



**City of Tampa**  
*Jane Castor, Mayor*

**Contract Administration**  
**Richard Mutterback, Director**  
306 East Jackson Street, 4N  
Tampa, FL 33602  
Office (813) 274-8116  
Fax: (813) 274-7368

**ADDENDUM 2**  
**Via E-Mail**  
**DATE: May 5, 2025**

Contract: 24-C-00002; E/W Green Spine Cycle Track PH 2A from Howard Ave to Rome Ave

Bidders on the above referenced project are hereby notified that the following addendum is made to the Contract Documents. BIDS TO BE SUBMITTED SHALL CONFORM TO THIS NOTICE.

**Item 1:** The EOC Reporting number = 24-C-00002. All CONTRACTORS MUST enter their bid opportunity information in the Equal Opportunity Compliance (EOC) system within three business days of submission of the bid or proposal. The link to the EOC system is  
<https://fdotwp1.dot.state.fl.us/EqualOpportunityCompliance/Account.aspx/LogIn?ReturnUrl=%2fEqualOpportunityCompliance>

**Item 2:** RFI - Does the City have a stockpile of granite curb that we can use on this project? Please refer to the specification for Removal of Existing Granite Curb. The first sentence states "excavate material from back of the granite curb". At Station 114+15 to station 114+61 it shows removal of existing granite curbing that is directly adjacent to sidewalk with no sod strip between the granite curb. The sidewalk at this location is not being called to be removed and replaced. How is the contractor to be paid for removal and replacement of this sidewalk?

**RFI response:** See SP-14.02. Since the existing sidewalk is to remain, contractor should use all care and remove the existing granite curb to be salvaged and reset, at this location from the front face/pavement side, since the pavement is to be removed at this location for the proposed bulb out. If it becomes absolutely necessary to remove and replace this 46LF of existing sidewalk, the City CEI can possibly authorize payment with the pay items for REMOVAL OF EXISTING CONCRETE and CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK. Existing granite curbs are to remain, with some to be reset. At this time, the City does have some stock for the small quantity of additional granite curb needed for this project.

**Item 3:** 1. The 15% max for MOB & MOT Pay Items needs to be removed.  
2. You're missing a Clearing & Grubbing Pay Item.

**RFI response:** 1.) The Bid Proposal sheet P-2 does not contain 15% max for MOB & MOT LS Pay Items. The quantity for each of those pay items is 1 LS. (see pg 8)

2.) There are no C&G limits shown on the Typical Section for this project. Practically all work is within the existing pavement or sidewalk except for drainage structures that would require construction outside of pavement limits. Please include any clearing and grubbing within the existing

appropriate pay items prices bid. Bidders to include any ancillary clearing and grubbing into the costs of associated work since there is no pay item for it directly. Pay items for concrete removal and sod are included so Note 5 of Sheet 6 covers restoration work without the need for a Clearing & Grubbing pay item.

**Item 4:** RFI - Can the intersection be under a full closure for storm work?

**RFI response:** Bidders should presume for their bid that the complete street/intersection closure is not permitted. The current design plans do not indicate any road closures, and the FDOT indexes included are for lane closures or shifts only. The City may consider contractor requests for full closure after bidding, with a customized MOT plan, including the proposed traffic detours and the required Portable Changeable Message Signs (PCMS), especially since W Cass St is a designated truck route road.

If the City allows closures, the Contractor will be responsible for providing a new Traffic Control Plan and obtaining any closure permits if needed. Construction work and associated lane and sidewalk closures within the City of Tampa right of way require a City Work Start (CWS) permit. CWS permits are applied for in Accela which can be accessed at the following link: <https://aca-prod.accela.com/TAMPA/Default.aspx>

The applicant must submit plans and appropriate MOT plans for all proposed work in the right of way. Please be sure to include the following in the online application:

1. City of Tampa project Manager - Nina Mabillean
2. A minimum of two project contacts

When filling out the worktable in Accela, each block with construction activity is to be listed by listing the "On" street and the intersecting street(s).

**Item 5:** RFI - Please note that one of the two contaminated sites is remediated and both locations are located farther than 500' from the proposed storm work. Does the dewatering for the storm work need to be treated? Please refer to SP-4.07 Identified Areas of Contamination. Please confirm all costs incurred with areas of contamination inclusive of the known contamination at 1702 W. Cass Street, Tampa, FL 33606 will be reimbursed by the owner through the work direct change/change order and that the contractor should not put any cost in our bid?

**RFI response:** Correct, costs incurred with areas of contamination will be reimbursed by the City from Contingency via Work Directed Change and you should not put any cost in your bid. This will be approved by the city engineer and the FDOT from contingency allowance, as encountered and needed. The Contamination Impact Certification, in the rear of the bid package specification book, states that the contamination "location/condition has no impact to the proposed project". In accordance with the specs: The Contractor shall employ a CAR Contractor to perform contamination assessment and remediation work, therefore if the dewatered groundwater is found contaminated, it will be the CAR's responsibility to remediate. See SP-4.07 IDENTIFIED AREAS OF CONTAMINATION. Furthermore, the contractor is responsible for all NPDES and/or other agency permits with regard to discharge. Contaminated dewatering may need to be tanked and disposed of properly per regulatory agency requirements. "Contractor to provide all invoicing (testing, permit fees, application for meter, metering by gallon, soil prep etc.). This will be approved by the City Engineer from the contingency allowance, as encountered and needed." See Contamination Impact Certification in bid package, .pdf sheet 282/286.

**Item 6:** RFI - Please confirm which class of RCP is required, the specs reference class three while the plans reference class two and four?

**RFI response:** All pipe to be RCP Class III.

**Item 7:** RFI - Please confirm that the storm is to flow to storm inlet S-103.

**RFI response:** Yes, runoff will flow to S-103 where it will fill up and then sheet flow down N Fremont Avenue.

**Item 8:** RFI - Please note that 12" RCP is no longer manufactured, should this be upsized to 15"?

**RFI response: No.** The 12" pipe cannot be upsized since it is connecting to an existing 12" pipe. Use Class III 12" RCP or connect the existing 12" pipe on N Fremont Avenue directly to S-102B.

**Item 9:** RFI -What class pipe is required for 15" RCP?

**RFI response:** Class III

**Item 10:** RFI - What class pipe is required for 18" RCP?

**RFI response:** Class III

**Item 11:** RFI - What class pipe is required for 24" RCP?

**RFI response:** Class III

**Item 12:** RFI - Please note there is a letter dated November 14th that states no existing drainage is being changed, so no environmental permit is required. Please clarify as we are tying into an existing storm system and adding new drainage.

**RFI response:** The project received an exemption (785609) from the SWFWMD on July 2, 2019, as stated in the 11/14/23 Final Design Memo for Environmental Permit. (see pg 10)

**Item 13:** RFI - Please confirm that the link provided on page SPT – 15 will take us to the correct City details for the proposed structures since no details were given in the plans.

**RFI response:** Refer to <https://www.tampa.gov/document/stormwater-standard-details-25946> for City details.

**Item 14:** RFI - Please confirm that the 18" steel gas pipe is no longer active. Plan sheet 17 calls for its removal to accommodate the 18" storm run.

**RFI response:** TECO Peoples Gas provided greenlines during the project design indicating that the line is retired and out of service (see markup below). Per Specification G-1.03: "Contractor to make his own investigations to inform himself fully of the character, condition and extent of all such installations and structures as may be encountered and as may affect the construction operations." Per Specification SP-2.04: "The prime contractor is responsible for organizing the work of and coordination with any and all Utility Agency Owners involved within the project limits. The Utility Relocation Schedules submitted during the design phase have been provided." Utility Owner contact information is shown on General Notes, page 6 of the roadway plans.



**Item 15:** RFI - Is the existing 18" steel gas line grout filled? If not, is the contractor required to bulkhead the remaining lines?

**RFI response:** We do not know if the line is grouted but TECO Peoples Gas has provided information for the other Green Spine projects indicating that grouting is likely for out of service lines under pavement. The contractor may choose to bulkhead or grout the severed line, but it is not required. It is the prime contractor's responsibility to please coordinate with Utility Owners. The Utility Agency Owner contacts are listed on General Notes sheet 6 of the plans. There is a TECO Utility Relocation Schedule in the rear of the specifications.

**Item 16:** RFI - How thick is the existing asphalt?

**RFI response:** According the Geotech Report the existing pavement is about 4.5" thick.

Core ID	Approximate Location (Street, Lane, Distance)	Asphalt Thickness (in)	Paver Thickness (in)	Base Material and Thickness (in)	Subbase Material (AASHTO)	Approximate GWT Depth (ft)
C-01	W. Cass Street, EB Lane, 350-ft. East of N. Albany Avenue Intersection	4 ½	3	Shell – 4 ½	A-3	3

**Item 17:** RFI - Is there a geotech report for this project, or one in the nearby area?

**RFI response:** See attached Geotechnical Report for this project. (see pg 14)

**Item 18:** RFI - Please confirm that S-102C requires a steel grate. It seems that this structure needs a cast iron grate that is traffic rated.

**RFI response:** S-102C can have the standard cast iron grate.

**Item 19:** RFI - If S-102C needs a steel grate, does it need to be galvanized and/or traffic rated?

**RFI response:** No steel grate is required.

**Item 20:** RFI - Does the contractor have to be certified with the Department of Transportation to bid the subject project?

**RFI response:** Paragraph 3 of the "Notice to Bidders" in the Specifications Package states, "A contractor must be pre-qualified in accordance with Rule Chapter 14-22 on the date of the Bid Opening or provide sufficient evidence of qualifications within ten (10) days thereof. All bidders must provide Certification of Current Capacity and Status of Contracts on Hand on the day of Bid Opening."

**Item 21:** RFI - Please refer to the Instructions to Bidders Section 1. Paragraph I-1.01 General reads The proposed work is the E/W Green Spine Cycle Track Ph 3b from 7<sup>th</sup> Ave to 13<sup>th</sup> Ave – Rebid and E/W Green Spine Cycle Track Ph 3c from 13<sup>th</sup> Ave to 21<sup>st</sup> Ave – Rebid. However, the advertisement and plans are for Ph 2a from Howard Ave. to Rome Ave. Please clarify. (see pg 6 & 7 )



**RFI response:** As you can see by the page header of the Instructions to Bidder, this Contract 24-C-00002; is for E/W Green Spine Cycle Track - PH 2A from Howard Ave. to Rome Ave. In the first paragraph of Instructions to Bidders Section 1. Paragraph I-1.01 in the Division I specifications, page I-1a, replace "E/W Green Spine Cycle Track - PH 3B from 7th Ave to 13th Ave - ReBid and E/W Green Spine Cycle Track - PH 3C from 13th Ave to 21st Ave – ReBid" with "E/W Green Spine Cycle Track - PH 2A from Howard Ave. to Rome Ave." (see pg 6 )

**Item 22:** RFI - Please refer to PDF page 80 of 178. The agreement on this page references the E/W Green Spine Cycle Track Ph 3b from 7th Ave to 13th Ave – Rebid and E/W Green Spine Cycle Track Ph 3c from 13th Ave to 21st Ave – Rebid. However, the advertisement and plans are for Ph 2a from Howard Ave. to Rome Ave. Please clarify.

**RFI response:** On AGREEMENT sheet A-1. PDF 85/286 replace "21-C-00022" with 24-C-00002". Also replace "Contract 21-C-00022; E/W Green Spine Cycle Track - PH 3B from 7th Ave to 13th Ave - ReBid and E/W Green Spine Cycle Track - PH 3C from 13th Ave to 21st Ave – ReBid" with "Contract 24-C-00002: E/W Green Spine Cycle Track - PH 2A from Howard Ave. to Rome Ave." The City Contract Specialist will include this correction on the revised Agreement once a bidder is selected. (see pg 7 )

**Item 23:** To match the FPID, replace "21-C-00022" on PDF 118/286" with "24-C-00002" (see pg 9)

All other provisions of the Contract Documents and Specifications not in conflict with this Addendum shall remain in full force and effect. Questions are to be e-mailed to [ContractAdministration@tampagov.net](mailto:ContractAdministration@tampagov.net) .



Jim Greiner, P.E., Contract Management Supervisor

INSTRUCTIONS TO BIDDERS  
SECTION 1 - SPECIAL INSTRUCTIONS

I-1.01 GENERAL:

**PH 2A from Howard Ave. to Rome Ave.**

The proposed work is the E/W Green Spine Cycle Track - PH 3B from 7th Ave to 13th Ave -- ReBid and E/W Green Spine Cycle Track - PH 3C from 13th Ave to 24th Ave -- ReBid in the City of Tampa, as required for a complete project, as shown on the plans and detailed in the specifications. The work is located on land owned or controlled by the City of Tampa.

To be eligible to submit a proposal, a Bidder must hold the required and/or appropriate current license, certificate, or registration (e.g. DBPR license/certificate of authorization, etc.) in good standing at the time of receipt of Bids. **Per Section 489.131, Florida Statutes, Proposals submitted for the construction, improvement, remodeling, or repair of public projects must be accompanied by evidence that the Bidder holds the required and/or appropriate current certificate or registration, unless the work to be performed is exempt under Section 489.103, Florida Statutes.**

I-1.02 FORM PREPARATION AND PRESENTATION OF PROPOSALS: Replace the second sentence with the following: Submission of the entire specification book is not required.

I-1.03 ADDENDA – Section I-2.03 is replaced with the following: No interpretation of the meaning of the Plans, Specifications, or other Contract Documents will be made to any Bidder orally.

Every request for such interpretation must be in writing, addressed to the City of Tampa, Contract Administration Department, 306 E. Jackson St., 4th Floor, Tampa, Florida 33602 and then emailed to [ContractAdministration@tampagov.net](mailto:ContractAdministration@tampagov.net). To be given consideration, such request must be received at least seven (7) days prior to the date fixed for the opening of the Proposals. Any and all such interpretations and any supplemental instructions will be in the form of written addenda which, if issued, will be posted on DemandStar.Com and on the Department's web page. Failure of any Bidder to receive any such addenda shall not relieve said Bidder from any obligation under his Proposal as submitted. All addenda so issued shall become part of the Contract Documents.

I-1.04 INSTRUCTIONS TO BIDDERS

**SECTION 2 – GENERAL INSTRUCTIONS.** Section I-2.07 SIGNATURE AND QUALIFICATIONS OF BIDDERS is replaced with the following:

Proposals must be signed in ink by the Bidder with signature in full. When firm is a Bidder, the Proposal shall be signed in the name of the firm by one or more partners. When a corporation is a bidder the officer signing shall set out the corporate name in full beneath which he shall sign his name and give the title of his office.

If the bidder referred to in Section I-2.07 is a corporation, it must submit; upon request, a copy of its filed Articles of Incorporation. In addition, if the bidder was incorporated in another state, it must establish that it is authorized to do business in the State of Florida. If the bidder is using a fictitious name, it must submit upon request, proof of registration of such name with the Clerk of the Circuit Court of the County where its principal place of business is. Failure to submit what is required is grounds to reject the bid of that bidder.

**SECTION 2 – GENERAL INSTRUCTIONS.** Section I-2.14 NONDISCRIMINATION IN EMPLOYMENT is changed to add the following to the end of the existing text:

The following provisions are hereby incorporated into any contract executed by or on behalf of the City. Contractor shall comply with the following Statement of Assurance: During the performance of the Contract, the Contractor assures the City, that the Contractor is in compliance with Title VII of the 1964 Civil Rights Act, as amended, the Florida Civil Rights Act of 1992, and the City of Tampa Code of Ordinances, Chapter 12, in that Firm/Contractor does not on the grounds of race, color, national origin, religion, sex, sexual orientation, gender identity or expression, age, disability, familial status, or marital status, discriminate in any form or manner against said Firm's/Contractor's employees or applicants for employment. Contractor understands and agrees that the Contract is conditioned upon the veracity of this Statement of Assurance, and that violation of this condition shall be considered a material breach of the Award/Contract. Furthermore, Contractor herein assures the City that said Contractor will comply with Title VI of the Civil Rights Act of 1964 when federal grant(s) is/are

AGREEMENT

24-C-00002

For furnishing all labor, materials and equipment, together with all work incidental thereto, necessary and required for the performance of the work for the construction of Contract ~~21-C-00022~~ in accordance with your Proposal dated \_\_\_\_\_, amounting to a total of \$\_\_\_\_\_ as completed in accordance with subsections I-2.09 and I-2.10 of the Instruction to Bidders.

This AGREEMENT, made and entered into in triplicate, between the City of Tampa, Florida, hereinafter called the City, and \_\_\_\_\_ hereinafter called the Contractor, as of the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ when the City Council of the City of Tampa, Florida adopted a Resolution authorizing, among other things, the Mayor's execution of this Agreement.

WITNESSETH that, in consideration of the mutual stipulations, agreements, and covenants herein contained, the parties hereto have agreed and hereby agree with each other, the Party of the First Part for itself, its successors and assigns, and the Party of the Second Part for itself, or himself, or themselves, and its successors and assigns, or his or their executors, administrators and assigns, as follows:

24-C-00002

PH 2A from Howard Ave. to Rome Ave.

Contract ~~21-C-00022; E/W Green Spine Cycle Track - PH 3B from 7th Ave to 13th Ave - ReBid and E/W Green Spine Cycle Track - PH 3C from 13th Ave to 21st Ave - ReBid~~, shall include, but not be limited to, maintenance of traffic, roadway, signing and pavement markings, signalization, utilities adjustments/relocations, landscape, hardscape, possible contamination remediation with all associated work required for a complete project in accordance with the Contract Documents.

Contract Documents referred to in Article 1.01 of this Agreement also includes this volume, applicable standard drawings, the plans and any provisions referred to whether actually attached or not.

Contract: 24-C-00002 E/W Green Spine Cycle Track .PH 2A from Howard Ave. to Rome Ave.

PAY ITEM #	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST IN WORDS	UNIT COST	TOTAL COST
0101 1	MOBILIZATION	LS	1			
0102 1	MAINTENANCE OF TRAFFIC	LS	1			
0104 10 3	SEDIMENT BARRIER	LF	213			
0104 18	INLET PROTECTION SYSTEM	EA	10			
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	105			
0120 6	EMBANKMENT	CY	50			
0285701	OPTIONAL BASE, BASE GROUP 01	SY	194			
0327 70 6	MILLING EXIST ASPH PAVT, 1 1/2" AVG DEPTH	SY	8564			
0337 7 83	ASPHALT CONCRETE FRICTION COURSE, TRAFFIC C, FC-12.5, PG 76-22	TN	706			
COT-T	INLETS, DITCH BOTTOM, TYPE T <10'	EA	2			
COT-E	INLETS, DITCH BOTTOM, TYPE E <10'	EA	1			
0425 2 71	MANHOLES, J-7, <10'	EA	1			
0425 5	MANHOLE, ADJUST	EA	3			
0430175112	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 12"S/CD	LF	4			
0430175118	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 18"S/CD	LF	237			
0430175124	PIPE CULVERT,OPTIONAL MATERIAL,ROUND, 24"S/CD	LF	50			
0520 2 4	CONCRETE CURB, TYPE D	LF	1990			
0520 7 1	GRANITE CURB, FURNISH & INSTALL	LF	11			
0520 7 2	GRANITE CURB, RESET	LF	202			
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	44			
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	74			
0526 1	RED BRICK PAVERS, INSTALL	SY	94			
0526 1A	RED BRICK PAVERS, FURNISH AND INSTALL	SY	94			
0527 2	DETECTABLE WARNINGS	SF	98			
0570 1 2	PERFORMANCE TURF, SOD	SY	76			
COT-003	CITY INLET TYPE 3	EA	2			
EX - 9910	ADJUST VALVE BOX (HEIGHT)	EA	4			
EX-099925	Contingency	LS	1	Fifty One Thousand Six Hundred Fifty Dollars	\$51,650	DO NOT BID
<b>ROADWAY</b>				<b>COMPONENT TOTAL</b>		



SPECIFICATIONS PACKAGE  
Contract Number: 24-C-00002  
FINANCIAL PROJECT ID(S).439476-5-58-01  
FEDERAL FUNDS  
DISTRICT SEVEN  
HILLSBOROUGH COUNTY

The applicable Articles and Subarticles of the General Requirements & Covenants division (Division I) of the FY 2024-25 edition of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction are added, and all of the Construction Details and Materials divisions (Division II & III) are revised, as follows:

*I hereby certify that this specifications package has been properly prepared by me, or under my responsible charge, in accordance with procedures adopted by the Florida Department of Transportation.*

This item has been digitally signed and sealed by Scott Samuels, PE on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Date: May 1, 2025  
State of Florida,  
Professional Engineer, License No.: 88738  
Firm/Agency Name: Kisinger, Campo & Associates, Inc.  
Firm/Agency Address: 201 North Franklin Street, Suite 900  
City, State, Zip Code: Tampa, Florida 33602  
Page(s): 1-WM-128



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# Southwest Florida Water Management District

## Bartow Office

170 Century Boulevard  
Bartow, Florida 33830-7700  
(863) 534-1448 or  
1-800-492-7862 (FL only)

## Sarasota Office

78 Sarasota Center Boulevard  
Sarasota, Florida 34240-9770  
(941) 377-3722 or  
1-800-320-3503 (FL only)

2379 Broad Street, Brooksville, Florida 34604-6899

(352) 796-7211 or 1-800-423-1476 (FL only)

WaterMatters.org

## Tampa Office

7601 U.S. 301 North (Fort King Highway)  
Tampa, Florida 33637-6759  
(813) 985-7481 or  
1-800-836-0797 (FL only)

May 21, 2020

City of Tampa

Attn: Nina Mabillean

306 East Jackson Street, MC 290A4E

Tampa, FL 33602

Subject: **Project Evaluation - Project Exempt**

Project Name:

E. Floribruska Ave. From N. Tampa St. to N.  
9th St.

File Number:

800480

County:

Hillsborough

Sec/Twp/Rge:

S12/T29S/R18E

Reference: Rule 62-330, Florida Administrative Code (F.A.C.)

Dear Ms. Mabillean:

The District has reviewed the information you submitted for the project referenced above and has determined that an Environmental Resource Permit (ERP) **will not be required** for the proposed resurfacing of Floribruska Ave. from N Tampa to N 9th Street, addition of a bike lane, and widening of the associated sidewalk [Rule 62-330.051(4)(e), F.A.C.]

The information received by the District will be kept on file to support the District's determination regarding your application. This information is available for viewing or downloading through the District's Application and Permit Search Tools located at [www.WaterMatters.org/permits](http://www.WaterMatters.org/permits).

The District's determination that your project does not require an ERP is only applicable pursuant to the statutes and rules in effect at the time the information was submitted and may not be valid in the event subsequent changes occur in the applicable rules and statutes. Additionally, this notification does not mean that the District has determined that your project is permanently exempt from permitting requirements. Any subsequent change you make in the project's operation may necessitate further evaluation or permitting by the District. Therefore, you are advised to contact the District before beginning the project and before beginning any activity which is not specifically described in your submittal. Your timely pursuit of this activity is encouraged to avoid any potential rule changes that could affect your request.

This letter constitutes notice of Intended Agency Action of the project referenced above. The District's action in this matter only becomes closed to future legal challenges from members of the public if such persons have been properly notified of the District's action and no person objects to the District's action within the prescribed period of time following the notification. The District does not publish notices of agency action. If you wish to limit the time within which a person who does not receive actual written notice from the District may request an administrative hearing regarding this action, you are strongly encouraged to publish, at your own expense, a notice of agency action in the legal advertisement section of a newspaper of general circulation in the county or counties where the activity will occur. Publishing notice of agency action will close the window for filing a petition for hearing. Legal requirements and instructions for publishing notice of agency action, as well as a noticing form that can be used is available

from the District's website at [www.WaterMatters.org/permits/noticing](http://www.WaterMatters.org/permits/noticing). If you publish notice of agency action, a copy of the affidavit of publishing provided by the newspaper should be sent to the Regulation Division at the District Service Office that services this permit or other agency action, for retention in the File of Record for this agency action.

If you have questions regarding this matter, please contact Brett Bjornberg in the Tampa Service Office, extension 2247. Please reference the Project Name and Inquiry/Permit Number in future communications concerning this project.

Sincerely,

David Kramer, P.E.  
Bureau Chief  
Environmental Resource Permit Bureau  
Regulation Division

Enclosures: Notice of Rights  
cc: Calvin Hardie P.E.  
Stantec Consulting Services Inc.

## **Notice of Rights**

### **Administrative Hearing**

1. You or any person whose substantial interests are or may be affected by the District's intended or proposed action may request an administrative hearing on that action by filing a written petition in accordance with Sections 120.569 and 120.57, Florida Statutes (F.S.), Uniform Rules of Procedure Chapter 28-106, Florida Administrative Code (F.A.C.) and District Rule 40D-1.1010, F.A.C. Unless otherwise provided by law, a petition for administrative hearing must be filed with (received by) the District within 21 days of receipt of written notice of agency action. "Written notice" means either actual written notice, or newspaper publication of notice, that the District has taken or intends to take agency action. "Receipt of written notice" is deemed to be the fifth day after the date on which actual notice is deposited in the United States mail, if notice is mailed to you, or the date that actual notice is issued, if sent to you by electronic mail or delivered to you, or the date that notice is published in a newspaper, for those persons to whom the District does not provide actual notice.
2. Pursuant to Subsection 373.427(2)(c), F.S., for notices of intended or proposed agency action on a consolidated application for an environmental resource permit and use of sovereignty submerged lands concurrently reviewed by the District, a petition for administrative hearing must be filed with (received by) the District within 14 days of receipt of written notice.
3. Pursuant to Rule 62-532.430, F.A.C., for notices of intent to deny a well construction permit, a petition for administrative hearing must be filed with (received by) the District within 30 days of receipt of written notice of intent to deny.
4. Any person who receives written notice of an agency decision and who fails to file a written request for a hearing within 21 days of receipt or other period as required by law waives the right to request a hearing on such matters.
5. Mediation pursuant to Section 120.573, F.S., to settle an administrative dispute regarding District intended or proposed action is not available prior to the filing of a petition for hearing.
6. A request or petition for administrative hearing must comply with the requirements set forth in Chapter 28-106, F.A.C. A petition for a hearing must: (1) explain how the substantial interests of each person requesting the hearing will be affected by the District's intended action or proposed action, (2) state all material facts disputed by the person requesting the hearing or state that there are no material facts in dispute, and (3) otherwise comply with Rules 28-106.201 and 28-106.301, F.A.C. Chapter 28-106, F.A.C., can be viewed at [www.flrules.org](http://www.flrules.org) or at the District's website at [www.WaterMatters.org/permits/rules](http://www.WaterMatters.org/permits/rules).
7. A petition for administrative hearing is deemed filed upon receipt of the complete petition by the District Agency Clerk at the District's Tampa Service Office during normal business hours, which are 8:00 a.m. to 5:00 p.m., Monday through Friday, excluding District holidays. Filings with the District Agency Clerk may be made by mail, hand-delivery or facsimile transfer (fax). The District does not accept petitions for administrative hearing by electronic mail. Mailed filings must be addressed to, and hand-delivered filings must be delivered to, the Agency Clerk, Southwest Florida Water Management District, 7601 US Hwy 301, Tampa, FL 33637-6759. Faxed filings must be transmitted to the District Agency Clerk at (813) 367-9776. Any petition not received during normal business hours shall be filed as of 8:00 a.m. on the next business day. The District's acceptance of faxed petitions for filing is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation, available for viewing at [www.WaterMatters.org/about](http://www.WaterMatters.org/about).



**Judicial Review**

1. Pursuant to Sections 120.60(3) and 120.68, F.S., a party who is adversely affected by District action may seek judicial review of the District's action. Judicial review shall be sought in the Fifth District Court of Appeal or in the appellate district where a party resides or as otherwise provided by law.
2. All proceedings shall be instituted by filing an original notice of appeal with the District Agency Clerk within 30 days after the rendition of the order being appealed, and a copy of the notice of appeal, accompanied by any filing fees prescribed by law, with the clerk of the court, in accordance with Rules 9.110 and 9.190 of the Florida Rules of Appellate Procedure (Fla. R. App. P.). Pursuant to Fla. R. App. P. 9.020(h), an order is rendered when a signed written order is filed with the clerk of the lower tribunal.

# Geotechnical Engineering Services Report

**Green Spine Cycle Track  
City of Tampa, Hillsborough County, Florida  
City of Tampa Contract No.: 17-D-00022**

Prepared for: ***Kisinger Campo & Associates***  
201 N. Franklin St., Suite 400  
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5808-A Breckenridge Parkway  
Tampa, Florida 33610

Project No. T021705.031  
June 14, 2018



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June 14, 2018

Mr. Chris Meares, PE  
Civil Department Manager  
**Kisinger Campo & Associates**  
201 N. Franklin St., Suite 400  
Tampa, Florida 33602

Subject: Geotechnical Engineering Services Report  
**Green Spine Cycle Track**  
City of Tampa, Hillsborough County, Florida  
City of Tampa Contract No.: 17-D-00022  
MC² Project No. T021705.031

Dear Mr. Meares:

**MC Squared, Inc. (MC²)** has performed the requested geotechnical engineering services, including a pavement condition survey, for the referenced project. This report presents the results of our fieldwork and laboratory testing, evaluation of the data generated, and our input recommendations for the design and construction of the project.

We appreciate the opportunity to be of service on this project. Should you have any questions and/or comments on the contents of this report, please do not hesitate to contact us.

Respectfully submitted,  
**MC²**

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## **1 INTRODUCTION**

### **1.1 Purpose**

The purpose of the geotechnical services was to evaluate and explore the subsurface conditions for the proposed design of a cycle track, bio-swales and a signalization mast arm. This report describes the exploratory and testing procedures and includes the following items:

- (a) Scope of Services Performed
- (b) The Results of the Subsurface Exploration
- (c) The Results of the Laboratory Testing
- (d) Engineering Evaluations of the Data Gathered
- (e) Pavement Condition Survey
- (f) Design and Construction Considerations

### **1.2 Project Authorization**

Authorization to proceed with this project was issued by Mr. Chris Meares, PE with **Kisinger Campo & Associates (KCA)** through a Subconsultant Agreement for Geotechnical Services dated March 15, 2018. The project was performed in general accordance with **MC<sup>2</sup>** Proposal No. T021705.031.

## **2 PROJECT INFORMATION**

### **2.1 Project Description**

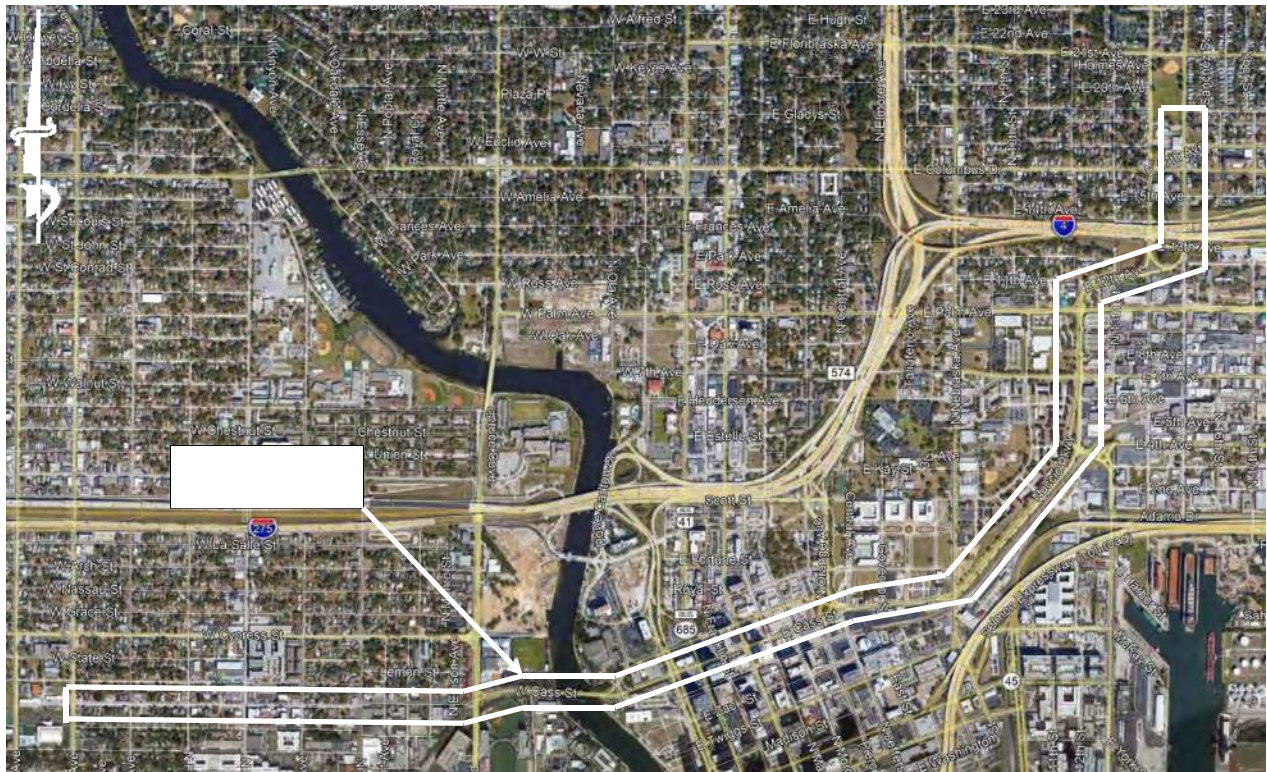
Based on the information provided by Mr. Meares of **KCA** through e-mailed and verbal communications, it is our understanding that the project requires geotechnical services to support the design of a cycle track, bio-swales and a signalization mast arm. The segregated bi-directional cycle track is located along Cass Street, Nuccio Parkway, and N. 15<sup>th</sup> Street. The signal mast arm is to be installed at the intersection of N. Howard Avenue and W. Cass Street.

If any of this project's description is incorrect or has changed, please inform **MC<sup>2</sup>** so that we may amend, if appropriate, the information presented in this report.

### **2.2 Site Description**

The project site is located along W. Cass Street from N. Howard Avenue to N. Nebraska, Nuccio Parkway from N. Nebraska Avenue to E. 13<sup>th</sup> Avenue and N. 15<sup>th</sup> Street from E. 13<sup>th</sup> Avenue to just past E. 19<sup>th</sup> Avenue in the City of Tampa, Florida (hereinafter "City"). The project alignment consists of a 2-lane, 4-lane undivided, and a 4-lane divided major collector urban roadway through the downtown area of the City.





**Figure 1: Project Site (photographed on January 11, 2017, Google Earth)**



**Figure 2: Nuccio Pkwy facing East (photographed on June 1, 2018)**

## **2.3 Scope of Services**

Our scope of services consisted of the following:

1. Conducted a visual reconnaissance of the project site, and reviewed the USDA Soil Survey for Hillsborough County and the USGS Topographic Maps for the area.
2. Cleared utilities with applicable utility companies in the area of proposed borings through coordination with Sunshine 811 and obtained required necessary permits to perform the fieldwork.
3. Performed ten (10) pavement cores, subsequent deepened with hand-auger (HA) borings through the subbase to approximately 5-ft. below the ground surface (bgs) or until the borehole collapsed or until refusal is met, whichever came first.
4. Performed five (5) individual HA borings to a depth of 5-ft. bgs or until borehole collapsed, along the shoulders of the project roadway.
5. Performed five (5) Double-Ring Infiltrometer tests (DRIT) at the requested locations that were conducted in the soils at a depth of approximately 1.5-ft. bgs.
6. Performed one (1) Standard Penetration Test (SPT) boring to an approximate depth of 26-ft. bgs, near the proposed signalization mast arm location at the intersection of N. Howard Avenue and W. Cass Street.
7. All SPT, HA, pavement cores and DRITs were performed at locations approved by **KCA**.
8. Performed a pavement condition survey (PCS) at each pavement core location, which included the crack and rutting ratings and overall condition of the pavement.
9. Visually examined all recovered soil samples in the laboratory and performed limited laboratory testing on selected representative samples to develop a soil legend for the project, using the Unified Soil Classification System (USCS) and the American Association of State Highway and Transportation Officials (AASHTO) Classification System, as appropriate. The laboratory testing consisted of percent passing the No. 200 sieve, natural moisture content determinations and Atterberg Limits testing.

The data collected from the subsurface exploration, along with the results of the laboratory testing, were used in the engineering evaluations and for developing geotechnical recommendations. Our geotechnical report contains the following:

1. General assessment of area geology based on our experience, study of geological literature and boring information.

2. General location and description of potentially deleterious materials encountered in the borings, which may interfere with future construction or performance, including existing fills or surficial organics.
3. Critical design and/or construction considerations, based on the soil and groundwater conditions developed from the borings.
4. Groundwater levels in the borings, where encountered, and an estimate of the seasonal high groundwater table (SHWT).
5. Estimate of the soil infiltration rates based on the results of the DRITs performed within the proposed locations of the bio-swales.
6. Summary of the findings of the Pavement Condition Survey.

The scope of our services did not include an environmental assessment for determining the presence or absence of wetlands or hazardous or toxic materials in the soil, bedrock, groundwater, or air, on or below or around the roadway alignment. Any statements in this report or on the boring logs regarding odors, colors, unusual or suspicious items or conditions are strictly for the information of our client. Additionally, this was not a sinkhole investigation. Accordingly, our field exploration was not designed to address sinkhole-related issues. Any mention of geological characteristics in relation to karst conditions is for informational purposes only.

### **3 SUBSURFACE EXPLORATION**

#### **3.1 General**

The field exploration program consisted of performing one (1) SPT boring, ten (10) pavement cores, five (5) HA borings and five (5) DRITs. The fieldwork was performed and supervised by **MC<sup>2</sup>'s** qualified staff geotechnical engineers. The fieldwork was performed from May 24, 2018 to June 5, 2018, after the appropriate required permits were attained. The field exploration services were overseen by one of **MC<sup>2</sup>'s** Florida State licensed professional geotechnical engineers.

#### **3.2 Standard Penetration Test Borings**

The SPT boring was completed at the site in general accordance with ASTM D1586 (Standard Test Method for Penetration Test and Split Barrel Sampling of Soils) by a truck-mounted drill rig using a wet-rotary procedure and a safety hammer. Representative soil samples were obtained using a 2-in. outer diameter split-barrel sampler driven into the soil by a 140-lb hammer operating freely over a drop of 30-inches. The number of blows required to drive the sampler through a 12-in. interval, after initial penetration of 6-in., is termed the Standard Penetration Resistance, or "N" value, and is indicated for each sample on the boring log. The "N" value may be taken as an indication of the empirical relative density (cohesionless soils) or consistency (cohesive soils) of soils in-situ.





**Figure 3: Performing SPT-01 on N. Howard Ave. (photographed June 6, 2018)**

The first four (4) feet in the boring was augered by hand in order to avoid potentially unmarked utilities and to help in the determining the SHWT.

Groundwater, if encountered, is normally measured during the advancement of our borings and prior to the introduction of bentonite to the drilling fluid. Once bentonite is added, an accurate groundwater level is difficult to measure at the time of drilling. Upon completion of our drilling, our test boring was backfilled using bentonite pellets. The groundwater conditions are discussed in **Section 5.4** herein.

### **3.3 Pavement Cores**

The pavement cores were performed using a 4-in. diameter core barrel that was advanced through the asphalt layer. This was followed by HA borings through the base and subbase material to a depth of 5-ft. bgs or until the borehole collapsed, whichever occurred first. The boreholes were backfilled and compacted with soil cuttings and then patched to restore each core location. The pavement cores and soil samples were collected and transported to our Tampa, FL office.

### **3.4 Hand Auger Borings**

The hand auger borings were completed at the site in general accordance with ASTM D1452 (Standard Practice for Soil Exploration and Sampling by Auger Borings) using a 3 ¼-in. diameter auger bucket. Samples were collected in 4 to 6-in. increments, classified and logged in the field, with confirmatory classifications by **MC<sup>2</sup>** professional geotechnical engineers at our Tampa, Florida laboratory location. Boreholes were backfilled and compacted with soil cuttings.



**Figure 4: Performing C-04 on Nuccio Pkwy., facing southwest (photographed May 29, 2018)**

### **3.5 Double-Ring Infiltrometer Tests**

Prior to performing the DRITs in the proposed project areas, a HA boring was advanced to a depth of five (5) feet to determine the soil type and groundwater level. The soil classification and groundwater level encountered at these locations are discussed herein. The DRITs were performed at the locations labeled as DRI-01 through DRI-05 at an approximate depth of 1.5-ft. bgs. The approximate locations of the DRITs are shown in the **Appendix**.

The DRITs were performed in general accordance with ASTM test designation D-3385 using a 24-inch diameter outer ring and a 12-inch diameter inner ring. A minimum constant head of 4-in. was maintained in both rings with the volume necessary to maintain the head in both the inner ring and the annular space between the inner and outer rings measured over time. The volume of water infiltrated during timed intervals is calculated as the incremental infiltration rate.

## **4 LABORATORY TESTING**

### **4.1 Soil Classification Testing**

A representative set of soil samples were tested in the laboratory to assist in the classification and determination of engineering characteristics of the soils, based on their mechanical and physical behavior. Laboratory testing was accomplished in general accordance with applicable USCS and

AASHTO standards, as appropriate. Laboratory tests completed on representative soil samples retrieved for this project were:

- Four (4) moisture content determinations (ASTM D-2216),
- Four (4) percent passing the No. 200 US standard sieve tests (ASTM D-1140),
- Three (3) Atterberg limits test (ASTM D-4318), however, one sample was non-rollable and non-plastic, and
- Visual classification in general accordance with applicable procedures (ASTM D-2488).

Results for each of these laboratory tests are summarized in **Table 1** and are presented on the **Individual Soil Profile** logs provided in the **Appendix**.

**Table 1: Summary of Laboratory Testing**

Boring ID (Depth) (ft)	Moisture Content (%)	Percent Passing No. 200 Sieve (%)	Plastic Limit	Liquid Limit	Plasticity Index	Classification
C-10 (4.5-5)	17.1	21.4	16	28	12	A-2-6
HA-02 (1.5-3.5)	17.1	4.0	-	-	-	A-3
HA-02 (3.5-4.5)	83.0	4.3	NR	NP	NP	A-3 (organic)
SPT-01 (18.5-20)	34.2	38.6	17	42	25	SC

NR = Non-Rollable, NP = Non-Plastic

## 4.2 Moisture Content

The laboratory moisture content test consists of the determination of the percentage of moisture contents in selected samples in general accordance with ASTM test designation D-2216 (Standard Test Methods for Laboratory Determination of Water Content of Soil and Rock by Mass). Briefly, natural moisture content is determined by weighing a sample of the selected material and then drying it in a warm oven. Care is taken to use gentle heat so as not to destroy any organics. The sample is then removed from the oven and reweighed. The difference between the two weights is the amount of moisture removed from the sample. The weight of the moisture divided by the weight of the dry soil sample is the percentage by weight of the moisture in the sample.

## 4.3 Percent Passing the No. 200 Sieve

The wash gradation test measures the percentage of a dry soil sample passing the No. 200 sieve. By definition in the Unified Soil Classification System, the percentage by weight passing the No. 200 sieve is the silt and clay content. The amount of silt and clay in a soil influences its properties, including permeability, workability and suitability as fill. This test was performed in general accordance with ASTM D-1140 (Standard Test Methods for Amount of Material Finer than the No. 200 (75 µm) Sieve).

#### **4.4 Atterberg Limits**

The laboratory Atterberg limits test measures the liquid limit, plastic limit, and plastic index of soils in accordance with ASTM D4318 (Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils). These characteristics are used in multiple engineering classification systems to specify the fine-grained fractions of soils. By classifying, other characteristics of soils can also be correlated with engineering behavior such as compressibility, permeability, compatibility, shrink-swell potential, and shear strength.

## **5 SITE AND SUBSURFACE CONDITIONS**

### **5.1 Hillsborough County Soil Survey**

The USDA Soil Conservation Service *Soil Survey of Hillsborough County, Florida* was reviewed for general information on the shallow soils in the site vicinity. The survey area data is Version 16 dated October 4, 2017, with aerial images taken from December 29, 2010 to January 17, 2014. The USDA Soil Conservation Service Soil Survey outlines approximate areas dominated by a particular shallow soil type. Small areas of other soils may occur within the mapping unit. We have concluded that the project site is within four (4) mapping units: Immokalee-Urban land complex (22), Myakka-Urban land complex (32) and Tavares-Urban land complex, 0 to 5 percent slopes (55) and Urban land (56).

Immokalee-Urban land complex (22) has a parent material of sandy marine deposits and a typical profile of fine sand from zero to 80-in. bgs. The material is poorly drained and has a moderately high to high capacity to transmit water. The depth to the groundwater table is about 6 to 18 inches.

Myakka-Urban land complex (32) has a parent material of sandy marine deposits and typical profile of fine sand from zero to 80-in. bgs. The material is poorly drained and has a moderately high to high capacity to transmit water. The depth to the groundwater table is about 6 to 18 inches.

Tavares-Urban land complex, 0 to 5 percent slopes (55) has a parent material of Eolian or sandy marine deposits and a typical profile of fine sand from zero to 80-in. bgs. The material is moderately well drained and has a very high capacity to transmit water. The depth to the groundwater table is about 42 to 72 inches.

Urban land (56) is heavily developed areas that consequentially have a high variability in soil types due to fill placement and movement. Because of this, soil characteristics are difficult to assign.

The USDA Soil Survey is not necessarily an exact representation of the soils on the site. The mapping is based on interpretation of aerial maps with scattered shallow borings for confirmation. Accordingly, borders between mapping units are approximate and the change may be transitional. Differences may also occur from the typical stratigraphy, and small areas of other

similar and dissimilar soils may occur within the soil-mapping unit. As such, there may be differences in the mapped description and the soil test boring descriptions presented in this report. The survey is, however, a good basis for evaluating the shallow soil conditions of the area. The **USDA Soil Survey Map** is included in the **Appendix** for information and reference, as necessary.

## **5.2 USGS Topographic Survey**

The U.S. Geological Survey (USGS) maintains a database of historical topographic maps. Based upon our review of the USGS Topographic Maps, 7.5 Minute Series “Tampa Quadrangle” where datum is NGVD 1929, approximate elevation of the project alignment is 10 to 45 feet. No major changes in elevation within the project limits are evident in the USGS topographic maps over time. A **Topographic Map** is included in the **Appendix** for information and reference, as necessary.

## **5.3 Subsurface Conditions**

The subsurface conditions described herein are of a generalized nature to highlight the major stratification features and material characteristics encountered during the field exploration. The soil profiles included in the **Appendix** should be reviewed for specific information at individual boring locations. These profiles include soil description, stratification and groundwater table depths where encountered. The stratification shown on the boring profiles represents the conditions only at the actual boring locations. Variations might occur and should be expected between the boring locations.

### *Pavement Cores (C-01 through C-10)*

The subsurface soil conditions encountered at the pavement core locations consisted of poorly graded fine SAND to fine SAND with silt (A-3) throughout the boreholes. SAND with gravel (A-1-b) with shell fragments was encountered in C-02 from underneath the asphalt pavement and brick pavers to approximately 2.5-ft. bgs. Clayey SAND (A-2-6) was encountered in C-10 from 4.5 to 5-ft. bgs where the borehole was terminated. Except at C-03, the upper foot of the subbase material appeared to be stabilized in the boreholes. However, no laboratory testing has been performed to determine this.

### *Hand-Auger Borings (HA-01 through HA-05)*

The subsurface conditions observed at the HA boring locations consisted of poorly graded fine SAND to fine SAND with silt (A-3) throughout the boreholes. SAND with some organic material was encountered in HA-02 from 3.5 to 4.5-ft. bgs where the borehole collapsed. Silty fine SAND (A-2-4) was encountered in HA-05 from 4.5 to 5-ft. bgs where the borehole was terminated.

### *SPT Borings (SPT-01)*

The subsurface boring conditions revealed in the signal mast arm boring consisted of medium dense, poorly graded fine SAND to SAND with silt (SP-SM) from the surface to 8-ft. bgs. The surficial SAND was followed by very loose to medium dense, clayey SAND (SC) from 8 to 25-ft. bgs,

weathered to competent LIMESTONE was encountered at 25-ft. bgs. The boring was terminated in competent LIMESTONE at 26-ft. bgs.

In general, the shallow soil conditions encountered in the soil borings performed throughout the proposed development area appear to be relatively similar to the surveyed soil mapping units previously described, taking into consideration previous site work and grading operations.

#### **5.4 Groundwater Information**

The groundwater table was not encountered (GNE) in the majority of the pavement cores and two (2) of the HA borings. In C-01, C-04, HA-01, HA-02 and HA-03 the groundwater was encountered at 3, 5, 4, 4 and 5-ft. bgs, respectively. The groundwater table was also encountered at 3-ft. bgs in SPT-01. The depth to the groundwater table and estimated SHWT at each boring location are presented in **Table 2** below. The estimated SHWT values are based upon our review of available publications and our review of the soil profiles and samples collected in the field.

**Table 2: Summary of Water Levels and SHWT Estimates**

<b>Boring ID</b>	<b>Encountered Water Table Depth (ft)</b>	<b>USDA Water Table Depth (ft)</b>	<b>Estimated SHWT Depth (ft)</b>
C-01	3	0.5 to 1.5	2.5
C-02	GNE	N/A	3
C-03	GNE	N/A	3
C-04	5	N/A	3
C-05	GNE	N/A	4
C-06	GNE	N/A	4
C-07	GNE	3.5 to 6	4
C-08	GNE	3.5 to 6	4
C-09	GNE	3.5 to 6	4
C-10	GNE	3.5 to 6	2.5
HA-01	4	0.5 to 1.5	2
HA-02	4	N/A	2.5
HA-03	5	N/A	2.5
HA-04	GNE	N/A	3.5
HA-05	GNE	3.5 to 6	4
SPT-01	3	3.5 to 6	2.5

In general, groundwater levels tend to fluctuate during periods of prolonged drought and extended rainfall, and would likely be affected by tidal influences along the project's alignment. In addition, a seasonal effect will also occur in which higher groundwater levels are normally recorded in rainy seasons. If the groundwater level is critical to design or construction, temporary observation wells should be installed along the alignment to monitor groundwater fluctuations over an adequate period that permits more accurate determinations of wet and dry seasonal

levels.

Fluctuation of the groundwater levels is normal, and should be anticipated. We recommend that the Contractor determine the actual groundwater levels at the time of construction to determine groundwater impact on the construction activities.

## **5.5 Infiltration Rates**

Prior to performing the DRITs in the proposed project area, a hand auger boring was performed to determine the soil type and groundwater level. The soils consisted of poorly graded fine SAND to fine SAND with silt (A-3) throughout the boreholes. SAND with some organic material was encountered in HA-02 from 3.5 to 4.5-ft. bgs where the borehole collapsed. Silty fine SAND (A-2-4) was encountered in HA-05 from 4.5 to 5-ft. bgs where the borehole was terminated. The groundwater level was encountered at 4-ft. bgs in HA-01 and HA-02, and 5-ft. bgs in HA-03. The groundwater table was not encountered at borings HA-04 and HS-05. The DRITs were performed at a depth of approximately 1.5-ft. bgs. The approximate locations of the DRITs are shown in the **Appendix**. The results of these tests are summarized in **Table 3** below.

**Table 3: Summary of Double-Ring Infiltrometer Tests**

<b>DRIT ID</b>	<b>Approximate Depth Performed (ft)</b>	<b>Measured Infiltration Rate (in/hour)</b>
DRI-01	1.5	9.5
DRI-02	1.5	4
DRI-03	1.5	6
DRI-04	1.5	8.5
DRI-05	1.5	10.5

Test results in the **Appendix** include a graphical representation of the elapsed time versus infiltration rate in inches/hour. The infiltration rates obtained are considered within the typical range for the sands identified at the test locations, but rates could possibly fluctuate depending on groundwater levels and soil density variations. The drainage area design should also consider the impact of silty sand and/or clayey sand soils, which could restrict vertical infiltration.

## **5.6 Pavement Condition Survey**

**MC<sup>2</sup>** has completed a field review to evaluate the existing pavement conditions along West Cass Street, Nuccio Parkway, and N. 15<sup>th</sup> Street, including documentation on the roadway surface conditions, at each pavement core location. We noted pavement changes, distressed areas, roughness and patching. Photos are also included to provide examples of each distress type observed. The values for crack and rut rating provided were determined in general accordance with the FDOT 2017 Flexible Pavement Condition Survey Handbook.



**C-01 along W. Cass Street (Eastbound Lane)**

Longitudinal cracks (Class II), transverse cracks (Class II), pavement raveling and block cracking (Class II) are present throughout the roadway. These distresses are generally caused by deficiencies within the pavement and base materials.

***Figures 3 & 5: Longitudinal Cracking (250-ft. West of N. Fremont Avenue)  
Transverse Cracking (270-ft. west of N. Fremont Avenue)***



Asphalt patches have been used in parking areas and locations where the pavement surface is weathered. Weathered asphalt patches are generally present due to the vehicle traffic load exceeding the design criteria of the roadway.

***Figures 6 & 7: Block Cracking (300-ft. west of N. Fremont Avenue)  
Asphalt Patches / Transverse Cracking (270-ft. west of N. Fremont Avenue)***



The pavement condition at this site should be considered **Poor**. This assessment was determined from a crack rating of 3.5 and a rut rating of 8.



**C-02 along W. Cass Street (Outside Eastbound Lane)**

Longitudinal cracks (Class I), transverse cracks (Class I), pavement raveling, and block cracking (Class I) are present throughout the roadway. These distresses are generally caused by deficiencies within the pavement and base materials.

***Figures 8 & 9: Longitudinal Cracking (330-ft. east of North Boulevard)  
Transverse Cracking (280-ft. east of North Boulevard)***



***Figure 10: Block Cracking (335-ft. east of North Boulevard)***



The pavement condition at this site should be considered **Poor**. This assessment was determined from a crack rating of 5.5 and a rut rating of 9.



### **C-03 along W. Cass Street (Paved Median)**

Transverse cracks (Class I) and reflection cracks are present in the eastbound lane of West Cass Street. These distresses are generally caused by deficiencies within the pavement and base materials.

***Figures 11 & 12: Transverse Cracking (200-ft. west of Doyle Carlton Drive)  
Reflection Cracking (240-ft. west of Doyle Carlton Drive)***



The pavement condition at this site should be considered **Fair**. This assessment was determined from a crack rating of 10 and a rut rating of 8.

### **C-04 along Nuccio Parkway (Outside Northbound Lane)**

Longitudinal cracks (Class I), transverse cracks (Class I), pavement raveling are present throughout the roadway. These distresses are generally caused by deficiencies within the pavement and base materials.

***Figure 13 & 14: Longitudinal Cracking (400-ft. northeast of N. Nebraska Ave.)  
Transverse Cracking (430-ft. northeast of N. Nebraska Ave.)***



**Figure 15: Transverse Cracking and Raveling (370-ft. northeast of N. Nebraska Ave.)**



The pavement condition at this site should be considered **Fair**. This assessment was determined from a crack rating of 8.5 and a rut rating of 9.

**C-05 along Nuccio Parkway (Outside Northbound Lane)**

Longitudinal cracks (Class II), and transverse cracks (Class II) are present throughout the roadway. These distresses are generally caused by deficiencies within the pavement and base materials.

**Figure 16 & 17: Longitudinal Cracking (30-ft. north of E. 6th Avenue)  
Transverse Cracking (80-ft. north of E. 6th Avenue)**





**Figure 18: Poor Drainage (20-ft. north of E. 6th Avenue)**



The pavement condition at this site should be considered **Poor**. This assessment was determined from a crack rating of 6.5 and a rut rating of 9.

**C-06 along Nuccio Parkway (Outside Northbound Lane)**

Longitudinal cracks (Class I) and transverse cracks (Class I) are present throughout the roadway. These distresses are generally caused by deficiencies within the pavement and base materials.

**Figure 19 & 20: Longitudinal Cracking (40-ft. north of E. 8<sup>th</sup> Avenue)  
Transverse Cracking (150-ft. north of E. 8<sup>th</sup> Avenue)**



The pavement condition at this site should be considered **Poor**. This assessment was determined from a crack rating of 7 and a rut rating of 9.



**C-07 along Nuccio Parkway (Outside Northbound/Eastbound Lane)**

Fatigue cracking (Class II) also known as alligator cracking is present in a few locations as seen in the figures above. Asphalt patches have been used in locations where the pavement surface is weathered or appears to be raveling. Asphalt patches as well as alligator cracking are generally present due to the vehicle traffic load exceeding the design criteria of the roadway.

***Figure 21 & 22: Longitudinal Cracking (150-ft. west of N. 14<sup>th</sup> Street)  
Transverse Cracking (80-ft. west of N. 14<sup>th</sup> Street)***



Longitudinal cracks (Class I) and transverse cracks (Class I) are present throughout the roadway. These distresses are generally caused by deficiencies within the pavement and base materials.

***Figure 23 & 24: Transverse Cracking / Fatigue (Alligator) Cracking (70-ft. west of N. 14<sup>th</sup> Street)  
Alligator Cracking / Patching (70-ft. west of N. 14<sup>th</sup> Street)***



**Figure 25: Raveling (70-ft. west of N. 14<sup>th</sup> Street)**



The pavement condition at this site should be considered **Poor**. This assessment was determined from a crack rating of 5.5 and a rut rating of 8.

**C-08 along Nuccio Parkway (Outside Northbound Lane)**

Transverse cracks (Class I) are present in the roadway and are generally caused by deficiencies within the pavement and base materials.

**Figure 26: Transverse Cracking (45-ft. south of E. 13<sup>th</sup> Avenue)**



The pavement condition at this site should be considered **Good**. This assessment was determined from a crack rating of 10 and a rut rating of 10.



**C-09 along N. 15<sup>th</sup> Street (Outside Northbound Lane)**

Transverse cracks (Class I) are present in the roadway and are generally caused by deficiencies within the pavement and base materials.

***Figure 27: Transverse Cracking (125-ft. north of E. 14<sup>th</sup> Avenue)***



The pavement condition at this site should be considered **Good**. This assessment was determined from a crack rating of 10 and a rut rating of 10.

**C-10 along N. 15<sup>th</sup> Street (Outside Northbound Lane)**

Longitudinal cracks (Class I), transverse cracks (Class II), and block cracking (Class II) are present throughout the roadway. These distresses are generally caused by deficiencies within the pavement and base materials.

***Figure 28 & 29: Transverse Cracking (160-ft. north of E. 17<sup>th</sup> Avenue)***  
***Transverse Cracking (200-ft. north of E. 17<sup>th</sup> Avenue)***



**Figure 30 & 31: Longitudinal Cracking / Transverse Cracking / Block Cracking  
(240-ft. north of E. 17th Avenue) Block Cracking (150-ft. north of E. 17th Avenue)**



Based upon the Pavement Condition Survey performed by **MC<sup>2</sup>**, the pavement condition at this site should be considered **Poor**. This assessment was determined from a crack rating of 3.5 and a rut rating of 9.

The values for crack and rut rating provided were determined in general accordance with the FDOT 2017 Flexible Pavement Condition Survey Handbook and are summarized in the following **Table**.

**Table 4: Summary of Pavement Condition Survey**

Pavement Core ID	Crack Rating	Rut Rating	Overall Roadway Condition
C-01	3.5	8	POOR
C-02	5.5	9	POOR
C-03	10	8	FAIR
C-04	8.5	9	FAIR
C-05	6.5	9	POOR
C-06	7	9	POOR
C-07	5.5	8	POOR
C-08	10	10	GOOD
C-09	10	10	GOOD
C-10	3.5	9	POOR

## 6 RECOMMENDATIONS

### 6.1 General

The following recommendations have been developed based on the previously described project characteristics, our review of published data, information provided by others, our site reconnaissance and the results of our subsurface exploration and associated laboratory testing. The



soils encountered throughout the project corridor at the locations explored are suitable for the proposed improvements provided the recommendations included in this report are followed.

## **6.2 Mast Arm Pole Considerations**

Based on the SPT N-values and soil types at various depths, we have estimated the strength and unit weight parameters for design of the pole structure. These parameters were obtained from the SPT boring performed at the specified location. We used empirical correlations between the “N” value and the types of soils to arrive at the internal friction angle, cohesion, dry and wet densities, etc. The results are summarized on the **Table 5: Summary of Soil Parameters** in the **Appendix**. The soil parameters shown are for the different soil strata encountered at the boring location and categorized using the USCS soil classification system.

Once the final loads are known, the foundation system may be designed using the soil parameters provided in this report. The foundation design should also consider torsional loads created by wind action.

If the foundation system selected is a drilled shaft, its design and construction should be done in accordance with publication “FHWA-IF-99-025 Drilled Shafts: Construction Procedures and Design Methods” and the latest FDOT Structural Guidelines and Standard Specifications for Road and Bridge Construction.

We also recommend that this complete report be provided to the various design team members and the appropriate contractors. Potential contractors should be informed of this report prior to them providing pricing.

## **6.3 Site Preparation**

Site preparation should include stripping and removal of surficial (topsoil) shallow organics and/or manmade obstructions (pavements, curbing, etc.) where present prior to replacing with properly compacted structural fill and/or pavement sections. If unstable soils are encountered during excavation that cannot be adequately densified in place, they should be removed and replaced under the recommendations of the **MC<sup>2</sup>** representative. The location of any existing underground utility lines, tanks, etc. within the construction corridor should be established, prior to construction. The contractor should exercise caution during construction and compaction of soils so as not to cause settlement of any nearby existing structures or utilities induced by vibrations. The Contractor must control and adjust the vibration to not disturb existing structures and/or subsurface utilities that may be near the project. In this regard, the Contractor may want to consider using non-vibratory compaction equipment. The contractor is solely responsible for any settlement caused by his actions.

The natural soil encountered directly underneath any roadway excavation should be compacted to 98% of the modified Proctor’s maximum dry density within  $\pm 2\%$  of the optimum moisture content. If compaction is not practical or the material encountered is unsuitable, then the material should be excavated an additional 6-in. and backfilled with either compacted fill, lean concrete or

course stone wrapped in a geotextile fabric to create a working platform for the roadway construction equipment.

#### **6.4 Selection and Placement of Fill**

After the stripped site has been accepted by the Geotechnical Engineer, the fill required to bring the site to final grade may be placed in properly compacted lifts. Fill material should be inorganic (less than 5%), non-plastic granular soil (clean to slightly silty SAND that classifies as A-3 and A-2-4) that is free of detrimental materials such as organics, clay clods, debris, roots, rocks larger than 1 inch in greatest dimension, etc. Careful evaluation should be made of any slightly organic to organic soils and clayey soils prior to use. The planned fill soils should be evaluated to determine that they meet the recommended material properties. The suitability of the soil for reuse should be evaluated against the project requirements.

In general, the shallow, on-site soils encountered in our boreholes meets the above criteria. This material may be used for grading, leveling, as general fill, structural fill and as backfill. The fill should be placed in level lifts not to exceed 12-in. loose thickness. Where fill is to be used in green areas, the soil should be compacted to at least 95% of the soil's modified Proctor maximum dry density and +/- 2% of the optimum moisture content, as determined by ASTM designation D1557. In any areas to be paved over, the soil should be compacted to 98% of the soil's modified Proctor maximum dry density and +/- 2% of the optimum moisture content. In-place density tests should be performed on each lift by an experienced engineering technician working under the direction of a licensed Geotechnical Engineer to verify that the recommended degree of compaction has been achieved. Within small excavations such as around utilities, we recommend the use of smaller hand or remote guided equipment. A maximum loose lift thickness of 4-in. is recommended when using such equipment.

#### **6.5 Reuse of Excavated Soils as Structural Fill**

Most of the near surface soils classified as SP, SP-SM/A-3, A-2-4 excavated during construction should, in our opinion, be suitable for reuse as fill material provided it meets our requirements and recommendations presented in this report. Routine adjustment of moisture content may be necessary to allow compaction in accordance with project specifications. The planned fill soils should be evaluated to determine that they meet the recommended material properties.

## **7 REPORT LIMITATIONS**

The evaluations and recommendations detailed herein are based on the available limited soil information obtained by **MC<sup>2</sup>** and information provided by **KCA** for the Green Spine Cycle Track Project. If there are any revisions to the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, **MC<sup>2</sup>** should be notified immediately to determine if changes to our recommendations or additional testing are required for this project. In the event that **MC<sup>2</sup>** is not retained to address such revisions and/or changes, **MC<sup>2</sup>** cannot be held responsible for their potential impact on the performance of the project.

**MC<sup>2</sup>** warrants that the findings or professional advice contained herein has been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

After the plans and specifications are more complete, **MC<sup>2</sup>** should be provided the opportunity to review the final design plans and specifications to assess that our findings have been properly incorporated into the design documents. At that time, it may be necessary to submit recommendations for supplementary information. This report has been prepared for the exclusive use of **KCA and their client**.

## **APPENDIX**

Table 5: Summary of Soil Parameters
Table 6: Summary of Pavement Cores
Pavement Core Summary (10 pages)
Project Location Map - Sheet 1
Boring Location Map - Sheets 2 through 14
USDA Soil Survey/USGS Topographic Maps - Sheet 15
Subsurface Boring Profiles - Sheets 16 through 18
Report of Core Boring – Sheet 19
Individual Soil Profiles (17 Pages)
Double Ring Infiltrometer Test Results (5 pages)
Test Procedures

**Table 5: Summary of Soil Parameters**

Depth (ft)	N Value Range	Soil Classification (USCS)	Average Unit Weight (y)**		Angle of Internal Friction ϕ** (degrees)	Earth Pressure Coefficients*		Average Undrained Cohesion C <sub>u</sub> ** (psf)	Ultimate Shear Strength (psf)
			Saturated (pcf)	Submerged (pcf)		Active (K <sub>a</sub> )	Passive (K <sub>p</sub> )		
SPT-01									
0-8	11	SP-SM	110.0	47.6	30	0.333	3.00	0	-
8-15	27	SC	115.0	52.6	0	1	1	2,700	-
15-25	3	SC	100.0	37.6	0	1	1	300	-
25-26	50+	LIMESTONE	135.0	72.6	0	1	1	0	15,000

\*Values are for level (non-sloping) backfill; no surcharge loads on backfill

\*\*Based on empirical correlations

NOTE: Hand augers were performed in the top 4 feet to avoid utilities

**Table 6: Summary of Pavement Cores**

Core ID	Approximate Location (Street, Lane, Distance)	Asphalt Thickness (in)	Paver Thickness (in)	Base Material and Thickness (in)	Subbase Material (AASHTO)	Approximate GWT Depth (ft)
C-01	W. Cass Street, EB Lane, 350-ft. East of N. Albany Avenue Intersection	4 ½	3	Shell – 4 ½	A-3	3
C-02	W. Cass Street, Outside EB Lane, 350-ft. East of North Blvd. Intersection	2 ½	2 ¾	Not Encountered	A-3	GNE
C-03	W. Cass Street, Paved Median, 190-ft. West of W. Gasparilla Plaza Intersection	4 ¾	-	Limerock – 7 ¼	A-3	GNE
C-04	Nuccio Parkway, Outside NB Lane, 590-ft. North of N. Nebraska Avenue Intersection	4	-	Limerock – 10	A-3	5
C-05	Nuccio Pkwy, Outside NB Lane, 90-ft. North of E. 6 <sup>th</sup> Avenue Intersection	3 ½	-	Limerock – 8 ½	A-3	GNE
C-06	Nuccio Pkwy, Outside NB Lane, 90-ft. South of E. 9 <sup>th</sup> Avenue Intersection	2 ¾	-	Limerock – 9 ¼	A-3	GNE
C-07	Nuccio Pkwy, Outside NB Lane, 350-ft. South of E. 12 <sup>th</sup> Avenue Intersection	3 ¾	-	Limerock – 11	A-3	GNE
C-08	Nuccio Pkwy, Outside NB Lane, 20-ft. South of N. 15 <sup>th</sup> Street Merger	3	-	Limerock – 11	A-3	GNE
C-09	N. 15 <sup>th</sup> Street, Outside NB Lane, 50-ft. South of E. 15 <sup>th</sup> Avenue Intersection	3 ½	3 ½	Not Encountered	A-3	GNE
C-10	N. 15 <sup>th</sup> Street, Outside NB Lane, 40-ft. South of 18 <sup>th</sup> Avenue Intersection	6	-	Not Encountered	A-3	GNE


NOTE: Photographs of the pavement cores are included in the Pavement Core Summaries. Photographs may or may not be representative of the thicknesses measured within the borehole.

GWT = Groundwater Table, GNE = Groundwater Table Not Encountered



**Core C-01: 4 ½" Asphalt**  
**3" Paver**  
**4 ½" Shell Base**  
**SAND with silt (A-3) Subbase**

**W. Cass Street, EB Lane, 350-ft. East of N. Albany Avenue Intersection**


	<p> <b>Green Spine Cycle Track</b>  <b>City of Tampa, Hillsborough</b>  <b>County, Florida</b>  <b>COT Contract No.: 17-D-00022</b> </p>	<b>For:</b>  <b>Kisinger Campo &amp; Associates</b>
		<b>MC² Project No. T021705.031</b>
	<b>PAVEMENT CORE SUMMARY</b>	<b>Date: 5/24/18</b>





**Core C-02: 2 ½" Asphalt**  
**2 ¾" Paver**  
**No Base Encountered**  
**SAND with silt (A-3) Subbase**


**W. Cass Street, Outside EB Lane, 350-ft. East of North Blvd. Intersection**

 <p> <b>MC<sup>2</sup></b>              GEOTECHNICAL • ENVIRONMENTAL              MATERIALS TESTING         </p>	<p> <b>Green Spine Cycle Track</b>  <b>City of Tampa, Hillsborough</b>  <b>County, Florida</b>  <b>COT Contract No.: 17-D-00022</b> </p>	<b>For:</b>  <p><b>Kisinger Campo &amp; Associates</b></p>
		<p><b>MC<sup>2</sup> Project No. T021705.031</b></p>
	<p><b>PAVEMENT CORE SUMMARY</b></p>	<p><b>Date: 5/29/18</b></p>



**Core C-03: 4 ¾" Asphalt (cracked underneath as shown)  
 7 ¼" Limerock Base  
 SAND with silt (A-3) Subbase**

**W. Cass Street, Paved Median, 190-ft. West of W. Gasparilla Plaza Intersection**


	<b>Green Spine Cycle Track          City of Tampa, Hillsborough          County, Florida          COT Contract No.: 17-D-00022</b>	<b>For:</b>  <b>Kisinger Campo &amp; Associates</b>
		<b>MC² Project No. T021705.031</b>
	<b>PAVEMENT CORE SUMMARY</b>	<b>Date: 5/24/18</b>





**Core C-04: 4" Asphalt  
10" Limerock Base  
SAND with silt (A-3) Subbase**


**Nuccio Parkway, Outside NB Lane, 590-ft. North of N. Nebraska Avenue Intersection**

	<b>Green Spine Cycle Track City of Tampa, Hillsborough County, Florida COT Contract No.: 17-D-00022</b>	<b>For:</b>  <b>Kisinger Campo &amp; Associates</b>
		<b>MC² Project No. T021705.031</b>
	<b>PAVEMENT CORE SUMMARY</b>	<b>Date: 5/29/18</b>



**Core C-05: 3 ½" Asphalt  
8 ½" Limerock Base  
SAND with silt (A-3) Subbase**

**Nuccio Pkwy, Outside NB Lane, 90-ft. North of E. 6<sup>th</sup> Avenue Intersection**


	<b>Green Spine Cycle Track City of Tampa, Hillsborough County, Florida COT Contract No.: 17-D-00022</b>	<b>For:</b>  <b>Kisinger Campo &amp; Associates</b>
		<b>MC² Project No. T021705.031</b>
	<b>PAVEMENT CORE SUMMARY</b>	<b>Date: 5/31/18</b>





Core C-06: 2 ¾" Asphalt  
9 ¼" Limerock Base  
SAND with silt (A-3) Subbase


Nuccio Pkwy, Outside NB Lane, 90-ft. South of E. 9<sup>th</sup> Avenue Intersection

	Green Spine Cycle Track City of Tampa, Hillsborough County, Florida COT Contract No.: 17-D-00022	For:
		Kisinger Campo & Associates
		MC² Project No. T021705.031
	PAVEMENT CORE SUMMARY	Date: 5/31/18



**Core C-07: 3 3/4" Asphalt  
11" Limerock Base  
SAND with silt (A-3) Subbase**

**Nuccio Pkwy, Outside NB Lane, 350-ft. South of E. 12<sup>th</sup> Avenue Intersection**


	<b>Green Spine Cycle Track City of Tampa, Hillsborough County, Florida COT Contract No.: 17-D-00022</b>	<b>For:</b>  <b>Kisinger Campo &amp; Associates</b>
		<b>MC² Project No. T021705.031</b>
	<b>PAVEMENT CORE SUMMARY</b>	<b>Date: 5/31/18</b>





Core C-08: 3" Asphalt  
11" Limerock Base  
SAND with silt (A-3) Subbase

Nuccio Pkwy, Outside NB Lane, 20-ft. South of N. 15<sup>th</sup> Street Merger


	<b>For:</b>  Green Spine Cycle Track City of Tampa, Hillsborough County, Florida COT Contract No.: 17-D-00022	Kisinger Campo & Associates
		MC² Project No. T021705.031
	<b>PAVEMENT CORE SUMMARY</b>	Date: 6/1/18





**Core C-09: 3 ½" Asphalt  
3 ½" Paver  
No Base Encountered  
SAND with silt (A-3) Subbase**


**N. 15<sup>th</sup> Street, Outside NB Lane, 50-ft. South of E. 15<sup>th</sup> Avenue Intersection**

 <p><b>MC<sup>2</sup></b> GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING</p>	<p><b>Green Spine Cycle Track City of Tampa, Hillsborough County, Florida COT Contract No.: 17-D-00022</b></p>	<p><b>For:</b></p> <p><b>Kisinger Campo &amp; Associates</b></p>
		<p><b>MC<sup>2</sup> Project No. T021705.031</b></p>
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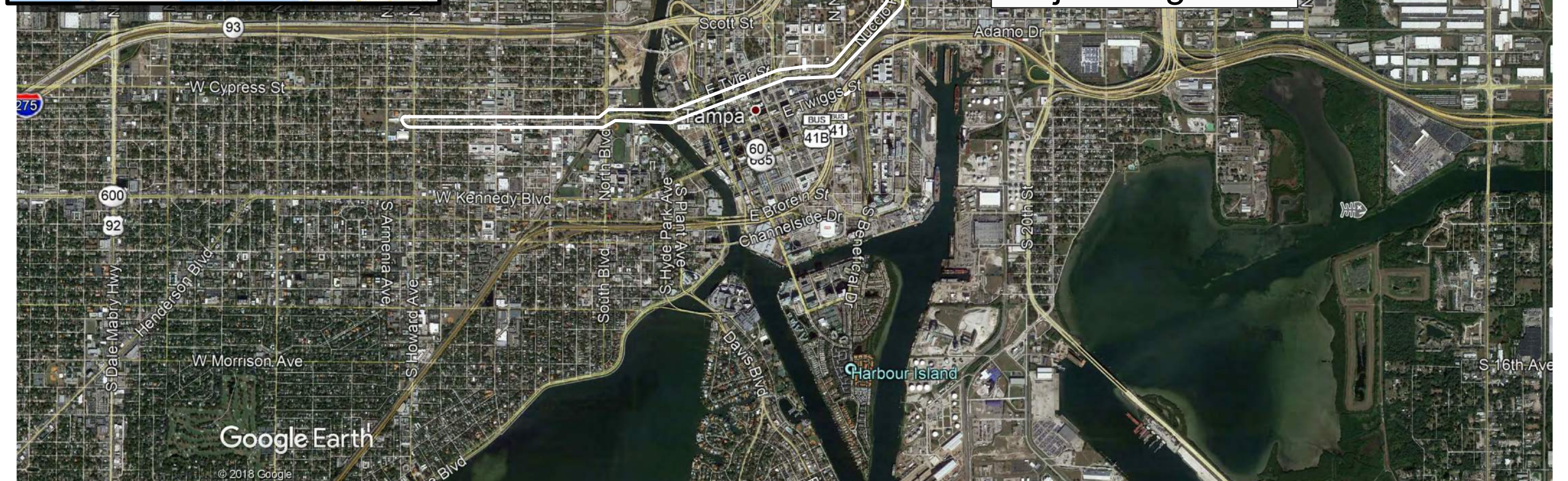
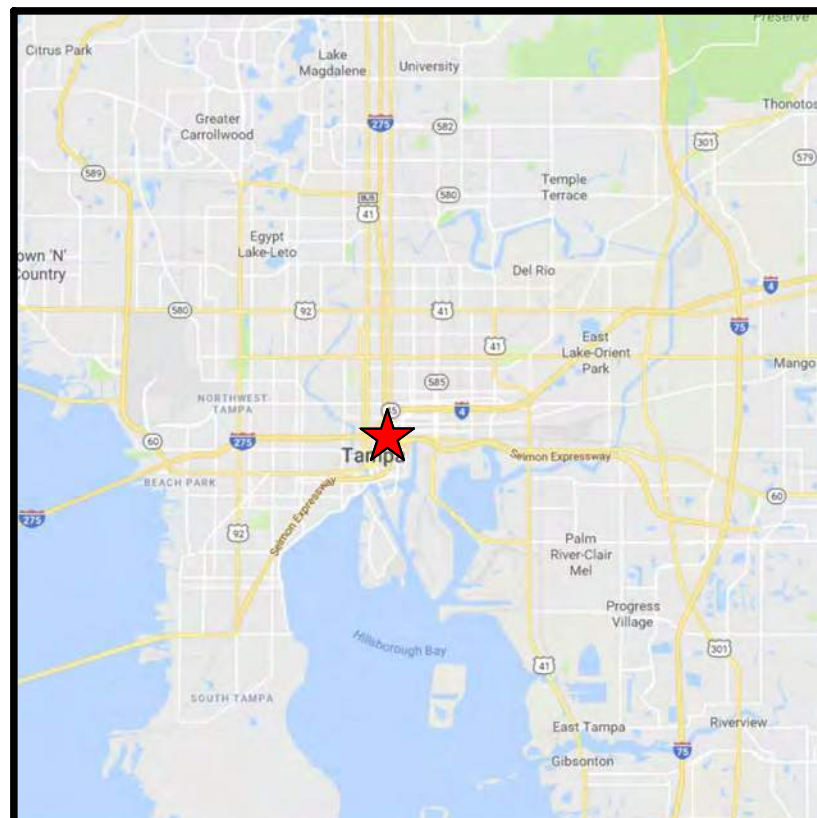


Core C-10: 6" Asphalt (saw cut captured in bottom layer as shown)  
No Base Encountered  
SAND with silt (A-3) Subbase

N. 15<sup>th</sup> Street, Outside NB Lane, 40-ft. South of 18<sup>th</sup> Avenue Intersection

	Green Spine Cycle Track City of Tampa, Hillsborough County, Florida COT Contract No.: 17-D-00022	For:	Kisinger Campo & Associates
			MC² Project No. T021705.031
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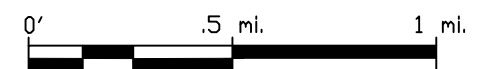





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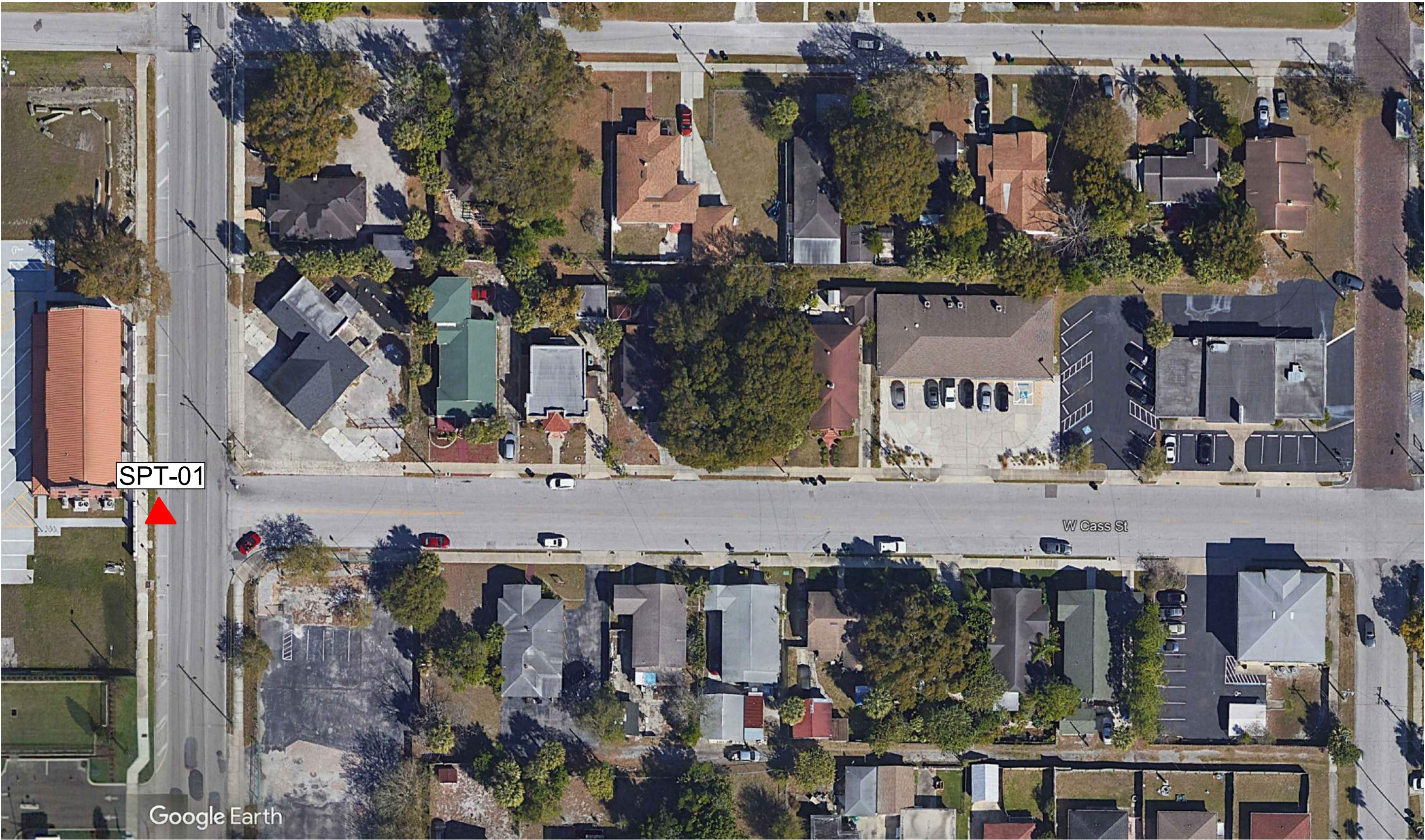
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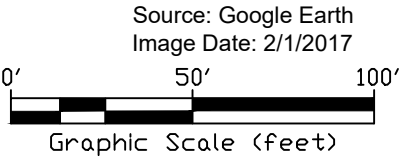
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						DRAWN BY:	KH	05/31/2018		
						CHECKED BY:	JH	06/11/2018		
				SUPERVISED BY: WS			Green Spine Cycle Track Hillsborough County, Florida		T021705.031	1

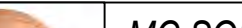




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-  Approximate SPT Location
-  Approximate Hand Auger Location
-  Approximate DRI Location



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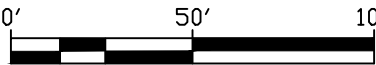




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DATE	NAME	REVISION	APPROVED BY:



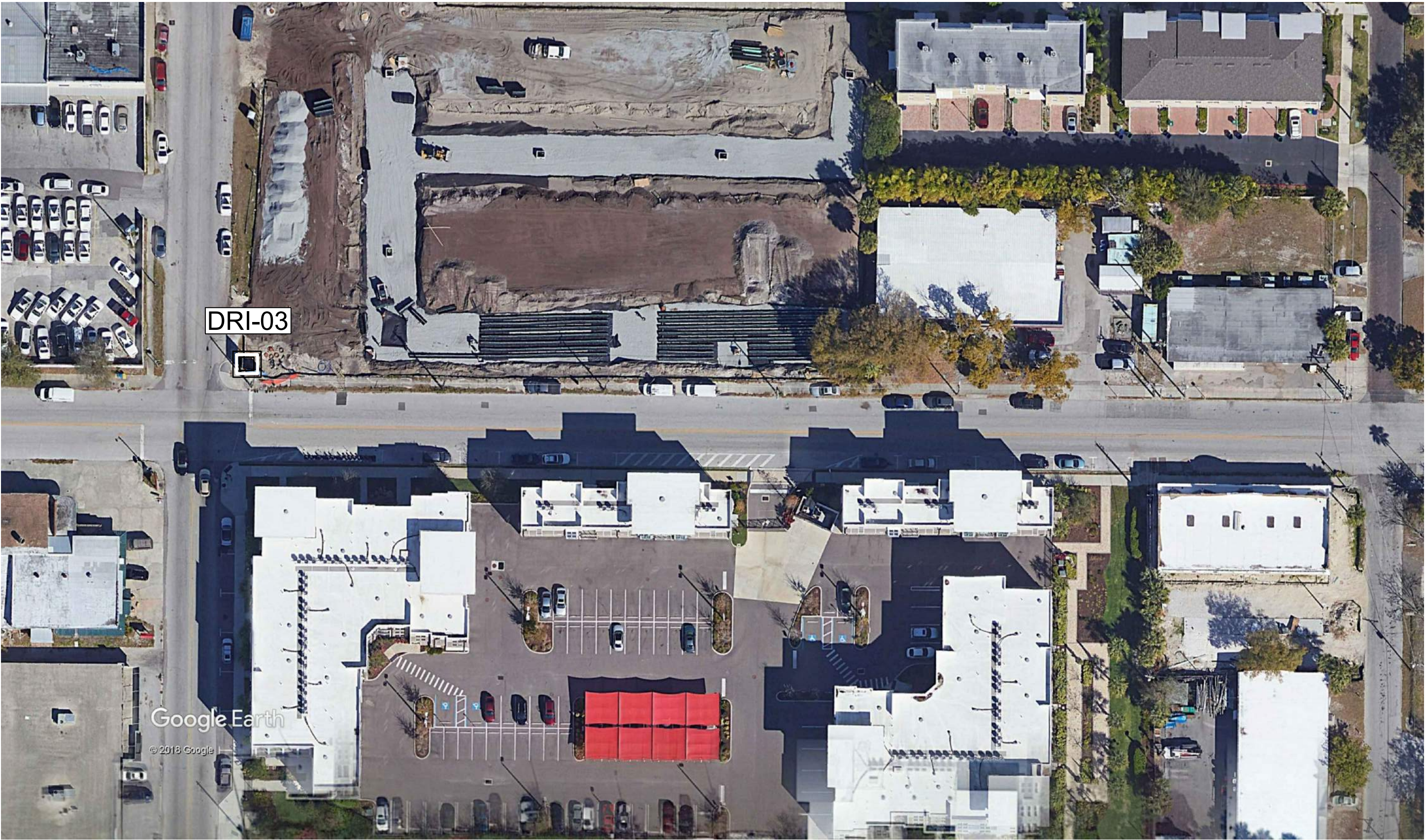
**MC SQUARED, INC.**  
Geotechnical Consultants  
5808-A Breckenridge Parkway  
Tampa, FL 33610  
Ph:813-623-3399 Fax:813-623-6636

FLORID- ENGINEERING CERTIFIC-TE OF  
-UTHORIZ- TION No. 9191  
Jeffery L. Hooks, P.E.  
FLORID- LICENSE No. 67882





	NAME	DATE
DESIGNED BY:	TC	11/01/2017
DRAWN BY:	KH	05/31/2018
CHECKED BY:	JH	06/11/2018
SUPERVISED BY:	WS	

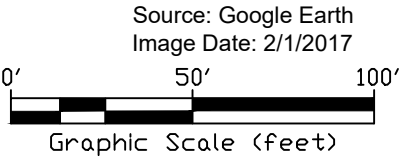
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Green Spine Cycle Track Hillsborough County, Florida	T021705.031	4






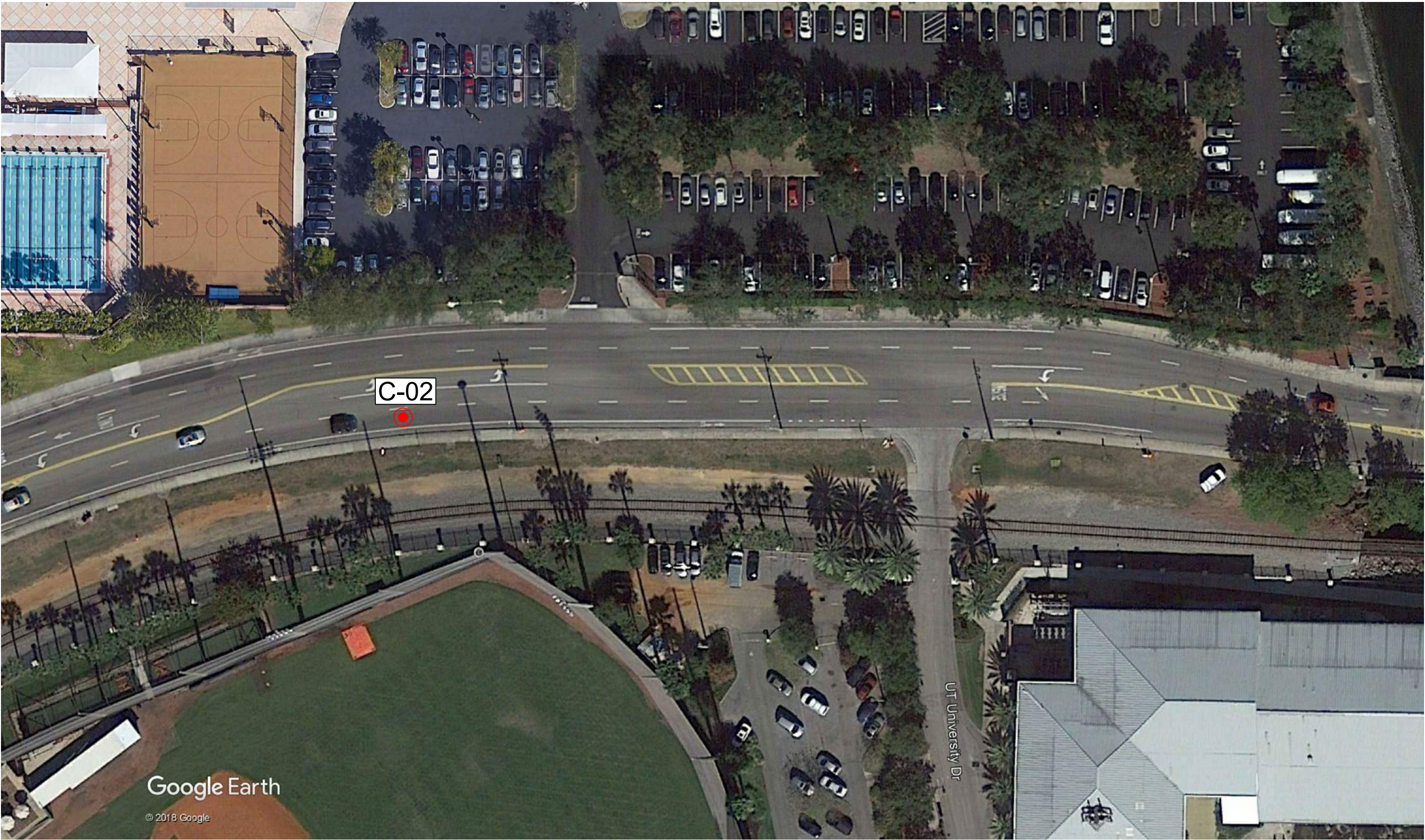
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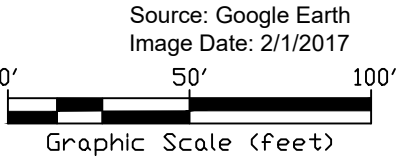
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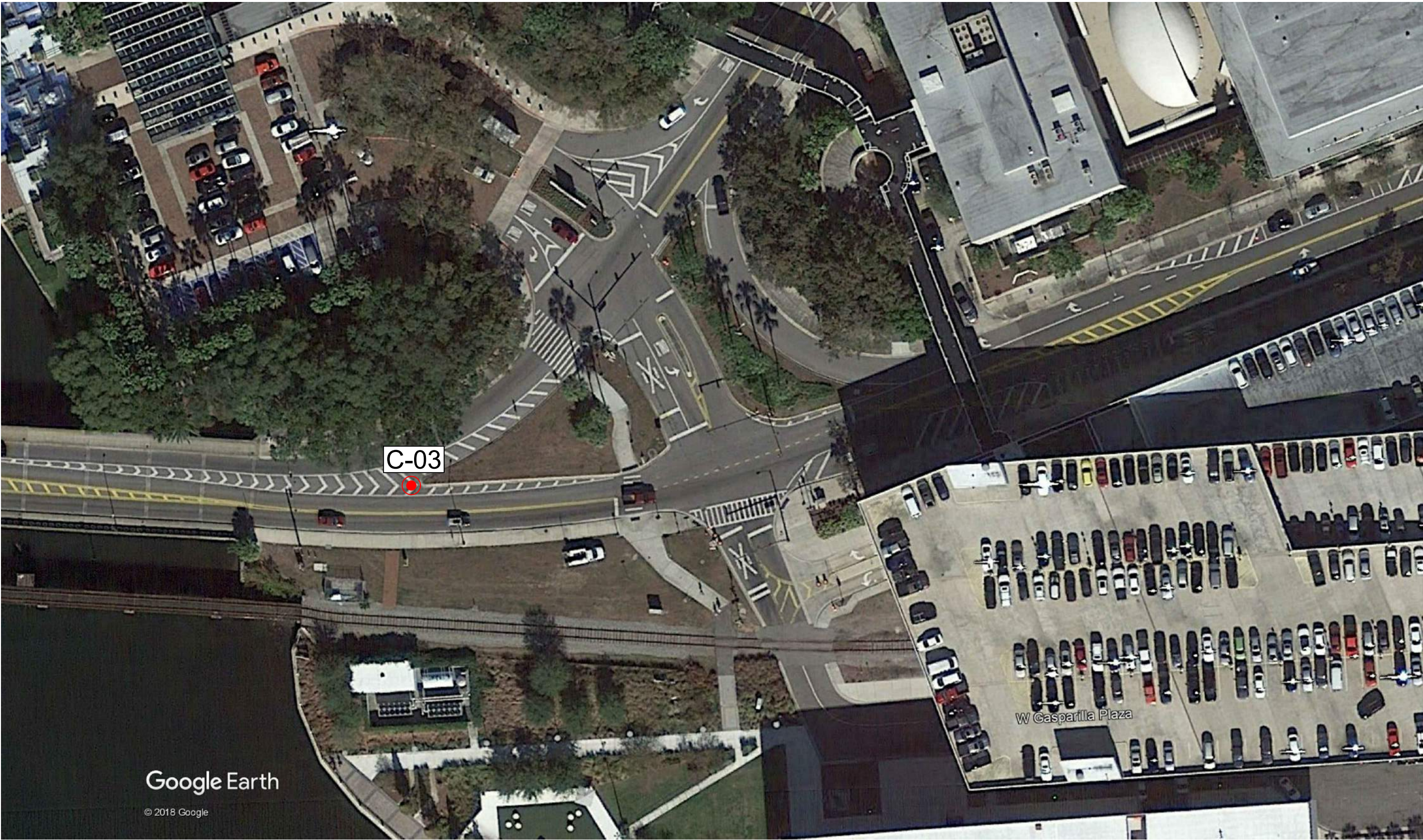
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-  Approximate Hand Auger Location
-  Approximate DRI Location







DATE		NAME		REVISION		APPROVED BY:		<div><p><b>MC<sup>2</sup></b> GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING</p></div> <div><p><b>MC SQUARED, INC.</b> Geotechnical Consultants 5808-A Breckenridge Parkway Tampa, FL 33610 Ph:813-623-3399 Fax:813-623-6636</p></div> <div><p>FLORID - ENGINEERING CERTIFIC-TE OF -UTHORIZ -TION No. 9191 Jeffery L. Hooks, P.E. FLORID - LICENSE No. 67882</p></div>	NAME			DATE		Boring Location Map		MC² PROJ. NO.	SHEET NO.
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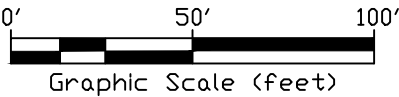





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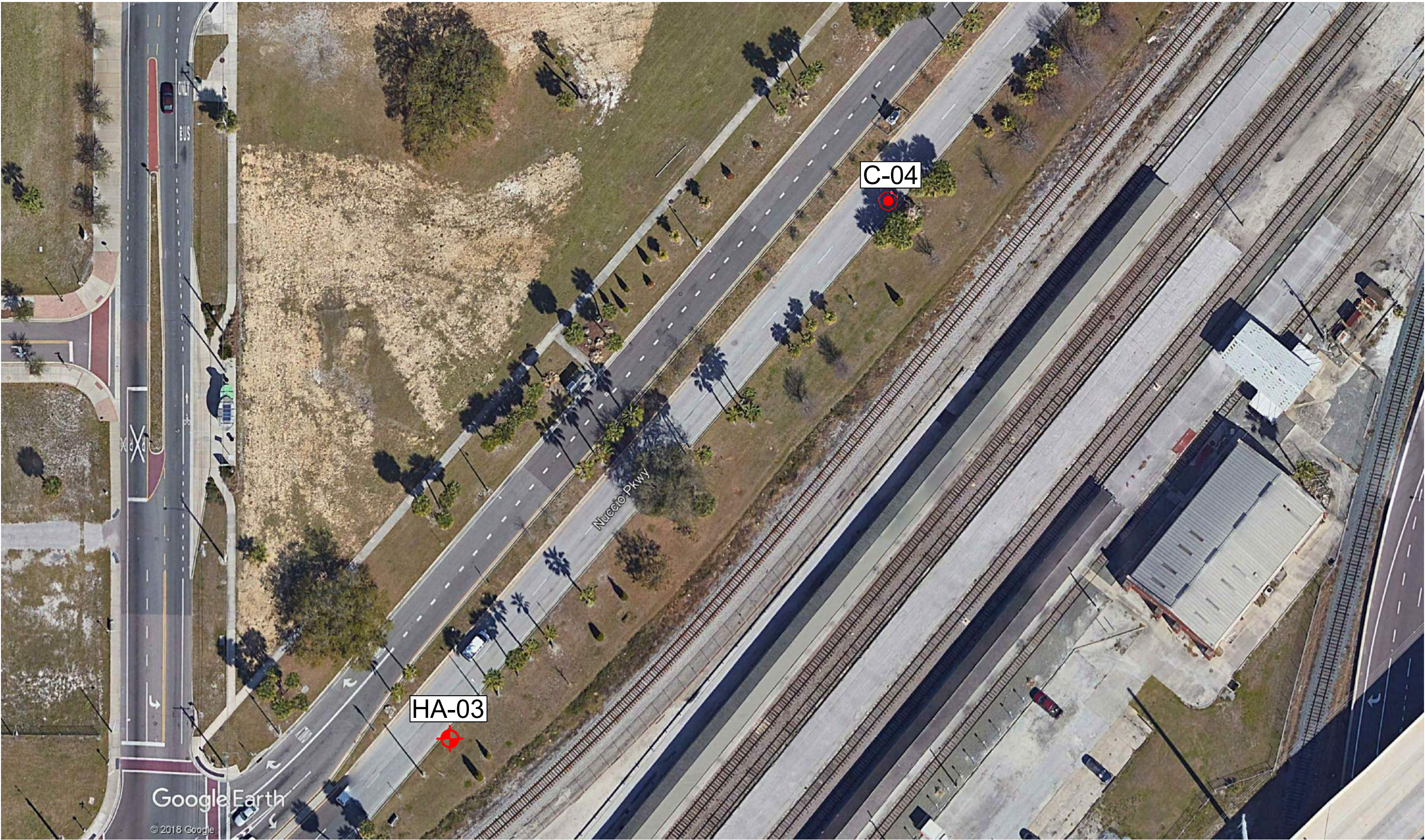
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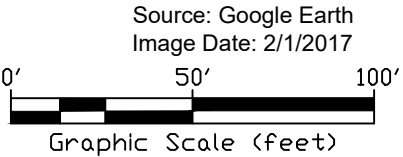
DATE		NAME		REVISION		APPROVED BY:		 Geotechnical • Environmental Materials Testing	<b>MC SQUARED, INC.</b> Geotechnical Consultants 5808-A Breckenridge Parkway Tampa, FL 33610 Ph:813-623-3399 Fax:813-623-6636	FLORID - ENGINEERING CERTIFIC - TE OF -UTHORIZ - TION No. 9191 Jeffery L. Hooks, P.E. FLORID - LICENSE No. 67882	NAME			DATE		Boring Location Map		MC² PROJ. NO.	SHEET NO.
											DESIGNED BY:	TC	11/01/2017	Green Spine Cycle Track Hillsborough County, Florida	T021705.031	7			
											DRAWN BY:	KH	05/31/2018						
											CHECKED BY:	JH	06/11/2018						
								SUPERVISED BY:			WS								






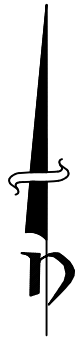
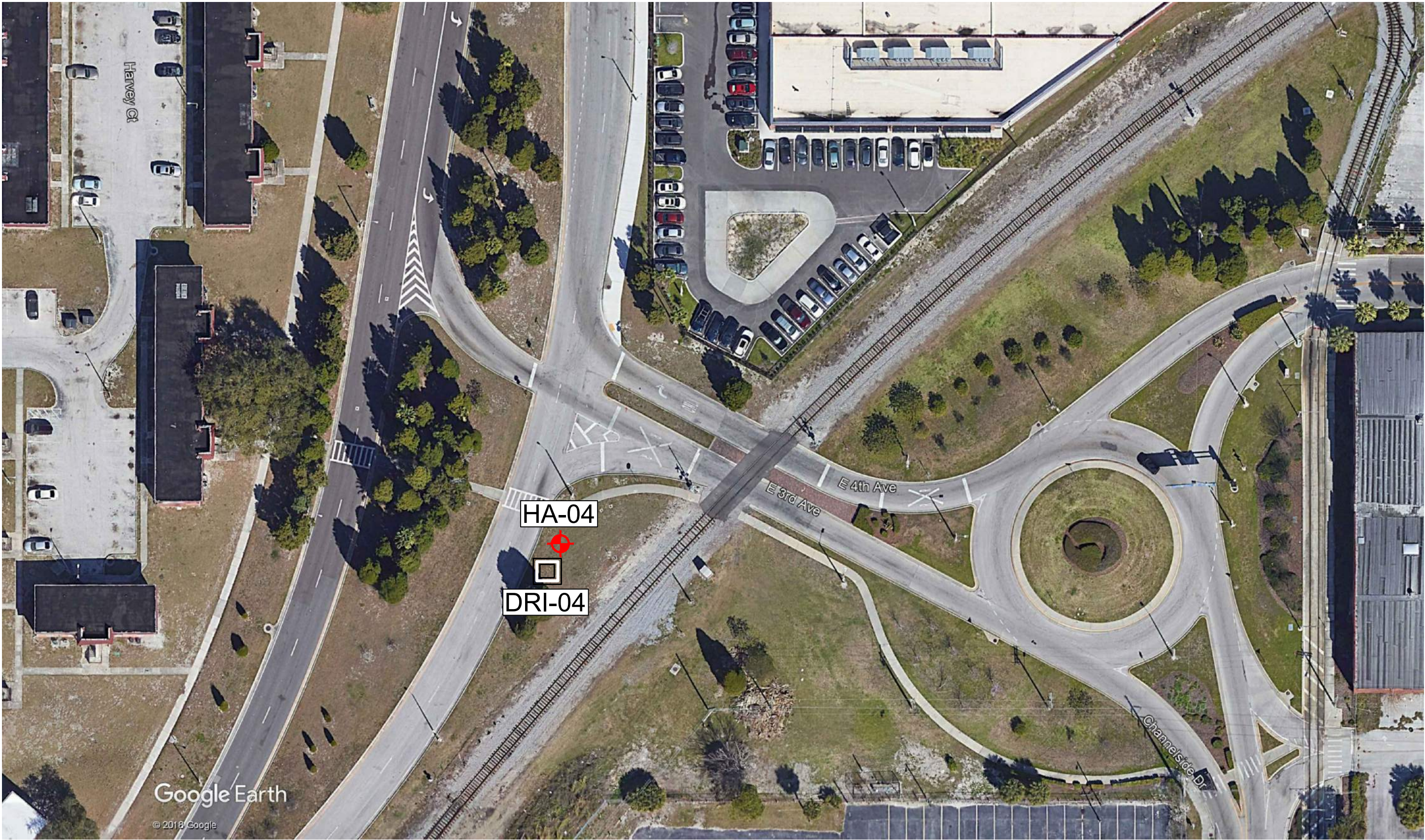
LEGEND:

-  Approximate Pavement Core Location
-  Approximate SPT Location
-  Approximate Hand Auger Location
-  Approximate DRI Location



DATE		NAME		REVISION		APPROVED BY:			<p><b>MC SQUARED, INC.</b> <b>Geotechnical Consultants</b> 5808-A Breckenridge Parkway Tampa, FL 33610 Ph:813-623-3399 Fax:813-623-6636</p>	<p>FLORID - ENGINEERING CERTIFIC-TE OF -UTHORIZ-TION No. 9191 Jeffery L. Hooks, P.E. FLORID - LICENSE No. 67882</p>	NAME			DATE		Boring Location Map		MC² PROJ. NO.		SHEET NO.	
											DESIGNED BY:	TC	11/01/2017		Green Spine Cycle Track Hillsborough County, Florida		T021705.031		8		
											DRAWN BY:	KH	05/31/2018								
											CHECKED BY:	JH	06/11/2018								
										SUPERVISED BY:		WS									

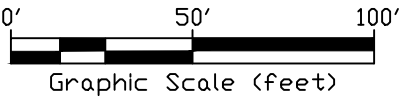





LEGEND:

- Approximate Pavement Core Location
- Approximate SPT Location
- Approximate Hand Auger Location
- Approximate DRI Location

Source: Google Earth  
Image Date: 2/1/2017







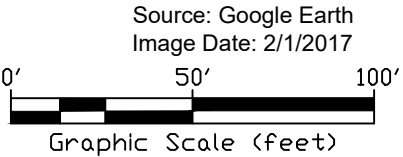
DATE		NAME		REVISION		APPROVED BY:		 <div>GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING</div>	<div>MC SQUARED, INC. Geotechnical Consultants 5808-A Breckenridge Parkway Tampa, FL 33610 Ph:813-623-3399 Fax:813-623-6636</div>	<div>FLORID - ENGINEERING CERTIFIC - TE OF -UTHORIZ - TION No. 9191 Jeffery L. Hooks, P.E. FLORID - LICENSE No. 67882</div>	NAME			DATE	Boring Location Map		MC² PROJ. NO.	SHEET NO.
						DESIGNED BY:	TC				11/01/2017	Green Spine Cycle Track Hillsborough County, Florida		T021705.031	9			
						DRAWN BY:	KH				05/31/2018							
						CHECKED BY:	JH				06/11/2018							
						SUPERVISED BY:			WS									






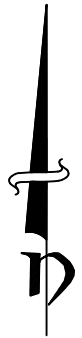
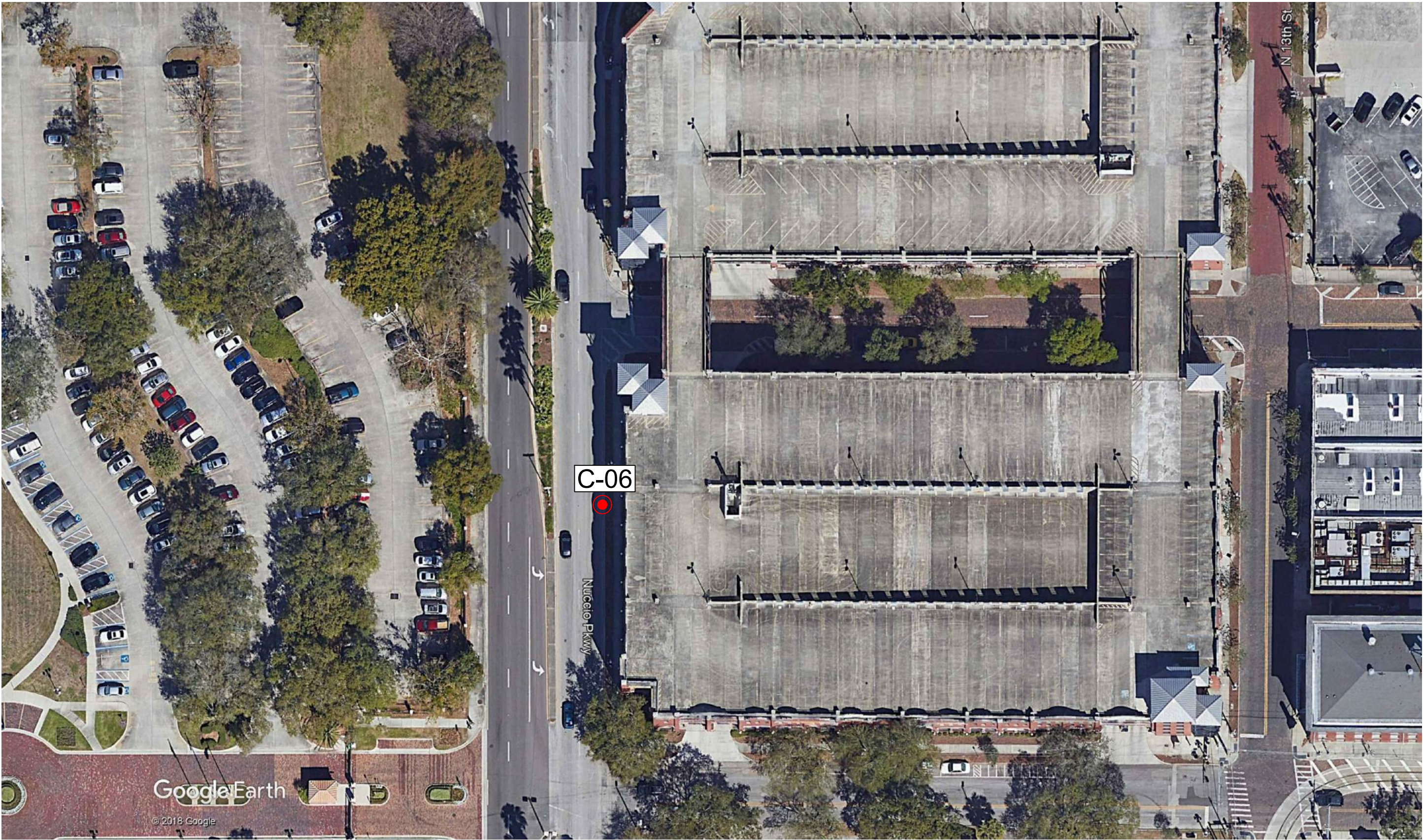
LEGEND:

-  Approximate Pavement Core Location
-  Approximate SPT Location
-  Approximate Hand Auger Location
-  Approximate DRI Location







DATE		NAME		REVISION		APPROVED BY:		 <div>GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING</div>	<div>MC SQUARED, INC. Geotechnical Consultants 5808-A Breckenridge Parkway Tampa, FL 33610 Ph:813-623-3399 Fax:813-623-6636</div>	<div>FLORID - ENGINEERING CERTIFIC - TE OF -UTHORIZ - TION No. 9191 Jeffery L. Hooks, P.E. FLORID - LICENSE No. 67882</div>	NAME			DATE		Boring Location Map		MC² PROJ. NO.	SHEET NO.
	</																		

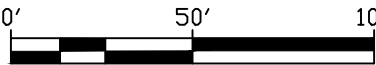




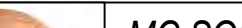
LEGEND:

-  Approximate Pavement Core Location
-  Approximate SPT Location
-  Approximate Hand Auger Location
-  Approximate DRI Location

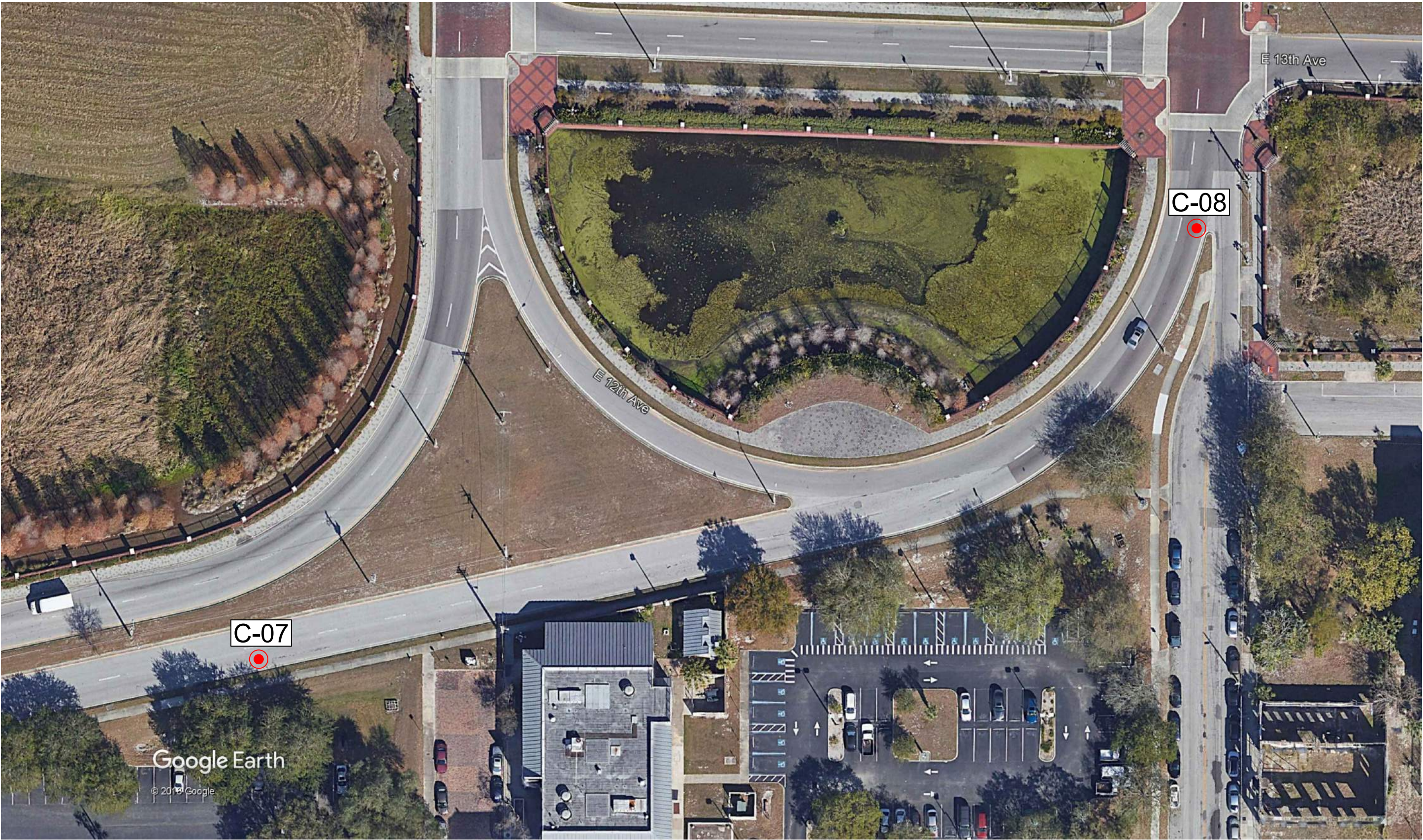
Source: Google Earth  
Image Date: 2/1/2017







Graphic Scale (feet)

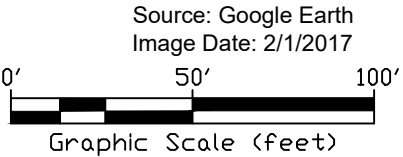
DATE		NAME		REVISION		APPROVED BY:		 <small>GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING</small>	<b>MC SQUARED, INC.</b> Geotechnical Consultants 5808-A Breckenridge Parkway Tampa, FL 33610 Ph:813-623-3399 Fax:813-623-6636	FLORID - ENGINEERING CERTIFIC - TE OF -UTHORIZ - TION No. 9191 Jeffery L. Hooks, P.E. FLORID - LICENSE No. 67882	NAME			DATE	Boring Location Map		MC² PROJ. NO.	SHEET NO.
											DESIGNED BY:	TC	11/01/2017	Green Spine Cycle Track Hillsborough County, Florida		T021705.031	11	
											DRAWN BY:	KH	05/31/2018					
											CHECKED BY:	JH	06/11/2018					
								SUPERVISED BY:			WS							





LEGEND:

-  Approximate Pavement Core Location
-  Approximate SPT Location
-  Approximate Hand Auger Location
-  Approximate DRI Location



DATE				NAME		DATE		Boring Location Map	MC <sup>2</sup> PROJ. NO.	SHEET NO.
DATE	NAME	REVISION	APPROVED BY:	DESIGNED BY:	TC	11/01/2017				
				DRAWN BY:	KH	05/31/2018		Green Spine Cycle Track Hillsborough County, Florida	T021705.031	12
				CHECKED BY:	JH	06/11/2018				
				SUPERVISED BY:	WS					



**MC SQUARED, INC.**  
Geotechnical Consultants  
5808-A Breckenridge Parkway  
Tampa, FL 33610  
Ph:813-623-3399 Fax:813-623-6636





FLORID - ENGINEERING CERTIFIC - TE OF  
-UTHORIZ - TION No. 9191  
Jeffery L. Hooks, P.E.  
FLORID - LICENSE No. 67882

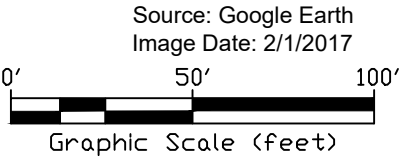
NAME		DATE
DESIGNED BY:	TC	11/01/2017
DRAWN BY:	KH	05/31/2018
CHECKED BY:	JH	06/11/2018
SUPERVISED BY:	WS	






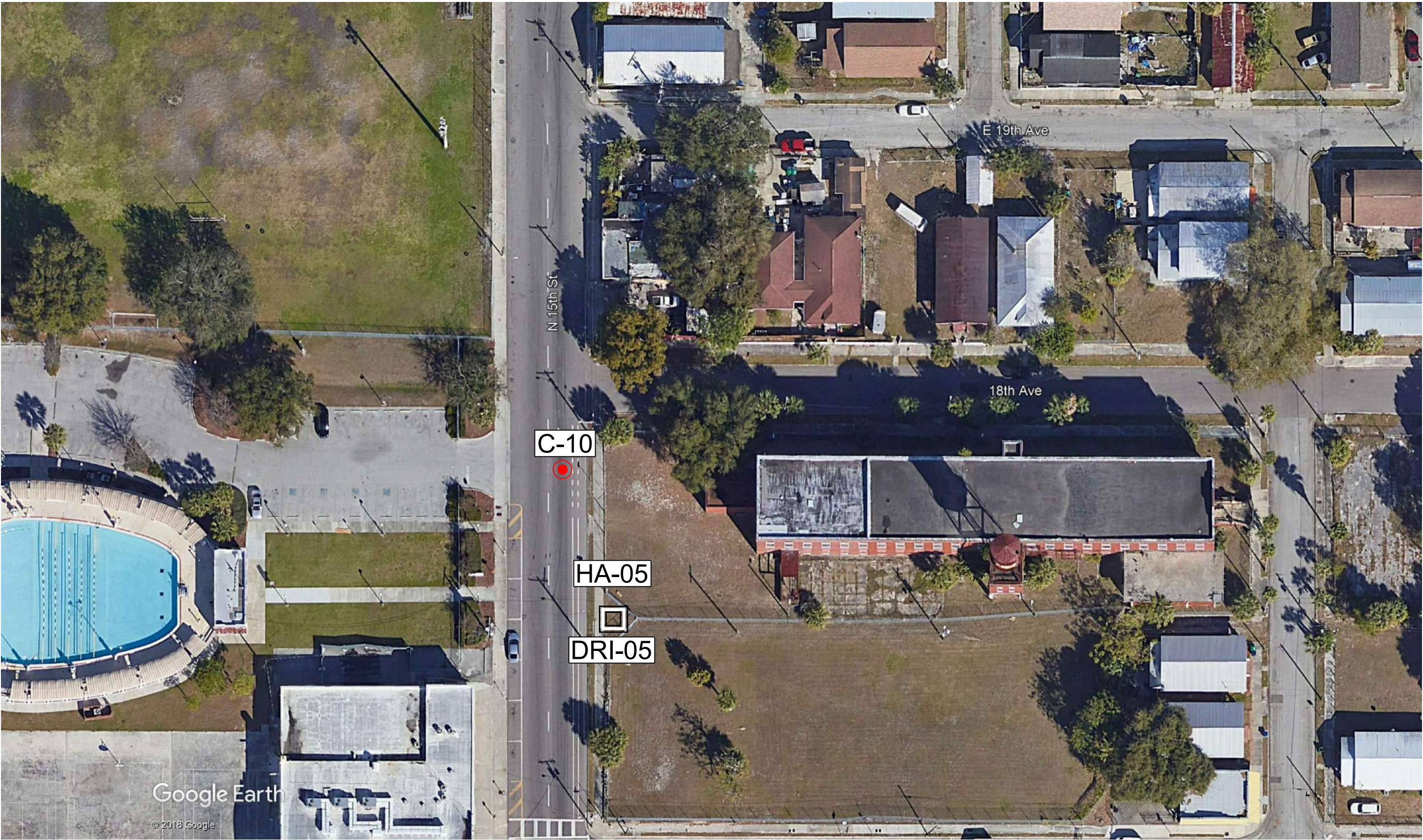
LEGEND:

-  Approximate Pavement Core Location
-  Approximate SPT Location
-  Approximate Hand Auger Location
-  Approximate DRI Location







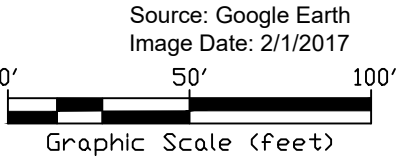
DATE		NAME		REVISION		APPROVED BY:		 <b>MC<sup>2</sup></b> <small>GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING</small>	<b>MC SQUARED, INC.</b> <b>Geotechnical Consultants</b> 5808-A Breckenridge Parkway Tampa, FL 33610 Ph:813-623-3399 Fax:813-623-6636	FLORID - ENGINEERING CERTIFIC-TE OF -UTHORIZ-TION No. 9191 Jeffery L. Hooks, P.E. FLORID - LICENSE No. 67882	NAME			DATE		Boring Location Map		MC² PROJ. NO.	SHEET NO.
											DESIGNED BY:	TC	11/01/2017	Green Spine Cycle Track Hillsborough County, Florida	T021705.031	13			
											DRAWN BY:	KH	05/31/2018						
											CHECKED BY:	JH	06/11/2018						
								SUPERVISED BY:			WS								

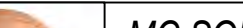




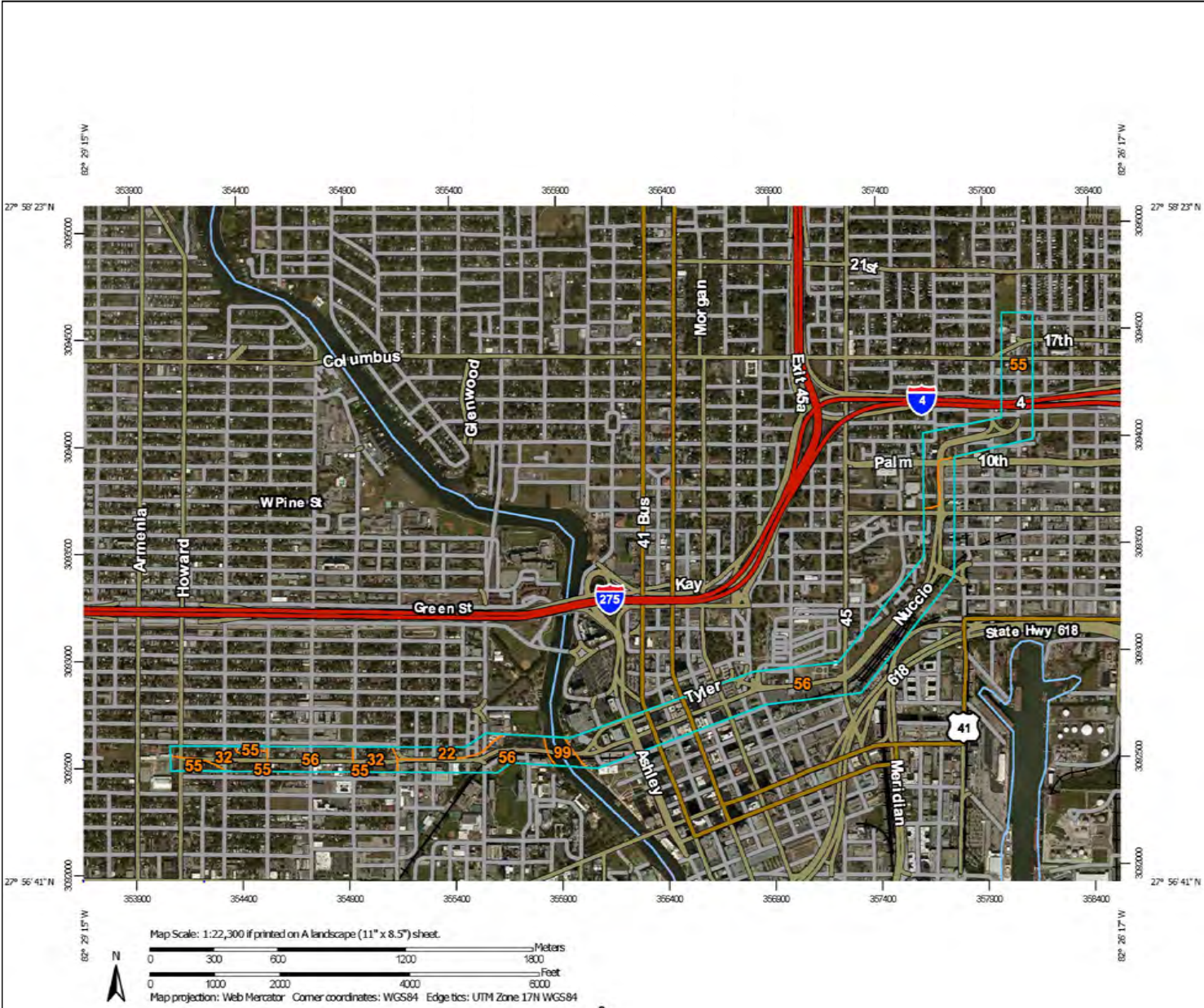
LEGEND:

-  Approximate Pavement Core Location
-  Approximate SPT Location
-  Approximate Hand Auger Location
-  Approximate DRI Location

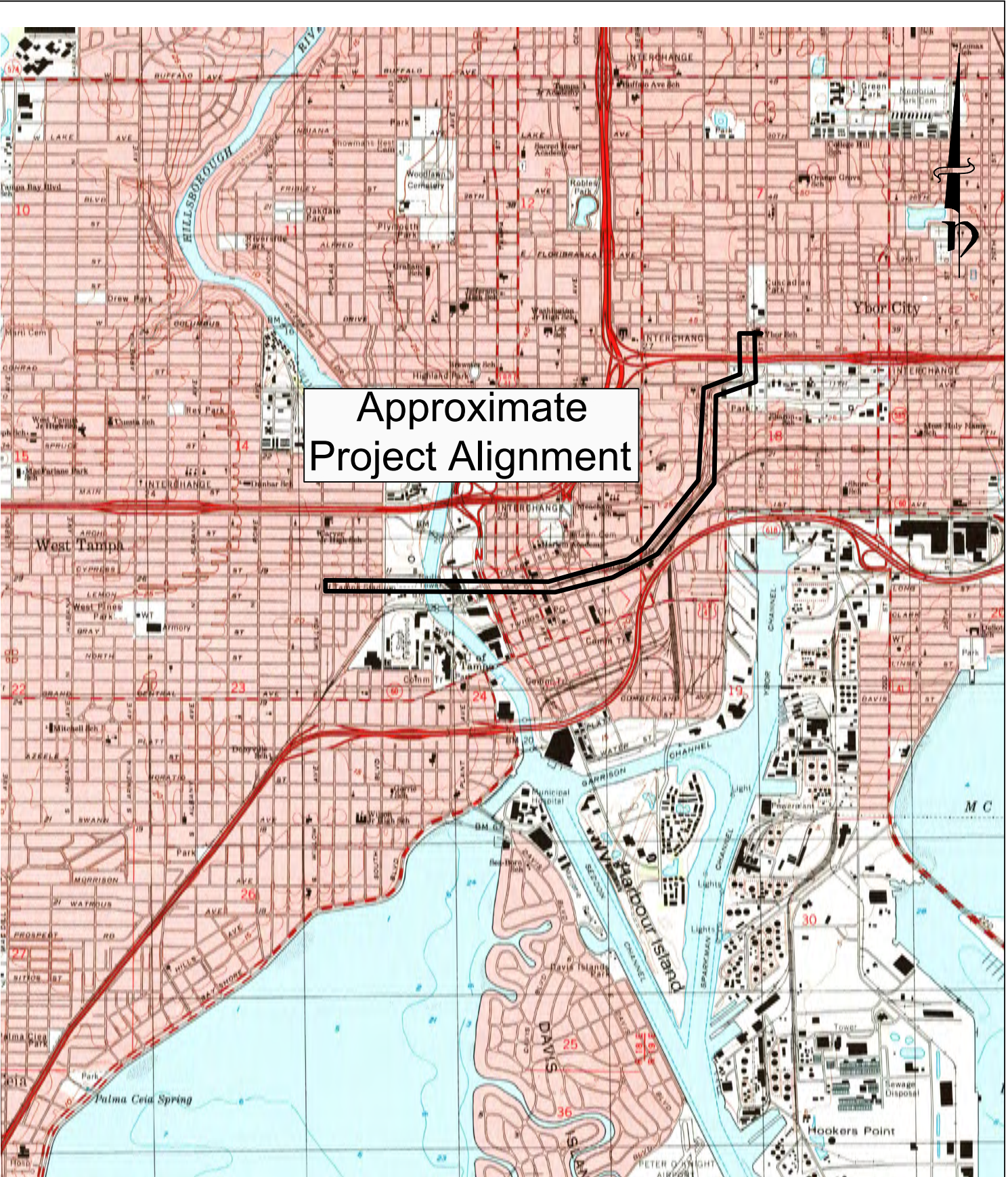


DATE		NAME		REVISION		APPROVED BY:		 GEOTECHNICAL • ENVIRONMENTAL MATERIALS TESTING	<b>MC SQUARED, INC.</b> Geotechnical Consultants 5808-A Breckenridge Parkway Tampa, FL 33610 Ph:813-623-3399 Fax:813-623-6636	FLORID - ENGINEERING CERTIFIC-TE OF -UTHORIZ-TION No. 9191 Jeffery L. Hooks, P.E. FLORID - LICENSE No. 67882	NAME      DATE			Boring Location Map		MC² PROJ. NO.	SHEET NO.
											DESIGNED BY:	TC	11/01/2017				
											DRAWN BY:	KH	05/31/2018	Green Spine Cycle Track Hillsborough County, Florida		T021705.031	14
											CHECKED BY:	JH	06/11/2018				
								SUPERVISED BY:			WS						






Hillsborough County, Florida			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
22	Immokalee-Urban land complex	6.9	3.6%
32	Myakka-Urban land complex	14.4	7.4%
55	Tavares-Urban land complex, 0 to 5 percent slopes	43.2	22.2%
56	Urban land	126.1	64.7%
99	Water	4.1	2.1%
Totals for Area of Interest (AOI)		194.8	100.0%

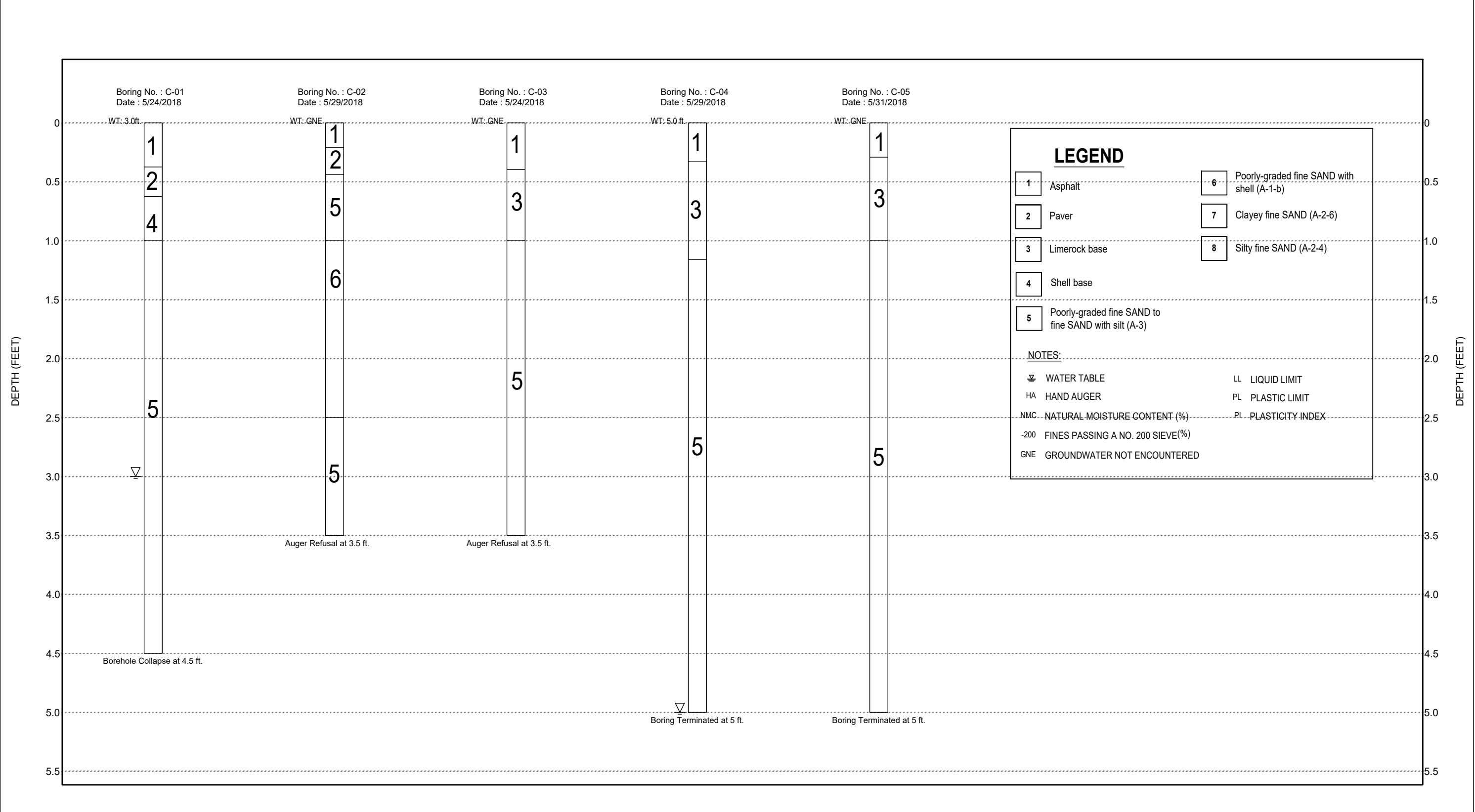


Source: United States Department of Agriculture

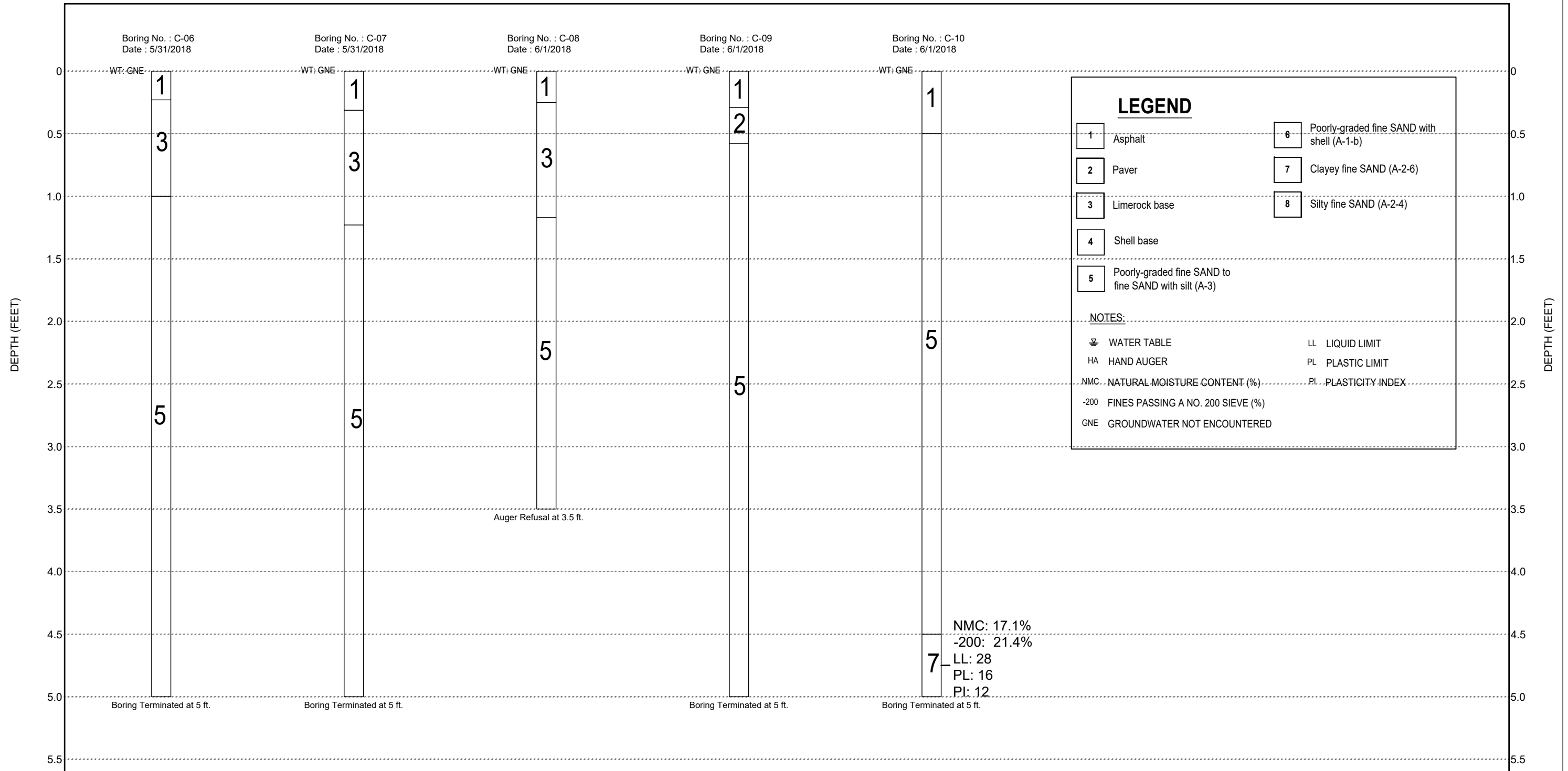
TAMPA QUADRANGLE  
FLORIDA-HILLSBOROUGH COUNTY  
7.5 MINUTE SERIES TOPOGRAPHIC  
NGVD: 1929 - DATE: 1995  
Source: United States Geological Survey

DATE	NAME	REVISION	APPROVED BY:		FLORID - ENGINEERING CERTIFIC - TE OF -UTHORIZ - TION No. 9191 Jeffery L. Hooks, P.E. FLORID - LICENSE No. 67882	NAME DATE		USDA Soil Survey/USGS Topographic Map	MC <sup>2</sup> PROJ. NO.	SHEET NO.
						DESIGNED BY:	TC 11/01/2017			
						DRAWN BY:	KH 05/31/2018			
						CHECKED BY:	JH 06/11/2018			
						SUPERVISED BY:	WS			
Green Spine Cycle Track Hillsborough County, Florida									T021705.031	15

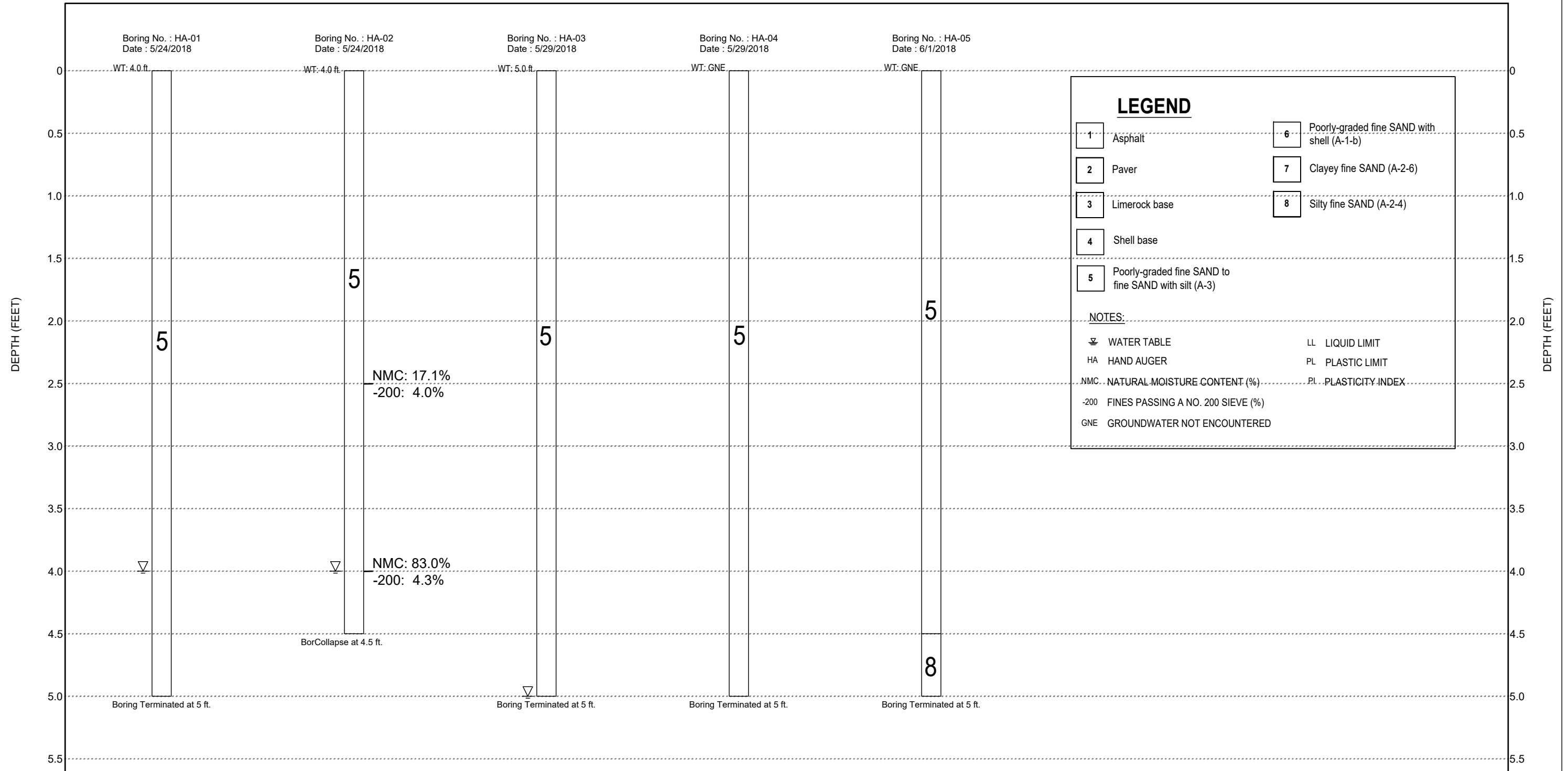




DATE	NAME	REVISION	APPROVED BY		<b>MC SQUARED INC.</b> <b>Geotechnical Consultants</b> 5808-A Breckenridge Parkway Tampa, FL 33610 Ph : 813-623-3399 Fax : 813-623-6636	FLORIDA ENGINEERING CERTIFICATE OF AUTHORIZATION No. 9191 Jeffery L. Hooks, P.E. FLORIDA LICENSE No. 67882		NAME	DATE	SUBSURFACE BORING PROFILES		MC² PROJ. NO.	SHEET NO.
							DESIGNED BY:	TC	11/7/17	Green Spine Cycle Track Tampa, Hillsborough County, Florida	T021705.031	16	
							DRAWN BY:	KH	5/31/2018				
							CHECKED BY:	JH	6/11/2018				
							SUPERVISED BY:	ws					



DATE	NAME	REVISION	APPROVED BY	 <b>MC SQUARED INC.</b> <b>Geotechnical Consultants</b> 5808-A Breckenridge Parkway Tampa, FL 33610 Ph : 813-623-3399 Fax : 813-623-6636	FLORIDA ENGINEERING CERTIFICATE OF AUTHORIZATION No. 9191 Jeffery L. Hooks, P.E. FLORIDA LICENSE No. 67882		NAME	DATE	SUBSURFACE BORING PROFILES	MC² PROJ. NO.	SHEET NO.
						DESIGNED BY:	TC	11/7/17	Green Spine Cycle Track Tampa, Hillsborough County, Florida	T021705.031	17
						DRAWN BY:	KH	5/31/2018			
						CHECKED BY:	JH	6/11/2018			
						SUPERVISED BY:	WS				



DATE	NAME	REVISION	APPROVED BY	 <p><b>MC SQUARED INC.</b>  <b>Geotechnical Consultants</b>          5808-A Breckenridge Parkway          Tampa, FL 33610          Ph : 813-623-3399 Fax : 813-623-6636</p>	<p>FLORIDA ENGINEERING CERTIFICATE OF          AUTHORIZATION No. 9191          Jeffery L. Hooks, P.E.          FLORIDA LICENSE No. 67882</p>		NAME	DATE	SUBSURFACE BORING PROFILES	MC² PROJ. NO.	SHEET NO.
						DESIGNED BY:	TC	11/7/17	<p>Green Spine Cycle Track          Tampa, Hillsborough County, Florida</p>	<p>T021705.031</p>	<p>18</p>
						DRAWN BY:	KH	5/31/2018			
						CHECKED BY:	JH	6/11/2018			
						SUPERVISED BY:	WS				



BORING NO.SPT-01  
DATE 5/18/18

WT: 3.0ft.

N

DEPTH (FEET)

0

5

10

15

20

25

30

HA

HA

11

28

26

6 NMC:34.2%  
-200:38.6%  
LL:42  
PL:17  
PI:25

WOH

50+/5"

LEGEND:



(SC) Clayey Sand



Limestone



(SP-SM) Poorly Graded Sand With Silt

NOTES:

▽ WATER TABLE

HA HAND AUGER

NMC NATURAL MOISTURE CONTENT (%)

-200 FINES PASSING A NO. 200 SIEVE (%)

LL LIQUID LIMIT

PL PLASTIC LIMIT

PI PLASTICITY INDEX

DEPTH (FEET)

0

5

10

15

20

25

30

GRANULAR MATERIALS- RELATIVE DENSITY	SPT (BLOWS/FT)
VERY LOOSE	≤ 4
LOOSE	5-10
MEDIUM	11-30
DENSE	31-50
VERY DENSE	GREATER THAN 50
SILTS AND CLAYS CONSISTENCY	SPT (BLOWS/FT)
VERY SOFT	≤ 2
SOFT	3-4
FIRM	5-8
STIFF	9-15
VERY STIFF	16-30
HARD	30-50
VERY HARD	GREATER THAN 50
SPT Spoon Inside Diameter 1 3/8" ASTM Standard Drop Safety Hammer	
SPT Spoon Outside Diameter 2" Average Hammer Drop Height 30"	
Hammer Weight 140 lbs	

LEGEND:

▲ Approximate SPT Location

DATE	NAME	REVISION	APPROVED BY:



**MC SQUARED, INC.**  
Geotechnical Consultants  
5808-A Breckenridge Parkway  
Tampa, FL 33610  
Ph:813-623-3399 Fax:813-623-6636

FLORIDA ENGINEERING CERTIFICATE OF  
AUTHORIZATION No. 9191  
Jeffery L. Hooks, P.E.  
FLORIDA LICENSE No. 67882

NAME	DATE
DESIGNED BY: TC	11/01/2017
DRAWN BY: KH	05/31/2018
CHECKED BY: JH	06/11/2018
SUPERVISED BY: WS	

REPORT OF CORE BORING	MC² PROJ. NO.	SHEET NO.
Green Spine Cycle Track Hillsborough County, Florida	T021705.031	19





# Soil Profile

**BORING ID: C-01**

<b>CLIENT</b> Kisinger Campo and Associates, Corp.	<b>PROJECT NAME</b> Green Spine Cycle Track
<b>PROJECT NUMBER</b> T021705.031	<b>PROJECT LOCATION</b> Tampa, Hillsborough County, Florida
<b>DATE STARTED</b> 5/24/18 <b>COMPLETED</b> 5/24/18	<b>GROUND ELEVATION</b> <b>HOLE SIZE</b> 4 inches
<b>DRILLING CONTRACTOR</b> MC Squared, Inc.	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> Wet Rotary	▽ <b>AT TIME OF DRILLING</b> 3.0 ft
<b>LOGGED BY</b> S. Nason <b>CHECKED BY</b> J. Hooks	<b>AT END OF DRILLING</b> ---
<b>NOTES</b> W. Cass Street, EB Lane, 350-ft. East of N. Albany Avenue	<b>AFTER DRILLING</b> ---

DEPTH (ft)	GRAPHIC LOG	AASHTO Symbol	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	⊖ SPT N VALUE ⊕			
							⊕ ORGANIC CONTENT % ⊕			
							PL	MC	LL	
							☐ FINES CONTENT (%) ☐			
0.0							20	40	60	80
			4.5 inches of ASPHALT	PC 1						
			3 inches of PAVER							
			4.5 inches of SHELL base							
			Dark brown, poorly-graded fine SAND to fine SAND with silt	HA 2						
2.5		A-3 ▽								
			Borehole collapse at 4.5 feet							
			Bottom of hole at 4.5 feet.							



# Soil Profile

**BORING ID: C-02**

<b>CLIENT</b> Kisinger Campo and Associates, Corp.	<b>PROJECT NAME</b> Green Spine Cycle Track
<b>PROJECT NUMBER</b> T021705.031	<b>PROJECT LOCATION</b> Tampa, Hillsborough County, Florida
<b>DATE STARTED</b> 5/29/18 <b>COMPLETED</b> 5/29/18	<b>GROUND ELEVATION</b> <b>HOLE SIZE</b> 4 inches
<b>DRILLING CONTRACTOR</b> MC Squared, Inc.	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> Wet Rotary	<b>AT TIME OF DRILLING</b> GNE
<b>LOGGED BY</b> S. Gomez <b>CHECKED BY</b> J. Hooks	<b>AT END OF DRILLING</b> ---
<b>NOTES</b> W. Cass Street, Outside EB Lane, 350-ft. East of North Blvd.	<b>AFTER DRILLING</b> ---

DEPTH (ft)	GRAPHIC LOG	AASHTO Symbol	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	⊖ SPT N VALUE ⊕			
							⊕ ORGANIC CONTENT % ⊕			
							PL	MC	LL	
							□ FINES CONTENT (%) □			
0.0							20	40	60	80
			2.5 inches ASPHALT	PC 1						
			2.75 inches of PAVER							
		A-3	Poorly-graded fine SAND to fine SAND with silt							
		A-1-b	Very dark gray, poorly-graded fine SAND with shell	HA 2						
2.5										
		A-3	Dark to grayish brown, poorly-graded fine SAND to fine SAND with silt, with hard nodules							
			Auger refusal at 3.5 feet							
			Bottom of hole at 3.5 feet.							



# Soil Profile

**BORING ID: C-03**

<b>CLIENT</b> Kisinger Campo and Associates, Corp.	<b>PROJECT NAME</b> Green Spine Cycle Track
<b>PROJECT NUMBER</b> T021705.031	<b>PROJECT LOCATION</b> Tampa, Hillsborough County, Florida
<b>DATE STARTED</b> 5/24/18 <b>COMPLETED</b> 5/24/18	<b>GROUND ELEVATION</b> <b>HOLE SIZE</b> 4 inches
<b>DRILLING CONTRACTOR</b> MC Squared, Inc.	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> Wet Rotary	<b>AT TIME OF DRILLING</b> GNE
<b>LOGGED BY</b> S. Nason <b>CHECKED BY</b> J. Hooks	<b>AT END OF DRILLING</b> ---
<b>NOTES</b> W. Cass St., Paved Median, 190-ft. W. of W. Gasparilla Pl.	<b>AFTER DRILLING</b> ---

DEPTH (ft)	GRAPHIC LOG	AASHTO Symbol	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	⊖ SPT N VALUE ⊕			
							⊕ ORGANIC CONTENT % ⊕			
							PL	MC	LL	
							□ FINES CONTENT (%) □			
0.0							20	40	60	80
			4.75 inches of ASPHALT	PC 1						
			7.25 inches of LIMEROCK base							
		A-3	Grayish brown, poorly-graded fine SAND to fine SAND with silt, Limerock aggregate	HA 2						
2.5										
			Auger refusal at 3.5 feet							
			Bottom of hole at 3.5 feet.							

**BORING ID: C-04**





# Soil Profile

**BORING ID: C-05**

<b>CLIENT</b> Kisinger Campo and Associates, Corp.	<b>PROJECT NAME</b> Green Spine Cycle Track
<b>PROJECT NUMBER</b> T021705.031	<b>PROJECT LOCATION</b> Tampa, Hillsborough County, Florida
<b>DATE STARTED</b> 5/31/18 <b>COMPLETED</b> 5/31/18	<b>GROUND ELEVATION</b> <b>HOLE SIZE</b> 4 inches
<b>DRILLING CONTRACTOR</b> MC Squared, Inc.	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> Wet Rotary	<b>AT TIME OF DRILLING</b> GNE
<b>LOGGED BY</b> S. Nason <b>CHECKED BY</b> J. Hooks	<b>AT END OF DRILLING</b> ---
<b>NOTES</b> Nuccio Pkwy, Outside NB Lane, 90-ft. North of E. 6th Avenue	<b>AFTER DRILLING</b> ---

DEPTH (ft)	GRAPHIC LOG	AASHTO Symbol	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	⊖ SPT N VALUE ⊕			
							⊕ ORGANIC CONTENT % ⊕			
							PL	MC	LL	
							□ FINES CONTENT (%) □			
0.0							20	40	60	80
			3.5 inches of ASPHALT	PC 1						
			8.5 inches of LIMEROCK base							
		A-3	Pale brown, dark gray to grayish brown, poorly-graded fine SAND to fine SAND with silt	HA 2						
2.5										
5.0			Bottom of hole at 5.0 feet.							









# Soil Profile

**BORING ID: C-08**

<b>CLIENT</b> Kisinger Campo and Associates, Corp.	<b>PROJECT NAME</b> Green Spine Cycle Track
<b>PROJECT NUMBER</b> T021705.031	<b>PROJECT LOCATION</b> Tampa, Hillsborough County, Florida
<b>DATE STARTED</b> 6/1/18	<b>COMPLETED</b> 6/1/18
<b>DRILLING CONTRACTOR</b> MC Squared, Inc.	<b>GROUND ELEVATION</b>
<b>DRILLING METHOD</b> Wet Rotary	<b>HOLE SIZE</b> 4 inches
<b>LOGGED BY</b> S. Nason	<b>GROUND WATER LEVELS:</b>
<b>CHECKED BY</b> J. Hooks	<b>AT TIME OF DRILLING</b> GNE
<b>NOTES</b> Nuccio Pkwy, Outside NB Lane, 20-ft. South of N. 15th St. Merger	<b>AT END OF DRILLING</b> ---
	<b>AFTER DRILLING</b> ---

DEPTH (ft)	GRAPHIC LOG	AASHTO Symbol	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	⊖ SPT N VALUE ⊕			
							⊕ ORGANIC CONTENT % ⊕			
							PL	MC	LL	
							□ FINES CONTENT (%) □			
0.0							20	40	60	80
			3 inches of ASPHALT	PC 1						
			11 inches of LIMEROCK base							
		A-3	Brown to pale brown, poorly-graded fine SAND to fine SAND with silt	HA 2						
2.5										
			Auger Refusal at 3.5 feet.							
			Bottom of hole at 3.5 feet.							







# Soil Profile

**BORING ID: C-10****CLIENT** Kisinger Campo and Associates, Corp.**PROJECT NAME** Green Spine Cycle Track**PROJECT NUMBER** T021705.031**PROJECT LOCATION** Tampa, Hillsborough County, Florida**DATE STARTED** 6/1/18**COMPLETED** 6/1/18**GROUND ELEVATION****HOLE SIZE** 4 inches**DRILLING CONTRACTOR** MC Squared, Inc.**GROUND WATER LEVELS:****DRILLING METHOD** Wet Rotary**AT TIME OF DRILLING** GNE**LOGGED BY** S. Nason**CHECKED BY** J. Hooks**AT END OF DRILLING** ---**NOTES** N. 15th Street, NB Lane, 40-ft. South of 18th Avenue**AFTER DRILLING** ---

DEPTH (ft)	GRAPHIC LOG	AASHTO Symbol	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	⊖ SPT N VALUE ⊕			
							⊕ ORGANIC CONTENT % ⊕			
							PL	MC	LL	
							□ FINES CONTENT (%) □			
0.0							20	40	60	80
			6 inches of ASPHALT	PC 1						
			Dark to pinkish gray, dark grayish to light yellowish brown, poorly-graded fine SAND to fine SAND with silt with rock fragments	HA 2						
2.5		A-3								
			Pinkish gray, silty, clayey fine SAND							
5.0		A-2-6								
			Bottom of hole at 5.0 feet.							



# Soil Profile

**BORING ID: HA-01**

<b>CLIENT</b> Kisinger Campo and Associates, Corp.	<b>PROJECT NAME</b> Green Spine Cycle Track
<b>PROJECT NUMBER</b> T021705.031	<b>PROJECT LOCATION</b> Tampa, Hillsborough County, Florida
<b>DATE STARTED</b> 5/24/18 <b>COMPLETED</b> 5/24/18	<b>GROUND ELEVATION</b> <b>HOLE SIZE</b> 4 inches
<b>DRILLING CONTRACTOR</b> MC Squared, Inc.	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> Hand Auger	▽ <b>AT TIME OF DRILLING</b> 4.0 ft
<b>LOGGED BY</b> S. Nason <b>CHECKED BY</b> J. Hooks	<b>AT END OF DRILLING</b> ---
<b>NOTES</b> SE Corner of W. Cass St. and N. Albany Ave.	<b>AFTER DRILLING</b> ---

DEPTH (ft)	GRAPHIC LOG	AASHTO Symbol	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	⊖ SPT N VALUE ⊕			
							⊕ ORGANIC CONTENT % ⊕			
							PL	MC	LL	
							□ FINES CONTENT (%) □			
0.0							20	40	60	80
2.5		A-3	Gray to very dark gray, poorly-graded fine SAND to fine SAND with silt, with some roots	HA						
5.0			Bottom of hole at 5.0 feet.							





# Soil Profile

**BORING ID: HA-02**

<b>CLIENT</b> Kisinger Campo and Associates, Corp.	<b>PROJECT NAME</b> Green Spine Cycle Track
<b>PROJECT NUMBER</b> T021705.031	<b>PROJECT LOCATION</b> Tampa, Hillsborough County, Florida
<b>DATE STARTED</b> 5/24/18 <b>COMPLETED</b> 5/24/18	<b>GROUND ELEVATION</b> <b>HOLE SIZE</b> 4 inches
<b>DRILLING CONTRACTOR</b> MC Squared, Inc.	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> Hand Auger	▽ <b>AT TIME OF DRILLING</b> 4.0 ft
<b>LOGGED BY</b> S. Nason <b>CHECKED BY</b> J. Hooks	<b>AT END OF DRILLING</b> ---
<b>NOTES</b> NE corner of W. Cass St. and N. Fremont Ave.	<b>AFTER DRILLING</b> ---

DEPTH (ft)	GRAPHIC LOG	AASHTO Symbol	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	⊖ SPT N VALUE ⊕			
							⊕ ORGANIC CONTENT % ⊕			
							PL	MC	LL	
							□ FINES CONTENT (%) □			
0.0							20	40	60	80
2.5		A-3	Dark to very dark gray, poorly-graded fine SAND to fine SAND with silt	HA			□	▲		
		A-3	Black, poorly-graded fine SAND with silt and some organics				□		▲	
			Borehole collapse at 4.5 feet							
			Bottom of hole at 4.5 feet.							



# Soil Profile

**BORING ID: HA-03**

<b>CLIENT</b> Kisinger Campo and Associates, Corp.	<b>PROJECT NAME</b> Green Spine Cycle Track
<b>PROJECT NUMBER</b> T021705.031	<b>PROJECT LOCATION</b> Tampa, Hillsborough County, Florida
<b>DATE STARTED</b> 5/29/18 <b>COMPLETED</b> 5/29/18	<b>GROUND ELEVATION</b> <b>HOLE SIZE</b> 4 inches
<b>DRILLING CONTRACTOR</b> MC Squared, Inc.	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> Hand Auger	▽ <b>AT TIME OF DRILLING</b> 5.0 ft
<b>LOGGED BY</b> S. Nason <b>CHECKED BY</b> J. Hooks	<b>AT END OF DRILLING</b> ---
<b>NOTES</b> East side of Nuccio Pkwy. and East of N. Nebraska Ave.	<b>AFTER DRILLING</b> ---

DEPTH (ft)	GRAPHIC LOG	AASHTO Symbol	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	⊖ SPT N VALUE ⊕			
							⊕ ORGANIC CONTENT % ⊕			
							PL	MC	LL	
							□ FINES CONTENT (%) □			
0.0							20	40	60	80
2.5		A-3	Light to dark gray, dark to light grayish brown, poorly-graded fine SAND to fine SAND with silt	HA						
5.0		▽	Bottom of hole at 5.0 feet.							





# Soil Profile

**BORING ID: HA-04**

<b>CLIENT</b> Kisinger Campo and Associates, Corp.	<b>PROJECT NAME</b> Green Spine Cycle Track
<b>PROJECT NUMBER</b> T021705.031	<b>PROJECT LOCATION</b> Tampa, Hillsborough County, Florida
<b>DATE STARTED</b> 5/29/18 <b>COMPLETED</b> 5/29/18	<b>GROUND ELEVATION</b> <b>HOLE SIZE</b> 4 inches
<b>DRILLING CONTRACTOR</b> MC Squared, Inc.	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> Hand Auger	<b>AT TIME OF DRILLING</b> GNE
<b>LOGGED BY</b> S. Nason <b>CHECKED BY</b> J. Hooks	<b>AT END OF DRILLING</b> ---
<b>NOTES</b> SE corner of E. 3rd Ave. and Nuccio Pkwy	<b>AFTER DRILLING</b> ---

DEPTH (ft)	GRAPHIC LOG	AASHTO Symbol	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	⊖ SPT N VALUE ⊕			
							⊕ ORGANIC CONTENT % ⊕			
							PL	MC	LL	
							□ FINES CONTENT (%) □			
0.0							20	40	60	80
2.5		A-3	Light brownish gray, light to very dark gray, poorly-graded fine SAND to fine SAND with silt	HA						
5.0			Bottom of hole at 5.0 feet.							



# Soil Profile

**BORING ID: HA-05**

<b>CLIENT</b> Kisinger Campo and Associates, Corp.	<b>PROJECT NAME</b> Green Spine Cycle Track
<b>PROJECT NUMBER</b> T021705.031	<b>PROJECT LOCATION</b> Tampa, Hillsborough County, Florida
<b>DATE STARTED</b> 6/1/18 <b>COMPLETED</b> 6/1/18	<b>GROUND ELEVATION</b> <b>HOLE SIZE</b> 4 inches
<b>DRILLING CONTRACTOR</b> MC Squared, Inc.	<b>GROUND WATER LEVELS:</b>
<b>DRILLING METHOD</b> Hand Auger	<b>AT TIME OF DRILLING</b> GNE
<b>LOGGED BY</b> S. Nason <b>CHECKED BY</b> J. Hooks	<b>AT END OF DRILLING</b> ---
<b>NOTES</b> East Side of 15th St., N of 17th Ave.	<b>AFTER DRILLING</b> ---

DEPTH (ft)	GRAPHIC LOG	AASHTO Symbol	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	⊖ SPT N VALUE ⊕			
							⊕ ORGANIC CONTENT % ⊕			
							PL	MC	LL	
							□ FINES CONTENT (%) □			
0.0							20	40	60	80
2.5		A-3	Dark grayish to very pale brown, poorly-graded fine SAND to fine SAND with silt	HA						
5.0		A-2-4	Pinkish gray, silty fine SAND							
			Bottom of hole at 5.0 feet.							





# Soil Profile

**BORING ID: SPT-01****CLIENT** Kisinger Campo and Associates, Corp.**PROJECT NAME** Green Spine Cycle Track**PROJECT NUMBER** T021705.031**PROJECT LOCATION** Tampa, Hillsborough County, Florida**DATE STARTED** 5/18/18**COMPLETED** 5/18/18**GROUND ELEVATION****HOLE SIZE** 4 inches**DRILLING CONTRACTOR** MC Squared, Inc.**GROUND WATER LEVELS:****DRILLING METHOD** Wet Rotary▽ **AT TIME OF DRILLING** 3.0 ft**LOGGED BY** B. Crowson**CHECKED BY** J. Hooks**AT END OF DRILLING** ---**NOTES** West of N. Howard Ave. and W. Cass St.**AFTER DRILLING** ---

DEPTH (ft)	GRAPHIC LOG	USCS Group Symbol	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	⊖ SPT N VALUE ⊕			
							⊕ ORGANIC CONTENT % ⊕			
							PL	MC	LL	
							□ FINES CONTENT (%) □			
0							20	40	60	80
			Loose to medium dense, gray to dark gray, brown to dark brown, poorly-graded fine SAND with silt	HA 1						
5		SP-SM		SS 2	3-4-6-6 (10)					
				SS 3	5-5-6-5 (11)					
10			Loose to medium dense, gray, clayey fine SAND	SS 4	7-10-18-10 (28)					
15				SS 5	8-12-14 (26)					
20		SC		SS 6	4-4-2 (6)					
25			Weight of Hammer (23.5'-25')	SS 7	0-0-0 (0)					

MC2 REPORT T17.031 GREEN SPINE CYCLE.GPJ MC2.GDT 6/13/18

(Continued Next Page)





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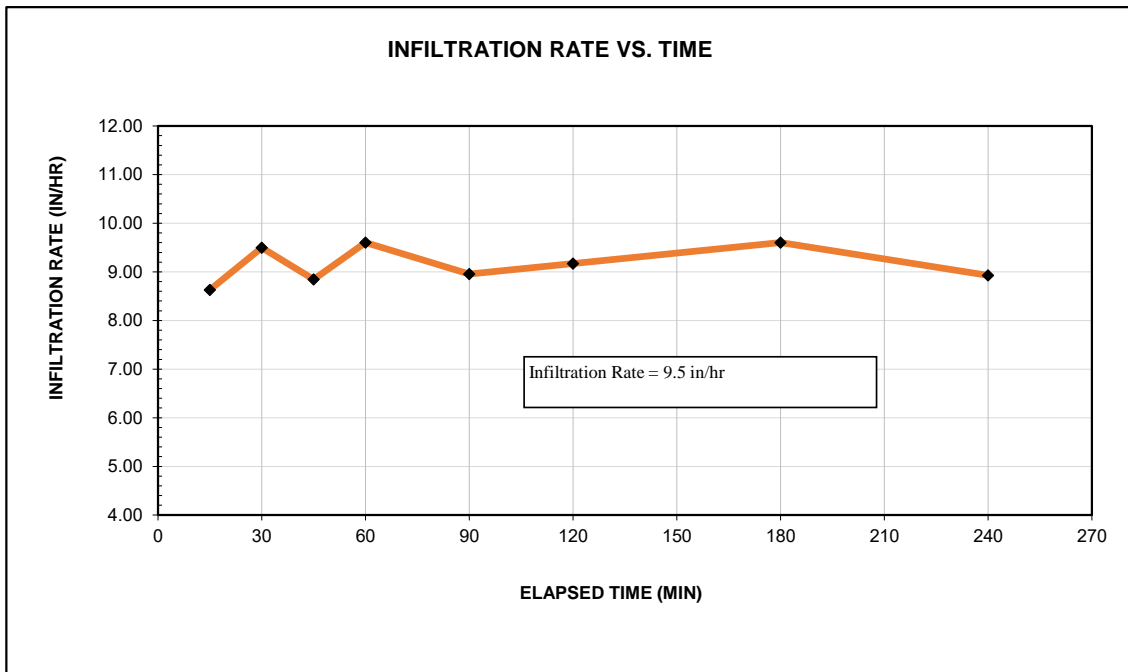
### DOUBLE-RING INFILTROMETER TEST

**Project:** Green Spine Cycle Track  
**Project No.:** T021705.031  
**Client:** Kisinger Campo & Assoc.  
**Performed By:** DG  
**Date/Time:** 6/5/18 @ 11:00 am  
**Test No.:** DRI-01

**Location:** SE corner of Cass & Albany  
**Surface Description:** Fine Sands (SP, SP-SM)  
**Test Depth:** 1.5-ft. bgs  
**Ring Size:** 12", 24"  
**Constant Head:** 4"

### INNER RING FIELD TEST DATA

ELAPSED TIME (minutes)	QUANTITY H <sub>2</sub> O (mL)	INFILTRATION RATE (in/hr)
15	4000	8.63
30	4400	9.49
45	4100	8.85
60	4450	9.60
90	8300	8.96
120	8500	9.17
180	17800	9.60
240	16550	8.93



**Comments:** Water Table at 4' bgs at time of test.

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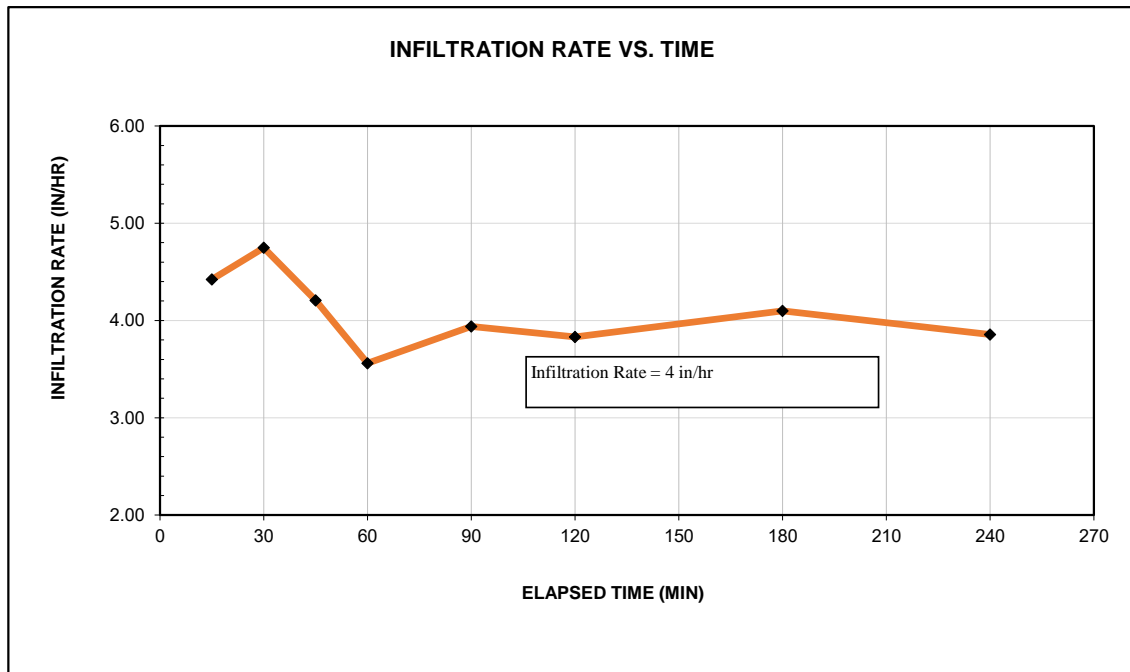
### DOUBLE-RING INFILTROMETER TEST

**Project:** Green Spine Cycle Track  
**Project No.:** T021705.031  
**Client:** Kisinger Campo & Assoc.  
**Performed By:** DG  
**Date/Time:** 6/6/18 @ 9:15 am  
**Test No.:** DRI-02

**Location:** NE corner of Cass & Fremont  
**Surface Description:** Fine Sands (SP, SP-SM)  
**Test Depth:** 1.5-ft. bgs  
**Ring Size:** 12", 24"  
**Constant Head:** 4"

### INNER RING FIELD TEST DATA

ELAPSED TIME (minutes)	QUANTITY H <sub>2</sub> O (mL)	INFILTRATION RATE (in/hr)
15	2050	4.42
30	2200	4.75
45	1950	4.21
60	1650	3.56
90	3650	3.94
120	3550	3.83
180	7600	4.10
240	7150	3.86



**Comments:** Water Table at 4' bgs at time of test.



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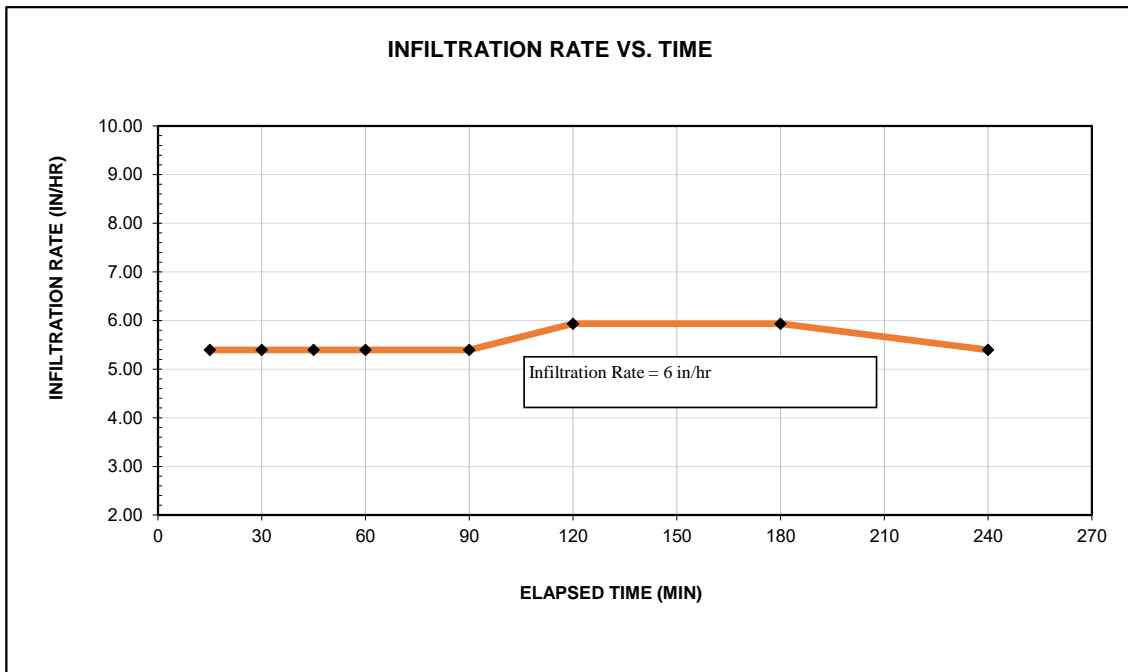
### DOUBLE-RING INFILTROMETER TEST

**Project:** Green Spine Cycle Track  
**Project No.:** T021705.031  
**Client:** Kisinger Campo & Assoc.  
**Performed By:** SG  
**Date/Time:** 6/6/18 @ 10:30 am  
**Test No.:** DRI-03

**Location:** NE corner of Cass & Rome  
**Surface Description:** Fine Sands (SP, SP-SM)  
**Test Depth:** 1.5-ft. bgs  
**Ring Size:** 12", 24"  
**Constant Head:** 4"

### INNER RING FIELD TEST DATA

ELAPSED TIME (minutes)	QUANTITY H <sub>2</sub> O (mL)	INFILTRATION RATE (in/hr)
15	2500	5.39
30	2500	5.39
45	2500	5.39
60	2500	5.39
90	5000	5.39
120	5500	5.93
180	11000	5.93
240	10000	5.39



**Comments:** Water Table at 4' bgs at time of test.

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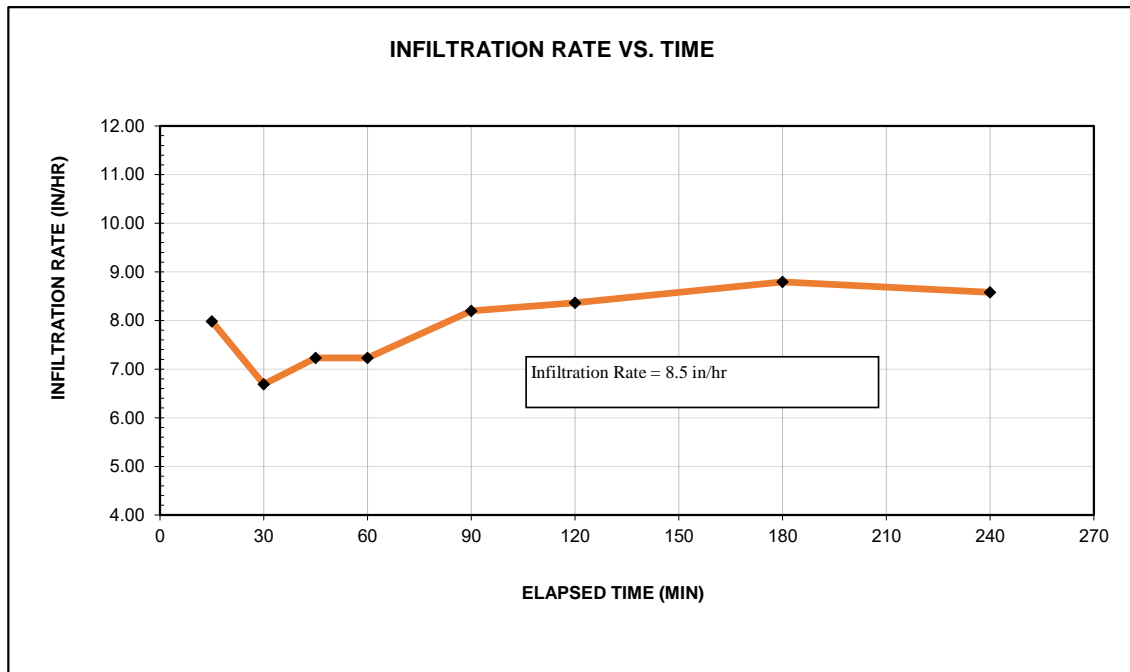
### DOUBLE-RING INFILTRMETER TEST

**Project:** Green Spine Cycle Track  
**Project No.:** T021705.031  
**Client:** Kisinger Campo & Assoc.  
**Performed By:** DG  
**Date/Time:** 6/7/18 @ 9:15 am  
**Test No.:** DRI-04

**Location:** S corner of 3rd & Nuccio  
**Surface Description:** Fine Sands (SP, SP-SM)  
**Test Depth:** 1.5-ft. bgs  
**Ring Size:** 12", 24"  
**Constant Head:** 4"

### INNER RING FIELD TEST DATA

ELAPSED TIME (minutes)	QUANTITY H <sub>2</sub> O (mL)	INFILTRATION RATE (in/hr)
15	3700	7.98
30	3100	6.69
45	3350	7.23
60	3350	7.23
90	7600	8.20
120	7750	8.36
180	16300	8.79
240	15900	8.58



**Comments:** Water Table greater than 5' bgs at time of test.



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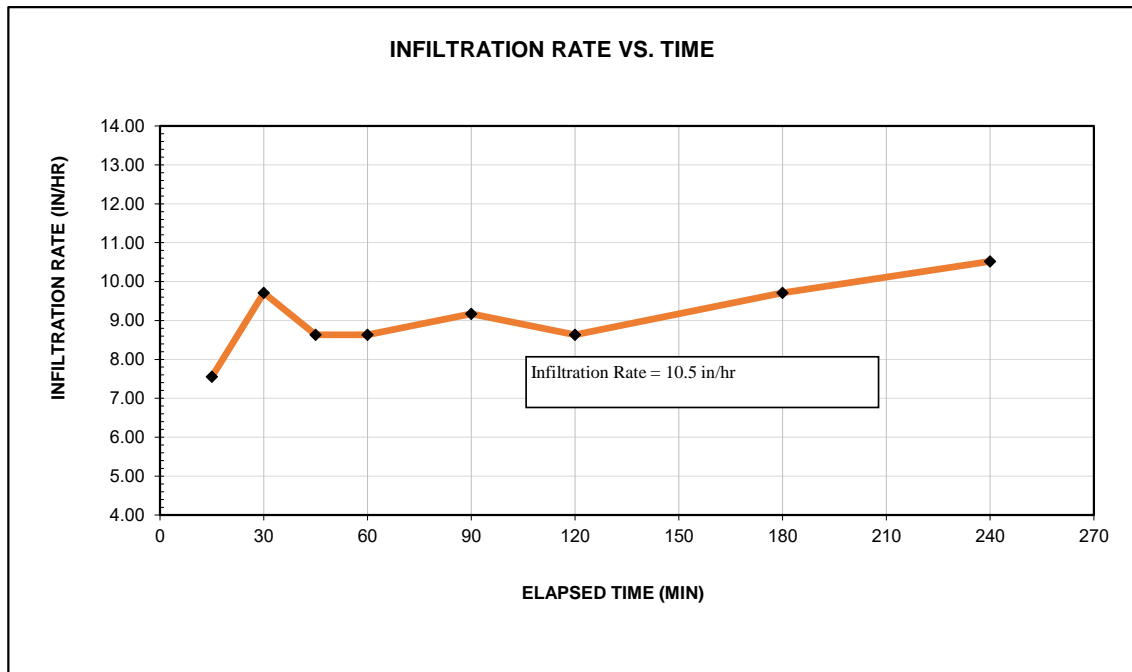
### DOUBLE-RING INFILTROMETER TEST

**Project:** Green Spine Cycle Track  
**Project No.:** T021705.031  
**Client:** Kisinger Campo & Assoc.  
**Performed By:** SG  
**Date/Time:** 6/7/18 @ 11:00 am  
**Test No.:** DRI-05

**Location:** E of 15th St., N of 17th Ave.  
**Surface Description:** Fine Sands (SP, SP-SM)  
**Test Depth:** 1.5-ft. bgs  
**Ring Size:** 12", 24"  
**Constant Head:** 4"

### INNER RING FIELD TEST DATA

ELAPSED TIME (minutes)	QUANTITY H <sub>2</sub> O (mL)	INFILTRATION RATE (in/hr)
15	3500	7.55
30	4500	9.71
45	4000	8.63
60	4000	8.63
90	8500	9.17
120	8000	8.63
180	18000	9.71
240	19500	10.52



**Comments:** Water Table greater than 5' bgs at time of test. Moist clayey Sands at 5' bgs

## TEST PROCEDURES

The general field procedures employed by MC Squared, Inc. (MC<sup>2</sup>) are summarized in the American Society for Testing and Materials (ASTM) Standard D420 which is entitled "Investigating and Sampling Soil and Rock". This recommended practice lists recognized methods for determining soil and rock distribution and groundwater conditions. These methods include geophysical and in-situ methods as well as boring.

### Standard Drilling Techniques

To obtain subsurface samples, boring are drilled using one of several alternate techniques depending upon the subsurface conditions. Some of these techniques are:

#### In Soils:

- a) Continuous hollow stem augers.
- b) Rotary boring using roller cone bits or drag bits, and water or drilling mud to flush the hole.
- c) "Hand" augers.

#### In Rock:

- a) Core drilling with diamond-faced, double or triple tube core barrels.
- b) Core boring with roller cone bits.

Hollow Stem Augering: A hollow stem auger consists of a hollow steel tube with a continuous exterior spiral flange termed a flight. The auger is turned into the ground, returning the cuttings along the flights. The hollow center permits a variety of sampling and testing tools to be used without removing the auger.

Mud Rotary: In situations where unconsolidated materials are anticipated, the direct-rotary or "mud" rotary method may be used as a more effective method for obtaining soil samples. The fluid used, which is typically stored in an aluminum tub (also known as a "mudtub"), is a mix of water and bentonite, also known as a bentonite slurry or "mud". This fluid circulates into the borehole and then returns to the mudtub using a pump system. A loss of circulation, partially or otherwise, may signify a void at that sample depth. The key advantage of using this drilling method is that it stabilizes the borehole wall while drilling in unconsolidated formations, due to the buildup of a filter cake on the wall.

Core Drilling: Soil drilling methods are not normally capable of penetrating through hard cemented soil, weathered rock, coarse gravel or boulders, thin rock seams, or the upper surface of sound, continuous rock. Material which cannot be penetrated by auger or rotary soil-drilling methods at a reasonable rate is designated as "refusal material". Core drilling procedures are required to penetrate and sample refusal materials.

Prior to coring, casing may be set in the drilled hole through the overburden soils, to keep the hole from caving and to prevent excessive water loss. The refusal materials are then cored according to ASTM D-2113 using a diamond-studded bit fastened to the end of a hollow, double or triple tube core barrel. This device is rotated at high speeds, and the cuttings are brought to the surface by circulating water. Core samples of the material penetrated are protected and retained in the swivel-mounted inner tube. Upon completion of each drill run, the core barrel is brought to the surface, the core recovery is measured, and the core is placed, in sequence, in boxes for storage and transported to our laboratory.



### **Sampling and Testing in Boreholes**

Several techniques are used to obtain samples and data in soils in the field; however the most common methods in this area are:

- a) Standard Penetrating Testing
- b) Undisturbed Sampling
- c) Dynamic Cone Penetrometer Testing
- d) Water Level Readings

The procedures utilized for this project are presented below.

Standard Penetration Testing: At regular intervals, the drilling tools are removed and soil samples obtained with a standard 2-inch diameter split tube sampler connected to an A or N-size rod. The sampler is first seated 6 inches to penetrate any loose cuttings, and then driven an additional 12 inches with blows of a 140-pound safety hammer falling 30 inches. Generally, the number of hammer blows required to drive the sampler the final 12 inches is designated the "penetration resistance" or "N" value, in blows per foot (bpf). The split barrel sampler is designed to retain the soil penetrated, so that it may be returned to the surface for observation. Representative portions of the soil samples obtained from each split barrel sample are placed in jars, sealed and transported to our laboratory.

The standard penetration test, when properly evaluated, provides an indication of the soil strength and compressibility. The tests are conducted according to ASTM Standard D1586. The depths and N-values of standard penetration tests are shown on the Boring Logs. Split barrel samples are suitable for visual observation and classification tests but are not sufficiently intact for quantitative laboratory testing.

Water Level Readings: Water level readings are normally taken in the boring and are recorded on the Boring Records. In sandy soils, these readings indicate the approximate location of the hydrostatic water level at the time of our field exploration. In clayey soils, the rate of water seepage into the boring is low and it is generally not possible to establish the location of the hydrostatic water level through short-term water level readings. Also, fluctuation in the water level should be expected with variations in precipitation, surface run-off, evaporation, and other factors. For long-term monitoring of water levels, it is necessary to install piezometers.

The water levels reported on the Boring Logs are determined by field crews immediately after the drilling tools are removed, and several hours after the boring are completed, if possible. The time lag is intended to permit stabilization of the groundwater level that may have been disrupted by the drilling operation.

Occasionally the boring will cave-in, preventing water level readings from being obtained or trapping drilling water above the cave-in zone.

### **BORING LOGS**

The subsurface conditions encountered during drilling are reported on a field boring log prepared by the Driller. The log contains information concerning the boring method, samples attempted and recovered, indications of the presence of coarse gravel, cobbles, etc., and observations of groundwater. It also contains the driller's interpretation of the soil conditions between samples. Therefore, these boring records contain both factual and interpretive information. The field boring records are kept on file in our office.

After the drilling is completed a geotechnical professional classifies the soil samples and prepares the final Boring Logs, which are the basis for our evaluations and recommendations.

## **SOIL CLASSIFICATION**

Soil classifications provide a general guide to the engineering properties of various soil types and enable the engineer to apply his past experience to current problems. In our investigations, samples obtained during drilling operations are examined in our laboratory and visually classified by an engineer. The soils are classified according to consistency (based on number of blows from standard penetration tests), color and texture. These classification descriptions are included on our Boring Logs.

The classification system discussed above is primarily qualitative and for detailed soil classification two laboratory tests are necessary; grain size tests and plasticity tests. Using these test results the soil can be classified according to the AASHTO or Unified Classification Systems (ASTM D-2487). Each of these classification systems and the in-place physical soil properties provides an index for estimating the soil's behavior. The soil classification and physical properties are presented in this report.

The following table presents criteria that are typically utilized in the classification and description of soil and rock samples for preparation of the Boring Logs.



Relative Density of Cohesionless Soils From Standard Penetration Test		Consistency of Cohesive Soils	
Very Loose	≤ 4 bpf	Very Soft	≤ 2 bpf
Loose	5 - 10 bpf	Soft	3 - 4 bpf
Medium Dense	11 - 30 bpf	Firm	5 - 8 bpf
Dense	31 - 50 bpf	Stiff	9 - 15 bpf
Very Dense	> 50 bpf	Very Stiff	16 - 30 bpf
		Hard	30 – 50 bpf
		Very Hard	> 50 bpf
(bpf= blows per foot, ASTM D 1586)			
Relative Hardness of Rock		Particle Size Identification	
Very Soft	Very soft rock disintegrates or easily compresses to touch; can be hard to very hard soil.	Boulders	Larger than 12"
		Cobbles	3" - 12"
Soft	May be broken with fingers.	Gravel	
		Coarse	3/4" - 3"
Moderately Soft	May be scratched with a nail, corners and edges may be broken with fingers.	Fine	4.76mm - 3/4"
		Sand	
		Coarse	2.0 - 4.76 mm
Moderately Hard	Light blow of hammer required to break samples.	Medium	0.42 - 2.00 mm
		Fine	0.42 - 0.074 mm
Hard	Hard blow of hammer required to break sample.	Fines (Silt or Clay)	Smaller than 0.074 mm
Rock Continuity		Relative Quality of Rocks	
<b>RECOVERY</b> = $\frac{\text{Total Length of Core}}{\text{Length of Core Run}} \times 100 \%$		<b>RQD</b> = $\frac{\text{Total core, counting only pieces > 4" long}}{\text{Length of Core Run}} \times 100 \%$	
<u>Description</u>	<u>Core Recovery %</u>	<u>Description</u>	<u>RQD %</u>
Incompetent	Less than 40	Very Poor	0 - 25 %
Competent	40 - 70	Poor	25 - 50 %
Fairly Continuous	71 - 90	Fair	50 - 75 %
Continuous	91 - 100	Good	75 - 90 %
		Excellent	90 - 100 %