



Event # 253-2

Name: CEI: Rehab. 48"/54" FM- SE 9th & 10th Ave to GTL

Description: The City of Fort Lauderdale is seeking the services of a qualified consulting firm to provide Construction Engineering and Inspection (CEI) Services related to the Rehab. 48"/54" Replacement- SE 9th and 10th Ave to GTL. Section 3.3 contains a list of services that may be required.

Buyer: HEMMINGS TURNER, PAULETTE

Status: Pending Award

Event Type: RFQ

Currency: USD

Sealed Bid: Yes

Respond To All Lines: No

Q & A Allowed: Yes

Number Of Amendments: 2

Display Bid Tabulation: Display When Event Closed For Bidding Or Canceled

Event Dates

Preview:

Q & A Open: 02/27/2024 04:00:00 PM

Open: 02/27/2024 04:00:00 PM

Q & A Close: 03/22/2024 05:00:00 PM

Close: 03/29/2024 02:00:00 PM

Dispute Close:

Questions

Question	Response Type	Attachment
Did you sign and attach all the Required Forms?	Yes No	Event 253 Required Forms.pdf
Did you sign and attached Contract Payment Method Form?	Yes No	Event 253 - Contract Payment Method.pdf

Attachments

Name	Description	Attachment
EVENT 253 SOLICITATION	EVENT 253 CEI: Rehab. 48"/54" FM- SE 9th & 10th Ave to GTL	Event 225 CEI Services.pdf
DCP Exhibit A & B Specs	DCP Exhibit A & B Specs	12799 DCP Exhibit A DCP & B Specs.pdf

Event # 253-2: CEI: Rehab. 48"/54" FM- SE 9th & 10th Ave to GTL

Name	Description	Attachment
DCP Exhibit C - Conceptual Layout	DCP Exhibit C - Conceptual Layout	12799 DCP Exhibit C - Conceptual Layout.pdf
Addendum 1	Addendum 1 to add Exhibit D Geotechnical Investigations	Addendum 1.pdf

Contacts

Name	Email Address
PAULETTE HEMMINGS TURNER	pturner@fortlauderdale.gov

Commodity Codes

Commodity Code	Description
925	ENGINEERING SERVICES, PROFESSIONAL
925-33	Engineer Services, Professional
925-55	Inspecting, General/Engineering
925-56	Inspecting, Structural/Engineering
962-58	Professional Services (Not Otherwise Classified)

Line Details

Line 1: RFPP P12799 CEI Services Rehabilitation of 48/54" FM Replace

Description: The City of Fort Lauderdale is seeking the services of a qualified consulting firm to provide Construction Engineering and Inspection (CEI) Services related to the Rehab. 48"/54" Replacement- SE 9

and 10th Ave to GTL. Section 3.3 contains a list of services that may be required.

Item: REPLACEMENT SE 9TH&10TH AVE -GTL RFPP P12799 CEI Services Rehabilitation of 48/54" FM Replace

Long Item The City of Fort Lauderdale is seeking the services of a qualified consulting firm to provide Construction

Event # 253-2: CEI: Rehab. 48"/54" FM- SE 9th & 10th Ave to GTL

Description: Engineering and Inspection (CEI) Services related to the Rehab. 48"/54" Replacement- SE 9th and 10th Ave to GTL. Section 3.3 contains a list of services that may be required.

Commodity Code: 925 ENGINEERING SERVICES, PROFESSIONAL

Manufacturer Code: MFC **Division:** DIV

Quantity: 1.0000 **Unit of Measure:** DO

Require Response: Yes **Price Breaks Allowed:** No **Allow Alternate Responses:** No

Add On Charges Allowed: No

Line 1 Questions

Question	Response Type	Attachment
Did you sign and attach all the required forms?	Yes No	Event 253 - Required Forms.pdf

Request for Qualifications

RFQ EVENT# 253

**CEI Serv. - Rehab. of 48"/54" FM: Replacement on SE 9th
and 10th Avenue to GTL**

Pursuant to Section 287.055
Consultants' Competitive Negotiation Act (CCNA)

City of Fort Lauderdale



Paulette Hemmings Turner
SENIOR PROCUREMENT SPECIALIST
Telephone: (954) 828-5139
E-mail: PTurner@fortlauderdale.gov

SECTION I – INTRODUCTION AND INFORMATION

1.1 Purpose

The City of Fort Lauderdale, FL (City) is actively seeking qualified, experienced, and licensed firm(s) to provide Construction Engineering and Inspection (CEI) Services as further described in Section III – Scope of Services. Those firms which are interested in submitting proposals in response to this Request for Qualifications (RFQ) shall comply with Section IV– Submittal Requirements.

1.2 INFOR

The City uses www.INFOR.com (INFOR) to administer the competitive solicitation process, including but not limited to soliciting bids, issuing addenda, posting results and issuing notification of an intended decision. There is no charge to register and download the RFQ from INFOR. Proposers are strongly encouraged to read the various supplier tutorials available in INFOR well in advance of their intention of submitting a response to ensure familiarity with the use of INFOR. The City shall not be responsible for an offeror's inability to submit a response by the end date and time for any reason, including issues arising from the use of INFOR. There is no charge to proposers to register and participate in the solicitation process, nor will any fees be charged to the awarded proposer.

It is the sole responsibility of the proposer to ensure that its bid is submitted electronically through INFOR at INFOR.com no later than the time and date specified in this solicitation. **PAPER BID SUBMITTALS WILL NOT BE ACCEPTED. BIDS MUST BE SUBMITTED ELECTRONICALLY VIA INFOR.com.**

1.3 Electronic Bid Openings

This solicitation will be opened electronically via INFOR.com at the date and time indicated in the solicitation. All openings will be held on the INFOR.com platform.

Anyone requesting assistance or having further inquiry in this matter must contact the Procurement Specialist indicated on the solicitation, via the Question and Answer (Q&A) forum on INFOR.com before the Last Day for Questions indicated in the Solicitation.

1.4 Pre-Proposal Meeting

There will not be a pre-proposal meeting for this RFQ.

1.5 Point of Contact

City of Fort Lauderdale, Procurement Services Division
Attn: Paulette Hemmings Turner, Senior Procurement Specialist
521 NE 4th Avenue, 6th Floor
Fort Lauderdale, FL 33301
Telephone: (954) 828-5139
E-mail: PTurner@fortlauderdale.gov

For all inquiries concerning this RFQ, questions, and requests for additional information, please utilize the Q&A forum provided by the City's online strategic sourcing platform. Questions of a material nature must be received prior to the cut-off date specified in the RFQ. Material changes, if any, to the scope of services or bidding procedures will only be transmitted by written addendum. **Consultants please note:** Proposals shall be submitted as stated in PART IV – Submittal Requirements. No part of your proposal can be submitted via FAX. Submission of a proposal will

be considered evidence that the proposer has familiarized itself with the nature and extent of the work, and the equipment, materials, and labor required. The entire proposal must be submitted in accordance with all requirements contained in this solicitation. The questions and answers submitted on the City's online strategic sourcing platform shall become part of any contract that is created from this RFQ.

1.6 Debarred or Suspended Bidders or Proposers

The proposer certifies, by submission of a response to this solicitation, that neither it nor its principals and subconsultants are presently debarred or suspended by any Federal department or agency.

1.7 Prohibition Against Contracting with Scrutinized Companies

Subject to *Odebrecht Construction, Inc., v. Prasad*, 876 F.Supp.2d 1305 (S.D. Fla. 2012), *affirmed*, *Odebrecht Construction, Inc., v. Secretary, Florida Department of Transportation*, 715 F.3d 1268 (11th Cir. 2013), with regard to the "Cuba Amendment," the Contractor certifies that it is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, and that it does not have business operations in Cuba or Syria, as provided in Section 287.135, Florida Statutes (2022), as may be amended or revised. The Contractor certifies that it is not on the Scrutinized Companies that Boycott Israel List created pursuant to Section 215.4725, Florida Statutes (2022), as may be amended or revised, and that it is not engaged in a boycott of Israel. The City may terminate this Agreement at the City's option if the Contractor is found to have submitted a false certification as provided under subsection (5) of Section 287.135, Florida Statutes (2022), as may be amended or revised, or been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or the Scrutinized Companies that Boycott Israel List created pursuant to Section 215.4725, Florida Statutes (2022), as may be amended or revised, or is engaged in a boycott of Israel or has been engaged in business operations in Cuba or Syria, as defined in Section 287.135, Florida Statutes (2022), as may be amended or revised.

By submitting a proposal or response, the company, principals, or owners certify that it is not listed on the Scrutinized Companies with Activities in Sudan List or listed on the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or is engaged in business operations in Cuba or Syria.

END OF SECTION

SECTION II – GENERAL TERMS AND CONDITIONS

2.1 Addenda, Changes, and Interpretations

It is the sole responsibility of each firm to notify the point of contact utilizing the Q&A forum provided by the City's online strategic sourcing platform and request modification or clarification of any ambiguity, conflict, discrepancy, omission or other error discovered in this competitive solicitation. Requests for clarification, modification, interpretation, or changes must be received prior to the Q&A deadline. Requests received after this date may not be addressed. Questions and requests for information that would not materially affect the scope of services to be performed or the solicitation process will be answered within the Q&A forum provided by the City's online strategic sourcing platform and shall be for clarification purposes only. Material changes, if any, to the scope of services or the solicitation process will only be transmitted by official written addendum issued by the City and uploaded to as a separate addendum to the RFQ. Under no circumstances shall an oral explanation given by any City official, officer, staff, or agent be binding upon the City and should be disregarded. All addenda are a part of the competitive solicitation documents, and each firm will be bound by such addenda. It is the responsibility of each to read and comprehend all addenda issued.

2.2 Changes and Alterations

Consultant may change or withdraw a proposal at any time prior to the proposal submission deadline; however, no oral modifications will be allowed. Modifications shall not be allowed following the proposal deadline.

2.3 Consultants' Costs

The City shall not be liable for any costs incurred by consultants in responding to this RFQ, including costs incurred in connection with evaluation and award proceedings.

2.4 Mistakes

The consultant shall examine this RFQ carefully. The submission of a proposal shall be prima facie evidence that the consultant has full knowledge of the scope, nature, and quality of the work to be performed; the detailed requirements of the specifications; and the conditions under which the work is to be performed. Ignorance of the requirements will not relieve the consultant from liability and obligations under the Agreement.

2.5 Acceptance of Responses/Minor Irregularities

2.5.1 The City reserves the right to accept or reject any or all responses, part of responses, and to waive minor irregularities or variances to specifications contained in responses which do not make the response conditional in nature, and minor irregularities in the solicitation process. A minor irregularity shall be a variation from the solicitation that does not affect the price of the contract or does not give a respondent an advantage or benefit not enjoyed by other respondents, does not adversely impact the interests of other firms or does not affect the fundamental fairness of the solicitation process. The City also reserves the right to reissue a Request for Qualifications.

2.5.2 The City reserves the right to disqualify Consultant during any phase of the competitive solicitation process and terminate for cause any resulting contract upon evidence of collusion with intent to defraud or other illegal practices on the part of the Consultant.

2.6 Responsiveness

In order to be considered responsive to the solicitation, the firm's response shall fully conform in all material respects to the solicitation and all of its requirements, including all form and substance.

2.7 Responsibility

In order to be considered as a responsible firm, firm shall be fully capable to meet all of the requirements of the solicitation and subsequent contract, must possess the full capability, including financial and technical, to perform as contractually required, and must be able to fully document the ability to provide good faith performance.

2.8 Minimum Qualifications

Firms shall be in the business of Construction Engineering Inspection (CEI) for at least five (5) years, and must possess sufficient financial support, equipment and organization to ensure that it can satisfactorily perform the services if awarded a contract. Firms must demonstrate that they, or the principals assigned to the project, have successfully provided services with similar magnitude to those specified in the scope of services to at least one city similar in size and complexity to the City of Fort Lauderdale or can demonstrate they have the experience with large scale private sector clients and the managerial and financial ability to successfully perform the work.

Firms shall satisfy each of the following requirements cited below. Failure to do so may result in the proposal being deemed non-responsive.

2.8.1 Before awarding a contract, the City reserves the right to require that a firm submit such evidence of its qualifications as the City may deem necessary. Further, the City may consider any evidence of the financial, technical, and other qualifications and abilities of a firm or principals, including previous experiences of same with the City and performance evaluation for services, in making the award in the best interest of the City.

2.8.2 Firm or principals shall have no record of judgments, pending lawsuits against the City or criminal activities involving moral turpitude and not have any conflicts of interest that have not been waived by the City Commission.

2.8.3 Neither Firm nor any principal, officer, or stockholder shall be in arrears or in default of any debt or contract involving the City, (as a party to a contract, or otherwise); nor have failed to perform faithfully on any previous contract with the City.

2.8.4 Consultant(s) must be appropriately licensed and registered in the State of Florida in the required field of service required.

2.9 Lobbyist Ordinance

ALL CONSULTANTS PLEASE NOTE: Any consultant submitting a response to this solicitation must comply, if applicable, with City of Fort Lauderdale Ordinance No. C-11-42 & Resolution No. 07-101, Lobbying Activities. Copies of Ordinance No. C-11-42 and Resolution No. 07-101 may be obtained from the City Clerk's Office on the Suite 444, 4th Floor of 1E Broward Boulevard, Fort Lauderdale, Florida 33301. The Ordinance may also be viewed on the City's website at <https://www.fortlauderdale.gov/home/showdocument?id=6036>.

2.10 Protest Procedure

2.10.1 Any proposer who is not recommended for award of a contract and who alleges a failure by the City to follow the City's Procurement Ordinance or any applicable law, may follow the

protest procedure as found in the City's Procurement Ordinance within five (5) days after a notice of intent to award is posted on the City's web site at the following link:
<https://www.fortlauderdale.gov/government/departments-a-h/finance/procurement-services/notices-of-intent-to-award>

2.10.2 The complete Protest Ordinance may be found on the City's web site at the following link: https://library.municode.com/fl/fort_lauderdale/codes/code_of_ordinances?nodemd=C_OOR_CH2AD_ARTVFI_DIV2PR_S2-182DIREPRAWINAW

2.11 Public Entity Crimes

In accordance with the Public Crimes Act, Section 287.133, Florida Statutes (2021), as may be amended or revised, a person or affiliate who is a contractor, consultant or other provider, who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to the City, may not submit a bid on a contract with the City for the construction or repair of a public building or public work, may not submit bids on leases of real property to the City, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with the City, and may not transact any business with the City in excess of the threshold amount provided in Section 287.017, Florida Statutes (2021), as may be amended or revised, for category two purchases for a period of thirty-six (36) months from the date of being placed on the convicted vendor list. Violation of this section by Consultant shall result in cancellation of the City purchase and may result in Consultant debarment.

2.12 Subconsultants

2.12.1 A Subconsultant is an individual or firm contracted by the Consultant or Consultant's firm to assist in the performance of services required under this RFQ. A subconsultant shall be paid through Consultant or Consultant's firm and not paid directly by the City. Subconsultants are permitted by the City in the performance of the services pursuant to the Agreement. Consultant must clearly reflect in its proposal, the major subconsultant(s) to be utilized in the performance of required services. The City retains the right to accept or reject any subconsultant proposed in the response of Successful Consultant(s) or prior to contract execution. Any and all liabilities regarding the use of a subconsultant shall be borne solely by the Successful Consultant and insurance for each subconsultant must be maintained in good standing and approved by the City throughout the duration of the Contract. Neither Successful Consultant nor any of its subconsultants are considered to be employees or agents of the City. Failure to list all subconsultants and provide the required information may disqualify any proposed subconsultant from performing work under this RFQ.

2.12.2 Consultants shall include in their responses, the requested subconsultant information and include all relevant information required of the Consultant. In addition, within five (5) working days after the identification of the award to the successful Consultant(s), the Consultant shall provide a list confirming the subconsultant(s) that the successful Consultant intends to utilize in the Contract, if applicable. The list shall include, at a minimum, the name, and location of the place of business for each subconsultant, the services subconsultant will provide relative to any contract that may result from this RFQ, subconsultants' hourly rates or fees, any applicable licenses, insurance, references, ownership, and other information required of Consultant.

2.13 Local Business Preference –N/A

2.14 Disadvantaged Business Enterprise Preference – N/A

2.15 Insurance Requirements

2.15.1 As a condition precedent to the effectiveness of this Agreement, during the term of this Agreement and during any renewal or extension term of this Agreement, Contractor, at its sole expense, shall provide insurance of such types and with such terms and limits as noted below. Providing proof of and maintaining adequate insurance coverage are material obligations of Contractor. Contractor shall provide the City a certificate of insurance evidencing such coverage. Contractor's insurance coverage shall be primary insurance for all applicable policies, in respect to the City's interests. The limits of coverage under each policy maintained by Contractor shall not be interpreted as limiting Contractor's liability and obligations under this Agreement. All insurance policies shall be through insurers authorized or eligible to write policies in the State of Florida and possess an A.M. Best rating of A-, VII or better, subject to approval by the City's Risk Manager.

The coverages, limits, and/or endorsements required herein protect the interests of the City, and these coverages, limits, and/or endorsements shall in no way be relied upon by Contractor for assessing the extent or determining appropriate types and limits of coverage to protect Contractor against any loss exposures, whether as a result of this Agreement or otherwise. The requirements contained herein, as well as the City's review or acknowledgement, are not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by Contractor under this Agreement.

The following insurance policies and coverages are required:

Commercial General Liability

Coverage must be afforded under a Commercial General Liability policy with limits not less than:

- \$1,000,000 each occurrence and \$2,000,000 aggregate for Bodily Injury, Property Damage, and Personal and Advertising Injury
- \$1,000,000 each occurrence and \$2,000,000 aggregate for Products and Completed Operations

Policy must include coverage for contractual liability and independent contractors.

The City, a Florida municipality, its officials, employees, and volunteers are to be covered as an additional insured with a CG 20 26 04 13 Additional Insured – Designated Person or Organization Endorsement or similar endorsement providing equal or broader Additional Insured Coverage with respect to liability arising out of activities performed by or on behalf of Contractor. The coverage shall contain no special limitation on the scope of protection afforded to the City, its officials, employees, and volunteers.

Professional Liability

Coverage must be afforded for Wrongful Acts in an amount not less than \$1,000,000 each claim and \$2,000,000 aggregate.

Contractor must keep the professional liability insurance in force until the third anniversary of expiration or early termination of this Agreement or the third anniversary of acceptance

of work by the City, whichever is longer, which obligation shall survive expiration or early termination of this Agreement.

Business Automobile Liability

Coverage must be afforded for all Owned, Hired, Scheduled, and Non-Owned vehicles for Bodily Injury and Property Damage in an amount not less than \$1,000,000 combined single limit each accident.

If Contractor does not own vehicles, Contractor shall maintain coverage for Hired and Non-Owned Auto Liability, which may be satisfied by way of endorsement to the Commercial General Liability policy or separate Business Auto Liability policy.

Workers' Compensation and Employer's Liability

Coverage must be afforded per Chapter 440, Florida Statutes. Any person or entity performing work for or on behalf of the City must provide Workers' Compensation insurance. Exceptions and exemptions will be allowed by the City's Risk Manager, if they are in accordance with Florida Statute.

Contractor waives, and Contractor shall ensure that Contractor's insurance carrier waives, all subrogation rights against the City, its officials, employees, and volunteers for all losses or damages. The City requires the policy to be endorsed with WC 00 03 13 Waiver of our Right to Recover from Others or equivalent.

Contractor must be in compliance with all applicable State and federal workers' compensation laws, including the U.S. Longshore and Harbor Workers' Compensation Act and the Jones Act, if applicable.

Insurance Certificate Requirements

- a) Contractor shall provide the City with valid Certificates of Insurance (binders are unacceptable) no later than ten (10) days prior to the start of work contemplated in this Agreement.
- b) Contractor shall provide to the City a Certificate of Insurance having a thirty (30) day notice of cancellation; ten (10) days' notice if cancellation is for nonpayment of premium.
- c) In the event that the insurer is unable to accommodate the cancellation notice requirement, it shall be the responsibility of Contractor to provide the proper notice. Such notification will be in writing by registered mail, return receipt requested, and addressed to the certificate holder.
- d) In the event the Agreement term or any surviving obligation of Contractor following expiration or early termination of the Agreement goes beyond the expiration date of the insurance policy, Contractor shall provide the City with an updated Certificate of Insurance no later than ten (10) days prior to the expiration of the insurance currently in effect. The City reserves the right to suspend the Agreement until this requirement is met.
- e) The Certificate of Insurance shall indicate whether coverage is provided under a claims-made or occurrence form. If any coverage is provided on a claims-made form, the Certificate of Insurance must show a retroactive date, which shall be the effective date of the initial contract or prior.
- f) The City shall be covered as an Additional Insured on all liability policies, with the exception of Workers' Compensation and Professional Liability.

- g) The City shall be granted a Waiver of Subrogation on Contractor's Workers' Compensation insurance policy.
- h) The title of the Agreement, Bid/Contract number, event dates, or other identifying reference must be listed on the Certificate of Insurance.

The Certificate Holder should read as follows:

City of Fort Lauderdale
100 N. Andrews Avenue
Fort Lauderdale, FL 33301

Contractor has the sole responsibility for all insurance premiums and shall be fully and solely responsible for any costs or expenses as a result of a coverage deductible, co-insurance penalty, or self-insured retention; including any loss not covered because of the application of such deductible, co-insurance penalty, self-insured retention, or coverage exclusion or limitation. Any costs for adding the City as an Additional Insured shall be at Contractor's expense.

If Contractor's primary insurance policy/policies do not meet the minimum requirements as set forth in this Agreement, Contractor may provide evidence of an Umbrella/Excess insurance policy to comply with this requirement.

Contractor's insurance coverage shall be primary insurance in respect to the City's interests, a Florida municipality, its officials, employees, and volunteers. Any insurance or self-insurance maintained by the City shall be non-contributory.

Any exclusion or provision in any insurance policy maintained by Contractor that excludes coverage required in this Agreement shall be deemed unacceptable and shall be considered breach of contract.

All required insurance policies must be maintained until the contract work has been accepted by the City, or until this Agreement is terminated, whichever is later. Any lapse in coverage may be considered breach of contract. In addition, Contractor must provide to the City confirmation of coverage renewal via an updated certificate of insurance should any policies expire prior to the expiration of this Agreement. The City reserves the right to review, at any time, coverage forms and limits of Contractor's insurance policies.

Contractor shall provide notice of any and all claims, accidents, and any other occurrences associated with this Agreement to Contractor's insurance company or companies and the City's Risk Management office as soon as practical.

It is Contractor's responsibility to ensure that any and all of Contractor's independent contractors and subcontractors comply with these insurance requirements. All coverages for independent contractors and subcontractors shall be subject to all of the applicable requirements stated herein. Any and all deficiencies are the responsibility of Contractor. The City reserves the right to adjust insurance limits from time to time at its discretion with notice to Contractor.

NOTE: CITY PROJECT NUMBER, PROJECT NAME AND BID NUMBER MUST APPEAR ON EACH CERTIFICATE, AND THE CITY OF FORTLAUDERDALE MUST BE NAMED ON THE CERTIFICATE AS AN "ADDITIONAL INSURED" ON REQUIRED LIABILITY POLICIES.

A Sample Insurance Certificate shall be included with the proposal to demonstrate the firm's ability to comply with insurance requirements. Provide a previous certificate or other evidence listing the insurance companies' names for all required coverage, and the dollar amounts of the coverage.

2.16 Insurance – Subconsultants

Consultant shall require all of its subconsultants to provide the aforementioned coverage as well as any other coverage that the consultant may consider necessary, and any deficiency in the coverage or policy limits of said subconsultants will be the sole responsibility of the consultant.

2.17 Award of Contract

A Contract (the "Agreement") will be awarded in accordance with Florida Statutes, by the City Commission. The City reserves the right to execute or not execute, as applicable, a contract with the Consultant(s) that is determined to be in the City's best interests. The draft/sample agreement is provided herein as an attachment to this RFQ. The City reserves the right to award a contract to more than one Consultant as is in the City's best interest.

2.18 Modification of Services

2.18.1 While this contract is for services provided to the department referenced in this RFQ, the City may require similar work for other City departments. Successful Proposer agrees to take on such work unless such work would not be considered reasonable or become an undue burden to the Successful Proposer.

2.18.2 The City reserves the right to delete any portion of the work at any time without cause, and if such right is exercised by the City, the total fee shall be reduced in the same ratio as the estimated cost of the work deleted bears to the estimated cost of the work originally planned. If work has already been accomplished and approved by the City on any portion of a contract resulting from this RFQ, the Successful Proposer shall be paid for the work completed on the basis of the estimated percentage of completion of such portion to the total project cost.

2.18.3 The City may require additional items or services of a similar nature, but not specifically listed in the contract. The Successful Proposer agrees to provide such items or services, and shall provide the City prices on such additional items or services. If the price(s) offered are not acceptable to the City, and the situation cannot be resolved to the satisfaction of the City, the City reserves the right to procure those items or services from other vendors, or to cancel the contract upon giving the Successful Proposer thirty (30) days written notice.

2.18.4 If the Successful Proposer and the City agree on modifications or revisions to the task elements, after the City has approved work to begin on a particular task or project, and a budget has been established for that task or project, the Successful Proposer will submit a revised budget to the City for approval prior to proceeding with the work.

2.19 No Exclusive Contract

Proposer agrees and understands that the contract shall not be construed as an exclusive arrangement and further agrees that the City may, at any time, secure similar or identical services from another vendor at the City's sole option.

2.20 Contract Agreement

Any subsequent contract will be subject to the Agreement included as an attachment and made a part of this RFQ.

2.21 Contract Period

The contract term shall commence upon date of award by the City.

2.22 Unauthorized Work

The Successful Consultant(s) shall not begin work until a Contract has been awarded by the City Commission and a notice to proceed has been issued. Consultant(s) agree and understand that the issuance of a Purchase Order and/or Task Order shall be issued and provided to the Consultant(s) following Commission award.

2.23 Payment Method

The City shall make payment to the Consultant through utilization of the City's P-Card Program. The City has implemented a Purchasing Card (P-Card) Program utilizing the MasterCard and Visa networks. Purchases from this contract will be made utilizing the City's Purchasing Card. Consultant will receive payment from the purchasing card in the same manner as other credit card purchases.

Accordingly, Consultant must presently have the ability to accept these credit cards or take whatever steps necessary to implement the ability before the start of the contract term, or contract award by the City. All costs associated with the Consultant's participation in this purchasing program shall be borne by the Consultant. The City reserves the right to revise this program as necessary.

2.24 Payment Card Industry (PCI) Compliance

Consultant agrees to comply with all applicable state, federal and international laws, as well as industry best practices, governing the collection, access, use, disclosure, safeguarding and destruction of Protected Information.

Consultant and/or any subconsultant that handles credit card data must be, and remain, PCI compliant under the current standards and will provide documentation confirming compliance upon request by the City of Fort Lauderdale. Failure to produce documentation could result in termination of the contract.

2.25 Prohibition Against Contingent Fees

The architect (or registered surveyor and mapper or professional engineer, as applicable) warrants that he or she has not and will not employ or retain any company or person, other than a bona fide employee working solely for the architect (or registered surveyor and mapper, or professional engineer, as applicable) to solicit or secure an agreement pursuant to this competitive solicitation and that he or she has not and will not pay or agree to pay any person, company, corporation, individual, or firm, other than a bona fide employee working solely for the architect (or registered surveyor and mapper or professional engineer, as applicable) any fee, commission, percentage, gift, or other consideration contingent upon or resulting from an award or making of an agreement pursuant to this competitive solicitation.

2.26 Indemnity/Hold Harmless Agreement

The Consultant shall indemnify and hold harmless the City, and its officers and employees, from liabilities, damages, losses, and costs, including, but not limited to, reasonable attorneys' fees, to the extent caused by the negligence, recklessness, or intentionally wrongful conduct of the Consultant and other persons employed or utilized by the design professional in the performance of the contract.

2.27 Substitution of Personnel

It is the intention of the City that the Proposer's personnel proposed for the contract will be available for the contract term. In the event the Proposer wishes to substitute personnel, he shall propose personnel of equal or higher qualifications and all replacement personnel are subject to City approval. In the event substitute personnel are not satisfactory to the City and the matter cannot be resolved to the satisfaction of the City, the City reserves the right to cancel the Contract for cause. See Section 5.09 of the General Conditions.

2.28 Ownership of Work

The City shall have full ownership and the right to copyright, otherwise limit, reproduce, modify, sell, or use all of the work or product produced under this Contract without payment of any royalties or fees to the Consultant above the agreed hourly rates and related costs.

2.29 Canadian Companies

In the event Consultant is a corporation organized under the laws of any province of Canada or is a Canadian federal corporation, the City may enforce in the United States of America or in Canada or in both countries, a judgment entered against the Consultant. The Consultant waives any and all defenses to the City's enforcement in Canada, of a judgment entered by a court in the United States of America. All monetary amounts set forth in this Contract are in United States dollars.

2.30 Instructions

Careful attention must be given to all requested items contained in this RFQ. Proposers are invited to submit responses in accordance with the requirements of this RFQ. Please read the entire solicitation before submitting a proposal. Firms must provide a response to each requirement of the RFQ. Responses should be prepared in a concise manner with an emphasis on completeness and clarity. Firm's notes and comments may be rendered on an attachment, provided the same format of this RFQ text is followed. All responses shall be submitted electronically through the City's online strategic sourcing platform as stated in Section 4.1.

2.31 Discrepancies, Errors and Omissions

Any discrepancies, errors, or ambiguities in the RFQ or addenda should be reported in writing to the City's Procurement Services Division. Should it be necessary, a written addendum will be incorporated to the RFQ. The City will NOT be responsible for any oral instructions, clarifications, or other communications.

2.32 Non-Discrimination

The Consultant shall not, in any of its activities, including employment, discriminate against any individual on the basis of race, color, national origin, age, disability, religion, gender, creed, sex, sexual orientation, gender, gender identity, gender expression, marital status, or any other protected classification as defined by applicable law.

1. The Consultant certifies and represents that it will comply with Section 2-187, Code of Ordinances of the City of Fort Lauderdale, Florida, as may be amended or revised, ("Section 2-187").
2. The failure of the Consultant to comply with Section 2-187 shall be deemed to be a material breach of the Agreement, entitling the City to pursue any remedy stated below or any remedy provided under applicable law.
3. The City may terminate this Agreement if the Consultant fails to comply with Section 2-187.

4. The City may retain all monies due or to become due until the Consultant complies with Section 2-187.
5. The Consultant may be subject to debarment or suspension proceedings. Such proceedings will be consistent with the procedures in Section 2-183 of the Code of Ordinances of the City of Fort Lauderdale, Florida.

2.33 E-Verify

As a condition precedent to the effectiveness of this Agreement, pursuant to Section 448.095, Florida Statutes (2023), as may be amended or revised, the Consultant and its subconsultants shall register with and use the E-Verify system to electronically verify the employment eligibility of newly hired employees.

1. The Consultant shall require each of its subconsultants, if any, to provide the Consultant with an affidavit stating that the subconsultant does not employ, contract with, or subcontract with an unauthorized alien. The Consultant shall maintain a copy of the subconsultant's affidavit for the duration of this Agreement and in accordance with the public records requirements of this Agreement.
2. The City, the Consultant, or any subconsultant who has a good faith belief that a person or entity with which it is contracting has knowingly violated Section 448.09(1), Florida Statutes (2023), as may be amended or revised, shall terminate the Agreement with the person or entity.
3. The City, upon good faith belief that a subconsultant knowingly violated the provisions of Section 448.095(2), Florida Statutes (2023), as may be amended or revised, but that the Consultant otherwise complied with Section 448.095(5), Florida Statutes (2023), as may be amended or revised, shall promptly notify Consultant and order the Consultant to immediately terminate the contract with the subconsultant, and the Consultant shall comply with such order.
4. An Agreement terminated under Sections 448.095(5)(c)1. or 2., Florida Statutes (2023), as may be amended or revised, is not a breach of contract and may not be considered as such. If the City terminates this Agreement under Section 448.095(5)(c), Florida Statutes (2023), as may be amended or revised, the Consultant may not be awarded a public contract for at least one year after the date on which the Agreement was terminated. The Consultant is liable for any additional costs incurred by the City as a result of termination of this Agreement.
5. Consultant shall include in each of its subcontracts, if any, the requirements set forth in this Section, including this subparagraph, requiring any and all subconsultants, as defined in Section 448.095(1)(e), Florida Statutes (2023), as may be amended or revised, to include all of the requirements of this Section in their subcontracts. Consultant shall be responsible for compliance by any and all subconsultants, as defined in Section 448.095(1)(j), Florida Statutes (2023), as may be amended or revised, with the requirements of Section 448.095, Florida Statutes (2023), as may be amended or revised.

END OF SECTION

SECTION III - SCOPE OF SERVICES

3.1 Purpose

The City of Fort Lauderdale is seeking the services of a qualified consulting firm to provide Construction Engineering and Inspection (CEI) Services related to the Rehab. 48"/54" Replacement- SE 9th and 10th Ave to GTL. Section 3.3 contains a list of services that may be required. This list shall not be construed as an exclusive list of activities that successful firm(s) may be engaged in. City shall have the right, in its sole and absolute discretion, to require additional services that are consistent with the scope of services and those activities typically performed by CEI consultants, and for which the firm(s) are experienced, qualified, and able to perform.

3.1.1 **Rehab. 48"/54" FM Replacement – SE 9th and 10th AVE to GTL**

The purpose of this project is for the rehabilitation or replacement of approximately 15,150 feet of existing 48- inch and 54-inch force main complete with all tie-ins and subsequent surface restoration to existing or better conditions. This existing force main, when still active, conveyed raw wastewater from the Galleria Mall area towards the George T. Lohmeyer Wastewater Treatment Plant (GTL WWTP). After the force main broke in December of 2019, part of this existing force main, the Tarpon River crossing section, was abandoned. As a result, the Project will also include approximately 8,220 linear feet of new 48-inch force main. Taken together the Project is a total of approximately 23,370 liner feet of new or rehabilitated pipe.

3.2 Scope of Services

The City of Fort Lauderdale is seeking Statements of Qualifications from qualified CEI firms in response to this Request for Qualifications for the purpose of managing the construction of the following project: **Rehab. 48"/54" Replacement – SE 9th and 10th Ave to GTL (Project No. P12799)**

3.3 Consultant CEI Firm's Requirements, Responsibilities & Services

for the **Rehab. 48"/54" Replacement – SE 9th and 10th Ave to GTL** Project will be required to perform services as requested in assisting the City with implementing the combined project.

3.3.1 General:

The CEI Services (CEI) for Rehab **48"/54" Replacement – SE 9th and 10th Ave to GTL** Project will consist of those services performed by the CEI firm and sub consultants enumerated in the Agreement between the City and the CEI Firm. Duties may include, but will not necessarily be limited to:

- A. Acting as the City's representative and agent relative to the entire project.
- B. Providing sufficient organization, personnel and management to carry out the requirements of the Agreement in an expeditious and economical manner consistent with the interests of the City.
- C. Possessing credentials from the State of Florida, certifying that both the firm and the key individuals are currently in good standing as a licensed Architect or Engineer throughout the duration of this contract.
- D. Acting as the City's representative and agent relative to the entire project.

- E. Providing sufficient organization, personnel and management to carry out the requirements of the Agreement in an expeditious and economical manner consistent with the interests of the City.
- F. Possessing credentials from the State of Florida, certifying that both the firm and the key individuals are currently in good standing as a licensed Architect or Engineer throughout the duration of this contract.
- G. Employees on site need to have a picture badge by their employer and be able to read, write and speak English. Employees must wear appropriate safety gear (PPE) at all times while on the project.
- H. CEI team to be trained as well as the contractor's staff in ISO 9001 and ISO 14001 in order to comply with the requirements the City has put in place.

3.3.2 Pre-Construction Phase:

The pre-construction phase will commence upon issuance of the Notice to Proceed from the City to the CEI firm and will end when the Contractor commences the work shown in the project documents, excluding mobilization and establishment of site offices. The Construction Engineering and Inspection Services firm duties during this phase may include but will not be limited to:

- A. Evaluation of the Contractor's bid to determine its adequacy regarding completing the project.
- B. Providing and establishing a temporary construction site office and coordinating with the City and Contractor for location of such office, allocation for private vehicles needs to be made due to the limited parking space on site. The CEI firm shall be responsible for all permits, utility hook ups and coordination necessary to establish the construction site office. If a site office is not feasible, the CEI firm shall rent office space off site and near the **Rehab. 48"/54" Replacement – SE 9th and 10th Ave to GTL** project site; however, the CEI firm must maintain adequate staffing levels on site any time the Contractor is conducting work or other major activities.
- C. Providing recommendations on relative feasibility of construction methods, availability of materials and labor, time requirements for procurement, installation and construction, and factors related to construction cost including, but not limited to, costs of alternative designs or materials, preliminary budgets, and possible economies.
- D. Reviewing the project baseline schedule provided by the Contractor and providing comments to the City as to its reasonableness. The CEI firm shall highlight the City's and Contractor's responsibilities that are considered critical and include long-lead-time items. In concert with the Contractor's schedule, the CEI firm shall provide and periodically update their staffing plan to adequately handle the workload created by meeting the project requirements and attending to the contractor's work items.
- E. Consulting with the City regarding the construction documents and making recommendations whenever design details adversely affect constructability, cost or schedules.
- F. Providing recommendations and information to the City regarding the allocation of responsibilities for safety programs with the Contractor.
- G. Selecting, retaining and coordinating the professional services of surveyors, special consultants and testing laboratories required for the project.

- H. Providing an analysis of the types and quantities of labor required for the project and reviewing the availability of appropriate categories of labor required for critical phases. As part of this task, the CEI firm shall make recommendations for actions designed to minimize adverse effects of labor shortages.
- I. Reviewing and advising the City on the acceptability of subcontractors and material suppliers proposed by Contractors.
- J. Assisting the City in obtaining special permits for permanent improvements, except for permits required to be obtained directly by the Contractor. The CEI firm shall verify that the City has paid applicable fees and assessments. The CEI firm shall file documents required for the approvals of governmental authorities having jurisdiction over the project.
- K. Reviewing Design deliverables 60%, 90%, 100% for Contractual compliance. CEI must assure submittals have incorporated all requirements set forth by permitting, code and environmental compliance as set in the Design Criteria Package.
- L. Review Administrative and technical submittals as necessary during the design phase.

3.3.3 Construction Phase - Administration of the Construction Contract:

The construction phase will commence with the Contractor beginning the work shown in the contract documents except for mobilization and establishing site offices and will end 60 days after final payment is received by the Contractor. The CEI firm shall provide administrative, management and related services to coordinate scheduled activities and responsibilities of the Contractor with those of the CEI firm and the City to endeavor to manage the project in accordance with the latest approved estimate of construction cost, the project schedule and the contract documents. Construction Engineering and Inspection Services (CEI) firm responsibilities during this phase may include but will not be limited to the following items:

- A. Scheduling and chairing construction progress meetings including the pre-construction meeting. This includes providing agendas and minutes for meetings. The CEI firm shall schedule and conduct meetings to discuss such matters as procedures, progress and scheduling. The CEI firm shall prepare and promptly distribute minutes to the City and Contractor by the following week.
- B. Creating, maintaining and distributing logs for permits, RFIs, submittals, shop drawings, samples, action items, tests, claims, change orders, errors/omissions and unforeseen conditions issues.
- C. Maintaining and distributing all project related documentation including overall Project files, including digital (PDF) and hard copies of all relative correspondence.
- D. Reviewing and tracking Contractor schedule updates and updating the CEI firm staffing plan. If an update indicates that the previously approved project construction schedule may not be met, the CEI firm shall recommend corrective action to the City.
- E. Advising the City if it appears that the construction cost may exceed the latest approved project budget and making recommendations for corrective action.
- F. Providing advice to obtain satisfactory performance from the Contractor and recommending courses of action to the City when requirements of the contract are not being fulfilled.
- G. Monitoring construction cost and showing actual costs for activities in progress and estimates for uncompleted tasks.

- H. Developing cash flow reports and forecasts for the project and advising the City as to variances between actual and budgeted or estimated costs.
- I. Maintaining accounting records on authorized work performed under unit costs, additional work performed based on actual costs of labor and materials, and other work requiring accounting records.
- J. Developing and implementing procedures for the review and processing of applications by the Contractor for progress and final payments.
- K. Tracking Contractor's Applications for Payment through City's Finance and Procurement staff as necessary to ensure timely and accurate payment.
- L. Monitoring the development of "As-Built" documents and confirming that updates are made prior to recommending approval for Contractor's Applications for Payment.
- M. The CEI firm shall determine in general that the work of the Contractor is being performed in accordance with the requirements of the contract documents, endeavoring to guard the City against defects and deficiencies in the work. As appropriate, the CEI firm shall have authority, upon written authorization from the City, to require additional inspection or testing of the work in accordance with the provisions of the contract documents, whether or not such work is fabricated, installed or completed. The CEI firm, in consultation with the City, may reject work which does not conform to the requirements of the contract documents.
- N. Establishing and implementing procedures for expediting the processing and approval of shop drawings, product data, samples and other submittals. The CEI firm shall review all shop drawings, product data, samples, testing results and other submittals from the Contractor. The CEI firm shall coordinate submittals with information contained in related documents and transmit to the City those which have been approved by the CEI firm. The CEI firm's actions shall be taken with such reasonable promptness as to cause no delay in the work or in the activities of the City or Contractor.
- O. Providing recommendations and information to the City regarding the assignment of responsibilities for temporary project facilities and equipment, materials and services for use of the Contractor. The CEI firm shall verify that such requirements and assignment of responsibilities are included in the contract documents.
- P. Providing general construction inspection services documented in pictures and video recordings in addition to written reports.
- Q. Providing special building inspection services for engineering specialties as required.
- R. Providing supplementary design and/or drafting services if so, requested by the City.
- S. Monitoring and documenting the Contractor's compliance with applicable laws and standards.
- T. Reviewing Contractor redlines and maintaining and keeping track of such records.
- U. Keeping the visitor log for the project site.
- V. Creating and maintaining a log of Notice to Owner documents and liens.
- W. Conducting safety training in addition to Contractor provided training required by the construction contract. Any visitor/worker at GTL must attend both the Risk Management Training as well as ISO 14001 training.
- X. Reviewing the contractor's access control plan and contractor's adherence to their plan.

- Y. Reviewing and approving the contractor's risk management plan to ensure it is adequate and addresses all necessary items, including medium voltage (5kV) power and equipment.
- Z. Ensuring compliance with material storage rules and monitoring hazardous material storage practices.
- AA. Scheduling, observing and documenting startup and testing of utilities, operational systems and equipment with the City's maintenance personnel.
- BB. Providing witness services for offsite tests.
- CC. Reviewing and tracking Contractor work progress, value, quality and conformance.
- DD. Recording the progress of the Project. The CEI firm shall submit written progress reports to the City including information on Contractor's work, as well as the entire Project, showing percentages of completion. The CEI firm shall keep a daily log containing a record of weather, each Contractor's work on the site, number of workers identification of equipment, materials used, work accomplished, testing performed, problems encountered and/or any events that impact the project, as well as other similar relevant data as the City may require.
- EE. Checking the contractor's pay applications and providing opinions on the accuracy compared to work completed and certifying the amounts due the Contractor. The CEI firm's certification for payment shall constitute a representation to the City, based on the CEI firm's determinations at the site, and on the data comprising the Contractors' Applications for Payment, that, to the best of the CEI firm's knowledge, information and belief, the work has progressed to the point indicated and the quality of the work is in accordance with the contract documents. The foregoing representations are subject to an evaluation of the work for conformance with the contract documents upon Substantial Completion, to results of subsequent tests and inspections, to minor deviations from the contract documents correctable prior to completion and to specific qualifications expressed by the CEI firm. The issuance of a Certificate of Payment shall further constitute a representation that the Contractor is entitled to payment in the amount certified.
- FF. Coordinating Contractor activities with the City's required activities necessary to operate and maintain the active water treatment facility and advising on potential conflicts or impacts.
- GG. Providing responses to Contractor requests for information. The CEI firm's actions shall be taken with such reasonable promptness as to cause no delay in the work or in the activities of the City or Contractor.
- HH. Coordinating use of work/staging/storage areas.
- II. Arranging for delivery, storage, protection and security of City-purchased materials, systems and equipment that are a part of the Project until such items are incorporated into the project and coordinating installation of all City-purchased materials, systems, and equipment that are part of the project.
- JJ. Relaying and documenting receipt of City policy or requirements to the Contractor and tracking the Contractor's adherence to policies and requirements.
- KK. Reviewing and providing opinions on Contractor claims and negotiating Contractor's proposals, submitting recommendations to the City and if they are accepted, preparing

change orders and construction change directives which incorporate the modifications to the contract documents for City approval.

- LL. Providing interpretations of the construction contract documents and assisting in the resolution of questions that may arise. The CEI firm shall assist the City in the review, evaluation and documentation of claims.
- MM. Maintaining project files (permits, licenses, insurance inspection reports, correspondence, meeting agenda and minutes, etc.) at the project site, available for City inspection. The CEI firm shall maintain at the project site for the City one record copy of all Contracts, Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record changes and selections made during construction, and in addition, approved shop drawings, product data, samples and similar required submittals. The CEI firm shall maintain records in duplicate, of principal building layout lines, elevations of the bottom of footings, floor levels and key site elevations certified by a qualified surveyor or professional engineer. The CEI firm shall make all such records available to the City and upon completion of the project shall deliver them to the City.
- NN. Reviewing Contractor designs and make recommendations.
- OO. The CEI firm shall assist the City in the review, evaluation and documentation of Claims.
- PP. Coordinating and scheduling testing services in concert with construction work.
- QQ. Monitoring, ensuring and documenting that the Contractor obtains all required governmental and regulatory inspections and approvals.
- RR. Issuing project correspondence (field directive, cure letter, notice of noncompliance, rejected pay application, etc.). The CEI firm's actions shall be taken with such reasonable promptness as to cause no delay in the work or in the activities of the City or Contractor.
- SS. Preparing cost estimates for alternate proposed work or change order work.
- TT. Tracking inspections for City building permits.
- UU. Conducting inspections with the City to determine whether the work or designated portion thereof is substantially complete and preparing certificate(s) of substantial completion for portions or components of facilities as they are completed and placed in useful service. When the CEI firm considers Contractor's work or a designated portion thereof substantially complete, the CEI firm shall, jointly with the Contractor, prepare for the City a list of incomplete or unsatisfactory items and a schedule for their completion.
- VV. Coordinating the correction and completion of the work. Following issuance of a Certificate of Substantial Completion of the work or a designated portion thereof, the CEI firm shall prepare project punch lists as portions of the project are finished and track and document completion of punch list items. The CEI firm shall evaluate the completion of the Contractor's work and make recommendations to the City when work is ready for final inspection. The CEI firm shall assist the City in conducting final inspections and issuing Final Completion notices to the Contractor.
- WW. Securing and transmitting to the City warranties and similar submittals required by the contract documents for delivery to the City and delivering all keys, manuals, record drawings and maintenance stocks to the City. The CEI firm shall forward to the City a final project application for payment upon compliance with the requirements of the contract documents.

- XX. Scheduling, observing and documenting control system testing and startup.
- YY. Providing specialists experienced to oversee technical activities described in the contract documents.
- ZZ. Coordinating preparation/collection/review of operation and maintenance manuals and incorporating such documents into an organized library to be provided to the City's plant manager. Coordinating with the City's plant manager for required format and storage location of such library.
- AAA. Scheduling and documenting Contractor provided training for City staff.
- BBB. Applying for permit closeouts, certifications etc. not applied for by the Contractor and tracking permit closeouts, certifications, etc. that are the Contractor's responsibility.

3.3.4 Post Construction phase:

Construction Engineering and Inspection Services (CEI) for the **Rehab. 48"/54" Replacement – SE 9th and 10th Ave to GTL** Project firm, shall assist the City in closing out the project and performing warranty inspections. The closeout tasks shall include but not be limited to:

- A. Securing and transmitting all project related files to the City. The Organization of all final files shall be established in coordination with City Project Manager and CEI firm and then be disseminated amongst all interested parties.
- B. Preparing project record drawings that are compliant with the City's CADD standards.
- C. Conducting Warranty Inspections, noting' deficiencies and tacking Contractor and subcontractor progress in correcting deficient items.
- D. Assisting the City with the submittal of any warranty claims.
- E. Upon completion of the project, issue a report identifying any issues which may need to be corrected for future projects.

3.4 **Deliverables**

Deliverables will include a variety of agendas, minutes, logs, documented opinions, correspondence, reviewed shop drawings, redlined drawings, photos, videos, approved items, etc. throughout the construction and one-year warranty period.

3.5 **Schedule**

The selected DBF is expected to complete the PROJECT as expeditiously as possible. The milestones are as followed:

1. The Work shall be Substantially Completed on or before April 3, 2026; the work for Phase D (Bid Alternate) shall be Substantially Completed on or before July 3, 2026, after the date when the Contract Time commences to run as provided in the Notice to Proceed.
2. The Work for all phases shall be finally completed and accepted on or before August 31, 2026, and ready for final payment in accordance with this Agreement when the Contract Time commences to run as provided in the Notice to Proceed.

3.6 Project Description

- 3.6.1 This project will impact multiple locations including, Galleria Mall areas going South through Tarpon River and concluding at the George T. Lohmeyer Wastewater Treatment Plant (GTL WWTP)
- 3.6.2 Paragraph 6(e) of the Amended Consent Order dated October 12, 2020, requires the City to complete the following force main rehabilitation projects no later than September 30th, 2026: "SE 10th Ave.
- The CITY has elected to move forward with the rehabilitation project via a design-build project delivery approach.
- 3.6.3 The CITY has issued this Request for Proposal (RFP) to solicit competitive proposals from a Design Build Firm (DBF) responsible for the design, permitting, construction, testing and startup of the Rehab. 48"/54" FM Replacement - SE 9th and 10th Ave to GTL project.
- 3.6.4 The purpose of this project is for the rehabilitation or replacement of approximately 15,150 feet of existing 48- inch and 54-inch force main complete with all tie-ins and subsequent surface restoration to existing or better conditions. This existing force main, when still active, conveyed raw wastewater from the Galleria Mall area towards the George T. Lohmeyer Wastewater Treatment Plant (GTL WWTP). After the force main broke in December of 2019, part of this existing force main, the Tarpon River crossing section, was abandoned. As a result, the Project will also include approximately 8,220 linear feet of new 48-inch force main. Taken together the Project is a total of approximately 23,370 liner feet of new or rehabilitated pipe.
- 3.6.5 The Project includes the design, permitting, construction, testing, and startup of all the phases shown below (A, B, C and D). The Design portion of the project will incorporate all the phases as part of the base bid. The bid alternate included in this project is solely for the construction portion and related activities of Phase D.

Phase A – New 48-inch Force Main:

- Approximately 8,100 linear feet of new 48-inch force main along SE 15th St, Miami Road, Davie Blvd, SE 3rd Ave, and SE 6th St. This alignment is proposed to utilize a combination of open-cut and trenchless construction, or other methods as proposed by the DBF.
- Approximately 120 feet of a new 48-inch force main subaqueous crossing under the Himmarshee Canal utilizing a combination of open-cut and trenchless construction, or other method as proposed by the DBF.
- The installation of 48-inch isolation and air release valves to the new pipeline as necessary and as indicated herein.
- The reinstatement of connections to other force mains as necessary and as indicated herein.

Phase B – Rehabilitation of existing Force Main in the Roadway:

- Approximately 14,200 linear feet of rehabilitation by means of compression fit lining or other methods as proposed by the DBF to the existing 48-inch and 54-inch ductile iron force mains along SE 10th Ave, SE 9th Ave, NE 10th Ave, NE 4th St, NE 14th Ave, NE 9th St, NE 18th Ave, and NE 9th Pl.

- The reinstatement and/or installation of 54-, 48-, 36-inch and smaller isolation valves and air release valves to the rehabilitation pipelines as necessary and as indicated herein.
- The reinstatement of connections to other force mains as necessary and as indicated herein.

Phase C – Rehabilitation of existing Force Main under the New River:

- Approximately 300 linear feet of rehabilitation by means of cured-in-place lining or other methods as proposed by the DBF to the existing 48-inch ductile iron force main under the New River.
- The reinstatement of connections to other force mains as necessary.

Phase D (Bid Alternate) – Rehabilitation of existing Force Mains under the Middle River:

- Approximately 650 linear feet of rehabilitation by means of cured-in-place lining or other methods as proposed by the DBF to the existing 48-inch ductile iron force main under the Middle River.
- Providing and installing one new 42-inch valve on the existing 42-inch force main in Middle River Drive just north of NE 9th Avenue and the existing 20-inch connection.
- The reinstatement of connections to other force mains as necessary.

END OF SECTION

SECTION IV – SUBMITTAL REQUIREMENTS

4.1 Instructions

4.1.1 The City uses an online strategic sourcing platform to administer the competitive solicitation process, including but not limited to soliciting proposals, issuing addenda, responding to questions/requests for information. There is no charge to register and download the RFQ from the online strategic sourcing platform. Proposers are strongly encouraged to read the various vendor Guides and Tutorials available in the online strategic sourcing platform well in advance of their intention to submit a proposal to ensure familiarity with the use of the system. The City shall not be responsible for a proposer's inability to submit a proposal by the end date and time for any reason, including issues arising from the use of the online strategic sourcing platform.

All proposals must be submitted electronically.

4.1.2 Careful attention must be given to all requested items contained in this RFQ. Consultants are invited to submit proposals in accordance with the requirements of this RFQ. Please read the entire solicitation before submitting a proposal. Proposers must provide a response to each requirement of the RFQ. Proposals should be prepared in a concise manner with an emphasis on completeness and clarity. Consultant's notes, exceptions, and comments may be rendered on an attachment, provided the same format of this RFQ text is followed.

4.1.3 All information submitted by proposer shall be typewritten or provided as otherwise instructed in the RFQ. Proposers shall use and submit any applicable or required forms provided by the City and attach such to its response. Failure to use the forms may cause the proposal to be rejected and deemed non-responsive.

The proposer understands that the information contained in these proposal pages is to be relied upon by the City in awarding the proposed Agreement, and such information is warranted by the proposer to be true. The proposer agrees to furnish such additional information, prior to acceptance of any proposal relating to the qualifications of the proposer, as may be required by the City.

4.1.4 Proposals shall be submitted by an authorized representative of the firm. Proposals must be submitted in the business entity's name by the President, Partner, Officer or Representative authorized to contractually bind the business entity. Proposals shall include an attachment evidencing that the individual submitting the proposal, does in fact have the required authority stated herein.

4.1.5 In the event of Contract award, all documentation produced as part of the Contract shall become the exclusive property of the City. The Proposer's response to the RFQ is a public record pursuant to Florida law, which is subject to disclosure by the City under the State of Florida Public Records Law, Florida Statutes Chapter 119.07 ("Public Records Law"). The City shall permit public access to all documents, papers, letters or other material submitted in connection with this RFQ and the Contract to be executed for this RFQ, subject to the provisions of Chapter 119.07 of the Florida Statutes.

Any language contained in the Proposer's response to the RFQ purporting to require confidentiality of any portion of the Proposer's response to the RFQ, except to the extent that certain information is in the City's opinion a Trade Secret pursuant to Florida law, shall be void. If a Proposer submits any documents or other information to the City which the

Proposer claims is Trade Secret information and exempt from Florida Statutes Chapter 119.07 (“Public Records Laws”), the Proposer shall clearly designate that it is a Trade Secret and that it is asserting that the document or information is exempt. The Proposer must specifically identify the exemption being claimed under Florida Statutes 119.07. The City shall be the final arbiter of whether any information contained in the Proposer’s response to the RFQ constitutes a Trade Secret. The City’s determination of whether an exemption applies shall be final, and the Proposer agrees to defend, indemnify, and hold harmless the City and the City’s officers, employees, and agent, against any loss or damages incurred by any person or entity as a result of the City’s treatment of records as public records. In addition, the Proposer agrees to defend, indemnify, and hold harmless the City and the City’s officers, employees, and agents, against any loss or damages incurred by any person or entity as a result of the City’s treatment of records as exempt from disclosure or confidential. Proposals purporting to be subject to copyright protection in full or in part will be rejected. The Proposer authorizes the City to publish, copy, and reproduce any and all documents submitted to the City bearing copyright symbols or otherwise purporting to be subject to copyright protection.

EXCEPT FOR CLEARLY MARKED PORTIONS THAT ARE BONA FIDE TRADE SECRETS PURSUANT TO FLORIDA LAW, DO NOT MARK YOUR RESPONSE TO THE SOLICITATION AS PROPRIETARY OR CONFIDENTIAL. DO NOT MARK YOUR RESPONSE TO THE SOLICITATION OR ANY PART THEREOF AS COPYRIGHTED.

IF THE CONSULTANT HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES (2022), TO THE CONSULTANT’S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT PRRCONTRACT@FORTLAUDERDALE.GOV, 954-828-5002, CITY CLERK’S OFFICE, SUITE 444, 1E BROWARD BOULEVARD, FORT LAUDERDALE, FLORIDA 33301.

Consultant shall:

1. Keep and maintain public records required by the City in order to perform the service.
2. Upon request from the City’s custodian of public records, provide the City with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes (2023), as may be amended or revised, or as otherwise provided by law.
3. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of this Agreement if the Consultant does not transfer the records to the City.
4. Upon completion of the Agreement, transfer, at no cost, to the City all public records in possession of the Consultant or keep and maintain public records required by the City to perform the service. If the Consultant transfers all public records to the City upon completion of this Agreement, the Consultant shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Consultant keeps and maintains public records upon completion of this Agreement, the Consultant shall meet all applicable requirements for retaining public

records. All records stored electronically must be provided to the City, upon request from the City's custodian of public records, in a format that is compatible with the information technology systems of the City.

- 4.1.6** By submitting a response, Proposer is confirming that the firm has not been placed on the convicted vendors list as described in Section §287.133 (2) (a) Florida Statutes; that the only person(s), company or parties interested in the proposal as principals are named therein; that the proposal is made without collusion with any other person(s), company or parties submitting a proposal; that it is in all respects fair and in good faith, without collusion or fraud; and that the signer of the proposal has full authority to bind the firm.

4.2 Contents of the Proposal

The City deems certain documentation and information important in the determination of responsiveness and for the purpose of evaluating responses. Responses should seek to avoid information in excess of that requested, must be concise, and must specifically address the issues of this RFQ. The City prefers those responses be no more than 100 pages in one complete pdf document. The proposals should be organized, divided and indexed into the sections indicated herein. These are not inclusive of all the information that may be necessary to properly evaluate the proposal and meet the requirements of the scope of work and/or specifications. Additional documents and information should be provided as deemed appropriate by the respondent in proposal to specific requirements stated herein or through the RFQ.

Note: Do not include pricing - Compensation will be requested and considered only during the competitive negotiations process.

4.2.1 Table of Contents

The table of contents should outline in sequential order the major areas of the submittal, including enclosures. All pages should be consecutively numbered and correspond to the Table of Contents.

4.2.2 Executive Summary

Each proposer must submit an executive summary that identifies the business entity, its background, main office(s), and office location that will service this contract. Identify the officers, principals, supervisory staff and key individuals who will be directly involved with the work and their office locations. The executive summary should also summarize the key elements of the proposal.

4.2.3 Firm Qualifications and Experience

Respondents must provide documentation that demonstrates their ability to satisfy all of the minimum qualification requirements. A Standard Form 330 may be used to provide this information. Indicate the firm's number of years of experience in providing the professional services as it relates to the work contemplated. Provide details of past projects for agencies of similar size and scope, including information on your firm's ability to meet time and budget requirements. Indicate the firm's initiatives towards its own sustainable business practices that demonstrate a commitment to conservation. Indicate business structure, i.e. Corp., Partnership, LLC. Firm should be registered as a legal entity in the State of Florida; Minority or Woman owned Business (if applicable); company address, phone number, fax number, e-mail address, web site, contact person(s), etc. Relative size of the firm, including management, technical and support staff; licenses and any other pertinent information shall be submitted.

Provide a comprehensive summary of the experience and qualifications of the individual(s) who will be selected to serve as the project manager(s) for the City.

4.2.4 Qualifications of the Project Team

List the members of the project team (**may be on a Standard Form 330 if you choose**). Provide a list of the personnel to be used on each project and their qualifications. Providing this information on an organizational chart is recommended. A brief resume including education, experience, licenses and any other pertinent information shall be included for each team member, including subconsultants to be assigned to each project. Explain how each project team member will contribute to the project, in what capacity, and the level of involvement they will have. Each resume should not exceed two (2) pages in length. Provide any other documentation that demonstrates their ability to satisfy all of the minimum qualification requirements. Submittals that do not contain such documentation may be deemed non-responsive.

4.2.5 Approach to Scope of Work

- Provide in concise narrative form, your understanding of the City's needs, goals and objectives as they relate to the project, and your overall approach to accomplishing the project.
- Give an overview on your proposed vision, ideas and methodology. Describe your proposed approach to the project. As part of the project approach, the firm shall propose a scheduling methodology (timeline) for effectively managing and executing the work in the optimum time.
- Also provide information on your firm's current workload and how this project will fit into your workload. Describe the firm's current and anticipated workload. Include a summary of current projects and anticipated completion timeframes. Describe how City tasks will be prioritized within your organization, and the availability of the project team to commit towards this project.
- Describe available facilities, technological capabilities and other available resources you offer for the project.

4.2.6 References

Provide at least three references, preferably government agencies, for projects with similar scope as listed in this RFQ. Information should include:

- Client Name, address, contact person telephone and e-mail address (E-mail will be primary means of contact).
- Description of work (types of projects completed).
- Year(s) the projects were completed.
- Total cost of the construction estimated and actual.

Note: Do not simply include City of Fort Lauderdale work or staff as references to demonstrate your capabilities. The Committee is interested in work experience and references other than the City as well.

4.2.7 Minority/Women (M/WBE) Participation

If your firm is a certified minority business enterprise as defined by the Florida Small and

Minority Business Assistance Act of 1985, provide copies of your certification(s). If your firm is not a certified M/WBE, describe your company's previous efforts, as well as planned efforts in meeting M/WBE procurement goals under Florida Statutes 287.09451.

4.2.8 Subconsultants

The consultant must clearly identify any subconsultants that may be utilized during the term of this contract.

4.2.9 Required Forms

a) Bid/Proposal Certification

Complete and attach.

b) Sample Insurance Certificate

Demonstrate your firm's ability to comply with the solicitation's insurance requirements.

c) Non-Collusion Statement

Complete and attach.

d) Affidavit of Compliance with Foreign Entity Laws

Complete and attach.

e) Non-Discrimination Certification Form

Complete and attach.

f) E-Verify Affirmation Statement

Complete and attach.

g) Active Status Page from Division of Corporations -Sunbiz.org

Provide PDF of current page.

h) Contract Payment

This form must be completed and returned with your proposal. Proposers must presently have the ability to accept these credit cards or take whatever steps necessary to implement acceptance of a card before the start of the contract term, or contract award by the City.

i) W-9 for Proposing Firm

j) Reference Form

4.3 By submitting a proposal, each firm is confirming that the firm has not been placed on the convicted vendors list as described in Section §287.133 (2) (a) Florida Statutes.

4.4 Before awarding a contract, the City reserves the right to require that a firm submit such evidence of its qualifications as the City may deem necessary. Further, the City may consider any evidence of the financial, technical, and other qualifications and abilities of a firm or principals, including previous experiences of same with the City and performance evaluation for services, in making the award in the best interest of the City.

END OF SECTION

SECTION V - EVALUATION AND AWARD

5.1 Evaluation Procedure

- 5.1.1** Evaluation of the submittals will be conducted by an Evaluation Committee, consisting of a minimum of three members of City Staff, or other persons selected by the City Manager or designee. All committee members must be present at scheduled evaluation meetings. Submittals shall be evaluated based upon the information and references contained in the proposal as submitted. Evaluation procedures shall be regulated by F.S. §287.055, referred to as Consultant's Competitive Negotiations Act (CCNA). Any firm(s) involved in a joint venture in its proposal will be evaluated individually, as each firm of the joint venture would have to stand on its own merits.
- 5.1.2** The Committee shall short list no less than three (3) submittals, assuming that three or more submittals have been received, that it deems best satisfy the weighted criteria set forth herein and attempt to select the best qualified firm(s) for the particular discipline. The Committee shall then hold discussions, conduct interviews, and/or require oral presentations with all short-listed firms. The Committee shall then re-rank the short-listed firms based upon the information provided in interviews and/or presentations, the materials presented, the firm's responses to the RFQ, and deliberations of the Evaluation Committee at publicly advertised evaluation meetings. The City may request, and the firm shall provide, additional information deemed necessary by the Evaluation Committee to conduct evaluations.
- 5.1.3** If the City manager or his/her designee is unable to negotiate a satisfactory contract with the first ranked firm, negotiations with that firm shall be formally terminated. Upon termination of said negotiations, negotiations shall then be undertaken with the second ranked firm, with this process being repeated until an agreement is reached which is then recommended and formally approved by the City Commission or until the short-list is exhausted in which case a new Request for Qualifications may be undertaken.

5.2 Evaluation Criteria

- 5.2.1** Per Florida Statute 287.055, in determining whether a firm is qualified, the agency shall consider such factors as the ability of professional personnel; whether a firm is a certified minority business enterprise; past performance; willingness to meet time and budget requirements; location; recent, current, and projected workloads of the firms; and the volume of work previously awarded to each firm by the agency, with the object of effecting an equitable distribution of contracts among qualified firms, provided such distribution does not violate the principle of selection of the most highly qualified firms. The agency may request, accept, and consider proposals for the compensation to be paid under the contract only during competitive negotiations.
- 5.2.2** The City uses a mathematical formula to determine the scoring for each individual responsive and responsible firm based on the weighted criteria stated herein. Each evaluation committee member will rank each firm by criteria, giving their first ranked firm as number 1, the second ranked firm a number 2, and so on. The City shall average the ranking for each criterion, for all evaluation committee members, and then multiply that average ranking by the weighted criteria identified herein. The lowest average final ranking score will determine the recommendation by the evaluation committee to the City Manager.

5.2.3 Weighted Criteria

<u>Criteria</u>	<u>Percentage</u>
Qualifications and Experience of Firm	20
Qualifications and Experience of Sub-Consultants / Project Team	20
History and Past Performance	20
Approach to Scope of Work	30
Reference	<u>10</u>
Total	100

5.3 Contract Award

- 5.3.1** The City reserves the right to award a contract to that Consultant who will best serve the interest of the City. The City reserves the right, based upon its deliberations and in its opinion, to accept or reject any or all submittals. The City also reserves the right to waive minor irregularities or variations of the submittal requirements and RFQ process.
- 5.3.2** Upon award of a Contract by the City Commission, the City Manager is authorized to execute the Contract on behalf of the City.
- 5.3.3** The City Manager shall appoint a contract administrator or project manager for each contract to assure compliance with the contract and applicable law. The contract administrator or project manager shall review all pay requests or deny same as required prior to approval by the City Manager.

END OF SECTION

AGREEMENT

between

CITY OF FORT LAUDERDALE

and

for

**PROFESSIONAL SERVICES FOR CONSTRUCTION
ENGINEERING AND INSPECTION (CEI) FOR REHAB.
OF 48"/54" FM: REPLACEMENT ON SE 9TH AND 10TH
AVENUE TO GTL**

RFQ No. 253

THIS IS AN AGREEMENT, made and entered into this ____ day of _____,
2024, by and between:

CITY OF FORT LAUDERDALE, a municipal corporation of the State of Florida (hereinafter referred to as “CITY”)

and
_____ (hereinafter referred to as “CONSULTANT”), or collectively referred to as “Party or Parties”)

WHEREAS, the City Commission of the City of Fort Lauderdale, Florida at its meeting of _____, 2024, authorized the proper officials by motion to execute an Agreement between CONSULTANT and CITY authorizing the performance of services in connection with CCNA – Construction Engineer and Inspection (“CEI”) Services for Rehab. of 48”/54” FM: Replacement on SE 9th and 10th Avenue to GTL; and

WHEREAS, the CITY issued a request for qualifications (“RFQ) No. 253 for continuing Construction and Engineering and Inspection (“CEI”) Services for the Rehab. of 48”/54” FM: Replacement on SE 9th and 10th Avenue to GTL and

WHEREAS, the CITY has met the requirements of Section 287.055, Florida Statutes, the CONSULTANTS Competitive Negotiation Act, and has selected CONSULTANT to perform the services hereunder; and

WHEREAS, the CONSULTANT is experienced in providing professional services set forth in Exhibit A, Scope of Services, for Construction Engineering and Inspection (CEI) Services and is willing and able to render services for such project for the compensation and on the terms hereinafter set forth;

NOW, THEREFORE, in consideration of the mutual covenants, agreements, terms and conditions contained herein, the Parties agree as follows:

ARTICLE 1. DEFINITIONS

1.1 **Additional Services** means services performed by the CONSULTANT authorized by Task Order and supplemental to the basic services described in this Agreement and listed in Exhibit A, Scope of Services.

1.2 **Agreement** means this document between the CITY and CONSULTANT dated _____, 2023, and any duly authorized and executed Amendments to the Agreement.

1.3 **City** means the City of Fort Lauderdale, a municipal corporation of the state of Florida.

1.4. **City Commission** means the governing body of the CITY government.

1.5 **CONSULTANT** means CDM Smith Inc., the CONSULTANT selected to perform professional services pursuant to this Agreement.

1.3 **Contract Administrator** means the Public Works Director, or his or her designee. In administration of this Agreement, as contrasted with matters of policy, all Parties may rely on instructions or determinations made by the Contract Administrator within the defined parameters of this Agreement.

1.4 **Contractor** means the person, firm, corporation, or other entity who enters into an agreement with CITY to perform the construction work for a project.

1.5 **City Manager** means the administrative head of the CITY appointed by the City Commission.

1.6 **City Attorney** means the chief legal counsel for CITY appointed by the City Commission.

1.7 **Notice to Proceed** means a written authorization to proceed with a project, phase, or task thereof, issued by the Contract Administrator.

1.11 **Services** consists of the work and phases set forth in Exhibit A, Scope of Services including all professional engineering, landscape architecture, registered surveying and mapping, and other professional design services, as described in each Work Authorization applicable to a project.

1.12 **Subconsultant** means an entity or individual providing services to CITY through CONSULTANT for all or any portion of the work under this Agreement. The term "Subconsultant" shall include all subcontractors.

1.13 **Task Order** means a document setting forth a negotiated detailed scope of services to be performed by the CONSULTANT at fixed contract prices in accordance with this Agreement between the CITY and CONSULTANT.

ARTICLE 2. EXHIBITS

The following exhibits are attached hereto and incorporated into this Agreement:

- 1. Exhibit A Scope of Services**
- 2. Exhibit B Schedule of Subconsultants**
- 3. Exhibit C Rates**

ARTICLE 3. SCOPE OF SERVICES

3.1 CONSULTANT shall provide all Services as set forth in the Scope of Services, including all necessary, incidental, and related activities required for full and complete performance of this Agreement.

3.2 This Agreement and the Scope of Services may not delineate every detail and minor work task required to be performed by CONSULTANT to complete a project. If CONSULTANT determines that work should be performed to complete a project and, in CONSULTANT'S opinion, that work is outside the level of effort originally anticipated, whether or not the Scope of Services identifies the work items, CONSULTANT shall notify the Contract Administrator in writing in a timely manner before proceeding with the work. If CONSULTANT proceeds with such work without notifying the Contract Administrator, the work shall be deemed to be within the original level of effort, whether or not specifically addressed in the Scope of Services. Notice to the Contract Administrator does not constitute authorization or approval by CITY to CONSULTANT to perform the work. Any such work that would entail additional compensation to CONSULTANT by CITY, or additional time for performance, shall require an amendment to this Agreement pursuant to Section 7.1 or a Work Authorization pursuant to Section 7.2. Unless there is a fully executed amendment or Work Authorization or a dispute as set forth in Section 7.3, any work performed by CONSULTANT outside the originally anticipated level of effort without prior written CITY approval shall be at no additional cost to CITY.

3.3 Exhibit A identifies the initial services related to this Agreement. Additional negotiations shall be required for other phases or additional services issued under this Agreement. CITY may select the type, amount, and timing of services under a Task Order executed by CONSULTANT and CITY, provided that no such selection, when combined with those goods or services required under this Agreement, would result in a payment obligation exceeding the applicable maximum amount stated in Article 6. CITY and CONSULTANT may negotiate additional services, compensation, time of performance, and other related matters, including for other phases of a project; notwithstanding the foregoing, CITY shall have the right to terminate negotiations at any time at no cost to County and procure services for other project phases from any other source.

3.4 CITY shall assist CONSULTANT by placing at CONSULTANT'S disposal all information CITY has available pertinent to a project, including previous reports and any other data relative to a project. CITY shall arrange for access to, and make all provisions for, CONSULTANT to enter upon public and private property as required for CONSULTANT to perform its Services. CITY shall review any itemized deliverables and documents required to be submitted by CONSULTANT and respond in writing with any comments within the time set

forth in the applicable Task Order. CITY shall give prompt written notice to CONSULTANT whenever CITY observes or otherwise becomes aware of any material defect in the work of CONSULTANT or Subconsultants, or other material development that affects the scope or timing of CONSULTANT'S Services.

ARTICLE 4. TASK ORDERS

4.1 All work to be performed by CONSULTANT under this Agreement must first be authorized in writing by a Task Order, in accordance with the requirements of this Article. The Task Orders shall be based upon the general description of basic services as described in Exhibit "A."

4.1.1 Before issuance of any Task Order, CONSULTANT shall provide Contract Administrator with a written estimate for all charges expected to be incurred for the tasks associated with the Task Order. Each Work Authorization (and amendments thereto) may be executed on behalf of County as follows: (a) the Chief Procurement Officer may execute any individual Task Order for which the cost to CITY is within the Chief Procurement Officer's delegated authority; and (b) any individual Task Order above the Chief Procurement Officer's delegated authority must be approved by the City Commission.

4.1.2 After complete execution of a Task Order under this Agreement, Contract Administrator will issue a Notice to Proceed for that authorized work. CONSULTANT must not commence such work until receipt of a Notice to Proceed.

4.1.3 Any modifications to a Task Order will require an amended Work Authorization approved by Contract Administrator, CITY'S Chief Procurement Officer, or City Commission as required by the City Code. CONSULTANT'S compensation will not exceed the amount approved in the Task Order unless such additional amount received the prior written approval from the appropriate authority.

4.1.4 All Task Orders and must contain, at a minimum, the following information and requirements:

4.1.4.1 A description of the work to be undertaken (which description must specify in detail the individual tasks and other activities to be performed by CONSULTANT), a reference to this Agreement under which the work to be undertaken is authorized, and a statement of the method of compensation.

4.1.4.2 A budget establishing the amount of compensation, which amount will constitute a guaranteed maximum and must not be exceeded unless prior written approval of CITY is obtained. If CITY does not approve an increase in the guaranteed maximum amount, and the need for such action is not the fault of CONSULTANT, the authorization will be terminated, and CONSULTANT will be paid in full for all work completed to that point but said amount will in no case

exceed the guaranteed maximum amount. The information contained in the budget shall be in sufficient detail to identify the various elements of costs.

4.1.4.3 A time established for completion of the Services undertaken by CONSULTANT or for the submission to CITY of documents, reports, and other information under this Agreement.

4.1.4.4 Any other additional instructions or provision relating to the work authorized under this Agreement.

4.1.4.5 Task Orders must be dated, serially numbered, and signed.

**ARTICLE 5. TIME FOR PERFORMANCE; CONTRACTOR DAMAGES:
LIQUIDATED DAMAGES**

5.1 The initial term of this Agreement is for a period of _____ years starting from the Effective Date (the "Initial Term"). Beyond the Initial Term, CITY shall have the option to renew this Agreement, under the same terms and conditions, for up to _____ consecutive one (1) year terms; CITY'S Chief Procurement Officer may exercise this renewal option by sending notice of renewal to CONSULTANT at least thirty (30) days prior to the expiration of the then-current term. Any renewal by CITY'S Chief Procurement Officer shall not result in a substantive change to the Agreement's terms. CONSULTANT shall perform the Services within the time periods specified in the Task Order commencing from the date of the applicable Notice to Proceed.

5.2 CONSULTANT must receive a Notice to Proceed from the Contract Administrator prior to commencement of Services or any phase thereof under this Agreement and any operative Task Order. Prior to granting approval for CONSULTANT to proceed to any phase, the Contract Administrator may, at the Contract Administrator's sole option, require CONSULTANT to submit the itemized deliverables and documents identified in the Task Order for the Contract Administrator's review.

5.3 If the Contract Administrator determines that CONSULTANT is unable to complete Services under any Task Order because of delays resulting from untimely review by CITY or other governmental agencies having jurisdiction over a project and such delays are not the fault of CONSULTANT, or because of delays caused by factors outside the control of CONSULTANT, CITY shall grant a reasonable extension of time for completion of the Services and shall provide reasonable compensation, if appropriate. It shall be the responsibility of CONSULTANT to notify the Contract Administrator in writing whenever a delay in approval by a governmental agency is anticipated or experienced, and whenever a delay has been caused by factors outside of CONSULTANT'S control, and to inform the Contract Administrator of all facts and details related to the delay. CONSULTANT must provide such written notice to the Contract Administrator within three (3) business days after the occurrence of the event causing the delay.

5.4 For any construction phase services authorized by a Task Order, if (a) Contractor fails to substantially complete a project on or before the substantial completion date specified in its agreement with CITY, or (b) if Contractor is granted an extension of time beyond said substantial completion date and CONSULTANT'S Services are extended beyond the substantial completion date through no fault of CONSULTANT, then CONSULTANT shall be compensated in accordance with Article 6 for all Services rendered by CONSULTANT beyond the substantial completion date.

5.5 If Contractor fails to substantially complete a project on or before the substantial completion date specified in its agreement with CITY, and the failure to substantially complete is caused in whole or in part by CONSULTANT, then CONSULTANT shall pay to CITY its proportional share of any claim for damages to Contractor arising out of the delay. The provisions for the computation of delay costs, damages, or any other amounts, whether direct or indirect, in the agreement between the Contractor and CITY are incorporated herein. This section shall not affect the indemnification rights or obligations of either party otherwise set forth in this Agreement.

5.6 If CONSULTANT is performing Services under a Task Order scheduled to be completed after the expiration of this Agreement, CONSULTANT agrees to continue those Services until completion under the same terms and conditions as stated in the existing Work Authorization.

ARTICLE 6. COMPENSATION AND METHOD OF PAYMENT

6.1 Amount and Method of Compensation. The total annual cumulative amount authorized for all Task Orders issued under this Agreement shall not exceed _____. It is agreed that the method of compensation is that of "Maximum Amount Not-to-Exceed" which means that CONSULTANT shall perform all services set forth in all Task Orders combined for total compensation amount of or less than the total stated. The hourly rate billing schedule to be used in negotiating each Task Order is attached as Exhibit C to this Agreement.

6.1.1 Optional Services. CITY may procure Optional Services up to a maximum not-to-exceed amount specified in the Task Order and in accordance with Article 7. Unused amounts of these Optional Services monies shall be retained by CITY.

6.1.2 Reimbursable Expenses. CITY will reimburse authorized Reimbursable Expenses as defined in Section 6.3 up to the maximum not-to-exceed amount specified in the Work Authorization. Unused amounts of those monies shall be retained by CITY.

6.1.3 Salary Costs. The maximum billing rates ("Maximum Billing Rates") payable by CITY for each of CONSULTANT'S employee categories are shown on Exhibit C and are further described in Section 6.2.

6.1.4 Subconsultant Fees. CONSULTANT shall bill CITY for Subconsultant fees using the employee categories for Salary Costs on Exhibit C as defined in Section 6.2 and Reimbursable Expenses defined in Section 6.3. CONSULTANT shall bill Subconsultant fees with no mark-up and within any applicable maximum not to exceed amount.

6.1.5 Phased Amounts. Payments for Services shall be paid out in accordance with the project's phasing specified in the Task Order and shall not exceed the amount set forth in the Task Order. The invoiced fee amount for each phase will be subject to retainage as set forth in Section 6.5.

6.2 Salary Costs. The term Salary Costs as used herein means the hourly rate actually paid to all personnel engaged directly on tasks under a Task Order issued under this Agreement, as adjusted by an overall multiplier that consists of the following: 1) a fringe benefits factor; 2) an overhead factor; and 3) an operating margin. Said Salary Costs are to be used only for time directly attributable to those tasks. The fringe benefit and overhead rates shall be CONSULTANT'S most recent and actual rates determined in accordance with Federal Acquisition Regulation ("FAR") guidelines and audited by an independent Certified Public Accountant. These rates shall remain in effect for the term of this Agreement except as provided for in this Section 6.2 inclusive of the subsections below.

6.2.1 CONSULTANT shall require all of its Subconsultants to comply with the requirements of Section 6.2.

6.2.2 Salary Costs for CONSULTANT and Subconsultants as shown in Exhibit C are the Maximum Billing Rates, which are provisional, subject to audit of actual costs, and if the audit discloses that the actual costs are less than the costs set forth on Exhibit C for CONSULTANT or any Subconsultant, CONSULTANT shall reimburse CITY based upon the actual costs determined by the audit. CITY may withhold the amount CONSULTANT is required to reimburse CITY from any payment due CONSULTANT.

6.3 Reimbursable Expenses. For reimbursement of any other direct non-salary expenses directly attributable to any Task Order permitted under this Agreement, CONSULTANT agrees to adhere to Section 112.061, Florida Statutes, as may be amended or revised, except to the extent otherwise stated herein. CITY shall not be liable for any such expenses that have not been approved in advance and in writing in a Task Order. Reimbursable Subconsultant expenses must also comply with the requirements of this section. Travel expenses are not allowed.

6.3.1 Direct non-salary expenses, entitled Reimbursable, directly attributable to the Project will be charged at actual cost. Reimbursable expenses are in addition to the compensation for basic services and include actual expenditures made by CONSULTANT and CONSULTANT'S employees directly attributable to the Project and will be charged at actual cost, without reference to the professional service fees above. CITY shall not withhold retainage from payments for Reimbursable Expenses. CONSULTANT shall be compensated for Reimbursables associated with a particular Task Order only up to the amount allocated for such Task Order. Any reimbursable or portion thereof which, when added to the Reimbursables related to a Task Order previously billed, exceeds the amount allocated for such Task Order shall be the responsibility of CONSULTANT unless otherwise agreed to in writing by the Contract Administrator. Travel and subsistence expenses for CONSULTANT, its staff and Subconsultants and communication expenses, long distance telephone, courier and

express mail between CONSULTANT'S and Subconsultants' various offices are not reimbursable under this Agreement.

6.4 Method of Billing.

6.4.1 For Maximum Amount Not-To-Exceed Compensation. CONSULTANT shall submit billings, which are identified by the specific project number on a monthly basis in a timely manner for all Salary Costs and Reimbursable Expenses attributable to the Task Order. These billings shall identify the nature of the work performed, the total hours of work performed, and the employee category of the individuals performing same. The statement shall itemize and summarize Reimbursable Expenses by category and identify the personnel incurring the expense and the nature of the work with which such expense was associated. Where prior written approval by Contract Administrator is required for Reimbursable Expenses, a copy of said approval shall accompany the billing for such reimbursable. The statement shall show a summary of Salary Costs and Reimbursable Expenses with accrual of the total and credits for portions paid previously. External Reimbursable Expenses and Subconsultant fees must be documented by copies of invoices or receipts that describe the nature of the expenses and contain a project number or other identifier that clearly indicates the expense is identifiable to the Services authorized by the operative Task Order. Internal expenses must be documented by appropriate CONSULTANT'S cost accounting forms with a summary of charges by category. When requested, CONSULTANT shall provide backup for past and current invoices that records hours and Salary Costs by employee category, Reimbursable Expenses by category, and Subconsultant fees on a task basis, so that total hours and costs by task may be determined.

6.5 Payment Procedure.

6.5.1 CITY shall pay CONSULTANT in accordance with the Florida Prompt Payment Act. To be deemed proper, all invoices and billing statements must comply with the requirements set forth in this Agreement and must be submitted on the form and pursuant to instructions prescribed by the Contract Administrator.

6.5.2 Unless otherwise provided in this section, retainage in the amount of five percent (5%) of each invoice shall be retained by CITY until satisfactory completion of the applicable phase. When the Services to be performed on all phases under a Task Order are fifty percent (50%) complete, upon written request by CONSULTANT and written approval by the Contract Administrator that the Services are progressing in a satisfactory manner, the Contract Administrator, in the Contract Administrator's sole discretion, may authorize the reduction of retainage of each invoice for subsequent payments. No amount shall be withheld from payments for Reimbursable Expenses or for Services performed during the construction phase, if applicable.

6.5.3 Upon CONSULTANT'S completion of each phase to the satisfaction of the Contract Administrator, CITY shall remit to CONSULTANT any amounts withheld as

retainage for that phase. Final payment under each Task Order must be approved by the Chief Purchasing Officer.

6.5.4 Payment will be made to CONSULTANT at the following address:

6.6 Fiscal Year. The continuation of this Agreement beyond the end of any CITY fiscal year (October 1 through September 30) is subject to appropriation and the availability of funds.

6.7 CONSULTANT shall pay Subconsultants and suppliers providing Services under any Work Authorization issued in accordance with this Agreement within fifteen (15) days following receipt of payment from CITY for such subcontracted work or supplies. If CONSULTANT withholds an amount as retainage from a Subconsultant or supplier, CONSULTANT shall release such retainage and pay same within fifteen (15) days following receipt of payment of retained amounts from CITY. The Contract Administrator may, at its option, increase allowable retainage or withhold progress payments unless and until CONSULTANT demonstrates timely payments of sums due to all Subconsultants and suppliers. CONSULTANT shall include requirements substantially similar to those set forth in this section in its contracts with Subconsultants and suppliers.

6.8 Payments are scheduled to be made by CITY to CONSULTANT using a credit card/CITY Procurement Card (P-Card).

ARTICLE 7. OPTIONAL AND ADDITIONAL SERVICES; CHANGES IN SCOPE OF SERVICES

7.1 CITY or CONSULTANT may request changes that would increase, decrease, or otherwise modify the Scope of Services to be provided under an operative Task Order. Unless otherwise expressly permitted herein, such changes must be made in accordance with the provisions of the CITY Procurement Code and must be contained in a written amendment, executed by the Parties hereto, with the same formality and of equal dignity herewith.

7.2 If a dispute between the Contract Administrator and CONSULTANT arises over whether any work requested by CITY is within the scope of contracted Services and such dispute cannot be resolved by the Contract Administrator and CONSULTANT, such dispute shall be promptly presented to City Manager or the City Manager's designee for resolution, whose decision shall be in writing and shall be final and binding on the Parties. During the pendency of any dispute, CONSULTANT shall promptly perform the disputed work.

ARTICLE 8. REPRESENTATIONS AND WARRANTIES

8.1 Representation of Authority. CONSULTANT represents and warrants that this Agreement constitutes the legal, valid, binding, and enforceable obligation of CONSULTANT, and that neither the execution nor performance of this Agreement constitutes a breach of any agreement that CONSULTANT has with any third party or violates any law, rule, regulation, or duty arising in law or equity applicable to CONSULTANT. CONSULTANT further represents and warrants that execution of this Agreement is within CONSULTANT'S legal powers, and

each individual executing this Agreement on behalf of CONSULTANT is duly authorized by all necessary and appropriate action to do so on behalf of CONSULTANT and does so with full legal authority.

8.2 Solicitation Representations. CONSULTANT represents and warrants that all statements and representations made in CONSULTANT'S proposal, bid, or other supporting documents submitted to CITY in connection with the solicitation, negotiation, or award of this Agreement, including during the procurement or evaluation process, were true and correct when made and are true and correct as of the date CONSULTANT executes this Agreement, unless otherwise expressly disclosed in writing by CONSULTANT.

8.3 Contingency Fee. CONSULTANT represents that it has not paid or agreed to pay any person or entity, other than a bona fide employee working solely for CONSULTANT, any fee, commission, percentage, gift, or other consideration contingent upon or resulting from the award or making of this Agreement. If this Agreement is subject to Section 287.055, Florida Statutes, the Parties agree and stipulate that the statutory language stated in Section 287.055(6)(a) is deemed included and fully incorporated herein.

8.4 Truth-In-Negotiation Representation. CONSULTANT'S compensation under this Agreement is based upon its representations to CITY, and CONSULTANT certifies that the wage rates, factual unit costs, and other information supplied to substantiate CONSULTANT'S compensation, including, without limitation, in the negotiation of this Agreement, are accurate, complete, and current as of the date CONSULTANT executes this Agreement. CONSULTANT'S compensation will be reduced to exclude any significant sums by which the contract price was increased due to inaccurate, incomplete, or noncurrent wage rates and other factual unit costs.

8.5 Public Entity Crime Act. CONSULTANT represents that it is familiar with the requirements and prohibitions under the Public Entity Crime Act, Section 287.133, Florida Statutes (2021), as may be amended or revised, and represents that its entry into this Agreement will not violate that Act. CONSULTANT further represents that there has been no determination that it committed a "public entity crime" as defined by Section 287.133, Florida Statutes (2021), as may be amended or revised, and that it has not been formally charged with committing an act defined as a "public entity crime" regardless of the amount of money involved or whether CONSULTANT has been placed on the convicted vendor list. Violation of this section shall result in termination of this Agreement and recovery of all monies paid hereto and may result in debarment from the CITY'S competitive procurement activities.

8.6 Scrutinized Companies List. The Boycott Israel List was created pursuant to Section 215.4725, Florida Statutes (2023), as may be amended or revised. CONSULTANT certifies that it is not on the scrutinized companies list and that it is not engaged in a boycott of Israel. The CITY may terminate this Agreement at the CITY'S sole option if the CONSULTANT is found to have submitted a false certification as provided under subsection (5) of Section 287.135, Florida Statutes (2023), as may be amended or revised, or been placed on the Scrutinized Companies that Boycott Israel List created pursuant to Section 215.4725, Florida Statutes (2023), as may be amended or revised, or is engaged in a boycott of Israel.

8.7 Verification of Employment Eligibility. CONSULTANT represents that CONSULTANT and each Subconsultant has registered with and uses the E-Verify system maintained by the United States Department of Homeland Security to verify the work authorization status of all newly hired employees in compliance with the requirements of Section 448.095, Florida Statutes (2023), as may be amended or revised, and that entry into this Agreement will not violate that statute. If CONSULTANT violates this section, County may immediately terminate this Agreement for cause and CONSULTANT shall be liable for all costs incurred by County due to the termination.

8.8 Warranty of Performance. CONSULTANT represents and warrants that it possesses the knowledge, skill, experience, and financial capability required to perform and provide all required and optional Services under this Agreement, and that each person and entity that will provide Services under this Agreement is duly qualified to perform such services by all appropriate governmental authorities, where required, and is sufficiently experienced and skilled in the area(s) for which such person or entity will render Services. CONSULTANT represents and warrants that the Services under this Agreement shall be performed in a skillful and respectful manner, and that the quality of all such services shall equal or exceed prevailing industry standards for the provision of such services.

8.9 Breach of Representations. In entering into this Agreement, CONSULTANT acknowledges that CITY is materially relying on the representations and warranties of CONSULTANT stated in this Article. CITY shall be entitled to recover any damages it incurs to the extent any such representation or warranty is untrue. In addition, if any such representation or warranty is false, CITY shall have the right, at its sole discretion, to terminate this Agreement without any further liability to CONSULTANT, to deduct from the compensation due CONSULTANT under this Agreement the full amount of any value paid in violation of a representation or warranty, or to recover all sums paid to CONSULTANT under this Agreement. Furthermore, a false representation may result in debarment from CITY'S competitive procurement activities.

ARTICLE 9. TERMINATION

9.1 Termination. This Agreement or any Task Order issued under this Agreement may be terminated for cause by the CITY if CONSULTANT has not corrected the breach within ten (10) days after receipt of written notice from the aggrieved party identifying the breach. This Agreement may also be terminated for convenience by the City Commission. Termination for convenience by the City Commission shall be effective on the termination date stated in written notice provided by CITY, which termination date shall be not less than thirty (30) days after the date of such written notice. If this Agreement or any Task Order was approved by City Commission action, termination for cause by CITY of the Agreement or Task Order, as applicable, must be by action of the City Commission or the City Manager; in all other instances termination for cause may be affected by the City Manager, the CITY representative expressly authorized under this Agreement, on behalf of CITY. This Agreement may also be terminated by the City Manager upon such notice as the City Manager deems appropriate under the circumstances if the City Manager determines that termination is necessary to protect the public

health, safety, or welfare. If CITY erroneously, improperly, or unjustifiably terminates for cause, such termination shall be deemed a termination for convenience and shall be effective thirty (30) days after such notice of termination for cause is provided.

9.2 This Agreement or any Task Order issued under this Agreement, may be terminated for cause by CITY for reasons including, but not limited to, any of the following:

9.2.1 CONSULTANT'S failure to suitably perform the work, failure to continuously perform the Services in a manner calculated to meet or accomplish the objectives in this Agreement or Task Order, or repeated (whether negligent or intentional) submission for payment of false or incorrect bills or invoices;

9.2.2 If CONSULTANT is a "scrutinized company" pursuant to Section 215.473, Florida Statutes, if CONSULTANT is placed on a "discriminatory vendor list" pursuant to Section 287.134, Florida Statutes, or if CONSULTANT provides a false certification submitted pursuant to Section 287.135, Florida Statutes;

9.3 Notice of termination shall be provided in accordance with the "Notices" section of this Agreement except that notice of termination by the City Manager to protect the public health, safety, or welfare may be oral notice that shall be promptly confirmed in writing.

9.4 If this Agreement or any Task Order issued under this Agreement is terminated for convenience, CONSULTANT shall be paid for any Services properly performed under this Agreement or operative Task Order through the termination date specified in the written notice of termination, subject to any right of County to retain any sums otherwise due and payable. CONSULTANT acknowledges and agrees that it has received good, valuable, and sufficient consideration from CITY, the receipt and adequacy of which are acknowledged by CONSULTANT, for CITY'S right to terminate this Agreement for convenience.

9.5 In addition to any right of termination stated in this Agreement, CITY shall be entitled to seek any and all available remedies, whether stated in this Agreement or otherwise available at law or in equity.

CONSULTANT shall have the right to terminate this Agreement upon substantial breach by the CITY of its obligation under this Agreement as to unreasonable delay in payment or non-payment of undisputed items. CONSULTANT shall have no right to terminate this Agreement for convenience of CONSULTANT.

ARTICLE 10. INSURANCE

10..1 Insurance

As a condition precedent to the effectiveness of this Agreement, during the term of this Agreement and during any renewal or extension term of this Agreement, CONSULTANT, at its sole expense, shall provide insurance of such types and with such terms and limits as noted below. Providing proof of and maintaining adequate insurance coverage are material obligations of CONSULTANT. CONSULTANT shall provide the

CITY a certificate of insurance evidencing such coverage. CONSULTANT'S insurance coverage shall be primary insurance for all applicable policies, in respect to the CITY'S interests. The limits of coverage under each policy maintained by CONSULTANT shall not be interpreted as limiting CONSULTANT'S liability and obligations under this Agreement. All insurance policies shall be through insurers authorized or eligible to write policies in the State of Florida and possess an A.M. Best rating of A-, VII or better, subject to approval by the CITY'S Risk Manager.

The coverages, limits, and/or endorsements required herein protect the interests of the CITY, and these coverages, limits, and/or endorsements shall in no way be relied upon by CONSULTANT for assessing the extent or determining appropriate types and limits of coverage to protect CONSULTANT against any loss exposures, whether as a result of this Agreement or otherwise. The requirements contained herein, as well as the CITY'S review or acknowledgement, are not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by CONSULTANT under this Agreement.

The following insurance policies and coverages are required:

Commercial General Liability

Coverage must be afforded under a Commercial General Liability policy with limits not less than:

- \$1,000,000 each occurrence and \$2,000,000 aggregate for Bodily Injury, Property Damage, and Personal and Advertising Injury
- \$1,000,000 each occurrence and \$2,000,000 aggregate for Products and Completed Operations

Policy must include coverage for contractual liability and independent CONSULTANTS.

The CITY, a Florida municipality, its officials, employees, and volunteers are to be covered as an additional insured with a CG 20 26 04 13 Additional Insured – Designated Person or Organization Endorsement or similar endorsement providing equal or broader Additional Insured Coverage with respect to liability arising out of activities performed by or on behalf of CONSULTANT. The coverage shall contain no special limitation on the scope of protection afforded to the CITY, its officials, employees, and volunteers.

Professional Liability

Coverage must be afforded for Wrongful Acts in an amount not less than \$5,000,000 each claim and \$5,000,000 aggregate.

CONSULTANT must keep the professional liability insurance in force until the third anniversary of expiration or early termination of this Agreement or the third anniversary of acceptance of work by the CITY, whichever is longer, which obligation shall survive expiration or early termination of this Agreement.

Business Automobile Liability

Proof of coverage must be provided for all Owned, Hired, Scheduled, and Non-Owned vehicles for Bodily Injury and Property Damage in an amount not less than the State of Florida required minimums unless a different amount is required by CITY Ordinance(s).

If CONSULTANT does not own vehicles, CONSULTANT shall maintain coverage for Hired and Non-Owned Auto Liability, which may be satisfied by way of endorsement to the Commercial General Liability policy or separate Business Auto Liability policy.

Workers' Compensation and Employer's Liability

Coverage must be afforded per Chapter 440, Florida Statutes. Any person or entity performing work for or on behalf of the CITY must provide Workers' Compensation insurance. Exceptions and exemptions will be allowed by the CITY'S Risk Manager, if they are in accordance with Florida Statute.

CONSULTANT waives, and CONSULTANT shall ensure that CONSULTANT'S insurance carrier waives, all subrogation rights against the CITY, its officials, employees, and volunteers for all losses or damages. The CITY requires the policy to be endorsed with WC 00 03 13 Waiver of our Right to Recover from Others or equivalent.

CONSULTANT must be in compliance with all applicable State and Federal workers' compensation laws, including the U.S. Longshore and Harbor Workers' Compensation Act and the Jones Act, if applicable.

10.1.1 Insurance Certificate Requirements

- a. CONSULTANT shall provide the CITY with valid Certificates of Insurance (binders are unacceptable) no later than ten (10) days prior to the start of work contemplated in this Agreement.
- b. CONSULTANT shall provide to the CITY a Certificate of Insurance having a thirty (30) day notice of cancellation; ten (10) day notice if cancellation is for nonpayment of premium.
- c. In the event that the insurer is unable to accommodate the cancellation notice requirement, it shall be the responsibility of CONSULTANT to provide the proper notice. Such notification will be in writing by registered mail, return receipt requested, and addressed to the certificate holder.
- d. In the event the Agreement term goes beyond the expiration date of the insurance policy, CONSULTANT shall provide the CITY with an updated Certificate of Insurance no later than ten (10) days prior to the expiration of the insurance currently in effect. The CITY reserves the right to suspend the Agreement until this requirement is met.
- e. The Certificate of Insurance shall indicate whether coverage is provided under a claims-made or occurrence form. If any coverage is provided on a claims-made form, the Certificate of Insurance must show a retroactive date, which shall be the effective date of the initial contract or prior.
- f. The CITY shall be named as an Additional Insured on all liability policies, with the exception of Workers' Compensation.
- g. The CITY shall be granted a Waiver of Subrogation on CONSULTANT'S

- Workers' Compensation insurance policy.
- h. The title of the Agreement, Proposal/Contract number, event dates, or other identifying reference must be listed on the Certificate of Insurance.

The Certificate Holder should read as follows:

City of Fort Lauderdale
Procurement Services Division
100 North Andrews Avenue
Fort Lauderdale, FL 33301

CONSULTANT has the sole responsibility for all insurance premiums and shall be fully and solely responsible for any costs or expenses as a result of a coverage deductible, co-insurance penalty, or self-insured retention; including any loss not covered because of the operation of such deductible, co-insurance penalty, self-insured retention, or coverage exclusion or limitation. Any costs for adding the CITY as an Additional Insured shall be at CONSULTANT'S expense.

If CONSULTANT'S primary insurance policy/policies do not meet the minimum requirements, as set forth in this Agreement, CONSULTANT may provide evidence of an Umbrella/Excess insurance policy to comply with this requirement.

CONSULTANT'S insurance coverage shall be primary insurance as respects to the CITY, its officials, employees, and volunteers. Any insurance or self-insurance maintained by the CITY, its officials, employees, or volunteers shall be non-contributory.

Any exclusion or provision in any insurance policy maintained by CONSULTANT that excludes coverage required in this Agreement shall be unacceptable and shall be considered breach of contract.

All required insurance policies must be maintained until the contract work has been accepted by the CITY, or until this Agreement is terminated, whichever is later. Any lapse in coverage shall be considered breach of contract. In addition, CONSULTANT must provide to the CITY confirmation of coverage renewal via an updated certificate should any policies expire prior to the expiration of this Agreement. The CITY reserves the right to review, at any time, coverage forms and limits of CONSULTANT'S insurance policies.

CONSULTANT shall provide notice of any and all claims, accidents, and any other occurrences associated with this Agreement to CONSULTANT'S insurance company or companies and the CITY'S Risk Management office as soon as practical.

It is CONSULTANT'S responsibility to ensure that any and all of the CONSULTANT'S independent consultants and subconsultants comply with these insurance requirements. All coverages for independent consultants and subconsultants shall be subject to all of the applicable requirements stated herein. Any and all deficiencies are the responsibility of the CONSULTANT.

**ARTICLE 11. MINORITY AND DISADVANTAGED PARTICIPATION;
NON-DISCRIMINATION, EQUAL EMPLOYMENT OPPORTUNITY,**

AND AMERICANS WITH DISABILITIES ACT

11.1 Historically, the CITY has been able to achieve participation levels of approximately twelve (12%) by minority and women business firms in CITY projects, and in the purchase of goods and services. CONSULTANT shall make a good faith effort to help the CITY maintain and encourage Minority Business Enterprise (MBE) and/or Women Business Enterprise (WBE) participation levels consistent with such historical levels and market conditions. CONSULTANT will be required to document all such efforts and supply the CITY with this documentation at the end of the Project, or in cases where projects are longer than one year, each CITY fiscal year.

11.2 CONSULTANT shall not unlawfully discriminate against any person in its operations and activities in its use or expenditure of the funds or any portion of the funds provided by this Agreement and shall affirmatively comply with all applicable provisions of the Americans with Disabilities Act (ADA) in the course of providing any services funded in whole or in part by CITY, including Titles I and II of the ADA (regarding nondiscrimination or the basis of disability) and all applicable regulations, guidelines, and standards.

CONSULTANT'S decisions regarding the delivery of services under this Agreement shall be made without regard to or in consideration of race, age, religion, color, gender, sexual orientation, national origin, marital status, physical or mental disability, political affiliation, or any other factor which cannot be lawfully or appropriately used as a basis for service delivery.

CONSULTANT shall comply with Title I of the ADA regarding nondiscrimination on the basis of disability in employment and further shall not discriminate against any employee or applicant for employment because of race, age, religion, color, gender, sexual orientation, national origin, marital status, political affiliation, or physical or mental disability. In addition, CONSULTANT shall take affirmative steps to ensure nondiscrimination in employment against disabled persons. Such actions shall include, but not be limited to, the following: employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff, termination, rates of pay, other forms of compensation, terms and conditions of employment, training (including apprenticeship), and accessibility.

CONSULTANT shall take affirmative action to ensure that applicants are employed and employees are treated without regard to race, age, religion, color, gender, sexual orientation, national origin, marital status, political affiliation, or physical or mental disability during employment. Such actions shall include, but not be limited to, the following: employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff, termination, rates of pay, other forms of compensation, terms and conditions of employment, training (including apprenticeship), and accessibility.

ARTICLE 12. MISCELLANEOUS

12.1 Contract Administrator Authority. The Contract Administrator is authorized to coordinate and communicate with CONSULTANT to manage and supervise the performance of this Agreement. Unless expressly stated otherwise in this Agreement, the Contract Administrator may exercise any ministerial authority under this Agreement in connection with the day-to-day

management of this Agreement provided that such instructions and determinations do not change the Scope of Services. The Contract Administrator may designate one or more CITY employees with authority pertaining to day-to-day project management or activities for each Work Authorization. CONSULTANT shall notify Contract Administrator in writing of CONSULTANT'S representative(s) to whom matters involving the Work Authorization shall be addressed.

12.2 Rights in Documents and Work. Any and all reports, photographs, surveys, and documents created by CONSULTANT in connection with performing Services under this Agreement or any Work Authorization shall be owned by CITY and shall be deemed works for hire by CONSULTANT and its agents; if the Services are determined not to be a work for hire, CONSULTANT hereby assigns all right, title, and interest, including any copyright or other intellectual property rights in or to the work, to CITY. In the event of termination of this Agreement, any reports, photographs, surveys, and other data and documents created by CONSULTANT, whether finished or unfinished, shall become the property of CITY and shall be delivered by CONSULTANT to the Contract Administrator within seven (7) days after termination of this Agreement. Any compensation due to CONSULTANT may be withheld until all documents are received as provided in this Agreement. CONSULTANT shall ensure that the requirements of this section are included in all agreements with its Subconsultant(s).

12.3 Ownership of Documents. All finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, specifications and reports prepared or provided by CONSULTANT in connection with this Agreement shall become the property of CITY, whether the Work Authorization for which they are made is completed or not and shall be delivered by CONSULTANT to Contract Administrator within fifteen (15) days of the receipt of the written notice of termination. If applicable, CITY may withhold any payments then due to CONSULTANT until CONSULTANT complies with the provisions of this section.

12.4 Public Records. To the extent CONSULTANT is acting on behalf of CITY as stated in Section 119.0701, Florida Statutes, CONSULTANT shall:

12.4.1 Keep and maintain public records required by CITY to perform the services under this Agreement;

12.4.2 Upon request from CITY, provide CITY with a copy of the requested records or allow the records to be inspected or copied within a reasonable time and at a cost that does not exceed that provided in Chapter 119, Florida Statutes, or as otherwise provided by law;

12.4.3 Ensure that public records that are exempt or confidential and exempt from public record requirements are not disclosed except as authorized by law for the duration of this Agreement and following completion or termination of this Agreement if the records are not transferred to CITY; and

12.4.4 Upon completion or termination of this Agreement, transfer to CITY, at no cost, all public records in possession of CONSULTANT or keep and maintain public records

required by CITY to perform the services. If CONSULTANT transfers the records to CITY, CONSULTANT shall destroy any duplicate public records that are exempt or confidential and exempt. If CONSULTANT keeps and maintains the public records, CONSULTANT shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to CITY upon request in a format that is compatible with the information technology systems of CITY.

A request for public records regarding this Agreement must be made directly to CITY, who will be responsible for responding to any such public records requests. CONSULTANT will provide any requested records to CITY to enable CITY to respond to the public records request. Any material submitted to CITY that CONSULTANT contends constitutes or contains trade secrets or is otherwise exempt from production under Florida public records laws (including Chapter 119, Florida Statutes) (“Trade Secret Materials”) must be separately submitted and conspicuously labeled “EXEMPT FROM PUBLIC RECORD PRODUCTION – TRADE SECRET.” In addition, CONSULTANT must, simultaneous with the submission of any Trade Secret Materials, provide a sworn affidavit from a person with personal knowledge attesting that the Trade Secret Materials constitute trade secrets under Section 812.081, Florida Statutes, and stating the factual basis for same. If a third party submits a request to CITY for records designated by CONSULTANT as Trade Secret Materials, CITY shall refrain from disclosing the Trade Secret Materials, unless otherwise ordered by a court of competent jurisdiction or authorized in writing by CONSULTANT. CONSULTANT shall indemnify and defend CITY and its employees and agents from any and all claims, causes of action, losses, fines, penalties, damages, judgments, and liabilities of any kind, including attorneys’ fees, litigation expenses, and court costs, relating to the nondisclosure of any Trade Secret Materials in response to a records request by a third party.

[IF CONSULTANT HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO CONSULTANT’S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT CITY CLERK’S OFFICE, 1E BROWARD BOULEVARD, FORT LAUDERDALE, FLORIDA, 33301, PHONE: 954-828-5002, EMAIL: PRRCONTRACT@FORTLAUDERDALE.GOV.](#)

12.5 Audit Rights and Retention of Records. CONSULTANT shall preserve all Contract Records (as defined below) for a minimum period of three (3) years after expiration or termination of this Agreement, any Work Authorization, or until resolution of any audit findings, whichever is longer. Contract Records shall, upon reasonable notice, be open to CITY inspection and subject to audit and reproduction during normal business hours. CITY audits and inspections pursuant to this section may be performed by any CITY representative (including any outside representative engaged by CITY). CITY may conduct audits or inspections at any time during the term of this Agreement and for a period of three (3) years after the expiration or termination of this Agreement (or longer if required by law). CITY may, without limitation, verify information, payroll distribution, and amounts through interviews, written affirmations, and on-site inspection with CONSULTANT’S employees, subconsultants, vendors, or other labor.

Contract Records include any and all information, materials and data of every kind and character, including, without limitation, records, books, papers, documents, subscriptions, recordings, agreements, purchase orders, leases, contracts, commitments, arrangements, notes, daily diaries, drawings, receipts, vouchers, memoranda, and any and all other documents that pertain to rights, duties, obligations, or performance under this Agreement. Contract Records include hard copy and electronic records, written policies and procedures, time sheets, payroll records and registers, cancelled payroll checks, estimating work sheets, correspondence, invoices and related payment documentation, general ledgers, insurance rebates and dividends, and any other records pertaining to rights, duties, obligations or performance under this Agreement, whether by CONSULTANT or Subconsultants.

CITY shall have the right to audit, review, examine, inspect, analyze, and make copies of all Contract Records at a location within Broward County. CONSULTANT hereby grants CITY the right to conduct such audit or review at CONSULTANT'S place of business, if deemed appropriate by CITY, with seventy-two (72) hours' advance notice. CONSULTANT agrees to provide adequate and appropriate workspace. CONSULTANT shall provide CITY with reasonable access to CONSULTANT'S facilities, and CITY shall be allowed to interview all current or former employees to discuss matters pertinent to the performance of this Agreement.

CONSULTANT shall, by written contract, require its Subconsultants to agree to the requirements and obligations of this section.

Any incomplete or incorrect entry in such books, records, and accounts shall be a basis for CITY'S disallowance and recovery of any payment upon such entry. If an audit or inspection in accordance with this section discloses overpricing or overcharges to CITY of any nature by CONSULTANT or its Subconsultants in excess of five percent (5%) of the total contract value reviewed by CITY, the reasonable actual cost of CITY'S audit shall be reimbursed to CITY by CONSULTANT in addition to making adjustments for the overcharges. Any adjustments or payments due as a result of such audit or inspection shall be made within thirty (30) days after presentation of CITY'S findings to CONSULTANT.

12.6 Subconsultants. CONSULTANT shall utilize only the Subconsultants identified in the Schedule of Subconsultants, to provide the Services under this Agreement. CONSULTANT shall obtain written approval of Contract Administrator prior to changing or modifying the Schedule of Subconsultants, which shall be automatically updated upon such written approval. CONSULTANT shall bind in writing each and every approved Subconsultant to the terms stated in this Agreement, provided that this provision shall not, in and of itself, impose the insurance requirements set forth in Article 10 on CONSULTANT'S Subconsultants.

12.7 Assignment. Neither this Agreement nor any interest herein shall be assigned, transferred, or encumbered without the prior written consent of the other party. CITY shall have the right to terminate this Agreement, effective immediately, if there is an assignment, or attempted assignment, transfer, or encumbrance, of this Agreement or any right or interest herein by CONSULTANT without CITY'S prior written consent.

12.8 Indemnification of County. CONSULTANT shall indemnify and hold harmless CITY, its officers and employees from liabilities, damages, losses, and costs, including, but not limited to, reasonable attorneys' fees, to the extent caused by the negligence, recklessness or intentionally wrongful conduct of CONSULTANT or other persons employed or utilized by CONSULTANT in the performance of this Agreement. The provisions of this section shall survive the expiration or earlier termination of this Agreement. To the extent considered necessary by Contract Administrator and City Attorney, any sums due CONSULTANT under this Agreement may be retained by CITY until all of CITY'S claims subject to this indemnification obligation have been settled or otherwise resolved, and any amount withheld shall not be subject to payment of interest by CITY.

12.9 Prior Agreements Superseded. This document incorporates and includes all prior negotiations, correspondence, conversations, agreements, or understandings applicable to the matters contained herein; and the Parties agree that there are no commitments, agreements, or understandings concerning the subject matter of this Agreement that are not contained in this document. Accordingly, the Parties agree that no deviation from the terms hereof shall be predicated upon any prior representations or agreements whether oral or written.

12.10 Amendments. No modification, amendment, or alteration in the terms or conditions contained herein shall be effective unless contained in a written document executed with the same formality and of equal dignity herewith.

12.11 Notices. In order for a notice to a party to be effective under this Agreement, notice must be sent via U.S. first-class mail, hand delivery, or commercial overnight delivery, each with a contemporaneous copy via e-mail, to the addresses listed below and shall be effective upon mailing or hand delivery (provided the contemporaneous email is also sent). The addresses for notice shall remain as set forth in this section unless and until changed by providing notice of such change in accordance with the provisions of this section.

FOR CITY:

Contract Administrator
City of Fort Lauderdale
100 North Andrews Avenue
Fort Lauderdale, Florida 33301

with copies to:

City Manager
City of Fort Lauderdale
100 North Andrews Avenue
Fort Lauderdale, Florida 33301

City Attorney
City of Fort Lauderdale
100 North Andrews Avenue

Fort Lauderdale, Florida 33301

FOR CONSULTANT:

12.12 Interpretation. The titles and headings contained in this Agreement are for reference purposes only and shall not in any way affect the meaning or interpretation of this Agreement. All personal pronouns used in this Agreement shall include the other gender, and the singular shall include the plural, and vice versa, unless the context otherwise requires. Terms such as “herein,” “hereof,” “hereunder,” and “hereinafter” refer to this Agreement as a whole and not to any particular sentence, paragraph, or section where they appear, unless the context otherwise requires. Whenever reference is made to a section or article of this Agreement, such reference is to the section or article as a whole, including all of the subsections of such section, unless the reference is made to a particular subsection or subparagraph of such section or article. Any reference to “days” means calendar days, unless otherwise expressly stated.

12.13 CONSULTANT’S Staff. CONSULTANT will provide the key staff identified in its proposal for each Work Authorization as long as said key staff are in CONSULTANT’S employment. CONSULTANT will obtain prior written approval of Contract Administrator to change key staff. CONSULTANT shall provide Contract Administrator with such information as necessary to determine the suitability of proposed new key staff. Contract Administrator will be reasonable in evaluating key staff qualifications. If Contract Administrator desires to request removal of any of CONSULTANT’S staff, Contract Administrator shall first meet with CONSULTANT and provide reasonable justification for said removal; upon such reasonable justification, CONSULTANT shall use good faith efforts to remove or reassign the staff at issue.

12.14 Drug-Free Workplace. To the extent required under Section 287.087, Florida Statutes, CONSULTANT certifies that it has a drug- free workplace program and that it will maintain such drug-free workplace program for the duration of this Agreement.

12.15 Independent Contractor. CONSULTANT is an independent contractor under this Agreement, and nothing in this Agreement shall constitute or create a partnership, joint venture, or any other relationship between the Parties. In providing Services under this Agreement, neither CONSULTANT nor its agents shall act as officers, employees, or agents of CITY, except as authorized by the Contract Administrator for permitting, licensing, or other regulatory requirements. CONSULTANT shall not have the right to bind CITY to any obligation not expressly undertaken by CITY under this Agreement.

12.16 Regulatory Capacity. Notwithstanding the fact that CITY is a political subdivision with certain regulatory authority, CITY’S performance under this Agreement is as a Party to this Agreement and in the capacity as owner. If CITY exercises its regulatory authority, the exercise of such authority and the enforcement of any rules, regulation, laws, and ordinances shall have

occurred under CITY'S regulatory authority as a governmental body separate and apart from this Agreement and shall not be attributable in any manner to CITY as a Party to this Agreement.

12.17 Sovereign Immunity. Except to the extent sovereign immunity may be deemed to be waived by entering into this Agreement, nothing herein is intended to serve as a waiver of sovereign immunity by CITY nor shall anything included herein be construed as consent by CITY to be sued by third parties in any matter arising out of this Agreement. CITY is a political subdivision as defined in Section 768.28, Florida Statutes, and shall be responsible for the negligent or wrongful acts or omissions of its employees pursuant to Section 768.28, Florida Statutes, as may be amended or revised.

12.18 Third-Party Beneficiaries. Neither CONSULTANT nor CITY intends to directly or substantially benefit a third party by this Agreement. Therefore, the Parties acknowledge that there are no third-party beneficiaries to this Agreement and that no third party shall be entitled to assert a right or claim against either of them based upon this Agreement.

12.19 Conflicts. Neither CONSULTANT nor its employees shall have or hold any continuing or frequently recurring employment or contractual relationship that is substantially antagonistic or incompatible with CONSULTANT'S loyal and conscientious exercise of judgment and care related to its performance under this Agreement. During the term of this Agreement, none of CONSULTANT'S officers or employees shall serve as an expert witness against CITY in any legal or administrative proceeding in which he, she, or CONSULTANT is not a party, unless compelled by court process. Further, such persons shall not give sworn testimony or issue a report or writing, as an expression of such person's expert opinion that is adverse or prejudicial to the interests of CITY in connection with any such pending or threatened legal or administrative proceeding unless compelled by court process. The limitations of this section shall not preclude CONSULTANT or any persons in any way from representing themselves, including giving expert testimony in support of such representation, in any action or in any administrative or legal proceeding. If CONSULTANT is permitted under this Agreement to utilize Subconsultants to perform any Services required by this Agreement, CONSULTANT shall require such Subconsultants, by written contract, to comply with the provisions of this section to the same extent as CONSULTANT.

12.20 Materiality and Waiver of Breach. Each requirement, duty, and obligation set forth in this Agreement was bargained for at arm's-length and is agreed to by the Parties. Each requirement, duty, and obligation set forth in this Agreement is substantial and important to the formation of this Agreement, and each is, therefore, a material term of this Agreement. CITY'S failure to enforce any provision of this Agreement shall not be deemed a waiver of such provision or modification of this Agreement. A waiver of any breach of a provision of this Agreement shall not be deemed a waiver of any subsequent breach and shall not be construed to be a modification of the terms of this Agreement. To be effective, any waiver must be in writing signed by an authorized signatory of the waiving party.

12.21 Compliance with Laws. CONSULTANT and the Services must comply with all applicable federal, state, and local laws, codes, ordinances, rules, and regulations including, without

limitation, American with Disabilities Act, 42 U.S.C. § 12101, Section 504 of the Rehabilitation Act of 1973, and any related federal, state, or local laws, rules, and regulations.

12.22 Severability. If any part of this Agreement is found to be unenforceable by any court of competent jurisdiction, that part shall be deemed severed from this Agreement and the balance of this Agreement shall remain in full force and effect.

12.23 Joint Preparation. This Agreement has been jointly prepared by the Parties and shall not be construed more strictly against either party.

12.24 Priority of Provisions. If there is a conflict or inconsistency between any term, statement, requirement, or provision of any document or exhibit attached to, referenced by, or incorporated in this Agreement and any provision of Articles 1 through 12 of this Agreement, the provisions contained in Articles 1 through 12 shall prevail and be given effect.

12.25 Law, Jurisdiction, Venue, Waiver of Jury Trial. This Agreement shall be interpreted and construed in accordance with and governed by the laws of the State of Florida. The exclusive venue for any lawsuit arising from, related to, or in connection with this Agreement shall be in the state courts of the Seventeenth Judicial Circuit in and for Broward County, Florida. If any claim arising from, related to, or in connection with this Agreement must be litigated in federal court, the exclusive venue for any such lawsuit shall be in the United States District Court or United States Bankruptcy Court for the Southern District of Florida. **BY ENTERING INTO THIS AGREEMENT, CONSULTANT AND CITY HEREBY EXPRESSLY WAIVE ANY RIGHTS EITHER PARTY MAY HAVE TO A TRIAL BY JURY OF ANY CIVIL LITIGATION RELATED TO THIS AGREEMENT.**

IF A PARTY FAILS TO WITHDRAW A REQUEST FOR A JURY TRIAL IN A LAWSUIT ARISING OUT OF THIS AGREEMENT AFTER WRITTEN NOTICE BY THE OTHER PARTY OF VIOLATION OF THIS SECTION, THE PARTY MAKING THE REQUEST FOR JURY TRIAL SHALL BE LIABLE FOR THE REASONABLE ATTORNEYS' FEES AND COSTS OF THE OTHER PARTY IN CONTESTING THE REQUEST FOR JURY TRIAL, AND SUCH AMOUNTS SHALL BE AWARDED BY THE COURT IN ADJUDICATING THE MOTION.

12.26 Reuse of Deliverables. CITY may, at its option, reuse (in whole or in part) the resulting end-product or deliverables resulting from CONSULTANT'S Services (including, but not limited to, drawings, specifications, other documents, and services as described herein and in Exhibit A or any Work Authorizations); and CONSULTANT agrees to such reuse in accordance with this provision. If the Contract Administrator elects to reuse the services, drawings, specifications, and other documents, in whole or in part, prepared for any services rendered under this Agreement for other projects on other sites, CONSULTANT will be paid a reuse fee to be negotiated between CONSULTANT and CITY, subject to approval by the proper awarding authority. Each reuse shall include all Services and modifications to the drawings, specifications, and other documents normally required to adapt the design documents to a new site. This reuse may include preparation of reverse plans, changes to the program, provision for exceptional site conditions, preparation of documents for off-site improvements, provisions for revised solar

orientation, provisions for revised vehicular and pedestrian access, and modifications to building elevations, ornament, or other aesthetic features. In all reuse assignments, the design documents shall be revised to comply with building codes and other jurisdictional requirements current at the time of reuse for the new site location. The terms and conditions of this Agreement shall remain in force for each reuse project, unless otherwise agreed by the Parties in writing.

12.27 Payable Interest.

12.27.1 Payment of Interest. CITY shall not be liable to pay any interest to CONSULTANT for any reason, whether as prejudgment interest or for any other purpose, and in furtherance thereof CONSULTANT waives, rejects, disclaims, and surrenders any and all entitlement it has or may have to receive interest in connection with a dispute or claim arising from, related to, or in connection with this Agreement. This subsection shall not apply to any claim for interest, including for post-judgment interest, if such application would be contrary to applicable law.

12.27.2 Rate of Interest. If the preceding subsection is inapplicable or is determined to be invalid or unenforceable by a court of competent jurisdiction, the annual rate of interest payable by CITY under this Agreement, whether as prejudgment interest or for any other purpose, shall be, to the full extent permissible under applicable law, one quarter of one percent (0.25%) simple interest (uncompounded).

12.28 Incorporation by Reference. Any and all Recital clauses stated above are true and correct and are incorporated in this Agreement by reference. The attached Exhibits are incorporated into and made a part of this Agreement.

[THIS SPACE WAS INTENTIONALLY LEFT BLANK]

CITY

IN WITNESS OF THE FOREGOING, the Parties have set their hands and seals the day and year first above written.

CITY OF FORT LAUDERDALE, a Florida
municipal corporation

By: _____
GREG CHAVARRIA
City Manager

Date: _____

(CORPORATE SEAL)

ATTEST:

By: _____
DAVID R. SOLOMAN
City Clerk

APPROVED AS TO LEGAL FORM AND
CORRECTNESS:
Thomas Ansbro, City Attorney

By: _____
RHONDA MONTOYA HASAN
Assistant City Attorney

SAMPLE AGREEMENT

CONSULTANT

WITNESSES:

., a Florida corporation

By: _____

Print Name

ATTEST:

Print Name

By: _____

Secretary

(CORPORATE SEAL)

STATE OF _____:

COUNTY OF _____:

The foregoing instrument was acknowledged before me by means of physical presence or online notarization, this _____ day of _____, 2024, by _____ (Name) of _____ (Name of Company)., a Florida corporation.

(Signature of Notary Public – State of _____)

(Print, Type, or Stamp Commissioned Name of Notary Public)

Personally Known _____ OR Produced Identification _____
Type of Identification Produced: _____



CITY OF FORT LAUDERDALE

**PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48/54-INCH FORCE
MAIN; REPLACEMENT ON SE 9TH AND 10TH
AVENUE TO GTL**

PROJECT ADDRESS FORT LAUDERDALE, FLORIDA

November 6, 2023



FOR BURIED UTILITY INFORMATION
THREE (3) BUSINESS DAYS
BEFORE YOU DIG CALL 811
(for 1-800-432-4770)
Sunshine 811
www.sunshine811.com

Hazen

CITY OF FORT LAUDERDALE

**SEWER DESIGN AND IMPLEMENTATION PROGRAM
REHABILITATION OF 48/54-INCH FORCE MAIN;
REPLACEMENT ON SE 9TH AND 10TH AVENUE TO GTL
CITY PROJECT NO. 12799**

November 6, 2023

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EXHIBIT A

DESIGN CRITERIA PACKAGE

SEWER DESIGN AND IMPLEMENTATION PROGRAM

REHABILITATION OF 48/54-INCH FORCE MAIN; REPLACEMENT ON
SE 9TH AND 10TH AVENUE TO GTL

CITY PROJECT NO. 12799

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1. SCOPE OF WORK

The City of Fort Lauderdale (hereafter the “City”) has issued this Request for Proposal (RFP) to solicit competitive proposals from a Design-Build Firm (DBF) for the design, permitting, and construction of the project referred to as the “*Rehabilitation of 48/54-inch Force Main; Replacement on SE 9th and 10th Avenue to GTL*” (hereafter, the “Project” also known as City Project Number 12799), complete with all tie-ins and subsequent surface restoration to existing or better conditions. The Project includes the rehabilitation or replacement of approximately 15,150 feet of existing 48-inch and 54-inch force main. This existing force main, when still active, conveyed raw wastewater from the Galleria Mall area towards the George T. Lohmeyer Wastewater Treatment Plant (GTL WWTP). After the force main broke in December of 2019, part of this existing force main, the Tarpon River crossing section, was abandoned. As a result, the Project will also include approximately 8,220 linear feet of new 48-inch force main. Taken together the Project is a total of approximately 23,370 linear feet of new or rehabilitated pipe as shown in Exhibit A - Figure 1. The Project is split into four phases depending on the type of work as defined herein as shown in Exhibit A - Figure 2. The term “phase” shall not be taken to mean the work shall be completed in a certain order.

Included in the scope of work are design, permitting, necessary inspections and exploratory work, construction, maintenance of traffic (MOT), dewatering, wastewater flow/control management, construction management services, third party testing, and all associated work delineated herein or determined by the DBF as required to meet the Project requirements. The RFP Documents which include the Design Criteria Package (DCP), Technical Specifications, all exhibits and attachments, the City’s Design/Build Services Agreement and the City’s General Conditions shall form the terms and conditions of the Contract. The DBF shall be responsible for design, preparation of permit submittal packages and procurement of all required permits for construction, construction phasing, MOT, and all other related work or services. This DCP sets forth minimum requirements for execution of the work regarding design, construction, and maintenance of traffic during construction, including requirements relative to project management and scheduling and coordination with other agencies and entities such as the state, county, local government, environmental permitting agencies, and the public.

Exhibit B includes technical specifications that describe the material quality standards and performance criteria for this Project. Exhibit C includes conceptual layouts that illustrate the Project intent and existing utility information. These conceptual layouts are provided to convey sufficient information to allow the Respondent to prepare a response to the City’s RFP. The construction methods shown in Exhibit C are not prescriptive, rather the Design Criteria Professional’s opinion of feasible methods for the purpose of a basis of design. Exhibit D provides relevant information from geotechnical investigation. Exhibit E provides relevant information from a subsurface utility survey, topographic survey which includes identification of right-of-way, easement requirements, and description of properties. The overall length of the force main, connections with existing utilities, and the exact tie-in locations shall be confirmed as part of the scope of this design-build project. All distances shown in Exhibit A - Figure 1 at the end of this exhibit and listed below are approximate, and for the purpose of competitive proposals. The selected DBF shall be responsible for design,

permitting, and construction of all aspects of the Project. The DBF shall develop a detailed project design based on the criteria set forth in this document and construct the work in accordance with the requirements set forth in this document and applicable permits procured for the Project by the DBF.

The Project includes the design, permitting, construction, testing, and startup of all the phases shown below (A, B, C and D). The Design portion of the project will incorporate all the phases as part of the base bid. The bid alternate included in this project is solely for the construction portion and related activities of Phase D.

Phase A – New 48-inch Force Main:

- Approximately 8,100 linear feet of new 48-inch force main along SE 15th St, Miami Road, Davie Blvd, SE 3rd Ave, and SE 6th St. This alignment is proposed to utilize a combination of open-cut and trenchless construction, or other methods as proposed by the DBF.
- Approximately 120 feet of a new 48-inch force main subaqueous crossing under the Himmarshee Canal utilizing a combination of open-cut and trenchless construction, or other method as proposed by the DBF.
- The installation of 48-inch isolation and air release valves to the new pipeline as necessary and as indicated herein.
- The reinstatement of connections to other force mains as necessary and as indicated herein.

Phase B – Rehabilitation of existing Force Main in the Roadway:

- Approximately 14,200 linear feet of rehabilitation by means of compression fit lining or other methods as proposed by the DBF to the existing 48-inch and 54-inch ductile iron force mains along SE 10th Ave, SE 9th Ave, NE 10th Ave, NE 4th St, NE 14th Ave, NE 9th St, NE 18th Ave, and NE 9th Pl.
- The reinstatement and/or installation of 54-, 48-, 36-inch and smaller isolation valves and air release valves to the rehabilitation pipelines as necessary and as indicated herein.
- The reinstatement of connections to other force mains as necessary and as indicated herein.

Phase C – Rehabilitation of existing Force Main under the New River:

- Approximately 300 linear feet of rehabilitation by means of cured-in-place lining or other methods as proposed by the DBF to the existing 48-inch ductile iron force main under the New River.
- The reinstatement of connections to other force mains as necessary.

Phase D (Bid Alternate) – Rehabilitation of existing Force Mains under the Middle River:

- Approximately 650 linear feet of rehabilitation by means of cured-in-place lining or other methods as proposed by the DBF to the existing 48-inch ductile iron force main under the Middle River.
- Providing and installing one new 42-inch valve on the existing 42-inch force main in Middle River Drive just north of NE 9th Avenue and the existing 20-inch connection.
- The reinstatement of connections to other force mains as necessary.

2. Project Requirements

The DBF shall demonstrate good project management practices while working on this Project. These include communication with the City and others as necessary, management of time and resources, and documentation. The City will provide contract administration and technical reviews of all work associated with this Project.

2.1 Design and Construction Requirements

The DBF shall provide a complete and thorough technical approach to constructing a design-build pipeline installation operation. The technical proposal should demonstrate a complete understanding of the Project and City objectives, including details for how the DBF intends to address the following items:

1. Completion of engineering design plans for construction, including progress document sets at 60%, 90%, and 100% design. Final plans must include emergency contact information as required by the City. Plans shall include site usage provisions, site maintenance provisions, maintenance of traffic conditions, and construction sequence restrictions. Refer to Section 8 and 16 in Exhibit B for additional details.
2. Provisions for temporary utilities.
3. The procurement of all permits required for construction and the placement of the pipelines in service from local, state, and federal agencies, including but not limited to, the Florida Department of Transportation, the South Florida Water Management District, Broward County Traffic Operations, Broward County Environmental Protection and Growth Management Department, US Army Corps of Engineers, and the City. The DBF shall develop strategies, and identify primary issues, possible testing requirements, and timing.
4. Construction in heavily trafficked areas and how to maintain access to residences and businesses during construction.
5. Appropriate Quality Control/Quality Assurance procedures.
6. The development of final record drawings (as-builts), including the collection of data in a format that allows as-built information to readily be uploaded into the City's asset management software systems (e.g., Cityworks and ArcGIS).

2.2 Detailed Descriptions

The technical proposal should demonstrate an understanding of the following design issues:

1. Trenchless technologies,
2. Compression fit lining,
3. Cured-In-Place Pipe (CIPP) lining,
4. HDD for pipe installation, risks, and risk mitigation measures,
5. Open-cut excavation and backfill for pipe installation,

6. Connection of new pipe to existing, in-service utilities,
7. Dewatering activities during construction,
8. Maintenance of traffic,
9. Preservation of access to private properties during construction,
10. Adjustment of existing utilities, as necessary,
11. Wastewater flow control/management (bypass operations).

2.3 Governing Regulations

The services provided by the DBF shall comply with all applicable City ordinances, rules and requirements, Occupational Safety and Health Administration (OSHA) Guidelines, South Florida Water Management District (SFWMD) Manuals and Guidelines, FDEP regulations and guidelines, and Broward County Environmental Protection and Growth Management Department regulations and guidelines. In general, the most recent editions of the following documents shall be utilized for this Project (this is not intended to be an exhaustive listing of all applicable guidelines):

1. South Florida Water Management District Volume V – Permit Information Manual, Criteria Manual for the Use of Works by the District
2. Broward County Environmental Protection Department – A Consulting Engineer’s Guide for a Wastewater Collection/Transmission System Construction License Application
3. OSHA Regulations for Construction – Title 29, Part 1926, Construction Safety and Health Regulations, Code of Federal Regulations (OSHA)
4. OSHA Standards – Title 29, Part 1910, Occupational Safety and Health Standards, Code of Federal Regulations (OSHA).
5. Florida Building Code
6. Federal Highway Administration – Manual on Uniform Traffic Control Devices

3. EXISTING UNDERGROUND UTILITY INFORMATION

Limited information on existing underground utilities within the vicinity of the Project area is available. A topographic survey of the force main route, which identifies, to the extent possible, aboveground and underground utilities, with above ground markings, within the public right-of-way. Which meets the requirements of the Board of Professional Surveyors and Mappers of the State of Florida, as defined in Chapter 51-17 F.A.C, is included as part of Exhibit E. Available Sunshine 811 Design Ticket information is included in Exhibit F. The DBF will be responsible for verifying all existing conditions and performing the necessary investigations to ensure a thorough and constructible design.

4. PERMIT REQUIREMENTS

The DBF shall secure all permits required for the work under this Contract and adhere to all requirements of the applicable permits before, during, and after construction. Permit fees will be reimbursed as a pass-through allowance. Refer to Exhibit B for additional information. In addition to

formal permits, coordination with local civic associations and community stakeholders will be required as described in Exhibit B – Section 6.

5. CITY CADD STANDARDS AND STANDARD DETAILS

All design drawings prepared under this Project shall comply with the latest City document titled “City of Fort Lauderdale Public Works Engineering & Architectural Department CADD Specifications for Project Drawings” (hereinafter CADD Standards) in effect at the time of contract execution. All design drawings shall also comply with the Standard Details A copy of the CADD Standards and City Standard Details is included at the following weblink:

<https://www.fortlauderdale.gov/government/departments-i-z/public-works/engineering-division/cadd-standards>

6. CONSENT ORDER

This Project is a Florida Department of Environmental Protection (FDEP) Consent Order (CO) mandated project. All deadlines for project completion must be strictly adhered to.

Paragraph 6(e) of the Amended Consent Order dated October 12, 2020, requires the City to complete the following force main rehabilitation projects no later than September 30th, 2026: “SE 10th Ave. 48-inch Force main” and “US 1 48-inch Force Main”. Due to the failures of the 54-inch force main on SE 9th Avenue during December of 2019, the City modified the project scopes. The projects were redefined as follows, in order of construction sequence:

- **Redundant Sewer Force Main South:** Install 15,000 feet of new 48-inch force main that will provide redundancy to the existing force main (4,500 additional linear feet than the identified in the Consent Order). This project has been completed under City Project Number P12567.
- **Rehabilitation of 48/54-inch Force Main; Replacement on SE 9th and 10th Avenue to GTL:** Rehabilitation or replacement of approximately 19,400 feet of existing 48-inch to 54-inch force main along SE 9th and 10th Avenues to George T. Lohmeyer Wastewater Treatment Plant. This is the Project scoped with this RFP despite the lengths and streets being slightly different. The Project (City Project Number 12799) described in this DCP meets the intent of the Amended Consent Order Project despite being slightly different.

7. PROVIDED RECORD DRAWINGS

Refer to Exhibit G for a collection of several separate construction projects’ record drawings spanning from the 1970s to 2021. Existing record drawing information is provided for informational purposes only. The City makes no guarantees, whether expressed or implied, as to their accuracy and completeness. Some drawings from the original set have been annotated or removed by the Design Criteria Professional if they were not in the general area of the project pipes. The full and unannotated drawings can be made available from the City upon request.

The DBF will be required to provide record drawing and updated information for the City’s asset management software systems (e.g., Cityworks and ArcGIS) as defined in Exhibit B.

8. PROVISIONS FOR UTILITIES, STAGING, AND PARKING

The DBF shall pay for all utilities needed for the performance of the Project. DBF shall be responsible for securing their own staging area for execution of the work.

9. PROJECT MEETINGS

The City shall require progress meetings throughout the duration of the Project that will require the participation of the DBF, subcontractors, and any others as requested by the City and/or DBF. All meetings shall be held at a central site that is convenient to all parties.

Following the written Notice to Proceed, the DBF shall coordinate with the City to hold a preconstruction meeting. All following meetings shall likewise be organized by the DBF upon instruction from the City.

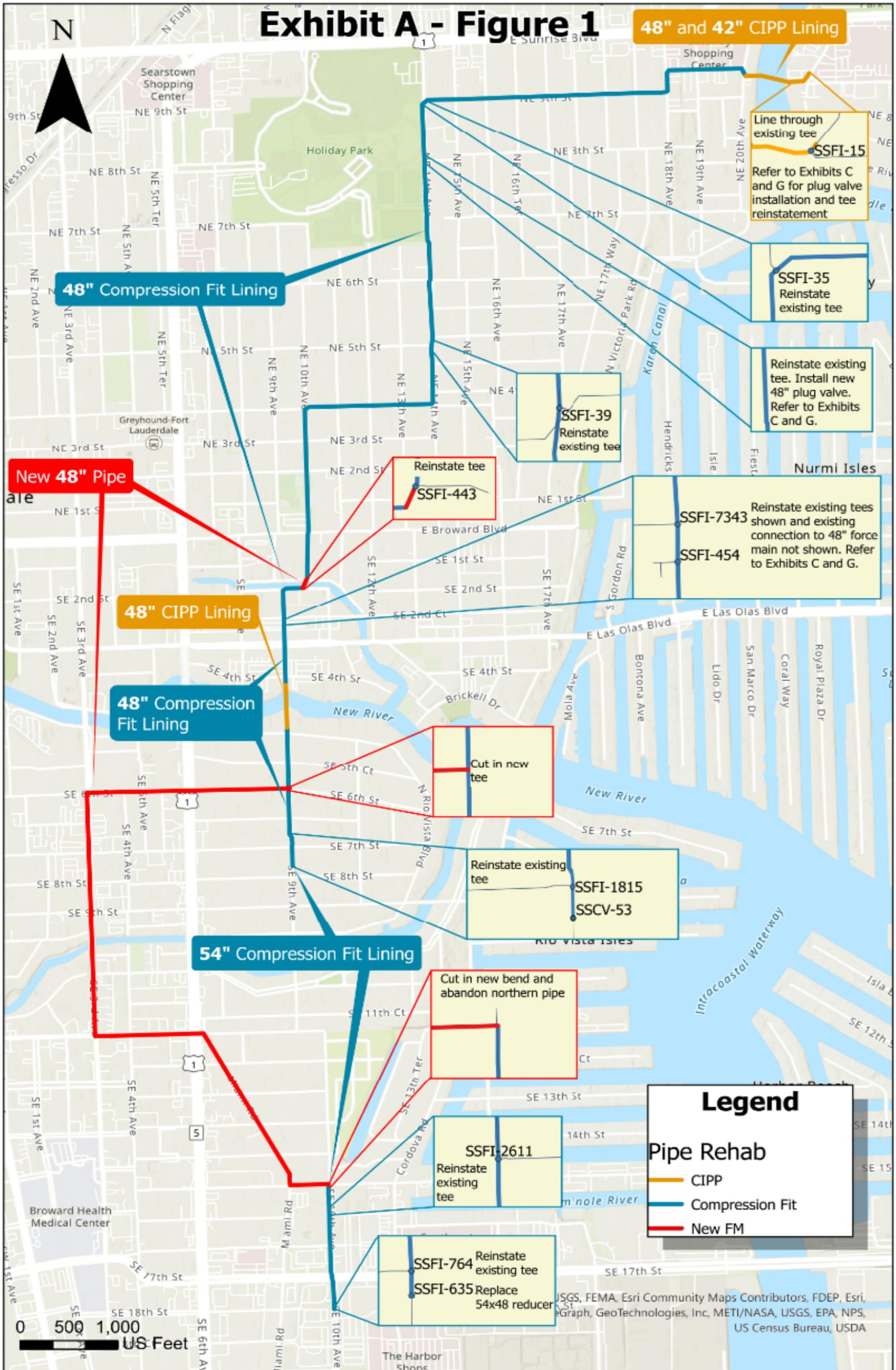
10. CONSTRUCTION DURATION

The selected DBF is expected to complete the Project as expeditiously as possible. At minimum, the selected DBF must adhere to the following schedule as set by the City:

MILESTONES	DATE
Substantial Completion Phases A, B, and C	04/03/2026
Substantial Completion Phase D (Bid Alternate)	07/03/2026
Final Completion of all Phase	08/31/2026

Notes:

1. Substantial Completion is defined in the City's Design-Build Request for Proposals Document. That definition shall be used for this Project with the understanding that "stated use" and "beneficially use" shall mean the new and rehabilitated pipes, connections, and all valves have been installed, tested, backfilled, and capable of pumping the City's wastewater to the specified parameters. The aboveground surface features shall be restored to be travelable for vehicular traffic including all pavement marking and signage for safety, as well as pedestrian traffic and other normal uses.
2. Final Completion is defined in the City's Design-Build Request for Proposals Document, which shall be used for this Project. Final surface restoration is to be considered part of Final Completion.
3. Failure to meet specified milestones will result in liquidated damages to be paid by the selected DBF, as described in the CITY's Design-Build Request for Proposals Document.
4. The procurement of permits and materials considered long lead items is critical for the completion of the Project and needs to be considered within the Critical Path by the selected DBF.



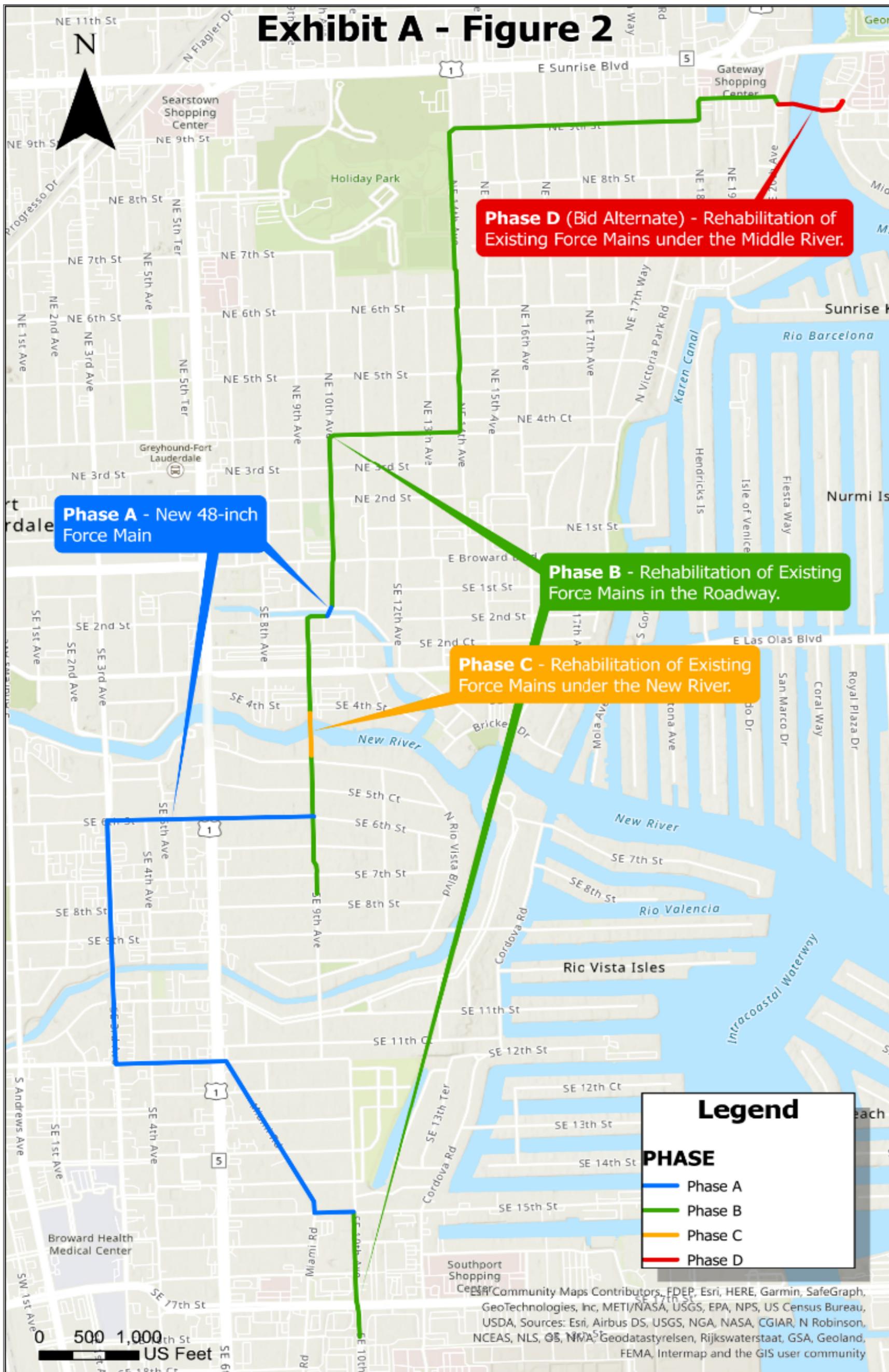


EXHIBIT B

TECHNICAL SPECIFICATIONS

SEWER DESIGN AND IMPLEMENTATION PROGRAM

REHABILITATION OF 48/54-INCH FORCE MAIN; REPLACEMENT ON
SE 9TH AND 10TH AVENUE TO GTL

CITY PROJECT NO. 12799

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1. Project Requirements

The City has issued this Request for Proposal to solicit competitive proposals from a Design Build Professional (DBF) for the design, permitting, and construction of new and the rehabilitation of 48/54-inch force mains (Project), as outlined in Exhibit A, and any other related documents and drawings included herein. The DBF will develop a detailed project design based on the criteria set forth in the contract documents. In addition, the DBF will construct the work in accordance with the requirements set forth in this document and all applicable permits procured for the project by the DBF.

1.1 Operational Conditions

A hydraulic model of the relevant portions of the collections system was utilized to understand operating conditions of the existing force main in the project area, including the proposed 48-inch force main. The model was run in InfoWater Version 12.5 using wet and dry weather flows based on 2028 demand. The model was developed and calibrated in 2019 for the City in response to the Consent Order and updated in 2022 to establish improvement recommendations.

Ten different scenarios were considered to establish a wide range of possible operating conditions. In general, dry and wet weather velocities along the alignment were modeled to range from 2.5 feet per second (ft/s) to 4.5 ft/s, flows range from 15 million gallons per day (MGD) to 30 MGD, and pressure ranged from 15 pounds per square inch (psi) to 40 psi. Despite the project force main having several connections along the alignment, there was not a large amount of variation in flows and pressures.

Scenarios were also run to evaluate rehabilitated force main performance when the recently constructed parallel redundant force main is valved off. This is considered a maintenance condition where all flow is forced through the project force main. In these scenarios, velocities reach 9 ft/s, flows reach 63 MGD, and pressures reach 60 psi at various locations along the alignment.

2. Site Investigation

The DBF, by virtue of executing the Agreement, acknowledges that it has satisfied itself to the nature and location of the work, and the general and local conditions including, but not restricted to the following:

- those bearing upon transportation, disposal, handling and storage of materials,
- access to the site,
- the confirmation and conditions of the work area,
- material and equipment staging areas,
- local regulatory agencies having jurisdiction over construction activities,
- and the character of equipment and facilities needed preliminary to and during the performance of the work.

Failure on the part of the DBF to completely or properly evaluate the site conditions shall not be grounds for additional compensation.

2.1 Geotechnical Investigation

During the development of the Design Criteria Package, a geotechnical engineer conducted a geotechnical study that included soil borings and analysis along the alignment of the proposed work. A copy of the geotechnical engineering report has been included as Exhibit D. Also included in Exhibit D are other geotechnical investigations conducted in the project vicinity. The DBF shall accept full responsibility for any interpretations, deductions, or conclusions made or implied from the information obtained from the geotechnical study.

The DBF shall review the geotechnical study with its design engineer and assess the need to acquire additional data to design the force main and its components described in this document. If geotechnical data, in addition to that provided in this document is required, the DBF shall perform additional geotechnical investigation at no additional cost to the City. Installation of the proposed new force main crossing the Himmarshee canal will likely require additional geotechnical investigation.

The DBF, by virtue of executing the Agreement, acknowledges that it has satisfied itself as to the nature and extent of soil, rock, muck, (underground) water conditions, and other materials on the Project site. No additional payment will be made to the DBF because of the differences between actual conditions and those determined by the provided geotechnical study.

2.2 Topographic Survey

A topographic survey of the proposed force main has been performed by a professional land surveyor and is included as Exhibit E. Electronic AutoCAD files of the topographic survey are available from the City upon request. The DBF shall perform additional site surveying, as may be required to develop a functional, constructible, and permissible project. If a survey in addition to that provided in this document is required, the DBF shall perform this at no additional cost to the City. Installation of the proposed new force main crossing the Himmarshee canal will likely require additional topographical survey.

the topographical survey was not conducted where rehabilitation of the force main where is proposed. The concept plans in Exhibit C utilized the City's GIS and Water Atlas information, which was the best available information at the time of developing this DCP. The DBF shall confirm this as part of their design.

As part of the additional survey effort, the DBF shall identify the need for any property easements or acquisitions, including temporary easements. In such cases, the DBF shall provide required survey data for the City's use in procuring required easements. The additional survey must be provided to the City in a timely manner and factored into the project schedule giving a reasonable amount of time for the City to obtain said easements. No time extension will be granted, compensable or non-compensable, should the DBF fail to provide the required information to the City in a timely manner.

Surveys shall comply with the latest City Public Works Engineering and Architectural Department CADD Specifications for Project Drawings (hereinafter CADD Standards) in effect at the time of contract execution. A link to the City's CADD Standards is included in Exhibit A.

3. Environmental Management Plan

The DBF shall ensure all statutory environmental requirements are met. The DBF assumes full responsibility for meeting environmental regulations and conditions of all applicable permits. The DBF shall develop an Environmental Management Plan prior to commencing construction.

This Environmental Management Plan shall detail, at a minimum, the DBF's work methods for handling the following items:

- Temporary environmental controls,
- Slurry and cuttings disposal,
- Drilling fluids,
- Dewatering,
- Stormwater pollution prevention,
- Environmental incident response,
- Impacts to existing trees/palms canopy or root zone areas,
- Spent cure water and odor management associated with the CIPP work.

The Environmental Management Plan shall incorporate the environmental regulations and conditions of all applicable permits.

3.1 Temporary Environmental Controls

The DBF shall carry out effective measures wherever and as often as necessary to prevent its operation from producing excessive dust. DBF shall ensure dust does not damage property, cultivated vegetation, or domestic animals, and that dust does not cause a nuisance to persons living in or occupying buildings or residences in the vicinity of the work.

During the progress of the work, the DBF shall keep the site and other areas used in a neat and clean condition and free from any accumulation of rubbish. Rubbish and waste materials shall be collected and disposed of offsite in accordance with the local codes and ordinances. Collection and disposal shall also conform with all applicable safety laws and the requirements of Part 1926 of the Occupational Safety and Health Administration (OSHA) Standards for Construction.

Fixed or portable chemical toilets shall be provided wherever needed for the use of employees. Toilets shall conform to the requirements of Part 1926 of the OSHA Standards for Construction.

All chemicals used during Project construction or furnished for Project operation shall show approval of either the U.S. Environmental Protection Agency or the U.S. Department of Agriculture for the intended use. The handling, storage, use, and disposal of all such chemicals including residues shall be in strict accordance with all applicable rules and regulations of federal, state, and local jurisdictional agencies and the printed instructions of the manufacturer and all regulatory requirements.

Noise resulting from the DBF's work shall not exceed the noise levels and other requirements stated in the City's Noise Ordinance. The DBF shall be responsible for curtailing noise resulting from its operation. The City's Noise Ordinance can be found using the following link:

https://library.municode.com/fl/fort_lauderdale/codes/code_of_ordinances?nodeId=COOR_CH17NOCO

3.2 Slurry and Cuttings Disposal (Contaminated and/or Non-Contaminated)

Cuttings (contaminated and/or non-contaminated) shall be disposed of properly and shall comply with all applicable requirements of the appropriate regulatory agencies. The DBF shall perform preliminary investigations of sufficient detail to determine if soil along the proposed pipeline corridors could potentially be classified as contaminated. Exhibit H shows known and documented contaminated sites near the work area. Additional information regarding these contaminated sites can be found on the Broward County Interactive Map of Contaminated Sites. The DBF shall be responsible for obtaining any permits required for the disposal of these cuttings.

<https://www.broward.org/Environment/ContaminatedSites/Pages/SiteLocations.aspx>

3.3 Drilling Fluids

Drilling fluids to be used shall be environmentally sound and biodegradable. Spent drilling fluids shall be disposed of properly and shall comply with all applicable requirements of the appropriate regulatory agencies. The DBF shall be responsible for obtaining any permits required for disposal of these fluids.

3.4 Dewatering

The DBF shall submit as part of the Environmental Management Plan its proposed methods of handling trench water and the locations at which the water will be disposed. The DBF shall provide pumps and other appurtenant equipment necessary to remove and maintain water at such a level as to permit construction in a dry condition. The DBF shall continue dewatering operations until backfilling has progressed to a sufficient depth over the pipe or structure to prevent flotation or movement of the pipe or structure in the trench or so that it is above the water table.

Water from dewatering operations such as trenches, excavations, and drilling operations shall be disposed of in such a manner that will not cause injury to public health, to public or private property, to the work completed or in progress, to the surface of the streets, cause any interference with the use of the same by the public, or cause pollution of any waterway or stream. Disposal to any surface waterbody shall be performed per approved permits. Dewatering shall not be routed/disposed of within any tree/palm root zone within the Project area. The DBF shall have full responsibility for acquiring all necessary permits for dewatering and disposal efforts required to perform their work.

3.5 Stormwater Pollution Prevention

The DBF shall comply with the National Pollutant Discharge Elimination System (NPDES) requirements. The DBF shall develop and implement a Stormwater Pollution Prevention Plan as outlined by NPDES.

3.6 Environmental Incident Reporting

In the event of any environmental incident, the DBF shall respond in an expeditious manner and notify the proper authorities. The appropriate environmental regulatory agency shall also be notified as soon as possible.

4. Compliance with Codes and Technical Requirements

All work specified in this document shall conform to or exceed the requirements of all applicable codes and specified technical requirements. The DBF shall construct the work specified in accordance with the requirements of this document and the referenced portions of those referenced codes, standards, and technical requirements listed herein. In case of conflict between codes, reference standards, and technical requirements, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the City's Project Manager, and any necessary deviations in work methods/materials shall be reviewed and approved by the City's Project Manager, with concurrence from the DBF if deemed necessary by the City, prior to ordering or providing any materials or labor.

All references made to published specifications, codes, standards, or other requirements shall mean the latest editions of the respective issuing agencies that have been published as of the date of the opening of the bids. In case of conflict between codes, reference standards, or other applicable documents, the most stringent requirements shall govern.

The following is a list of codes, design guides, Manuals of Practices (MOP), and industry guidelines that could be required as part of the design and construction of the Project:

- American Society of Civil Engineers (ASCE) MOP 106 Horizontal Auger Boring Projects,
- ASCE MOP 108 Pipeline Design for Installation by Horizontal Directional Drilling,
- ASCE MOP 125 Pipelines for Water Conveyance and Drainage,
- ASCE MOP 145 Design of Close-Fit Liners for the Rehabilitation of Gravity.
- American Water Works Association (AWWA) Manual M55 for Polyethylene Pipe,
- AWWA Manual M41 for Ductile Iron Pipe,
- AWWA Manual M51 for Air-Releases, Air/Vacuum and Combination Valves,
- AWWA Manual M28 for Rehabilitation of Water Mains,
- Ductile Iron Pipe Research Association (DIPRA) technical resources with emphasis on the thrust restraint, installation, and corrosion control,
- FDOT Design Manual
- Minimum Standards Applicable to Public Right-of-Way Under Broward County Jurisdiction,
- NASSCO Specification Guidelines with emphasis on CIPP lining, pressure pipe rehabilitation, and pipeline condition assessment,
- Plastic Pipe Institute (PPI) Handbook of Polyethylene Pipe with emphasis on the sections on underground installation, pipeline rehabilitation, and Horizontal Directional Drilling (HDD),

5. Responsibility for Utility Location and Connections

The information regarding existing underground utilities within the vicinity of the Project area is available and is provided in Exhibits C, E and F. The DBF shall perform utility locations to determine the exact locations and depths of all utilities that may interfere with the work. The DBF shall verify the utilities' location using ground penetrating radar, potholing, or other industry standard methods.

The DBF shall conduct utility investigations to fully inform themselves of the character, condition, and extent of all such utilities that may be encountered, and that may affect the design and construction operations. The DBF shall make all appropriate contacts and negotiations as required with local utility companies that may be affected by the proposed work. All existing utilities in the vicinity of the proposed pipeline corridor routing shall be shown on the design drawings developed by the DBF.

The DBF shall perform utility verifications and shall excavate to verify tie-in points for connections to existing systems. All connections shall be performed in such a manner that no damage and minimal interruption is caused to the existing facilities. All test-hole data shall be shown on the design and construction drawings, in addition to any survey plans.

Before commencing work involving the removal or placement into operation of existing or new facilities or tie-ins to existing facilities, the DBF shall notify the City in writing at least 3 days in advance. Connections to existing services or utilities, shutdowns, and startups shall be planned in detail with appropriate scheduling of work and coordination with the City. All shutdowns and startups are weather-dependent and may be cancelled by the City with little to no warning based on inclement weather.

6. Permit Requirements

It shall be the DBF's responsibility to secure all permits required to initiate and complete the work under this contract. The DBF shall be responsible for all applicable permit fees and adhere to all requirements of the applicable permits before, during, and after construction. Electronic copies of all permit applications and approved permits issued by the approving agency, including supporting documentation, shall be provided to the City's Project Manager. The agencies to be contacted by the DBF may include, but are not limited to the following:

- City Development Services Department (DSD)
- South Florida Water Management District (SFWMD)
- Florida Department of Environmental Protection (FDEP)
- Florida Department of Transportation (FDOT)
- Broward County Traffic Engineering Division
- U.S. Army Corps of Engineers
- Broward County Environmental Protection and Growth Management Department
- Broward County Health Department
- Removal of any trees/palms requires a City/County Tree Removal Permit and previous approval from City staff (DSD/Urban Forester etc.). Care shall be taken to avoid damage to any tree roots within the designated Tree Protection Zone.

- Other Permitting Agencies, as applicable

The DBF shall have responsibility for acquiring and adhering to the requirements of any other permit required, or local civic association to complete the work for this Project. A Permit and Local Authority Matrix and Road Ownership Map are included as Appendix A and B to this Exhibit.

7. Submittal Requirements

All submittals shall be directed to the City's Project Manager, with copies to the Design Criteria Professional as deemed necessary and when directed by the City. Any submittals required to be copied to the Design Criteria Professional shall be provided in electronic format. Submittals in electronic format shall be uploaded to a file management system through the web based Procore program. An account will be provided at the beginning of the Project.

A general summary of the types of submittals is noted below. The City may request submittals in addition to those specified when deemed necessary to adequately describe the work.

7.1 Type of Submittal

Design Submittals:

- DCP's Route, Technology, and Methodology Confirmation Technical Memorandum Submittal – The DBF shall review the DCP's recommended route, materials, and construction methods that are identified herein as well as Exhibits C, I, and J. The DBF shall identify any major revisions from the identified design criteria for the City's review and approval.
- Underground Utility and Topographical Survey
- Geotechnical Investigation
- Tree survey including at a minimum unique tree number, tree/palm species, height, weight, diameter at breast height (dbh), clear trunk (palm only), condition with percentage, and disposition (remove/relocate or remain)
- 60% Design Submittal - plan and profile drawings, specifications, flow control plan
- 90% Design Submittal - including preliminary Maintenance of Traffic MOT plan
- 100% Design Submittal
- Specifications and diagrams of all proposed landscape/tree bracing materials, methods, and duration timetables; brand of root barrier to be installed, size/dimensions, depth, and installation methods.

Pre-Construction Submittals:

- All Permit Application Packages for Applicable Regulatory Agencies
- All Approved Permits from Applicable Regulatory Agencies Environmental Management Plan
- Final MOT Plan

- Quality Management Plan and Risk Management Plan
- Preconstruction survey as described below
- Progress Payment Requests – including Native File of CPM Schedule
- Shop Drawings – approved by DBF’s Engineer of Record (herein referred to as “Engineer”)
- Horizontal Directional Drilling (HDD) design calculations – approved by DBF’s Engineer
- HDD design frac out plan
- CIPP design calculations – approved by DBF’s Engineer
- Warranties as described below
- Initial Schedule and Monthly Progress Schedules within seven (7) days after the award of the contract. The schedule shall be updated monthly and submitted with the application for monthly progress payments. The DBF shall provide its proposed critical path method (CPM) schedule and monthly updates in native file format. Schedules must identify long lead items for possible early procurement and must identify how the DBF will be compliant with all deadlines outlined in this DCP. The schedule shall be prepared in the form of a horizontal bar chart showing in detail the proposed sequence of the work and identifying construction activities for the pipeline, as well as critical milestones. The schedule shall be time scaled, identifying the first day of each week, with the estimated date of starting and completion of each stage of the work, clearly showing how the work will be completed before all stipulated deadlines.
- Schedule of Pay Items for review within two (2) weeks after receiving the Notice to Proceed, for the City’s review, comments, and approval. The schedule of items shall contain the major design elements/milestones, as well as the furnished & installed value of the component parts of work for the purpose of making progress payments during the design and construction period. Progress payment requests shall be made in accordance with City standards. Payment requests submitted without such documentation will not be processed. Copies of all shop drawings, approved by the DBF’s Engineer, shall be submitted to the City’s Project Manager.

Prior to commencing work, the DBF shall have a continuous color audio-video digital recording taken of the entire Project corridor/work area(s), including adjacent work areas and all other areas that will be disturbed by the DBF’s operations, to serve as a record of preconstruction conditions. Recordings shall not be performed more than 90 days prior to construction in any area. If it is infeasible to record the corridor, the DBF shall make arrangements with the City regarding when preconstruction conditions recordings will occur. No construction shall begin prior to review and acceptance of the digital recording covering the respective, affected construction area by the City’s Project Manager. The City’s Project Manager shall have the authority to reject all or any portion of the recording not conforming to the specifications and order that it be redone at no additional charge. The DBF shall reschedule unacceptable coverage within 5 days after being notified. The City’s Project Manager will designate those areas, if any, to be omitted from or added to the audio-video coverage. All digital files and written records shall become property of the City.

Where warranties are called for, a sample of the warranty shall be submitted with the approved shop drawings. The sample warranty shall be the same form that will be used for the actual warranty. Actual warranties shall be original and notarized. Copies of certificates of compliance and test reports shall be submitted for requested items prior to request for payment.

Post-Construction Submittals:

- HDD Pipe Fusing Logs approved by DBF's Engineer
- Daily Construction Inspection Reports as described below
- Certificates of Compliance
- Start-up Documentation and Executed Warranties of Valves
- All Hydrostatic Test Results
- Drilling Log Information
- Record Drawing Information for Review
- Vendor supplied drawings
- Record Drawings – AutoCAD files accordance with the City's CADD Standard
- Record Drawings – electronic format for transfer to the City's ArcGIS and Cityworks software
- Record Drawings as described below
- Approvals from Regulatory Agencies to Place Facilities Into Service
- Original releases from all parties entitled to claims against Project

The DBF shall submit daily construction inspection reports with photographs to the City's Project Manager from the date that the DBF commences mobilization onsite to the date that the DBF achieves final completion for the Project. Reports shall be submitted weekly, on Mondays immediately following the end of the previous week.

The DBF shall keep all drilling logs containing dates, times and locations, soil conditions, drilling data such as depth, angle and rate of penetration, and utility crossings. Computer data sheets from steering tools and tracking systems shall also be kept by the DBF. The DBF shall, within 30 calendar days of the date of final completion, submit these records to the City's Project Manager.

The DBF shall submit record drawing information to the City's Project Manager for review prior to the preparation of final record drawings. This preliminary submittal shall be submitted within 30 calendar days of the date of substantial completion. Within 30 calendar days of receipt of review comments from the City, the DBF shall commence preparation of final record drawings. Record Drawings shall be plotted on 22-inch by 34-inch paper. Record Drawings shall contain the following information, where available:

- Plan views showing:
 - Horizontal alignment details of the horizontal directional drill and open-cut installation
 - All horizontal curve data, including point of curvature and point of tangency stations or radial bearings

- All coordinates shall be in Florida State Plane Coordinates North American Datum of 1983 (NAD83)
- Top of pipe elevations every 100 feet
- Location and elevations of all fittings including bends, tees, sleeves, valves, air release valves, etc.
- Vertical profiles showing:
 - All vertical curve data, including PC and PT stations or radial bearings
 - All elevations shall be in North American Vertical Datum of 1988 (NAVD88) with 2011 adjustments
 - Top of pipe elevations every 100 feet
- The diameter and type of pipe and pipe joints (including joint restraint)
- The diameter and type of pipe and pipe joints used in casing pipes
- Final reamed size of the boreholes
- Extent and type of grouting
- Pipe spacer/centralizer arrangements
- Valve(s) manufacturer information with field-verified turn counts to open and close the valve(s)

8. General Construction Requirements

8.1 General Requirements

Maintenance of existing operations is mandated throughout the construction period. All materials and workmanship supplied for this Project shall be of first-class quality. During construction, the DBF is expected to work regular hours defined as 8:00 A.M. to 5:00 P.M. Monday through Friday.

Requests to work other than regular hours that conform to the standard hours listed in the City Noise Ordinance Section 17 – 8.1 must be submitted to the City’s Project Manager, for consideration and approval. Such request for work outside of regular hours must include a Noise Management Plan as describe in Section 8.2.

Requests to work other than regular hours that do not conform to the standard hours listed in the City Noise Ordinance Section 17 – 8.1 shall follow the Development Services Department’s process for “Requesting Exemption from the Noise Ordinance”, located at

https://library.municode.com/fl/fort_lauderdale/codes/code_of_ordinances?nodeId=COOR_CH17NOCO

The DBF shall not perform work outside of approved hours, including overtime work or the performance of work on Saturday, Sunday, or any legal holiday (designated by the City), without the City Project Manager’s or City Manager’s written consent at least 72 hours in advance of the period proposed for such overtime work. City holidays include the following:

1. New Year's Day
2. Martin Luther King's Birthday
3. President's Day
4. Memorial Day
5. Independence Day
6. Labor Day
7. Veterans Day
8. Thanksgiving Day
9. Day Following Thanksgiving
10. Christmas Day

When a holiday falls on Saturday, the immediately preceding Friday shall be declared a holiday, and when a holiday falls on Sunday, the following Monday shall be declared a holiday. Exceptions will need to be evaluated on a case-by-case basis. Hours of work shall conform to the requirements of the City's Noise Ordinance.

Prior to the commencement of work at the site, a preconstruction conference will be held at a mutually agreed time and place, which shall be attended by the DBF, its superintendent, and its subcontractors, as well as representatives of the City, Design Criteria Professional, other governmental representatives as appropriate, and others requested by the DBF or City. Prior to the preconstruction conference, the DBF shall have submitted project schedule to the City for review, comments, and approval.

The City will schedule and hold biweekly, or weekly (if needed) progress meetings during construction. The City, Design Criteria Professional (as necessary), DBF, and all subcontractors active on the site shall be represented at each meeting. For each biweekly progress meeting, the DBF shall provide a 3-week look-ahead schedule, and a 2-week look-back schedule update, capturing work that has taken place and work that is planned for completion.

8.2 Noise Management Plan

A Noise Management Plan can be submitted in a word.doc format. The following bulleted items need to be headings for each section of the plan:

- Cover page with Contractor name, project name, and location.
- Description of work to be performed outside of normal work hours.
- Site plan and location map (If this is being submitted with a new MOT plan, then the site plan and location map can be excerpts from the MOT plan.).
- Legal description.
- Justification for work and why extended work hours are being requested.
- Commencement date and duration of work. It is recommended that if the Contractor is not certain as to which day extended hours are needed, then multiple days are included in the request. This ensures that a window of time is approved to allow the Contractor to perform the work in.
- List of DBF contacts, including those onsite.

- Details on type of equipment to be used during extended work hours.
- Details on noise levels that may be produced by range of decibels, including current ambient levels at site and levels predicted from proposed construction impacts.
- Details on vibratory control measures to be implemented.
- Details on how neighbors in vicinity of work area will be notified and how access to property will be maintained during construction.
- Details on how complaints will be resolved and/or mitigated.
- MOT plans, if required.

If no lane closure or traffic impacts are necessary, the request must be submitted at least 12 business days in advance of the scheduled work. If the work requires lane closures, request should be submitted at least 22 business days in advance along with MOT plans approved by City Transportation and Mobility Department (TAM) and any other agencies if necessary to allow time for City Manager consideration and approval, City MOT permit issuance, and notification to the public.

Noise Management Plans shall be submitted to the City's Project Manager for review. DBF shall allow for a 1-week review period by the City's Project Manager. The Noise Management Plan, following approval by the City Project Manager, shall be submitted to the City Manager's Office for review and approval. The DBF shall allow for a 1-week review period by the City Manager's Office. If a new MOT plan is needed for the work, then such MOT plan shall be submitted to City TAM, and DBF shall allow a minimum of 2 weeks for the review of the new MOT plan by TAM, following the approval of the Noise Management Plan from the City Manager's office. Public notification shall be issued 48 hours in advance of starting the work (See Section 8.8 Public Notification for requirements).

8.3 Temporary Utilities

The DBF shall be responsible for determining and providing the equipment and temporary utilities that are adequate for the performance of the work within the time specified. All items shall conform to the applicable requirements of OSHA Standards for Construction. These items may include, but are not limited to power, lighting, and water supply.

The DBF shall pay for all utilities (including power, lighting, water, sanitary facilities, etc.) needed for the performance of the Project. The DBF shall make arrangements for and pay all costs for all water used for construction and testing. The DBF shall provide and maintain all meters, piping, fittings, adapters, and valves required.

To obtain potable water, the DBF shall install a City supplied meter and backflow preventer. The City will charge the DBF for potable water. The DBF shall make all necessary connections to existing piping and shall provide all necessary appurtenances at the DBF's own expense.

The DBF shall not make connection to, or draw water from, any fire hydrant or pipeline without first obtaining permission of the authority having jurisdiction over the use of said fire hydrant or pipeline and from the agency owning the affected water system. For each such connection made, the DBF shall first

attach to the fire hydrant or pipeline a valve and a meter, if required by the said authority, of a size and type acceptable to said authority and agency.

8.4 Maintenance of Facilities

All connections to existing systems shall be performed in such a manner that no damage and minimal interruption approved by the City is caused to the existing facilities. Required shutdowns to the utility systems shall be identified in writing during design. The DBF shall give the City three (3) business days' notice in writing before commencing work involving removing or placing into operation existing or new facilities or tie-ins to existing facilities for all planned connections for this Project. Connections to existing services or utilities, shutdowns, and startups shall be planned in detail with appropriate scheduling of work and coordination with the City. The DBF shall obtain written approval from the appropriate permitting agencies and the City prior to placing the force main into service.

Final connections between existing and proposed pipelines may be performed via short-term shutdown. A maximum of 4 hours shall be allowed for a short-term shutdown. The start and stop time for performing short-term shutdowns shall be agreed to in writing with the City.

All connections between the existing and proposed piping shall be constructed in the presence of the City.

The existing isolation 16-in plug valve on SE 10th Ave and SE 2nd St (sheet No. C15) is closed and has been covered in concrete. For the existing 16-in force main to be connected to the Project pipe after rehabilitation, the valve will have to be located, excavated, and the concrete removed to open the valve.

8.5 Temporary Flow Control

The project pipeline is currently not conveying flow and will require flow control, except for the interconnectivity to connecting force mains. Where flow control is needed, the DBF shall prepare and submit a sewer bypass plan to the City's Project Manager for approval, which is to be included as part of the 60% design submittals. The DBF shall be responsible for coordinating the work to transfer flow and/or make connections to the existing force mains. The DBF shall be responsible for continuity of sanitary sewer service to each facility connected to the system during the execution of the work performed under this contract.

In the event that a sewage backup occurs and enters property, dwellings or other structures, due in any part to a failure of the bypass piping system or non-compliance of the Contract Documents, the DBF shall be responsible for cleanup, repairs, property damage costs, fines imposed by jurisdictional authorities, and all claims arising therefrom. All spills shall be contained and returned to the sewer system.

The DBF shall take appropriate steps to ensure that all pumps, piping, and hoses carrying raw sewage are protected from vehicular and pedestrian traffic and are included as part of the detailed section for MOT. The DBF shall submit a sewage spill emergency plan for review by the City prior to starting work.

8.6 Protection of Existing Facilities

The DBF shall protect all existing utilities and improvements not required for removal and shall restore damaged or temporarily relocated utilities and improvements to equal or better conditions than they were prior to such damage or temporary relocation.

The DBF shall determine the exact locations and depths of all utilities that may interfere with the work. At a minimum, preliminary potholing shall be performed every 500 linear feet and at other locations where the DBF needs to verify the location of existing utilities. The locations where potholing is performed shall be restored in kind to original or better condition. Laterals from all properties along the force main route, as well as water service lines to all properties along the force main route, shall be located and protected during construction. Utility location shall be performed in a manner sufficient to determine the alignment and grade of any potential conflicts. It is the responsibility of the DBF to perform utility investigations in order to fully inform themselves of the character, condition, and extent of all such utilities, as may be encountered and as may affect the design and the construction operations, at no additional cost to the City. The DBF shall make all appropriate contacts and negotiations, as required, with local utility companies for relocation, or that may otherwise be affected by the proposed work.

The DBF shall protect all existing trees within the project corridor and plan its work to avoid the removal of any trees. If the removal of a tree is required to complete the work, the DBF shall obtain the required permits from the City. All existing trees/palms within the construction Project area shall be protected with tree protection barriers in accordance with the publication Tree Protection Barriers DSD-Urban Design & Planning Revision 1 Revision Dated 4/10/2018. No construction related activities, including storage of materials/debris/equipment shall occur within the Tree Protection Zone without City staff/Urban Forester authorization. Any unauthorized damage to tree roots, root zone, canopy, or any unauthorized tree/palm removals shall be the sole responsibility of the Contractor to mitigate. Note that additional penalties and enforcement action may also be pursued for unauthorized tree/palm impacts. A City Tree Removal Permit shall also be required for any impacts to trees with a diameter base height of 3 inches or greater that are considered non-exempt. An onsite walkthrough is required with appropriate City staff/Urban Forester prior to any tree removals/impacts.

8.7 Site Access, Staging, and Parking

Nothing herein shall be construed to entitle the DBF to the exclusive use of any public street, alleyway, parking area, or easement during the performance of the work. The DBF shall conduct its operations so as to keep one lane of traffic open for both directions at all times and access to residences at all times. The DBF shall not interfere unnecessarily with the authorized work of utility companies or other agencies in such streets, alleyways, parking areas, or easements. No lanes shall be closed to the public without first obtaining permission from the City and shall consider traffic peak hours and City events. Fire hydrants on or adjacent to the work shall be kept accessible to firefighting equipment at all times. Temporary provisions shall be made by the DBF to assure the use of sidewalks and the proper functioning of all gutters, sewer inlets, and other drainage facilities.

The DBF shall obtain permission from the City and relevant authority prior to using any right-of-way or easement for storage or operation of any construction equipment.

If closure of any street is required during construction, a formal application for a street closure shall be made to the authority having jurisdiction over said street. Refer to Section 8.1.

Responsibility for protection and safekeeping of equipment and materials at or near the Project area will be solely that of the DBF and no claim shall be made against the City by reasons of any act of an employee or trespasser.

The DBF shall notify the fire and police departments prior to closing any street or portion thereof, and again when streets are passable for emergency vehicles. Emergency vehicle access to consecutive arterial crossings or dead-end streets in excess of 300 feet shall not be blocked without special written permission from the fire department.

8.8 Project Signs

The DBF shall furnish and utilize two project signs (with white painted posts) prior to commencement of, and throughout construction, and must remove said signage upon final completion of the Project. The signs shall be a minimum of 4 feet by 8 feet. The exact style and design of the sign will be provided by the City to the Contractor in PDF format during the design development stage of the Project. The DBF shall submit a shop drawing for approval for the project sign. Shop drawing must be approved prior to fabrication.

8.9 Public Notification

Through coordination with the City's Project Manager and Strategic Communications Department, the DBF is responsible for notifying property owners that may be affected by construction activities. All homes and businesses potentially impacted by construction shall be notified 48 hours in advance by use of a "door hanger" type announcement in English and Spanish, describing at a minimum, the nature of the work, the proposed schedule, and the 24-hour call line and email for resident inquiries during the construction phase of the design-build project. Prior to the CIPP lining, the public notification shall mention the potential odor from the styrene chemicals. The DBF shall coordinate and/or notify the City's Project Manager regarding construction activities that will warrant use of public notification. The City's Strategic Communications Department will use existing communication channels to supplement the DBF's outreach activities.

Prior to exposing a utility, the DBF shall be responsible for obtaining utility owner's permission. The DBF shall refer any and all media or public inquiries regarding the work under this Project to the 24-hour call line and email established for resident inquiries during the construction phase of the Project. The City shall maintain a log of every call and email received on the online construction management site as inquiries are received and addressed or on a daily basis. The City's Project Manager shall notify the assigned Project Inspector, as needed, to review the list of inquiries/complaints and establish the validity of the inquiry. Valid complaints shall be coordinated with the DBF or other affected parties to ensure resolution. The call log will document the date of when a complaint is resolved. The City's Project Manager shall be notified immediately of any complaints that cannot be resolved or that need the City's attention.

8.10 Traffic Control, Regulations, and Maintenance of Traffic

The DBF shall adhere to all traffic laws and comply with all the requirements, rules and regulations of FDOT, the City, and other local authorities having jurisdiction, to maintain adequate warning signs, lights, barriers, etc. for the protection of traffic on public roadways.

The DBF shall maintain and protect access, for vehicular and pedestrian traffic, to and from all properties and business establishments adjoining or adjacent to those streets affected by its operations. The DBF shall always maintain one lane of traffic open in both directions. Any lane closures shall be scheduled with the City and shall consider traffic peak hours and City events.

Upon submittal of the 60% design plans, the DBF shall prepare and submit MOT plans to the City for approval. The MOT plans shall comply with the requirements of the City and any other regulatory agency that may have jurisdiction within the Project area. The MOT plans need to consider daytime road closure restrictions, including morning and afternoon peak hour periods, special events that may require roadways and pedestrian facilities to be fully open and accessible, and coordination with neighboring municipalities and civic associations.

8.11 Other Conditions Allowance

The allowance amount indicated for this item is to pay for labor, materials, equipment, and services necessary for modification or extra work required to complete the Project because of unforeseeable conditions, and unforeseeable conflicts between existing elements of work and the proposed work. Included in this allowance is work associated with other conditions or conflicts developing from other conditions. All work authorized for payment will be authorized in writing by the City. The amount to be paid per other conditions or conflicts shall be negotiated or agreed to by both parties.

Measurement and payment for other conditions work will be based upon the furnishing, installing, and completing of the items and actual work required to address said other conditions. Prior to purchasing products for and performing other conditions, the DBF shall make the City's Project Manager aware of the other conditions and provide a field plan and cost for the work to be performed for the City's review and approval prior to proceeding with the other conditions work. Payment for work shall only be made for the amount agreed upon for work the City's Project Manager deems acceptable.

8.12 Permits, Licenses, and Fee Allowance for Government Agencies

The allowance amount indicated for this item is to pay for all permits, licenses, and other fees required of the DBF from the various agencies having jurisdiction for design and construction of the Project. The allowance shown on the Price Proposal Form is an estimate of fees required. Payment will be based on the actual permit, license, or fee paid directly to agency, documented by paid receipts, specifically excluding any labor, markup, overhead and profit, administration, or other costs involved in obtaining permits or licenses or paying fees. The DBF shall submit documentation in the form of paid receipts with their monthly applications for payment confirming actual cost. Only fees substantiated by the DBF and approved by the City's Project Manager will be paid as part of this allowance. Fees specifically excluded from this allowance include but are not limited to re-inspection fees and expired permit fees. Any balance in this item at the end of the Project shall be credited back to the City.

8.13 Allowance for Work Associated with Laboratory Sampling and Analysis of Contaminated Soils and/or Groundwater

The allowance amount indicated for this item is to pay for all labor, equipment and materials for all work necessary and required for laboratory sampling and analysis of contaminated soils or groundwater as determined by the DBF and as required by applicable regulatory agencies. This item includes, but is not limited to preparation of sampling plan, sample collection and preservation, laboratory analysis, report preparation and all other miscellaneous work required to complete this task. Exhibit H identifies the locations of 23 known areas of contamination. Fees specifically excluded from this allowance are any work related to these documented areas. This allowance may only be used for additional areas not identified in this DCP.

The DBF shall provide a plan and cost for the work to be performed for the City's review prior to proceeding with the work described herein. Payment for work shall only be made for the amount agreed upon for work the City deems acceptable. Any balance in this item at the end of the Project shall be credited back to the City.

8.14 Allowance for Work Associated with Handling of Contaminated Soils and/or Groundwater

The allowance amount indicated for this item is to pay for all labor, equipment, material and all work necessary and required for excavation, removal and treatment of contaminated soils along with all work necessary for removal, treatment, and discharge of contaminated groundwater, all in compliance with applicable regulatory requirements as identified by the DBF and described herein for which payment is not provided under other pay items. This item includes, but is not limited to soil excavation and removal, stockpiling, treatment, transportation and disposal of contaminated soils, and replacement with clean fill. Exhibit H identifies the locations of 23 known areas of contamination. Fees specifically excluded from this allowance are any work related to these documented areas. This allowance may only be used for additional areas not identified in this DCP.

This item also includes, but is not limited to dewatering, sampling, GAC treatment units or other approved treatment method, pumps, filters, piping, hoses, miscellaneous fittings, GAC carbon (if used) removal and disposal of spent carbon, GAC (or other) equipment operating labor, transportation, discharge of treated groundwater and all other miscellaneous work required to complete this task.

The DBF shall provide a plan and cost for the work to be performed for the CITY's and DCE's review prior to proceeding with the work described herein. Payment for work shall only be made for the amount agreed upon for work the City deems acceptable. Any balance in this item at the end of the Project shall be credited back to the City.

8.15 Project Closeout

The DBF shall promptly remove from the vicinity of the completed work, all rubbish, excavation spoils, unused materials, concrete forms, construction equipment, temporary structures and facilities,

construction signs, tools, scaffolding, materials, supplies, and equipment that may have been used in the performance of the work.

Before final acceptance of the Project, the DBF shall submit to the City's Project Manager the following items:

- Written test results of project components
- Certificates of inspection and acceptance by governing agencies having jurisdiction
- Record drawings signed and sealed by the DBF's Engineer
- Documentation demonstrating compliance with the specific conditions of all permits, including documentation from all permit agencies stating all open permits are closed
- Releases from all parties who are entitled to claims against the subject project

Final inspection of the work will be done by the City's Project Manager, assigned project inspector(s), and the DBF's Engineer upon notification from the DBF. Any work not found acceptable will be noted on a "Punch List". Punch List work must be completed by the DBF to the satisfaction of the City prior to processing the final payment.

The DBF shall restore damaged areas or temporarily relocated utilities and improvements to a condition equal to or better prior to such damage or temporary relocation.

The DBF shall comply with all maintenance and guarantee requirements.

9. Pipe Materials

The proposed pipelines are anticipated to be installed or rehabilitated through a combination of the following methods. However, the DFB shall confirm these methods and complete the design and construction as required to meet the project goals and parameters.

- Open cut
- HDD
- Microtunnel / Auger Bore / Bore and Jack (collectively refer to as "Tunneling")
- Compression Fit Lining
- Cure-in-Place (CIPP)

All connections to existing piping shall be coordinated with the City. Connections requiring the removal of existing piping from service shall be coordinated with the City and shall be no longer than 4 hours in duration during any 24-hour period unless bypass facilities are provided by the DBF.

The City prefers the use of High-Density Polyethylene (HDPE) and Ductile Iron Pipe (DIP), however the DBR shall evaluate Prestressed Concrete Cylinder Pipe (PCCP).

No newly installed or rehabilitated pipe shall have an internal diameter less than 44.4 inches.

9.1 High-Density Polyethylene

HDPE pipe and fittings are one of the allowable materials for the new 48-inch force main when proposed to be installed by open cut, HDD, and/or boring. HDPE pipe is also allowed for the compression fit lining. The resin material shall have a standard PE code designation of PE 4710, as defined in ASTM D1248. At a minimum, the pipe shall conform to dimensions and dimension ratio (DR) of the following:

- 48-in DIPS DR 17 for HDD,
- 48-in DIPS DR 17 for Open Cut Excavation, or larger
- 48- DIPS DR 26 for Compression Fit Lining of existing 48-inch force main, or larger
- 54- DIPS DR 26 for Compression Fit Lining of existing 54-inch force main, or larger

Bids assuming HDPE shall be based on the above-listed materials. Based on the DBF's engineering analysis, the DR may be increased or decreased to facilitate proper installation. If the DBF's engineer recommends a larger DR after award of the contract, the DBF shall submit calculations for review and approval from the City and offer a reduction in contract price corresponding to material and labor savings.

All joints for polyethylene piping shall be of the thermal butt fusion type or electrofusion type. All butt fusion or electrofusion fittings shall be PE4710 HDPE ASTM F2620. A fusion procedure that follows the guidelines of ASTM F2620 Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings must be documented on company letterhead. A record of certificate of training for fusion operator must be provided that documents training to the fundamentals of ASTM F2620.

All HDPE fusion equipment operators shall be qualified to perform pipe joining and must be certified by the equipment manufacturer. Fusion equipment operators shall have current, formal training on all fusion equipment employed on the Project. Training received more than 2 years prior to operation with no evidence of activity within the past 6 months shall not be considered current. When the fusion machine operator is employed by the HDPE pipe and fusion machine supplier, the supplier shall maintain an ISO 9001 Certified Quality Management System.

All HDPE pipe shall be color-coded for the intended service. The color coding shall be permanently coextruded on the pipe outside surface as part of the pipe's manufacturing process. Painting HDPE pipe to accomplish color coding is not permitted. Color coding shall be green for sewer.

Company specializing in manufacturing products specified in this subsection with documented experience of minimum 5 years of pipe installations that have been successful, continuous service for same type of service as proposed work.

9.2 Ductile Iron Pipe

DIP and fittings are one of the allowable materials for the new 48-inch force main when proposed to be installed by open cut, and/or boring. All DIP for this Project shall meet the following requirements:

- Standard: All pipe shall be DIP conforming to ANSI/AWWA Standard C151/A21.51, "Ductile-Iron Pipe, Centrifugally Cast, for Water."

- Pressure Class: 150
- Internal Lining:
 - Wastewater Piping: Shop-applied ceramic epoxy lining of Protecto 401 by Induron Coatings, Inc.
 - Exterior coating: All pipe and fittings shall be outside coated with an asphaltic material applied by means of the airless spray method. The shop-applied exterior asphaltic coating shall be approximately 1 mil thick per latest revisions of ANSI/AWWA C151/A21.51.
- Color Code:
 - Wastewater Piping: a continuous green line painted along the top of the pipe to indicate the pipe conveys sewage.
- Fittings: Fittings shall be manufactured in accordance with ANSI/AWWA C110/A21.10.
- Polyethylene Encasement: All DIP shall be encased in polyethylene per latest revisions of ANSI/AWWA C105/A21.5. Virgin polyethylene raw material conforming to requirements of ASTM D4976. Elongation of 800%, minimum, in machine and transverse direction (ASTM D882).
- Manufactured Proprietary Restrained Joints:
 - DIP shall be designed to use manufacturer restrained joints to the maximum extent practicable.
 - Restrained joint pipe and fittings shall be Flex-Ring or Lok-Ring-type as manufactured by American Cast Iron Pipe, TR Flex as manufactured by U.S. Pipe, or equal.
- Restrained Mechanical Joint Fittings:
 - Series 1100 MEGALUG Mechanical Joint Restraint manufactured by EBAA Iron, Inc., or equal.
 - The restraint devices shall be coated using MEGA-BOND Coating System.
- Restraining System for Field Cut Piping:
 - Use only in areas where adjoining to fixed points where laying length is determined in the field and requires field cutting of the pipe.
 - Series 1700 MEGALUG restraint harness, manufactured by EBAA Iron, Inc., or equal.
 - The restraint devices shall be coated using MEGA-BOND Coating System.

Bids assuming DIP shall be based on the above-listed materials. Based on the DBF's engineering analysis, the Pressure Class may be increased.

9.2.1 Thrust Restraint Design

Thrust restraint design shall be based on the following criteria:

- Thrust restraint minimum design safety factor: 1.5
- Design pressure/Test pressure: 60 psi
- Thrust blocks shall not be allowed, except at transitions from HDPE to DIP.
- Factory manufactured restrained joint pipe and fittings shall be designed wherever practicable in lieu of mechanical restraining devices.

9.3 Hydrostatic Testing

All pipelines shall be hydrostatically tested. Prior to resting, all pipelines shall be flushed or blown out as appropriate. The pipelines can be tested in sections or as a unit. The pipeline shall be filled with potable water and shall be allowed to stand under pressure for a period of at least 24 hours. For all horizontally directionally drilled pipelines, product pipelines shall be hydrostatically tested above ground prior to installation and shall be tested again after installation of the product pipe in the final position within borehole. For DIP, the test procedure is to follow AWWA C600 and shall consist of holding the test pressure on the pipeline for a period of 4 hours, leakage rates will be in accordance with AWWA C600. For HDPE pipe, the test procedure shall be in accordance with AWWA M55. If a pressure test on HDPE is not completed, the test section shall be de-pressurized for repairs. De-pressurization shall last for a minimum of 8 hours.

All water required for hydrostatic testing can be supplied to the DBF by the City for a fee. The City will furnish a suitable meter and backflow preventer for measuring the flow of water into the line. The City will charge the DBF for potable water usage. The DBF shall furnish and install all necessary pumps, piping, and fittings, including the corporation stops, to connect the section under test to the source of water. The test pump shall be a centrifugal or gear pump producing a steady pressure free of pulsation. If the DBF determines that casing piping is required, it shall be included with its bid. Hydrostatic testing of casing pipe is not required unless specifically required by a permit condition.

10. Pipe Rehabilitation

10.1 Cleaning

The existing force mains have not been in service for an extended period and cleaning is expected. Cleaning shall include high pressure water jetting, robotic cutters/grinders, and flushing of sewers and structures. Cleaning shall dislodge, transport, and remove all debris from the interior of the pipe. If the pipe condition is such that cleaning may cause a potential collapse, no attempt shall be made to clean the pipe without approval of the City.

All water required for cleaning can be supplied to the DBF by the City for a fee. The City will furnish a suitable meter and backflow preventer for measuring the flow of water into the line. The City will charge the DBF for potable water usage.

All loose debris and other solid or semisolid material resulting from cleaning operations shall be removed at the downstream structure. When hydraulic cleaning equipment is used a suitable dam or weir shall be

placed in the downstream structure to trap all such material. No debris shall be allowed to pass downstream of the segment(s) where work is being performed.

No loose debris removed during cleaning operations shall be dumped or spilled into streets, ditches, storm drains, or other sanitary sewers. All material collected during cleaning operations shall be collected by and properly disposed of by the DBF.

All necessary precautions shall be taken during cleaning operations to protect the force mains from damage and ensure that no damage is caused to adjacent properties. Any property damage caused as a result of such cleaning operations shall be restored to preexisting conditions by the DBF at no additional cost to the City.

The configuration of the inverted siphons (New River and Middle River crossing) is such that the pipe cannot be drained by gravity. A pump, vacuum hose, or other means is necessary to dewater the barrel to facilitate condition evaluation and acceptance testing and rehabilitation. This level of water removal is incidental to rehabilitating these assets.

10.2 CCTV Inspection

CCTV inspection of sanitary sewers shall use the NASSCO industry standard Pipeline Assessment and Certification Program (PACP) forms and coding. The DBF shall provide competent certified technicians, equipment, tools, accessories, and materials required to perform Pre- and Post-Installation CCTV inspection as required to complete the work.

10.3 CIPP Liner

All CIPP lining design and installation shall conform to the applicable requirements of the following documents:

- ASTM F1216, and/or,
- ASTM F2019,
- NASSCO – Cured-In-Place (CIPP) Installation performance Specification Guideline,
- The following criteria:

Design Safety Factor	2.0
Minimum design life	50 years
Internal Pressure	0 - 60 psi
Hydrostatic Pressure	Δ of King Tide and lowest invert
Soil Load	Δ of grade and pipe crown
Soil Density (unless otherwise obtained by additional Geotech)	120 pcf
Soil Modulus (unless otherwise obtained by additional Geotech)	900 psi
Live Load	One AASHTO H-20 Truck
Enhancement Factor "K"	7
Design Condition	Fully-Deteriorated
Creep Retention (unless otherwise measured by 10,000-hr testing)	50%
Ovality (unless observed higher in pre- inspection)	2%

Due to the influence of inflow on these interceptor siphons, the City reserves the right to stop work at the threat of a wet weather event that could exceed the capacity of the flow handling means. A Weather Forecasting Protocol shall be provided by the DBF.

CIPP design data listing all parameters used in the CIPP design and thickness calculations. All CIPP liner design calculations shall be signed and sealed by a Professional Engineer and certified by the manufacturer as to the compliance of their materials to the values used in the calculations. Calculations shall be based on ASTM F1216, and other approved methods. The buckling analysis shall account for the combination of dead load, live load, hydrostatic pressure, and grout pressure (if any).

10.4 Compression Fit Liner

The compression fit HDPE pipe shall be designed in accordance with the guidelines in the appropriate ASCE MOP and installed according to ASTM F3508. Newly installed HDPE pipe shall fit tightly against existing host DIP.

11. Open-Cut Excavation and Backfill

The DBF shall excavate, grade and backfill as required for site underground piping systems. All excavations shall meet applicable OSHA, local and federal code requirements. Trench excavation, where required, shall be done in accordance with the requirements of Florida Statute Section 553.60 et. seq. cited as the "Trench Safety Act". The DBF shall furnish, place, and maintain sheeting and bracing to support sides of the excavation as necessary to provide safe working conditions in accordance with OSHA requirements.

Refer to Appendix D for pipe bedding and backfill recommendation. Clean, sandy excavated materials, free from organics, clay, and construction debris, can be used as pipe bedding when the invert is at least 24 inches above the groundwater level (natural or pre-drained by dewatering). All excavations shall be free from water before pipes or structures are installed. The DBF shall remove water in a manner that minimizes soil erosion from trench sides and bottom and shall use dewatering systems as necessary to permit construction in a dry condition. The liquid contained in the dewatering tank cannot be discharged in City sewer or stormwater systems. The liquid must be hauled away via vacuum trucks. The DBF is responsible for providing continuous water control until trench backfill is complete. Promptly remove and

dispose of water entering the trench as necessary to grade trench bottom and to compact backfill. The DBF shall be responsible for acquiring all necessary permits for disposal.

Trenching/excavation and backfilling is not permissible within any areas inside a tree protection barrier, without prior approval and review from applicable City staff.

Compaction of backfill shall be as defined in Appendix D. Granular backfill should be placed at a moisture content within three 3% of its ASTM D 1557 determined optimum moisture and in level lifts whose thickness does not exceed 8 inches. Each fill lift should be stable, unyielding and uniformly compacted to at least 95% of the maximum dry density in accordance with ASTM D 1557, the Modified Proctor Method. The DBF shall be responsible for obtaining all density tests that may be required for the work.

11.1 Depth of Cover

Depth of cover shall be between 3 and 8 feet except as needed for utilities conflicts, interconnection and connection to trenchless crossings.

11.2 Tracer Identification Tape and Locator Wire

Pipelines installed by the open trench method shall be marked with metal tracer identification tapes located 18 inches above the pipe. Identification tape shall be safety green, imprinted with the words “CAUTION – PRESSURE SEWER MAIN BURIED BELOW”, and be 3 inches in width.

All nonmetallic pipes not contained in a metallic casing pipe shall have 14 strand green identification wire installed on top of the pipe. The wire shall be attached to top of pipe using tape at maximum of 10-foot intervals. In areas where depth of cover may be excessive for allowing detection of tracer wire with electronic pipe locator, install tracer wire within pipe backfill directly above pipe centerline at a minimum of 3 feet.

The wire shall pass through a drilled hole near the top of valve boxes from the outside of the box to the inside of the box. The wire shall be attached to the valve box. Continuity of tracer wire shall be tested using an electronic pipe locator in the presence of the City’s inspector.

12. Horizontal Directional Drilling

The DBF shall ensure that the grades, tolerances, and hydraulic characteristics are achievable using the proposed construction methods, such that the completed pipeline will perform its intended function in accordance with this DCP documents. The maximum number of butt fusion welds that will be allowed during the pullback operation is two welds.

All pipe installed by HDD shall be fused HDPE pipe. The DBF’s Engineer shall verify that the DR specified is adequate for the DBF’s proposed design. The DBF’s Engineer shall consider pipe loads such as operational and installation loads, internal pressure loads, external hydraulic and earth loads, pipe resistance to external loads, axial bending stress, pulling force, axial tensile stress, torsional stress, combined loads during installation and combined loads during operation. The assumption of soil arching

is permitted but shall be in accordance with the information in Appendix D, or additional geotechnical investigations, and the guidelines of ASTM F1962 and AASHTO. The design and selection of the product piping shall be done in accordance with the requirements of ASTM F1962 as well as the guidelines in the appropriate ASCE MOP.

If the DBF determines that casing piping is required, it shall be included with its bid. The diameter of the casing pipe shall be as determined by the DBF.

12.1 Drilling Fluids and Cuttings

The DBF shall use an appropriate drilling fluid to suit the ground conditions that may be encountered during the drilling, reaming and product pipe installation operations. Cutting and spent drilling fluids shall be disposed of properly and shall comply with the requirements of all local regulatory agencies.

12.2 Guidance and Survey

The DBF's drilling method shall incorporate a survey system that will include tracking of the drill head and drill path for the entire length of the bore. The survey system shall be capable of measuring the elevation and gradient of the bore path.

12.3 Tracer Locator Wire

Pipelines installed by the HDD shall have tracer locator wires fixed every 18 inches along the HDD installed pipelines and be marked with at all bore entry and exit points. Tracer wire shall be extra high strength designed to withstand damage from pipe pulling equipment, elements, sharp objects, and from harsh environments such as PRO-TRACE® HDD-CCS PE45, or equal.

12.4 Grout for HDD Applications

If the borehole diameter exceeds the casing pipe outside diameter by more than 2 inches, the casing pipe shall be grouted within the drilled hole. The use of grout in other circumstances shall be at the discretion of the DBF's Engineer for the depending on the outcome of preliminary surface and subsurface studies, environmental considerations, the need to provide additional strength or mechanical protection of the pipe, or to increase the long-term collapse resistance of the pipe.

The method employed to achieve the grouting shall ensure complete filling of the annulus and full encasement of the casing pipe so that full circle continuous support from the surrounding material is provided. The DBF shall ensure that the grouting process does not result in deformation of the casing pipe or dislodging of supports and movement of the casing pipe from its designed alignment. The DBF shall ensure that the net pressure on the pipe does not exceed the critical buckling pressure of the casing pipe divided by an appropriate factor of safety as selected by the DBF's Engineer.

The grout composition shall be as designed by the DBF's Engineer for the application. The design of the grout mixture shall consider the following:

- Grout shall undergo minimal shrinkage.

- Grout shall be compatible with site conditions.
- Grout shall be environmentally sound.
- Grout composition shall have no adverse effect on the casing pipe.
- Placement of the grout mixture shall consider the desired set up time.

13. Tunneling

Tunneling shall be taken to mean Microtunnel, Auger Bore, or Bore-and-Jack installation. Tunneling, including casing pipe and annular space grout, shall be designed and installed in accordance with the guidelines in the appropriate ASCE MOP and other appropriate standards. Any tunneling installation that cross FDOT roads (including those shown in the DCP) shall be designed and installed in accordance with FDOT 556. No blasting shall be permitted until a detailed blasting plan is submitted to and approved by the FDOT and the City.

14. Valves

The DBF shall install, replace, or reinstate all valves encountered during the various phases of work unless otherwise noted. Appendix C provides a figure that shows the existing valves along the pipe alignment. The figure was generated based off the best available information at the time. The DBF shall be responsible for field verification of the locations and number of valves and shall report any discrepancies encountered to the City.

14.1 Plug Valves

All plug valves for this Project shall meeting the following requirements:

- Plug valves shall be of the non-lubricated, eccentric seating plug type with synthetic rubber-faced plugs as manufactured by DeZurik Company, Val-Matic and Golden Anderson.
- All valves shall be provided with limit stops and rotate 90 degrees from fully open to fully shut.
- The minimum working pressure for all valves shall be 150 psi, and the test pressure shall be at least 270 psi for valves up through 12-inches and at least 230 psi for valves 14 inches and larger.
- The port area of the valves shall be at least 80% of full pipe areas for valves less than 24-inches and 70% for valves 24 inches and larger.
- The body materials shall be of epoxy coated cast iron or semi-steel. Seats shall have a welded overlay of 90% pure nickel and machined to a finish containing no stress cracks.
- All buried valves shall have mechanical joint ends (unless otherwise shown), conforming to AWWA C111/ANSI A21.11, and shall be operational with a standard AWWA 2-inch square nut through a totally enclosed worm gear actuator. Valve boxes shall be installed with all buried plug valves. Exposed shafting shall be 316 stainless steel.
- All internal and external ferrous components and surfaces of the valves, except for stainless steel and finished or bearing surfaces, shall be shop-painted with two coats (10 mils min. dry film

thickness) of the manufacturer's premium epoxy for corrosion resistance. Damaged surfaces shall be repaired in accordance with the manufacturer's recommendations.

14.2 Automatic Air Release Valves

Automatic air release valves shall be located, designed, installed, and/or reinstated in accordance with the guidelines in the appropriate AWWA Manual(s). Automatic air release valves shall be installed and/or reinstated where required to vent accumulating air while the system is in service and under pressure. The design of the valves shall be appropriate for wastewater. Air release valves below grade shall be installed in precast concrete boxes in accordance with site requirements and City standards. Hardware and nipples shall be Type 316 Stainless Steel.

14.3 Tapping Valves and Sleeves

Tapping valves shall be resilient wedge-type, meeting AWWA C509, and shall be connected by a machined projection on the outlet flanges of the tapping sleeves and crosses. The outlet ends shall conform in mechanical joint connections, except that the outside of the valves shall be larger than normal size to permit full-diameter cuts.

All tapping valves must have a cast-in alignment ring, resilient seat only. Bids shall be based on the following manufacturers:

- Muller,
- American Darling
- AVK Series 45, or
- City-Approved Equal

All tapping sleeves shall have duck-tipped end gaskets, flanged outlet with American 125-pound standard template, mechanical joints in the main line factory tested for 400 psi, and with working pressure of 150 psi. Bids shall be based on the following manufacturers:

- Ford Style FS1-SS,
- JCM Model 432 (4-inch to 12-inch),
- Mueller,
- American Darling,
- A Series, or
- City-approved equal

Stainless-steel, full clamp-style may be considered on a case-by-case basis per City approval.

14.4 Valve Boxes

Valve boxes and covers for all size valves shall be of cast-iron construction and adjustable screw-on type. The lid shall have cast in the metal the word "SEWER" for the sewer force main. All valve boxes shall be 6 inches nominal diameter and shall be suitable for depths of the particular valve. The stem of the buried valve shall be within 24 inches of the finished grade unless otherwise approved by the City. Cast-iron valve box shall not rest directly upon the body of the valve or upon the pipe. The box shall be placed in proper alignment and to such an elevation that the top will be at the final grade. Back filling around both units shall be placed and compacted to the satisfaction of the City.

Valve boxes and covers/Lids: Tyler Pipe/Union Foundry cast iron two-piece 5-1/4-inch shaft screw-type 6850 series, or City approved equal.

15. Concrete

All materials for concrete work shall comply with the requirements of ACI 301. Materials for concrete shall conform to the following requirements:

- Cement shall be standard brand Portland cement conforming to ASTM C150, Type I, II, or III.
- Water shall be potable and clean.
- Aggregates shall conform to the Florida Building Code and ASTM C33.
- Ready mix concrete shall conform to the requirements of ASTM C94.

Reinforcing steel shall conform to the following requirements:

- Bar reinforcement shall conform to the requirements of ASTM A615 for Grade 60 Billet Steel Reinforcement.
- Welded wire fabric reinforcement shall conform with the requirements of ASTM A185.

The minimum comprehensive strength of structural concrete shall be 4,000 psi at 28 days. For site work concrete, the minimum comprehensive strength of structural concrete shall be 3,000 psi at 28 days.

16. Site Restoration

The DBF shall restore damaged areas on public or private property to a condition equal to or better than original condition prior to such damage. The DBF shall make any repairs to landscaped and grassed areas that may be damaged by DBF activities. Landscaping and sodding in City rights-of-way shall be done in accordance with the applicable City standards.

16.1 Pavement Restoration

All damaged pavement shall be reconstructed in accordance with the requirements of applicable City, Broward County, or FDOT Specifications. Full-width restoration (milling and resurfacing) is required for all work in the City's right-of-way. There are City, County, and FDOT owned roads in the Project that will require restoration based on owner requirements. Appendix B identifies roads ownership along the

Project alignment. The DBF shall be responsible for ensuring surface restoration is in compliance with the applicable requirements, which are available on the agency’s websites:

- City of Fort Lauderdale – City Engineering Standard Details for Right-of Way Work
 - <https://www.fortlauderdale.gov/government/departments-i-z/public-works/engineering-division/cadd-standards>
 - Refer to the Road Details sheets 001 – 003
- Minimum Standards Applicable to Public Right-of-Way Under Broward County Jurisdiction
 - <https://www.broward.org/WaterServices/Engineering/Pages/MinimumDesignandConstructionStandards.aspx>
 - Refer to the Water and Wastewater Standard Details sheet 180 - 192
- The FDOT Design Manual
 - <https://www.fdot.gov/design/standardplans/current/24.shtm>
 - Refer to Standard Plans Index 125-001

All damaged signs, reflective pavement markers, traffic stripes, and markings shall be replaced in conformance with FDOT and City requirements. The DBF shall replace any existing reflective pavement markers, traffic stripes, and markings damaged during construction. Paint for traffic stripes and markings shall be in conformance with FDOT specification Section 711 titled “Thermoplastic Traffic Stripes and Markings”. The DBF shall replace all signs damaged during construction. Traffic regulating signs shall conform to the colors, dimensions, and requirements of the Federal Highway Administration document titled “Manual on Uniform Traffic Control Devices”.

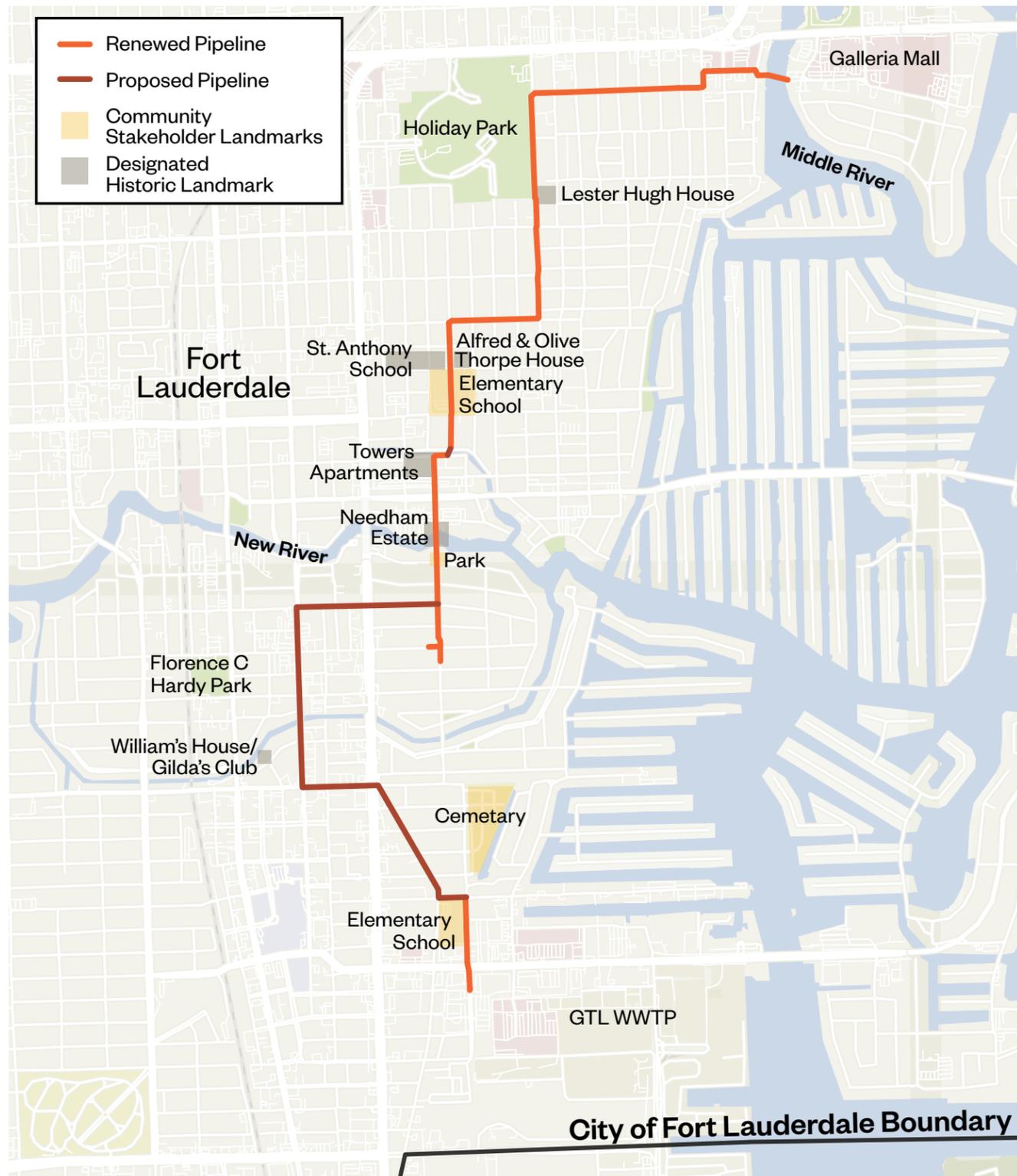
Damaged concrete pavement, curbs, and sidewalks shall be reconstructed as new to existing lines, grades, and dimensions. Irrigation systems (piping, control wiring, etc.) damaged by DBF activities shall be restored to fully operational condition.

16.2 Tree Restoration

Any damage to existing trees/palms shall be mitigated solely by the DBF. Any required tree removal, replacement, corrective root, or canopy pruning shall be performed by an ISA Certified Arborist after consultation with the City Urban Forester. Prior to conducting any root pruning an ISA Certified Arborist shall consult with the City Urban Forester regarding the required root pruning and identify potential stability concerns. All proposed sidewalk/trench impacts affecting existing trees/palm root zones shall be submitted as a visual layer to the City Urban Forester for review. An onsite walkthrough is required with appropriate City staff/Urban Forester prior to any root impacts/root pruning activities taking place.

A City Tree Removal Permit shall also be required for any impacts to trees with a dbh of 3 inches or greater that are considered non-exempt. An onsite walkthrough is required with appropriate City staff/Urban Forester prior to any tree removals/impacts.

Appendix A: Permit and Local Authority Matrix



Notes:

1. These lists are meant to summarize the potential required permitted activities, and the local permitting authorities and/or stakeholders. The lists may be incomplete. The DBF shall coordinate with the respective authorities and/or stakeholders for more complete and current requirements.

2. The Community stakeholder landmarks are indicated to draw attention to areas where special provisions may be required during design and construction. It is not a complete list of all stakeholders. The DFB shall coordinate with all local authorities to make any needed provision.

Permits and Local Authority Matrix

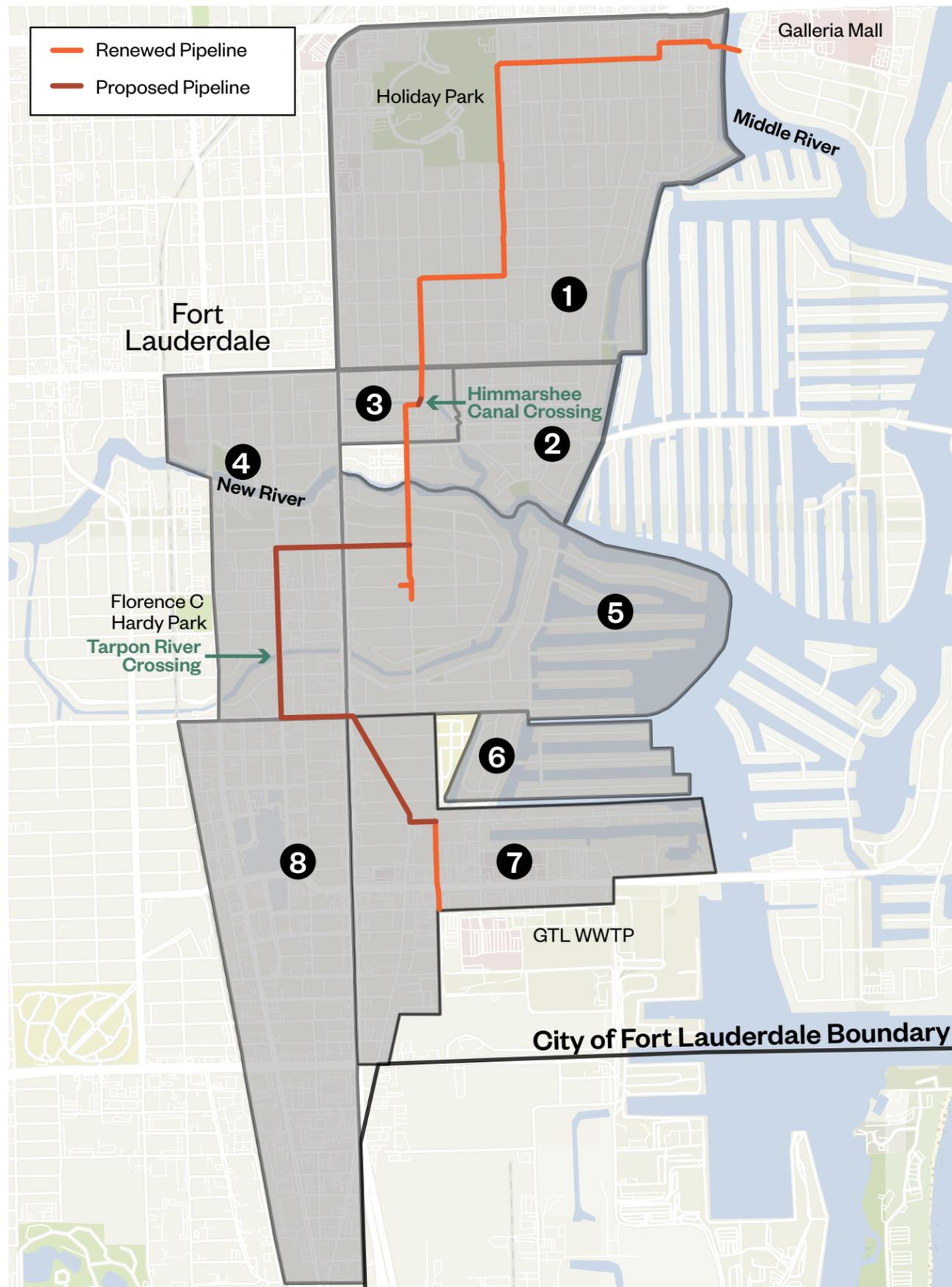
City of Fort Lauderdale Development Services Department

Permit Type	Permit Required Activity	Contact
FDEP Application	Sanitary Sewer Construction	RBetancourt@fortlauderdale.gov
Right of Way	Roadway and pipeline construction, sediment and erosion control, landscaping, and dewatering activity in the City right of way	954.519.1483 ear@broward.org
Landscaping Permit	Installation, removal, or replacement of any required landscaping	954.828.5281 FBrock@fortlauderdale.gov
Tree Permit	Tree/palm and specimen tree relocation and removal.	
Certificate of Appropriateness	Work that would change the exterior appearance of a Designated Historic Landmarks	954.828.7101 TLogan@fortlauderdale.gov

State of Florida Permitting Agencies

Permit Type	Permit Required Activity	Contact
Florida Department of Environmental Protection		
Application For Constructing A Domestic Wastewater Collection/Transmission System	Wastewater collection/transmission systems to treatment facilities	561.681.6600 SED_Permitting@FloridaDEP.gov
South Florida Water Management District		
Environmental Resource Permit	Construction activities that affect State waters	
Right of Way Occupancy Permit	Construction within the District's right of way	561.686.8800 www.sfwmd.gov/doing-business-with-us/permits
Consumptive Water Use Permit	Dewatering	
Florida Department of Transportation		
Utility Permits	Installation of or adjustments to utilities within the DOT's right of way	954.776.4300 954.958.7657 Ricardo.Hernandez@dot.state.fl.us
General Use	Temporary activities to be conducted within state road right of way	
Road Closure Permit	Temporarily closure of a state road	
Construction Agreement	Permanent construction within state right of way	
Access/Driveway Permit	Driveways, streets, or other means of providing access to the State Highway Systems	954.776.4300 954.777.4372 Roger.Lemieux@dot.state.fl.us
Highway Landscaping Permits	Alteration, removal or installation of vegetation within state right of way	
Vegetation Management Permits	Alteration, removal, or installation of vegetation within the DOT's right of way	850.414.4545

Note: The DBF shall refer to Florida DEP's Guide to Permitting Wastewater Facilities or Activities Under Chapter 62-620, F.A.C, SFWMD's Environmental Resource Permit Information Manual and Everglades Program Chapter 40E-63, F.A.C, and FDOT One-Stop Permitting website.



Fort Lauderdale Civic Associations

Tag	Associations	Contact
1	Victoria Park Civic Association	https://vpca.org/contact-us/
2	Colee Hammock Homeowners Association	https://coleehammock.org/
3	Beverly Heights Association Inc.	https://cflca.org/beverly-heights-association-inc/
4	Downtown Fort Lauderdale Civic Association	https://downtownfortlauderdalecivicassociation.org/
5	Rio Vista Civic Association	https://www.riovistaonline.com/
6	Lauderdale Harbors Association	lauderdaleharbors@gmail.com
7	Harbordale Civic Association, Inc.	https://harbordale.org/
8	Poinciana Park Civic Association	https://www.poincianapark.org/

US Army Corps of Engineers

Nationwide or Regional General Permit	Permit Required Activity	Contact
NWP 58	Construction, of utility lines in the Waters of the US	
NWP 33	Temporary construction, cofferdams or dewatering of construction sites in the Waters of the US	https://www.saj.usace.army.mil/
SAJ-14	Subaqueous utility lines in Florida	

Broward County Environmental Permitting Division

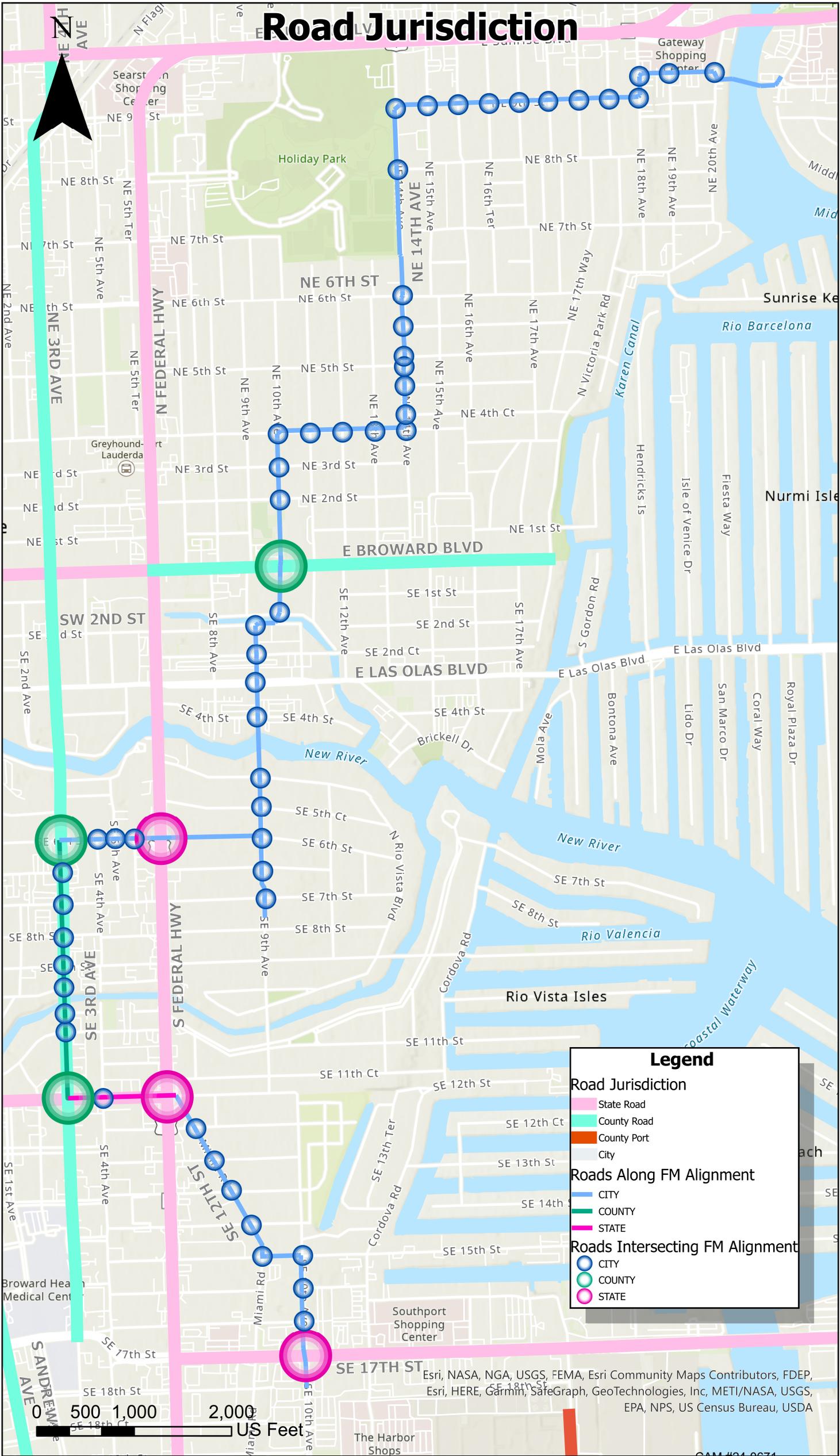
Permit Type	Permit Required Activity	Contact
Environmental Assessment & Remediation Dewatering	Dewatering activities within 1/4 mile radius of a contaminated site	954-519-1483 EAR@broward.org
Wastewater Construction	Construction, extension, or alteration of a reuse distribution system or a sanitary sewer system	954-519-1483 WWLicense@broward.org
Water and Wastewater Utility Connection Permit	Allows connection to, or modification of potable water, wastewater and/or reclaimed water systems	954-831-0944 mjaramillo@broward.org
Right-of-Way Plan Review / Permit	Construction activities within the County right-of-way including: pavement, sidewalks, utilities, driveways, etc.	954-577-4598 HCEDPermit@broward.org
Surface Water Management	Activities that alter surface water flow (i.e. pavement, grading, drainage). Jurisdiction is the entire County excluding independent water control districts.	954-519-1483 SWMLicense@broward.org
Environmental Resource License	Any activity in, on, under, or impacts surface waters or wetlands of Broward County	954-519-1454 lsunderland@broward.org AWRLicense@broward.org
Tree Removal License	Removal or relocation of any trees within defined area	954-519-1483 Tree@broward.org
Development and Environmental Review	Prior to the issuance of a building permit	954.357.6666 ext. 2 DERPlans@broward.org
Broward County Uniform Building Permit	Install, enlarge, alter, repair, remove, or replace any impact-resistant coverings, and electrical, gas, mechanical, or plumbing systems	954-765-4400 building@broward.org

Note: These lists are meant to summarize the potential required permitted activities, and the local permitting authorities and/or stakeholders. The lists may be incomplete. The DBF shall coordinate with the respective authorities and/or stakeholders for more complete and current requirements.

Note: The DBF shall refer to Broward County’s Guide for Consulting Engineers How to Apply for a Domestic Wastewater Collection/Transmission System Construction License

Appendix B: Road Ownership

Road Jurisdiction



Legend

Road Jurisdiction

- State Road
- County Road
- County Port
- City

Roads Along FM Alignment

- CITY
- COUNTY
- STATE

Roads Intersecting FM Alignment

- CITY
- COUNTY
- STATE

Esri, NASA, NGA, USGS, FEMA, Esri Community Maps Contributors, FDEP, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA



Appendix C: Valve Layout

Alignment Valve Map



Sheet Number	DRAWING INDEX
G01	TITLE SHEET AND LOCATION MAP
G02	ABBREVIATIONS
G03	SYMBOLS
G04	KEY MAP
G05	GENERAL NOTES
G06	GENERAL NOTES
C01	STA 100+00 TO 110+00
C02	STA 110+00 TO 114+00
C03	STA 500+00 TO 510+00
C04	STA 510+00 TO 520+00
C05	STA 520+00 TO 530+00
C06	STA 530+00 TO 540+00
C07	STA 540+00 TO 550+00
C08	STA 550+00 TO 560+00
C09	STA 560+00 TO 570+00
C10	STA 570+00 TO 580+00
C11	STA 580+00 TO 581+23
C12	STA 200+00 TO 210+00
C13	STA 210+00 TO 220+00
C14	STA 220+00 TO 230+00
C15	STA 230+00 TO 240+00
C16	STA 240+00 TO 250+00
C17	STA 250+00 TO 260+00
C18	STA 260+00 TO 270+00
C19	STA 270+00 TO 280+00
C20	STA 280+00 TO 290+00
C21	STA 290+00 TO 300+00
C22	STA 300+00 TO 310+00
C23	STA 310+00 TO 320+00
C24	STA 320+00 TO 330+00
C25	STA 330+00 TO 338+36
C26	STA 500+00 TO 510+00
C27	STA 510+00 TO 520+00
C28	STA 520+00 TO 530+00
C29	STA 530+00 TO 560+00
C30	STA 560+00 TO 570+00
C31	STA 570+00 TO 580+00
C32	STA 200+00 TO 210+00
D01	CONNECTION DETAIL SHEET 1
D02	CONNECTION DETAIL SHEET 2
D03	DETAIL SHEET 3



CITY OF FORT LAUDERDALE

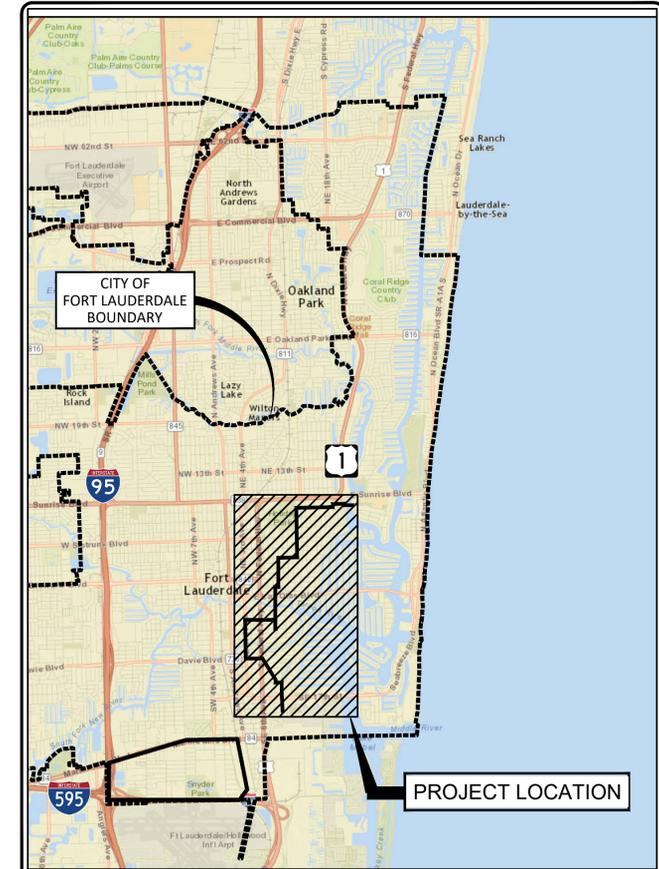
PROJECT # 12799

REHABILITATION OF 48"/54" FM ON SE 9TH AVE AND 10TH AVE TO GTL

FORT LAUDERDALE, FLORIDA

DESIGN CRITERIA PACKAGE

PRELIMINARY - NOT FOR CONSTRUCTION



LOCATION SKETCH

PROJECT #12799
REHABILITATION OF 48"/54" FM ON SE 9TH AVE AND 10TH AVE TO GTL

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING
 100 North Andrews Avenue, Fort Lauderdale, Florida 33301

FORT LAUDERDALE CITY COMMISSION

DEAN J. TRANTALIS	MAYOR
JOHN HERBST	COMMISSIONER - DISTRICT I
STEVEN GLASSMAN	COMMISSIONER - DISTRICT II
PAMELA BEASLEY-PITTMAN	COMMISSIONER - DISTRICT III
WARREN STURMAN	COMMISSIONER - DISTRICT IV

PROJECT MANAGER	JOB TITLE	PHONE NO.
WILLIAM POWERS, PE	SENIOR PROJECT MANAGER	954-828-5675

DATE: 09/29/2023
CAD FILE: G01
DRAWING FILE No.: 4-XXX-XX

NOT FOR CONSTRUCTION

ABBREVIATIONS

VALVE AND FITTING ABBREVIATIONS:

CO CLEAN OUT
(E) East
(W) West
(N) North
(S) South
FH FIRE HYDRANT

PIPING:

CIP CAST IRON PIPE
CMP CORRUGATED METAL PIPE
DIP DUCTILE IRON PIPE
HDPE HIGH DENSITY POLYETHYLENE PIPE
PVC POLYVINYLCHLORIDE
RCP REINFORCED CONCRETE PIPE
SS STAINLESS STEEL PIPE
VCP VITRIFIED CLAY PIPE

GENERAL

APPROX APPROXIMATE
BFP BACK FLOW PREVENTER
BLDG BUILDING
CATV CABLE TELEVISION
CB/C.B. CATCH BASIN
C&G CURB AND GUTTER
CHK'D CHECKERED
C.I. CURB INLET
CL, q CENTER LINE
CLF CHAIN LINK FENCE
C.O. CLEAN OUT
CONC, C CONCRETE
CONT CONTINUOUS
DCP DESIGN CRITERIA PROFESSIONAL
DDCP DOUBLE DETECTOR CHECK VALVE
DIA DIAMETER
DWG DRAWING
EL, ELEV ELEVATION
ELEC ELECTRIC
EOP EDGE OF PAVEMENT
EXIST/EX EXISTING
FDC SIAMESE VALVE
FH FIRE HYDRANT
FM FORCE MAIN
FT FOOT OR FEET
GAS GAS MAIN
HDD HORIZONTAL DIRECTIONAL DRILL
ID INSIDE DIAMETER
IE/I.E INVERT ELEVATION
IN INCH
INV INVERT
IP IRON PIPE
MH MANHOLE
NO NUMBER
NTS NOT TO SCALE
OHV OVERHEAD WIRES
P/L PROPERTY LINE
PS PUMP STATION
R RIM
RAD, R RADIUS
RE/R.E. RIM ELEVATION
REHAB REHABILITATION
R/W, ROW RIGHT OF WAY
SANMH Sanitary Manhole
SECT SECTION
SHT SHEET
SMH STORMWATER MANHOLE
SQ SQUARE
STA STATION
STM STORM

GENERAL CONT.

STMH STORM MANHOLE
STL STEEL
S.V. Sewer Valve
TMH TELEPHONE MANHOLE
TOP TOP OF PIPE
TYP TYPICAL
UGE UNDERGROUND ELECTRIC
UNK UNKNOWN
W WIDE
WTR WATER
W.V. Water Valve

FLOWSTREAM IDENTIFICATION:

FM FORCE MAIN
SAN SANITARY SEWER
STM STORMWATER
WM WATER MAIN

ENGINEER:
REG. No.
DATE:
TEL:
FAX:

DRAWN BY:
DATE: 10/20/2023
DESIGNED BY: SCALE: N/A
CHECKED BY:
FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE



100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS		DESCRIPTION
NO.	DATE	BY

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
ABBREVIATIONS

SHEET NO.
G02
TOTAL: 38
CAD FILE: G02.dwg
DRAWING FILE NO. 0-000-00

PRELIMINARY - NOT FOR CONSTRUCTION

LINETYPES

COMMUNICATION, CABLE TV, TELEPHONE:

— CATV —
— OHT — OVERHEAD TELEPHONE LINES

ELECTRIC LINES:

— UGE — UNDERGROUND ELECTRIC LINES
— OHE — OVERHEAD ELECTRIC LINES

OTHERS LINES:

— GAS — GAS MAIN (SIZE UNKNOWN)
— X" GAS — GAS MAIN (SIZE)
— FM — SANITARY FORCE MAIN (SIZE UNKNOWN)
— X" FM — SANITARY FORCE MAIN (SIZE)
— X" PVC FM — SANITARY FORCEMAIN (SIZE/MATERIAL)
— SS — SANITARY GRAVITY (SIZE UNKNOWN)
— X" SS — SANITARY GRAVITY MAIN (SIZE)
— X" PVC SS — SANITARY GRAVITY (SIZE/MATERIAL)
— STM — STORM DRAINAGE (SIZE UNKNOWN)
— X" STM — STORM DRAINAGE (SIZE)
— X" PVC STM — STORM DRAINAGE (SIZE/MATERIAL)
— WM — WATER MAIN (SIZE UNKNOWN)
— X" W — WATER MAIN (SIZE)
— X" DIP W — WATER MAIN (SIZE/MATERIAL)
— OHW — OVER HEAD WIRES (TYPE UNKNOWN)
— UNK UG — UNDERGROUND LINE (TYPE UNKNOWN)
· / / / / / · ABANDONED
——— EXISTING
——— PROPOSED
——— PROPOSED PIPELINE (DOUBLE LINE IF SCALE OF DRAWING PERMITS)
- - - - - WOODEN FENCE
—X—X—X—X— CHAIN LINK FENCE
— · — · — PROPERTY LINE
- - - - - EASEMENT LINE

LANDSCAPING SYMBOLS:

PALM TREE
 SHADE TREE
 VEGETATION
 BUSH
 UNKNOWN TREE

LEGEND:

AIR VALVE MANHOLE
 ANCHOR
 BACK FLOW PREVENTER
 BOLLARD
 BOX GATE VALVE
 BUILDING COLUMN/PILE
 CATV PEDESTAL
 CATCH BASIN
 CURB INLET
 CLEAN OUT
 COMMUNICATION VAULT
 CONCRETE LIGHT POLE
 CONCRETE POST
 CONCRETE POWER POLE
 CURB INLET
 DECORATIVE/YARD LIGHT POLE
 DOUBLE DETECTOR CHECK VALVE
 ELECTRIC MANHOLE
 ELECTRICAL METER
 ELECTRICAL PEDESTAL
 ELECTRICAL PULL BOX
 ELECTRICAL VAULT
 EXISTING VALVE

SYMBOLS, LEGEND AND HATCH PATTERNS

LEGEND CONT:

FIRE HYDRANT
 FIBER OPTIC PEDESTAL
 FLAG POLE
 FORCE MAIN VALVE
 GAS MARKER
 GAS METER
 GAS VALVE
 LINESTOP
 MAILBOX
 MANHOLE
 MARKER POST
 METAL LIGHT POLE
 PARK BENCH
 PEDESTRIAN SIGNAL
 PARKING LIGHT 1 BULB
 PARKING LIGHT 2 BULBS
 PARKING METER
 PROPOSED VALVE
 PUMP STATION
 REDUCER

LEGEND CONT:

SANITARY MANHOLE
 SANITARY WYE LATERAL
 SIAMESE VALVE
 SIGN
 SIGN DOUBLE POST
 SIGN INTERSTATE HIGHWAY
 SPOT-FLOOD LIGHT
 SOIL BORING
 SQUARE COLUMN
 STORM MANHOLE
 STORM DRAINAGE VAULT
 TELEPHONE JUNCTION BOX
 TELEPHONE MANHOLE
 TELEPHONE PEDESTAL
 TELEPHONE PULL BOX
 TELEPHONE VAULT
 TEST HOLES
 TRAFFIC CONTROL
 TRAFFIC POLE
 TRANSFORMER PAD
 TRASH CAN
 UNKNOWN MANHOLE
 VALLEY CURB INLET
 VALVE PIPE
 WATER MANHOLE
 WATER METER
 WATER METER
 WATER METER (DOUBLE)

LEGEND CONT:

WATER VALVE
 WATER VAULT
 WOOD POST
 WOOD LIGHT POLE
 WOOD TELEPHONE POLE
 WOOD POWER POLE
 YARD DRAIN

CONTROL LEGEND:

BENCH MARK
 NAIL&TAB
 EXISTING SPOT ELEVATION

HATCH LEGEND:

PERMEABLE PAVEMENT
 GRASSY SWALE
 EXFILTRATION TRENCH
 POROUS PAVEMENT
 CONTRACTOR STAGING AREA
 CONCRETE
 PAVER BRICKS
 GRAVEL
 TYPE A PAVING
 TYPE B PAVING
 DEMOLITION AREA
 GRADING DIRECTION

Hazen

HAZEN AND SAWYER
101 NE THIRD AVE, SUITE 550
FORT LAUDERDALE, FLORIDA 33301

ENGINEER:
REG. No.
DATE:
TEL:
FAX:

DRAWN BY: **10/20/2023**
DESIGNED BY: SCALE: **N/A**
CHECKED BY:
FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE

100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISTIONS		DESCRIPTION
NO.	DATE	BY

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
SYMBOLS

SHEET NO.
G03
TOTAL: 38
CAD FILE: **G03.dwg**
DRAWING FILE NO.
0-000-00

PRELIMINARY - NOT FOR CONSTRUCTION



KEY MAP
SCALE: 1"=500'

SCALE: 1" = 500'



PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
KEY MAP

SHEET NO.	G04
TOTAL:	38
CAD FILE:	G04.dwg
DRAWING FILE NO.	0-000-00

REVOLUTIONS		DESCRIPTION
NO.	DATE	BY

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE

100 North Andrews Avenue, Fort Lauderdale, Florida 33301

ENGINEER:	
REG. No.:	
DATE:	
DESIGNED BY:	
CHECKED BY:	
FIELD BOOK:	

DATE:	10/20/2023
SCALE:	1"=500'
DRAWN BY:	

GENERAL CONSTRUCTION NOTES:

- NO CONNECTIONS FOR THE PURPOSE OF OBTAINING WATER SUPPLY DURING CONSTRUCTION SHALL BE MADE TO ANY FIRE HYDRANT OR BLOW-OFF STRUCTURE WITHOUT FIRST OBTAINING PERMISSION AND A CONSTRUCTION METER FROM THE CITY OF FORT LAUDERDALE.
- THE CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING, MOVING AND RELOCATING OR REPLACING ALL WATER SERVICES OR SEWER LATERALS WHICH ARE ENCOUNTERED DURING EXCAVATION. THE CONTRACTOR SHALL SUBMIT A WRITTEN PLAN FOR WATER SERVICE AND WASTEWATER SERVICE DISRUPTION FOR APPROVAL 7 (SEVEN) CALENDAR DAYS PRIOR TO THE ANTICIPATED DISRUPTION. THE CONTRACTOR SHALL NOTIFY THE PROPERTY OWNERS 48 HOURS IN ADVANCE OF ANY WORK ON THEIR SERVICES. THIS WORK SHALL BE CONSIDERED INCIDENTAL.
- THE CONTRACTOR MUST USE EXTREME CARE TO AVOID DAMAGE OR DISRUPTION TO ANY EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT. ALL PLAN LOCATIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED. CONTRACTOR IS TO CONTACT SUNSHINE STATE ONE CALL OF FLORIDA AT 1-800-432-4770 AND ALL OTHER PARTICIPATING UTILITIES 2 FULL BUSINESS DAYS PRIOR TO CONSTRUCTION FOR FIELD MARKUP LOCATIONS OF EXISTING UTILITIES AND FACILITIES.
- THE CONTRACTOR MUST INFORM THE CITY AT LEAST 48-HOURS IN ADVANCE OF CONSTRUCTION, IN WRITING IF ANY CONFLICT IS DISCOVERED DURING POT HOLE OPERATIONS FOR CLARIFICATION BY THE CITY.
- IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE UTILITIES DEPARTMENT OF THE CITY OF FORT LAUDERDALE AT LEAST TWO (2) BUSINESS DAYS IN ADVANCE TO COORDINATE ANY ACTIVITY TO BE PERFORMED BY THE CITY'S UTILITIES DEPARTMENT.
- CONTRACTOR SHALL NOT DISTURB AREAS OUTSIDE EXISTING RIGHTS-OF-WAY.
- IN GENERAL, EXISTING STRUCTURES AND UTILITIES ARE NOTED AS EXISTING AND/OR SHOWN IN THIN LINES. NEW CONSTRUCTION IS IN HEAVY LINES AND/OR UNDERLINED.
- ALL WORK WITHIN STATE DEPARTMENT OF TRANSPORTATION (FDOT) RIGHT-OF-WAYS SHALL BE IN CONFORMANCE WITH FDOT SPECIFICATIONS AND PERMIT REQUIREMENTS.
- ALL WORK WITHIN BROWARD COUNTY RIGHT-OF-WAYS SHALL BE IN CONFORMANCE WITH THE BROWARD COUNTY MINIMUM STANDARDS AND/OR REQUIREMENTS.
- CONTRACTOR SHALL COMPLY WITH ALL LOCAL CITY, COUNTY AND STATE REGULATIONS PERTAINING TO THE CLOSING OF PUBLIC STREETS FOR USE OF TRAFFIC DURING CONSTRUCTION.
- CONTRACTOR SHALL PREPARE AND SUBMIT MAINTENANCE OF TRAFFIC (MOT) PLANS TO FDOT, CITY OF FORT LAUDERDALE, BROWARD COUNTY AS REQUIRED FOR WORK TO BE DONE WITHIN THEIR R/W PRIOR TO COMMENCEMENT OF WORK. SPECIFIC AGENCY MOT REQUIREMENTS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- STATIONS SHOWN ON THE DRAWINGS ARE BASED ON THE ESTABLISHED BASELINE AND SHALL NOT BE CONSIDERED AS DISTANCES OR AS A MEASURE OF THE LINEAR FOOTAGE OF PIPE TO BE INSTALLED.
- SURFACE RESTORATION SHOWN ARE APPROXIMATE BASED ON THE DCP BASIS OF DESIGN. DBF SHALL DESIGN AND CONSTRUCT ALL SURFACE RESTORATION BASED ON THE ROADWAY OWNER'S REQUIREMENTS. REFER TO EXHIBIT B FOR MORE INFORMATION ON THE CITY, BROWARD COUNTY, AND FDOT PAVEMENT RESTORATION REQUIREMENTS.
- CONTRACTOR SHALL MAINTAIN ACCESS TO PRIVATE PROPERTY AT ALL TIMES.
- ALL OPEN TRENCHES AND HOLES ADJACENT TO ROADWAY OR WALKWAY SHALL BE PROPERLY MARKED AND BARRICADED TO ASSURE THE SAFETY OF BOTH VEHICULAR AND PEDESTRIAN TRAFFIC.
- TRENCHES OR HOLES NEAR WALKWAYS, IN ROADWAYS OR THEIR SHOULDERS SHALL NOT BE LEFT OPEN DURING NIGHT TIME HOURS WITHOUT ADEQUATE PROTECTION.
- CONTRACTOR SHALL PROMPTLY REPAIR AND RESTORE EXISTING PAVEMENT, SIDEWALKS, CURBS, DRIVEWAYS, PIPES, RESIDENTIAL AND COMMERCIAL SPRINKLER LINES, CONDUIT, CABLES, ETC. AND LANDSCAPE AREAS DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES.
- CONTRACTOR SHALL PROVIDE TEMPORARY FENCING AS REQUIRED BY AGENCIES HAVING JURISDICTION OVER THE PROJECT AND/OR WHEN REQUIRED FOR PUBLIC SAFETY.
- THE CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES THROUGHOUT THE DURATION OF CONSTRUCTION AND UNTIL ACCEPTANCE OF WORK, FOR THE PROTECTION OF EXISTING AND NEWLY INSTALLED UTILITIES FROM DAMAGE OR DISRUPTION OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING SUCH MEASURES AS NECESSARY TO PROTECT THE HEALTH, SAFETY AND WELFARE OF THOSE PERSONS HAVING ACCESS TO THE WORK SITE.
- LOCATION OF AIR RELEASE VALVES MAY BE FIELD ADJUSTED BY THE ENGINEER OR CITY OF FORT LAUDERDALE AS NECESSARY.
- CONTRACTOR SHALL ADJUST TO GRADE ALL EXISTING UTILITY CASTINGS INCLUDING VALVE BOXES, MANHOLES, HAND HOLES, PULL BOXES, INLETS AND SIMILAR STRUCTURES IN CONSTRUCTION AREA TO BE OVERLAPPED WITH ASPHALT.
- EXISTING TRAFFIC SIGNS SHALL BE RESET UPON COMPLETION PER BROWARD COUNTY TRAFFIC ENGINEERING STANDARDS. COST SHALL BE CONSIDERED INCIDENTAL. CONTRACTOR SHALL REPAIR OR REPLACE DAMAGED TRAFFIC SIGNAL LOOPS PER BROWARD COUNTY TRAFFIC ENGINEERING SPECIFICATIONS; COST SHALL BE INCIDENTAL.
- CONTRACTOR SHALL RESTORE EXISTING PAVEMENT AND PAVEMENT MARKINGS/SIGNAGE TO ORIGINAL PRE-CONSTRUCTION CONDITION OR AS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS. THIS WORK SHALL BE CONSIDERED INCIDENTAL.
- ALL CONSTRUCTION WITHIN FDOT R/W MUST CONFORM WITH FDOT SPECIFICATIONS, STANDARDS, AND PERMIT REQUIREMENTS. NO WORK SHALL COMMENCE WITHIN FDOT R/W'S WITHOUT AN FDOT PERMIT. FULL LANE WIDTH RESTORATION TO MATCH EXISTING PAVEMENT SECTION IS REQUIRED IN ACCORDANCE WITH FDOT STANDARDS FOR PROPOSED WORK WITHIN FDOT R/W.
- CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS AND ELEVATIONS BEFORE STARTING CONSTRUCTION.
- ELEVATIONS SHOWN HEREON ARE BASED ON THE NATIONAL GEODETIC VERTICAL DATUM 1929.

GENERAL NOTES – TRAFFIC CONTROL PLAN

- THE TRAFFIC CONTROL PLANS FOR THE PROJECT SHALL COMPLY WITH THE LATEST EDITION OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, INDEX NO. 600-660. MUTCD AND THE STANDARD SPECIFICATIONS. THE CONTRACTOR'S RESPONSE TIME TO ALL REPORTED MALFUNCTIONS OF TRAFFIC SIGNALS WITHIN THE PROJECT LIMITS SHALL BE NO MORE THAN TWO (2) HOURS AND SHALL RESTORE ALL MALFUNCTIONING TRAFFIC SIGNAL EQUIPMENT TO ITS LEVEL OF OPERATION PRIOR TO THE MALFUNCTIONING WITHIN TWENTY-FOUR (24) HOURS. DURING THIS TIME THE CONTRACTOR SHALL PROVIDE AT HIS EXPENSE TEMPORARY TRAFFIC CONTROL DEVICES, FLAGGLER PERSONNEL AND LAW ENFORCEMENT PERSONNEL AS NECESSARY TO MAINTAIN A SAFE AND EFFICIENT FLOW OF TRAFFIC AT THE AFFECTED WORK ZONE. THE ENGINEER OR THE CITY OF FORT LAUDERDALE SHALL APPROVE ALL MODIFICATIONS PRIOR TO THEIR IMPLEMENTATION.
- THE CONTRACTOR SHALL MAINTAIN PROPER OPERATION OF ALL TRAFFIC SIGNAL LOOP ASSEMBLIES AND LOOP DETECTORS WITHIN THE PROJECT LIMITS. THE CONTRACTOR SHALL CORRECT ALL LOOP ASSEMBLY/DETECTOR MALFUNCTIONS WITHIN 24 HOURS OF NOTIFICATION OF SUCH MALFUNCTIONS BY THE ENGINEER.
- THE AGENCY RESPONSIBLE FOR MAINTENANCE OF THE TRAFFIC SIGNALS AND RELATED EQUIPMENT IS BROWARD COUNTY TRAFFIC ENGINEERING.
- A REGULATORY SPEED OF 25 MPH SHALL BE POSTED WITHIN THE LIMITS OF THE WORK ZONE.
- EXISTING SIGNS AND PAVEMENT MARKINGS THAT CONFLICT WITH CONSTRUCTION SIGNS AND MARKINGS SHALL BE REMOVED DURING CONSTRUCTION. ALL EXISTING SIGNS THAT ARE REMOVED SHALL BE STOCKPILED IN A SECURE PLACE AND REINSTALLED AFTER CONSTRUCTION. REMOVE AND REPLACE ANY GROUND MOUNT SIGN BY USE OF INDEX NO. 611.
- THE CONTRACTOR SHALL MAINTAIN EXISTING DRAINAGE PATTERNS AND PREVENT ADVERSE FLOODING OF THE TRAVEL LANES DURING CONSTRUCTION.
- THE CONTRACTOR SHALL OBTAIN WRITTEN AUTHORIZATION FROM THE CITY OF FORT LAUDERDALE FOR ANY AND ALL CONSTRUCTION ACTIVITIES TO BE PERFORMED AT NIGHT. NO LANE CLOSURE SHALL BE ALLOWED BETWEEN THE HOURS OF 6:00 AM TO 9:00 AM AND 4:00 PM TO 7:00 PM, MONDAY THROUGH FRIDAY UNLESS APPROVED BY THE ENGINEER.
- THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE UTILITY COMPANY TWO (2) BUSINESS DAYS IN ADVANCE OF ANY EXCAVATION INVOLVING ITS UTILITIES SO THAT A COMPANY REPRESENTATIVE CAN BE PRESENT. THE LOCATION OF THE UTILITIES SHOWN IN THE PLANS ARE APPROXIMATE ONLY. THE EXACT LOCATION SHALL BE DETERMINED BY THE CONTRACTOR DURING CONSTRUCTION. SEE SPECS FOR LIST OF UTILITY COMPANIES.
- TRAFFIC CONTROL ON ALL COUNTY RIGHTS-OF-WAY SHALL MEET THE ADDITIONAL REQUIREMENTS OF THE BROWARD COUNTY ENGINEERING DEPARTMENT.
- THE AGENCY RESPONSIBLE FOR MAINTENANCE OF THE TRAFFIC SIGNALS AND RELATED EQUIPMENT IS BROWARD COUNTY TRAFFIC ENGINEERING.
- CONTRACTOR SHALL PREPARE AND SUBMIT MAINTENANCE OF TRAFFIC PLAN (MOT) WHERE REQUIRED BY FEDERAL, STATE, COUNTY, OR LOCAL AGENCIES HAVING JURISDICTION. CONTRACTOR SHALL OBTAIN ALL REQUIRED APPROVALS AND PERMITS ASSOCIATED WITH THE MOT'S. ALL MOT'S TO BE AT'S CERTIFIED.
- THE CONTRACTOR SHALL ALSO COORDINATE THE CONSTRUCTION SCHEDULE WITH FDOT, BROWARD COUNTY AND THE CITY OF FORT LAUDERDALE TO AVOID LANE CLOSURES WHICH WOULD ADVERSELY AFFECT TRAFFIC DURING RUSH HOUR.

DRAINAGE NOTES

- DRAINAGE PIPE SHALL BE HIGH DENSITY POLYETHYLENE (HDPE) OR REINFORCED CONCRETE (RCP), THE USE OF RCP PIPE FOR PUBLIC ROADWAY CROSSINGS IS PREFERRED.
- CATCH BASINS, INLETS AND JUNCTION BOXES SHALL NOT BE INSTALLED IN DRIVEWAYS.
- PRIOR TO BACKFILLING EXFILTRATION TRENCHES, DRAINAGE INLETS OR MANHOLES, THE CONTRACTOR SHALL NOTIFY THE ENGINEERING INSPECTOR FOR AN INSPECTION.
- DRAINAGE STRUCTURES SHALL BE CLEANED PRIOR TO ACCEPTANCE BY CITY OR DEPARTMENT OF ENVIRONMENTAL PROTECTION (DPEP).
- ALL PIPES SHALL BE LAID IN DRY TRENCH. ALL MUCK OR UNSUITABLE MATERIALS IN TRENCHES, INLETS OR MANHOLES SHALL BE REMOVED AND BACKFILLED WITH SELECTED MATERIAL APPROVED BY THE ENGINEER.
- MINIMUM COVER FOR HDPE PIPE UNDER ASPHALT SHALL BE 24" COMPACTED LIMEROCK BASE. MINIMUM COVER FOR PIPE UNDER GRASS SHALL BE 18" COMPACTED SUBGRADE.
- THE CONTRACTOR SHALL MAINTAIN EXISTING DRAINAGE PATTERNS AND PREVENT ADVERSE FLOODING OF THE TRAVEL LANES DURING CONSTRUCTION.
- MAINTENANCE ACCESS SHALL BE PROVIDED ON BOTH SIDES OF EXFILTRATION TRENCHES IN THE FORM OF MANHOLES OR CATCH BASINS. THE MAXIMUM DISTANCE BETWEEN STORM STRUCTURES SHALL NOT EXCEED TREE HUNDRED (300) FEET.
- ALL EXFILTRATION SYSTEMS SHALL BE DESIGNED IN ACCORDANCE WITH SOUTH FLORIDA WATER MANAGEMENT DISTRICT'S (SFWMD) PERMIT INFORMATION MANUAL "MANAGEMENT AND STORAGE OF SURFACE WATER", LATEST EDITION.
- GEOTEXTILE MATERIALS USED IN THE CONSTRUCTION OF EXFILTRATION TRENCHES SHALL BE IN ACCORDANCE WITH THE CRITERIA OF FDOT "ROADWAY AND TRAFFIC DESIGN STANDARDS" LATEST EDITION AND CITY OF FORT LAUDERDALE'S SPECIFICATIONS.

GENERAL NOTES-BROWARD COUNTY TRAFFIC ENGINEERING DEPT.

ALL PARTIES NOTE THE FOLLOWING:

- DIRECTIONAL BORES, UTILITY CONNECTIONS, THE PLACEMENT OF MOT AND ADVANCE SIGNAGE MAY BY THEIR PLACEMENT, DAMAGE/DESTROY THE COMMUNICATIONS CABLE/CONDUIT LOCATED INSIDE AND OUTSIDE THE PROJECT AREA. ADDITIONALLY, CURB/GUTTER/SIDEWALK REMOVAL/PLACEMENT, RELOCATION OF TREES, LANDSCAPING ACTIVITIES AND IRRIGATION ACTIVITIES ARE POTENTIAL CAUSES FOR DAMAGE TO BCTED'S COMMUNICATION CABLE/CONDUIT. ALL PARTIES SHALL EXERCISE EXTREME CAUTION WHEN WORKING IN PROXIMITY TO THE COMMUNICATIONS CABLE/CONDUIT.
- ANY ABOVE PROJECT ACTIVITY, INCIDENTAL OR OTHERWISE, WHICH IMPACTS OR DAMAGES THE COMMUNICATIONS CABLE/CONDUIT, SHALL BE SUBJECT TO THE FOLLOWING NOTES AND CONDITIONS BELOW:

BROWARD COUNTY COMMUNICATION NOTES:

- THE AGENCY RESPONSIBLE FOR MAINTENANCE OF THE TRAFFIC SIGNALS AND RELATED EQUIPMENT IS BROWARD COUNTY TRAFFIC ENGINEERING DIVISION (BCTED). ALL SYSTEM COMMUNICATIONS EQUIPMENT, CABLING AND RELATED MATERIAL SHALL COMPLY WITH BROWARD COUNTY'S LATEST EDITION OF THE MINIMUM STANDARDS AS EXPRESSED IN THE "STANDARDS AND SPECIFICATIONS - COMMUNICATION INFRASTRUCTURE" DOCUMENT. PLEASE REFER TO (BCTED'S) COMMUNICATIONS POLICIES AND PROCEDURES FOR ADDITIONAL INFORMATION. BROWARD COUNTY TRAFFIC ENGINEERING DIVISION WILL NOT ACCEPT ANY PROJECTS THAT DO NOT MEET THESE STANDARDS AND SPECIFICATIONS. IF FIBER OPTIC PULL BOXES ALREADY EXIST AT AN INTERSECTION, NO ADDITIONAL FIBER OPTIC PULL BOXES WILL NEED TO BE INSTALLED. FOR A COPY OF THESE STANDARDS REFER TO THE BROWARD COUNTY WEB SITE AT WWW.BROWARD.ORG/TRAFFIC UNDER PUBLICATIONS.
- IF THERE ARE COPPER INTERCONNECT CABLE/S WITHIN YOUR PROJECT LIMITS OR WITHIN 1,500 FEET OF YOUR PROJECT LIMITS, CONTACT THE COMMUNICATIONS MANAGER AT TECOMMUNICATIONS@BROWARD.ORG OR 954-847-2745.
- IF THERE ARE FIBER OPTIC CABLE/S WITHIN YOUR PROJECT LIMITS OR WITHIN 1,500 FEET OF YOUR PROJECT LIMITS, CONTACT THE COMMUNICATIONS MANAGER AT TECOMMUNICATIONS@BROWARD.ORG OR 954-847-2745.
- IF THERE ARE CELLULAR COMMUNICATIONS WITHIN YOUR PROJECT LIMITS, CONTACT THE COMMUNICATIONS MANAGER AT TECOMMUNICATIONS@BROWARD.ORG OR 954-847-2745.
- ALL BCTED COMMUNICATIONS CABLES/CONDUIT SHALL BE LOCATED A MINIMUM OF 48 HOURS IN ADVANCE.

**BROWARD COUNTY TRAFFIC ENGINEERING DIVISION
PROCEDURE FOR NOTIFICATION OF COMMUNICATION DISRUPTION
COPPER INTERCONNECT CABLE NOTIFICATION CONTACT PERSON:**

WHEN COMMUNICATIONS TO AN INTERSECTION MUST BE DISRUPTED BY A CONTRACTOR TO PERFORM WORK, THE CONTRACTOR SHALL PROVIDE TWO DAY ADVANCE NOTICE IN WRITING TO THE BROWARD COUNTY TRAFFIC ENGINEERING DIVISION. THIS NOTIFICATION SHALL BE CONVEYED VIA ELECTRONIC MAIL (EMAIL) TO THE TRAFFIC SIGNAL TECHNICIAN III AT TECOMMUNICATIONS@BROWARD.ORG. NOTIFICATION SHALL INCLUDE CONTACT PERSON, TELEPHONE NUMBER, PURPOSE, LOCATION AND DURATION. THE DISRUPTION SHALL LAST FOR NO MORE THAN 3 CONSECUTIVE BUSINESS DAYS. WHERE POSSIBLE, THE DISRUPTION SHALL BE DURING OFF PEAK HOURS BEGINNING AT 9:00 AM AND ENDING AT 3:00 PM.

FIBER OPTIC CABLE NOTIFICATION CONTACT PERSON :

WHEN COMMUNICATIONS TO AN INTERSECTION MUST BE DISRUPTED BY A CONTRACTOR TO PERFORM WORK, THE CONTRACTOR SHALL PROVIDE TWO DAY ADVANCE NOTICE IN WRITING TO THE BROWARD COUNTY TRAFFIC ENGINEERING DIVISION. THIS NOTIFICATION SHALL BE CONVEYED VIA ELECTRONIC MAIL (EMAIL) TO THE COMMUNICATIONS MANAGER AT TECOMMUNICATIONS@BROWARD.ORG. NOTIFICATION SHALL INCLUDE CONTACT PERSON, TELEPHONE NUMBER, PURPOSE, LOCATION AND DURATION. THE DISRUPTION SHALL LAST FOR NO MORE THAN 3 CONSECUTIVE BUSINESS DAYS. WHERE POSSIBLE, THE DISRUPTION SHALL BE DURING OFF PEAK HOURS BEGINNING AT 9:00 AM AND ENDING AT 3:00 PM.

UTILITY OWNER CONTACT PERSON :

INTERCONNECT COMMUNICATIONS CABLES - (ROBERT BLOUNT) BROWARD COUNTY TRAFFIC ENGINEERING DIVISION (BCTED) 954-847-2745

Hazen

HAZEN AND SAWYER
101 NE THIRD AVE, SUITE 550
FORT LAUDERDALE, FLORIDA 33301

FDOT SCHOOL MAINTENANCE OF TRAFFIC NOTES:

- THE FOLLOWING AREAS WITHIN THE PROJECT LIMITS ARE DESIGNATED AS SAFE ROUTES TO SCHOOL BY THE BROWARD COUNTY SCHOOL BOARD (AREAS TO BE PROVIDED BY BCTED):
A. DATA TO BE SUPPLIED BY BCTED
B. DATA TO BE SUPPLIED BY BCTED
- WITHIN THESE AREAS THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FOLLOWING REQUIREMENTS:
- PROVIDE AT LEAST ONE SAFE, WALKABLE PATH THROUGHOUT THE CONSTRUCTION ZONE. IF THE EXISTING WALKING SURFACES CANNOT BE MAINTAINED, THEN A TEMPORARY PATH, A MINIMUM OF 4 FOOT WIDE, SHALL BE PROVIDED. THE SAFE WALK ROUTE SHALL ALSO BE SEPARATED FROM THE CONSTRUCTION ACTIVITY DURING THE ENTIRE LENGTH OF THE PROJECT ENCOMPASSING THE ENTIRE WALK ROUTE WITH PROPER PEDESTRIAN OPENINGS AT DESIGNATED CROSSINGS IN COMPLIANCE WITH FDOT DESIGN STANDARDS INDEX NO. 600 AS WELL AS MEETING ALL ADA REQUIREMENTS. THE CONTRACTOR SHALL ALSO INSTALL OR MODIFY ANY ADDITIONAL PAVEMENT MARKINGS, SIGNAGE OR PEDESTRIAN SIGNALS AS NEEDED IN CONJUNCTION WITH THE TEMPORARY PATH.
- ON DAYS THAT SCHOOL IS IN SESSION, THE CONTRACTOR'S WORK SCHEDULE WITHIN THE SCHOOL ZONE MAY BE REDUCED BASED ON ACTUAL WORK ACTIVITIES IN THE SCHOOL ZONE. SEE MAINTENANCE OF TRAFFIC PLANS FOR DETAILS ON THE WORK ZONE RESTRICTIONS. IF WARRANTED, ANY CHANGES IN THE MAINTENANCE OF TRAFFIC WORK SCHEDULES WITHIN SCHOOL ZONES SHOULD BE DISCUSSED WITH THE SPECIAL PROJECTS COORDINATOR AT BROWARD COUNTY TRAFFIC ENGINEERING, (954) 847-2600.
- ALL WORK REQUIRED AT DESIGNATED SCHOOL CROSSINGS AND PEDESTRIAN CROSSINGS SHALL BE RESTORED TO A SAFE WALKABLE PATH DURING ARRIVAL AND DISMISSAL TIMES.
- THIRTY (30) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE SPECIAL PROJECTS COORDINATOR AT BROWARD COUNTY TRAFFIC ENGINEERING DIVISION, (954) 847-600, TO DISCUSS ALL NECESSARY SAFETY MEASURES.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE FOLLOWING BROWARD COUNTY SCHOOL BOARD PUPIL TRANSPORTATION DEPARTMENT PERSONNEL IF CONSTRUCTION WILL IMPACT ANY BUS ROUTES.

NAME	SECTION	PHONE	EMAIL
RUTH MASTERS	ROUTING	(754) 321-4400 EXT. # 2309	RUTH.MASTERS@BROWARD.SCHOOLS.COM
VINCENT HARRELL	STUDENT TRANSPORTATION & FLEET SERVICE	(754) 321-4472	VINCENT.HARRELL@BROWARD.SCHOOLS.COM
MARY TOCHTERMANN	STUDENT TRANSPORTATION & FLEET SERVICE	(754) 321-4400 EXT. # 2006	MARY.TOCHTERMANN@BROWARD.SCHOOLS.COM

- UPON COORDINATION WITH THE AFOREMENTIONED PERSONNEL, AND IF DEEMED NECESSARY, A PRECONSTRUCTION MEETING WILL BE HELD TO DETERMINE ALL BUS ROUTES AND TO MAKE ANY NECESSARY ARRANGEMENTS FOR REROUTING. THE SPECIAL PROJECTS COORDINATOR FROM THE BROWARD COUNTY TRAFFIC ENGINEERING DIVISION, (954) 847-2600, WILL BE NOTIFIED AND MAY ATTEND THE PRE-CONSTRUCTION MEETING.

 CITY OF FORT LAUDERDALE PUBLIC WORKS DEPARTMENT ENGINEERING DETAILS 100 North Andrews Avenue, Fort Lauderdale, Florida 33301	FDOT SCHOOL MOT NOTES	SHEET NO. GNRL 004 2016/09/21
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ENGINEER: _____
REG. NO. _____
DATE: _____
TELEPHONE: _____
FAX: _____

DRAWN BY: _____
DATE: 10/20/2023
DESIGNED BY: SCALE: N/A
CHECKED BY: _____
FIELD BOOK: _____

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE



100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	REV'D	DESCRIPTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
GENERAL NOTES

SHEET NO.
G05

TOTAL: 38
CAD FILE: G05.dwg
DRAWING FILE NO. 0-000-00

PRELIMINARY - NOT FOR CONSTRUCTION

GENERAL DEMOLITION SPECIFICATIONS:

- THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF ALL EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. PRIOR TO THE START OF ANY DEMOLITION ACTIVITY, THE CONTRACTOR SHALL VERIFY THE LOCATION, ELEVATIONS, AND DIMENSIONS OF ALL EXISTING UTILITIES AND OTHER FEATURES AFFECTING THE WORK PRIOR TO DEMOLITION. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES WHICH MAY EFFECT THE DEMOLITION WORK.
- CHAPTER 553.851 OF THE FLORIDA STATUTES REQUIRES THAT AN EXCAVATOR NOTIFY ALL UTILITIES A MINIMUM OF TWO (2) WORKING DAYS PRIOR TO EXCAVATING.
- THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR, SUPERVISION, AND EQUIPMENT REQUIRED FOR THE ORDERLY DEMOLITION AND REMOVAL OF EXISTING STRUCTURES, PAVEMENT AND UTILITIES AS SHOWN ON THE DRAWINGS AND DESCRIBED HEREIN.
- THE CONTRACTOR IS REQUIRED TO FAMILIARIZE HIMSELF WITH THE STRUCTURES TO BE DEMOLISHED.
- THE FOLLOWING LIST OF STRUCTURES REQUIRING DEMOLITION IS INCLUDED FOR THE CONTRACTOR'S CONVENIENCE ONLY. THE DRAWINGS INDICATE THE SCOPE OF DEMOLITION WHERE DEMOLITION IS REQUIRED.
 - DEMOLITION AND REMOVAL OF A 5' MIN.± STRIP OF EXISTING ON-SITE ASPHALT, CONCRETE AND CURBING AROUND THE PERIMETER OF THE EXISTING STRUCTURES AND UTILITIES BEING DEMOLISHED.
 - REMOVAL OF EXISTING ON-SITE ABOVEGROUND AND UNDERGROUND UTILITIES, INCLUDING REMOVAL OR PLUGGING OF EXISTING UTILITIES AS SHOWN ON PLANS.
- PRIOR TO REMOVAL OF ANY UNDERGROUND TANK AND OTHER COMPONENT, CONTRACTOR MUST COMPLETELY DRAIN THE SYSTEMS TO AN APPROVED SANITATION TANK FOR DISPOSAL TO AN APPROVED LOCATION, AS REQUIRED BY DISPOSAL PERMIT.
- PROTECT AND SAVE ALL UTILITIES, UNLESS OTHERWISE NOTED.
- ALL THE CONCRETE AND PAVEMENT TO BE REMOVED MUST BE SAW CUT CLEAN PRIOR TO REMOVAL.
- WET DOWN MASONRY WALLS AND DEBRIS DURING DEMOLITION AND LOADING OPERATIONS TO PREVENT THE SPREAD OF DUST (AS APPLICABLE TO PROJECT).
- ALL EXISTING STRUCTURES, PAVEMENTS, SLABS, FOUNDATIONS, STEPS AND OTHER ON-SITE EXISTING FEATURES INDICATED ON THE DRAWINGS TO BE REMOVED SHALL BE DEMOLISHED AND REMOVED BY THE CONTRACTOR (AS APPLICABLE TO PROJECT).
- ALL EXISTING SEWERS, PIPING AND UTILITIES SHOWN ARE NOT TO BE INTERPRETED AT THE EXACT LOCATION, OR AS THE ONLY OBSTACLES THAT MAY OCCUR ON THE SITE. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND PROCEED WITH CAUTION AROUND ANY ANTICIPATED FEATURES. GIVE NOTICE TO ALL UTILITY COMPANIES REGARDING DESTRUCTION AND REMOVAL OF ALL SERVICE LINES AND CAP ALL LINES BEFORE PROCEEDING WITH THE WORK.
- THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO REMOVAL OR RELOCATION OF ANY ELECTRICAL, TELEPHONE, CABLE AND/OR GAS LINES. SUFFICIENT TIME SHALL BE PROVIDED FOR RELOCATION AND CLOSE COORDINATION WITH THE UTILITY COMPANY TO PROVIDE A SMOOTH TRANSITION IN UTILITY SERVICE.
- CONTRACTOR MUST STOP OPERATION AND NOTIFY THE OWNER/ENGINEER FOR PROPER DIRECTION IF ANY ENVIRONMENTAL OR HEALTH RELATED CONTAMINANT IS ENCOUNTERED DURING THE DEMOLITION/EXCAVATION PROCESS.
- FILL FOR LOWER LEVELS OF DEMOLISHED STRUCTURES MAY INCLUDE CONCRETE OR MASONRY RUBBLE RESULTING FROM DEMOLITION, SUBJECT TO THE ENGINEER'S/ARCHITECT'S APPROVAL. RUBBLE SHALL NOT EXCEED SIX (6) INCHES IN LONGEST DIMENSION.
- REMOVE AND LEGALLY DISPOSE OF ALL OTHER RUBBISH, RUBBLE, AND DEBRIS. COMPLY WITH ALL APPLICABLE LAWS AND REGULATIONS GOVERNING DISPOSAL OF WASTES AND DEBRIS.
- CONTINUOUS ACCESS AND OPERATION SHALL BE MAINTAINED FOR THE SURROUNDING PROPERTIES AND BUILDINGS AT ALL TIMES DURING DEMOLITION OF THE EXISTING COMPOST FACILITY.
- PRIOR TO DEMOLITION OCCURRING ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED.
- ALL SIGNS OUTSIDE THE DEMOLITION AREA ARE TO REMAIN UNLESS OTHERWISE SPECIFIED.
- ANY MUCK ENCOUNTERED UNDER PROPOSED STRUCTURES SHALL BE REMOVED TO 5 FT. BEYOND THE FOOTPRINT OF THAT STRUCTURE. BACKFILL WITH APPROVED FILL MATERIAL SATISFYING ALL COMPACTION REQUIREMENTS.
- ALL EXISTING UTILITIES WITHIN THE DEMOLITION SITE AREA SHALL BE ADJUSTED, REMOVED OR RELOCATED AT THE CONTRACTOR'S EXPENSE. ACTUAL WORK SHALL BE COORDINATED BY THE CONTRACTOR DIRECTLY W/ THE APPROPRIATE UTILITY COMPANY. ALL EXPENSES SHALL BE INCLUDED IN THE CONTRACTOR'S BID.
- THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES BEFORE EXCAVATION.
- ALL TRASH, DEBRIS AND OTHER MATERIAL REMOVED FROM THE SITE SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

PRE-DEMOLITION RESPONSIBILITIES

- UPON RECEIPT OF NOTICE OF AWARD, THE CONTRACTOR SHALL ARRANGE A PRE-DEMOLITION CONFERENCE TO INCLUDE ALL INVOLVED GOVERNMENTAL AGENCIES, ALL AFFECTED UTILITY OWNERS, THE OWNER, THE ENGINEER AND THE CONTRACTOR.
- PRIOR TO DEMOLITION, THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT A DEMOLITION SCHEDULE DEPICTING EACH PHASE OF THE WORK.
- PRIOR TO DEMOLITION, CONTRACTOR TO PROVIDE FOR THE OWNER A LISTING OF THE FACILITIES THE CONTRACTOR WILL UTILIZE FOR RECYCLING AND DISPOSAL OF SPECIFIC MATERIALS. CONTRACTOR TO SPECIFY THE MATERIALS INTENDED FOR RECYCLING AND THE MATERIALS INTENDED FOR DISPOSAL FOR OWNER'S APPROVAL.
- PRIOR TO DEMOLITION CONTRACTOR TO PROVIDE THE OWNER SKETCHES SHOWING PROPOSED HAULING ROUTES TO RECYCLING AND DISPOSAL FACILITIES FOR APPROVAL.
- PRIOR TO BEGINNING DEMOLITION, THE CONTRACTOR SHALL VERIFY THE SIZE, LOCATION, ELEVATION, AND MATERIAL OF ALL EXISTING UTILITIES WITHIN THE AREA OF DEMOLITION.
- EXISTING UTILITY LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF EXISTING UTILITIES SHOWN OR FOR ANY EXISTING UTILITIES NOT SHOWN.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ANY EXISTING UTILITIES FOR WHICH IT FAILS TO REQUEST LOCATIONS FROM THE UTILITY OWNER. THE CONTRACTOR IS RESPONSIBLE AS WELL FOR DAMAGE TO ANY EXISTING UTILITIES WHICH ARE PROPERLY LOCATED.
- THE LOCATIONS OF EXISTING UTILITIES AND STORM DRAINAGE SHOWN ON THE PLANS HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. ENGINEER ASSUMES NO RESPONSIBILITY FOR INACCURACY. PRIOR TO THE START OF ANY DEMOLITION ACTIVITY, IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO MAKE ARRANGEMENTS FOR THE FIELD LOCATIONS AND FOR ANY RELOCATION'S OF THE VARIOUS EXISTING UTILITIES WITH THE UTILITY OWNERS, WHICH SHALL BE DONE IN A TIMELY MANNER TO MINIMIZE IMPACT ON DEMOLITION SCHEDULE. ANY DELAY CAUSED BY THE CONTRACTOR BY THE RELOCATION OF UTILITIES SHALL BE INCIDENTAL TO THE CONTRACT AND NO EXTRA COMPENSATION WILL BE ALLOWED.
- SUNSHINE STATE ONE CALL OF FLORIDA, INC. REQUIRES THE CONTRACTOR TO CALL TWO (2) FULL BUSINESS DAYS (BUT NOT MORE THAN FIVE) PRIOR TO BREAKING GROUND TO FIND OUT WHERE BURIED FACILITIES (ELECTRICAL, GAS, TELEPHONE, CABLE, WATER) ARE LOCATED.

DEMOLITION SAFETY

- ALL DEMOLITION SHALL BE DONE IN A SAFE MANNER, SPECIFICALLY, THE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) SHALL BE STRICTLY OBSERVED.

BUILDING MATERIALS SHALL BE TESTED FOR ASBESTOS.

- IF PETROLEUM PRODUCTS ARE FOUND WHILE DEMOLISHING, PETROLEUM WASTE SHOULD BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

PAVEMENT DEMOLITION

- WHERE EXISTING PAVEMENT IS TO BE REMOVED, SAW-CUT THE SURFACING LEAVING A UNIFORM AND STRAIGHT EDGE WITH MINIMUM DISTURBANCE TO THE REMAINING ADJACENT SURFACING. IF DEMOLITION RESULTS IN RAVELING OF SAW CUT SURFACE , RECUT BACK FROM THE RAVELED EDGE PRIOR TO RESTORATION.
- WHERE EXISTING PAVEMENT, CURB, CURB AND GUTTER, SIDEWALK, DRIVEWAY, OR VALLEY GUTTER IS REMOVED FOR INLETS, MANHOLES, APPURTENANCES, FACILITIES OR STRUCTURES, SAID PAVEMENT, ETC., SHALL BE REPLACED AND RESTORED IN EQUAL OR BETTER CONDITION THAN THE ORIGINAL. CONTRACTOR SHALL PROVIDE ALL NECESSARY LABOR, MATERIALS, EQUIPMENT, TOOLS, SUPPLIES, AND OTHER EQUIPMENT AS REQUIRED.
- CONTRACTOR MAY LIMIT SAW-CUT AND PAVEMENT REMOVAL TO ONLY THOSE AREAS WHERE IT IS REQUIRED AS SHOWN ON THIS PLAN; HOWEVER, IF ANY DAMAGE IS INCURRED ON ANY OF THE SURROUNDING PAVEMENT, SIDEWALK, BUILDINGS, UTILITIES, ETC., THEN THE CONTRACTOR SHALL BE RESPONSIBLE FOR IT'S REMOVAL AND REPAIR TO EQUAL OR BETTER QUALITY.

DEMOLITION PERMITTING

- IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ANY REQUIRED PERMITS FOR DEMOLITION FROM RESPONSIBLE REGULATORY AGENCIES WHILE FULLY ACKNOWLEDGING AND COMPLYING WITH ALL REQUIREMENTS PRIOR TO COMMENCING DEMOLITION WORK.
- IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE THE EXTENT OF DEMOLITION, RECYCLING OR REUSE REQUIRED IN ORDER TO PERFORM THE CONTRACT WORK FOR THIS PROJECT. THE CONTRACTOR SHALL CONDUCT SITE VISITS AND SHALL EXAMINE ALL OF THE INFORMATION WITHIN THESE DOCUMENTS: ALL DISCREPANCIES AND/OR OMISSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO BID SUBMITTAL.
- THE CONTRACTOR SHALL COORDINATE WITH OWNER PRIOR TO COMMENCEMENT OF ANY WORK. ACTUAL REMOVAL AND/OR RELOCATION OF ALL EXISTING LANDSCAPING WITHIN DEMOLITION AREAS TO BE CONDUCTED BY A LANDSCAPE CONTRACTOR. IT IS THE RESPONSIBILITY OF THE SITEMARK DEMOLITION CONTRACTOR TO COORDINATE DEMOLITION ACTIVITIES WITH THE LANDSCAPE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND PRESERVING TREES AS INDICATED ON THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TREE REMOVAL PERMIT OR ANY OTHER APPLICABLE PERMIT TO REMOVE, RELOCATE, OR PRESERVE EXISTING LANDSCAPE & TREES.
- ANY TREES FOR REMOVAL FOUND TO BE GREATER THAN OR EQUAL TO THREE (3) INCHES IN DIAMETER AT BREST HEIGHT (DBH) WILL REQUIRE A PERMIT WITH THE BROWARD COUNTY ENVIRONMENTAL PROTECTION AND GROWTH MANAGEMENT DEPARTMENT (BCEP/GMD).
- SHOULD REMOVAL AND/OR RELOCATION ACTIVITIES DAMAGE THE LIGHTING, STORM INLET STRUCTURES, OR OTHER STRUCTURES DESIGNATED TO BE SAVED, THEN THE CONTRACTOR SHALL PROVIDE NEW MATERIALS/STRUCTURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

DEMOLITION EROSION AND SEDIMENT CONTROL NOTES:

- THE SCHEDULING, SEQUENCING AND CONTROL MEASURES, WHICH ARE OUTLINED HEREIN, ARE SUBJECT TO THE FINAL DEFINITION BY THE CONTRACTOR WHO WILL BE SELECTED TO PERFORM THE WORK AND WILL BE RESPONSIBLE FOR IMPLEMENTATION AND COMPLIANCE.
- PRIOR TO DEMOLITION, THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT A DEMOLITION SCHEDULE DEPICTING EACH PHASE OF THE WORK. THE CONTRACTOR SHALL ALSO BE REQUIRED TO SUBMIT AN EROSION AND SEDIMENT CONTROL PLAN ENCOMPASSING THE PRINCIPALS AND THE REQUIREMENTS DESCRIBED HEREIN AND A SCHEDULE FOR THEIR IMPLEMENTATION AND MAINTENANCE FOR THE PROJECT DURATION.
- DURING DEMOLITION, THE CONTRACTOR SHALL TAKE ALL REASONABLE MEASURES TO ENSURE AGAINST POLLUTING, SILTATION OR DISTURBANCE TO SUCH AN EXTENT AS TO CAUSE AN INCREASE IN TURBIDITY TO THE EXISTING DRAINAGE SYSTEMS AND ADJACENT WATER BODIES AND WETLANDS, IN COMPLIANCE WITH ALL PERMIT REQUIREMENTS RELATED TO SUCH MEASURES.
- METHODS MAY INCLUDE DEMOLITION OF TEMPORARY CONTROL STRUCTURES SUCH AS SEDIMENT BASINS, SEDIMENT CHECKS, SILT BARRIERS, SILT SCREENS, TURBIDITY BARRIERS OR THE BEST MANAGEMENT PRACTICES AVAILABLE TO THE INDUSTRY.
- EROSION AND SEDIMENT CONTROL INSTALLATIONS SHALL BE MAINTAINED THROUGHOUT THE DEMOLITION PERIOD AND UNTIL NEW VEGETATIVE GROWTH HAS BEEN ESTABLISHED.
- THROUGHOUT THE DEMOLITION PERIOD, THE CONTRACTOR SHALL INSPECT DAILY THE PROTECTIVE INSTALLATIONS FOR FAILURE OR SIGNS OF FAILURE OR MALFUNCTION AND EFFECT REPAIRS OR REPLACEMENT IMMEDIATELY UPON DISCOVERY.
- INLETS AND CATCH BASINS, EXISTING ON-SITE AND OFF-SITE, SHALL BE PROTECTED FROM SEDIMENT STORM RUNOFF.
- THE CONTRACTOR SHALL PROMPTLY REMOVE ALL MUD, DIRT OR OTHER MATERIALS TRACKED OR SPILLED ONTO EXISTING PUBLIC ROADS AND FACILITIES DUE TO DEMOLITION.
- DEWATERING ACTIVITIES WILL NOT RESULT IN ANY DISCHARGE OF TURBID WATER FROM THE PROJECT SITE WITHOUT PROPER EROSION AND SEDIMENT CONTROL AND APPROVAL FROM ENGINEER.
- PHASING OF EROSION CONTROL DEMOLITION SHALL BE RECOMMENDED AS FOLLOWS:
 - 10.1. PLACEMENT OF PERIMETER PROTECTIVE MEASURES (SILT FENCE, HAY BALES, TURBIDITY BARRIERS, ETC.) AROUND ON-SITE FEATURES TO BE RETAINED, AT POINTS OF OFF-SITE DISCHARGE AND AROUND WORK AREAS TO BE EXCAVATED OR FILLED.
 - 10.2. REROUTE RUNOFF FROM AREAS OUTSIDE OF THE DEMOLITION AREA TO MINIMIZE FLOW THROUGH AREAS TO BE DISTURBED BY DEMOLITION. BERMS, SWALES AND OTHER MEANS USED FOR SUCH CONVEYANCE SHALL BE VEGETATED AND MEASURES TAKEN TO PROVIDE PROTECTION UNTIL STABILIZATION OCCURS (AS APPLICABLE TO THE PROJECT).
 - 10.3. SELECT LOCATIONS FOR PLACEMENT OF EXCAVATED MATERIAL, WHERE SUITABLE FOR FILL OR UNSUITABLE MATERIAL, AND CONSTRUCT CONTAINMENT BERMS AROUND THE AREA. THE USE OF STRIPING FOR THIS PURPOSE MAY ACCELERATE BERM REVEGETATION. CONSTRUCT TEMPORARY OUTLETS FOR CONTAINMENT AREAS WITH SCREENS, HAY BALES, SETTLING BASINS OR OTHER MEASURES TO PREVENT SILT TRANSPORT.
 - 10.4. SELECT / DESIGNATE ACCESS ROUTING FOR DEMOLITION EQUIPMENT AND VEHICLES AND PROVIDE PERIMETER PROTECTIVE MEASURES WHERE EXISTING TERRAIN WILL BE SUBJECT TO DISRUPTION BY SUCH TRAFFIC.
 - 10.5. CONSTRUCT ABOVE GROUND OR OTHER CONTAINMENT AREAS FOR DEMOLITION AREA RUNOFF. PROVIDE SCREENS, HAY BALES, ETC. TO FILTER DISCHARGE FROM THOSE AREAS.
 - 10.6. SPOIL MOUNDS SHALL NOT BE LEFT FOR MORE THAN ONE WEEK PRIOR TO REPLACEMENT UNLESS PROTECTIVE CONTAINMENT MEASURES IN THE WORK AREA ARE APPLIED.
 - 10.7. GRASSING, SODDING, ETC. SHALL BE IN PLACE IMMEDIATELY UPON COMPLETION OF REGRADING, SWALE SLOPES AND THE CONSTRUCTED OR DISTURBED AREAS.
- THE CONTRACTOR IS REQUIRED TO ADHERE TO THE REQUIREMENT OF THE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES). THE CONTRACTOR SHALL INSTITUTE BEST MANAGEMENT PRACTICES (BMPs) TO ENSURE COMPLIANCE WITH THE NPDES PROGRAM AND TO MINIMIZE THE IMPACT TO PUBLIC STORMWATER FACILITIES. A NOTICE OF INTENT (NOI) SHALL BE FILED PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.
- PRIOR TO CONSTRUCTION, A SILT FENCE IN ACCORDANCE WITH CITY'S DETAIL SILT FENCE SHALL BE ERECTED AS NOTED ON PLANS. ALL PROPOSED CATCH BASINS WILL HAVE THEIR INLETS PROTECTED BY THE INSTALLATION OF FILTER FABRIC INTO THE FRAME AND GRATE. THIS SILT FENCE AND FILTER FABRIC WILL REMAIN IN PLACE DURING THE ENTIRE DURATION OF CONSTRUCTION.
- CONTRACTOR WILL BRACE ALL EXISTING LANDSCAPING TO REMAIN PRIOR TO BEGINNING ANY WORK AND WILL ENSURE THEIR STABILIZATION THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS. EXISTING SOD DISTURBED BY CONSTRUCTION THAT IS NOT AFFECTED BY PROPOSED GRADING WILL BE RESTORED TO ITS ORIGINAL STATE UPON COMPLETION OF CONSTRUCTION. SODDED SLOPES STEEPER THAN 4 HORIZONTAL TO 1 VERTICAL WILL BE PEGGED.
- ALL WASTE GENERATED FROM THE CONSTRUCTION SHALL BE DISCARDED IN ACCORDANCE WITH ALL APPLICABLE STATE, LOCAL AND FEDERAL REGULATIONS. CONTRACTOR IS TO OBTAIN ALL APPLICABLE CODES AND BECOME FAMILIAR WITH STATE, LOCAL AND FEDERAL REGULATIONS PRIOR TO BEGINNING CONSTRUCTION. REGULATIONS CAN BE FOUND, BUT NOT LIMITED TO, DEPARTMENT OF ENVIRONMENTAL RESOURCE MANAGEMENT AND DEPARTMENT OF ENVIRONMENTAL PROTECTION.
- TO ENSURE THAT OFF-SITE VEHICLE TRACKING OF SEDIMENTS AND THE GENERATION OF DUST IS MINIMIZED, CONTRACTOR IS TO PUT INTO PRACTICE THE METHODS DETAILED IN FDOT INDEX 106 (LATEST VERSION) AND BMPs.

DUST GENERATED FROM CONSTRUCTION WILL BE MINIMIZED BY DAILY WATERING OF THE SITE.

- AT ANY TIME DURING CONSTRUCTION THAT THE SILT FENCING IS DISTURBED, THE SILT FENCING SHALL BE RESTORED TO ITS ORIGINAL STATE WITHIN 24 HOURS. AT NO TIME DURING CONSTRUCTION SHALL WORK BE PERFORMED WITHOUT THE INTEGRITY OF THE SILT FENCING SECURED.
- A QUALIFIED INSPECTOR, PROVIDED BY THE OPERATOR, SHALL INSPECT ALL POINTS OF DISCHARGE INTO NEARBY SURFACE WATER OF THE STATE AND SPFLMD. THE INSPECTION WILL OCCUR AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM THAT IS 0.5 INCHES OR GREATER. INSPECTION INCLUDES THE WRITTEN RECORDING OF THE CONDITION OF ALL DISCHARGE POINTS, INTEGRITY OF SILT FENCING, DAILY DUST CONTROL MEASURES, VEHICULAR TRAFFIC AND CONSTRUCTION MATERIAL STORAGE AND DISPOSAL. WRITTEN RECORD OF ALL INSPECTIONS WILL BE STORED BY THE OPERATOR DURING CONSTRUCTION.
- THE INSPECTION REPORT WILL INCLUDE, BUT IS NOT LIMITED TO, THE FOLLOWING INFORMATION: NAME AND QUALIFICATION OF PERSONNEL MAKING THE INSPECTION, DATE OF INSPECTION, RAINFALL DATE, MAJOR OBSERVATIONS RELATING TO THE SWPPP, ACTIONS TAKEN BY CONTRACTOR AND ANY INCIDENT OF NONCOMPLIANCE WITH PERMIT. WHERE AN INSPECTION DOES NOT IDENTIFY ANY INCIDENT OF NONCOMPLIANCE, THE REPORT SHALL CONTAIN A CERTIFICATION THAT THE FACILITY IS IN COMPLIANCE WITH THE SWPPP AND THE PERMIT.
- THE PERMITTEE SHALL RETAIN A COPY OF THE SWPPP AND ALL REPORTS, RECORDS AND DOCUMENTATION REQUIRED BY THE PERMIT AT THE CONSTRUCTION SITE, OR AN APPROPRIATE ALTERNATIVE LOCATION AS SPECIFIED IN THE NOTICE OF INTENT, FROM THE DATE OF PROJECT INITIATION TO THE DATE OF FINAL STABILIZATION. THE PERMITTEE SHALL RETAIN COPIES OF SWPPP AND ALL REPORTS REQUIRED BY THIS PERMIT, AND RECORDS OF ALL DATA USED TO COMPLETE THE NOTICE OF INTENT TO BE COVERED BY THE PERMIT, FOR A PERIOD OF AT LEAST THREE (3) YEARS FROM THE DATE THAT THE SITE IS FINALLY STABILIZED.
- SEE LANDSCAPE PLANS FOR TREE REMOVAL AND LANDSCAPE DEMOLITION.
- CONTRACTOR SHALL COORDINATE THROUGH CONSTRUCTION DIVISION AND CITY OF FORT LAUDERDALE PARKS DEPARTMENT ON HOW TO STOCK AND RE-USE EXCAVATED SOIL FROM SITE (AS APPLICABLE TO THE PROJECT).

INTERRUPTION OF EXISTING UTILITIES

- ANY DEMOLITION WORK THAT REQUIRES INTERRUPTION OF SERVICE TO ANY CUSTOMER SHALL BE DONE SO WITH A MINIMUM OF SEVENTY-TWO (72) HOUR NOTICE TO, AND WRITTEN APPROVAL BY, THE APPROPRIATE UTILITY COMPANY. THE CONTRACTOR SHALL ARRANGE A MEETING WITH THE LOCAL JURISDICTIONAL AGENCIES AND OTHER GOVERNING AGENCIES, AND OTHER AFFECTED UTILITIES PRIOR TO SCHEDULING THE SHUT DOWN TO ASSESS THE SCOPE OF WORK. ALL SYSTEM SHUT DOWNS SHALL BE SCHEDULED BY THE CONTRACTOR AT SUCH TIME THAT SYSTEM DEMAND IS LOW. THIS GENERALLY REQUIRES NIGHT TIME WORK BY THE CONTRACTOR AND REQUIRES FULL TIME INSPECTION BY A REPRESENTATIVE OF THE UTILITY. ALL COST FOR OVERTIME WORK BY THE REPRESENTATIVE OF THE UTILITY SHALL BE BORNE BY THE CONTRACTOR. EACH CUSTOMER AFFECTED BY THE SHUT DOWN SHALL BE PROVIDED, MINIMUM, FORTY-EIGHT (48) HOURS WRITTEN NOTIFICATION BY THE CONTRACTOR.

TEMPORARY DEMOLITION FACILITIES

- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE OR SUPPLY TEMPORARY WATER SERVICE, SANITARY FACILITIES AND ELECTRICITY TO ITS EMPLOYEES AND SUBCONTRACTORS FOR THEIR USE DURING DEMOLITION.
- MAINTENANCE OF TRAFFIC (MOT) IN THE PUBLIC RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH THE MUTCD AND FDOT.
- ALL OPEN TRENCHES AND HOLES ADJACENT TO ROADWAYS OR WALKWAYS SHALL BE PROPERLY MARKED AND BARRICADED TO ASSURE THE SAFETY OF BOTH VEHICULAR AND PEDESTRIAN TRAFFIC.
- NO TRENCHES OR HOLES NEAR WALKWAYS OR IN ROADWAYS OR THEIR SHOULDERS ARE TO BE LEFT OPEN DURING NIGHTTIME HOURS WITHOUT EXPRESS WRITTEN PERMISSION OF THE CITY OR RESPECTIVE GOVERNING AGENCY.

WASTE MANAGEMENT PLAN

- IMPLEMENT A WASTE MANAGEMENT PLAN FOR APPROVED BY THE OWNER. PROVIDE HANDLING, CONTAINERS, STORAGE, SIGNAGE, TRANSPORTATION AND OTHER ITEMS AS NEEDED TO IMPLEMENT THE WASTE MANAGEMENT PLAN DURING THE ENTIRE DURATION OF THE CONTRACT.
- DESIGNATE A WASTE MANAGEMENT COORDINATOR TO BE RESPONSIBLE FOR IMPLEMENTING, MONITORING AND REPORTING STATUS OF WASTE MANAGEMENT WORK PLAN. COORDINATOR SHALL BE PRESENT AT PROJECT SITE FULL TIME FOR DURATION OF PROJECT.
- TRAIN WORKERS, SUBCONTRACTORS AND SUPPLIERS ON PROPER WASTE MANAGEMENT PROCEDURES, AS APPROPRIATE FOR THE WORK OCCURRING AT THE PROJECT SITE.
- DISTRIBUTE A WASTE MANAGEMENT PLAN BEFORE WORK BEGINS. REVIEW PLAN PROCEDURES AND LOCATION ESTABLISHED FOR SALVAGE, RECYCLING AND DISPOSAL.

RECYCLING DEMOLITION WASTE

- SEPARATE RECYCLABLE WASTE FROM OTHER WASTE MATERIALS, TRASH AND DEBRIS. SEPARATE RECYCLABLE WASTE BY TYPE AT THE PROJECT SITE TO THE MAXIMUM EXTENT PRACTICAL.
- PROVIDE APPROPRIATELY MARKED CONTAINERS OR BINS FOR CONTROLLING RECYCLABLE WASTE UNTIL THEY ARE REMOVED FROM THE PROJECT SITE. INCLUDE A LIST OF ACCEPTABLE AND UNACCEPTABLE MATERIALS AT EACH CONTAINER AND BIN.
 - 2.1. INSPECT CONTAINERS AND BINS FOR CONTAMINATION AND REMOVE CONTAMINATED MATERIALS IF FOUND.
- STOCKPILE PROCESSED MATERIALS ON-SITE WITHOUT INTERMIXING WITH OTHER MATERIALS. PLACE, GRADE AND SHAPE STOCKPILES TO DRAIN SURFACE WATER. COVER TO PREVENT WINDBLOWN DUST.
- STOCKPILE MATERIALS AWAY FROM DEMOLITION AREA. DO NOT STORE WITHIN DRIP LINE OF REMAINING TREES.
- STORE COMPONENTS OFF THE GROUND AND PROTECT FROM THE WEATHER.
- REMOVE RECYCLABLE WASTE OFF THE OWNER'S PROPERTY AND TRANSPORT TO RECYCLING RECEIVER OR PROCESSOR.
- ASPHALTIC CONCRETE PAVING: BREAK UP AND TRANSPORT PAVING TO ASPHALT RECYCLING FACILITY.
- CONCRETE: REMOVE REINFORCEMENT AND OTHER METALS FROM CONCRETE AND SORT WITH OTHER METALS.
- MASONRY: MASONRY WASTE SHALL INCLUDE WHOLE OR BROKEN BRICK AND CONCRETE MASONRY UNITS. WHOLE MASONRY UNITS SHALL BE CLEANED AND REUSED OR DONATED. BROKEN MASONRY SHALL BE CRUSHED AND USED AS FILL FOR OFFSITE AREAS. REMOVE METAL REINFORCEMENT, ANCHORS AND TIES FROM MASONRY AND SORT WITH OTHER METALS.
- METALS: METALS FROM REINFORCED CONCRETE, REINFORCED MASONRY, STRUCTURAL STEEL MEMBERS, FLASHING AND SHEET METAL, CONDUIT PIPE, SIDING, PIPING AND WIRING SHALL BE SEPARATED BY TYPE.
 - 10.1. STRUCTURAL STEEL: STACK MEMBERS ACCORDING TO THEIR SIZE, TYPE AND LENGTH.
 - 10.2. REMOVE BOLTS, NUTS, WASHERS AND OTHER ROUGH HARDWARE.

DISPOSAL OF WASTE

- GENERAL: EXCEPT FOR ITEMS OR MATERIALS TO BE SALVAGED, RECYCLED OR OTHERWISE REUSED, REMOVE WASTE MATERIALS FROM PROJECT SITE AND LEGALLY DISPOSE OF THEM IN A LANDFILL OR OTHER PERMITTED DISPOSAL FACILITY.
 - 1.1. EXCEPT AS OTHERWISE SPECIFIED, DO NOT ALLOW WASTE MATERIALS THAT ARE TO BE DISPOSAL OF TO ACCUMULATE ON-SITE.
 - 1.2. REMOVE AND TRANSPORT DEBRIS IN A MANNER THAT WILL PREVENT SPILLAGE ON ADJACENT SURFACES AND AREAS.
- BURNING: DO NOT BURN WASTE MATERIALS.
- DISPOSAL: TRANSPORT WASTE MATERIALS OFF THE OWNER'S PROPERTY AND LEGALLY DISPOSE OF THEM.



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ENGINEER: _____
REG. No: _____
DATE: _____
DRAWN BY: _____ DATE: 10/20/2023
DESIGNED BY: _____ SCALE: N/A
CHECKED BY: _____
FIELD BOOK: _____

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	REV'D	DESCRIPTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
GENERAL NOTES

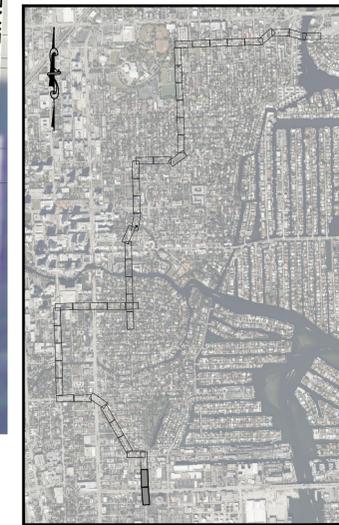
SHEET NO. **G06**
TOTAL: 38
CAD FILE: G06.dwg
DRAWING FILE NO. 0-000-00

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101 NE THIRD AVE, SUITE 550
FORT LAUDERDALE, FLORIDA 33301

ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 1988)



INDEX MAP
SCALE: NTS

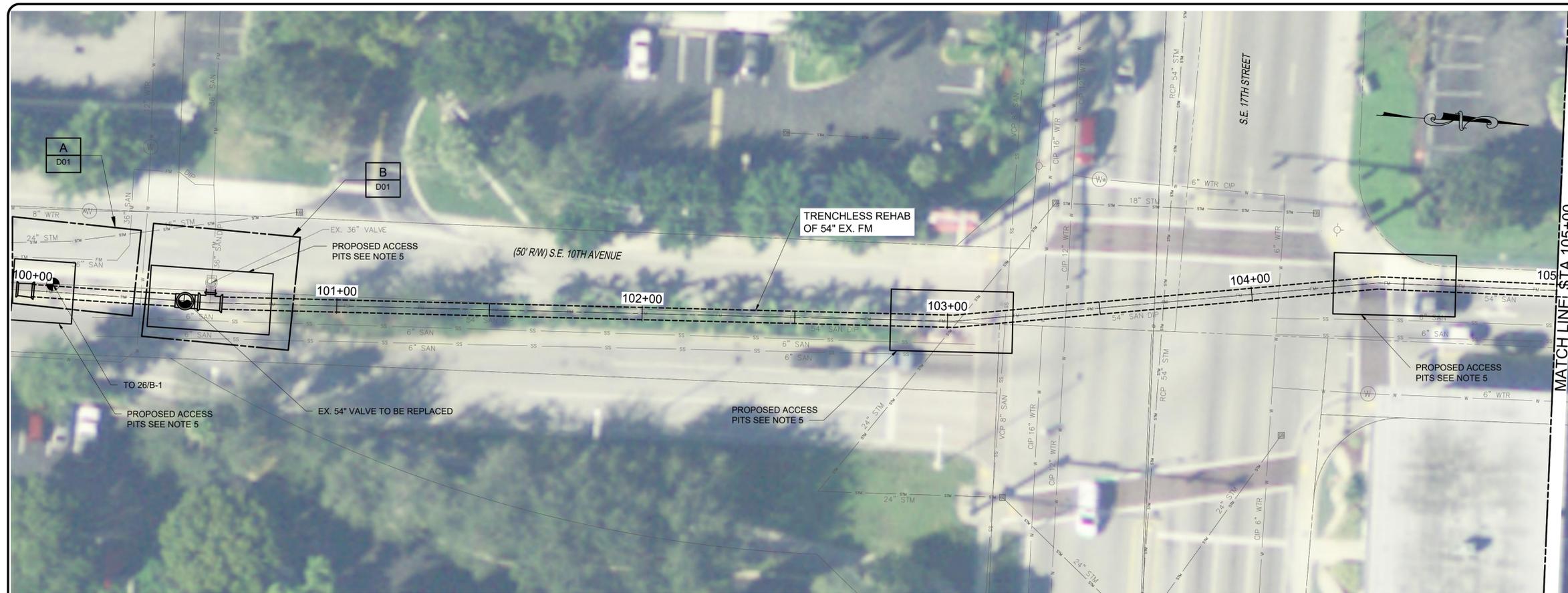
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6. RESTORE ACCESS PIT AS REQUIRED BASED DETAILS ON SHEET D03 AND ROAD OWNERSHIP.

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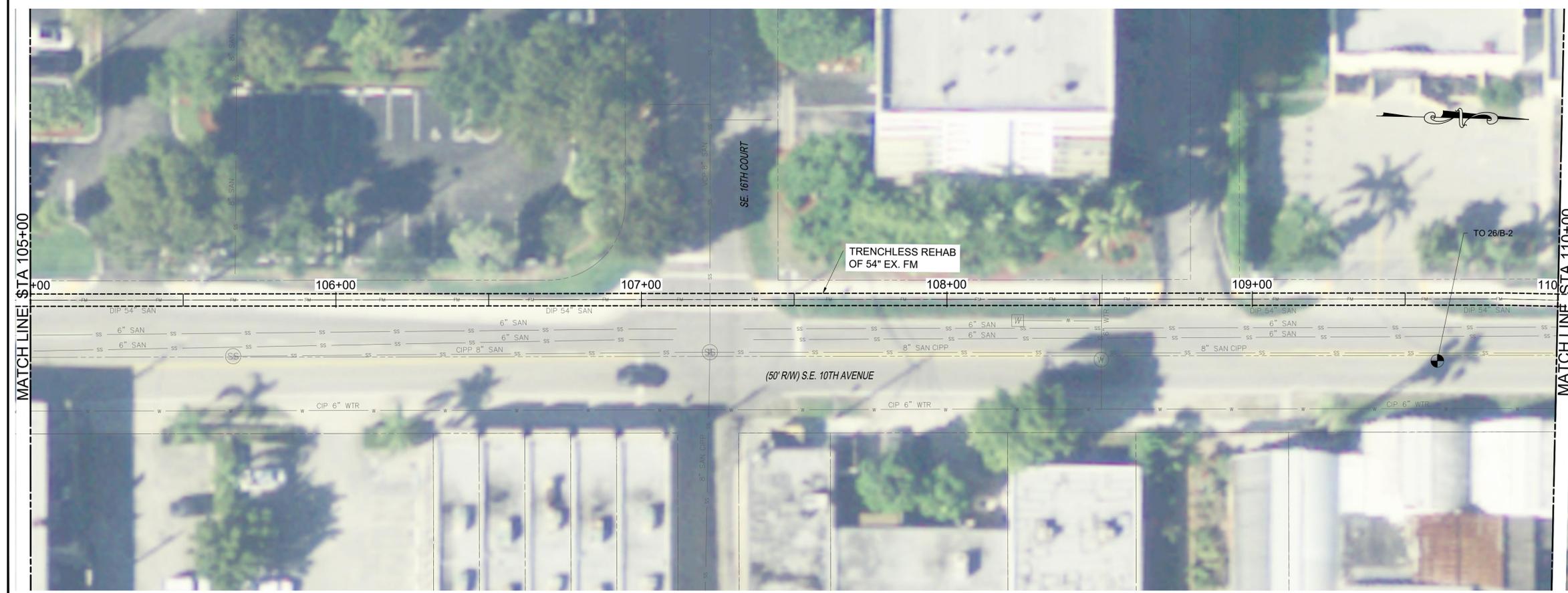
PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 100+00 TO 110+00

SHEET NO.	C01
TOTAL:	38
CAD FILE:	C01.dwg
DRAWING FILE NO.	0-000-00



PLAN
SCALE: 1=20'

SCALE: 1" = 20'



PLAN
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SCALE: 1" = 20'



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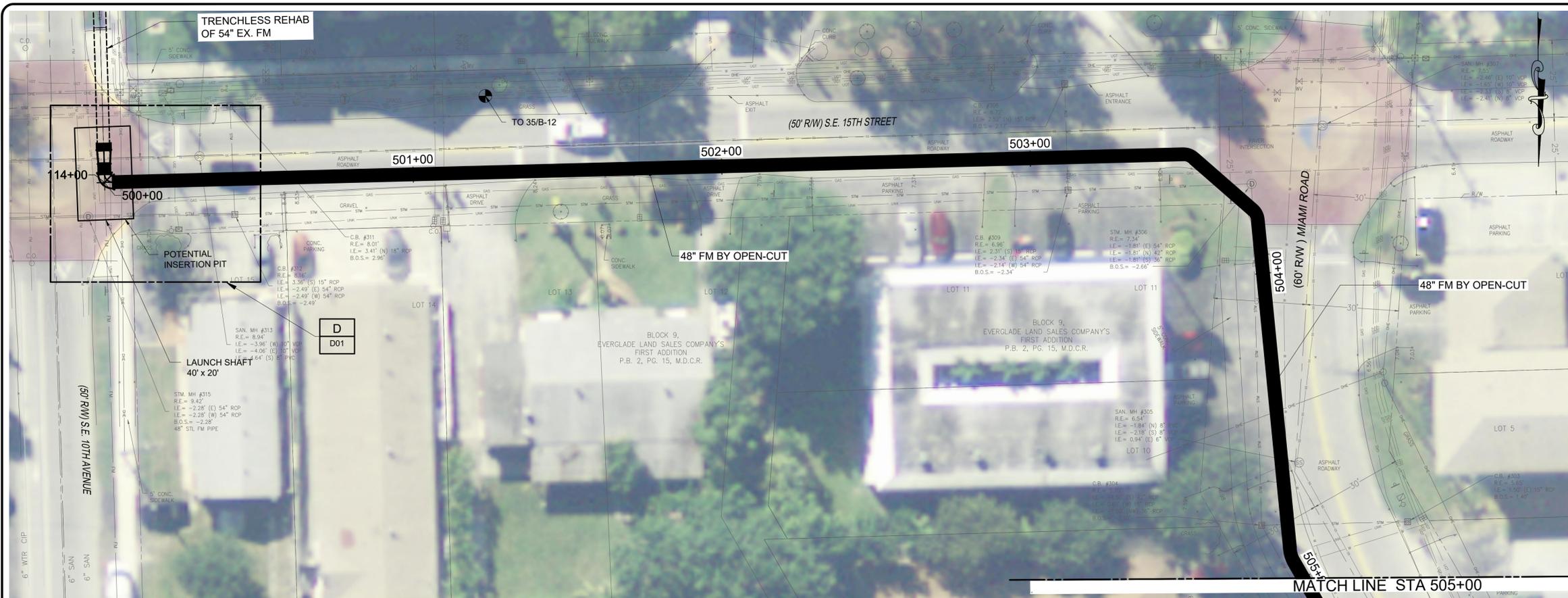
PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 110+00 TO 114+00

SHEET NO.
C02

TOTAL: 38

CAD FILE: C02.dwg

DRAWING FILE NO.
0-000-00



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SCALE: 1" = 20'



PLAN
SCALE: 1"=20'

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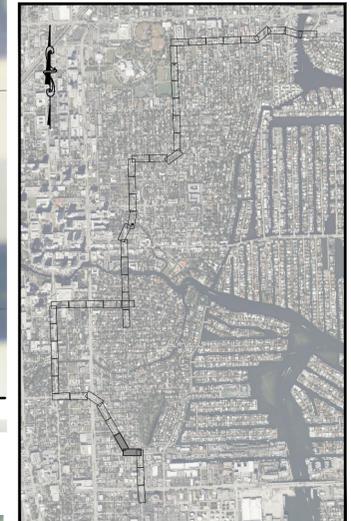
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ENGINEER:	DATE:	10/20/2023
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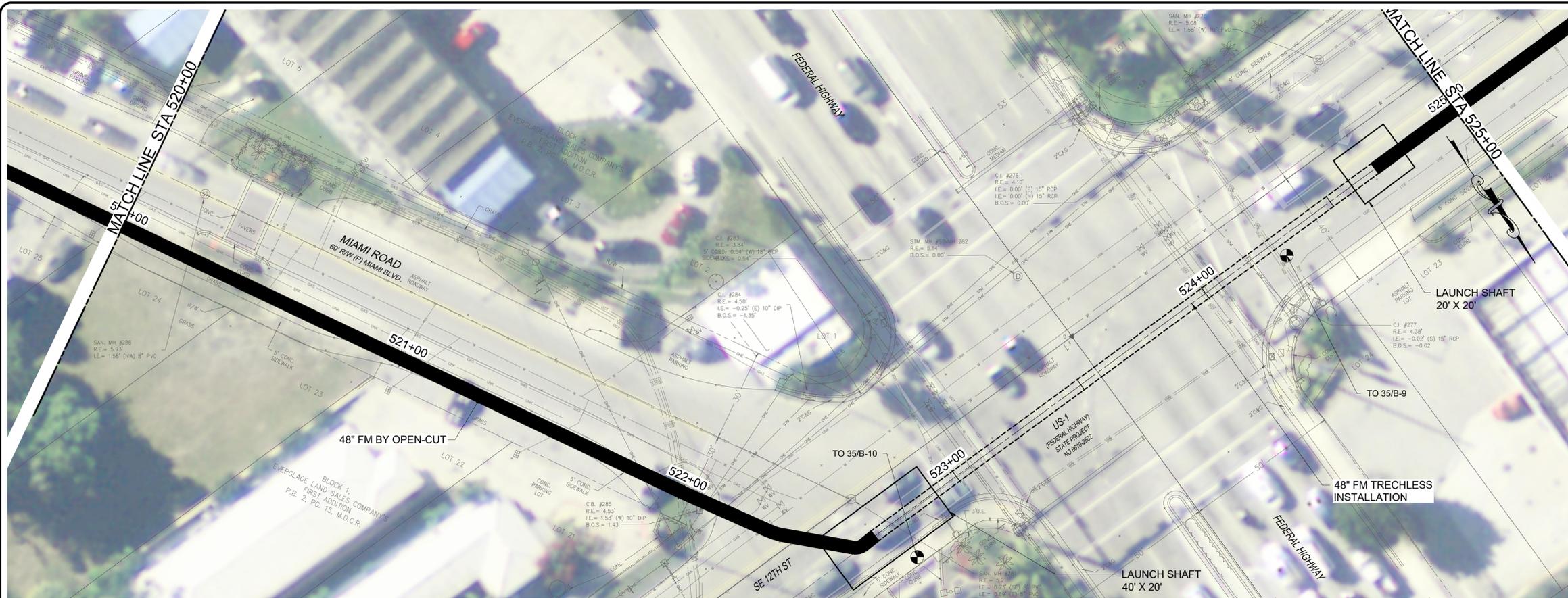
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PROJECT # 12799
DESIGN CRITERIA PACKAGE
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SE 9TH AVE AND 10TH AVE TO GTL
STA 500+00 TO 510+00

SHEET NO.	C03
TOTAL:	38
CAD FILE:	C03.dwg
DRAWING FILE NO.	0-000-00



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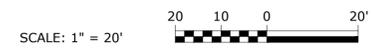


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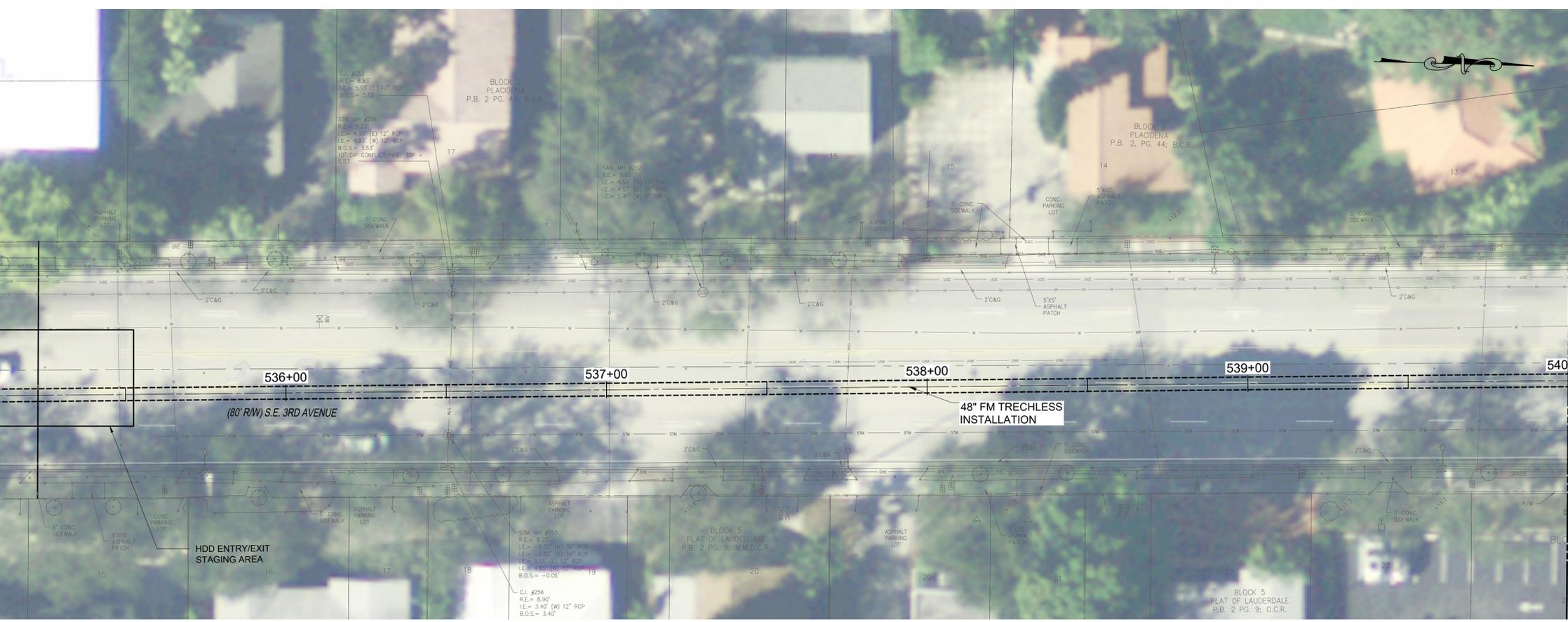
PROJECT # 12799
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REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 520+00 TO 530+00

SHEET NO.
C05

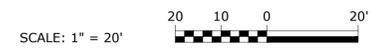
TOTAL: 38
CAD FILE: C05.dwg
DRAWING FILE NO. 0-000-00



PLAN
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SE 9TH AVE AND 10TH AVE TO GTL
STA 530+00 TO 540+00

SHEET NO.
C06
TOTAL: 38
CAD FILE: C06.dwg
DRAWING FILE NO. 0-000-00

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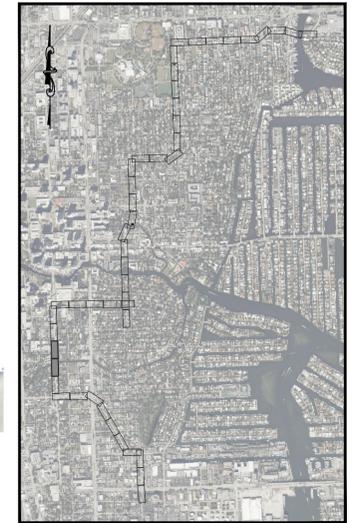
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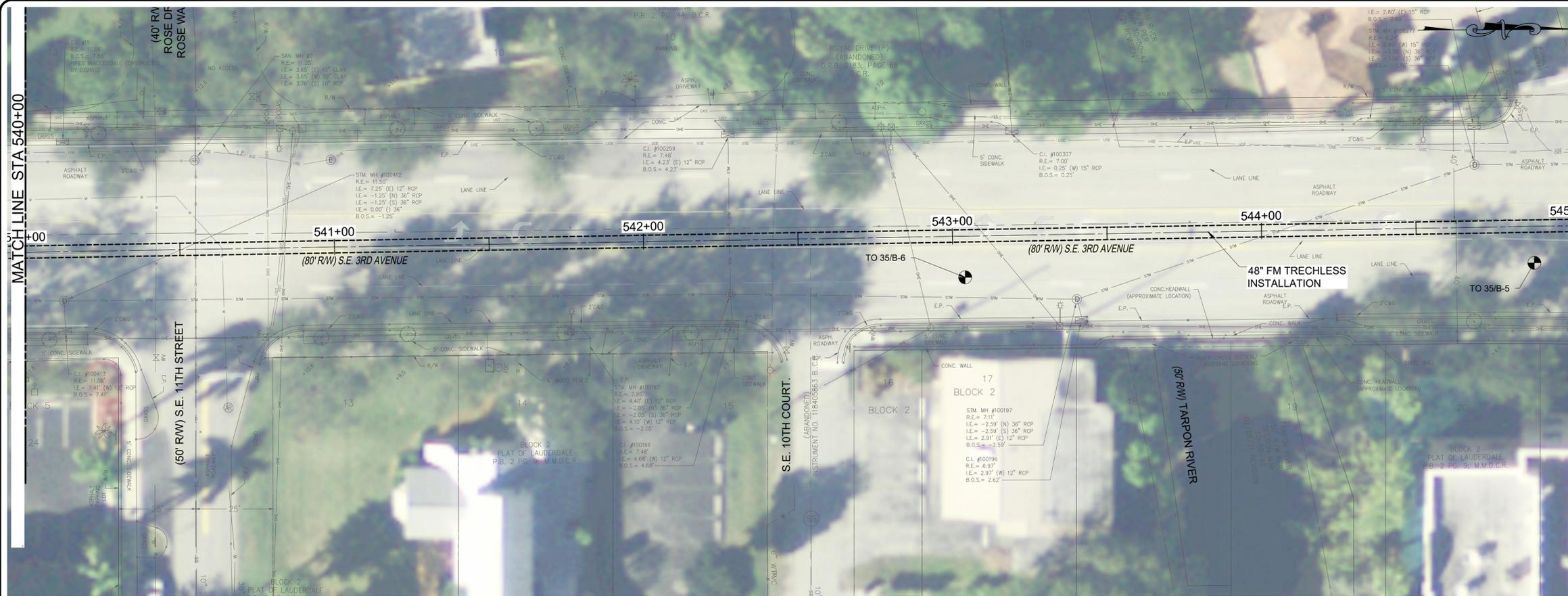
ELEVATIONS SHOWN HEREON ARE
BASED ON THE NORTH AMERICAN
VERTICAL DATUM 1988 (NAVD 1988)



INDEX MAP
SCALE: NTS

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6. RESTORE ACCESS PIT AS REQUIRED BASED DETAILS ON SHEET D03 AND ROAD OWNERSHIP.



PLAN
SCALE: 1"=20'

SCALE: 1" = 20'



PLAN
SCALE: 1"=20'

SCALE: 1" = 20'



PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 540+00 TO 550+00

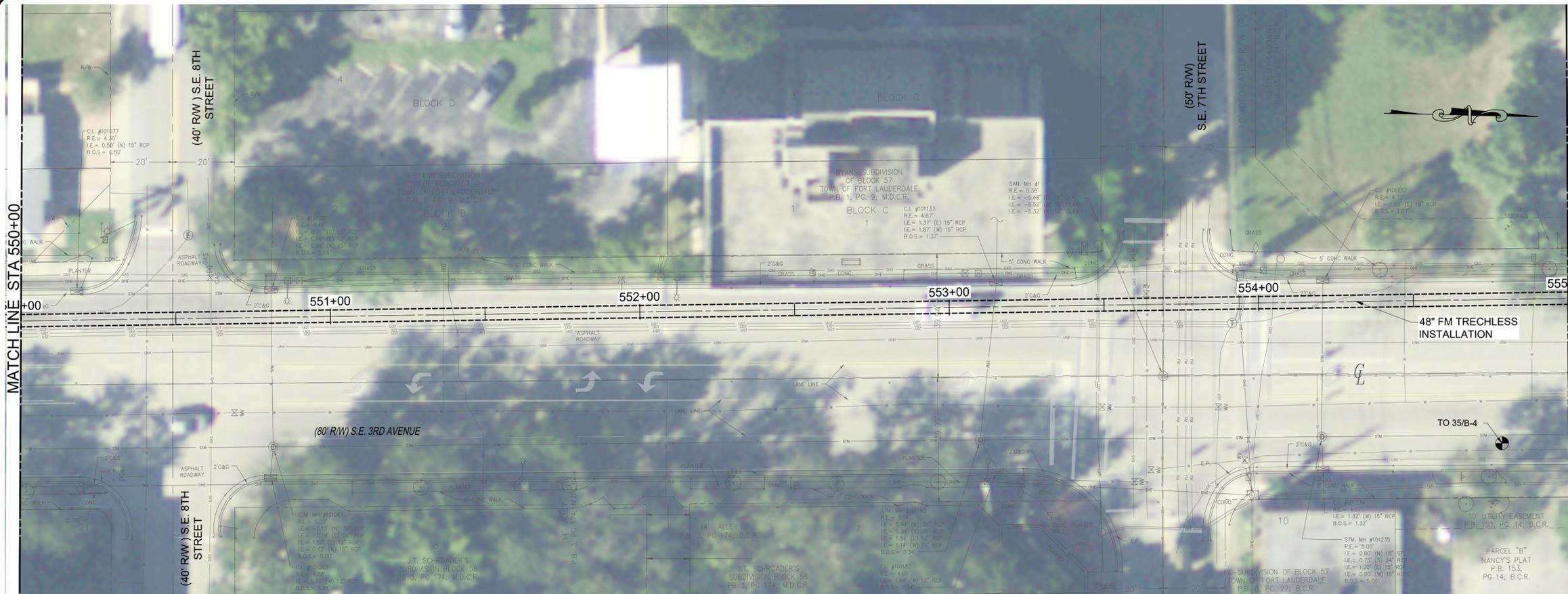
SHEET NO.	C07
TOTAL:	38
CAD FILE:	C07.dwg
DRAWING FILE NO.	0-000-00

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE

100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	CHK'D	DESCRIPTION

ENGINEER:	
REG. NO.:	
DATE:	
DRAWN BY:	
DESIGNED BY:	
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FIELD BOOK:	



PLAN
SCALE: 1:20

SCALE: 1" = 20'



Hazen

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PLAN
SCALE: 1:20

SCALE: 1" = 20'



ENGINEER:	REG. No.:	DATE:	TEL. FAX:
DRAWN BY:	DATE: 10/20/2023	DESIGNED BY:	SCALE: 1:20
CHECKED BY:		CHECKED BY:	FIELD BOOK:

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100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	REVISIONS	BY	DATE	DESCRIPTION

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 550+00 TO 560+00

SHEET NO.	C08
TOTAL:	38
CAD FILE:	C08.dwg
DRAWING FILE NO.	0-000-00

Hazen

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PRELIMINARY - NOT FOR CONSTRUCTION

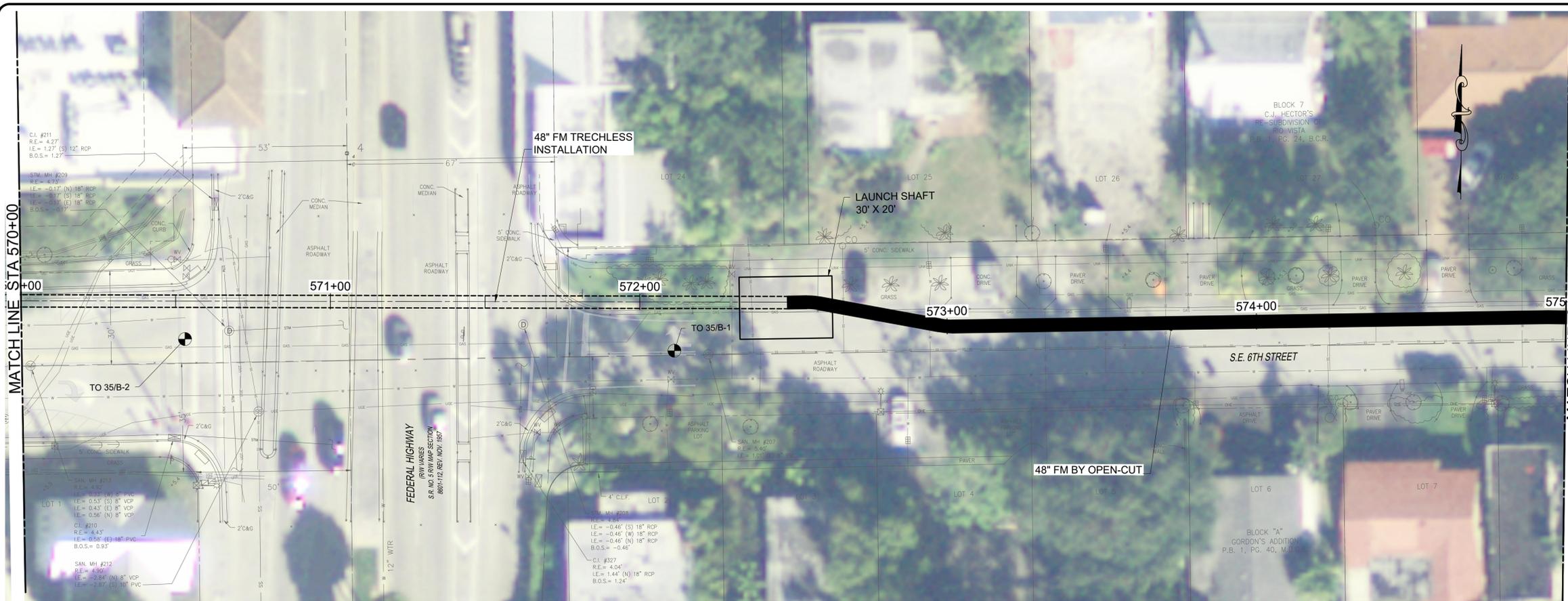
PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 570+00 TO 580+00

SHEET NO.	C10
TOTAL:	38
CAD FILE:	C10.dwg
DRAWING FILE NO.	0-000-00

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ENGINEERING & ARCHITECTURE

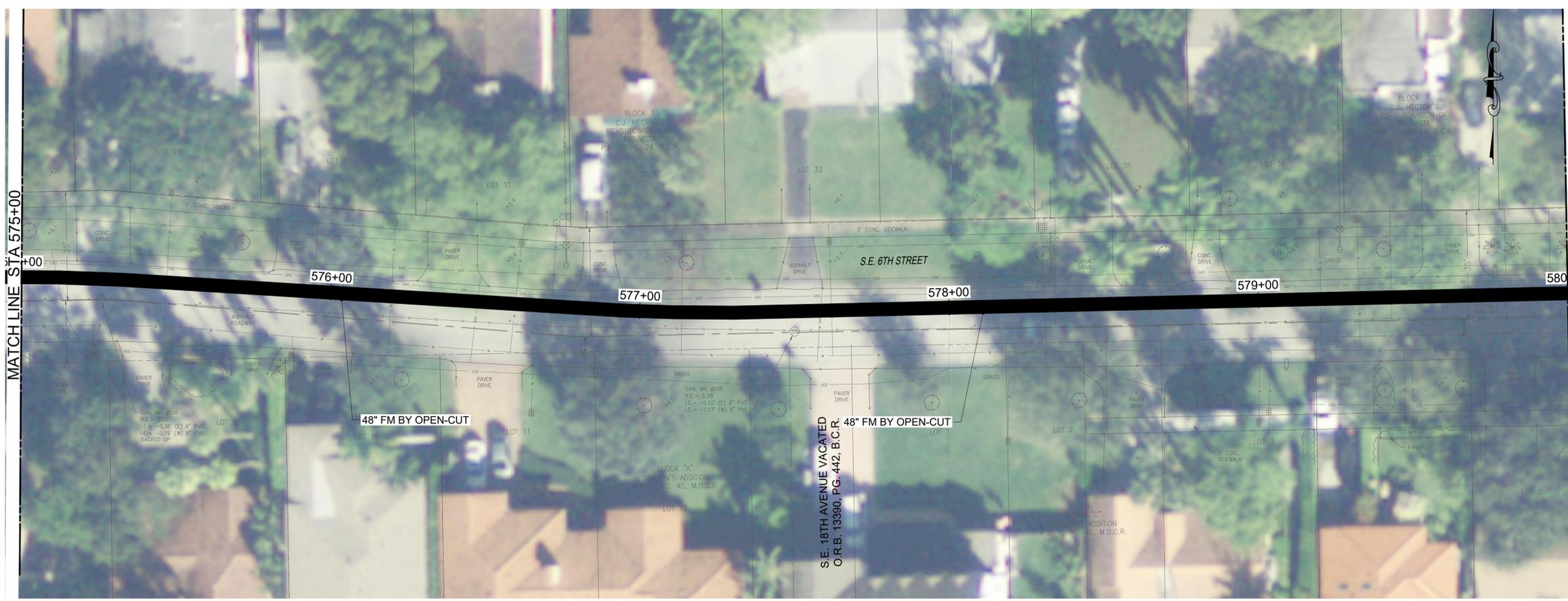
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

ENGINEER:	DATE: 10/20/2023
REG. NO.:	SCALE: 1:20
DATE:	CHECKED BY:
FIELD BOOK:	



PLAN
SCALE: 1:20

SCALE: 1" = 20'



PLAN
SCALE: 1:20

SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'



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PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 580+00 TO 581+23

SHEET NO.	C11
TOTAL:	38
CAD FILE:	C11.dwg
DRAWING FILE NO.	0-000-00

NO.	DATE	BY	REV'D	DESCRIPTION

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DATE:	
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CHECKED BY:	
FIELD BOOK:	

DATE: **10/20/2023**
SCALE: **1" = 20'**



PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'

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SCALE: NTS

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PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'

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DATE:

DATE: 10/20/2023
DRAWN BY:
DESIGNED BY: SCALE: 1" = 20'
CHECKED BY:
FIELD BOOK:

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ENGINEERING & ARCHITECTURE

100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	DESCRIPTION

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 200+00 TO 210+00

SHEET NO.
C12
TOTAL: 38
CAD FILE: C12.dwg
DRAWING FILE NO. 0-000-00

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PRELIMINARY - NOT FOR CONSTRUCTION

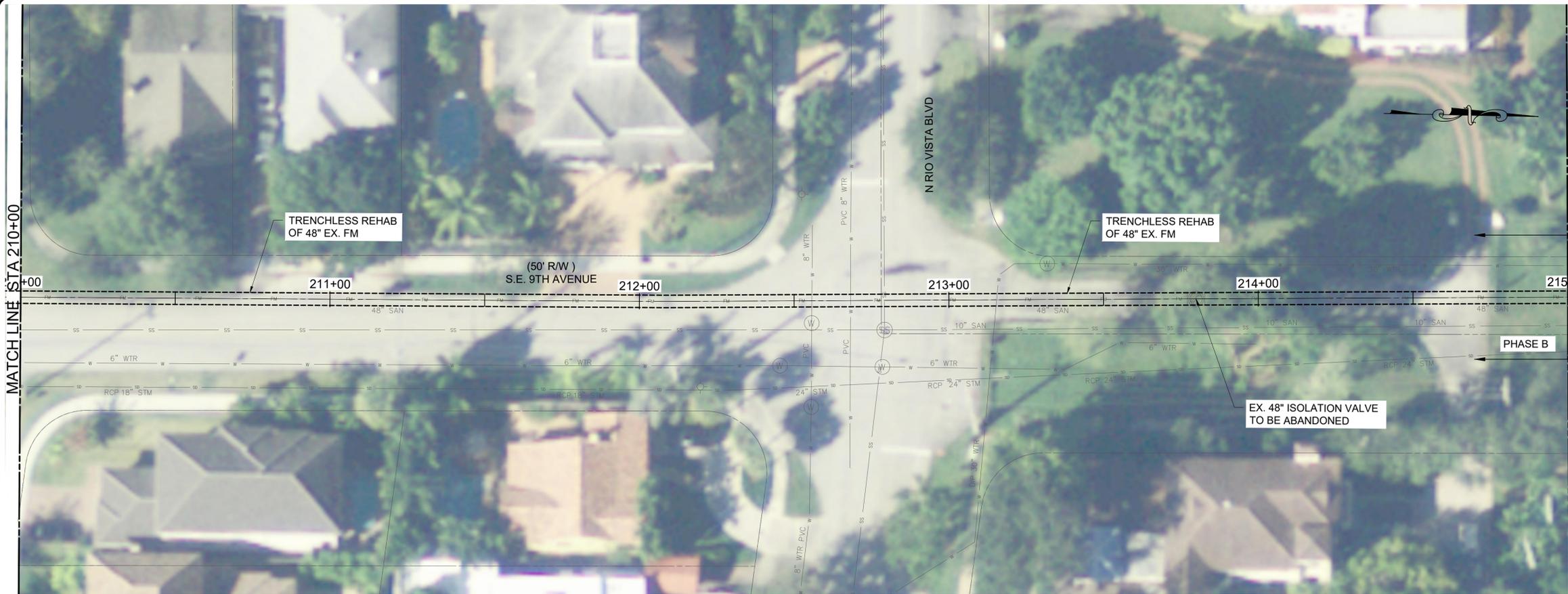
PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 210+00 TO 220+00

SHEET NO.	C13
TOTAL:	38
CAD FILE:	C13.dwg
DRAWING FILE NO.	0-000-00

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
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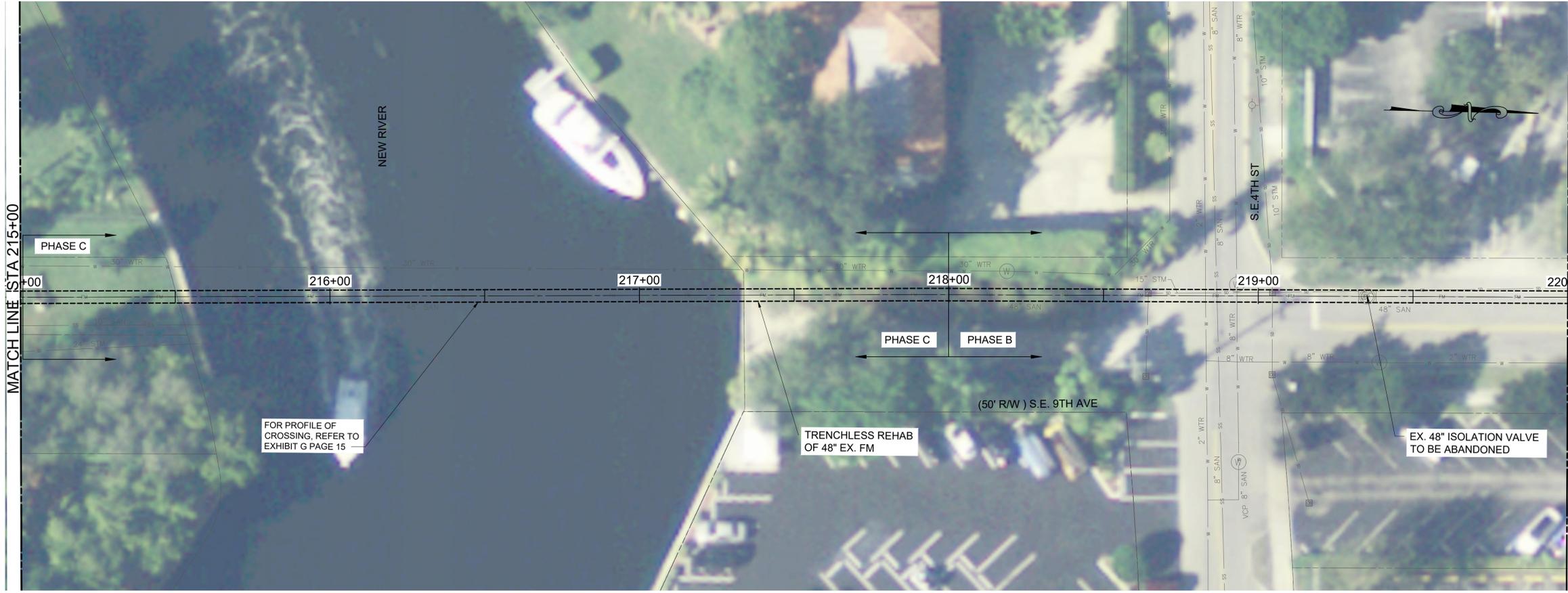
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

ENGINEER:	
REG. No.:	
DATE:	
DRAWN BY:	10/20/2023
DESIGNED BY:	SCALE: 1" = 20'
CHECKED BY:	
FIELD BOOK:	



PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'

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PLAN
SCALE: 1" = 20'

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 220+00 TO 230+00

SHEET NO.	C14
TOTAL:	38
CAD FILE:	C14.dwg
DRAWING FILE NO.	0-000-00

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE

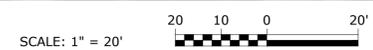
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

ENGINEER:	DATE:	REG. NO.:	SCALE:
	10/20/2023		1" = 20'
DRAWN BY:	DESIGNED BY:	CHECKED BY:	FIELD BOOK:

Hazen
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101 NE THIRD AVE, SUITE 550
FORT LAUDERDALE, FLORIDA 33301



PLAN
SCALE: 1"=20'



PLAN
SCALE: 1"=20'



Hazen

HAZEN AND SAWYER
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FORT LAUDERDALE, FLORIDA 33301

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7. EX. 16" ISOLATION VALVE HAS BEEN CLOSED AND ENCASED IN CONCRETE. CONTRACTOR SHALL LOCATE, EXCAVATE, REMOVE CONCRETE AND OPEN VALVE.

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 230+00 TO 240+00

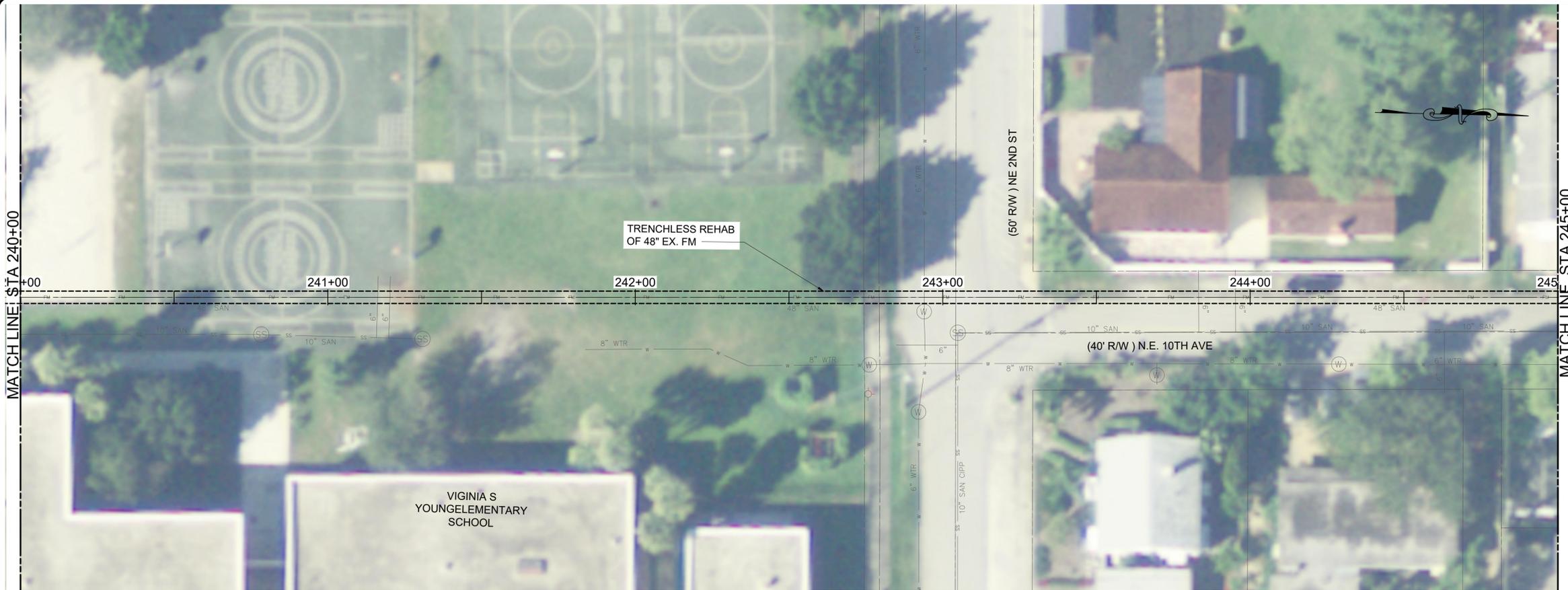
SHEET NO.	C15
TOTAL:	38
CAD FILE:	C15.dwg
DRAWING FILE NO.	0-000-00

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100 North Andrews Avenue, Fort Lauderdale, Florida 33301

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REG. No.:	
DATE:	
DRAWN BY:	10/20/2023
DESIGNED BY:	SCALE: 1"=20'
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FIELD BOOK:	

NO.	DATE	BY	REV'D	DESCRIPTION



PLAN
SCALE: 1" = 20'



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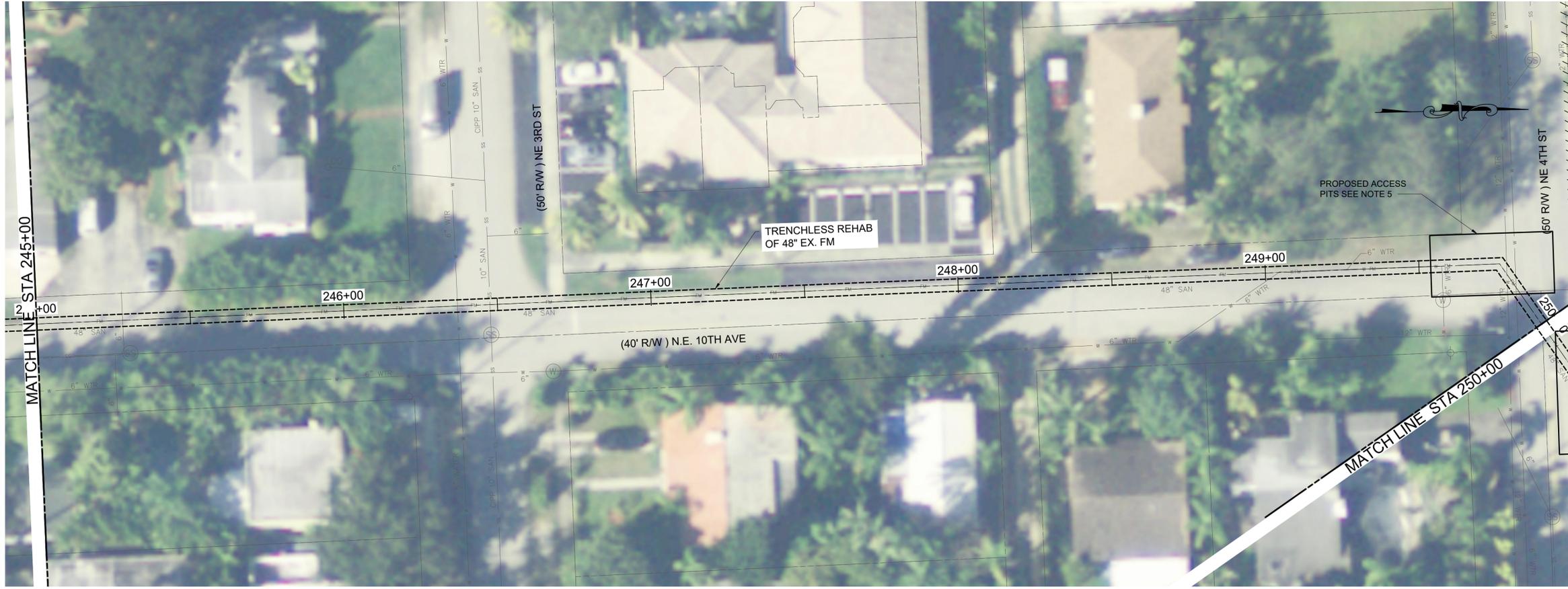
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PLAN
SCALE: 1" = 20'



PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 240+00 TO 250+00

SHEET NO.	C16
TOTAL:	38
CAD FILE:	C16.dwg
DRAWING FILE NO.	0-000-00

NO.	DATE	BY	REV'D	DESCRIPTION

CITY OF FORT LAUDERDALE
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ENGINEERING & ARCHITECTURE

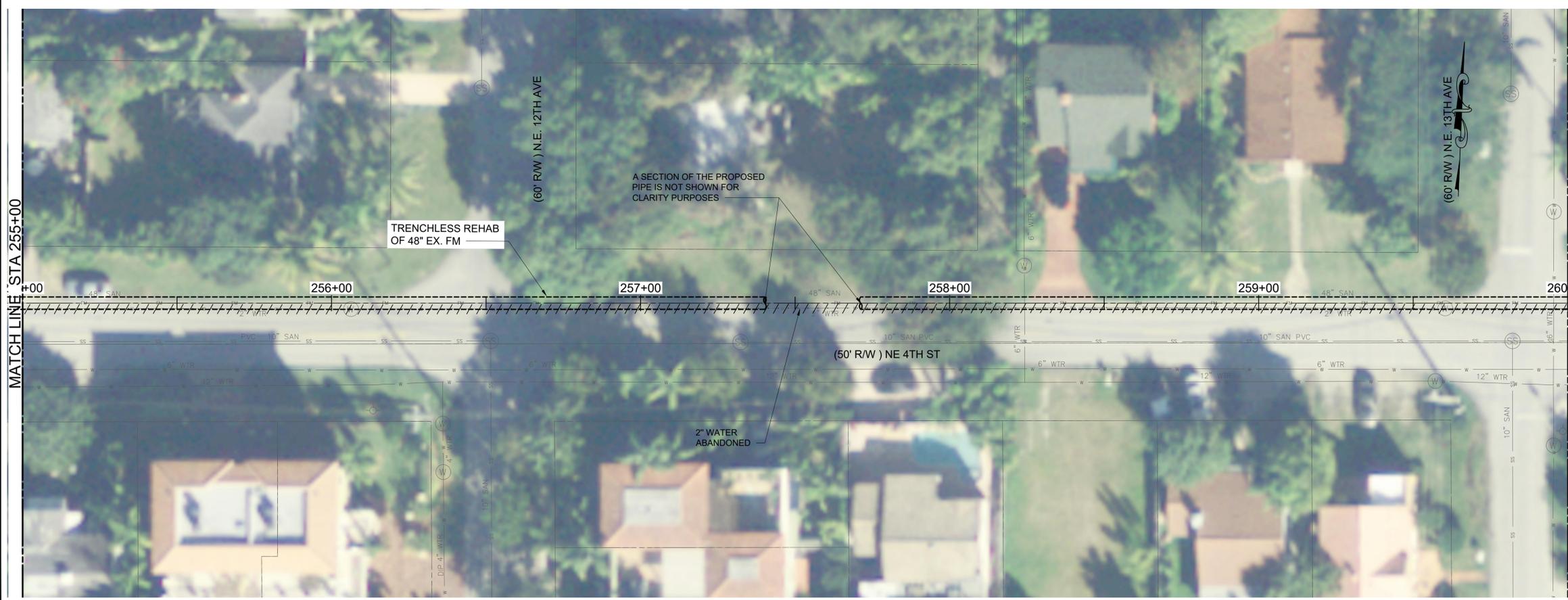
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

ENGINEER:
REG. No.
DATE:
DRAWN BY: 10/20/2023
DESIGNED BY: SCALE: 1" = 20'
CHECKED BY:
FIELD BOOK:

TEL: FAX:



PLAN
SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'



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PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 250+00 TO 260+00

SHEET NO.	
C17	
TOTAL:	38
CAD FILE:	C17.dwg
DRAWING FILE NO.	0-000-00

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ENGINEER:	DATE:	10/20/2023
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DATE:	CHECKED BY:	FIELD BOOK:

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PLAN
SCALE: 1" = 20'



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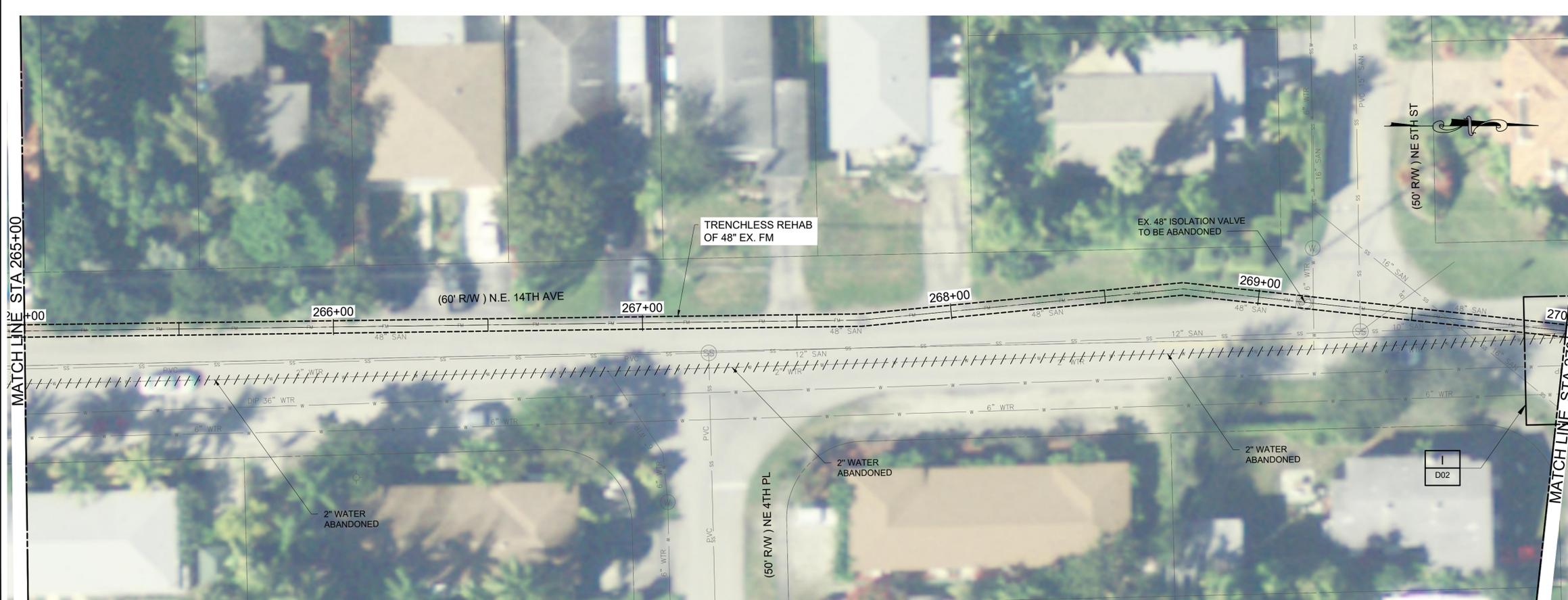
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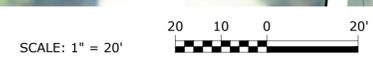


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PLAN
SCALE: 1" = 20'



PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 260+00 TO 270+00

SHEET NO.	C18
TOTAL:	38
CAD FILE:	C18.dwg
DRAWING FILE NO.	0-000-00

NO.	DATE	BY	REV'D	DESCRIPTION

CITY OF FORT LAUDERDALE
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ENGINEER: _____
REG. No: _____
DATE: _____
TEL: _____
FAX: _____

DATE: 10/20/2023
SCALE: 1" = 20'
DRAWN BY: _____
DESIGNED BY: _____
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INDEX MAP
SCALE: NTS

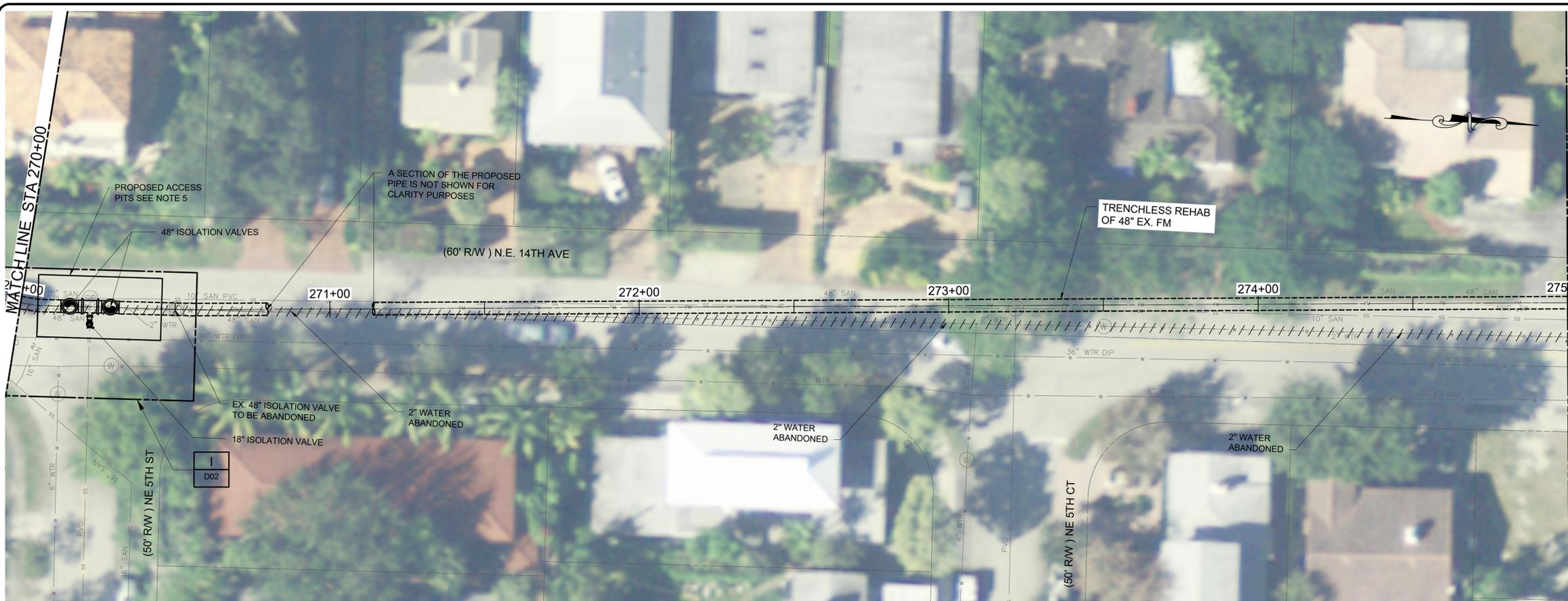
NOTES:

1. LOCATION AND ELEVATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS SHALL BE CONSIDERED APPROXIMATE AND SHOULD BE VERIFIED BY THE DBF PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
2. STATIONING IS ALONG THE CENTER OF PIPE.
3. ALL ASPHALT/ CONCRETE SHALL BE SAW CUT TO ENSURE CLEAN EDGES.
4. REFER TO SHEETS C26 - C32 FOR PAVEMENT RESTORATION PLAN.
5. ACCESS PIT LOCATIONS AND SIZES ARE APPROXIMATE BASED ON THE PROPOSED REHABILITATION METHODS LISTED IN THE DCP, AND THE AVAILABLE INFORMATION. DBF SHALL BE RESPONSIBLE FOR THE FINAL ACCESS PIT DESIGNS.
6. RESTORE ACCESS PIT AS REQUIRED BASED DETAILS ON SHEET D03 AND ROAD OWNERSHIP.

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 270+00 TO 280+00

SHEET NO.	C19
TOTAL:	38
CAD FILE:	C19.dwg
DRAWING FILE NO.	0-000-00



PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'



ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 1988)



INDEX MAP
SCALE: NTS

NOTES:

1. LOCATION AND ELEVATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS SHALL BE CONSIDERED APPROXIMATE AND SHOULD BE VERIFIED BY THE DBF PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
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6. RESTORE ACCESS PIT AS REQUIRED BASED DETAILS ON SHEET D03 AND ROAD OWNERSHIP.

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 280+00 TO 290+00

SHEET NO.	C20
TOTAL:	38
CAD FILE:	C20.dwg
DRAWING FILE NO.	0-000-00

NO.	DATE	BY	REV'D	DESCRIPTION

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE

100 North Andrews Avenue, Fort Lauderdale, Florida 33301

ENGINEER: _____
REG. No: _____
DATE: _____
DRAWN BY: _____
DESIGNED BY: _____
CHECKED BY: _____
FIELD BOOK: _____



PLAN
SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'



Hazen

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ELEVATIONS SHOWN HEREON ARE
BASED ON THE NORTH AMERICAN
VERTICAL DATUM 1988 (NAVD 1988)



INDEX MAP
SCALE: NTS

NOTES:

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PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 290+00 TO 300+00

SHEET NO.	C21
TOTAL:	38
CAD FILE:	C21.dwg
DRAWING FILE NO.	0-000-00

NO.	DATE	BY	REV'D	DESCRIPTION

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE

100 North Andrews Avenue, Fort Lauderdale, Florida 33301

ENGINEER:	
REG. No.:	
DATE:	
DESIGNED BY:	
CHECKED BY:	
FIELD BOOK:	

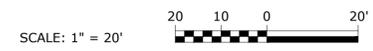
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SCALE:	1" = 20'

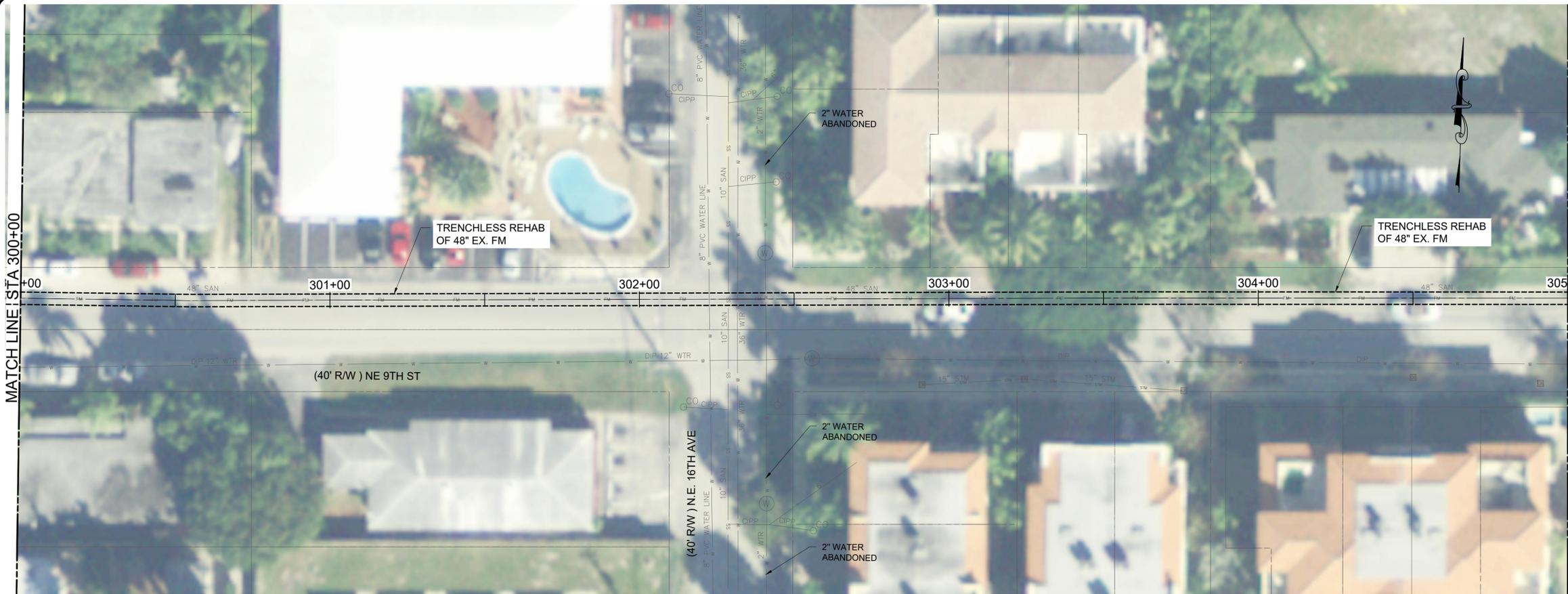


PLAN
SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'





PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'



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VERTICAL DATUM 1988 (NAVD 1988)



INDEX MAP
SCALE: NTS

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6. RESTORE ACCESS PIT AS REQUIRED BASED DETAILS ON SHEET D03 AND ROAD OWNERSHIP.

PRELIMINARY - NOT FOR CONSTRUCTION

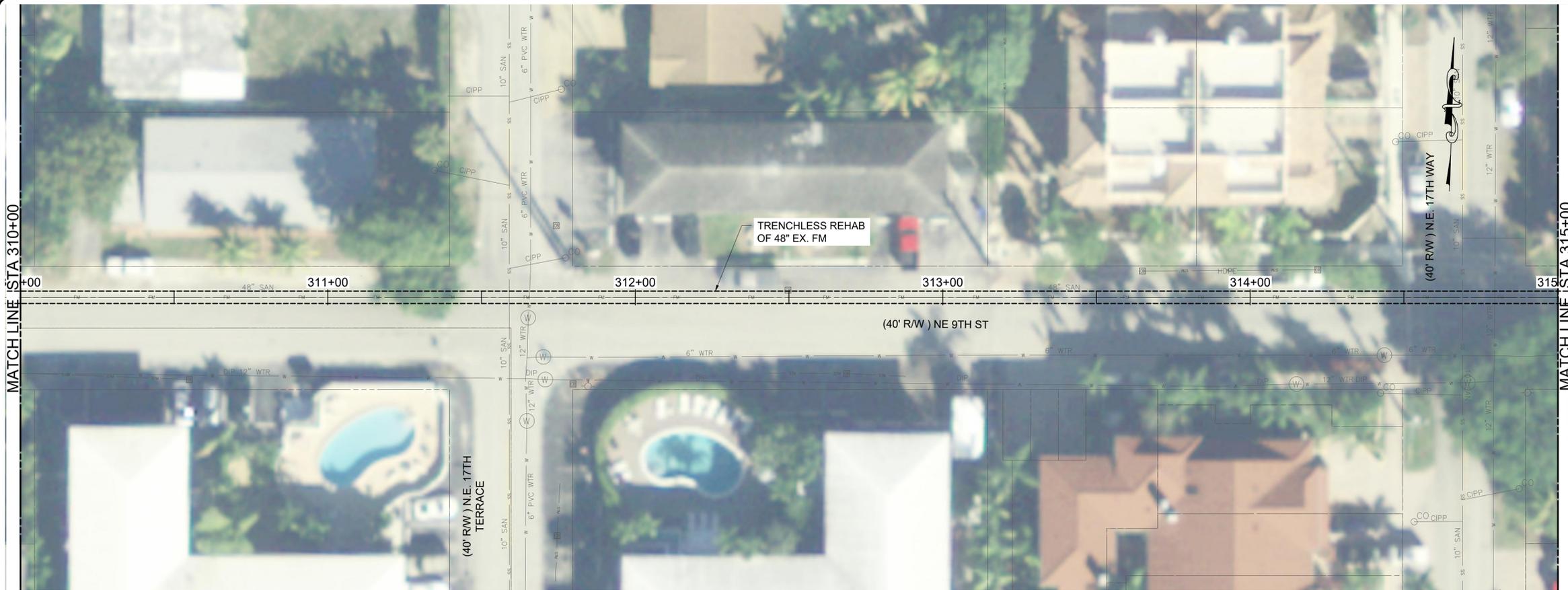
PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 300+00 TO 310+00

SHEET NO.	C22
TOTAL:	38
CAD FILE:	C22.dwg
DRAWING FILE NO.	0-000-00

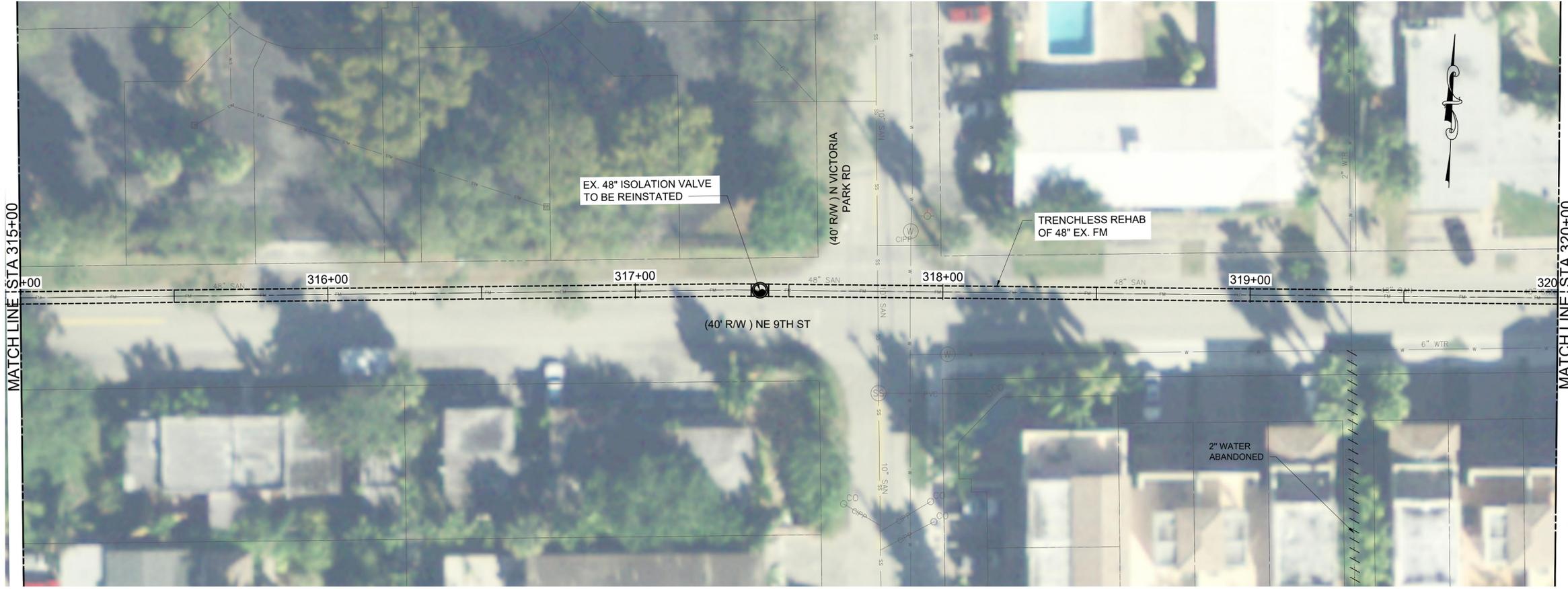
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	REV'D	DESCRIPTION

ENGINEER:	
REG. No.	
DATE:	
DRAWN BY:	10/20/2023
DESIGNED BY:	SCALE: 1" = 20'
CHECKED BY:	
FIELD BOOK:	



PLAN
SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'



Hazen

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FORT LAUDERDALE, FLORIDA 33301

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ELEVATIONS SHOWN HEREON ARE
BASED ON THE NORTH AMERICAN
VERTICAL DATUM 1988 (NAVD 1988)



INDEX MAP
SCALE: NTS

- NOTES:**
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 6. RESTORE ACCESS PIT AS REQUIRED BASED DETAILS ON SHEET D03 AND ROAD OWNERSHIP.

ENGINEER:
REG. No.
DATE:

DRAWN BY: 10/20/2023
DESIGNED BY: SCALE: 1" = 20'
CHECKED BY:
FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE

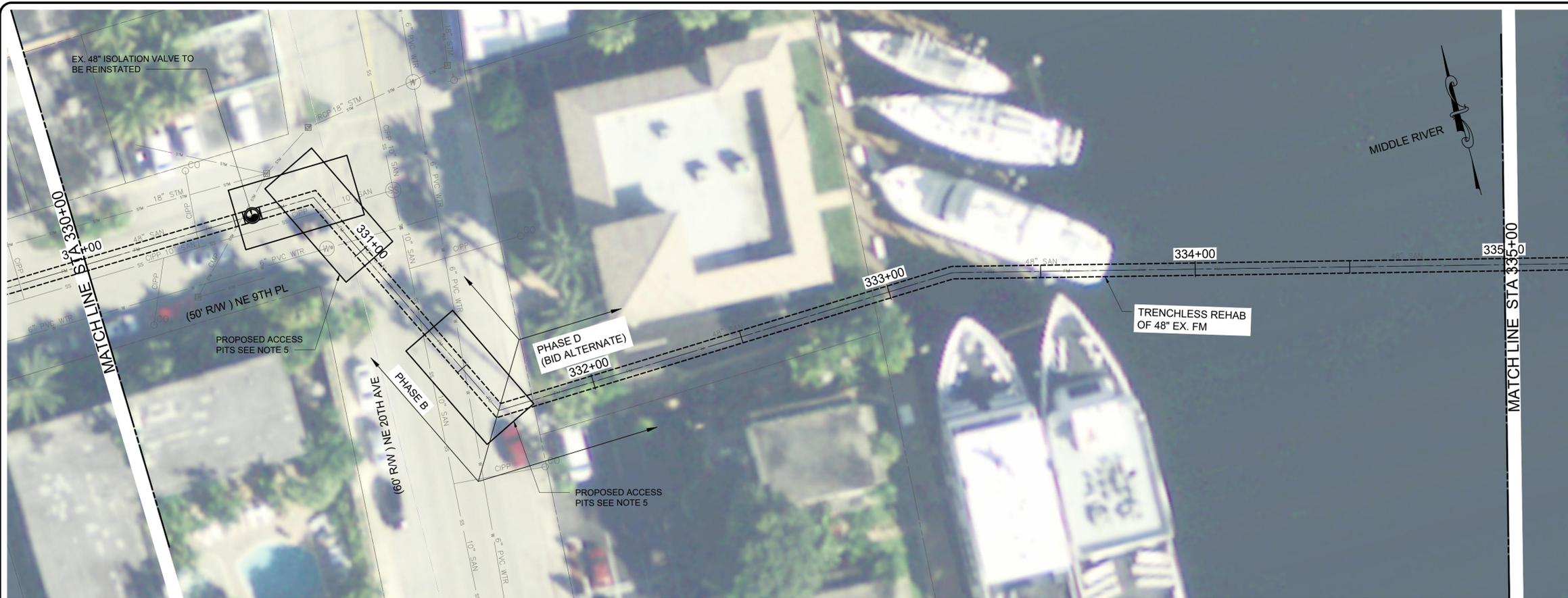
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	REV'D	DESCRIPTION

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 310+00 TO 320+00

SHEET NO.
C23
TOTAL: 38
CAD FILE: C23.dwg
DRAWING FILE NO. 0-000-00



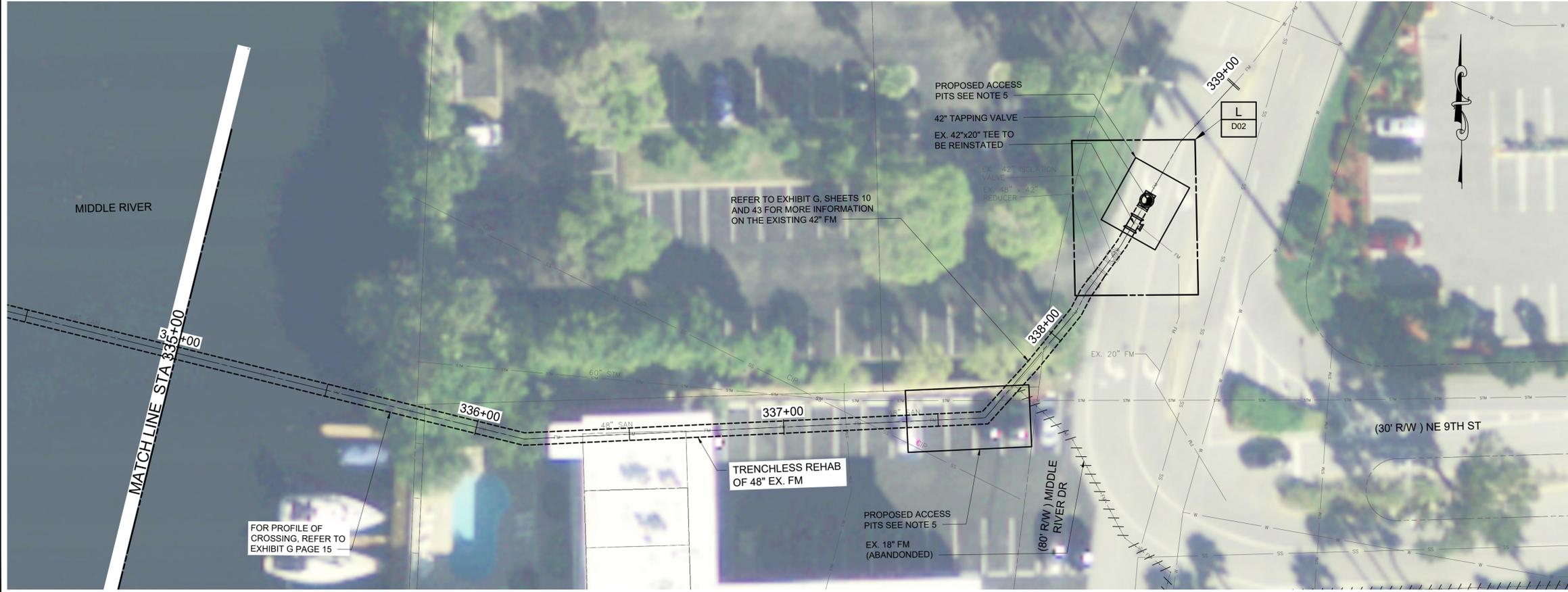
PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'

ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 1988)



INDEX MAP
SCALE: NTS



PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'

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PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 330+00 TO 338+36

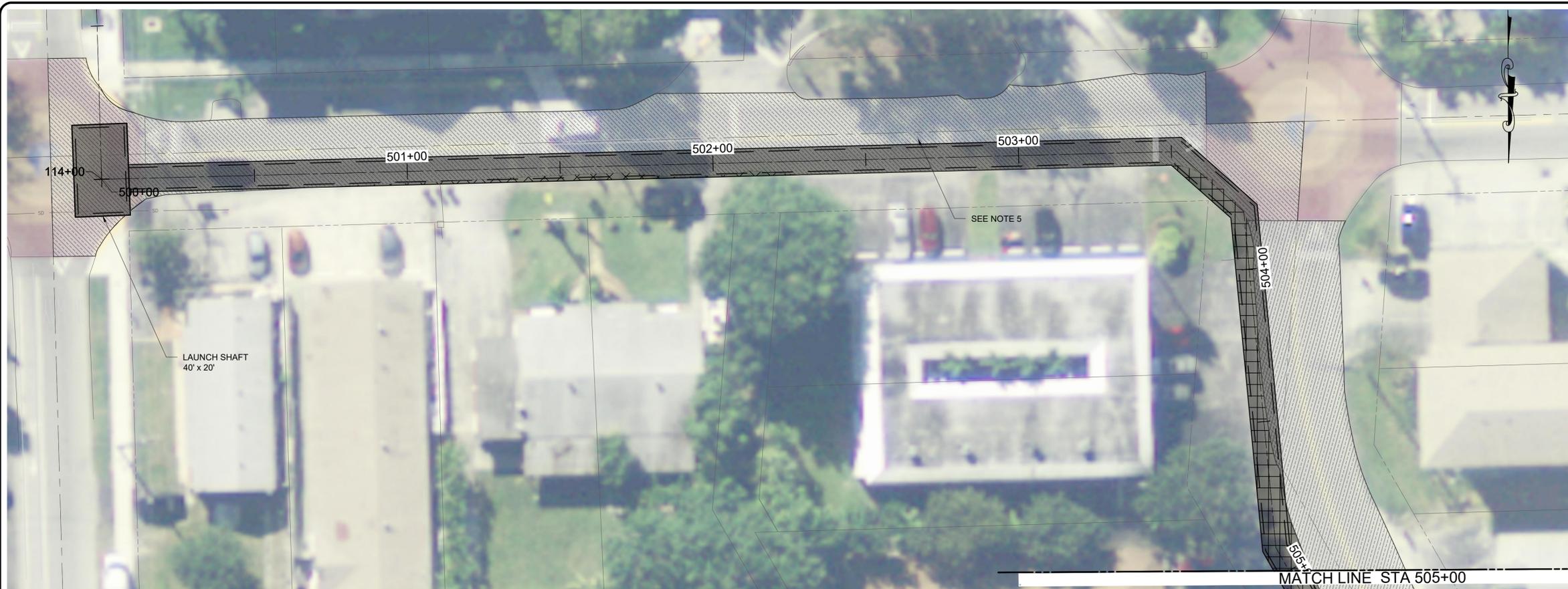
SHEET NO.	
C25	
TOTAL:	38
CAD FILE:	C25.dwg
DRAWING FILE NO.	0-000-00

Hazen
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FORT LAUDERDALE, FLORIDA 33301

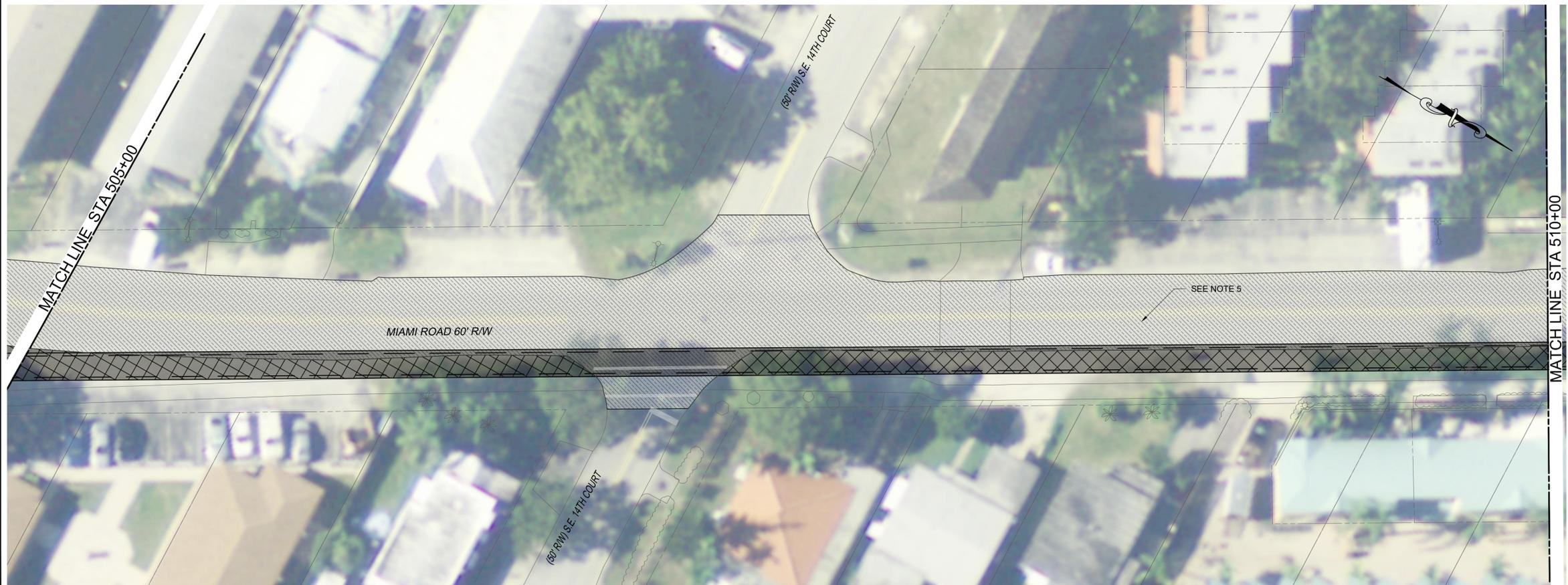
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ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

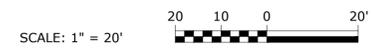
NO.	DATE	BY	REV'D	DESCRIPTION



PLAN
SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'



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ELEVATIONS SHOWN HEREON ARE
BASED ON THE NORTH AMERICAN
VERTICAL DATUM 1988 (NAVD 1988)



INDEX MAP
SCALE: NTS

- NOTES:**
1. UTILITIES ARE NOT SHOWN FOR CLARITY.
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LEGEND:

	PAVEMENT RESTORATION TYPE "A"
	PAVEMENT RESTORATION TYPE "B"
	RESTORE PRIVATE PROPERTY IN-KIND

ENGINEER:
REG. No.
DATE:

DRAWN BY: 10/20/2023
DESIGNED BY: SCALE: 1" = 20'
CHECKED BY:
FIELD BOOK:

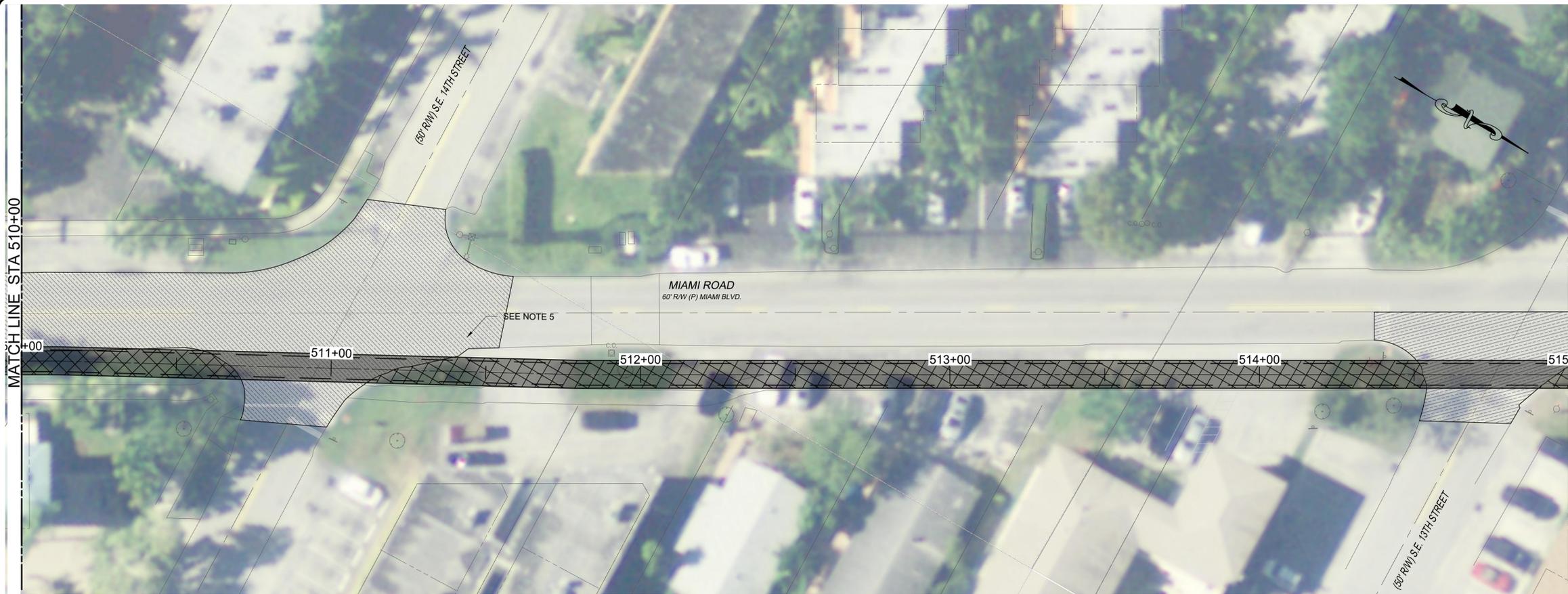
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	REV'D	DESCRIPTION

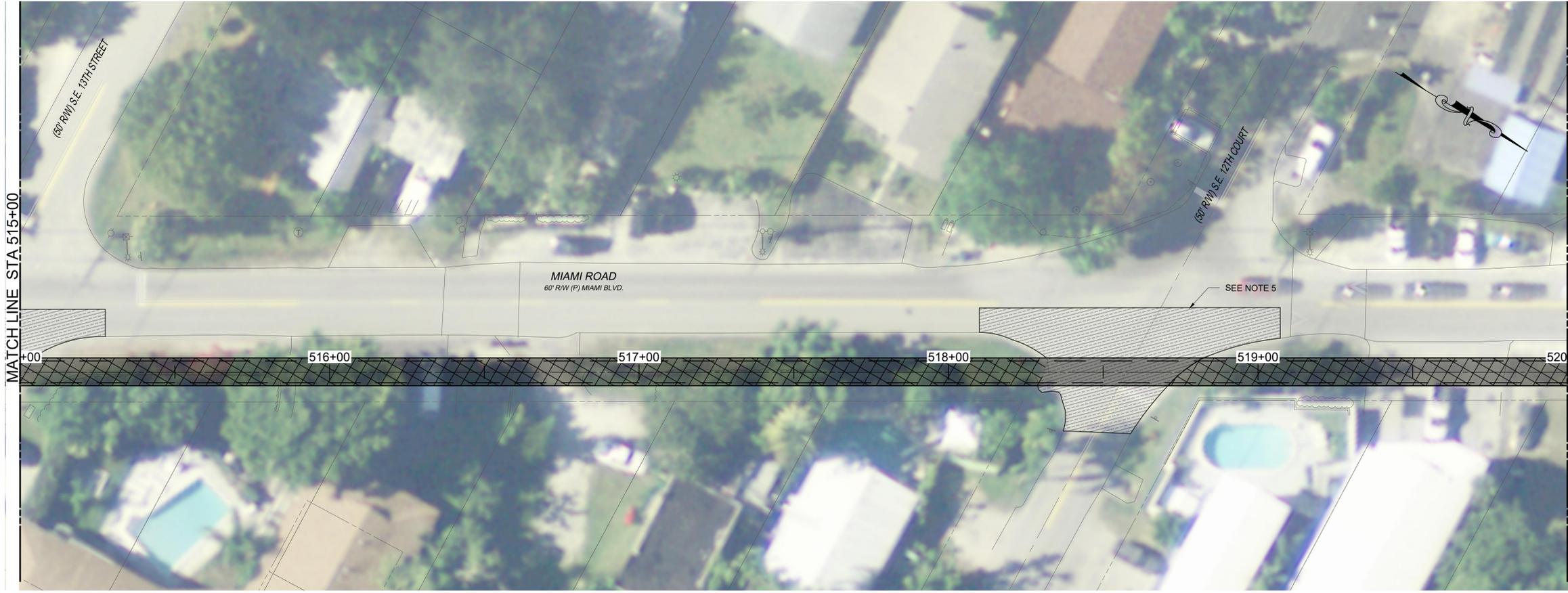
PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 500+00 TO 510+00

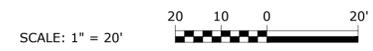
SHEET NO.	C26
TOTAL:	38
CAD FILE:	C26.dwg
DRAWING FILE NO.	0-000-00



PLAN
SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'



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FORT LAUDERDALE, FLORIDA 33301

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ELEVATIONS SHOWN HEREON ARE
BASED ON THE NORTH AMERICAN
VERTICAL DATUM 1988 (NAVD 1988)



INDEX MAP
SCALE: NTS

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LEGEND:

	PAVEMENT RESTORATION TYPE "A"
	PAVEMENT RESTORATION TYPE "B"
	RESTORE PRIVATE PROPERTY IN-KIND

ENGINEER:	REG. No.:	DATE:	TEL.:
			FAX:
DRAWN BY:	DATE:	DESIGNED BY:	SCALE:
	10/20/2023		1" = 20'
CHECKED BY:		FIELD BOOK:	

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE

100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	REV'D	DESCRIPTION

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 510+00 TO 520+00

SHEET NO.
C27

TOTAL: 38
CAD FILE: C27.dwg
DRAWING FILE NO. 0-000-00



PLAN
SCALE: 1" = 20'



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FORT LAUDERDALE, FLORIDA 33301

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ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 1988)

ENGINEER: _____
REG. No: _____
DATE: _____
TEL: _____
FAX: _____

DATE: 10/20/2023
DRAWN BY: _____
DESIGNED BY: _____
CHECKED BY: _____
FIELD BOOK: _____
SCALE: 1" = 20'



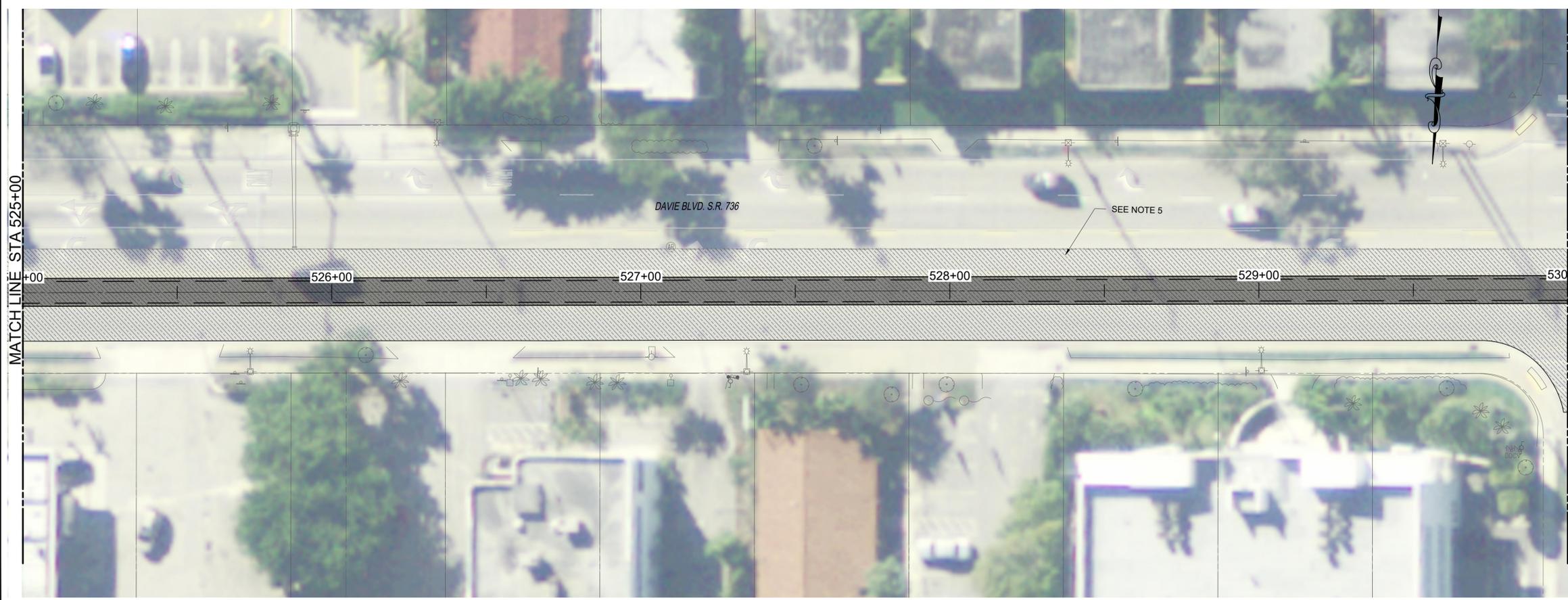
INDEX MAP
SCALE: NTS

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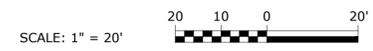
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE

100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	REV'D	DESCRIPTION



PLAN
SCALE: 1" = 20'



LEGEND:

	PAVEMENT RESTORATION TYPE "A"
	PAVEMENT RESTORATION TYPE "B"
	RESTORE PRIVATE PROPERTY IN-KIND

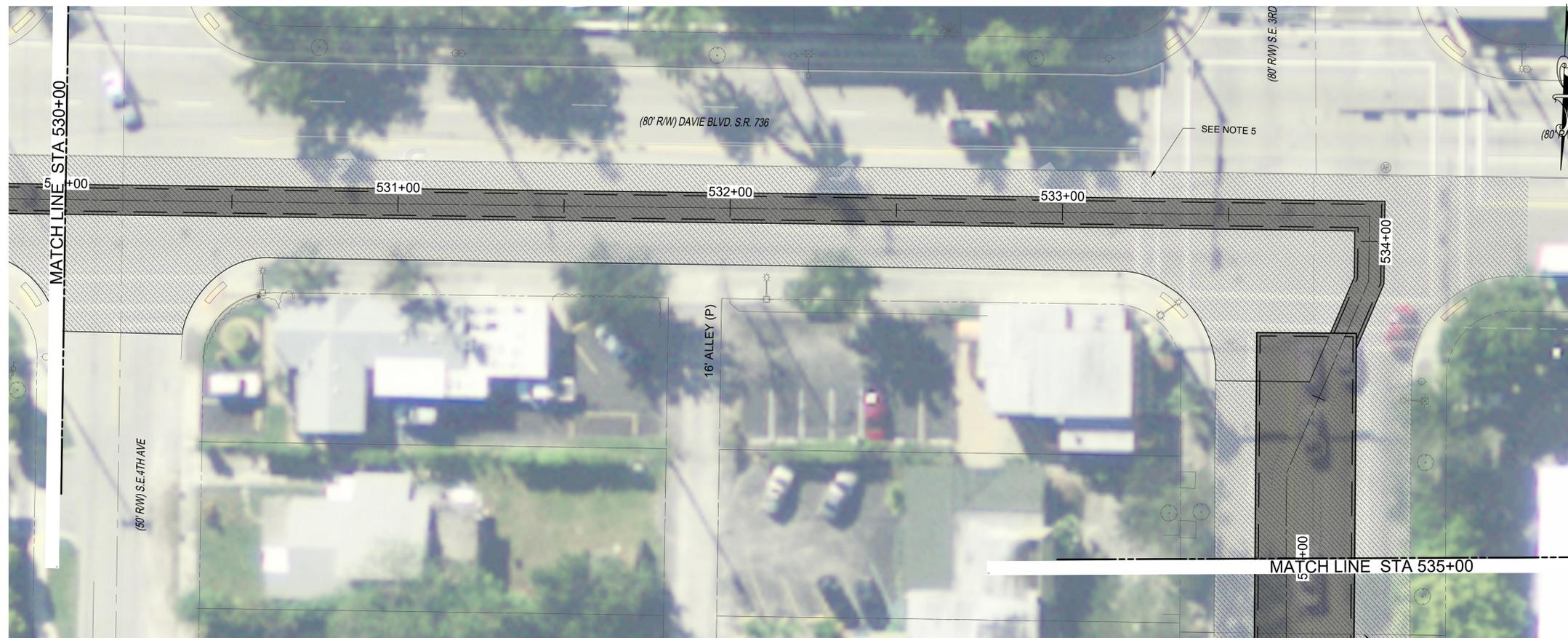
PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 520+00 TO 530+00

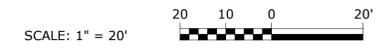
SHEET NO.

C28

TOTAL: 38
CAD FILE: C28.dwg
DRAWING FILE NO. 0-000-00



PLAN
SCALE: 1" = 20'



PLAN
SCALE: 1"=20'

SCALE: 1" = 20'

- LEGEND:
- PAVEMENT RESTORATION TYPE "A"
 - PAVEMENT RESTORATION TYPE "B"
 - RESTORE PRIVATE PROPERTY IN-KIND

INDEX MAP
SCALE: NTS

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ELEVATIONS SHOWN HEREON ARE
BASED ON THE NORTH AMERICAN
VERTICAL DATUM 1988 (NAVD 1988)

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE

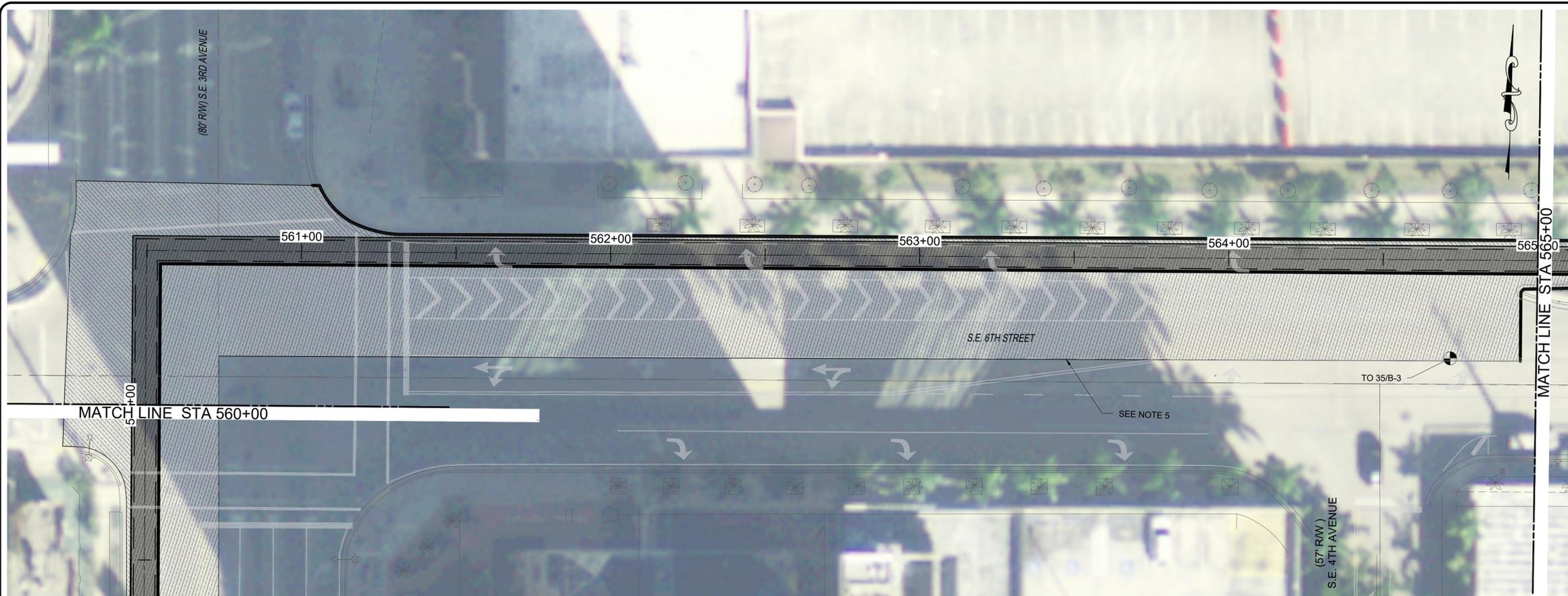
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	REV'D	DESCRIPTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 530+00 TO 560+00

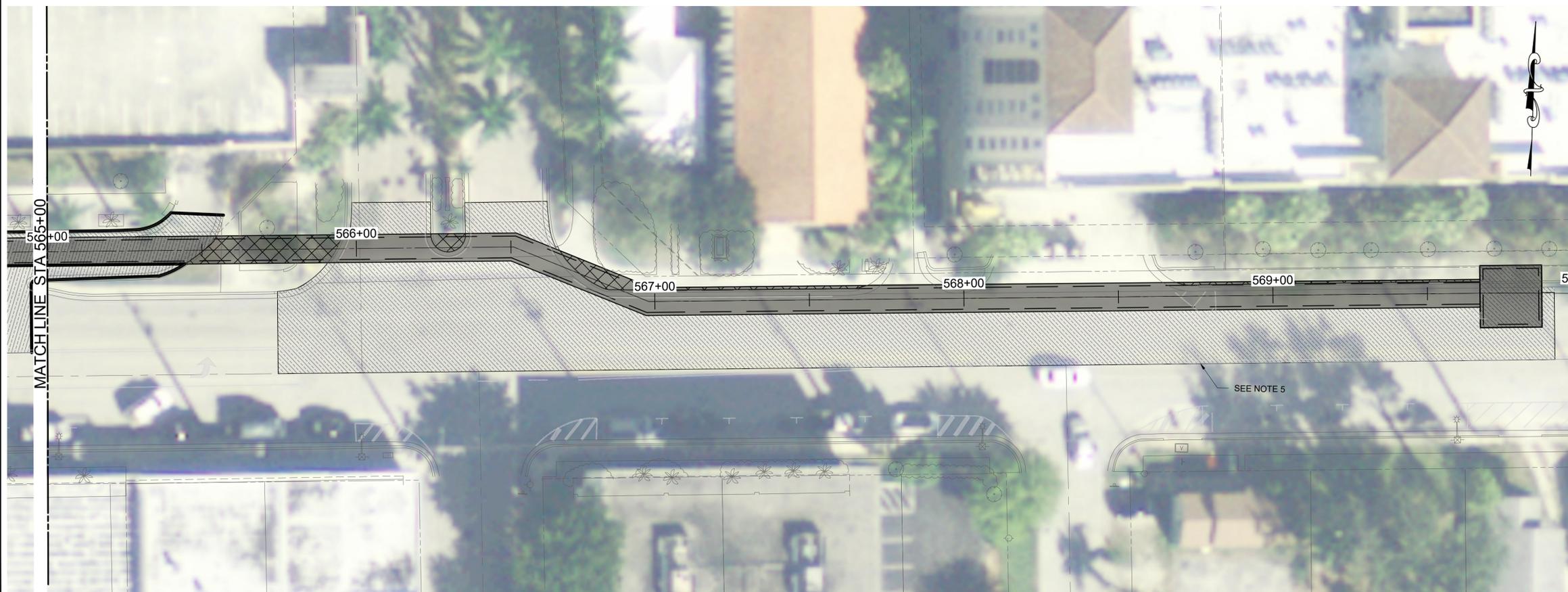
PRELIMINARY - NOT FOR CONSTRUCTION

SHEET NO.	C29
TOTAL:	38
CAD FILE:	C29.dwg
DRAWING FILE NO.	0-000-00



PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'

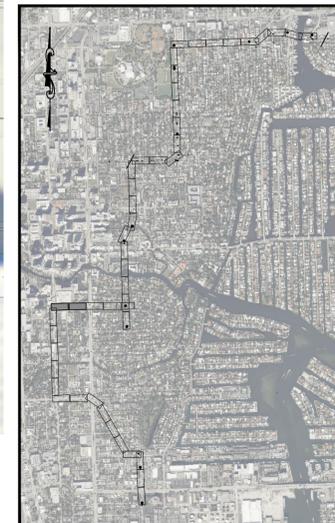
SCALE: 1" = 20'

Hazen

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FORT LAUDERDALE, FLORIDA 33301

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ELEVATIONS SHOWN HEREON ARE
BASED ON THE NORTH AMERICAN
VERTICAL DATUM 1988 (NAVD 1988)



INDEX MAP
SCALE: NTS

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LEGEND:

- PAVEMENT RESTORATION TYPE "A"
- PAVEMENT RESTORATION TYPE "B"
- RESTORE PRIVATE PROPERTY IN-KIND

ENGINEER:	REG. No.:	DATE:	TEL:
			FAX:
DRAWN BY:	DATE:	DESIGNED BY:	SCALE:
	10/20/2023		1" = 20'
CHECKED BY:		FIELD BOOK:	

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE



100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	REV'D	DESCRIPTION

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 560+00 TO 570+00

SHEET NO.
C30

TOTAL: 38

CAD FILE: C30.dwg

DRAWING FILE NO.
0-000-00



PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'

Hazen

HAZEN AND SAWYER
101 NE THIRD AVE, SUITE 550
FORT LAUDERDALE, FLORIDA 33301

811 KNOW WHAT'S BELOW
ALWAYS CALL 811 BEFORE YOU DIG
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www.callsunshine.com

ELEVATIONS SHOWN HEREON ARE
BASED ON THE NORTH AMERICAN
VERTICAL DATUM 1988 (NAVD 1988)



INDEX MAP
SCALE: NTS

- NOTES:
1. UTILITIES ARE NOT SHOWN FOR CLARITY.
 2. REFER TO D03 FOR PAVEMENT RESTORATION DETAILS.
 3. ALL ASPHALT/ CONCRETE SHALL BE SAW CUT TO ENSURE CLEAN EDGES.
 4. MATCH EXISTING CONDITIONS WHERE THERE IS NO PAVEMENT.
 5. SURFACE RESTORATION SHOWN ARE APPROXIMATE BASED ON THE DCP BASIS OF DESIGN. DBF SHALL DESIGN AND CONSTRUCT ALL SURFACE RESTORATION BASED ON THE ROADWAY OWNER'S REQUIREMENTS. REFER TO EXHIBIT B FOR MORE INFORMATION ON THE CITY, BROWARD COUNTY, AND FDOT PAVEMENT RESTORATION REQUIREMENTS.

LEGEND:

	PAVEMENT RESTORATION TYPE "A"
	PAVEMENT RESTORATION TYPE "B"
	RESTORE PRIVATE PROPERTY IN-KIND

ENGINEER:	REG. No.:	DATE:	TEL.:
			FAX:
DRAWN BY:	DATE:	DESIGNED BY:	SCALE:
	10/20/2023		1" = 20'
CHECKED BY:			
FIELD BOOK:			

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE

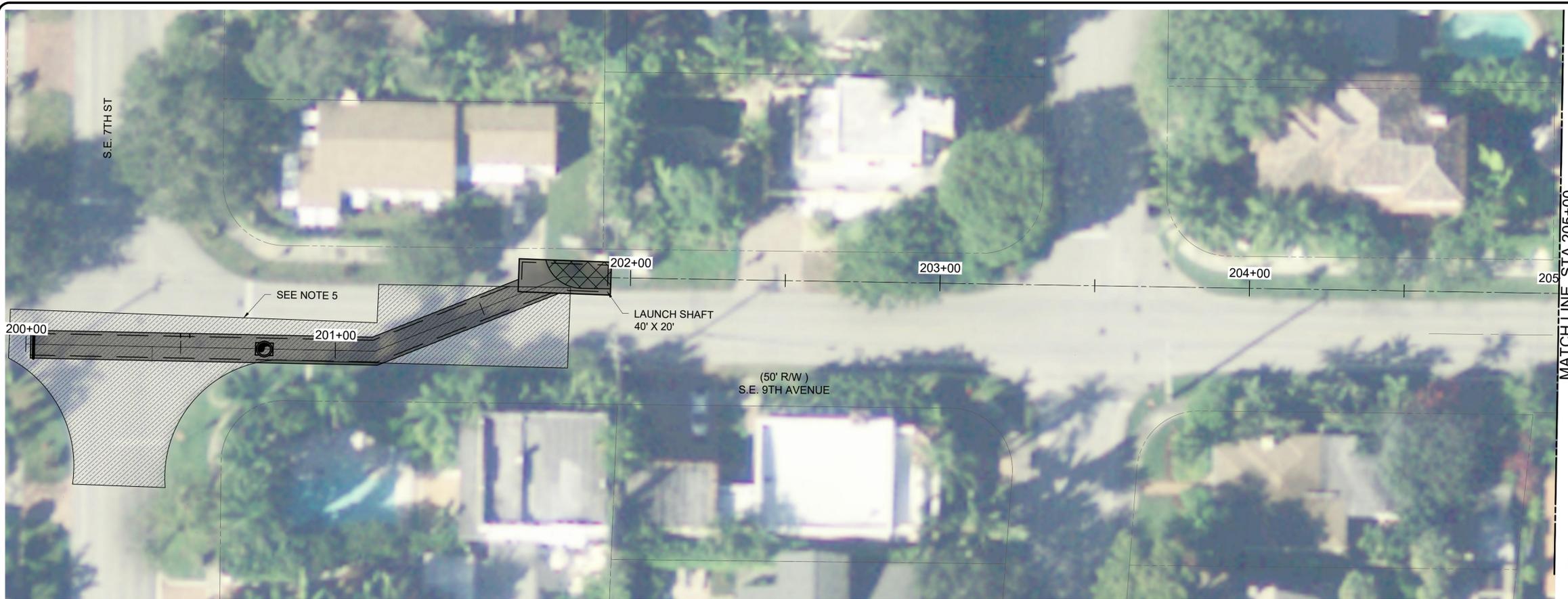
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	REV'D	DESCRIPTION

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 570+00 TO 580+00

SHEET NO.	C31
TOTAL:	38
CAD FILE:	C31.dwg
DRAWING FILE NO.	0-000-00



PLAN
SCALE: 1" = 20'



Hazen

HAZEN AND SAWYER
101 NE THIRD AVE, SUITE 550
FORT LAUDERDALE, FLORIDA 33301

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www.callsunshine.com

ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 1988)

ENGINEER: _____
REG. No: _____
DATE: _____
TEL: _____
FAX: _____

DATE: 10/20/2023
SCALE: 1" = 20'
DRAWN BY: _____
DESIGNED BY: _____
CHECKED BY: _____
FIELD BOOK: _____



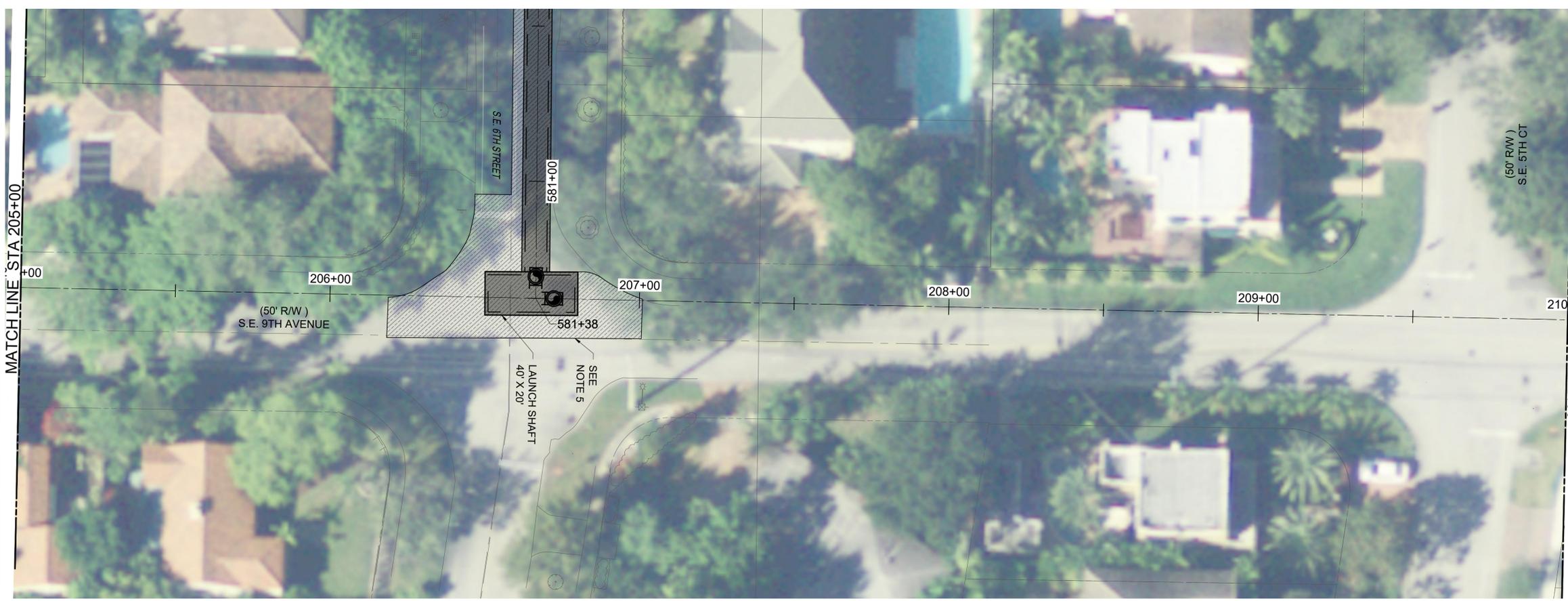
INDEX MAP
SCALE: NTS

- NOTES:
- UTILITIES ARE NOT SHOWN FOR CLARITY.
 - REFER TO D03 FOR PAVEMENT RESTORATION DETAILS.
 - ALL ASPHALT/ CONCRETE SHALL BE SAW CUT TO ENSURE CLEAN EDGES.
 - MATCH EXISTING CONDITIONS WHERE THERE IS NO PAVEMENT.
 - SURFACE RESTORATION SHOWN ARE APPROXIMATE BASED ON THE DCP BASIS OF DESIGN. DBF SHALL DESIGN AND CONSTRUCT ALL SURFACE RESTORATION BASED ON THE ROADWAY OWNER'S REQUIREMENTS. REFER TO EXHIBIT B FOR MORE INFORMATION ON THE CITY, BROWARD COUNTY, AND FDOT PAVEMENT RESTORATION REQUIREMENTS.

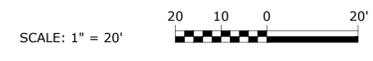
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE

100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	REV'D	DESCRIPTION



PLAN
SCALE: 1" = 20'



LEGEND:

- PAVEMENT RESTORATION TYPE "A"
- PAVEMENT RESTORATION TYPE "B"
- RESTORE PRIVATE PROPERTY IN-KIND

PRELIMINARY - NOT FOR CONSTRUCTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
STA 200+00 TO 210+00

SHEET NO. **C32**

TOTAL: 38

CAD FILE: C32.dwg

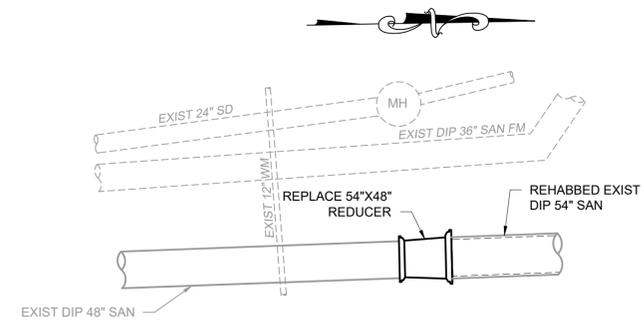
DRAWING FILE NO. 0-000-00

NO.	DATE	BY	REVISED	DESCRIPTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
DETAIL SHEET 1

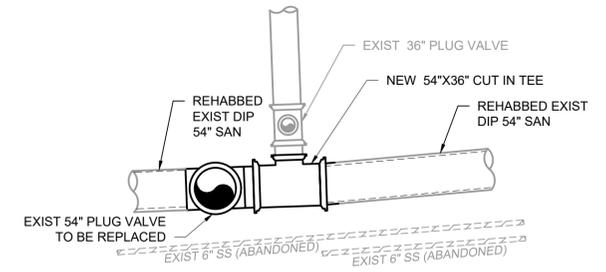
SHEET NO.
D01
TOTAL:
CAD FILE:
DRAWING FILE NO.

NOTE:
1. IT IS THE RESPONSIBILITY OF THE DBF TO FULLY INVESTIGATE THE ACTUAL FIELD CONDITIONS PRIOR TO INSTALLING FORCE MAIN CONNECTIONS.



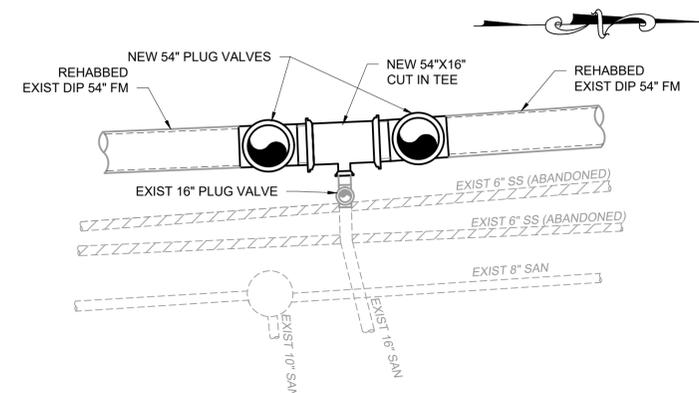
SE 17TH ST AND SE 10TH AVE

DETAIL **A**
C01



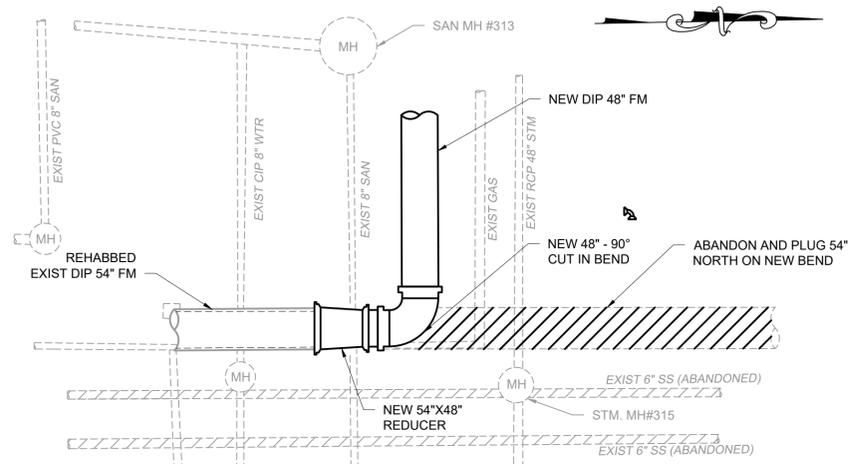
SE 17TH ST AND SE 10TH AVE

DETAIL **B**
C01



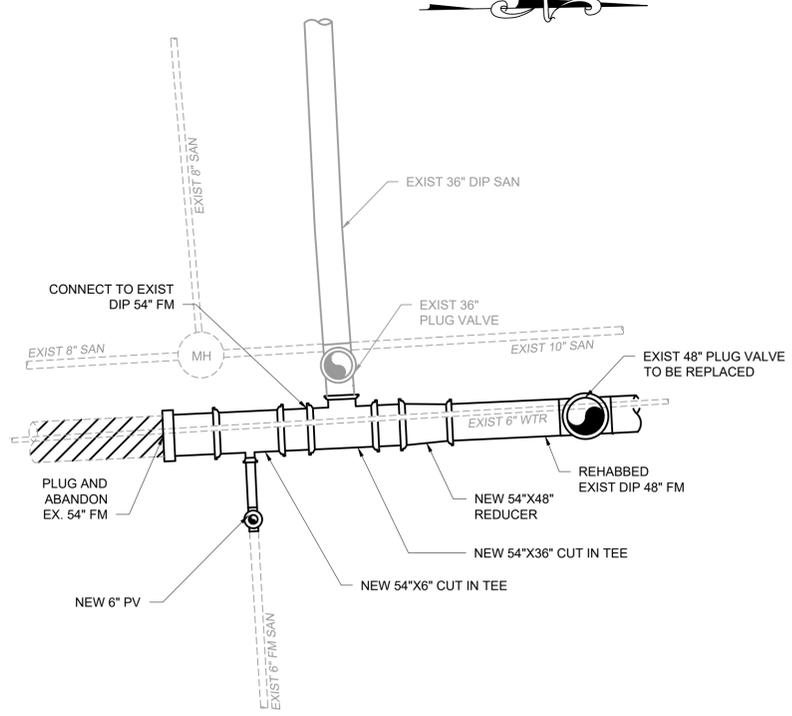
SE 16TH ST AND SE 10TH AVE

DETAIL **C**
C02



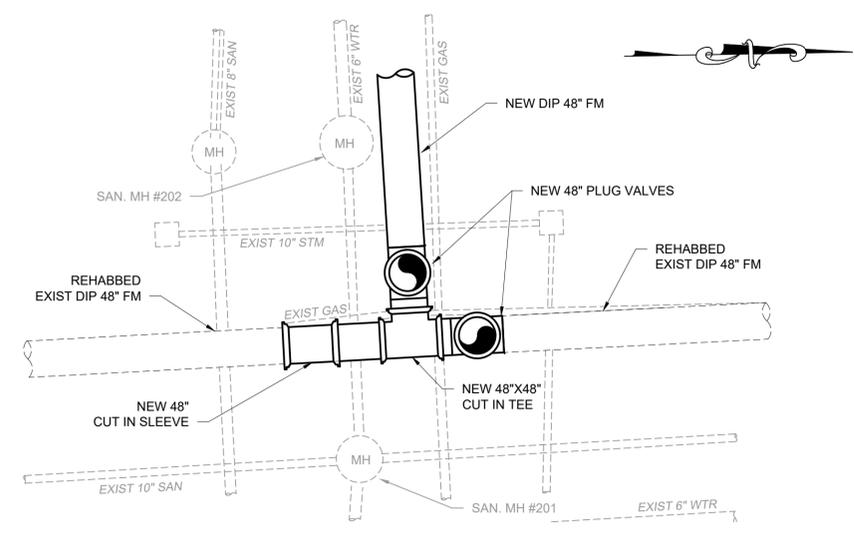
SE 15TH ST AND SE 10TH AVE

DETAIL **D**
C03



SE 7TH ST AND SE 9TH AVE

DETAIL **E**
C12



SE 6TH ST AND SE 9TH AVE

DETAIL **F**
C12

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	DATE	BY	CHK'D	DESCRIPTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
CONNECTION DETAIL SHEET 2

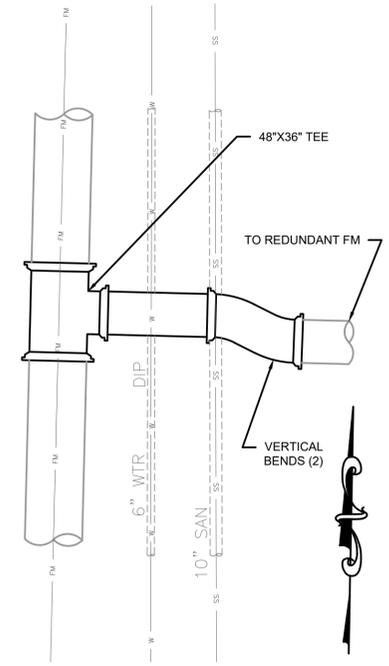
SHEET NO. **D02**

TOTAL: 38

CAD FILE: **D02.dwg**

DRAWING FILE NO. **0-000-00**

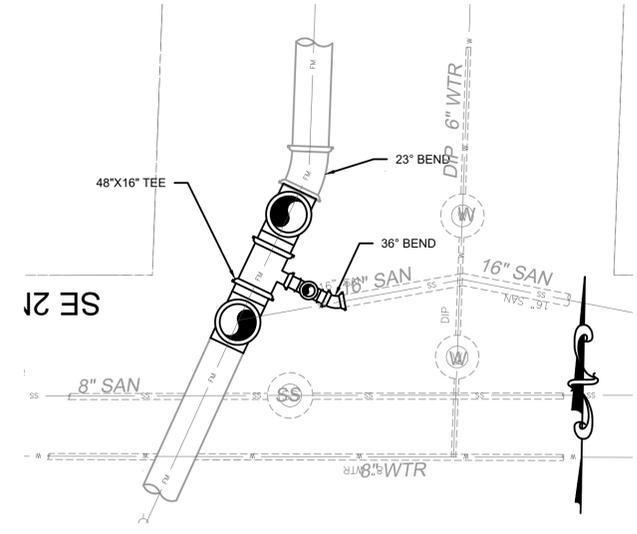
PRELIMINARY - NOT FOR CONSTRUCTION



SE 9TH ST AND SE 2ND CT - REINSTATE TEE AT STATION 224+40

DETAIL 1"=10'

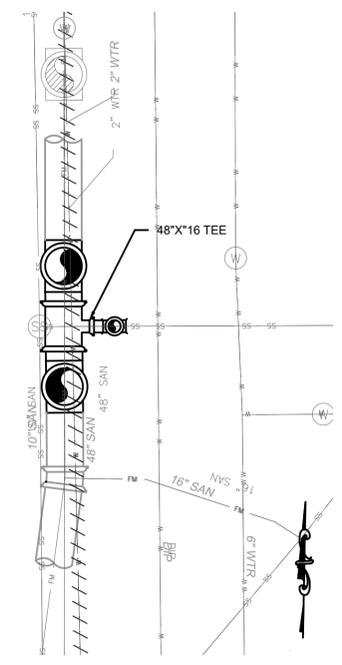
G
C14



SE 2ND ST - REINSTATE EXISTING TEE AT STATION 231+30

DETAIL 1"=10'

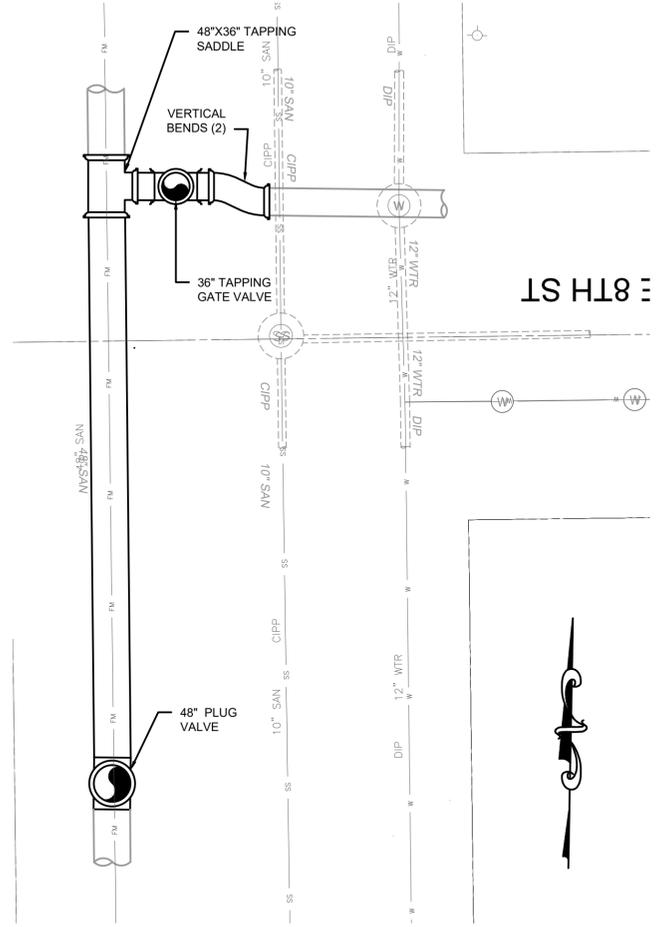
H
C15



NE 14TH AVE AND NE 5TH ST - REINSTATE TEE AT STATION 270+23

DETAIL 1"=10'

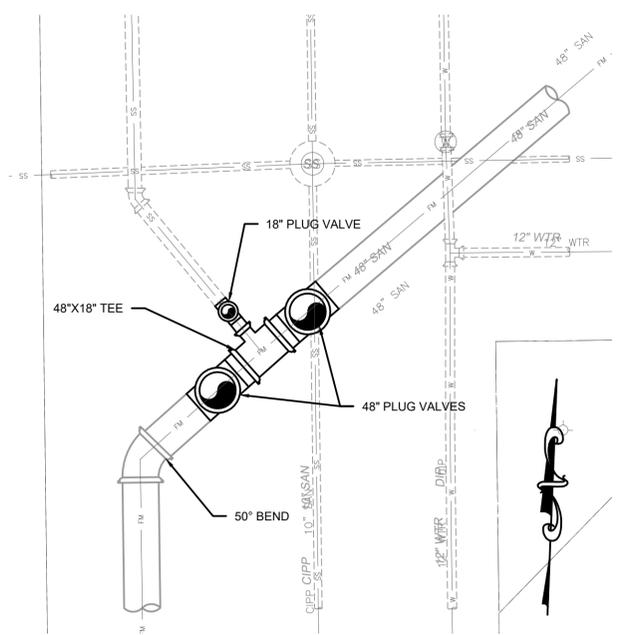
I
C18



NE 14TH AVE AND NE 8TH ST - REINSTATE TEE AT STATION 289+45

DETAIL 1"=10'

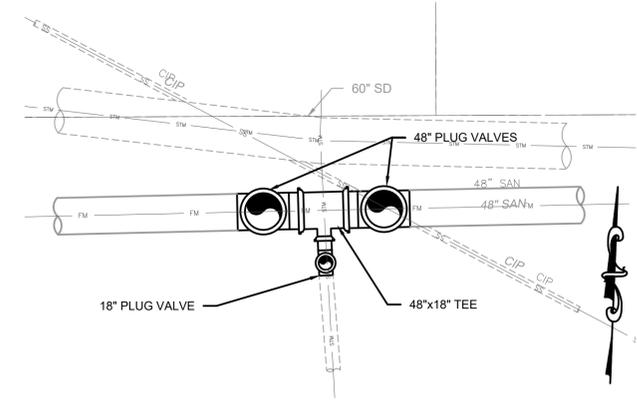
J
C20



NE 9TH ST AND NE 14TH ST - LINE THRU EXISTING BUT ABANDONED TEE AT STATION 295+70

DETAIL 1"=10'

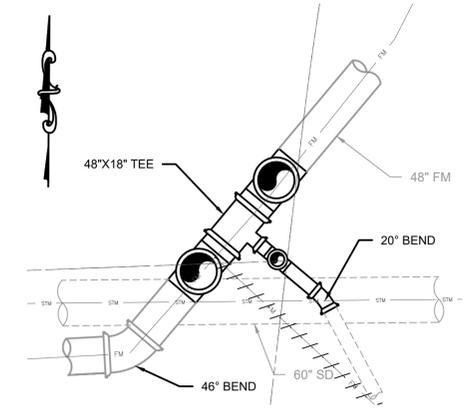
K
C21



MIDDLE RIVER DRIVE - LINE THRU EXISTING TEE AT STATION 337+20

DETAIL 1"=10'

L
C25



MIDDLE RIVER DRIVE - REINSTATE EXISTING TEE AT STATION 337+65

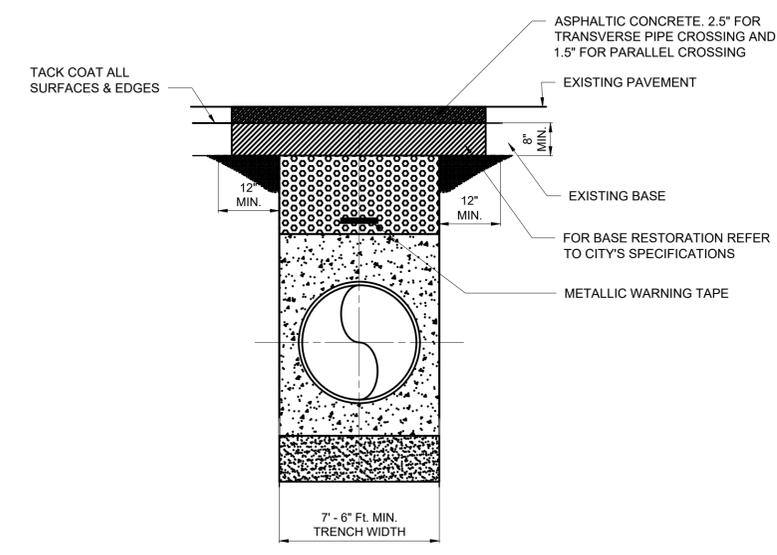
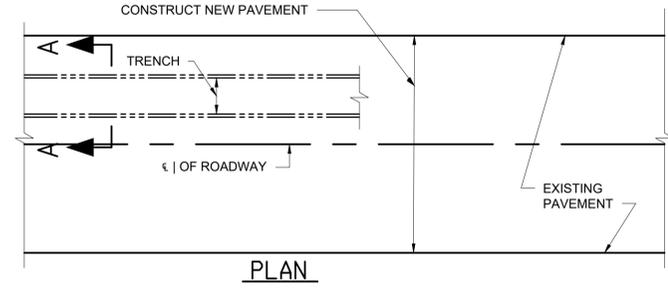
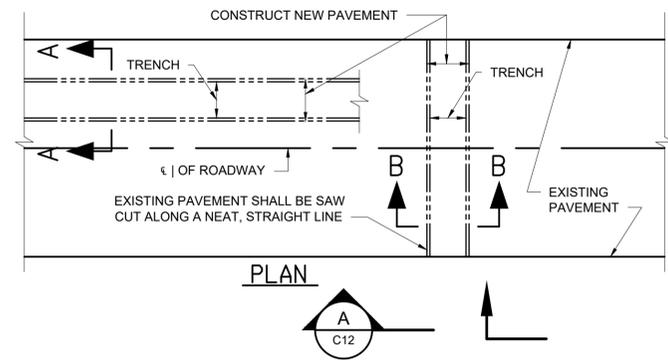
DETAIL 1"=10'

M
C25

NO.	DATE	BY	CHK'D	DESCRIPTION

PROJECT # 12799
DESIGN CRITERIA PACKAGE
REHABILITATION OF 48"/54" FM ON
SE 9TH AVE AND 10TH AVE TO GTL
DETAIL SHEET 3

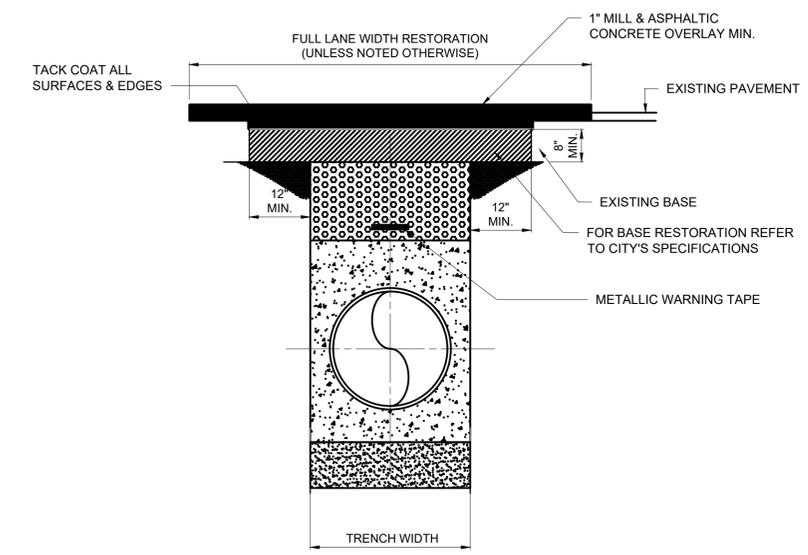
SHEET NO.
D03
TOTAL: 38
CAD FILE: D03.dwg
DRAWING FILE NO.
0-000-00



SECTION A-A (PARALLEL) & B-B (TRANSVERSE)

- NOTE:
- REFER TO THE CITY TRENCH AND PAVEMENT RESTORATION DETAILS FOR ADDITIONAL INFORMATION.
 - PAVEMENT RESTORATION AND ASPHALT RESURFACING SHALL MEET THE CITY, BROWARD COUNTY, OR FDOT REQUIREMENTS BASED ON THE ROAD OWNERSHIP. REFER TO EXHIBIT B FOR TRENCH AND PAVEMENT REQUIREMENTS IN THE APPLICABLE JURISDICTION AND A MAP INDICATED ROAD OWNERSHIP

TYPE "A" TRENCH RESTORATION
NTS



SECTION A-A

- NOTE:
- REFER TO THE CITY TRENCH AND PAVEMENT RESTORATION DETAILS FOR ADDITIONAL INFORMATION.
 - PAVEMENT RESTORATION AND ASPHALT RESURFACING SHALL MEET THE CITY, BROWARD COUNTY, OR FDOT REQUIREMENTS IN THE APPLICABLE JURISDICTION AND A MAP INDICATED ROAD OWNERSHIP

TYPE "B" PAVEMENT MILLING OVERLAY
NTS



PRELIMINARY - NOT FOR CONSTRUCTION

Executive Summary Report

Of

Event: 253-2 - CEI: Rehab. 48"/54" FM- SE 9th & 10th Ave to GTL

Buyer: PAULETTE HEMMINGS TURNER

Date Range: 02/27/2024 04:00:00 PM - 03/29/2024
02:00:00 PM

**All Suppliers 7
Responding:**

Suppliers Responding

Supplier	Contact	Phone Number	E Mail	City	State Or Province	Total Bid Amount	Total Awarded	Response Attachments Exist
Calvin, Giordano & Associates, Inc.	Jessica Koehler	9549217781	procurement@cgasolutions.com	Fort Lauderdale	FL	1.00	0.00	Yes
Arcadis US, Inc.	Leah Richter	9545252499	Leah.Richter@arcadis.com	Plantation	FL	1.00	0.00	Yes
Tectonic Group International, LLC	Raof Shams	954-610-4482	raof.shams@tecgi.com	Pembroke Pines	FL	0.00	0.00	Yes
Keith and Associates, Inc.	Yazmin Bryant	954-788-3400	marketing@keithteam.com	Fort Lauderdale	FL	0.00	0.00	Yes
WSP	Codi Barron	3524150563	wds.floridamarketing@wsp.com	Gainesville	FL	0.00	0.00	Yes
EAC Consulting, Inc.	Nicole Mallard	3052655400	nmallard@eacconsult.com	Miami	FL	0.00	0.00	Yes
HBC Engineering Company	Maria Gouveia	3052327932	mgouveia@hbcengineeringco.com	Ft. Lauderdale	FL	1.00	0.00	Yes

Event Lines And Responses

continued...

Item	Description	Unit of Measure	Quantity
REPLACEMENT SE 9TH&10TH AVE -GTL-	<p>The City of Fort Lauderdale is seeking the services of a qualified consulting firm to provide Construction Engineering and Inspection (CEI) Services related to the Rehab. 48"/54" Replacement- SE 9</p> <p>and 10th Ave to GTL. Section 3.3 contains a list of services that may be required.</p>	DO	1.0000

Responses

Supplier	Bid Quantity	Unit of Measure	Unit Price	Award Amount
Calvin, Giordano & Associates, Inc.	1.0000	DO	1.00000000	0.00
Arcadis US, Inc.	1.0000	DO	1.00000000	0.00
Tectonic Group International, LLC	1.0000	DO	0.00000000	0.00
Keith and Associates, Inc.	1.0000	DO	0.00000000	0.00
WSP	0.0000	DO	0.00000000	0.00
EAC Consulting, Inc.	1.0000	DO	0.00000000	0.00
HBC Engineering Company	1.0000	DO	1.00000000	0.00

Header Questions And Responses

QUESTION

Did you sign and attach all the Required Forms?

Question Responses

Supplier	Response	Has Attachment
Calvin, Giordano & Associates, Inc.	Yes	Yes
Arcadis US, Inc.	Yes	Yes

continued...

Question Responses

Supplier	Response	Has Attachment
Tectonic Group International, LLC	Yes	Yes
Keith and Associates, Inc.	Yes	Yes
WSP	Yes	Yes
EAC Consulting, Inc.	Yes	Yes
HBC Engineering Company	Yes	Yes

QUESTION

Did you sign and attached Contract Payment Method Form?

Question Responses

Supplier	Response	Has Attachment
Calvin, Giordano & Associates, Inc.	Yes	Yes
Arcadis US, Inc.	Yes	Yes
Tectonic Group International, LLC	Yes	Yes
Keith and Associates, Inc.	Yes	Yes
WSP	Yes	Yes
EAC Consulting, Inc.	Yes	Yes
HBC Engineering Company	Yes	Yes

Line Questions And Responses

QUESTION

Did you sign and attach all the required forms?

Question Responses

Item	Description	Supplier	Response	Has Attachment
REPLACEMENT SE 9TH&10TH AVE -GTL-	The City of Fort Lauderdale is seeking the	Calvin, Giordano & Associates, Inc.	Yes	Yes

continued...

Question Responses				
Item	Description	Supplier	Response	Has Attachment
AVE -GTL-	services of a qualified consulting firm to provide Construction Engineering and Inspection (CEI) Services related to the Rehab. 48"/54" Replacement- SE 9 and 10th Ave to GTL. Section 3.3 contains a list of services that may be required.			
REPLACEMENT SE 9TH&10TH AVE -GTL-	The City of Fort Lauderdale is seeking the services of a qualified consulting firm to provide Construction Engineering and Inspection (CEI) Services related to the Rehab. 48"/54" Replacement- SE 9 and 10th Ave to GTL. Section 3.3 contains a list of services that may be required.	Arcadis US, Inc.	Yes	Yes
REPLACEMENT SE 9TH&10TH AVE -GTL-	The City of Fort Lauderdale is seeking the services of a qualified consulting firm to provide Construction Engineering and Inspection (CEI) Services related to the Rehab. 48"/54" Replacement- SE 9 and 10th Ave to GTL. Section 3.3 contains a list of services that may be required.	Tectonic Group International, LLC	Yes	Yes

continued...

Question Responses				
Item	Description	Supplier	Response	Has Attachment
REPLACEMENT SE 9TH&10TH AVE -GTL-	<p>The City of Fort Lauderdale is seeking the services of a qualified consulting firm to provide Construction Engineering and Inspection (CEI) Services related to the Rehab. 48"/54" Replacement- SE 9</p> <p>and 10th Ave to GTL. Section 3.3 contains a list of services that may be required.</p>	Keith and Associates, Inc.	Yes	Yes
REPLACEMENT SE 9TH&10TH AVE -GTL-	<p>The City of Fort Lauderdale is seeking the services of a qualified consulting firm to provide Construction Engineering and Inspection (CEI) Services related to the Rehab. 48"/54" Replacement- SE 9</p> <p>and 10th Ave to GTL. Section 3.3 contains a list of services that may be required.</p>	EAC Consulting, Inc.	Yes	Yes
REPLACEMENT SE 9TH&10TH AVE -GTL-	<p>The City of Fort Lauderdale is seeking the services of a qualified consulting firm to provide Construction Engineering and Inspection (CEI) Services related to the Rehab. 48"/54" Replacement- SE 9</p> <p>and 10th Ave to GTL. Section 3.3 contains a list of services that may be required.</p>	HBC Engineering Company	Yes	Yes

Contacts

Name	Email
PAULETTE HEMMINGS TURNER	pturner@fortlauderdale.gov

Q And A

Supplier	Question	Answer
Tectonic Group International, LLC	How much is CEI Budget	Budget for CEI is \$1,500,000.00
Arcadis US, Inc.	See attached Questions related to this RFQ.	<p>Question Section 3.3.2 (b) of the RFQ requires the CEI firm to provide and establishing a temporary construction site office, including permits, hookups and spaces for vehicles. If not feasible shall rent office space off site and near the Project. Question - Our office is 15 minutes away from the Project site. Is this sufficient to comply with this requirement, or the temporary site office is required?</p> <p>Response Office needs and location will be assessed once CEI firm is selected.</p> <p>Question Section 3.3.4 (b) of the RFQ requires the CEI firm to prepare project record drawings that are compliant with the City's CADD Standards. Question - Is the CEI required to do this? Typically is the Design Builder and their EOR. CEI reviews the deliverable to make sure is compliant with City's Standards.</p> <p>Response The record drawings are part of the Design Builder's responsibility, CEI to assure compliance and completeness of such drawings.</p>

continued...

Supplier	Question	Answer
Tectonic Group International, LLC	Can you please provide Exhibit D (Geotechnical Investigation).	Please refer to Addendum 1
The Engineering Company, LLC	Question is included in the attached pdf document. Thanks.	Question: Section 2.8 Minimum Qualifications, states: Firms shall be in the business of Construction Engineering Inspection (CEI) for at least five (5) years, and must possess sufficient financial support, equipment and organization to ensure that it can satisfactorily perform the services if awarded a contract. Firms must demonstrate that they, or the principals assigned to the project, have successfully provided services with similar magnitude to those specified in the scope of services to at least one city similar in size and complexity to the City of Fort Lauderdale or can demonstrate they have the experience with large scale private sector clients and the managerial and financial ability to successfully perform the work. Can the five (5) years for the firm in the business of Construction Engineering Inspection (CEI) be met by the Principal and Team members of the Prime Consultant? Response: The requirement is for the firm to be in business doing CEI work for at least 5 years.
Tectonic Group International, LLC	Is it ok to be prime and sub on another team?	No. A Prime cannot be a Subconsultant on another team.
Tectonic Group International, LLC	What is project duration (calendar days) and anticipated start date?	The Work for Phase A, B, and C shall be Substantially Completed on or before April 3, 2026; the work for Phase D (Bid Alternate) shall be Substantially Completed on or before July 3, 2026. The Work for all phase shall be finally completed and accepted on or before August 31, 2026 and ready for final payment in accordance with this Agreement. Anticipated Start Date May 2024.
RS&H, Inc.	Under Section IV - Submittal Requirements, section 4.2.9 h) Contract Payments states: "This form must be completed and returned with your proposal. Question: The referenced form was not provided in the "Event 253 Required Forms" attachment provided.	Contract Payment Form is now attached.

continued...

Supplier	Question	Answer
RS&H, Inc.	Please see the attachment for the question.	<p>Question: Under section IV – Submittal Requirements, section 4.2.9 h) Contract Payments states: “This form must be completed and returned with your proposal. Proposers must presently have the ability to accept these credit cards or take whatever steps necessary to implement acceptance of a card before the start of the contract term, or contract award by the City.”</p> <p>The referenced form was not provided in the “Event 253 Required Forms” attachment. How can we obtain a copy of this form to complete for submittal?</p> <p>Response: Contract Payment Form is now attached.</p> <p>Question: In addition, is the City’s P-Card Program the only payment method or is Automated Clearing House (ACH) a system that can be used for a payment method.</p> <p>Response: The payment method the City utilizes is the P-Card Program.</p>
Arcadis US, Inc.	On the RFQ, Section 4.2.6. requires 3 references. The Reference PDF form is required in section 4.2.9 asks for the same details. Is section 4.2.6. and the Reference PDF form asking for the same thing/can we place the Reference PDF in both sections?	Yes, you can.
Arcadis US, Inc.	Section 4.2.6 of the RFQ indicates "Provide at least three references...", Do we need to use the Reference Form provided by City for Section 4.2.9? If so, is it required to include the same document in both Section 4.2.6 and 4.2.9?	Yes, you can also refer to the section the form was previously attached.
RS&H, Inc.	Can you provide the form referenced in section 4.2.9 h) Contract Payment?	Contract Payment Form Attached - Please see Questions Tab, attached as a Required Form.
Tectonic Group International, LLC	Is Public Information Officer (PIO) require for the project.	Please refer to the solicitation document for project requirements.

continued...

Supplier	Question	Answer
HBC Engineering Company	Due to the large scope and the recent soil borings addendum (Exhibit D Geotechnical Investigations), would it be possible to move the closing date from Mar 29 to Apr 19? It would allow firms more time to digest the information and propose solutions.	The City is not extending this project at this time.
HBC Engineering Company	Please see attached document for full question concerning the General Conditions section. Thank you,	<p>Question:</p> <p>Please note that the City of Fort Lauderdale Bid/Proposal Certification Form, also see screen shot below, has a section that asks for the following information:</p> <ul style="list-style-type: none">•Delivery: Calendar days after receipt of Purchase Order (section 1.02 of General Conditions)•Total Bid Discount (section 1.05 of General Conditions)•Check box if your firm qualifies for DBE (section 1.09 of General Conditions)•References to General Conditions are also mentioned elsewhere in the RFQ <p>We are unable to locate this General Conditions text. Would you please direct us to where this General Conditions information is?</p> <p>Response:</p> <p>The referenced form is a generic form used by the City for all its solicitations, please disregard those questions as they do not relate to this solicitation.</p>

continued...

Supplier	Question	Answer
HBC Engineering Company	Please see attached documentation concerning subconsultant forms. Thank you for your time.	<p>Question:</p> <p>Is it required for the subconsultants of the Prime to fill out or provide any of the documentation below:</p> <ul style="list-style-type: none">a) Bid/Proposal Certificationb) Sample Insurance Certificatec) Non-Collusion Statementd) Affidavit of Compliance with Foreign Entity Lawse) Non-Discrimination Certification Form: Complete and attachf) E-Verify Affirmation Statement: Complete and attachg) Active Status Page from Division of Corporations-Sunbiz.orgh) Contract Paymenti) W-9 for Proposing Firm <p>Thank you,</p> <p>Response:</p> <p>The Subconsultants are not required to complete and submit the listed documentation.</p>
Keith and Associates, Inc.	I am unable to see the full answer to the question highlighted in yellow, or the full question being asked in pink. Can you kindly advise how or where I can access this information?	<p>In order to see the full responses to questions, please log on to the system and view the responses from the Q & A portal. You are trying to view the responses from the home page, and this will not allow you to see the full responses.</p>
Arcadis US, Inc.	See attached our question related to Article 5.5 of the Sample Agreement - Liquidated Damages.	<p>QUESTION:</p> <p>We respectfully request Article 5.5 in the Sample Agreement which relates to Liquidated Damages be removed from the contract. Typically, for City's Design-Build Projects the "Design Consultant" works for the Contractor and together are the ones driving the schedule and not the "CEI Consultant" who serves as the Owner's Rep.</p> <p>Response:</p> <p>CEI will be the Owner's representative and not subject to Liquidated Damages. Please refer to entire Article 5.5 language.</p>

RFQ No. 253

TITLE: CEI Rehab. 48”/54” FM- SE 9th & 10th Ave to GTL.

ADDENDUM NO.1

DATE: 03/12/2024

This addendum is being issued to add Exhibit D Geotechnical Investigation

All other terms, conditions and specifications remain unchanged.

Paulette Hemmings Turner

Snr. Purchasing Specialist

Company Name: _____

(Please print)

Bidder's Signature: _____

Date: _____

EXHIBIT D

GEOTECHNICAL

INVESTIGATIONS

SEWER DESIGN AND IMPLEMENTATION PROGRAM

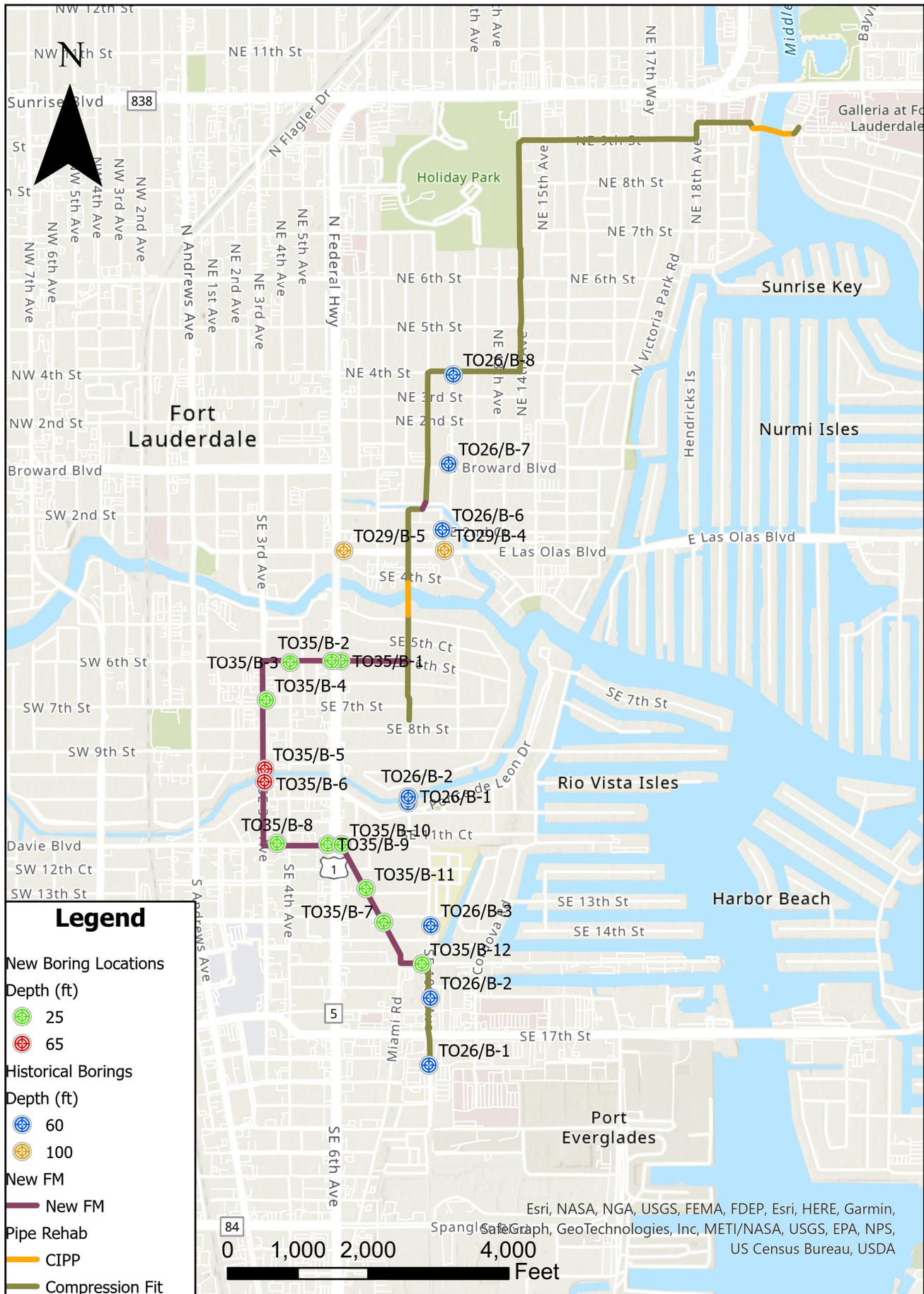
REHABILITATION OF 48/54-INCH FORCE MAIN; REPLACEMENT ON SE 9TH AND 10TH AVENUE TO GTL

CITY PROJECT NO. 12799

Notes:

1. The following exhibit is a collection of several separate geotechnical investigations as shown on the **Soil Boring Vicinity Map** (pg. 2).
 - 1.1 The report titled *Rehabilitation of 48/54- Inch Force Main; Replacement on SE 9th and 10th Ave. to GTL – Design Criteria Package* (pg. 3-59) was completed in August 2023 and consists of 12 soil borings which were obtained for the evaluation of the New Force Main being described in this DCP.
 - 1.2 The report titled *New Redundant Bypass Line Zone 1 – SE 18th ST TO SE 12TH ST.* (pg. 60-72) was completed in March 2020 and consists of 2 soil borings.
 - 1.3 The Soil Profiles and Field Logs with Project Number 7111-20-015 (pg. 73-79) was completed in January 2020 and consists of 2 soil borings.
 - 1.4 The report titled *Ft Lauderdale Force Main Replacement – Locations 6 through 8, Zone 4 SE 10th Terrance & SE 11th Avenue* (pg. 104-222) was completed in August 2022 and consists of 7 soil borings, of which B-4 and B-5 are in the proximity of the work being described in this DCP.
2. The information provided herein is for information purposes only. The Design-Build Firm shall interpret the investigation results as they deem necessary to complete the design and construction.

Soil Boring Vicinity Map





August 3, 2023

Hazen and Sawyer
7870 E. Kemper Road,
Cincinnati, Ohio, 45249

Attn: Mr. Sean O'Rourke, P.E.
Phone: 513-469-5104
Email: sorourke@hazenandsawyer.com

**RE: Geotechnical Engineering Services Report
Rehabilitation of 48/54- Inch Force Main; Replacement on SE 9th and 10th Ave. to
GTL – Design Criteria Package
Fort Lauderdale, Florida
RADISE Project No.: 02-23-075
Hazen and Sawyer Job No.: 43194-035
Task Order No. 35**

Dear Mr. O'Rourke, P.E.

RADISE International, LC (RADISE) is pleased to submit this *Geotechnical Engineering Services Report* for the above referenced project. RADISE has completed these services in accordance with our proposal dated November 16, 2022, and subsequent Subcontract executed on May 31, 2023.

This report presents the results of our field exploration and laboratory testing programs, and provides our geotechnical recommendations relative to the design and construction of the force main.

We appreciate the opportunity to work with you on this project. Should you have any questions regarding the report, or if we can be of further assistance as this project develops, please contact us at (561) 841-0103.

Sincerely,

RADISE International, LC
Florida Certificate of Authorization
No.8901

Nitesh Goli, E.I., PMP
Project Engineer

Akash Bissoon, State of Florida, Professional Engineer, License No. 74582.
This document has been digitally signed and sealed by Akash Bissoon, P.E.
on the date indicated here.

Akash

Bissoon

Digitally signed by

Akash Bissoon

Date: 2023.08.03

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Printed copies of this document are not considered signed and sealed and the
signature must be verified on any electronic copies.

Akash Bissoon, P.E.
Senior Project Engineer
Florida Registration No. 74582



561.841.0103



4152 W. Blue Heron Blvd. Suite 1114,
Riviera Beach, FL 33404



www.RADISE.com

CAM #24-0671

Exhibit 2

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1.0 INTRODUCTION

This report has been prepared to aid in the evaluation and the design of the rehabilitation and replacement of a 48/54-Inch Force Main on SE 9th and 10th Avenues to the George T. Lohmeyer Wastewater Treatment Plant, located in Broward County, Florida. The project site is located at the general location shown on the attached *Vicinity Map*, Sheet 1.

This report includes geotechnical exploration information and field-testing data, subsurface groundwater information, and preliminary geotechnical engineering considerations for the proposed project as well as other site-specific information that may be valuable to the design and construction of the proposed project. These investigations are limited in scope and is intended to provide advice to the design criteria professional to specify design requirements. Please note that any geotechnical engineering evaluations and recommendations presented herein have been included for informational purposes only. It is the responsibility of the selected Design-Build Firm (DBF) to confirm the subsurface conditions and preliminary geotechnical engineering recommendations described herein. The DBF should consider doing additional field work to confirm design parameters and construction methods (test pits, groundwater sampling, etc.).

The information presented in this report are based upon our interpretation of the subsurface information revealed by the performance soil borings. The report does not reflect variations in subsurface conditions that may exist between or beyond these borings. Variations in soil and groundwater conditions should be expected, the nature and extent of which might not become evident until construction is undertaken. If variations are encountered, and/or the scope of the project altered, we should be consulted for additional recommendations.

2.0 PROJECT DESCRIPTION

The City of Fort Lauderdale has retained Hazen and Sawyer for the rehabilitation of approximately 19,400 feet of existing 48-inch to 54-inch force main along SE 9th and 10th Avenues to the George T. Lohmeyer Wastewater Treatment Plant. It is our understanding that the utility will be installed using either open-trench or horizontal directional drilling (HDD) methods. RADISE was subcontracted by Hazen and Sawyer to obtain general subsurface soil information so that recommendations can be provided for the geotechnical aspects of the project.

Should any of the above information or reiterated statements made by RADISE be inconsistent with the planned construction, we request that you contact us promptly to allow us to make any necessary modifications to the recommendations in this report.

3.0 SCOPE OF SERVICES PERFORMED

RADISE performed the following services in accordance with the proposed scope of work:

1. Visited the site and observed the planned boring and test locations, site conditions and reviewed site access.
2. Contacted Sunshine 811 per Florida Statutes, to request the field location of underground utilities in the area of the borings.
3. Obtained Maintenance of Traffic (MOT) approvals from Broward County and the City of Fort Lauderdale Transportation and Mobility Department.
4. Obtained General use Permit from Florida Department of Transportation.
5. Mobilized and set up Temporary Traffic Control (TTC) prior to and during the drilling operations.
6. Mobilized a truck-mounted drilling rig and crew to the site.
7. Performed twelve (12) pavement cores to determine the thickness of the asphalt and base material and composition of the base material.
8. Performed twelve (12) Standard Penetration Test (SPT) borings in the pavement core holes; ten (10) to depths of 25 feet below the existing ground surface and two (2) to depths of 65 feet below the existing ground surface. The groundwater level encountered in the borings at the time of drilling was measured and recorded.
9. The boreholes were then backfilled with a neat cement grout backfill and the pavement patched with cold asphalt patch following the completion of drilling and groundwater measurement operations.
10. Initially visually classified the collected soil samples in the field and then verified field classifications in the laboratory using the Unified Soil Classification System (USCS) in accordance with the visual-manual method of ASTM D 2488.
11. A limited laboratory testing program was assigned and performed to identify soil index properties and assist in the final classification of the soils for engineering purposes (ASTM 2487).
12. Prepared this geotechnical report which includes, but is not necessarily limited to:
 - a. A detailed graphical log of each soil boring showing soil classifications, the groundwater level and the subsurface profile encountered.
 - b. Discussion of the findings and our recommendations for the design of the force main replacement.

- c. Overall site map showing the locations of all soil borings.
- d. Ground water level elevations (including seasonal fluctuation).
- e. Lateral earth pressure and other soil parameters for the design of below grade structures.
- f. Backfilling recommendations for under and against structures and pipes.

4.0 FIELD EXPLORATION

RADISE personnel visited the project site prior to drilling to observe the locations of the planned soil borings. MOT approval from Broward County and the City of Fort Lauderdale Transportation and Mobility was obtained prior to starting the field exploration. Sunshine 811 was then contacted for field location of underground utilities in the area of the planned borings as per Florida Statutes. The boring locations were determined in the field by RADISE after the underground utility locations were determined. The boring locations are depicted on the attached ***Boring Location Plan***, Sheets 2A and 2B.

Temporary Traffic Control (TTC) was used in the vicinity of our field work efforts to protect our field crew and the general public from damage or injury. The TTC system and components was designed and set up in accordance with the FDOT Standard Plans and the MOT approvals from Broward County and the City of Fort Lauderdale Transportation and Mobility.

4.1 PAVEMENT CORES

The asphalt pavement was cored at twelve locations using a 6-inch diameter diamond tipped core drill bit. Upon removal of the asphalt core, a hand-held power auger and a hand operated bucket-type auger were used to loosen the base course material and to clean out the borehole. Subsequent down-hole field measurements were made using a surveyor's tape to document the approximate thickness and composition of the encountered pavement base course materials. Representative samples of the base course, obtained from the hand bucket-type auger, were placed in moisture proof bags and transported to our laboratory. The samples were then examined by a geotechnical engineer in the lab to confirm the field classifications. Photographs of the asphalt cores and base materials are included on the attached ***Pavement Core Photographs***, Sheets 4A to 4L. The following *Pavement Coring Data*, Table 1, presents a summary of the measured asphalt section thickness, the base thickness and composition, and estimated existing structural numbers (SN_E) for the asphalt and base.

Table 1: Pavement Coring Data

Core No.	Core Location Latitude & Longitude	Asphalt			Base Course			Base Course Composition
		Thickness (in.)	Layer Coefficient	S _{NE}	Thickness (in.)	Layer Coefficient	S _{NE}	
PC-1/B-1	26.1149° -80.1369°	7.0	0.15	1.05	8.0	0.12	0.96	Light tan, limerock
PC-2/B-2	26.1149° -80.1373°	3.0	0.15	0.45	10.0	0.12	1.20	Tan, sandy limerock
PC-3/B-3	26.1148° -80.1391°	1.75	0.15	0.26	8.0	0.12	0.96	Tan, limerock
PC-4/B-4	26.1133° -80.1401°	2.25	0.15	0.34	5.5	0.12	0.66	Tan to gray, limerock
PC-5/B-5	26.1106° -80.1401°	2.25	0.15	0.34	7.0	0.12	0.84	Tan to gray, limerock
PC-6/B-6	26.1101° -80.1401°	4.25	0.15	0.64	6.0	0.12	0.72	Tan to gray, limerock
PC-7/B-7	26.1047° -80.1348°	4.5	0.15	0.68	8.0	0.12	0.96	Tan to gray, sandy limerock
PC-8/B-8	26.1077° -80.1395°	2.5	0.15	0.38	6.0	0.12	0.72	Light tan, limerock
PC-9/B-9	26.1077° -80.1373°	2.75	0.15	0.41	6.0	0.12	0.72	Tan, limerock
PC-10/ B-10	26.1077° -80.1367°	2.75	0.15	0.41	9.0	0.12	1.08	Tan, limerock
PC-11/ B-11	26.1060° -80.1356°	4.5	0.15	0.68	8.0	0.12	0.96	Tan to orange, sandy limerock
PC-12/ B-12	26.1031° -80.1331°	5.25	0.15	0.79	9.0	0.12	1.08	Tan, limerock

The cores physically varied in length between 1.75 and 7.0 inches as listed in Table 1 and shown on the photographs in the Attachments. The encountered base coarse material typically consisted of a light tan, ta, gray, orange, limerock or sandy limerock and varied in length between 5.5 and 10.0 inches as listed in Table 1. Photographs of the base coarse materials are also presented in the Attachments.

4.2 SPT BORINGS

RADISE performed twelve (12) Standard Penetration Test (SPT) borings; ten (10) to depths of 25 feet below the existing ground surface and two (2) to depths of 65 feet below the existing ground surface. The SPT borings were performed in general accordance with ASTM D 1586, “*Standard Test Method for Standard Penetration Test and Split-Barrel Sampling of Soils*”. The SPT borings were drilled using a CME-45 truck mounted drilling rig equipped with an automatic hammer. The SPT boring samples of the in-place materials were obtained at frequent vertical intervals using a standard split-barrel sampler driven with a 140-pound hammer freely falling 30 inches. After seating the SPT sampler 6 inches, the number of successive blows required to drive the sampler an additional 12 inches deeper in the soil constitutes the SPT test result, commonly referred to as the SPT N-value. The field SPT “N”-values should be corrected for hammer efficiency in accordance with the recommended relationship presented in the FDOT Soils and Foundations Handbook ($N_{safety} = 1.24 * N_{automatic}$). The N-value has been empirically correlated with various soil properties and is considered to be indicative of the denseness of cohesionless soils and the consistency of cohesive soils. The SPT sampling was performed continuously to 10-foot and 5-foot intervals thereafter to the termination depths.

Soil Samples recovered from the drilling operations were visually classified in the field by an Engineer in general accordance with ASTM D 2488, “*Standard Practice for Description and Identification of Soils*” (Visual Manual Procedure) using the Unified Soil Classification System (USCS). The samples were then placed in moisture-proof containers and transported to the RADISE laboratory.

The depth at which groundwater was encountered was measured within the borings at the time of drilling. Following completion of the drilling and testing, the boreholes were backfilled with grout and the pavement patched with cold asphalt patch, where necessary.

Table 2: Summary of SPT Borings

Boring Number	Boring Depth (ft)	Latitude	Longitude
B-1	25	26.1149°	-80.1369°
B-2	25	26.1149°	-80.1373°
B-3	25	26.1148°	-80.1391°

Boring Number	Boring Depth (ft)	Latitude	Longitude
B-4	25	26.1133°	-80.1401°
B-5	65	26.1106°	-80.1401°
B-6	65	26.1101°	-80.1401°
B-7	25	26.1047°	-80.1348°
B-8	25	26.1077°	-80.1395°
B-9	25	26.1077°	-80.1373°
B-10	25	26.1077°	-80.1367°
B-11	25	26.1060°	-80.1356°
B-12	25	26.1031°	-80.1331°

4.3 GROUNDWATER LEVEL MEASUREMENTS

After completion of the borings and after a short stabilization period, the depth to the groundwater was measured, recorded and plotted adjacent to the soil profiles on the attached *Subsurface Profiles*, Sheets 3A to 3D.

5.0 LABORATORY TESTING

At the time of drilling in the field, the soil samples obtained from the soil boring were visually classified by our staff engineer, in general accordance with the *Unified Soil Classification System* (ASTM D 2488). Field classifications were subsequently confirmed by a RADISE geotechnical engineer in the laboratory. Selected soil samples were then subject to additional testing for index properties to aid in their classification for engineering purposes (ASTM D 2487).

The following laboratory tests were performed for this project:

- Thirty-nine (39), Moisture content tests (ASTM D2216)
- Four (4), Organic content tests (ASTM D2216)
- Thirty-two (32), Percent of material passing through No. 200 sieve (ASTM D 1140)
- Five (5) grain size analysis (ASTM D6913)

A summary of laboratory test results is presented in the attached *Summary of Laboratory Test Results*, Table A-1 in Appendix A, and on the attached *Subsurface Profiles*, Sheets 3A to 3D. Grain Size Distributions are provided in Appendix A.

6.0 SUMMARY OF SURFACE AND SUBSURFACE CONDITIONS

A detailed graphical log of the SPT borings, including SPT N-values, soil profiles, and groundwater levels, are provided on the attached Sheets 3A to 3D, *Subsurface Profiles*.

6.1 SUBSURFACE CONDITIONS

Stratification of the explored soils is based on visual examination of the recovered soil samples, laboratory classification and index property testing, and interpretation of the field boring logs by a geotechnical engineer in accordance with the Unified Soil Classification System (USCS). Subsurface profiles showing the soil stratification at the boring locations were developed and are presented on the attached *Subsurface Profiles*, Sheets 3A to 3D. Stratification lines represent approximate boundaries between soil types, but the actual transition between layers may be gradual or abrupt. Additionally, soil and groundwater conditions will vary between boring locations.

In brief, the project site was generally found to be underlain by fine sand (USCS Classification: SP), fine sand with silt (SP-SM), silty sand (SM), and silty limerock (GM) from the ground surface to depths on the order of 4 to 8 feet, followed by a layer of predominantly sandy/silty limestone. This layer was approximately 18 feet thick with an exception in boring B-10, where 2 feet of sandy limestone was encountered. These soils in borings B-5, B-6 and B-10 are generally underlain by alternating layers of fine sand (SP) and sandy limestone to the deepest termination depth of the boring at 65 feet below the existing ground surface.

The SPT Values (N-values) in terms of relative particle density, indicate that the subsurface sandy soils are generally very loose to medium dense. The underlying limestone is generally soft.

6.2 GENERALIZED STRATIGRAPHY

A generalized stratigraphy of the subsurface deposits was developed based on the information obtained from field exploration and our laboratory testing program. The following Table 3 presents a generalized description of the site soil stratigraphy.

Table 3: Stratigraphy

Stratum No.	Soil Description	USCS Soil Classification
1	Asphalt	-
2	Limerock / sandy limerock base	GP
3	Tan, gray, silty limerock, with sand	GM
4	Light gray, brown, light brown, dark gray, gray, dark gray, tan, white, fine sand, occasional trace organics, and with varying amounts of silt, shells and limerock	SP
5	Tan, light gray, gray, fine sand, with silt, occasionally with varying amounts of limerock and shell fragments	SP-SM
6	Tan, gray, brown, silty sand, occasionally with varying amounts of limerock and limestone fragments	SM
7	Light gray, gray, tan, orange, silty limestone with sand	-
8	Light gray, tan, light brown, brown, gray, orange, limestone, with sand, occasionally with varying amounts of silt, trace shell fragments	-

Detailed graphical logs of the SPT borings, including SPT N-values, the soil profile, and the observed groundwater depth, are provided on the attached *Subsurface Profiles*, Sheets 3A to 3D.

6.3 GROUNDWATER

In June and July of 2023, at the time of our drilling operations, groundwater was encountered in the soil borings at depths ranging between approximately 6.0 and 6.6 feet below the existing ground surface. It should be noted that groundwater levels will fluctuate with the seasonal variations of precipitation. The water levels are expected to be higher during the wet season (summer months).

7.0 RECOMMENDATIONS AND DISCUSSIONS

The following sections present our conclusions and recommendations for the proposed construction. The recommendations discussed herein are based on our interpretation and understanding of the project’s needs and site conditions. If subsurface conditions encountered during the construction differ from those disclosed by the borings, we should be notified immediately, so that we can review and modify as necessary, our recommendations included herein.

The sands and limestone encountered in the borings performed for this study will be suitable for the proposed construction. The limestone encountered is expected to require special tools and equipment to excavate.

7.1 HORIZONTAL DIRECTIONALLY DRILLED PIPELINES (HDD)

It is our understanding that it is an option to install the pipeline underground using HDD methods. HDD pipeline installation is a suitable technique for smaller diameter pipelines anticipated for this project. Please note that the directional equipment setup, supporting facilities and pipe layout requirements would present significant coordination challenges to such installations. HDD pipeline installations require an adequate area be available for the HDD drilling and slurry processing equipment setup.

The primary concern with HDD pipeline construction installation techniques is the potential for loss of ground into the pipeline installation excavations. Such loss of ground can result in settlement of the ground above the pipeline therein adversely impacting subgrade support and the pavement and structures bearing on the subgrade.

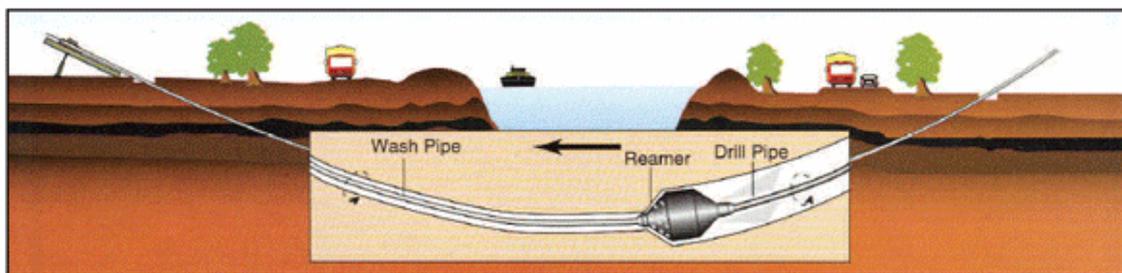
The HDD pipeline installation process requires construction of an entrance and exit receiving pits. These pits are commonly sized based on the size of the pipeline and drill fluid circulation volume requirements needed for its installation. The entry and receiving pits allow the HDD drilling fluid to be contained, collected and reclaimed during the drilling process to reduce costs, prevent waste and limit environmental impacts associated with the drilling fluid usage. Given the nature of the upper sandy soil encountered at the site, it is anticipated that



entrance and exit pits would be capable of being excavated as open pits with fairly steep but shallow 2V:1H side slopes and without the need for shoring retention systems. For the design of retention systems for the entrance and exit pits, the soil parameters in Section 7.2, Appendix B, based on the boring log profiles, should be used by the excavation support structural designer.

HDD pipeline profiles are a series of long radius arcs starting at entry and exit locations with straight horizontal tangents between same which pass beneath the infrastructure system to be avoided. Entry angles are typically between 8 and 16 degrees and exit angles typically vary from 5 to 12 degrees. The design of the pipeline material and thickness of the pipe must be designed to accommodate the anticipated tension stress to be imposed on the pipeline during the pullback process.

The HDD installation begins by boring a small directionally guided horizontal hole (pilot hole) along the proposed design alignment and under the crossing obstacle (e.g. a waterway, canal, river etc.). The pilot hole is drilled with a heavy bentonite slurry with a continuous string of steel drill rod affixed to a directionally guided capable drill head and bit. When the bore head and rod emerge on the opposite side of the crossing, a special cutter, called a back-reamer is attached and pulled back through the pilot hole leaving an enlarge hole filled with slurry. The back-reamer bores out

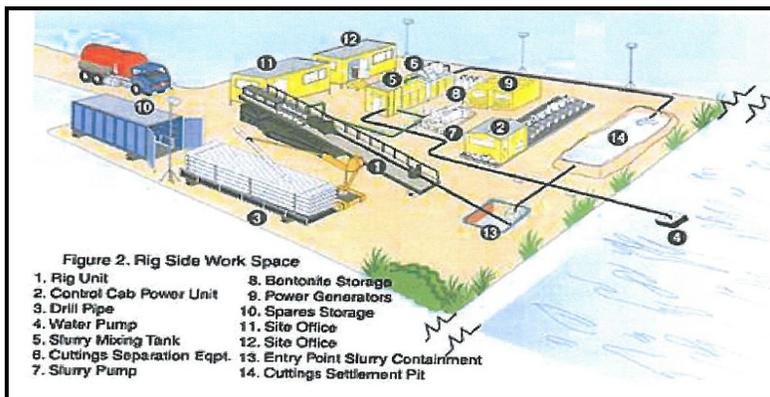


PRE-REAMING

and enlarges the pilot hole so that the design pipeline can be pulled through. Typically, the enlarged hole is some 40% (+/-) larger than the intended design pipe installation. The pipe is usually assembled pulled through from the side of the crossing opposite the drill rig after the final enlargement and cleanout passes of the reaming tool. Once installed, the HDD process leaves a borehole containing the design pipeline surrounded by remnant bentonite drilling slurry.

From an environmental perspective, primary site impacts are associated with the land use requirements needed to drill and stage the drill and slurry processing equipment and piping etc. needed for the crossing.

Space requirements for HDD rigs and entry areas are expected to be in the range of 20 feet wide by 20 feet long for the smaller diameter pipeline installations proposed for this project.



On the pipe exit side of the crossing, adequate space should be provided to allow fusing and joining the carrier pipe. It is desirable to provide sufficient pipeline assembly and staging area around and away from the exit pit such that the pipe can be assembled and then pulled back in one continuous operation without having to stop pullback to fuse or weld piping. However, in occupied areas, this may not be possible. A schematic of a typical HDD drilling exit site is shown above.

A primary design and construction consideration during HDD pipeline installation, is the inadvertent surface release (i.e. frac-outs) of drilling mud along the HDD alignment. This reportedly can be caused by a variety of reasons such as; excess slurry fluid pressures in the drilled hole exceeding the soil's weight and strength to contain it, pre-existing fractures or other openings in the soil or rock, or, where ground has been previously disturbed (previous excavations, piling, etc.). Drilling fluid pressures should not exceed that which can be supported by the overburden (soil) pressure which is function of the borehole cover. Typical installation criteria limits drilling fluid pressures to a maximum of 10 psi. Use of pressures above this value would require analysis of the existing conditions by a qualified registered professional engineer in the state of Florida. For environmental impact considerations, frac-out containment and mitigation plans will need to be developed and permitted and effected during construction.

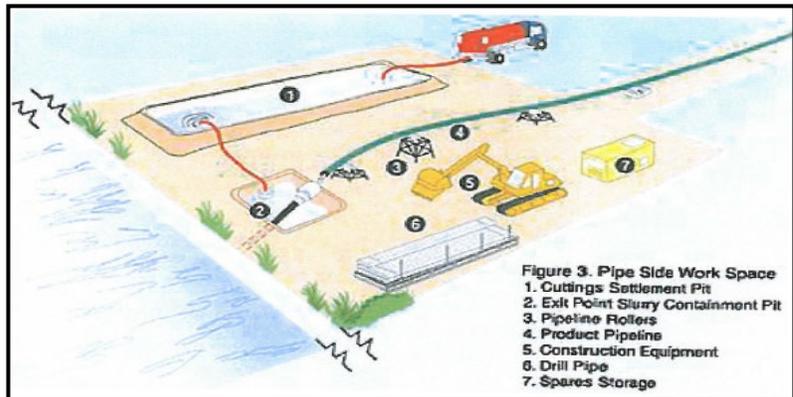


Figure 3. Pipe Side Work Space
 1. Cuttings Settlement Pit
 2. Exit Point Slurry Containment Pit
 3. Pipeline Rollers
 4. Product Pipeline
 5. Construction Equipment
 6. Drill Pipe
 7. Spares Storage

7.2 SOIL DESIGN PARAMETERS

Underground structures used for this project should be designed to resist pressures exerted by the adjacent soils and hydrostatic head. For walls that are not restrained during backfilling but are free to rotate at the top, active earth pressure should be used in design. Walls that are restrained should be designed assuming at-rest pressures. Recommended soil parameters for the soils encountered at the site are provided in Appendix B, Tables B1 to B12.

7.3 PAVEMENT DESIGN CONSIDERATIONS

The pavement thicknesses at the pavement cores ranged between 1.75 and 7.0 inches. The encountered base course material thickness ranged between 5.5 and 10.0 inches at the pavement core locations and typically consisted of light tan, tan, gray, orange, limerock and sandy limerock.

The existing pavement was observed to be in fair condition. Surface deterioration, automobile fluids, and weathering were observed on the pavement surface in several areas.

Typical roadway pavement standards for new construction include the following:

1. 12 inches of Type B stabilized subgrade (LBR 40 or Structural Number (SN) 0.96)
2. Optional Base Group 7 (SN of at least 1.5).
3. 1.5 inches of Type SP structural course (Traffic C) asphalt (SN 0.66).

4. 1 inch of friction course FC-9.5 asphalt (SN 0.44).
5. Total SN should be at least 3.56

Typical roadway pavement standards for widening projects include the following:

1. Optional Base Group 13 (SN ranging between 2.35 and 2.45).
2. 1.5 inches of Type SP structural course (Traffic C) asphalt (SN 0.66).
3. 1 inch of friction course FC-9.5 asphalt (SN 0.44).
4. Total SN should be at least 3.50

These recommendations are based solely on the data obtained from the pavement coring and SPT borings and the observed conditions of the existing pavements in the field. Traffic loadings and frequencies were not provided nor taken into account when preparing this report. Such loadings and frequencies will need to be taken into account and addressed by the roadway designer during the final pavement design process.

7.4 CLEARING AND GRUBBING

Clearing and grubbing may be required in some of the proposed construction areas. Clearing and grubbing where required should include the complete removal and disposal of surficial grasses, associated root systems, topsoil, rubbish, debris, any demolition material/pavement and all other obstructions resting on or protruding through the surface of the existing ground and the surface of excavated areas.

7.5 UNDERGROUND UTILITIES AND STRUCTURES

Existing underground utilities and structures are present in the proposed construction area. Any such utilities will need to be properly identified/marked, excavated, trenched, and the existing utilities removed as necessary to construct the project. The excavation bottoms should be cleaned of any undesirable materials prior to placing any engineered backfill. We recommend that a Geotechnical Engineer be present to observe that the areas have been adequately stripped and prepared.

Site preparation, excavation, and backfilling for new utilities or re-aligned utilities should follow all of the applicable recommendations of this report.

Density control should be exercised in the upper 12 inches of the improved subgrade. Soils in this interval should be compacted to not less than 95 percent of the maximum dry density in accordance with ASTM D 1557, the Modified Proctor Method, and verified in the field by RADISE. Subgrade soils that pump or deflect under the weight of the passing compaction equipment could indicate the presence of soft soils, compressible soils or voids existing within the depth of influence of the

compaction equipment. In such cases, those areas should be remedied by tilling, excavating and backfilling as described in the following sections of this report, or as directed by RADISE.

7.6 EXCAVATIONS

The Design-Build Firm (DBF) should be solely responsible for making temporary excavations in a safe manner and provide appropriate measures to retain side slopes to ensure that persons working in or near the excavation are protected. All excavations shall comply with Occupational Health and Safety Administration (OHSA) stipulations for Trench Excavation Safety including all temporary design and safety requirements. Temporary and/or permanent structural retaining walls shall be designed and sealed by a structural engineer registered in the State of Florida.

OSHA 29 CFR part 1926 (Subpart P, Excavations) defines the sandy soils encountered at in the borings as Type C soils. As such, temporary side slopes in fully dewatered excavations could be made at a 1½H:1V inclination or flatter if sufficient area is available around the excavation. Adjustment to this inclination and/or the use of sheeting, shoring or trench boxes will be required where inadequate area/space is not available.

7.7 DEWATERING

At the time of drilling of the borings (June and July of 2023), groundwater was encountered at depths ranging between approximately 6.0 and 6.6 feet below the existing ground surface. In-the-dry construction of deeper underground utilities and foundations may require groundwater lowering via dewatering and control of groundwater seepage. Dewatering of the excavations may necessitate the use of sumps, wells, well-points or combinations thereof to be operated on a 24/7 basis until the Force Main is constructed and properly backfilled. Control of groundwater should be accomplished in a manner that preserves the integrity of the foundation bearing materials and does not cause instability of the excavation sidewalls. The dewatering system employed should be capable of maintaining a pre-drained surface a minimum of 24 inches below the excavation bottoms. Dewatering measures should be controlled so that the groundwater is not lowered beneath any nearby structure. Special treatment of groundwater contaminated with petroleum is expected. Please note that recommendations presented herein have been included for informational purposes only.

The contractor shall be responsible for selecting appropriate methods to manage groundwater during construction.

7.8 PIPE BEDDING

The sands encountered in the borings are expected to provide good support for utility pipelines without the need for bedding when the invert elevations are at least 24 inches above the groundwater level (natural or pre-drained by dewatering). Should organics or other deleterious

materials be encountered at or below the pipe invert, such soils shall be considered compressible and unsuitable for pipe support. These soils should be over-excavated and replaced with compacted clean sand or coarse aggregate.

The bedding surface should be uniformly compacted to a density of not less than 95 percent of the maximum dry density in accordance with ASTM D 1557, the Modified Proctor Method.

7.9 TRENCH BACKFILL AND COMPACTION

Soils used to backfill utility excavations and structures should consist of relatively clean sands having no materials larger than two inches in size, not more than ten (10) percent passing the U.S. Standard No. 200 sieve. Such backfill shall not contain more than three (3) percent organics or other deleterious materials by weight.

Granular backfill should be placed at a moisture content within three (3) percent of its ASTM D 1557 determined optimum moisture and in level lifts whose thickness does not exceed eight (8) inches. Each fill lift should be stable, unyielding and uniformly compacted to at least ninety-five (95) percent of the maximum dry density in accordance with ASTM D 1557, the Modified Proctor Method. We recommend the use of only relatively light, hand-held compaction equipment in the densification operations around utilities to limit the potential damage to the pipelines and buried structures.

7.10 PROTECTION OF EXISTING STRUCTURES

Ground vibrations induced primarily by pile driving, soil compaction or any other construction activities should be monitored to assure that they do not reach levels which prove damaging to any adjacent/nearby structures. Vibration Monitoring should be performed in accordance with "Section 108, Protection of Existing Structures" Division II Construction Details: General Construction Operations of the current FDOT Standard Specifications for Road and Bridge Construction. Vibration levels on adjacent facilities should generally be maintained below a 0.25 ips peak particle velocity level. The Design-Build Firm (DBF) will need to inventory adjacent structures and determine suitable vibration impact monitoring locations and limits for their construction activities.

7.11 OBSERVATIONS, INSPECTIONS AND TESTING DURING CONSTRUCTION

It is recommended that RADISE be retained to provide soil engineering services during the construction earthwork phase of the project. This is to observe compliance with the design concept, specifications and recommendations, and to allow design changes in the event subsurface conditions differ from those anticipated are encountered. In addition, a RADISE representative should be present to provide excavation observation and monitoring of both fill and concrete placement during the construction phase of the project.

8.0 LIMITATIONS

This report is intended for geotechnical purposes only, and does not document or detect the presence, or absence, of any environmental conditions at the site, nor is it intended to perform an environmental assessment of the site.

The analysis and recommendations presented in this report are based upon our interpretation of the subsurface information revealed by the test borings. The report does not reflect variations in subsurface conditions that may exist between or beyond these borings. Variations in soil and groundwater conditions should be expected, the nature and extent of which might not become evident until construction is undertaken. If variations are encountered, and/or the scope of the project altered, we should be consulted for additional recommendations.

RADISE International warrants that the professional services performed and presented in this report, are prepared for Hazen and Sawyer and are based upon typical standard of care recognized principles and practices in the discipline of geotechnical engineering and hydrogeology at this place and point in time, for this project site. No other warranties are expressed or implied.

-oOo-

RADISE appreciates the opportunity to be of service to you. Please feel free to contact us at 561-841-0103 if you have any questions or comments regarding this report.

Respectfully submitted
RADISE International, L.C.

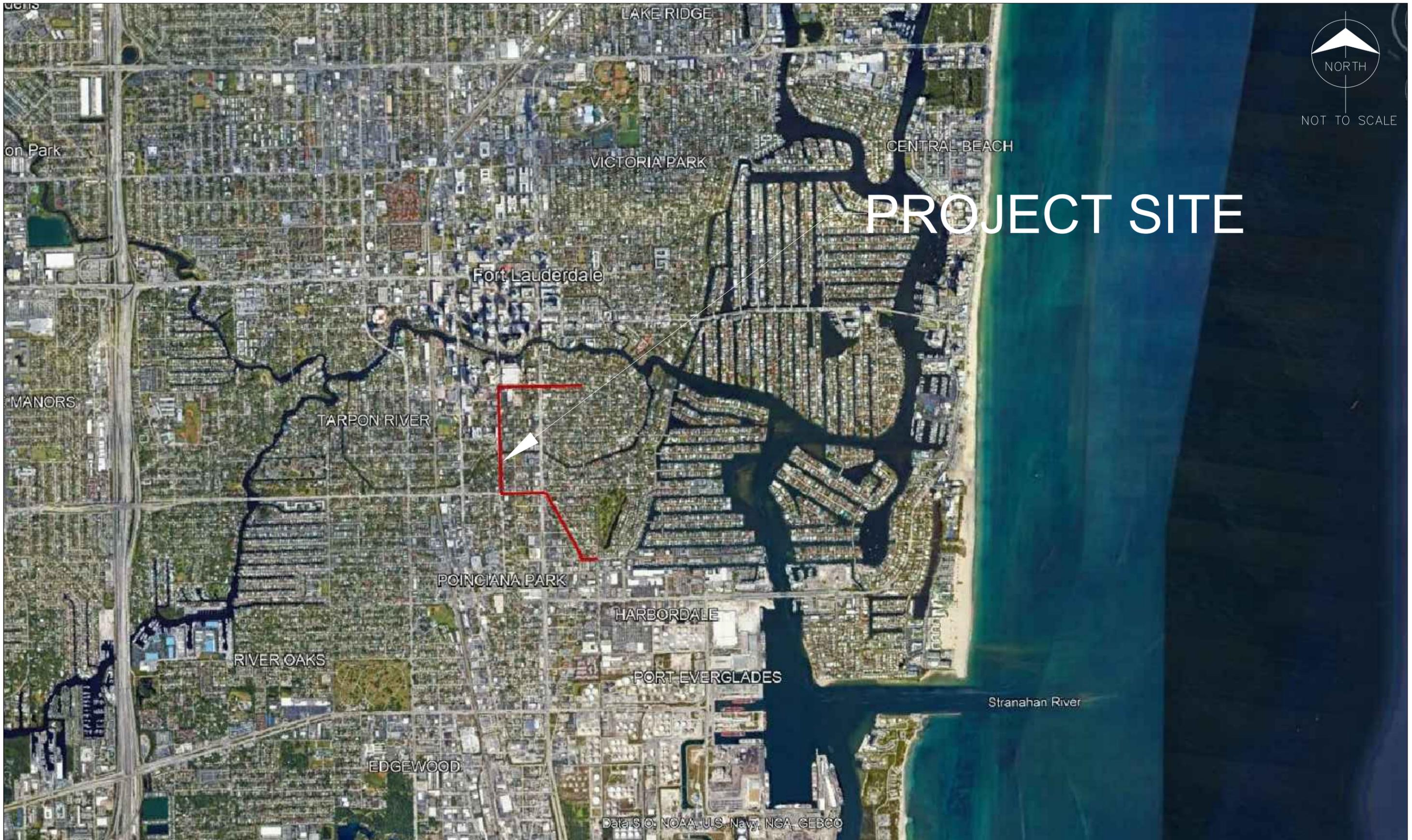
ATTACHMENTS

SHEET 1: VICINITY MAP

SHEETS 2A AND 2B: BORING LOCATION PLAN

SHEETS 3A TO 3D: SUBSURFACE PROFILES

SHEETS 4A TO 4L: PAVEMENT CORE PHOTOGRAPHS



PROJECT SITE

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

Names	Dates
Drawn by AM	07/12/2023
Checked by NG	07/12/2023
Designed by NG	07/12/2023
Checked by NG	07/12/2023
Approved by AB	



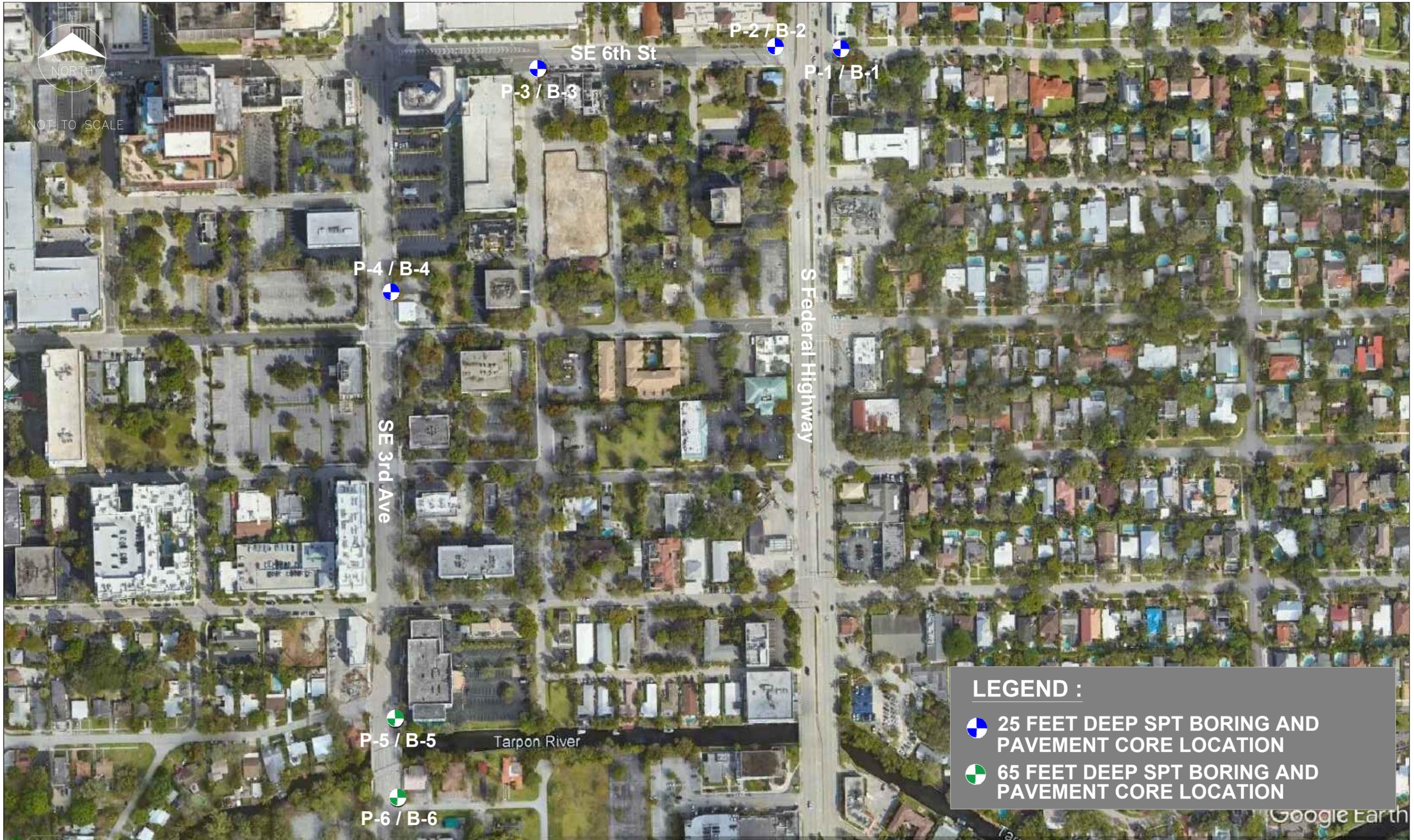
ENGINEER OF RECORD
 AKASH BISSOON (P.E.No. - 74582)
 RADISE International
 4152 West Blue Heron Boulevard, Suite 1114
 Riviera Beach, Florida, 33404
 TEL 561-841-0103 FAX 561-841-0104
 URL : [http:// www.radise.net](http://www.radise.net)

CITY OF FORT LAUDERDALE	
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE:
 VERTICAL
 N.T.S.
 SCALE:
 HORIZONTAL
 N.T.S.

SHEET TITLE:
VICINITY MAP
 PROJECT NAME:
**TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN
 REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP**

SHEET NO.
1
 RADISE PROJECT NO:
02-23-075



NOT TO SCALE

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

Names	Dates
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Checked by NG	07/12/2023
Designed by NG	07/12/2023
Checked by NG	07/12/2023
Approved by AB	



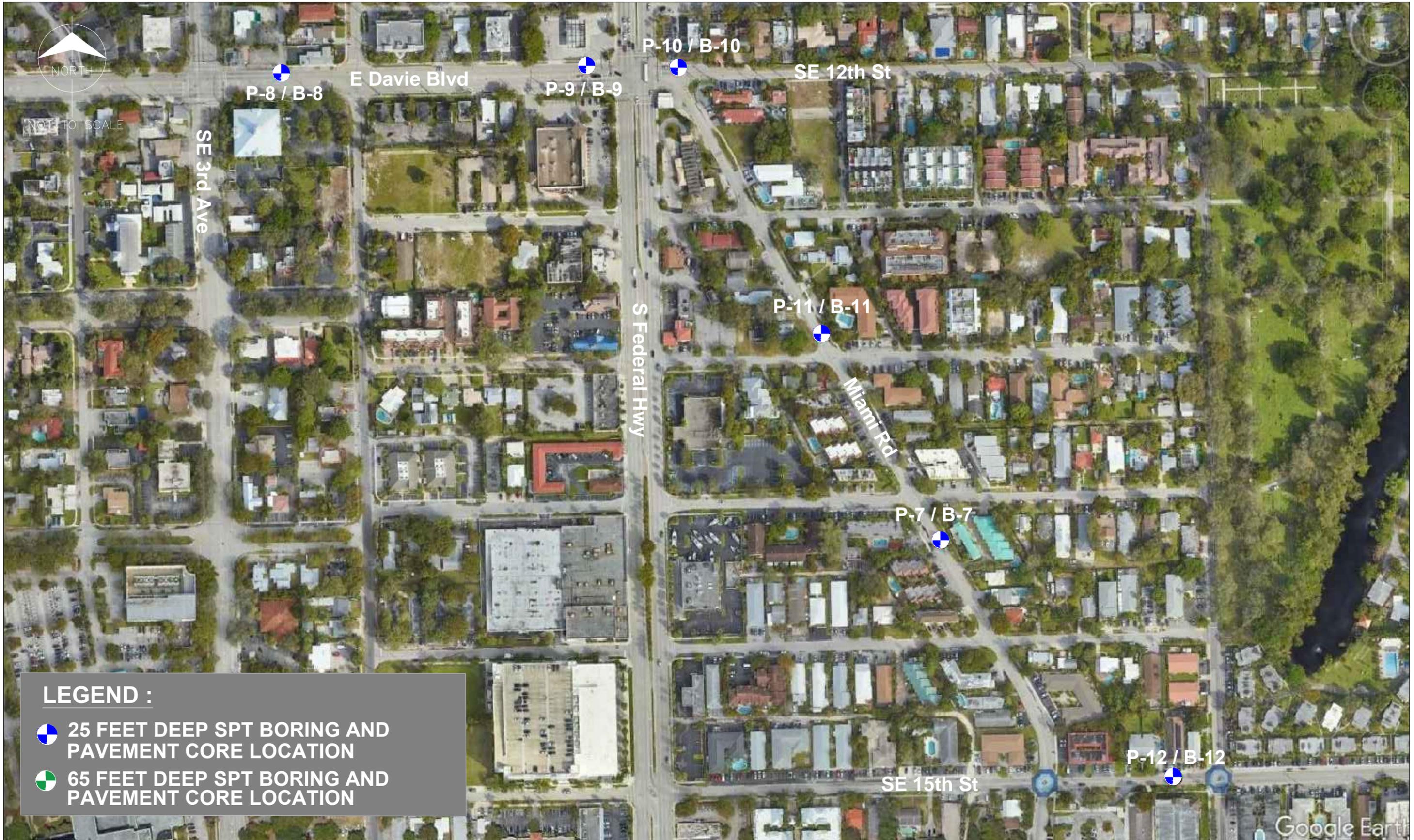
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CITY OF FORT LAUDERDALE	
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE:
 VERTICAL
 N.T.S.
 SCALE:
 HORIZONTAL
 N.T.S.

SHEET TITLE:
BORING LOCATION PLAN
 PROJECT NAME:
**TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN
 REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP**

SHEET NO.
2A
 RADISE PROJECT NO:
02-23-075



LEGEND :

-  25 FEET DEEP SPT BORING AND PAVEMENT CORE LOCATION
-  65 FEET DEEP SPT BORING AND PAVEMENT CORE LOCATION

REVISIONS	
Date.	By

Names	Dates
AM	07/12/2023
NG	07/12/2023
NG	07/12/2023
NG	07/12/2023
AB	



LICENSE NO. - 8901

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 RADISE International
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 Riviera Beach, Florida. 33404
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CITY OF FORT LAUDERDALE	
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

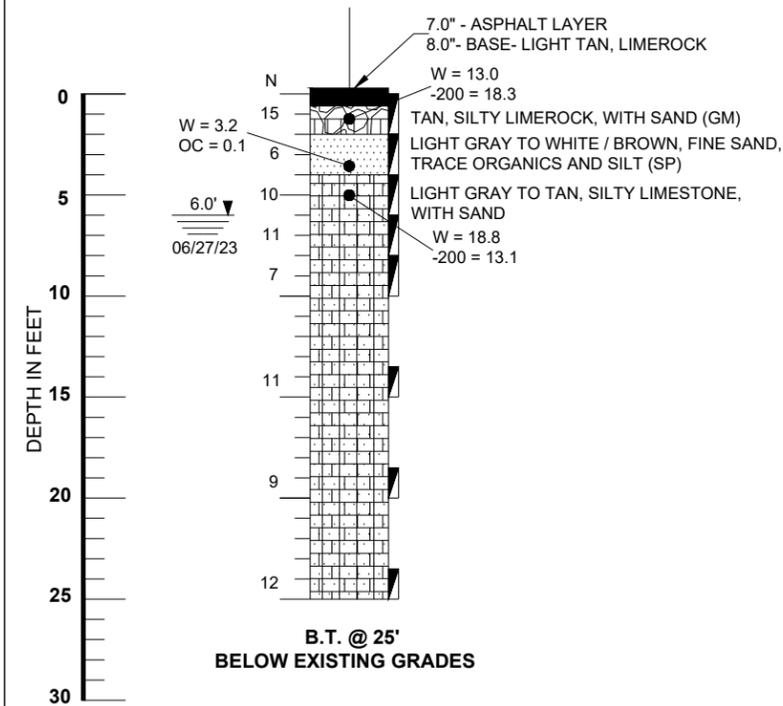
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SHEET TITLE:
BORING LOCATION PLAN
 PROJECT NAME:
**TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN
 REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP**

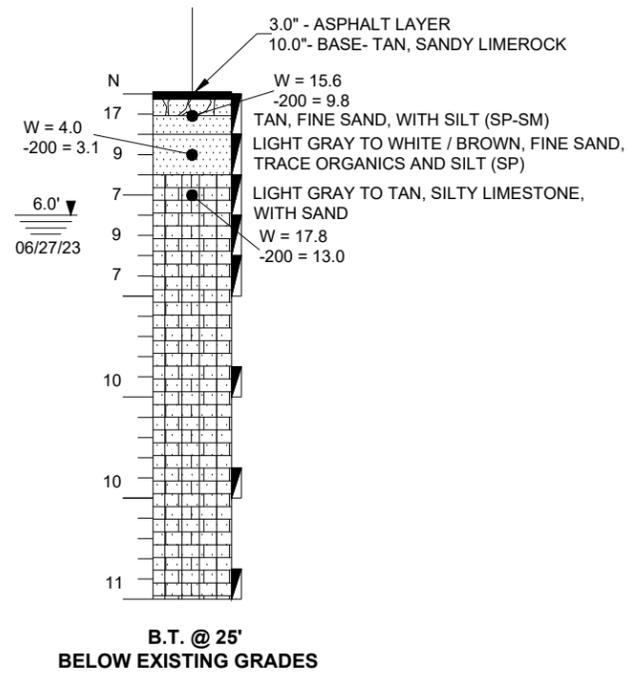
SHEET NO.
2B
 RADISE PROJECT NO:
02-23-075

BORING NO.
LONGITUDE:
LATITUDE:
RIG:
HAMMER:
DRILLER:
DATE:

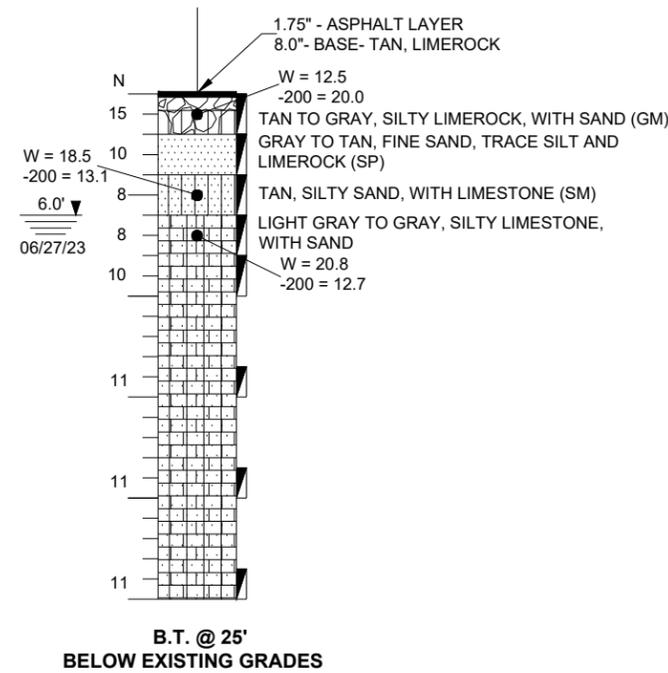
B-1
W -80.1369°
N 26.1149°
CME 45
AUTO
P. RAMSEWACK
06/27/2023



B-2
W -80.1373°
N 26.1149°
CME 45
AUTO
P. RAMSEWACK
06/27/2023



B-3
W -80.1391°
N 26.1148°
CME 45
AUTO
P. RAMSEWACK
06/27/2023



LEGEND

- SAND (SP, SP-SM)
- SANDY LIMEROCK OR LIMEROCK BASE LAYER
- LIMESTONE WITH SILT AND SAND
- SILTY LIMESTONE (GM)
- SILTY LIMESTONE
- ASPHALT LAYER

B.T. @ 25' BORING TERMINATED AT 25 FEET BELOW THE EXISTING GROUND SURFACE
 B-1 STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
 N STANDARD PENETRATION RESISTANCE-BLOWS PER FOOT USING AUTOMATIC HAMMER
 SAMPLING INTERVAL
 6.0' ▼ GROUNDWATER LEVEL IN FEET AND DRILLING DATE
 06/27/23

W MOISTURE CONTENT (%)
 OC ORGANIC CONTENT (%)
 -200 AMOUNT PASSING US STANDARD 200 SIEVE (%)
 SP, SP-SM UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2487)

NOTES:

1. BORINGS WERE DRILLED BETWEEN 06/27/2023 AND 07/07/2023. SPT BORINGS WERE PERFORMED USING A CME-45C AUTOMATIC HAMMER DRILLING RIG (ASTM D 1586).
2. STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.
3. GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVEL FLUCTUATIONS SHOULD BE ANTICIPATED THROUGHOUT THE YEAR.
4. AFTER COMPLETION OF DRILLING, BOREHOLES WERE BACKFILLED WITH GROUT & PAVEMENT PATCHED WITH COLD ASPHALT PATCH.

STANDARD PENETRATION TEST DATA *

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS
GRANULAR MATERIALS	AUTOMATIC HAMMER
	SPT N - VALUE
RELATIVE DENSITY	BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40
SILTS AND CLAYS	AUTOMATIC HAMMER
	SPT N - VALUE
CONSISTENCY	BLOWS/FOOT
VERY SOFT	LESS THAN 1
SOFT	1 - 3
FIRM	3 - 6
STIFF	6 - 12
VERY STIFF	12 - 24
HARD	GREATER THAN 24

*FDOT SOILS AND FOUNDATIONS HANDBOOK 2020

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

Names	Dates
AM	07/21/2023
NG	07/21/2023
NG	07/21/2023
NG	07/21/2023
AB	



ENGINEER OF RECORD
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 RADISE International
 4152 West Blue Heron Boulevard, Suite 1114
 Riviera Beach, Florida. 33404
 TEL 561-841-0103 FAX 561-841-0104
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CITY OF FORT LAUDERDALE
 COUNTY: BROWARD
 CLIENT: HAZEN AND SAWYER

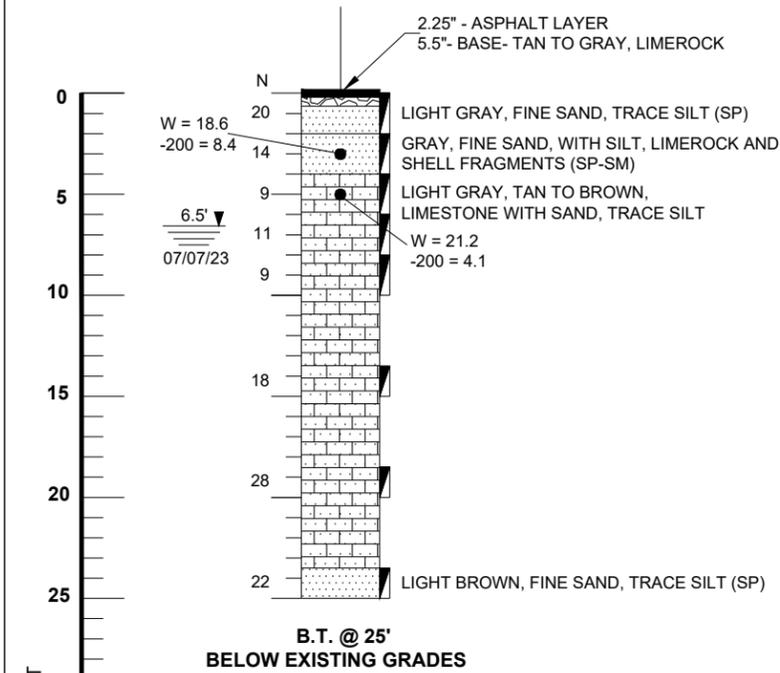
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SHEET TITLE: **SUBSURFACE PROFILES**
 PROJECT NAME: **TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP**

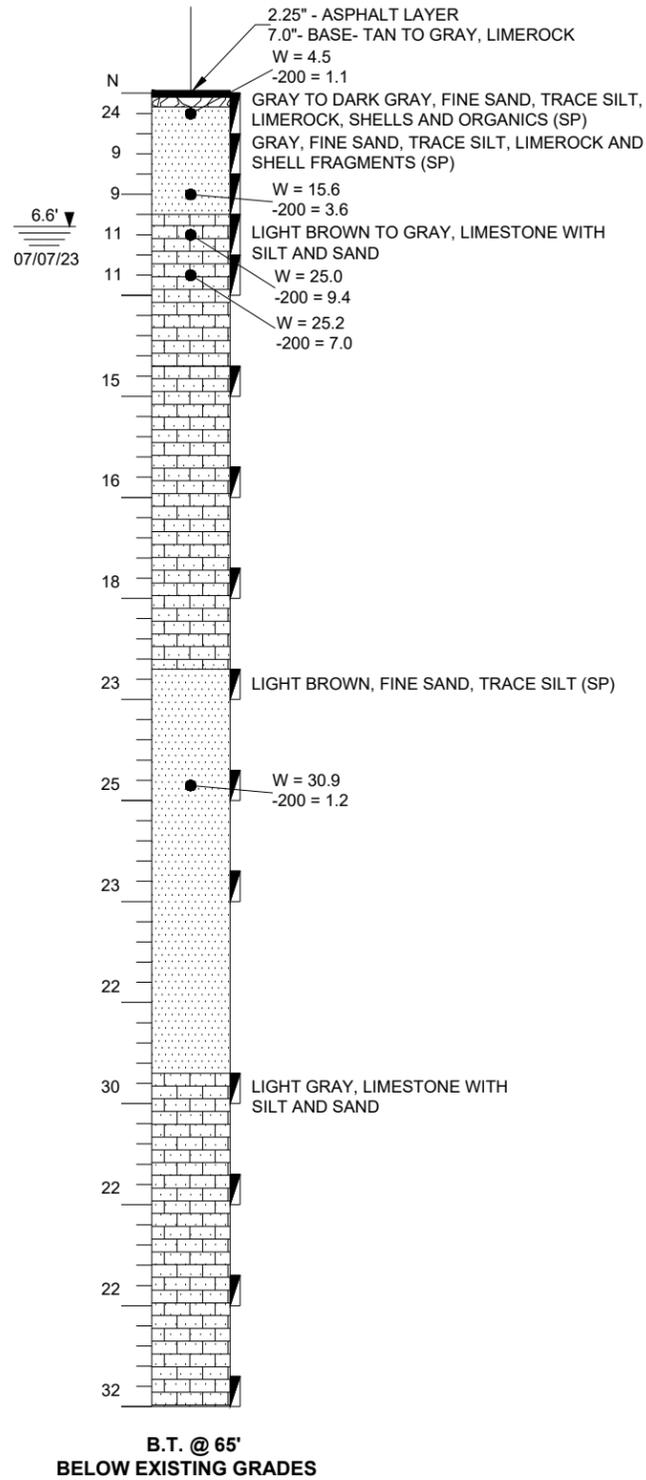
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 RADISE PROJECT NO: **02-23-075**

BORING NO.
LONGITUDE:
LATITUDE:
RIG:
HAMMER:
DRILLER:
DATE:

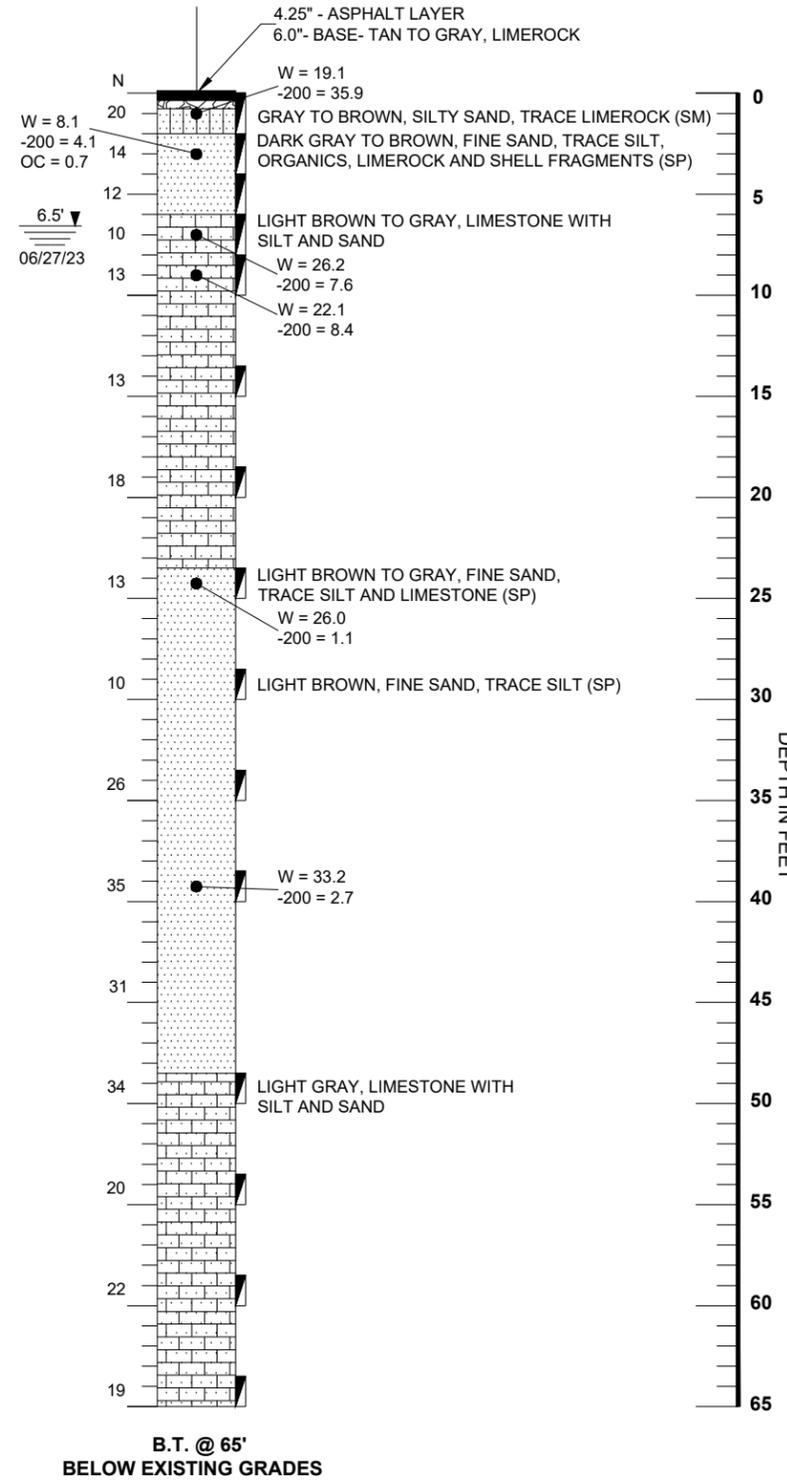
B-4
W -80.1401°
N 26.1133°
CME 45
AUTO
P. RAMSEWACK
07/07/2023



B-5
W -80.1401°
N 26.1106°
CME 45
AUTO
P. RAMSEWACK
07/07/2023



B-6
W -80.1401°
N 26.1101°
CME 45
AUTO
P. RAMSEWACK
07/06/2023



LEGEND

- SAND (SP, SP-SM)
- SILTY SAND (SM)
- LIMESTONE WITH SILT AND SAND
- SILTY LIMESTONE
- ASPHALT LAYER
- SANDY LIMEROCK OR LIMEROCK BASE LAYER
- SILTY LIMEROCK (GM)

- B.T. @ 25' BORING TERMINATED AT 25 FEET BELOW THE EXISTING GROUND SURFACE
- B-1 STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
- N STANDARD PENETRATION RESISTANCE-BLOWS PER FOOT USING AUTOMATIC HAMMER
- SAMPLING INTERVAL
- GROUNDWATER LEVEL IN FEET AND DRILLING DATE
- W MOISTURE CONTENT (%)
- OC ORGANIC CONTENT (%)
- 200 AMOUNT PASSING US STANDARD 200 SIEVE (%)
- SP, SP-SM UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2487)

NOTES:

1. BORINGS WERE DRILLED BETWEEN 06/27/2023 AND 07/07/2023. SPT BORINGS WERE PERFORMED USING A CME-45C AUTOMATIC HAMMER DRILLING RIG (ASTM D 1586).
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STANDARD PENETRATION TEST DATA *

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS
GRANULAR MATERIALS	AUTOMATIC HAMMER
	SPT N - VALUE
RELATIVE DENSITY	BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40
SILTS AND CLAYS	AUTOMATIC HAMMER
	SPT N - VALUE
CONSISTENCY	BLOWS/FOOT
VERY SOFT	LESS THAN 1
SOFT	1 - 3
FIRM	3 - 6
STIFF	6 - 12
VERY STIFF	12 - 24
HARD	GREATER THAN 24

*FDOT SOILS AND FOUNDATIONS HANDBOOK 2020

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

Names	Dates
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NG	07/21/2023
AB	



ENGINEER OF RECORD
AKASH BISSOON (P.E.No. - 74582)
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida, 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http://www.radise.net

CITY OF FORT LAUDERDALE	
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE:
VERTICAL
N.T.S.

SCALE:
HORIZONTAL
N.T.S.

SHEET TITLE:
SUBSURFACE PROFILES

PROJECT NAME:
TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP

SHEET NO.
3B

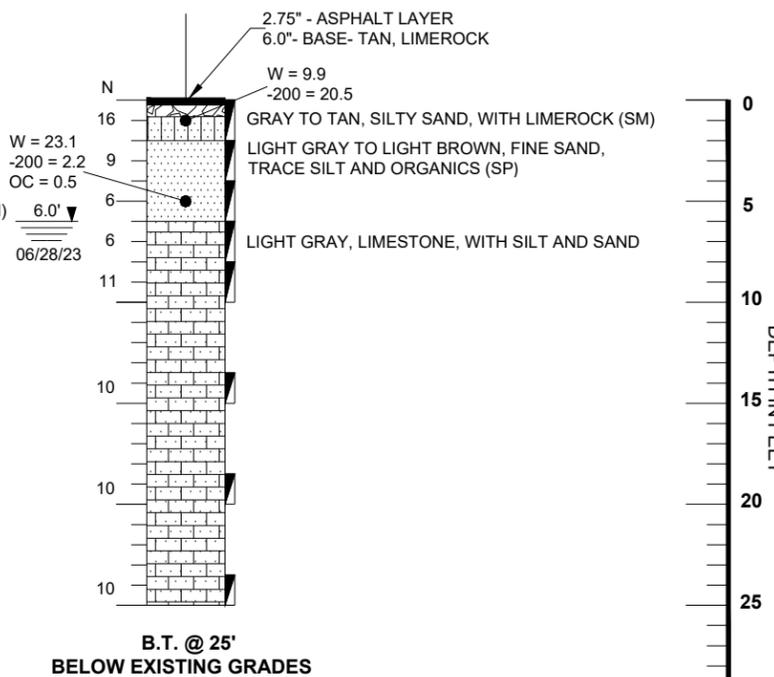
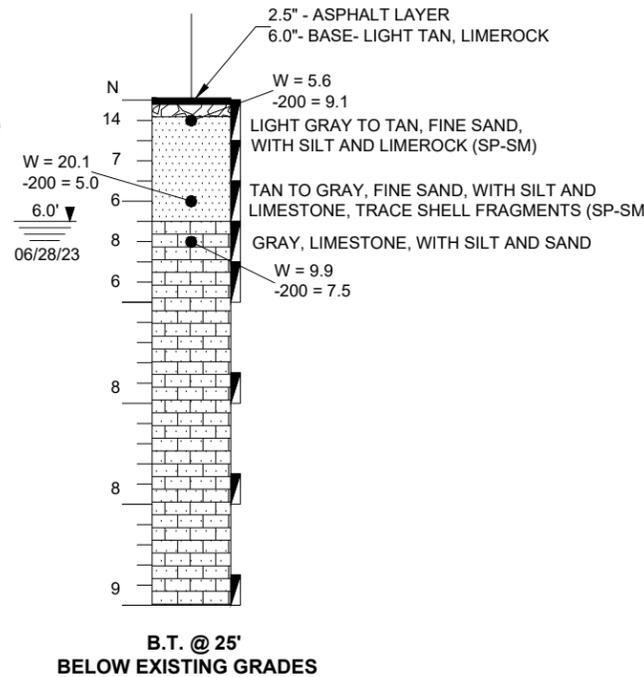
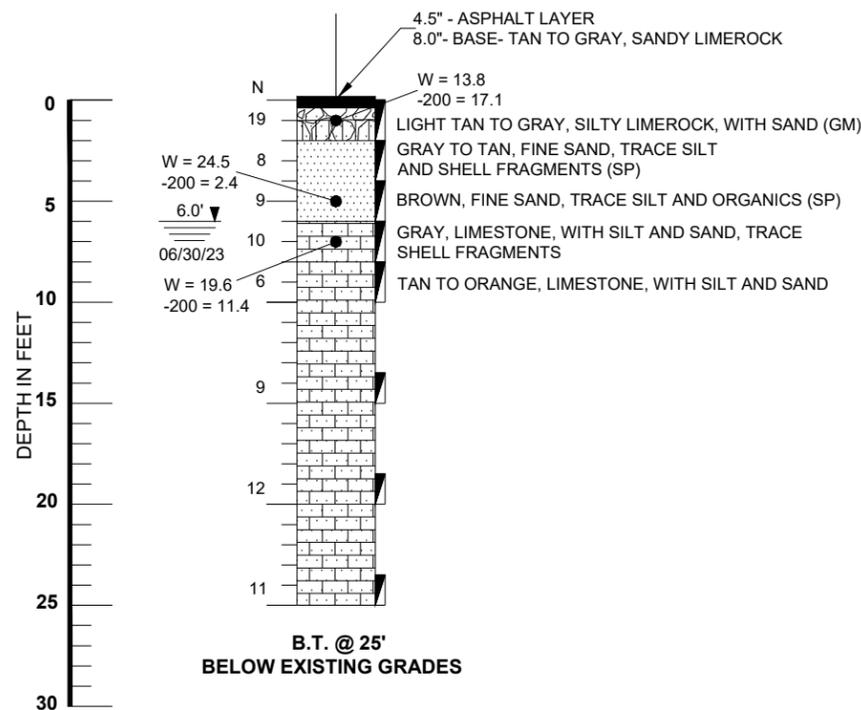
RADISE PROJECT NO:
02-23-075

BORING NO.
LONGITUDE:
LATITUDE:
RIG:
HAMMER:
DRILLER:
DATE:

B-7
W -80.1348°
N 26.1047°
CME 45
AUTO
P. RAMSEWACK
06/30/2023

B-8
W -80.1395°
N 26.1077°
CME 45
AUTO
P. RAMSEWACK
06/28/2023

B-9
W -80.1373°
N 26.1077°
CME 45
AUTO
P. RAMSEWACK
06/28/2023



LEGEND

- SAND (SP, SP-SM)
- SILTY SAND (SM)
- LIMESTONE WITH SILT AND SAND
- SILTY LIMESTONE
- ASPHALT LAYER
- SANDY LIMEROCK OR LIMEROCK BASE LAYER
- SILTY LIMEROCK (GM)

B.T. @ 25' BORING TERMINATED AT 25 FEET BELOW THE EXISTING GROUND SURFACE
 B-1 STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
 N STANDARD PENETRATION RESISTANCE-BLOWS PER FOOT USING AUTOMATIC HAMMER
 SAMPLING INTERVAL
 GROUNDWATER LEVEL IN FEET AND DRILLING DATE
 06/27/23

W MOISTURE CONTENT (%)
 OC ORGANIC CONTENT (%)
 -200 AMOUNT PASSING US STANDARD 200 SIEVE (%)
 SP, SP-SM UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2487)

NOTES:

1. BORINGS WERE DRILLED BETWEEN 06/27/2023 AND 07/07/2023. SPT BORINGS WERE PERFORMED USING A CME-45C AUTOMATIC HAMMER DRILLING RIG (ASTM D 1586).
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SPOON OUTSIDE DIA.	2 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS
GRANULAR MATERIALS	AUTOMATIC HAMMER
	SPT N - VALUE
RELATIVE DENSITY	BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40
SILTS AND CLAYS	AUTOMATIC HAMMER
	SPT N - VALUE
CONSISTENCY	BLOWS/FOOT
VERY SOFT	LESS THAN 1
SOFT	1 - 3
FIRM	3 - 6
STIFF	6 - 12
VERY STIFF	12 - 24
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NG	07/21/2023
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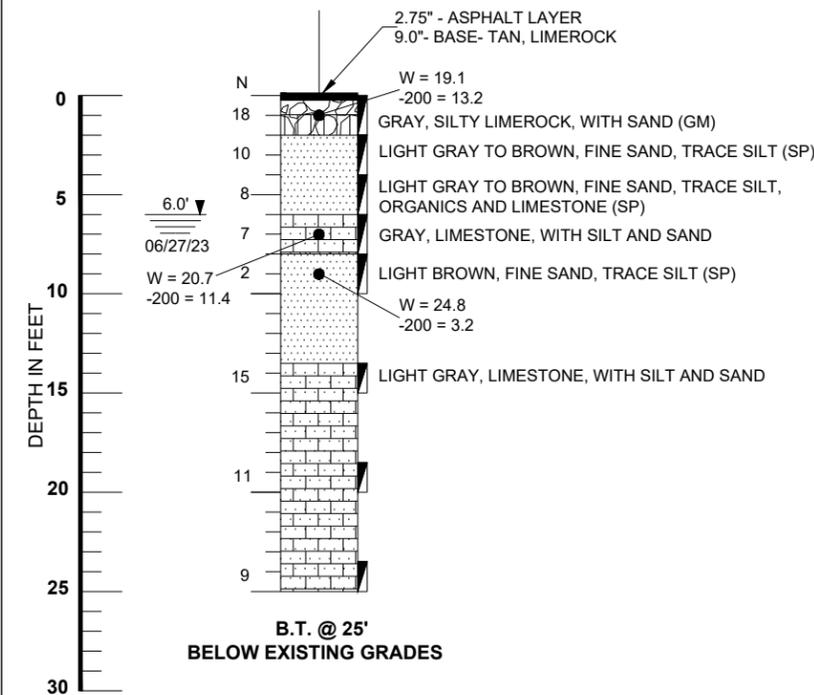
CITY OF FORT LAUDERDALE	
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE:
 VERTICAL
 N.T.S.
 SCALE:
 HORIZONTAL
 N.T.S.

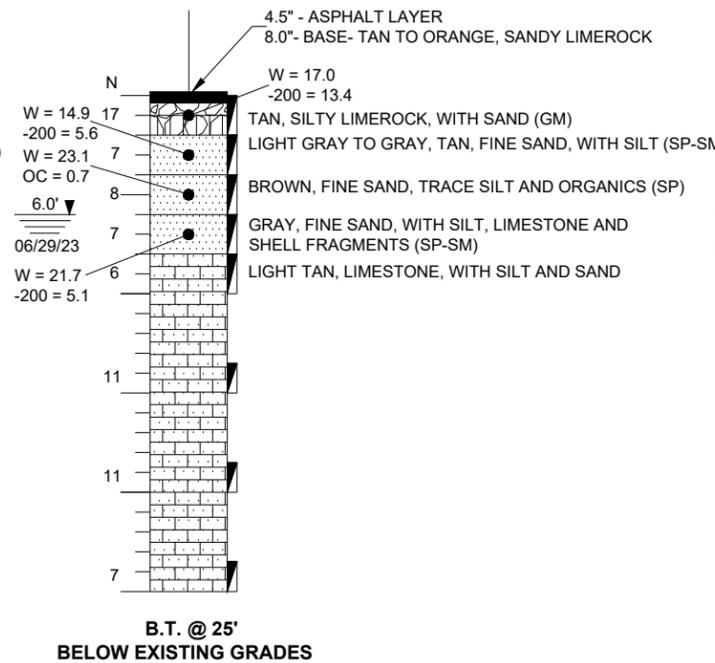
SHEET TITLE:
SUBSURFACE PROFILES
 PROJECT NAME:
TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP

SHEET NO.
3C
 RADISE PROJECT NO:
02-23-075

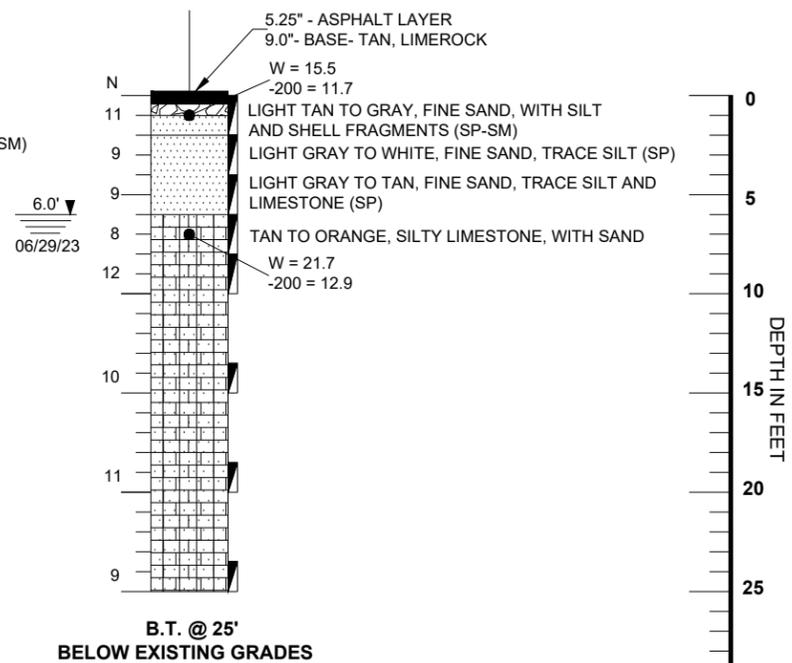
BORING NO. B-10
LONGITUDE: W -80.1367°
LATITUDE: N 26.1077°
RIG: CME 45
HAMMER: AUTO
DRILLER: P. RAMSEWACK
DATE: 06/27/2023



BORING NO. B-11
LONGITUDE: W -80.1356°
LATITUDE: N 26.1060°
RIG: CME 45
HAMMER: AUTO
DRILLER: P. RAMSEWACK
DATE: 06/29/2023



BORING NO. B-12
LONGITUDE: W -80.1331°
LATITUDE: N 26.1031°
RIG: CME 45
HAMMER: AUTO
DRILLER: P. RAMSEWACK
DATE: 06/29/2023



LEGEND

- SAND (SP, SP-SM)
- SILTY SAND (SM)
- LIMESTONE WITH SILT AND SAND
- SILTY LIMESTONE
- ASPHALT LAYER
- SANDY LIMEROCK OR LIMEROCK BASE LAYER
- SILTY LIMEROCK (GM)

- B.T. @ 25' BORING TERMINATED AT 25 FEET BELOW THE EXISTING GROUND SURFACE
- B-1 STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
- N STANDARD PENETRATION RESISTANCE-BLOWS PER FOOT USING AUTOMATIC HAMMER
- SAMPLING INTERVAL

6.0' GROUNDWATER LEVEL IN FEET AND DRILLING DATE
06/27/23

- W MOISTURE CONTENT (%)
- OC ORGANIC CONTENT (%)
- 200 AMOUNT PASSING US STANDARD 200 SIEVE (%)
- SP, SP-SM UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2487)

NOTES:

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2. STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.
3. GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVEL FLUCTUATIONS SHOULD BE ANTICIPATED THROUGHOUT THE YEAR.
4. AFTER COMPLETION OF DRILLING, BOREHOLES WERE BACKFILLED WITH GROUT & PAVEMENT PATCHED WITH COLD ASPHALT PATCH.

STANDARD PENETRATION TEST DATA *

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS
GRANULAR MATERIALS	AUTOMATIC HAMMER
	SPT N - VALUE
RELATIVE DENSITY	BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40
SILTS AND CLAYS	AUTOMATIC HAMMER
	SPT N - VALUE
CONSISTENCY	BLOWS/FOOT
VERY SOFT	LESS THAN 1
SOFT	1 - 3
FIRM	3 - 6
STIFF	6 - 12
VERY STIFF	12 - 24
HARD	GREATER THAN 24

*FDOT SOILS AND FOUNDATIONS HANDBOOK 2020

REVISIONS

Date	By	Descriptions	Date	By	Descriptions

Names	Dates
AM	07/21/2023
NG	07/21/2023
NG	07/21/2023
NG	07/21/2023
AB	

ENGINEER OF RECORD
AKASH BISSOON (P.E.No. - 74582)
RADISE International
 4152 West Blue Heron Boulevard, Suite 1114
 Riviera Beach, Florida, 33404
 TEL 561-841-0103 FAX 561-841-0104
 URL : http:// www.radise.net

CITY OF FORT LAUDERDALE

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE:
 VERTICAL
 N.T.S.
 SCALE:
 HORIZONTAL
 N.T.S.

SHEET TITLE:
SUBSURFACE PROFILES

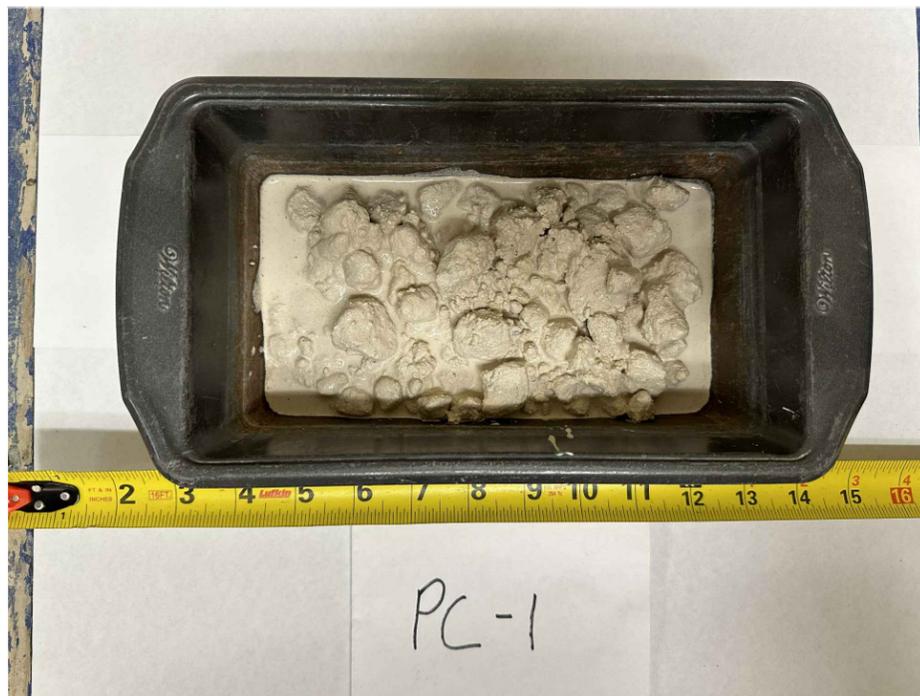
PROJECT NAME:
TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP

SHEET NO.
3D

RADISE PROJECT NO:
02-23-075



P-1: 7.0 INCHES THICK ASPHALT



P-1: 8.0 INCHES THICK LIMEROCK BASE

REVISIONS						Names		Dates		 ENGINEER OF RECORD AKASH BISSOON (P.E.No. - 74582) RADISE International 4152 West Blue Heron Boulevard, Suite 1114 Riviera Beach, Florida. 33404 TEL 561-841-0103 FAX 561-841-0104 URL : http:// www.radise.net	CITY OF FORT LAUDERDALE		SCALE: VERTICAL N.T.S.	SHEET TITLE: PAVEMENT CORE PHOTOGRAPHS	SHEET NO. 4A
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	AM	07/12/2023	COUNTY		CLIENT	SCALE: HORIZONTAL N.T.S.	PROJECT NAME: TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP	RADISE PROJECT NO: 02-23-075	
						Checked by	NG	07/12/2023	BROWARD	HAZEN AND SAWYER					
						Designed by	NG	07/12/2023							
						Checked by	NG	07/12/2023							
						Approved by	AB								



P-2: 3.0 INCHES THICK ASPHALT



P-2: 10.0 INCHES THICK SANDY LIMEROCK BASE

REVISIONS

Date	By	Descriptions	Date	By	Descriptions

Names	Dates
AM	07/12/2023
NG	07/12/2023
NG	07/12/2023
NG	07/12/2023
AB	

RADISE
INTERNATIONAL
LICENSE NO. - 8901

ENGINEER OF RECORD
AKASH BISSOON (P.E.No. - 74582)
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : [http:// www.radise.net](http://www.radise.net)

CITY OF FORT LAUDERDALE	
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

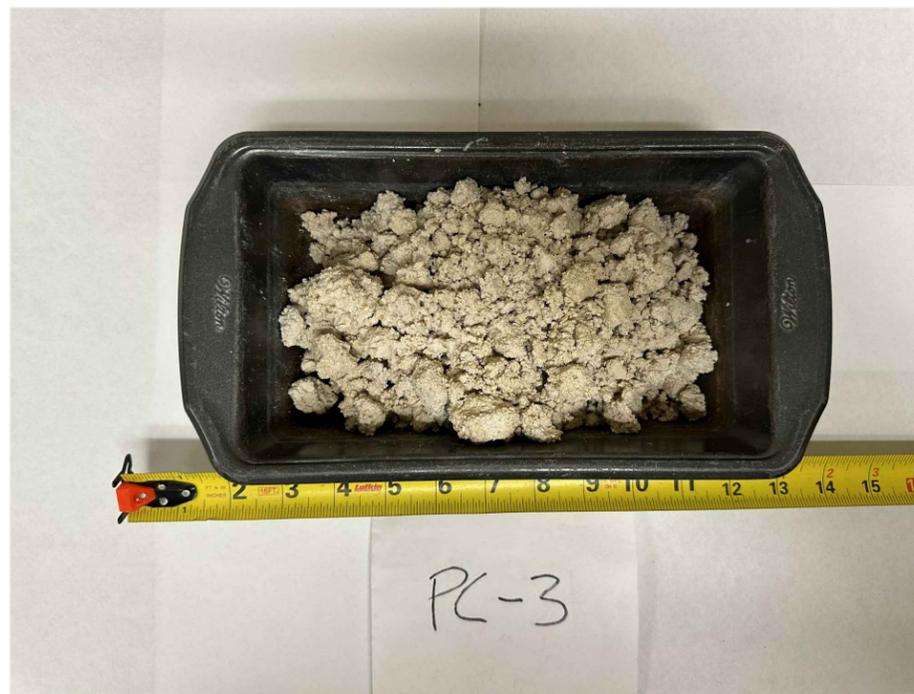
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: PAVEMENT CORE PHOTOGRAPHS
PROJECT NAME: TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP

SHEET NO. 4B
RADISE PROJECT NO: 02-23-075



P-3: 1.75 INCHES THICK ASPHALT



P-3: 8.0 INCHES THICK LIMEROCK BASE

REVISIONS						Names		Dates		 ENGINEER OF RECORD AKASH BISSOON (P.E.No. - 74582) RADISE International 4152 West Blue Heron Boulevard, Suite 1114 Riviera Beach, Florida. 33404 TEL 561-841-0103 FAX 561-841-0104 URL : http:// www.radise.net	CITY OF FORT LAUDERDALE		SCALE:	SHEET TITLE:	SHEET NO.
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	AM	07/12/2023	COUNTY		CLIENT	VERTICAL	PAVEMENT CORE PHOTOGRAPHS	4C	
						Checked by	NG	07/12/2023	BROWARD	HAZEN AND SAWYER	N.T.S.	PROJECT NAME:	RADISE PROJECT NO:		
						Designed by	NG	07/12/2023			HORIZONTAL	TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN	02-23-075		
						Checked by	NG	07/12/2023			N.T.S.	REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP			
						Approved by	AB								



P-4: 2.25 INCHES THICK ASPHALT

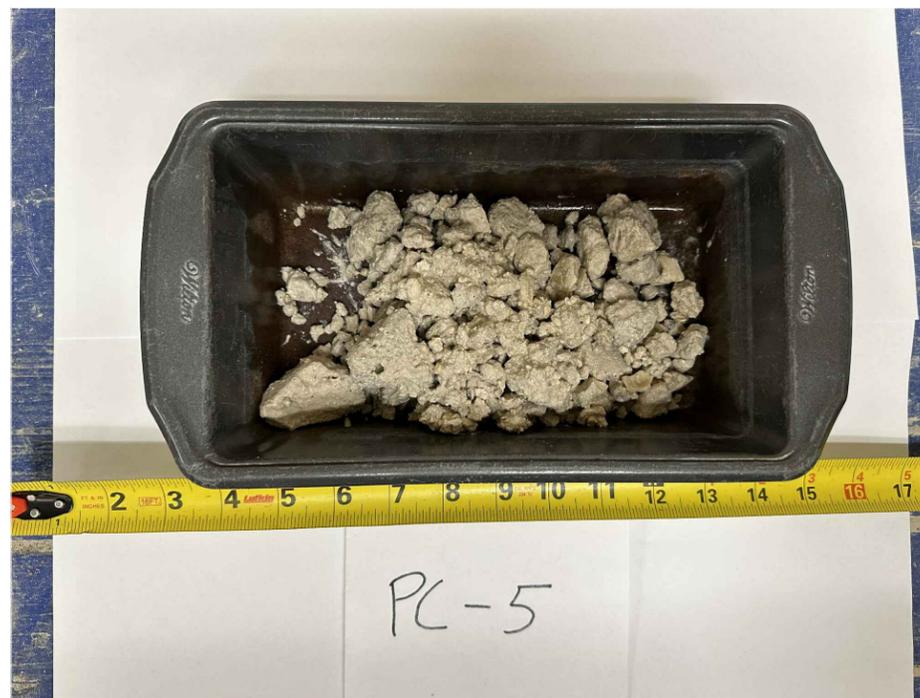


P-4: 5.5 INCHES THICK LIMEROCK BASE

REVISIONS						Names		Dates		 ENGINEER OF RECORD AKASH BISSOON (P.E.No. - 74582) RADISE International 4152 West Blue Heron Boulevard, Suite 1114 Riviera Beach, Florida. 33404 TEL 561-841-0103 FAX 561-841-0104 URL : http:// www.radise.net	CITY OF FORT LAUDERDALE		SCALE:	SHEET TITLE:	SHEET NO.
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	Checked by	Designed by	Checked by		Approved by	COUNTY	CLIENT	VERTICAL	PROJECT NAME:
						AM	NG	NG	NG	AB	BROWARD	HAZEN AND SAWYER	N.T.S.	TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP	02-23-075



P-5: 2.25 INCHES THICK ASPHALT



P-5: 7.0 INCHES THICK LIMEROCK BASE

REVISIONS

Date	By	Descriptions	Date	By	Descriptions

Names	Dates
AM	07/12/2023
NG	07/12/2023
NG	07/12/2023
NG	07/12/2023
AB	

RADISE
INTERNATIONAL
LICENSE NO. - 8901

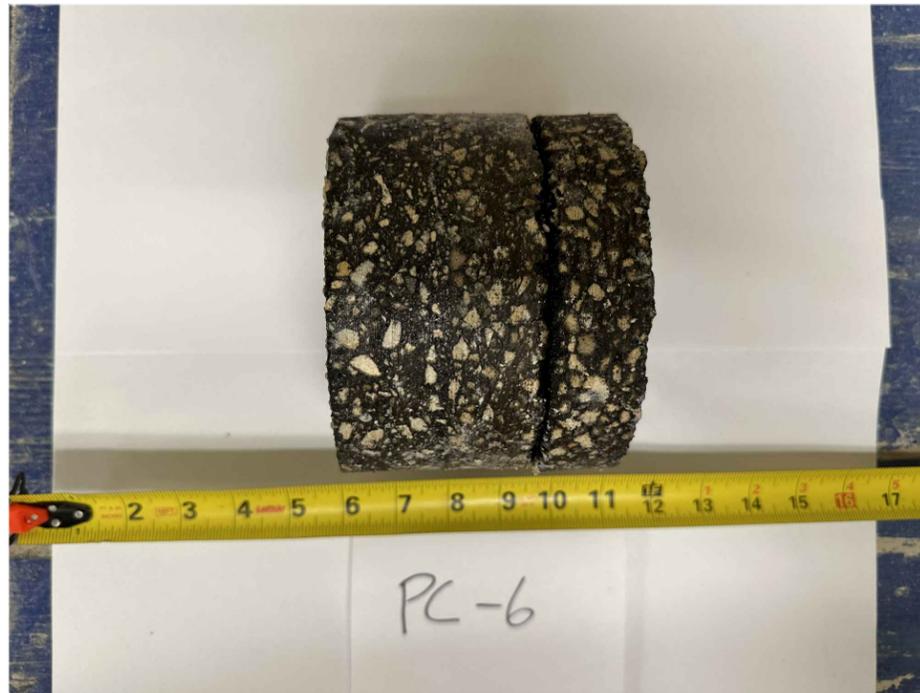
ENGINEER OF RECORD
AKASH BISSOON (P.E.No. - 74582)
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : [http:// www.radise.net](http://www.radise.net)

CITY OF FORT LAUDERDALE	
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

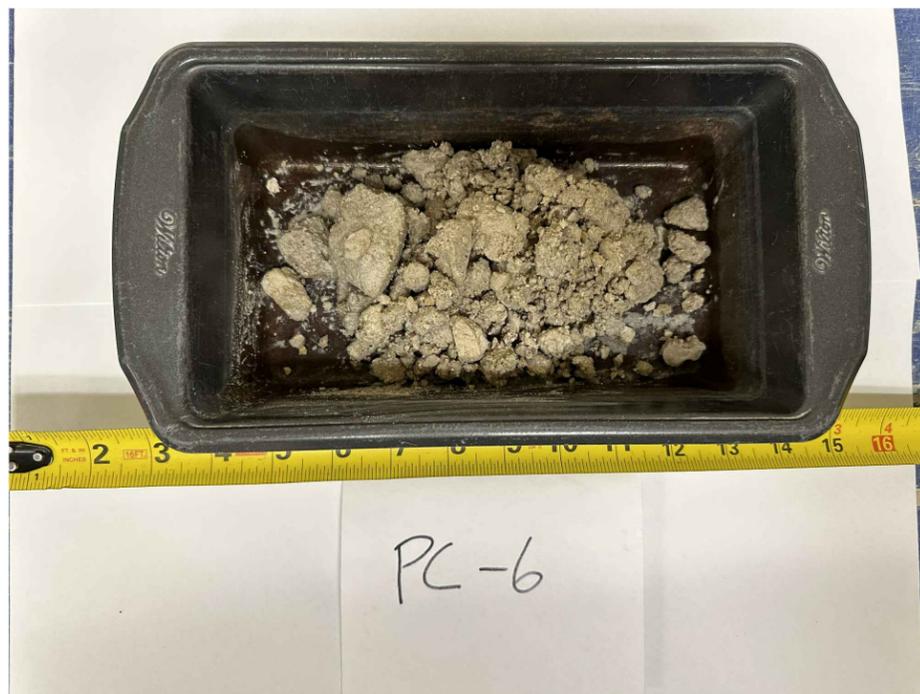
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SCALE: HORIZONTAL N.T.S.

SHEET TITLE: PAVEMENT CORE PHOTOGRAPHS
PROJECT NAME: TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP

SHEET NO. 4E
RADISE PROJECT NO: 02-23-075



P-6: 4.25 INCHES THICK ASPHALT



P-6: 6.0 INCHES THICK LIMEROCK BASE

REVISIONS						Names		Dates		 ENGINEER OF RECORD AKASH BISSOON (P.E.No. - 74582) RADISE International 4152 West Blue Heron Boulevard, Suite 1114 Riviera Beach, Florida. 33404 TEL 561-841-0103 FAX 561-841-0104 URL : http:// www.radise.net	CITY OF FORT LAUDERDALE		SCALE:	SHEET TITLE:	SHEET NO.
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	AM	07/12/2023	Checked by		NG	07/12/2023	VERTICAL	PAVEMENT CORE PHOTOGRAPHS	4F
						Designed by	NG	07/12/2023	Checked by	NG	07/12/2023	N.T.S.	PROJECT NAME:	RADISE PROJECT NO:	
						Checked by	NG	07/12/2023	Approved by	AB		HORIZONTAL	TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN	02-23-075	
						LICENSE NO. - 8901						N.T.S.	REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP	CAM #24-0671	
														Exhibit 2	
														Page 197 of 385	



P-7: 4.5 INCHES THICK ASPHALT



P-7: 8.0 INCHES THICK SANDY LIMEROCK BASE

REVISIONS						Names	Dates	 ENGINEER OF RECORD AKASH BISSOON (P.E.No. - 74582) RADISE International 4152 West Blue Heron Boulevard, Suite 1114 Riviera Beach, Florida. 33404 TEL 561-841-0103 FAX 561-841-0104 URL : http:// www.radise.net	CITY OF FORT LAUDERDALE		SCALE: VERTICAL N.T.S.	SHEET TITLE: PAVEMENT CORE PHOTOGRAPHS	SHEET NO. 4G
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	AM		07/12/2023	COUNTY	CLIENT	SCALE: HORIZONTAL N.T.S.	PROJECT NAME: TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP
						Checked by	NG	07/12/2023	BROWARD	HAZEN AND SAWYER			
						Designed by	NG	07/12/2023					
						Checked by	NG	07/12/2023					
						Approved by	AB						



P-8: 2.5 INCHES THICK ASPHALT

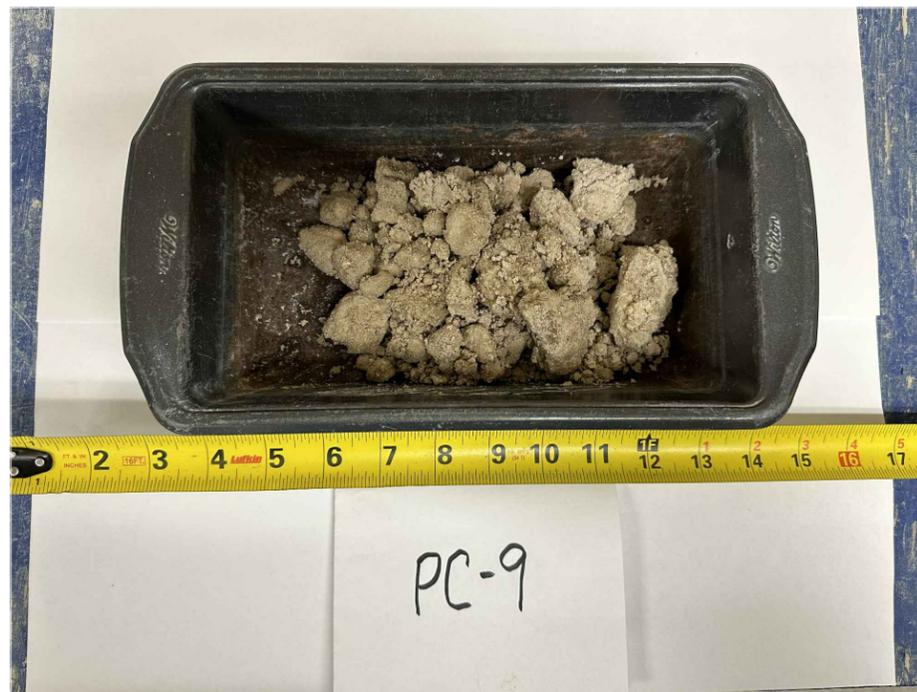


P-8: 6.0 INCHES THICK LIMEROCK BASE

REVISIONS						Names		Dates		 ENGINEER OF RECORD AKASH BISSOON (P.E.No. - 74582) RADISE International 4152 West Blue Heron Boulevard, Suite 1114 Riviera Beach, Florida. 33404 TEL 561-841-0103 FAX 561-841-0104 URL : http:// www.radise.net	CITY OF FORT LAUDERDALE		SCALE:	SHEET TITLE:	SHEET NO.
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	Checked by	Designed by	Checked by		Approved by	COUNTY	CLIENT	VERTICAL	PROJECT NAME:
						AM	NG	NG	NG	AB	BROWARD	HAZEN AND SAWYER	N.T.S.	TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP	02-23-075



P-9: 2.75 INCHES THICK ASPHALT



P-9: 6.0 INCHES THICK LIMEROCK BASE

REVISIONS						Names		Dates		 ENGINEER OF RECORD AKASH BISSOON (P.E.No. - 74582) RADISE International 4152 West Blue Heron Boulevard, Suite 1114 Riviera Beach, Florida, 33404 TEL 561-841-0103 FAX 561-841-0104 URL : http:// www.radise.net	CITY OF FORT LAUDERDALE		SCALE:	SHEET TITLE:	SHEET NO.	
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	Checked by	Designed by	Checked by		Approved by	LICENSE NO. - 8901	COUNTY	CLIENT	VERTICAL	PAVEMENT CORE PHOTOGRAPHS
						AM	NG	NG	NG	AB		BROWARD	HAZEN AND SAWYER	N.T.S.	PROJECT NAME:	RADISE PROJECT NO:
														HORIZONTAL	TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN	02-23-075
														N.T.S.	REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP	



P-10: 2.75 INCHES THICK ASPHALT



P-10: 9.0 INCHES THICK LIMEROCK BASE

REVISIONS						Names		Dates		 ENGINEER OF RECORD AKASH BISSOON (P.E.No. - 74582) RADISE International 4152 West Blue Heron Boulevard, Suite 1114 Riviera Beach, Florida, 33404 TEL 561-841-0103 FAX 561-841-0104 URL : http:// www.radise.net	CITY OF FORT LAUDERDALE		SCALE:	SHEET TITLE:	SHEET NO.
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	AM	07/12/2023	VERTICAL		PAVEMENT CORE PHOTOGRAPHS	4J			
						Checked by	NG	07/12/2023	N.T.S.	PROJECT NAME: TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP	RADISE PROJECT NO: 02-23-075				
						Designed by	NG	07/12/2023	HORIZONTAL						
						Checked by	NG	07/12/2023	N.T.S.						
						Approved by	AB								



P-11: 4.5 INCHES THICK ASPHALT



P-11: 8.0 INCHES THICK SANDY LIMEROCK BASE

REVISIONS						Names		Dates		 ENGINEER OF RECORD AKASH BISSOON (P.E.No. - 74582) RADISE International 4152 West Blue Heron Boulevard, Suite 1114 Riviera Beach, Florida. 33404 TEL 561-841-0103 FAX 561-841-0104 URL : http:// www.radise.net	CITY OF FORT LAUDERDALE		SCALE:	SHEET TITLE:	SHEET NO.
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	Checked by	Designed by	Checked by		Approved by	COUNTY	CLIENT	VERTICAL N.T.S.	PAVEMENT CORE PHOTOGRAPHS
						AM	NG	NG	NG	AB	BROWARD	HAZEN AND SAWYER	HORIZONTAL N.T.S.	PROJECT NAME: TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP	RADISE PROJECT NO: 02-23-075



P-12: 5.25 INCHES THICK ASPHALT



P-12: 9.0 INCHES THICK LIMEROCK BASE

REVISIONS						Names		Dates		 ENGINEER OF RECORD AKASH BISSOON (P.E.No. - 74582) RADISE International 4152 West Blue Heron Boulevard, Suite 1114 Riviera Beach, Florida, 33404 TEL 561-841-0103 FAX 561-841-0104 URL : http:// www.radise.net	CITY OF FORT LAUDERDALE		SCALE:	SHEET TITLE:	SHEET NO.
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	Checked by	Designed by	Checked by		Approved by	COUNTY	CLIENT	VERTICAL	PAVEMENT CORE PHOTOGRAPHS
						AM	NG	NG	NG	AB	BROWARD	HAZEN AND SAWYER	N.T.S.	PROJECT NAME:	RADISE PROJECT NO:
													HORIZONTAL	TO-35 REHABILITATION OF 48/54 -INCH FORCE MAIN	02-23-075
													N.T.S.	REPLACEMENT ON SE 9TH & 10TH AVE TO GTL - DCP	

APPENDIX A

TABLE A-1: SUMMARY OF LABORATORY TEST RESULTS GRAIN SIZE DISTRIBUTIONS

TABLE A-1: SUMMARY OF LABORATORY TEST RESULTS



Table A-1: Summary of Laboratory Test Results

Project Name: TO 35 - Rehabilitation of 48/54-Inch FM; Replacement on SE 9th and 10th Avenue to the GTL Design Criteria Package

Project ID: 02-23-075

Boring No	Sample Depth	Soil Classification	Moisture Content (%)	Organic Content (%)	-200 wash	ATTERBERG LIMITS			GRAIN SIZE ANALYSIS												
						LL (%)	PL (%)	PI	U.S. STANDARD SIEVE SIZE (% Passing)												
						3"	1.5"	3/4"	3/8"	#4	#10	#20	#40	#50	#60	#100	#140	#200			
B-1	0-2	GM	13.0	-	18.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
B-1	2-4	SP	3.2	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
B-1	4-6	*	18.8	-	13.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
B-2	0-2	SP-SM	15.6	-	9.8	-	-	-	100.0	100.0	91.0	73.5	57.8	52.8	49.5	41.9	33.1	27.0	13.8	11.1	9.8
B-2	2-4	SP	4.0	-	3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-2	4-6	*	17.8	-	13.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-3	0-2	GM	12.5	-	20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-3	4-6	SM	18.5	-	13.1	-	-	-	100.0	100.0	100.0	88.3	73.4	69.0	64.2	52.0	41.1	34.5	19.2	14.9	13.1
B-3	6-8	*	20.8	-	12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-4	2-4	SP-SM	18.6	-	8.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-4	4-6	*	21.2	-	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-5	0-2	SP	4.5	-	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-5	4-6	SP	15.6	-	3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-5	6-8	*	25.0	-	9.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-5	8-10	*	25.2	-	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-5	33.5-35	SP	30.9	-	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-6	0-2	SM	19.1	-	35.9	-	-	-	100.0	100.0	100.0	100.0	100.0	95.8	94.3	91.7	87.4	84.3	71.7	48.8	35.9
B-6	2-4	SP	8.1	0.7	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-6	6-8	*	26.2	-	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-6	8-10	*	22.1	-	8.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-6	23.5-25	SP	26.0	-	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-6	38.5-40	SP	33.2	-	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-7	0-2	GM	13.8	-	17.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-7	4-6	SP	24.5	-	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-7	6-8	*	19.6	-	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Boring No	Sample Depth	Soil Classification	Moisture Content (%)	Organic Content (%)	-200 wash	ATTERBERG LIMITS			GRAIN SIZE ANALYSIS U.S. STANDARD SIEVE SIZE (% Passing)													
						LL (%)	PL (%)	PI	3"	1.5"	3/4"	3/8"	#4	#10	#20	#40	#50	#60	#100	#140	#200	
B-8	0-2	SP-SM	5.6	-	9.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-8	4-6	SP-SM	20.1	-	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-8	6-8	*	9.9	-	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-9	0-2	SM	9.9	-	20.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-9	4-6	SP	23.1	0.5	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-10	0-2	GM	19.1	-	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-10	6-8	*	20.7	-	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-10	8-10	SP	24.8	-	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-11	0-2	GM	17.0	-	13.4	-	-	-	100.0	100.0	90.2	78.9	55.6	46.8	41.9	34.7	27.5	23.7	16.8	14.9	13.4	
B-11	2-4	SP-SM	14.9	-	5.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-11	4-6	SP	23.1	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-11	6-8	SP-SM	21.7	-	5.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-12	0-2	SP-SM	15.5	-	11.7	-	-	-	100.0	100.0	91.0	73.1	58.6	48.9	45.4	38.8	31.4	27.1	17.0	13.6	11.7	
B-12	6-8	*	21.7	-	12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

* Silty limestone / limestone with sand and silt
 Moisture Content tested in accordance with ASTM D2216,
 Organic Content tests are performed with furnace temperature @ 450 Celsius and tested in accordance with ASTM D2974,
 Soil Classification tested in accordance with ASTM D2487,
 Grain Size Analysis was tested in accordance with ASTM D422,
 Fines Content (Passing No. 200 Sieve) was tested in accordance with ASTM D1140.

GRAIN SIZE DISTRIBUTIONS

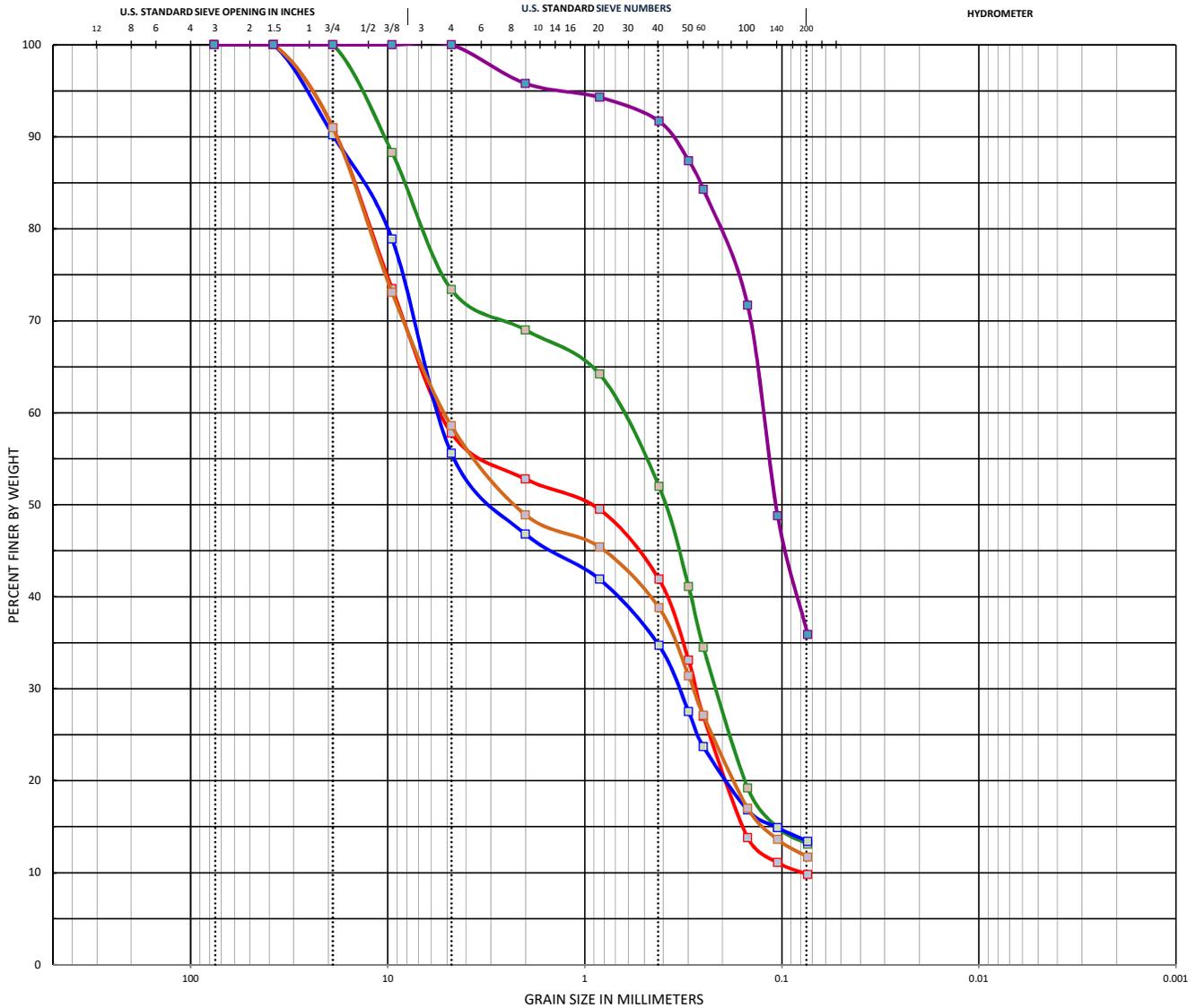


GRAIN SIZE DISTRIBUTION

CLIENT NAME Hazen and Sawyer, P.C.

PROJECT NAME Rehabilitation of 48/54- Inch Force Main; Replacement on SE 9th and 10th Ave. to GTL – Design Criteria Package

PROJECT NUMBER 02-23-075



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No, Depth	Classification	LL	PL	PI	Cc	Cu
B-2, 0-2	Fine sand, with silt (SP-SM)	-	-	-	0.17	68.91
B-3, 4-6	Silty sand (SM)	-	-	-	0	0
B-11, 0-2	Silty limerock (GM)	-	-	-	0	0
B-12, 0-2	Fine sand, with silt (SP-SM)	-	-	-	0	0
B-6, 0-2	Silty sand (SM)	-	-	-	0	0

Boring No, Depth	D100	D60	D30	D10	% Cobble	%Gravel	%Sand	%Silt	%Clay
B-2, 0-2	38.1	5.43	0.27	0.08	0	42.2	48	9.8	
B-3, 4-6	19	0.7	0.22	0	0	26.6	60.3	13.1	
B-11, 0-2	38.1	5.66	0.34	0	0	44.4	42.2	13.4	
B-12, 0-2	38.1	5.22	0.28	0	0	41.4	46.9	11.7	
B-6, 0-2	4.76	0.13	0	0	0	0	64.1	35.9	

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CAM #24-0671

Exhibit 2

Page 209 of 385

APPENDIX B

SOIL DESIGN PARAMETERS FOR UNDERGROUND STRUCTURES

Table B1: Soil Design Parameters (Boring B-1)

Depth (ft – ft)	Description	Avg. N _{AUTO}	Avg. N _{ES}	Recommended Values			Earth Pressure Coefficients			Shear Modulus (ksi), G	Modulus of Soil Reaction (pci), K	Friction Angle (Degrees) for Dissimilar Materials ¹		
				Friction Angle (degrees)	Total Unit Weight (pcf)	Submerged Unit Weight (pcf)	Active, K _a	Passive, K _p	At rest, K _o			Interface Materials ²		
												A	B	C
0-2	Silty limerock (GM)	15	19	38	123	61	0.242	4.139	0.389	0.41	35	32	21	21
2-4	Loose, sand (SP)	6	7	30	108	45	0.335	2.983	0.502	0.16	12	26	17	17
4-25	Soft, limestone	10	12	36	120	58	0.258	3.869	0.411	0.27	19	31	21	21

Notes:

- (1) Based on AASHTO Table C 3.11.5.3-1.
- (2) A = Mass concrete on the soils encountered, B = Steel sheet piles against the soils encountered, C = Formed or precast concrete or concrete sheet piling against soils encountered.

Table B2: Soil Design Parameters (Boring B-2)

Depth (ft – ft)	Description	Avg. N _{AUTO}	Avg. N _{ES}	Recommended Values			Earth Pressure Coefficients			Shear Modulus (ksi), G	Modulus of Soil Reaction (pci), K	Friction Angle (Degrees) for Dissimilar Materials ¹		
				Friction Angle (degrees)	Total Unit Weight (pcf)	Submerged Unit Weight (pcf)	Active, K _a	Passive, K _p	At rest, K _o			Interface Materials ²		
												A	B	C
0-2	Medium dense, fine sand, with silt (SP-SM)	17	21	33	115	52	0.292	3.431	0.451	0.46	40	28	18	18
2-4	Medium dense, fine sand (SP)	9	11	31	110	47	0.323	3.097	0.488	0.25	17	26	17	17
4-25	Soft, limestone	9	11	31	110	47	0.323	3.097	0.488	0.25	17	26	17	17

Notes:

- (1) Based on AASHTO Table C 3.11.5.3-1.
- (2) A = Mass concrete on the soils encountered, B = Steel sheet piles against the soils encountered, C = Formed or precast concrete or concrete sheet piling against soils encountered.

Table B3: Soil Design Parameters (Boring B-3)

Depth (ft - ft)	Description	Avg. NAUTO	Avg. NES	Recommended Values			Earth Pressure Coefficients			Shear Modulus (ksi), G	Modulus of Soil Reaction (pci), K	Friction Angle (Degrees) for Dissimilar Materials ¹		
				Friction Angle (degrees)	Total Unit Weight (pcf)	Submerged Unit Weight (pcf)	Active, Ka	Passive, Kp	At rest, Ko			Interface Materials ²		
												A	B	C
0-2	Silty limerock (GM)	15	19	38	123	61	0.242	4.139	0.389	0.41	35	32	21	21
2-4	Medium dense, fine sand, with silt (SP-SM)	10	12	31	110	48	0.319	3.137	0.483	0.27	19	26	17	17
4-6	Loose, silty sand (SM)	8	10	30	109	47	0.327	3.059	0.493	0.22	15	26	17	17
6-25	Soft, limestone	10	13	36	120	58	0.258	3.879	0.410	0.27	19	31	20	20

Notes:

- (1) Based on AASHTO Table C 3.11.5.3-1.
- (2) A = Mass concrete on the soils encountered, B = Steel sheet piles against the soils encountered, C = Formed or precast concrete or concrete sheet piling against soils encountered.

Table B4: Soil Design Parameters (Boring B-4)

Depth (ft – ft)	Description	Avg. N _{AUTO}	Avg. N _{ES}	Recommended Values			Earth Pressure Coefficients			Shear Modulus (ksi), G	Modulus of Soil Reaction (pci), K	Friction Angle (Degrees) for Dissimilar Materials ¹		
				Friction Angle (degrees)	Total Unit Weight (pcf)	Submerged Unit Weight (pcf)	Active, K _a	Passive, K _p	At rest, K _o			Interface Materials ²		
												A	B	C
0-2	Medium dense, fine sand (SP)	20	25	34	116	54	0.280	3.567	0.438	0.55	50	29	19	19
2-4	Medium dense, fine sand, with silt (SP-SM)	14	17	32	113	50	0.303	3.301	0.465	0.38	31	27	18	18
4-23.5	Soft, limestone	15	19	38	123	61	0.242	4.139	0.389	0.41	35	32	21	21
23.5-25	Medium dense, fine sand (SP)	22	27	35	118	55	0.273	3.662	0.429	0.60	55	30	20	20

Notes:

(1) Based on AASHTO Table C 3.11.5.3-1.

(2) A = Mass concrete on the soils encountered, B = Steel sheet piles against the soils encountered, C = Formed or precast concrete or concrete sheet piling against soils encountered.

Table B5: Soil Design Parameters (Boring B-5)

Depth (ft – ft)	Description	Avg. N _{AUTO}	Avg. N _{ES}	Recommended Values			Earth Pressure Coefficients			Shear Modulus (ksi), G	Modulus of Soil Reaction (pci), K	Friction Angle (Degrees) for Dissimilar Materials ¹		
				Friction Angle (degrees)	Total Unit Weight (pcf)	Submerged Unit Weight (pcf)	Active, K _a	Passive, K _p	At rest, K _o			Interface Materials ²		
												A	B	C
0-6	Medium dense, fine sand (SP)	17	20	33	114	52	0.293	3.408	0.454	0.46	40	28	18	18
6-28.5	Soft, limestone	13	17	37	122	60	0.247	4.046	0.396	0.36	28	31	21	21
28.5-48.5	Medium dense to dense, fine sand (SP)	23	29	35	118	56	0.269	3.723	0.423	0.63	58	30	20	20
48.5-65	Soft, limestone	27	33	40	128	66	0.217	4.599	0.357	0.74	70	34	22	22

Notes:

- (1) Based on AASHTO Table C 3.11.5.3-1.
- (2) A = Mass concrete on the soils encountered, B = Steel sheet piles against the soils encountered, C = Formed or precast concrete or concrete sheet piling against soils encountered.

Table B6: Soil Design Parameters (Boring B-6)

Depth (ft – ft)	Description	Avg. N _{AUTO}	Avg. N _{ES}	Recommended Values			Earth Pressure Coefficients			Shear Modulus (ksi), G	Modulus of Soil Reaction (pci), K	Friction Angle (Degrees) for Dissimilar Materials ¹		
				Friction Angle (degrees)	Total Unit Weight (pcf)	Submerged Unit Weight (pcf)	Active, K _a	Passive, K _p	At rest, K _o			Interface Materials ²		
												A	B	C
0-2	Medium dense, silty sand (SM)	20	25	34	116	54	0.280	3.567	0.438	0.55	50	29	19	19
2-6	Medium dense, fine sand (SP)	13	16	32	112	50	0.307	3.259	0.470	0.36	28	27	18	18
6-23.5	Soft, limestone	14	17	37	122	60	0.247	4.055	0.396	0.38	31	31	21	21
23.5-33.5	Medium dense, fine sand (SP)	12	14	32	111	49	0.313	3.197	0.477	0.33	25	27	18	18
33.5-48.5	Dense, fine sand (SP)	31	38	38	123	61	0.243	4.113	0.391	0.85	83	32	21	21
48.5-65	Soft, limestone	24	29	40	129	66	0.214	4.676	0.352	0.66	62	34	22	22

Notes:

- (1) Based on AASHTO Table C 3.11.5.3-1.
- (2) A = Mass concrete on the soils encountered, B = Steel sheet piles against the soils encountered, C = Formed or precast concrete or concrete sheet piling against soils encountered.

Table B7: Soil Design Parameters (Boring B-7)

Depth (ft – ft)	Description	Avg. N _{AUTO}	Avg. N _{ES}	Recommended Values			Earth Pressure Coefficients			Shear Modulus (ksi), G	Modulus of Soil Reaction (pci), K	Friction Angle (Degrees) for Dissimilar Materials ¹		
				Friction Angle (degrees)	Total Unit Weight (pcf)	Submerged Unit Weight (pcf)	Active, K _a	Passive, K _p	At rest, K _o			Interface Materials ²		
												A	B	C
0-2	Silty limerock (GM)	19	24	39	126	63	0.229	4.374	0.372	0.52	47	33	22	22
2-6	Medium dense to loose, fine sand (SP)	9	11	31	109	47	0.325	3.078	0.490	0.25	17	26	17	17
6-25	Soft, limestone	10	12	36	120	58	0.260	3.848	0.413	0.27	19	31	20	20

Notes:

- (1) Based on AASHTO Table C 3.11.5.3-1.
- (2) A = Mass concrete on the soils encountered, B = Steel sheet piles against the soils encountered, C = Formed or precast concrete or concrete sheet piling against soils encountered.

Table B8: Soil Design Parameters (Boring B-8)

Depth (ft – ft)	Description	Avg. N _{AUTO}	Avg. N _{ES}	Recommended Values			Earth Pressure Coefficients			Shear Modulus (ksi), G	Modulus of Soil Reaction (pci), K	Friction Angle (Degrees) for Dissimilar Materials ¹		
				Friction Angle (degrees)	Total Unit Weight (pcf)	Submerged Unit Weight (pcf)	Active, K _a	Passive, K _p	At rest, K _o			Interface Materials ²		
												A	B	C
0-2	Medium dense, fine sand, with silt (SP-SM)	14	17	32	113	50	0.303	3.301	0.465	0.38	31	27	18	18
2-6	Loose, fine sand, with silt (SP-SM)	7	8	30	108	46	0.333	3.002	0.500	0.19	14	26	17	17
6-25	Soft, limestone	8	10	30	109	46	0.328	3.051	0.494	0.22	15	26	17	17

Notes:

- (1) Based on AASHTO Table C 3.11.5.3-1.
- (2) A = Mass concrete on the soils encountered, B = Steel sheet piles against the soils encountered, C = Formed or precast concrete or concrete sheet piling against soils encountered.

Table B9: Soil Design Parameters (Boring B-9)

Depth (ft – ft)	Description	Avg. N _{AUTO}	Avg. N _{ES}	Recommended Values			Earth Pressure Coefficients			Shear Modulus (ksi), G	Modulus of Soil Reaction (pci), K	Friction Angle (Degrees) for Dissimilar Materials ¹		
				Friction Angle (degrees)	Total Unit Weight (pcf)	Submerged Unit Weight (pcf)	Active, K _a	Passive, K _p	At rest, K _o			Interface Materials ²		
												A	B	C
0-2	Medium dense, silty sand (SM)	16	20	33	114	52	0.295	3.386	0.456	0.44	37	28	18	18
2-6	Medium dense to loose, fine sand (SP)	8	9	30	109	46	0.329	3.040	0.495	0.22	15	26	17	17
6-25	Soft, limestone	9	12	31	110	47	0.321	3.113	0.486	0.25	17	26	17	17

Notes:

- (1) Based on AASHTO Table C 3.11.5.3-1.
- (2) A = Mass concrete on the soils encountered, B = Steel sheet piles against the soils encountered, C = Formed or precast concrete or concrete sheet piling against soils encountered.

Table B10: Soil Design Parameters (Boring B-10)

Depth (ft – ft)	Description	Avg. N _{AUTO}	Avg. N _{ES}	Recommended Values			Earth Pressure Coefficients			Shear Modulus (ksi), G	Modulus of Soil Reaction (pci), K	Friction Angle (Degrees) for Dissimilar Materials ¹		
				Friction Angle (degrees)	Total Unit Weight (pcf)	Submerged Unit Weight (pcf)	Active, K _a	Passive, K _p	At rest, K _o			Interface Materials ²		
												A	B	C
0-2	Silty limerock (GM)	18	22	39	125	63	0.232	4.314	0.376	0.49	43	33	22	22
2-6	Medium dense to loose, fine sand (SP)	9	11	31	110	47	0.323	3.097	0.488	0.25	17	26	17	17
6-8	Soft, limestone	7	9	30	108	46	0.331	3.021	0.497	0.19	14	26	17	17
8-13.5	Very loose, fine sand (SP)	2	2	29	105	43	0.352	2.839	0.521	0.05	5	25	16	16
13.5-25	Soft, limestone	12	14	37	121	59	0.253	3.956	0.404	0.33	25	31	21	21

Notes:

- (1) Based on AASHTO Table C 3.11.5.3-1.
- (2) A = Mass concrete on the soils encountered, B = Steel sheet piles against the soils encountered, C = Formed or precast concrete or concrete sheet piling against soils encountered.

Table B11: Soil Design Parameters (Boring B-11)

Depth (ft – ft)	Description	Avg. N _{AUTO}	Avg. N _{ES}	Recommended Values			Earth Pressure Coefficients			Shear Modulus (ksi), G	Modulus of Soil Reaction (pci), K	Friction Angle (Degrees) for Dissimilar Materials ¹		
				Friction Angle (degrees)	Total Unit Weight (pcf)	Submerged Unit Weight (pcf)	Active, K _a	Passive, K _p	At rest, K _o			Interface Materials ²		
												A	B	C
0-2	Silty limerock (GM)	17	21	38	125	62	0.235	4.254	0.381	0.46	40	32	21	21
2-8	Loose, fine sand, trace to with silt (SP, SP-SM)	7	9	30	109	46	0.330	3.033	0.496	0.19	14	26	17	17
8-25	Soft, limestone	9	11	31	109	47	0.324	3.088	0.489	0.25	17	26	17	17

Notes:

(1) Based on AASHTO Table C 3.11.5.3-1.

(2) A = Mass concrete on the soils encountered, B = Steel sheet piles against the soils encountered, C = Formed or precast concrete or concrete sheet piling against soils encountered.

Table B12: Soil Design Parameters (Boring B-12)

Depth (ft – ft)	Description	Avg. N _{AUTO}	Avg. N _{ES}	Recommended Values			Earth Pressure Coefficients			Shear Modulus (ksi), G	Modulus of Soil Reaction (pci), K	Friction Angle (Degrees) for Dissimilar Materials ¹		
				Friction Angle (degrees)	Total Unit Weight (pcf)	Submerged Unit Weight (pcf)	Active, K _a	Passive, K _p	At rest, K _o			Interface Materials ²		
												A	B	C
0-6	Loose, fine sand, trace to with silt (SP, SP-SM)	10	12	31	110	48	0.320	3.124	0.485	0.27	19	26	17	17
6-25	Soft, limestone	10	12	36	120	58	0.258	3.869	0.411	0.27	19	31	20	20

Notes:

- (1) Based on AASHTO Table C 3.11.5.3-1.
- (2) A = Mass concrete on the soils encountered, B = Steel sheet piles against the soils encountered, C = Formed or precast concrete or concrete sheet piling against soils encountered.

**REPORT OF
GEOTECHNICAL EXPLORATION**

**NEW REDUNDANT BYPASS LINE
ZONE 1 – SE 18TH ST TO SE 12TH ST.
FT. LAUDERDALE, FL**

FOR

**A&P CONSULTING TRANSPORTATION ENGINEERS
8935 NW 35TH LANE, SUITE 200
DORAL, FLORIDA 33172**

PREPARED BY

**PAN GEO CONSULTANTS
2001 TYLER ST., SUITE 7
HOLLYWOOD, FL 33020**

PROJECT NO. AP0320

MARCH 2020

***SERVICE AND SOLUTIONS
(954) 200-4019
INFO@PANGEOCONSULT.COM***

March 20, 2020

Mr. Arnelio Alfonso, P.E.
Senior Project Manager
A&P Consulting Transportation Engineers
8935 NW 35th Lane, Suite 200
Doral, Florida 33172
Tel: (305) 592-7283, Cell: (786) 252-3373
Fax: (305) 593-1594
Email: aalfonso@apcte.com

Re: Report of Geotechnical Exploration Services
New Redundant Bypass Line
Zone 1 – SE 18th St to SE 12th St.
Ft. Lauderdale, FL

Dear Mr. Alfonso:

Pan Geo Consultants, LLC. (PGC) has performed a geotechnical exploration at the referenced area. The purpose of this exploration was to obtain information concerning the subsurface conditions at specific test locations in order to classify the subterranean soil/rock for use in evaluating locations for directional drilling, by others. This report presents our findings.

PROJECT INFORMATION

Based on our conversations with you and review of materials provided, we understand that plans for this project call for a new sewage line, installed via directional drilling and open cut.

PGC should be notified in writing by the client of any changes in the proposed construction along with a request to amend our foundation analysis and/or recommendations within this report as appropriate.

GENERAL SUBSURFACE CONDITIONS

Subsurface Soil Exploration

The exploration of subsurface conditions included site observation and three (3) Standard Penetration Test borings (ASTM D-1586) performed to depths of 60 feet

below grade, in order to evaluate the subsurface soil conditions along the proposed alignment.

The locations of the test borings are indicated on the attached Test Boring Location Plan which is presented in the Appendix of this report. The test boring locations were established in the field by PGC at the approximate location specified by the client. The boring locations may have adjusted in the field due to site access, utilities, etc. As such the locations shown on the site plan should be considered approximate.

Test Boring Results

The test borings generally revealed a surficial layer of asphalt underlain by limestone fragments and fine sand (base course) to a depth of approximately one foot below prevailing grade. Each boring location was augered and cased down to a depth of approximately eighteen feet, whereupon split spoon sampling commenced. Medium hard to hard limestone with varying proportions of sand was observed below eighteen feet to depths of approximately twenty-five to thirty-four feet, followed by medium dense sand to depths of approximately thirty-five to forty-five feet below grade. Medium hard to very hard limestone was observed below this layer to depths of approximately forty-eight to forty-nine feet below grade, followed by intermixed loose to very dense sand and hard limestone to sixty feet, the maximum depth explored.

Generalized Soil Parameters

The following table, Table 1, presents the soil parameters for each stratum as well as generalized subsurface soil profiles as encountered at the survey locations.

Table 1: General Subsurface Profiles and Soil Parameters

Layer Description	Approx. Layer Depths (Feet)	N-Values (Blows/ft)	Internal Friction Angle (degrees)	Consistency and Relative Density
LIMESTONE, some Sand	18-30	10-41	38	Medium Hard to Hard
SAND	30-43	10-25	28	Medium Dense to Dense
LIMESTONE	43-48	9-100+	40	Medium Hard to Very Hard
SAND and LIMESTONE	48-60	6-100+	35	Loose to Dense/Very Hard

A detailed description of the soil/rock interlayering is given on the test boring logs in the Appendix.

Groundwater Information

The immediate groundwater level was measured at the boring locations at the time of drilling. The groundwater level was encountered at approximately ten and a half to thirteen feet below the existing ground surface.

The immediate depth to groundwater measurements presented in this report may not provide a reliable indication of stabilized or long term depth to groundwater at this site. Water table elevations can vary dramatically with time through rainfall, droughts, storm events, flood control activities, nearby surface water bodies, tidal activity, pumping and many other factors. For these reasons, this immediate depth to water data **should not** be relied upon alone for project design considerations.

Further information regarding stabilized groundwater elevations at the site could be developed upon specific request.

SUMMARY

The test borings performed for this project revealed intermittent sand and limestone layers. Both materials should provide adequate support for the proposed pipe. Pockets of rock or pinnacles of limestone are possible within the sand layers and intermittent hard drilling conditions should be planned for and appropriate measures taken. Hard to very hard drilling may occur within the limestone, however, these layers may be highly variable over small vertical and horizontal distances and pockets of unconsolidated sand may be encountered during drilling. We are available for further discussions regarding this project with the interested parties.

If conditions are encountered which are not consistent with the findings presented in this report, this office shall be notified immediately so that the condition or change can be evaluated and appropriate action taken.

GENERAL INFORMATION

Our client for this geotechnical evaluation was:

A&P Consulting Transportation Engineers
8935 NW 35th Lane, Suite 200
Doral, Florida 33172

The contents of this report are for the exclusive use of the client, the client's design & construction team and governmental authorities for this specific project exclusively. Information conveyed in this report shall not be used or relied upon by other parties or for other projects without the expressed written consent of PGC. This report discusses geotechnical considerations for this site based upon observed conditions and our understanding of proposed construction for foundation support.

Environmental issues including (but not limited to), soil and/or groundwater contamination are beyond our scope of service for this project. As such, this report shall not be used or relied upon for evaluation of environmental issues.

If conditions are encountered which are not consistent with the findings presented in this report, or if proposed construction is moved from the location investigated, this office shall be notified in writing immediately so that the condition or change can be evaluated and appropriate action taken.

Excavations of five feet or more in depth should be sloped or shored in accordance with OSHA and State of Florida requirements.

The Geotechnical Engineer warrants that the findings, recommendations, specifications, or professional advice contained herein, have been prepared after being prepared in accordance with general accepted professional practice in the field of foundation engineering, soil mechanics and engineering geology. No other warranties are implied or expressed.

We appreciate the opportunity to provide these services for you and look forward to completing this and other projects with you. If we can be of any further assistance with the design or construction services, or if you need additional information, please feel free to contact us at your convenience.

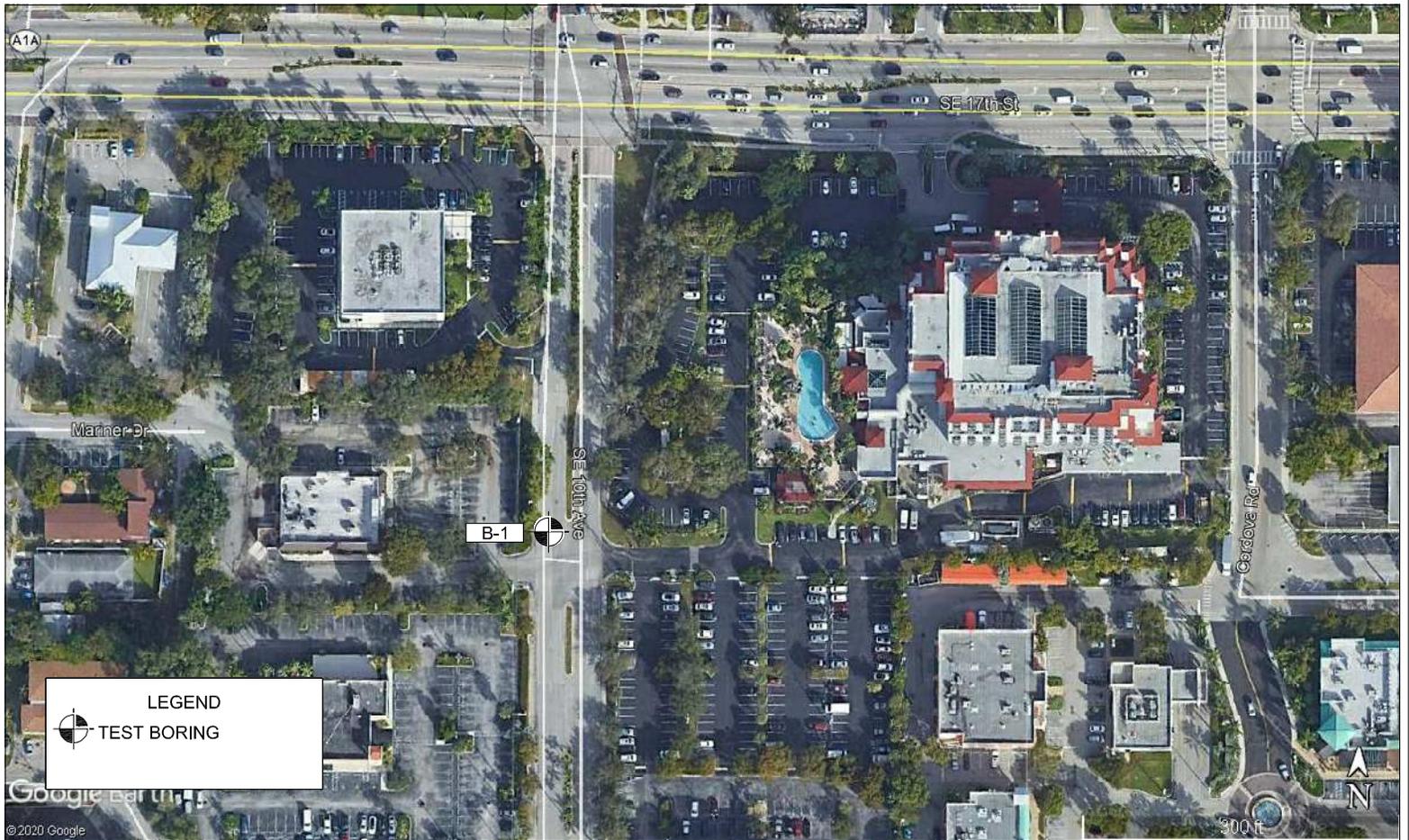
Sincerely,
PAN GEO CONSULTANTS, LLC

Paul C. Catledge, P.E.
2020.03.20
10:36:42 -04'00'



Paul C. Catledge, P.E. #68448
Principal

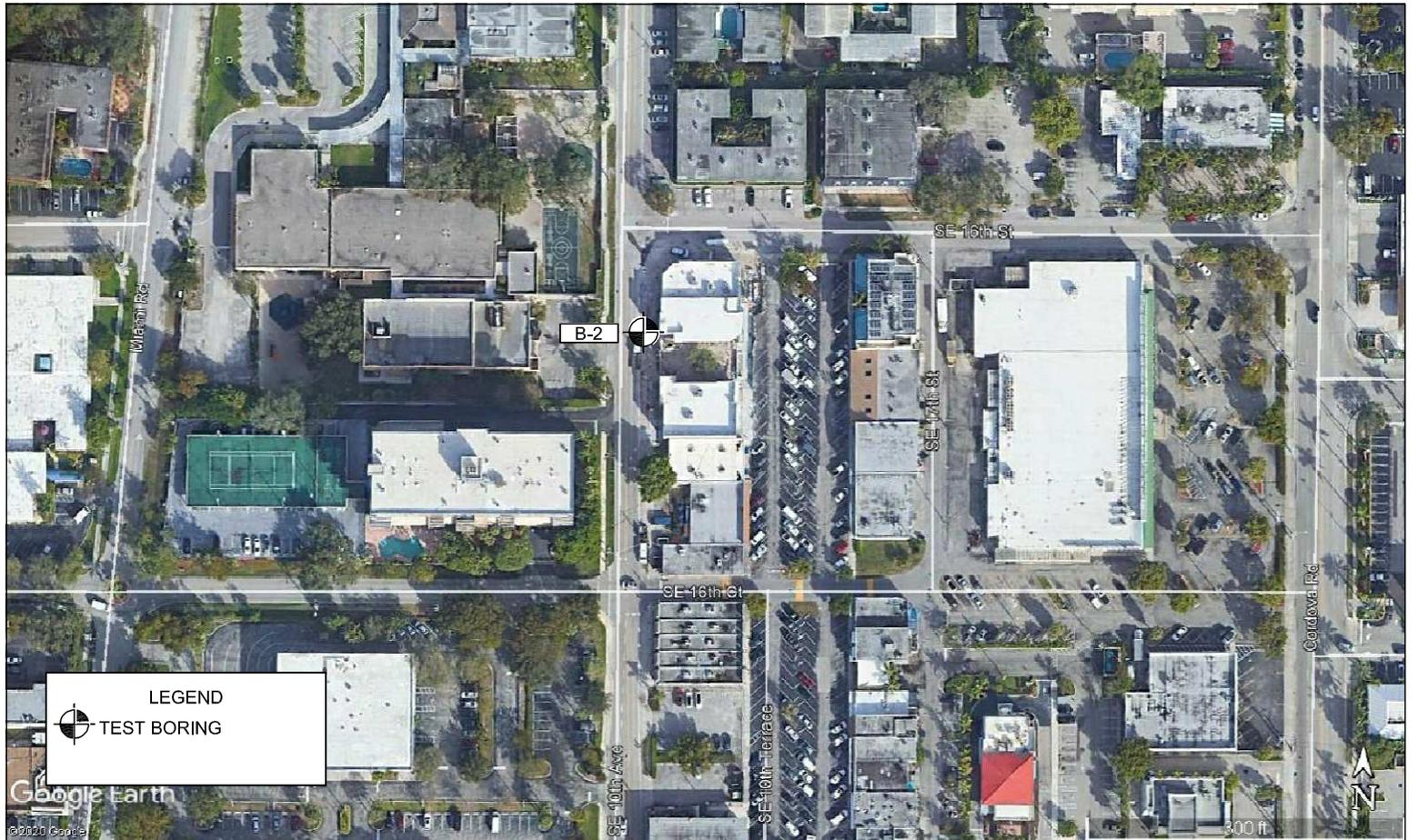
Attachments: Test Location Plans (1-3)
Soil Boring Profiles
Test Boring Logs (B-1 to B-3)



PANGEO
CONSULTANTS

TEST LOCATION PLAN
REDUNDANT BYPASS LINE
ZONE 1 - SE 18TH ST TO SE 12TH ST.
FT. LAUDERDALE, FL

APPROXIMATE LOCATIONS
NOT TO SCALE

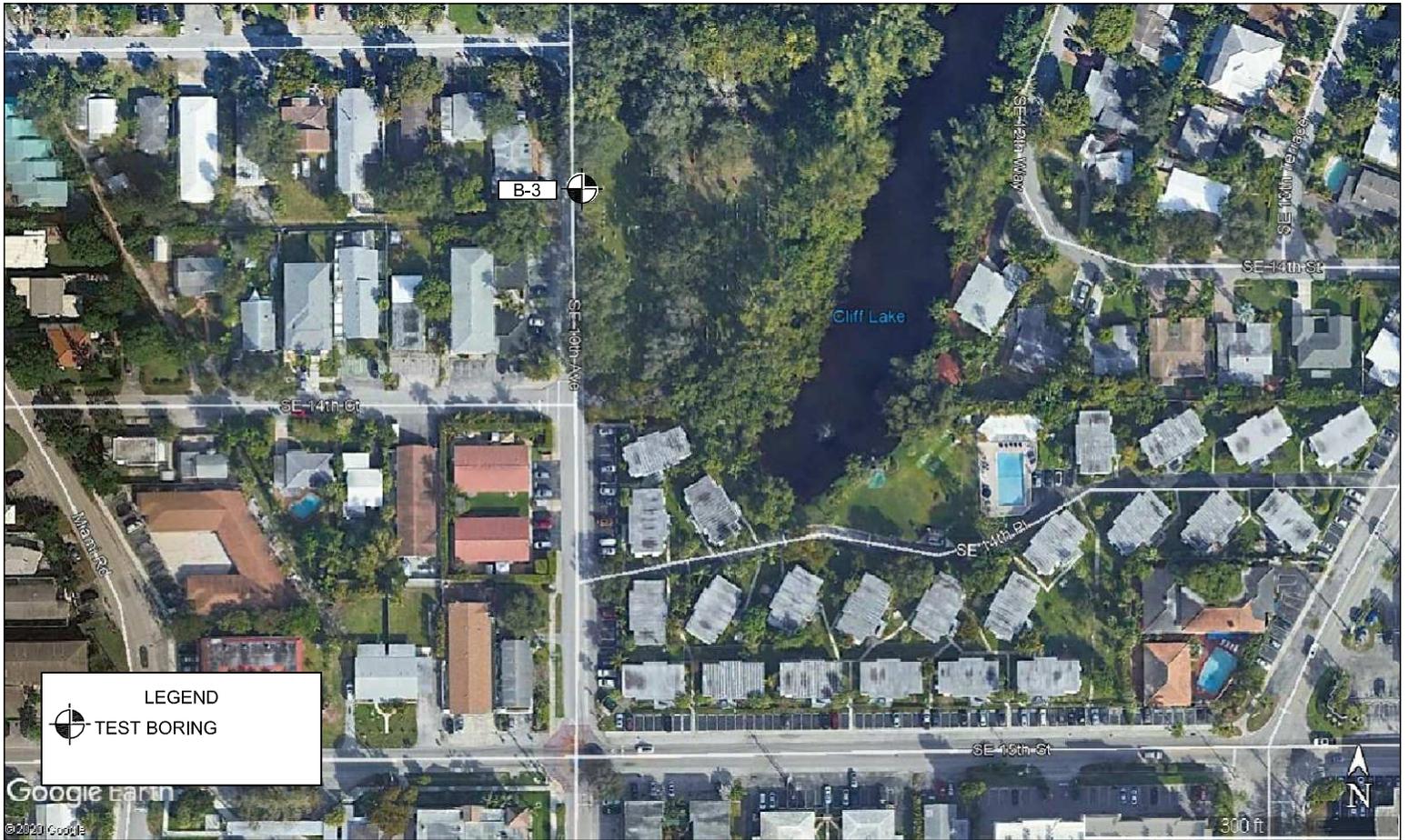


LEGEND
 TEST BORING

PANGEO
 CONSULTANTS

TEST LOCATION PLAN
 REDUNDANT BYPASS LINE
 ZONE 1 - SE 18TH ST TO SE 12TH ST.
 FT. LAUDERDALE, FL

APPROXIMATE LOCATIONS
 NOT TO SCALE



LEGEND

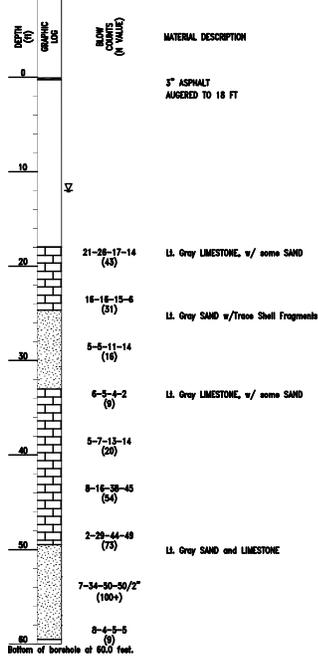
 TEST BORING

PANGEO
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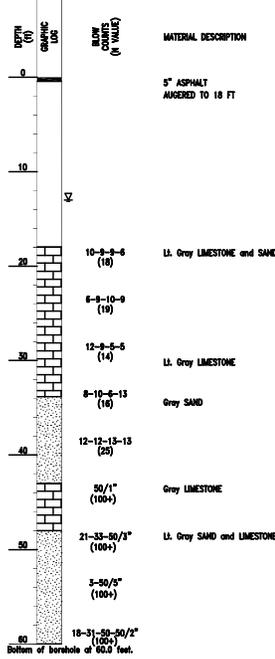
TEST LOCATION PLAN
REDUNDANT BYPASS LINE
ZONE 1 - SE 18TH ST TO SE 12TH ST.
FT. LAUDERDALE, FL

APPROXIMATE LOCATIONS
NOT TO SCALE

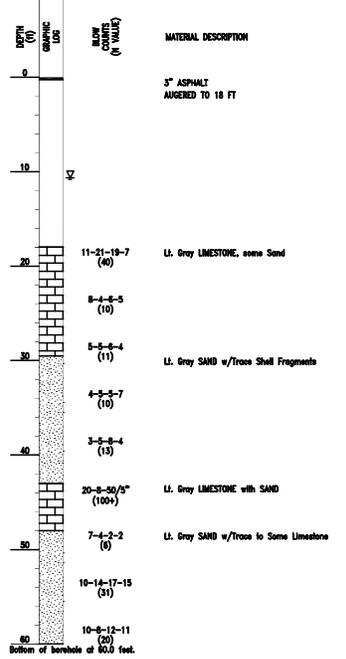
BORING NUMBER B-1



BORING NUMBER B-2



BORING NUMBER B-3



SOIL BORING PROFILES
 REDUNDANT BYPASS LINE
 ZONE 1 - SE 18TH ST. TO SE 12 ST.
 FT. LAUDERDALE, FL

NOT TO SCALE

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PanGeo Consultants
 2001 Tyler St., Suite 7
 Hollywood, FL 33020
 Telephone: (954) 200-4019

BORING NUMBER B-1

PAGE 1 OF 1

CLIENT A&P Consulting Transportation Engineers
PROJECT NUMBER AP0320
DATE STARTED 3/10/20 **COMPLETED** 3/10/20
DRILLING CONTRACTOR DANCOR
DRILLING METHOD _____
LOGGED BY Pablo Estrada **CHECKED BY** PCC
NOTES AS LOCATED ON SITE PLAN

PROJECT NAME New Redundant Bypass Line - Zone 1
PROJECT LOCATION SE 18th St. to SE 12th St., Ft. Lauderdale
GROUND ELEVATION _____ **HOLE SIZE** 3 inches
GROUND WATER LEVELS:
 ∇ **AT TIME OF DRILLING** 12.00 ft
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲			
					PL	MC LL		
					20	40	60	80
					20	40	60	80
					□ FINES CONTENT (%) □			
					20	40	60	80
0		3" ASPHALT AUGERED TO 18 FT	AU					
10	∇							
20	[Brick Pattern]	Lt. Gray LIMESTONE, w/ some SAND	SS S-1	21-26-17-14 (43)				
25	[Dotted Pattern]	Lt. Gray SAND w/Trace Shell Fragments	SS S-2	16-16-15-6 (31)				
30	[Dotted Pattern]		SS S-3	5-5-11-14 (16)				
35	[Brick Pattern]	Lt. Gray LIMESTONE, w/ some SAND	SS S-4	6-5-4-2 (9)				
40	[Brick Pattern]		SS S-5	5-7-13-14 (20)				
45	[Brick Pattern]		SS S-6	8-16-38-45 (54)				
50	[Dotted Pattern]	Lt. Gray SAND and LIMESTONE	SS S-7	2-29-44-49 (73)				
55	[Dotted Pattern]		SS S-8	7-34-50-50/2" (100+)				
60	[Dotted Pattern]		SS S-9	8-4-5-5 (9)				

Bottom of borehole at 60.0 feet.

GEOTECH BH PLOTS - GINT STD US LAB.GDT - 3/11/20 15:49 - C:\USERS\ADMIN\DROPBOX\PAN GEO CONSULTING\TECHNICAL\A&P TRANSPORTATION CONSULTING ENGINEERS_FT. LAUD. REDUNDANT BYPASS LINE_ZONE 1\A&P CONSULTING TRANSPORTATION



PanGeo Consultants
 2001 Tyler St., Suite 7
 Hollywood, FL 33020
 Telephone: (954) 200-4019

BORING NUMBER B-2

PAGE 1 OF 1

CLIENT A&P Consulting Transportation Engineers
PROJECT NUMBER AP0320
DATE STARTED 3/10/20 **COMPLETED** 3/10/20
DRILLING CONTRACTOR DANCOR
DRILLING METHOD _____
LOGGED BY Pablo Estrada **CHECKED BY** PCC
NOTES AS LOCATED ON SITE PLAN

PROJECT NAME New Redundant Bypass Line - Zone 1
PROJECT LOCATION SE 18th St. to SE 12th St., Ft. Lauderdale
GROUND ELEVATION _____ **HOLE SIZE** 3 inches
GROUND WATER LEVELS:
 ∇ **AT TIME OF DRILLING** 13.00 ft
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲		
					PL	MC	LL
					<input type="checkbox"/> FINES CONTENT (%) <input type="checkbox"/>		
0		5" ASPHALT AUGERED TO 18 FT	AU				
10	∇						
20		Lt. Gray LIMESTONE and SAND	SS S-1	10-9-9-6 (18)			
			SS S-2	6-9-10-9 (19)			
30		Lt. Gray LIMESTONE	SS S-3	12-9-5-5 (14)			
		Gray SAND	SS S-4	8-10-6-13 (16)			
40			SS S-5	12-12-13-13 (25)			
		Gray LIMESTONE	SS S-6	50/1" (100+)			>>
50		Lt. Gray SAND and LIMESTONE	SS S-7	21-33-50/3" (100+)			>>
			SS S-8	3-50/5" (100+)			>>
60			SS S-9	18-31-50-50/2"			>>

Bottom of borehole at 60.0 feet.

(100+)

CAM #24-0671

Exhibit 2

Page 234 of 385

GEOTECH BH PLOTS - GINT STD US LAB.GDT - 3/11/20 15:49 - C:\USERS\ADMIN\DROPBOX\PAN GEO CONSULT\GEO\TECH\A&P TRANSPORTATION CONSULTING ENGINEERS.FT. LAUD. REDUNDANT BYPASS LINE ZONE 1\A&P CONSULTING TRANSPORTATION



PanGeo Consultants
 2001 Tyler St., Suite 7
 Hollywood, FL 33020
 Telephone: (954) 200-4019

BORING NUMBER B-3

PAGE 1 OF 1

CLIENT A&P Consulting Transportation Engineers
PROJECT NUMBER AP0320
DATE STARTED 3/11/20 **COMPLETED** 3/11/20
DRILLING CONTRACTOR DANCOR
DRILLING METHOD _____
LOGGED BY Pablo Estrada **CHECKED BY** PCC
NOTES AS LOCATED ON SITE PLAN

PROJECT NAME New Redundant Bypass Line - Zone 1
PROJECT LOCATION SE 18th St. to SE 12th St., Ft. Lauderdale
GROUND ELEVATION _____ **HOLE SIZE** 3 inches
GROUND WATER LEVELS:
 ∇ **AT TIME OF DRILLING** 10.66 ft
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲		
					PL	MC	LL
					□ FINES CONTENT (%) □		
0		3" ASPHALT AUGERED TO 18 FT	AU				
10	∇						
20		Lt. Gray LIMESTONE, some Sand	SS S-1	11-21-19-7 (40)			
			SS S-2	8-4-6-5 (10)			
30		Lt. Gray SAND w/Trace Shell Fragments	SS S-3	5-5-6-4 (11)			
			SS S-4	4-5-5-7 (10)			
40			SS S-5	3-5-8-4 (13)			
50		Lt. Gray LIMESTONE with SAND	SS S-6	20-8-50/5" (100+)			
			SS S-7	7-4-2-2 (6)			
		Lt. Gray SAND w/Trace to Some Limestone	SS S-8	10-14-17-15 (31)			
			SS S-9	10-8-12-11 (20)			

Bottom of borehole at 60.0 feet.

CAM #24-0671

Exhibit 2

Page 235 of 385



BORINGS LOCATION PLAN

Approximate SPT Boring Location

NOTES

* DENOTES DEPTH IN FEET FROM EXISTING GROUND SURFACE

** WB DENOTES WASH BORING

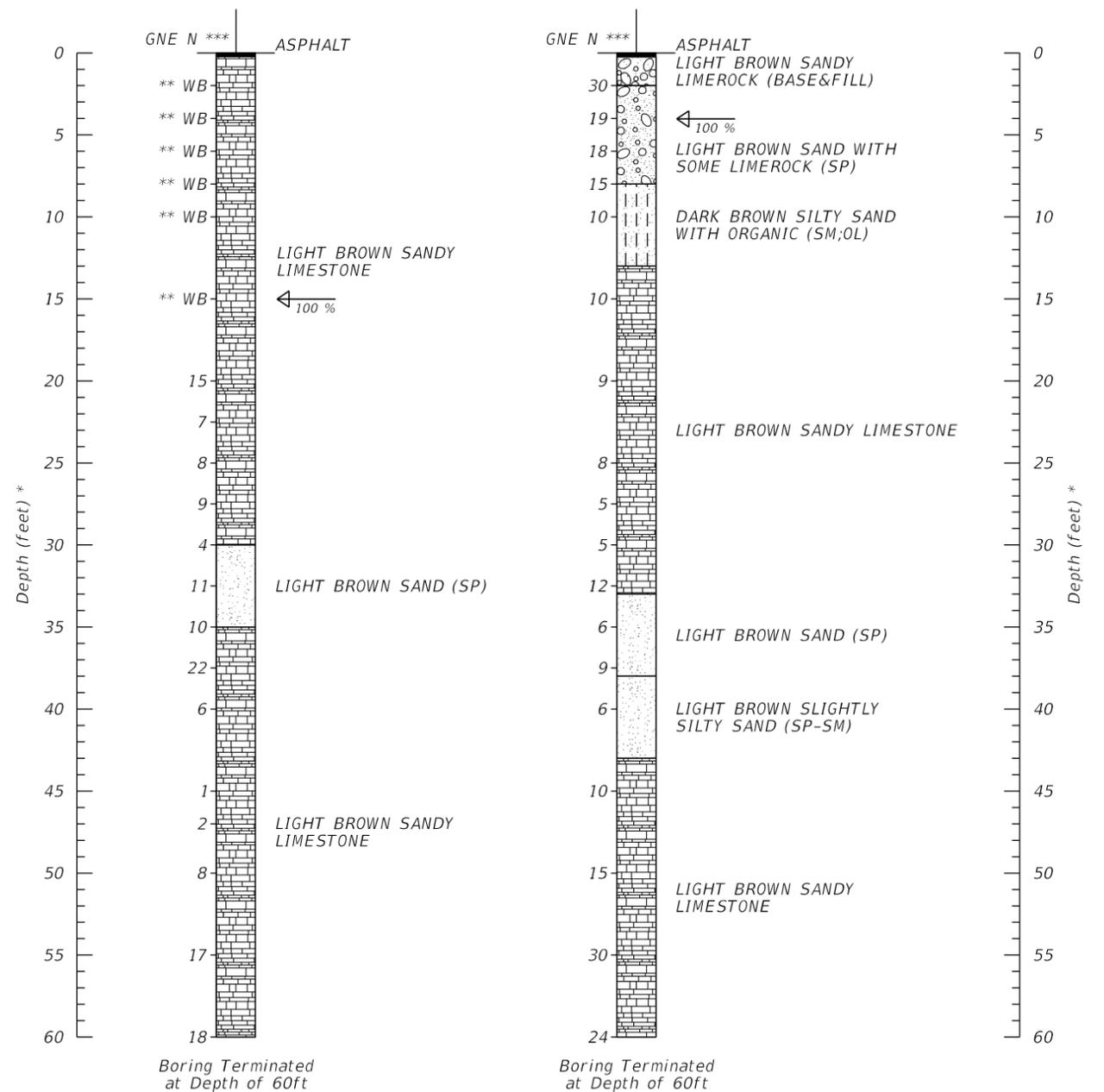
*** SPT N-VALUES SHOWN ABOVE WERE OBTAINED USING AUTOMATIC HAMMERS. GENERALLY DESIGN CORRELATIONS AND PROGRAMS USE SAFETY HAMMER N-VALUES. HENCE, THE ABOVE N-VALUES NEED TO BE MULTIPLIED BY 1.24 TO OBTAIN EQUIVALENT SAFETY HAMMER N-VALUES FOR DESIGN PURPOSE.

LEGEND

-  Asphalt
-  Limestone
-  Sand
-  Sandy Gravel
-  Gravelly Sand
-  Silty Sand

BOR # B-1
DATE 1/17/2020
HAMMER Auto
RIG CME-45

BOR # B-2
DATE 1/16/2020
HAMMER Auto
RIG D-25



 ENCOUNTERED GROUNDWATER TABLE
 N NUMBERS TO THE LEFT OF BORINGS INDICATE SPT VALUE FOR 12" PENETRATION USING AN AUTOMATIC HAMMER.
 100% LOSS OF CIRCULATION AND PERCENTAGE OF LOSS

DRAWN BY:
NG

APPROVED BY:
RK

ENGINEER OF RECORD:
RAJ KRISHNASAMY, P.E.
FLORIDA LICENSE NO.:
53567



TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411
STATE OF FLORIDA REGISTRATION No. 28073

SCALE:
NTS

PROJECT NUMBER:
7111-20-015

BORING LOCATION PLAN AND SOIL PROFILES
SE 9TH AVE
STRUCTURE NO.865758
FORT LAUDERDALE, FLORIDA

Sheet:

1

PROJECT # 7111-20-015	PROJECT NAME/LOCATION SE 9th Ave	PROJECT MANAGER	BORING SHEET # 1 OF 3
DATE/TIME BORING WAS STARTED 01/17/20	DATE/TIME BORING WAS COMPLETED	WEATHER CONDITIONS Sunny	
BORING # B1	STATION/OFFSET	SURFACE ELEV. IF AVAILABLE	DEPTH TO WATER TABLE / NOTE DATE AND TIME RECORDED N/A
OFFSET FROM REQUESTED LOCATION	DIFFERENCE IN ELEVATION	CASING SIZE	DEPTH OF CASING SET 60'
DRILLED BY YP	RIG TYPE CWC-45	DRILLING METHOD	SAMPLING EQUIPMENT USED

BORING LOG 0' - 25'

DEPTH	BLOWS PER 6"	N CONT'S	SAMPLE NO.	STRATUM NO.	DESCRIPTION OF SOIL	REMARKS, OBSERVATIONS, SUMMARY OF LABORATORY TEST(S), % RECOVERED AND RQD
0						
2						
4						LOST CIRCULATION 15' Not recovered
6						
8						
10						
15						
20	9 ⑧ ⑦	15		10	L. Sand	LS
22½	18 3 4	7		7	"	11
25	4 ⑨ ④	8		7	L. Ans w /, Sand	11

FIELD LOGS SHOULD NOT BE CONSIDERED AS THE FINAL SOIL PROFILE DATA. WHEN PROVIDED TO THE CLIENT, THEY SHOULD BE CONSIDERED DRAFT INFORMATION ONLY.



FIELD LOGS SHOULD NOT BE CONSIDERED AS THE FINAL SOIL PROFILE DATA. WHEN PROVIDED TO THE CLIENT, THEY SHOULD BE CONSIDERED DRAFT INFORMATION ONLY.

PROJECT # 711-22-015	PROJECT NAME SE 9th Ave	BORING # B1	BORING SHEET # 2 OF 3
-------------------------	----------------------------	----------------	--------------------------

BORING LOG 25' - 50'

DEPTH	BLOWS PER 6"	N CONT'S	SAMPLE NO.	STRATUM NO.	DESCRIPTION OF SOIL	REMARKS, OBSERVATIONS, SUMMARY OF LABORATORY TEST(S), % RECOVERED AND RQD
25	/					
27 1/2	8 5 4	9		8	L. Stone w/ Gray S	LS
30	4 ② ②	4		8	Gray S w/ L. Stone	
32 1/2	3 4 7	11		9	gray S	LAS (SP)
35	3 ④ ⑥	10		11	"	
37 1/2	3 10 12	22		10	Gray S w/ L. Stone	LS
40	6 ② ④	6		10	"	
45	3 ① ①	1		5	"	
46	0 4					De 44 a 45 1/2 Bajo' con 1 golpe
47	1 1	2		7		De 46 1/2 a 47 1/2 Bajo' con 1 golpe.
48	0 0				"	
49	0 9					De 47 1/2 - 48 1/2 w/H
50	④ ④	8		10	"	

45 1/2
46 1/2
47 1/2
48 1/2
49 1/2

DRILLERS NOTES AND REMARKS:

FIELD LOGS SHOULD NOT BE CONSIDERED
AS THE FINAL SOIL PROFILE DATA. WHEN PROVIDED TO THE CLIENT,
THEY SHOULD BE CONSIDERED DRAFT INFORMATION ONLY.

PROJECT # 7011-20-015	PROJECT NAME LOC SE-9th-AVE	BORING SHEET # 1 OF 3
DATE TIME BORING WAS STARTED 1/16/20	DATE TIME BORING WAS COMPLETED	WEATHER CONDITIONS SUNNY
BORING # B-2	STATION OFFSET	SURFACE ELEV. IF AVAILABLE DEPTH TO WATER TABLE NOTE DATE AND TIME RECORDED NA
OFFSET FROM REQUESTED LOCATION	DIFFERENCE IN ELEVATION	CASING SIZE DEPTH OF CASING SET
DRILLED BY A-P	RIG TYPE D.25	DRILLING METHOD SAMPLING EQUIPMENT USED

BORING LOG 0' - 25'

DEPTH	BLOWS PER 6"	N CONT'S	SAMPLE NO.	STRATUM NO.	DESCRIPTION OF SOIL	REMARKS, OBSERVATIONS, SUMMARY OF LABORATORY TEST(S), % RECOVERED AND RQD
0	12	15				
2	15	13	30	5 ^u	L.R	LR 0-3" asphalt
4	10	10		6 ^u	L.B.S. + R.L.R	LR 2.35 / some LR (SM)
6	9	9	19	7 ^u	L.B.S. + R.L.R	← less circulation. NOT RECOVERED.
8	9	8	18	7 ^u	L.B.S. + R.L.R	
10	8	8		6 ^u	MOOK	DB (SP-SM) to (EM) / org.
15	4	6	10	5 ^u	LSuton	LR most of circulation with NOT RECOVERED.
20	4	5	9	4 ^u	LSuton	
25	5	3	8	4 ^u	LSuton	

1/16/20

BORING LOG 25' - 50'

DEPTH	BLOWS PER 6"	N CONT'S	SAMPLE NO.	STRATUM NO.	DESCRIPTION OF SOIL	REMARKS, OBSERVATIONS, SUMMARY OF LABORATORY TEST(S), % RECOVERED AND RQD
25	3 2					
	3 5			2"	LS-ton	LS
	3 2					
30	3 5			7"	L. ton w/ G.R.	LI
	8 3					
	4 12			4"	"	LI
	2 6			12"	L. BR-J	LS (SP)
35	5 9			12"	"	LI
	5 6			10"	"	LS (SP-SM)
40	2 10			10"	L.B.S. + R.L.P	LS
	4 15			9"	L.B.S. + R.L.P	LI
45	5 15					
50	7 15					

DRILLERS NOTES AND REMARKS:

FIELD LOGS SHOULD NOT BE CONSIDERED AS THE FINAL SOIL PROFILE DATA. WHEN PROVIDED TO THE CLIENT, THEY SHOULD BE CONSIDERED DRAFT INFORMATION ONLY.

1/16/20

BORING LOG 50' - 75'

DEPTH	BLOWS PER 6"	N CONT'S	SAMPLE NO.	STRATUM NO.	DESCRIPTION OF SOIL	REMARKS, OBSERVATIONS, SUMMARY OF LABORATORY TEST(S), % RECOVERED AND RQD
50						
	14					
55	15 13	30		10"	Lo-s-tr L.R	28
	10					
60	12 12	24		9"	Lo-s-tr	11
65						
70						
75						

DRILLERS NOTES AND REMARKS:

FIELD LOGS SHOULD NOT BE CONSIDERED AS THE FINAL SOIL PROFILE DATA. WHEN PROVIDED TO THE CLIENT, THEY SHOULD BE CONSIDERED DRAFT INFORMATION ONLY.



UNIVERSAL ENGINEERING SCIENCES

Consultants In: Geotechnical Engineering • Environmental Sciences
Geophysical Services • Construction Materials Testing • Threshold Inspection
Building Inspection • Plan Review • Building Code Administration

LOCATIONS:

- Atlanta, GA
- Daytona Beach, FL
- Fort Myers, FL
- Fort Pierce, FL
- Gainesville, FL
- Jacksonville, FL
- Miami, FL
- Ocala, FL
- Orlando, FL (Headquarters)
- Palm Coast, FL
- Panama City, FL
- Pensacola, FL
- Rockledge, FL
- Sarasota, FL
- Tampa, FL
- Tifton, GA
- West Palm Beach, FL

April 2, 2020

Mr. Arnelio Alfonso, PE
Senior Project Manager
A&P Consulting Transportation Engineers
8935 NW 35th Lane, Suite 200
Miami, FL 33172

Reference: Geotechnical Exploration Services
Ft Lauderdale Force Main Replacement – Locations 6 through 8, Zone 4
SE 10th Terrace & SE 11th Avenue
Fort Lauderdale, Broward County, Florida
UES Project No. 0630.2000007
UES Report No. 17197

Dear Mr. Alfonso:

In accordance with your request, Universal Engineering Sciences (UES) has completed a subsurface exploration for the above referenced project in Fort Lauderdale, Broward County, Florida. This exploration was performed in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

PROJECT DESCRIPTION

Based on the supplied information, we understand that this project consists of the planning and design of a 54-inch sanitary force main along SE 11th Ave, NE 6th Street, and NE 15th Avenue (Zones 4 through 6) in Fort Lauderdale, Florida. A boring location plan has been supplied for our use. A total of seven (7) soil borings are required.

Our recommendations are based upon the above considerations. If any of this information is incorrect, or if you anticipate any changes, please inform Universal Engineering Sciences so that we may review our recommendations.

FIELD EXPLORATION

At this time, the subsurface conditions at the sites were explored with a total of three (3) soil borings designated B-6 through B-8 in Zone 4 at Locations 6 through 8. The remaining borings B-9 through B-12 will be drilled at a later date. Our drilling crew located the borings based on the provided boring location plan. A general location map of the project area appears in Appendix A: Site Location Map. The approximate locations of the soil borings are presented in Appendix B: Boring Location Plan.

1818 7th Avenue North • Lake Worth, Florida 33461 • (561) 540-6200 • Fax (561) 540-6242
www.UniversalEngineering.com

The SPT borings were advanced to a depth of 60 feet below existing grade using the rotary wash method; samples were collected while performing the SPT at regular intervals. We completed the SPT in general accordance with ASTM D-1586 guidelines. Continuous sampling was conducted from 0 to 10 feet and then at 2.5-foot sampling intervals. The SPT test consists of driving a standard split-barrel sampler (split-spoon) into the subsurface using a 140-pound hammer free-falling 30 inches. The number of hammer blows required to drive the sampler 12 inches, after first seating it 6 inches, is designated the penetration resistance, or SPT-N value. This value is used as an index to soil strength and consistency. SPT soil borings were performed with the use of a safety hammer.

Soil samples collected during the SPT were placed in clean sample containers and transported to our laboratory where they were visually classified by a member of our geotechnical engineering staff in accordance with ASTM D-2488. These soil samples will be held in our laboratory for your inspection for 90 days, after which time they will be discarded unless we are otherwise notified.

SUBSURFACE CONDITIONS

The results of our field exploration are shown on the boring logs included in Appendix B. The Key to Boring Logs is also included in Appendix B. The stratification lines shown on the boring logs represent the approximate boundaries between soil types. The actual soil boundaries may be more transitional than depicted. A generalized profile of the soils found at the boring location are presented in Tables 1 through 3. The soil profiles were prepared from the field log after the recovered soil samples were visually classified by a member of our geotechnical staff.

TABLE 1: SOIL PROFILE (B-6)	
Depth (feet)	Soil Description
0 – 6.5	Loose to medium dense, light gray to dark brown sand [SP]
6.5 – 26.5	Loose to very dense, limestone with sand [GP]
26.5 – 30	Loose, light brown to gray sand [SP]
30 – 36.5	Medium dense to loose, light gray cemented sand with some shell fragments [SP]
36.5 – 45	Very dense to loose, cemented sand [SP]
45 – 60*	Loose to medium dense, limestone with lenses of sand [SP]
* Boring Termination depth	

The test boring found groundwater at 5 feet below ground surface at boring B-6. Based upon the test boring data, a reasonable estimate for the seasonal high groundwater table is 3 feet below existing grade.



TABLE 2: SOIL PROFILE (B-7)	
Depth (feet)	Soil Description
0 – 4	Loose to very loose, dark gray to light gray sand with trace gravel and roots [SP]
4 – 30	Loose to medium dense, limestone [GP]
30 – 34.5	Loose, light brown sand [SP]
34.5 – 60*	Medium dense to very dense, limestone with lenses of sand [SP]
* Boring Termination depth	

The test boring found groundwater about 5.2 feet below ground surface at boring B-7. Based upon the test boring data, a reasonable estimate for the seasonal high groundwater table is 3.2 feet below existing grade.

TABLE 3: SOIL PROFILE (B-8)	
Depth (feet)	Soil Description
0 – 4.5	Loose, dark gray to light gray sand with trace gravel [SP]
4.5 – 9	Loose, limestone [GP]
9 – 10	Loose, light brown sand [SP]
10 – 25	Medium dense to loose, limestone [GP]
25 – 31.5	Medium dense, limestone with sand [GP]
31.5 – 44	Very dense, limestone [GP]
44 – 60*	Very dense to medium dense, limestone with sand [GP]
* Boring Termination depth	

The test boring found groundwater about 6.1 feet below ground surface at boring B-8. Based upon the test boring data, a reasonable estimate for the seasonal high groundwater table is 4.1 feet below existing grade.



SOIL PARAMETERS

Tables 4 through 6 show estimated geotechnical soil parameters for the materials found in the test borings B-6 through B-8.

TABLE 4: RECOMMENDED SOIL DESIGN PARAMETERS (B-6)								
Layer Depth (Feet)	SPT "N" Range	Phi	c (PSF)	k _a	k _p	K _o	Unit Weight (PCF)	
							Saturated	Submerged
0 – 6.5	5 – 11	29	0	0.35	2.88	0.52	105	42.6
6.5 – 26.5	6 – 34	30	0	0.33	3.0	0.5	135	72.6
26.5 – 30	5 & 6 2/4"	34	0	0.28	3.54	0.44	125	62.6
30 – 36.5	4 & 28	32	0	0.31	3.26	0.47	115	52.6
36.5 – 45	7 – 7 0/4"	34	0	0.28	3.54	0.44	125	62.6
45 – 60	4 – 24	30	0	0.33	3.0	0.5	135	72.6

TABLE 5: RECOMMENDED SOIL DESIGN PARAMETERS (B-7)								
Layer Depth (Feet)	SPT "N" Range	Phi	c (PSF)	k _a	k _p	K _o	Unit Weight (PCF)	
							Saturated	Submerged
0 – 4	3 & 6	28	0	0.36	2.77	0.53	100	37.6
4 – 30	3 – 19	30	0	0.33	3.0	0.5	135	72.6
30 – 34.5	6 & 5	29	0	0.35	2.88	0.52	110	47.6
34.5 – 60	5 – 7 0/3"	32	0	0.31	3.26	0.47	135	72.6



TABLE 6: RECOMMENDED SOIL DESIGN PARAMETERS (B-8)								
Layer Depth (Feet)	SPT "N" Range	Phi	c (PSF)	k _a	k _p	K _o	Unit Weight (PCF)	
							Saturated	Submerged
0 – 4.5	5 – 7	29	0	0.35	2.88	0.52	105	42.6
4.5 – 9	5 – 9	29	0	0.35	2.88	0.52	135	72.6
9 – 10	6	29	0	0.35	2.88	0.52	105	42.6
10 – 25	6 – 26	30	0	0.33	3.00	0.5	135	72.6
25 – 31.5	12 & 29	30	0	0.33	3.00	0.5	135	72.6
31.5 – 44	17 – 100/3"	34	0	0.28	3.54	0.44	135	72.6
44 – 60	18 – 71	33	0	0.30	3.39	0.46	135	72.6

UTILITY LINES EXCAVATION AND BACKFILL RECOMMENDATIONS

The following are our recommendations for construction of the proposed utility lines.

1. As appropriate, install a temporary dewatering system capable of maintaining the groundwater level at least 2 feet below the bottom of the utility invert.
2. After excavation to design invert elevations, the in-situ bedding soils should be compacted to at least 95 percent of the Modified Proctor test maximum dry density (ASTM D 1557) to a depth of 12 inches below the bedding level. Compaction in confined areas can probably be achieved using jumping jacks or light weight walk-behind vibratory sleds and/or rollers. However, contractor is responsible for selecting the appropriate compaction equipment. Any unsuitable soils (i.e. organics, excessively soft, highly plastic soils, etc.) encountered at trench bottom level should be removed and replaced with compacted approved backfill.
3. If difficult compaction operations are encountered for the soils beneath the utility invert elevations due to excessive fines content and/or saturated soil conditions, contractor may use aggregate/stone to stabilize the bottom the excavation. This can be accomplished by undercutting 6 inches of the subgrade, placing coarse aggregate (FDOT 57 stone) in 6 inch loose lifts in the bottom of the excavation, and "beating" or "pounding" each lift of the stone into the saturated subgrade with compaction equipment (i.e. jumping jack) until it is absorbed, and another 6" lift of stone is pounded into the subgrade. Repeat until a firm, non-yielding subgrade is achieved. The non-yielding aggregate/soil subgrade should be probed to verify compaction (i.e. firm and stable) in lieu of density testing.



4. After stabilizing the bedding level soils and constructing the utility line, backfill the excavation with suitable native soils or imported fill placed in maximum 6 inch thick compacted lifts. Suitable native soils or imported fill material should consist of relatively clean sandy soils containing less than 12 percent passing the No. 200 sieve. Soils with greater than about 5 percent passing the No. 200 sieve will be sensitive to even slight changes in moisture content and may prove difficult to compact if the in-situ moisture contents are greater than about 2 percent above or below the optimum moisture content as determined by the laboratory proctor test. Each lift of backfill should be compacted to at least 95 percent of the Modified Proctor test maximum dry density (ASTM D 1557). Beneath pavement areas, the top 12 inches of backfill should be compacted to at least 98 percent. Additionally, local jurisdictional compaction requirements should be followed when stricter than the recommendations herein.

All excavation work must meet OSHA Excavation Standard Subpart P regulations. Either a trench box, braced sheet pile structure or an excavation with temporary side slopes should be designed according to OSHA requirements for the on-site soils. Provisions for maintaining workman safety within excavations is the sole responsibility of the contractor.

LIMITATIONS

The test borings completed for this report were widely spaced and are not considered sufficient for reliably detecting the presence of isolated, anomalous surface or subsurface conditions, or reliably estimating unsuitable or suitable material quantities. Accordingly, UES does not recommend relying on our boring information to negate the presence of anomalous materials or for estimation of material quantities. Therefore, UES will not be responsible for any extrapolation or use of our data by others beyond the purpose(s) for which it is applicable or intended.

During construction, geotechnical issues not addressed in this report may arise. Because of the natural limitations inherent in working with the subsurface, it is not possible for a geotechnical engineer to predict and address all possible problems. An (ASFE) publication, "Important Information about Your Geotechnical Engineering Report" appears in Appendix C, and will help explain the nature of geotechnical issues. Further, we present documents in Appendix C: Constraints and Restrictions, to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

This report is for the exclusive use of our client and our client's design team for this specific project. Information contained in this report may not be used or relied on by others without the expressed written consent of UES.



CLOSURE

We appreciate the opportunity to have worked with you on this project and look forward to a continued association. Please contact us if you have any questions, or if we may further assist you as your plans proceed.

Respectfully submitted,
UNIVERSAL ENGINEERING SCIENCES, INC.
Certificate of Authorization No. 549



Oliver D. Rosen, E.I
Staff Engineer
E.I.T. No. 1100022655



Allan G. Abubakar, P.E.
Project Engineer
Florida Professional Engineer No. 69952
04-2-2020

Enclosures: Appendix A: Site Location Map
Appendix B: Boring Location Plan
Boring Logs
Key to Boring Logs
Appendix C: Important Information About Your Geotechnical
Engineering Report
Appendix D: General Conditions

Dist: Client (PDF)



APPENDIX A



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**GEOTECHNICAL EXPLORATION SERVICES
FORCE MAIN REPLACEMENT- LOCATIONS 6 THROUGH 8, ZONE 4
FORT LAUDERDALE, BROWARD COUNTY, FLORIDA**

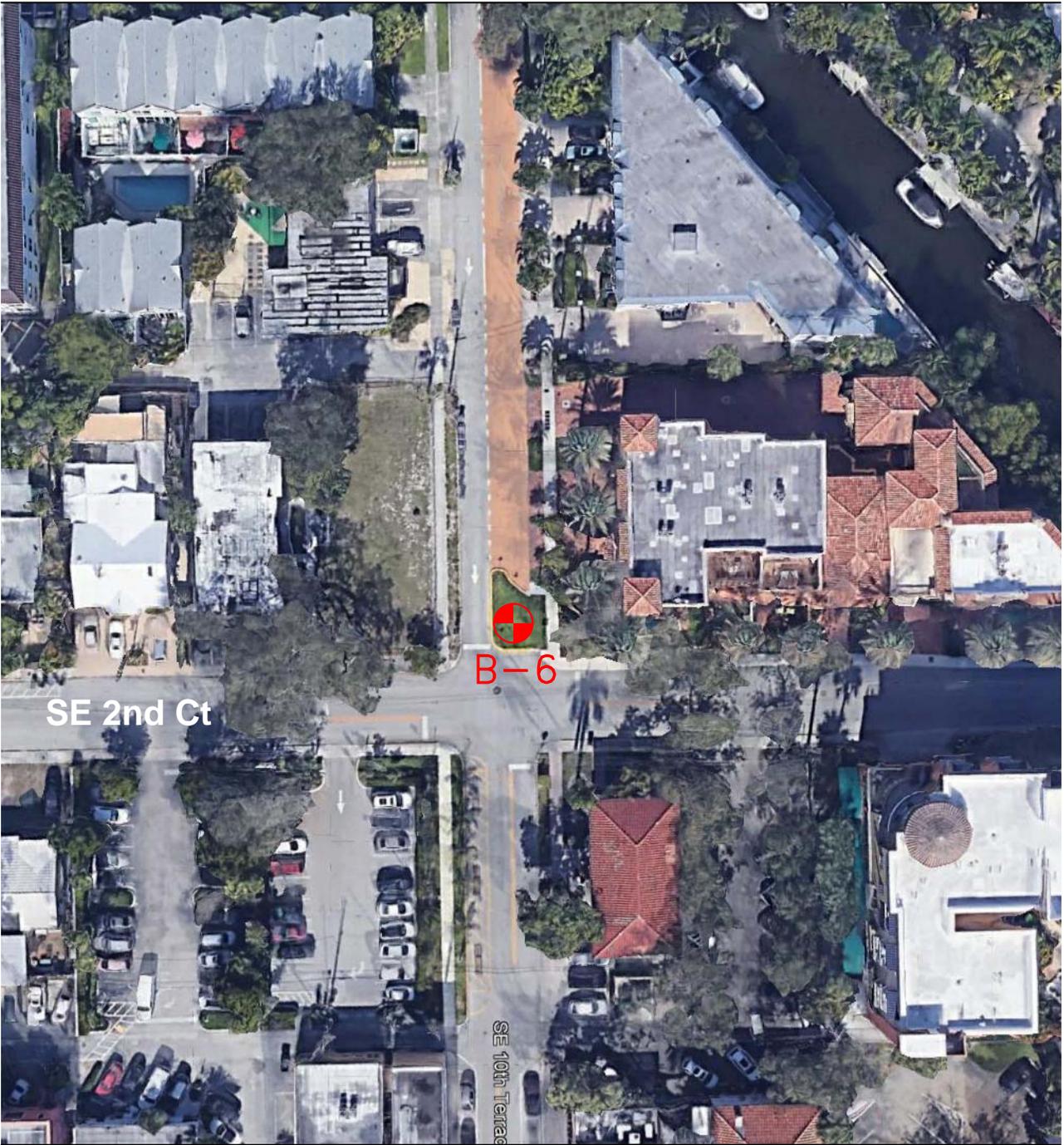
SITE LOCATION MAP

DRAWN BY: O.D.R.	DATE: 03/30/2020	CHECKED BY: P.G.R.	DATE: 03/30/2020
SCALE: N.T.S.	PROJECT NO: 0630.2000007	REPORT NO: 17197	PAGE NO: A-1 CAM #24-0671

APPENDIX B



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#1



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ENGINEERING SCIENCES

GEOTECHNICAL EXPLORATION SERVICES
FORCE MAIN REPLACEMENT - LOCATION 6, ZONE 4
FORT LAUDERDALE, BROWARD COUNTY, FLORIDA

BORING LOCATION PLAN

DRAWN BY:	O.R.	DATE:	03/30/2020	CHECKED BY:	P.G.R.	DATE:	03/30/2020
SCALE:	NTS	PROJECT NO:	0630.2000007	REPORT NO:	17201	PAGE NO:	B-1



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0630.2000007

REPORT NO.: 17197

PAGE: B-2

PROJECT: Ft Lauderdale Force Main Replacement - Location 6, Zone 4
SE 10th Terrace & SE 2nd Ct
Ft Lauderdale, Florida

BORING DESIGNATION: **B-6**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: A & P Consulting Transportation Engineers

G.S. ELEVATION (ft): DATE STARTED: 3/31/20

LOCATION: 26°07'12.54" N & 80°07'57.62" W

WATER TABLE (ft): 5.0 DATE FINISHED: 4/1/20

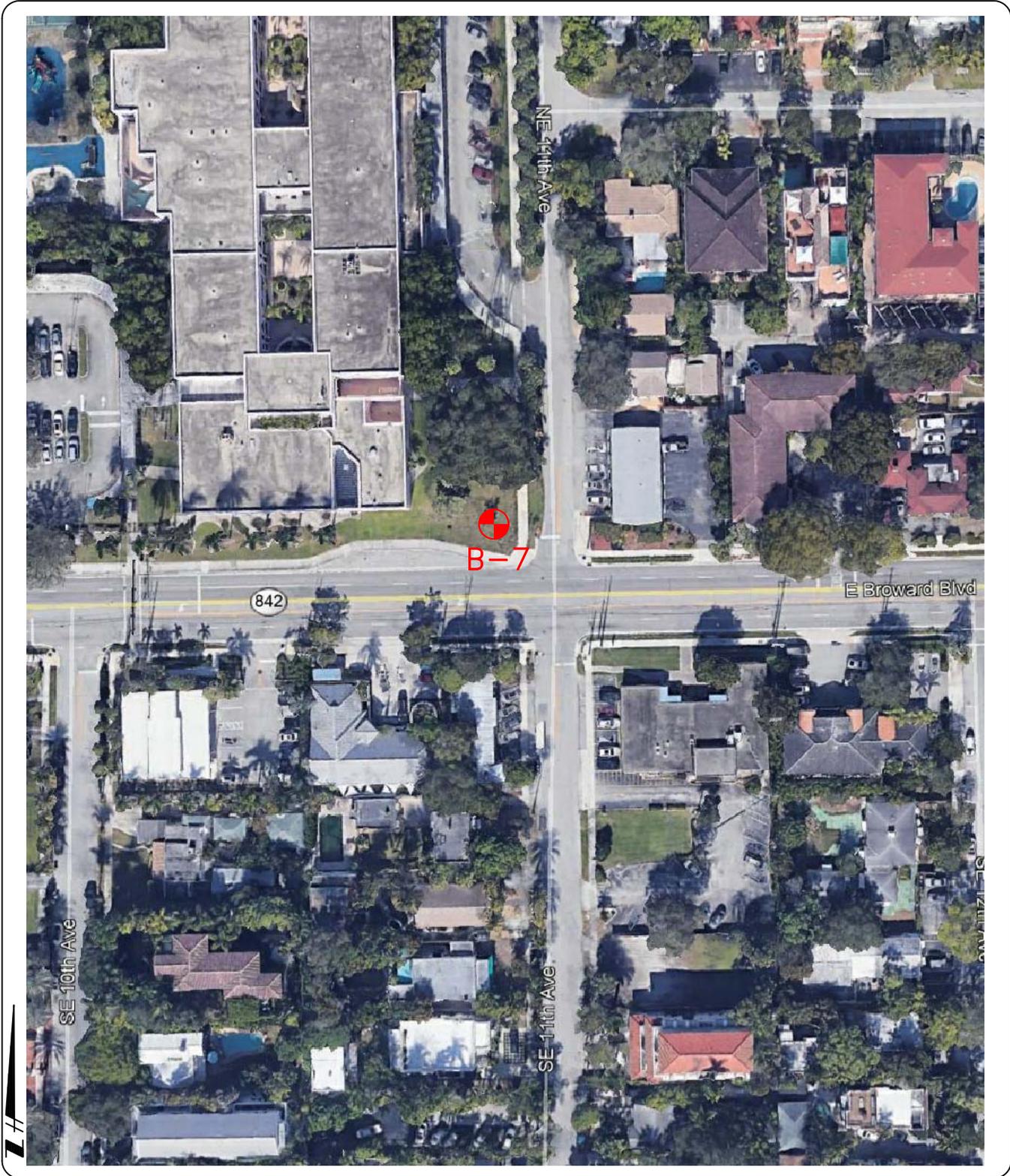
REMARKS:

DATE OF READING: 3/31/2020 DRILLED BY: JW/CD/CG

EST. W.S.W.T. (ft): 3.0 TYPE OF SAMPLING: SPT

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%) (Term)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0		3-4-5-6	9			Loose Dark gray sand [SP]						
		5-5-6-7	11			Loose, gray to light gray sand [SP]						
		4-3-2-2	5			Medium dense, light gray sand [SP]						
5		3-5-5-4	10			Loose, dark brown sand [SP]						
		6-7-10-9	17			Medium dense, limestone with sand [GP]						
		9-7-9-9	16									
		9-8-26-26	34			...Dense						
15		8-8-12-9	20			...Medium dense						
		5-5-5-4	10									
20		5-3-3-3	6			...Loose						
		8-3-4-4	7									
25		60/4"	60/4"			...Very dense						
		2-2-3-3	5			Loose, light gray sand [SP]						
30		11-20-8-4	28			Medium dense, light gray cemented sands with shell fragments and limestone [GP]						
		23-2-2-3	4			Loose, light gray sand with some cemented sands and shell fragments [SP]						
35		1-12-16-50/3"	28			...Medium dense						
		70/4"	70/4"			Very dense, cemented sands with shell fragments [GP]						
40		19-24-10-28	34			...Dense						
		3-3-4-7	7			...Loose						
45		3-2-2-1	4			Loose, limestone with sand [GP]						
		4-2-2-8	4									
50		10-16-10-16	26			...Medium dense						
		12-14-10-16	24									
55		8-9-4-7	13									
		9-10-6-10	16									
60						Soil boring terminated at 60 feet						

BL3



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ENGINEERING SCIENCES

**GEOTECHNICAL EXPLORATION SERVICES
FORCE MAIN REPLACEMENT - LOCATION 7, ZONE 4
FORT LAUDERDALE, BROWARD COUNTY, FLORIDA**

BORING LOCATION PLAN

DRAWN BY: O.R.	DATE: 03/30/2020	CHECKED BY: P.G.R.	DATE: 03/30/2020
SCALE: NTS	PROJECT NO: 0630.2000007	REPORT NO: 17197	PAGE NO: B-3



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0630.2000007

REPORT NO.: 17197

PAGE: B-4

PROJECT: Ft Lauderdale Force Main Replacement - Zone 4
SE 9th Ave crossing New River & Las Olas Blvd
Ft Lauderdale, Florida

BORING DESIGNATION: **B-7**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: A & P Consulting Transportation Engineers

G.S. ELEVATION (ft):

DATE STARTED: 3/26/20

LOCATION: 26° 7'21.91"N, 80° 7'56.69"W

WATER TABLE (ft): 5.2

DATE FINISHED: 3/26/20

REMARKS:

DATE OF READING: 3/26/2020

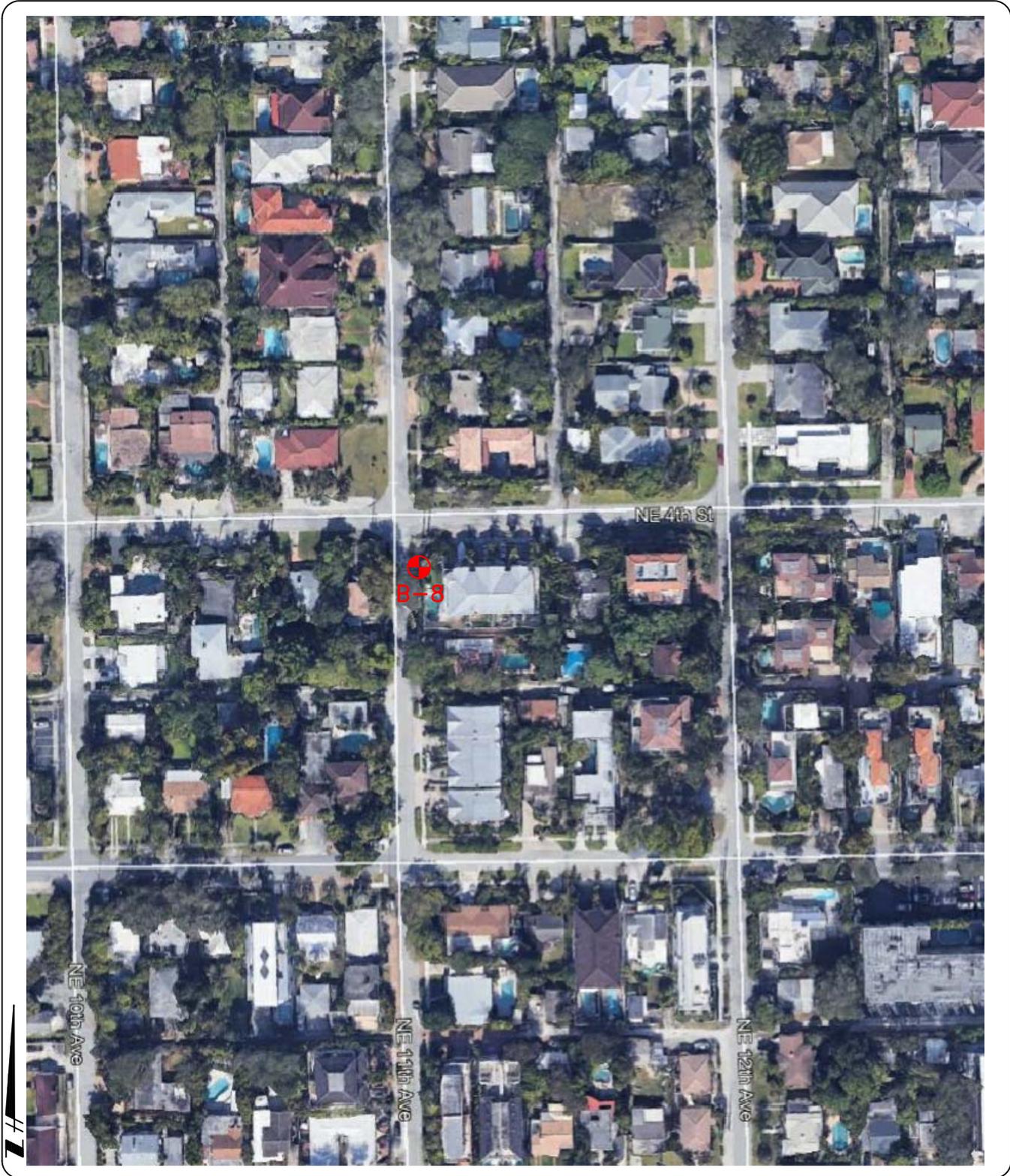
DRILLED BY: JW/CD/CG

EST. W.S.W.T. (ft): 3.2

TYPE OF SAMPLING: SPT

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%) (Term)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0		2-3-3-3	6			Loose, dark gray to light gray sand with trace gravel and roots [SP]						
		2-1-2-3	3	▽		Very loose, light gray sand with gravel [SP]						
5		3-3-2-1	5	▽		Loose, limestone [GP]						
		2-3-3-5	6									
10		6-11-8-6	19			...Medium dense						
		5-5-8-12	13									
		10-2-4-3	6			...Loose						
15		5-8-10-11	18			...Medium dense						
		6-4-4-6	8									
20		3-2-2-1	4			...Loose						
		5-3-3-3	6									
25		4-1-2-2	3			...Very loose						
		6-4-2-2	6			Loose, limestone with lenses of sand [GP]						
30		4-3-3-4	6			Loose, light brown sand [SP]						
		3-2-3-4	5									
35		24-50/4"	50/4"			Very dense, limestone [GP]						
		70/3"	70/3"									
40		3-2-3-5	5			Loose, limestone with lenses of sand [GP]						
		60/4"	60/4"			Very dense, limestone [GP]						
45		63-50/3"	50/3"									
		8-5-5-45	8			...Loose						
50		11-8-8-8	16			Medium dense, limestone with lenses of sand [GP]						
		10-8-10-10	18									
55		6-11-23-38	34			...Dense						
		12-30-23-20	53			...Very dense						
60						Soil boring terminated at 60 feet						

BL3



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ENGINEERING SCIENCES

**GEOTECHNICAL EXPLORATION SERVICES
FORCE MAIN REPLACEMENT - LOCATION 8, ZONE 4
FORT LAUDERDALE, BROWARD COUNTY, FLORIDA**

BORING LOCATION PLAN

DRAWN BY: O.R.	DATE: 03/30/2020	CHECKED BY: P.G.R.	DATE: 03/30/2020
SCALE: NTS	PROJECT NO: 0630.2000007	REPORT NO: 17197	PAGE NO: B-5



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0630.2000007

REPORT NO.: 17197

PAGE: B-6

PROJECT: Ft Lauderdale Force Main Replacement - Zone 4
SE 9th Ave crossing New River & Las Olas Blvd
Ft Lauderdale, Florida

BORING DESIGNATION: **B-8**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: A & P Consulting Transportation Engineers

G.S. ELEVATION (ft):

DATE STARTED: 3/30/20

LOCATION: 26° 7'34.30"N, 80° 7'56.44"W

WATER TABLE (ft): 6.1

DATE FINISHED: 3/30/20

REMARKS:

DATE OF READING: 3/30/2020

DRILLED BY: JW/CD/CG

EST. W.S.W.T. (ft): 4.1

TYPE OF SAMPLING: SPT

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%) (Term)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0		3-2-3-4	5			Loose, dark gray sand with trace gravel [SP]						
		4-3-4-5	7	▽		Loose, light gray sand [SP]						
5		3-3-2-1	5	▽		Loose, limestone [GP]						
		4-4-5-6	9									
10		5-5-1-1	6			Loose, light brown sand [SP]						
		12-13-13-13	26			Medium dense, limestone [GP]						
15		6-5-7-6	12									
		6-4-4-5	8			...Loose						
20		4-3-4-8	7									
		5-3-4-6	7									
25		4-3-3-5	6									
		9-7-5-6	12			Medium dense, limestone with sand [GP]						
30		7-12-17-50/2"	29									
		7-8-9-50/2"	17									
35		70/2"	70/2"			Very dense, limestone [GP]						
		100/3"	100/3"									
40		27-42-50/2"	50/2"									
		80/3"	80/3"									
45		80/2"	80/2"									
		5-4-3-2	71			Very dense, limestone with sand [GP]						
50		8-17-8-8	25			...Medium dense						
		11-9-9-11	18									
55		10-10-8-7	18									
		12-20-10-9	30									
60		10-8-11-11	19									
						Soil boring terminated at 60 feet						

BL3



SYMBOLS AND ABBREVIATIONS

<u>SYMBOL</u>	<u>DESCRIPTION</u>
N-Value	No. of Blows of a 140-lb. Weight Falling 30 Inches Required to Drive a Standard Spoon 1 Foot
WOR	Weight of Drill Rods
WOH	Weight of Drill Rods and Hammer
	Sample from Auger Cuttings
	Standard Penetration Test Sample
	Thin-wall Shelby Tube Sample (Undisturbed Sampler Used)
RQD	Rock Quality Designation
	Stabilized Groundwater Level
	Seasonal High Groundwater Level (also referred to as the W.S.W.T.)
NE	Not Encountered
GNE	Groundwater Not Encountered
BT	Boring Terminated
-200 (%)	Fines Content or % Passing No. 200 Sieve
MC (%)	Moisture Content
LL	Liquid Limit (Atterberg Limits Test)
PI	Plasticity Index (Atterberg Limits Test)
NP	Non-Plastic (Atterberg Limits Test)
K	Coefficient of Permeability
Org. Cont.	Organic Content
G.S. Elevation	Ground Surface Elevation

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS More than 50% retained on the No. 200 sieve*	GRAVELS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS	GW Well-graded gravels and gravel-sand mixtures, little or no fines
			GP Poorly graded gravels and gravel-sand mixtures, little or no fines
	SANDS More than 50% of coarse fraction passes No. 4 sieve	GRAVELS WITH FINES	GM Silty gravels and gravel-sand-silt mixtures
			GC Clayey gravels and gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS 5% or less passing No. 200 sieve	SW** Well-graded sands and gravelly sands, little or no fines
			SP** Poorly graded sands and gravelly sands, little or no fines
SANDS with 12% or more passing No. 200 sieve		SM** Silty sands, sand-silt mixtures	
		SC** Clayey sands, sand-clay mixtures	
FINE-GRAINED SOILS 50% or more passes the No. 200 sieve*	SILTS AND CLAYS Liquid limit 50% or less	ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50%	MH	Inorganic silts, micaceous or diamicaceous fine sands or silts, elastic silts
		CH	Inorganic clays or clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity
		PT	Peat, muck and other highly organic soils

*Based on the material passing the 3-inch (75 mm) sieve

** Use dual symbol (such as SP-SM and SP-SC) for soils with more than 5% but less than 12% passing the No. 200 sieve

RELATIVE DENSITY

(Sands and Gravels)

- Very loose – Less than 4 Blow/Foot
- Loose – 4 to 10 Blows/Foot
- Medium Dense – 11 to 30 Blows/Foot
- Dense – 31 to 50 Blows/Foot
- Very Dense – More than 50 Blows/Foot

CONSISTENCY

(Sils and Clays)

- Very Soft – Less than 2 Blows/Foot
- Soft – 2 to 4 Blows/Foot
- Firm – 5 to 8 Blows/Foot
- Stiff – 9 to 15 Blows/Foot
- Very Stiff – 16 to 30 Blows/Foot
- Hard – More than 30 Blows/Foot

RELATIVE HARDNESS

(Limestone)

- Soft – 100 Blows for more than 2 Inches
- Hard – 100 Blows for less than 2 Inches

MODIFIERS

These modifiers Provide Our Estimate of the Amount of Minor Constituents (Silt or Clay Size Particles) in the Soil Sample

- Trace – 5% or less
- With Silt or With Clay – 6% to 11%
- Silty or Clayey – 12% to 30%
- Very Silty or Very Clayey – 31% to 50%

These Modifiers Provide Our Estimate of the Amount of Organic Components in the Soil Sample

- Trace – Less than 3%
- Few – 3% to 4%
- Some – 5% to 8%
- Many – Greater than 8%

These Modifiers Provide Our Estimate of the Amount of Other Components (Shell, Gravel, Etc.) in the Soil Sample

- Trace – 5% or less
- Few – 6% to 12%
- Some – 13% to 30%
- Many – 31% to 50%

CAM #24-0671

Exhibit 2

APPENDIX C



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Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply this report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by:* the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help

others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your GBC-Member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

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CONSTRAINTS & RESTRICTIONS

The intent of this document is to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations.

Bidders are urged to make their own soil borings, test pits, test caissons or other investigations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of driving resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water levels may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides, and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME

This report reflects the soil conditions at the time of exploration. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional reviews may be required.



APPENDIX D



UNIVERSAL
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Universal Engineering Sciences, Inc.
GENERAL CONDITIONS

SECTION 1: RESPONSIBILITIES

- 1.1 *Universal Engineering Sciences, Inc.*, ("UES"), has the responsibility for providing the services described under the Scope of Services section. The work is to be performed according to accepted standards of care and is to be completed in a timely manner. The term "UES" as used herein includes all of *Universal Engineering Sciences, Inc.*'s agents, employees, professional staff, and subcontractors.
- 1.2 The Client or a duly authorized representative is responsible for providing UES with a clear understanding of the project nature and scope. The Client shall supply UES with sufficient and adequate information, including, but not limited to, maps, site plans, reports, surveys and designs, to allow UES to properly complete the specified services. The Client shall also communicate changes in the nature and scope of the project as soon as possible during performance of the work so that the changes can be incorporated into the work product.
- 1.3 The Client acknowledges that UES's responsibilities in providing the services described under the Scope of Services section is limited to those services described therein, and the Client hereby assumes any collateral or affiliated duties necessitated by or for those services. Such duties may include, but are not limited to, reporting requirements imposed by any third party such as federal, state, or local entities, the provision of any required notices to any third party, or the securing of necessary permits or permissions from any third parties required for UES's provision of the services so described, unless otherwise agreed upon by both parties.
- 1.4 Universal will not be responsible for scheduling our services and will not be responsible for tests or inspections that are not performed due to a failure to schedule our services on the project or any resulting damages.

1.5 **PURSUANT TO FLORIDA STATUTES §558.0035, ANY INDIVIDUAL EMPLOYEE OR AGENT OF UES MAY NOT BE HELD INDIVIDUALLY LIABLE FOR NEGLIGENCE.**

SECTION 2: STANDARD OF CARE

- 2.1 Services performed by UES under this Agreement will be conducted in a manner consistent with the level of care and skill ordinarily exercised by members of UES's profession practicing contemporaneously under similar conditions in the locality of the project. No other warranty, express or implied, is made.
- 2.2 The Client recognizes that subsurface conditions may vary from those observed at locations where borings, surveys, or other explorations are made, and that site conditions may change with time. Data, interpretations, and recommendations by UES will be based solely on information available to UES at the time of service. UES is responsible for those data, interpretations, and recommendations, but will not be responsible for other parties' interpretations or use of the information developed.
- 2.3 Execution of this document by UES is not a representation that UES has visited the site, become generally familiar with local conditions under which the services are to be performed, or correlated personal observations with the requirements of the Scope of Services. It is the Client's responsibility to provide UES with all information necessary for UES to provide the services described under the Scope of Services, and the Client assumes all liability for information not provided to UES that may affect the quality or sufficiency of the services so described.
- 2.4 Should UES be retained to provide threshold inspection services under Florida Statutes §553.79, Client acknowledges that UES's services thereunder do not constitute a guarantee that the construction in question has been properly designed or constructed, and UES's services do not replace any of the obligations or liabilities associated with any architect, contractor, or structural engineer. Therefore it is explicitly agreed that the Client will not hold UES responsible for the proper performance of service by any architect, contractor, structural engineer or any other entity associated with the project.

SECTION 3: SITE ACCESS AND SITE CONDITIONS

- 3.1 Client will grant or obtain free access to the site for all equipment and personnel necessary for UES to perform the work set forth in this Agreement. The Client will notify any and all possessors of the project site that Client has granted UES free access to the site. UES will take reasonable precautions to minimize damage to the site, but it is understood by Client that, in the normal course of work, some damage may occur, and the correction of such damage is not part of this Agreement unless so specified in the Proposal.
- 3.2 The Client is responsible for the accuracy of locations for all subterranean structures and utilities. UES will take reasonable precautions to avoid known subterranean structures, and the Client waives any claim against UES, and agrees to defend, indemnify, and hold UES harmless from any claim or liability for injury or loss, including costs of defense, arising from damage done to subterranean structures and utilities not identified or accurately located. In addition, Client agrees to compensate UES for any time spent or expenses incurred by UES in defense of any such claim with compensation to be based upon UES's prevailing fee schedule and expense reimbursement policy.

SECTION 4: SAMPLE OWNERSHIP AND DISPOSAL

- 4.1 Soil or water samples obtained from the project during performance of the work shall remain the property of the Client.
- 4.2 UES will dispose of or return to Client all remaining soils and rock samples 60 days after submission of report covering those samples. Further storage or transfer of samples can be made at Client's expense upon Client's prior written request.
- 4.3 Samples which are contaminated by petroleum products or other chemical waste will be returned to Client for treatment or disposal, consistent with all appropriate federal, state, or local regulations.

SECTION 5: BILLING AND PAYMENT

- 5.1 UES will submit invoices to Client monthly or upon completion of services. Invoices will show charges for different personnel and expense classifications.
- 5.2 Payment is due 30 days after presentation of invoice and is past due 31 days from invoice date. Client agrees to pay a finance charge of one and one-half percent (1 ½ %) per month, or the maximum rate allowed by law, on past due accounts.
- 5.3 If UES incurs any expenses to collect overdue billings on invoices, the sums paid by UES for reasonable attorneys' fees, court costs, UES's time, UES's expenses, and interest will be due and owing by the Client.

SECTION 6: OWNERSHIP AND USE OF DOCUMENTS

- 6.1 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, as instruments of service, shall remain the property of UES.
- 6.2 Client agrees that all reports and other work furnished to the Client or his agents, which are not paid for, will be returned upon demand and will not be used by the Client for any purpose.
- 6.3 UES will retain all pertinent records relating to the services performed for a period of five years following submission of the report, during which period the records will be made available to the Client at all reasonable times.
- 6.4 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, are prepared for the sole and exclusive use of Client, and may not be given to any other party or used or relied upon by any such party without the express written consent of UES.

SECTION 7: DISCOVERY OF UNANTICIPATED HAZARDOUS MATERIALS

- 7.1 Client warrants that a reasonable effort has been made to inform UES of known or suspected hazardous materials on or near the project site.
- 7.2 Under this agreement, the term hazardous materials include hazardous materials (40 CFR 172.01), hazardous wastes (40 CFR 261.2), hazardous substances (40 CFR 300.6), petroleum products, polychlorinated biphenyls, and asbestos.
- 7.3 Hazardous materials may exist at a site where there is no reason to believe they could or should be present. UES and Client agree that the discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the scope of work. UES and Client also agree that the discovery of unanticipated hazardous materials may make it necessary for UES to take immediate measures to protect health and safety. Client agrees to compensate UES for any equipment decontamination or other costs incident to the discovery of unanticipated hazardous waste.
- 7.4 UES agrees to notify Client when unanticipated hazardous materials or suspected hazardous materials are encountered. Client agrees to make any disclosures required by law to the appropriate governing agencies. Client also agrees to hold UES harmless for any and all consequences of disclosures made by UES which are required by governing law. In the event the project site is not owned by Client, Client recognizes that it is the Client's responsibility to inform the property owner of the discovery of unanticipated hazardous materials or suspected hazardous materials.
- 7.5 Notwithstanding any other provision of the Agreement, Client waives any claim against UES, and to the maximum extent permitted by law, agrees to defend, indemnify, and save UES harmless from any claim, liability, and/or defense costs for injury or loss arising from UES's discovery of unanticipated hazardous materials or suspected hazardous materials including any costs created by delay of the project and any cost associated with possible reduction of the property's value. Client will be responsible for ultimate disposal of any samples secured by UES which are found to be contaminated.

SECTION 8: RISK ALLOCATION

- 8.1 Client agrees that UES's liability for any damage on account of any breach of contract, error, omission or other professional negligence will be limited to a sum not to exceed \$50,000 or UES's fee, whichever is greater. If Client prefers to have higher limits on contractual or professional liability, UES agrees to increase the limits up to a maximum of \$1,000,000.00 upon Client's written request at the time of accepting our proposal provided that Client agrees to pay an additional consideration of four percent of the total fee, or \$400.00, whichever is greater. The additional charge for the higher liability limits is because of the greater risk assumed and is not strictly a charge for additional professional liability insurance.

SECTION 9: INSURANCE

- 9.1 UES represents and warrants that it and its agents, staff and consultants employed by it, is and are protected by worker's compensation insurance and that UES has such coverage under public liability and property damage insurance policies which UES deems to be adequate. Certificates for all such policies of insurance shall be provided to Client upon request in writing. Within the limits and conditions of such insurance, UES agrees to indemnify and save Client harmless from and against loss, damage, or liability arising from negligent acts by UES, its agents, staff, and consultants employed by it. UES shall not be responsible for any loss, damage or liability beyond the amounts, limits, and conditions of such insurance or the limits described in Section 8, whichever is less. The Client agrees to defend, indemnify and save UES harmless for loss, damage or liability arising from acts by Client, Client's agent, staff, and other UESs employed by Client.

SECTION 10: DISPUTE RESOLUTION

- 10.1 All claims, disputes, and other matters in controversy between UES and Client arising out of or in any way related to this Agreement will be submitted to alternative dispute resolution (ADR) such as mediation or arbitration, before and as a condition precedent to other remedies provided by law, including the commencement of litigation.
- 10.2 If a dispute arises related to the services provided under this Agreement and that dispute requires litigation instead of ADR as provided above, then:
- (a) the claim will be brought and tried in judicial jurisdiction of the court of the county where UES's principal place of business is located and Client waives the right to remove the action to any other county or judicial jurisdiction, and
 - (b) The prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorneys' fees, and other claim related expenses.

SECTION 11: TERMINATION

- 11.1 This agreement may be terminated by either party upon seven (7) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof. Such termination shall not be effective if that substantial failure has been remedied before expiration of the period specified in the written notice. In the event of termination, UES shall be paid for services performed to the termination notice date plus reasonable termination expenses.
- 11.2 In the event of termination, or suspension for more than three (3) months, prior to completion of all reports contemplated by the Agreement, UES may complete such analyses and records as are necessary to complete its files and may also complete a report on the services performed to the date of notice of termination or suspension. The expense of termination or suspension shall include all direct costs of UES in completing such analyses, records and reports.

SECTION 12: ASSIGNS

- 12.1 Neither the Client nor UES may delegate, assign, sublet or transfer their duties or interest in this Agreement without the written consent of the other party.

SECTION 13. GOVERNING LAW AND SURVIVAL

- 13.1 The laws of the State of Florida will govern the validity of these Terms, their interpretation and performance.
- 13.2 If any of the provisions contained in this Agreement are held illegal, invalid, or unenforceable, the enforceability of the remaining provisions will not be impaired. Limitations of liability and indemnities will survive termination of this Agreement for any cause.

SECTION 14. INTEGRATION CLAUSE

- 14.1 This Agreement represents and contains the entire and only agreement and understanding among the parties with respect to the subject matter of this Agreement, and supersedes any and all prior and contemporaneous oral and written agreements, understandings, representations, inducements, promises, warranties, and conditions among the parties. No agreement, understanding, representation, inducement, promise, warranty, or condition of any kind with respect to the subject matter of this Agreement shall be relied upon by the parties unless expressly incorporated herein.
- 14.2 This Agreement may not be amended or modified except by an agreement in writing signed by the party against whom the enforcement of any modification or amendment is sought.

August 26, 2022

Hazen & Sawyer
4000 Hollywood Boulevard
Suite 750 N
Hollywood, FL - 33021



Attention: Ms. Patricia A. Carney, P.E.

Re.: Geotechnical Services
City of Ft. Lauderdale Public Works Project
Las Olas Blvd.
Between NE 2nd Avenue & SR A1A
Ft. Lauderdale, FL - 33301

QuEST Report No. J-21161.002

Dear Ms. Carney:

As requested, Quest Engineering Services & Testing, Inc. (QuEST) had previously completed a subsurface exploration at the subject site. The fieldwork involved the drilling of seven (7) Standard Penetration Test (SPT) borings in accordance with ASTM D 1586, primarily along Las Olas Boulevard from A1A to NE 2nd Ave., in Ft. Lauderdale, Florida. The boring locations were indicated to us by the client. Those results were transmitted to you via our report no. J-21161.001 dated August 11, 2021. Initially we were asked to hold the extracted soils samples in our lab. Subsequently we were asked to run several tests on these soil samples. The results of those tests were transmitted to periodically as those tests were run.

We have now been requested to close out the project file. Therefore we have prepared this consolidated report that includes the Boring Location Plan, Boring Logs and the results of the requested laboratory test results.

SPT BORINGS

We obtained clearances for underground utilities at the boring areas, prior to our commencing the drilling operations. The borings were drilled to a depth of 100 feet below grade at the locations indicated by the client. The approximate boring locations are indicated on the attached Boring Location Plan. The scope of our services was strictly limited to drilling the borings and providing the subsurface profile. In accordance with our scope, no conclusions were drawn or foundation evaluations made for the planned construction.

The borings were drilled using casing and the boreholes were grouted after completion. In each of the borings, rock coring was done in one 10' section per borehole. These rock coring depths were positioned at different depths in these borings. The rock coring details are also indicated in the boring logs. The boring logs also indicate the latitude and longitude of the drilled locations.

Sub-surface Conditions

The detailed sub-surface profile is indicated on the attached boring logs. The stratification of the profile components, as shown on the boring logs, represents the subsurface conditions at the actual boring locations. Variations may occur within a short distance from the borings. Lines of demarcation represent the approximate boundary between the types of materials encountered, but the transition may be gradual, or not clearly defined.

In general, the soil borings disclosed the drilled site to be mantled by flexible pavement, comprising of roughly 3 inches of asphalt and 21 inches of limerock base course. The pavement was generally followed by interbedded layers of sand, limestone and sand with limestone fragments to the terminal limits of the exploration at 100 feet below grade.

Groundwater

The ground water table was encountered at a depth of 4.5 to 8 feet below grade, in the borings. In the absence of other data, we suggest assuming that a 1 to 2 foot rise in the water table could occur during periods of prolonged rainfall and at the peak of the wet hydroperiod, which typically occurs in the Fall.

LABORATORY TESTS

The requested laboratory tests have been completed and the test results are attached. The following tests were conducted by our sub-consultant. The table below lists the number of type of tests run, the numbers of samples tested (i.e. number of tests) and their corresponding ASTM designations.

<u>Test Name</u>	<u>Number of Test</u>	<u>Method</u>
1 - Particle Size Distribution	14	ASTM D422
2 – Swell (Expansion) Test	14	ASTM D4829 Method C
3 – Constant Head Permeability	3	ASTM D2434
4 – Flexible Wall Permeability	1	ASTM D5084 Method F
5 – Chloride Ion Test	9	AASHTO T-291
6 – Sulfate Ion Test	14	AASHTO T-290
7 – Direct Shear Test	9	ASTM D3080
8 – Cercher Abrasivity Test	6	ASTM D7625
9 – Percent Quartz (Petrography)	11	ASTM C295

LIMITATIONS OF STUDY

The soils engineer warrants that the findings, recommendations, specifications, or professional advice contained herein, have been promulgated after being prepared in accordance with generally accepted professional engineering practice in the field of foundation engineering, soil mechanics and engineering geology. No other warranties are implied or expressed.

oOo-

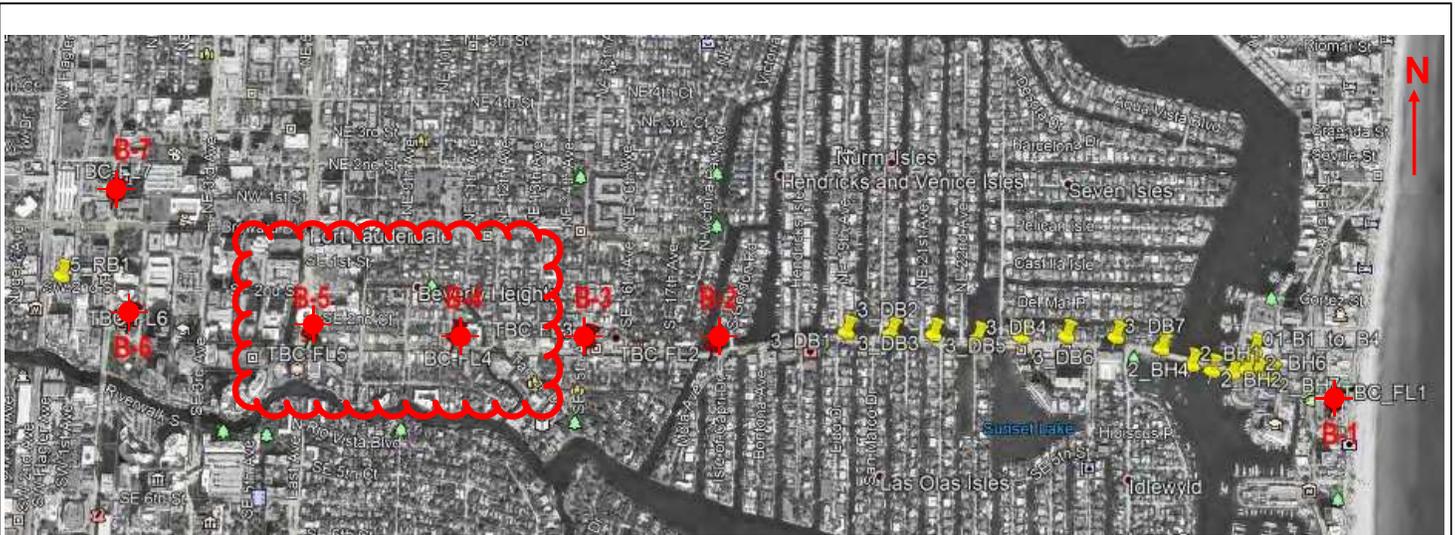
QuEST appreciates the opportunity to be of service. If we may answer any additional questions or be of further service, please call.

Sincerely,
Quest Engineering Services & Testing, Inc.

Mohammad Reza Digitally signed by Mohammad
Reza Raffaty Javidan
Date: 2022.08.26 17:59:28 -04'00'
Raffaty Javidan

Reza Javidan, P.E.
Project Engineer
Florida Registration No. 60223

Attachments: Boring Location Plan
SPT Boring Logs
Laboratory Test Results



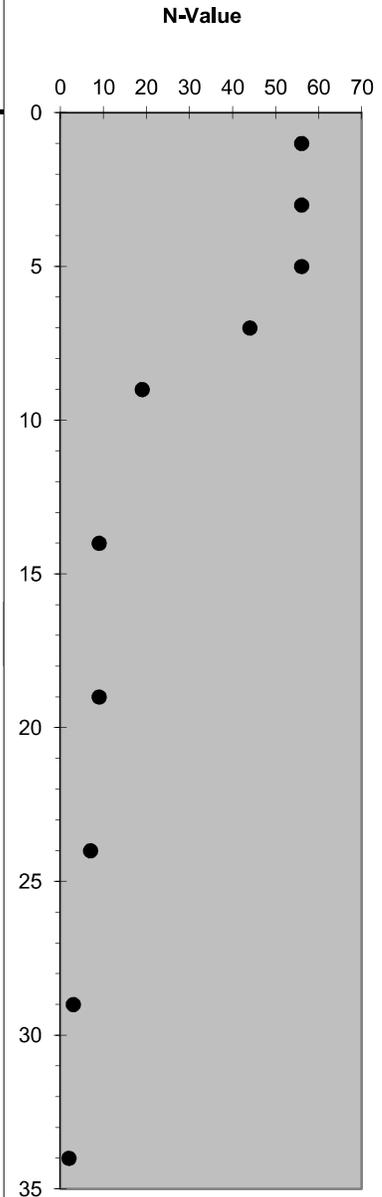
Boring No.	Total Depth	Boring Location		Rock Core Interval
		Latitude	Longitude	
B-1	100' SPT	26.1184143°N	80.10534330°W	75' - 81'
B-2	100' SPT	26.1193673°N	80.1240446°W	45' - 55'
B-4	100' SPT	26.1193276°N	80.13250430°W	20' - 30'
B-3	100' SPT	26.1192822°N	80.14273600°W	35' - 45'
B-3	100' SPT	26.1194100°N	80.12611400°W	25' - 35'
B-5	100' SPT	26.11923451°N	80.13687770°W	65' - 75'
B-7	100' SPT	26.1227172°N	80.12143530°W	60' - 70'

<p>Quest Engineering Services & Testing, Inc. 2737 NW 19th Street Pompano Beach, FL – 33069</p> <p>Ph (954) 582 9800 Fax (954) 582 9836</p>	Title: BORING LOCATION PLAN		SPT Boring	
	Project: Las Olas Boulevard Project Between NE 2nd Avenue & SR A1A Ft. Lauderdale, FL			
	Client: Hazen & Sawyer		Scale NTS	
	Project No. J-21228	Drawn RJ	Sheet No. 1 of 1	Revision No.

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-1
Boring Location	Lat. 26.1184143° N; Long. 80.1053433° W	Date Drilled	04/28/21
Water Depth	8' - 0"	Drilled By	UES - JW/DG/BM

DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value
1		Flexible Pavement (3" Asphalt + Base Course)	56	1	
2				2	
3		Brown SAND with Limerock Fragments	56	3	
4				4	
5			56	5	
6				6	
7		Light Brown SAND with Shell Fragments	44	7	
8				8	
9			19	9	
10				10	
11				11	
12				12	
13				13	
14			9	14	
15				15	
16		Light Brown SAND, Trace of Shell Fragments		16	
17				17	
18				18	
19			9	19	
20				20	
21				21	
22				22	
23				23	
24			7	24	
25		Brown Silty SAND with Some Roots		25	
26				26	
27				27	
28				28	
29		Dark Brown Organic Sity SAND	3	29	
30		Tan Silty SAND with Some Roots		30	
31		Tan SAND		31	
32				32	
33				33	
34		Gray Slightly Silty SAND	2	34	
35				35	
Continued on Next Sheet					

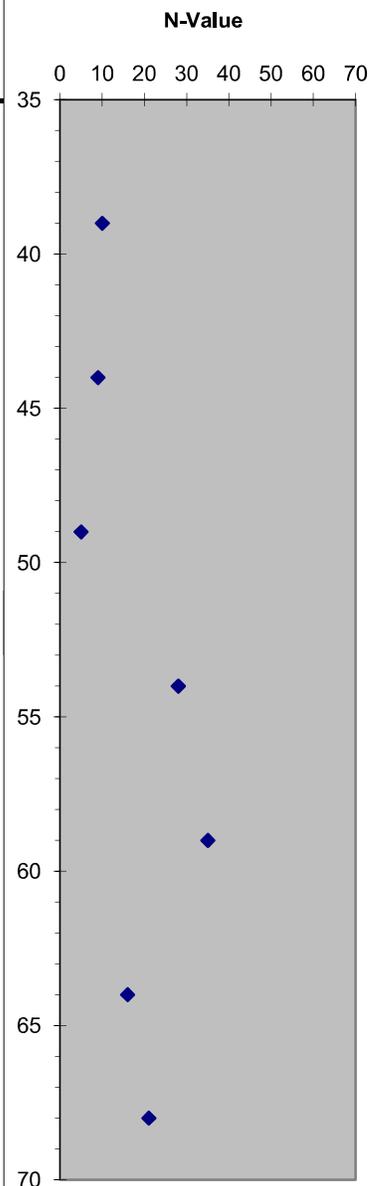


Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-1
Boring Location	Lat. 26.1184143° N; Long. 80.1053433° W	Date Drilled	04/28/21
Water Depth	8' - 0"	Drilled By	UES - JW/DG/BM

DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value
36		Gray Slightly Silty SAND		36	
37				37	
38		Light Gray SAND with Shell & Limestone Fragments	10	38	
39				39	
40				40	
41				41	
42				42	
43			9	43	
44		44			
45		45			
46			5	46	
47		47			
48		48			
49		49			
50			28	50	
51		51			
52		Light Gray Fine SAND with Trace of Shell Fragments	35	52	
53				53	
54				54	
55			16	55	
56		56			
57		57			
58		58			
59		Light Gray SAND with Shell & Limestone Fragments		59	
60				60	
61			21	61	
62		62			
63		63			
64		64			
65		65			
66		Gray SAND with Shell Fragments		66	
67				67	
68		68			
69		69			
70		70			
Continued on Next Sheet					



Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-1
Boring Location	Lat. 26.1184143° N; Long. 80.1053433° W	Date Drilled	04/28/21
Water Depth	8' - 0"	Drilled By	UES - JW/DG/BM

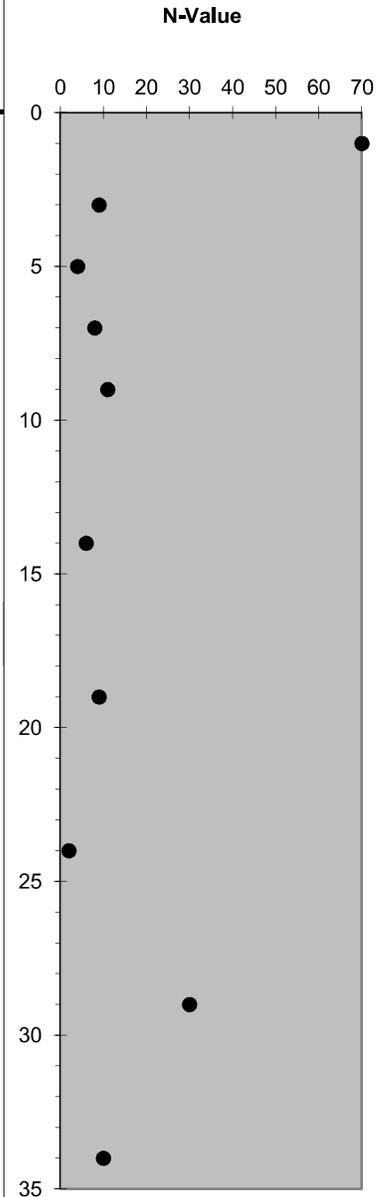
DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value
71		Light Gray SAND		71	
72				72	
73				73	
74		Gray LIMESTONE with Some Sand	70	74	
75				75	
76		Light Gray LIMESTONE		76	
77				77	
78		Recovery = 18 Inches		78	
79		RQD = 6%		79	
80				80	
81				81	
82				82	
83		Recovery = 23 Inches		83	
84	RQD = 8%		84		
85			85		
86		Gray LIMESTONE		86	
87				87	
88				88	
89			70	89	
90				90	
91				91	
92				92	
93				93	
94		Gray SAND with Trace of Limestone Fragments	7	94	
95				95	
96			96		
97			97		
98			98		
99		7	99		
100			100		
101		End of Boring		101	
102				102	
103				103	
104				104	
105				105	

Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-2
Boring Location	Lat. 26.1193875° N; Long. 80.1244448° W	Date Drilled	04/29/21
Water Depth	7' - 0"	Drilled By	UES - JW/TB

DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value
1		Flexible Pavement (3" Asphalt + Base Course)	70	1	
2				2	
3		Tan SAND with Limerock Fragments	9	3	
4				4	
5			4	5	
6		Gray Slightly Silty SAND with Some Limestone Fragments	8	6	
7				7	
8				8	
9			11	9	
10				10	
11		Gray Slightly Silty SAND with some Limestone Fragments		11	
12				12	
13				13	
14			6	14	
15		Gray SAND to Slightly Silty SAND with Some Limestone Fragments		15	
16				16	
17				17	
18		Light Gray LIMESTONE with Some SAND		18	
19			9	19	
20				20	
21				21	
22				22	
23				23	
24			2	24	
25		Tan Silty SAND with Some Limestone Fragments		25	
26				26	
27				27	
28				28	
29		Light Gray SAND and Limestone Fragments	30	29	
30				30	
31				31	
32		Gray Fine SAND with Trace of Limestone Fragments		32	
33				33	
34			10	34	
35				35	
		Continued on Next Sheet			



Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-2
Boring Location	Lat. 26.1193875° N; Long. 80.1244448° W	Date Drilled	04/29/21
Water Depth	7' - 0"	Drilled By	UES - JW/TB

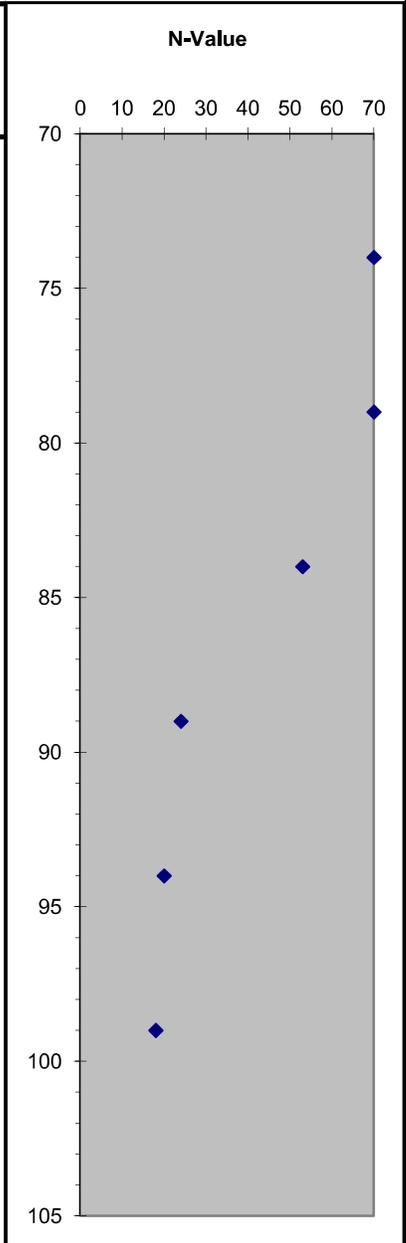
DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value										
36		Gray SAND with limestone Fragments	21	36	<table border="1" style="display: none;"> <caption>N-Value Data Points</caption> <thead> <tr> <th>Depth (Ft)</th> <th>N-Value</th> </tr> </thead> <tbody> <tr> <td>39</td> <td>21</td> </tr> <tr> <td>59</td> <td>13</td> </tr> <tr> <td>64</td> <td>23</td> </tr> <tr> <td>68</td> <td>43</td> </tr> </tbody> </table>	Depth (Ft)	N-Value	39	21	59	13	64	23	68	43
Depth (Ft)				N-Value											
39				21											
59				13											
64				23											
68				43											
37															
38															
39															
40															
41															
42															
43															
44															
45															
46		Gray LIMESTON Recovery = 28 Inches RQD = 7% Recovery + 48 Inches RQD = 63%		46											
47															
48															
49															
50															
51															
52															
53															
54															
55															
56		Light Gray LIMESTONE with Some SAND	13	56											
57															
58															
59															
60															
61															
62															
63															
64															
65															
66			23	66											
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Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-2
Boring Location	Lat. 26.1193875° N; Long. 80.1244448° W	Date Drilled	04/29/21
Water Depth	7' - 0"	Drilled By	UES - JW/TB

DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value	
71	[Symbol]	Light Gray SAND with Some Limestone Fragments		71		
72		Light Gray SAND with Some Limestone Fragments		72		
73		Gray LIMESTONE		73		
74		[Symbol]	Gray LIMESTONE	70	74	
75					75	
76					76	
77					77	
78					78	
79		[Symbol]	Gray SAND with Some Limestone Fragments	70	79	
80			Gray SAND with Some Limestone Fragments		80	
81				81		
82				82		
83				83		
84	53			84		
85				85		
86				86		
87				87		
88				88		
89	24			89		
90			90			
91			91			
92			92			
93			93			
94	20		94			
95			95			
96			96			
97			97			
98			98			
99	18		99			
100			100			
101		End of Boring		101		
102				102		
103				103		
104				104		
105				105		

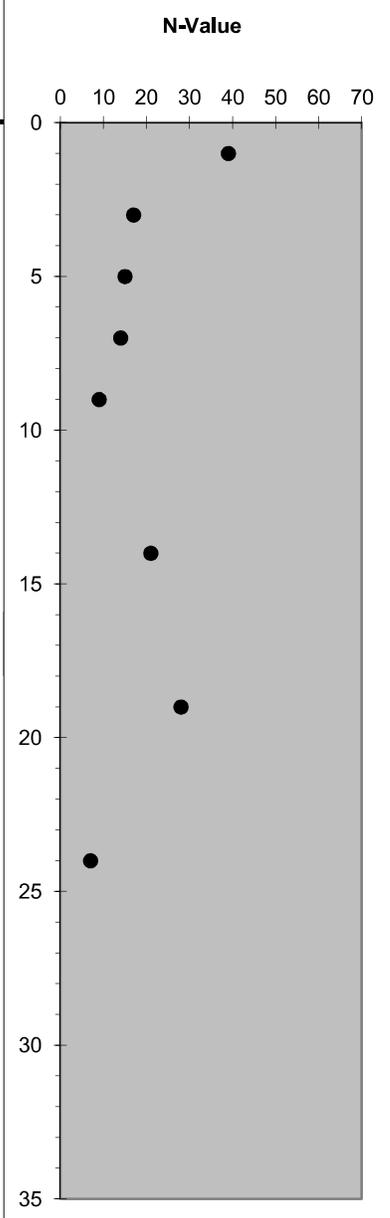


Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-3
Boring Location	Lat. 26.119410° N; Long. 80.128114° W	Date Drilled	05/11/21
Water Depth	8' - 0"	Drilled By	UES - JW/TB

DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value
1		Flexible Pavement (3" Asphalt + Base Course)	39	1	
2				2	
3		Tan SAND with Limerock Fragments	17	3	
4				4	
5			15	5	
6				6	
7			14	7	
8				8	
9		Light Gray Silty SAND with Some Limestone Fragments	9	9	
10				10	
11		Tan LIMESTONE and Sand		11	
12				12	
13				13	
14			21	14	
15				15	
16				16	
17				17	
18				18	
19			28	19	
20				20	
21				21	
22				22	
23				23	
24			7	24	
25				25	
26		Tan LIMESTONE		26	
27				27	
28		Recovery = 19 Inches		28	
29		RQD = 0%		29	
30				30	
31				31	
32				32	
33		Recovery = 21 Inches		33	
34		RQD = 0%		34	
35				35	
		Continued on Next Sheet			



Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-3
Boring Location	Lat. 26.119410° N; Long. 80.128114° W	Date Drilled	05/11/21
Water Depth	8' - 0"	Drilled By	UES - JW/TB

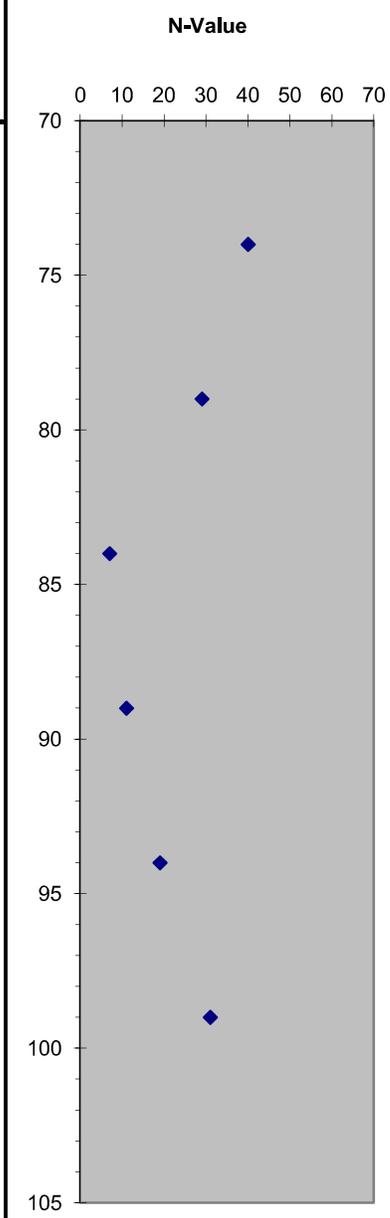
DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value																
36	[Grid Pattern]	Gray SAND	10	36	<table border="1" style="display: none;"> <caption>N-Value Data Points</caption> <thead> <tr> <th>Depth (Ft)</th> <th>N-Value</th> </tr> </thead> <tbody> <tr><td>39</td><td>10</td></tr> <tr><td>44</td><td>12</td></tr> <tr><td>49</td><td>70</td></tr> <tr><td>54</td><td>33</td></tr> <tr><td>59</td><td>55</td></tr> <tr><td>64</td><td>70</td></tr> <tr><td>68</td><td>33</td></tr> </tbody> </table>	Depth (Ft)	N-Value	39	10	44	12	49	70	54	33	59	55	64	70	68	33
Depth (Ft)				N-Value																	
39				10																	
44				12																	
49				70																	
54	33																				
59	55																				
64	70																				
68	33																				
37	37																				
38	38																				
39	39																				
40	40																				
41	41																				
42	42																				
43	[Grid Pattern]	Light Gray LIMESTONE and Sand	12	43																	
44				44																	
45				45																	
46				46																	
47				47																	
48				48																	
49				49																	
50	70	Gray LIMESTONE with Trace of Sand	70	50																	
51				51																	
52				52																	
53				53																	
54				54																	
55				55																	
56				56																	
57	57																				
58	55	Gray LIMESTONE with Trace of Sand	55	58																	
59				59																	
60				60																	
61				61																	
62				62																	
63				63																	
64				[Grid Pattern]	Light Gray SAND with Some Limestone Fragments	70	64														
65	65																				
66	66																				
67	67																				
68	68																				
69	69																				
70	70																				
Continued on Next Sheet																					

Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-3
Boring Location	Lat. 26.119410° N; Long. 80.128114° W	Date Drilled	05/11/21
Water Depth	8' - 0"	Drilled By	UES - JW/TB

DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value	
71		Light Gray SAND with Some Limestone Fragments		71		
72				72		
73		Tan LIMESTONE and Sand		73		
74				74		
75				40	75	
76					76	
77					77	
78					78	
79			Gray LIMESTONE with Some Sand		79	
80				29	80	
81				81		
82				82		
83		Gray SAND with Some Limestone Fragments		83		
84			7	84		
85				85		
86				86		
87				87		
88				88		
89			11	89		
90				90		
91				91		
92				92		
93				93		
94			19	94		
95				95		
96				96		
97				97		
98				98		
99			31	99		
100				100		
101		End of Boring		101		
102				102		
103				103		
104				104		
105				105		



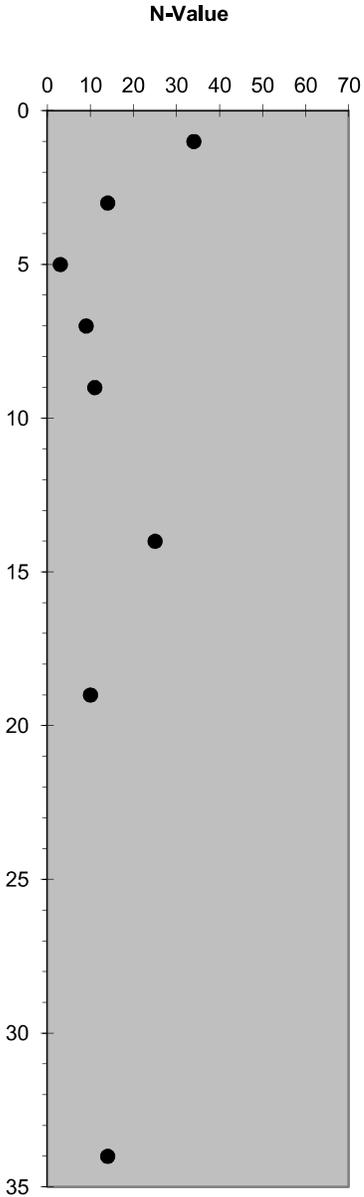
Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-4
Boring Location	Lat. 26.1193276° N; Long. 80.1325043° W	Date Drilled	05/3/21
Water Depth	4' - 6"	Drilled By	UES - JW/TB



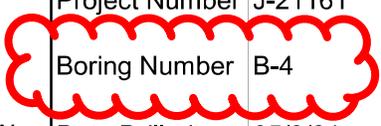
DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value
1		Flexible Pavement (3" Asphalt + Base Course)	34	1	
2				2	
3		Light Gray SAND	14	3	
4				4	
5		Dark Brown SAND with Trace of Roots	3	5	
6				6	
7		Gray SAND with Some Limestone Fragments	9	7	
8				8	
9			11	9	
10				10	
11				11	
12				12	
13				13	
14			25	14	
15				15	
16		Tan LIMESTONE with Some Sand		16	
17				17	
18				18	
19			10	19	
20				20	
21		Tan LIMESTONE		21	
22				22	
23		Recovery = 26 Inches		23	
24		RQD = 0%		24	
25				25	
26				26	
27				27	
28		Recovery = 12 Inches		28	
29		RQD = 13%		29	
30				30	
31		Tan LIMESTONE with Some Sand		31	
32				32	
33				33	
34			14	34	
35		Light Gray SAND with Trace of Limestone		35	
		Continued on Next Sheet			



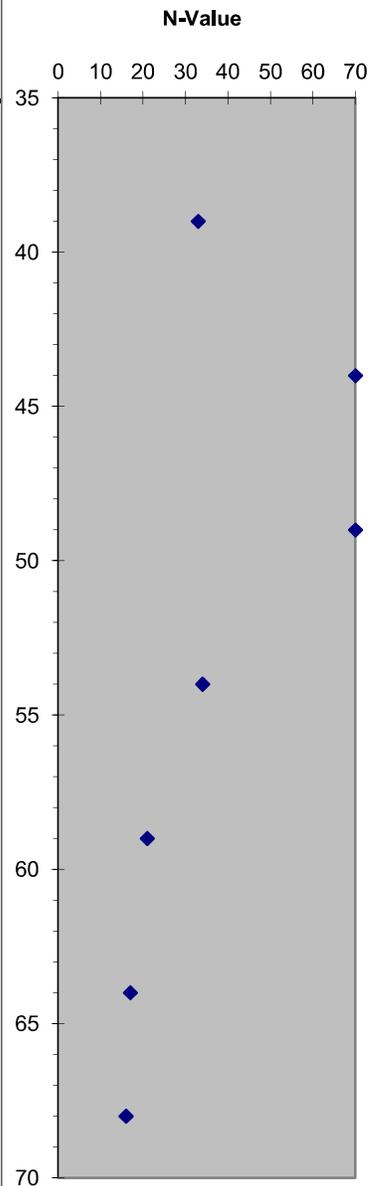
Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-4
Boring Location	Lat. 26.1193276° N; Long. 80.1325043° W	Date Drilled	05/3/21
Water Depth	4' - 6"	Drilled By	UES - JW/TB



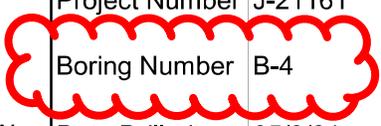
DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value
36		Light Gray SAND with Trace of Limestone Fragments		36	
37				37	
38				38	
39		Light Gray SAND with Some Limestone Fragments	33	39	
40				40	
41				41	
42		Light Gray LIMESTONE with Some Sand	70	42	
43				43	
44				44	
45				45	
46				46	
47				47	
48				48	
49				49	
50			70	50	
51				51	
52				52	
53		Light Gray SAND with Some Limestone Fragments	34	53	
54				54	
55				55	
56				56	
57				57	
58				58	
59				59	
60				60	
61			21	61	
62				62	
63				63	
64				64	
65				65	
66				66	
67				67	
68				68	
69			16	69	
70				70	
Continued on Next Sheet					



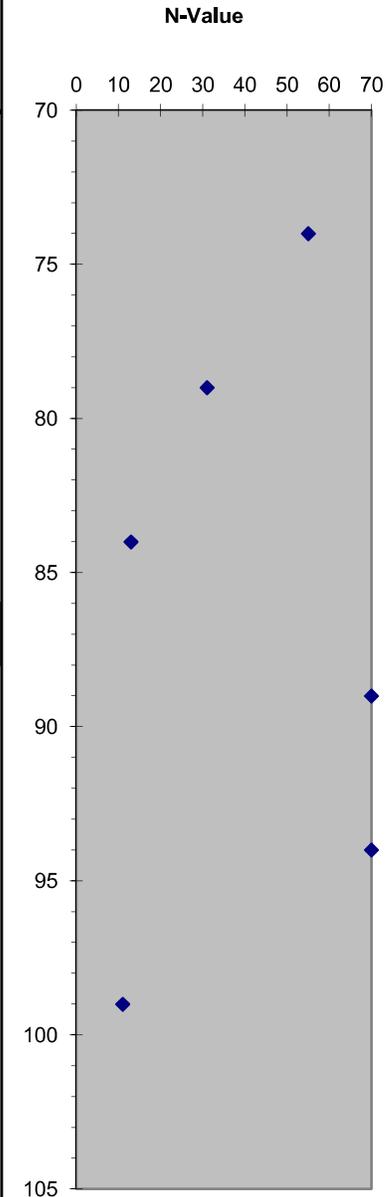
Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-4
Boring Location	Lat. 26.1193276° N; Long. 80.1325043° W	Date Drilled	05/3/21
Water Depth	4' - 6"	Drilled By	UES - JW/TB



DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value
71		Gray LIMESTONE and Sand		71	
72				72	
73		Light Gray SAND and Limestone Fragments		73	
74			55	74	
75				75	
76				76	
77				77	
78				78	
79			31	79	
80				80	
81			81		
82			82		
83			83		
84		13	84		
85			85		
86			86		
87			87		
88			88		
89		70	89		
90			90		
91		Gray LIMESTONE and Sand		91	
92				92	
93				93	
94			70	94	
95				95	
96				96	
97				97	
98				98	
99			11	99	
100				100	
101		End of Boring		101	
102				102	
103				103	
104				104	
105				105	



Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-5
Boring Location	Lat. 26.11923451° N; Long. 80.1368777° W	Date Drilled	05/12/21
Water Depth	5' - 0"	Drilled By	UES - JW/TB

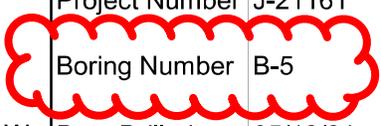


DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value
1		Flexible Pavement (3" Asphalt + Base Course)	20	1	
2				2	
3		Brown SAND and Limerock Fragments	7	3	
4				4	
5		Tan SAND with Some Limerock Fragments	11	5	
6				6	
7		Light Gray SAND with Some Limestone Fragments	14	7	
8				8	
9			19	9	
10				10	
11				11	
12				12	
13				13	
14			10	14	
15				15	
16				16	
17				17	
18				18	
19			9	19	
20		Tan SAND with Trace of Limestone Fragments		20	
21				21	
22				22	
23				23	
24			6	24	
25				25	
26				26	
27				27	
28				28	
29			6	29	
30				30	
31		Tan SAND with Some Limestone Fragments		31	
32				32	
33				33	
34			17	34	
35				35	
Continued on Next Sheet					

Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-5
Boring Location	Lat. 26.11923451° N; Long. 80.1368777° W	Date Drilled	05/12/21
Water Depth	5' - 0"	Drilled By	UES - JW/TB



DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value												
36		Light Gray SAND with Some Limestone Fragments	11	36	<div style="text-align: center;">N-Value</div> <table border="1" style="display: none;"> <caption>N-Value Data Points</caption> <thead> <tr> <th>Depth (Ft)</th> <th>N-Value</th> </tr> </thead> <tbody> <tr><td>39</td><td>11</td></tr> <tr><td>44</td><td>5</td></tr> <tr><td>49</td><td>7</td></tr> <tr><td>54</td><td>31</td></tr> <tr><td>59</td><td>24</td></tr> </tbody> </table>	Depth (Ft)	N-Value	39	11	44	5	49	7	54	31	59	24
Depth (Ft)				N-Value													
39				11													
44		5															
49		7															
54		31															
59		24															
37		37															
38		38															
39		39															
40	40																
41	41																
42	42																
43	43																
44	44																
45	45																
46	46																
47	47																
48	48																
49	49																
50	50																
51	51																
52	52																
53		Light Gray SAND with Some Limestone Fragments	31	53													
54				54													
55				55													
56				56													
57				57													
58	58																
59	59																
60	60																
61		Light Gray LIMESTONE		61													
62				62													
63				63													
64				64													
65				65													
66				66													
67				67													
68				68													
69				69													
70				70													
Continued on Next Sheet																	

Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-5
Boring Location	Lat. 26.11923451° N; Long. 80.1368777° W	Date Drilled	05/12/21
Water Depth	5' - 0"	Drilled By	UES - JW/TB



DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value
71		Light Gray SAND with Some Limestone Fragments	33	71	<div style="text-align: center;">N-Value</div>
72				72	
73				73	
74				74	
75				75	
76				76	
77				77	
78				78	
79				79	
80				80	
81		Light Gray LIMESTONE with Some SAND	25	81	
82				82	
83				83	
84				84	
85				85	
86				86	
87				87	
88				88	
89				89	
90				90	
91		End of Boring	70	91	
92				92	
93				93	
94				94	
95				95	
96				96	
97				97	
98				98	
99				99	
100				100	
101		End of Boring		101	
102				102	
103				103	
104				104	
105				105	

Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-6
Boring Location	Lat. 26.1192822° N; Long. 80.1427360° W	Date Drilled	05/5/21
Water Depth	5' - 0"	Drilled By	UES - JW/TB

DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value																												
1		Flexible Pavement (3" Asphalt + Base Course)	18	1	<table border="1" style="display: none;"> <caption>N-Value Data Points</caption> <thead> <tr> <th>Depth (Ft)</th> <th>N-Value</th> </tr> </thead> <tbody> <tr><td>1</td><td>18</td></tr> <tr><td>3</td><td>8</td></tr> <tr><td>5</td><td>1</td></tr> <tr><td>6</td><td>2</td></tr> <tr><td>7</td><td>2</td></tr> <tr><td>8</td><td>2</td></tr> <tr><td>9</td><td>5</td></tr> <tr><td>14</td><td>12</td></tr> <tr><td>19</td><td>5</td></tr> <tr><td>24</td><td>14</td></tr> <tr><td>29</td><td>16</td></tr> <tr><td>34</td><td>30</td></tr> <tr><td>35</td><td>30</td></tr> </tbody> </table>	Depth (Ft)	N-Value	1	18	3	8	5	1	6	2	7	2	8	2	9	5	14	12	19	5	24	14	29	16	34	30	35	30
Depth (Ft)	N-Value																																
1	18																																
3	8																																
5	1																																
6	2																																
7	2																																
8	2																																
9	5																																
14	12																																
19	5																																
24	14																																
29	16																																
34	30																																
35	30																																
2				2																													
3		Gray SAND with Some Limerock Fragments	8	3																													
4		Brown SAND with Some Limerock Fragments and Trace of Roots		4																													
5			1	5																													
6				6																													
7			2	7																													
8				8																													
9		Brown Silty SAND	5	9																													
10				10																													
11				11																													
12				12																													
13				13																													
14		Light Gray SAND with Some Limestone Fragments and Trace of Roots	12	14																													
15				15																													
16				16																													
17				17																													
18				18																													
19			5	19																													
20				20																													
21				21																													
22				22																													
23				23																													
24		Brown SAND	14	24																													
25				25																													
26				26																													
27				27																													
28				28																													
29			16	29																													
30				30																													
31		Light Gray SAND with Some Limestone Fragments		31																													
32				32																													
33				33																													
34		Tan LIMESTONE and Sand	30	34																													
35				35																													
		Continued on Next Sheet																															

Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-6
Boring Location	Lat. 26.1192822° N; Long. 80.1427360° W	Date Drilled	05/5/21
Water Depth	5' - 0"	Drilled By	UES - JW/TB

DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value												
36		Tan LIMESTONE		36	<div style="display: flex; justify-content: space-between; border-bottom: 1px solid black; margin-bottom: 5px;"> 010203040506070 </div> <table border="1" style="margin-top: 10px; font-size: small;"> <caption>N-Value Data Points</caption> <thead> <tr> <th>Depth (Ft)</th> <th>N-Value</th> </tr> </thead> <tbody> <tr><td>49</td><td>19</td></tr> <tr><td>54</td><td>14</td></tr> <tr><td>59</td><td>37</td></tr> <tr><td>64</td><td>21</td></tr> <tr><td>68</td><td>8</td></tr> </tbody> </table>	Depth (Ft)	N-Value	49	19	54	14	59	37	64	21	68	8
Depth (Ft)		N-Value															
49		19															
54		14															
59		37															
64		21															
68		8															
37						37											
38			Recovery = 39 Inches			38											
39			RQD = 45%			39											
40				40													
41				41													
42				42													
43		Recovery = 39 Inches		43													
44		RQD = 49%		44													
45				45													
46		Tan SAND with Some Limestone		46													
47		Fragments		47													
48				48													
49			19	49													
50				50													
51				51													
52				52													
53		Gray SAND with Some Limestone		53													
54		Fragments	14	54													
55				55													
56				56													
57				57													
58				58													
59		Gray LIMESTONE with Some Sand	37	59													
60				60													
61				61													
62				62													
63				63													
64			21	64													
65				65													
66		Light Gray LIMESTONE and Sand		66													
67				67													
68			8	68													
69				69													
70				70													
Continued on Next Sheet																	

Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-6
Boring Location	Lat. 26.1192822° N; Long. 80.1427360° W	Date Drilled	05/5/21
Water Depth	5' - 0"	Drilled By	UES - JW/TB

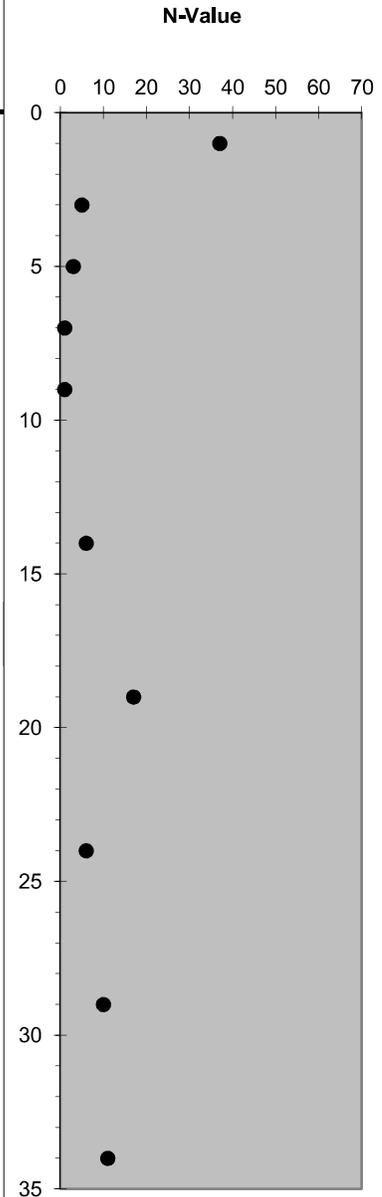
DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value												
71		Gray SAND with Some Limestone Fragments	19	71	<table border="1" style="display: none;"> <caption>N-Value Data Points</caption> <thead> <tr> <th>Depth (Ft)</th> <th>N-Value</th> </tr> </thead> <tbody> <tr><td>74</td><td>19</td></tr> <tr><td>80</td><td>23</td></tr> <tr><td>85</td><td>22</td></tr> <tr><td>94</td><td>18</td></tr> <tr><td>99</td><td>23</td></tr> </tbody> </table>	Depth (Ft)	N-Value	74	19	80	23	85	22	94	18	99	23
Depth (Ft)				N-Value													
74				19													
80				23													
85				22													
94				18													
99				23													
72				72													
73				73													
74				74													
75				75													
76				76													
77				77													
78				78													
79				79													
80				80													
81				81													
82				82													
83				83													
84				84													
85				85													
86				86													
87				87													
88				88													
89				89													
90				90													
91				91													
92				92													
93				93													
94				94													
95				95													
96				96													
97				97													
98				98													
99				99													
100				100													
101				101													
102				102													
103				103													
104				104													
105				105													
						Light Gray LIMESTONE with Some Sand	70	86									
87				87													
88				88													
89				89													
90				90													
91				91													
92				92													
93				93													
94				94													
95				95													
96				96													
97				97													
98				98													
99				99													
100				100													
101				101													
102				102													
103				103													
104				104													
105				105													
						Light Gray SAND and Limestone Fragments		18	91								
92				92													
93				93													
94				94													
95				95													
96				96													
97				97													
98				98													
99				99													
100				100													
101				101													
102				102													
103				103													
104				104													
105				105													
						End of Boring			23	101							
102				102													
103				103													
104				104													
105				105													

Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-7
Boring Location	Lat. 26.1227172° N; Long. 80.1446518° W	Date Drilled	05/14/21
Water Depth	4' - 6"	Drilled By	UES - JW/TB

DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value
1		Flexible Pavement (3" Asphalt + Base Course)	37	1	
2				2	
3		Tan SAND with Some Limerock Fragments	5	3	
4		Light Brown SAND with Trace of Limerock Fragments	3	4	
5				5	
6				6	
7			1	7	
8				8	
9			1	9	
10				10	
11				11	
12				12	
13				13	
14		Light Gray SAND with Some Limestone Fragments	6	14	
15				15	
16				16	
17				17	
18		Light Gray SAND	17	18	
19				19	
20				20	
21				21	
22				22	
23				23	
24		Light Brown SAND	6	24	
25				25	
26				26	
27				27	
28				28	
29			10	29	
30		Light Gray SAND		30	
31				31	
32				32	
33				33	
34			11	34	
35				35	
Continued on Next Sheet					



Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-7
Boring Location	Lat. 26.1227172° N; Long. 80.1446518° W	Date Drilled	05/14/21
Water Depth	4' - 6"	Drilled By	UES - JW/TB

DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value														
36	[Grid Pattern]	Light Brown SAND	11	36	<table border="1" style="display: none;"> <caption>N-Value Data Points</caption> <thead> <tr> <th>Depth (Ft)</th> <th>N-Value</th> </tr> </thead> <tbody> <tr><td>39</td><td>11</td></tr> <tr><td>44</td><td>3</td></tr> <tr><td>45</td><td>8</td></tr> <tr><td>49</td><td>70</td></tr> <tr><td>54</td><td>4</td></tr> <tr><td>60</td><td>70</td></tr> </tbody> </table>	Depth (Ft)	N-Value	39	11	44	3	45	8	49	70	54	4	60	70
Depth (Ft)				N-Value															
39				11															
44				3															
45				8															
49				70															
54				4															
60				70															
37																			
38																			
39																			
40																			
41																			
42																			
43																			
44																			
45																			
46																			
47																			
48																			
49																			
50																			
51																			
52																			
53	[Grid Pattern]	Tan LIMESTONE with Some Sand and Shell Fragments	4	53															
54																			
55																			
56																			
57																			
58																			
59																			
60																			
61	[Grid Pattern]	Light Gray LIMESTONE	70	61															
62																			
63																			
64																			
65																			
66																			
67																			
68																			
69																			
70																			
Continued on Next Sheet																			

Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

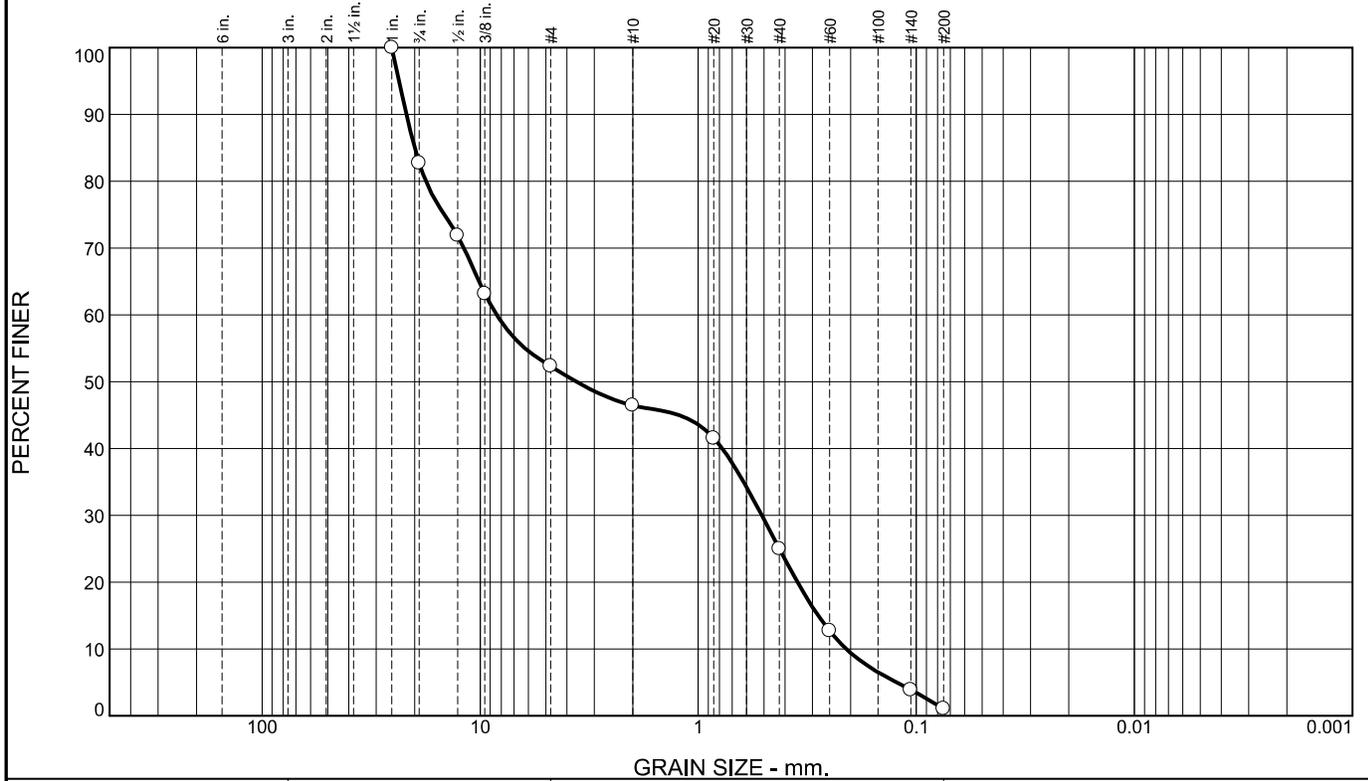
BORING LOG

Project Name	Las Olas Project	Project Number	J-21161
Client Name	Hazen & Sawyer	Boring Number	B-7
Boring Location	Lat. 26.1227172° N; Long. 80.1446518° W	Date Drilled	05/14/21
Water Depth	4' - 6"	Drilled By	UES - JW/TB

DEPTH (FT)	SYM-BOL	DESCRIPTION OF MATERIAL	Blow Counts	Depth (Ft)	N-Value														
71	[Symbol]	Light Gray LIMESSTONE and Sand	18	71	<table border="1" style="display: none;"> <caption>N-Value Data Points</caption> <thead> <tr> <th>Depth (Ft)</th> <th>N-Value</th> </tr> </thead> <tbody> <tr><td>74</td><td>18</td></tr> <tr><td>80</td><td>70</td></tr> <tr><td>85</td><td>70</td></tr> <tr><td>90</td><td>70</td></tr> <tr><td>94</td><td>48</td></tr> <tr><td>99</td><td>70</td></tr> </tbody> </table>	Depth (Ft)	N-Value	74	18	80	70	85	70	90	70	94	48	99	70
Depth (Ft)				N-Value															
74				18															
80				70															
85				70															
90	70																		
94	48																		
99	70																		
72	72																		
73	73																		
74	74																		
75	75																		
76	[Symbol]	Light Gray SAND & Limestone Fragments	70	76															
77				77															
78				78															
79				79															
80				80															
81				81															
82				82															
83				83															
84				84															
85				85															
86	[Symbol]	Light Gray SAND with Some Limestone Fragments	70	86															
87				87															
88				88															
89				89															
90				90															
91				91															
92				92															
93				93															
94				94															
95				95															
96	[Symbol]	End of Boring	70	96															
97				97															
98				98															
99				99															
100				100															
101				101															
102				102															
103				103															
104				104															
105				105															

Ground Elev.	Not Known	Completion Depth	100 Feet
Type of Boring	Standard Penetration Test	Casing	Yes
Hammer Wt.	140 Pounds	Hammer Drop Ht.	30 Inches

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	17.3	30.4	5.8	21.5	23.9	1.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	82.7		
.5	71.9		
.375	63.2		
#4	52.3		
#10	46.5		
#20	41.5		
#40	25.0		
#60	12.7		
#140	3.9		
#200	1.1		

Material Description

SAND

Atterberg Limits
 PL= LL= N PI= P

Coefficients
 D₉₀= 21.8189 D₈₅= 19.9781 D₆₀= 8.3981
 D₅₀= 3.6125 D₃₀= 0.5110 D₁₅= 0.2815
 D₁₀= 0.2092 C_u= 40.14 C_c= 0.15

Classification
 USCS= SP AASHTO=

Remarks

* (no specification provided)

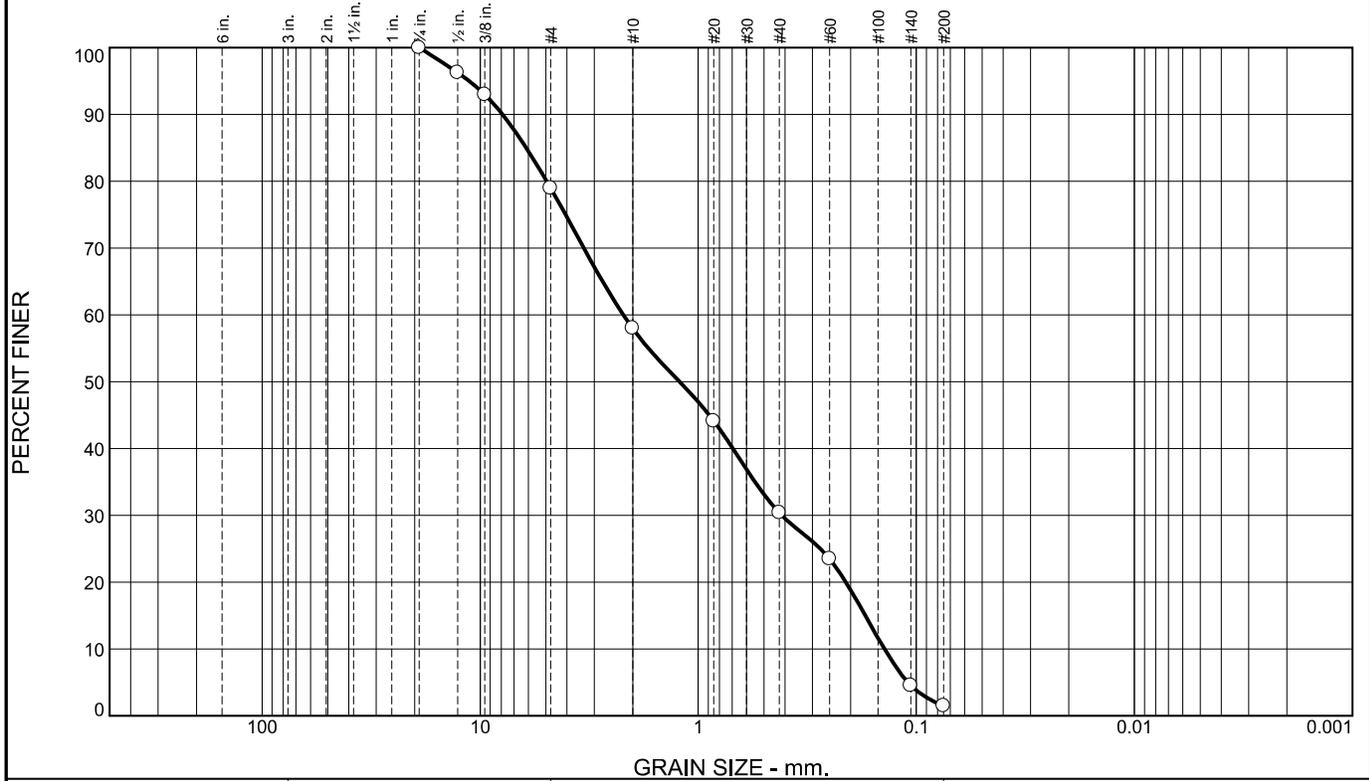
Source of Sample: B-2 6.0-8.0

Date: 5-3-22

<h3 style="margin: 0;">Terracon, Inc.</h3> <p style="margin: 0;">Cincinnati, Ohio</p>	<p>Client: QUEST ENGINEERING</p> <p>Project: GEOTECHNICAL LAB TESTING</p> <p>Project No: N1211591</p> <p style="text-align: right;">Figure</p>
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Tested By: CS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	21.0	21.0	27.6	28.9	1.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	96.3		
.375	93.0		
#4	79.0		
#10	58.0		
#20	44.1		
#40	30.4		
#60	23.5		
#140	4.5		
#200	1.5		

Material Description

GRAVELLY SAND

Atterberg Limits

PL= LL= N PI= P

Coefficients

D ₉₀ = 7.8970	D ₈₅ = 6.1418	D ₆₀ = 2.2059
D ₅₀ = 1.2175	D ₃₀ = 0.4141	D ₁₅ = 0.1714
D ₁₀ = 0.1401	C _u = 15.75	C _c = 0.55

Classification

USCS= SP AASHTO=

Remarks

* (no specification provided)

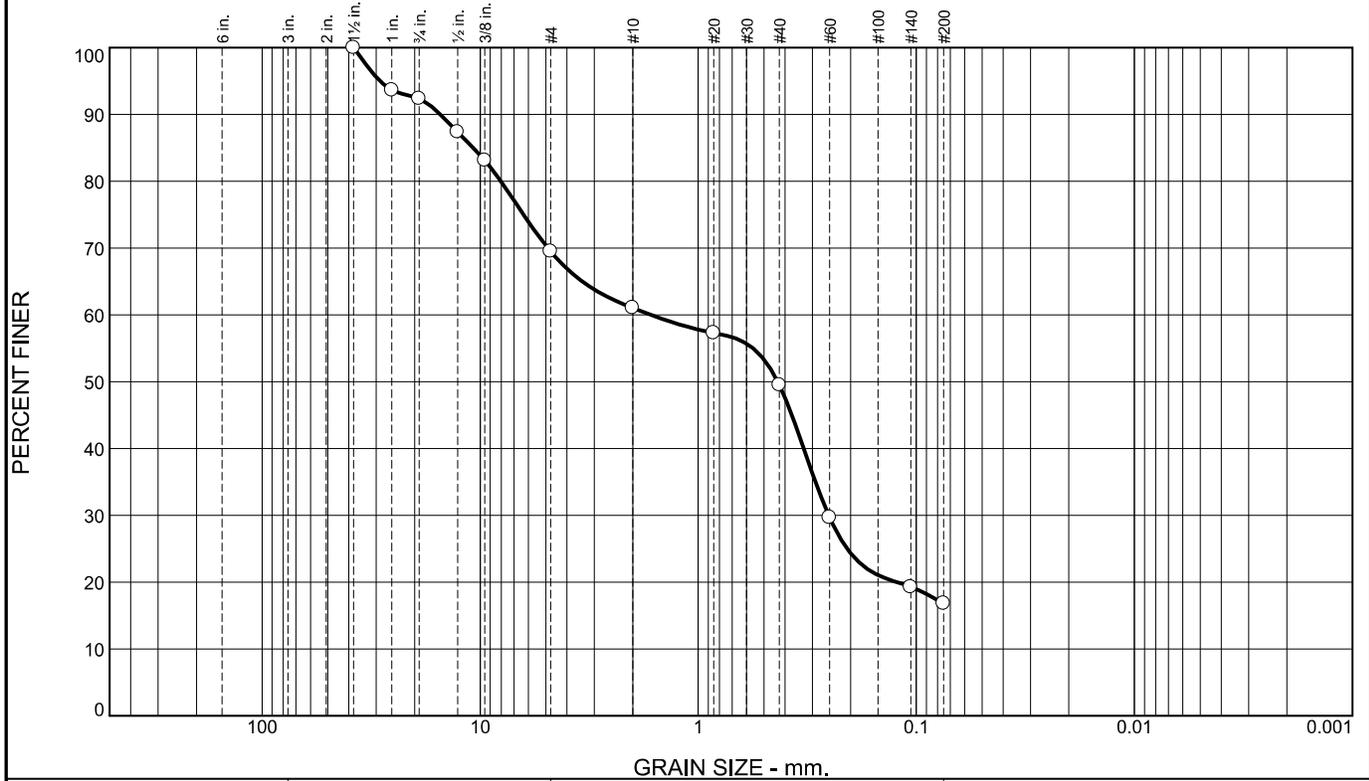
Source of Sample: B-2 28.0-45.0
 Sample Number: S1-9

Date: 5-3-22

<h3 style="margin: 0;">Terracon, Inc.</h3> <p style="margin: 0;">Cincinnati, Ohio</p>	<p>Client: QUEST ENGINEERING</p> <p>Project: GEOTECHNICAL LAB TESTING</p> <p>Project No: N1211591</p> <p style="text-align: right;">Figure 1789</p>
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Tested By: CS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	7.6	22.9	8.4	11.6	32.7	16.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	93.6		
.75	92.4		
.5	87.4		
.375	83.1		
#4	69.5		
#10	61.1		
#20	57.3		
#40	49.5		
#60	29.7		
#140	19.3		
#200	16.8		

Material Description
SILTY GRAVELLY SAND

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 15.2270 D₈₅= 10.7550 D₆₀= 1.6476
 D₅₀= 0.4322 D₃₀= 0.2525 D₁₅=
 D₁₀= C_u= C_c=

Classification
 USCS= SM AASHTO=

Remarks

* (no specification provided)

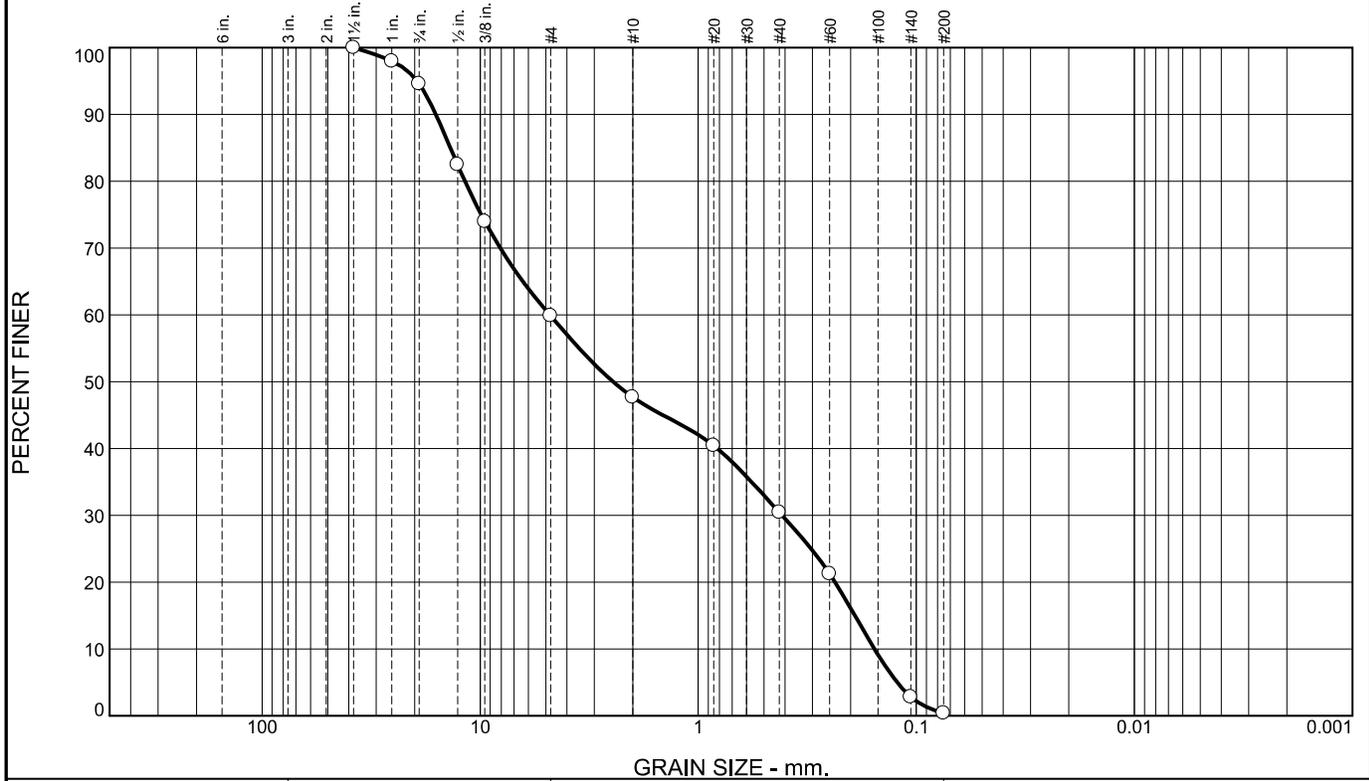
Source of Sample: B-3 13.0-15.0
 Sample Number: S3-6

Date: 5-3-22

Terracon, Inc. Cincinnati, Ohio	Client: QUEST ENGINEERING Project: GEOTECHNICAL LAB TESTING Project No: N1211591	Figure 1792
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Tested By: CS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.4	34.7	12.2	17.2	30.1	0.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	98.0		
.75	94.6		
.5	82.5		
.375	74.0		
#4	59.9		
#10	47.7		
#20	40.4		
#40	30.5		
#60	21.3		
#140	2.8		
#200	0.4		

Material Description

GRAVELLY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 15.9720 D₈₅= 13.6908 D₆₀= 4.7887
D₅₀= 2.4548 D₃₀= 0.4129 D₁₅= 0.1911
D₁₀= 0.1555 C_u= 30.79 C_c= 0.23

Classification

USCS= SP AASHTO=

Remarks

* (no specification provided)

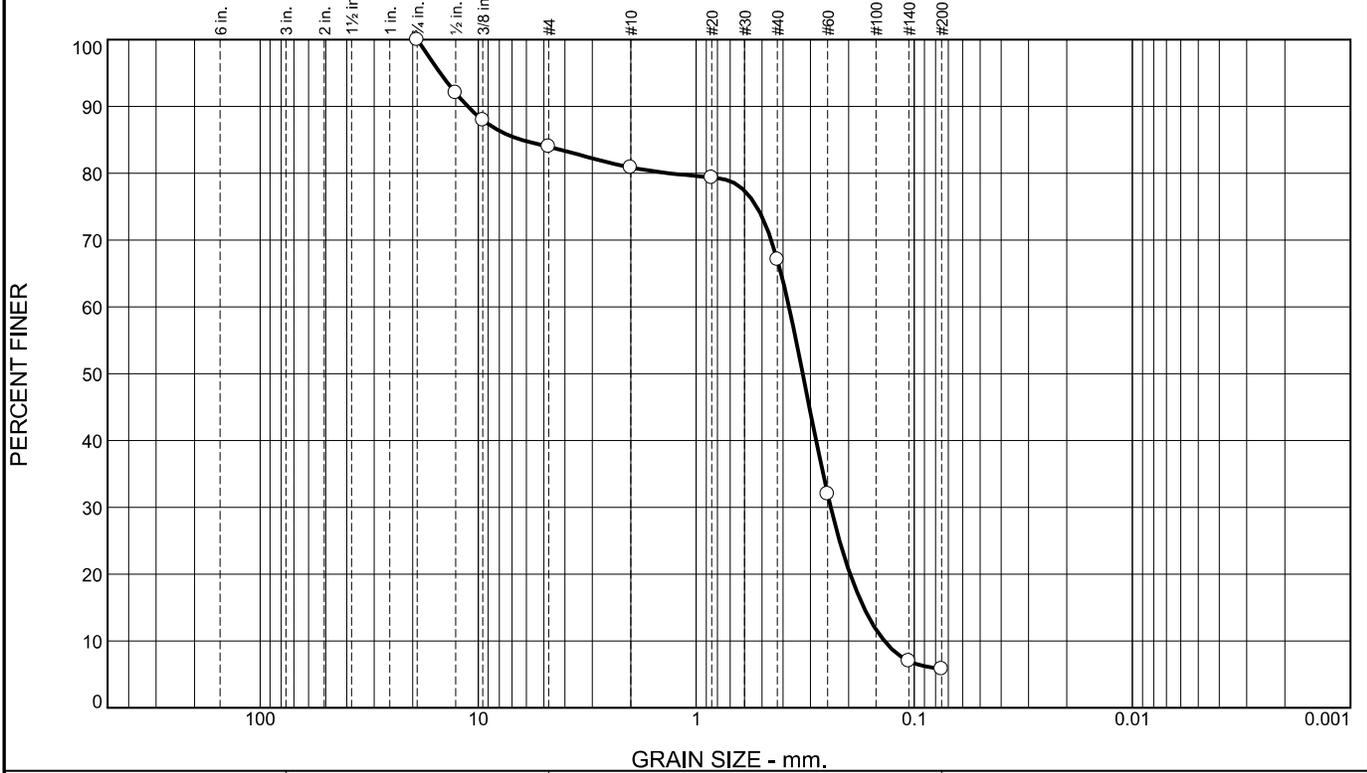
Source of Sample: B-3 65.0-70.0 & 73.0-75.0
Sample Number: S3-17 and S5-18

Date: 5-3-22

<h3>Terracon, Inc.</h3> <p>Cincinnati, Ohio</p>	<p>Client: QUEST ENGINEERING Project: GEOTECHNICAL LAB TESTING</p> <p>Project No: N1211591</p>	<p>Figure 1793 and 1794</p>
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Tested By: CS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	16.0	3.1	13.8	61.3	5.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	92.1		
.375	88.0		
#4	84.0		
#10	80.9		
#20	79.4		
#40	67.1		
#60	32.0		
#140	7.0		
#200	5.8		

Material Description

GRAVELL SAND

PL= **Atterberg Limits** PI=

Coefficients

D₉₀= 11.1611 D₈₅= 6.2799 D₆₀= 0.3757
D₅₀= 0.3246 D₃₀= 0.2416 D₁₅= 0.1705
D₁₀= 0.1372 C_u= 2.74 C_c= 1.13

USCS= SP-SM **Classification** AASHTO=

Remarks

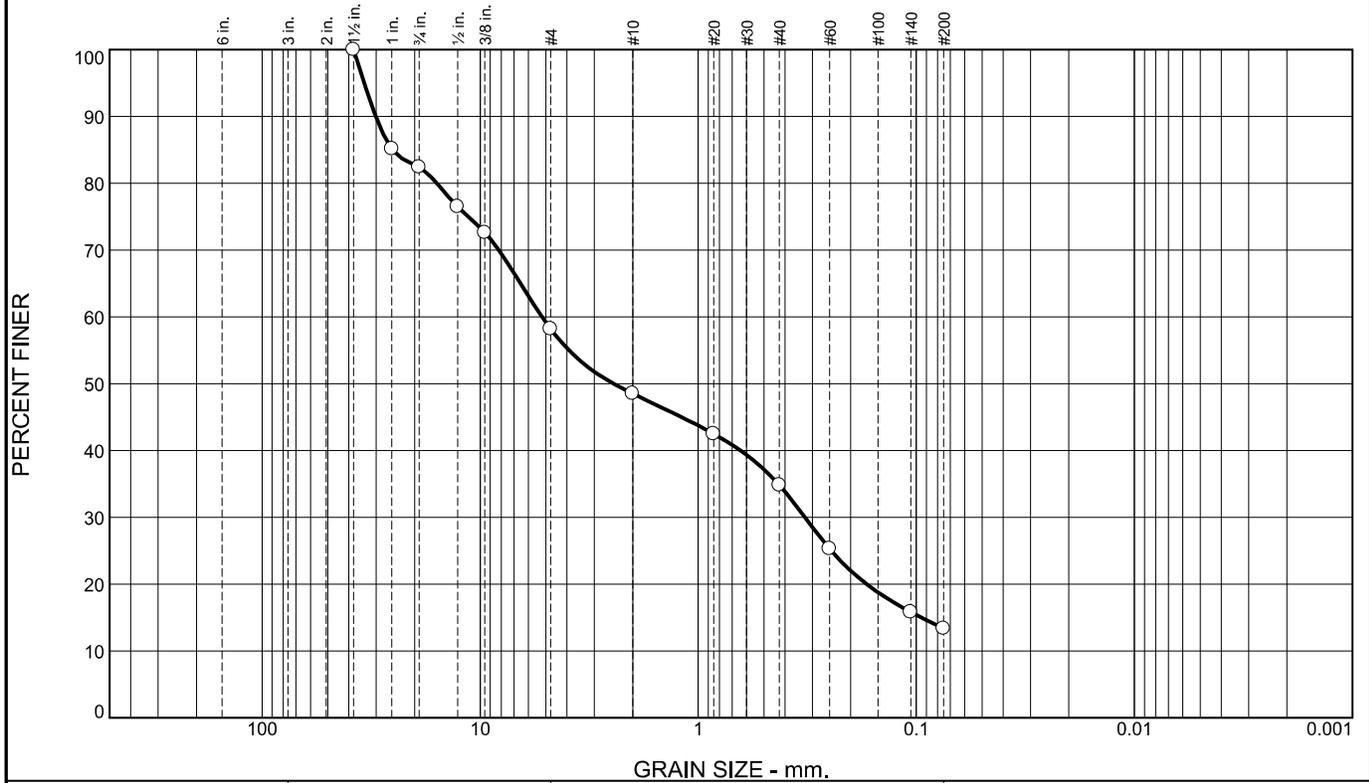
* (no specification provided)
Source of Sample: B-4 73.0-75.0
Sample Number: S4-18

Date: 5-3-22

Terracon, Inc. Cincinnati, Ohio	Client: QUEST ENGINEERING Project: GEOTECHNICAL LAB TESTING Project No: N1211591	Figure 1796
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Tested By: CS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	17.6	24.2	9.7	13.7	21.4	13.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	85.2		
.75	82.4		
.5	76.5		
.375	72.6		
#4	58.2		
#10	48.5		
#20	42.5		
#40	34.8		
#60	25.3		
#140	15.8		
#200	13.4		

Material Description

SILTY GRAVELLY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 30.0829 D₈₅= 25.1807 D₆₀= 5.1987

D₅₀= 2.4399 D₃₀= 0.3240 D₁₅= 0.0946

D₁₀= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

* (no specification provided)

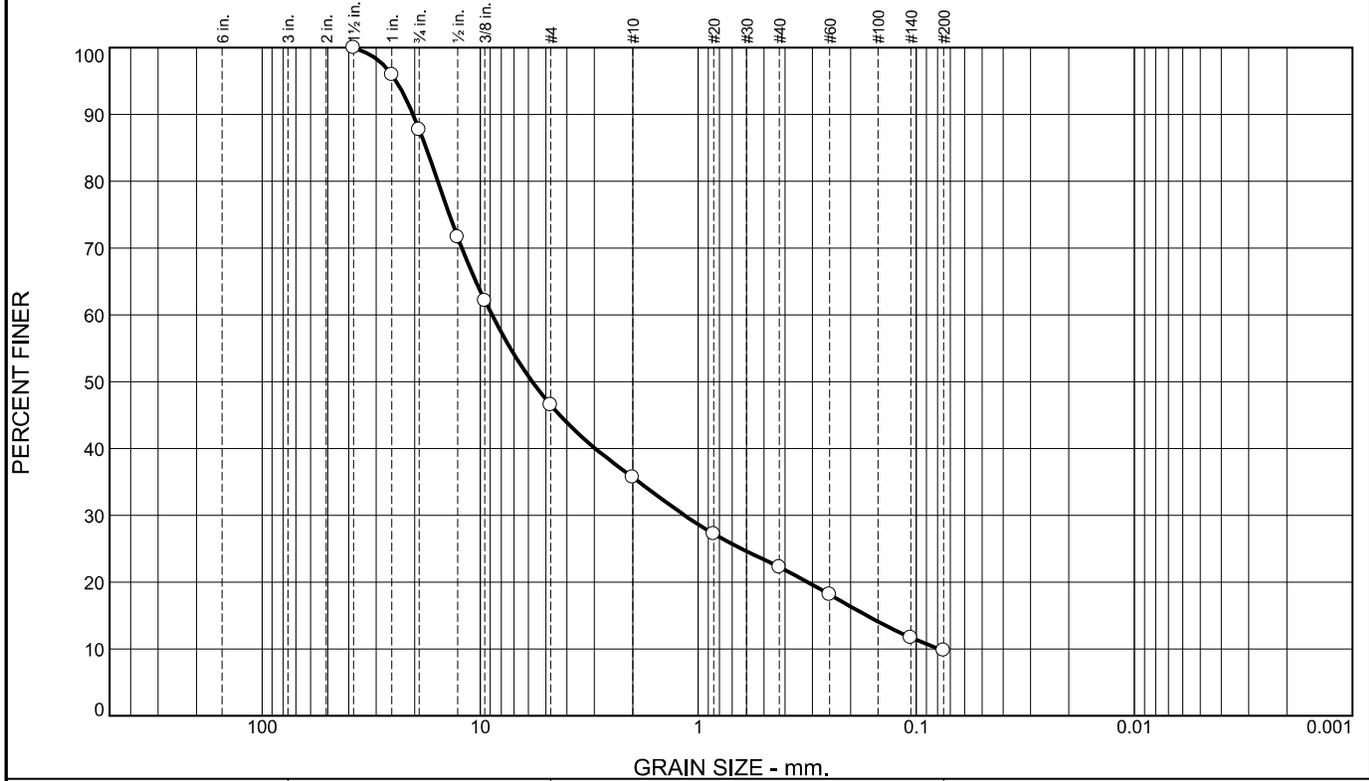
Source of Sample: B-4 78.0-80.0
Sample Number: S4-19

Date: 5-3-22

<h3 style="margin: 0;">Terracon, Inc.</h3> <p style="margin: 0;">Cincinnati, Ohio</p>	<p>Client: QUEST ENGINEERING</p> <p>Project: GEOTECHNICAL LAB TESTING</p> <p>Project No: N1211591</p> <p style="text-align: right;">Figure 1797</p>
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Tested By: CS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	12.3	41.2	10.8	13.4	12.5	9.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	96.0		
.75	87.7		
.5	71.7		
.375	62.1		
#4	46.5		
#10	35.7		
#20	27.2		
#40	22.3		
#60	18.2		
#140	11.7		
#200	9.8		

Material Description

SANDY GRAVEL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 20.3355 D₈₅= 17.7128 D₆₀= 8.8310
D₅₀= 5.7596 D₃₀= 1.1531 D₁₅= 0.1685
D₁₀= 0.0779 C_u= 113.38 C_c= 1.93

Classification

USCS= GP-GM AASHTO=

Remarks

* (no specification provided)

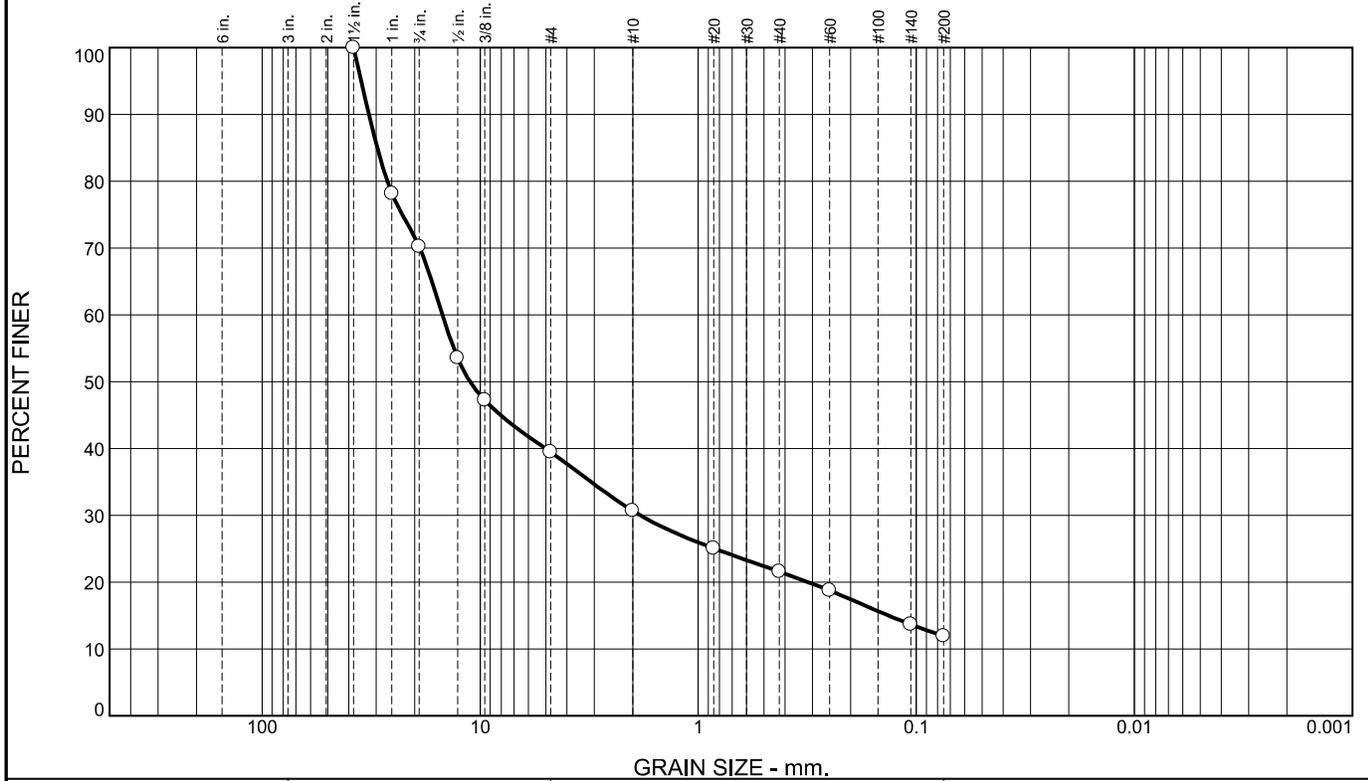
Source of Sample: B-5 38.0-48.0
Sample Number: S5-11 and S5-12

Date: 5-3-22

<h3 style="margin: 0;">Terracon, Inc.</h3> <p style="margin: 0;">Cincinnati, Ohio</p>	<p>Client: QUEST ENGINEERING</p> <p>Project: GEOTECHNICAL LAB TESTING</p> <p>Project No: N1211591</p>	<p>Figure 1802-1803</p>
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Tested By: CS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	29.8	30.7	8.8	9.1	9.7	11.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	78.2		
.75	70.2		
.5	53.6		
.375	47.2		
#4	39.5		
#10	30.7		
#20	25.1		
#40	21.6		
#60	18.8		
#140	13.7		
#200	11.9		

Material Description

SANDY GRAVEL

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 32.4035 D₈₅= 29.6265 D₆₀= 14.8869
D₅₀= 11.1422 D₃₀= 1.8379 D₁₅= 0.1338
D₁₀= C_u= C_c=

Classification

USCS= GP-GM AASHTO=

Remarks

* (no specification provided)

Source of Sample: B-5 38.0-48.0
Sample Number: S5-13

Date: 5-3-22

Terracon, Inc. Cincinnati, Ohio	Client: QUEST ENGINEERING Project: GEOTECHNICAL LAB TESTING Project No: N1211591	Figure 1804
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Tested By: CS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	20.7	18.5	8.9	24.0	19.4	8.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	79.3		
.75	79.3		
.5	75.4		
.375	70.3		
#4	60.8		
#10	51.9		
#20	42.3		
#40	27.9		
#60	17.6		
#140	10.4		
#200	8.5		

Material Description

GRAVELLY SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 32.6600 D₈₅= 29.8381 D₆₀= 4.4098
D₅₀= 1.6220 D₃₀= 0.4667 D₁₅= 0.2047
D₁₀= 0.0985 C_u= 44.76 C_c= 0.50

Classification

USCS= SP-SM AASHTO=

Remarks

* (no specification provided)

Source of Sample: B-6 78.0-80.0
Sample Number: S6-119

Date: 5-3-22

<h3 style="margin: 0;">Terracon, Inc.</h3> <p style="margin: 0;">Cincinnati, Ohio</p>	<p>Client: QUEST ENGINEERING</p> <p>Project: GEOTECHNICAL LAB TESTING</p> <p>Project No: N1211591</p> <p style="text-align: right;">Figure 1806</p>
---	--

Tested By: CS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.0	21.6	76.9	1.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375	100.0		
#4	99.9		
#10	99.9		
#20	97.3		
#40	78.3		
#60	61.2		
#140	3.6		
#200	1.4		

Material Description

PL= **Atterberg Limits** PI=

LL= **Coefficients** D₆₀= 0.2449

D₉₀= 0.6336 D₈₅= 0.5371 D₁₅= 0.1334

D₅₀= 0.2106 D₃₀= 0.1634 C_c= 0.89

D₁₀= 0.1228 C_u= 1.99

USCS= SP **Classification** AASHTO=

Remarks

* (no specification provided)

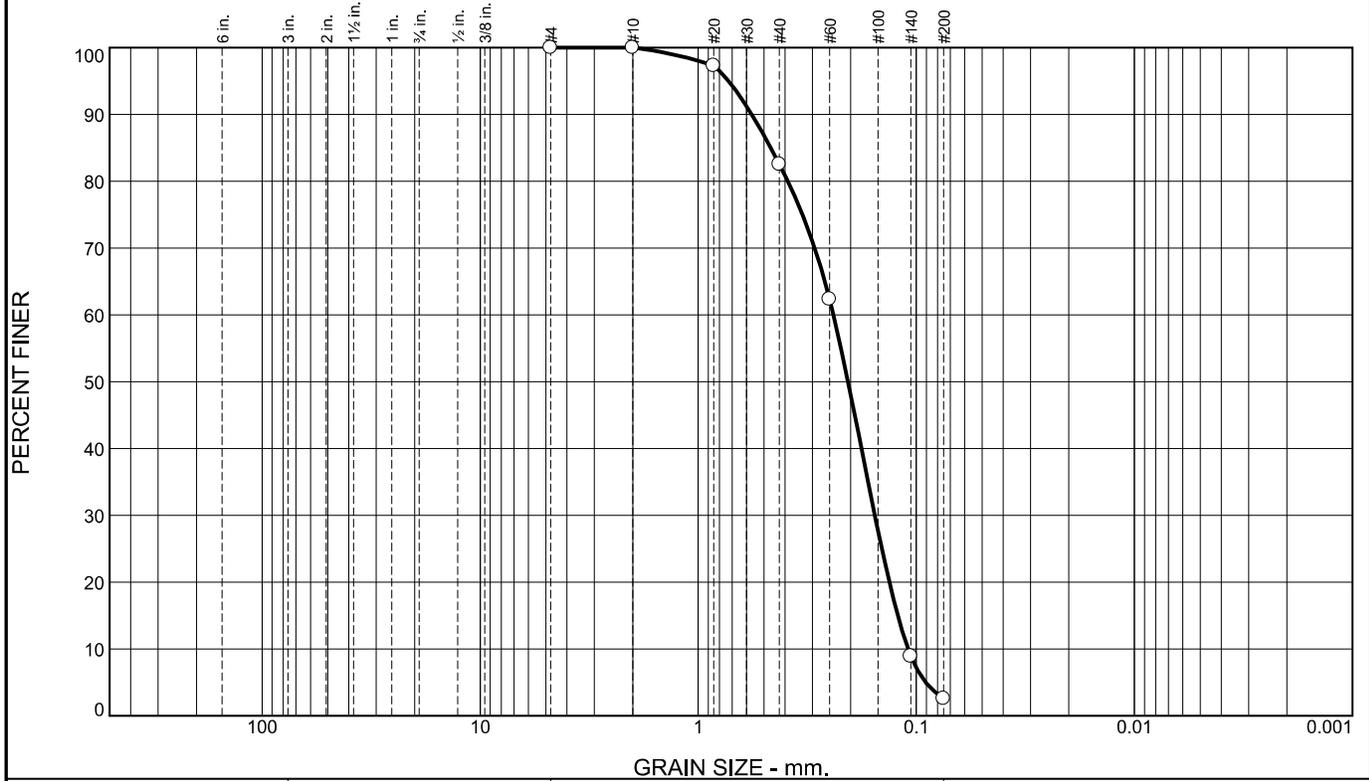
Source of Sample: B7 18.0-25.0
 Sample Number: S7-7A and S7-8

Date: 5-3-22

<h3 style="margin: 0;">Terracon, Inc.</h3> <p style="margin: 0;">Cincinnati, Ohio</p>	<p>Client: QUEST ENGINEERING</p> <p>Project: GEOTECHNICAL LAB TESTING</p> <p>Project No: N1211591</p> <p style="text-align: right;">Figure 1808-1809</p>
---	--

Tested By: CS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	17.5	79.9	2.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#20	97.3		
#40	82.5		
#60	62.3		
#140	8.9		
#200	2.6		

Material Description

SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D ₉₀ = 0.5682	D ₈₅ = 0.4652	D ₆₀ = 0.2401
D ₅₀ = 0.2057	D ₃₀ = 0.1551	D ₁₅ = 0.1217
D ₁₀ = 0.1091	C _u = 2.20	C _c = 0.92

Classification

USCS= SP AASHTO=

Remarks

* (no specification provided)

Source of Sample: B7
Sample Number: S7-9

Date: 5-3-22

Terracon, Inc. Cincinnati, Ohio	Client: QUEST ENGINEERING Project: GEOTECHNICAL LAB TESTING Project No: N1211591	Figure 1810
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Tested By: CS

SWELL TEST DATA

5/4/2022

Client: QUEST ENGINEERING
Project: GEOTECHNICAL LAB TESTING
Project Number: N1211591
Location: B-1 18.0-25.0
Sample Number: S1-7 and S1-8
Material Description: SAND
Sample Date: 4-25-22
USCS: SP
Tested By: DR

Checked by: GS

Test Specimen Data

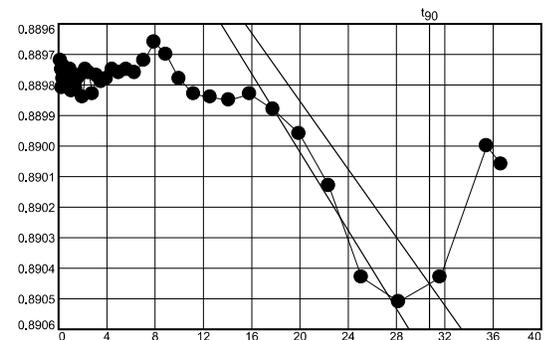
NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t =	146.00 g.	Spec. Gr. =	2.65	Wet w+t =	208.11 g.
Dry w+t =	143.47 g.	Est. Ht. Solids =	0.631 in.	Dry w+t =	184.92 g.
Tare Wt. =	119.62 g.	Init. V.R. =	0.568	Tare Wt. =	51.93 g.
Moisture =	10.6 %	Init. Sat. =	49.5 %	Moisture =	17.4 %
UNIT WEIGHT		TEST START		Dry Wt. = 132.99 g.	
Height =	0.990 in.	Height =	0.990 in.		
Diameter =	2.500 in.	Diameter =	2.500 in.		
Weight =	148.85 g.				
Dry Dens. =	105.5 pcf				

End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	0.88982	0.00000			0.568	
0.42	0.89006	0.00024	0.002		0.568	0.0 Compr.

Pressure: 0.42 tsf **TEST READINGS** Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.88982	13	1.2333	0.88982
2	0.0333	0.88972	14	1.5667	0.88981
3	0.0667	0.88975	15	1.9833	0.88981
4	0.1000	0.88981	16	2.5167	0.88978
5	0.1500	0.88978	17	3.1667	0.88977
6	0.2000	0.88974	18	3.9833	0.88984
7	0.2667	0.88980	19	5.0167	0.88975
8	0.3500	0.88976	20	6.3167	0.88976
9	0.4667	0.88980	21	7.9500	0.88983
10	0.5833	0.88979	22	10.0167	0.88977
11	0.7500	0.88976	23	12.6000	0.88979
12	0.9667	0.88975	24	15.8667	0.88978



Terracon, Inc.

Pressure: 0.42 tsf

TEST READINGS (continued)

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
25	19.9833	0.88975	35	199.5833	0.88985
26	25.1500	0.88976	36	251.2500	0.88983
27	31.6500	0.88975	37	316.3000	0.88988
28	39.8500	0.88976	38	398.1833	0.88996
29	50.1667	0.88972	39	501.2667	0.89013
30	63.1333	0.88966	40	631.0500	0.89043
31	79.4833	0.88970	41	794.4167	0.89051
32	100.0500	0.88978	42	1000.1000	0.89043
33	125.9500	0.88983	43	1259.0333	0.89000
34	158.5500	0.88984	44	1345.8000	0.89006

Void Ratio = 0.568 Compression = 0.0%

$D_0 = 0.8887$ $D_{90} = 0.8905$ $D_{100} = 0.8906$ C_v at 944.46 min. = 0.002 ft.²/day

Steven Zhou

Terracon, Inc.

SWELL TEST DATA

5/4/2022

Client: QUEST ENGINEERING
Project: GEOTECHNICAL LAB TESTING
Project Number: N1211591
Location: B-2 6.0-8.0
Sample Number: S1-3
Material Description: SAND
Sample Date: 5-4-22
Tested By: DR

Checked by: GS

Test Specimen Data

NATURAL MOISTURE Wet w+t = 130.21 g. Dry w+t = 129.20 g. Tare Wt. = 119.61 g. Moisture = 10.5 %	VOID RATIO Spec. Gr. = 2.65 Est. Ht. Solids = 0.636 in. Init. V.R. = 0.557 Init. Sat. = 50.1 %	AFTER TEST Wet w+t = 209.84 g. Dry w+t = 186.14 g. Tare Wt. = 50.91 g. Moisture = 17.5 %
UNIT WEIGHT Height = 0.990 in. Diameter = 2.500 in. Weight = 149.81 g. Dry Dens. = 106.2 pcf	TEST START Height = 0.990 in. Diameter = 2.500 in.	Dry Wt. = 135.23 g.

End-Of-Load Summary

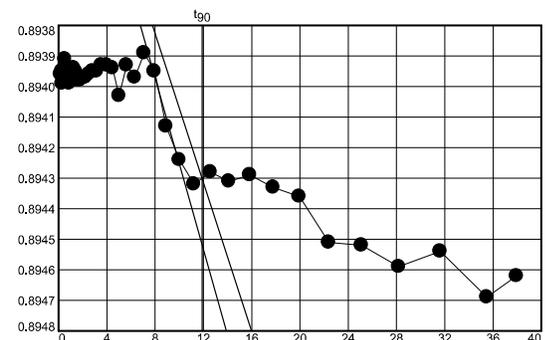
Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C_v (ft. ² /day)	C_α	Void Ratio	% Strain
start	0.89389	0.00000			0.557	
3.42	0.89462	0.00073	0.015		0.556	0.1 Compr.

Pressure: 3.42 tsf

TEST READINGS

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.89389	14	1.5833	0.89394
2	0.0333	0.89396	15	2.0000	0.89395
3	0.0667	0.89395	16	2.5167	0.89398
4	0.1000	0.89399	17	3.1667	0.89398
5	0.1500	0.89397	18	4.0000	0.89397
6	0.2167	0.89395	19	5.0333	0.89397
7	0.2833	0.89391	20	6.3333	0.89396
8	0.3667	0.89397	21	7.9667	0.89395
9	0.4667	0.89398	22	10.0333	0.89395
10	0.6000	0.89396	23	12.6167	0.89393
11	0.7667	0.89399	24	15.8833	0.89393
12	0.9833	0.89396	25	20.0000	0.89394
13	1.2500	0.89395	26	25.1667	0.89403



Terracon, Inc.

Pressure: 3.42 tsf

TEST READINGS (continued)

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
27	31.6833	0.89393	37	316.3333	0.89433
28	39.8667	0.89397	38	398.2167	0.89436
29	50.1667	0.89389	39	501.3000	0.89451
30	63.1667	0.89395	40	631.0833	0.89452
31	79.5000	0.89413	41	794.4500	0.89459
32	100.0833	0.89424	42	1000.1333	0.89454
33	125.9833	0.89432	43	1259.0667	0.89469
34	158.5833	0.89428	44	1440.4500	0.89462
35	199.6167	0.89431			
36	251.2833	0.89429			

Void Ratio = 0.556 Compression = 0.1%

$D_0 = 0.8929$ $D_{90} = 0.8943$ $D_{100} = 0.8945$ C_v at 141.46 min. = 0.015 ft.²/day

Steven Zhou

Terracon, Inc.

SWELL TEST DATA

5/4/2022

Client: QUEST ENGINEERING
Project: GEOTECHNICAL LAB TESTING
Project Number: N1211591
Location: B-2 28.0-45.0
Sample Number: S1-9
Material Description: SAND
Sample Date: 4-25-22
USCS: SW
Tested By: DR

Checked by: GS

Test Specimen Data

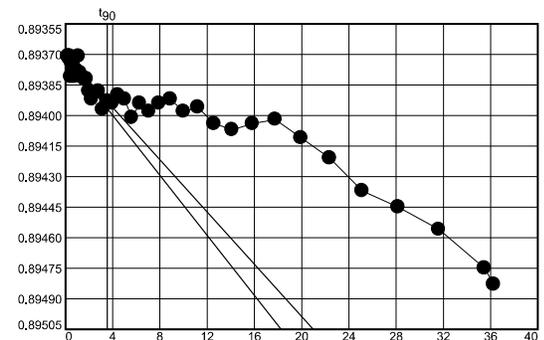
NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t =	136.31 g.	Spec. Gr. =	2.65	Wet w+t =	211.53 g.
Dry w+t =	134.72 g.	Est. Ht. Solids =	0.635 in.	Dry w+t =	189.01 g.
Tare Wt. =	119.62 g.	Init. V.R. =	0.560	Tare Wt. =	52.10 g.
Moisture =	10.5 %	Init. Sat. =	49.8 %	Moisture =	16.4 %
UNIT WEIGHT		TEST START		Dry Wt. = 136.91 g.	
Height =	0.990 in.	Height =	0.990 in.		
Diameter =	2.500 in.	Diameter =	2.500 in.		
Weight =	149.53 g.				
Dry Dens. =	106.1 pcf				

End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	0.89364	0.00000			0.560	
3.42	0.89483	0.00119	0.165		0.558	0.1 Compr.

Pressure: 3.42 tsf **TEST READINGS** Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.89364	13	1.2500	0.89371
2	0.0500	0.89371	14	1.5833	0.89379
3	0.0833	0.89371	15	2.0000	0.89381
4	0.1167	0.89372	16	2.5167	0.89382
5	0.1667	0.89371	17	3.1833	0.89382
6	0.2167	0.89381	18	4.0000	0.89388
7	0.2833	0.89374	19	5.0333	0.89392
8	0.3667	0.89372	20	6.3333	0.89389
9	0.4833	0.89378	21	7.9667	0.89388
10	0.6167	0.89381	22	10.0333	0.89397
11	0.7833	0.89379	23	12.6167	0.89393
12	0.9833	0.89378	24	15.8833	0.89394



Terracon, Inc.

Pressure: 3.42 tsf

TEST READINGS (continued)

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
25	20.0000	0.89390	35	199.6167	0.89407
26	25.1667	0.89392	36	251.2833	0.89404
27	31.6667	0.89401	37	316.3167	0.89402
28	39.8667	0.89394	38	398.2167	0.89411
29	50.1667	0.89398	39	501.3000	0.89421
30	63.1500	0.89394	40	631.0667	0.89437
31	79.5000	0.89392	41	794.4500	0.89445
32	100.0667	0.89398	42	1000.1333	0.89456
33	125.9667	0.89396	43	1259.0667	0.89475
34	158.5667	0.89404	44	1314.7333	0.89483

Void Ratio = 0.558 Compression = 0.1%

$D_0 = 0.8937$ $D_{90} = 0.8939$ $D_{100} = 0.8940$ C_v at 12.54 min. = 0.165 ft.²/day

Steven Zhou

Terracon, Inc.

SWELL TEST DATA

5/4/2022

Client: QUEST ENGINEERING
Project: GEOTECHNICAL LAB TESTING
Project Number: N1211591
Location: B-3
Sample Number: S3-6
Material Description: SAND
Sample Date: 5-4-22
Tested By: DR

Checked by: GS

Test Specimen Data

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t =	129.82 g.	Spec. Gr. =	2.65	Wet w+t =	201.10 g.
Dry w+t =	128.85 g.	Est. Ht. Solids =	0.619 in.	Dry w+t =	178.59 g.
Tare Wt. =	119.61 g.	Init. V.R. =	0.585	Tare Wt. =	50.31 g.
Moisture =	10.5 %	Init. Sat. =	47.6 %	Moisture =	17.5 %
UNIT WEIGHT		TEST START		Dry Wt. = 128.28 g.	
Height =	0.981 in.	Height =	0.981 in.		
Diameter =	2.500 in.	Diameter =	2.500 in.		
Weight =	145.80 g.				
Dry Dens. =	104.4 pcf				

End-Of-Load Summary

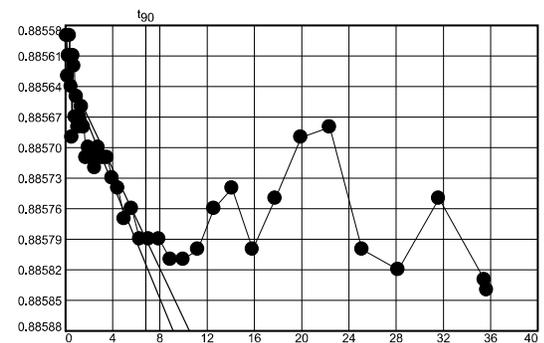
Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	0.88566	0.00000			0.585	
2.63	0.88584	0.00018	0.044		0.585	0.0 Compr.

Pressure: 2.63 tsf

TEST READINGS

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.88566	14	1.5167	0.88567
2	0.0167	0.88559	15	1.9333	0.88566
3	0.0500	0.88563	16	2.4500	0.88568
4	0.0833	0.88561	17	3.1000	0.88571
5	0.1333	0.88559	18	3.9167	0.88570
6	0.1833	0.88561	19	4.9500	0.88571
7	0.2500	0.88564	20	6.2500	0.88572
8	0.3333	0.88569	21	7.8833	0.88570
9	0.4333	0.88561	22	9.9500	0.88571
10	0.5667	0.88562	23	12.5333	0.88571
11	0.7333	0.88567	24	15.8000	0.88573
12	0.9333	0.88565	25	19.9000	0.88574
13	1.2000	0.88568	26	25.0667	0.88577



Terracon, Inc.

Pressure: 2.63 tsf

TEST READINGS (continued)

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
27	31.5833	0.88576	37	316.2000	0.88575
28	39.7667	0.88579	38	398.0833	0.88569
29	50.0833	0.88579	39	501.1667	0.88568
30	63.0500	0.88579	40	630.9333	0.88580
31	79.4000	0.88581	41	794.3167	0.88582
32	99.9667	0.88581	42	999.9833	0.88575
33	125.8500	0.88580	43	1258.9167	0.88583
34	158.4500	0.88576	44	1273.5333	0.88584
35	199.5000	0.88574			
36	251.1667	0.88580			

Void Ratio = 0.585 Compression = 0.0%

$D_0 = 0.8856$ $D_{90} = 0.8858$ $D_{100} = 0.8858$ C_v at 46.29 min. = 0.044 ft.²/day

Steven Zhou

Terracon, Inc.

SWELL TEST DATA

5/4/2022

Client: QUEST ENGINEERING
Project: GEOTECHNICAL LAB TESTING
Project Number: N1211591
Location: B-3 13.0-15.0
Sample Number: S3-6
Material Description: SAND
Sample Date: 5-4-22
Tested By: DR

Checked by: GS

Test Specimen Data

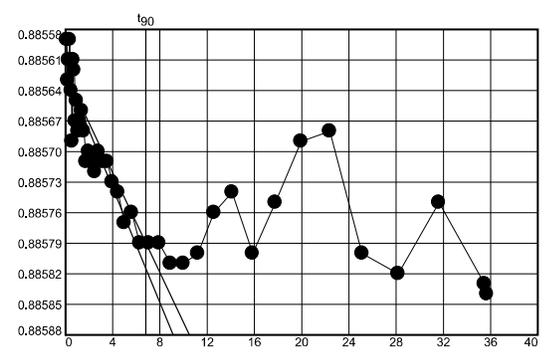
NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t =	129.82 g.	Spec. Gr. =	2.65	Wet w+t =	201.10 g.
Dry w+t =	128.85 g.	Est. Ht. Solids =	0.619 in.	Dry w+t =	178.59 g.
Tare Wt. =	119.61 g.	Init. V.R. =	0.585	Tare Wt. =	50.31 g.
Moisture =	10.5 %	Init. Sat. =	47.6 %	Moisture =	17.5 %
UNIT WEIGHT		TEST START		Dry Wt. = 128.28 g.	
Height =	0.981 in.	Height =	0.981 in.		
Diameter =	2.500 in.	Diameter =	2.500 in.		
Weight =	145.80 g.				
Dry Dens. =	104.4 pcf				

End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	0.88566	0.00000			0.585	
2.63	0.88584	0.00018	0.044		0.585	0.0 Compr.

Pressure: 2.63 tsf **TEST READINGS** Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.88566	14	1.5167	0.88567
2	0.0167	0.88559	15	1.9333	0.88566
3	0.0500	0.88563	16	2.4500	0.88568
4	0.0833	0.88561	17	3.1000	0.88571
5	0.1333	0.88559	18	3.9167	0.88570
6	0.1833	0.88561	19	4.9500	0.88571
7	0.2500	0.88564	20	6.2500	0.88572
8	0.3333	0.88569	21	7.8833	0.88570
9	0.4333	0.88561	22	9.9500	0.88571
10	0.5667	0.88562	23	12.5333	0.88571
11	0.7333	0.88567	24	15.8000	0.88573
12	0.9333	0.88565	25	19.9000	0.88574
13	1.2000	0.88568	26	25.0667	0.88577



Terracon, Inc.

Pressure: 2.63 tsf

TEST READINGS (continued)

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
27	31.5833	0.88576	37	316.2000	0.88575
28	39.7667	0.88579	38	398.0833	0.88569
29	50.0833	0.88579	39	501.1667	0.88568
30	63.0500	0.88579	40	630.9333	0.88580
31	79.4000	0.88581	41	794.3167	0.88582
32	99.9667	0.88581	42	999.9833	0.88575
33	125.8500	0.88580	43	1258.9167	0.88583
34	158.4500	0.88576	44	1273.5333	0.88584
35	199.5000	0.88574			
36	251.1667	0.88580			

Void Ratio = 0.585 Compression = 0.0%

$D_0 = 0.8856$ $D_{90} = 0.8858$ $D_{100} = 0.8858$ C_v at 46.29 min. = 0.044 ft.²/day

Steven Zhou

Terracon, Inc.

SWELL TEST DATA

5/4/2022

Client: QUEST ENGINEERING
Project: GEOTECHNICAL LAB TESTING
Project Number: N1211591
Location: B-3 Combined Sample 65.0-70.0 and 73.0-75.0
Sample Number: S3-17 and S3-18
Material Description: SAND
Sample Date: 5-4-22
Tested By: DR **Checked by:** GS

Test Specimen Data

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t =	132.38 g.	Spec. Gr. =	2.65	Wet w+t =	206.86 g.
Dry w+t =	131.15 g.	Est. Ht. Solids =	0.629 in.	Dry w+t =	184.75 g.
Tare Wt. =	119.61 g.	Init. V.R. =	0.559	Tare Wt. =	50.56 g.
Moisture =	10.7 %	Init. Sat. =	50.5 %	Moisture =	16.5 %
UNIT WEIGHT		TEST START		Dry Wt. = 134.19 g.	
Height =	0.981 in.	Height =	0.981 in.		
Diameter =	2.500 in.	Diameter =	2.500 in.		
Weight =	148.41 g.				
Dry Dens. =	106.1 pcf				

End-Of-Load Summary

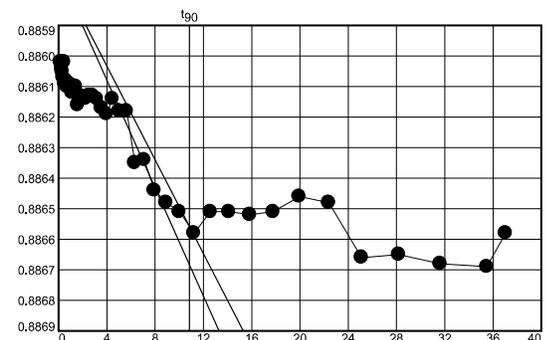
Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	0.88603	0.00000			0.559	
2.63	0.88658	0.00055	0.017		0.558	0.1 Compr.

Pressure: 2.63 tsf

TEST READINGS

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.88603	14	1.5833	0.88610
2	0.0333	0.88602	15	2.0000	0.88610
3	0.0667	0.88604	16	2.5167	0.88616
4	0.1000	0.88605	17	3.1833	0.88613
5	0.1500	0.88607	18	4.0000	0.88614
6	0.2000	0.88602	19	5.0333	0.88614
7	0.2667	0.88609	20	6.3333	0.88613
8	0.3667	0.88608	21	7.9833	0.88613
9	0.4667	0.88610	22	10.0333	0.88614
10	0.6000	0.88610	23	12.6333	0.88617
11	0.7667	0.88609	24	15.9000	0.88619
12	0.9833	0.88610	25	20.0000	0.88614
13	1.2500	0.88612	26	25.1667	0.88618



Terracon, Inc.

Pressure: 2.63 tsf

TEST READINGS (continued)

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
27	31.6833	0.88618	37	316.3333	0.88651
28	39.8667	0.88635	38	398.2167	0.88646
29	50.1833	0.88634	39	501.3000	0.88648
30	63.1667	0.88644	40	631.0833	0.88666
31	79.5167	0.88648	41	794.4667	0.88665
32	100.0833	0.88651	42	1000.1333	0.88668
33	125.9833	0.88658	43	1259.0833	0.88669
34	158.5833	0.88651	44	1372.1500	0.88658
35	199.6333	0.88651			
36	251.3000	0.88652			

Void Ratio = 0.558 Compression = 0.1%

$D_0 = 0.8857$ $D_{90} = 0.8866$ $D_{100} = 0.8867$ C_v at 117.45 min. = 0.017 ft.²/day

Steven Zhou

Terracon, Inc.

SWELL TEST DATA

5/4/2022

Client: QUEST ENGINEERING
Project: GEOTECHNICAL LAB TESTING

Project Number: N121561

Location: B-4 73.0-75.0

Sample Number: S4-18

Material Description: SAND

Sample Date: 5-4-22

Tested By: DR

Checked by: GS

Test Specimen Data

<p>NATURAL MOISTURE</p> <p>Wet w+t = 127.63 g. Dry w+t = 126.88 g. Tare Wt. = 119.61 g. Moisture = 10.3 %</p> <p>UNIT WEIGHT</p> <p>Height = 0.988 in. Diameter = 2.500 in. Weight = 148.61 g. Dry Dens. = 105.8 pcf</p>	<p>VOID RATIO</p> <p>Spec. Gr. = 2.65 Est. Ht. Solids = 0.632 in. Init. V.R. = 0.563 Init. Sat. = 48.5 %</p> <p>TEST START</p> <p>Height = 0.988 in. Diameter = 2.500 in.</p>	<p>AFTER TEST</p> <p>Wet w+t = 207.96 g. Dry w+t = 186.33 g. Tare Wt. = 51.68 g. Moisture = 16.1 %</p> <p>Dry Wt. = 134.65 g.</p>
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End-Of-Load Summary

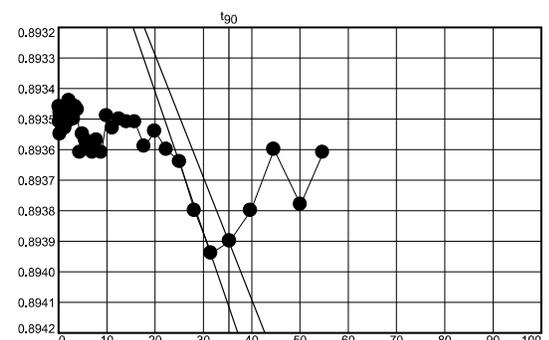
Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C_v (ft. ² /day)	C_α	Void Ratio	% Strain
start	0.89351	0.00000			0.563	
2.79	0.89361	0.00010	0.002		0.563	0.0 Compr.

Pressure: 2.79 tsf

TEST READINGS

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.89351	14	1.5333	0.89349
2	0.0333	0.89346	15	1.9500	0.89353
3	0.0667	0.89351	16	2.4667	0.89351
4	0.1000	0.89355	17	3.1167	0.89348
5	0.1333	0.89348	18	3.9333	0.89351
6	0.1833	0.89351	19	4.9667	0.89344
7	0.2500	0.89349	20	6.2667	0.89347
8	0.3333	0.89347	21	7.9000	0.89346
9	0.4333	0.89348	22	9.9667	0.89350
10	0.5667	0.89350	23	12.5500	0.89346
11	0.7333	0.89348	24	15.8167	0.89347
12	0.9500	0.89350	25	19.9167	0.89361
13	1.2000	0.89348	26	25.0833	0.89355



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Pressure: 2.79 tsf

TEST READINGS (continued)

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
27	31.5833	0.89357	37	316.2000	0.89359	47	3000.4500	0.89361
28	39.7833	0.89358	38	398.0833	0.89354			
29	50.0833	0.89361	39	501.1667	0.89360			
30	63.0667	0.89357	40	630.9500	0.89364			
31	79.4000	0.89361	41	794.3167	0.89380			
32	99.9667	0.89349	42	1000.0000	0.89394			
33	125.8667	0.89353	43	1258.9333	0.89390			
34	158.4667	0.89350	44	1584.9000	0.89380			
35	199.5000	0.89351	45	1995.2833	0.89360			
36	251.1667	0.89351	46	2511.9167	0.89378			

Void Ratio = 0.563 Compression = 0.0%

$D_0 = 0.8925$ $D_{90} = 0.8939$ $D_{100} = 0.8941$ C_v at 1243.50 min. = 0.002 ft.²/day

Steven Zhou

Terracon, Inc.

SWELL TEST DATA

5/4/2022

Client: QUEST ENGINEERING
Project: GEOTECHNICAL LAB TESTING

Project Number: N121561

Location: B-4 78.0-80.0

Sample Number: S4-19

Material Description: SAND

Sample Date: 5-4-22

Tested By: DR

Checked by: GS

Test Specimen Data

<p>NATURAL MOISTURE</p> <p>Wet w+t = 129.11 g. Dry w+t = 128.20 g. Tare Wt. = 119.61 g. Moisture = 10.6 %</p> <p>UNIT WEIGHT</p> <p>Height = 0.990 in. Diameter = 2.500 in. Weight = 147.82 g. Dry Dens. = 104.8 pcf</p>	<p>VOID RATIO</p> <p>Spec. Gr. = 2.65 Est. Ht. Solids = 0.627 in. Init. V.R. = 0.579 Init. Sat. = 48.5 %</p> <p>TEST START</p> <p>Height = 0.990 in. Diameter = 2.500 in.</p>	<p>AFTER TEST</p> <p>Wet w+t = 205.92 g. Dry w+t = 185.03 g. Tare Wt. = 51.29 g. Moisture = 15.6 %</p> <p>Dry Wt. = 133.74 g.</p>
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End-Of-Load Summary

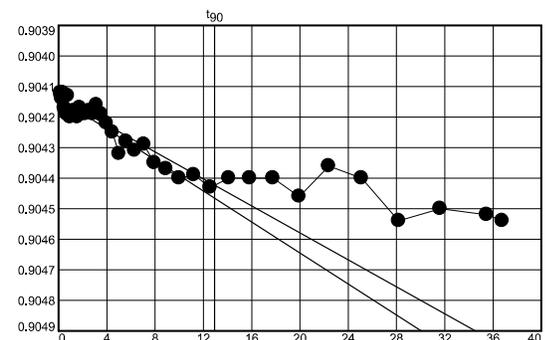
Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C_v (ft.2/day)	C_α	Void Ratio	% Strain
start	0.90419	0.00000			0.579	
3.00	0.90454	0.00035	0.012		0.578	0.0 Compr.

Pressure: 3.00 tsf

TEST READINGS

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.90419	14	1.5333	0.90418
2	0.0333	0.90412	15	1.9333	0.90419
3	0.0500	0.90413	16	2.4500	0.90420
4	0.0833	0.90414	17	3.1167	0.90417
5	0.1333	0.90412	18	3.9333	0.90419
6	0.1833	0.90413	19	4.9667	0.90419
7	0.2500	0.90417	20	6.2667	0.90418
8	0.3333	0.90418	21	7.9000	0.90419
9	0.4333	0.90419	22	9.9500	0.90416
10	0.5667	0.90413	23	12.5500	0.90419
11	0.7333	0.90419	24	15.8000	0.90422
12	0.9500	0.90420	25	19.9000	0.90425
13	1.2000	0.90419	26	25.0833	0.90432



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Pressure: 3.00 tsf

TEST READINGS (continued)

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
27	31.5833	0.90428	37	316.2000	0.90440
28	39.7667	0.90431	38	398.0833	0.90446
29	50.0833	0.90429	39	501.1667	0.90436
30	63.0667	0.90435	40	630.9500	0.90440
31	79.4000	0.90437	41	794.3167	0.90454
32	99.9667	0.90440	42	1000.0000	0.90450
33	125.8667	0.90439	43	1258.9333	0.90452
34	158.4667	0.90443	44	1351.5167	0.90454
35	199.5000	0.90440			
36	251.1667	0.90440			

Void Ratio = 0.578 Compression = 0.0%

$D_0 = 0.9041$ $D_{90} = 0.9044$ $D_{100} = 0.9045$ C_v at 167.18 min. = 0.012 ft.²/day

Steven Zhou

Terracon, Inc.

SWELL TEST DATA

5/4/2022

Client: QUEST ENGINEERING
 Project: GEOTECHNICAL LAB TESTING
 Project Number: N1211561
 Location: B-4 93.0-95.0
 Sample Number: S4-23
 Material Description: SAND
 Sample Date: 4-25-22
 USCS: SP

Tested By: DJ

Checked by: GS

Test Specimen Data

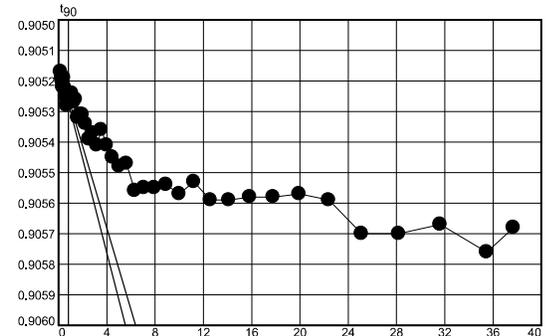
NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t =	123.40 g.	Spec. Gr. =	2.65	Wet w+t =	198.63 g.
Dry w+t =	123.05 g.	Est. Ht. Solids =	0.570 in.	Dry w+t =	170.83 g.
Tare Wt. =	119.61 g.	Init. V.R. =	0.737	Tare Wt. =	49.55 g.
Moisture =	10.2 %	Init. Sat. =	36.6 %	Moisture =	22.9 %
UNIT WEIGHT		TEST START		Dry Wt. = 121.28 g.	
Height =	0.991 in.	Height =	0.991 in.		
Diameter =	2.500 in.	Diameter =	2.500 in.		
Weight =	133.98 g.				
Dry Dens. =	95.2 pcf				

End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	0.90518	0.00000			0.737	
3.00	0.90568	0.00050	3.162		0.736	0.1 Compr.

Pressure: 3.00 tsf TEST READINGS Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.90518	13	1.2333	0.90524
2	0.0333	0.90517	14	1.5667	0.90527
3	0.0667	0.90519	15	1.9833	0.90526
4	0.1000	0.90520	16	2.5000	0.90532
5	0.1333	0.90522	17	3.1500	0.90531
6	0.2000	0.90519	18	3.9667	0.90531
7	0.2667	0.90522	19	5.0000	0.90534
8	0.3500	0.90525	20	6.3000	0.90539
9	0.4500	0.90528	21	7.9500	0.90537
10	0.5833	0.90526	22	10.0000	0.90541
11	0.7500	0.90525	23	12.6000	0.90536
12	0.9667	0.90527	24	15.8667	0.90541



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Pressure: 3.00 tsf

TEST READINGS (continued)

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
25	19.9667	0.90545	35	199.5833	0.90559
26	25.1333	0.90548	36	251.2667	0.90558
27	31.6500	0.90547	37	316.3000	0.90558
28	39.8333	0.90556	38	398.1833	0.90557
29	50.1500	0.90555	39	501.2667	0.90559
30	63.1333	0.90555	40	631.0500	0.90570
31	79.4667	0.90554	41	794.4333	0.90570
32	100.0500	0.90557	42	1000.1000	0.90567
33	125.9500	0.90553	43	1259.0500	0.90576
34	158.5500	0.90559	44	1421.1500	0.90568

Void Ratio = 0.736 Compression = 0.1%

$D_0 = 0.9051$ $D_{90} = 0.9053$ $D_{100} = 0.9053$ C_v at 0.66 min. = 3.162 ft.²/day

Steven Zhou

Terracon, Inc.

SWELL TEST DATA

5/4/2022

Client: QUEST ENGINEERING
Project: GEOTECHNICAL LAB TESTING
Project Number: N1211561
Location: B-5 28.0-30.0
Sample Number: S4-9
Material Description: SAND
Tested By: DR

Checked by: GS

Test Specimen Data

NATURAL MOISTURE

Wet w+t = 129.35 g.
Dry w+t = 128.45 g.
Tare Wt. = 119.61 g.
Moisture = 10.2 %

VOID RATIO

Spec. Gr. = 2.65
Est. Ht. Solids = 0.587 in.
Init. V.R. = 0.682
Init. Sat. = 39.6 %

AFTER TEST

Wet w+t = 201.46 g.
Dry w+t = 175.44 g.
Tare Wt. = 51.28 g.
Moisture = 21.0 %

UNIT WEIGHT

Height = 0.988 in.
Diameter = 2.500 in.
Weight = 137.95 g.
Dry Dens. = 98.3 pcf

TEST START

Height = 0.988 in.
Diameter = 2.500 in.

Dry Wt. = 124.16 g.

End-Of-Load Summary

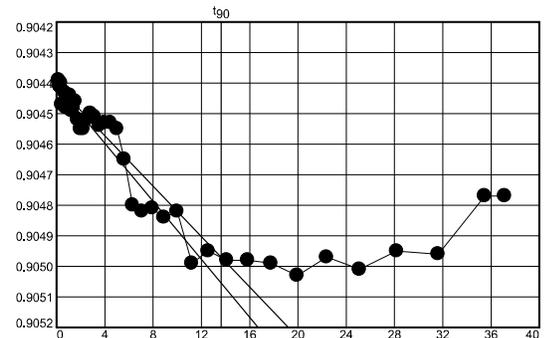
Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft.2/day)	C _α	Void Ratio	% Strain
start	0.90440	0.00000			0.682	
3.42	0.90477	0.00037	0.011		0.681	0.0 Compr.

Pressure: 3.42 tsf

TEST READINGS

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.90440	15	1.9500	0.90448
2	0.0333	0.90439	16	2.4667	0.90446
3	0.0667	0.90441	17	3.1167	0.90452
4	0.1000	0.90441	18	3.9333	0.90455
5	0.1333	0.90440	19	4.9667	0.90455
6	0.2000	0.90447	20	6.2667	0.90452
7	0.2500	0.90447	21	7.9000	0.90450
8	0.3333	0.90447	22	9.9500	0.90451
9	0.4500	0.90443	23	12.5500	0.90454
10	0.5667	0.90448	24	15.8000	0.90453
11	0.7333	0.90448	25	19.9167	0.90453
12	0.9500	0.90445	26	25.0833	0.90455
13	1.2000	0.90444	27	31.5833	0.90465
14	1.5333	0.90449	28	39.7667	0.90480



Terracon, Inc.

Pressure: 3.42 tsf

TEST READINGS (continued)

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
29	50.0833	0.90482	39	501.1667	0.90497
30	63.0667	0.90481	40	630.9500	0.90501
31	79.4000	0.90484	41	794.3167	0.90495
32	99.9667	0.90482	42	1000.0000	0.90496
33	125.8667	0.90499	43	1258.9333	0.90477
34	158.4500	0.90495	44	1379.2833	0.90477
35	199.5000	0.90498			
36	251.1667	0.90498			
37	316.2000	0.90499			
38	398.0833	0.90503			

Void Ratio = 0.681 Compression = 0.0%

$D_0 = 0.9044$ $D_{90} = 0.9050$ $D_{100} = 0.9050$ C_v at 185.86 min. = 0.011 ft.²/day

Steven Zhou

Terracon, Inc.

SWELL TEST DATA

5/4/2022

Client: QUEST ENGINEERING
Project: GEOTECHNICAL LAB TESTING
Project Number: N1211561
Location: B-5 38.0-48.0
Sample Number: S5-11 and S5-12
Material Description: SAND
Sample Date: 5-4-22
Tested By: DR

Checked by: GS

Test Specimen Data

NATURAL MOISTURE Wet w+t = 128.67 g. Dry w+t = 127.80 g. Tare Wt. = 119.61 g. Moisture = 10.6 %	VOID RATIO Spec. Gr. = 2.65 Est. Ht. Solids = 0.634 in. Init. V.R. = 0.555 Init. Sat. = 50.7 %	AFTER TEST Wet w+t = 206.51 g. Dry w+t = 186.75 g. Tare Wt. = 51.68 g. Moisture = 14.6 % Dry Wt. = 135.07 g.
UNIT WEIGHT Height = 0.986 in. Diameter = 2.500 in. Weight = 149.52 g. Dry Dens. = 106.4 pcf	TEST START Height = 0.986 in. Diameter = 2.500 in.	

End-Of-Load Summary

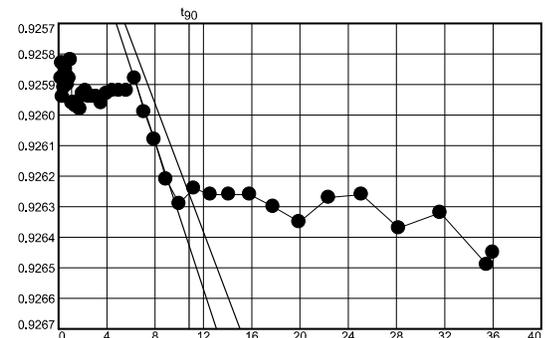
Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C_v (ft. ² /day)	C_α	Void Ratio	% Strain
start	0.92582	0.00000			0.555	
3.42	0.92645	0.00063	0.018		0.554	0.1 Compr.

Pressure: 3.42 tsf

TEST READINGS

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.92582	14	1.5667	0.92596
2	0.0500	0.92588	15	1.9833	0.92597
3	0.0833	0.92583	16	2.5000	0.92596
4	0.1167	0.92594	17	3.1667	0.92598
5	0.1500	0.92588	18	3.9833	0.92593
6	0.2167	0.92591	19	5.0167	0.92592
7	0.2833	0.92590	20	6.3167	0.92594
8	0.3667	0.92585	21	7.9667	0.92594
9	0.4667	0.92587	22	10.0167	0.92594
10	0.6000	0.92590	23	12.6167	0.92596
11	0.7667	0.92588	24	15.8833	0.92593
12	0.9833	0.92582	25	19.9833	0.92592
13	1.2500	0.92596	26	25.1500	0.92592



Terracon, Inc.

Pressure: 3.42 tsf

TEST READINGS (continued)

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
27	31.6667	0.92592	37	316.3167	0.92630
28	39.8500	0.92588	38	398.2000	0.92635
29	50.1667	0.92599	39	501.2833	0.92627
30	63.1500	0.92608	40	631.0667	0.92626
31	79.4833	0.92621	41	794.4333	0.92637
32	100.0667	0.92629	42	1000.1167	0.92632
33	125.9667	0.92624	43	1259.0500	0.92649
34	158.5667	0.92626	44	1295.2333	0.92645
35	199.6000	0.92626			
36	251.2667	0.92626			

Void Ratio = 0.554 Compression = 0.1%

$D_0 = 0.9251$ $D_{90} = 0.9263$ $D_{100} = 0.9264$ C_v at 116.78 min. = 0.018 ft.²/day

Steven Zhou

Terracon, Inc.

SWELL TEST DATA

5/4/2022

Client: QUEST ENGINEERING
Project: GEOTECHNICAL LAB TESTING
Project Number: N1211591
Location: B-6 78.0-80.0
Sample Number: S6-119
Material Description: SAND & LIMESTONE
Sample Date: 4-25-22
USCS: SP
Tested By: DR **Checked by:** GS

Test Specimen Data

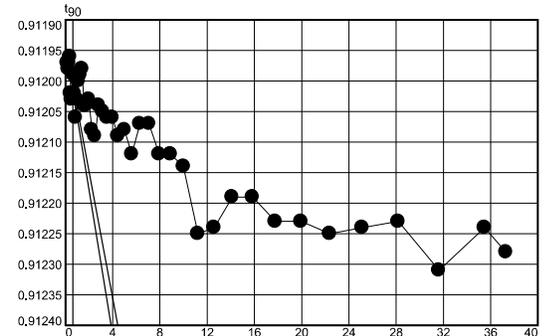
NATURAL MOISTURE	VOID RATIO	AFTER TEST
Wet w+t = 130.21 g.	Spec. Gr. = 2.65	Wet w+t = 200.04 g.
Dry w+t = 129.20 g.	Est. Ht. Solids = 0.607 in.	Dry w+t = 178.45 g.
Tare Wt. = 119.61 g.	Init. V.R. = 0.630	Tare Wt. = 49.31 g.
Moisture = 10.5 %	Init. Sat. = 44.3 %	Moisture = 16.7 %
UNIT WEIGHT	TEST START	Dry Wt. = 129.14 g.
Height = 0.990 in.	Height = 0.990 in.	
Diameter = 2.500 in.	Diameter = 2.500 in.	
Weight = 143.11 g.		
Dry Dens. = 101.5 pcf		

End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	0.91198	0.00000			0.630	
3.06	0.91228	0.00030	5.216		0.629	0.0 Compr.

Pressure: 3.06 tsf **TEST READINGS** Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.91198	13	1.2333	0.91200
2	0.0333	0.91197	14	1.5667	0.91199
3	0.0667	0.91198	15	1.9833	0.91198
4	0.1000	0.91197	16	2.5000	0.91204
5	0.1500	0.91196	17	3.1500	0.91204
6	0.2000	0.91202	18	3.9833	0.91203
7	0.2667	0.91203	19	5.0167	0.91208
8	0.3500	0.91202	20	6.3167	0.91209
9	0.4667	0.91199	21	7.9500	0.91204
10	0.6000	0.91202	22	10.0167	0.91205
11	0.7667	0.91206	23	12.6000	0.91206
12	0.9667	0.91203	24	15.8667	0.91206



Terracon, Inc.

Pressure: 3.06 tsf

TEST READINGS (continued)

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
25	19.9667	0.91209	35	199.5833	0.91219
26	25.1333	0.91208	36	251.2500	0.91219
27	31.6500	0.91212	37	316.3000	0.91223
28	39.8333	0.91207	38	398.1833	0.91223
29	50.1500	0.91207	39	501.2667	0.91225
30	63.1333	0.91212	40	631.0500	0.91224
31	79.4667	0.91212	41	794.4333	0.91223
32	100.0500	0.91214	42	1000.1000	0.91231
33	125.9500	0.91225	43	1259.0333	0.91224
34	158.5500	0.91224	44	1391.1833	0.91228

Void Ratio = 0.629 Compression = 0.0%

$D_0 = 0.9119$ $D_{90} = 0.9120$ $D_{100} = 0.9120$ C_v at 0.40 min. = 5.216 ft.²/day

Steven Zhou

Terracon, Inc.

SWELL TEST DATA

5/4/2022

Client: QUEST ENGINEERING
Project: GEOTECHNICAL LAB TESTING
Project Number: N1211591
Location: B7 18.0-25.0
Sample Number: S7-7 and S7-8
Material Description: SAND
Sample Date: 5-4-22
Tested By: DR

Checked by: GS

Test Specimen Data

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t =	130.84 g.	Spec. Gr. =	2.65	Wet w+t =	208.39 g.
Dry w+t =	129.81 g.	Est. Ht. Solids =	0.624 in.	Dry w+t =	184.21 g.
Tare Wt. =	119.61 g.	Init. V.R. =	0.585	Tare Wt. =	51.36 g.
Moisture =	10.1 %	Init. Sat. =	45.8 %	Moisture =	18.2 %
UNIT WEIGHT		TEST START		Dry Wt. = 132.85 g.	
Height =	0.989 in.	Height =	0.989 in.		
Diameter =	2.500 in.	Diameter =	2.500 in.		
Weight =	146.45 g.				
Dry Dens. =	104.4 pcf				

End-Of-Load Summary

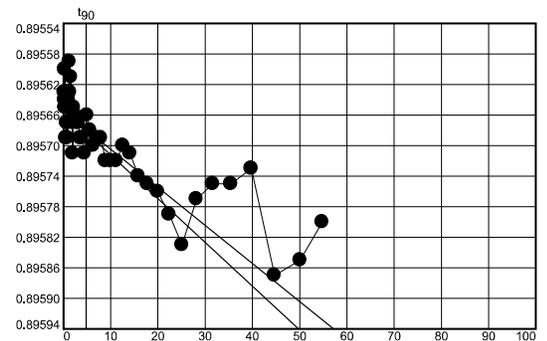
Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	0.89561	0.00000			0.585	
3.00	0.89580	0.00019	0.090		0.585	0.0 Compr.

Pressure: 3.00 tsf

TEST READINGS

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.89561	14	1.5833	0.89559
2	0.0500	0.89563	15	2.0000	0.89563
3	0.0833	0.89560	16	2.5167	0.89561
4	0.1167	0.89564	17	3.1667	0.89567
5	0.1500	0.89565	18	4.0000	0.89571
6	0.2167	0.89564	19	5.0333	0.89565
7	0.2833	0.89569	20	6.3333	0.89566
8	0.3667	0.89563	21	7.9667	0.89567
9	0.4667	0.89567	22	10.0333	0.89567
10	0.6000	0.89563	23	12.6167	0.89569
11	0.7667	0.89569	24	15.8833	0.89569
12	0.9833	0.89563	25	20.0000	0.89571
13	1.2500	0.89564	26	25.1667	0.89566



Terracon, Inc.

Pressure: 3.00 tsf

TEST READINGS (continued)

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
27	31.6833	0.89568	37	316.3500	0.89575	47	3000.4667	0.89580
28	39.8833	0.89570	38	398.2333	0.89576			
29	50.1833	0.89569	39	501.3167	0.89579			
30	63.1667	0.89569	40	631.1000	0.89583			
31	79.5167	0.89572	41	794.4667	0.89577			
32	100.1000	0.89572	42	1000.1500	0.89575			
33	126.0000	0.89572	43	1259.0833	0.89575			
34	158.6000	0.89570	44	1585.0667	0.89573			
35	199.6333	0.89571	45	1995.4500	0.89587			
36	251.3000	0.89574	46	2512.0833	0.89585			

Void Ratio = 0.585 Compression = 0.0%

$D_0 = 0.8957$ $D_{90} = 0.8957$ $D_{100} = 0.8957$ C_v at 23.13 min. = 0.090 ft.²/day

Steven Zhou

Terracon, Inc.

SWELL TEST DATA

5/4/2022

Client: QUEST ENGINEERING
Project: GEOTECHNICAL LAB TESTING
Project Number: N1211591
Location: B7
Sample Number: S7-9
Material Description: SAND
Sample Date: 5-4-22
Tested By: DR

Checked by: GS

Test Specimen Data

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t =	130.84 g.	Spec. Gr. =	2.65	Wet w+t =	201.71 g.
Dry w+t =	129.81 g.	Est. Ht. Solids =	0.600 in.	Dry w+t =	177.50 g.
Tare Wt. =	119.61 g.	Init. V.R. =	0.654	Tare Wt. =	49.81 g.
Moisture =	10.1 %	Init. Sat. =	40.9 %	Moisture =	19.0 %
UNIT WEIGHT		TEST START		Dry Wt. = 127.69 g.	
Height =	0.993 in.	Height =	0.993 in.		
Diameter =	2.500 in.	Diameter =	2.500 in.		
Weight =	140.92 g.				
Dry Dens. =	100.0 pcf				

End-Of-Load Summary

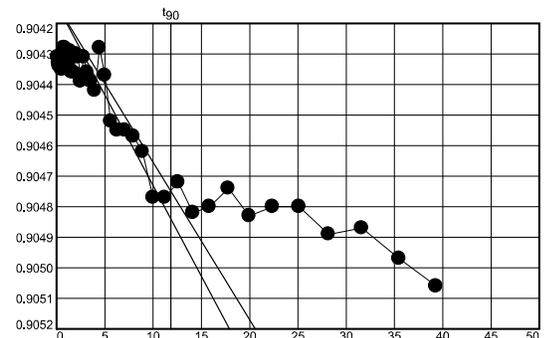
Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	0.90429	0.00000			0.654	
3.00	0.90506	0.00077	0.015		0.652	0.1 Compr.

Pressure: 3.00 tsf

TEST READINGS

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
1	0.0000	0.90429	14	1.5167	0.90434
2	0.0167	0.90431	15	1.9333	0.90429
3	0.0500	0.90433	16	2.4500	0.90436
4	0.0833	0.90434	17	3.1000	0.90436
5	0.1167	0.90432	18	3.9167	0.90430
6	0.1833	0.90431	19	4.9500	0.90431
7	0.2500	0.90435	20	6.2500	0.90439
8	0.3333	0.90432	21	7.8833	0.90431
9	0.4333	0.90435	22	9.9500	0.90436
10	0.5667	0.90428	23	12.5333	0.90439
11	0.7333	0.90428	24	15.8000	0.90442
12	0.9333	0.90430	25	19.9000	0.90428
13	1.2000	0.90432	26	25.0667	0.90437



Terracon, Inc.

Pressure: 3.00 tsf

TEST READINGS (continued)

Load No. 1

No.	Elapsed Time	Dial Reading	No.	Elapsed Time	Dial Reading
27	31.5667	0.90452	37	316.2000	0.90474
28	39.7667	0.90455	38	398.0833	0.90483
29	50.0667	0.90455	39	501.1667	0.90480
30	63.0500	0.90457	40	630.9333	0.90480
31	79.3833	0.90462	41	794.3000	0.90489
32	99.9667	0.90477	42	999.9833	0.90487
33	125.8500	0.90477	43	1258.9167	0.90497
34	158.4500	0.90472	44	1545.3333	0.90506
35	199.4833	0.90482			
36	251.1500	0.90480			

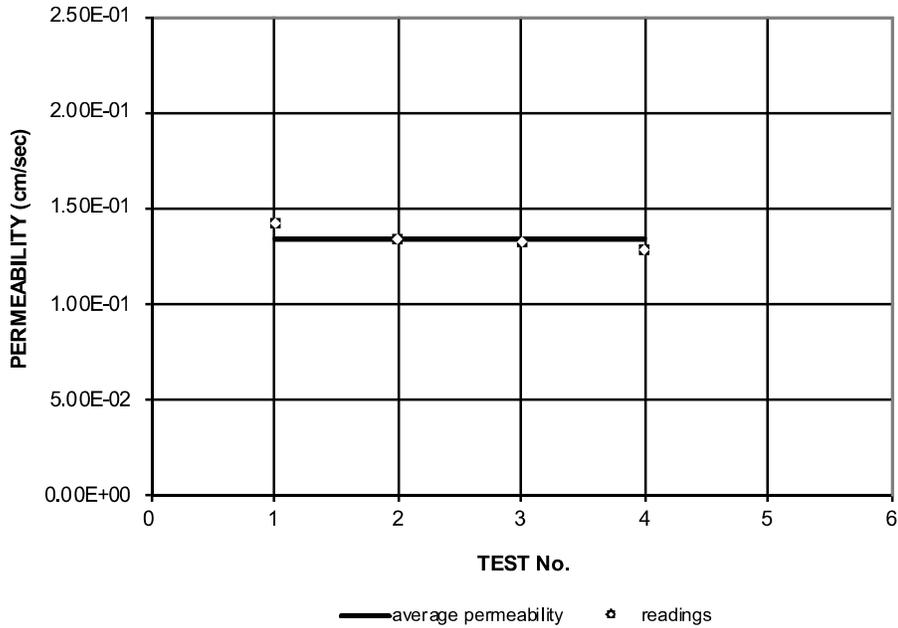
Void Ratio = 0.652 Compression = 0.1%

$D_0 = 0.9041$ $D_{90} = 0.9047$ $D_{100} = 0.9048$ C_v at 139.68 min. = 0.015 ft.²/day

Steven Zhou

Terracon, Inc.

CONSTANT HEAD PERMEABILITY TEST



Test Specification: ASTM D 2434

Test No.	Manometers		Water Levels		Water Head (cm)	Flow Volume (cm ³)	Elapsed Time (s)	Calculated Permeability (cm/s)
	H1 (cm)	H2 (cm)	L1 (cm)	L2 (cm)				
1	3.3	6.3	100		3	100	39.34	1.42E-01
2	3.8	7.3	100		3.5	100	35.76	1.34E-01
3	4.6	8.6	100		4	100	31.4	1.33E-01
4	5.3	9.8	100		4.5	100	28.89	1.29E-01
Average								1.34E-01

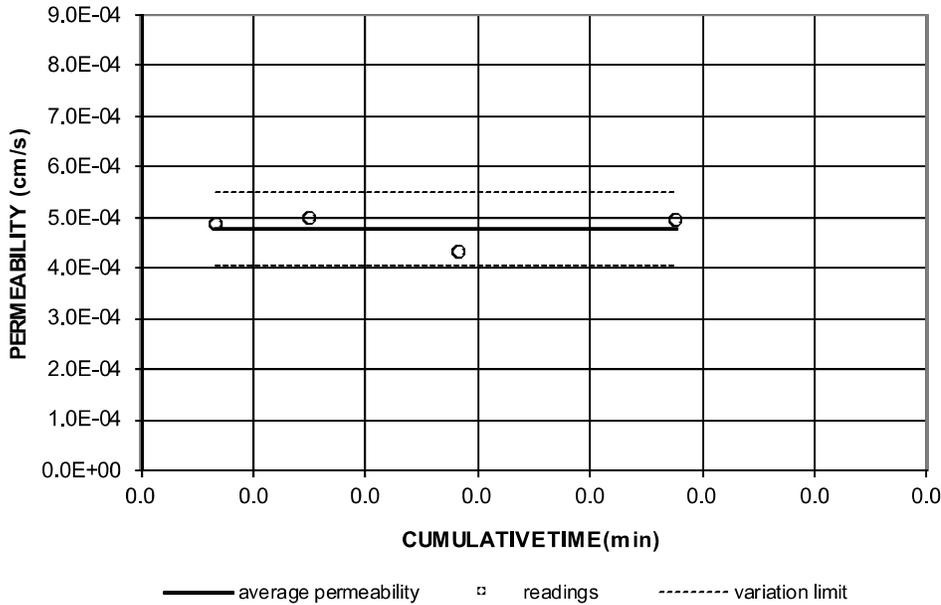
Specimen Conditions			
Diameter D (in)	3.0	Weight of Specimen (gms)	1180.0
Length of Specimen (in)	6.1	Density of Specimen (pcf)	104.8
Length of Flow (in)	3.0	Approximate Porosity (%)	37.8

Material Description Poorly Graded Sand, SP	Remarks
Carbonate Content (%)	
USCS	
Water Content (%)	

Project Name Las Olas Blvd Geotechnical Lab	Tested by FCE Review. by TGG
Client Quest Engineering W.O.# N1211591	CONSTANT HEAD PERMEABILITY
Sample Number B1 S1-7 and S1-8	
Sample Location	
Date 8-Mar-22 Lab No. 1786	

Steven Zhou

FLEXIBLE WALL PERMEABILITY TEST



Test Specification: ASTM D 5084 Method F

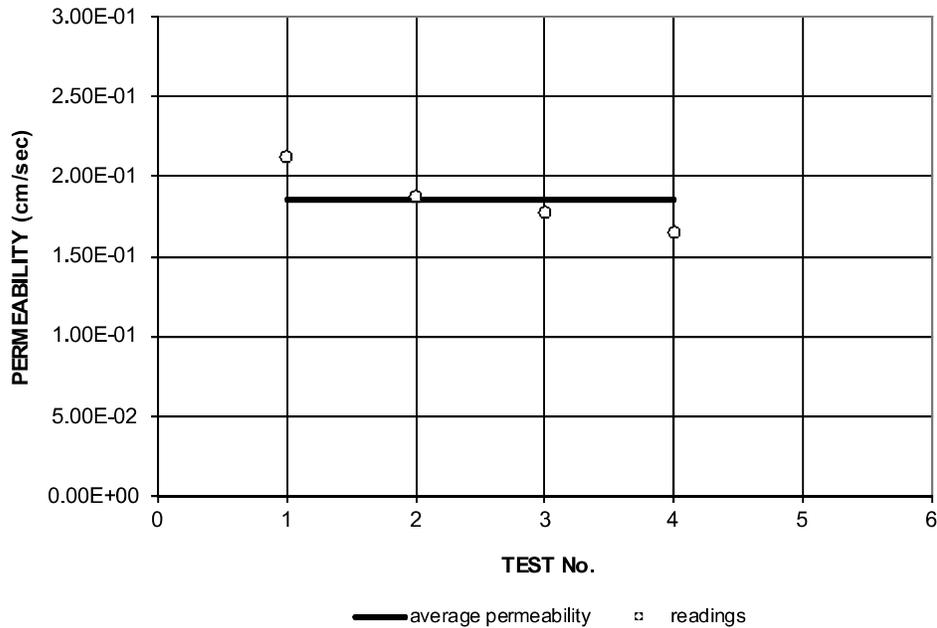
Fluid Temp. (°C)	Elapsed Time (min.)	Cumulative Time (min.)	Gradient (cm-Hg)	Calculated Permeability (cm/sec)	Average Permeability (cm/sec)
21.00	0.0033	0.0033	21.26	4.85E-04	4.8E-04
21.00	0.0042	0.0075	16.08	4.97E-04	
21.00	0.0067	0.0142	10.89	4.32E-04	
21.00	0.0097	0.0238	5.70	4.95E-04	

Compaction Data		Sample Data		Initial	Final
Proctor (pcf)		Specimen Height, (inches)		2.14	2.14
Opti. M.C., (%)		Specimen Diameter, (inches)		2.39	2.39
Comp. Method		Specimen Volume, (cu. In.)		9.58	9.58
% Recompct.		Moisture Content, (%)		0.37	4.48
Test Pressures (psi)		Percent Saturation (%)		3.21	38.53
Backpressure	100.00	Wet Mass Density (pcf)		128.70	133.96
Cell pressure	105.00	Dry Mass Density (pcf)		128.22	128.22
Eff. Stress	5.00	Void Ratio		0.31	0.31
Specific Gravity	2.70	Calculated Porosity, %		23.90	23.90

USCS	SG Assumed	LL	PI
Permeant Used:	WATER	Remarks	Light Gray Conchoidal Limestone

Project Name	Geotechnical Lab Testing	Tested by	FCE Reviewed by TGG
Client	Quest Eng W.O.# N1211591	FLEXIBLE WALL PERMEABILITY TEST 	
Sample Number	B2,S13 B2 CORE (B1)		
Sample Location			
Date	3/10/2022 Lab No. 1791		

CONSTANT HEAD PERMEABILITY TEST



Test Specification: ASTM D 2434

Test No.	Manometers		Water Levels		Water Head (cm)	Flow Volume (cm ³)	Elapsed Time (s)	Calculated Permeability (cm/s)
	H1 (cm)	H2 (cm)	L1 (cm)	L2 (cm)				
1	24.4	26.4	100		2	100	39.34	2.12E-01
2	26	28.5	100		2.5	100	35.76	1.87E-01
3	27.2	30.2	100		3	100	31.4	1.77E-01
4	27.5	31	100		3.5	100	28.89	1.65E-01
Average								1.86E-01

Specimen Conditions

Diameter D (in)	3.0	Weight of Specimen (gms)	1250.0
Length of Specimen (in)	5.7	Density of Specimen (pcf)	118.2
Length of Flow (in)	3.0	Approximate Porosity(%)	29.8

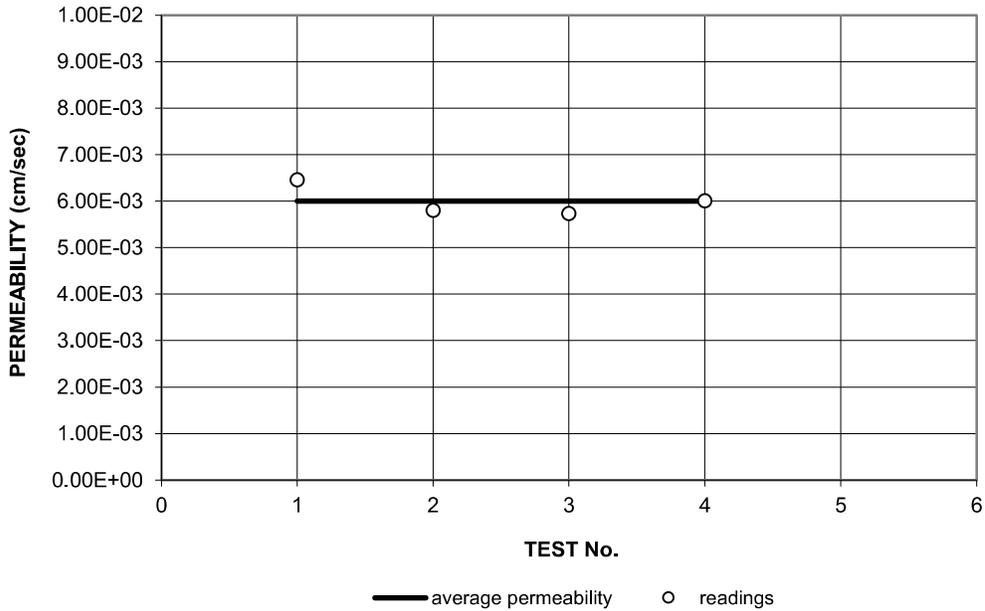
Material Description	Remarks
Carbonate Content (%) USCS Water Content (%)	

Project Name Las Olas Blvd Geotechnical Lab	Tested by FCE Review by TGG
Client Quest Engineering W.O.# N1211591	CONSTANT HEAD PERMEABILITY TEST
Sample Number B-3,S3-17 & S3-18	
Sample Location 65.0-70.0 & 73.0-75.0	
Date 10-Mar-22 Lab No. 1793	

Steven Zhou

4/7/2022

CONSTANT HEAD PERMEABILITY TEST



Test Specification: ASTM D 2434

Test No.	Manometers		Water Levels		Water Head (cm)	Flow Volume (cm ³)	Elapsed Time (s)	Calculated Permeability (cm/s)
	H1 (cm)	H2 (cm)	L1 (cm)	L2 (cm)				
1	1.1	4.1	25		3	25	215.7	6.46E-03
2	1.3	4.8	25		3.5	25	205.8	5.80E-03
3	1.6	5.6	25		4	25	182.3	5.73E-03
4	2	6.5	25		4.5	25	154.6	6.01E-03
Average								6.00E-03

Specimen Conditions			
Diameter D (in)	3.0	Weight of Specimen (gms)	1115.0
Length of Specimen (in)	5.9	Density of Specimen (pcf)	101.7
Length of Flow (in)	3.0	Approximate Porosity(%)	39.6

Material Description	Remarks
Carbonate Content (%) USCS Water Content (%)	Water Temp: 15.73 Celsius

Project Name Las Olas Blvd Geotechnical Lab	Tested by FCE Review. by TGG
Client Quest Engineering W.O.# N1211591	CONSTANT HEAD PERMEABILITY TEST
Sample Number B-7 S7-7 & S7-8	
Sample Location 18.0-25.0	
Date 13-May-22 Lab No. 1808	

Steven Zhou

LABORATORY SERVICES REPORT

Report Number: N1211591.0007
 Service Date: 05/16/22
 Report Date: 05/16/22
 Task:



611 Lunken Park Dr
 Cincinnati, OH 45226-1813
 513-321-5816

Client

Quest Engineering
 Attn: Reza Javidan
 2737 NW 19th St
 Pompano Beach, FL 33069-5232

Project

Las Olas Blvd Geotechnical Lab Testing
 2737 NW 19TH ST
 Pompano Beach, FL 33069-5232

Project No. N1211591

Laboratory Chemical Analysis

Sample Information

Boring:	B-1	Sample No.	Combined Sample S1-7 & S1-8
Depth:	18.0-25.0	Lab No.	1786
Material Description:		Sample Date:	Unknown

Equipment Used

Balance ID:	B-47913	pH Meter ID:	Z-72510
Thermometer ID:	C-60041	Container ID:	V
ORP Meter ID:	Z-82817	ORP Probe ID:	Z-82818
ORP Calibration Value:	220 Mv	ORP Calibration Expiration Date:	Jul-23
Photometer ID:	Z-82819	Miller Box ID:	Z-82820

pH, ASTM D4972, Method A

Oxidation-Reduction Potential (ORP), ASTM G200

	Soil and Water Slurry	ORP Reading (Mv)	Temp. (°C)	Date/Time
Sample Mass (g)				
pH Reading				
Temp. (°C)				

Soil Resistivity, ASTM G57

Water-Soluble Sulfate Ion, AASHTO T-290

Miller Box Readings ($\Omega \times \text{cm}$)	Sample Mass (g)	Average Photometer Reading (mg/kg moisture free)
	100.20	
		20

Water Soluble Chloride Ion, AASHTO T-291

Notes:

Sample Mass (g)	100.2	According to AASHTO T-290 (Section 7.1) and T-291 (Section 7.1), samples may be oven dried at 140°F. However, due to the insufficient amount of material, these samples were oven dried at 230°F.
Meter Reading (mg/kg)	28.64	

Services:

Terracon Rep: Kalyn Abrams

Reported To:

Contractor:

Report Distribution

(1) Quest Engineering, Reza Javidan

Reviewed By: _____

Stewart Abrams
 Senior Geologist

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results presented herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

LABORATORY SERVICES REPORT

Report Number: N1211591.0007
 Service Date: 05/16/22
 Report Date: 05/16/22
 Task:



611 Lunken Park Dr
 Cincinnati, OH 45226-1813
 513-321-5816

Client

Quest Engineering
 Attn: Reza Javidan
 2737 NW 19th St
 Pompano Beach, FL 33069-5232

Project

Las Olas Blvd Geotechnical Lab Testing
 2737 NW 19TH ST
 Pompano Beach, FL 33069-5232

Project No. N1211591

Laboratory Chemical Analysis

Sample Information

Boring:	B-2	Sample No.	S1-9
Depth:	28.0-45.0	Lab No.	1789
Material Description:		Sample Date:	Unknown

Equipment Used

Balance ID:	B-47913	pH Meter ID:	Z-72510
Thermometer ID:	C-60041	Container ID:	K
ORP Meter ID:	Z-82817	ORP Probe ID:	Z-82818
ORP Calibration Value:	220 Mv	ORP Calibration Expiration Date:	Jul-23
Photometer ID:	Z-82819	Miller Box ID:	Z-82820

pH, ASTM D4972, Method A

Oxidation-Reduction Potential (ORP), ASTM G200

	Soil and Water Slurry	ORP Reading (Mv)	Temp. (°C)	Date/Time
Sample Mass (g)				
pH Reading				
Temp. (°C)				

Soil Resistivity, ASTM G57

Water-Soluble Sulfate Ion, AASHTO T-290

Miller Box Readings ($\Omega \times \text{cm}$)		Sample Mass (g)	100.20
		Average Photometer Reading (mg/kg moisture free)	58

Water Soluble Chloride Ion, AASHTO T-291

Notes:

Sample Mass (g)	100.2	According to AASHTO T-290 (Section 7.1) and T-291 (Section 7.1), samples may be oven dried at 140°F. However, due to the insufficient amount of material, these samples were oven dried at 230°F.
Meter Reading (mg/kg)	254.3	

Services:

Terracon Rep: Kalyn Abrams

Reported To:

Contractor:

Report Distribution

(1) Quest Engineering, Reza Javidan

Reviewed By: _____

Stewart Abrams
 Senior Geologist

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LABORATORY SERVICES REPORT

Report Number: N1211591.0007
 Service Date: 05/16/22
 Report Date: 05/16/22
 Task:



611 Lunken Park Dr
 Cincinnati, OH 45226-1813
 513-321-5816

Client

Quest Engineering
 Attn: Reza Javidan
 2737 NW 19th St
 Pompano Beach, FL 33069-5232

Project

Las Olas Blvd Geotechnical Lab Testing
 2737 NW 19TH ST
 Pompano Beach, FL 33069-5232

Project No. N1211591

Laboratory Chemical Analysis

Sample Information

Boring:	B-2	Sample No.	S1-3
Depth:	6.0-8.0	Lab No.	1790
Material Description:		Sample Date:	Unknown

Equipment Used

Balance ID:	B-47913	pH Meter ID:	Z-72510
Thermometer ID:	C-60041	Container ID:	V
ORP Meter ID:	Z-82817	ORP Probe ID:	Z-82818
ORP Calibration Value:	220 Mv	ORP Calibration Expiration Date:	Jul-23
Photometer ID:	Z-82819	Miller Box ID:	Z-82820

pH, ASTM D4972, Method A

Oxidation-Reduction Potential (ORP), ASTM G200

	Soil and Water Slurry	ORP Reading (Mv)	Temp. (°C)	Date/Time
Sample Mass (g)				
pH Reading				
Temp. (°C)				

Soil Resistivity, ASTM G57

Water-Soluble Sulfate Ion, AASHTO T-290

Miller Box Readings ($\Omega \times \text{cm}$)	Sample Mass (g)	Average Photometer Reading (mg/kg moisture free)
	100.00	
		105

Water Soluble Chloride Ion, AASHTO T-291

Notes:

Sample Mass (g)		According to AASHTO T-290 (Section 7.1), samples may be oven dried at 140°F. However, due to the insufficient amount of material, these samples were oven dried at 230°F.
Meter Reading (mg/kg)		

Services:

Terracon Rep: Kalyn Abrams

Reported To:

Contractor:

Report Distribution

(1) Quest Engineering, Reza Javidan

Reviewed By: _____

Stewart Abrams
 Senior Geologist

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LABORATORY SERVICES REPORT

Report Number: N1211591.0007
 Service Date: 05/16/22
 Report Date: 05/16/22
 Task:



611 Lunken Park Dr
 Cincinnati, OH 45226-1813
 513-321-5816

Client

Quest Engineering
 Attn: Reza Javidan
 2737 NW 19th St
 Pompano Beach, FL 33069-5232

Project

Las Olas Blvd Geotechnical Lab Testing
 2737 NW 19TH ST
 Pompano Beach, FL 33069-5232

Project No. N1211591

Laboratory Chemical Analysis

Sample Information

Boring:	B-3	Sample No.	S3-17 & 18
Depth:	65.0-70.0/73.0-75.0	Lab No.	1793
Material Description:		Sample Date:	Unknown

Equipment Used

Balance ID:	B-47913	pH Meter ID:	Z-72510
Thermometer ID:	C-60041	Container ID:	M
ORP Meter ID:	Z-82817	ORP Probe ID:	Z-82818
ORP Calibration Value:	220 Mv	ORP Calibration Expiration Date:	Jul-23
Photometer ID:	Z-82819	Miller Box ID:	Z-82820

pH, ASTM D4972, Method A

Oxidation-Reduction Potential (ORP), ASTM G200

	Soil and Water Slurry	ORP Reading (Mv)	Temp. (°C)	Date/Time
Sample Mass (g)				
pH Reading				
Temp. (°C)				

Soil Resistivity, ASTM G57

Water-Soluble Sulfate Ion, AASHTO T-290

Miller Box Readings ($\Omega \times \text{cm}$)		Sample Mass (g)	100.00
		Average Photometer Reading (mg/kg moisture free)	65

Water Soluble Chloride Ion, AASHTO T-291

Notes:

Sample Mass (g)	100	According to AASHTO T-290 (Section 7.1) and T-291 (Section 7.1), samples may be oven dried at 140°F. However, due to the insufficient amount of material, these samples were oven dried at 230°F.
Meter Reading (mg/kg)	0.692	

Services:

Terracon Rep: Kalyn Abrams

Reported To:

Contractor:

Report Distribution

(1) Quest Engineering, Reza Javidan

Reviewed By: _____

Stewart Abrams
 Senior Geologist

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results presented herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

LABORATORY SERVICES REPORT

Report Number: N1211591.0007
Service Date: 05/16/22
Report Date: 05/16/22
Task:



611 Lunken Park Dr
Cincinnati, OH 45226-1813
513-321-5816

Client

Quest Engineering
Attn: Reza Javidan
2737 NW 19th St
Pompano Beach, FL 33069-5232

Project

Las Olas Blvd Geotechnical Lab Testing
2737 NW 19TH ST
Pompano Beach, FL 33069-5232

Project No. N1211591

Laboratory Chemical Analysis

Sample Information

Boring:	B-3	Sample No.	S3-6
Depth:	13.0-15.0	Lab No.	1792
Material Description:		Sample Date:	Unknown

Equipment Used

Balance ID:	B-47913	pH Meter ID:	Z-72510
Thermometer ID:	C-60041	Container ID:	V
ORP Meter ID:	Z-82817	ORP Probe ID:	Z-82818
ORP Calibration Value:	220 Mv	ORP Calibration Expiration Date:	Jul-23
Photometer ID:	Z-82819	Miller Box ID:	Z-82820

pH, ASTM D4972, Method A

Oxidation-Reduction Potential (ORP), ASTM G200

	Soil and Water Slurry	ORP Reading (Mv)	Temp. (°C)	Date/Time
Sample Mass (g)				
pH Reading				
Temp. (°C)				

Soil Resistivity, ASTM G57

Water-Soluble Sulfate Ion, AASHTO T-290

Miller Box Readings ($\Omega \times \text{cm}$)		Sample Mass (g)	100.01
		Average Photometer Reading (mg/kg moisture free)	64

Water Soluble Chloride Ion, AASHTO T-291

Notes:

Sample Mass (g)	100	According to AASHTO T-290 (Section 7.1) and T-291 (Section 7.1), samples may be oven dried at 140°F. However, due to the insufficient amount of material, these samples were oven dried at 230°F.
Meter Reading (mg/kg)	1.004	

Services:

Terracon Rep: Kalyn Abrams

Reported To:

Contractor:

Report Distribution

(1) Quest Engineering, Reza Javidan

Reviewed By: _____

Stewart Abrams
Senior Geologist

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LABORATORY SERVICES REPORT

Report Number: N1211591.0007
 Service Date: 05/16/22
 Report Date: 05/16/22
 Task:



611 Lunken Park Dr
 Cincinnati, OH 45226-1813
 513-321-5816

Client

Quest Engineering
 Attn: Reza Javidan
 2737 NW 19th St
 Pompano Beach, FL 33069-5232

Project

Las Olas Blvd Geotechnical Lab Testing
 2737 NW 19TH ST
 Pompano Beach, FL 33069-5232

Project No. N1211591

Laboratory Chemical Analysis

Sample Information

Boring:	B-4	Sample No.	S4-18
Depth:	73.0-75.0	Lab No.	1796
Material Description:		Sample Date:	Unknown

Equipment Used

Balance ID:	B-47913	pH Meter ID:	Z-72510
Thermometer ID:	C-60041	Container ID:	J
ORP Meter ID:	Z-82817	ORP Probe ID:	Z-82818
ORP Calibration Value:	220 Mv	ORP Calibration Expiration Date:	Jul-23
Photometer ID:	Z-82819	Miller Box ID:	Z-82820

pH, ASTM D4972, Method A

Oxidation-Reduction Potential (ORP), ASTM G200

	Soil and Water Slurry	ORP Reading (Mv)	Temp. (°C)	Date/Time
Sample Mass (g)				
pH Reading				
Temp. (°C)				

Soil Resistivity, ASTM G57

Water-Soluble Sulfate Ion, AASHTO T-290

Miller Box Readings ($\Omega \times \text{cm}$)		Sample Mass (g)	100.30
		Average Photometer Reading (mg/kg moisture free)	36

Water Soluble Chloride Ion, AASHTO T-291

Notes:

Sample Mass (g)	100.3	According to AASHTO T-290 (Section 7.1) and T-291 (Section 7.1), samples may be oven dried at 140°F. However, due to the insufficient amount of material, these samples were oven dried at 230°F.
Meter Reading (mg/kg)	0.3	

Services:

Terracon Rep: Kalyn Abrams

Reported To:

Contractor:

Report Distribution

(1) Quest Engineering, Reza Javidan

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Stewart Abrams
 Senior Geologist

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 513-321-5816

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 2737 NW 19th St
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Project

Las Olas Blvd Geotechnical Lab Testing
 2737 NW 19TH ST
 Pompano Beach, FL 33069-5232

Project No. N1211591

Laboratory Chemical Analysis				
Sample Information				
Boring:	B-4		Sample No.	S4-19
Depth:	78.0-80.0		Lab No.	1797
Material Description:			Sample Date:	Unknown
Equipment Used				
Balance ID:	B-47913	pH Meter ID:	Z-72510	
Thermometer ID:	C-60041	Container ID:	O	
ORP Meter ID:	Z-82817	ORP Probe ID:	Z-82818	
ORP Calibration Value:	220 Mv	ORP Calibration Expiration Date:	Jul-23	
Photometer ID:	Z-82819	Miller Box ID:	Z-82820	
pH, ASTM D4972, Method A			Oxidation-Reduction Potential (ORP), ASTM G200	
	Soil and Water Slurry		ORP Reading (Mv)	Temp. (°C)
Sample Mass (g)				Date/Time
pH Reading				
Temp. (°C)				
Soil Resistivity, ASTM G57			Water-Soluble Sulfate Ion, AASHTO T-290	
Miller Box Readings (Ω x cm)			Sample Mass (g)	100.30
			Average Photometer Reading (mg/kg moisture free)	20
Water Soluble Chloride Ion, AASHTO T-291			Notes:	
Sample Mass (g)	100.3		According to AASHTO T-290 (Section 7.1) and T-291 (Section 7.1), samples may be oven dried at 140°F. However, due to the insufficient amount of material, these samples were oven dried at 230°F.	
Meter Reading (mg/kg)	0.258			

Services:

Terracon Rep: Kalyn Abrams

Reported To:

Contractor:

Report Distribution

(1) Quest Engineering, Reza Javidan

Reviewed By: _____

Stewart Abrams
 Senior Geologist

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 Task:



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 Cincinnati, OH 45226-1813
 513-321-5816

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Quest Engineering
 Attn: Reza Javidan
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Project

Las Olas Blvd Geotechnical Lab Testing
 2737 NW 19TH ST
 Pompano Beach, FL 33069-5232

Project No. N1211591

Laboratory Chemical Analysis				
Sample Information				
Boring:	B-4		Sample No.	S4-23
Depth:	93.0-95.0		Lab No.	1799
Material Description:			Sample Date:	Unknown
Equipment Used				
Balance ID:	B-47913	pH Meter ID:	Z-72510	
Thermometer ID:	C-60041	Container ID:	J	
ORP Meter ID:	Z-82817	ORP Probe ID:	Z-82818	
ORP Calibration Value:	220 Mv	ORP Calibration Expiration Date:	Jul-23	
Photometer ID:	Z-82819	Miller Box ID:	Z-82820	
pH, ASTM D4972, Method A			Oxidation-Reduction Potential (ORP), ASTM G200	
	Soil and Water Slurry		ORP Reading (Mv)	Temp. (°C)
Sample Mass (g)				Date/Time
pH Reading				
Temp. (°C)				
Soil Resistivity, ASTM G57			Water-Soluble Sulfate Ion, AASHTO T-290	
Miller Box Readings (Ω x cm)			Sample Mass (g)	100.15
			Average Photometer Reading (mg/kg moisture free)	35
Water Soluble Chloride Ion, AASHTO T-291			Notes:	
Sample Mass (g)			According to AASHTO T-290 (Section 7.1), samples may be oven dried at 140°F. However, due to the insufficient amount of material, these samples were oven dried at 230°F.	
Meter Reading (mg/kg)				

Services:

Terracon Rep: Kalyn Abrams

Reported To:

Contractor:

Report Distribution

(1) Quest Engineering, Reza Javidan

Reviewed By: _____

Stewart Abrams
 Senior Geologist

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611 Lunken Park Dr
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Project

Las Olas Blvd Geotechnical Lab Testing
 2737 NW 19TH ST
 Pompano Beach, FL 33069-5232

Project No. N1211591

Laboratory Chemical Analysis				
Sample Information				
Boring:	B-5		Sample No.	S4-9
Depth:	28.0-30.0		Lab No.	1801
Material Description:			Sample Date:	Unknown
Equipment Used				
Balance ID:	B-47913	pH Meter ID:	Z-72510	
Thermometer ID:	C-60041	Container ID:	E	
ORP Meter ID:	Z-82817	ORP Probe ID:	Z-82818	
ORP Calibration Value:	220 Mv	ORP Calibration Expiration Date:	Jul-23	
Photometer ID:	Z-82819	Miller Box ID:	Z-82820	
pH, ASTM D4972, Method A		Oxidation-Reduction Potential (ORP), ASTM G200		
	Soil and Water Slurry	ORP Reading (Mv)	Temp. (°C)	Date/Time
Sample Mass (g)				
pH Reading				
Temp. (°C)				
Soil Resistivity, ASTM G57		Water-Soluble Sulfate Ion, AASHTO T-290		
Miller Box Readings (Ω x cm)		Sample Mass (g)	100.00	
		Average Photometer Reading (mg/kg moisture free)	59	
Water Soluble Chloride Ion, AASHTO T-291		Notes:		
Sample Mass (g)	100	According to AASHTO T-290 (Section 7.1) and T-291 (Section 7.1), samples may be oven dried at 140°F. However, due to the insufficient amount of material, these samples were oven dried at 230°F.		
Meter Reading (mg/kg)	0.264			

Services:

Terracon Rep: Kalyn Abrams

Reported To:

Contractor:

Report Distribution

(1) Quest Engineering, Reza Javidan

Reviewed By: _____

Stewart Abrams
 Senior Geologist

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 513-321-5816

Client

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 2737 NW 19th St
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Project

Las Olas Blvd Geotechnical Lab Testing
 2737 NW 19TH ST
 Pompano Beach, FL 33069-5232

Project No. N1211591

Laboratory Chemical Analysis

Sample Information

Boring:	B-5	Sample No.	S5-11 & 12
Depth:	38.0-48.0	Lab No.	1802
Material Description:		Sample Date:	Unknown

Equipment Used

Balance ID:	B-47913	pH Meter ID:	Z-72510
Thermometer ID:	C-60041	Container ID:	M
ORP Meter ID:	Z-82817	ORP Probe ID:	Z-82818
ORP Calibration Value:	220 Mv	ORP Calibration Expiration Date:	Jul-23
Photometer ID:	Z-82819	Miller Box ID:	Z-82820

pH, ASTM D4972, Method A

Oxidation-Reduction Potential (ORP), ASTM G200

	Soil and Water Slurry	ORP Reading (Mv)	Temp. (°C)	Date/Time
Sample Mass (g)				
pH Reading				
Temp. (°C)				

Soil Resistivity, ASTM G57

Water-Soluble Sulfate Ion, AASHTO T-290

Miller Box Readings ($\Omega \times \text{cm}$)		Sample Mass (g)	100.00
		Average Photometer Reading (mg/kg moisture free)	126

Water Soluble Chloride Ion, AASHTO T-291

Notes:

Sample Mass (g)	100	According to AASHTO T-290 (Section 7.1) and T-291 (Section 7.1), samples may be oven dried at 140°F. However, due to the insufficient amount of material, these samples were oven dried at 230°F.
Meter Reading (mg/kg)	0.288	

Services:

Terracon Rep: Kalyn Abrams

Reported To:

Contractor:

Report Distribution

(1) Quest Engineering, Reza Javidan

Reviewed By:

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 Senior Geologist

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LABORATORY SERVICES REPORT

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Task:



611 Lunken Park Dr
Cincinnati, OH 45226-1813
513-321-5816

Client

Quest Engineering
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2737 NW 19th St
Pompano Beach, FL 33069-5232

Project

Las Olas Blvd Geotechnical Lab Testing
2737 NW 19TH ST
Pompano Beach, FL 33069-5232

Project No. N1211591

Laboratory Chemical Analysis

Sample Information

Boring:	B-5	Sample No.	S5-13
Depth:	38.0-48.0	Lab No.	1804
Material Description:		Sample Date:	Unknown

Equipment Used

Balance ID:	B-47913	pH Meter ID:	Z-72510
Thermometer ID:	C-60041	Container ID:	A
ORP Meter ID:	Z-82817	ORP Probe ID:	Z-82818
ORP Calibration Value:	220 Mv	ORP Calibration Expiration Date:	Jul-23
Photometer ID:	Z-82819	Miller Box ID:	Z-82820

pH, ASTM D4972, Method A

Oxidation-Reduction Potential (ORP), ASTM G200

	Soil and Water Slurry	ORP Reading (Mv)	Temp. (°C)	Date/Time
Sample Mass (g)				
pH Reading				
Temp. (°C)				

Soil Resistivity, ASTM G57

Water-Soluble Sulfate Ion, AASHTO T-290

Miller Box Readings ($\Omega \times \text{cm}$)		Sample Mass (g)	100.00
		Average Photometer Reading (mg/kg moisture free)	19

Water Soluble Chloride Ion, AASHTO T-291

Notes:

Sample Mass (g)		According to AASHTO T-290 (Section 7.1), samples may be oven dried at 140°F. However, due to the insufficient amount of material, these samples were oven dried at 230°F.
Meter Reading (mg/kg)		

Services:

Terracon Rep: Kalyn Abrams

Reported To:

Contractor:

Report Distribution

(1) Quest Engineering, Reza Javidan

Reviewed By: _____

Stewart Abrams
Senior Geologist

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LABORATORY SERVICES REPORT

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Task:



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Cincinnati, OH 45226-1813
513-321-5816

Client

Quest Engineering
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Pompano Beach, FL 33069-5232

Project

Las Olas Blvd Geotechnical Lab Testing
2737 NW 19TH ST
Pompano Beach, FL 33069-5232

Project No. N1211591

Laboratory Chemical Analysis

Sample Information

Boring:	B-6	Sample No.	S6-19
Depth:	78.0-80.0	Lab No.	1806
Material Description:		Sample Date:	Unknown

Equipment Used

Balance ID:	B-47913	pH Meter ID:	Z-72510
Thermometer ID:	C-60041	Container ID:	G1
ORP Meter ID:	Z-82817	ORP Probe ID:	Z-82818
ORP Calibration Value:	220 Mv	ORP Calibration Expiration Date:	Jul-23
Photometer ID:	Z-82819	Miller Box ID:	Z-82820

pH, ASTM D4972, Method A

Oxidation-Reduction Potential (ORP), ASTM G200

	Soil and Water Slurry	ORP Reading (Mv)	Temp. (°C)	Date/Time
Sample Mass (g)				
pH Reading				
Temp. (°C)				

Soil Resistivity, ASTM G57

Water-Soluble Sulfate Ion, AASHTO T-290

Miller Box Readings ($\Omega \times \text{cm}$)		Sample Mass (g)	100.62
		Average Photometer Reading (mg/kg moisture free)	66

Water Soluble Chloride Ion, AASHTO T-291

Notes:

Sample Mass (g)		According to AASHTO T-290 (Section 7.1), samples may be oven dried at 140°F. However, due to the insufficient amount of material, these samples were oven dried at 230°F.
Meter Reading (mg/kg)		

Services:

Terracon Rep: Kalyn Abrams

Reported To:

Contractor:

Report Distribution

(1) Quest Engineering, Reza Javidan

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Senior Geologist

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Project

Las Olas Blvd Geotechnical Lab Testing
2737 NW 19TH ST
Pompano Beach, FL 33069-5232

Project No. N1211591

Laboratory Chemical Analysis

Sample Information

Boring:	B-7	Sample No.	S7-7 & 8
Depth:	18.0-25.0	Lab No.	1808
Material Description:		Sample Date:	Unknown

Equipment Used

Balance ID:	B-47913	pH Meter ID:	Z-72510
Thermometer ID:	C-60041	Container ID:	F1
ORP Meter ID:	Z-82817	ORP Probe ID:	Z-82818
ORP Calibration Value:	220 Mv	ORP Calibration Expiration Date:	Jul-23
Photometer ID:	Z-82819	Miller Box ID:	Z-82820

pH, ASTM D4972, Method A

Oxidation-Reduction Potential (ORP), ASTM G200

	Soil and Water Slurry	ORP Reading (Mv)	Temp. (°C)	Date/Time
Sample Mass (g)				
pH Reading				
Temp. (°C)				

Soil Resistivity, ASTM G57

Water-Soluble Sulfate Ion, AASHTO T-290

Miller Box Readings ($\Omega \times \text{cm}$)		Sample Mass (g)	100.30
		Average Photometer Reading (mg/kg moisture free)	15

Water Soluble Chloride Ion, AASHTO T-291

Notes:

Sample Mass (g)	100.3	According to AASHTO T-290 (Section 7.1) and T-291 (Section 7.1), samples may be oven dried at 140°F. However, due to the insufficient amount of material, these samples were oven dried at 230°F.
Meter Reading (mg/kg)	0.186	

Services:

Terracon Rep: Kalyn Abrams

Reported To:

Contractor:

Report Distribution

(1) Quest Engineering, Reza Javidan

Reviewed By: _____

Stewart Abrams
Senior Geologist

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Project

Las Olas Blvd Geotechnical Lab Testing
 2737 NW 19TH ST
 Pompano Beach, FL 33069-5232

Project No. N1211591

Laboratory Chemical Analysis

Sample Information

Boring:	B-7	Sample No.	S7-9
Depth:	Unknown	Lab No.	1810
Material Description:		Sample Date:	Unknown

Equipment Used

Balance ID:	B-47913	pH Meter ID:	Z-72510
Thermometer ID:	C-60041	Container ID:	C1
ORP Meter ID:	Z-82817	ORP Probe ID:	Z-82818
ORP Calibration Value:	220 Mv	ORP Calibration Expiration Date:	Jul-23
Photometer ID:	Z-82819	Miller Box ID:	Z-82820

pH, ASTM D4972, Method A

Oxidation-Reduction Potential (ORP), ASTM G200

	Soil and Water Slurry	ORP Reading (Mv)	Temp. (°C)	Date/Time
Sample Mass (g)				
pH Reading				
Temp. (°C)				

Soil Resistivity, ASTM G57

Water-Soluble Sulfate Ion, AASHTO T-290

Miller Box Readings ($\Omega \times \text{cm}$)		Sample Mass (g)	100.30
		Average Photometer Reading (mg/kg moisture free)	14

Water Soluble Chloride Ion, AASHTO T-291

Notes:

Sample Mass (g)		According to AASHTO T-290 (Section 7.1), samples may be oven dried at 140°F. However, due to the insufficient amount of material, these samples were oven dried at 230°F.
Meter Reading (mg/kg)		

Services:

Terracon Rep: Kalyn Abrams

Reported To:

Contractor:

Report Distribution

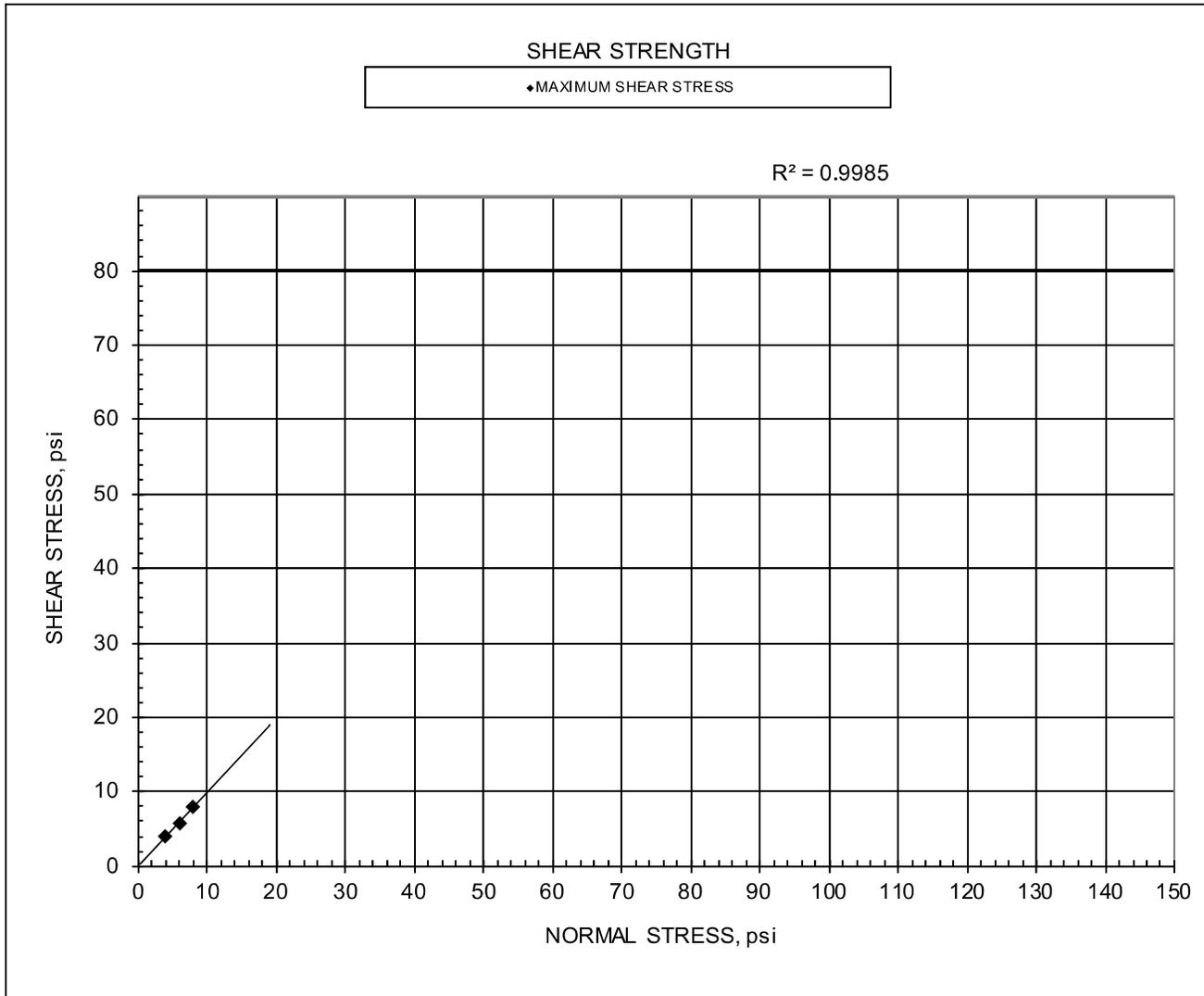
(1) Quest Engineering, Reza Javidan

Reviewed By: _____

Stewart Abrams
 Senior Geologist

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**DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS
ASTM D3080**



		FRICTION ANGLE		COHESION		NORMAL	NORMAL	NORMAL
AT MAXIMUM SHEAR STRESS		45.0	deg	0.0	psi	STRESS, psi	STRESS, psi	STRESS, psi
						4.00	6.00	8.00
INITIAL AREA, mm ²	3166.9	INITIAL MOISTURE, %				10.6	10.6	10.6
INITIAL LENGTH, mm	25.40	INITIAL DRY DENSITY, pcf				105.4	105.4	105.4
SPECIFIC GRAVITY	2.79	INITIAL SATURATION, %				45	45	45
SG TESTED		INITIAL VOID RATIO				0.65	0.65	0.65
SG ASSUMED	X	FINAL MOISTURE, %				20.0	20.8	20.1
LIQUID LIMIT		FINAL SATURATION, %				82	89	85
PLASTIC LIMIT		FINAL VOID RATIO				0.68	0.65	0.66
PLASTICITY INDEX		MAXIMUM SHEAR STRESS, psi				4.00	5.87	8.00
SAMPLE TYPE	RECOMPACTED	RATE OF LOADING, in/min				0.0100	0.0100	0.0100
DESCRIPTION	Sand w/shells							

PROJECT NAME: Geotechnical Lab Testing

BORING NO. B-1

LOCATION: 18.0-25.0

SAMPLE NO. S1-7 and S1-8

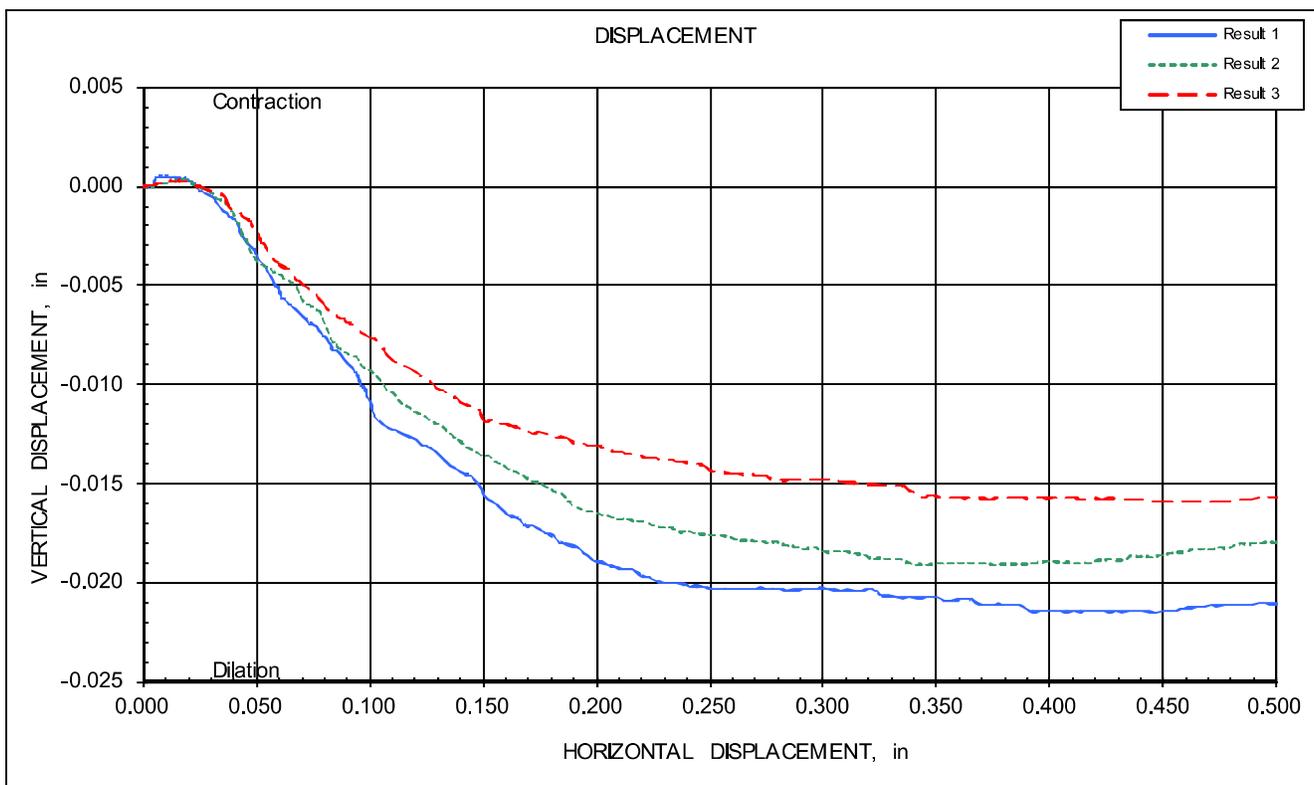
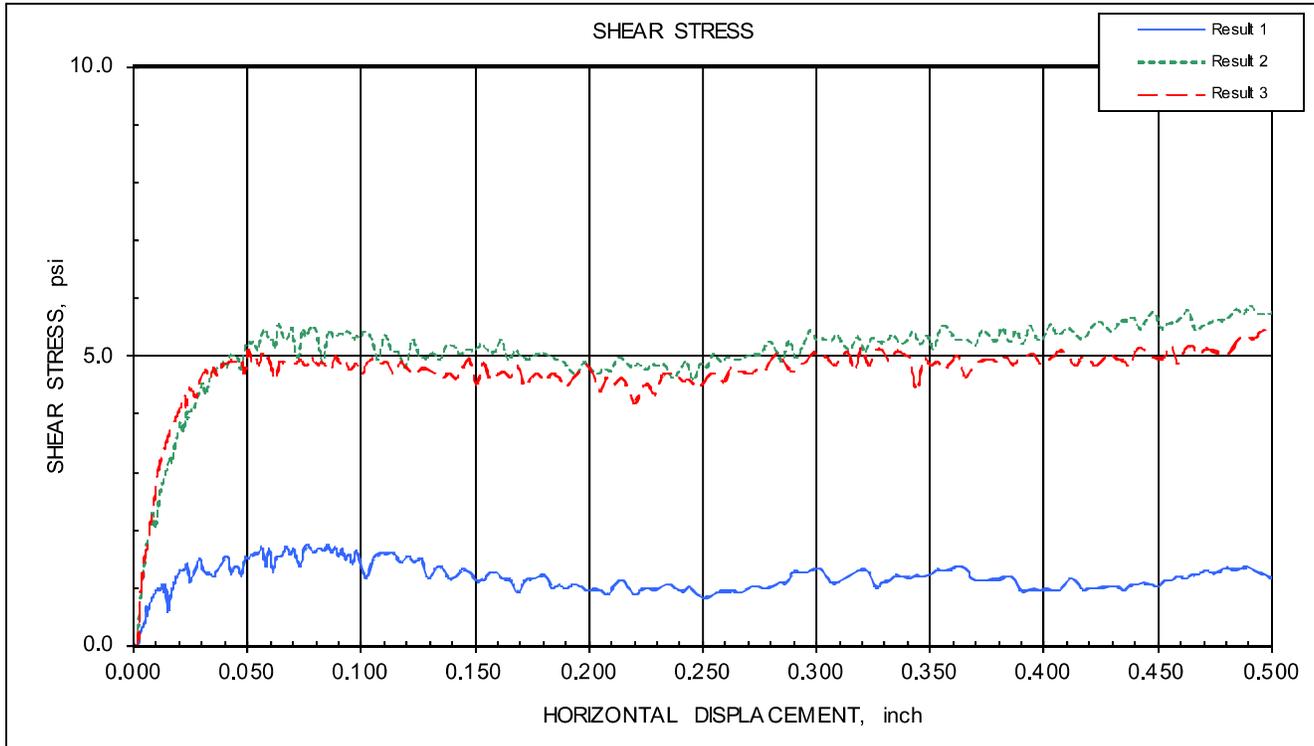
JOB NO.: N1211591

DEPTH, feet TO

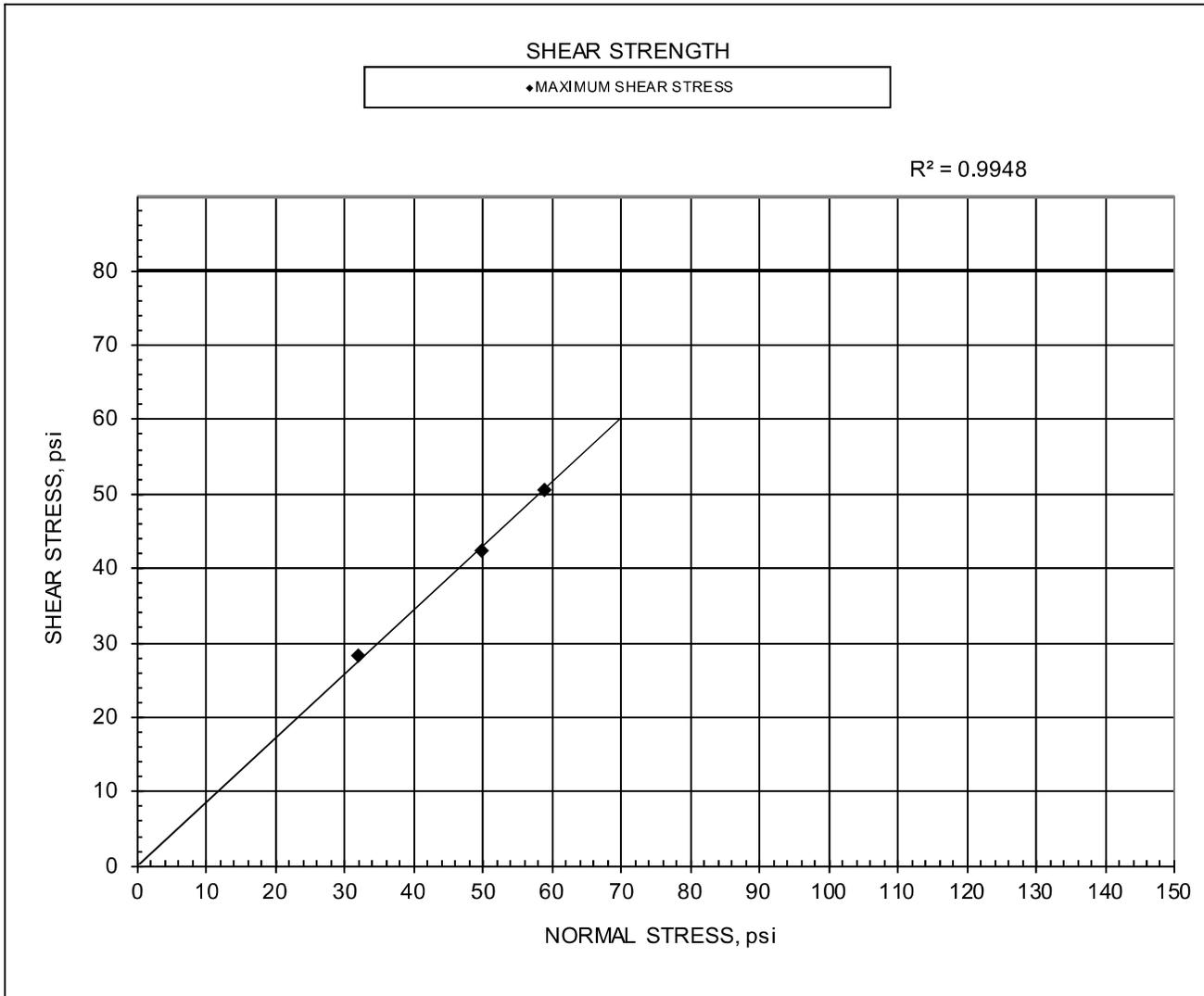
Geotechnical Lab Testing

N1211591
5/3/2022

BORING NO. S1-7 and S1-8
 SAMPLE NO. _____
 DEPTH, feet TO



**DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS
ASTM D3080**



		FRICITION ANGLE	COHESION	NORMAL STRESS, psi	NORMAL STRESS, psi	NORMAL STRESS, psi
AT MAXIMUM SHEAR STRESS		39.2 deg	0.0 psi	31.83	49.87	58.84
INITIAL AREA, mm ²	3166.9	INITIAL MOISTURE, %		10.3	10.3	10.3
INITIAL LENGTH, mm	25.40	INITIAL DRY DENSITY, pcf		105.7	105.7	105.7
SPECIFIC GRAVITY	2.79	INITIAL SATURATION, %		44	44	44
SG TESTED		INITIAL VOID RATIO		0.65	0.65	0.65
SG ASSUMED	X	FINAL MOISTURE, %		16.9	16.9	17.1
LIQUID LIMIT		FINAL SATURATION, %		76	81	83
PLASTIC LIMIT		FINAL VOID RATIO		0.62	0.58	0.57
PLASTICITY INDEX		MAXIMUM SHEAR STRESS, psi		28.39	42.37	50.58
SAMPLE TYPE	RECOMPACTED	RATE OF LOADING, in/min		0.0100	0.0100	0.0100
DESCRIPTION	Sand					

PROJECT NAME: Geotechnical Lab Testing

BORING NO. B-2

LOCATION: 28.0-45.0

SAMPLE NO. S1-9

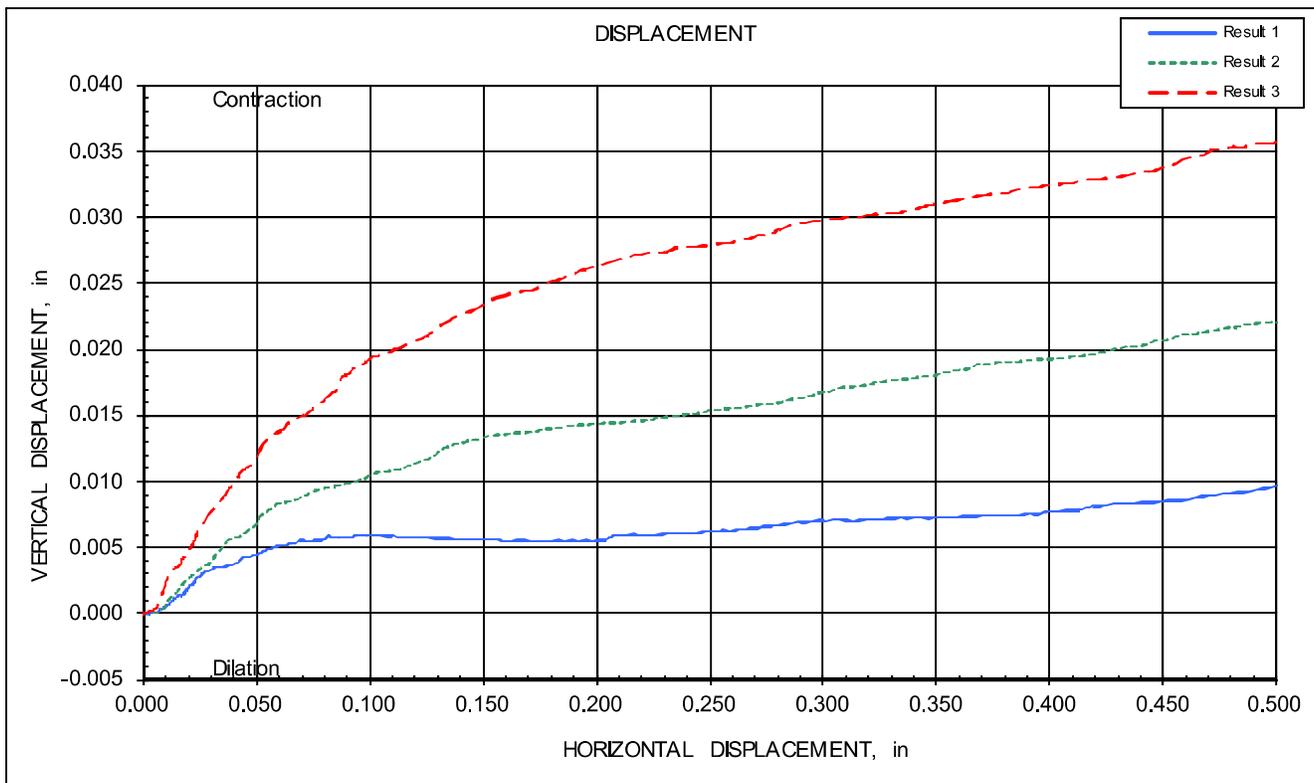
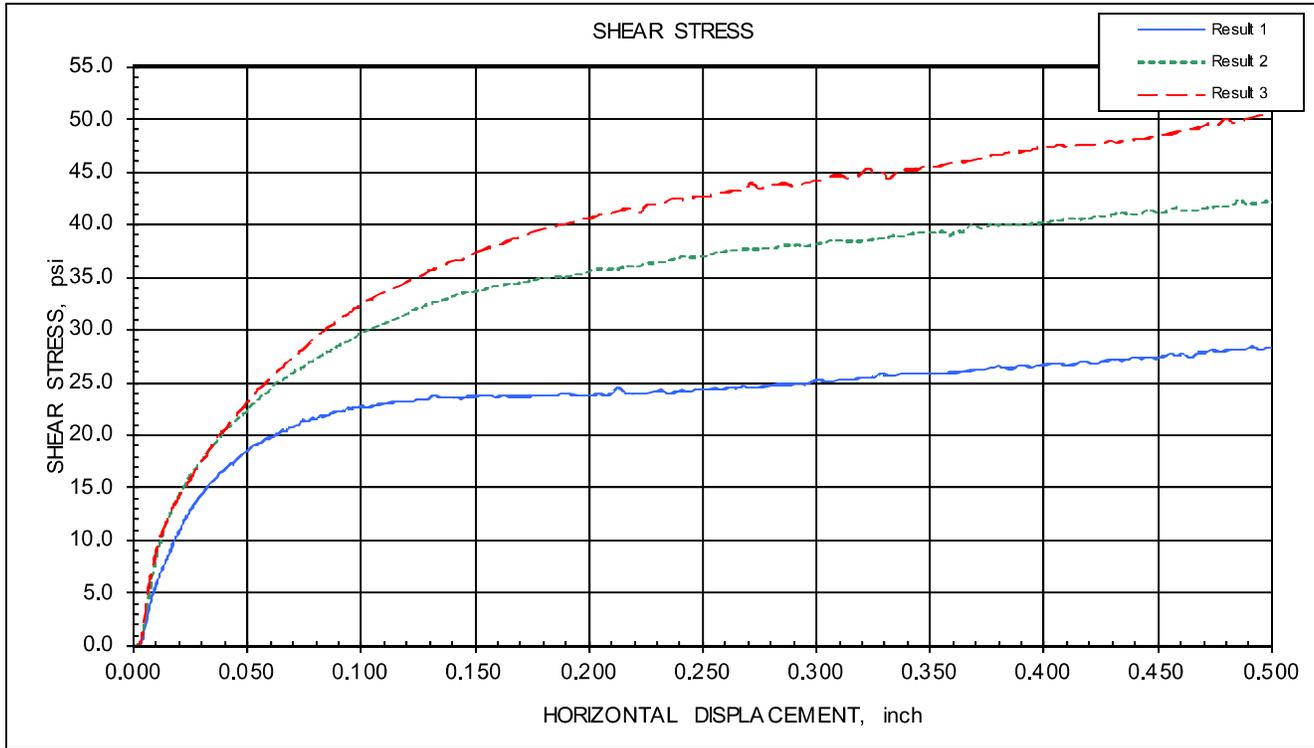
JOB NO.: N1211591

DEPTH, feet TO

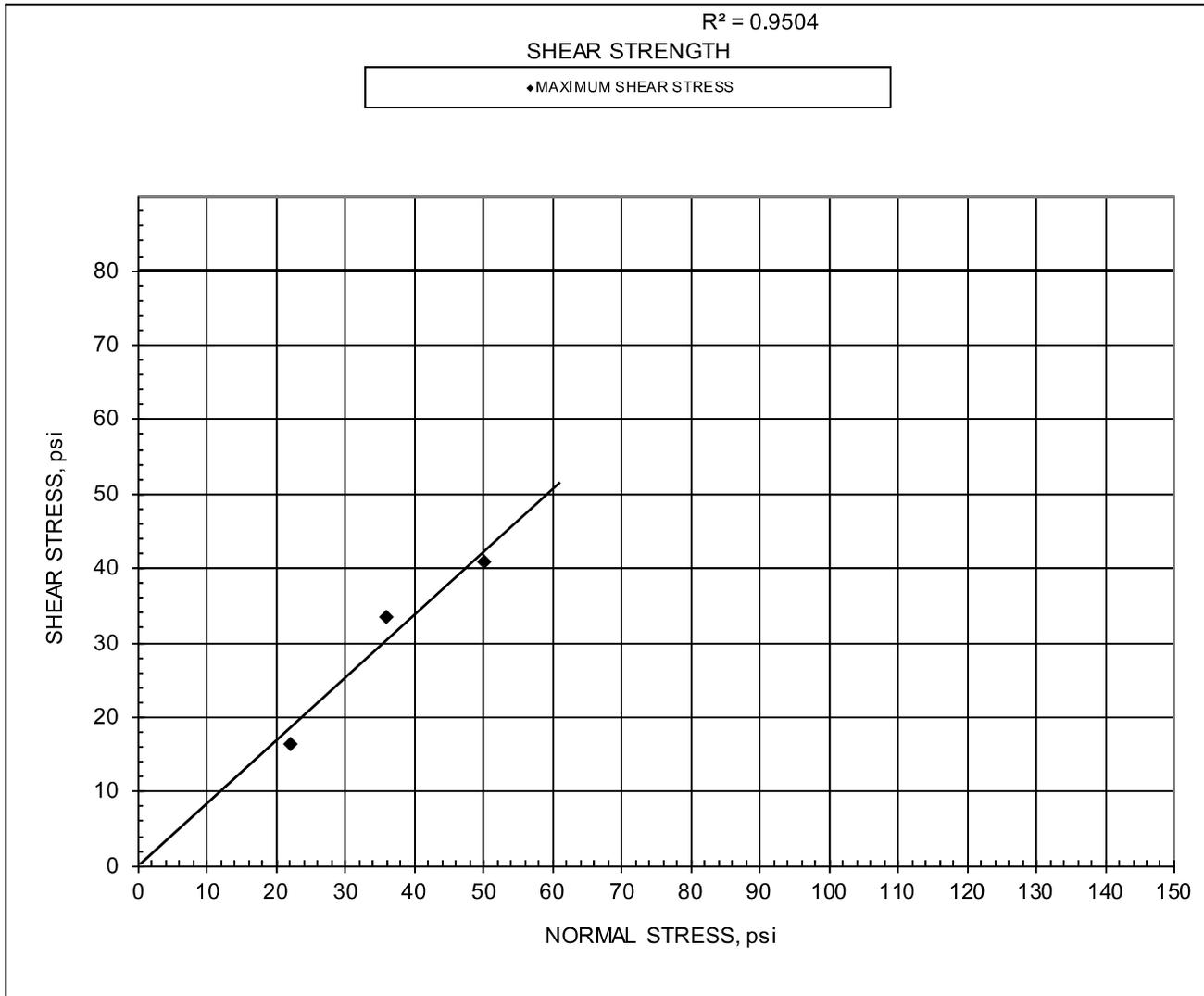
Geotechnical Lab Testing

N1211591
5/3/2022

BORING NO. B-2
 SAMPLE NO. S1-9
 DEPTH, feet 28.0-45.0



**DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS
ASTM D3080**



		FRICTION ANGLE		COHESION		NORMAL	NORMAL	NORMAL
AT MAXIMUM SHEAR STRESS		41.3	deg	0.0	psi	STRESS, psi	STRESS, psi	STRESS, psi
						21.99	35.98	49.98
INITIAL AREA, mm ²	3166.9	INITIAL MOISTURE, %				10.3	10.3	10.3
INITIAL LENGTH, mm	25.40	INITIAL DRY DENSITY, pcf				105.7	105.7	105.7
SPECIFIC GRAVITY	2.79	INITIAL SATURATION, %				44	44	44
SG TESTED		INITIAL VOID RATIO				0.65	0.65	0.65
SG ASSUMED	X	FINAL MOISTURE, %				24.9	22.0	22.4
LIQUID LIMIT		FINAL SATURATION, %				105	98	98
PLASTIC LIMIT		FINAL VOID RATIO				0.66	0.63	0.63
PLASTICITY INDEX		MAXIMUM SHEAR STRESS, psi				16.40	33.47	40.97
SAMPLE TYPE	RECOMPACTED	RATE OF LOADING, in/min				0.0100	0.0100	0.0100
DESCRIPTION	Sand w/Limestone							

PROJECT NAME: Geotechnical Lab Testing

BORING NO. B-3

LOCATION: 13.0-15.0

SAMPLE NO. S3-6

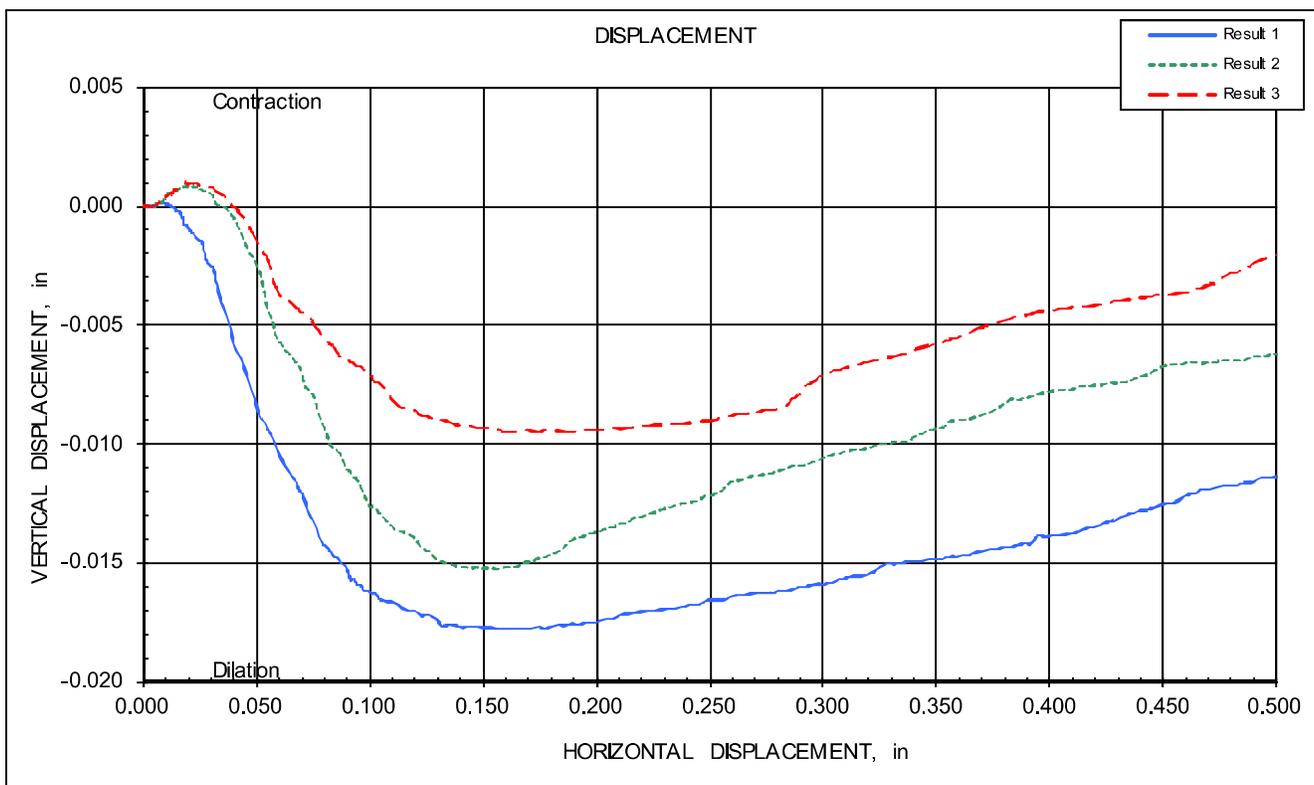
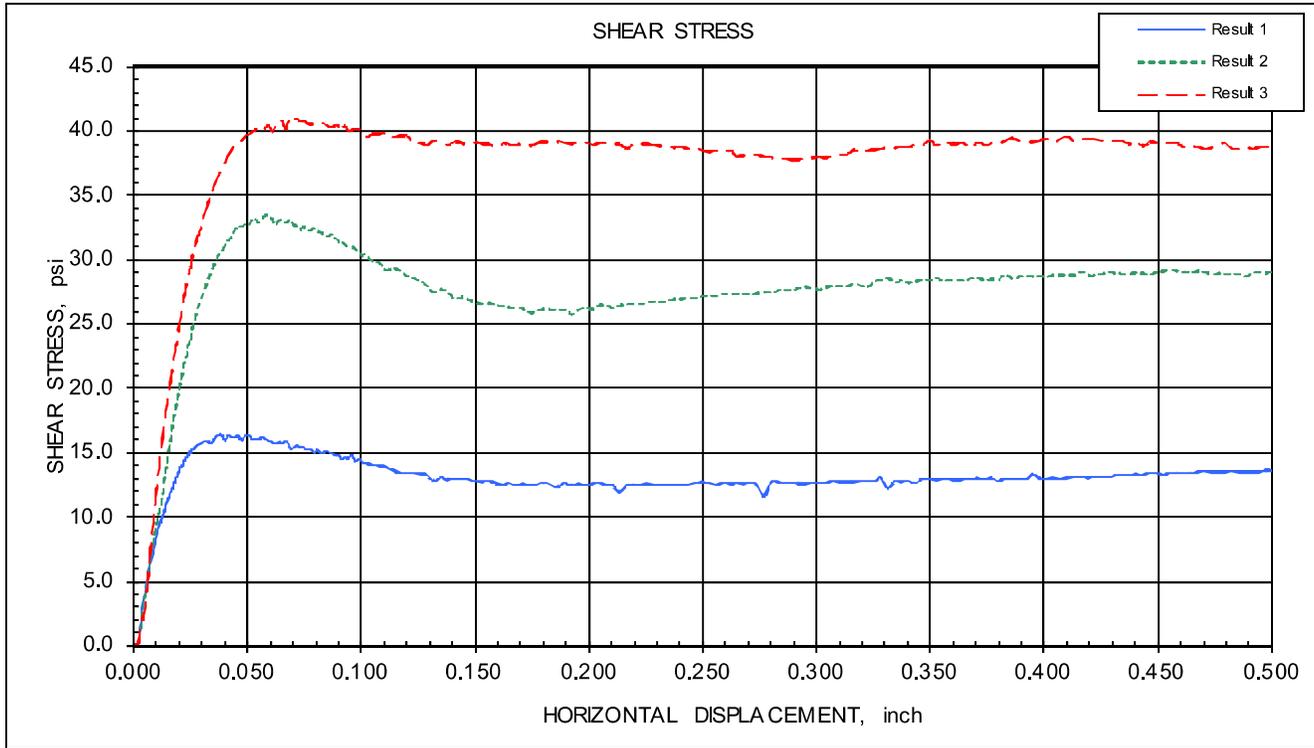
JOB NO.: N1211591

DEPTH, feet TO

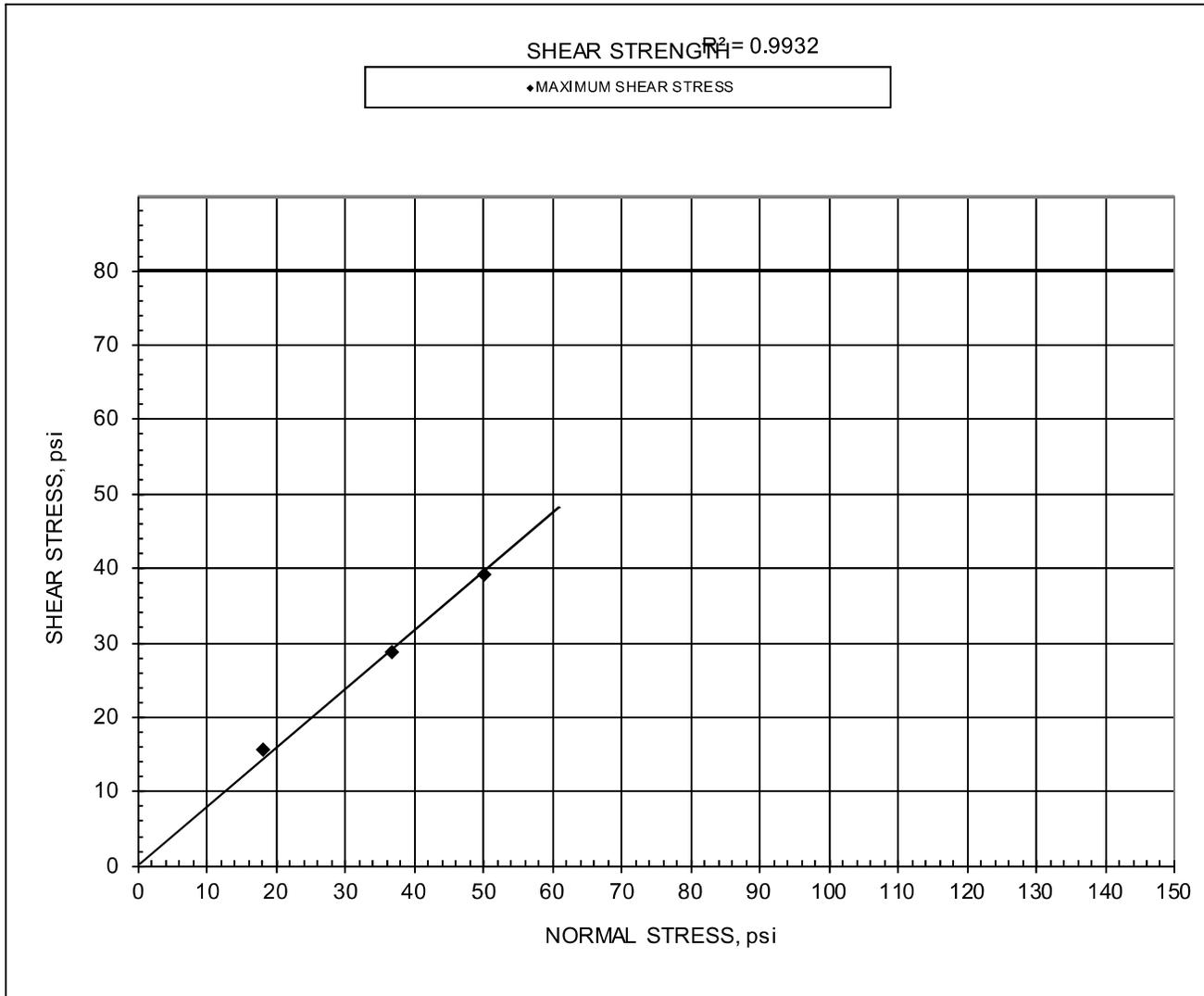
Geotechnical Lab Testing

N1211591
5/3/2022

BORING NO. B-3
 SAMPLE NO. S3-6
 DEPTH, feet 13.0-15.0



**DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS
ASTM D3080**



		FRICTION ANGLE		COHESION		NORMAL	NORMAL	NORMAL
AT MAXIMUM SHEAR STRESS		36.3	deg	0.0	psi	STRESS, psi	STRESS, psi	STRESS, psi
						18.00	36.83	50.00
INITIAL AREA, mm ²	3166.9	INITIAL MOISTURE, %				10.7	10.7	10.7
INITIAL LENGTH, mm	25.40	INITIAL DRY DENSITY, pcf				105.4	105.4	105.4
SPECIFIC GRAVITY	2.79	INITIAL SATURATION, %				46	46	46
SG TESTED		INITIAL VOID RATIO				0.65	0.65	0.65
SG ASSUMED	X	FINAL MOISTURE, %				18.3	18.6	18.9
LIQUID LIMIT		FINAL SATURATION, %				79	84	85
PLASTIC LIMIT		FINAL VOID RATIO				0.65	0.62	0.62
PLASTICITY INDEX		MAXIMUM SHEAR STRESS, psi				15.54	28.88	39.13
SAMPLE TYPE	RECOMPACTED	RATE OF LOADING, in/min				0.0100	0.0100	0.0100
DESCRIPTION	Sand							

PROJECT NAME: Geotechnical Lab Testing

BORING NO. B3

LOCATION: 65.0-75.0

SAMPLE NO. S3-17 and S3-18

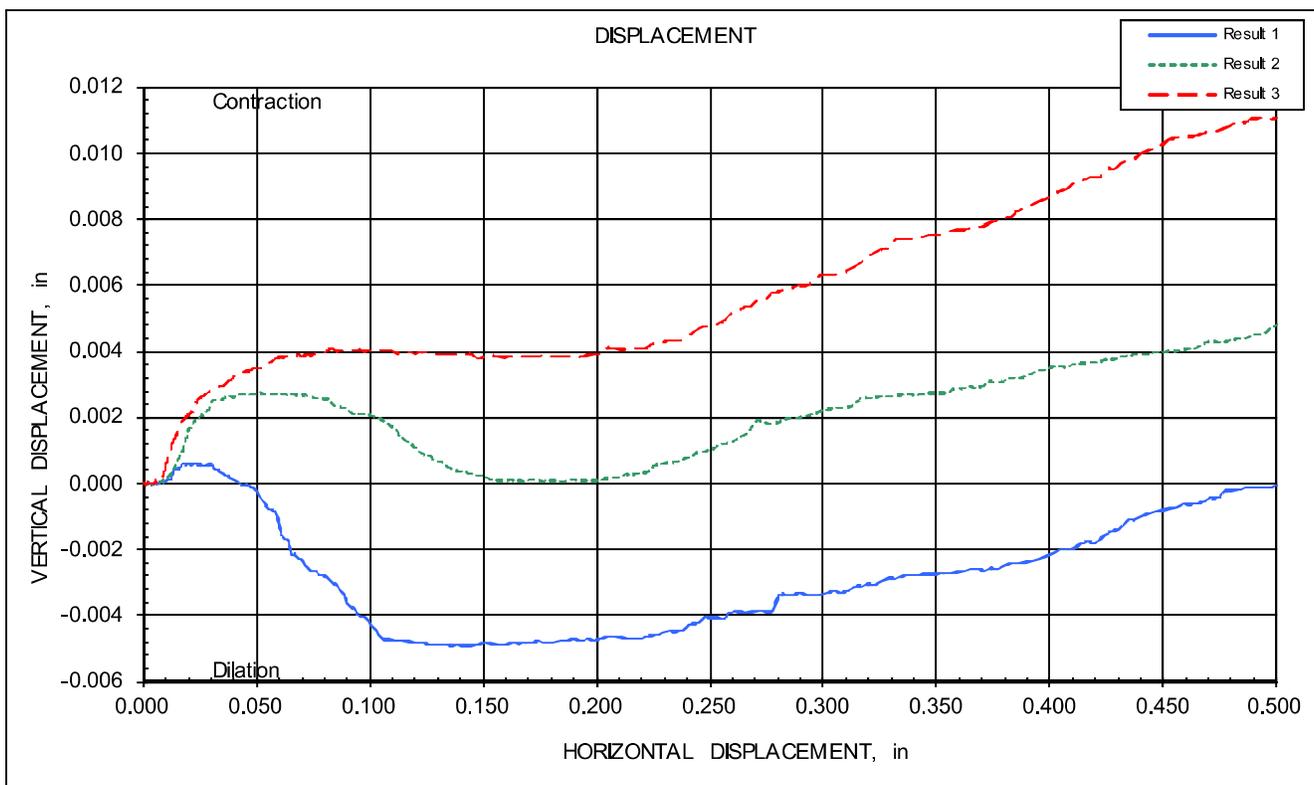
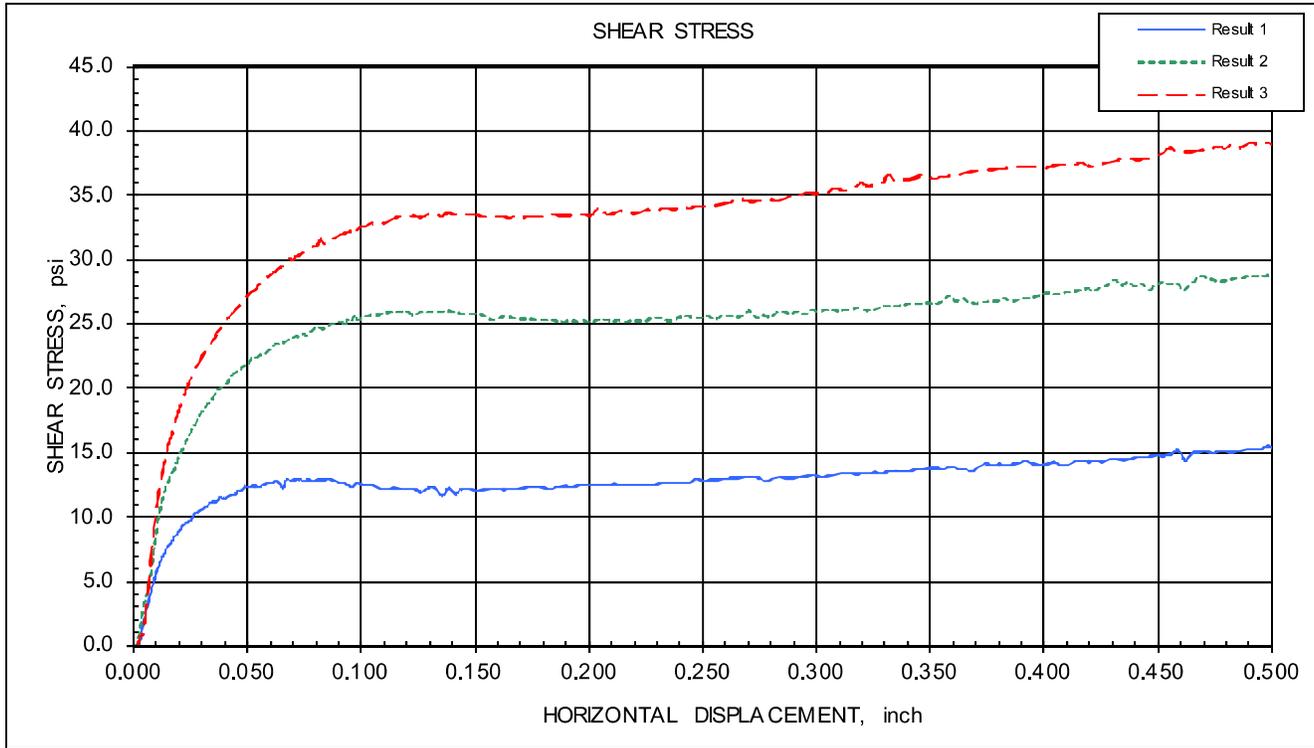
JOB NO.: N1211591

DEPTH, feet TO

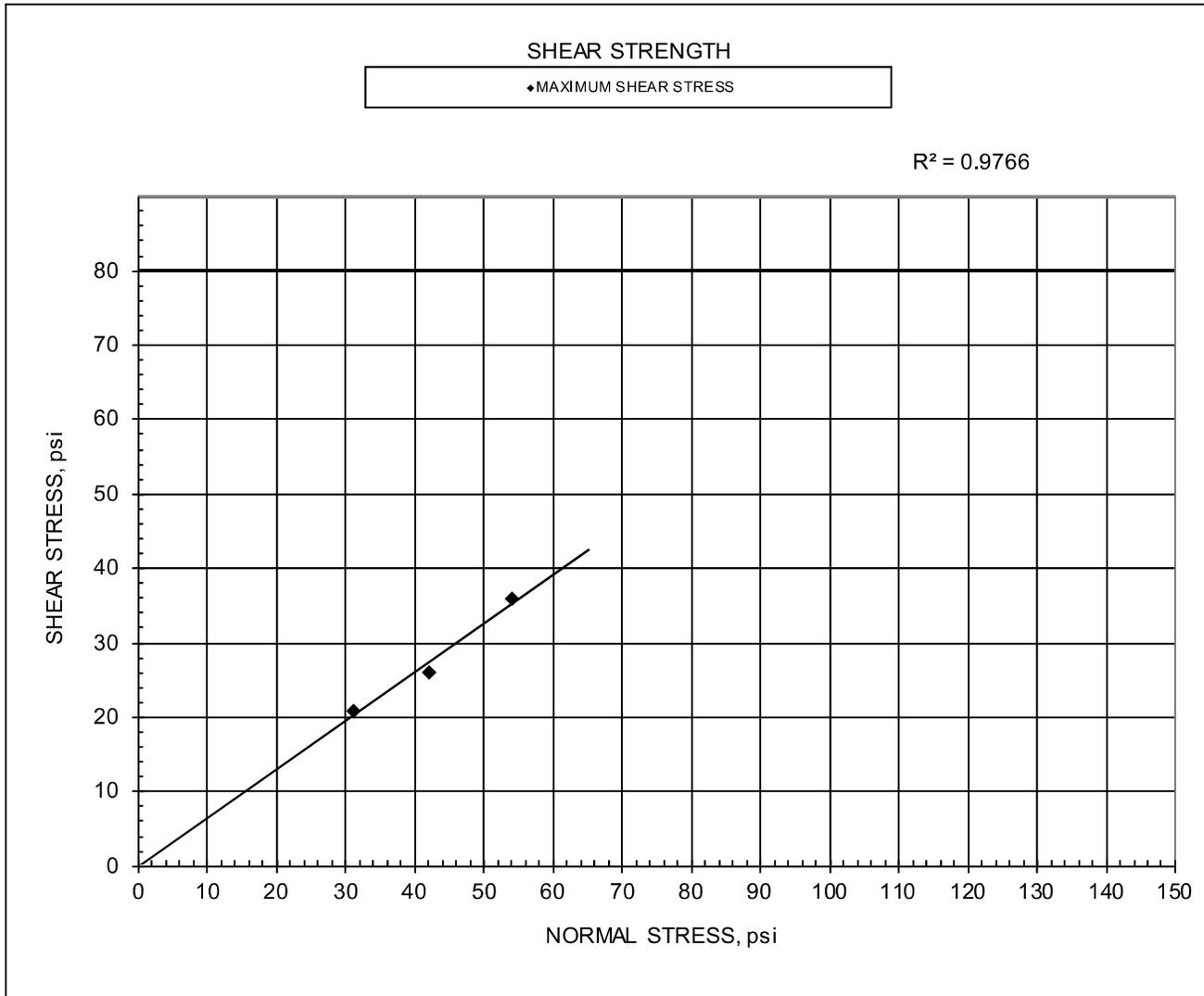
Geotechnical Lab Testing

N1211591
5/4/2022

BORING NO. B3
 SAMPLE NO. S3-17 and S3-18
 DEPTH, feet 65.0-75.0



**DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS
ASTM D3080**



		FRICITION ANGLE	COHESION	NORMAL STRESS, psi	NORMAL STRESS, psi	NORMAL STRESS, psi
AT MAXIMUM SHEAR STRESS		33.5 deg	0.0 psi			
				31.08	41.98	54.09
INITIAL AREA, mm ²	3166.9	INITIAL MOISTURE, %		10.2	10.2	10.2
INITIAL LENGTH, mm	25.40	INITIAL DRY DENSITY, pcf		105.9	105.9	105.9
SPECIFIC GRAVITY	2.79	INITIAL SATURATION, %		44	44	44
SG TESTED		INITIAL VOID RATIO		0.64	0.64	0.64
SG ASSUMED	X	FINAL MOISTURE, %		19.4	20.9	19.0
LIQUID LIMIT		FINAL SATURATION, %		83	93	83
PLASTIC LIMIT		FINAL VOID RATIO		0.65	0.63	0.64
PLASTICITY INDEX		MAXIMUM SHEAR STRESS, psi		20.93	26.06	36.07
SAMPLE TYPE	RECOMPACTED	RATE OF LOADING, in/min		0.0100	0.0100	0.0100
DESCRIPTION	Sand W/Limestone					

PROJECT NAME: Geotechnical Lab Testing

BORING NO. B4

LOCATION: 73.0-75.0

SAMPLE NO. S4-18

JOB NO.: N1211591

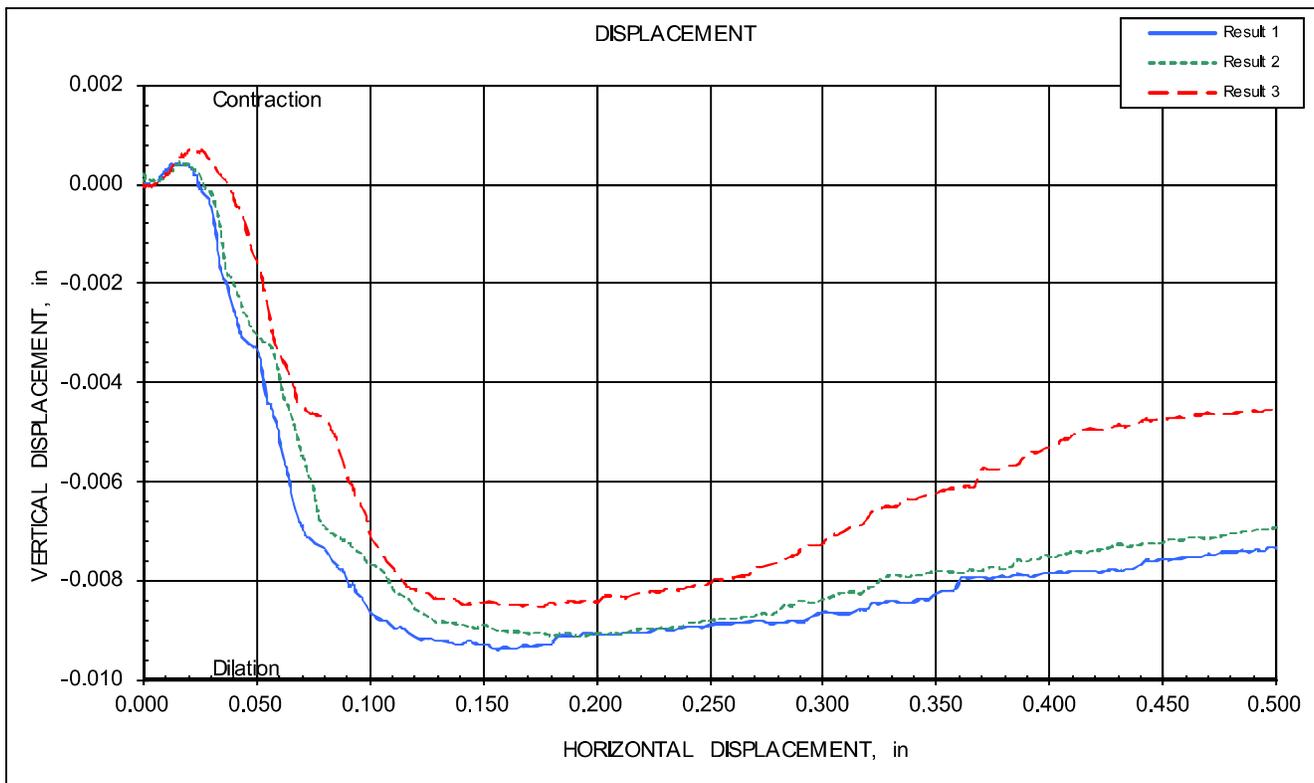
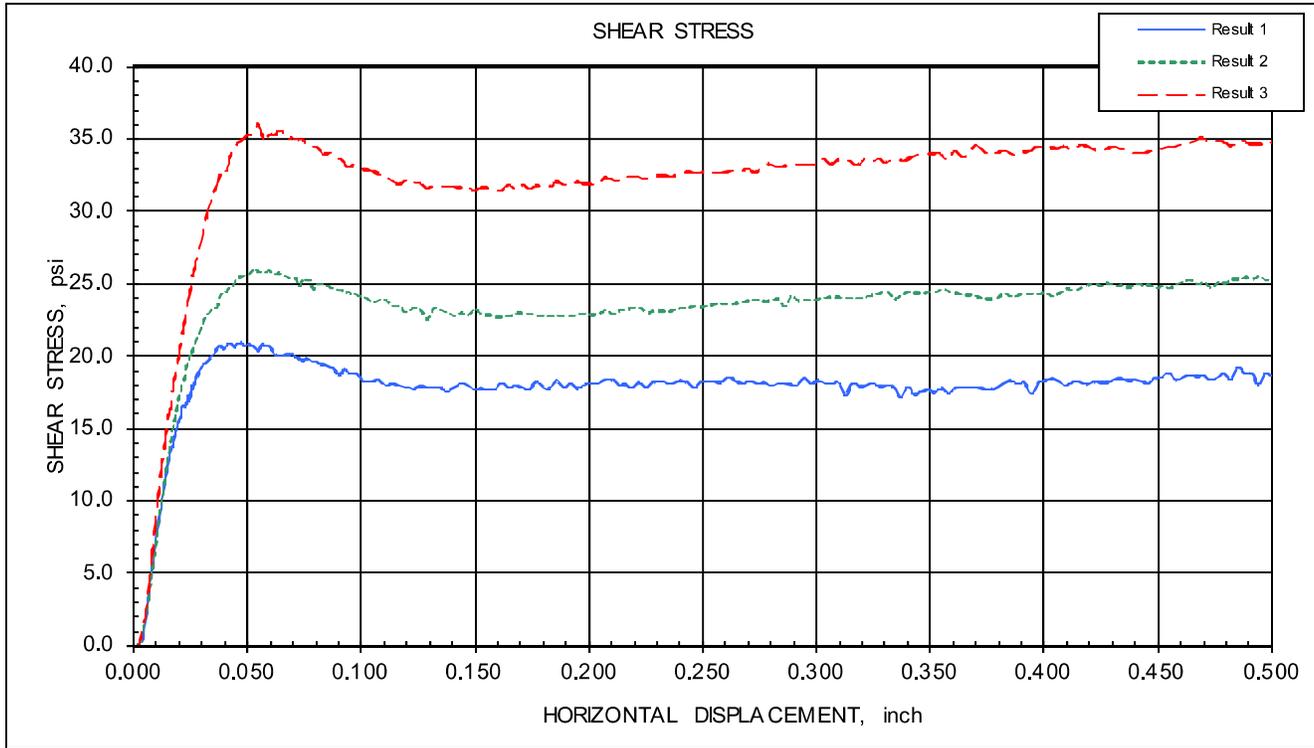
DEPTH, feet TO

Geotechnical Lab Testing

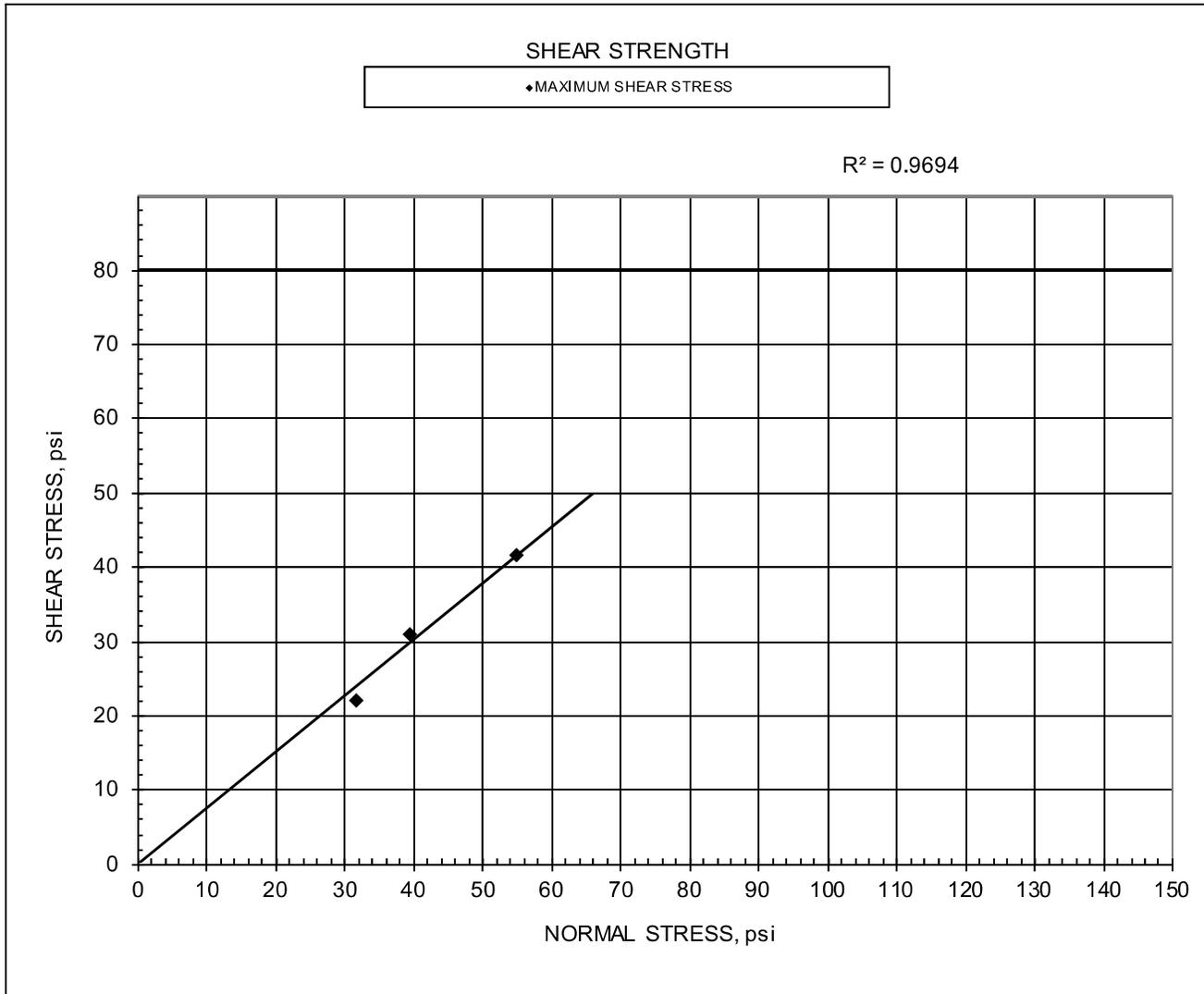
N1211591

5/3/2022

BORING NO. B4
 SAMPLE NO. S4-18
 DEPTH, feet 73.0-75.0



**DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS
ASTM D3080**



		FRICITION ANGLE	COHESION	NORMAL STRESS, psi	NORMAL STRESS, psi	NORMAL STRESS, psi
AT MAXIMUM SHEAR STRESS		39.5 deg	0.0 psi	31.78	39.39	55.00
INITIAL AREA, mm ²	3166.9	INITIAL MOISTURE, %		10.6	10.6	10.6
INITIAL LENGTH, mm	25.40	INITIAL DRY DENSITY, pcf		105.5	105.5	105.5
SPECIFIC GRAVITY	2.79	INITIAL SATURATION, %		45	45	45
SG TESTED		INITIAL VOID RATIO		0.65	0.65	0.65
SG ASSUMED	X	FINAL MOISTURE, %		20.3	19.1	18.3
LIQUID LIMIT		FINAL SATURATION, %		86	85	80
PLASTIC LIMIT		FINAL VOID RATIO		0.66	0.63	0.64
PLASTICITY INDEX		MAXIMUM SHEAR STRESS, psi		21.98	31.11	41.69
SAMPLE TYPE	RECOMPACTED	RATE OF LOADING, in/min		0.0100	0.0100	0.0100
DESCRIPTION	Sand W/Limestone					

PROJECT NAME: Geotechnical Lab Testing

BORING NO. B4

LOCATION: 78.0-80.0

SAMPLE NO. S4-19

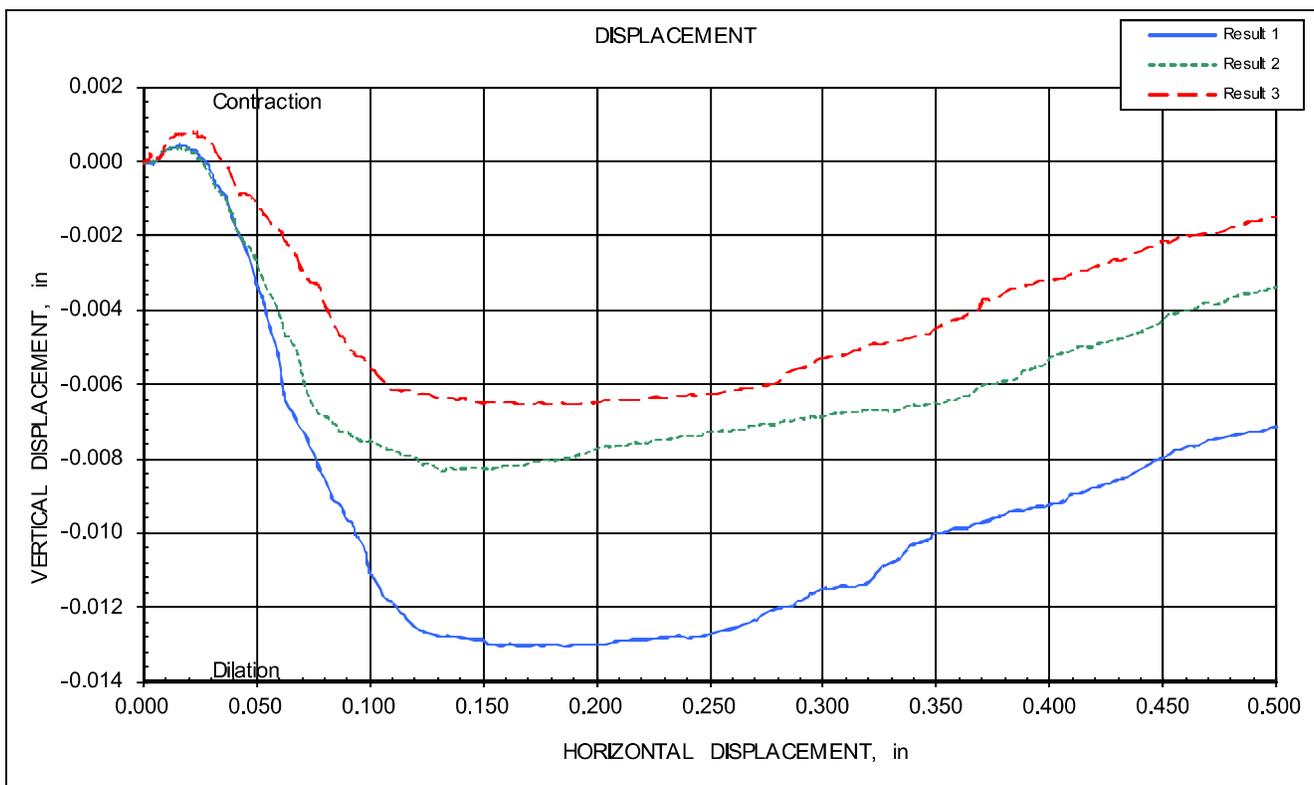
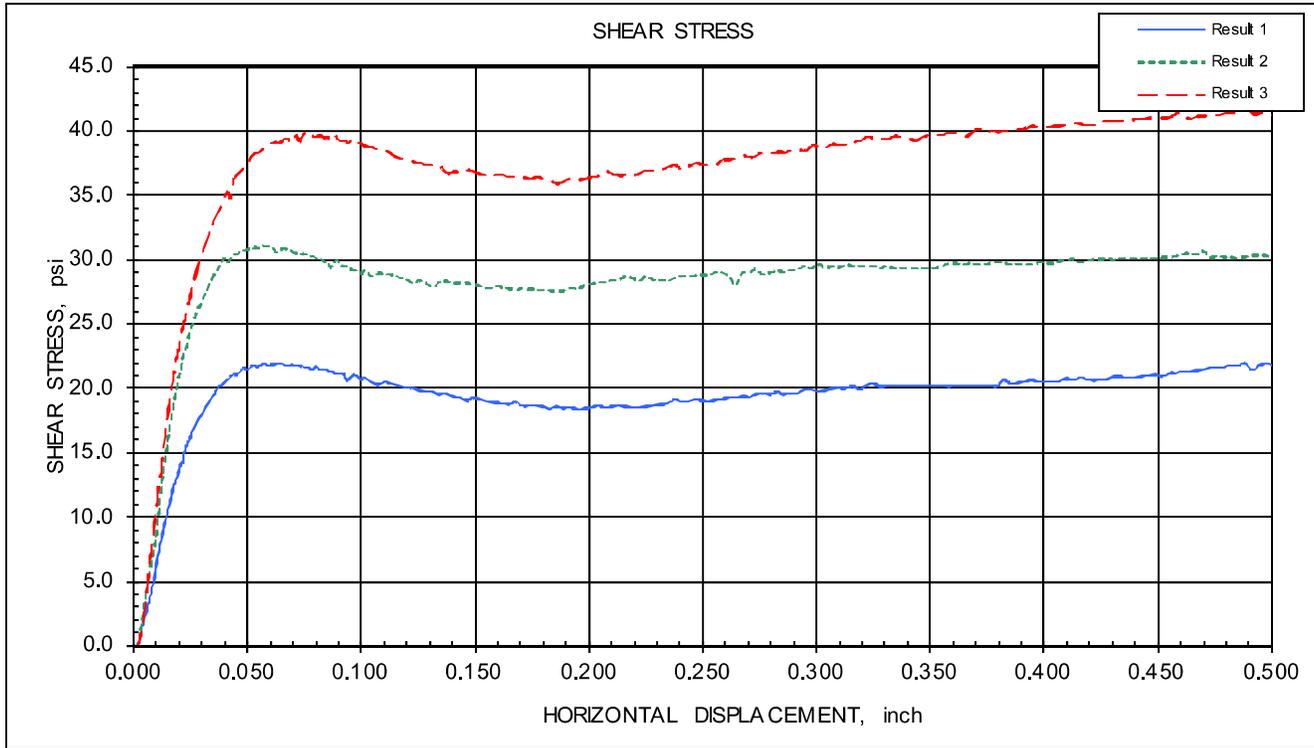
JOB NO.: N1211591

DEPTH, feet TO

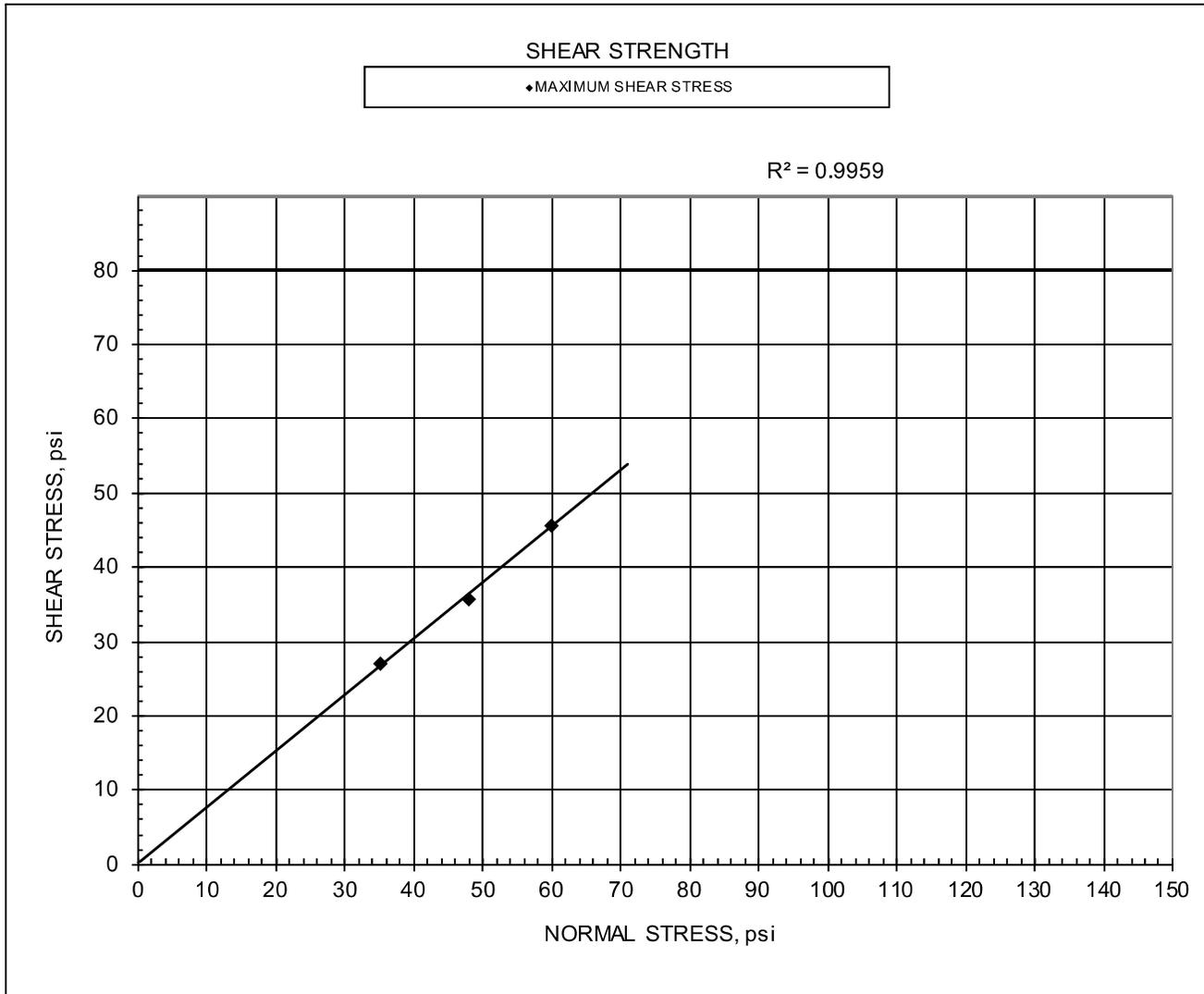
Geotechnical Lab Testing

N1211591
5/3/2022

BORING NO. B4
 SAMPLE NO. S4-19
 DEPTH, feet 78.0-80.0



**DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS
ASTM D3080**



		FRICTION ANGLE		COHESION		NORMAL	NORMAL	NORMAL
AT MAXIMUM SHEAR STRESS		36.4	deg	0.0	psi	STRESS, psi	STRESS, psi	STRESS, psi
						35.06	48.01	60.03
INITIAL AREA, mm ²	3166.9	INITIAL MOISTURE, %				10.1	10.1	10.1
INITIAL LENGTH, mm	25.40	INITIAL DRY DENSITY, pcf				106.0	106.0	106.0
SPECIFIC GRAVITY	2.79	INITIAL SATURATION, %				44	44	44
SG TESTED		INITIAL VOID RATIO				0.64	0.64	0.64
SG ASSUMED	X	FINAL MOISTURE, %				24.9	28.3	21.8
LIQUID LIMIT		FINAL SATURATION, %				106	125	95
PLASTIC LIMIT		FINAL VOID RATIO				0.66	0.63	0.64
PLASTICITY INDEX		MAXIMUM SHEAR STRESS, psi				27.14	35.77	45.61
SAMPLE TYPE	RECOMPACTED	RATE OF LOADING, in/min				0.0100	0.0100	0.0100
DESCRIPTION	Sand							

PROJECT NAME: Geotechnical Lab Testing

LOCATION: 28.0-30.0

JOB NO.: N1211591

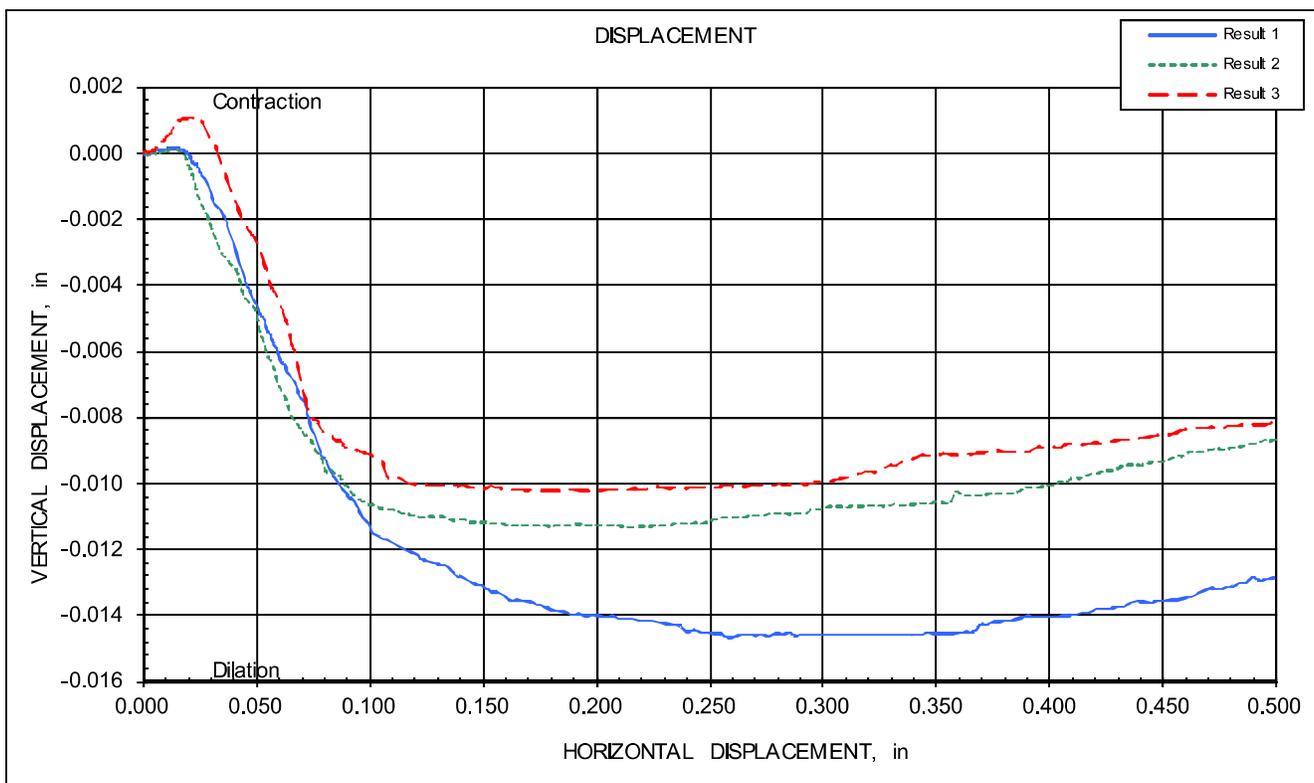
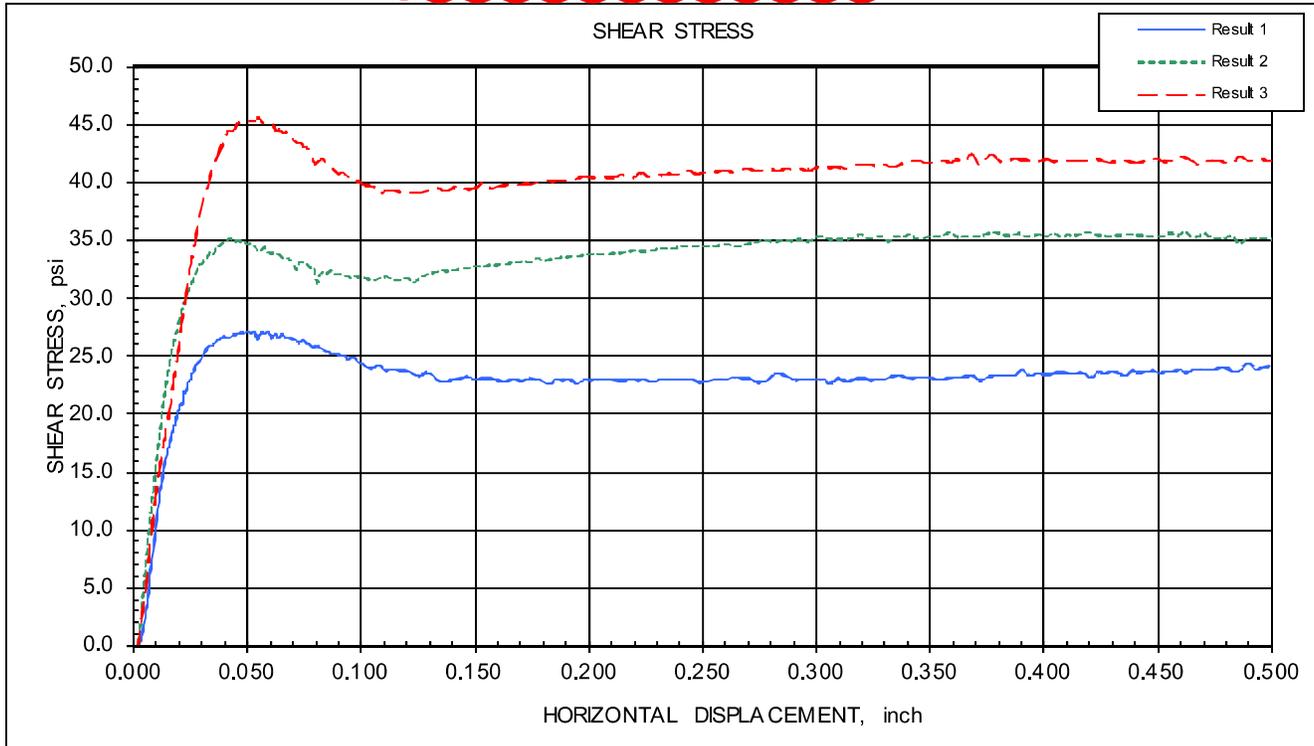
BORING NO. B5
SAMPLE NO. 646

DEPTH, feet TO

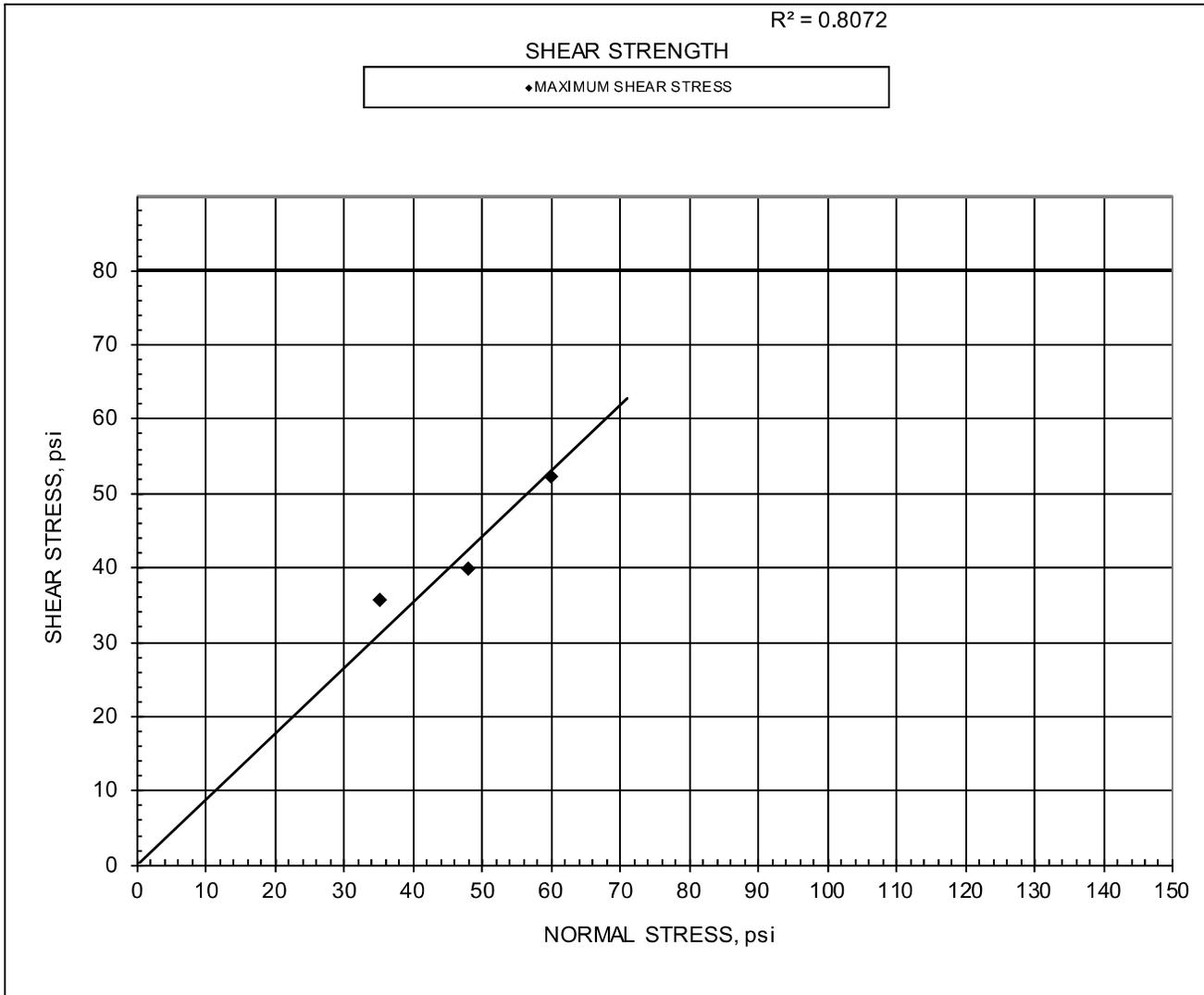
Geotechnical Lab Testing

N1211591
5/3/2022

BORING NO. B5
SAMPLE NO. S4-9
DEPTH, feet 28.0-30.0



**DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS
ASTM D3080**



		FRICITION ANGLE	COHESION	NORMAL	NORMAL	NORMAL
AT MAXIMUM SHEAR STRESS		33.5 deg	0.0 psi	STRESS, psi	STRESS, psi	STRESS, psi
				35.04	48.02	59.96
INITIAL AREA, mm ²	3166.9	INITIAL MOISTURE, %		10.0	10.0	10.0
INITIAL LENGTH, mm	25.40	INITIAL DRY DENSITY, pcf		106.1	106.1	106.1
SPECIFIC GRAVITY	2.79	INITIAL SATURATION, %		43	43	43
SG TESTED		INITIAL VOID RATIO		0.64	0.64	0.64
SG ASSUMED	X	FINAL MOISTURE, %		21.1	20.9	19.1
LIQUID LIMIT		FINAL SATURATION, %		90	93	86
PLASTIC LIMIT		FINAL VOID RATIO		0.65	0.63	0.62
PLASTICITY INDEX		MAXIMUM SHEAR STRESS, psi		35.69	39.98	52.34
SAMPLE TYPE	RECOMPACTED	RATE OF LOADING, in/min		0.0100	0.0100	0.0100
DESCRIPTION	Sand					

PROJECT NAME: Geotechnical Lab Testing

LOCATION: 38.0-48.0

JOB NO.: N1211591

BORING NO. B5

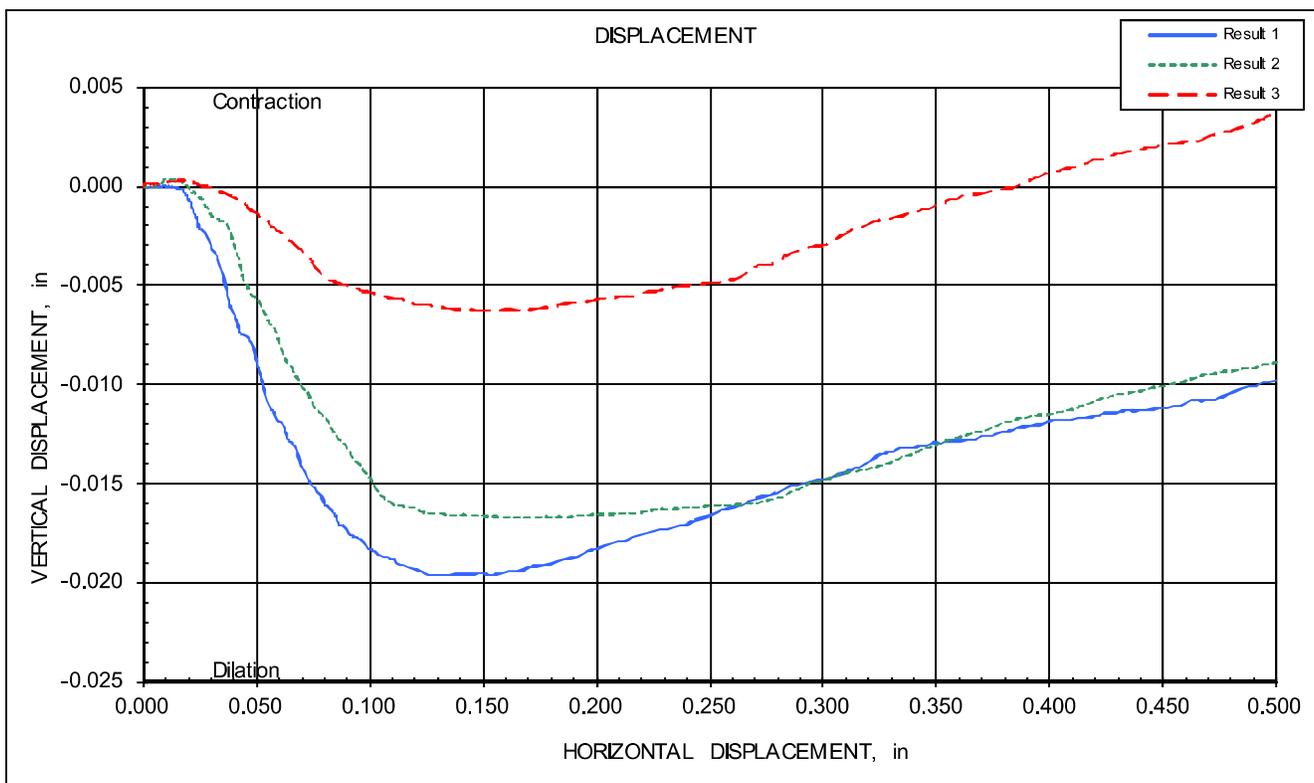
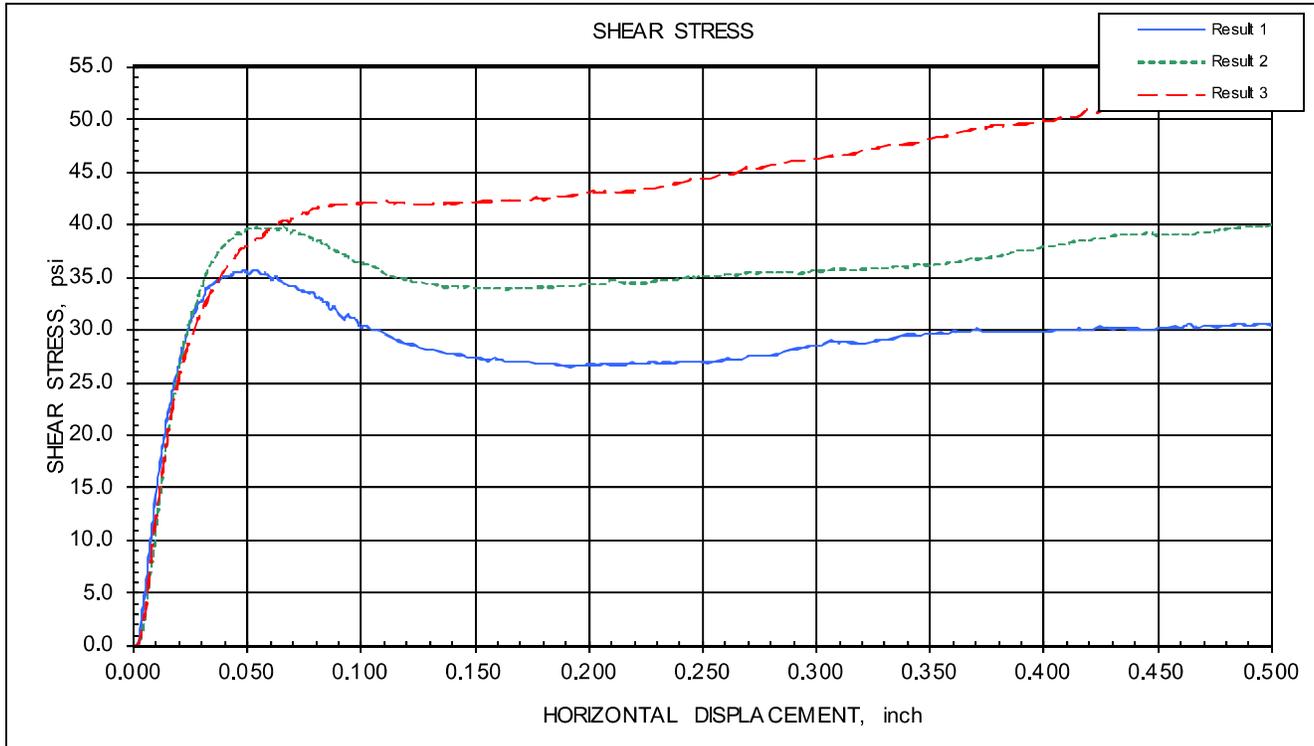
SAMPLE NO. SS-11 and SS-12

DEPTH, feet TO

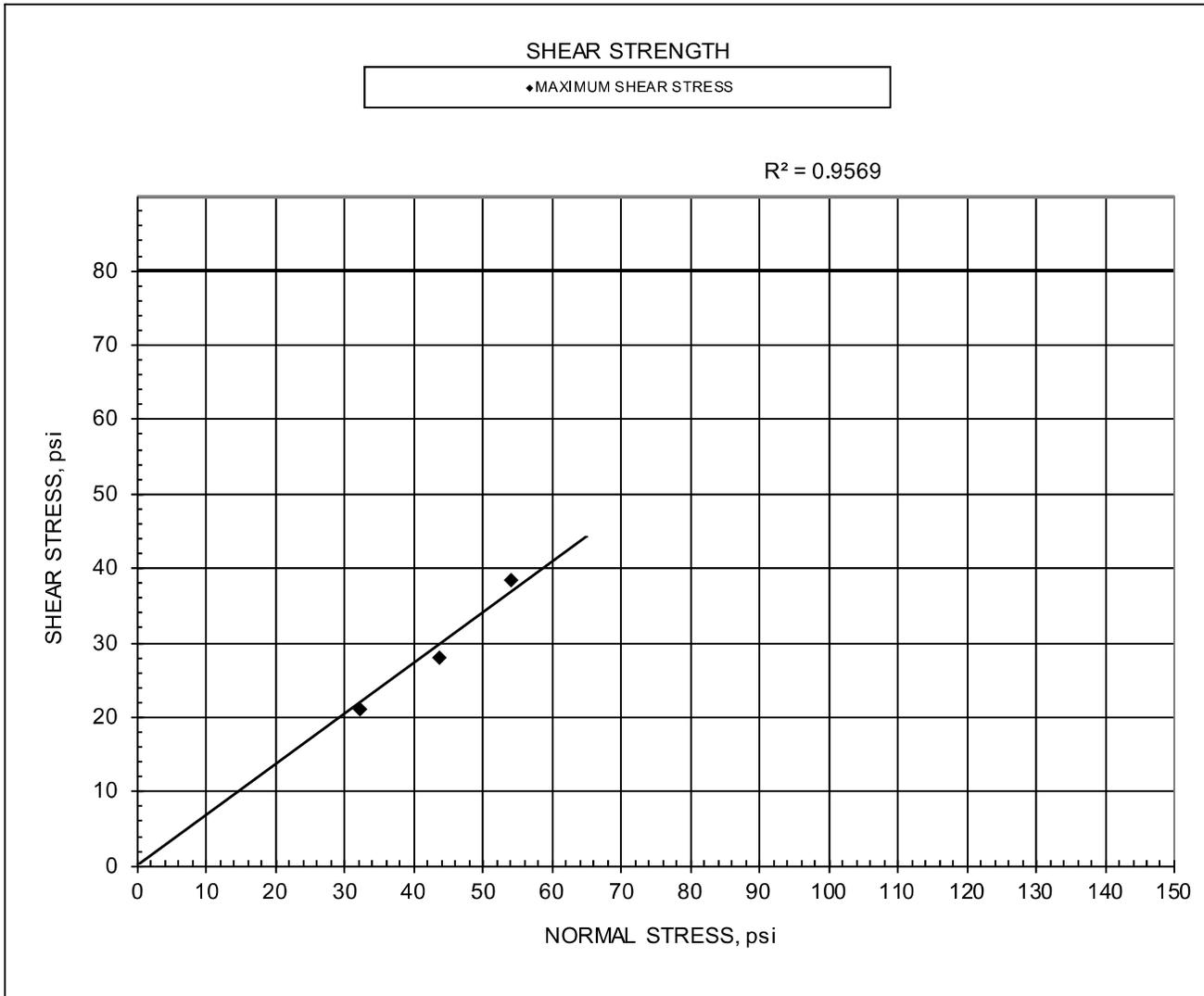
Geotechnical Lab Testing

N1211591
5/4/2022

BORING NO. B5
SAMPLE NO. S5-11 and S5-12
DEPTH, feet 38.0-48.0



**DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS
ASTM D3080**



		FRICTION ANGLE		COHESION		NORMAL	NORMAL	NORMAL
AT MAXIMUM SHEAR STRESS		38.4	deg	0.0	psi	STRESS, psi	STRESS, psi	STRESS, psi
						32.08	43.70	54.00
INITIAL AREA, mm ²	3166.9	INITIAL MOISTURE, %				9.9	9.9	9.9
INITIAL LENGTH, mm	25.40	INITIAL DRY DENSITY, pcf				106.1	106.1	106.1
SPECIFIC GRAVITY	2.79	INITIAL SATURATION, %				43	43	43
SG TESTED		INITIAL VOID RATIO				0.64	0.64	0.64
SG ASSUMED	X	FINAL MOISTURE, %				20.5	22.1	23.5
LIQUID LIMIT		FINAL SATURATION, %				89	99	104
PLASTIC LIMIT		FINAL VOID RATIO				0.65	0.63	0.63
PLASTICITY INDEX		MAXIMUM SHEAR STRESS, psi				21.06	28.05	38.54
SAMPLE TYPE	RECOMPACTED	RATE OF LOADING, in/min				0.0100	0.0100	0.0100
DESCRIPTION	Sand							

PROJECT NAME: Geotechnical Lab Testing

BORING NO. B7

LOCATION: 18.0-25.0

SAMPLE NO. S7-7 and S7-8

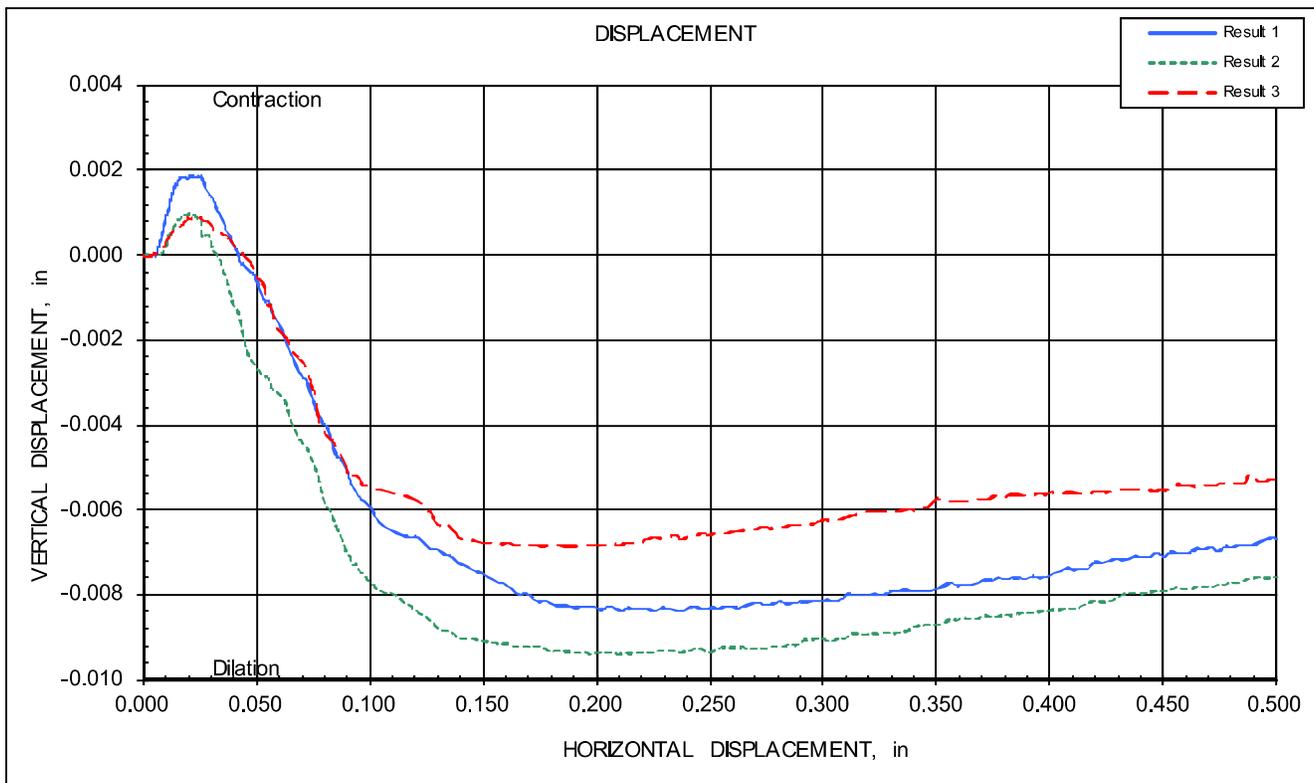
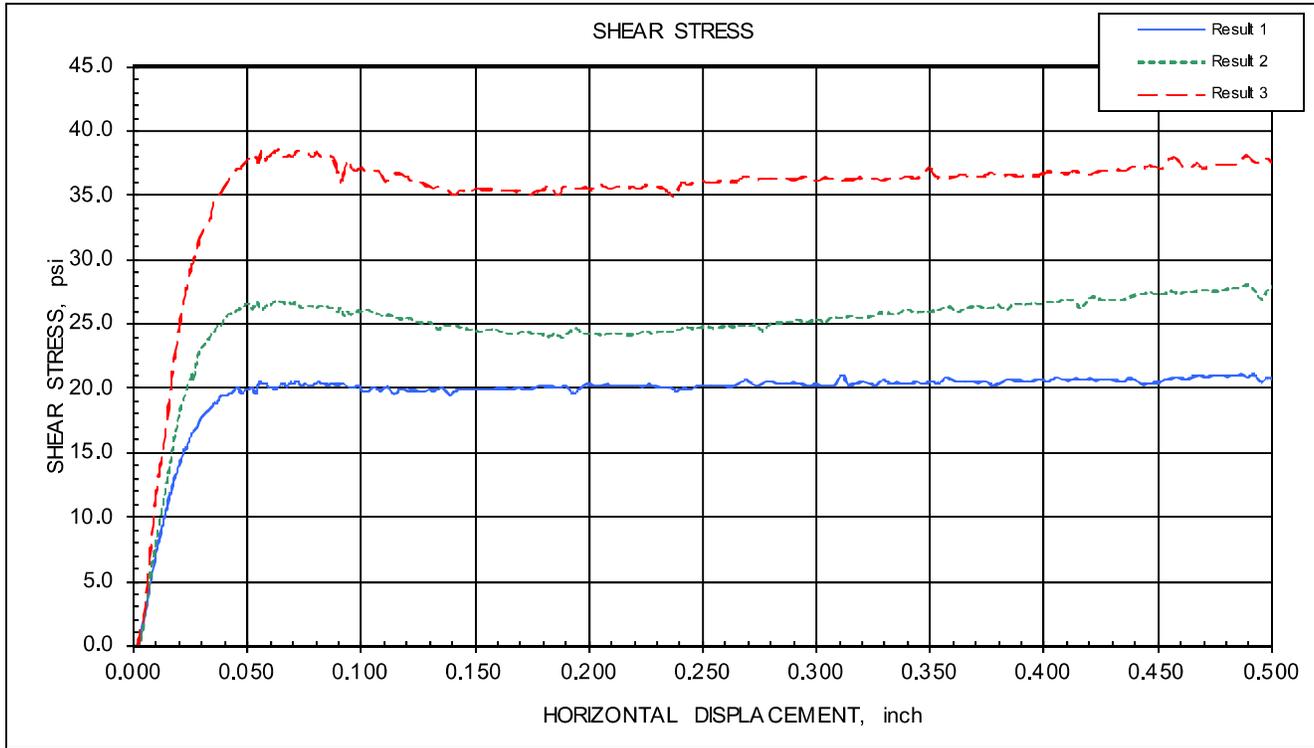
JOB NO.: N1211591

DEPTH, feet TO

Geotechnical Lab Testing

N1211591
5/4/2022

BORING NO. B7
 SAMPLE NO. S7-7 and S7-8
 DEPTH, feet 18.0-25.0





ADVANCED TERRA TESTING
833 PARFET ST UNIT A
LAKEWOOD, CO
303-232-8308 www.terratesting.com

Tuesday, May 03, 2022

Project Number: 2261-239
Company: Terracon
Address:
City:
State:

RE: Rock Testing
Las Olas Blvd Geotechnical Lab Testing
N1211591

Dear Kalyn Abrams,

With this letter you will find a report on Rock samples assigned on 4/12/2022.

Testing was performed in accordance with standardized test methods, accepted industry practices as well as specific instructions received from you, our client. Advanced Terra Testing accepts no responsibility and makes no claims to the use or purpose of the material being tested. Furthermore, the results herein are based solely on the material received and tested. Please note that all material will be disposed of after thirty days unless other arrangements are made.

We respectfully request that sample reports be considered proprietary information and are not to be reproduced, except in full and only with prior written approval of Advanced Terra Testing. We are pleased to have been given the opportunity to perform high quality laboratory testing for your project. We sincerely hope the results herein provide you with all the information required. If you have questions or need anything further, please reach out and we will be happy to assist you.

Respectfully,

Hamid



ADVANCED TERRA TESTING

**CERCHAR Abrasiveness
ASTM D7625**

CLIENT	Terracon			JOB NO.	2261-239
PROJECT	Las Olas Blvd Geotechnical Lab Testing			LOCATION	--
PROJECT NO.	N1211591				
BORING NO.	B-1	B-2	B-4	B-5	
DEPTH	Unknown	45.0-55.0	20.0-30.0	60.0-70.0	
SAMPLE NO.	S-13	S-13	S-9	S-17	
DATE SAMPLED					
DATE TESTED	04/29/22	04/29/22	04/29/22	04/29/22	
TECHNICIAN	HN	HN	HN	HN	
ROCK TYPE					
Surface Type:	Saw Cut	Saw Cut	Saw Cut	Saw Cut	
Moisture Condition	As Received	As Received	As Received	As Received	
Reading A.1 (in):	0.01378	0.00528	0.01307	0.00646	
Reading A.2 (in):	0.01159	0.00732	0.00575	0.00583	
Reading A.3 (in):	0.00835	0.00524	0.00913	0.00465	
Reading A.4 (in):	0.00535	0.00591	0.00898	0.00764	
Reading A.5 (in):	0.00866	0.00874	0.00819	0.00465	
Reading B.1 (in):	0.00898	0.00677	0.01551	0.00449	
Reading B.2 (in):	0.01294	0.00661	0.00677	0.00606	
Reading B.3 (in):	0.00583	0.00409	0.00819	0.00817	
Reading B.4 (in):	0.00622	0.00598	0.00886	0.00622	
Reading B.5 (in):	0.00748	0.00961	0.00528	0.00323	
Average Reading (in):	0.00892	0.00656	0.00897	0.00574	
Average Reading (mm):	0.2265	0.1665	0.2279	0.1458	
Uncorrected CAI or CAI _s :	2.27	1.66	2.28	1.46	
Corrected CAI:	2.72	2.13	2.74	1.92	
NOTES	<p>CAI_s is the CAI calculated on saw cut specimens. Corrected CAI for saw cut specimens based on R. Plinger and H. Kasling Suggested formula CAI = 0.99*CAI_s + 0.48. Applied pins had a Rockwell Hardness of 54-56.</p>				
Data entry by:	HN				Date: 05/02/22
Checked by:	DL				Date: 05/02/22
File name:	2261239_CERCHAR ASTM D7625_0.xlsm				

**CHERCHAR Abrasiveness
ASTM D7625**

CLIENT	Terracon	BORING NO.	B-1
JOB NO.	2261-239	DEPTH	Unknown
PROJECT	Las Olas Blvd Geotechnical Lab Testing	SAMPLE NO.	S-13
PROJECT NO.	N1211591	DATE SAMPLED	--
LOCATION	--	DATE TESTED	04/29/22
		TECHNICIAN	HN
		ROCK TYPE	--

Before Picture



NOTES

Picture File: 1.JPG
File name: 2261239__CHERCHAR ASTM D7625_0.xlsm

**CHERCHAR Abrasiveness
ASTM D7625**

CLIENT	Terracon	BORING NO.	B-1
JOB NO.	2261-239	DEPTH	Unknown
PROJECT	Las Olas Blvd Geotechnical Lab Testing	SAMPLE NO.	S-13
PROJECT NO.	N1211591	DATE SAMPLED	--
LOCATION	--	DATE TESTED	04/29/22
		TECHNICIAN	HN
		ROCK TYPE	--

After Picture



NOTES

Picture File: 1a.JPG
File name: 2261239__CHERCHAR ASTM D7625_0.xlsm

**CHERCHAR Abrasiveness
ASTM D7625**

CLIENT	Terracon	BORING NO.	B-2
JOB NO.	2261-239	DEPTH	45.0-55.0
PROJECT	Las Olas Blvd Geotechnical Lab Testing	SAMPLE NO.	S-13
PROJECT NO.	N1211591	DATE SAMPLED	--
LOCATION	--	DATE TESTED	04/29/22
		TECHNICIAN	HN
		ROCK TYPE	--

Before Picture



NOTES

Picture File: 2.JPG
File name: 2261239__CHERCHAR ASTM D7625_0.xlsm

**CHERCHAR Abrasiveness
ASTM D7625**

CLIENT	Terracon	BORING NO.	B-2
JOB NO.	2261-239	DEPTH	45.0-55.0
PROJECT	Las Olas Blvd Geotechnical Lab Testing	SAMPLE NO.	S-13
PROJECT NO.	N1211591	DATE SAMPLED	--
LOCATION	--	DATE TESTED	04/29/22
		TECHNICIAN	HN
		ROCK TYPE	--

After Picture



NOTES

Picture File: 2a.JPG
File name: 2261239__CHERCHAR ASTM D7625_0.xlsm

**CHERCHAR Abrasiveness
ASTM D7625**

CLIENT Terracon
 JOB NO. 2261-239
 PROJECT Las Olas Blvd Geotechnical Lab Testing
 PROJECT NO. N1211591
 LOCATION --

BORING NO. B-4
 DEPTH 20.0-30.0
 SAMPLE NO. S-9
 DATE SAMPLED --
 DATE TESTED 04/29/22
 TECHNICIAN HN
 ROCK TYPE --

Before Picture



CLIENT	Terracon	BORING NO.	B-4
JOB NO.	2261-239	DEPTH	unknown
PROJECT	Las Olas Blvd Geotechnical Lab Testing	SAMPLE NO.	S-9
PROJECT NO.	N1211591	TEST	CERCHAR
LOCATION		ROCK	

NOTES

Picture File: 3.JPG
 File name: 2261239__CHERCHAR ASTM D7625_0.xlsm



ADVANCED TERRA TESTING

CHERCHAR Abrasiveness
ASTM D7625

CLIENT Terracon
 JOB NO. 2261-239
 PROJECT Las Olas Blvd Geotechnical Lab Testing
 PROJECT NO. N1211591
 LOCATION --

BORING NO. B-4
 DEPTH 20.0-30.0
 SAMPLE NO. S-9
 DATE SAMPLED --
 DATE TESTED 04/29/22
 TECHNICIAN HN
 ROCK TYPE --

After Picture



NOTES

Picture File: 3a.JPG
 File name: 2261239__CHERCHAR ASTM D7625_0.xlsm

**CHERCHAR Abrasiveness
ASTM D7625**

CLIENT Terracon
 JOB NO. 2261-239
 PROJECT Las Olas Blvd Geotechnical Lab Testing
 PROJECT NO. N1211591
 LOCATION --

BORING NO. B-5
 DEPTH 60.0-70.0
 SAMPLE NO. S-17
 DATE SAMPLED --
 DATE TESTED 04/29/22
 TECHNICIAN HN
 ROCK TYPE --

Before Picture



NOTES

Picture File: 4.JPG
 File name: 2261239__CHERCHAR ASTM D7625_0.xlsm

**CHERCHAR Abrasiveness
ASTM D7625**

CLIENT Terracon
 JOB NO. 2261-239
 PROJECT Las Olas Blvd Geotechnical Lab Testing
 PROJECT NO. N1211591
 LOCATION --

BORING NO. B-5
 DEPTH 60.0-70.0
 SAMPLE NO. S-17

DATE SAMPLED --
 DATE TESTED 04/29/22
 TECHNICIAN HN
 ROCK TYPE --

After Picture



NOTES

Picture File: 4a.JPG
 File name: 2261239__CHERCHAR ASTM D7625_0.xlsm



ADVANCED TERRA TESTING

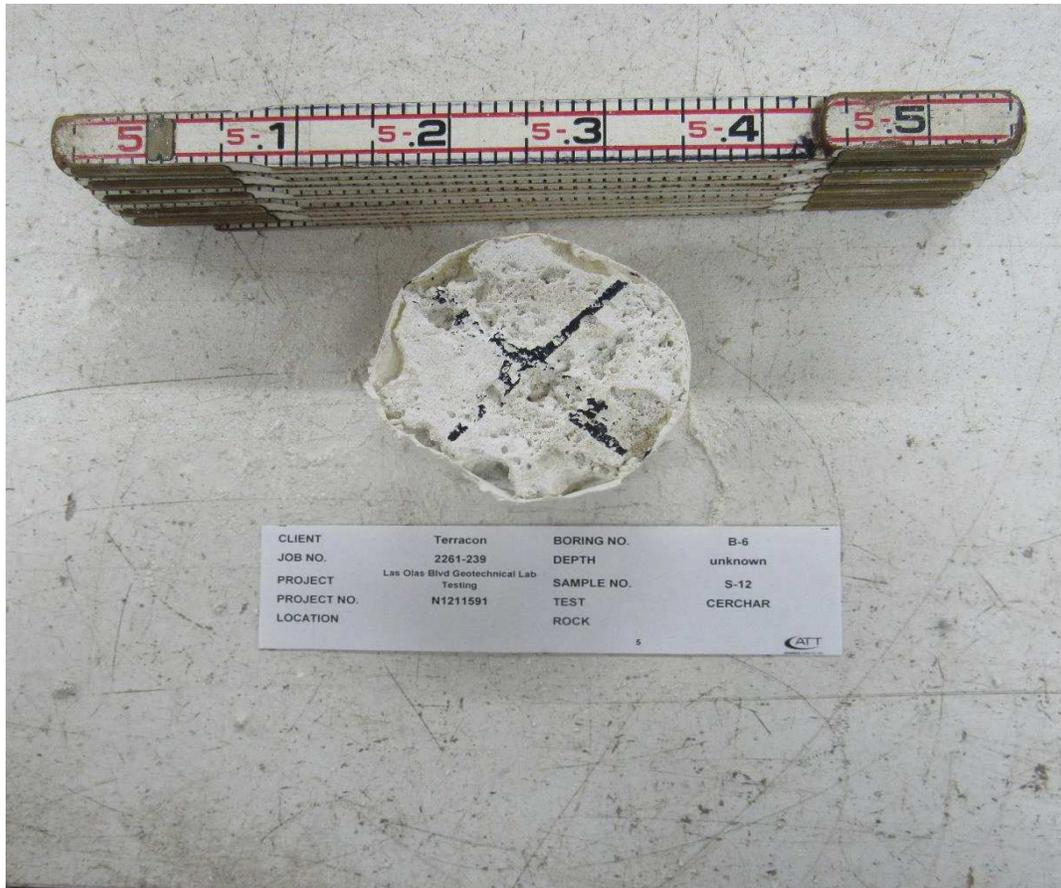
**CERCHAR Abrasiveness
ASTM D7625**

CLIENT	Terracon		JOB NO.	2261-239
PROJECT	Las Olas Blvd Geotechnical Lab Testing		LOCATION	--
PROJECT NO.	N1211591			
BORING NO.	B-6	B-7		
DEPTH	35.0-45.0	60.0-70.0		
SAMPLE NO.	S-12	S-18		
DATE SAMPLED				
DATE TESTED	04/29/22	04/29/22		
TECHNICIAN	HN	HN		
ROCK TYPE				
Surface Type:	Saw Cut	Saw Cut		
Moisture Condition	As Received	As Received		
Reading A.1 (in):	0.00276	0.00898		
Reading A.2 (in):	0.00465	0.00886		
Reading A.3 (in):	0.00283	0.00705		
Reading A.4 (in):	0.00370	0.00740		
Reading A.5 (in):	0.00283	0.01024		
Reading B.1 (in):	0.00283	0.00984		
Reading B.2 (in):	0.00307	0.00787		
Reading B.3 (in):	0.00213	0.00622		
Reading B.4 (in):	0.00189	0.00764		
Reading B.5 (in):	0.00362	0.01087		
Average Reading (in):	0.00303	0.00850		
Average Reading (mm):	0.0770	0.2158		
Uncorrected CAI or CAI _s :	0.77	2.16		
Corrected CAI:	1.24	2.62		
NOTES	<p>CAI_s is the CAI calculated on saw cut specimens. Corrected CAI for saw cut specimens based on R. Plinger and H. Kasling Suggested formula CAI = 0.99*CAI_s + 0.48. Applied pins had a Rockwell Hardness of 54-56.</p>			
Data entry by:	HN		Date:	05/02/22
Checked by:	DL		Date:	05/02/22
File name:	2261239_CERCHAR ASTM D7625_1.xlsm			

**CHERCHAR Abrasiveness
ASTM D7625**

CLIENT	Terracon	BORING NO.	B-6
JOB NO.	2261-239	DEPTH	35.0-45.0
PROJECT	Las Olas Blvd Geotechnical Lab Testing	SAMPLE NO.	S-12
PROJECT NO.	N1211591	DATE SAMPLED	--
LOCATION	--	DATE TESTED	04/29/22
		TECHNICIAN	HN
		ROCK TYPE	--

Before Picture



CLIENT	Terracon	BORING NO.	B-6
JOB NO.	2261-239	DEPTH	unknown
PROJECT	Las Olas Blvd Geotechnical Lab Testing	SAMPLE NO.	S-12
PROJECT NO.	N1211591	TEST	CERCHAR
LOCATION		ROCK	

NOTES

Picture File: 5.JPG
File name: 2261239__CHERCHAR ASTM D7625_1.xlsm

**CHERCHAR Abrasiveness
ASTM D7625**

CLIENT	Terracon	BORING NO.	B-6
JOB NO.	2261-239	DEPTH	35.0-40.0
PROJECT	Las Olas Blvd Geotechnical Lab Testing	SAMPLE NO.	S-12
PROJECT NO.	N1211591	DATE SAMPLED	--
LOCATION	--	DATE TESTED	04/29/22
		TECHNICIAN	HN
		ROCK TYPE	--

After Picture



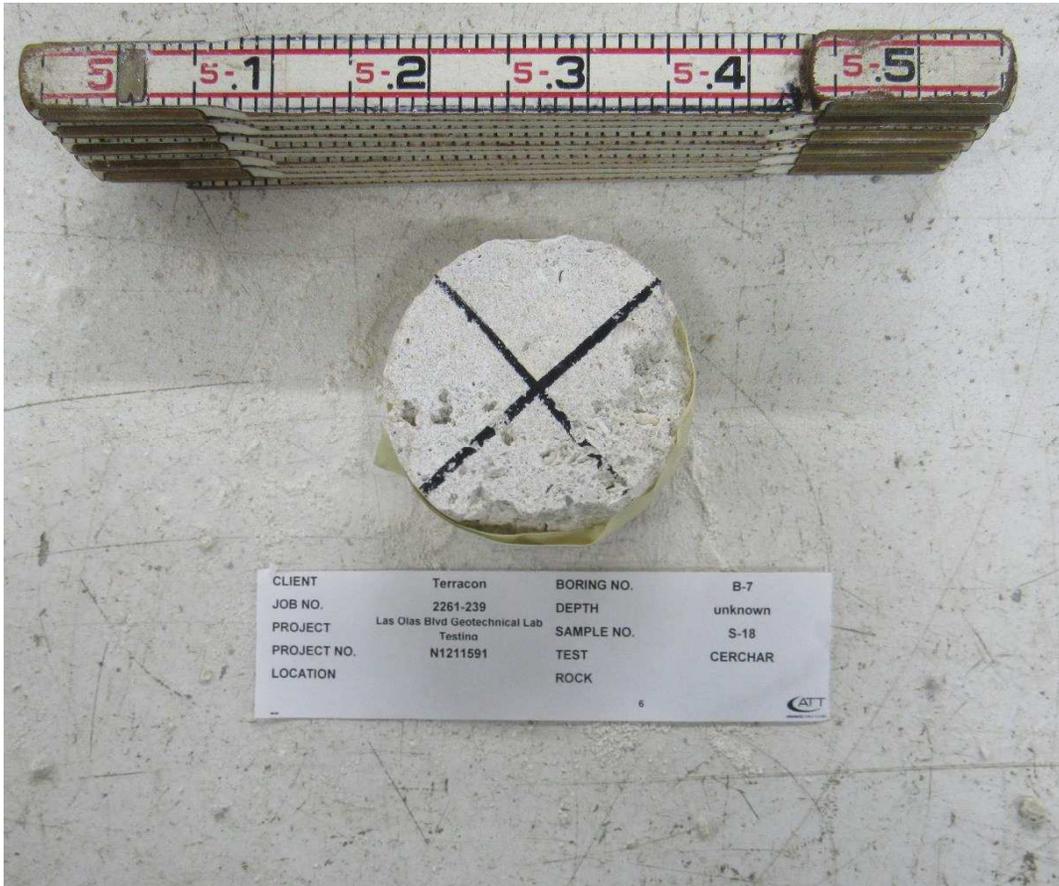
NOTES

Picture File: 5a.JPG
File name: 2261239__CHERCHAR ASTM D7625_1.xlsm

**CHERCHAR Abrasiveness
ASTM D7625**

CLIENT	Terracon	BORING NO.	B-7
JOB NO.	2261-239	DEPTH	60.0-70.0
PROJECT	Las Olas Blvd Geotechnical Lab Testing	SAMPLE NO.	S-18
PROJECT NO.	N1211591	DATE SAMPLED	--
LOCATION	--	DATE TESTED	04/29/22
		TECHNICIAN	HN
		ROCK TYPE	--

Before Picture



NOTES

Picture File: 6.JPG
File name: 2261239__CHERCHAR ASTM D7625_1.xlsm

**CHERCHAR Abrasiveness
ASTM D7625**

CLIENT	Terracon	BORING NO.	B-7
JOB NO.	2261-239	DEPTH	60.0-70.0
PROJECT	Las Olas Blvd Geotechnical Lab Testing	SAMPLE NO.	S-18
PROJECT NO.	N1211591	DATE SAMPLED	--
LOCATION	--	DATE TESTED	04/29/22
		TECHNICIAN	HN
		ROCK TYPE	--

After Picture



After Test

NOTES

Picture File: 6a.JPG
File name: 2261239__CHERCHAR ASTM D7625_1.xlsm

LABORATORY SERVICES REPORT

Report Number: N1211591.0006
Service Date: 05/13/22
Report Date: 05/13/22



611 Lunken Park Dr
Cincinnati, OH 45226-1813
513-321-5816

Client

Quest Engineering
Attn: Reza Javidan
2737 NW 19th St
Pompano Beach, FL 33069-5232

Project

Las Olas Blvd Geotechnical Lab Testing
2737 NW 19TH ST
Pompano Beach, FL 33069-5232

Project Number: N1211591

RESULTS OF PERCENT QUARTZ

A sample from Quest Engineering was obtained by the client and was received at the Terracon, Cincinnati, Ohio materials laboratory on 3/6/2022 for examination to determine the percent of quartz in each sample. The petrographic examination (ASTM C295/C295M-18a, Section 13) was modified to record percent quartz in the received samples, sieve sizes #4 to #200. After receipt, the sample was separated into individual sieve sizes, washed, visually examined, and then examined by stereomicroscope. Representative portions of each sieve size comprising more than 10% by weight of the sample were examined. Results for percent quartz of the examined samples are presented in tabular form below.

Percent Quartz								
Sample ID	Depth	Sieve Size						
		#4	#8	#16	#30	#50	#100	#200
B-1 S1-7 & S1-8	18.0-25.0	-	-	67.3	40.0	41.7	-	-
B-2 S2-9 & S2-12	28.0-45.0	-	-	42.3	54.3	64.3	73.0	-
B-3 S3-6	13.0-25.0	-	-	-	-	64.7	63.0	-
B-3 S3-17	65.0-70.0	-	-	-	76.7	78.0	86.66	-
B-4 S4-18		-	-	-	-	96.3	96.0	-
B-4 S4-19		-	-	-	-	75.0	77.7	-
B-4 S4-23		-	-	-	-	-	-	82.7
B-5 S4-9		-	-	-	-	-	91.0	-
B-5 S5-11 & S5-12	38.0-48.0	-	-	-	67.0	85.7	97.0	98.7
B-6 S6-119		-	-	-	6.0	54.7	55.7	-
B-7 S7-7 & S7-8	18.0-25.0	-	-	-	97.0	96.3	98.0	99.3

Services:

Terracon Rep.:

Reported To:

Contractor:

Report Distribution:

(1) Quest Engineering, Reza Javidan

Reviewed By:

Stewart Abrams

Senior Geologist

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.