Schematic Design Report

Lake Worth Beach – Parking Structure

K Street South, Lake Worth Beach FL

Prepared: June 27, 2025

TABLE OF CONTENTS

I. **Executive Summary**

II. **Project Team**

III. **Site Development**

IV. **Milestone Schedule**

V. **Site Identification**
   a. Parcel survey
   b. Tree site survey
   c. Tree analysis spreadsheet

VI. **Geotechnical Report**

VII. **Schematic Design**
   a. Schematic design layout
   b. MEP/FP narrative
   c. Structural narrative
   d. Civil preliminary layout

VIII. **Conceptual Budget**
   a. Hard Cost
   b. Soft Cost
   c. Exterior elevations (Exterior aesthetics removed)

I. EXECUTIVE SUMMARY

Property Overview:

The site encompasses 0.77 acres (33,750 SF) spread across multiple parcels in Lake Worth Beach:

  - 704 1st Ave South
  - 710 1st Ave South
  - 25 South K Street
  - 19 South K Street
  - 13 South K Street
- Flood zone: “X”
  - Panel number: 12099C 0781F
  - Date: October 5, 2017
- MU-E (Mixed Use East – Downtown Historic District)

II. PROJECT TEAM

Developer:	Sunshine Lake Worth Development LLC (c/o United Management)
Owner's Rep:	HE2PD, Inc
Architect:	PGAL Architects
Structural Engineer:	ONM&J
MEP Engineer:	JLRD Engineers
Civil Engineer:	Miller Legg Engineers
Geotechnical Engineer:	ECS Florida
Construction Manager:	TBD
Historic Consultant:	KSK Preservation

III. SITE DEVELOPMENT

The proposed development at South K Street in Lake Worth Beach, FL, is a freestanding parking structure. This development aligns with the visual intent of the surrounding area and is intended to relieve existing local parking limitations and accompany the WMODA required parking.

Key Features

Level	Standard Parking	Compact Parking	HC Parking	EV Parking	Total Parking	GSF
Level #5	27	0	1	0	28	11,771 SF
Level #4	53	12	1	0	66	23,114 SF
Level #3	52	12	2	0	66	23,114 SF
Level #2	52	12	2	0	66	23,114 SF
Level #1	13	10	2	8	33	16,820 SF
Total	**197**	**46**	**8**	**8**	**259**	**97,933 SF**

IV. MILESTONE SCHEDULE

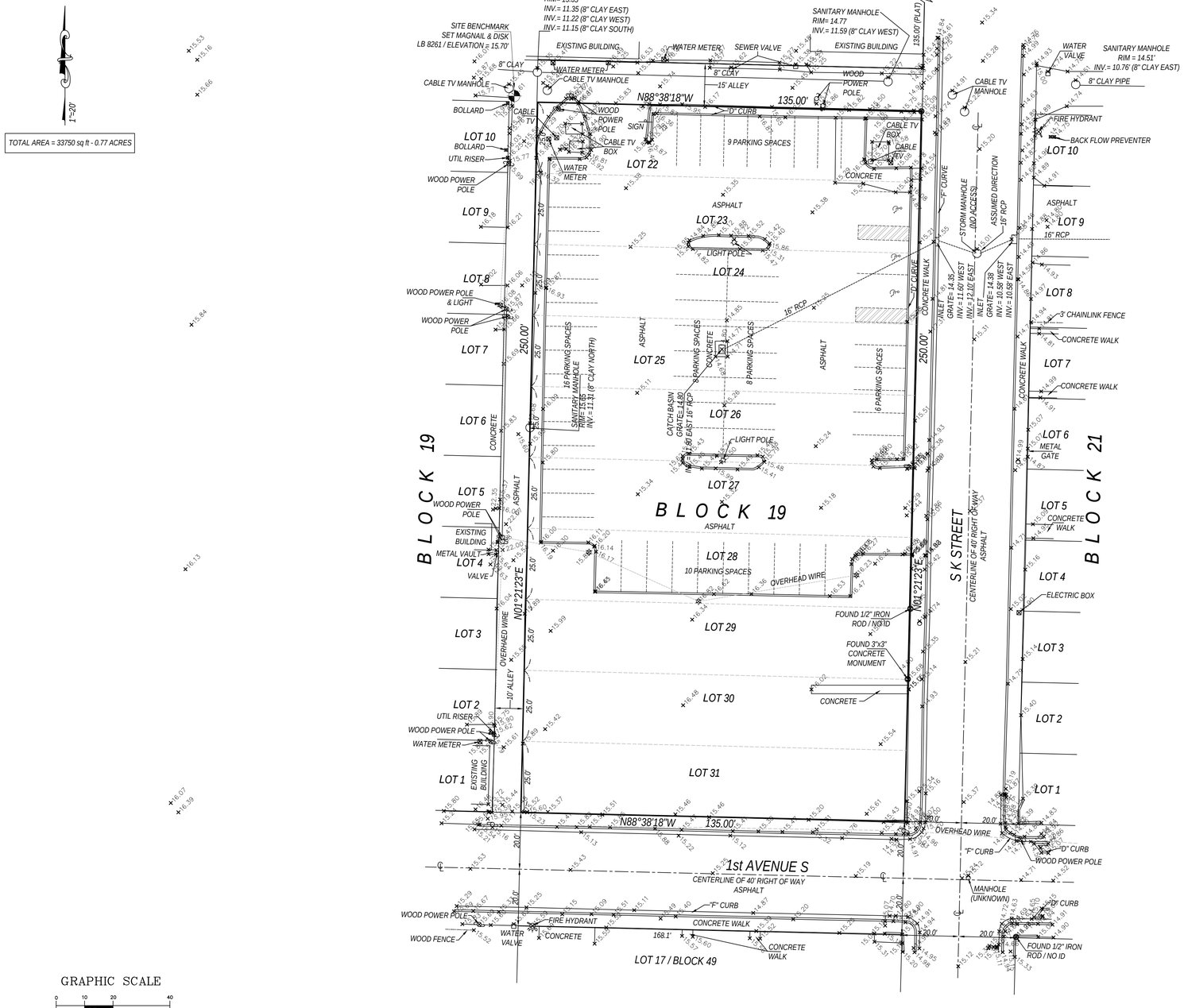
Milestone Schedule:

- **Conceptual Design submission:** **6/30/2025**
  - City review/comments due (45 days): 8/15/2025
- **Design Development submission:** **11/15/2025**
  - City review due (30 days): 12/15/2025
  - Receive written confirmation (15 days): 1/1/2026
  - Entitlement approvals due (75 Days): 3/15/2026
- **Construction Documents submission:** **5/15/2026**
- **Permit submission:** **5/15/2026**
  - Permit approval (60 days): 7/15/2026
- **GMP proposal submission:** **9/1/2026**
  - GMP City/CRA approval (20 Days): 9/20/2026
- **Construction start Date:** **10/2026**
- **Temporary Certificate of Occupancy:** **9/2027**
- **Final Certificate of Occupancy:** **11/2027**

V. SITE IDENTIFICATION

Site Identification:

- Parcel survey
- Site tree survey
- Tree analysis spreadsheet



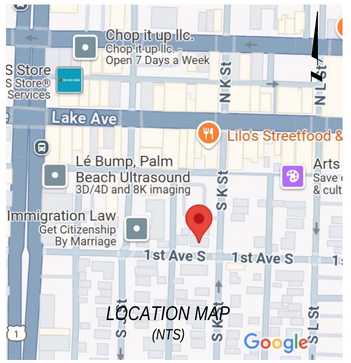
1"=20'

TOTAL AREA = 33750 sq ft - 0.77 ACRES

GRAPHIC SCALE

0 10 20 40

1 inch = 20 ft.



PROPERTY ADDRESS:
704 1ST AVENUE SOUTH
710 1ST AVENUE SOUTH
25 SOUTH K STREET
19 SOUTH K STREET
13 SOUTH K STREET
LAKE WORTH, FLORIDA 33460

FLOOD ZONE:"X"
PANEL NO: 12099C 0781F
DATE: OCTOBER 5, 2017

CERTIFIED TO:
1. LAKE WORTH COMMUNITY REDEVELOPMENT AGENCY OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANYGOREN, CHEROF, DOODY & EZROL, P.A.

LEGAL DESCRIPTION:
THE EAST 85 FEET OF LOTS 30 AND 31, BLOCK 19, TOWNSITE OF LUCERNE (NOW KNOWN AS LAKE WORTH), ACCORDING TO THE PLAT THEREOF ON FILE IN THE OFFICE OF THE CLERK OF THE CIRCUIT COURT IN AND FOR PALM BEACH COUNTY, FLORIDA, RECORDED IN PLAT BOOK 2, PAGES 29 THROUGH 40, INCLUSIVE.ANDTHE WEST 50 FEET OF LOTS 30 AND 31, BLOCK 19 OF THE PALM BEACH FARMS COMPANY PLAT NO. 2 TOWNSITE OF LUCERNE NKA LAKE WORTH, ACCORDING TO THE PLAT THEREOF ON FILE IN THE OFFICE OF THE CLERK OF THE CIRCUIT COURT IN AND FOR PALM BEACH COUNTY, FLORIDA, RECORDED IN PLAT BOOK 2, PAGE 29.ANDLOT 29, BLOCK 19, IN THE TOWNSITE OF LUCERNE ACCORDING TO THE PALM BEACH FARMS COMPANY, PLAT NO.2, RECORDED IN PLAT BOOK 2, PAGES 29 TO 40, INCLUSIVE, IN THE OFFICE OF THE CLERK OF THE CIRCUIT COURT IN AND FOR PALM BEACH COUNTY, FLORIDA. (THE TOWNSITE OF LUCERNE IS NOW KNOWN AS LAKE WORTH.)ANDLOT 23 THROUGH 28, BLOCK 19, IN THE TOWNSITE OF LUCERNE, (NOW KNOWN AS LAKE WORTH), ACCORDING TO THE PLAT THEREOF ON FILE IN THE OFFICE OF THE CLERK OF THE CIRCUIT COURT IN AND FOR PALM BEACH COUNTY, FLORIDA RECORDED IN PLAT BOOK 2, PAGES 29-40, INCLUSIVE.ANDLOT 22, BLOCK 19, IN THE TOWNSITE OF LUCERNE, (NOW KNOWN AS LAKE WORTH), ACCORDING TO THE PLAT THEREOF ON FILE IN THE OFFICE OF THE CLERK OF THE CIRCUIT COURT IN AND FOR PALM BEACH COUNTY, FLORIDA RECORDED IN PLAT BOOK 2, PAGES 29-40, INCLUSIVE.

SURVEYORS' NOTES:
1. I HEREBY CERTIFY THIS SURVEY MEETS STANDARDS OF PRACTICE SET FORTH IN RULE 5J-17.050-.052, OF THE FLORIDA ADMINISTRATIVE CODE, ADOPTED BY THE FLORIDA BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS, PURSUANT TO CHAPTER 472.027 OF THE FLORIDA STATUTES.
2. THE SURVEY MAP AND REPORT AND THE COPIES THEREOF ARE NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OR VERIFIED ELECTRONIC SIGNATURE OF A FLORIDA LICENSED SURVEYOR AND MAPPER..
3. UNDERGROUND OR OBSCURED IMPROVEMENTS WERE NOT LOCATED.
4. DIMENSIONS ARE RECORD AND FIELD UNLESS OTHERWISE NOTED.
5. STATED DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS.
6. THIS FIRM'S CERTIFICATE OF AUTHORIZATION NUMBER IS LB 8261.
7. ADDITIONS OR DELETIONS TO SURVEY MAPS OR REPORTS BY OTHER THAN THE SIGNING PARTY OR PARTIES IS PROHIBITED WITHOUT WRITTEN CONSENT OF THE SIGNING PARTY OR PARTIES.
8. SURVEY SUBJECT TO RESERVATIONS, RESTRICTIONS, EASEMENTS AND RIGHTS-OF-WAY OF RECORD. (UNLESS A TITLE REVIEW, COMMITMENT REVIEW, OR OWNERSHIP AND ENCUMBRANCE REVIEW IS PRESENT ON THE FACE OF THIS DOCUMENT, THIS SURVEY HAS BEEN COMPLETED IN THE ABSENCE OF A TITLE INSURANCE POLICY).
9. LOCATION MAP IS GLEANED FROM ONLINE MAPPING SITES AND AND IS ONLY APPROXIMATE.
10. ELEVATIONS SHOWN HEREON ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988. (NAVD'88)

JOB#	PURPOSE	FIELD	DRAFT	CD	DATE
25-0179	SANITARY BOUNDARY SURVEY	JRJ	JH		05.06.25 05.21.25

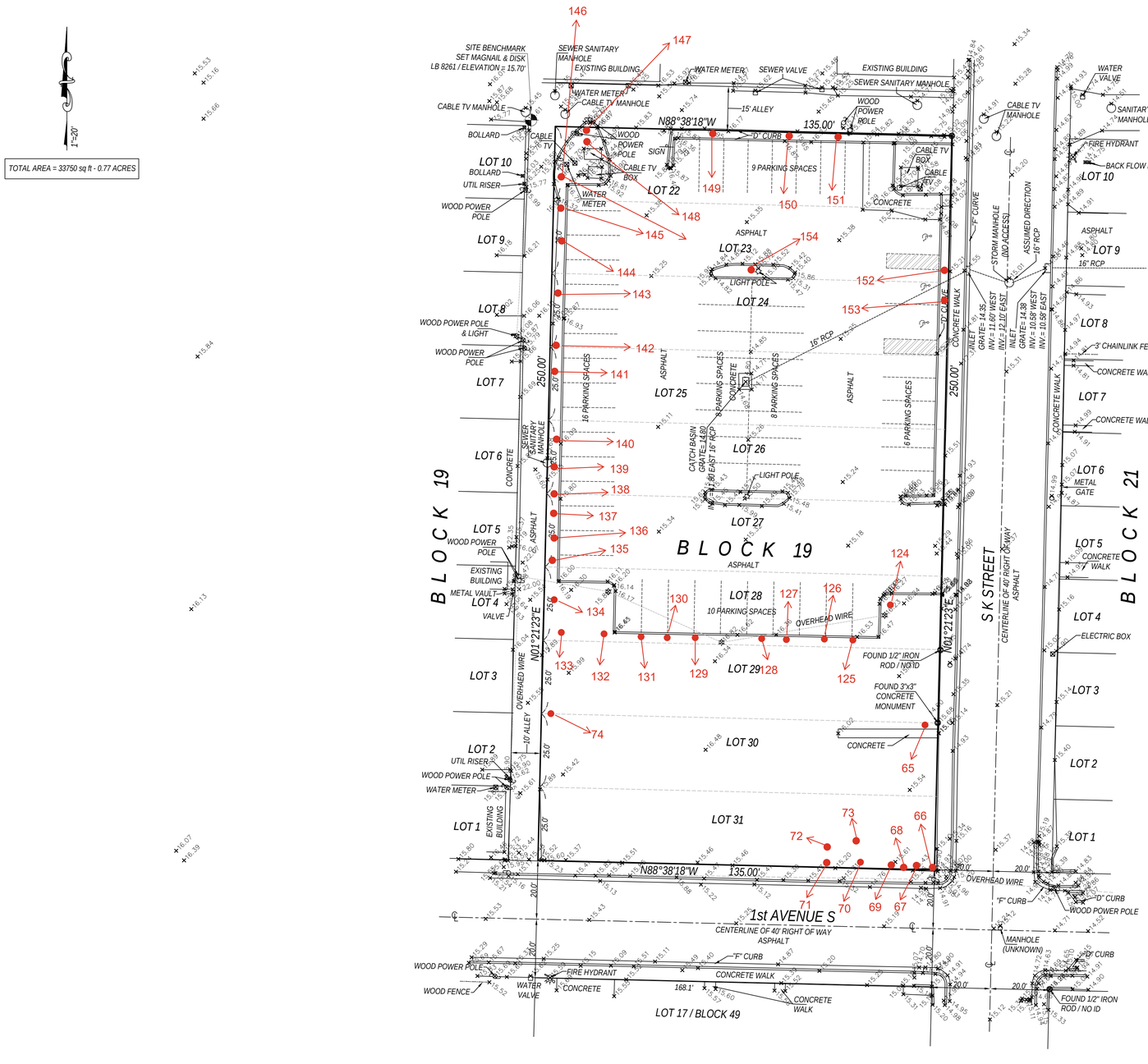
DOUG WALKER
STATE OF FLORIDA
7211
PROFESSIONAL SURVEYOR AND MAPPER

SIGNED

DOUG WALKER
PROFESSIONAL SURVEYOR AND MAPPER
FLORIDA CERTIFICATE No. 7211

BOUNDARY AND TOPOGRAPHIC SURVEY

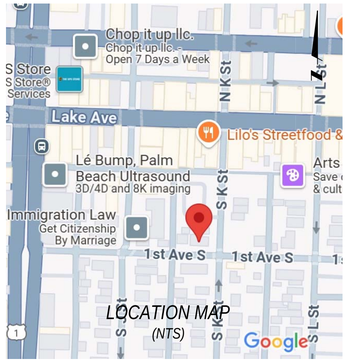
PRINCIPAL MERIDIAN SURVEYING, Inc.
LICENSED BUSINESS No. 8261
4546 CAMBRIDGE STREET
WEST PALM BEACH, FL 33415
OFFICE 561-478-7764



GRAPHIC SCALE

0 10 20 40

1 inch = 20 ft.



PROPERTY ADDRESS:
704 1ST AVENUE SOUTH
710 1ST AVENUE SOUTH
25 SOUTH K STREET
19 SOUTH K STREET
13 SOUTH K STREET
LAKE WORTH, FLORIDA 33460

FLOOD ZONE:"X"
PANEL NO: 12099C 0781F
DATE: OCTOBER 5, 2017

CERTIFIED TO:
1. LAKE WORTH COMMUNITY REDEVELOPMENT AGENCY OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANYGOREN, CHEROF, DOODY & EZROL, P.A.

LEGAL DESCRIPTION:
THE EAST 85 FEET OF LOTS 30 AND 31, BLOCK 19, TOWNSITE OF LUCERNE (NOW KNOWN AS LAKE WORTH), ACCORDING TO THE PLAT THEREOF ON FILE IN THE OFFICE OF THE CLERK OF THE CIRCUIT COURT IN AND FOR PALM BEACH COUNTY, FLORIDA, RECORDED IN PLAT BOOK 2, PAGES 29 THROUGH 40, INCLUSIVE.ANDTHE WEST 50 FEET OF LOTS 30 AND 31, BLOCK 19 OF THE PALM BEACH FARMS COMPANY PLAT NO. 2 TOWNSITE OF LUCERNE NKA LAKE WORTH, ACCORDING TO THE PLAT THEREOF ON FILE IN THE OFFICE OF THE CLERK OF THE CIRCUIT COURT IN AND FOR PALM BEACH COUNTY, FLORIDA, RECORDED IN PLAT BOOK 2, PAGE 29.ANDLOT 29, BLOCK 19, IN THE TOWNSITE OF LUCERNE ACCORDING TO THE PALM BEACH FARMS COMPANY, PLAT NO.2, RECORDED IN PLAT BOOK 2, PAGES 29 TO 40, INCLUSIVE, IN THE OFFICE OF THE CLERK OF THE CIRCUIT COURT IN AND FOR PALM BEACH COUNTY, FLORIDA. (THE TOWNSITE OF LUCERNE IS NOW KNOWN AS LAKE WORTH,)ANDLOT 23 THROUGH 28, BLOCK 19, IN THE TOWNSITE OF LUCERNE, (NOW KNOWN AS LAKE WORTH), ACCORDING TO THE PLAT THEREOF ON FILE IN THE OFFICE OF THE CLERK OF THE CIRCUIT COURT IN AND FOR PALM BEACH COUNTY, FLORIDA RECORDED IN PLAT BOOK 2, PAGES 29-40, INCLUSIVE.ANDLOT 22, BLOCK 19, IN THE TOWNSITE OF LUCERNE, (NOW KNOWN AS LAKE WORTH), ACCORDING TO THE PLAT THEREOF ON FILE IN THE OFFICE OF THE CLERK OF THE CIRCUIT COURT IN AND FOR PALM BEACH COUNTY, FLORIDA RECORDED IN PLAT BOOK 2, PAGES 29-40, INCLUSIVE.

SURVEYORS' NOTES:
1. I HEREBY CERTIFY THIS SURVEY MEETS STANDARDS OF PRACTICE SET FORTH IN RULE 5J-17.050-.052, OF THE FLORIDA ADMINISTRATIVE CODE, ADOPTED BY THE FLORIDA BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS, PURSUANT TO CHAPTER 472.027 OF THE FLORIDA STATUTES.
2. THE SURVEY MAP AND REPORT AND THE COPIES THEREOF ARE NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OR VERIFIED ELECTRONIC SIGNATURE OF A FLORIDA LICENSED SURVEYOR AND MAPPER..
3. UNDERGROUND OR OBSCURED IMPROVEMENTS WERE NOT LOCATED.
4. DIMENSIONS ARE RECORD AND FIELD UNLESS OTHERWISE NOTED.
5. STATED DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS.
6. THIS FIRM'S CERTIFICATE OF AUTHORIZATION NUMBER IS LB 8261.
7. ADDITIONS OR DELETIONS TO SURVEY MAPS OR REPORTS BY OTHER THAN THE SIGNING PARTY OR PARTIES IS PROHIBITED WITHOUT WRITTEN CONSENT OF THE SIGNING PARTY OR PARTIES.
8. SURVEY SUBJECT TO RESERVATIONS, RESTRICTIONS, EASEMENTS AND RIGHTS-OF-WAY OF RECORD. (UNLESS A TITLE REVIEW, COMMITMENT REVIEW, OR OWNERSHIP AND ENCUMBRANCE REVIEW IS PRESENT ON THE FACE OF THIS DOCUMENT, THIS SURVEY HAS BEEN COMPLETED IN THE ABSENCE OF A TITLE INSURANCE POLICY).
9. LOCATION MAP IS GLEANED FROM ONLINE MAPPING SITES AND AND IS ONLY APPROXIMATE.
10. ELEVATIONS SHOWN HEREON ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988. (NAVD'88)

Survey edited to show tree locations

Arbor Experts, Inc.
2486 Mission Terrace
Palm Beach Gardens, FL 33410
561-721-5762
arborexperts@outlook.com
Andrew Tellier ISA certified arborist
FL -0830

Arbor Experts, Inc. — ArborExperts.com

DATE	DRAFT	FIELD
05-06-25	CD	

BOUNDARY SURVEY — PURPOSE
25-0179 — JOB#

DOUG WALKER — PROFESSIONAL LAND SURVEYOR AND MAPPER — FLORIDA CERTIFICATE No. 7211

SIGNED

BOUNDARY AND TOPOGRAPHIC SURVEY

PRINCIPAL MERIDIAN SURVEYING, Inc.
LICENSED BUSINESS No. 8261
4546 CAMBRIDGE STREET
WEST PALM BEACH, FL 33415
OFFICE 561-478-7764

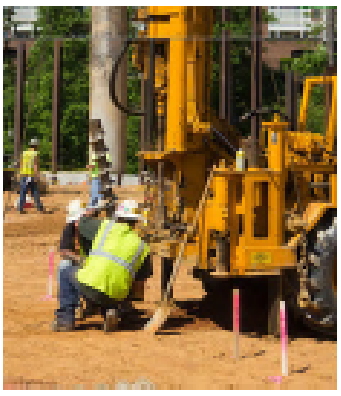
PMSI

Inventory conducted by: Arbor Experts, Inc. 2486 Monaco Terrace, Palm Beach Gardens, FL 3341(

City of Lake Worth Beach — Date of Inspection: Trees 65-74 on 11/18/2024. Trees 124-154 on 5/27/2025.

Tree #	DBH	Common name	Worthy of relocation?	Structure	Vigor	Location	OA %age	Genus species	Notes
The following list of trees are located at 704 1st. Ave. S									
65	10.5"	Tropical Almond X	No	35%	50%	25%	37%	Terminalia catappa	
66	14"	Sabal palm X	No	50%	70%	25%	48%	Sabal palmetto	
67	6"	Gumbo Limbo X	No	10%	60%	0%	23%	Bursea simaruba	
68	6.25"	Gumbo Limbo X	No	10%	60%	0%	23%	Bursea simaruba	
69	3.25"/1.25"	Draceana X	No	0%	0%	0%	0%	Draceana sp.	
70	7"	Coconut palm X	No	60%	60%	10%	43%	Cocos nucifera	
71	12.25"	Sabal palm X	No	50%	50%	0%	33%	Sabal palmetto	
72	12.25"	Sabal palm X	No	50%	50%	0%	33%	Sabal palmetto	
73	12.25"	Sabal palm X	Yes	50%	50%	25%	42%	Sabal palmetto	
74	12"	Sabal palm	Yes	50%	50%	25%	42%	Sabal palmetto	
The following list of trees are located at 19 S. K St.									
124	12.75"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
125	12"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
126	11.25"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
127	11"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
128	11.75"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
129	11.75"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
130	14.25"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
131	9.75"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
132	12.25"	Sabal palm	No	40%	40%	75%	52%	Sabal palmetto	
133	10.25"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
134	9"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
135	9.5"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
136	12.5"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
137	11"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
138	11.5"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
139	9"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
140	10.5"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
141	10.5"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
142	9.75"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
143	10"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
The following list of trees are located at 13 S. K St.									
144	10.75"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
145	11.5"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
146	10.25"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
147	10.75"	Sabal palm	No	40%	75%	75%	63%	Sabal palmetto	
148	6.5"	Sabal palm	No	40%	75%	75%	63%	Sabal palmetto	
149	10.5"	Sabal palm	No	40%	75%	75%	63%	Sabal palmetto	
150	7.25"	Sabal palm	No	40%	75%	75%	63%	Sabal palmetto	
151	13.25"	Sabal palm	Yes	50%	75%	75%	67%	Sabal palmetto	
The following list of trees are located at 19 S. K St.									
152	19.25"	Mahogany	No	25%	45%	30%	33%	Swietenia mahagoni	
153	18"	Mahogany	No	25%	45%	30%	33%	Swietenia mahagoni	
154	22"	Mahogany	No	25%	45%	30%	33%	Swietenia mahagoni	

VI. GEOTECHNICAL REPORT



ECS Florida, LLC

Subsurface Exploration and Geotechnical Engineering Report

Proposed 19 South K Street Parking Structure - Lake Worth

19th South K Street
Lake Worth, Palm Beach County, Florida 33460

ECS Project Number 25:4388

June 11, 2025

June 11, 2025

Mr. Scott Gabriel
Sunshine Lake Worth Development LLC c/o HE2PD
10 Grand Avenue
Rockville Centre, FL 11570

ECS Project No. 25:4388

Reference: Subsurface Exploration and Geotechnical Engineering Report
Proposed 19 South K Street Parking Structure - Lake Worth
19th South K Street
Lake Worth, Palm Beach County, Florida 33460

Dear Mr. Gabriel:

ECS Florida, LLC (ECS) has completed the subsurface exploration, laboratory testing, and geotechnical engineering analyses for the above-referenced project. Our services were performed in general accordance with our agreed to scope of work. This report presents our understanding of the geotechnical aspects of the project, the results of the field exploration conducted, and our geotechnical design and construction recommendations for the project.

It has been our pleasure to be of service to you during the design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations as well to verify subsurface conditions estimated for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,

ECS Florida, LLC

Ernesto J Masis, E.I.
Geotechnical Project Manager
EMasis@ecslimited.com

Gustavo Langoni, P.E.
Geotechnical Department Manager
Florida Registration No. 72327
GLangoniBayard@ecslimited.com

Gustavo Langoni, State of Florida Professional Engineer, License No. 72327

This item has been digitally signed and sealed by Gustavo Langoni on the date indicated here. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

TABLE OF CONTENTS

EXECUTIVE SUMMARY **3**
1.0 INTRODUCTION **4**
2.0 PROJECT INFORMATION **4**
2.1 Site Information 4
2.2 Proposed Construction 6
3.0 FIELD EXPLORATION AND LABORATORY TESTING **6**
3.1 Regional Geology And Subsurface Characterization 6
3.2 Groundwater Observations 7
3.3 Visual Classification 7
3.4 Usual Open Hole Testing 8
4.0 DESIGN RECOMMENDATIONS **8**
4.1 Building/Structure Foundations 8
4.1.1 Vibro-replacement (Stone Columns) 9
4.1.2 Vibro-Compaction (VC) 9
4.2 Lightly Loaded Appurtenant Structures 10
4.3 Ground Floor Slabs 10
4.4 Pavements 11
5.0 SITE CONSTRUCTION RECOMMENDATIONS **13**
5.1 Subgrade Preparation 13
5.1.1 Previous Site Development 13
5.1.2 Demolition 14
5.1.3 Stripping and Grubbing 14
5.1.4 Proofrolling 14
5.1.5 Site Temporary Dewatering 15
5.1.6 Compaction 15
5.2 Structural Fill 15
5.3 Foundations and Floor Slabs 16
5.4 Utility Installations 17
6.0 CLOSING **17**

APPENDICES

Appendix A – Diagrams

- Site Location Diagram
- Boring Location Diagram
- Generalized Subsurface Profile A-A'
- Flood Map
- Soil Survey Map

Appendix B – Field Operations

- Reference Notes for Boring Logs
- Subsurface Exploration Procedure: Standard Penetration Testing (SPT)
- Boring Logs
- Exfiltration Logs

EXECUTIVE SUMMARY

This executive summary is intended as a very brief overview of the primary geotechnical conditions that are expected to affect foundation design and earthwork construction.

- The proposed development includes the construction of a new 4-story parking structure. The proposed structure is to be approximately 108,000 square foot freestanding parking structure designed to have at least 268 parking spaces. The building is proposed to be 4 levels with ground floor non-load bearing wall loads of 32 Kips per linear foot (KLF) and maximum column loads of 650 kips.

- ECS performed 6 Standard Penetration Test (SPT) borings drilled to depth a depth in the range of 50 feet to 80 feet below ground surface (bgs). Additionally, two exfiltration tests were also performed to a depth of 10 feet bgs.

- Subsurface conditions within the borings generally consisted of fine very loose to medium dense SAND (SP) and fine SILTY SAND (SM) from existing grade to termination depth of 80 feet bgs. Interbedded layers of moderately hard Limestone were found after 48 feet bgs to termination depth of 80 feet bgs.

- It is our opinion that the 4-story parking structure may be supported on shallow foundation with the use of a ground improvement method in the form of vibro-replacement (stone columns) or vibro-compaction (VC) which can be used to improve bearing capacities and reduce settlement. With vibro-compaction we opine that allowable bearing capacities in the range of 6,000 psf can be achieved while stone columns can provide a bearing capacity in the range of 8,000 psf. Ground improvement is not necessary in slab-on-grade areas.

- Vibratory ground improvement techniques such as stone columns and VC have the potential to induce vibrations on nearby structures. The site is surrounded by local roads creating a buffer with surrounding structures. We recommend vibration impact is vetted with ground improvement contractors prior to foundation design.

- The proposed floor slabs can be constructed as Ground Supported Slabs (or Slab-On-Grade).

- Appurtenant structures can be supported on shallow foundations using a contact bearing pressure of 3,000 pounds per square foot (psf).

Information gleaned from the executive summary should not be utilized in lieu of reading the entire geotechnical report.

1.0 INTRODUCTION

The purpose of this geotechnical exploration was to provide subsurface information for the foundation design and earthwork construction of the proposed 4-story parking structure development. The recommendations developed for this report are based on project information provided by HE2PD.

Our services were provided in accordance with our revised Proposal No. 25:9179-GP, dated May 14, 2025, as authorized by Scott Gabriel with Sunshine Lake Worth Development LLC c/o HE2PD.

This report contains the procedures and results of our subsurface exploration program, review of existing site conditions, engineering analyses, and recommendations for the design and construction of the project.

The report includes the following items.

- A brief review and description of our field and laboratory test procedures and the results of testing conducted,
- A review of area and site geologic conditions,
- A review of subsurface soil stratigraphy with pertinent available physical properties,
- Final copies of our soil exploration/test boring logs,
- Recommended soil parameters and foundation types,
- Recommendation for standard and heavy-duty pavements,
- Evaluation and recommendations relative to groundwater control, and
- Earthwork construction recommendations including site preparation and placement of engineered fill.

Our assessment was confined to the zone of soil likely to be stressed by the proposed construction. Our work did not address the potential for subsurface expression of deep geological conditions, such as sinkhole development related to karst activity. This evaluation requires a more extensive range of field services than performed in this study. We will be pleased to conduct an exploration to evaluate the probable effect of the regional geology upon the proposed construction if you desire.

2.0 PROJECT INFORMATION

2.1 SITE INFORMATION

The site is located at 19th South K Street, in Lake Worth, Palm Beach County, Florida, at the approximate location shown in the following figure below. The site is bounded to the north by a service drive lane, to the west by a 1-story and 2-story building, to the south by an empty lot followed by 1st Avenue South, and to the east by South K Street.

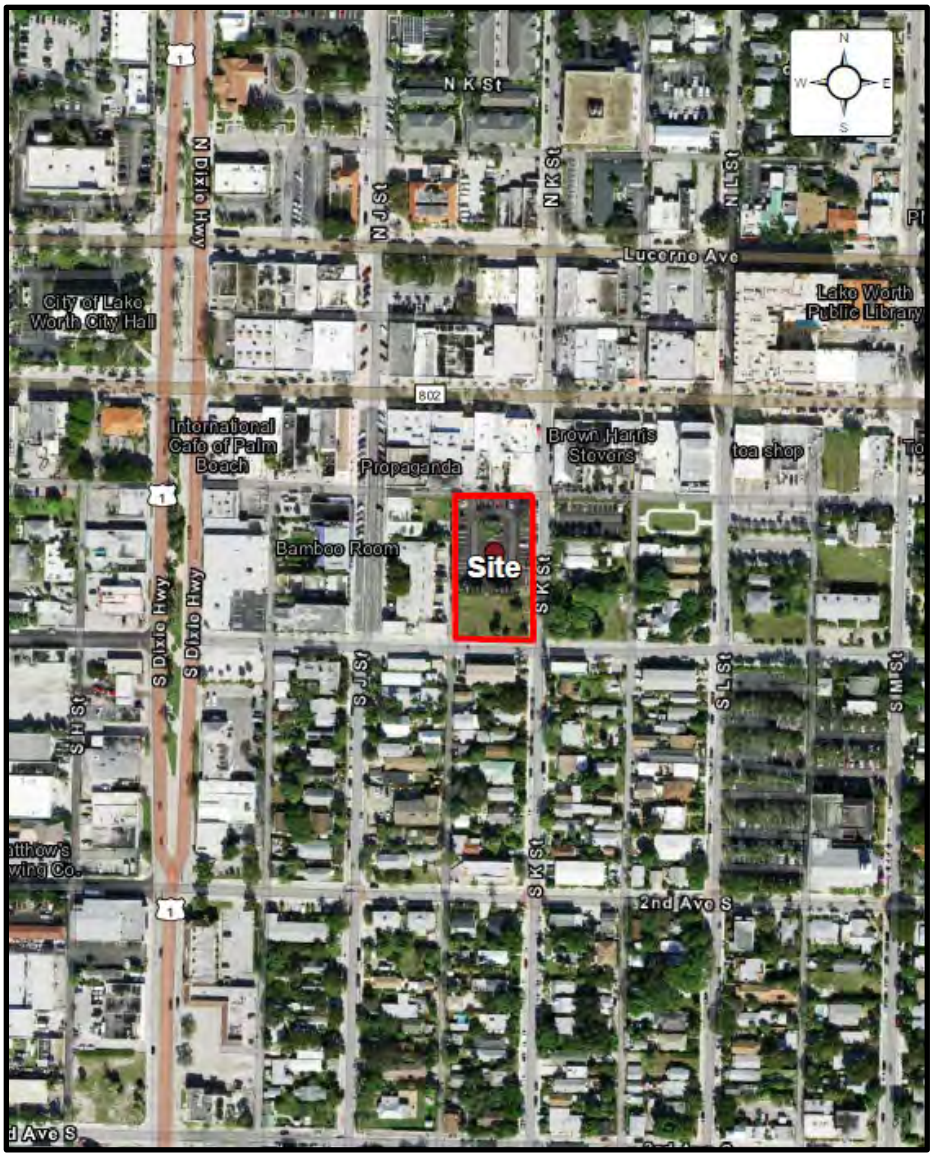


Figure 2.1.1. Site Location

ECS reviewed aerial photographs of the subject property and immediate surrounding properties on Historic Aerials and Google Earth© Historical Imagery databases dating to 1952. Based on review of aerial photographs dating back to 1958, the site appears to have bene occupied by multiple structures from approximately 1958 to 1979. By 1979 the site structures appear to have been demolished and by 1980 a parking lot was constructed. The lot south of the site appears to have had multiple structures that appear to have been demolished by approximately 2023. The site has remained unchanged since then. Per Palm Beach County Property Appraiser website, the sites Parcel ID is 38-43-44-21-15-019-0230. Per the site, the existing parking lot was constructed in 1980. Site terrain is relatively flat with a ground elevation of approximately 15 feet referenced to the North American Vertical Datum of 1988 (NAVD 88).

2.2 PROPOSED CONSTRUCTION

Based on the information provided to us, we understand that the project involves the construction of a new 4-story parking structure building. The proposed development is to include an 108,000 square foot (SF) freestanding parking structure designed to have at least 268 parking spaces. The building is proposed to be 4 levels with ground floor non-load bearing wall loads of 32 Kips per linear foot (KLF) and maximum column loads of 650 kips. The following information included in Table 2.2.1 provides our assumptions regarding the structure:

Table 2.2.1 Parking Structure Design Values

SUBJECT	DESIGN INFORMATION / EXPECTATIONS
# of Stories	4-story above grade
Usage	Parking Structure
Framing	We anticipate that the building will be principally cast-in-place concrete with minor reinforced masonry or steel frame.
Maximum Column Loads (1)	650 kips
Lowest Finish Floor Elevation (2)	Assumed EL.+15 feet-NAVD 88

(1) If actual structural loads differ from these loads ECS must be contacted immediately to revise building foundation recommendations and settlement calculations as needed.

(2) Please note the ground surface elevations in this report and our boring logs were not surveyed by a licensed surveyor; therefore, the elevations shown are approximate and were inferred from public available topographic information and Google-Earth© aps. The elevations described in this report should not be relied upon for site design.

3.0 FIELD EXPLORATION AND LABORATORY TESTING

Our exploration procedures are explained in greater detail in Appendix B including the insert titled Subsurface Exploration Procedures. Our scope of work included drilling 6 SPT borings. Borings (B-01 through B-06) were performed for the proposed parking structure, as well as 2 exfiltration tests (EXF-01 and EXF-02).

Boring locations were identified in the field by ECS personnel using GPS techniques prior to mobilization of our drilling equipment and their approximate locations are shown on the Boring Location Diagram in Appendix A. The approximate as-drilled boring locations are shown on the Boring Location Diagram in Appendix A. Ground surface elevations noted on our boring logs were interpolated from published topographic information and should be considered approximate. We recommend that boring location survey be performed by a professional surveyor to extend the usefulness of the subsurface information gathered. Standard penetration tests (SPTs) were conducted in the borings at regular intervals in general accordance with ASTM D 1586. Small representative samples were obtained during these tests and were used to classify the soils encountered. The standard penetration resistances obtained to provide a general indication of soil density and correlate to shear strength parameters.

3.1 REGIONAL GEOLOGY AND SUBSURFACE CHARACTERIZATION

The subsurface conditions encountered were generally consistent with published geological mapping. The following sections provide generalized characterizations of the soil strata. Please refer to the boring logs in Appendix B for more detailed boring information.

The South Florida region is located on the southern flank of Florida Plateau, a stable, carbonate platform on which thick deposits of limestones, dolomites, and evaporates have accumulated. The

general geology of the upper 200 feet of this platform within the area of South Florida where the proposed project is to be located is composed predominantly of limestone and quartz sand. The two geological formations that usually are encountered from west to east within Broward County are: Shelly Sediments of Plio-Pleistocence age and Limestone.

Generalized Subsurface Stratigraphy

Approximate Depth (ft)	Elevation (1) (ft)	Stratum	Description	Ranges of SPT(2) N-values (bpf)
0 – ¼ to ½	EL.15 – EL+14½ to +14¾	NA	Surficial Cover: Borings (B-01 through B-04): Asphalt Pavement [3"] Borings B-05 and B-06: Topsoil [6 Inches]	NA
0 – 80	EL. +14½ to +14¾ – EL. -65	I	(SP) FINE SAND, light gray to orangish brown, moist to wet, very loose to medium dense Note: Boring contained interbedded layers of moderately hard Limestone starting from 48 feet bgs..	WOH(3) – 50/2

Notes:
(1) Please note the ground surface elevations were not surveyed by a licensed surveyor; therefore, the elevations shown in this report and our boring logs are approximate and were inferred from public available topographic information and Google-Earth© maps. The elevations described in this report should not be relied upon for site design.
(2) SPT refers to Standard Penetration Test.
(3) Weight of Hammer

A graphical presentation of the subsurface conditions is shown on the Generalized Subsurface Profile Diagrams included in Appendix A.

3.2 GROUNDWATER OBSERVATIONS

Groundwater levels were measured at our boring locations as shown on the boring logs in Appendix B. Groundwater depth measured at the time of drilling ranged 6 feet below the ground surface. Variations in the long-term water table may occur because of changes in precipitation, evaporation, surface water runoff, construction activities, and other factors. Based upon our interpretation of the subsurface data, it appears that the seasonal high groundwater level is at a depth of 4 feet bgs.

Based on the Flood Insurance Rate Map (FIRM) Map Number 12099C0781G of Palm Beach County, effective date December 20, 2025, indicates that the site is located within Flood Zone X, an area of minimal flooding.

3.3 VISUAL CLASSIFICATION

Each sample was visually classified on the basis of texture and plasticity in accordance with ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedures) including USCS classification symbols, and ASTM D2487 Standard Practice for Classification for Engineering Purposes (Unified Soil Classification System (USCS). After classification, the samples were grouped in the major zones noted on the boring logs in Appendix B. The group symbols for each soil type are indicated in parentheses along with the soil descriptions. The stratification lines between strata on the logs are approximate; in situ, the transitions may be gradual.

3.4 USUAL OPEN HOLE TESTING

Usual open hole testing was performed in accordance with procedures of South Florida Water Management District (SFWMD) Usual Condition Test procedure found in the SFWMD Environmental Resource Permit Information Manual Volume IV (September 2010 edition) at the location denoted as exfiltration test EXF-01 and EXF-02 on the attached Exfiltration Log found in Appendix B which includes the hydraulic conductivity (K_{IV} value). The K_{IV}-values are summarized below.

Tests	K_{IV} –Value (cfs/ft2 –ft head)
EXF-01	7.9×10^{-4}
EXF-02	7.4×10^{-4}

Note: Refer to the attached Usual Open Hole Test summary sheets for detailed information

4.0 DESIGN RECOMMENDATIONS

4.1 BUILDING/STRUCTURE FOUNDATIONS

Based on the above evaluation of the site and subsurface conditions at the borings with respect to the anticipated construction, it appears the proposed 4-story parking structure can be supported on a shallow foundation system supported on ground improved soils. Based upon the presumed loads to be placed over existing loose SAND (SP), it is recommended that a ground improvement system such as vibro-compacted sand columns or stone columns be installed for the project as discussed in the following Section 4.1.1. We emphasize the necessary site preparation and earthwork construction procedures will be primarily dependent on the maximum anticipated structural loads applied to the foundations.

We recommend the foundation design use the following parameters:

Summary of Shallow Foundation Preliminary Design Parameters

Design Parameter	Column Footing	Wall Footing
Net Allowable Bearing Pressure (1)	6,000 psf (vibro-compaction) or 8,000 psf (stone columns)	
Acceptable Bearing Soil Material	Compacted Stratum I and/or engineered fill with stone column or vibro-compaction ground improvements	Compacted Stratum I and/or engineered fill with stone column or vibro-compaction ground improvements
Minimum Width	24 inches	18 inches
Minimum Footing Embedment Depth (below slab or finished grade)	24 inches	24 inches
Estimated Total Settlement (2)	1-inch or less	1-inch or less
Estimated Differential Settlement (3)	Approximately ½ inches between columns	Approximately ½ inches over 30 feet

Notes:
(1) Net allowable bearing pressure is the applied pressure in excess of the surrounding overburden soils above the base of the foundation.
(2) Based on estimated structural loads. If final loads are different, ECS must be contacted to update foundation recommendations and settlement calculations.
(3) Based on maximum column/wall loads and variability in borings. Differential settlement can be re-evaluated once the foundation plans are more complete.

Potential Undercuts: If soft or unsuitable soils are observed at the footing bearing elevations, the unsuitable soils should be undercut and replaced with approved structural fill or with lean concrete (f'c ≥ 1,000 psi at 28 days) or No. 57 stone, as applicable, up to the original design bottom of footing elevation.

4.1.1 Vibro-replacement (Stone Columns)

Ground improvement methods in the form of vibratory stone columns (VSC) are technically viable in combination with shallow foundations to support the project. Stone columns extending to depths in the order of 40 feet to 50 feet below ground surface would be sufficient to result in tolerable settlements for the project (on the order of 1 to 1.5 inches). The stone columns would increase the allowable bearing pressure to allow for reasonable sized footings to be utilized for support of the 4-story parking garage. We would anticipate settlements to occur primarily during construction. A bearing capacity in the range of 8,000 psf appears to be feasible at this site.

Stone columns are installed using a soil vibrator that is introduced to the design depth. The soil vibrator can either be mounted to a specially fabricated equipment such as a Vibrocat or free hung from a lattice boom crawler crane. Vibration of loose granular soils will result in densification and the resulting cavity is filled with stone as the vibrator is withdrawn. Raising and lowering the vibrator in two-to-three-foot increments provides densification effort to the stone fill and surrounding granular soils. A dense column is formed with the stone laterally compacted against the surrounding soil. This process generates vibrations that radiate from the stone column location and can affect neighboring structures. Due to this, stone columns have the potential to affect third party structures if they are in proximity.

Stone columns are of a design-build nature and will need to be procured this way. Drawings and specifications should be prepared by the engineering consultants sufficient to adequately bid the work. The proposals prepared by any specialty foundation contractor should be provided to ECS so that we may review the proposed construction techniques to assure compliance with the intention of our geotechnical recommendations.

4.1.2 Vibro-Compaction (VC)

Based on our experience in the area, vibro-compaction will increase the allowable soil bearing pressures to support the proposed building on a shallow foundation system with maximum total settlements within acceptable tolerances. Bearing capacity in the range of 6,000 psf appears to be feasible at this site with vibro-compaction under the footing subgrade. The foundation improvement program should be designed by the specialty foundation contractor.

Vibro-compaction supports the shallow foundations by densifying the underlying sand strata. Vibro-compaction methodology employs a vibrating cylindrical probe supported by a crane which is inserted into the soil with or without jetted water. The probe is advanced into the soil and then gradually removed while the annular space around the probe is backfilled with sand fill. The resulting densification of the soil strata provides improved bearing capacity and reduced potential for settlement.

Standard Penetration Test (SPT) borings should be performed during the vibro-compaction process by the geotechnical engineer to confirm that the estimated compaction efforts are being achieved.

The depth of the vibro-compaction recommended is estimated to be between 40 and 50 feet bgs. Further, we recommend that vibro-compaction operations be performed under the full-time observation of the Geotechnical Engineer's representative. We also recommend performing preconstruction surveys prior to construction and vibration monitoring at the time of soil improvements.

Vibro-compaction procedures can begin any time after the mass grading of the site area is complete. Since improvement using vibro-compaction generally results in lowering of the site grade, the building area subgrades should be brought close to final grades before the initiation of vibro-compaction activities and engineered fill may need to be imported to reach finished floor elevation following vibro-compaction. The upper 4 feet of soil is typically disturbed and will likely require remedial compaction. Once the vibro-compaction has been completed, final filling and any required remedial compaction may be performed using a vibratory roller prior to excavating the footings. It should be noted that vibratory rollers should be used in static mode within 20 feet of existing structures.

4.2 LIGHTLY LOADED APPURTENANT STRUCTURES

For lightly loaded structures such as on grade landscape areas, lighting, etc., a net allowable bearing pressure of 3,000 psf could be used for shallow foundation design. Subgrades should be prepared in accordance with recommendations in Section 5 of this report.

4.3 GROUND FLOOR SLABS

Provided subgrades and structural fills are prepared as discussed in Section 5, the proposed floor slabs can be constructed as Ground Supported Slabs (or Slab-On-Grade). Based on an estimated finished floor elevation around +15 feet (NAVD88) we anticipate the slabs would bear on compacted structural fill and/or potentially Stratum I - SAND (SP). We recommend that the slabs bear at least two feet above the seasonal high groundwater level. Soils with high fine material within a foot of the slab, if encountered, should be removed, and replaced with granular material. If engineered fill is placed, we recommend a granular soil with less than 5 percent fines be placed for at least the top 1 foot. There may be areas of loose or yielding soils that should be removed from below the structure foundation and the slab footprints, plus and extended horizontal distance of 5 feet and replaced with compacted engineered fill in accordance with the recommendations

included in this report. We also recommend a minimum separation of 2 feet between bottom of floor slab and seasonal high groundwater elevation as described in Section 3.2.

The following graphic depicts our soil-supported slab recommendations:

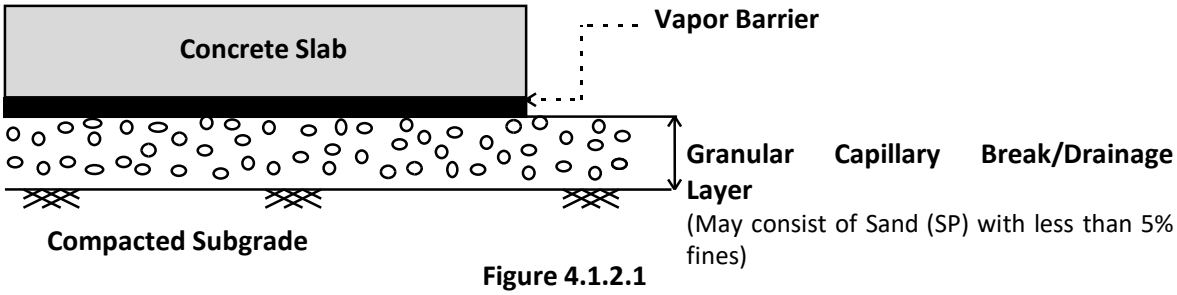


Figure 4.1.2.1

1. Drainage Layer Thickness: 6 inches
2. Drainage Layer Material: Gravel (GP, GW), SAND (SP, SP-SM, SW)
3. Subgrade compacted to 98% maximum dry density per ASTM D698

If soft or yielding soils is encountered in some areas, those soils should be removed and replaced with compacted Engineered Fill in accordance with the recommendations included in this report.

Vapor Barrier: Before the placement of concrete, a vapor barrier may be placed on top of the granular drainage layer to provide additional protection against moisture penetration through the floor slab. When a vapor barrier is used, special attention should be given to surface curing of the slab to reduce the potential for uneven drying, curling and/or cracking of the slab. Depending on proposed flooring material types, the structural engineer and/or the architect may choose to eliminate the vapor barrier.

Slab Isolation: Soil-supported slabs should be isolated from the foundations and foundation-supported elements of the structure so that differential movement between the foundations and slab will not induce excessive shear and bending stresses in the floor slab. Where the structural configuration prevents the use of a free-floating slab such as in a drop-down footing/monolithic slab configuration, the slab should be designed with suitable reinforcement and load transfer devices to preclude overstressing of the slab.

4.4 PAVEMENTS

Subgrade Characteristics: Based on the results of our soil test borings, it appears that the soils that will be exposed as pavement subgrade will consist mainly of structural fill material and/or sandy soils. The pavement design assumes subgrades consist of suitable materials evaluated by ECS and placed and compacted to at least 98 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D1557).

Pavement Considerations: Pavement subgrades should be prepared in accordance with the recommendations in Section 5.2 Structural Fill. We are providing recommendations for both standard duty and heavy duty flexible and rigid pavements sections. No traffic counts were provided to ECS at the time this report was prepared. These pavement section recommendations should be suitable for pavements experiencing up to 1,000 automobiles and 5 trucks per day, and

for a 20-year design life. For the design and construction of exterior pavements, the subgrade should be prepared in strict accordance with the recommendations in the geotechnical report. An important consideration with the design and construction of pavements is surface and subsurface drainage. Where standing water develops, softening of the subgrade and other problems related to the premature deterioration of the pavement can be expected.

Pavement recommendations are based upon local experience with similar pavement conditions, Florida Department of Transportation (FDOT), and AASHTO Guide for Design of Pavement Structures.

A minimum separation of 18 inches should be maintained between the pavement aggregate base (limerock) or base course in asphalt pavement areas and the seasonal high groundwater levels. In most cases, this separation is available. Recommended pavement sections are described below in Table 4.2.1.

Table 4.4.1: Pavement Structures Sections

	Flexible (Hot Mix Asphalt)		Rigid (Concrete)	
Component	**Standard**	**Heavy**	**Standard**	**Heavy**
Surface Course	1.5 inches	2.0 inches	5 inches	6 inches
Base Course (Limerock)	6 inches	8 inches	-	-
Stabilized Subgrade	12 inches	12 inches	12 inches	12 inches

Hot Mix Asphalt Surface Course (flexible): Prime and tack coats should be applied during the construction of the pavement sections in accordance with Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction (current edition). Before applying any bituminous material, all loose dust, dirt, and other foreign material which might prevent proper bond with the existing surface should be removed. Care should be taken in cleaning the outer edges, to ensure that the prime or tack coat will adhere. Prior to applying prime coat, the moisture content of the base should be checked to make sure that it does not exceed the optimum moisture. The hot mix asphalt concrete pavement should consist of a Superpave mix Type SP as per FDOT Standard Specifications for Road and Bridge Construction (current edition), Section 334 Superpave Asphalt Concrete. Recycled Asphalt Pavement (RAP) and other recycled materials may be used as indicated in Section 334, previously mentioned. If this is to be a LEED certified project, credits may be awarded for using such materials.

Base Course: Typically, the most prevalent flexible or rigid pavement base material in South Florida is limerock. Limerock is readily available from FDOT approved mines in South Florida. As an alternative base course, crushed concrete could be used. Limerock should have a minimum LBR value of 100 and should be mined from an FDOT approved source. Limerock should be placed in maximum six-inch lifts and compacted to 98 percent of the Modified Proctor (ASTM D1557) maximum dry density. Limerock pavement base shall be in accordance with Section 911 and 200 of the FDOT Specifications for Road and Bridge Construction (Current Edition).

Stabilized Subgrade: Stabilized subgrade soil material should have a minimum Limerock Bearing Ratio (LBR) value of 40, as specified by FDOT requirements for Type B or Type C Stabilized Subgrade. All stabilized subgrade materials should be compacted to 98 percent of the Modified Proctor (ASTM D1557) maximum dry density. Furthermore, the stabilized subgrade may be onsite soils, imported

material, or a blend of on-site soils and imported materials. If a blend is proposed, we recommend that the contractor perform a mix design to find the optimum mix proportions. It should be noted that a minimum of 97 percent of the stabilized material should pass a 3½ inch sieve.

Concrete surface course (rigid): Our recommendations for heavy-duty Portland cement concrete (pcc) pavement section is using unreinforced Portland cement concrete surface course (Type 1) providing a minimum 28-day compressive strength of 4,000 pounds per square inch (psi). This section would be placed atop a layer of fine (SP). Appropriate steel reinforcing and jointing should also be incorporated into the design of all PCC. In addition, the concrete should provide a minimum 28-day flexural strength (modulus of rupture) of 600 psi, based on the third point loading of concrete beam samples.
Rigid pavement notes recommendations:

- The surface of the subgrade soils should be free of all soft, unstable, or unsatisfactory soil and smooth and uniform. Any disturbances or wheel rutting corrected prior to placement of concrete.
- The subgrade soils should be moistened not more than 24 hours prior to placement of concrete but there should be no standing water present during concrete placement.
- Concrete pavement thickness should be uniform throughout, with the exception to thickened edges (curbs or footings).
- The bottom of the pavement base course should be separated from the estimated typical wet season groundwater level by at least one foot.
- Maximum Control Joint Spacing should be 12 feet by 12 feet
- Minimum Sawcut depth should be at least 1/4 of concrete thickness
- Isolation joints are recommended at the interface between concrete pavement and fixed objects such as drainage inlets, light poles, etc.
- Control joints should be sawed as soon as the concrete can withstand traffic and concrete surface and aggregate raveling can be prevented.

It is recommended that dowels be used for all construction joints for new pavements, the interface between new pavement and existing pavements, and interface at existing curb and gutter. It is recommended that 3/4-inch diameter smooth dowels 18 inches long spaced 12 inches on center be used. The full length of the dowels should be lightly oiled.

5.0 SITE CONSTRUCTION RECOMMENDATIONS

5.1 Subgrade Preparation

5.1.1 Previous Site Development

When reviewing our recommendations, please note that in the past there were multiple structures on this site, and that previous grading activities have likely occurred on this site. Our experience with previously graded sites indicates that unexpected conditions can exist that were not

encountered by the soil test borings. Unexpected conditions could include areas of soft or loose fill, debris-laden fill, and other obstructions or conditions. There is a possibility that existing underground utilities may be present and should be removed or abandoned in place. It should be noted that if existing or former underground utilities are abandoned and not removed or grouted full, soil may migrate into open voids (e.g., open pipes from utilities), causing subsidence of the overlaying construction. These conditions should be addressed by on-site engineering evaluation by ECS during construction. In addition, existing utility lines, if located within proposed construction areas, may cause the new construction to behave unexpectedly due to the variable support conditions caused by old backfill. Furthermore, old backfill along utility lines also may provide inadequate support due to poor compaction. The poor support conditions may result in settlement or distress of the overlying new construction. Based on our experience, existing utility backfill rarely is suitable for support of new foundations. In slab areas, the load support characteristics of the backfill along utility lines typically can be assessed with careful proofrolling and subgrade evaluation during construction. Some undercutting and/or bridging of these backfill areas should be anticipated if utilities are present.

5.1.2 Demolition

Site demolition should include the removal of concrete curb and gutter, underground utilities and pipes from the proposed construction areas. Any underground utilities that may exist within the proposed building areas should be relocated, and any within proposed pavement areas should be evaluated by the design team and relocated or filled with grout, if necessary. The crushed stone on the ground surface in the existing pavement areas should be left in place in areas to be filled or can be excavated and re-used as compacted engineered fill but not as the new pavement base course. Excavations or cavities resulting from demolition should be backfilled with compacted structural backfill.

5.1.3 Stripping and Grubbing

The subgrade preparation should consist of stripping all vegetation, rootmat, topsoil, existing fill, existing pavements and aggregate base, and any soft or unsuitable materials. The existing fill material should be evaluated by ECS engineers before reuse. ECS should be retained to verify that topsoil and unsuitable surficial materials have been removed prior to the placement of structural fill or construction of structures.

5.1.4 Proofrolling

Prior to fill placement or other construction on subgrades, the subgrades should be evaluated by an ECS field technician. The exposed subgrade should be thoroughly proofrolled with construction equipment having a minimum axle load of 20 tons [e.g. fully loaded tandem-axle dump truck]. Proofrolling should be traversed in two perpendicular directions with overlapping passes of the vehicle under the observation of an ECS technician. This procedure is intended to assist in identifying any localized yielding materials.

Where proofrolling identifies areas that are unstable or “pumping” subgrade those areas should be repaired prior to the placement of any subsequent Structural Fill or other construction materials. Methods of stabilization include undercutting or moisture conditioning. The situation should be discussed with ECS to determine the appropriate procedure. Test pits may be excavated to explore

the shallow subsurface materials to help in determining the cause of the observed unstable materials, and to assist in the evaluation of appropriate remedial actions to stabilize the subgrade.

5.1.5 Site Temporary Dewatering

Based on groundwater measurements and the presumed finished floor elevation of 2 feet above existing grade, localized shallow dewatering may be achieved using sump pumps up to a few feet below the water table. Deeper excavations must be analyzed on a case-by-case basis. The dewatering system should be determined by the contractor.

Note that discharge of produced groundwater to surface waters of the state from dewatering operations or other site activities is regulated and would require temporary dewatering permits from Broward County and the State of Florida Department of Environmental Protection (FDEP). This permit is termed a Generic Permit for the Discharge of Produced Groundwater from Any Non-Contaminated Site Activity. If discharge of produced groundwater is anticipated, we recommend sampling and testing of the groundwater early in the site design phase to prevent project delays during construction. ECS can provide the sampling, testing, and professional consulting required to evaluate compliance with the regulations.

5.1.6 Compaction

Subgrade Compaction: Upon completion of subgrade documentation, the exposed subgrade within the five-foot expanded building limit should be moisture conditioned to within +/- two percent of the soil's optimum moisture content and be compacted with suitable equipment (minimum ten-ton roller) to a depth of ten inches. Subgrade compaction within the expanded building and pavement limits should be to a dry density of at least 98 percent of the Modified Proctor maximum dry density (ASTM D1557).

Subgrade Compaction Control: The expanded limits of the proposed construction areas should be well defined, including the limits for buildings, fills, and slopes, etc. Field density testing of subgrades will be performed at frequencies in Table 5.1.6.1.

Table 5.1.6.1 Frequency of Subgrade Compaction Testing

Location	Frequency of Tests
Expanded Building Limits	One test per 2,000 sq. ft.
Pavement Areas	One test per 5,000 sq. ft.
Utility Trenches	One test per 200 linear ft.
All Other Non-Critical Areas	One test per 5,000 sq. ft.

5.2 STRUCTURAL FILL

Prior to placement of Structural Fill, representative bulk samples (about 50 pounds) of on-site and/or off-site borrow should be submitted to ECS for laboratory testing, which will typically include Atterberg limits, natural moisture content, grain-size distribution, and moisture-density relationships (i.e., Proctors) for compaction. Import materials should be tested prior to being hauled to the site to determine if they meet project specifications. Alternatively, Proctor data from other accredited laboratories can be submitted if the test results are within the last 90 days.

Satisfactory Structural Fill Materials: Materials satisfactory for use as Structural Fill should consist of inorganic soils with the following engineering properties and compaction requirements.

STRUCTURAL FILL INDEX PROPERTIES	
Subject	**Property**
Building and Pavement Areas	LL < 40, PI<6
Max. Particle Size	4 inches
Fines Content	Max. 5 % > #200 sieve
Max. organic content	5% by dry weight

STRUCTURAL FILL COMPACTION REQUIREMENTS	
Subject	**Requirement**
Compaction Standard	Modified Proctor, ASTM D1557
Required Compaction	95% of Max. Dry Density
Moisture Content	-2 to +3 % points of the soil's optimum value
Loose Thickness	12 inches prior to compaction

Fill Placement: Asphalt and Concrete should not be reused as Structural Fill. Fill materials should not be placed on excessively wet soils. Excessively wet soils or aggregates should be scarified, aerated, and moisture conditioned.

At the end of each workday, all fill areas should be graded to facilitate drainage of any precipitation and the surface should be sealed by use of a smooth-drum roller to limit infiltration of surface water. During placement and compaction of new fill at the beginning of each workday, the Contractor may need to scarify existing subgrades to a depth on the order of four inches so that a weak plane will not be formed between the new fill and the existing subgrade soils.

Drying and compaction of wet soils is typically difficult during the rainy season. Accordingly, earthwork should be performed during the drier times of the year, if practical. Proper drainage should be maintained during the earthwork phases of construction to prevent ponding of water which tends to degrade subgrade soils.

Fill material should be placed in horizontal lifts in confined areas such as utility trenches, portable compaction equipment and thin lifts of three inches to four inches may be required to achieve specified degrees of compaction.

We recommend that the grading contractor have equipment on site during earthwork for both drying and wetting fill soils. We do not anticipate significant problems in controlling moisture within the fill during dry weather, but moisture control may be difficult during extended periods of rain.

5.3 FOUNDATIONS AND FLOOR SLABS

Protection of Foundation Excavations: Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. Therefore,

foundation concrete should be placed the same day that excavations are made. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, a one to three-inch thick "mud mat" of "lean" concrete should be placed on the bearing soils before the placement of reinforcing steel.

Footing Subgrade Observations: After over-excavation of the deleterious organic soils, most of the soils at the foundation bearing elevation are anticipated to be suitable for support of the proposed structure. It is important to have ECS observe the foundation subgrade prior to placing foundation concrete; to confirm the bearing soils are what was anticipated.

Slab Subgrade Verification: Prior to placement of a drainage layer, the subgrade should be prepared in accordance with the recommendations found in Section 5.1.4 Proofrolling.

5.4 UTILITY INSTALLATIONS

Utility Subgrades: The soils encountered in our exploration are expected to be generally suitable for support of utility pipes. The pipe subgrades should be observed and probed for stability by ECS. Any loose or unsuitable materials encountered should be removed and replaced with suitable compacted structural fill, or pipe stone bedding material.

Utility Backfilling: The granular bedding material should be at least 4 inches thick, but not less than that specified by the civil engineer's project drawings and specifications. We recommend that the bedding materials be placed up to the springline of the pipe. Fill placed for support of the utilities, as well as backfill over the utilities, should satisfy the requirements for Section 5.1 Subgrade Preparation and Section 5.2 Structural Fill.

Excavation Safety: All excavations and slopes should be constructed and maintained in accordance with OSHA excavation safety standards. The contractor is solely responsible for designing, constructing, and maintaining stable temporary excavations and slopes. The contractor's responsible person, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. ECS is providing this information solely as a service to our client. ECS is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

6.0 CLOSING

ECS has prepared this report to guide the geotechnical-related design and construction aspects of the project. We performed these services in accordance with the standard of care expected of professionals in the industry performing similar services on projects of like size and complexity at this time in the region. No other representation expressed or implied, and no warranty or guarantee is included or intended in this report.

The description of the proposed project is based on information provided to ECS by Sunshine Lake Worth Development LLC c/o HE2PD. If any of this information is inaccurate or changes, either

because of our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted so we can review our recommendations and provide additional or alternate recommendations that reflect the proposed construction.

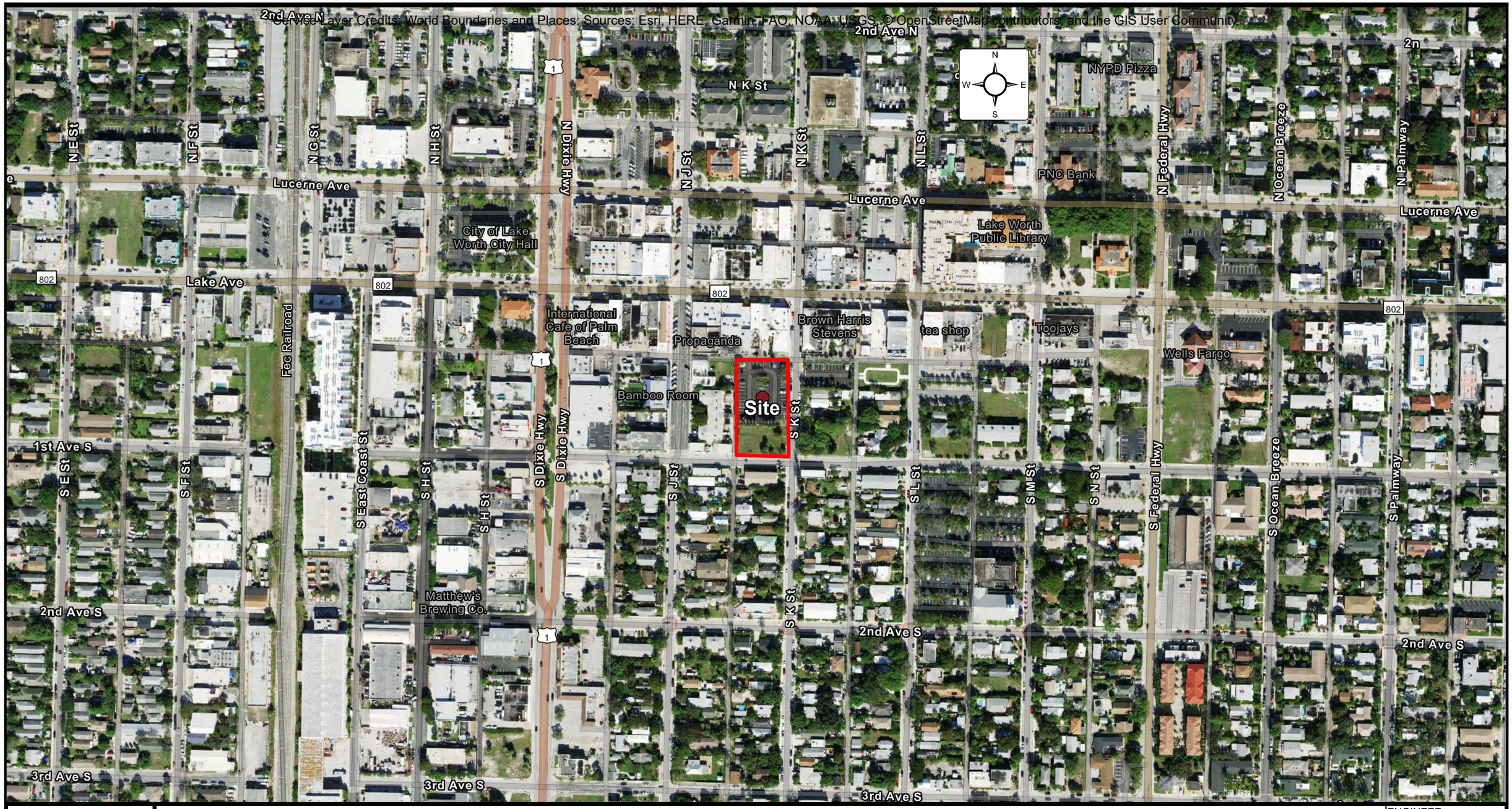
We recommend that ECS review the project plans and specifications so we can confirm that those plans/specifications are in accordance with the recommendations of this geotechnical report.

Field observations and quality assurance testing during earthwork and foundation installation are an extension of, and integral to, the geotechnical design. We recommend that ECS be retained to apply our expertise throughout the geotechnical phases of construction, and to provide consultation and recommendation should issues arise.

ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

APPENDIX A – Diagrams

Site Location Diagram
Boring Location Diagram
Generalized Subsurface Profile A-A’
Flood Map
Soil Survey Map



BORING LOCATION DIAGRAM

19 South K Street Parking Structure - Lake Worth Beach

19th South K Street, Lake Worth, Florida
Sunshine Lake Worth Development LLC c/o HE2PD

ENGINEER	GL5
SCALE	1" = 250'
PROJECT NO.	25:4388
SHEET	2
DATE	6/10/2025

BORING LOCATION DIAGRAM

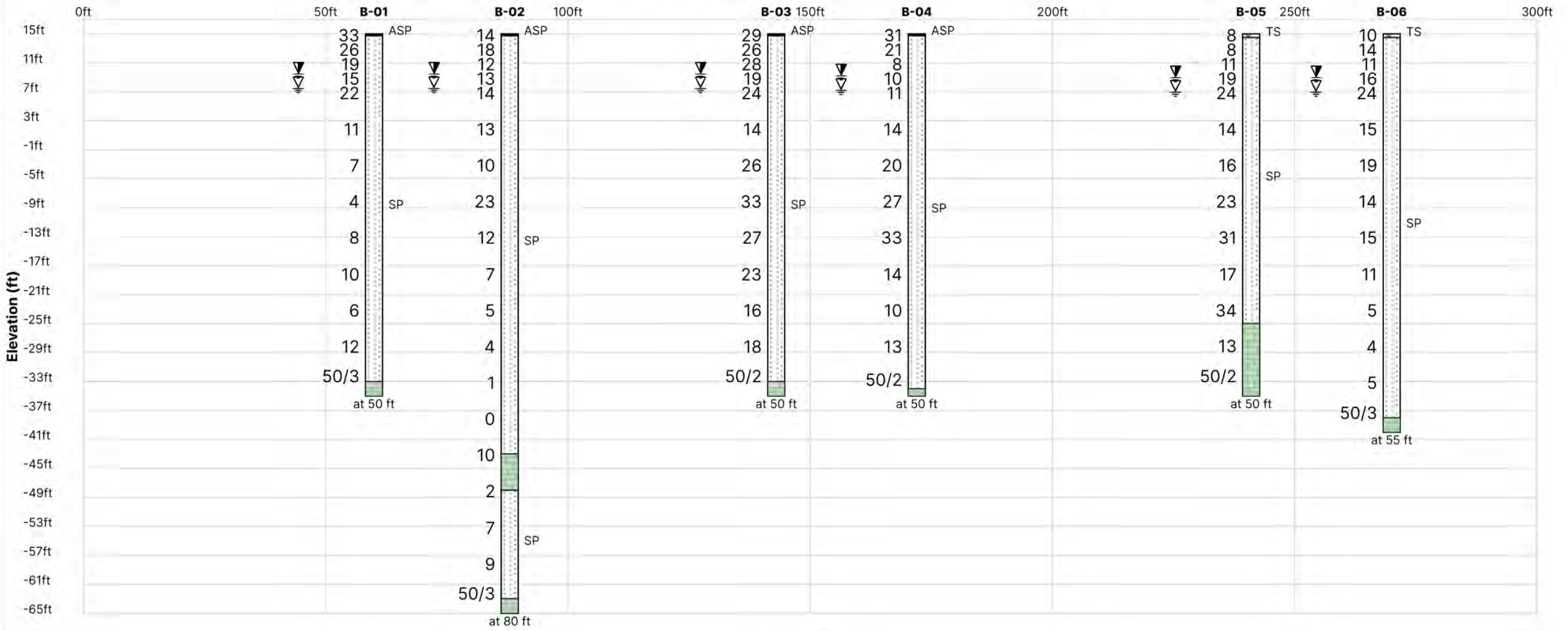
19 South K Street Parking Structure - Lake Worth

19th South K Street, Lake Worth, Florida

Sunshine Lake Worth Development LLC c/o HE2PD

ENGINEER	GL5
SCALE	1" = 30'
PROJECT NO.	25:4388
SHEET	2
DATE	6/10/2025

Generalized Subsurface Cross Section A-A'



CLIENT:	HE2PD	PROJECT:	19 South K Street Parking Structure - Lake Worth Beach
DRAWN DATE:	5/22/25	PROJECT NO.:	25:4388
CHECKED DATE:	5/22/25	SCALE:	NTS

Notes:
1-EOB: END OF BORING AR: AUGER REFUSALSR: SAMPLER REFUSAL
2-SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
3-STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).
4- TOPOGRAPHIC INFORMATION IS BASED ON PUBLICLY AVAILABLE DATA (GOOGLE OR CESIUM).THE TOPOGRAPHIC LINE SHOWN BETWEEN BORINGS IS FOR VISUAL REFERENCE ONLY.PLEASE REFER TO THE REFERENCE NOTES FOR BORING LOGS FOR SYMBOLOGY MEANING AND ADDITIONAL INFORMATION.

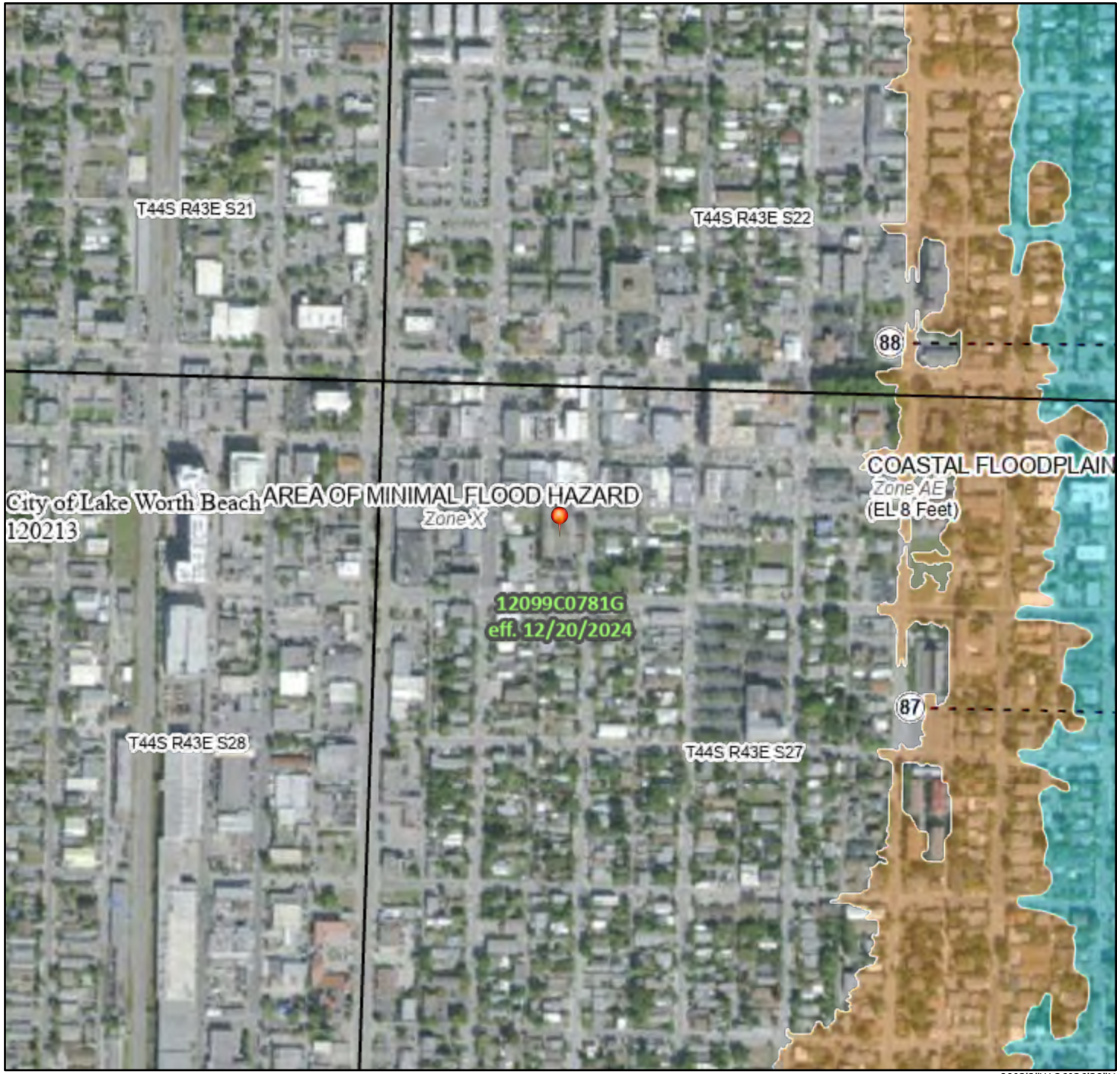
Plastic Limit Water Content Liquid Limit X——●——△	
[FINES CONTENT %]	
BOTTOM OF CASING	
100% LOSS OF CIRCULATION	
CALIBRATED PENETROMETER	

▽	WL (First Encountered)		Fill
▼	WL (Completion)		Possible Fill
▽	WL (Estimated Seasonal High Water)		Probable Fill
▽	WL (Stabilized)		WR/Rock

National Flood Hazard Layer FIRMette

FEMA

80°3'39"W 26°37'11"N



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

1:6,000

80°3'2"W 26°36'38"N

Basemap Imagery Source: USGS National Map 2023

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, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- 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 D*

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

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

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 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 approximate point selected by the user and does not represent 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 6/10/2025 at 4:17 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.

Soil Map—Palm Beach County Area, Florida

Map Scale: 1:467 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 20 40 80 120

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Palm Beach County Area, Florida
Survey Area Data: Version 21, Aug 22, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 10, 2022—May 1, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
41	St. Lucie-Paola-Urban land complex, 0 to 8 percent slopes	0.1	6.8%
48	Urban land, 0 to 2 percent slopes	0.8	93.2%
Totals for Area of Interest		**0.9**	**100.0%**

APPENDIX B – Field Operations

Reference Notes for Boring Logs
Subsurface Exploration Procedure: Standard Penetration Testing (SPT)
Boring Log
Exfiltration Logs

REFERENCE NOTES FOR BORING LOGS

MATERIAL[1,2]

	ASPHALT
	CONCRETE
	GRAVEL
	TOPSOIL
	VOID
	BRICK
	AGGREGATE BASE COURSE
	GW **WELL-GRADED GRAVEL** gravel-sand mixtures, little or no fines
	GP **POORLY-GRADED GRAVEL** gravel-sand mixtures, little or no fines
	GM **SILTY GRAVEL** gravel-sand-silt mixtures
	GC **CLAYEY GRAVEL** gravel-sand-clay mixtures
	SW **WELL-GRADED SAND** gravelly sand, little or no fines
	SP **POORLY-GRADED SAND** gravelly sand, little or no fines
	SM **SILTY SAND** sand-silt mixtures
	SC **CLAYEY SAND** sand-clay mixtures
	ML **SILT** non-plastic to medium plasticity
	MH **ELASTIC SILT** high plasticity
	CL **LEAN CLAY** low to medium plasticity
	CH **FAT CLAY** high plasticity
	OL **ORGANIC SILT or CLAY** non-plastic to low plasticity
	OH **ORGANIC SILT or CLAY** high plasticity
	PT **PEAT** highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS

SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION

DESIGNATION		PARTICLE SIZES
Boulders		12 inches (300 mm) or larger
Cobbles		3 inches to 12 inches (75 mm to 300 mm)
Gravel:	Coarse	¾ inch to 3 inches (19 mm to 75 mm)
	Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand:	Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
	Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
	Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")		<0.074 mm (smaller than a No. 200 sieve)

COHESIVE SILTS & CLAYS

UNCONFINED COMPRESSIVE STRENGTH, Q_P[4]	SPT[5] (BPF)	CONSISTENCY[7] (COHESIVE)
<0.25	<2	Very Soft
0.25 - <0.50	2 - 4	Soft
0.50 - <1.00	5 - 8	Firm
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

GRAVELS, SANDS & NON-COHESIVE SILTS

SPT[5]	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

RELATIVE AMOUNT[7]	COARSE GRAINED (%)[8]	FINE GRAINED (%)[8]
Trace	≤5	≤5
With	10 - 20	10 - 25
Adjective *(ex: "Silty")*	25 - 45	30 - 45

WATER LEVELS[6]

- WL (First Encountered)
- WL (Completion)
- WL (Seasonal High Water)
- WL (Stabilized)

FILL AND ROCK

FILL | POSSIBLE FILL | PROBABLE FILL | ROCK

[1]Classifications and symbols per ASTM D 2488-17 (Visual-Manual Procedure) unless noted otherwise.

[2]To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.

[3]Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-FILL)].

[4]Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).

[5]Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf). SPT correlations per 7.4.2 Method B and need to be corrected if using an auto hammer.

[6]The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.

[7]Minor deviation from ASTM D 2488-17 Note 14.

[8]Percentages are estimated to the nearest 5% per ASTM D 2488-17.

SUBSURFACE EXPLORATION PROCEDURE: STANDARD PENETRATION TESTING (SPT) ASTM D 1586 Split-Barrel Sampling

Standard Penetration Testing, or **SPT**, is the most frequently used subsurface exploration test performed worldwide. This test provides samples for identification purposes, as well as a measure of penetration resistance, or N-value. The N-Value, or blow counts, when corrected and correlated, can approximate engineering properties of soils used for geotechnical design and engineering purposes.

SPT Procedure:

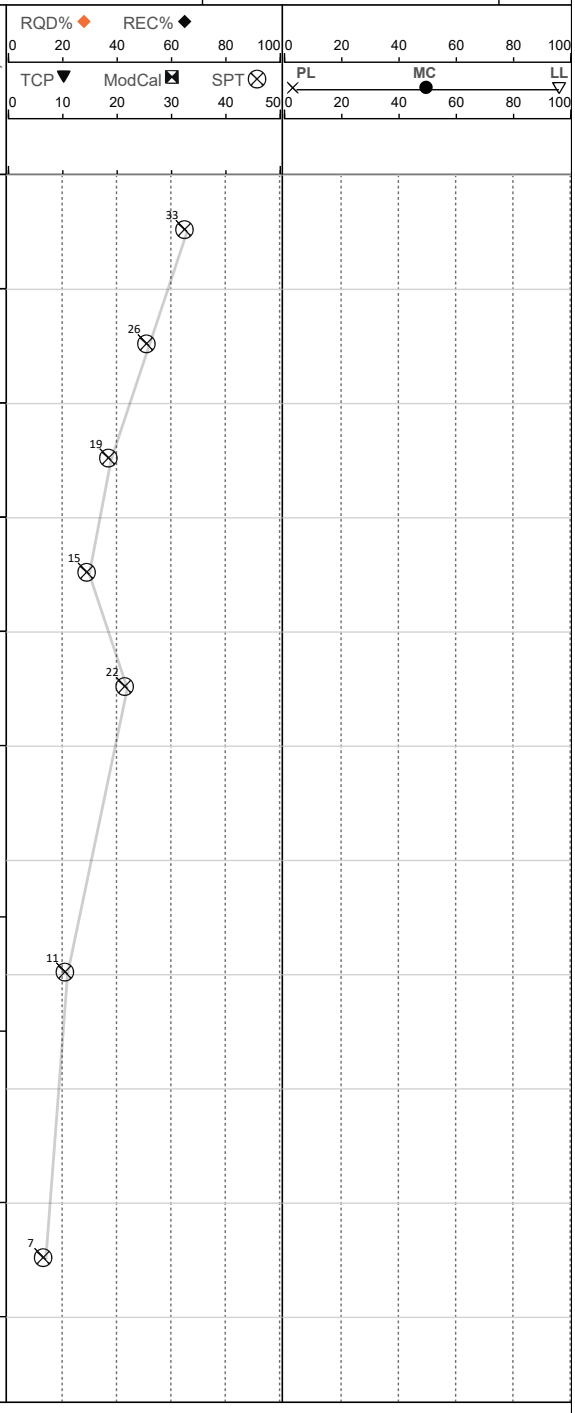
- Involves driving a hollow tube (split-spoon) into the ground by dropping a 140-lb hammer a height of 30-inches at desired depth
- Recording the number of hammer blows required to drive split-spoon a distance of 18-24 inches (in 3 or 4 Increments of 6 inches each)

- Auger is advanced* and an additional SPT is performed
- One SPT typically performed for every two to five feet. An approximate 1.5 inch diameter soil sample is recovered.

**Drilling Methods May Vary*— The predominant drilling methods used for SPT are open hole fluid rotary drilling and hollow-stem auger drilling.

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-01**	**1 OF 3**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.615310**	LONGITUDE: **-80.055800**	STATION:	SURFACE ELEVATION: **15**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
	S-01	SS	24	15	Asphalt Asphalt Thickness [3.0"]. (SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, very loose to dense.			15	22-15-18-21 (33)
	S-02	SS	24	19					12-13-13-13 (26)
5	S-03	SS	24	18			▼	10	9-10-9-11 (19)
	S-04	SS	24	17			▽		8-8-7-9 (15)
	S-05	SS	24	16					7-8-14-13 (22)
10								5	
	S-06	SS	24	14					4-5-6-8 (11)
15								0	
	S-07	SS	24	12					3-3-4-4 (7)
20								-5	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered):	7 ft	BORING STARTED:	05/08/2025	CAVE IN DEPTH:	Not Observed
▼ WL (Completion):		BORING COMPLETED:	05/08/2025	HAMMER TYPE:	Automatic
▼ WL (Seasonal High Water):	5 ft	EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
▽ WL (Stabilized):					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-01**	**2 OF 3**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.615310**	LONGITUDE: **-80.055800**	STATION:	SURFACE ELEVATION: **15**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
					(SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, very loose to dense.				
	S-08	SS	24	11					2-1-3-3 (4)
25								-10	
	S-09	SS	24	19					3-4-4-6 (8)
30								-15	
	S-10	SS	24	12					5-5-5-3 (10)
35								-20	
	S-11	SS	24	10					3-3-3-4 (6)
40								-25	

RQD% ◆ REC% ◆ 0 20 40 60 80 100

TCP ▼ ModCal ▣ SPT ⊗ 0 10 20 30 40 50

PL MC LL 0 20 40 60 80 100

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	**7 ft**	**BORING STARTED:**	**05/08/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**05/08/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**5 ft**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):					

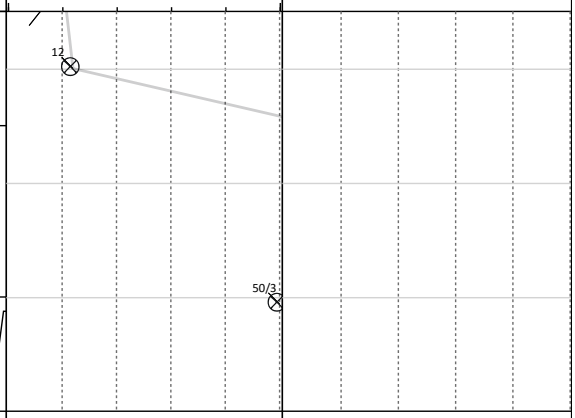
GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-01**	**3 OF 3**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.615310**	LONGITUDE: **-80.055800**	STATION:	SURFACE ELEVATION: **15**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
45	S-12	SS	24	13	(SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, very loose to dense.			-30	3-3-9-12 (12)
	S-13	SS	3	3	LIMESTONE, Moderately Hard, Tan.				50/3 (50/3)
					Terminate AT 50ft			-35	

RQD% ◆ REC% ◆ 0 20 40 60 80 100 | 0 20 40 60 80 100

TCP ▼ ModCal ▣ SPT ⊗ 0 10 20 30 40 50 | PL MC LL 0 20 40 60 80 100



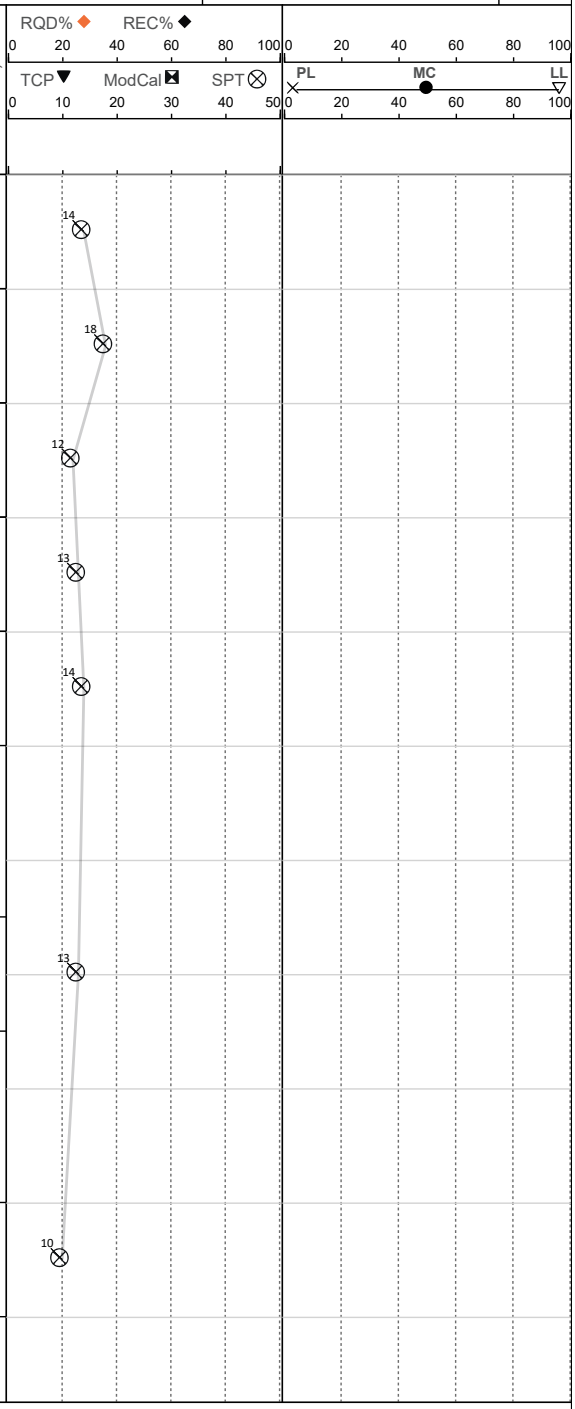
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ **WL (First Encountered):**	**7 ft**	**BORING STARTED:**	**05/08/2025**	**CAVE IN DEPTH:**	**Not Observed**
▼ **WL (Completion):**		**BORING COMPLETED:**	**05/08/2025**	**HAMMER TYPE:**	**Automatic**
▽ **WL (Seasonal High Water):**	**5 ft**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
▽ **WL (Stabilized):**					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-02**	**1 OF 4**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.615310**	LONGITUDE: **-80.055500**	STATION:	SURFACE ELEVATION: **15**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
	S-01	SS	24	15	Asphalt Asphalt Thickness [3.0"]. (SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, very loose to medium dense.			15	8-7-7-9 (14)
				19					9-10-8-9 (18)
5	S-03	SS	24	18			▼	10	7-6-6-7 (12)
	S-04	SS	24	19			▽		7-6-7-7 (13)
	S-05	SS	24	10					6-7-7-8 (14)
10	S-02	SS	24					5	
	S-06	SS	24	10					4-6-7-7 (13)
15								0	
	S-07	SS	24	10					5-5-5-5 (10)
20								-5	



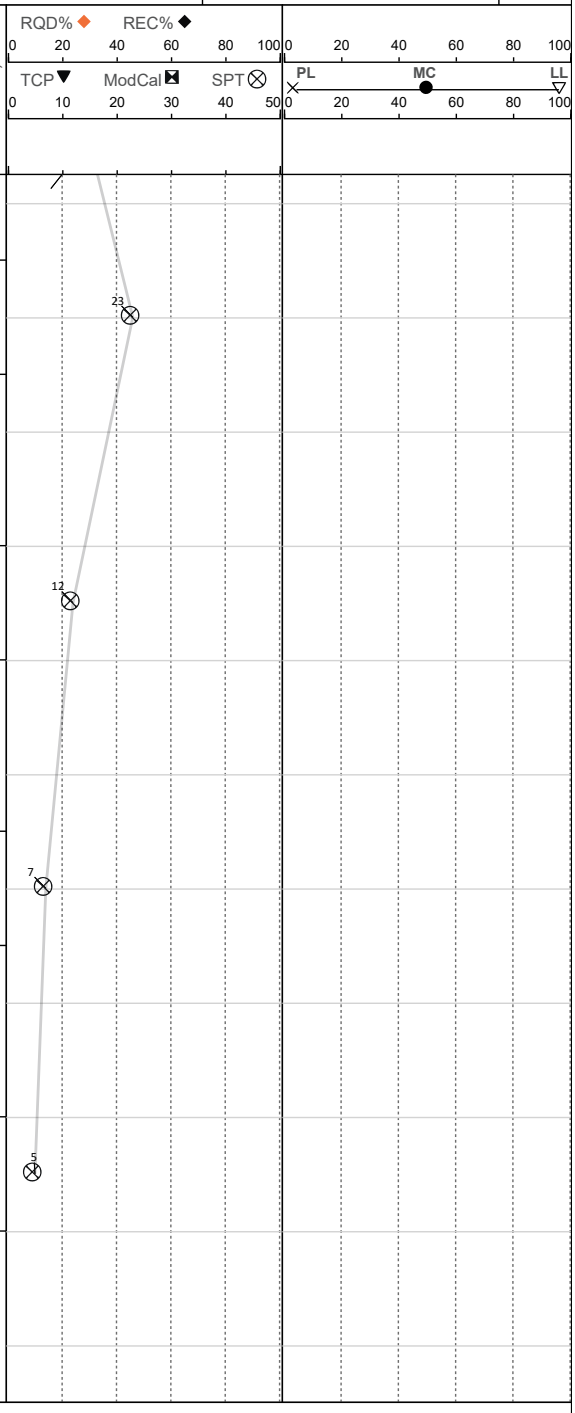
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered):	7 ft	BORING STARTED:	05/07/2025	CAVE IN DEPTH:	Not Observed
▼ WL (Completion):		BORING COMPLETED:	05/07/2025	HAMMER TYPE:	Automatic
▼ WL (Seasonal High Water):	5 ft	EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
▽ WL (Stabilized):					

GEOTECHNICAL BOREHOLE LOG

CLIENT: **HE2PD**	PROJECT NO.: **25:4388**	BORING NO.: **B-02**	SHEET: **2 OF 4**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.615310**	LONGITUDE: **-80.055500**	STATION:	SURFACE ELEVATION: **15**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
					(SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, very loose to medium dense.				
	S-08	SS	24	20					9-12-11-14 (23)
25								-10	
	S-09	SS	24	18					6-7-5-5 (12)
30								-15	
	S-10	SS	24	20					4-3-4-7 (7)
35								-20	
	S-11	SS	24	18					2-2-3-3 (5)
40								-25	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	**7 ft**	**BORING STARTED:**	**05/07/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**05/07/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**5 ft**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-02**	**3 OF 4**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.615310**	LONGITUDE: **-80.055500**	STATION:	SURFACE ELEVATION: **15**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
45	S-12	SS	24	6	(SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, very loose to medium dense.			-30	2-2-2-2 (4)
	S-13	SS	12	6					2-1-WoH-WoH (1)
50								-35	
	S-14	SS	0	4					WoH-WoH-WoH-WoH (0)
55								-40	
	S-15	SS	24	10	LIMESTONE, Soft, Tan.				5-6-4-5 (10)
60								-45	
	S-16	SS	24	5	(SP) POORLY GRADED SAND - fine sand, tan, wet, very loose to loose , contains shell fragments.				1-1-1-1 (2)

RQD% ◆ REC% ◆ 0 20 40 60 80 100

TCP ▼ ModCal ▣ SPT ⊗ 0 10 20 30 40 50

PL MC LL 0 20 40 60 80 100

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered): 7 ft	**BORING STARTED: 05/07/2025**	**CAVE IN DEPTH: Not Observed**
WL (Completion):	**BORING COMPLETED: 05/07/2025**	**HAMMER TYPE: Automatic**
WL (Seasonal High Water): 5 ft	**EQUIPMENT:** / **LOGGED BY:**	**DRILLING METHOD:**
WL (Stabilized):		

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-02**	**4 OF 4**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION: 100%
LATITUDE: **26.615310**	LONGITUDE: **-80.055500**	STATION:	SURFACE ELEVATION: **15**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
65	S-16	SS	24	5	(SP) POORLY GRADED SAND - fine sand, tan, wet, very loose to loose , contains shell fragments.			-50	1-1-1-1 (2)
	S-17	SS	24	15					3-4-3-2 (7)
70								-55	
	S-18	SS	24	24					3-4-5-14 (9)
75								-60	
	S-19	SS	3	3	LIMESTONE, Moderately Hard, Tan.				50/3 (50/3)
					Terminate AT 80ft			-65	

RQD% ◆ REC% ◆ (0 20 40 60 80 100)
TCP ▼ ModCal ▣ SPT ⊗ (0 10 20 30 40 50)
PL MC LL (0 20 40 60 80 100)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered):	7 ft	BORING STARTED:	05/07/2025	CAVE IN DEPTH:	Not Observed
▼ WL (Completion):		BORING COMPLETED:	05/07/2025	HAMMER TYPE:	Automatic
▼ WL (Seasonal High Water):	5 ft	EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
▽ WL (Stabilized):					

GEOTECHNICAL BOREHOLE LOG

CLIENT: **HE2PD**	PROJECT NO.: **25:4388**	BORING NO.: **B-03**	SHEET: **1 OF 3**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.615070**	LONGITUDE: **-80.055800**	STATION:	SURFACE ELEVATION: **15**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
	S-01	SS	24	15	Asphalt Asphalt Thickness [3.0"]. (SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, medium dense to dense.			15	18-13-16-17 (29)
	S-02	SS	24	12					11-10-16-17 (26)
5	S-03	SS	24	20			▼	10	11-13-15-15 (28)
	S-04	SS	24	22			▽		8-9-10-11 (19)
	S-05	SS	24	23					10-11-13-17 (24)
10								5	
	S-06	SS	24	16					5-6-8-10 (14)
15								0	
	S-07	SS	24	15					11-10-16-19 (26)
20								-5	

RQD% ◆ REC% ◆ (0 20 40 60 80 100)
TCP ▼ ModCal ▣ SPT ⊗ (0 10 20 30 40 50)
PL MC LL (0 20 40 60 80 100)

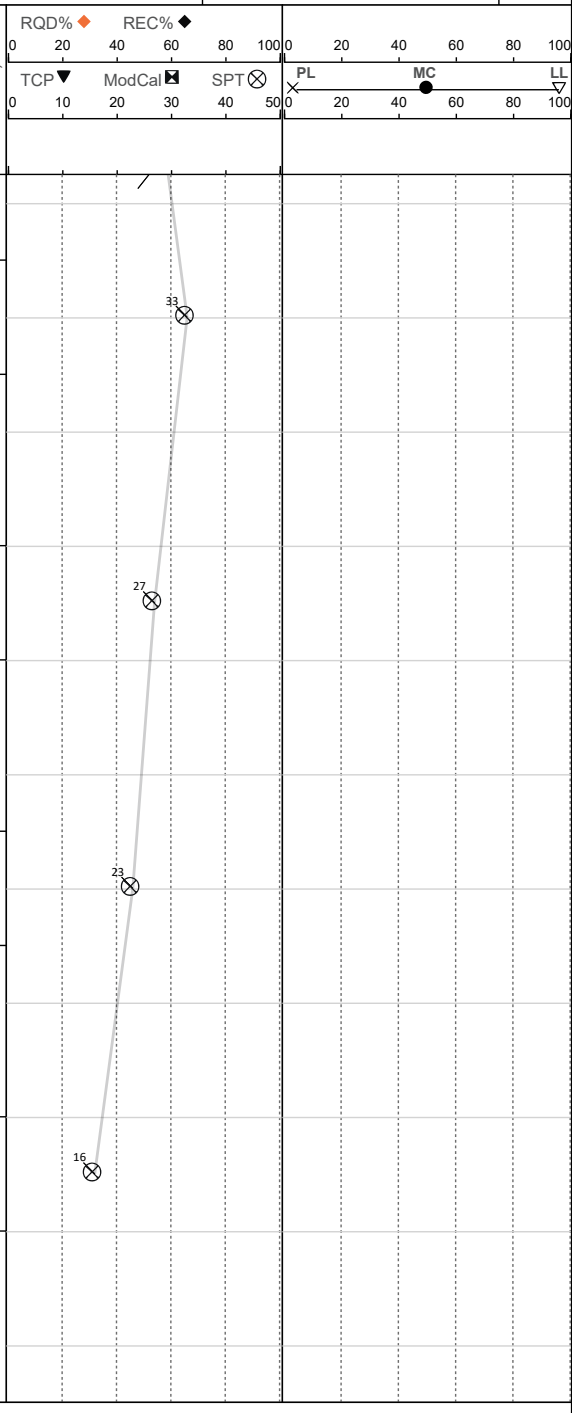
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered):	7 ft	BORING STARTED:	05/06/2025	CAVE IN DEPTH:	Not Observed
▼ WL (Completion):		BORING COMPLETED:	05/06/2025	HAMMER TYPE:	Automatic
▼ WL (Seasonal High Water):	5 ft	EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
▽ WL (Stabilized):					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-03**	**2 OF 3**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.615070**	LONGITUDE: **-80.055800**	STATION:	SURFACE ELEVATION: **15**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
					(SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, medium dense to dense.				
	S-08	SS	24	12					10-15-18-20 (33)
25								-10	
	S-09	SS	24	14					11-13-14-17 (27)
30								-15	
	S-10	SS	24	9					9-11-12-13 (23)
35								-20	
	S-11	SS	24	10					6-7-9-8 (16)
40								-25	



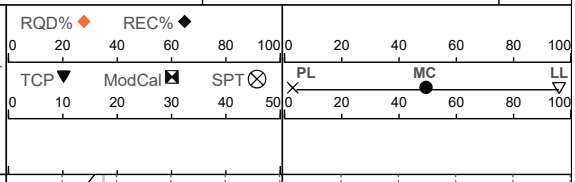
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

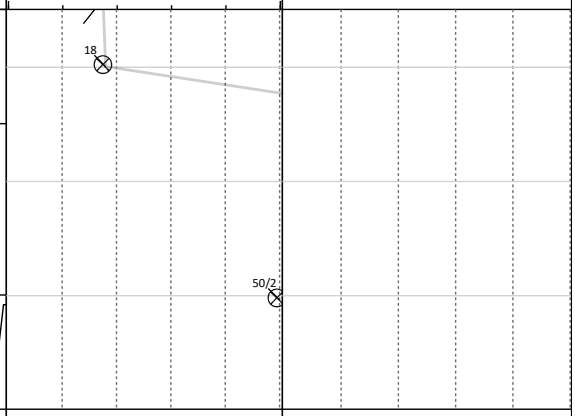
WL (First Encountered):	**7 ft**	**BORING STARTED:**	**05/06/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**05/06/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**5 ft**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-03**	**3 OF 3**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.615070**	LONGITUDE: **-80.055800**	STATION:	SURFACE ELEVATION: **15**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
45	S-12	SS	24	12	(SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, medium dense to dense.			-30	6-6-12-9 (18)
	S-13	SS	2	2	LIMESTONE, Moderately Hard, Tan.				50/2 (50/2)
					Terminate AT 50ft			-35	





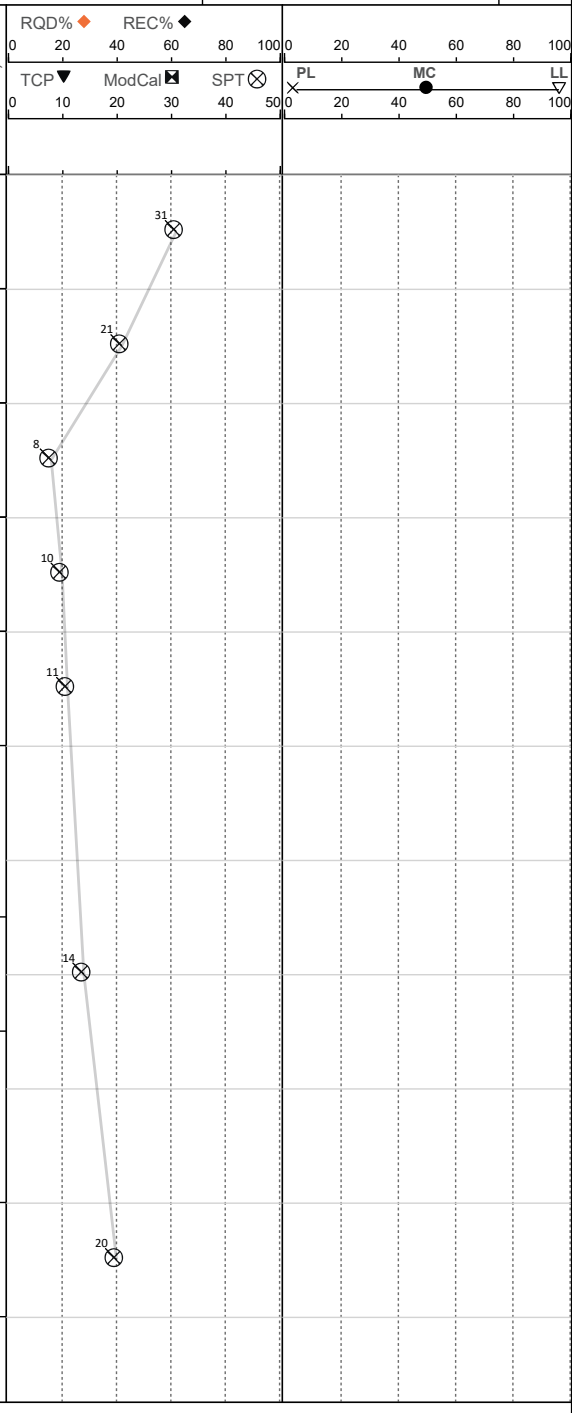
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	**7 ft**	**BORING STARTED:**	**05/06/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**05/06/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**5 ft**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-04**	**1 OF 3**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.615070**	LONGITUDE: **-80.055500**	STATION:	SURFACE ELEVATION: **15**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
	S-01	SS	24	12	Asphalt Asphalt Thickness [3.0"]. (SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, loose to dense.			15	17-13-18-16 (31)
	S-02	SS	24	20					11-11-10-8 (21)
5	S-03	SS	24	19			▼	10	5-4-4-5 (8)
	S-04	SS	24	17			▽		4-5-5-5 (10)
	S-05	SS	24	17					5-6-5-17 (11)
10								5	
	S-06	SS	24	20					5-6-8-9 (14)
15								0	
	S-07	SS	24	19					7-8-12-13 (20)
20								-5	



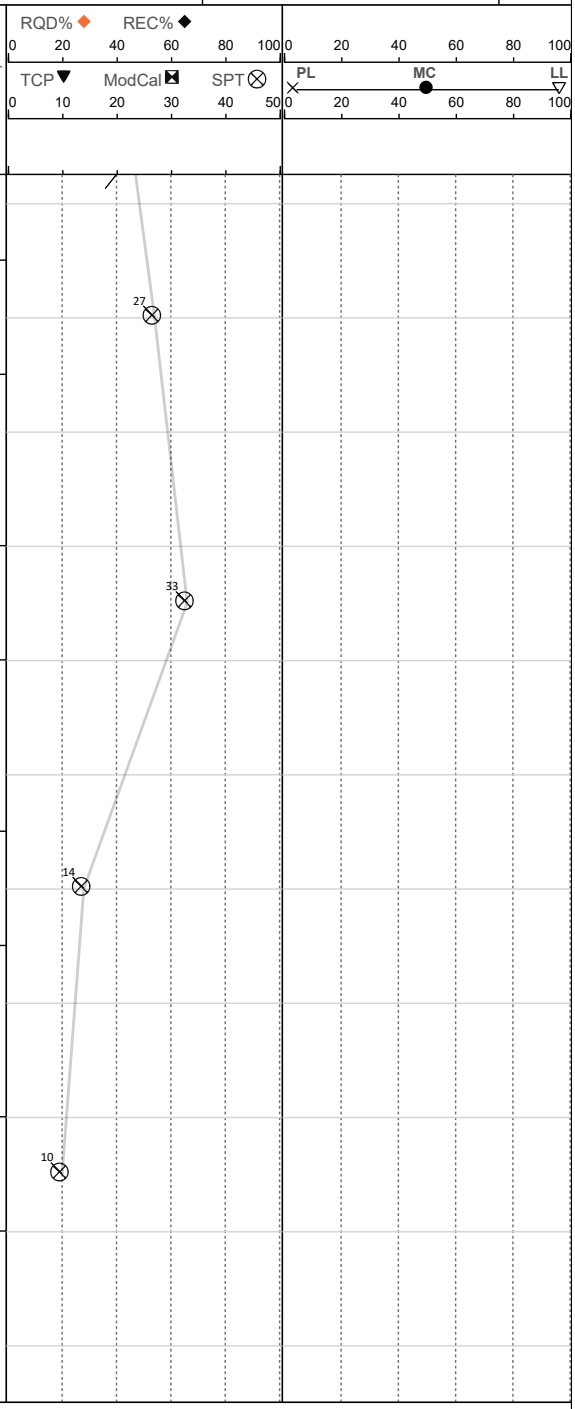
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered):	7.25 ft	BORING STARTED:	05/07/2025	CAVE IN DEPTH:	Not Observed
▼ WL (Completion):		BORING COMPLETED:	05/07/2025	HAMMER TYPE:	Automatic
▼ WL (Seasonal High Water):	5.25 ft	EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
▽ WL (Stabilized):					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-04**	**2 OF 3**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.615070**	LONGITUDE: **-80.055500**	STATION:	SURFACE ELEVATION: **15**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
					(SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, loose to dense.				
	S-08	SS	24	20					12-13-14-15 (27)
25								-10	
	S-09	SS	24	13					10-16-17-18 (33)
30								-15	
	S-10	SS	24	15					6-7-7-8 (14)
35								-20	
	S-11	SS	24	7					4-5-5-6 (10)
40								-25	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	**7.25 ft**	**BORING STARTED:**	**05/07/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**05/07/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**5.25 ft**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-04**	**3 OF 3**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.615070**	LONGITUDE: **-80.055500**	STATION:	SURFACE ELEVATION: **15**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
45	S-12	SS	24	10	(SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, loose to dense.			-30	2-2-11-3 (13)
	S-13	SS	14	7					5-2-50/2 (50/2)
					LIMESTONE, Moderately Weathered, Tan.			-35	
					Terminate AT 50ft				

RQD% ◆ REC% ◆ 0 20 40 60 80 100

TCP ▼ ModCal ▣ SPT ⊗ 0 10 20 30 40 50

PL MC LL 0 20 40 60 80 100

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ **WL (First Encountered):**	**7.25 ft**	**BORING STARTED:**	**05/07/2025**	**CAVE IN DEPTH:**	**Not Observed**
▼ **WL (Completion):**		**BORING COMPLETED:**	**05/07/2025**	**HAMMER TYPE:**	**Automatic**
▼ **WL (Seasonal High Water):**	**5.25 ft**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
▽ **WL (Stabilized):**					

GEOTECHNICAL BOREHOLE LOG

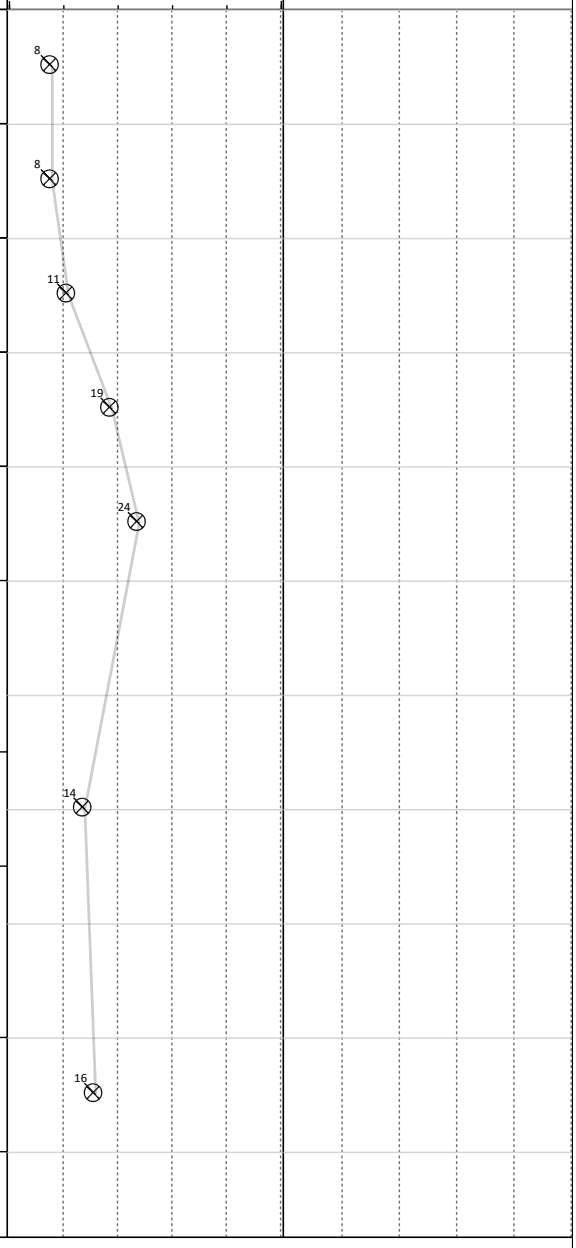
CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-05**	**1 OF 3**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.614790**	LONGITUDE: **-80.055800**	STATION:	SURFACE ELEVATION: **15**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
	S-01	SS	24	21	Topsoil [Thickness=6"]. (SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, loose to dense.			15	2-3-5-5 (8)
	S-02	SS	24	14					4-4-4-5 (8)
5	S-03	SS	24	18			▼	10	4-5-6-6 (11)
	S-04	SS	24	17			▽		7-9-10-12 (19)
	S-05	SS	24	18					10-13-11-10 (24)
10								5	
	S-06	SS	24	12					4-7-7-10 (14)
15								0	
	S-07	SS	24	12					10-1-15-19 (16)
20								-5	

RQD% ◆ REC% ◆ (0 20 40 60 80 100)

TCP ▼ ModCal ▣ SPT ⊗ (0 10 20 30 40 50)

PL MC LL (0 20 40 60 80 100)



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ **WL (First Encountered):**	**7.5 ft**	**BORING STARTED:**	**05/08/2025**	**CAVE IN DEPTH:**	**Not Observed**
▼ **WL (Completion):**		**BORING COMPLETED:**	**05/08/2025**	**HAMMER TYPE:**	**Automatic**
▼ **WL (Seasonal High Water):**	**5.5 ft**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
▽ **WL (Stabilized):**					

GEOTECHNICAL BOREHOLE LOG

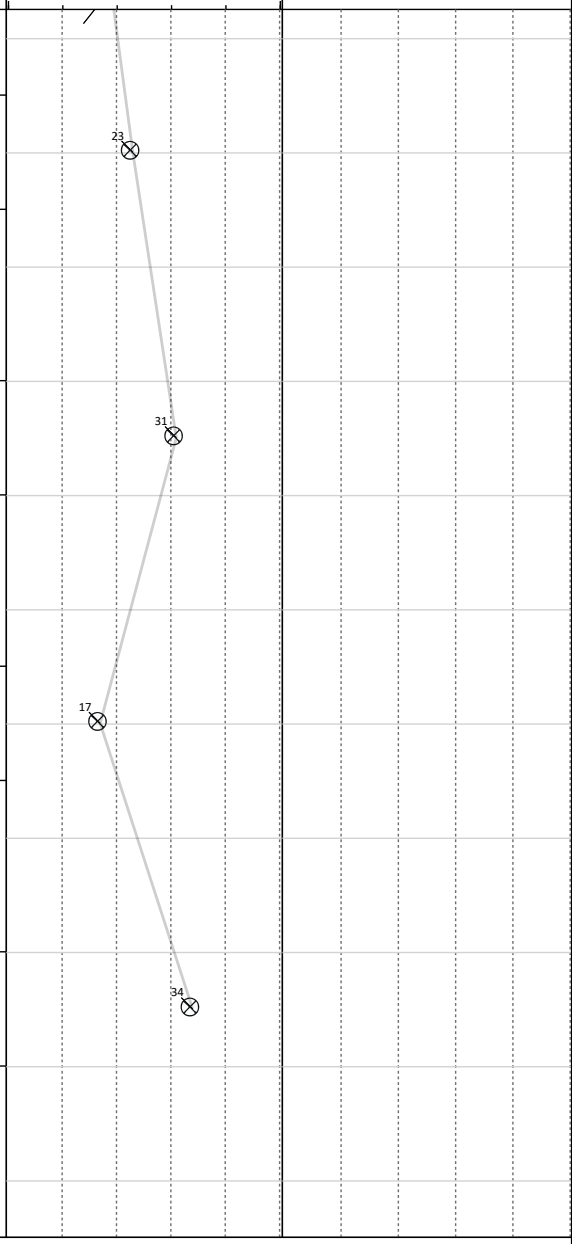
CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-05**	**2 OF 3**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.614790**	LONGITUDE: **-80.055800**	STATION:	SURFACE ELEVATION: **15**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
					(SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, loose to dense.				
	S-08	SS	24	16					6-9-14-18 (23)
25								-10	
	S-09	SS	24	12					16-16-15-15 (31)
30								-15	
	S-10	SS	24	13					6-8-9-10 (17)
35								-20	
	S-11	SS	24	12					12-19-15-12 (34)
40					LIMESTONE, Soft to Moderately Hard.			-25	

RQD% ◆ REC% ◆ (0 20 40 60 80 100)

TCP ▼ ModCal ▣ SPT ⊗ (0 10 20 30 40 50)

PL MC LL (0 20 40 60 80 100)



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ **WL (First Encountered):**	**7.5 ft**	**BORING STARTED:**	**05/08/2025**	**CAVE IN DEPTH:**	**Not Observed**
▼ **WL (Completion):**		**BORING COMPLETED:**	**05/08/2025**	**HAMMER TYPE:**	**Automatic**
▼ **WL (Seasonal High Water):**	**5.5 ft**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
▽ **WL (Stabilized):**					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-05**	**3 OF 3**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.614790**	LONGITUDE: **-80.055800**	STATION:	SURFACE ELEVATION: **15**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
45	S-12	SS	22	7	LIMESTONE, Soft to Moderately Hard.			-30	4-6-7-50/4 (13)
	S-13	SS	2	2					50/2 (50/2)
					Terminate AT 50ft			-35	

RQD% ◆ REC% ◆ (0 20 40 60 80 100)
TCP ▼ ModCal ▣ SPT ⊗ (0 10 20 30 40 50)
PL MC LL (0 20 40 60 80 100)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ **WL (First Encountered):**	**7.5 ft**	**BORING STARTED:**	**05/08/2025**	**CAVE IN DEPTH:**	**Not Observed**
▼ **WL (Completion):**		**BORING COMPLETED:**	**05/08/2025**	**HAMMER TYPE:**	**Automatic**
▼ **WL (Seasonal High Water):**	**5.5 ft**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
▽ **WL (Stabilized):**					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-06**	**1 OF 3**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.614790**	LONGITUDE: **-80.055500**	STATION:	SURFACE ELEVATION: **15**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
	S-01	SS	24	15	Topsoil [Thickness=6"]. (SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, very loose to medium dense.			15	2-4-6-7 (10)
	S-02	SS	24	14					6-7-7-7 (14)
5	S-03	SS	24	11			▼	10	5-6-5-7 (11)
	S-04	SS	24	14			▽		7-7-9-9 (16)
	S-05	SS	24	11					7-11-13-16 (24)
10								5	
	S-06	SS	24	12					5-7-8-10 (15)
15								0	
	S-07	SS	24	11					7-8-11-10 (19)
20								-5	

RQD% ◆ REC% ◆ (0 20 40 60 80 100)
TCP ▼ ModCal ▣ SPT ⊗ (0 10 20 30 40 50)
PL MC LL (0 20 40 60 80 100)

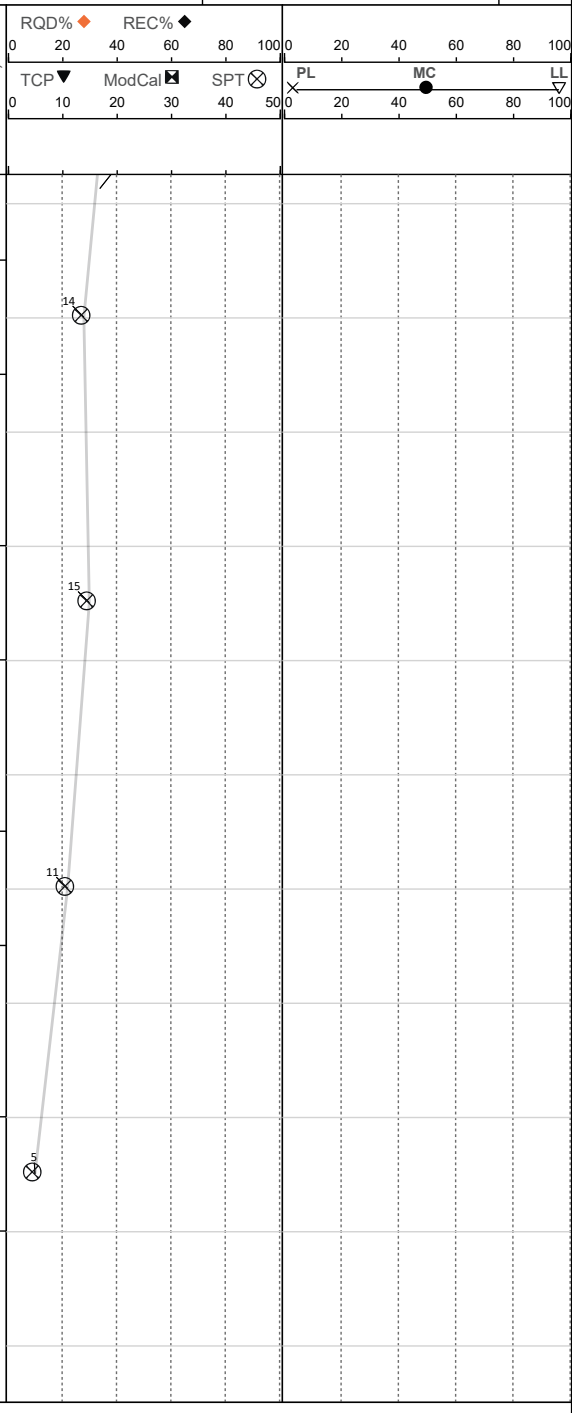
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered):	7.5 ft	BORING STARTED:	05/06/2025	CAVE IN DEPTH:	Not Observed
▼ WL (Completion):		BORING COMPLETED:	05/06/2025	HAMMER TYPE:	Automatic
▼ WL (Seasonal High Water):	5.5 ft	EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
⊽ WL (Stabilized):					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-06**	**2 OF 3**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.614790**	LONGITUDE: **-80.055500**	STATION:	SURFACE ELEVATION: **15**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
					(SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, very loose to medium dense.				
	S-08	SS	24	14					6-7-7-8 (14)
25								-10	
	S-09	SS	24	12					5-8-7-9 (15)
30								-15	
	S-10	SS	24	9					4-5-6-7 (11)
35								-20	
	S-11	SS	24	12					6-2-3-4 (5)
40								-25	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

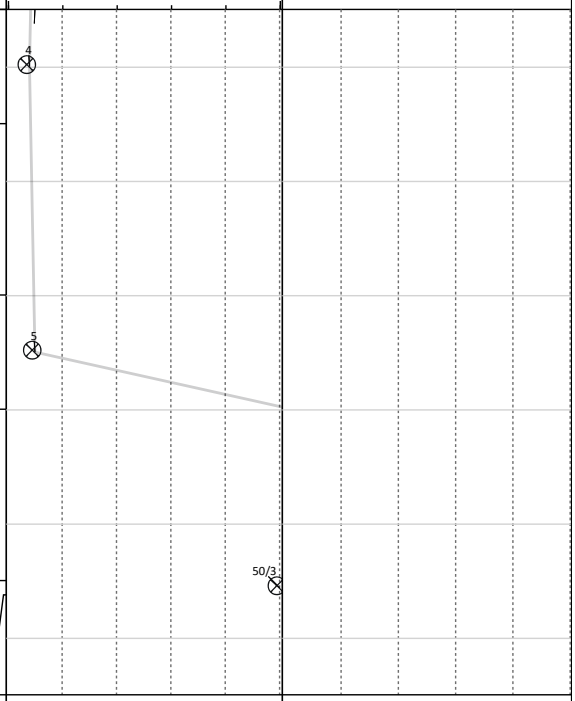
WL (First Encountered):	7.5 ft	BORING STARTED:	05/06/2025	CAVE IN DEPTH:	Not Observed
WL (Completion):		BORING COMPLETED:	05/06/2025	HAMMER TYPE:	Automatic
WL (Seasonal High Water):	5.5 ft	EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
WL (Stabilized):					

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
HE2PD	**25:4388**	**B-06**	**3 OF 3**
PROJECT NAME: **19 South K Street Parking Structure - Lake Worth Beach**	DRILLER/CONTRACTOR:		
SITE LOCATION: **19th South K Street, Lake Worth, Florida, 33460**			LOSS OF CIRCULATION
LATITUDE: **26.614790**	LONGITUDE: **-80.055500**	STATION:	SURFACE ELEVATION: **15**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE (IN)	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N VALUE)*
45	S-12	SS	24	12	(SP) POORLY GRADED SAND - fine sand, light gray and orangish tan, moist to wet, very loose to medium dense.			-30	2-2-2-3 (4)
50	S-13	SS	24	12				-35	3-2-3-4 (5)
	S-14	SS	3	2	LIMESTONE, Moderately Hard, Tan.			-40	50/3 (50/3)
					Terminate AT 55ft				

RQD% ◆ REC% ◆ (0 20 40 60 80 100)
TCP ▼ ModCal ▣ SPT ⊗ (0 10 20 30 40 50)
PL MC LL (0 20 40 60 80 100)

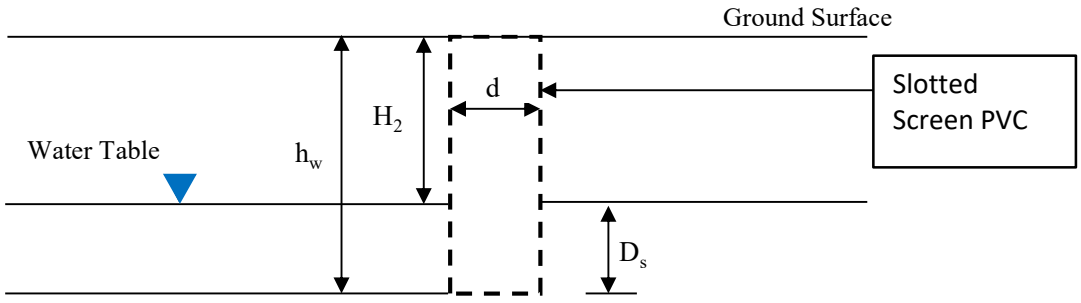


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	**7.5 ft**	**BORING STARTED:**	**05/06/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**05/06/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**5.5 ft**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):					

GEOTECHNICAL BOREHOLE LOG

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
" USUAL OPEN - HOLE TEST "



$$K_{IV} = 4Q/[\pi d(2H_2^2 + 4H_2Ds + H_2d)]$$

7.9E-04 CFS/FT^2-FT HEAD

Q =	Average Flow Rate =	4.4E-02	CFS
d =	Diameter of Test Hole =	0.42	feet
H_2 =	Head on Water Table =	6.0	feet
h_w =	Total Hole Depth =	10.0	feet
D_s =	Saturated Hole Depth =	4.0	feet

TEST LOCATION :	EXF-01	
DEPTH TO WATER TABLE :	6.0 ft	Below Existing Grade
DEPTH OF TEST HOLE :	10 ft	Below Existing Grade
AVERAGE FLOW RATE:	19.9 GPM	

SOIL PROFILE :

0.0' - 10.0' Brown SAND (SP) with limerock fragments

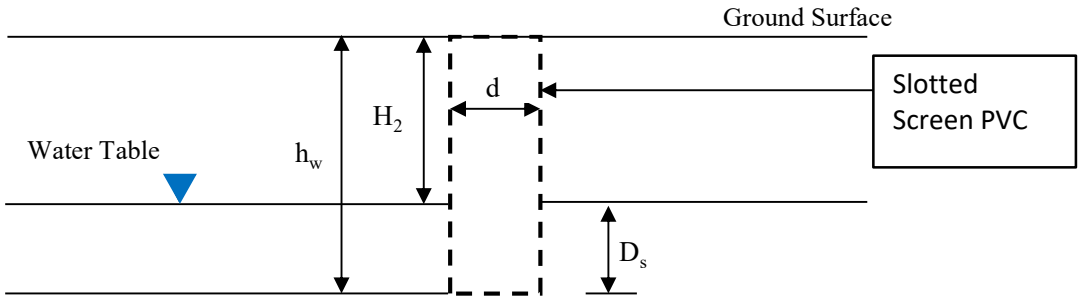
NOTES: The soil profile is determined by drilled cuttings & should not be relied upon as an accurate record of soil type or for transition zones.

USUAL OPEN HOLE TEST SUMMARY	Test Date	Project No.	Test No.	Tested By	Checked by:
	05/07/25	4388	EXF-01	JPE	EJM

Job No.: 25:4388

19 South K Street Parking Structure - Lake Worth Beach

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
" USUAL OPEN - HOLE TEST "



$$K_{IV} = 4Q/[\pi d(2H_2^2 + 4H_2Ds + H_2d)]$$

7.4E-04 CFS/FT^2-FT HEAD

Q =	Average Flow Rate =	4.6E-02	CFS
d =	Diameter of Test Hole =	0.42	feet
H_2 =	Head on Water Table =	7.5	feet
h_w =	Total Hole Depth =	10.0	feet
D_s =	Saturated Hole Depth =	2.5	feet

TEST LOCATION :	EXF-02	
DEPTH TO WATER TABLE :	7.5 ft	Below Existing Grade
DEPTH OF TEST HOLE :	10 ft	Below Existing Grade
AVERAGE FLOW RATE:	20.7 GPM	

SOIL PROFILE :

0.0' - 10.0' Brown SAND (SP) with limerock fragments

NOTES: The soil profile is determined by drilled cuttings & should not be relied upon as an accurate record of soil type or for transition zones.

USUAL OPEN HOLE TEST SUMMARY	Test Date	Project No.	Test No.	Tested By	Checked by:
	05/07/25	4388	EXF-02	JPE	EJM

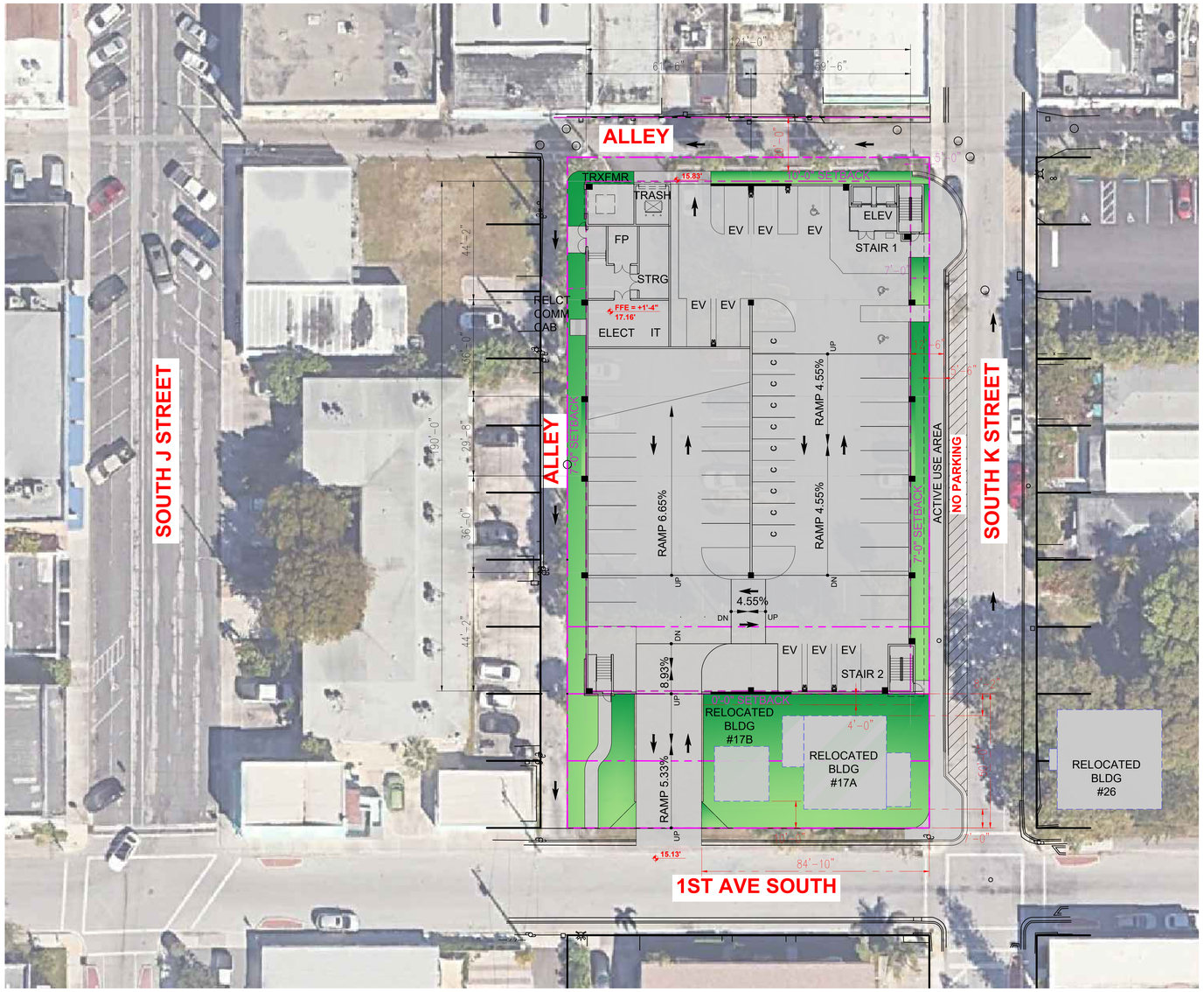
Job No.: 25:4388

19 South K Street Parking Structure - Lake Worth Beach

VII. SCHEMATIC DESIGN

Concept Design:

- Schematic design layout – PGAL Architects
- MEP/FP schematic design narrative – JLRD Engineers
- Structural schematic design narrative – ONM&J Engineers
- Civil schematic design layout – Miller Legg Engineers



GROUND LEVEL SITE PLAN

LEVEL 5

LEVELS 2 - 4

PARKING GARAGE DATA

MU-E (Mixed Use East (Downtown Historic District)
.77 acres (33,750SF)

LEVEL	Standard Parking	Compact Parking	HC Parking	EV Parking	Total Parking	GSF	Remarks
LVL 5	27	0	1	0	28	11,771	
LVL 4	53	12	1	0	66	23,114	
LVL 3	52	12	2	0	66	23,114	
LVL 2	52	12	2	0	66	23,114	
LVL G	13	10	2	8	33	16,820	1 EV Space for HC use
Total	197	46	8	8	259	97,933	
Existing Parking Spaces	69						Approx. count. includes (9) parralel spaces on K Street
Total Parking Spaces	259						
Net Parking Spaces	190						
SF / Parking Space	378						
Compact Percentage	18%						
Impervious Area	82%						Allowed Downtown 90%
Floor Aera Ratio (FAR) Allowed	54,000						1.6 PUD. First 3 levels exempt
Floor Aera Ratio (FAR) Provided	34,885						

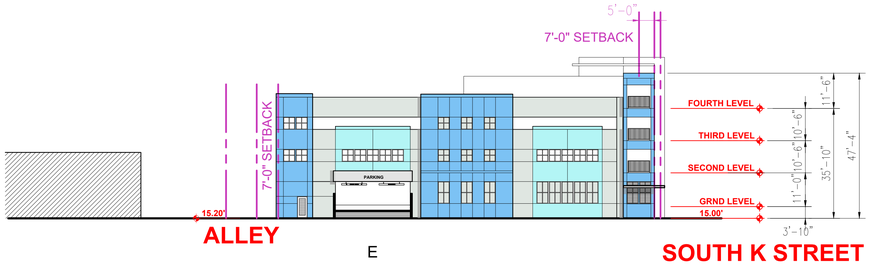
PGAL
791 PARK OF COMMERCE
S U I T E 4 0 0
BOCA RATON, FL 33487
[T] 561 988 4002
[F] 561 988 3002
W W W . P G A L . C O M

06.18.2025

SITE / FLOOR PLANS - SCHEMATIC DESIGN PHASE

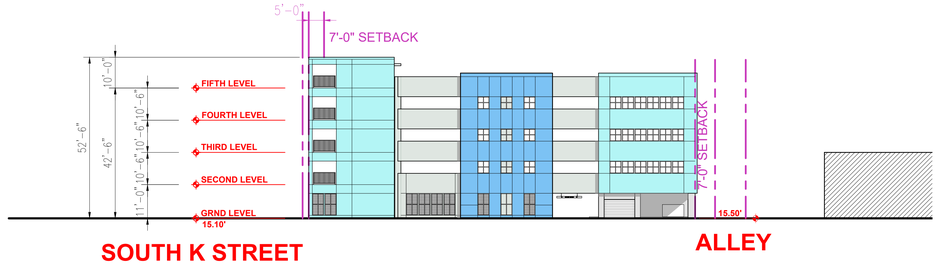
SUNSHINE PARKING GARAGE - LAKE WORTH BEACH, FLA

1" = 40'-0"

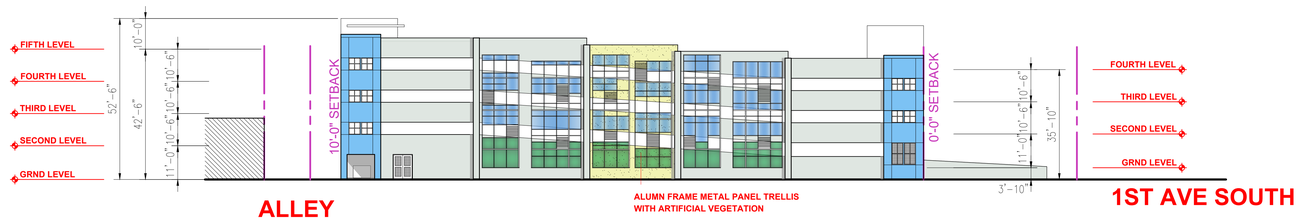


E

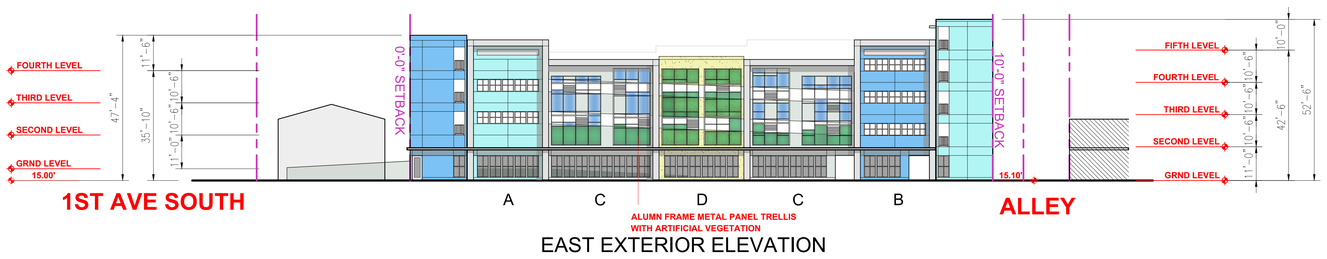
SOUTH EXTERIOR ELEVATION



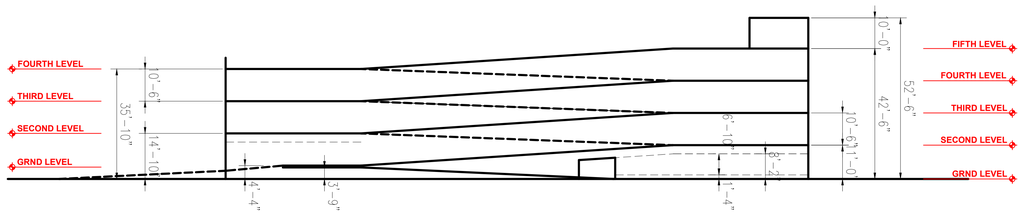
NORTH EXTERIOR ELEVATION



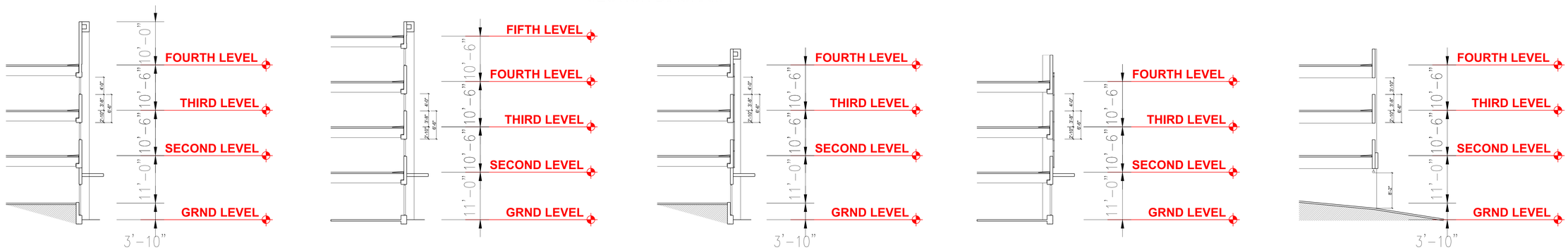
WEST EXTERIOR ELEVATION



EAST EXTERIOR ELEVATION



SECTION DIAGRAM



PRELIMINARY SECTIONS

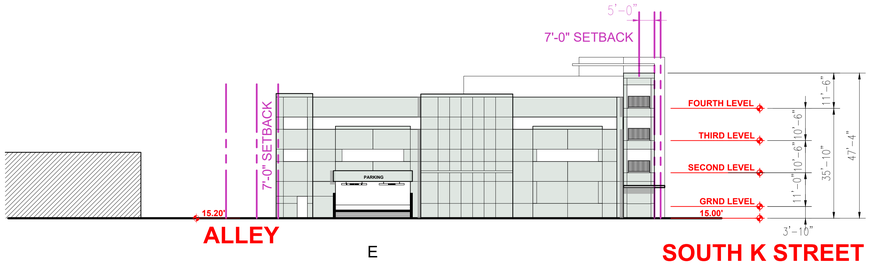
EXTERIOR ELEVATIONS - SECTION DIAGRAM - SCHEMATIC DESIGN PHASE

SUNSHINE PARKING GARAGE - LAKE WORTH BEACH, FLA

1" = 20'-0"

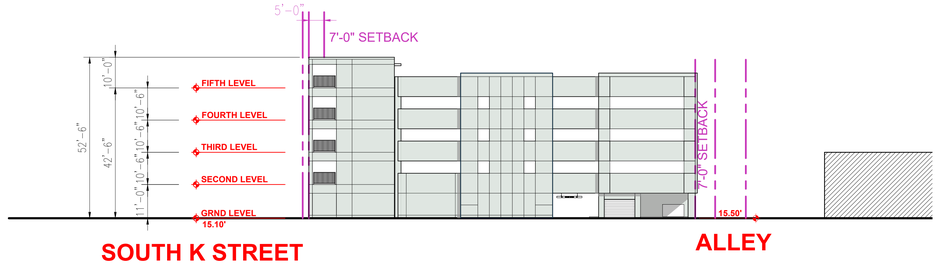
PGAL
791 PARK OF COMMERCE
SUITE 400
BOCA RATON, FL 33487
[T] 561 988 4002
[F] 561 988 3002
WWW.PGAL.COM

06.18.2025

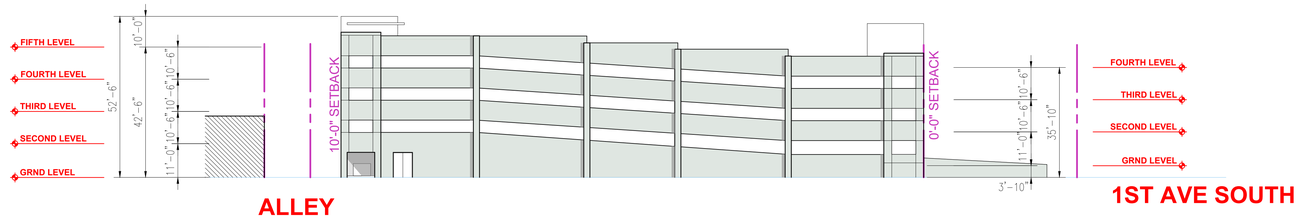


E

SOUTH EXTERIOR ELEVATION



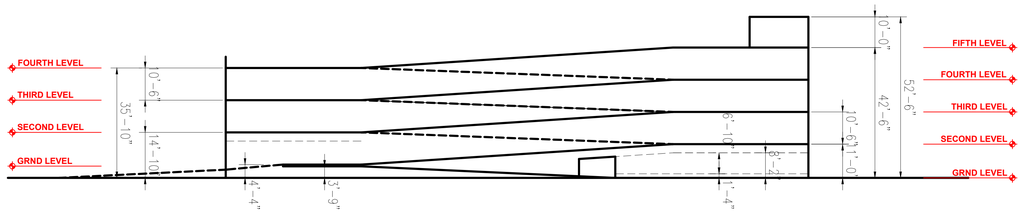
NORTH EXTERIOR ELEVATION



WEST EXTERIOR ELEVATION

A C D D sim B

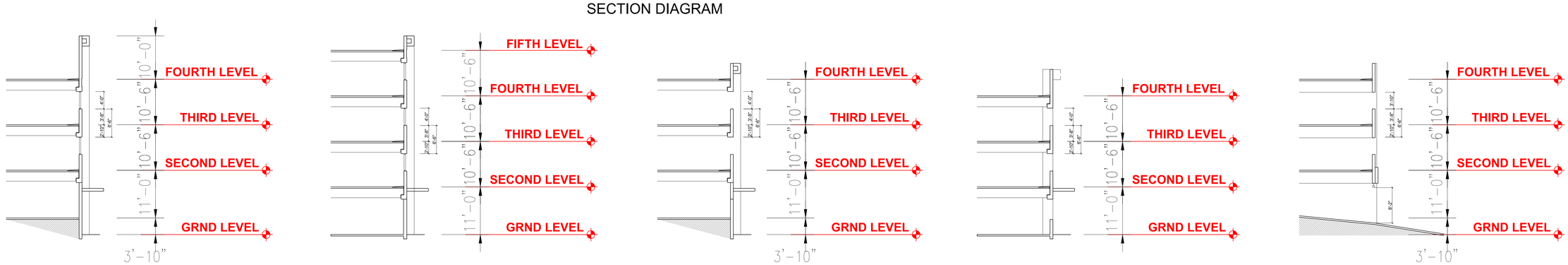
EAST EXTERIOR ELEVATION



SECTION DIAGRAM

NOTE:

THE EXTERIOR ELEVATIONS SHOWN HERE PRESENT THE APPEARANCE OF THE PARKING GARAGE WITH THE BASE BID PACKAGE WITH RESPECT TO AESTHETIC IMPROVEMENTS. IN THESE ELEVATIONS, THE GARAGE DOES NOT INCLUDE COLORED CONCRETE, WINDOW FRAMING, AND COLORED PANELING.



A B C D E

PRELIMINARY SECTIONS

EXTERIOR ELEVATIONS - SECTION DIAGRAM - SCHEMATIC DESIGN PHASE

SUNSHINE PARKING GARAGE - LAKE WORTH BEACH, FLA

1" = 20'-0"

PGAL
791 PARK OF COMMERCE
SUITE 400
BOCA RATON, FL 33487
[T] 561 988 4002
[F] 561 988 3002
WWW.PGAL.COM

07.01.2025

JOHNSON, LEVINSON,
RAGAN, DAVILA, INC.
CONSULTING ENGINEERS

1450 Centrepark Boulevard, Suite 350
West Palm Beach, FL 33401
(561) 689-2303 · (561) 689-2302 Fax
www.jlrdinc.com

MEP&FP Schematic Design Narrative
Lake Worth Beach Parking Garage
JLRD Project No. 125056
June 11, 2025

Mechanical

The cooling medium for new HVAC systems within the proposed garage shall be direct expansion (DX). Basis of design shall be R-454b refrigerant. Load calculations will be performed to determine required airflows for each space. Evaporators and condensing units shall be provided for all DX equipment to provide cooling for utility spaces. Leak detection and mitigation sensors with means of isolation shall be provided by the manufacturer, as required by code, for all equipment containing A2L refrigerants. Either a roof mounted or sidewall mounted exhaust fan shall provide mechanical ventilation for the elevator shaft housing the controller and elevator equipment. Exhaust fans at each parking garage level, along with carbon monoxide and nitrogen dioxide detectors at each level, will be provided for closed air parking structure. If the proposed garage is to be open-air, exhaust fans at each level and associated sensors will not be required.

HVAC Systems

Ventilation would be in accordance with ASHRAE 62.1-2019 Standards, as well as the 2023 Florida Mechanical Code, Table 403.3. Carbon monoxide and nitrogen dioxide sensors shall be provided to provide energy efficiency in regard to ventilation and airflow. This pertains only to enclosed parking garages.

The applicable Codes are as follows:

- 2023 Florida Building Code - 8th Edition - Building
- 2023 Florida Building Code - 8th Edition - Mechanical
- 2023 Florida Building Code - 8th Edition - Energy Conservation
- NFPA 13 - 2019
- NFPA 90A, NFPA 90B, NFPA 101, - 2021
- ASHRAE 62.1 - 2019
- ASHRAE, ANSI, ASTM, and SMACNA Standards

Proposed Parking Garage

It is anticipated that each level of the proposed parking garage shall require mechanical ventilation if it is an enclosed parking garage. Automatic operation shall cycle the ventilation

system between two modes of operation. Full on airflow at not less than 0.75 cfm per square foot of floor area served and standby at not less than 0.05 cfm. Carbon monoxide and nitrogen dioxide sensors shall be provide at specific elevations as illustrated in FBC - 8th Edition - Mechanical, chapter 4, section 404.1, at each level of the garage. Fans shall be sized for approximately 17,500 CFM per fan, direct drive fans. Louvers with an active NOA, AMCA 540/550 rating shall be specified for exhaust air discharge to the exterior of the proposed parking garage.

If the proposed garage is not enclosed, mechanical ventilation via exhaust fan at each level shall not be required.

Leak detection and mitigation sensors with means of isolation shall be provided by the manufacturer, as required by code, for all equipment containing A2L refrigerants. One-to-one systems shall be provided for all utility spaces.

Mini split systems shall be sized in accordance with load calculations performed by JLRD. Evaporators shall be wall mounted with integral condensate pumps for condensate disposal. Condensate shall be routed to the nearest wall box provided by plumbing series drawings. Wall mounted thermostats within the room shall be provided for temperature control. The storage room, IT room and electrical room on the first level shall be provided with dedicated evaporators. The IT room on the second level shall be provided with a dedicated evaporator.

Inverter compressors shall be specified for capacity modulation for all systems. Coated coils shall be provided for long term protection. Condensing units shall be exterior mounted with uplift calculations provided by a delegated engineer. Either wall mounted or on grade condensing units shall be provided.

Either a sidewall or roof mounted exhaust fan shall be provided for mechanical ventilation of the elevator shaft. It is assumed the controller and the elevator equipment will be located within the hoistway. A temperature sensor will be provided at the top of the shaft set for an 85-degree F setpoint. Once the elevator shaft hits setpoint, the exhaust fan shall engage to provide ventilation to the hoistway. This will allow the elevator equipment to maintain required temperature and will protect against overheating. The exhaust fan shall be provided with an integral backdraft damper and integral bird screen. Balancing will be completed with a dial on the fan. Uplift calculations from a delegated engineer shall be provided.

It is recommended that an elevator machine room is provided for the elevator equipment. This will allow for ease of access to the equipment. Air conditioning can be provided if elevator equipment is in the machine room. If an elevator machine room cannot be provided and it is desired to condition the hoistway, a split system can be provided and ducted into the hoistway. Keep in mind, with new A2L refrigerants, the hoistway would act as a shaft. Per ASHRAE 15, the new A2L refrigerants, when located in a shaft serving more than two floors, must be ventilated at the bottom of the shaft and must be provided with a ventilator at the top of the shaft.

MEP&FP Schematic Design Narrative
Lake Worth Beach Parking Garage
June 11, 2025

Plumbing

New Construction

Overall plumbing scope consists of providing parking lot storm and condensate drainage, hose bibbs thru out for cleaning and maintenance purposes, elevator sump pump and trash room sanitary drains.

Drain, waste and vent piping will be cast iron (PVC below grade), cold and hot water piping type "L" copper with 95/5 joints.

Roof and storm drain piping will be PVC, provided with a rigid fiberglass insulation on horizontal runs.

The applicable Codes are as follows:

- Florida Building Code - 8th Edition Plumbing
- Florida Building Code - 8th Edition
- AWWA, ASME Standards

The domestic water, sanitary and storm system shall exit the building and connect to the site utilities as shown on the civil plans

Domestic water piping shall be Type 'L' copper for all above grade applications. For below grade applications Type 'K' copper shall be used.

Condensate shall be Armaflex type, similar to refrigerant piping.

Valves shall be bonze, stainless steel ball and Teflon seats.

Fire Protection

The facility will be fully protected utilizing a wet pipe sprinkler system with a fire pump. 750 gpm@100 psi fire pump located on the first floor.

Spaces such as mechanical equipment rooms, storage areas, and the new valet parking garage will be designed for Ordinary Hazard Group I.

Sprinkler heads shall be upright type, quick response, K=5.6 corrosion resistant Multiple control valves shall be utilized, via 2 standpipe risers, located in the stairwells.

Piping above ground 2 inches and smaller shall be galvanized steel; 2-1/2 inch and larger shall be galvanized steel.

Fittings for 2 inches and smaller shall be galvanized steel.

Fittings for 2-1/2 inches and larger shall be groove type.

All hangers shall be UL Listed and FM approved, hot dipped galvanized, supported per spacing distances in NFPA-13 (2018 Edition).

Butterfly valves shall be ductile iron, with tamper switch. Gate valves shall be OS&Y type with rising stem. Check valves shall be swing type, ductile iron body with drain valve.

Test system per NFPA 13 and NFPA 25 requirements.

Drawings and specifications shall be "performance type" for Permit. Fire protection contractor shall provide shop drawings with all layouts of heads, sizes, locations, hydraulic calculations, etc.

Electrical

The proposed construction of the Lake Worth Beach Parking structure is comprised of a 108,000 s.f., 4-story, 268 space open parking garage.

The applicable Codes are as follows:

- 2023 Florida Building Code - 8th Edition - Building
- 2023 Florida Building Code - 8th Edition - Energy Conservation
- NFPA 70 - 2020
- NFPA 72 - 2019
- NFPA 780

The parking garage entrance and exiting shall incorporate a grade level ramps and signage for wayfinding, located on the east side of the garage.

Normal Power Distribution

The proposed facility will utilize a 400A, 277/480 volt, 3-phase 4-wire electrical service, routed from a liquid-filled pad mounted transformer located near the main electric room. The service is configured in a main distribution panelboard construction with main circuit breaker and group mounted molded-case circuit breakers distribution sections.

The general building lighting, elevator, and fire pump loads utilize 277/480 volt power. Step down transformers will provide 120/208 volt service for receptacles and other 120 volt loads. Proposed branch circuit panelboards shall have an integrated, three level system of surge protective devices (SPD's) for cascaded protection, to protect against voltage surges and transients.

The fire pump will be fed directly from the utility pad mounted transformer via a fire pump controller with an integral transfer switch and surge protection. The fire jockey pump will be fed via a 480V, 3ph normal power branch circuit.

MEP&FP Schematic Design Narrative
Lake Worth Beach Parking Garage
June 11, 2025

Receptacles will be provided in all areas in accordance with the requirements. No more than six receptacles will be on any branch circuit. All receptacles within 6-feet of a sink edge, or located outside, on the roof or in mechanical or custodial spaces will be GFI type. All devices will have nonmagnetic #302 stainless steel coverplates. Locking weatherproof covers will be provided at all exterior outlets.

Four, level 2, electric vehicle chargers will be provided on the first floor and strategic parking space locations. Each charger will be fed from a 40A, 2 pole 208V, 1ph branch circuits. Based on Lake Worth Beach Ordinances, the quantity for off-road parking requires 4% of the parking spaces to be supported with EV chargers which would increase the count from 4 to 11 chargers. Additional coordination with the plan reviewer will be necessary to confirm requirements.

Vehicle gates will be provided at the entry and exiting lanes. Revenue kiosks will be located per owner's direction with power and communication services.

Provisions will be made for future expansion. Spare conduits will be provided stubbed out of the main switchgear to the exterior of the building. These will be capped and marked for future use. Each panelboard will be provided with 20% spare capacity and 20% spare breakers.

Emergency Power Distribution

A standby diesel generator with a sub-base tank in a hurricane rated, weather-proof enclosure (level II attenuation) will be located on first floor of the parking garage. Should a generator room be provided, the weatherproof enclosure would no longer be required. The generator is anticipated to be 275kW. Automatic transfer switches will be provided to feed life safety and optional equipment systems. The life safety system and fire pump will be fed separately from the utility transformer. The genset shall utilize diesel fuel and have on-site fuel storage for a minimum of 24-hours at full load run time capacity. Remote annunciator will be provided in the maintenance office. Generator emergency shutoff will be provided in the main electrical room.

Two (2) emergency distribution systems will be configured for legally required standby systems (life safety) and optional standby systems (equipment) via separate, dedicated automatic transfer switches. The main emergency distribution equipment will be housed in a room separate from the normal power distribution service entrance gear.

Panelboards will be located around the facility as required to feed Life Safety lighting loads, elevator(s), and fire pump within the facility. A step-down life safety transformer will provide 120v service for the fire alarm system and elevator controls. An equipment branch transformer will serve the security, data/telephone, card access, EMS, intrusion detection, and video surveillance systems as well as supporting HVAC equipment supporting the IT and elevator machine room.

Life safety lighting will be furnished in all stairwells, parking areas, and where required for egress. A minimum of two fixtures will be provided in all areas requiring life safety lighting. All life safety lighting will be switched with red switches and furnished with sensing relays to ensure operation upon power outage.

MEP&FP Schematic Design Narrative
Lake Worth Beach Parking Garage
June 11, 2025

Egress lighting will be furnished outside to illuminate exit pathways away from the buildings. These fixtures will be fed from the generator and provided with sensing relays to ensure operation upon power outage.

LED type exit lighting fixtures will be provided and connected to the life safety service un-switched.

Minimum size wiring for emergency system power and lighting will be #10 AWG.

Interior Lighting

All lighting fixtures within this facility will utilize LED type sources.

In individual offices and small spaces, local wall mounted occupancy sensors will be utilized for control. For common areas, parking, and other larger expansive areas, automatic control will be implemented via a central lighting control system. Stairwells will be illuminated to 10 fc minimum and will utilize occupancy sensors for dimming control to save energy. Parking areas shall be lit to a 1.0 fc min., ramps lit to a 2.0 f.c. min., and entrance to the garage lit to a 50.0 f.c. min. The fixture lamp source shall utilize 4000K color temperature, 80 CRI, with strategic distribution to light the parking spaces yet minimize glare in the drive aisle. If desired by the owner, photocells can monitor natural light and dim or turn off perimeter lighting fixtures to save energy.

It is anticipated that lighting fixtures in aesthetically sensitive areas such as lobbies, etc., will be selected by the Architect. Other utility type fixtures in back-of-house areas may be selected by the Engineer.

Exterior Lighting

Lighting fixtures installed on the exterior of the building and along pathways and entrances shall be lit to a code minimum. Control of exterior lighting fixtures will be via photocell/timeclock or central lighting control system to allow for all lighting fixtures to be programmed. Similar to the interior fixtures, all exterior lighting fixtures will utilize LED sources.

Pole mounted lighting fixtures will be used on the top level of the garage, ASCE 7-20 windload rated for 180 mph.

House-side shielding via directional lensing will be provided to prevent overspill lighting from encroaching on neighboring residential property.

Fire Alarm System (FAS)

An Intelligent Addressable Fire Alarm Voice Evacuation system is provided for this facility. Annunciating devices will be located throughout the facility per NFPA 72. Initiating and monitoring devices will also be provided per NFPA 72, fire pump codes, and National Standards for Elevators. Since a fire protection sprinkler system will be provided in the garage, coverage of

smoke detectors in egress pathways and heat detectors in storage rooms and ancillary spaces are not required, and therefore will not be installed.

The main fire alarm control panel will be located in the 1st floor systems room, with an LCD remote annunciator panel located in the lobby where fire fighters would respond initially. Booster / NAC panels will be installed for new devices.

All fire alarm wiring will be Class A or Class B.

Telecommunications

A voice/data communications raceway system will be provided in the building. The telecommunications system provided under this contract will be an empty conduit/raceway system with pull-lines to accommodate cable installation by the owner's telecommunication vendor/installer.

Where applicable, horizontal cabling is intended to be distributed from telecommunications rooms via conduit, 1 inch min., throughout the building and above the ceilings where applicable. Telecommunications outlets located in walls within select rooms, mounted at approximately 18 inches AFF unless otherwise noted. Typical telecommunications outlet box will consist of a 4-11/16" square with a single-gang trim ring mounted vertically at each outlet location. Blank plates will be installed on each opening. When owner provides and installs cabling, it will provide the proper faceplate with the correct number of ports for each outlet location.

A dedicated ground bus and a 120/208 volt, 3-phase 4-wire power panel connected to generator power will be provided in each telecommunications room for outlets and servers required in that room. All receptacles within the IT closet shall be quad isolated ground type receptacles.

Intrusion Detection System (IDS)

An intrusion detection system will be provided which monitors all entry points on the 1st floor. The IDS provided under this contract will be a complete, empty raceway system with cabling equipment, devices, terminations and testing provided by the security system vendor/installer.

An empty raceway system with junction boxes located per the owner's direction will be provided for an owner furnished card access system in accordance with the owner requirements.

Card readers are typically required at the following locations:

1. All utility room entrances
2. Elevator
3. IT/Data closets

It is recommended to furnish backup power from a rack-mounted UPS in the data room. All entry doors will be piped to allow future card access equipment. Terminal cabinets will be furnished in spaces adjoining data rooms in each area of the building.

MEP&FP Schematic Design Narrative
Lake Worth Beach Parking Garage
June 11, 2025

ACCESS SYSTEM

An empty raceway system with junction boxes located per the owner's direction will be provided for an owner furnished card access system in accordance with the owner requirements.

Proximity card readers are typically required at the following locations:

1. All utility room entrances
2. Elevator
3. IT/Data closets

It is recommended to furnish backup power from a rack-mounted UPS in the data room. Terminal cabinets will be furnished in spaces adjoining data rooms in each area of the building.

Video Surveillance System

A complete empty raceway system will be provided for connection of video cameras to be located as per owner's security criteria. It is anticipated that cameras will be Power Over Ethernet (POE) type and will not require 120 volt source at each location. Similar to the other systems, a complete empty raceway system with pull lines will be provided to house all cabling. Cabling will be distributed throughout the garage via 1 inch conduits routed to each camera location provided with a pull line.

Video cameras are typically required at the following locations:

1. All corners of entrances of all buildings for full visibility of exterior perimeter
2. All canopies and walkways
3. All corridors at each end and all intersections
4. Stairwells.

It is anticipated the NVR and POE network switches will be rack mounted in the IT room's rack. All equipment, cabling, cameras, termination and testing would be provided and installed by the owner's security system vendor/installer.

It is recommended to furnish backup power from a rack-mounted UPS in the data room.

Lightning Protection

Lightning protection shall be provided in accordance with NFPA 780. The system shall be provided by the contractor based on the performance specification in the documents. Roof terminals will be mounted along the perimeter of the roof and on any roof mounted equipment with perimeter and interconnecting cables tied to down cables routed within concealed raceways to driven ground rods spaced approximately 40 to 60 feet apart around the perimeter of the building.

MEP&FP Schematic Design Narrative
Lake Worth Beach Parking Garage
June 11, 2025

Electrical Grounding System

A complete system of grounding will be provided in the building. All telecommunications and security equipment rooms will be provided with dedicated ground busses that will be interconnected to the grounding system located throughout the electrical closets and terminated at the main service electrical ground. The lightning protection and building electrical ground systems will not be interconnected, they shall remain as separate dedicated systems. A ground mat will be provided below the transformer pad to provide equipment grounding for the housing of the transformer. All dry type stepdown transformers located within the building will have their secondary's grounded, as they are considered to be separately derived systems.

General Note

All wiring will be in conduit. All conduits will be provided with grounding conductors. All conduit systems will be separate and complete. All empty conduits will be furnished with pull strings. All conduits and junction boxes will be identified in accordance with requirements. All conduits will be concealed.

June 11, 2023
Revised 06/19/2025

Attn: Scott Gabriel
HE2PD, Inc.
10 Grande Ave.
Rockville Center, NY 11570

Re: Parking Garage
Lake Worth, FL
Project No: 585.004

Subject: SCHEMATIC DESIGN NARRATIVE

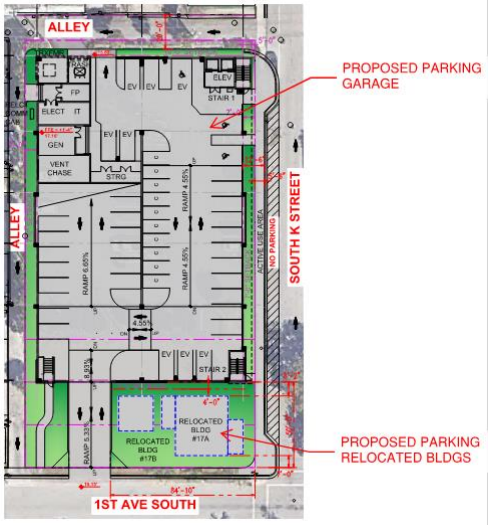
1. INTENT

We are pleased to provide the following structural narrative (schematic narrative) of the proposed structural systems for the above referenced project. The intent of the schematic narrative is to define the structural engineering systems proposed for use in this project. These systems will be refined and amended throughout the various design phases of the project as the architectural, mechanical, electrical, plumbing, and fire-protection systems are further developed.

2. SCOPE

This project is a four-level parking structure with 259 spaces. There will be two elevators and two stairs. The floor plan shall be open and free of columns as is feasible.

It is proposed to provide open space at the south side of the project site for the relocation of several historic buildings.



3. SUMMARY OF STRUCTURAL SYSTEMS

PARKING GARAGE

The structural framing of the parking garage will be pre topped 30" pre-topped precast pre-stressed Double Tees spanning approximately 60'. Double Tee floor framing shall be supported by 12" pre-cast lite wall at center of garage and by pre-cast Spandrel beams or pre-cast concrete walls at the perimeter of garage. Spandrel beams shall be supported by Pre-cast concrete columns spaced at 48 feet o center where possible.
Interior non-load bearing partitions shall be 8" CMU with reinforced grout filled cells. Spacing of reinforcing is to be determined.

FOUNDATIONS

Geotechnical Report by ECS Florida, LLC dated June 1, 2025 has been provided. The report includes a recommendation for shallow foundations for the proposed project.
Columns, bearing walls and shear walls shall be supported on soil improved with either of the proposed soil improvement methods. These methods include vibro-replacement with stone columns for proposed allowable soil bearing capacity of 8000 psf or vibro-compaction for proposed allowable soil bearing capacity of 6000 psf.
We suggest contacting either of the two following Geotechnical Sub-Contractors for input on most economical choice of these two options:

Keller
Nick Syriopoulos
1000 NW 65th Street, Suite 300B
Fort Lauderdale, FL 33309
(954) 977-8117
https://www.keller-na.com/

EARTH TECH
info@earthtech.com
3810 Northdale Blvd., Ste 210
Tampa, FL 33624
(813) 909-8000
https://earthtech.com/

Ground level slab-on-grade is indicated as ground supported and secondary structures can be supported with allowable bearing capacity of 3000 psf per the provided report.

4. STRUCTURAL DESIGN CRITERIA

CODES, STANDARDS, AND SPECIFICATIONS

- Florida Building Code: 8th Edition (2023).
- Minimum Design Loads for Buildings and Other Structures: ASCE 7-22.
- Building Code Requirements for Structural Concrete: ACI 318-19.
- Building Code Requirements for Masonry Structures: TMS 402 and 602.

- Project Specifications to be provided by design Team in subsequent submissions.
- Soil Investigation and Geotechnical Recommendations to be provided.

DESIGN LOADS

- Superimposed Dead Loads for floor framing shall be 10 psf at storage and Trash rooms.
- Superimposed Dead Loads for parking garage areas shall be 5 psf.
- Live Loads for floor framing shall be 40 psf for parking areas.
- Live Loads for storage and Trash rooms shall be 125 psf.
- Live Loads for Elevator Lobby and stairs shall be 100 psf.
- Roof Live Load above stairs and elevators shall be 20 psf.
- Wind Loading per ASCE 7-22, Wind Speed V(ult) =**170** MPH, Exposure C, and Risk Category **II**.
- Railing/guardrail/impact load: as indicated in FBC 8th Edition (2023).

5. STRUCTURAL MATERIALS

Cast-In-Place Concrete

Concrete shall meet the following minimum compressive strength (f ’c) at 28 days and have w/c ratio not exceed 0.55 unless noted otherwise below:

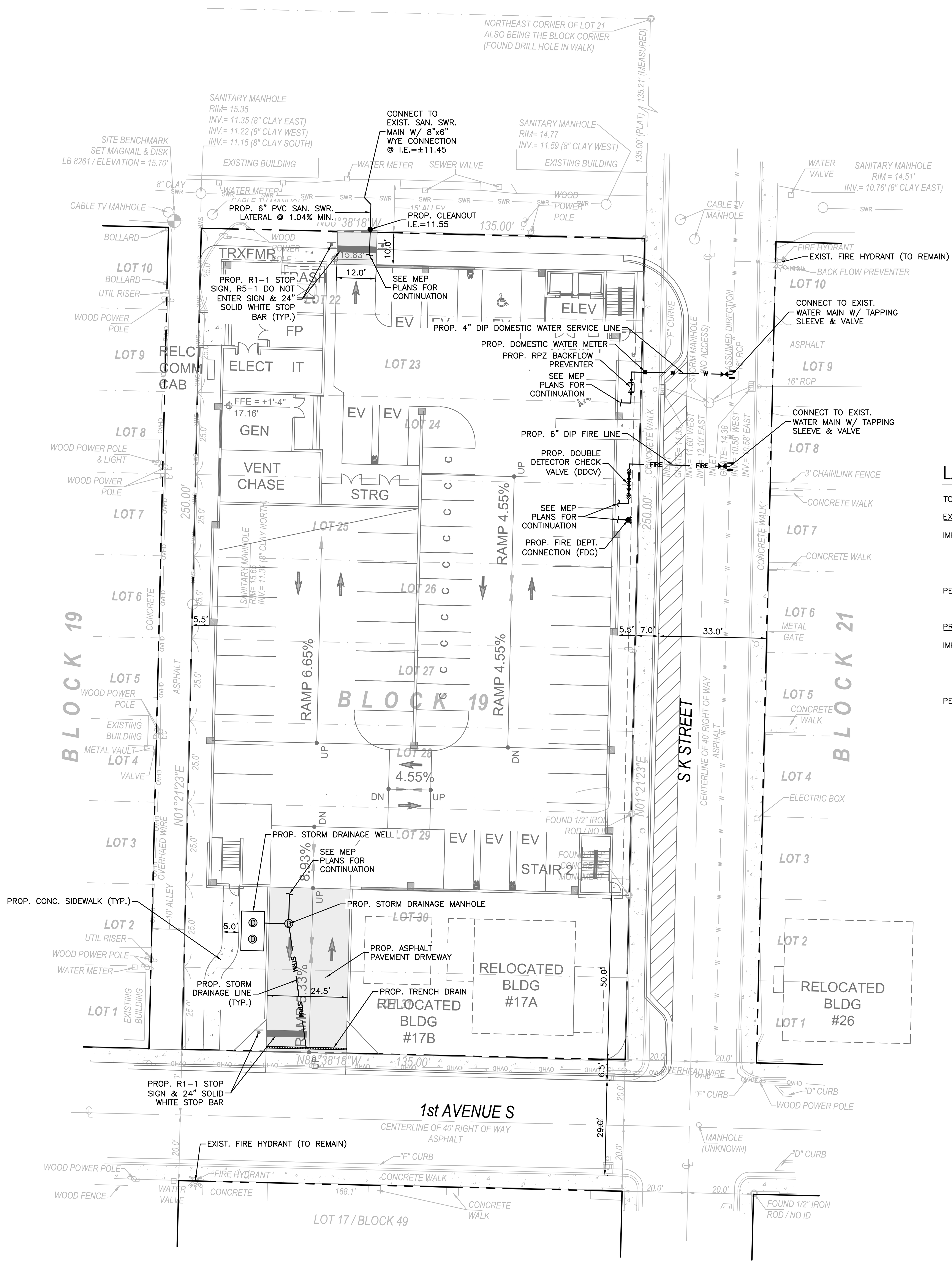
- Foundation: 3,000 PSI.
- Interior slab-on-ground: 3,000 PSI.
- Pre-Cast Concrete columns, walls, Lite walls, Double Tees and Spandrel Beams: 5,000 PSI minimum.
- Reinforcing: Shall comply with ASTM A 615:
- Grade 75 with a minimum Fy = 75,000 PSI for all #9, #10 and #11 bars.
- Grade 60 with a minimum Fy = 60,000 PSI for all bars #8 and smaller.

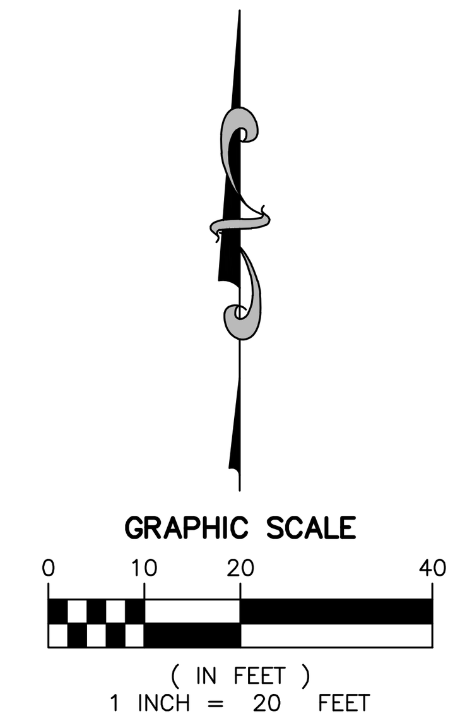
Masonry

- Concrete Masonry Unit shall comply with ASTM C90 and meet the following minimum compressive strength (f’m):
    - Exterior walls: 2,000 PSI net.
    - Interior walls: 2,000 PSI net.
- Mortar shall comply with ASTM C 270 Type S and be selected to yield the net compressive strength indicated above for the CMU.
- Reinforcing: Shall comply with ASTM A 615, Grade 60 with a minimum Fy = 60,000 PSI installed in a cell to be fully grouted. Size and spacing will be indicated on plans with #5rebar as minimum size and 48” o.c. as maximum spacing. There will be (1) vertical bar at each side of CMU wall openings.
- Galvanized ladder type horizontal joint reinforcing will be required at 16” o.c. vertically at all CMU walls..

If you have any questions, please feel free to contact our office.

O’DONNELL, NACCARATO, MIGNOGNA & JACKSON, INC.





LAND USE BREAKDOWN:

TOTAL PROPERTY AREA	=	33,750 SF	(0.77 AC)
EXISTING LAND USE:			
IMPERVIOUS AREA	=	20,195 SF	(0.46 AC)
– BUILDING	=	0 SF	(0.00 AC)
– ASPHALT/CONCRETE SURFACE	=	20,195 SF	(0.46 AC)
PERVIOUS AREA	=	13,555 SF	(0.31 AC)
– LANDSCAPE & OPEN SPACE	=	13,555 SF	(0.31 AC)
PROPOSED LAND USE:			
IMPERVIOUS AREA	=	25,181 SF	(0.57 AC)
– BUILDING	=	23,280 SF	(0.53 AC)
– ASPHALT/CONCRETE SURFACE	=	1,901 SF	(0.04 AC)
PERVIOUS AREA	=	8,569 SF	(0.20 AC)
– LANDSCAPE & OPEN SPACE	=	8,569 SF	(0.20 AC)

SIGNAGE AND MARKING NOTES:

1. ALL STOP BARS AND TRAFFIC CONTROL STRIPING SHALL BE THERMOPLASTIC. ALL OTHER STRIPING SHALL BE PAINTED UNLESS OTHERWISE SPECIFIED.
2. ALL PAINT USED FOR PAVEMENT MARKINGS SHALL CONFORM TO SECTION 971–13 OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION (SSRBC). ALL PAINTED MARKINGS SHALL BE APPLIED IN ACCORDANCE WITH SECTION 710 OF THE FDOT SSRBC AND THE MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). PAINT MAY ONLY BE USED FOR PRIVATE DEVELOPMENT IMPROVEMENTS OR AS TEMPORARY MARKINGS.
3. THERMOPLASTIC TRAFFIC MARKINGS SHALL CONFORM TO SECTION 711–2 OF THE FDOT SSRBC. ONLY ALKYD BASED MATERIALS SHALL BE USED. THERMOPLASTIC TRAFFIC MARKINGS SHALL BE APPLIED IN ACCORDANCE WITH SECTION 711 OF THE FDOT SSRBC AND THE MUTCD.
4. ALL REFLECTIVE PAVEMENT MARKINGS SHALL BE INSTALLED IN CONFORMANCE WITH SECTION 706 OF THE FDOT SSRBC.
5. ALL TRAFFIC SIGNS SHALL USE TYPE XI SHEETING AND BE "STANDARD" SIZE AS ESTABLISHED IN THE MUTCD.
6. BLUE REFLECTIVE PAVEMENT MARKERS SHALL BE PLACED OPPOSITE FIRE HYDRANTS IN THE CENTER OF THE NEAREST TRAVELED LANE TO MARK THEIR LOCATIONS.
7. STOP BARS TO BE A MINIMUM OF 4 FEET CLEAR BEHIND CROSSWALKS EDGE OF INTERSECTING TRAVEL LANE OR DRIVE AISLE.
8. HANDICAP PARKING SPACES SHALL BE DESIGNATED BY APPROPRIATE PAVEMENT MARKINGS AND SIGNS.
9. ALL PAVEMENT MARKINGS, REFLECTIVE PAVEMENT MARKERS, THERMOPLASTIC AND GEOMETRICS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL SERVICES, THE ROADWAY & TRAFFIC DESIGN STANDARDS. (F.D.O.T.).
10. ALL SIGNAGE AND PAVEMENT MARKINGS AND THEIR CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND LAKE WORTH TRAFFIC ENGINEERING STANDARDS (LATEST EDITION).
11. THE CONTRACTOR SHALL TAKE PRECAUTION NOT TO DAMAGE EXISTING LANDSCAPING. IF EXISTING LANDSCAPING IS IN CONFLICT WITH PROPOSED WORK THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER OF SAID CONFLICT.
12. ALL CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE LAKE WORTH PUBLIC WORKS DEPARTMENT, AND ANY OTHER STATE OR LOCAL AGENCY WITH JURISDICTION. IT IS THE INTENT OF THESE PLANS TO BE IN ACCORDANCE WITH APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION. ANY DISCREPANCIES BETWEEN THESE PLANS AND APPLICABLE CODES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
13. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE EPA AND THE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES).

UTILITY NOTES:

1. CONTRACTOR TO VERIFY EXACT LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AT ALL CROSSING AND CONNECTION POINTS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION RELATED ACTIVITIES. NOTIFY ENGINEER IMMEDIATELY IF ANY DISCREPANCIES.
2. CONTRACTOR SHALL REFER TO MEP PLANS (BY OTHERS) FOR EXACT POINTS OF CONNECTION FOR DOMESTIC WATER SERVICE AND SANITARY SEWER LATERALS.

GRADING & DRAINAGE NOTES:

1. ALL EARTHWORK ACTIVITIES (CUT, FILL, DREDGING, ETC.) SHALL BE PERFORMED IN ACCORDANCE TO THE GEOTECHNICAL REPORT RECOMMENDATIONS.
2. CONTRACTOR TO OBTAIN A COPY OF THE GEOTECHNICAL REPORT AND MAINTAIN IT ON–SITE AT ALL TIMES.
3. EARTHWORK ACTIVITIES SHALL BE MONITORED AND PERFORMED UNDER CLOSE SUPERVISION OF THE GEOTECHNICAL ENGINEER AND FOLLOWING THE GEOTECHNICAL REPORT RECOMMENDATIONS FOR METHODOLOGY, PROCEDURES, COMPACTION, ETC.
4. NO CONSTRUCTION ACTIVITIES (EARTHWORK, UTILITIES, TREE REMOVAL, OR GROUND DISTURBANCE) TO TAKE PLACE OUTSIDE OF THE LIMITS OF CONSTRUCTION UNLESS OTHERWISE APPROVED BY CITY OF LAKE WORTH.
5. CONTRACTOR SHALL FIELD VERIFY LOCATION, INVERT, ELEVATION, MATERIALS AND PIPE SIZE BEFORE CONSTRUCTION BEGINS.
6. PROPOSED SIDEWALKS SHALL NOT EXCEED 2% ACROSS AND 5% LONGITUDINAL.
7. ALL PROPOSED GRADES AND CONTOURS ARE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
8. CONTRACTOR SHALL OBTAIN A COPY OF THE SITE GEOTECHNICAL REPORT AND INCLUDE ALL NECESSARY SOIL WORK IN THE PROJECT BID.
9. CONTRACTOR TO VERIFY SLOPES ON ALL SIDEWALKS, HANDICAP ZONES, RAMPS AND DRIVEWAY CONNECTIONS FOR COMPLIANCE WITH ADA REQUIREMENTS AND/OR OPERATIONAL FUNCTIONABILITY PRIOR TO POURING FINAL CONCRETE OR ASPHALT.
10. CONTRACTOR SHALL CONTACT ENGINEER OF RECORD AT LEAST 24 HOURS PRIOR TO POURING CONCRETE OR PLACING ASPHALT ON ALL DRIVEWAY/CURB CUT CONNECTIONS FOR ENGINEERING INSPECTIONS.
11. ALL RIGHT–OF–WAY DISTURBED BY THIS WORK SHALL BE RESTORED TO IT'S ORIGINAL CONDITION AND IN ACCORDANCE WITH APPLICABLE COUNTY CODES. ALL DISTURBED AREAS MUST BE SODDED, MATCHING EXISTING GRASS TYPE.
12. IF SHEETING, SHORING, OR DEWATERING, INCLUDING WELL POINTS ARE NECESSARY, THE CONTRACTOR MUST MONITOR AND CONTROL ALL WORK THAT MAY CAUSE CRACKING TO ANY ADJACENT BUILDING, STRUCTURE, OR PROPERTY AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES CAUSED BY THESE OPERATIONS. COST OF SHEETING, SHORING, OR DEWATERING SHALL BE INCLUDED IN THE RELATED BID ITEM FOR THE WORK BEING DONE.
13. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING EXISTING AND NEW INLETS CLEAN OF MILLING MATERIAL, LIMEROCK, DEBRIS, ETC. DURING THE CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER. ALL LINES AND STRUCTURES SHALL BE CLEANED PRIOR TO FINAL INSPECTION AND ACCEPTANCE.
14. EXISTING DRAINAGE STRUCTURES WITHIN THE LIMITS OF CONSTRUCTION SHALL REMAIN UNLESS OTHERWISE NOTED.
15. EXISTING MANHOLES AND INLETS SCHEDULED TO REMAIN SHALL BE THOROUGHLY CLEANED BY REMOVING ALL DEBRIS AND SEDIMENTS, AND THE INTERIOR SHALL BE SEALED WITH AN APPROVED NON–TOXIC BITUMASTIC SEALANT.
16. PRIOR TO CONSTRUCTION THE CONTRACTOR WILL INSPECT ALL EXISTING STRUCTURES WHICH ARE TO REMAIN AND NOTIFY THE ENGINEER OF ANY OBVIOUS STRUCTURAL DEFICIENCIES.
17. CONTRACTOR SHALL ADJUST ALL EXISTING VALVES, CATCH BASINS, GRATES, AND STORM MANHOLE COVERS TO MEET NEW GRADES WHERE APPLICABLE.
18. WHERE NEW PAVEMENT MEETS EXISTING, CONNECTION SHALL BE MADE IN A NEAT STRAIGHT LINE AND FLUSH WITH THE EXISTING PAVEMENT.

SURVEY DATUM NOTE:

ELEVATIONS SHOWN ON THE PLANS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88') OBTAINED FROM THE SURVEY PERFORMED BY PRINCIPAL MERIDIAN SURVEYING, INC. (PROJECT #25–0179), LAST REVISION DATED 05–21–25, RECEIVED 05–28–25.

SAFETY IS IN YOUR HANDS.
EVERY DIG. EVERY TIME.

JOAQUIN A. MOJICA LICENSE No. 60488 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED : JOAQUIN A. MOJICA, P.E.
FLA. REGISTRATION NO. 60488 DATE : 6/13/2025

SITE CIVIL SCHEMATIC PLAN

NO.	DATE	REVISIONS	DES.	DWN.

LAKE WORTH K STREET PARKING GARAGE
LAKE WORTH, FLORIDA
FOR: LAKE WORTH BEACH CRA

MILLER LEGG
South Florida Office: 13680 NW 5th Street, Suite 200
Sunrise, Florida · 33325
954-436-7000
www.millerlegg.com

CERTIFICATE OF AUTHORIZATION: LB6680

DES	DRWN	CHK
DES.	DWN.	CHK.

PROJECT / FILE NO. 25–00093
DRAWING NO. C1.0
DATE DRAWN: 6/13/25

VIII. CONCEPTUAL BUDGET

Hard Cost:

JRM Construction Management
Conceptual Estimate - Summary

Job #:	24-1390
Job Name:	501 Lake Ave - Precast Parking Garage
Date:	June 27, 2025
Revision:	4

					GSF:		92,632
					Parking Stalls		231
CSI	**Trade Description**	**Total Project Cost 6/27/25 - Rev4**		**$/Stall**		**$/GSF**	
01 54 00	Fence & Protection	$	92,475.00	$	400	$	1.00
03 30 00	Excavation & Foundations	$	451,925.00	$	1,956	$	4.88
03 40 00	Precast Concrete	$	2,615,654.00	$	11,323	$	28.24
04 00 00	Masonry	$	56,100.00	$	243	$	0.61
05 50 00	Misc. Metals	$	51,894.80	$	225	$	0.56
07 10 00	Waterproofing	$	192,360.00	$	833	$	2.08
07 42 00	Exterior Wall Panels	$	-	$	-	$	-
08 10 00	Doors / Frames / Hardware	$	52,500.00	$	227	$	0.57
08 33 00	Overhead Doors	$	15,000.00	$	65	$	0.16
09 90 00	Painting & Wall Covering	$	163,948.00	$	710	$	1.77
11 12 00	Parking Control Equipment	$	70,000.00	$	303	$	0.76
14 20 00	Elevators	$	146,000.00	$	632	$	1.58
21 00 00	Fire Suppression Systems	$	530,307.69	$	2,296	$	5.72
22 00 00	Plumbing	$	208,422.00	$	902	$	2.25
23 00 00	HVAC	$	14,000.00	$	61	$	0.15
26 00 00	Electric	$	841,640.00	$	3,643	$	9.09
26 50 00	Light Fixtures	$	85,000.00	$	368	$	0.92
31 60 00	Ground Improvements	$	279,480.00	$	1,210	$	3.02
32 30 00	BPP - Site Improvements	$	90,000.00	$	390	$	0.97
32 90 00	Landscape / Hardscape	$	15,000.00	$	65	$	0.16
	Total Direct Work	$	5,971,706.49	$	25,852	$	64.47
	Construction Contingency - 5.00%	$	298,585.32	$	1,293	$	3.22
	General Conditions - 8.00%	$	501,623.35	$	2,172	$	5.42
	Subcontractor Default Insurance (SDI) - 1.50%	$	94,054.38	$	407	$	1.02
	Fee - 3.25%	$	223,144.01	$	966	$	2.41
	CM Insurance - 2.02%	$	143,200.09	$	620	$	1.55
	Escalation - 2.25%	$	159,505.05	$	690	$	1.72
	Project Total	**$**	**7,391,818.70**	**$**	**31,999**	**$**	**79.80**

ALTERNATES							
Alt #01:	Add for Exterior Aesthetics (Glassless Window Frames/Ext. Wall Panels)	$	609,856.32	$	2,640	$	6.58
Alt #02:	Add for Second Elevator, PE #2	$	180,749.52	$	782	$	1.95
Alt #03:	Add for 5th Floor Parking Garage	$	766,072.86	$	3,316	$	8.27

Soft Cost:

HE2PD
PROGRAM MANAGEMENT • OWNERS' REPRESENTATION

Parking Structure
501 Lake Ave
Lake Worth Beach, FL

Project # :
Date : 4/18/2025
Revised Date:
Estimator :

SOFT COST SUMMARY

Cst Code	Design Team			Estimate
	Architect	*Budget		$205,000.00
	MEP Engineer	*Budget		$23,000.00
	Structural Engineer	*Budget		$42,000.00
	Geo Tech (Inc. Borings)	*Budget		$21,000.00
	Site/Civil Engineer	*Budget		$66,000.00
	Landscaping	*Budget		$35,000.00
	Traffic Consultant	*Budget		$4,000.00
	Expediting	*Budget		$5,000.00
	Owner's Representative	*Budget		$130,000.00
	Government Liasion	*Budget		$40,000.00
	Attorney	*Budget		$100,000.00
	Preservation Consultant	*Budget		$2,000.00
	Surveyor	*Budget		$3,000.00
	Threshold Inspections	*Budget		$50,000.00
	Filing, Permits, Fees	*Budget		
	Misc. Design Expenses	*Budget		
	Builders Risk Insurance	*Budget		Lake Worth Beach
	Subtotal			$726,000.00
	Contingency			$24,000.00
		Grand Total		$750,000.00

Exclusions

Existing Conditions - No adjacent properties. Demolition already completed.
License Agreement Attorneys - No adjacent properties. No license agreements will be required.
Zoning Consultant/Zoning Attorney
Environmental Report - This has been completed, via Brownsfield program completion Letter provided by NYS DEC.
Soil Contamination Report - This has been completed, via Brownsfield program completion Letter provided by NYS DEC.
Commitment Fee
Misc. Finance Costs
Closing Costs
Interest Reserve

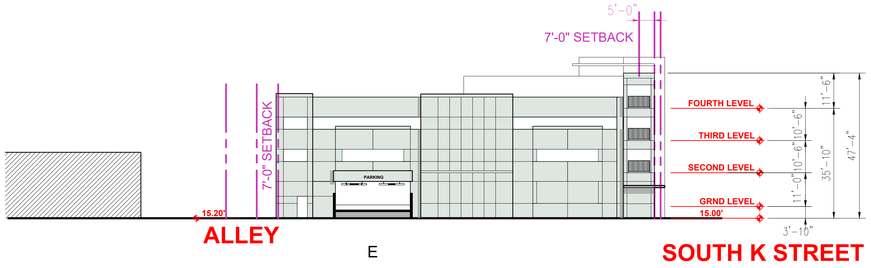
Preliminary Overall Budget:

- Hard Cost: $7,391,818.70
- Soft Costs: $750,000.00
- **Total Cost: $8,141,818.70**

Add Alternates:

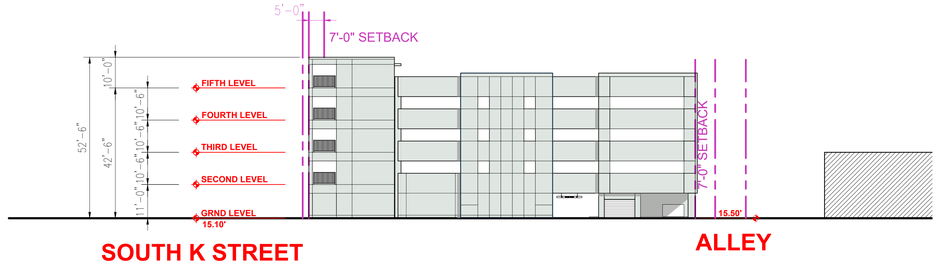
- Base price + Add Alt 1 (Exterior Aesthetics: Glassless Window Frames & Colored Wall Panels)
    - $8,141,818.70 + $609,856.32 = $8,751,675.02
- Base price + Add Alt 2 (Second Elevator)
    - $8,141,818.70 + $180,749.52 = $8,322,568.22
- Base price + Add Alt 3 (Fifth Floor for Parking Garage: From 231 to 259 spaces)
    - $8,141,818.70 + $766,072.86 = $8,907,891.56

Note: See revised elevations on next page representing the facade without the above references "exterior aesthetics" add alternate.

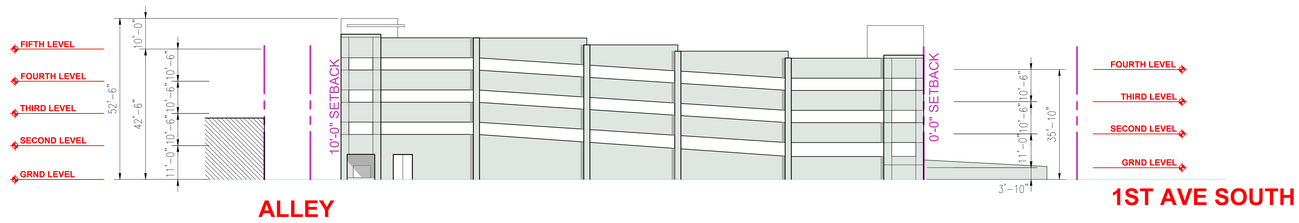


E

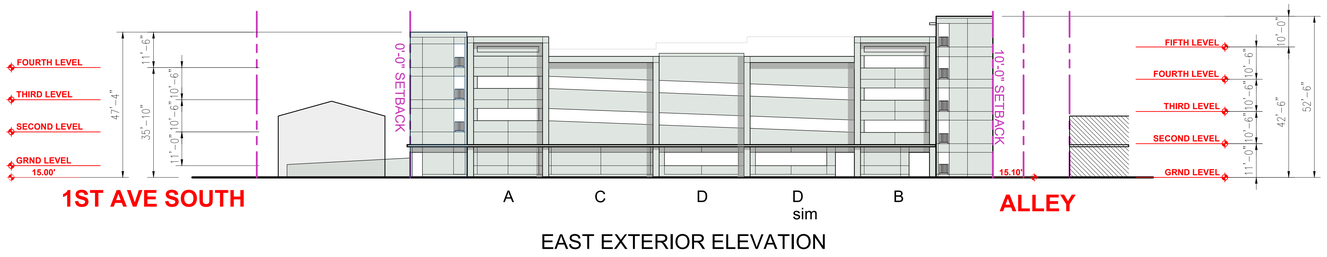
SOUTH EXTERIOR ELEVATION



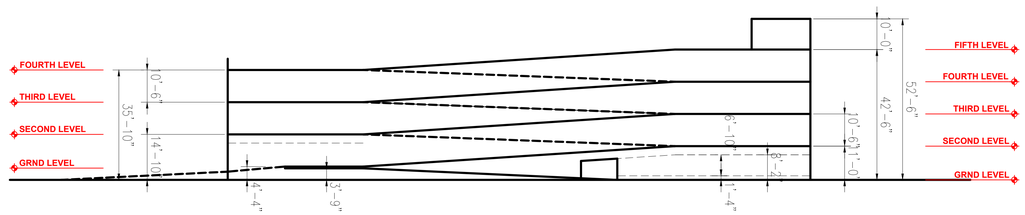
NORTH EXTERIOR ELEVATION



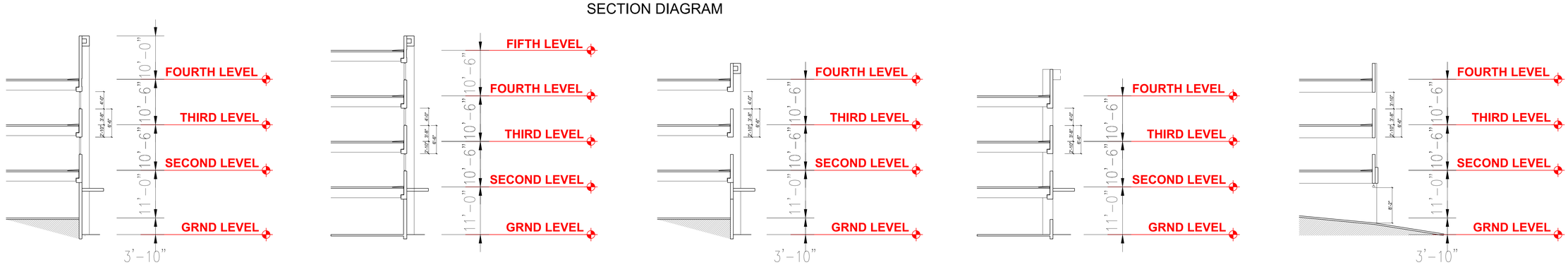
WEST EXTERIOR ELEVATION



EAST EXTERIOR ELEVATION



SECTION DIAGRAM



A B C D E

PRELIMINARY SECTIONS

EXTERIOR ELEVATIONS - SECTION DIAGRAM - SCHEMATIC DESIGN PHASE

SUNSHINE PARKING GARAGE - LAKE WORTH BEACH, FLA

1" = 20'-0"

PGAL
791 PARK OF COMMERCE
SUITE 400
BOCA RATON, FL 33487
[T] 561 988 4002
[F] 561 988 3002
WWW.PGAL.COM

07.01.2025