Cal -Tech Testing, Inc.

- Engineering
- Geotechnical
- Environmental

LABORATORIES

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June 9, 2022

Mr. Boe Skinner
North Florida Truck Parts
10434 SW CR 240
Lake City, Florida 32225

RE: Geotechnical Engineering Exploration Report
Strait Residence at 10524 SW CR 240
Lake City, Florida
Cal-Tech Testing Inc. Project No. 22-00217-01

Dear Mr. Boe Skinner:

This report presents the results of our geotechnical engineering exploration performed for the Strait Residence at 10524 SW CR 240 in Lake City, Florida.

The purposes of the exploration were to determine and evaluate the general subsurface soil conditions to provide site preparation and foundation recommendations in regards to the design and construction of the proposed residential home structure.

SITE AND PROJECT INFORMATION

Based on observations during our field work, the site consists of a vacant property proposed for construction of a residential 1-story, structure.

SUBSURFACE SOIL EXPLORATION

Our subsurface soil exploration was performed on June 1, 2022 and consisted of drilling three (3) Standard Penetration Test (SPT) borings (B1 through B3) to a depth of 10 ft. (B1 and B2) and 15 ft. (B3) at locations within, or in proximity to, the proposed structure footprint. Our field crew recorded the Global Positioning System (GPS) coordinates of the boring locations. Refer to the enclosed Boring Logs and Boring Location Plan.

We contacted Sunshine State One Call of Florida to mark out existing, known underground utilities prior to the beginning of our field exploration.

The SPT borings were advanced using continuous-flight auger and automatic hammer. The split-spoon sampling was performed continuously in the upper 10 ft. and at 5 ft. intervals thereafter to the termination depth of the borings. The penetration test was performed by driving a 2-inch O.D. split spoon sampler with the hammer falling 30 inches. The number of hammer blows required to drive the sampler a total of 24 inches (upper 10 ft.) and 18 inches in 6-inch increments were recorded in boring logs. The penetration resistance, N-values, is the summation of the

second and third 6-inch increments and is used to derive soil engineering parameter indexes from empirical correlations. The boreholes were backfilled with soil cuttings at completion.

All soil samples were delivered to our geotechnical laboratory for their review and classification by our geotechnical engineer.

SUBSURFACE SOIL CONDITIONS

Generalized Subsurface Soil Profile
The generalized subsurface soil profile inferred from the results of the subsurface soil exploration consists of a CLAYEY SAND stratum, extending to depths varying 6 ft. (B1) to 14 ft. (B3), underlain by the LIMESTONE formation to the explored depths except for a layer of SILTY SAND at boring location B3.

The N-values recorded (and multiplied by 1.28 to include the automatic hammer efficiency) indicate a Loose (i.e. 5<N<10) relative density of the strata upper 2 ft. and Medium Dense (i.e. 11<N<30) to the termination depth of the borings, thereafter.

Laboratory testing performed on CLAYEY SAND samples obtained from the bottom of the excavated footing on May 13, 2022, indicate fines content of 55% and 45.3%. Furthermore, the Plasticity Index (PI) from the sample with the highest fines content PI=25 indicates a Medium to High Expansion Potential and shrinkage with changes of moisture.

Details of the subsurface soil strata SPT blows/foot (N-value) are presented in the Boring Logs enclosed to this report.

Groundwater
No groundwater was encountered while drilling the borings. The USDA NRCS indicates groundwater between 42 inches and 72 inches of depth from natural grade elevations.

Based on the Federal Emergency Administration (FEMA) Flood No. 12023C0370C, (enclosed) effective February 4, 2009, the property is located within an "Area of Minimal Flood Hazard-Zone X."

FOUNDATION EVALUATION AND RECOMMENDATIONS

The geotechnical consideration for support of the proposed house structure on shallow foundations is the Medium to High Potential for expansion and shrinkage of the CLAYEY SAND stratum as changes of moisture will likely induce intolerable settlements and/or heaving of the footings and ground floor slab.

However, shallow foundations and on-grade ground floor slab could be used to support the house structure after the removal and replacement of the CLAYEY SAND soils to 4 ft. below the footing subgrades and to 5 ft. beyond the structure's footprint. The excavation/removal of the CLAYEY SAND soils should be performed with an excavator equipped with a flat bucket in order to minimize disturbance of the underlying soils.

Subsequently, the excavation should be backfilled with approved fill material placed in 12-inch-thick lifts to the existing ground surface elevation. Each lift should be compacted to at least 95% of the material Maximum Dry Density (ASTM D 1557).

The approved fill material should consist of granular soils with 3-inch maximum size particles, no more than 12% of fine content and no organic matter, with exception of the last 2 lifts with fines

content in the 15%-18% range in order to minimize infiltration of storm and irrigation water into the backfilled excavation.

Raising of grades, if required to establish the finished floor elevations, should be performed with approved fill placed in 12-in thick lifts and compacted to at least 95% of the material Maximum Dry Density (ASTM D 1557) after backfilling the excavation. When raising grades, we recommend placing approved fill with fines content in the 15% to 18% range outside the footprint of the structure and a slope to allow stormwater running off away from the structure.

After satisfactory performance of our recommendations in the preceding paragraphs, the proposed structure could be supported on footings bearing on the backfilled soils and designed with a safe soil contact pressure of 2,000 lb/ft^2 and settlements within 1 inch. Similarly, the ground floor slab could be supported on grade.

An allowable sliding resistance of 0.35 could be used for the concrete footings cast directly on sand.

The footing and slab subgrade upper 12 inches should be compacted to at least 95% of the material's Maximum Dry Density (ASTM D 1557).

LIMITATIONS

Information on subsurface strata shown on the boring logs represent conditions encountered only at the locations and depths indicated and at the time of the exploration. If different conditions are encountered during construction, they should be immediately brought to our attention for evaluation as they may affect our recommendations.

The subsurface soil exploration results indicate the presence of a Limestone Pinnacle at relatively shallow depth at the explored locations; therefore, a Soil Electrical Resistivity Imaging survey is suggested to screen for sinkhole-potential soil anomalies.

CLOSURE

It has been a pleasure working with you and we look forward to continuing our work on this project.

Sincerely,

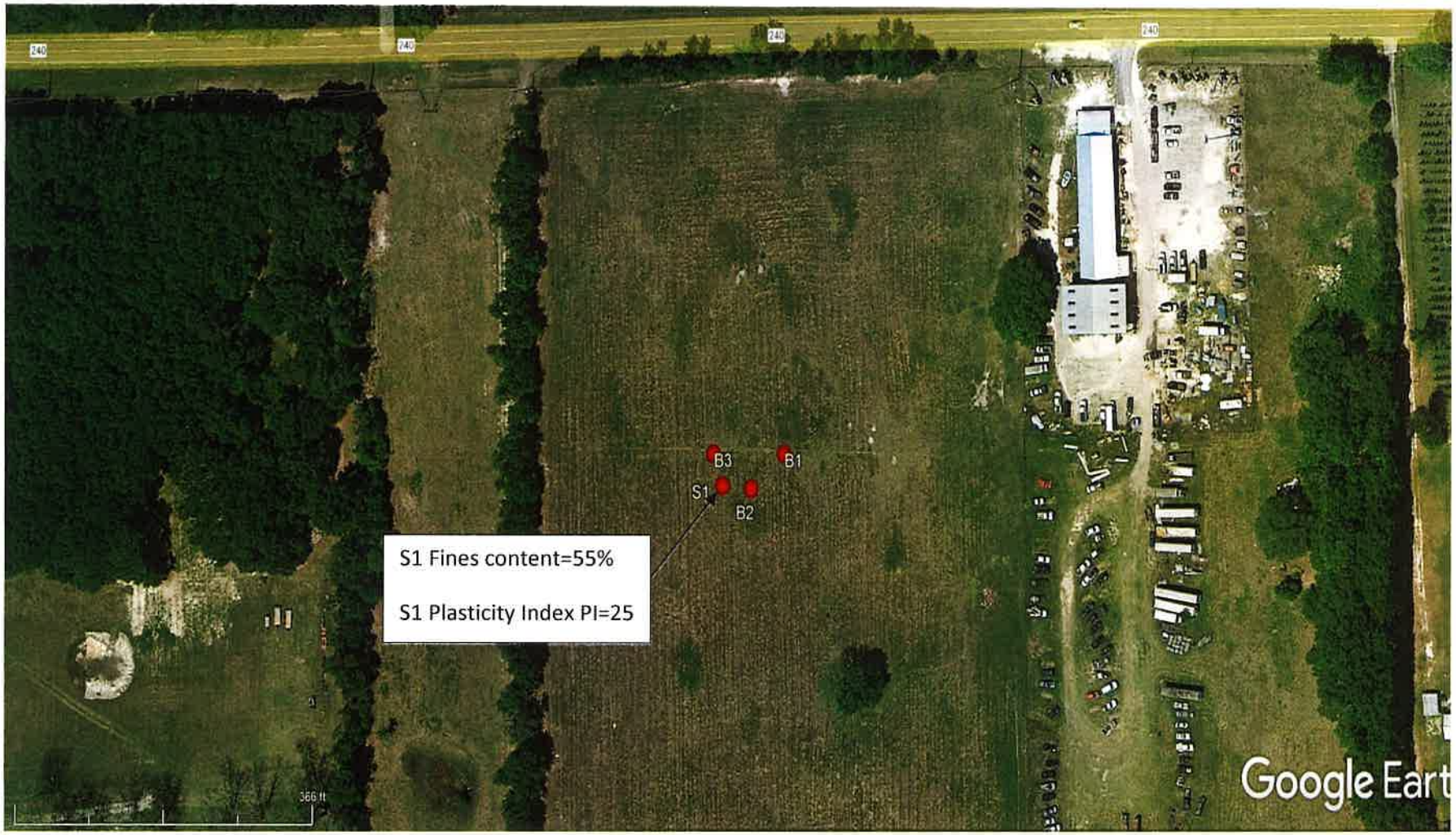
Cal-Tech Testing, Inc.

IVAN E. MARCANO LICENSE No. 65550 STATE OF FLORIDA PROFESSIONAL ENGINEER 6/9/22

Ivan E. Marcano, P.E.
Sr. Geotechnical Engineer

Mike Stalvey, Jr.
Vice-President

Enclosures:
Boring Location Plan
FEMA Flood Map
Boring Logs



CAL-TECH TESTING, INC.
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BORING LOCATION PLAN

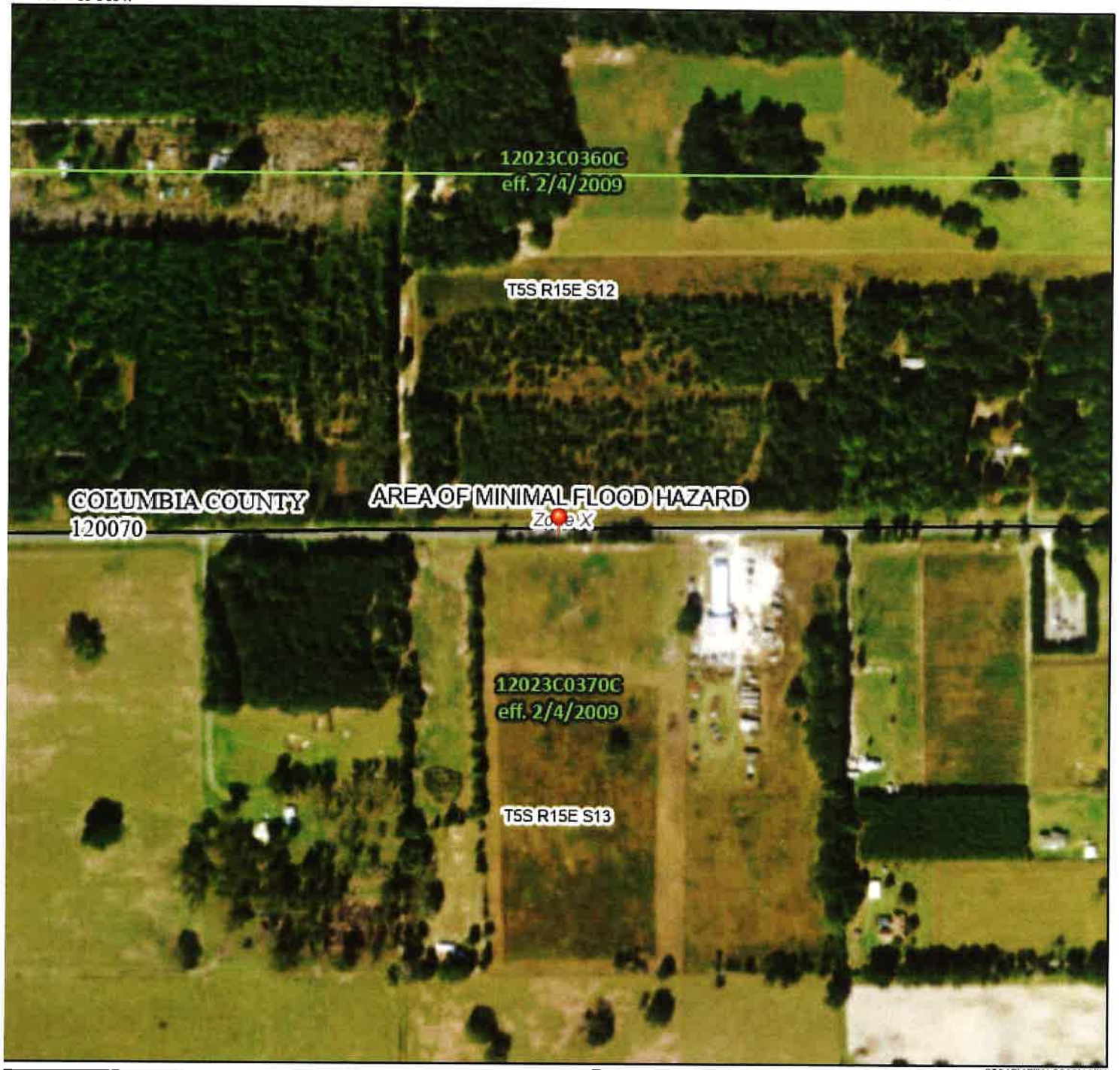
Strait Residence at 10524 SW CR 240

Lake City, Florida

National Flood Hazard Layer FIRMette

FEMA

82°46'23"W 30°3'50"N



82°45'45"W 30°3'19"N

0 250 500 1,000 1,500 2,000 Feet 1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximat point selected by the user and does not repres an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/9/2022 at 2:49 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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BORING NUMBER B1

CLIENT North Florida Truck Parts
PROJECT NAME Strait Residence at 10524 SW CR 240
PROJECT NUMBER 22-00217-01
PROJECT LOCATION Lake City, Florida
DATE STARTED 6/1/22 **COMPLETED** 6/1/22
GROUND ELEVATION 0 ft **HOLE SIZE** 2-in dia x 10 ft. depth
DRILLING CONTRACTOR Cal-Tech Testing, Inc.
GROUND WATER LEVELS:
DRILLING METHOD SPT
AT TIME OF DRILLING --- Not encountered
LOGGED BY B.S. **CHECKED BY** I.M.
AT END OF DRILLING ---
NOTES Elev. refered to ground surface
AFTER DRILLING ---

ELEV. (ft)	MATERIAL DESCRIPTION	SYMBOL LOG	DEPTH SCALE (ft)	SAMPLE DATA: NUMBER	TYPE	RECOVERY (%) (RQD) %	BLOW COUNTS (N VALUE)	REMARKS (DRILLING FLUID, DEPTH OF CASING, FLUID LOSS, DRILLING RESISTANCE, ETC.)
	(SC) Yellowish red **CLAYEY SAND**		2	1	SS	71	2-3-3-3 (6)	Boring Location Coordinates; N30°03'30.25" W82°46'03.28"
			4	2	SS	67	3-4-5-4 (9)	SS=Split Spoon sampler
-5			6	3	SS	71	4-4-7-7 (11)	
	LIMESTONE		8	4	SS	67	10-18-18-23 (36)	
-10			10	5	SS	67	17-17-12-8 (29)	
	Bottom of borehole at 10.0 feet.							

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BORING NUMBER B2

CLIENT North Florida Truck Parts
PROJECT NAME Strait Residence at 10524 SW CR 240
PROJECT NUMBER 22-00217-01
PROJECT LOCATION Lake City, Florida
DATE STARTED 6/1/22 **COMPLETED** 6/1/22
GROUND ELEVATION 0 ft **HOLE SIZE** 2-in dia x 10 ft. depth
DRILLING CONTRACTOR Cal-Tech Testing, Inc.
GROUND WATER LEVELS:
DRILLING METHOD SPT
AT TIME OF DRILLING --- Not encountered
LOGGED BY B.S. **CHECKED BY** I.M.
AT END OF DRILLING ---
NOTES Elev. refered to ground surface
AFTER DRILLING ---

ELEV. (ft)	MATERIAL DESCRIPTION	SYMBOL LOG	DEPTH SCALE (ft)	SAMPLE DATA: NUMBER	TYPE	RECOVERY (%) (RQD) %	BLOW COUNTS (N VALUE)	REMARKS (DRILLING FLUID, DEPTH OF CASING, FLUID LOSS, DRILLING RESISTANCE, ETC.)
	(SC) Yellowish red **CLAYEY SAND**		2	1	SS	75	1-3-3-3 (6)	Boring Location Coordinates; N30°03'29.91" W82°46'03.75"
			4	2	SS	75	4-4-7-7 (11)	SS=Split Spoon sampler
-5			6	3	SS	75	7-7-7-6 (14)	
			8	4	SS	75	5-6-7-7 (13)	
-10	**LIMESTONE**		10	5	SS	63	8-8-12-23 (20)	
	Bottom of borehole at 10.0 feet.							

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BORING NUMBER B3

CLIENT North Florida Truck Parts
PROJECT NAME Strait Residence at 10524 SW CR 240
PROJECT NUMBER 22-00217-01
PROJECT LOCATION Lake City, Florida
DATE STARTED 6/1/22 **COMPLETED** 6/1/22
GROUND ELEVATION 0 ft **HOLE SIZE** 3-in dia x 10 ft. depth
DRILLING CONTRACTOR Cal-Tech Testing, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Continuous Flight Auger/Split Spoon
AT TIME OF DRILLING --- Not encountered
LOGGED BY B.S. **CHECKED BY** I.M.
AT END OF DRILLING ---
NOTES Elev. refered to ground surface
AFTER DRILLING ---

ELEV. (ft)	MATERIAL DESCRIPTION	SYMBOL LOG	DEPTH SCALE (ft)	SAMPLE DATA: NUMBER	TYPE	RECOVERY (%) (RQD) %	BLOW COUNTS (N VALUE)	REMARKS (DRILLING FLUID, DEPTH OF CASING, FLUID LOSS, DRILLING RESISTANCE, ETC.)
	(SM) Yellowish brown **SILTY SAND**		2	1	SS	71	1-2-2-2 (4)	Boring Location Coordinates; N30°03'30.25" W82°46'04.29"
	(SC) Yellowish red **CLAYEY SAND**		4	2	SS	75	3-4-6-7 (10)	SS=Split Spoon sampler
-5			6	3	SS	75	9-6-9-12 (15)	
			8	4	SS	75	10-10-10-10 (20)	
-10			10	5	SS	75	6-7-8-8 (15)	
			12					
	(SM) Yellowish red **SILTY SAND**		14	6	SS	78	4-5-7 (12)	
-15	Bottom of borehole at 15.0 feet.							