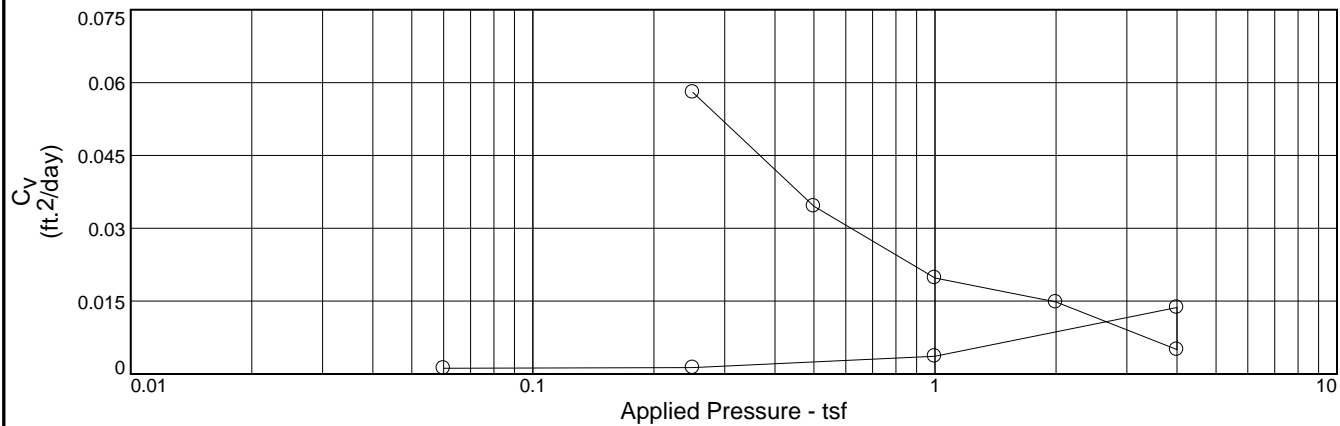
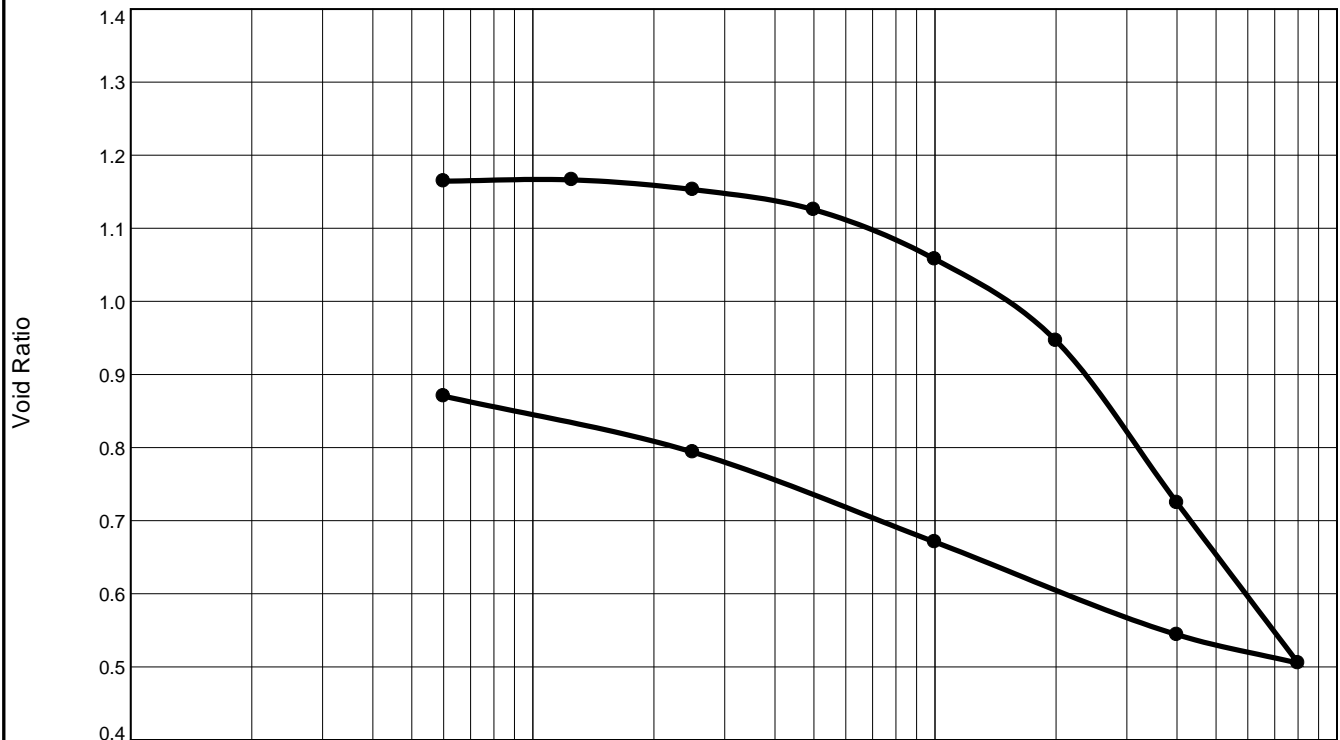
Client: AECOM, NEW ORLEANS, LOUISIANA**Project:** LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
15% DESIGN PHASE, MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN,
ST. JOHN THE BAPTIST PARISH, LOUISIANA. S.P. PO-0029**Project Number:** 24384**Location:** SB-05**Depth:** 19**Sample Number:** 5D**Material Description:** M GR & DGR CHOA**Plasticity Index:** 100**Liquid Limit:** 137**USCS:** CHOA**Tested by:** BH**Checked by:** RR**Test Specimen Data**

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t	= 305.76 g.	Spec. Gr.	= 2.57	Wet w+t	= 540.71 g.
Dry w+t	= 169.60 g.	Est. Ht. Solids	= 0.321 in.	Dry w+t	= 429.83 g.
Tare Wt.	= 0.00 g.	Init. V.R.	= 2.111	Tare Wt.	= 260.23 g.
Moisture	= 80.3 %	Init. Sat.	= 97.7 %	Moisture	= 65.4 %
UNIT WEIGHT		TEST START		Dry Wt. = 169.60* g.	
Height	= 0.998 in.	Height	= 0.998 in.		
Diameter	= 3.998 in.	Diameter	= 3.998 in.		
Weight	= 305.76 g.				
Dry Dens.	= 51.6 pcf	* Final dry weight used as mineral solids weight			

End-Of-Load Summary


Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft.2/day)	C _α	Void Ratio	% Strain
start	1.70778	0.00000			2.111	
0.06	1.70033	-0.00745			2.134	0.7 Swell
0.13	1.69950	-0.00828			2.137	0.8 Swell
0.25	1.70571	-0.00207	0.072	0.004	2.118	0.2 Swell
0.50	1.71855	0.01077	0.037	0.007	2.078	1.1 Compr.
1.00	1.75004	0.04226	0.017	0.016	1.979	4.2 Compr.
2.00	1.80197	0.09419	0.015	0.050	1.817	9.4 Compr.
4.00	1.90536	0.19758	0.005	0.060	1.495	19.8 Compr.
8.00	2.00748	0.29970	0.004	0.107	1.177	30.0 Compr.
4.00	1.98939	0.28161	0.014		1.233	28.2 Compr.
1.00	1.93032	0.22254	0.004		1.417	22.3 Compr.
0.25	1.87303	0.16525	0.001		1.596	16.6 Compr.
0.06	1.83135	0.12357			1.726	12.4 Compr.
Compression index (C _c), tsf = 1.11			Preconsolidation pressure (P _p), tsf = 1.3		Void ratio at P _p (e _m) = 1.927	

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _c (tsf)	C _c	Initial Void Ratio
Saturation	Moisture							
97.7 %	43.3 %	75.3	132	100	2.59	1.5	0.75	1.148

MATERIAL DESCRIPTION							USCS	AASHTO
VSO DGR CHOA							CHOA	

Project No. 24384			Client: AECOM, NEW ORLEANS, LOUISIANA			Remarks:
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),						
Source of Sample: SB-06		Depth: 14		Sample Number: 4C		
<div><div>EUSTIS ENGINEERING SINCE 1946</div></div>						
						Figure

Tested By: BH Checked By: RR

CONSOLIDATION TEST DATA

11/19/2020

Client: AECOM, NEW ORLEANS, LOUISIANA**Project:** LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
15% DESIGN PHASE, MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN,
ST. JOHN THE BAPTIST PARISH, LOUISIANA. S.P. PO-0029**Project Number:** 24384**Location:** SB-06**Depth:** 14**Sample Number:** 4C**Material Description:** VSO DGR CHOA**Plasticity Index:** 100**Liquid Limit:** 132**USCS:** CHOA**Tested by:** BH**Checked by:** RR**Test Specimen Data**

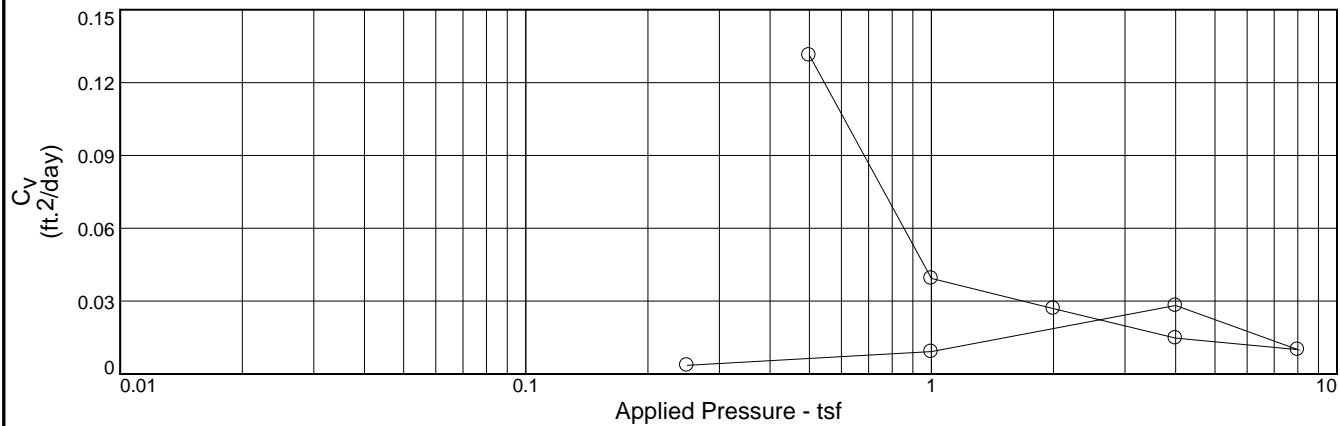
NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t	= 355.41 g.	Spec. Gr.	= 2.59	Wet w+t	= 475.02 g.
Dry w+t	= 248.00 g.	Est. Ht. Solids	= 0.466 in.	Dry w+t	= 378.98 g.
Tare Wt.	= 0.00 g.	Init. V.R.	= 1.148	Tare Wt.	= 130.98 g.
Moisture	= 43.3 %	Init. Sat.	= 97.7 %	Moisture	= 38.7 %
UNIT WEIGHT		TEST START		Dry Wt. = 248.00* g.	
Height	= 1.001 in.	Height	= 1.001 in.		
Diameter	= 3.996 in.	Diameter	= 3.996 in.		
Weight	= 355.41 g.				
Dry Dens.	= 75.3 pcf	* Final dry weight used as mineral solids weight			

End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	1.70778	0.00000			1.148	
0.06	1.70033	-0.00745			1.164	0.7 Swell
0.13	1.69950	-0.00828			1.166	0.8 Swell
0.25	1.70571	-0.00207	0.058	0.002	1.153	0.2 Swell
0.50	1.71855	0.01077	0.035	0.005	1.125	1.1 Compr.
1.00	1.75004	0.04226	0.020	0.012	1.058	4.2 Compr.
2.00	1.80197	0.09419	0.015	0.034	0.946	9.4 Compr.
4.00	1.90536	0.19758	0.005	0.041	0.724	19.7 Compr.
8.00	2.00748	0.29970		0.061	0.505	29.9 Compr.
4.00	1.98939	0.28161	0.014		0.544	28.1 Compr.
1.00	1.93032	0.22254	0.004		0.671	22.2 Compr.
0.25	1.87303	0.16525	0.001		0.794	16.5 Compr.
0.06	1.83729	0.12951	0.001		0.870	12.9 Compr.
Compression index (C _c), tsf = 0.75 Preconsolidation pressure (P _p), tsf = 1.5 Void ratio at P _p (e _m) = 1.006						

Figure 10 is a line graph showing the relationship between Void Ratio (Y-axis) and Logarithm of Vertical Stress ($\log \sigma_v$) (X-axis). The Y-axis ranges from 1.80 to 3.30, and the X-axis ranges from 1.0 to 4.0. Two curves are plotted, representing the compression behavior of two different soil samples. The upper curve starts at a void ratio of approximately 2.87 at $\log \sigma_v = 1.0$ and decreases to approximately 1.95 at $\log \sigma_v = 4.0$. The lower curve starts at a void ratio of approximately 2.45 at $\log \sigma_v = 1.0$ and decreases to approximately 1.95 at $\log \sigma_v = 4.0$. Both curves show a decrease in void ratio as the logarithm of vertical stress increases, with the upper curve being steeper than the lower curve.

Logarithm of Vertical Stress ($\log \sigma_v$)	Void Ratio (Upper Curve)	Void Ratio (Lower Curve)
1.0	2.87	2.45
1.5	2.87	2.42
2.0	2.87	2.38
2.5	2.86	2.32
3.0	2.84	2.24
3.5	2.70	2.10
4.0	1.95	1.95



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _C (tsf)	C _C	Initial Void Ratio
Saturation	Moisture							
98.5 %	110.0 %	41.5	150	98	2.58	2.4	1.42	2.883

MATERIAL DESCRIPTION	USCS	AASHTO
SO GR CHOA	CHOA	

Project No. 24384	Client: AECOM, NEW ORLEANS, LOUISIANA
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),	
Source of Sample: SB-07	Depth: 14 Sample Number: 4C

Remarks:



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Figure

Tested By: BH **Checked By:** RR

CONSOLIDATION TEST DATA

11/19/2020

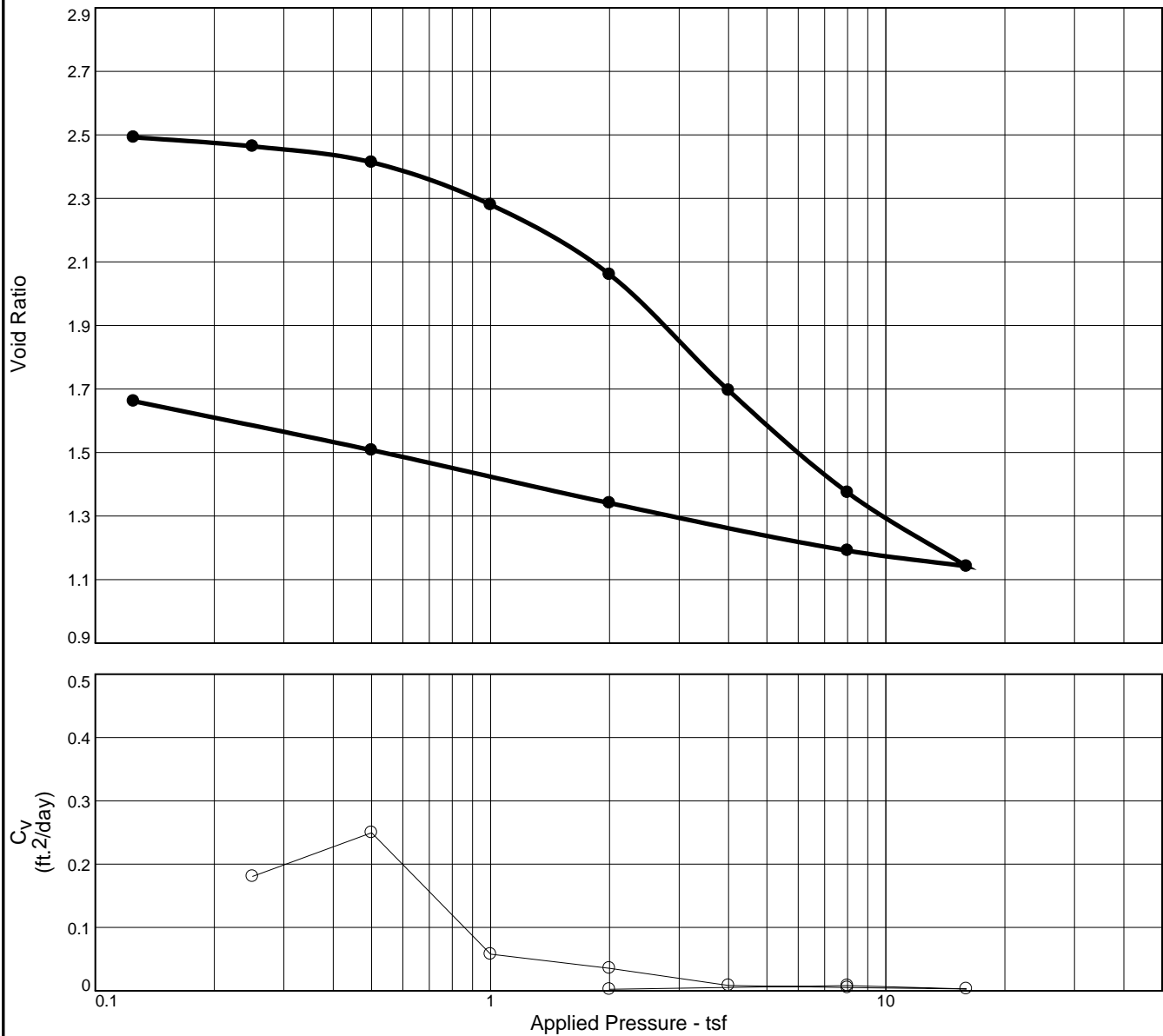
Client: AECOM, NEW ORLEANS, LOUISIANA**Project:** LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
15% DESIGN PHASE, MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN,
ST. JOHN THE BAPTIST PARISH, LOUISIANA. S.P. PO-0029**Project Number:** 24384**Location:** SB-07**Depth:** 14**Sample Number:** 4C**Material Description:** SO GR CHOA**Liquid Limit:** 150**Plasticity Index:** 98**USCS:** CHOA**Tested by:** BH**Checked by:** RR**Test Specimen Data**

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t	= 287.23 g.	Spec. Gr.	= 2.58	Wet w+t	= 402.81 g.
Dry w+t	= 136.75 g.	Est. Ht. Solids	= 0.257 in.	Dry w+t	= 265.07 g.
Tare Wt.	= 0.00 g.	Init. V.R.	= 2.883	Tare Wt.	= 128.32 g.
Moisture	= 110.0 %	Init. Sat.	= 98.5 %	Moisture	= 100.7 %
UNIT WEIGHT		TEST START		Dry Wt. = 136.75* g.	
Height	= 0.999 in.	Height	= 0.999 in.		
Diameter	= 4.001 in.	Diameter	= 4.001 in.		
Weight	= 287.23 g.				
Dry Dens.	= 41.5 pcf	* Final dry weight used as mineral solids weight			

End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C_v (ft.2/day)	C_α	Void Ratio	% Strain
start	1.12972	0.00000			2.883	
0.06	1.12405	-0.00567			2.905	0.6 Swell
0.13	1.12368	-0.00604			2.907	0.6 Swell
0.25	1.12450	-0.00522			2.903	0.5 Swell
0.50	1.13307	0.00335	0.131	0.004	2.870	0.3 Compr.
1.00	1.14920	0.01948	0.039	0.008	2.807	1.9 Compr.
2.00	1.17949	0.04977	0.027	0.028	2.690	5.0 Compr.
4.00	1.25473	0.12501	0.015	0.052	2.397	12.5 Compr.
8.00	1.36551	0.23579	0.010	0.082	1.967	23.6 Compr.
4.00	1.34687	0.21715	0.028		2.039	21.7 Compr.
1.00	1.29760	0.16788	0.009		2.231	16.8 Compr.
0.25	1.25948	0.12976	0.004		2.379	13.0 Compr.
0.06	1.23937	0.10965			2.457	11.0 Compr.
Compression index (C_c), tsf = 1.42			Preconsolidation pressure (P_p), tsf = 2.4		Void ratio at P_p (e_m) = 2.638	


CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _c (tsf)	C _c	Initial Void Ratio
Saturation	Moisture							
96.5 %	93.7 %	45.9	144	99	2.57	1.5	1.09	2.495

MATERIAL DESCRIPTION							USCS	AASHTO
M GR & BR CHOA							CHOA	

Project No. 24384	Client: AECOM, NEW ORLEANS, LOUISIANA	Remarks:
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),		
Source of Sample: SB-08	Depth: 10	
Sample Number: 3C		


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Figure

Tested By: BH _____ Checked By: RR _____

CONSOLIDATION TEST DATA

11/20/2020

Client: AECOM, NEW ORLEANS, LOUISIANA**Project:** LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
15% DESIGN PHASE, MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN,
ST. JOHN THE BAPTIST PARISH, LOUISIANA. S.P. PO-0029**Project Number:** 24384**Location:** SB-08**Depth:** 10**Sample Number:** 3C**Material Description:** M GR & BR CHOA**Liquid Limit:** 144**Plasticity Index:** 99**USCS:** CHOA**Tested by:** BH**Checked by:** RR**Test Specimen Data**

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t	= 293.64 g.	Spec. Gr.	= 2.57	Wet w+t	= 379.74 g.
Dry w+t	= 151.59 g.	Est. Ht. Solids	= 0.285 in.	Dry w+t	= 281.23 g.
Tare Wt.	= 0.00 g.	Init. V.R.	= 2.495	Tare Wt.	= 129.64 g.
Moisture	= 93.7 %	Init. Sat.	= 96.5 %	Moisture	= 65.0 %
UNIT WEIGHT		TEST START		Dry Wt. = 151.59* g.	
Height	= 0.997 in.	Height	= 0.997 in.		
Diameter	= 4.008 in.	Diameter	= 4.008 in.		
Weight	= 293.64 g.				
Dry Dens.	= 45.9 pcf	* Final dry weight used as mineral solids weight			

End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C_v (ft.2/day)	C_α	Void Ratio	% Strain
start	1.99354	0.00000			2.495	
0.13	1.99414	0.00060		0.001	2.493	0.1 Compr.
0.25	2.00232	0.00878	0.181	0.003	2.464	0.9 Compr.
0.50	2.01666	0.02312	0.250	0.007	2.414	2.3 Compr.
1.00	2.05469	0.06115	0.058	0.017	2.280	6.1 Compr.
2.00	2.11737	0.12383	0.036	0.060	2.061	12.4 Compr.
4.00	2.22155	0.22801	0.008	0.076	1.695	22.9 Compr.
8.00	2.31319	0.31965	0.005	0.043	1.374	32.1 Compr.
16.00	2.37944	0.38590	0.003	0.063	1.142	38.7 Compr.
8.00	2.36542	0.37188	0.008		1.191	37.3 Compr.
2.00	2.32271	0.32917	0.002		1.341	33.0 Compr.
0.50	2.27517	0.28163			1.507	28.2 Compr.
0.13	2.23119	0.23765			1.662	23.8 Compr.
Compression index (C_c), tsf = 1.09 Preconsolidation pressure (P_p), tsf = 1.5 Void ratio at P_p (e_m) = 2.178						

The figure consists of two vertically stacked plots sharing a common x-axis representing Applied Pressure in tsf on a logarithmic scale from 0.1 to 10.

The top plot shows the relationship between Applied Pressure (tsf) and Void Ratio. The y-axis ranges from 2.30 to 2.60. Two data series are plotted, both showing a decrease in void ratio as applied pressure increases. The upper curve starts at a void ratio of approximately 2.565 at 0.1 tsf and decreases to about 2.34 at 8 tsf. The lower curve starts at a void ratio of approximately 2.43 at 0.1 tsf and decreases to about 2.34 at 8 tsf.

The bottom plot shows the relationship between Applied Pressure (tsf) and the Coefficient of Vertical Consolidation (C_v) in ft.²/day. The y-axis ranges from 0 to 2.5. Two data series are plotted. The upper curve starts at approximately 1.75 at 0.5 tsf, peaks at about 2.1 at 1 tsf, and then decreases to about 0.25 at 8 tsf. The lower curve starts at approximately 0.05 at 0.1 tsf, increases slightly to about 0.25 at 1 tsf, and then decreases to about 0.25 at 8 tsf.

Applied Pressure (tsf)	Void Ratio (Upper Curve)	Void Ratio (Lower Curve)	C_v (ft. ² /day) (Upper Curve)	C_v (ft. ² /day) (Lower Curve)
0.1	2.565	2.430	-	0.05
0.5	2.560	2.415	1.75	0.05
1.0	2.545	2.395	2.10	0.15
2.0	2.515	2.375	1.45	0.25
4.0	2.460	2.355	0.65	0.25
8.0	2.340	2.340	0.25	0.25

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _C (tsf)	C _C	Initial Void Ratio
Saturation	Moisture							
97.6 %	44.5 %	75.3	61	45	2.68	3.0	0.39	1.223

MATERIAL DESCRIPTION	USCS	AASHTO
M GR CH3 W/ ARS ML	CH3	

Project No. 24384	Client: AECOM, NEW ORLEANS, LOUISIANA	
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),		
Source of Sample: SB-09	Depth: 18	Sample Number: 5C

Remarks:



Figure

Tested By: BH **Checked By:** RR

CONSOLIDATION TEST DATA

11/20/2020

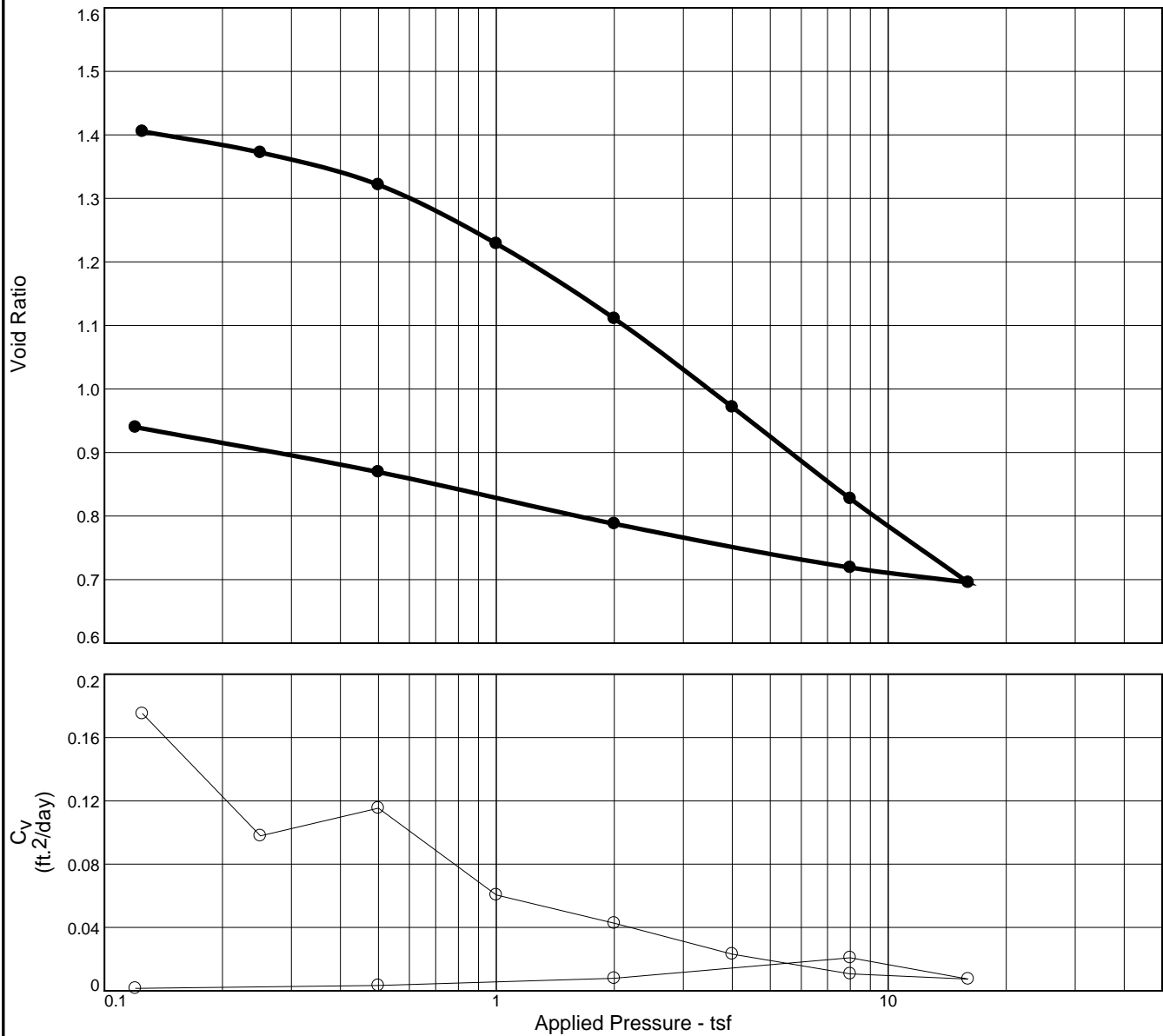
Client: AECOM, NEW ORLEANS, LOUISIANA**Project:** LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
15% DESIGN PHASE, MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN,
ST. JOHN THE BAPTIST PARISH, LOUISIANA. S.P. PO-0029**Project Number:** 24384**Location:** SB-09**Depth:** 18**Sample Number:** 5C**Material Description:** M GR CH3 W/ ARS ML**Liquid Limit:** 61**Plasticity Index:** 45**USCS:** CH3**Tested by:** BH**Checked by:** RR**Test Specimen Data**

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t	= 358.41 g.	Spec. Gr.	= 2.68	Wet w+t	= 475.02 g.
Dry w+t	= 248.00 g.	Est. Ht. Solids	= 0.450 in.	Dry w+t	= 378.98 g.
Tare Wt.	= 0.00 g.	Init. V.R.	= 1.223	Tare Wt.	= 130.98 g.
Moisture	= 44.5 %	Init. Sat.	= 97.6 %	Moisture	= 38.7 %
UNIT WEIGHT		TEST START		Dry Wt. = 248.00* g.	
Height	= 1.001 in.	Height	= 1.001 in.		
Diameter	= 3.996 in.	Diameter	= 3.996 in.		
Weight	= 358.41 g.				
Dry Dens.	= 75.3 pcf	* Final dry weight used as mineral solids weight			

End-Of-Load Summary


Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C_v (ft. ² /day)	C_α	Void Ratio	% Strain
start	1.74834	0.00000			1.223	
0.12	1.74828	-0.00006			2.562	0.0 Swell
0.25	1.75053	0.00219		0.004	2.558	0.1 Compr.
0.50	1.75493	0.00659	1.762	0.002	2.550	0.3 Compr.
1.00	1.76305	0.01471	2.110	0.002	2.536	0.7 Compr.
2.00	1.77515	0.02681	1.425	0.003	2.514	1.3 Compr.
4.00	1.80785	0.05951	0.667	0.008	2.456	3.0 Compr.
8.00	1.87316	0.12482	0.247	0.018	2.340	6.2 Compr.
2.00	1.85226	0.10392	0.243		2.377	5.2 Compr.
0.50	1.83372	0.08538	0.082		2.410	4.3 Compr.
0.12	1.82276	0.07442	0.017		2.430	3.7 Compr.
Compression index (C_c), tsf = 0.39 Preconsolidation pressure (P_p), tsf = 3.0 Void ratio at P_p (e_m) = 2.488						

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _c (tsf)	C _c	Initial Void Ratio
Saturation	Moisture							
96.0 %	50.6 %	69.5	77	47	2.70	0.9	0.47	1.425

MATERIAL DESCRIPTION							USCS	AASHTO
SO GR & T CH4 W/ ARS ML, WD							CH4	

Project No. 24384			Client: AECOM, NEW ORLEANS, LOUISIANA			Remarks:
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),						
Source of Sample: SB-11		Depth: 5	Sample Number: 3B			
<div><div>EUSTIS ENGINEERING SINCE 1946</div></div>						Figure

Tested By: BH **Checked By:** RR

CONSOLIDATION TEST DATA

12/10/2020

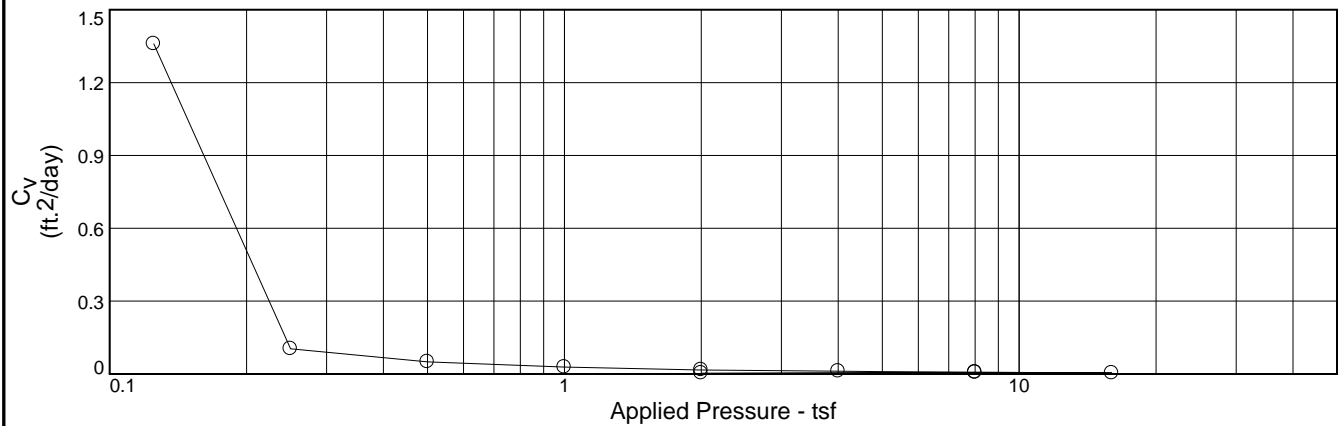
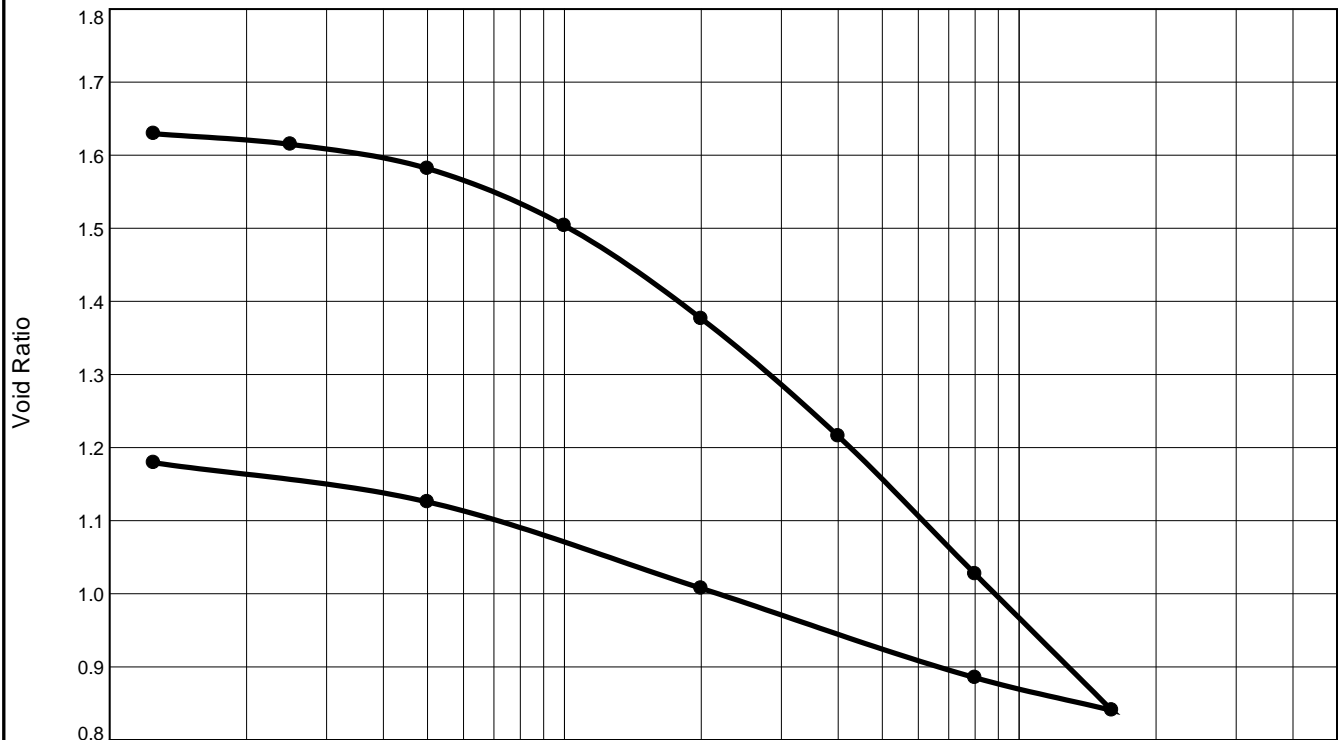
Client: AECOM, NEW ORLEANS, LOUISIANA**Project:** LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
15% DESIGN PHASE, MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN,
ST. JOHN THE BAPTIST PARISH, LOUISIANA. S.P. PO-0029**Project Number:** 24384**Location:** SB-11**Depth:** 5**Sample Number:** 3B**Material Description:** SO GR & T CH4 W/ ARS ML, WD**Liquid Limit:** 77**Plasticity Index:** 47**USCS:** CH4**Tested by:** BH**Checked by:** RR**Test Specimen Data**

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t	= 344.23 g.	Spec. Gr.	= 2.70	Wet w+t	= 444.10 g.
Dry w+t	= 228.51 g.	Est. Ht. Solids	= 0.411 in.	Dry w+t	= 358.41 g.
Tare Wt.	= 0.00 g.	Init. V.R.	= 1.425	Tare Wt.	= 129.90 g.
Moisture	= 50.6 %	Init. Sat.	= 96.0 %	Moisture	= 37.5 %
UNIT WEIGHT		TEST START		Dry Wt. = 228.51* g.	
Height	= 0.997 in.	Height	= 0.997 in.		
Diameter	= 3.999 in.	Diameter	= 3.999 in.		
Weight	= 344.23 g.				
Dry Dens.	= 69.5 pcf	* Final dry weight used as mineral solids weight			

End-Of-Load Summary


Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	2.40405	0.00000			1.425	
0.13	2.41197	0.00792	0.175	0.005	1.405	0.8 Compr.
0.25	2.42561	0.02156	0.098	0.005	1.372	2.2 Compr.
0.50	2.44650	0.04245	0.115	0.009	1.321	4.3 Compr.
1.00	2.48460	0.08055	0.061	0.014	1.229	8.1 Compr.
2.00	2.53308	0.12903	0.043	0.021	1.111	12.9 Compr.
4.00	2.59038	0.18633	0.023	0.022	0.971	18.7 Compr.
8.00	2.64962	0.24557	0.011	0.020	0.827	24.6 Compr.
16.00	2.70387	0.29982	0.007	0.014	0.695	30.1 Compr.
8.00	2.69424	0.29019	0.021		0.719	29.1 Compr.
2.00	2.66589	0.26184	0.008		0.788	26.3 Compr.
0.50	2.63243	0.22838	0.003		0.869	22.9 Compr.
0.12	2.60337	0.19932	0.002		0.940	20.0 Compr.
Compression index (C _c), tsf = 0.47			Preconsolidation pressure (P _p), tsf = 0.9		Void ratio at P _p (e _m) = 1.242	

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _c (tsf)	C _c	Initial Void Ratio
Saturation	Moisture							
95.7 %	58.0 %	64.0	97	71	2.70	1.3	0.64	1.635

MATERIAL DESCRIPTION							USCS	AASHTO
SO GR & T CH4 W/ ARS ML, RT							CH4	

Project No. 24384			Client: AECOM, NEW ORLEANS, LOUISIANA			Remarks:
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),						
Source of Sample: SB-12		Depth: 5.0		Sample Number: 3B		
<div><div>EUSTIS ENGINEERING SINCE 1946</div></div>						Figure

Tested By: BH _____ Checked By: RR _____

CONSOLIDATION TEST DATA

12/9/2020

Client: AECOM, NEW ORLEANS, LOUISIANA**Project:** LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
15% DESIGN PHASE, MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN,
ST. JOHN THE BAPTIST PARISH, LOUISIANA. S.P. PO-0029**Project Number:** 24384**Location:** SB-12**Depth:** 5.0**Sample Number:** 3B**Material Description:** SO GR & T CH4 W/ ARS ML, RT**Liquid Limit:** 97**Plasticity Index:** 71**USCS:** CH4**Tested by:** BH**Checked by:** RR**Test Specimen Data**

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t	= 333.67 g.	Spec. Gr.	= 2.70	Wet w+t	= 602.56 g.
Dry w+t	= 211.21 g.	Est. Ht. Solids	= 0.378 in.	Dry w+t	= 505.40 g.
Tare Wt.	= 0.00 g.	Init. V.R.	= 1.635	Tare Wt.	= 294.19 g.
Moisture	= 58.0 %	Init. Sat.	= 95.7 %	Moisture	= 46.0 %
UNIT WEIGHT		TEST START		Dry Wt. = 211.21* g.	
Height	= 0.997 in.	Height	= 0.997 in.		
Diameter	= 4.008 in.	Diameter	= 4.008 in.		
Weight	= 333.67 g.				
Dry Dens.	= 64.0 pcf	* Final dry weight used as mineral solids weight			

End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	1.99817	0.00000			1.635	
0.13	2.00033	0.00216	1.360	0.001	1.629	0.2 Compr.
0.25	2.00585	0.00768	0.103	0.002	1.615	0.8 Compr.
0.50	2.01837	0.02020	0.050	0.003	1.582	2.0 Compr.
1.00	2.04789	0.04972	0.028	0.010	1.504	5.0 Compr.
2.00	2.09606	0.09789	0.016	0.020	1.376	9.8 Compr.
4.00	2.15685	0.15868	0.011	0.043	1.216	15.9 Compr.
8.00	2.22822	0.23005	0.006	0.029	1.027	23.1 Compr.
16.00	2.29879	0.30062	0.004	0.032	0.841	30.2 Compr.
8.00	2.28192	0.28375	0.007		0.885	28.5 Compr.
2.00	2.23564	0.23747	0.003		1.007	23.8 Compr.
0.50	2.19090	0.19273			1.126	19.3 Compr.
0.13	2.17064	0.17247			1.179	17.3 Compr.
Compression index (C _c), tsf = 0.64			Preconsolidation pressure (P _p), tsf = 1.3		Void ratio at P _p (e _m) = 1.454	

The figure consists of two vertically stacked plots sharing a common x-axis representing Applied Pressure in tsf on a logarithmic scale from 0.01 to 10.

The top plot shows the relationship between Applied Pressure (tsf) and Void Ratio. The y-axis ranges from 0.9 to 3.9. Two data series are plotted, both showing a decrease in void ratio as applied pressure increases. The upper curve starts at a void ratio of approximately 3.6 at 0.05 tsf and decreases to about 1.3 at 10 tsf. The lower curve starts at a void ratio of approximately 2.1 at 0.05 tsf and decreases to about 1.3 at 10 tsf.

The bottom plot shows the relationship between Applied Pressure (tsf) and the Coefficient of Vertical Consolidation (C_v in ft²/day). The y-axis ranges from 0 to 0.15. The data points, represented by open circles, show a sharp decrease in C_v as applied pressure increases, starting from approximately 0.13 ft²/day at 0.1 tsf and dropping to near zero at 10 tsf.

Applied Pressure (tsf)	Void Ratio (Upper Curve)	Void Ratio (Lower Curve)	C_v (ft ² /day)
0.05	3.6	2.1	0.00
0.1	3.55	1.9	0.13
0.2	3.45	1.75	0.08
0.5	3.3	1.6	0.05
1.0	2.85	1.45	0.01
2.0	2.2	1.35	0.01
5.0	1.3	1.3	0.01
10.0	1.3	1.3	0.00

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _C (tsf)	C _C	Initial Void Ratio
Saturation	Moisture							
99.8 %	139.1 %	35.0	268	224	2.58	0.5	1.95	3.597

MATERIAL DESCRIPTION	USCS	AASHTO
SO DGR CHOC	CHOC	


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Figure

Tested By: BH **Checked By:** RR

CONSOLIDATION TEST DATA

12/9/2020

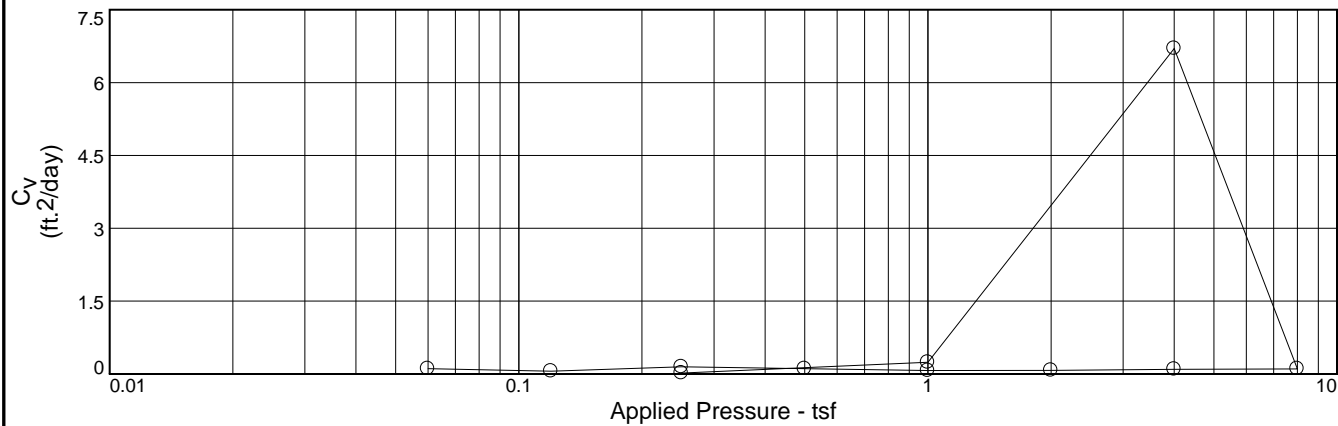
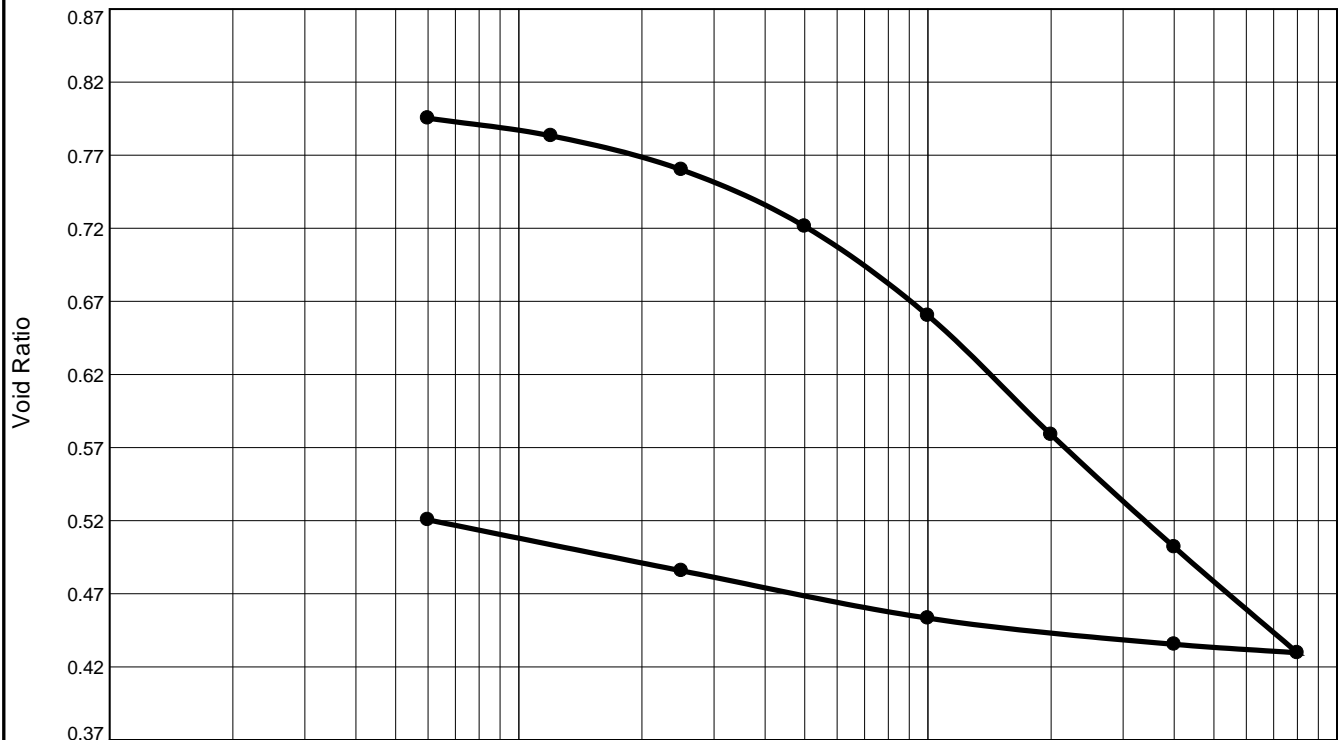
Client: AECOM, NEW ORLEANS, LOUISIANA**Project:** LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
15% DESIGN PHASE, MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN,
ST. JOHN THE BAPTIST PARISH, LOUISIANA. S.P. PO-0029**Project Number:** 24384**Location:** SB-12**Depth:** 12.0**Sample Number:** 5A**Material Description:** SO DGR CHOC**Liquid Limit:** 268**Plasticity Index:** 224**USCS:** CHOC**Tested by:** BH**Checked by:** RR**Test Specimen Data**

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t	= 203.83 g.	Spec. Gr.	= 2.58	Wet w+t	= 545.46 g.
Dry w+t	= 85.25 g.	Est. Ht. Solids	= 0.164 in.	Dry w+t	= 448.45 g.
Tare Wt.	= 0.00 g.	Init. V.R.	= 3.597	Tare Wt.	= 363.20 g.
Moisture	= 139.1 %	Init. Sat.	= 99.8 %	Moisture	= 113.8 %
UNIT WEIGHT		TEST START		Dry Wt. = 85.25* g.	
Height	= 0.753 in.	Height	= 0.753 in.		
Diameter	= 3.959 in.	Diameter	= 3.959 in.		
Weight	= 203.83 g.				
Dry Dens.	= 35.0 pcf	* Final dry weight used as mineral solids weight			

End-Of-Load Summary


Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C_v (ft.2/day)	C_α	Void Ratio	% Strain
start	0.00010	0.00000			3.597	
0.06	0.00480	0.00470		0.001	3.568	0.6 Compr.
0.12	0.01200	0.01190	0.126	0.007	3.524	1.6 Compr.
0.25	0.02460	0.02450	0.074	0.007	3.448	3.3 Compr.
0.50	0.04900	0.04890	0.045	0.022	3.299	6.5 Compr.
1.00	0.13100	0.13090	0.004	0.024	2.798	17.4 Compr.
2.00	0.22430	0.22420	0.008	0.069	2.228	29.8 Compr.
8.00	0.37980	0.37970	0.001	0.000	1.279	50.4 Compr.
4.00	0.37820	0.37810	0.007	0.000	1.289	50.2 Compr.
1.00	0.35210	0.35200	0.002		1.448	46.7 Compr.
0.25	0.30530	0.30520			1.734	40.5 Compr.
0.06	0.24290	0.24280	0.000		2.115	32.2 Compr.
Compression index (C_c), tsf = 1.95 Preconsolidation pressure (P_p), tsf = 0.5 Void ratio at P_p (e_m) = 3.270						

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _c (tsf)	C _c	Initial Void Ratio
Saturation	Moisture							
99.2 %	30.5 %	91.2	42	26	2.65	0.5	0.28	0.814

MATERIAL DESCRIPTION							USCS	AASHTO
M DGR & GR CL6 W/ O							CL6	

Project No. 24384		Client: AECOM, NEW ORLEANS, LOUISIANA		Remarks:
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),				
Source of Sample: SB-12		Depth: 14.0	Sample Number: 5C	
<div> EUSTIS ENGINEERING SINCE 1946</div>				Figure

Tested By: BH _____ Checked By: RR _____

CONSOLIDATION TEST DATA

12/9/2020

Client: AECOM, NEW ORLEANS, LOUISIANA**Project:** LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
15% DESIGN PHASE, MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN,
ST. JOHN THE BAPTIST PARISH, LOUISIANA. S.P. PO-0029**Project Number:** 24384**Location:** SB-12**Depth:** 14.0**Sample Number:** 5C**Material Description:** M DGR & GR CL6 W/ O**Plasticity Index:** 26**Liquid Limit:** 42**USCS:** CL6**Tested by:** BH**Checked by:** RR**Test Specimen Data**

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t	= 293.76 g.	Spec. Gr.	= 2.65	Wet w+t	= 597.94 g.
Dry w+t	= 225.18 g.	Est. Ht. Solids	= 0.413 in.	Dry w+t	= 538.66 g.
Tare Wt.	= 0.00 g.	Init. V.R.	= 0.814	Tare Wt.	= 313.48 g.
Moisture	= 30.5 %	Init. Sat.	= 99.2 %	Moisture	= 26.3 %
UNIT WEIGHT		TEST START		Dry Wt. = 225.18* g.	
Height	= 0.750 in.	Height	= 0.750 in.		
Diameter	= 3.996 in.	Diameter	= 3.996 in.		
Weight	= 293.76 g.				
Dry Dens.	= 91.2 pcf	* Final dry weight used as mineral solids weight			

End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft.2/day)	C _α	Void Ratio	% Strain
start	0.00030	0.00000			0.814	
0.06	0.00800	0.00770	0.107	0.001	0.795	1.0 Compr.
0.12	0.01300	0.01270	0.058	0.002	0.783	1.7 Compr.
0.25	0.02260	0.02230	0.147	0.003	0.760	3.0 Compr.
0.50	0.03860	0.03830	0.108	0.004	0.721	5.1 Compr.
1.00	0.06380	0.06350	0.070	0.008	0.660	8.5 Compr.
2.00	0.09750	0.09720	0.073	0.008	0.579	13.0 Compr.
4.00	0.12930	0.12900	0.095	0.008	0.502	17.2 Compr.
8.00	0.15920	0.15890	0.104	0.006	0.430	21.2 Compr.
4.00	0.15680	0.15650	6.702		0.435	20.9 Compr.
1.00	0.14940	0.14910	0.240		0.453	19.9 Compr.
0.25	0.13600	0.13570	0.018		0.486	18.1 Compr.
0.06	0.12160	0.12130			0.521	16.2 Compr.
Compression index (C _c), tsf = 0.28			Preconsolidation pressure (P _p), tsf = 0.5		Void ratio at P _p (e _m) = 0.722	

The figure consists of two vertically stacked plots sharing a common x-axis representing Applied Pressure in tsf on a logarithmic scale from 0.1 to 10.

The top plot shows the relationship between Applied Pressure (tsf) and Void Ratio. The y-axis ranges from 0.59 to 1.09. Two curves are plotted, both showing a decrease in void ratio as applied pressure increases. The upper curve starts at a void ratio of approximately 1.09 at 0.1 tsf and decreases to about 0.60 at 15 tsf. The lower curve starts at a void ratio of approximately 0.83 at 0.1 tsf and decreases to about 0.60 at 15 tsf.

The bottom plot shows the relationship between Applied Pressure (tsf) and the Coefficient of Vertical Consolidation (C_v) in ft.2/day. The y-axis ranges from 0 to 0.15. The data points are scattered, with a notable peak in C_v of approximately 0.115 at 0.2 tsf. For pressures greater than 1 tsf, the values of C_v are generally low, mostly below 0.03.

Applied Pressure (tsf)	Void Ratio (Upper Curve)	Void Ratio (Lower Curve)
0.1	1.09	0.83
0.2	1.08	0.80
0.5	1.05	0.77
1.0	1.02	0.73
2.0	0.93	0.69
5.0	0.82	0.65
10.0	0.72	0.62
15.0	0.60	0.60

Applied Pressure (tsf)	C_v (ft.2/day)
0.1	0.00
0.2	0.115
0.5	0.09
1.0	0.03
2.0	0.01
5.0	0.01
10.0	0.02
15.0	0.005

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P _C (tsf)	C _C	Initial Void Ratio
Saturation	Moisture							
98.1 %	39.6 %	80.6	40	20	2.69	1.2	0.35	1.086

MATERIAL DESCRIPTION	USCS	AASHTO
ST GR CL6 W/ O	CL6	

Project No. 24384	Client: AECOM, NEW ORLEANS, LOUISIANA	
Project: LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),		
Source of Sample: SB-13	Depth: 10	Sample Number: 4C

Remarks:



Figure

Tested By: BH **Checked By:** RR

CONSOLIDATION TEST DATA

12/10/2020

Client: AECOM, NEW ORLEANS, LOUISIANA**Project:** LOUISIANA, STATE OF - COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA),
15% DESIGN PHASE, MAUREPAS DIVERSION AND WEST SHORE OF LAKE PONTCHARTRAIN,
ST. JOHN THE BAPTIST PARISH, LOUISIANA. S.P. PO-0029**Project Number:** 24384**Location:** SB-13**Depth:** 10**Sample Number:** 4C**Material Description:** ST GR CL6 W/ O**Liquid Limit:** 40**Plasticity Index:** 20**USCS:** CL6**Tested by:** BH**Checked by:** RR**Test Specimen Data**

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t	= 370.04 g.	Spec. Gr.	= 2.69	Wet w+t	= 830.44 g.
Dry w+t	= 265.08 g.	Est. Ht. Solids	= 0.479 in.	Dry w+t	= 742.88 g.
Tare Wt.	= 0.00 g.	Init. V.R.	= 1.086	Tare Wt.	= 477.80 g.
Moisture	= 39.6 %	Init. Sat.	= 98.1 %	Moisture	= 33.0 %
UNIT WEIGHT		TEST START		Dry Wt. = 265.08* g.	
Height	= 0.997 in.	Height	= 0.998 in.		
Diameter	= 4.000 in.	Diameter	= 4.000 in.		
Weight	= 370.04 g.				
Dry Dens.	= 80.6 pcf	* Final dry weight used as mineral solids weight			

End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	1.82482	0.00000			1.086	
0.12	1.82552	0.00070		0.004	1.084	0.1 Compr.
0.25	1.83096	0.00614	0.115	0.001	1.073	0.6 Compr.
0.50	1.84126	0.01644	0.088	0.005	1.051	1.6 Compr.
1.00	1.86093	0.03611	0.030	0.004	1.010	3.6 Compr.
2.00	1.90159	0.07677	0.015	0.017	0.925	7.7 Compr.
4.00	1.95338	0.12856	0.011	0.020	0.817	12.9 Compr.
8.00	2.00453	0.17971	0.008	0.022	0.710	18.0 Compr.
16.00	2.06002	0.23520	0.007	0.009	0.594	23.6 Compr.
8.00	2.05083	0.22601	0.019		0.613	22.6 Compr.
2.00	2.01734	0.19252	0.005		0.683	19.3 Compr.
0.50	1.97657	0.15175	0.002		0.768	15.2 Compr.
0.12	1.95098	0.12616	0.001		0.822	12.6 Compr.
Compression index (C _c), tsf = 0.35 Preconsolidation pressure (P _p), tsf = 1.2 Void ratio at P _p (e _m) = 0.990						