

ATTACHMENTS

ATTACHMENT A

FDOT TECHNICAL SPECIAL PROVISION (TSP)
(OVER-HEIGHT VEHICLE DETECTION SENSOR)

ATTACHMENT B

FDOT OVERHEIGHT VEHICLE DETECTION SENSOR APPROVAL LETTER

ATTACHMENT C

RAILROAD RIGHT-OF-ENTRY APPLICATION 2026

ATTACHMENT D

RAILROAD FLAGGING RATE AGREEMENT 2026

ATTACHMENT E

GEOTECHNICAL REPORT BY LMJ (JULY 31, 2024)

ATTACHMENT F

GEOTECHNICAL REPORT BY LMJ - ADDENDUM (AUGUST 29, 2024)

Page Intentionally Left Blank

Technical Special Provision

Over-Height Vehicle Detection Sensor

(Trigg 3403-Z Series or Approved Equal)

A. Description

Provide an over-height vehicle detection sensor to activate advance warning devices for vehicles exceeding a defined clearance threshold. The sensor shall be performance-based, field-proven, and integrate with FDOT-approved solar power systems, wireless communications, cameras, and warning devices.

B. Standards

- FDOT Standard Specifications (Sections 630, 635, 700 series, as applicable)
- FDOT ITS Design Manual (power, solar, communications, cameras)
- MUTCD (warning sign activation)

All system components other than the sensor shall be FDOT APL-listed or otherwise approved. This provision applies only to the over-height detection sensor.

C. Performance Requirements

1. Detection: Must detect a 2.5-inch diameter target located 1 inch above the clearance threshold at vehicle speeds from 1 to 75 mph.
2. Range: Up to 500 feet, with recommended maximum of 200 feet to maintain reliability under Florida weather conditions.
3. Accuracy: Minimum 95% detection rate for over-height vehicles; maximum 5% false alarm rate under sun, rain, and fog.
4. Outputs:
 - Two Form-C (changeover) alarm relays, 240 VAC / 10 A contact rating.
 - One Form-C fault relay, 240 VAC / 10 A contact rating.
 - Alarm hold time adjustable between 2 and 60 seconds.
5. Diagnostics: Fault relay shall change state when sensor is misaligned, loses power, or fails internally.
6. Alignment: Provide visible alignment aids (LEDs or meter) to verify proper installation.

D. Electrical and Environmental Requirements

1. Power Models:
 - 120 VAC (0.70 A master, 0.65 A remote)
 - 240 VAC (0.35 A master, 0.325 A remote)
 - 24 VDC (1.45 A master, 1.15 A remote)
2. Temperature: Operate from -40 °F to +158 °F.
3. Enclosures:
 - Sensor head: NEMA 6P / IP67.

- Master and remote housings: NEMA 3R aluminum with heater and fan.
4. Mounting: Provide 2-axis or 3-axis adjustable brackets, stainless steel fasteners.

E. Integration Requirements

- Sensor shall connect via dry-contact relay outputs to FDOT-approved ITS field cabinets.
- Relay activations shall directly trigger FDOT APL-listed blank-out signs, flashing beacons, and cameras.
- All solar, communications, cabinet, and video equipment shall conform to FDOT APL and ITS standards.

F. Submittals

1. Manufacturer datasheet and model number.
2. Shop drawings showing mounting and cabinet connections.
3. Certification of environmental and electrical performance.
4. Warranty statement (minimum 2 years).
5. Field acceptance test plan.

G. Field Acceptance Testing

1. Detection Test: Perform ≥ 10 passes with over-height vehicles and ≥ 10 passes with compliant vehicles at 30–40 mph. Require $\geq 95\%$ detection and $\leq 5\%$ false alarms.
2. Integration Test: Verify activation of beacons/signs and camera triggers upon detection.
3. Fault Test: Simulate misalignment or power loss to confirm fault relay output.

H. Measurement and Payment

Payment shall be made under a single pay item for Over-Height Detection Sensor Assembly, including master/remote units, mounting hardware, wiring to cabinet, and testing. Associated warning devices, cameras, and solar equipment shall be paid under separate FDOT items.



Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

JARED W. PERDUE, P.E.
SECRETARY

November 6, 2025

Mr. Sam Slade
Trigg Industries
716 Bluecrab Rd Ste B
Newport News, VA 23606

RE: Traffic Control Device Permit

Dear Mr. Slade:

In compliance with Section 316.0745(8), Florida Statutes, the following product has been permitted.

TYPE OF DEVICE	DESCRIPTION
Over-Height Vehicle Detection System	Model 3403-Z-24

This permit is subject to the following conditions. Failure to meet all conditions renders this permit null and void.

- 1) The product is not authorized for sale and installation except on the following project(s):
Project Number: 09632-0003
Description: 1 unit to be installed near the Graffiti bridge, N 17th Ave and railroad crossing in Pensacola
- 2) Upon notification of FDOT product specification available for listing on the Approved Product List (APL), Trigg Industries obtains listing on the APL if it wishes to sell additional products listed above on transportation projects in Florida.

For listing on the APL, the product and quality system of the applicant must meet, at a minimum, the following applicable requirements:

- The applicant’s quality system is listed on FDOT’s *Acceptable Quality System List*.
- If the product is intended for outdoor use, it is environmentally hardened and meets environmental requirements described in NEMA TS-2 sections 2.2.7, 2.2.8, and 2.2.9.

- If the product emits radio frequency and is unshielded, it meets emission requirements described in FCC 47 CFR Part 15, Subpart B.
- If the product is used within FDOT's traffic management center system, it operates with SunGuide® software.

For questions, please contact Derek Vollmer at (850) 921-7361.

Sincerely,

A handwritten signature in black ink that reads "Derek Vollmer". The signature is written in a cursive style with a long horizontal line extending to the right.

Derek Vollmer, P.E.
Traffic Engineering Research Lab Manager
Traffic Engineering & Operations Office

cc: Kim Toole (D3 DTOE), Amy DiRusso (D3 TSM&O Program Engineer), Brad Hinote (City of Pensacola), Mark Mathes (TEOO Director), Karen Byram (Product Evaluation group), CO-TERL

Attachments: None

RIGHT OF ENTRY APPLICATION & INSTRUCTIONS



If you require Expedited Service, notify us by checking this box. There is an additional fee of \$2,500 USD for this request.

A completed application, non-refundable fee in the amount of **\$3,750 USD**, and a print or sketch of the proposed lease premises (including dimensions, coordinates, and cardinal directions) are required to begin the lease process. The print or sketch should depict any planned or existing improvements on the requested premises and the distance from the nearest track.

The non-refundable fee of **\$3,750 USD** includes access to railroad-owned property for up to thirty (30) days. If your project will take longer than thirty (30) days to complete, is complex, or involves HAZMAT, contact a Real Estate representative to discuss your project needs. Additional fees will be requested if flagging or a License Agreement are required for your project.

Make all checks payable to:

[NAME OF RAILROAD]

Memo: Pinsly Accounting Dept. (R.E. Fees)

245 Riverside Avenue

Suite 250

Jacksonville, FL 32202

LIST CHECK NUMBER(S): _____

Contact us at Realestate-AR@pinsly.com for ACH information [state the name of the railroad in the subject line and attach the completed application with plans].

Once an executable lease, license, or other agreement is submitted to you, it must be fully executed within thirty (30) days. Thereafter, the application and materials will be archived, and resubmission (including fees) will be required. All annual rental payments can be submitted to the same name and address shown above.

EXPEDITED SERVICE: Once a complete application, print or sketch, and required fees are received, including the additional fee of \$2,500 USD, an executable agreement will be made available for review within fourteen (14) business days. Please be sure to mark the box above if you require this service.

PLEASE INITIAL HERE TO INDICATE YOU UNDERSTAND THIS POLICY _____

RIGHT OF ENTRY APPLICATION



REQUIRED:

Date range for the use of Railroad property (30-day maximum)

Indicate Date Range: FROM _____ TO _____

Will you be performing environmental testing? YES ___ NO ___ (If 'YES', complete the "Environmental Testing" Section)

APPLICANT AND PROPERTY INFORMATION:

1. Legal Name of Applicant: _____
2. Agreement to be in the name of (if different from above): _____
3. Type of Entity (select ONE): Corporation _____ LLC ___ Individual ___ Municipality ___
Partnership ___ General ___ Limited ___ Other _____
4. If applicable, state/province of incorporation or organization: _____
5. Federal Tax Identification number (U.S. Leases): _____
6. Mailing Address: _____
7. Overnight Delivery Service Address (if different): _____
8. Contact Person: _____ Title: _____
9. Phone No.: (_____) _____ Fax No.: (_____) _____
10. Email: _____
11. Email address where non-billing notices can be sent to: _____
12. Is Applicant a condemning authority? ___ Yes ___ No
13. Is Applicant an active railroad shipper? ___ Yes ___ No
14. Is track usage needed? ___ Yes ___ No (**NOTE:** If track usage is required, submit a Track Lease Application)
15. **Billing Contact Name, Phone Number, Email, and Address Required:**

NAME:	
PHONE NUMBER:	EMAIL:
ADDRESS:	

16. Railroad Name: _____
- Nearest Milepost: _____ DOT No.: _____
- Track Station (from): _____ Track Station (to): _____
- _____
(Adjacent Address)

RIGHT OF ENTRY APPLICATION

Section: _____ Township: _____ Range: _____

City: _____ County: _____ State: _____

Located on the (N/S/E/W) _____ side of (landmark, intersection) _____

Geographical Coordinates Required (in decimal degrees)

Latitude: _____ Longitude: _____

PROJECT INFORMATION:

- Will there be any activity, material, vehicles or equipment within 50 feet of a railroad track in connection with your project? YES _____ NO _____ (If 'YES', Railroad protective liability insurance will be required)
- Within 25 feet? YES _____ NO _____ (If 'YES', a Flagmen will be required at applicant's expense)
- Will there be any excavation involved? YES _____ NO _____ (If 'YES', include shoring plans)
- Will there be storage on Railroad property during the project? YES _____ NO _____ (If 'YES', a License Agreement will be required)
- Will there be permanent fixtures installed on Railroad property during the project? YES _____ NO _____ (If 'YES', a License Agreement will be required)
- If you are a hired contractor performing an installation, and that installation is covered under an existing License Agreement, what is the License Agreement number? Agreement Number _____ (attach a copy to this application)
- Are you performing railcar stenciling? YES _____ NO _____ If 'YES', provide customer's name and attach a list of the railcar numbers. Customer Name: _____
- Are you performing railcar testing? YES _____ NO _____ If 'YES', provide customer's name and attach a list of the railcar numbers. Customer Name: _____
- Are you performing railcar repairs? YES _____ NO _____ If 'YES', provide customer's name and attach a list of the railcar numbers. Customer Name: _____
- Are you performing railcar cleaning? YES _____ NO _____ If 'YES', provide customer's name and attach a list of the railcar numbers. Customer Name: _____
- Are you performing transloading? YES _____ NO _____ If 'YES', provide customer's name and attach a list of the railcar numbers. Customer Name: _____
- Are you a 3rd party performing work on behalf of the railroad? YES ___ NO ___ If 'YES', provide details below.

ENVIRONMENTAL TESTING REQUEST:

- Project Levels:
 - _____ Phase I. Non-invasive, non-intrusive visual site inspection and records check only. No sampling will be involved.
 - _____ Phase II. Site investigation. You must advise specific testing to be performed from the list below.
 - _____ Phase III. Site remediation.
 - _____ Other. Please describe your project in detail as it pertains to Railroad property.

- Name, Address and Contact Person of Governmental Agency Requiring this Project:

RIGHT OF ENTRY APPLICATION



Type of Environmental Testing	Number of Each
Surface soil/sediment samples	_____
Hand-held auger borings	_____
Soil gas survey points	_____
Boring drilled with soil samples	_____
Temporary piezometer wells	_____
Temporary monitoring wells (must be flush-mounted)	_____
Permanent monitoring wells	_____
Recovery wells and associated above-ground equipment	_____
Recovery systems and above-ground equipment	_____
Other – full description required	_____

-
- Special Provisions: Confidentiality _____ Railroad Flagmen _____ Monitoring Well _____
Furnish Information _____ Proof of Financial Capability or Performance Bond _____

PROJECT DETAILS:

Write a short summary of your project scope below.

RIGHT OF ENTRY APPLICATION



By submitting this application for credit, you authorize Pinsly, or affiliates, to make any inquiries necessary to determine credit worthiness. You release your banking details that would assist to determine credit worthiness.

I hereby certify that the information contained herein is complete and accurate. This information has been furnished with the understanding that it is to be used to determine the amount and conditions of the credit to be extended. Furthermore, I hereby authorize the financial institutions listed in this credit application to release necessary information to the company for which credit is being applied for in order to verify the information contained herein. Our terms of sale and service are NET 30 DAYS from the date listed on the invoice. Invoices that are beyond granted terms will be assessed a late fee of 18% APR (1.5% monthly) additional Terms and Conditions apply. A \$20.00 charge will apply for any NSF/Non-Sufficient Checks.

Date: _____

LIST CHECK NUMBER(S): _____

Signature: _____

Name Printed: _____

Title: _____

Phone No.: _____

Fax No: _____

BE SURE TO RETURN THE COVER SHEET WITH YOUR APPLICATION

Page Intentionally Left Blank



Flagging Rate Agreement

When a contractor, state agency, utility or other approved third party has workers and equipment working within the railroad right-of-way, Federal Regulations mandate protection must be provided by a qualified railroad flagman or the track must be taken out of service. Equipment with extensions, such as a crane boom, that are near enough to reach within twenty-five (25) feet of the track also require proper protection.

The completion of this form is required when submitting a formal request for a qualified railroad flagman. An advance deposit in an amount equal to the estimated hours of flagging required must be paid at least two (2) weeks in advance. The signed Flagging Rate Agreement form and deposit shall be sent to: **Pinsly Railroad Company - C/O Accounting Dept. (R.E. Fees) – 245 Riverside Avenue, Suite 250, Jacksonville, FL 32202. Please make the check(s) payable to the railroad the work is being performed on or contact us at RealEstate@Pinsly.com for ACH/CC information [state the name of the railroad in the subject line of the email request and attach this completed form].**

The railroad must be contacted a minimum of fourteen (14) days prior to the required flagging date in order to receive approval from the Roadmaster or Division Engineer who will be scheduling the flagman protection. Below are the Flagging Rates for flagging work completed within the railroad right-of-way. Contractor shall provide a minimum of forty-eight (48) hours’ written notice for the cancellation of any scheduled flagging services. Failure to provide such notice will result in the Contractor being charged for one (1) full day of flagging, regardless of whether the service is utilized.

- \$275.00 Per hour with an eight (8) hour minimum on weekdays + \$150 Per day Transportation Fee
- \$325.00 Per hour for all hours over eight (8) hours on weekdays + \$150 Per day Transportation Fee
- \$325.00 Per hour with an eight (8) hour minimum on Saturdays + \$150 Per day Transportation Fee
- \$375.00 Per hour for all hours over eight (8) on Saturdays, or up to eight (8) hours on Sundays or Holidays + \$150 Per day Transportation Fee

By completing the information below and signing this Agreement, you acknowledge and agree to pay the rates for flagging and further agree to provide a deposit no less than two (2) weeks in advance of the required flagging date. In the event of emergency flagging where the required two (2) week notice and prepayment cannot be given, all rates are subject to a 1.5x multiplier.

Total Flagging Prepayment ([Rate x Days]+ Trans. Fee):	
Date Range and Start Time for Flagging:	
Deposit Check Number or ACH Confirmation Number:	
Company Name:	
Address:	
Billing Contact Name:	
Billing Contact Title:	
Billing Contact Phone and Email:	
Onsite Contact Name:	
Onsite Contact Title and Company:	
Onsite Contact Phone and Email:	
Railroad Name and State:	
Project Location (Address or Lat/Long):	
Authorized Personnel Signature:	
Date:	

Page Intentionally Left Blank



Geotech Report



Since 1976

Geotechnical Engineering

Construction Materials Testing

Drilling Services

Summary
Project Info
Foundation
Pavement
Borings
Lab
Appendix

Wayside Park East

Pensacola, Florida

LMJ File #: 24-138 E

July 31, 2024

Prepared for

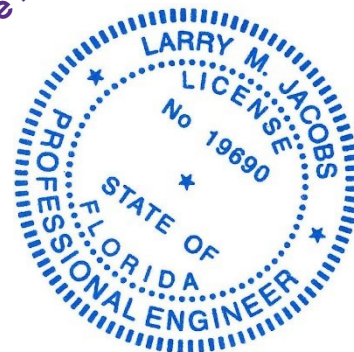
Mr. Patrick Jehle, PE
McKim & Creed
pjehle@mckimcreed.com

Prepared by

Larry M. Jacobs & Associates, Inc.
328 East Gadsden Street, Pensacola, Florida 32501
Florida Certificate of Authorization #2184

Terry Niemann
Project Manager

Signed Copy Provided Separate from this Package



This document has been electronically signed and sealed by Larry M. Jacobs, PE (license # 19690) on July 31, 2024. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.

Subsurface Conditions

- ▼ In general, the borings in the dock and boardwalk area (B1, B2) generally encountered 7-8 inches of asphalt or 4 inches of topsoil at the ground surface at B-3, underlain by white, tan and orange sand or slightly silty sand to 23-38 feet, over orange, white and tan silty sand or slightly silty sand to the bottom of the borings at 41 feet.
- ▼ Below the topsoil, boring B3 encountered gray and black silty sand in the upper 5 feet, and this upper layer had layers with brick and gravel debris.
- ▼ In general, the two borings in the parking lot (P1, P2) encountered 2.5-3 inches of asphalt at the ground surface, underlain by 4-21 inches of red/orange silty sand (poor sand/clay base material), over gray and white slightly silty sand and sand to the bottom of the borings at 3.5-4 feet.
- ▼ In general, the soils were loose with erratic very loose or medium dense layers in the upper 13-18 feet, underlain by medium dense, dense and very dense sandy soils to the bottom of the borings.
- ▼ Groundwater was encountered at 1.5 to 3.5 feet below existing grades at the time of drilling. Groundwater levels will vary with the amount of local rainfall, the tide, changes in site drainage features and may be different at other times. This site can flood in tropical storms or hurricanes.

General Comments and Recommendations

- ▼ The soils encountered in the borings (B1, B2 & B3) appear to be best suited for the support of the proposed dock and elevated boardwalk on timber piling if the recommendations of this report are followed.
- ▼ The preliminary proposed “footing” with a 4 foot long 18”-24” diameter “footing” placed at 5 feet of embedment would encounter very loose (N=1) soils in the B-2 location and is not well suited to placement in this location which will likely have erosion and scour during major storm conditions as well as lateral loading from water entering and exiting the bayou during and after storm events.
- ▼ The existing asphalt pavement was in poor condition at the time of this report. Widespread block cracking was noted, along with frequent alligator cracking, large potholes and pavement patches.
- ▼ The pavement could be replaced with asphalt pavement of suitable thickness. New base materials should be graded aggregate base, and the existing sand clay base materials can be reused as a stabilized subgrade. Concrete pavement is commonly used for the boat ramp construction. The native sand soils are low strength and will require stabilization if used as subgrade.
- ▼ Shallow groundwater is a concern on site, and drainage/dewatering will be needed for footing construction and deeper excavations and compaction operations in some areas.

Note: *The above summary is an overview of the report and should not be used by itself for planning, design, and/or construction. See the relevant sections for further details.*



Existing Site

The site is located near the graffiti bridge at the Wayside Park and N 17th Avenue Park. The site is roughly split in half (north – south) by the CSX railroad embankment/easement. An existing elevated boardwalk surrounds a stormwater pond north of the train tracks. South of the CSX Embankment/easement is an asphalt paved parking lot for a small boat ramp, along with a short wood pier. North of the train tracks the pond is surrounded by areas of thick vegetation, along with grassed areas. Reportedly, there is a small wetland between the railroad easement and the existing boardwalk.

Proposed Construction

We understand that the project consists of the construction of an elevated timber boardwalk, a new timber pier, new pavement for the parking lot, and a covered walkway under the railroad tracks for a pedestrian crossing. Reportedly, the proposed structural loading on the vertical timber posts is 3 kips, and $\frac{3}{4}$ of that load is wind loading. The wood roof over the walkway under the railroad bridge is currently planned to be supported on four-foot-long footings/piers (24 inch in diameter) established at 5 feet below grade on $\frac{1}{2}$ foot of crushed stone, with a concrete slab on grade walking surface. Timber piling is also under consideration for the walkway. Final structural and grading plans were not available at this time.

Subsurface Exploration

To evaluate the subsurface conditions at the site, we drilled three Standard Penetration Test (SPT) borings to a depth of 41 feet for the structures and two hand auger borings to a depth of 3.5-4 feet for the pavement areas. Soil density in the auger borings was roughly evaluated by periodic probing with a steel rod. The SPT borings were drilled with a truck mounted drilling rig with a safety hammer and the borings were advanced using solid stem auger and/or a mud jetting drilling method. The subsurface conditions encountered in the SPT borings can be found on the boring logs [here](#).

The above information is the basis of our recommendations. If the information in this section changes or is incorrect, our office should be notified, and changes to our report may be needed.



Site Preparation

- ▼ The work areas should be cleared, grubbed, and stripped of all vegetation, major roots, root mass, topsoil, pavement materials, soils with a significant amount of organics, debris, and any other deleterious materials.
- ▼ Stripped vegetation, topsoil, and organic materials should be hauled offsite, or suitable topsoil could be stockpiled for use in landscaped areas.
- ▼ The contractor should check the depth to groundwater at the start of construction and provide drainage/dewatering as needed to complete the work. Groundwater should be kept at least 2-3 feet below the working surface during compaction operations.
- ▼ After stripping and clearing, the subgrade in the proposed pavement and slab on grade areas should be compacted to a minimum of 95% of the Modified Proctor Test (ASTM D1557) density for a minimum depth of 12 inches.
- ▼ The boring B3 encountered moisture sensitive silty sand at the surface, and the sand clay base materials in the parking borings are also moisture sensitive.
- ▼ These moisture sensitive soils drain slowly, retain excess moisture, are prone to pumping and can become unworkable when too wet and are hard to compact if too dry, and this is a concern for earthwork. The contractor should be prepared to moisture condition the soil as needed for compaction.
- ▼ Areas that pump, rut or are difficult to compact should be evaluated by LMJ staff and undercutting of wet/problem soils and replacement with suitable fill may be recommended.

Fill Material

- ▼ Fill material should be the soil types listed in the following table. Excavated native soils can be used as fill or backfill, provided they meet the requirements below.
- ▼ Fill or backfill should be free of significant organic materials, debris, or other deleterious materials and be non-plastic. It should comply with any local color codes.
- ▼ Samples of any imported fill material should be submitted to the geotechnical engineer for testing and evaluation prior to shipment to the site.

Fill Type Recommendations

Material Type	Lift Thickness (in)		Equipment Type	
	Large Equipment	Hand Operated Equipment	Large	Hand Operated
Sand or Slightly Silty Sand	6-8	4-6	Vibratory Roller	Plate Tamper



Compaction

- ▼ Fill material and top of existing subgrade should be moisture conditioned to within 2% of its optimum moisture content prior to compaction.
- ▼ Fill and top of subgrade should be compacted to the requirements in the following table.
- ▼ Note that large vibratory rollers can damage/disturb nearby structures and we do not recommend using large vibratory rollers near (within 75 feet) of existing structures.

Compaction Recommendations

Site Element	Minimum Compaction (ASTM D1557)	Minimum Compaction Testing Frequency Per 12-inch Increment of Soil
Top 12 inches of Subgrade Below Slab-on-Grade	95%	Minimum of 3, One every 2,000 ft ²
Top 12 inches of Subgrade below Pavement	98%	Minimum of 3, One every 2,000 ft ²
Fill/Backfill	95%	Minimum of 3, One every 2,000 ft ²
Utility Trench Backfill	95%	One per 75 linear feet

- ▼ Backfill for utility excavations or any other excavations in the structural areas should be compacted per the above tables.
- ▼ Compaction testing should be performed by LMJ staff.

Utility Installation and Bedding

We recommend that the bottom of all settlement sensitive utility excavations be evaluated by a representative from LMJ prior to utility placement. We recommend using a smooth excavator bucket or “butter bar” to excavate the bottom of utility trenches. Settlement sensitive utilities should be bedded on firm soils, and any loose areas would need to be properly compacted prior to utility placement. Loose soils present at the bottom of utility trenches should be compacted to a minimum of 95% of the Modified Proctor Test (ASTM D1557) density for a minimum depth of 12 inches. We recommend installing utilities in manageable sections that can be backfilled in a timely manner when rainfall is anticipated. Dewatering would be needed for utility installation in shallow water areas.

Excavations

All deeper excavations should be made at a safe slope (1.5H:1V minimum) or sheeting, shoring, or trench boxes should be used. Note that significant rainfall events and flowing groundwater (seepage forces) through excavation walls can be destabilizing. Therefore, stormwater runoff and erosion should be controlled for all excavations. The contractor is solely responsible for designing and constructing safe excavations that maintain stability during construction. All excavations should be constructed in accordance with the latest local, state, and federal safety regulations.



Footing Recommendations

- ▼ The site is located in an area which will have potential wave action on the south side of the embankment and a potential for scour from flood water flowing into the bayou through the constricted opening and then out of the opening after the storm.
- ▼ The site of the pedestrian crossing has very shallow groundwater, and dewatering will be needed to install shallow foundations in the dry.
- ▼ Allowable bearing capacity is limited, due to very loose soils at the proposed embedment depth. We recommend dropping the pier foundations to 6+ feet below existing grades to help avoid the worse of the very loose soils and deeper placement will provide more scour protection as well as increased lateral resistance.
- ▼ The client should consider supporting the roof of the pedestrian crossing and at least the walkway closest to the water with timber piling, as noted in the sections below. LMJ believes this to be the more practical foundation option, given the shallow groundwater and native loose soils as well as the scour and lateral loading potential.
- ▼ Either foundation alternative will have difficulty in placing foundations close to or under the railway due to low overhead conditions under the railway. Using piles for supporting the walkway readily allows for deeper higher capacity piles to be placed on both sides of the rail crossing and clear spanning this portion of the walkway.
- ▼ Footings that are prepared in accordance with this report can be designed based on the parameters in the following table. Minimum embedment depth is below existing grade.

Footing Design Parameters

Minimum Width (ft)	Minimum Embedment Depth (ft)	Net Allowable Soil Pressure (psf)	Estimated Settlement (in)	
			Total	Differential
1.5-2.0	6	1,000	1 or less	½ or less

- ▼ The estimated settlement above is from the sandy soils immediately beneath the footings, and reflect shallow water conditions. Roughly ½-¾ of the settlement is expected to occur during construction or relatively soon after initial loading, with the remainder during the first high groundwater event.
- ▼ LMJ recommends replacing the six inch thick crushed limerock footing pad noted on the provided interm plans with a hard, well graded, crushed stone well compacted to a firm surface. Very loose areas may require additional crushed stone to create a firm surface. The footing pad should be evaluated by LMJ staff by probing with a steel rod, as density testing would be impractical in the excavation.



Pile Recommendations

- ▼ The borings encountered soils that appear to be best suited for supporting the proposed boardwalk, dock and pedestrian crossing on jetted and driven timber piles if the recommendations of this report are followed.
- ▼ The table below provides the theoretical allowable pile capacities for 8 & 10-inch tip diameter round timber piles and 6 & 8 inch square timber piling with an embedment depth of 20 and 25 feet below existing grades at the time of drilling. We would anticipate that spans of the elevated walkway would be increased to reflect the higher available pile capacities.
- ▼ The contractor should be prepared to encounter debris at pile locations, particularly at or near the B3 boring location. Pre augering the piling location or digging the debris out could be needed.

Pile Recommendations

Pile size/Description	Pile Tip Embedment Depth (ft) ⁽¹⁾	Allowable Pile Capacity (kips) ⁽²⁾	
		Compression	Tension
8-Inch Tip Dia. Round Timber Pile	20	7.4	1.1
10-Inch Tip Dia. Round Timber Pile		11.2	1.4
6-Inch Square Timber Pile		5.6	1.0
8-Inch Square Timber Pile		9.4	1.4
8-Inch Tip Dia. Round Timber Pile	25	20	2.2
10-Inch Tip Dia. Round Timber Pile		30	2.8
6-Inch Square Timber Pile		15	2.1
8-Inch Square Timber Pile		25	2.8

(1) Depth is below grade at the time of drilling or the mudline for dock piling.
 (2) Theoretical Factor of Safety = 2 for compression and tension capacity.

- ▼ The pile capacities are based on the worst conditions in the borings, and different pile capacities may develop in different areas of the site due to variations in soil conditions.
- ▼ The pile capacities account for flooding and two feet of scour during an extreme storm event. If significant additional scour is a concern, LMJ can recalculate the capacities in the above table once scour analysis information has been provided.
- ▼ Lateral load capacities are available upon request.
- ▼ LMJ normally recommends ordering piles somewhat longer than needed to allow for natural variations in soil conditions.



Pile Installation Recommendations

- ▼ All piles should be jetted to a depth 3-5 feet above the target embedment depth in the above table and then driven to bearing using an approved pile driving hammer.
- ▼ Field determination of the actual pile capacities developed should be analyzed using a dynamic pile driving formula (Hiley, WAVE, etc.). This analysis will require knowledge of the pile driving equipment to be used on the site.
- ▼ We would be pleased to calculate the required pile driving resistances (blow counts or blows/foot) to obtain the pile capacities given in the preceding table when the pile driving contractor's equipment to be used and design pile is known.
- ▼ A hammer analysis will also help us determine if the contractor's hammer choice is appropriate for this project.
- ▼ The allowable pile capacities were calculated assuming flood and minor scour conditions. Flooding and scour will reduce the capacities of the piles, and piles will need to be driven beyond the blow counts (124%) required for the design load in order to allow for reductions in pile capacity from flooding and scour.
- ▼ An LMJ technician should be onsite during pile driving so that an evaluation and record of the pile driving resistances achieved and pile embedment depths can be made to check the capacities of the piles and relay information to our engineering staff.
- ▼ In the event that any unusual circumstances arise during construction, additional engineering recommendations could be provided.
- ▼ After the piles have been satisfactorily installed under the observation of our technician, we can provide a completion letter to document that the piles have been installed in accordance with this report.
- ▼ LMJ would be pleased to provide a cost proposal for providing the above services during construction.

Vibration Discussion

- ▼ Driving piles creates noise and vibrations, and these vibrations can cause disturbance or damage to any nearby existing structures.
- ▼ A low frequency hammer such as a drop hammer or a small diesel hammer would be suitable for driving the piles and should create less vibration. Jetting the piles to the recommended depth will also reduce the energy required for pile driving and the resulting vibrations.
- ▼ We suggest performing initial crack surveys of nearby or adjacent structures prior to any pile driving, which includes taking photos and documenting the size/location of cracks present before pile driving.
- ▼ LMJ can perform initial crack surveys and offers vibration monitoring services. If vibrations are a concern, we would be pleased to provide you with a proposal for these services.



Subgrade Recommendations

- ▼ Based on our experience, the upper silty sand soils encountered in the pavement borings should meet or exceed the normal pavement subgrade strength requirements of LBR 40. If sand soils are exposed, the upper 12 inches would need to be stabilized with the addition of 4-6 inches of graded aggregate base material.
- ▼ Any imported fill used in the top 12 inches of subgrade in pavement areas should have a minimum LBR of 40.
- ▼ The contractor should provide drainage/dewatering as needed to compact the subgrade and base materials.

Base Recommendations

- ▼ We recommend a graded aggregate base (GAB) for this project. These materials are high strength and are best suited for the site conditions. Base materials should meet FDOT requirements.
- ▼ A sample of any proposed base material should be submitted to our lab for testing and approval prior to shipment to the site.

Pavement Subgrade and Base Parameters

Layer	Minimum Compaction	Proctor Type	ASTM	Minimum LBR Value
Subgrade ¹	98%	Modified	D1557	40
Base	100%			100

¹Top 12 inches of subgrade

Asphalt Recommendations

- ▼ Asphalt should be FDOT structural course Superpave Asphaltic Concrete meeting the requirements of Section 334 (SP-9.5 or 12.5 is preferred).
- ▼ Limit the amount of Recycled Asphalt Pavement (RAP) to no more than 25% of the mixture since mixtures over 25% RAP have a higher potential for quality issues.
- ▼ The asphalt should be compacted to a target of 92% of the laboratory maximum specific gravity (G_{mm} or Rice Specific Gravity) as determined by FM 1-T 209.

Typical local pavement sections for parking areas are shown in the following table. Pavement thickness should reflect the proposed traffic loading. If requested, we can prepare a site-specific pavement design if specific traffic loading data is provided.

Typical Minimum Pavement Section

Loading	Minimum Thickness (in)	
	Base	Asphalt
Light Duty	6	1.5



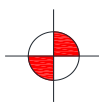
Concrete Pavement Recommendations

Concrete pavement should be used at the boat ramp location(s). It would perform best in areas prone to wetting/flooding and is most practical to construct in these conditions. Concrete pavement should be at least 6 inches thick or thicker if needed to support the traffic loading. Concrete pavement should have a minimum compressive strength of 4000 psi at 28 days. Saw cutting, jointing, and doweling should be according to current industry standards.

Testing Recommendations

- ▼ Run density tests on compacted subgrade at a minimum frequency of one test per 2,000 square feet of pavement area. Test the base for compaction at the same frequency.
- ▼ After paving, we recommend coring the asphalt to determine thickness and compaction. The bulk specific gravity (G_{mb}) of the cores should be determined using FM 1-T 166
- ▼ Concrete pavement should have cylinders cast during placement by LMJ staff to check the compressive strength of the mix.

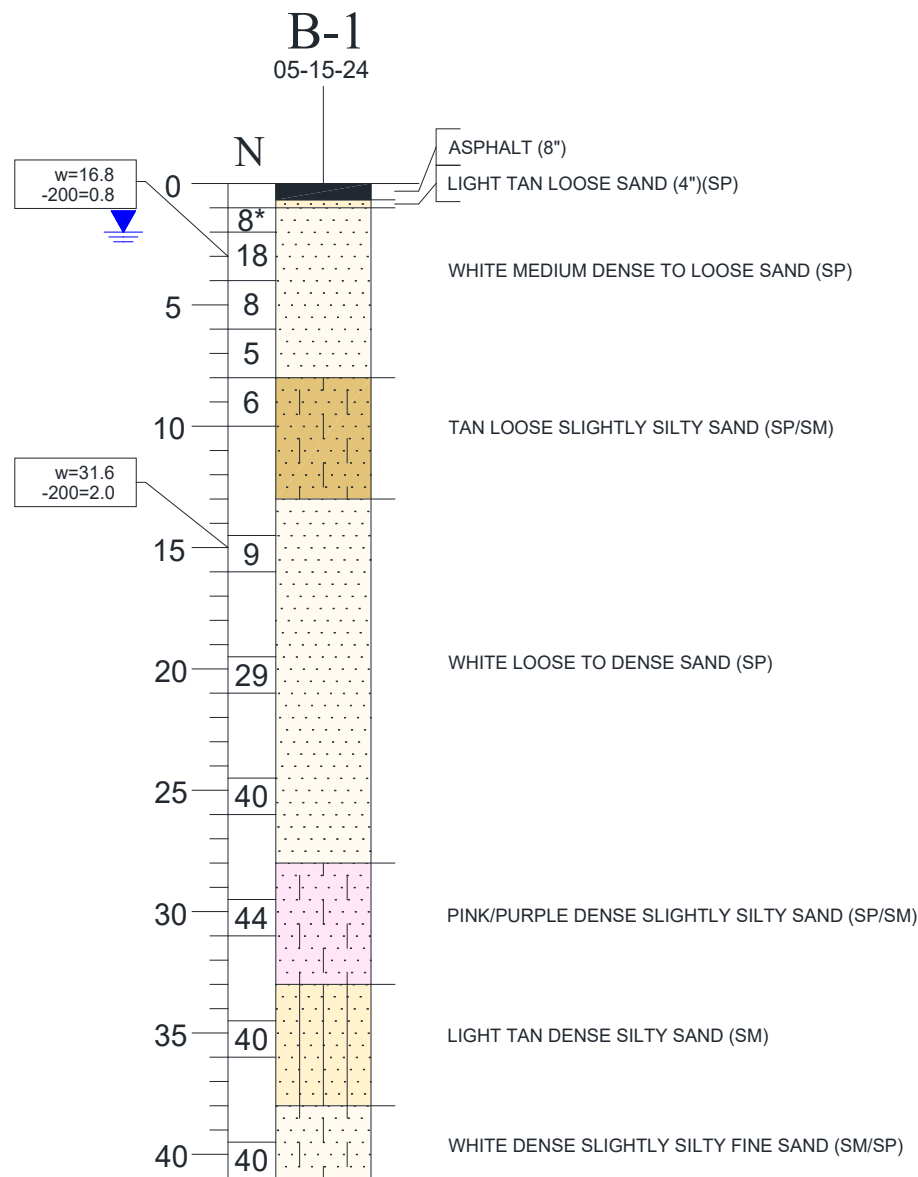
Boring Locations



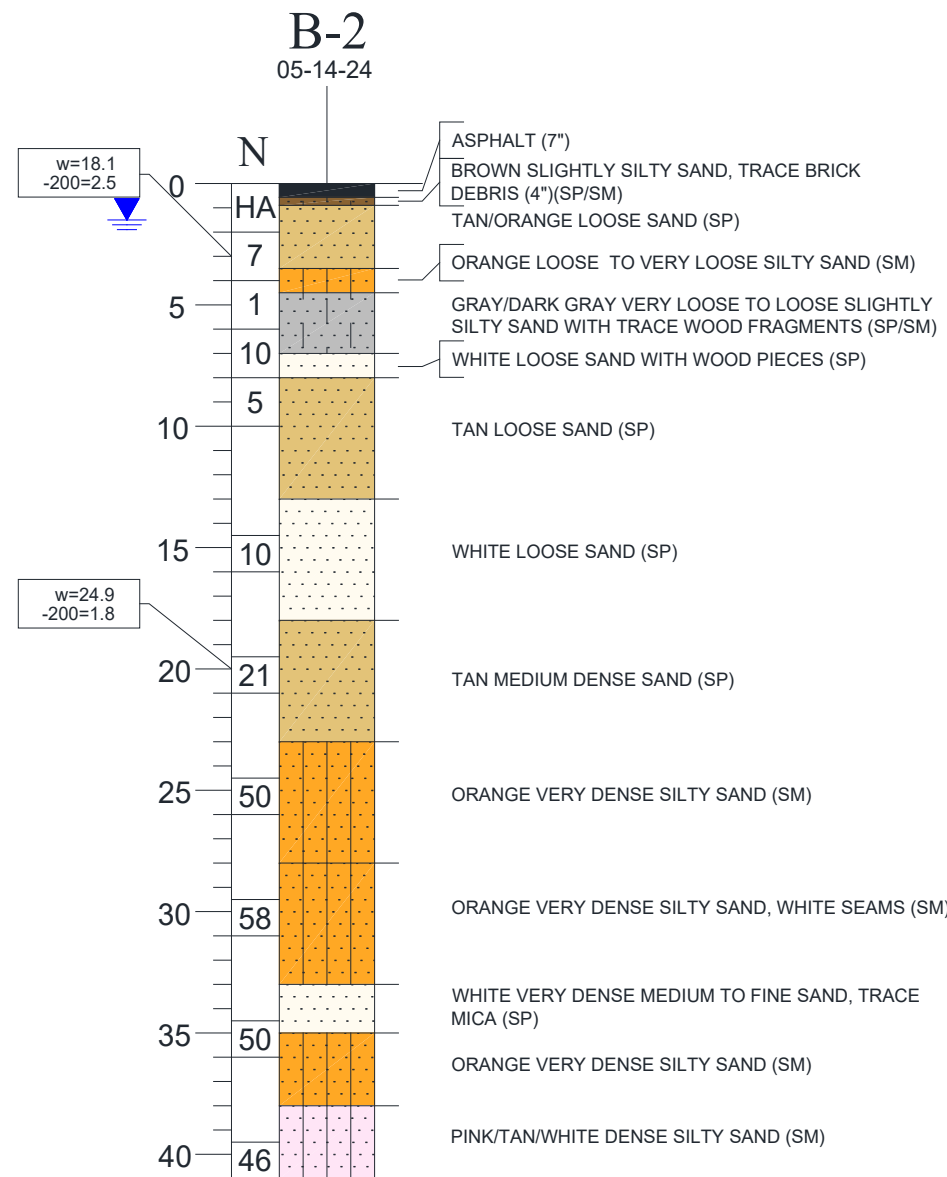
STANDARD PENETRATION TEST BORING
ALL BORING LOCATIONS ARE APPROXIMATE



Borings

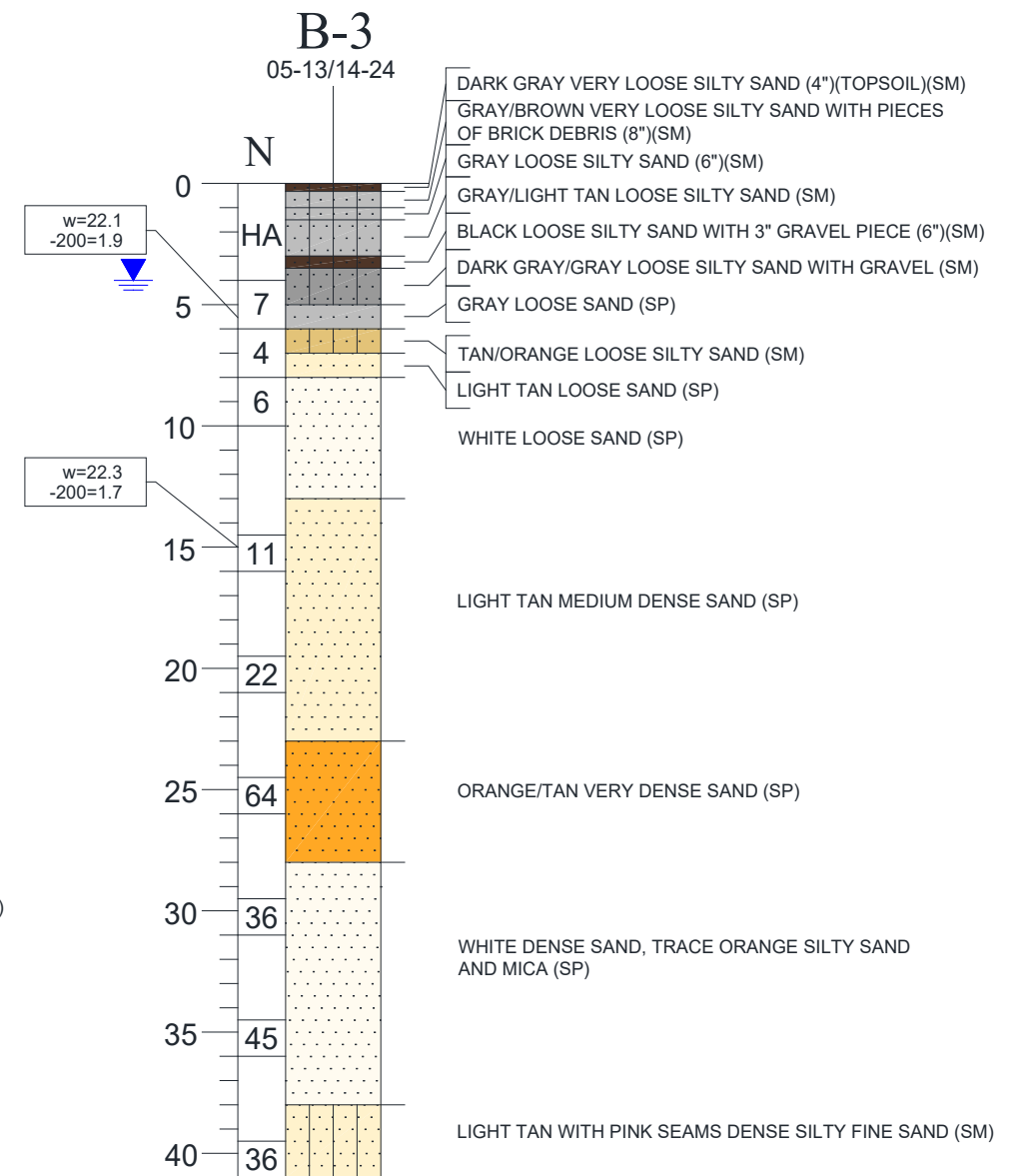


*HAMMER BLOWS:
1 FT SAMPLE: 4/4



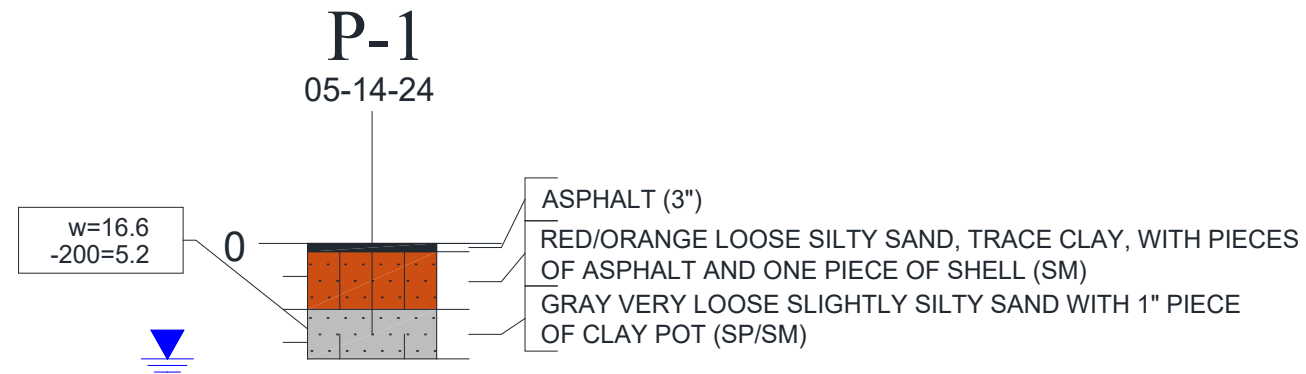
NOTE: WITH A PIECE OF WOOD AT 7-8 FEET

DEPTH (FT)	PROBE (IN)
BELOW ASPHALT	1.5
1	3
1.5	12

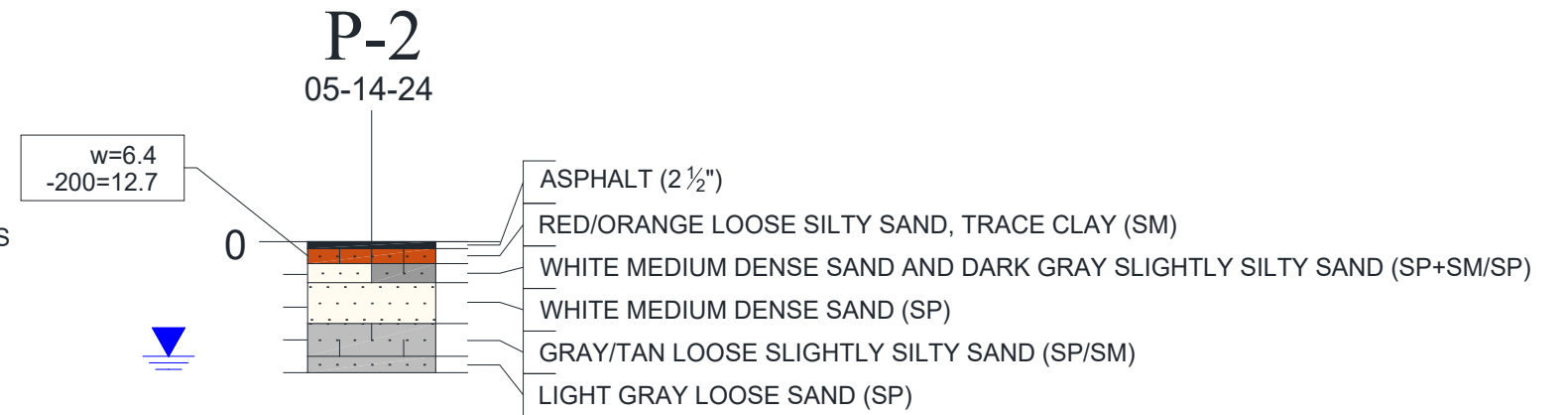


DEPTH (FT)	PROBE (IN)
SURFACE	12
1	10
2	8
3	8

Borings



DEPTH (FT)	PROBE (IN)
0.5	3
1	2
1.5	1.5
2	3
2.5	12
3.5	6



DEPTH (FT)	PROBE (IN)
0.5	2
1	1
1.5	0.5
2	3
2.5	1
3	2
3.5	5
4	14

Test Results

Laboratory testing for this project included wash #200 sieve tests and natural moisture content tests run on the spilt spoon samples to assist in soil classification and to evaluate and document basic soil properties. The results of these tests can be found on the boring logs adjacent to the sample tested.



Basis of Recommendations

Recommendations rendered herein are based on assumed and/or design information available at the time of this report, the subsurface conditions encountered in the test borings, generally accepted geotechnical engineering principles and practices, and our experience with similar soil and groundwater conditions. Should final project information or existing conditions differ from the information used in this report or should any soil conditions not discussed in this report be encountered during construction, our office should be notified and retained so that this report can be modified as needed. LMJ should be provided with the final plans and specifications for review to determine if any changes to our report are needed based on the final design and that our recommendations have been properly interpreted.

This report and any correspondence are intended for the exclusive use of our client for the specific application to the project discussed. LMJ is not responsible for the interpretations, conclusions, or recommendations made by others based on the information in this report. Note that environmental work or chemical testing was not part of our scope of work on this project.

Regardless of the care exercised in performing a Geotechnical Exploration, the possibility always exists that soil and/or groundwater conditions will differ from those encountered at the specific boring locations. In addition, construction operations may alter the soil conditions. Therefore, it is recommended that a representative from LMJ be involved during the construction phases discussed in this report.

Test Methods

Standard Penetration Test

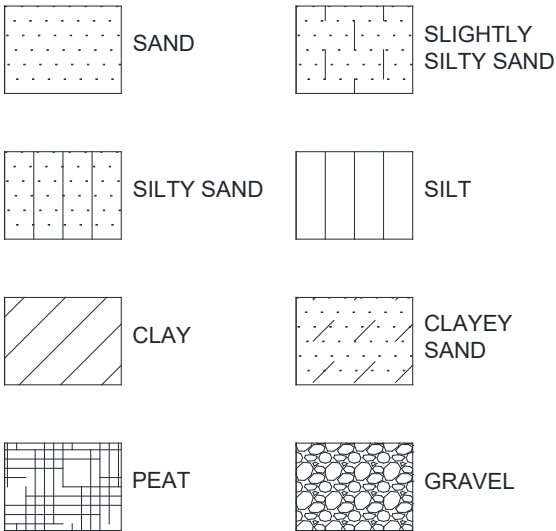
The Standard Penetration Test (SPT) consists of driving a 2-inch diameter split spoon sampler into the ground using a 140-pound hammer dropped 30 inches. The number of blows required to drive the sampler one foot (after seating it 6 inches) is referred to as the blow count or “N” value and represents the relative density of subsurface soils. “N” values can be found on the boring logs. The SPT borings were drilled in general accordance with ASTM D1586 using a truck mounted drill rig and were sampled by driving back-to-back 2-foot split spoons to a depth of 10 feet followed by samples at 5-foot increments thereafter. Each sample was removed from the sampler, classified in the field by the driller, and packaged for visual classification by our engineering staff and laboratory testing.

Other Test Methods

Wash #200 Sieve (ASTM D1140), Moisture Content (ASTM D2216), Sieve Analysis (ASTM C136)

Appendix

LEGEND



NOTES

- 1) SPT BORINGS PERFORMED IN GENERAL ACCORDANCE WITH ASTM D1586
- 2) SUBSURFACE CONDITIONS ARE AT BORING LOCATIONS AND ACTUAL CONDITIONS BETWEEN BORINGS MAY VARY
- 3) ALL CLASSIFICATIONS ARE BASED ON VISUAL EXAMINATION UNLESS ACCOMPANIED BY LABORATORY TEST RESULTS
- 4) BOUNDARIES BETWEEN SOIL LAYERS SHOULD BE CONSIDERED APPROXIMATE AS THE ACTUAL TRANSITION MAY BE GRADUAL
- 5) DEPTH OF BORING IS BELOW EXISTING GRADE AT TIME OF DRILLING
- 6) ELEVATIONS, IF SHOWN, WERE ESTIMATED FROM PROVIDED TOPOGRAPHIC SURVEY
- 7) COLORS USED FOR BORING HATCHING MAY NOT REPRESENT THE ACTUAL SOIL COLORS

GNE

GROUNDWATER NOT ENCOUNTERED AT TIME OF DRILLING

N

STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT

N_A

STANDARD PENETRATION RESISTANCE USING AUTOHAMMER



ENCOUNTERED GROUNDWATER LEVEL



ENCOUNTERED PERCHED WATER LEVEL

$50/2''$

NUMBER OF BLOWS REQUIRED (50) TO ADVANCE SPLIT SPOON SAMPLER A SPECIFIC DISTANCE (2) INCHES

HW

SPLIT SPOON SAMPLE ADVANCED UNDER WEIGHT OF ROD AND HAMMER

HA

HAND AUGER



SHELBY TUBE SAMPLER

W

NATURAL MOISTURE CONTENT (%)

-200

FINES PASSING #200 SIEVE (%)

O.C.

ORGANIC CONTENT (%)

LL

LIQUID LIMIT

PL

PLASTIC LIMIT



LIQUIDITY INDEX

$C \approx$

APPROXIMATE COHESION VALUE (PSF) BASED ON POCKET PENETROMETER READINGS

K_v

SATURATED VERTICAL HYDRAULIC CONDUCTIVITY (FT/DAY)

γ_d

DRY UNIT WEIGHT (PCF)

γ_m

ESTIMATED MOIST UNIT WEIGHT (PCF)

γ_b

ESTIMATED BUOYANT UNIT WEIGHT (PCF)

ϕ

ESTIMATED ANGLE OF INTERNAL FRICTION (DEGREES)

SAFETY HAMMER

GRANULAR SOILS

SPT BLOWS/FOOT (N)	RELATIVE DENSITY
0-3	VERY LOOSE
4-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
> 50	VERY DENSE

COHESIVE SOILS

SPT BLOWS/FOOT (N)	RELATIVE DENSITY
0-1	VERY SOFT
2-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
> 30	HARD

AUTOMATIC HAMMER

GRANULAR SOILS

SPT BLOWS/FOOT (N)	RELATIVE DENSITY
0-2	VERY LOOSE
3-8	LOOSE
9-24	MEDIUM DENSE
25-40	DENSE
> 40	VERY DENSE

COHESIVE SOILS

SPT BLOWS/FOOT (N)	RELATIVE DENSITY
<1	VERY SOFT
1-3	SOFT
4-6	MEDIUM STIFF
7-12	STIFF
13-24	VERY STIFF
> 24	HARD



August 29, 2024

Mr. Patrick Jehle, PE
McKim & Creed
pjehle@mckimcreed.com

**SUBJECT: Addendum #1 to the Report of Geotechnical Exploration
Wayside Park East – Low Bridge Advanced Warning System
Pensacola, Florida
LMJ Job #: 24-138 E**

Dear Mr. Jehle:

This letter forwards addendum #1 to our geotechnical report for the subject project (LMJ Report #24-138). The purpose of this addendum is to provide estimated engineering soil properties for the soils encountered in the SPT boring locations for the two signal mast arm foundations for the low bridge advance warning system. LMJ drilled two SPT borings to a depth of 41 feet below existing grades for the new system, and the boring locations are noted on the attached **Figure #1** and the logs of boring are attached **Figure #2**. Boring locations were selected by our client. These soil borings were drilled with a track mounted drilling rig equipped with an auto hammer for the SPT.

The estimated soil parameters for the soils encountered in the borings consisted of angle of internal friction and the soil's estimated moist and buoyant unit weight. These values can be found on the attached logs of boring and can be used for foundation design. These properties are based on the SPT results, published correlations, and our experience with similar soils and should be considered approximate. This addendum is covered under the basis of recommendations and the terms & conditions of our proposal, and the project geotechnical report.

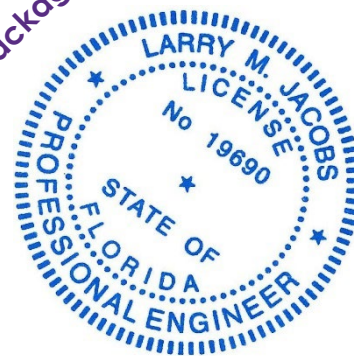
We hope that this letter provides sufficient information for your current requirements. If you have any questions or comments, please call.

Respectfully yours,

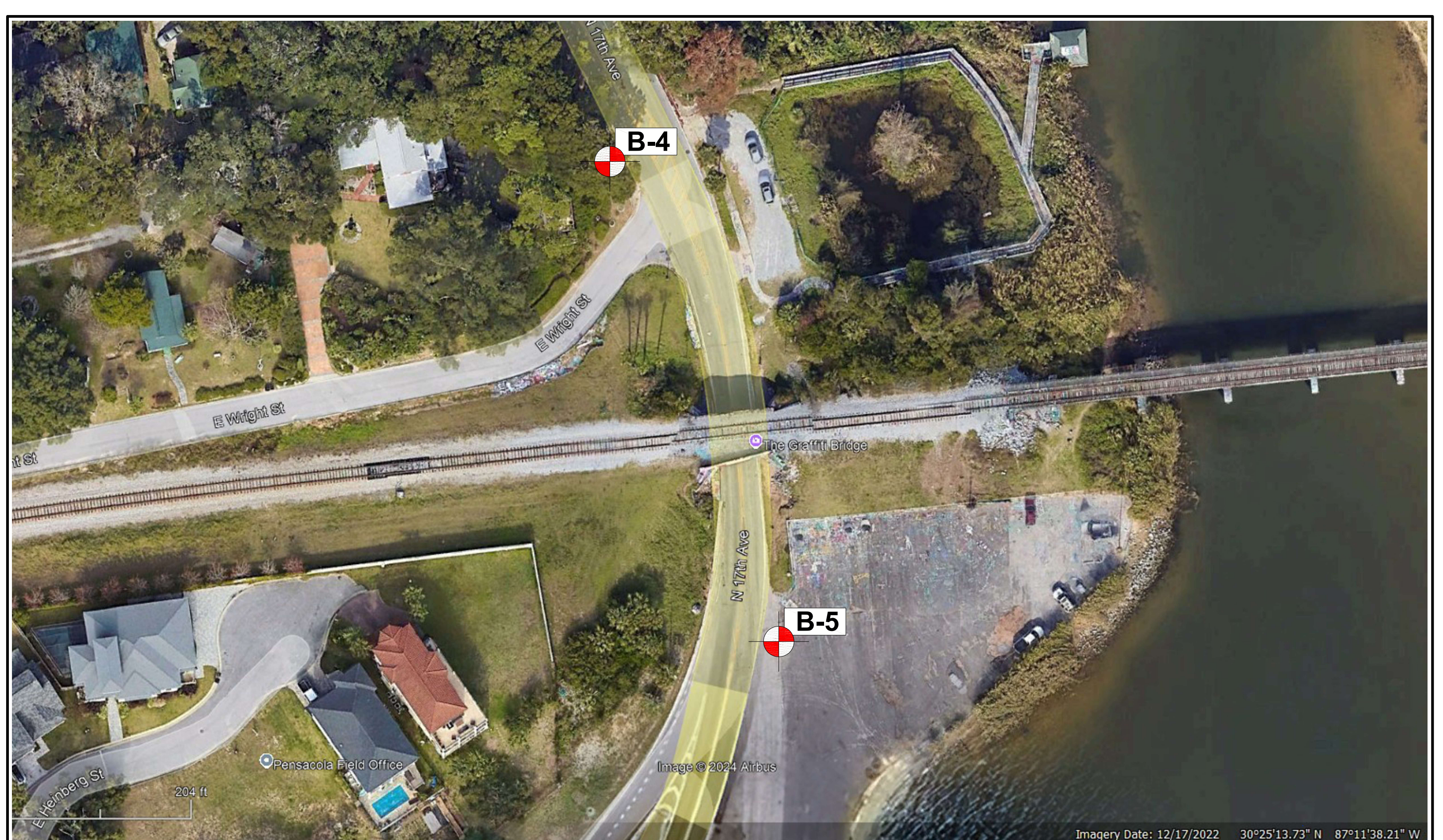
LARRY M. JACOBS & ASSOCIATES, INC.

Terry Niemann
Project Manager


Signed Copy Provided Separate from this Package



This document has been electronically signed and sealed by Larry M. Jacobs, PE (license # 19690) on August 29, 2024. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.



Imagery Date: 12/17/2022 30°25'13.73" N 87°11'38.21" W



STANDARD PENETRATION TEST BORING
ALL BORING LOCATIONS ARE APPROXIMATE

LARRY M. JACOBS AND ASSOCIATES, INC.
328 E GADSDEN STREET
PENSACOLA, FLORIDA 32501

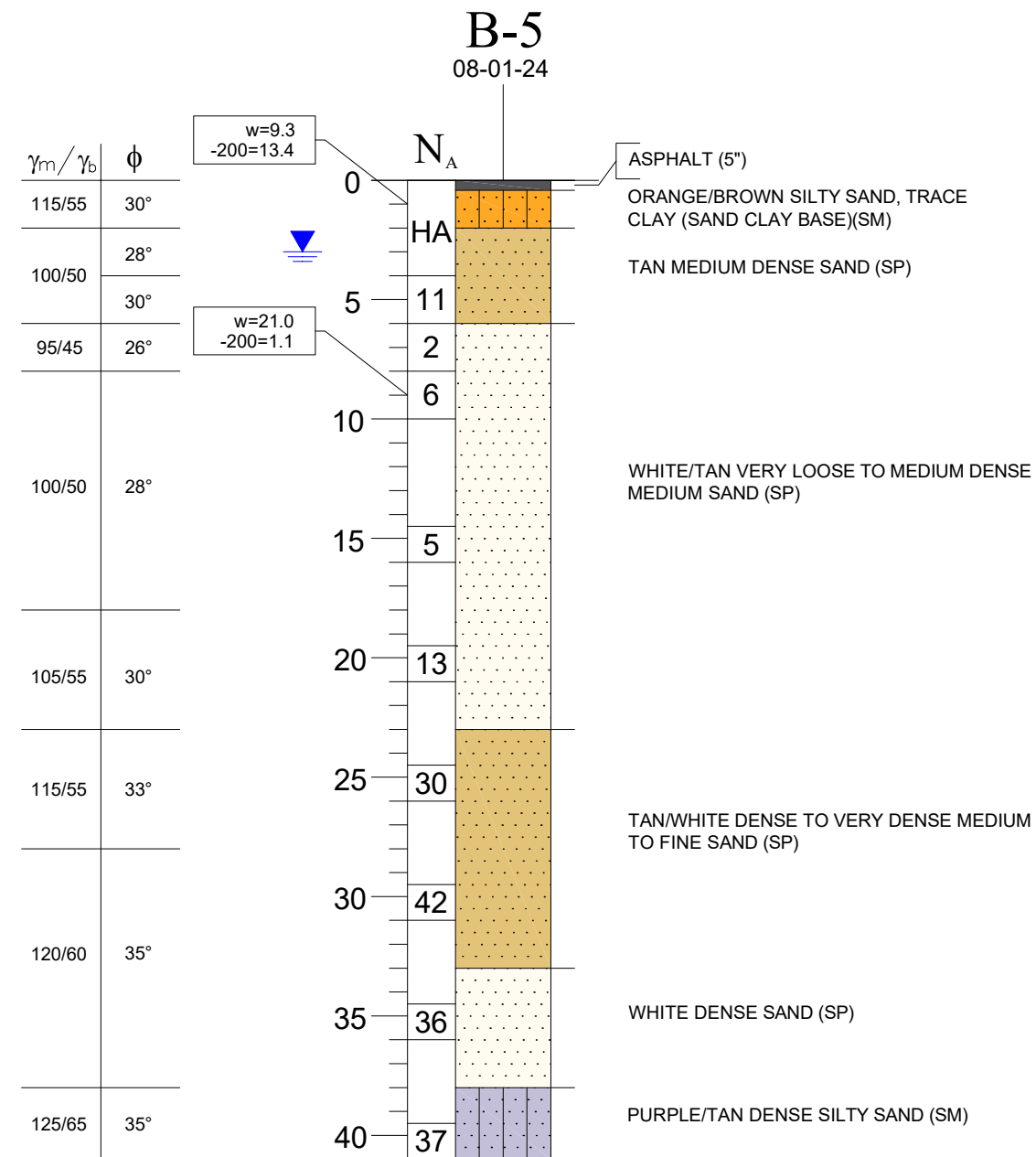
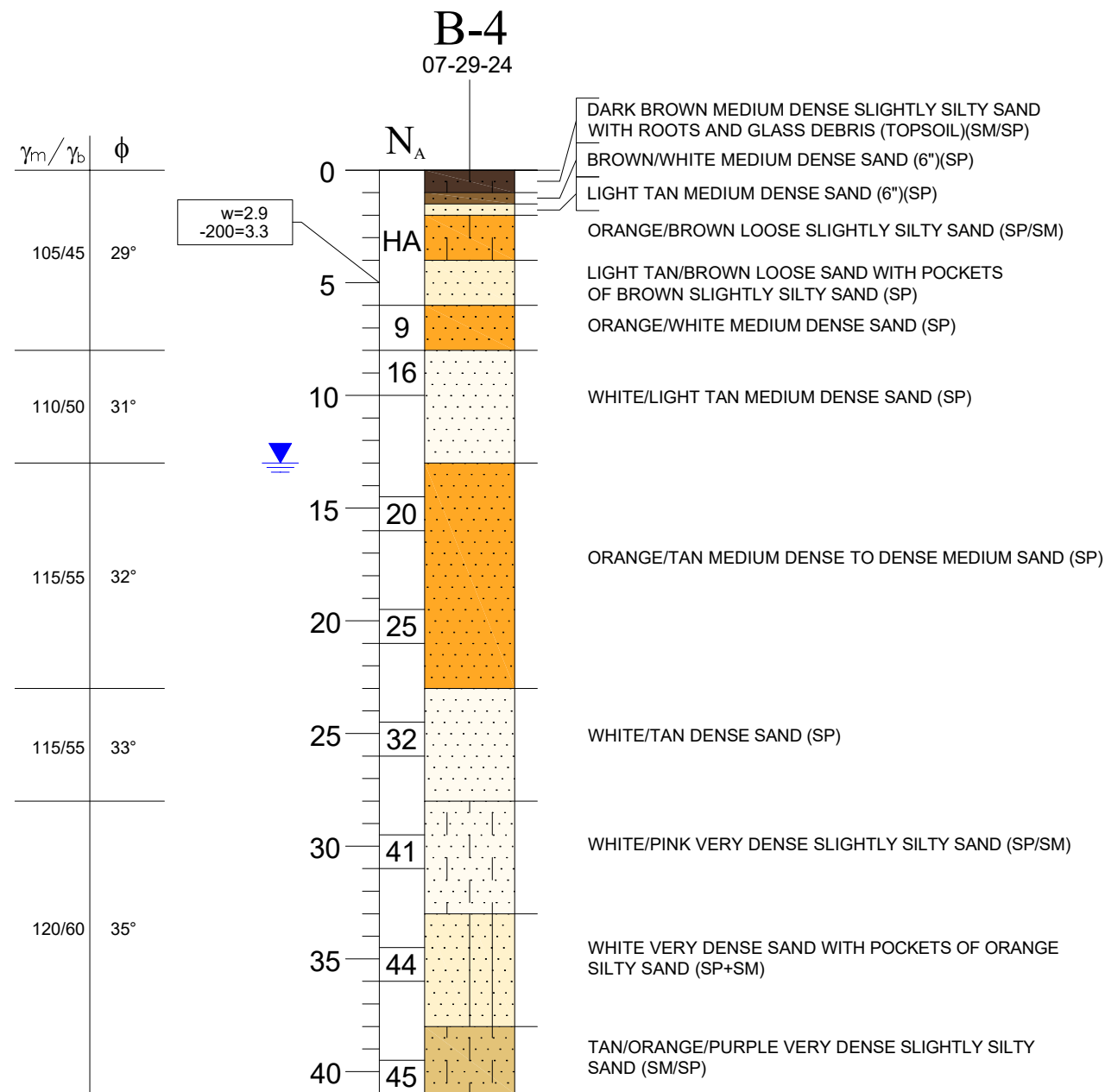


DRAWN BY: GEM		
CHECKED BY: TDN	ROAD NO.	COUNTY
		Escambia
	FINANCIAL PROJECT ID	

SHEET TITLE: BORING LOCATIONS
PROJECT NAME: Wayside East 17th Ave. Park

REF. DWG. NO. 24-138
FIGURE NO. 1

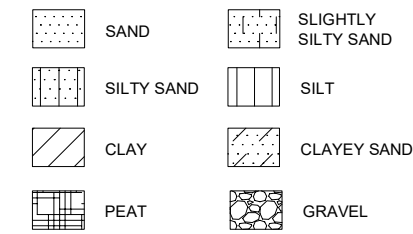
BORING LOGS



DEPTH (FT)	PROBE (IN)
SURFACE	1
0.5	1.5
1	1.5
1.5	1.5
2	1
2.5	1
3	1
3.5	2
4	0.5
4.5	1

DEPTH (FT)	PROBE (IN)
SURFACE	-
0.5	1
1	1
1.5	2
2	2.5
2.5	5
3	12

LEGEND



GRANULAR SOILS	
SPT BLOWS/FOOT (N)	RELATIVE DENSITY
0-2	VERY LOOSE
3-8	LOOSE
9-24	MEDIUM DENSE
25-40	DENSE
GREATER THAN 40	VERY DENSE

COHESIVE SOILS	
SPT BLOWS/FOOT (N)	RELATIVE DENSITY
< 1	VERY SOFT
1-3	SOFT
4-6	MEDIUM STIFF
7-12	STIFF
13-24	VERY STIFF
GREATER THAN 24	HARD

SYMBOLS:

- ONE** = GROUNDWATER NOT ENCOUNTERED AT TIME OF DRILLING
- N** = STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT
- N_A** = STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT USING AUTOMATIC HAMMER
- ▽** = ENCOUNTERED GROUNDWATER LEVEL
- ▽** = ENCOUNTERED PERCHED WATER LEVEL
- 50'** = NUMBER OF BLOWS REQUIRED (50) TO ADVANCE SPLIT SPOON SAMPLER A SPECIFIC DISTANCE (INCHES)
- HW** = SPLIT SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD AND HAMMER
- w** = NATURAL MOISTURE CONTENT (%)
- 200** = FINES PASSING #200 SIEVE (%)
- O.C.** = ORGANIC CONTENT (%)
- LL** = ATTERBERG LIMITS (%)
- LL=LIQUID LIMIT, PL=PLASTIC LIMIT
- LI** = LIQUIDITY INDEX
- c** = APPROXIMATE COHESION VALUE (PSF) BASED ON POCKET PENETROMETER READINGS
- K_v** = SATURATED VERTICAL HYDRAULIC CONDUCTIVITY (FT/DAY)
- γ_d** = DRY UNIT WEIGHT (PCF)
- γ_m** = ESTIMATED MOIST UNIT WEIGHT (PCF)
- γ_b** = ESTIMATED BOUYANT UNIT WEIGHT (PCF)
- φ** = ESTIMATED ANGLE OF INTERNAL FRICTION (DEGREES)

NOTES:

- 1) SPT BORINGS PERFORMED IN GENERAL ACCORDANCE WITH ASTM D1586
- 2) SUBSURFACE CONDITIONS ARE AT BORING LOCATIONS AND ACTUAL CONDITIONS BETWEEN BORINGS MAY VARY
- 3) ALL CLASSIFICATIONS ARE BASED ON VISUAL EXAMINATION UNLESS ACCOMPANIED BY LABORATORY TEST RESULTS
- 4) BOUNDARIES BETWEEN SOIL LAYERS SHOULD BE CONSIDERED APPROXIMATE AS THE ACTUAL TRANSITION MAY BE GRADUAL
- 5) DEPTH OF BORING IS BELOW EXISTING GRADE AT TIME OF DRILLING

Project #: 24-138 Scale: NTS

Date: 08/29/2024 Checked By: TDN

Project: Wayside East 17th Ave. Park

Location: Escambia County, Florida





Geotech Report



Since 1976

Geotechnical Engineering

Construction Materials Testing

Drilling Services

Wayside Park East

Pensacola, Florida

LMJ File #: 24-138 E

July 31, 2024

Prepared for

Mr. Patrick Jehle, PE

McKim & Creed

pjehle@mckimcreed.com

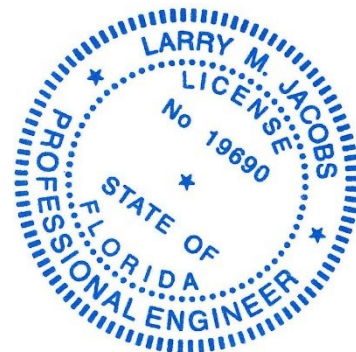
Prepared by

Larry M. Jacobs & Associates, Inc.

328 East Gadsden Street, Pensacola, Florida 32501

Florida Certificate of Authorization #2184

Terry Niemann
Project Manager



This document has been electronically signed and sealed by Larry M. Jacobs, PE (license # 19690) on July 31, 2024. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.

Summary

Project Info

Foundation

Pavement

Borings

Lab

Appendix

Subsurface Conditions

- ▼ In general, the borings in the dock and boardwalk area (B1, B2) generally encountered 7-8 inches of asphalt or 4 inches of topsoil at the ground surface at B-3, underlain by white, tan and orange sand or slightly silty sand to 23-38 feet, over orange, white and tan silty sand or slightly silty sand to the bottom of the borings at 41 feet.
- ▼ Below the topsoil, boring B3 encountered gray and black silty sand in the upper 5 feet, and this upper layer had layers with brick and gravel debris.
- ▼ In general, the two borings in the parking lot (P1, P2) encountered 2.5-3 inches of asphalt at the ground surface, underlain by 4-21 inches of red/orange silty sand (poor sand/clay base material), over gray and white slightly silty sand and sand to the bottom of the borings at 3.5-4 feet.
- ▼ In general, the soils were loose with erratic very loose or medium dense layers in the upper 13-18 feet, underlain by medium dense, dense and very dense sandy soils to the bottom of the borings.
- ▼ Groundwater was encountered at 1.5 to 3.5 feet below existing grades at the time of drilling. Groundwater levels will vary with the amount of local rainfall, the tide, changes in site drainage features and may be different at other times. This site can flood in tropical storms or hurricanes.

General Comments and Recommendations

- ▼ The soils encountered in the borings (B1, B2 & B3) appear to be best suited for the support of the proposed dock and elevated boardwalk on timber piling if the recommendations of this report are followed.
- ▼ The preliminary proposed “footing” with a 4 foot long 18”-24” diameter “footing” placed at 5 feet of embedment would encounter very loose (N=1) soils in the B-2 location and is not well suited to placement in this location which will likely have erosion and scour during major storm conditions as well as lateral loading from water entering and exiting the bayou during and after storm events.
- ▼ The existing asphalt pavement was in poor condition at the time of this report. Widespread block cracking was noted, along with frequent alligator cracking, large potholes and pavement patches.
- ▼ The pavement could be replaced with asphalt pavement of suitable thickness. New base materials should be graded aggregate base, and the existing sand clay base materials can be reused as a stabilized subgrade. Concrete pavement is commonly used for the boat ramp construction. The native sand soils are low strength and will require stabilization if used as subgrade.
- ▼ Shallow groundwater is a concern on site, and drainage/dewatering will be needed for footing construction and deeper excavations and compaction operations in some areas.

Note: The above summary is an overview of the report and should not be used by itself for planning, design, and/or construction. See the relevant sections for further details.



Existing Site

The site is located near the graffiti bridge at the Wayside Park and N 17th Avenue Park. The site is roughly split in half (north – south) by the CSX railroad embankment/easement. An existing elevated boardwalk surrounds a stormwater pond north of the train tracks. South of the CSX Embankment/easement is an asphalt paved parking lot for a small boat ramp, along with a short wood pier. North of the train tracks the pond is surrounded by areas of thick vegetation, along with grassed areas. Reportedly, there is a small wetland between the railroad easement and the existing boardwalk.

Proposed Construction

We understand that the project consists of the construction of an elevated timber boardwalk, a new timber pier, new pavement for the parking lot, and a covered walkway under the railroad tracks for a pedestrian crossing. Reportedly, the proposed structural loading on the vertical timber posts is 3 kips, and $\frac{3}{4}$ of that load is wind loading. The wood roof over the walkway under the railroad bridge is currently planned to be supported on four-foot-long footings/piers (24 inch in diameter) established at 5 feet below grade on $\frac{1}{2}$ foot of crushed stone, with a concrete slab on grade walking surface. Timber piling is also under consideration for the walkway. Final structural and grading plans were not available at this time.

Subsurface Exploration

To evaluate the subsurface conditions at the site, we drilled three Standard Penetration Test (SPT) borings to a depth of 41 feet for the structures and two hand auger borings to a depth of 3.5-4 feet for the pavement areas. Soil density in the auger borings was roughly evaluated by periodic probing with a steel rod. The SPT borings were drilled with a truck mounted drilling rig with a safety hammer and the borings were advanced using solid stem auger and/or a mud jetting drilling method. The subsurface conditions encountered in the SPT borings can be found on the boring logs [here](#).

The above information is the basis of our recommendations. If the information in this section changes or is incorrect, our office should be notified, and changes to our report may be needed.



Site Preparation

- ▼ The work areas should be cleared, grubbed, and stripped of all vegetation, major roots, root mass, topsoil, pavement materials, soils with a significant amount of organics, debris, and any other deleterious materials.
- ▼ Stripped vegetation, topsoil, and organic materials should be hauled offsite, or suitable topsoil could be stockpiled for use in landscaped areas.
- ▼ The contractor should check the depth to groundwater at the start of construction and provide drainage/dewatering as needed to complete the work. Groundwater should be kept at least 2-3 feet below the working surface during compaction operations.
- ▼ After stripping and clearing, the subgrade in the proposed pavement and slab on grade areas should be compacted to a minimum of 95% of the Modified Proctor Test (ASTM D1557) density for a minimum depth of 12 inches.
- ▼ The boring B3 encountered moisture sensitive silty sand at the surface, and the sand clay base materials in the parking borings are also moisture sensitive.
- ▼ These moisture sensitive soils drain slowly, retain excess moisture, are prone to pumping and can become unworkable when too wet and are hard to compact if too dry, and this is a concern for earthwork. The contractor should be prepared to moisture condition the soil as needed for compaction.
- ▼ Areas that pump, rut or are difficult to compact should be evaluated by LMJ staff and undercutting of wet/problem soils and replacement with suitable fill may be recommended.

Fill Material

- ▼ Fill material should be the soil types listed in the following table. Excavated native soils can be used as fill or backfill, provided they meet the requirements below.
- ▼ Fill or backfill should be free of significant organic materials, debris, or other deleterious materials and be non-plastic. It should comply with any local color codes.
- ▼ Samples of any imported fill material should be submitted to the geotechnical engineer for testing and evaluation prior to shipment to the site.

Fill Type Recommendations

Material Type	Lift Thickness (in)		Equipment Type	
	Large Equipment	Hand Operated Equipment	Large	Hand Operated
Sand or Slightly Silty Sand	6-8	4-6	Vibratory Roller	Plate Tamper



Compaction

- ▼ Fill material and top of existing subgrade should be moisture conditioned to within 2% of its optimum moisture content prior to compaction.
- ▼ Fill and top of subgrade should be compacted to the requirements in the following table.
- ▼ Note that large vibratory rollers can damage/disturb nearby structures and we do not recommend using large vibratory rollers near (within 75 feet) of existing structures.

Compaction Recommendations

Site Element	Minimum Compaction (ASTM D1557)	Minimum Compaction Testing Frequency Per 12-inch Increment of Soil
Top 12 inches of Subgrade Below Slab-on-Grade	95%	Minimum of 3, One every 2,000 ft ²
Top 12 inches of Subgrade below Pavement	98%	Minimum of 3, One every 2,000 ft ²
Fill/Backfill	95%	Minimum of 3, One every 2,000 ft ²
Utility Trench Backfill	95%	One per 75 linear feet

- ▼ Backfill for utility excavations or any other excavations in the structural areas should be compacted per the above tables.
- ▼ Compaction testing should be performed by LMJ staff.

Utility Installation and Bedding

We recommend that the bottom of all settlement sensitive utility excavations be evaluated by a representative from LMJ prior to utility placement. We recommend using a smooth excavator bucket or “butter bar” to excavate the bottom of utility trenches. Settlement sensitive utilities should be bedded on firm soils, and any loose areas would need to be properly compacted prior to utility placement. Loose soils present at the bottom of utility trenches should be compacted to a minimum of 95% of the Modified Proctor Test (ASTM D1557) density for a minimum depth of 12 inches. We recommend installing utilities in manageable sections that can be backfilled in a timely manner when rainfall is anticipated. Dewatering would be needed for utility installation in shallow water areas.

Excavations

All deeper excavations should be made at a safe slope (1.5H:1V minimum) or sheeting, shoring, or trench boxes should be used. Note that significant rainfall events and flowing groundwater (seepage forces) through excavation walls can be destabilizing. Therefore, stormwater runoff and erosion should be controlled for all excavations. The contractor is solely responsible for designing and constructing safe excavations that maintain stability during construction. All excavations should be constructed in accordance with the latest local, state, and federal safety regulations.



Footing Recommendations

- ▼ The site is located in an area which will have potential wave action on the south side of the embankment and a potential for scour from flood water flowing into the bayou through the constricted opening and then out of the opening after the storm.
- ▼ The site of the pedestrian crossing has very shallow groundwater, and dewatering will be needed to install shallow foundations in the dry.
- ▼ Allowable bearing capacity is limited, due to very loose soils at the proposed embedment depth. We recommend dropping the pier foundations to 6+ feet below existing grades to help avoid the worse of the very loose soils and deeper placement will provide more scour protection as well as increased lateral resistance.
- ▼ The client should consider supporting the roof of the pedestrian crossing and at least the walkway closest to the water with timber piling, as noted in the sections below. LMJ believes this to be the more practical foundation option, given the shallow groundwater and native loose soils as well as the scour and lateral loading potential.
- ▼ Either foundation alternative will have difficulty in placing foundations close to or under the railway due to low overhead conditions under the railway. Using piles for supporting the walkway readily allows for deeper higher capacity piles to be placed on both sides of the rail crossing and clear spanning this portion of the walkway.
- ▼ Footings that are prepared in accordance with this report can be designed based on the parameters in the following table. Minimum embedment depth is below existing grade.

Footing Design Parameters

Minimum Width (ft)	Minimum Embedment Depth (ft)	Net Allowable Soil Pressure (psf)	Estimated Settlement (in)	
			Total	Differential
1.5-2.0	6	1,000	1 or less	½ or less

- ▼ The estimated settlement above is from the sandy soils immediately beneath the footings, and reflect shallow water conditions. Roughly ½-¾ of the settlement is expected to occur during construction or relatively soon after initial loading, with the remainder during the first high groundwater event.
- ▼ LMJ recommends replacing the six inch thick crushed limerock footing pad noted on the provided interm plans with a hard, well graded, crushed stone well compacted to a firm surface. Very loose areas may require additional crushed stone to create a firm surface. The footing pad should be evaluated by LMJ staff by probing with a steel rod, as density testing would be impractical in the excavation.



Pile Recommendations

- ▼ The borings encountered soils that appear to be best suited for supporting the proposed boardwalk, dock and pedestrian crossing on jetted and driven timber piles if the recommendations of this report are followed.
- ▼ The table below provides the theoretical allowable pile capacities for 8 & 10-inch tip diameter round timber piles and 6 & 8 inch square timber piling with an embedment depth of 20 and 25 feet below existing grades at the time of drilling. We would anticipate that spans of the elevated walkway would be increased to reflect the higher available pile capacities.
- ▼ The contractor should be prepared to encounter debris at pile locations, particularly at or near the B3 boring location. Pre augering the piling location or digging the debris out could be needed.

Pile Recommendations

Pile size/Description	Pile Tip Embedment Depth (ft) ⁽¹⁾	Allowable Pile Capacity (kips) ⁽²⁾	
		Compression	Tension
8-Inch Tip Dia. Round Timber Pile	20	7.4	1.1
10-Inch Tip Dia. Round Timber Pile		11.2	1.4
6-Inch Square Timber Pile		5.6	1.0
8-Inch Square Timber Pile		9.4	1.4
8-Inch Tip Dia. Round Timber Pile	25	20	2.2
10-Inch Tip Dia. Round Timber Pile		30	2.8
6-Inch Square Timber Pile		15	2.1
8-Inch Square Timber Pile		25	2.8

(1) Depth is below grade at the time of drilling or the mudline for dock piling.
 (2) Theoretical Factor of Safety = 2 for compression and tension capacity.

- ▼ The pile capacities are based on the worst conditions in the borings, and different pile capacities may develop in different areas of the site due to variations in soil conditions.
- ▼ The pile capacities account for flooding and two feet of scour during an extreme storm event. If significant additional scour is a concern, LMJ can recalculate the capacities in the above table once scour analysis information has been provided.
- ▼ Lateral load capacities are available upon request.
- ▼ LMJ normally recommends ordering piles somewhat longer than needed to allow for natural variations in soil conditions.



Pile Installation Recommendations

- ▼ All piles should be jetted to a depth 3-5 feet above the target embedment depth in the above table and then driven to bearing using an approved pile driving hammer.
- ▼ Field determination of the actual pile capacities developed should be analyzed using a dynamic pile driving formula (Hiley, WAVE, etc.). This analysis will require knowledge of the pile driving equipment to be used on the site.
- ▼ We would be pleased to calculate the required pile driving resistances (blow counts or blows/foot) to obtain the pile capacities given in the preceding table when the pile driving contractor's equipment to be used and design pile is known.
- ▼ A hammer analysis will also help us determine if the contractor's hammer choice is appropriate for this project.
- ▼ The allowable pile capacities were calculated assuming flood and minor scour conditions. Flooding and scour will reduce the capacities of the piles, and piles will need to be driven beyond the blow counts (124%) required for the design load in order to allow for reductions in pile capacity from flooding and scour.
- ▼ An LMJ technician should be onsite during pile driving so that an evaluation and record of the pile driving resistances achieved and pile embedment depths can be made to check the capacities of the piles and relay information to our engineering staff.
- ▼ In the event that any unusual circumstances arise during construction, additional engineering recommendations could be provided.
- ▼ After the piles have been satisfactorily installed under the observation of our technician, we can provide a completion letter to document that the piles have been installed in accordance with this report.
- ▼ LMJ would be pleased to provide a cost proposal for providing the above services during construction.

Vibration Discussion

- ▼ Driving piles creates noise and vibrations, and these vibrations can cause disturbance or damage to any nearby existing structures.
- ▼ A low frequency hammer such as a drop hammer or a small diesel hammer would be suitable for driving the piles and should create less vibration. Jetting the piles to the recommended depth will also reduce the energy required for pile driving and the resulting vibrations.
- ▼ We suggest performing initial crack surveys of nearby or adjacent structures prior to any pile driving, which includes taking photos and documenting the size/location of cracks present before pile driving.
- ▼ LMJ can perform initial crack surveys and offers vibration monitoring services. If vibrations are a concern, we would be pleased to provide you with a proposal for these services.



Subgrade Recommendations

- ▼ Based on our experience, the upper silty sand soils encountered in the pavement borings should meet or exceed the normal pavement subgrade strength requirements of LBR 40. If sand soils are exposed, the upper 12 inches would need to be stabilized with the addition of 4-6 inches of graded aggregate base material.
- ▼ Any imported fill used in the top 12 inches of subgrade in pavement areas should have a minimum LBR of 40.
- ▼ The contractor should provide drainage/dewatering as needed to compact the subgrade and base materials.

Base Recommendations

- ▼ We recommend a graded aggregate base (GAB) for this project. These materials are high strength and are best suited for the site conditions. Base materials should meet FDOT requirements.
- ▼ A sample of any proposed base material should be submitted to our lab for testing and approval prior to shipment to the site.

Pavement Subgrade and Base Parameters

Layer	Minimum Compaction	Proctor Type	ASTM	Minimum LBR Value
Subgrade ¹	98%	Modified	D1557	40
Base	100%			100

¹Top 12 inches of subgrade

Asphalt Recommendations

- ▼ Asphalt should be FDOT structural course Superpave Asphaltic Concrete meeting the requirements of Section 334 (SP-9.5 or 12.5 is preferred).
- ▼ Limit the amount of Recycled Asphalt Pavement (RAP) to no more than 25% of the mixture since mixtures over 25% RAP have a higher potential for quality issues.
- ▼ The asphalt should be compacted to a target of 92% of the laboratory maximum specific gravity (G_{mm} or Rice Specific Gravity) as determined by FM 1-T 209.

Typical local pavement sections for parking areas are shown in the following table. Pavement thickness should reflect the proposed traffic loading. If requested, we can prepare a site-specific pavement design if specific traffic loading data is provided.

Typical Minimum Pavement Section

Loading	Minimum Thickness (in)	
	Base	Asphalt
Light Duty	6	1.5



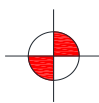
Concrete Pavement Recommendations

Concrete pavement should be used at the boat ramp location(s). It would perform best in areas prone to wetting/flooding and is most practical to construct in these conditions. Concrete pavement should be at least 6 inches thick or thicker if needed to support the traffic loading. Concrete pavement should have a minimum compressive strength of 4000 psi at 28 days. Saw cutting, jointing, and doweling should be according to current industry standards.

Testing Recommendations

- ▼ Run density tests on compacted subgrade at a minimum frequency of one test per 2,000 square feet of pavement area. Test the base for compaction at the same frequency.
- ▼ After paving, we recommend coring the asphalt to determine thickness and compaction. The bulk specific gravity (G_{mb}) of the cores should be determined using FM 1-T 166
- ▼ Concrete pavement should have cylinders cast during placement by LMJ staff to check the compressive strength of the mix.

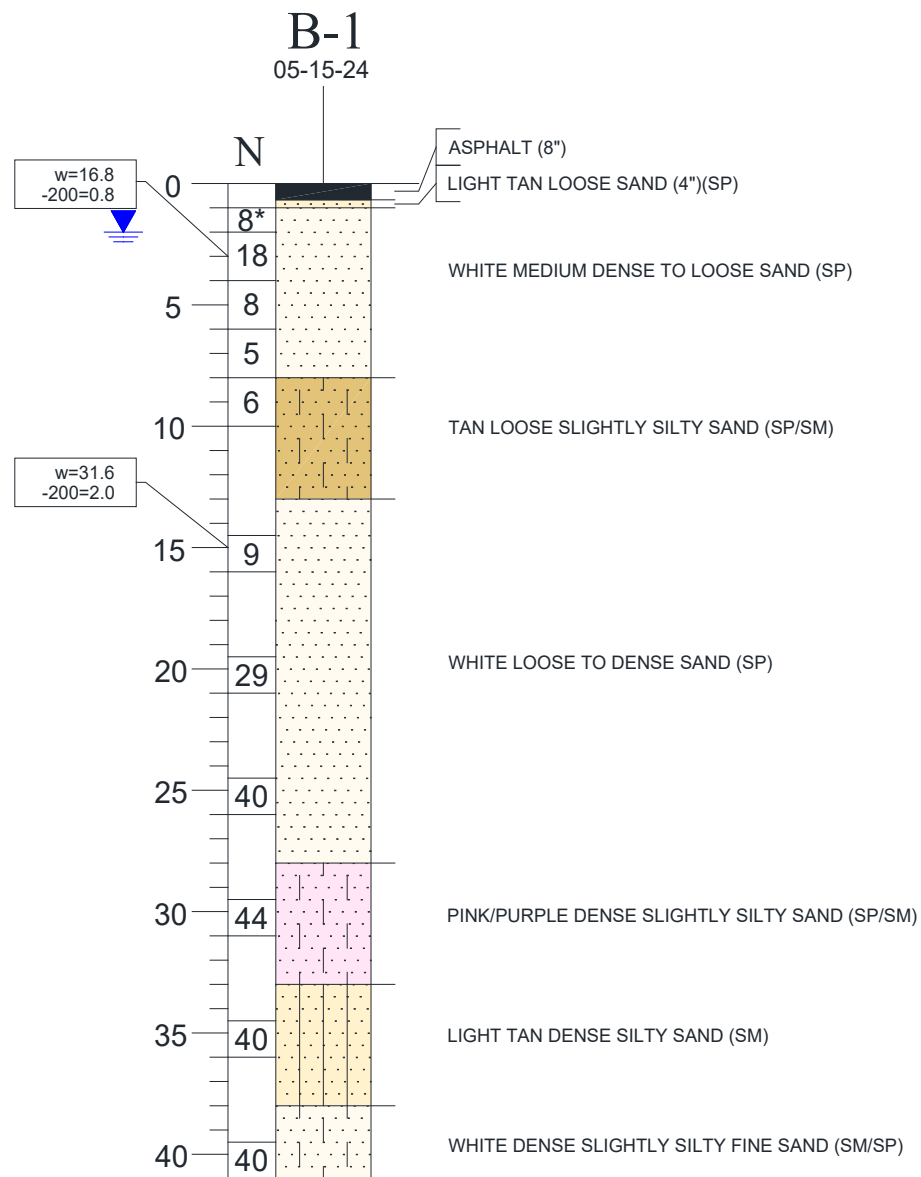
Boring Locations



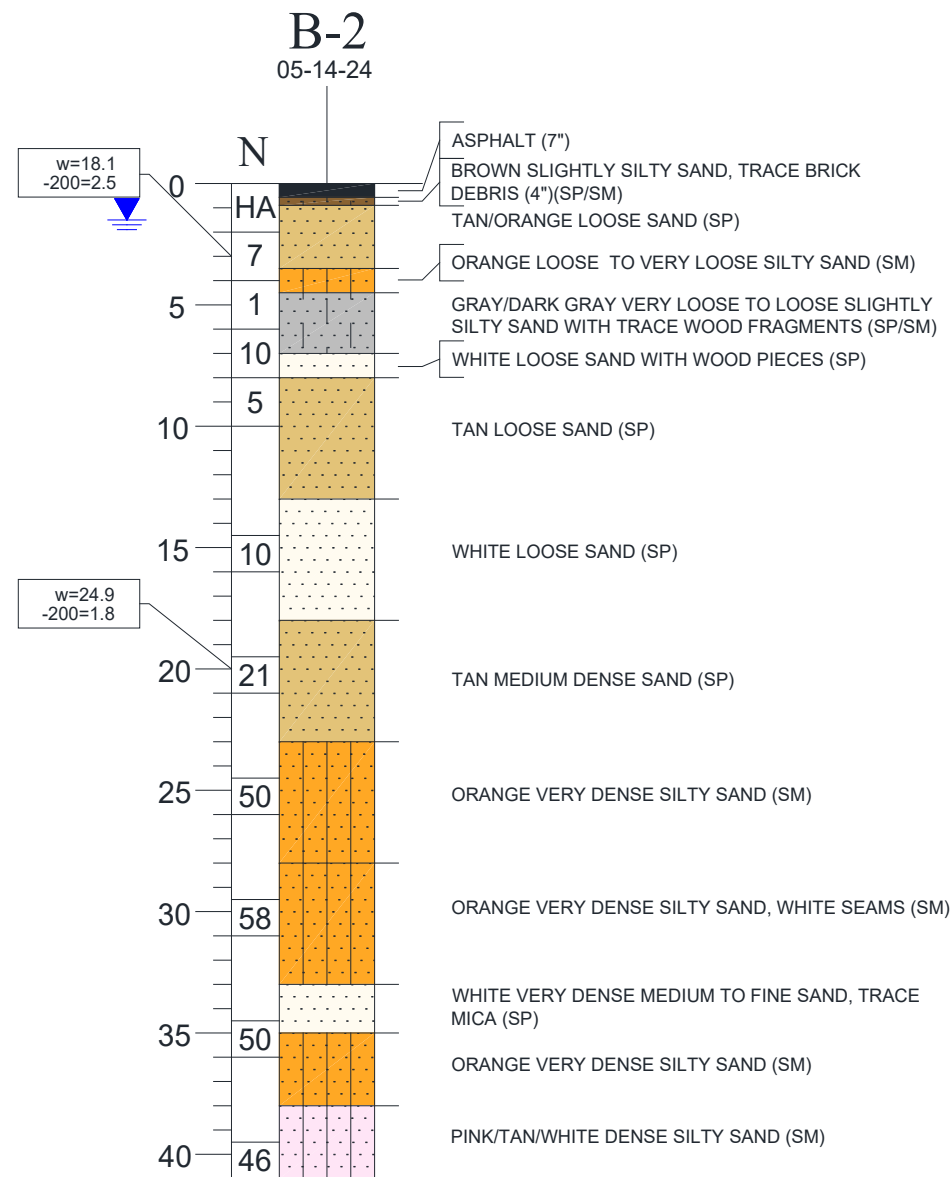
STANDARD PENETRATION TEST BORING
ALL BORING LOCATIONS ARE APPROXIMATE



Borings

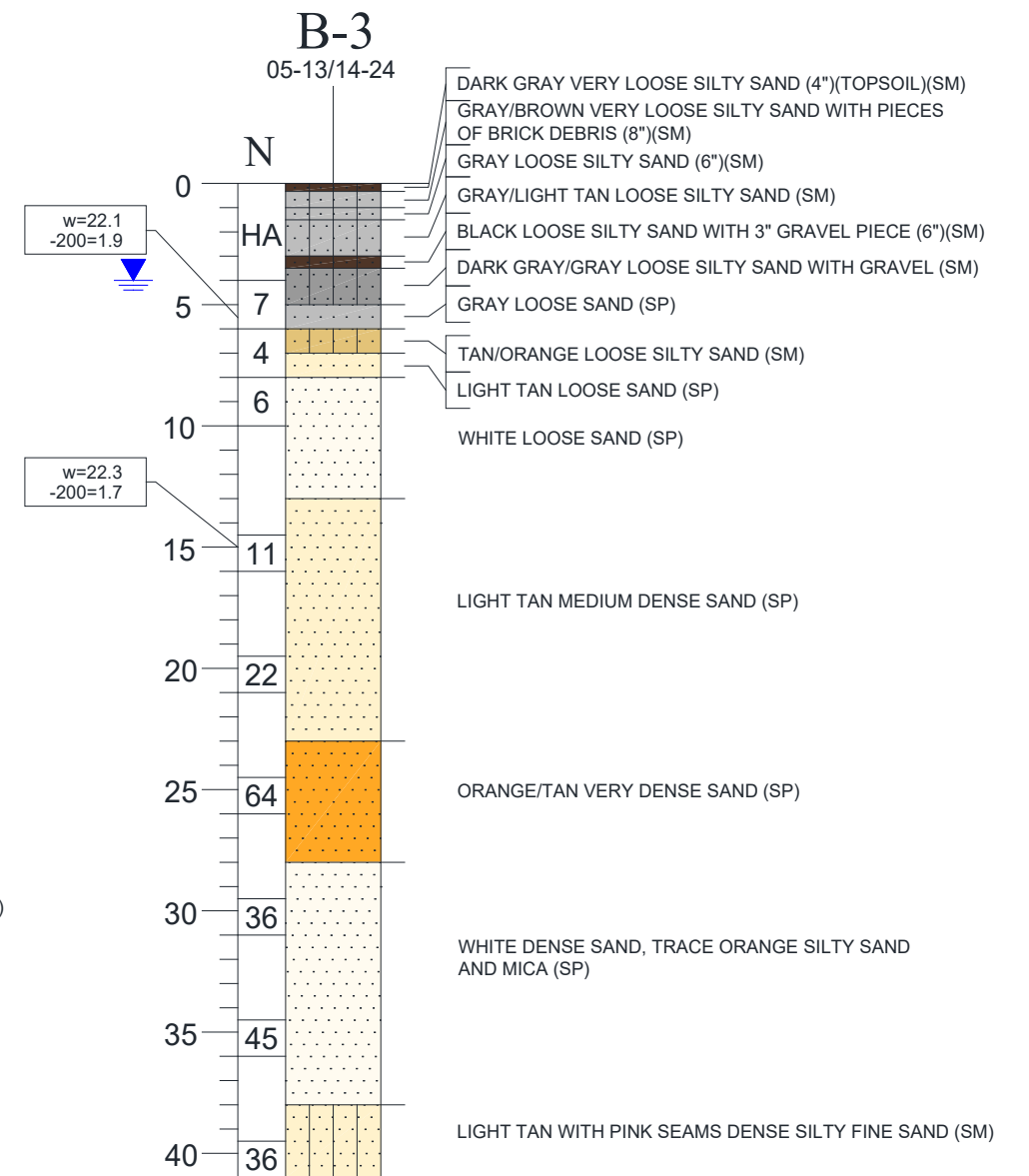


*HAMMER BLOWS:
1 FT SAMPLE: 4/4



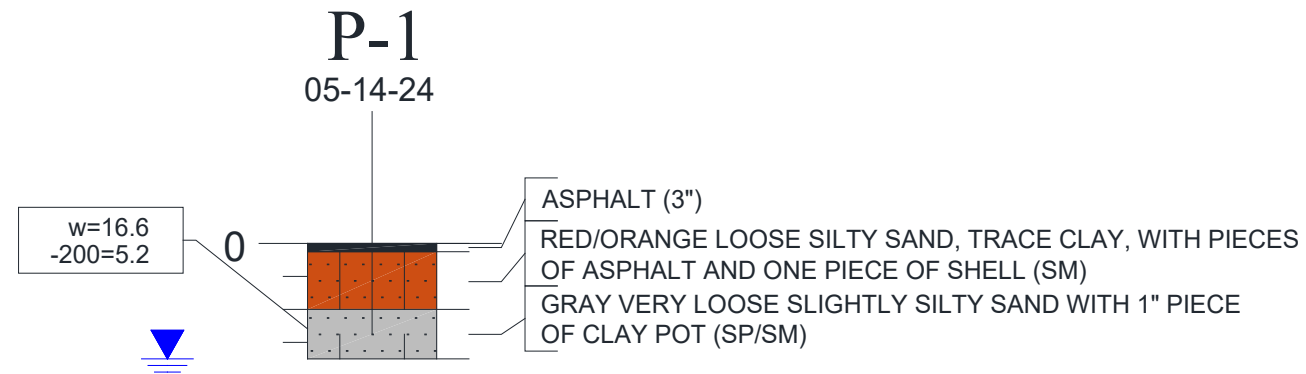
NOTE: WITH A PIECE OF WOOD AT 7-8 FEET

DEPTH (FT)	PROBE (IN)
BELOW ASPHALT	1.5
1	3
1.5	12

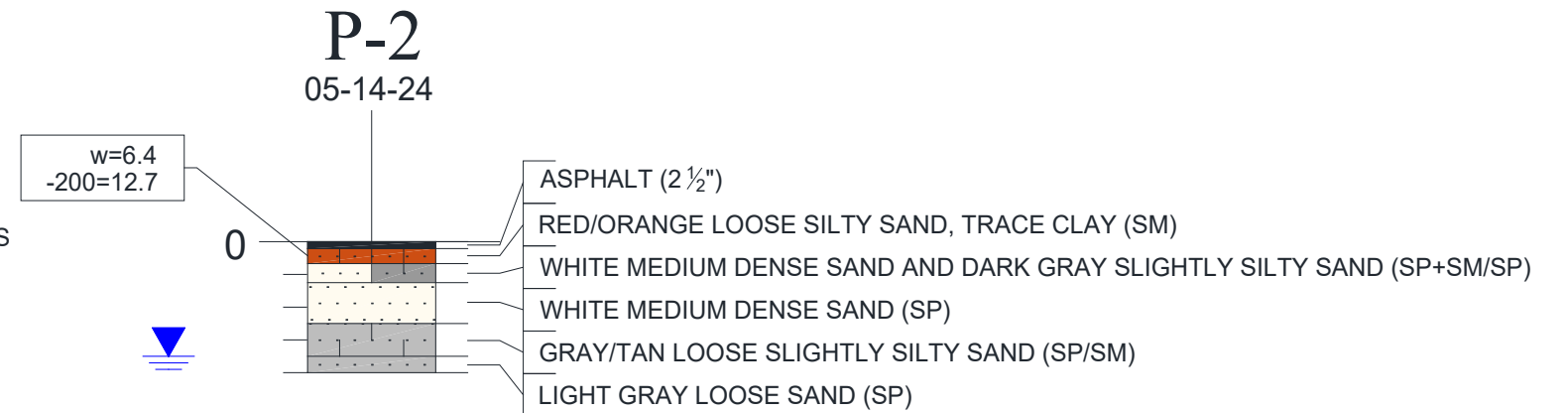


DEPTH (FT)	PROBE (IN)
SURFACE	12
1	10
2	8
3	8

Borings



DEPTH (FT)	PROBE (IN)
0.5	3
1	2
1.5	1.5
2	3
2.5	12
3.5	6



DEPTH (FT)	PROBE (IN)
0.5	2
1	1
1.5	0.5
2	3
2.5	1
3	2
3.5	5
4	14



Test Results

Laboratory testing for this project included wash #200 sieve tests and natural moisture content tests run on the spilt spoon samples to assist in soil classification and to evaluate and document basic soil properties. The results of these tests can be found on the boring logs adjacent to the sample tested.



Basis of Recommendations

Recommendations rendered herein are based on assumed and/or design information available at the time of this report, the subsurface conditions encountered in the test borings, generally accepted geotechnical engineering principles and practices, and our experience with similar soil and groundwater conditions. Should final project information or existing conditions differ from the information used in this report or should any soil conditions not discussed in this report be encountered during construction, our office should be notified and retained so that this report can be modified as needed. LMJ should be provided with the final plans and specifications for review to determine if any changes to our report are needed based on the final design and that our recommendations have been properly interpreted.

This report and any correspondence are intended for the exclusive use of our client for the specific application to the project discussed. LMJ is not responsible for the interpretations, conclusions, or recommendations made by others based on the information in this report. Note that environmental work or chemical testing was not part of our scope of work on this project.

Regardless of the care exercised in performing a Geotechnical Exploration, the possibility always exists that soil and/or groundwater conditions will differ from those encountered at the specific boring locations. In addition, construction operations may alter the soil conditions. Therefore, it is recommended that a representative from LMJ be involved during the construction phases discussed in this report.

Test Methods

Standard Penetration Test

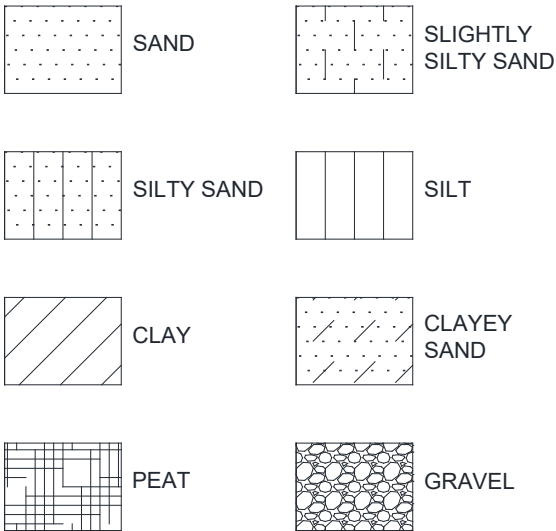
The Standard Penetration Test (SPT) consists of driving a 2-inch diameter split spoon sampler into the ground using a 140-pound hammer dropped 30 inches. The number of blows required to drive the sampler one foot (after seating it 6 inches) is referred to as the blow count or “N” value and represents the relative density of subsurface soils. “N” values can be found on the boring logs. The SPT borings were drilled in general accordance with ASTM D1586 using a truck mounted drill rig and were sampled by driving back-to-back 2-foot split spoons to a depth of 10 feet followed by samples at 5-foot increments thereafter. Each sample was removed from the sampler, classified in the field by the driller, and packaged for visual classification by our engineering staff and laboratory testing.

Other Test Methods

Wash #200 Sieve (ASTM D1140), Moisture Content (ASTM D2216), Sieve Analysis (ASTM C136)

Appendix

LEGEND



NOTES

- 1) SPT BORINGS PERFORMED IN GENERAL ACCORDANCE WITH ASTM D1586
- 2) SUBSURFACE CONDITIONS ARE AT BORING LOCATIONS AND ACTUAL CONDITIONS BETWEEN BORINGS MAY VARY
- 3) ALL CLASSIFICATIONS ARE BASED ON VISUAL EXAMINATION UNLESS ACCOMPANIED BY LABORATORY TEST RESULTS
- 4) BOUNDARIES BETWEEN SOIL LAYERS SHOULD BE CONSIDERED APPROXIMATE AS THE ACTUAL TRANSITION MAY BE GRADUAL
- 5) DEPTH OF BORING IS BELOW EXISTING GRADE AT TIME OF DRILLING
- 6) ELEVATIONS, IF SHOWN, WERE ESTIMATED FROM PROVIDED TOPOGRAPHIC SURVEY
- 7) COLORS USED FOR BORING HATCHING MAY NOT REPRESENT THE ACTUAL SOIL COLORS

GNE

GROUNDWATER NOT ENCOUNTERED AT TIME OF DRILLING

N

STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT

N_A

STANDARD PENETRATION RESISTANCE USING AUTOHAMMER



ENCOUNTERED GROUNDWATER LEVEL



ENCOUNTERED PERCHED WATER LEVEL

$50/2''$

NUMBER OF BLOWS REQUIRED (50) TO ADVANCE SPLIT SPOON SAMPLER A SPECIFIC DISTANCE (2) INCHES

HW

SPLIT SPOON SAMPLE ADVANCED UNDER WEIGHT OF ROD AND HAMMER

HA

HAND AUGER



SHELBY TUBE SAMPLER

W

NATURAL MOISTURE CONTENT (%)

-200

FINES PASSING #200 SIEVE (%)

O.C.

ORGANIC CONTENT (%)

LL

LIQUID LIMIT

PL

PLASTIC LIMIT



LIQUIDITY INDEX

$C \approx$

APPROXIMATE COHESION VALUE (PSF) BASED ON POCKET PENETROMETER READINGS

K_v

SATURATED VERTICAL HYDRAULIC CONDUCTIVITY (FT/DAY)

γ_d

DRY UNIT WEIGHT (PCF)

γ_m

ESTIMATED MOIST UNIT WEIGHT (PCF)

γ_b

ESTIMATED BUOYANT UNIT WEIGHT (PCF)



ESTIMATED ANGLE OF INTERNAL FRICTION (DEGREES)

SAFETY HAMMER

GRANULAR SOILS

SPT BLOWS/FOOT (N)	RELATIVE DENSITY
0-3	VERY LOOSE
4-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
> 50	VERY DENSE

COHESIVE SOILS

SPT BLOWS/FOOT (N)	RELATIVE DENSITY
0-1	VERY SOFT
2-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
> 30	HARD

AUTOMATIC HAMMER

GRANULAR SOILS

SPT BLOWS/FOOT (N)	RELATIVE DENSITY
0-2	VERY LOOSE
3-8	LOOSE
9-24	MEDIUM DENSE
25-40	DENSE
> 40	VERY DENSE

COHESIVE SOILS

SPT BLOWS/FOOT (N)	RELATIVE DENSITY
<1	VERY SOFT
1-3	SOFT
4-6	MEDIUM STIFF
7-12	STIFF
13-24	VERY STIFF
> 24	HARD





August 29, 2024

Mr. Patrick Jehle, PE
McKim & Creed
pjehle@mckimcreed.com

**SUBJECT: Addendum #1 to the Report of Geotechnical Exploration
Wayside Park East – Low Bridge Advanced Warning System
Pensacola, Florida
LMJ Job #: 24-138 E**

Dear Mr. Jehle:

This letter forwards addendum #1 to our geotechnical report for the subject project (LMJ Report #24-138). The purpose of this addendum is to provide estimated engineering soil properties for the soils encountered in the SPT boring locations for the two signal mast arm foundations for the low bridge advance warning system. LMJ drilled two SPT borings to a depth of 41 feet below existing grades for the new system, and the boring locations are noted on the attached **Figure #1** and the logs of boring are attached **Figure #2**. Boring locations were selected by our client. These soil borings were drilled with a track mounted drilling rig equipped with an auto hammer for the SPT.

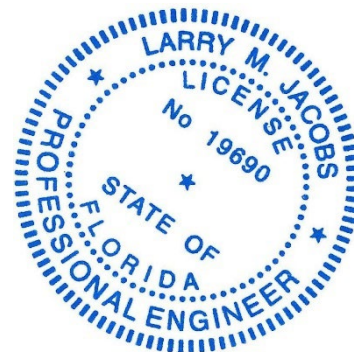
The estimated soil parameters for the soils encountered in the borings consisted of angle of internal friction and the soil's estimated moist and buoyant unit weight. These values can be found on the attached logs of boring and can be used for foundation design. These properties are based on the SPT results, published correlations, and our experience with similar soils and should be considered approximate. This addendum is covered under the basis of recommendations and the terms & conditions of our proposal, and the project geotechnical report.

We hope that this letter provides sufficient information for your current requirements. If you have any questions or comments, please call.

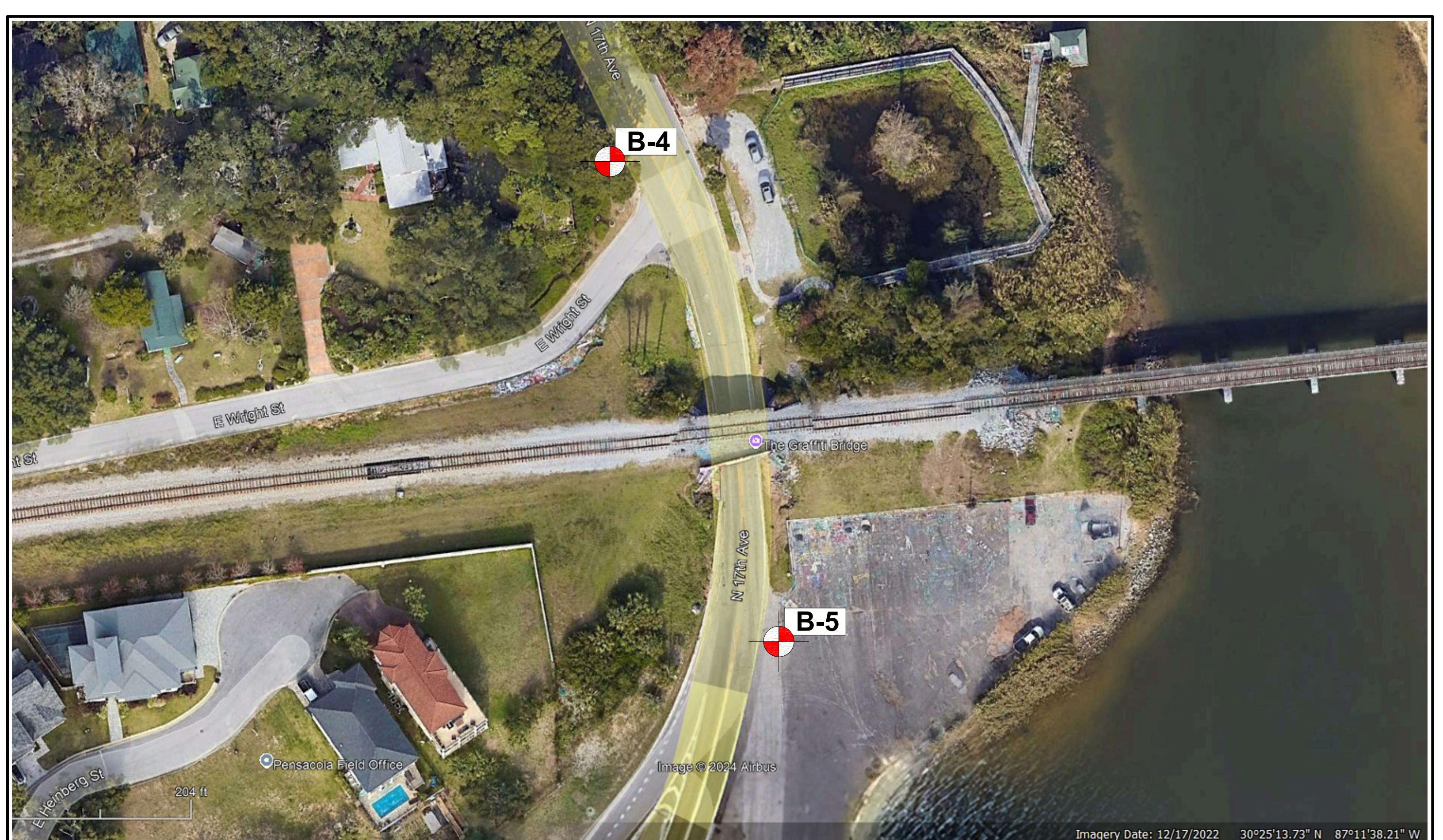
Respectfully yours,

LARRY M. JACOBS & ASSOCIATES, INC.


Terry Niemann
Project Manager



This document has been electronically signed and sealed by Larry M. Jacobs, PE (license # 19690) on August 29, 2024. Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.




Imagery Date: 12/17/2022 30°25'13.73" N 87°11'38.21" W



STANDARD PENETRATION TEST BORING
ALL BORING LOCATIONS ARE APPROXIMATE

LARRY M. JACOBS AND ASSOCIATES, INC.
328 E GADSDEN STREET
PENSACOLA, FLORIDA 32501

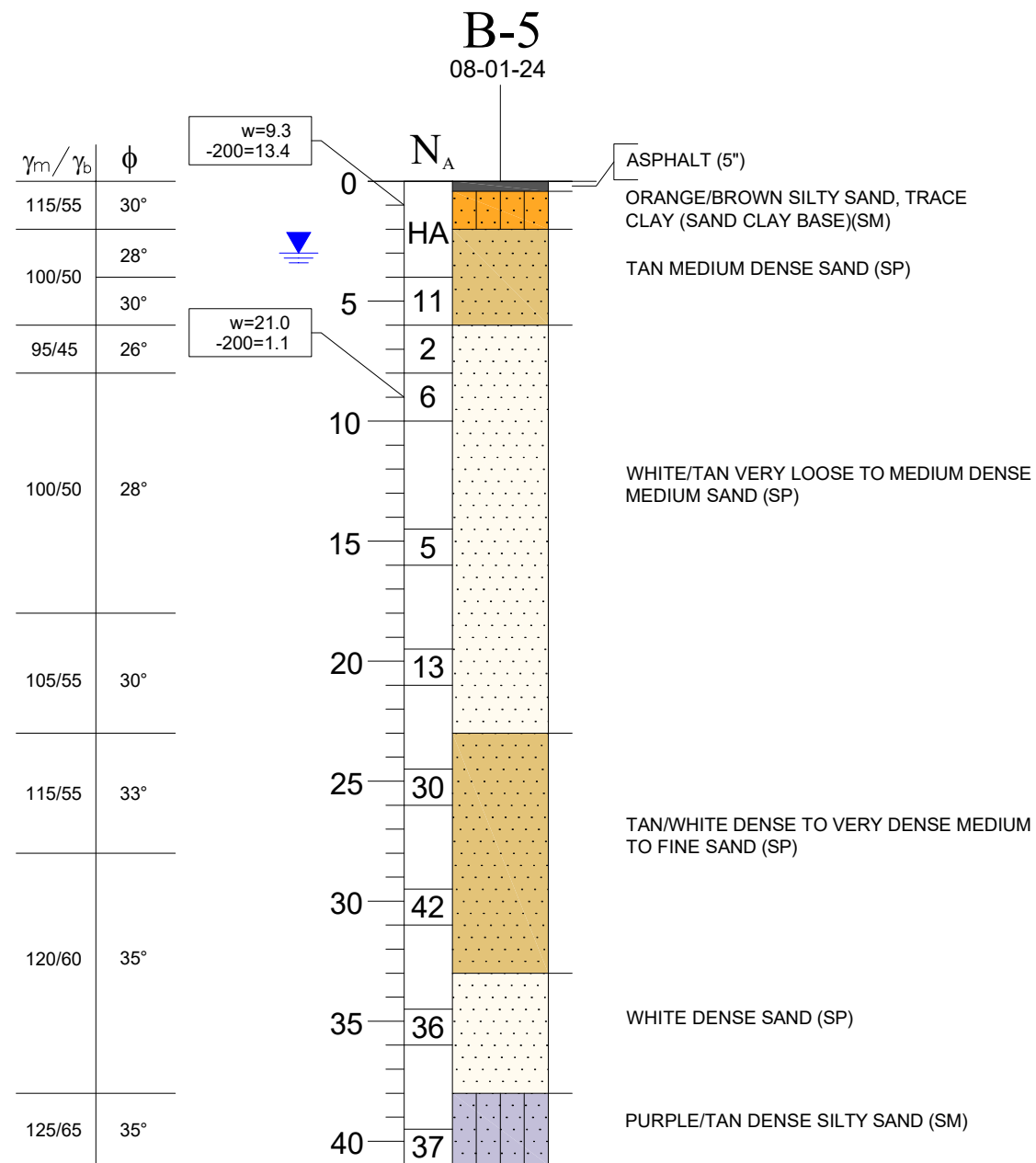
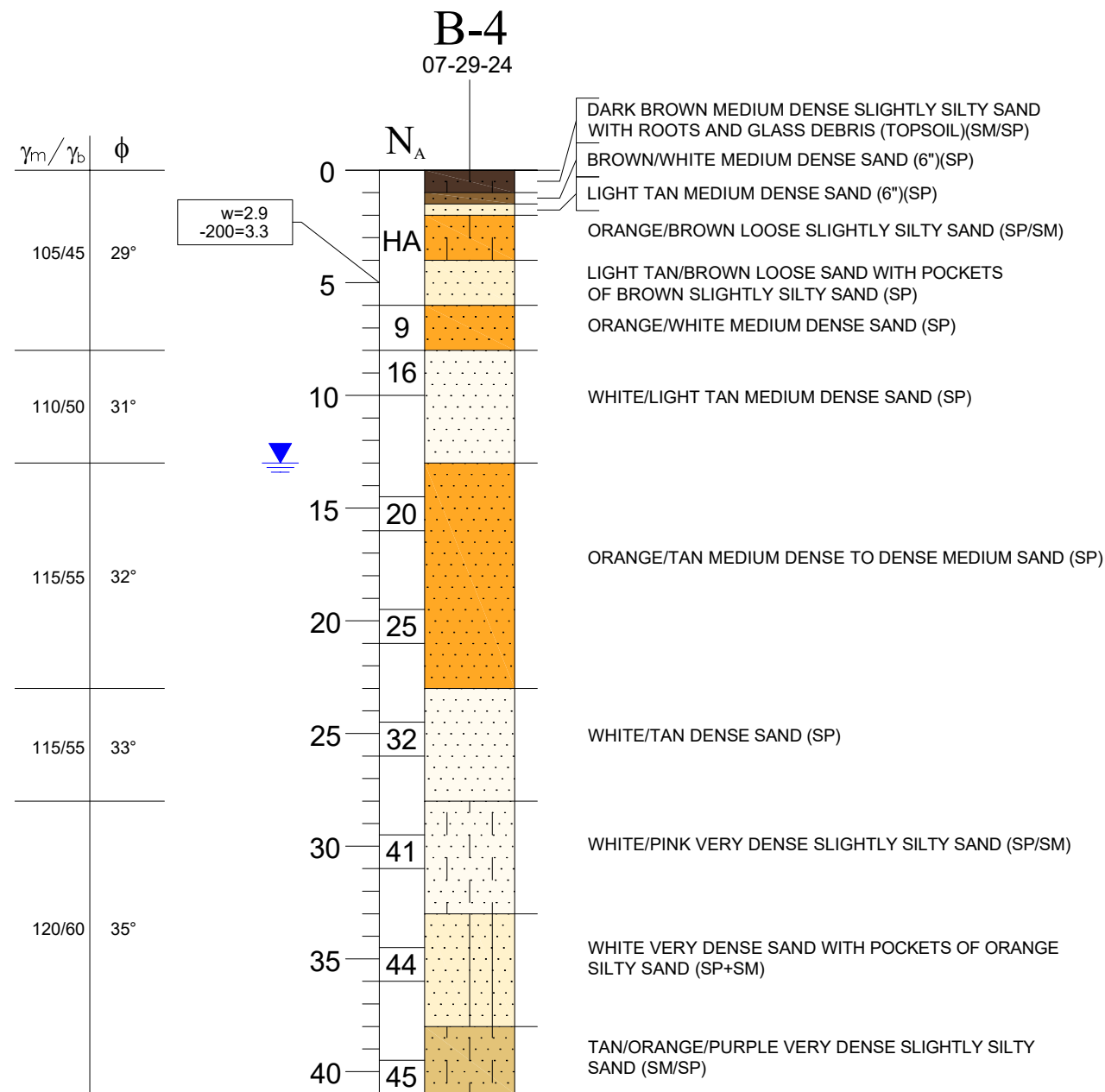


DRAWN BY: GEM		
CHECKED BY: TDN	ROAD NO.	COUNTY
		Escambia
	FINANCIAL PROJECT ID	

SHEET TITLE: BORING LOCATIONS
PROJECT NAME: Wayside East 17th Ave. Park

REF. DWG. NO. 24-138
FIGURE NO. 1

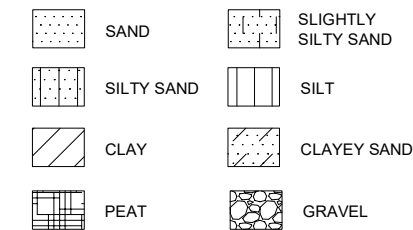
BORING LOGS



DEPTH (FT)	PROBE (IN)
SURFACE	1
0.5	1.5
1	1.5
1.5	1.5
2	1
2.5	1
3	1
3.5	2
4	0.5
4.5	1

DEPTH (FT)	PROBE (IN)
SURFACE	-
0.5	1
1	1
1.5	2
2	2.5
2.5	5
3	12

LEGEND



GRANULAR SOILS	
SPT BLOWS/FOOT (N)	RELATIVE DENSITY
0-2	VERY LOOSE
3-8	LOOSE
9-24	MEDIUM DENSE
25-40	DENSE
GREATER THAN 40	VERY DENSE

COHESIVE SOILS	
SPT BLOWS/FOOT (N)	RELATIVE DENSITY
< 1	VERY SOFT
1-3	SOFT
4-6	MEDIUM STIFF
7-12	STIFF
13-24	VERY STIFF
GREATER THAN 24	HARD

SYMBOLS:

- ONE** = GROUNDWATER NOT ENCOUNTERED AT TIME OF DRILLING
- N** = STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT
- N_A** = STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT USING AUTOMATIC HAMMER
- = ENCOUNTERED GROUNDWATER LEVEL
- = ENCOUNTERED PERCHED WATER LEVEL
- 50'** = NUMBER OF BLOWS REQUIRED (50) TO ADVANCE SPLIT SPOON SAMPLER A SPECIFIC DISTANCE (INCHES)
- HW** = SPLIT SPOON SAMPLER ADVANCED UNDER WEIGHT OF ROD AND HAMMER
- w** = NATURAL MOISTURE CONTENT (%)
- 200** = FINES PASSING #200 SIEVE (%)
- O.C.** = ORGANIC CONTENT (%)
- LL** = ATTERBERG LIMITS (%)
- LL=LIQUID LIMIT, PL=PLASTIC LIMIT
- LI** = LIQUIDITY INDEX
- c** = APPROXIMATE COHESION VALUE (PSF) BASED ON POCKET PENETROMETER READINGS
- K_v** = SATURATED VERTICAL HYDRAULIC CONDUCTIVITY (FT/DAY)
- γ_d** = DRY UNIT WEIGHT (PCF)
- γ_m** = ESTIMATED MOIST UNIT WEIGHT (PCF)
- γ_b** = ESTIMATED BOUYANT UNIT WEIGHT (PCF)
- ϕ** = ESTIMATED ANGLE OF INTERNAL FRICTION (DEGREES)

NOTES:

- 1) SPT BORINGS PERFORMED IN GENERAL ACCORDANCE WITH ASTM D1586
- 2) SUBSURFACE CONDITIONS ARE AT BORING LOCATIONS AND ACTUAL CONDITIONS BETWEEN BORINGS MAY VARY
- 3) ALL CLASSIFICATIONS ARE BASED ON VISUAL EXAMINATION UNLESS ACCOMPANIED BY LABORATORY TEST RESULTS
- 4) BOUNDARIES BETWEEN SOIL LAYERS SHOULD BE CONSIDERED APPROXIMATE AS THE ACTUAL TRANSITION MAY BE GRADUAL
- 5) DEPTH OF BORING IS BELOW EXISTING GRADE AT TIME OF DRILLING

Project #: 24-138 Scale: NTS

Date: 08/29/2024 Checked By: TDN

Project: Wayside East 17th Ave. Park

Location: Escambia County, Florida



ZONE V DESIGN CERTIFICATE

Name Wayside Park East / 17th Avenue Park Improvements Policy Number (Insurance Co. Use) _____
Building Address or Other Description Covered Walkway
Permit No. _____ City Pensacola State FL Zip Code 32502

SECTION I: Flood Insurance Rate Map (FIRM) Information

Community Name & No. City of Pensacola Panel No. 0390 Suffix G FIRM Date 9/29/2006
FIRM Zone(s) _____ Seaward of LiMWA (Coastal A Zone) Yes No

SECTION II: Elevation Information Used for Design

[NOTE: This section documents elevations used in the design – it does not substitute for an as-built Elevation Certificate.]

1. Datum..... NGVD NAVD Other
2. Elevation of the Bottom of Lowest Horizontal Structural Member 12.0 feet above datum
3. Base Flood Elevation (BFE)..... 9.0 feet above datum
4. Elevation of Lowest Adjacent Grade 4.0 feet above datum
5. Approximate Depth of Anticipated Scour/Erosion used for Foundation Design..... 0.5 feet
6. Embedment Depth of Pilings or Foundation Below Lowest Adjacent Grade..... 20.0 feet

SECTION III: Zone V Design Certification Statement

[NOTE: This section must be certified by a Florida licensed engineer or architect.]

I certify: (1) I have developed or reviewed the structural design, plans, and specifications for construction and (2) the design and methods of construction to be used are in accordance with accepted standards of practice for meeting the following provisions:

- The bottom of the lowest horizontal structural member of the lowest floor (with the exception of mat or raft foundations, piling, pile caps, columns, grade beams and bracing) is elevated to or above the BFE in accordance with the requirements of the *Florida Building Code* or local floodplain management regulations (manufactured homes and buildings exempt from the FBC, B); and
- The pile and column foundation and building or structure to be attached thereto is designed in accordance with the *Florida Building Code* to be anchored to resist flotation, collapse, and lateral movement due to the effects of the wind and flood loads acting simultaneously on all building components, and other load requirements of the *Florida Building Code*. The potential for scour and erosion at the foundation has been anticipated for conditions associated with the base flood, including wave action.

SECTION IV: Breakaway Wall Design Certification Statement

[NOTE: This section must also be certified by a Florida licensed engineer or architect when breakaway walls exceed a design safe loading resistance of 20 pounds per square foot. This requirement does not apply to open wood/plastic lattice/slats/louvers or insect screening.]

I certify: (1) I have developed or reviewed the structural design, plans, and specifications for construction and (2) the design and methods of construction to be used for the breakaway walls are in accordance with the *Florida Building Code, Building* (ASCE 24) or *Florida Building Code, Residential*, as applicable, and accepted standards of practice.

SECTION V: Certification and Seal

This certification is to be signed and sealed by a Florida licensed professional engineer or architect authorized by law to certify structural designs. I certify the Zone V Design Certification Statement in Section III and the Breakaway Wall Design Certification Statement in Section IV (if applicable).

Stephen W. Leonard, PE 60730
Certifier's Name Florida License Number
Structural Engineer Berube Leonard, LLC
Title Company Name
3101 N. 12th Avenue Pensacola FL 32503
Address City State ZIP
[Signature] 7/24/2025 (850) 473-9955 x103
Signature Date Telephone

