REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/16/17
						Checked by	AB	11/16/17
						Designed by		
						Checked by		
						Approved by		

RADISE
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

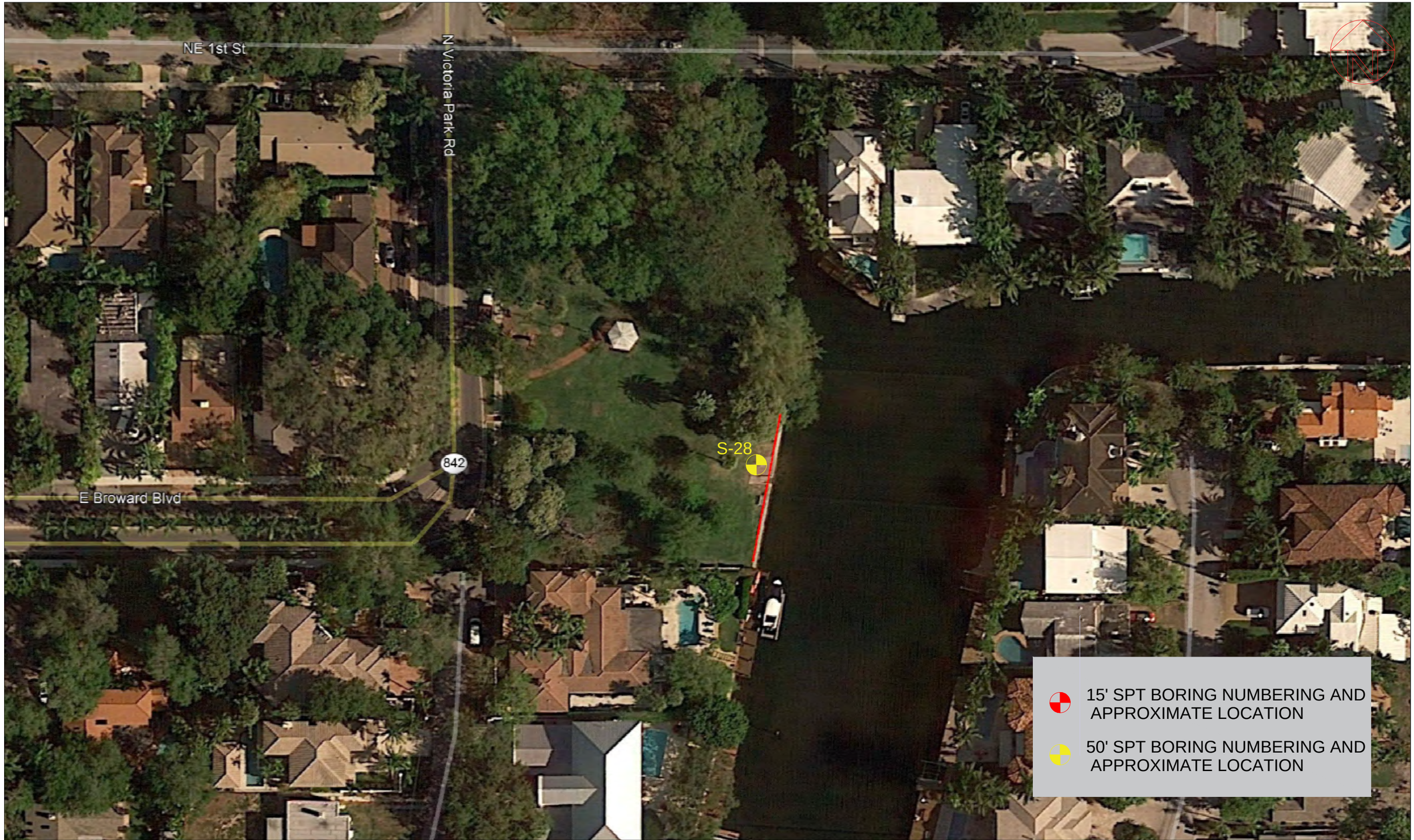
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: VICINITY MAP

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 1

RADISE PROJECT NO: 170901



REVISIONS					
Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/16/17
Checked by	AB	11/16/17
Designed by	KA	11/16/17
Checked by	AB	11/16/17
Approved by	AN	07/24/18

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

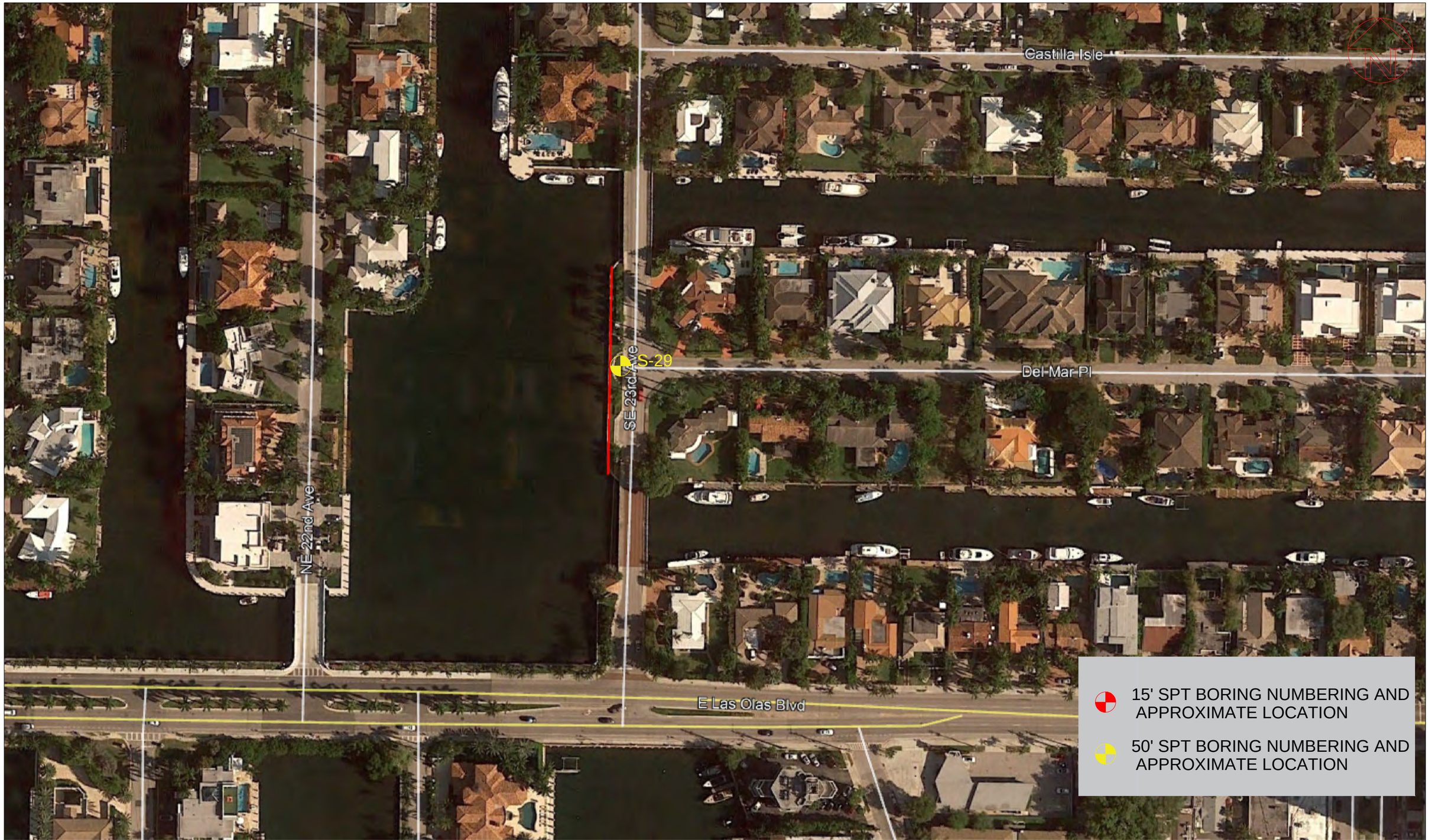
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (SEAWALL 9)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2A

RADISE PROJECT NO: 170901



REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/16/17
						Checked by	AB	11/16/17
						Designed by	KA	11/16/17
						Checked by	AB	11/16/17
						Approved by	AN	07/24/18

RADISE
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

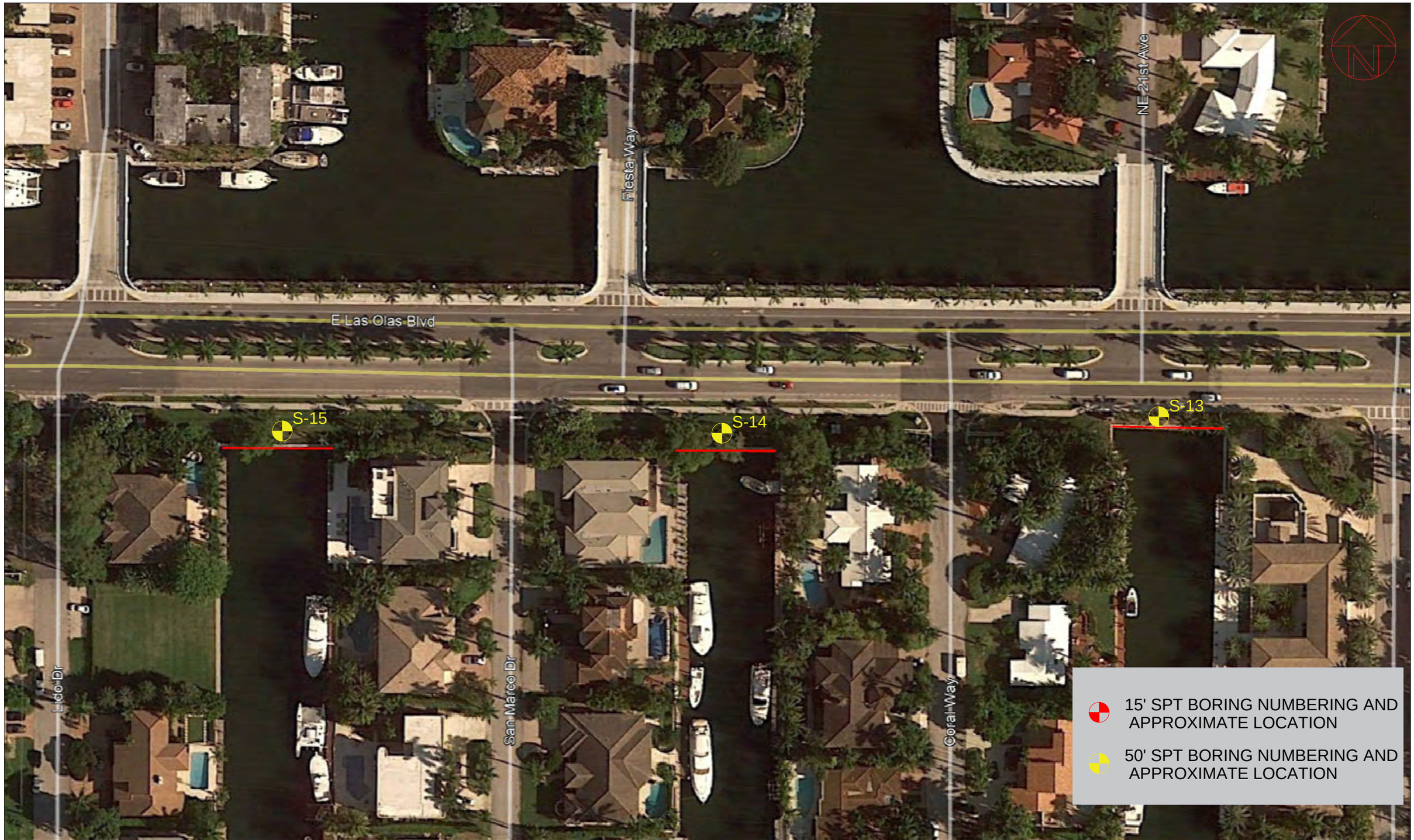
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (SEAWALL 10)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2B

RADISE PROJECT NO: 170901



REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/16/17
						Checked by	AB	11/16/17
						Designed by	KA	11/16/17
						Checked by	AB	11/16/17
						Approved by	AN	07/24/18

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

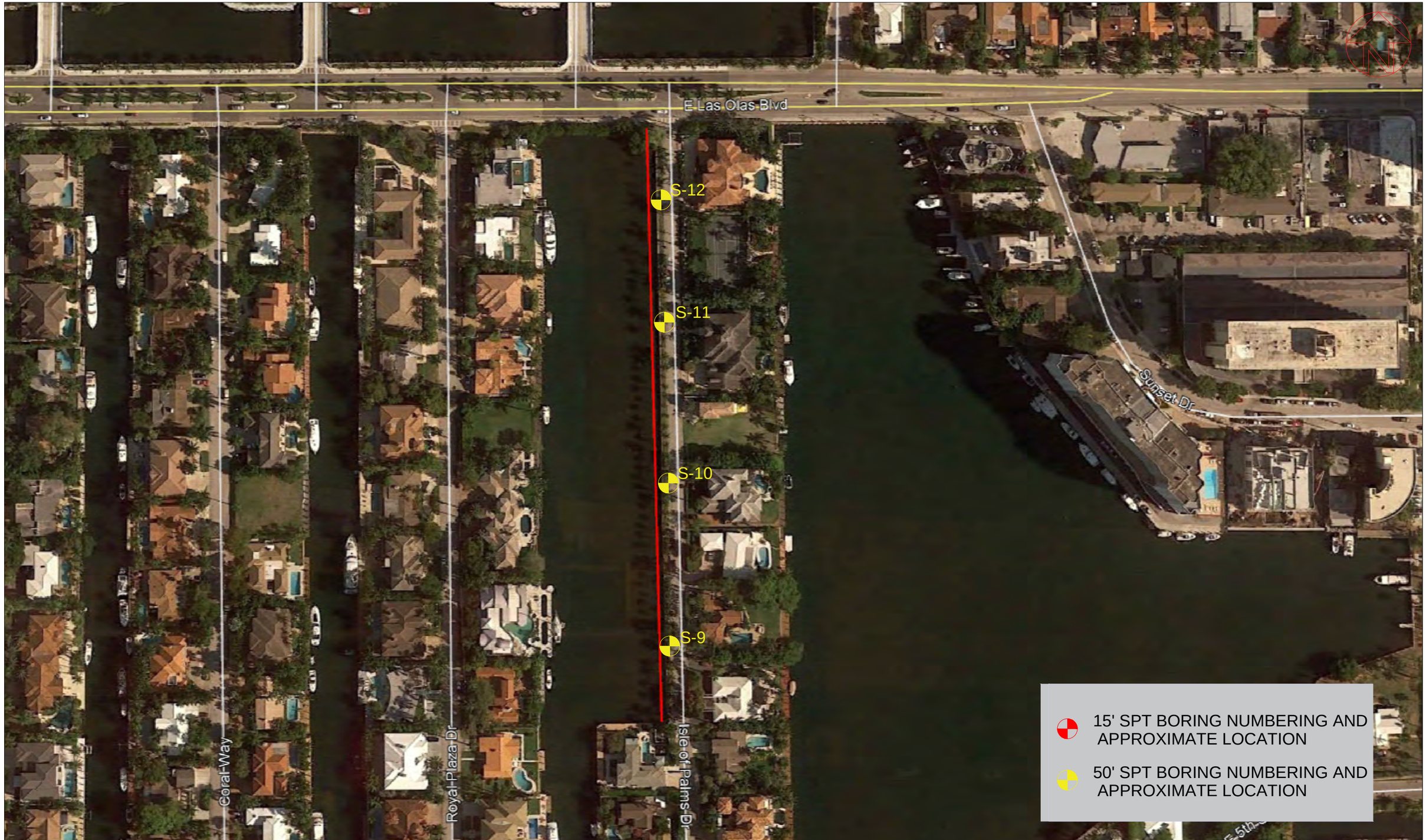
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (SEAWALL 12, 13 AND 14)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2C

RADISE PROJECT NO: 170901



REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/16/17
						Checked by	AB	11/16/17
						Designed by	KA	11/16/17
						Checked by	AB	11/16/17
						Approved by	AN	07/24/18

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

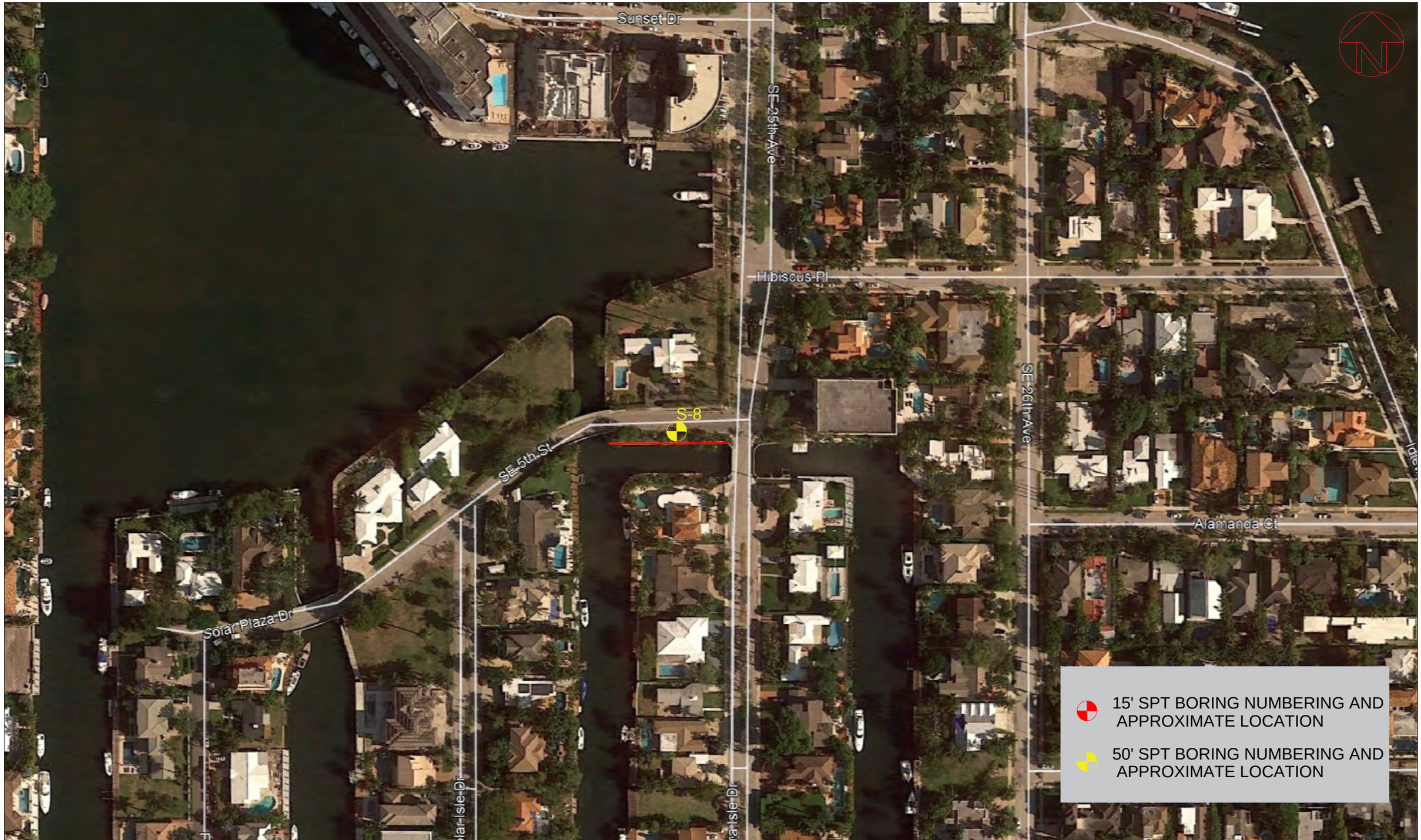
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (SEAWALL 15)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2D

RADISE PROJECT NO: 170901



REVISIONS					
Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/16/17
Checked by	AB	11/16/17
Designed by	KA	11/16/17
Checked by	AB	11/16/17
Approved by	AN	07/24/18

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

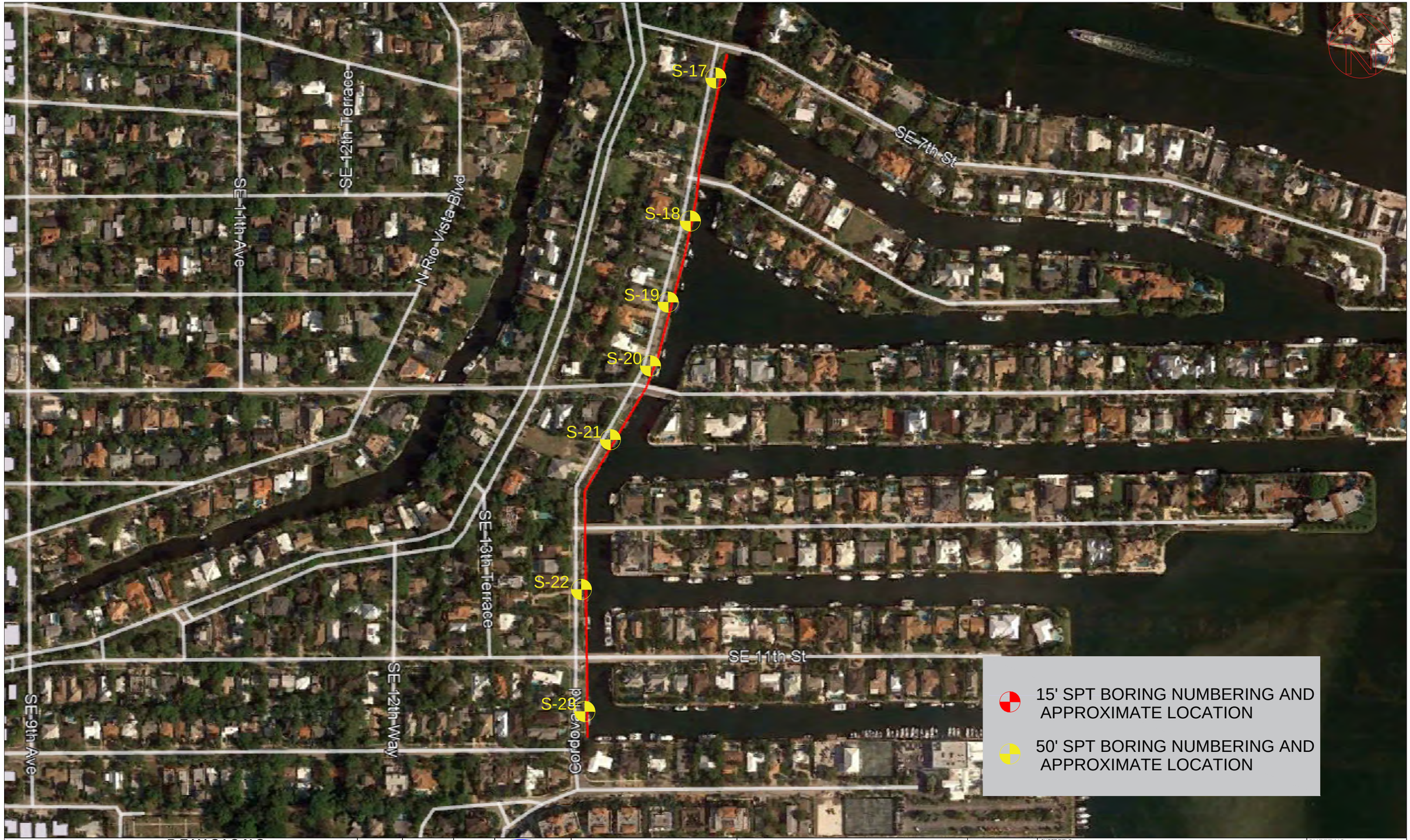
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (SEAWALL 17)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2E

RADISE PROJECT NO: 170901



REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/16/17
						Checked by	AB	11/16/17
						Designed by	KA	11/16/17
						Checked by	AB	11/16/17
						Approved by	AN	07/24/18

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

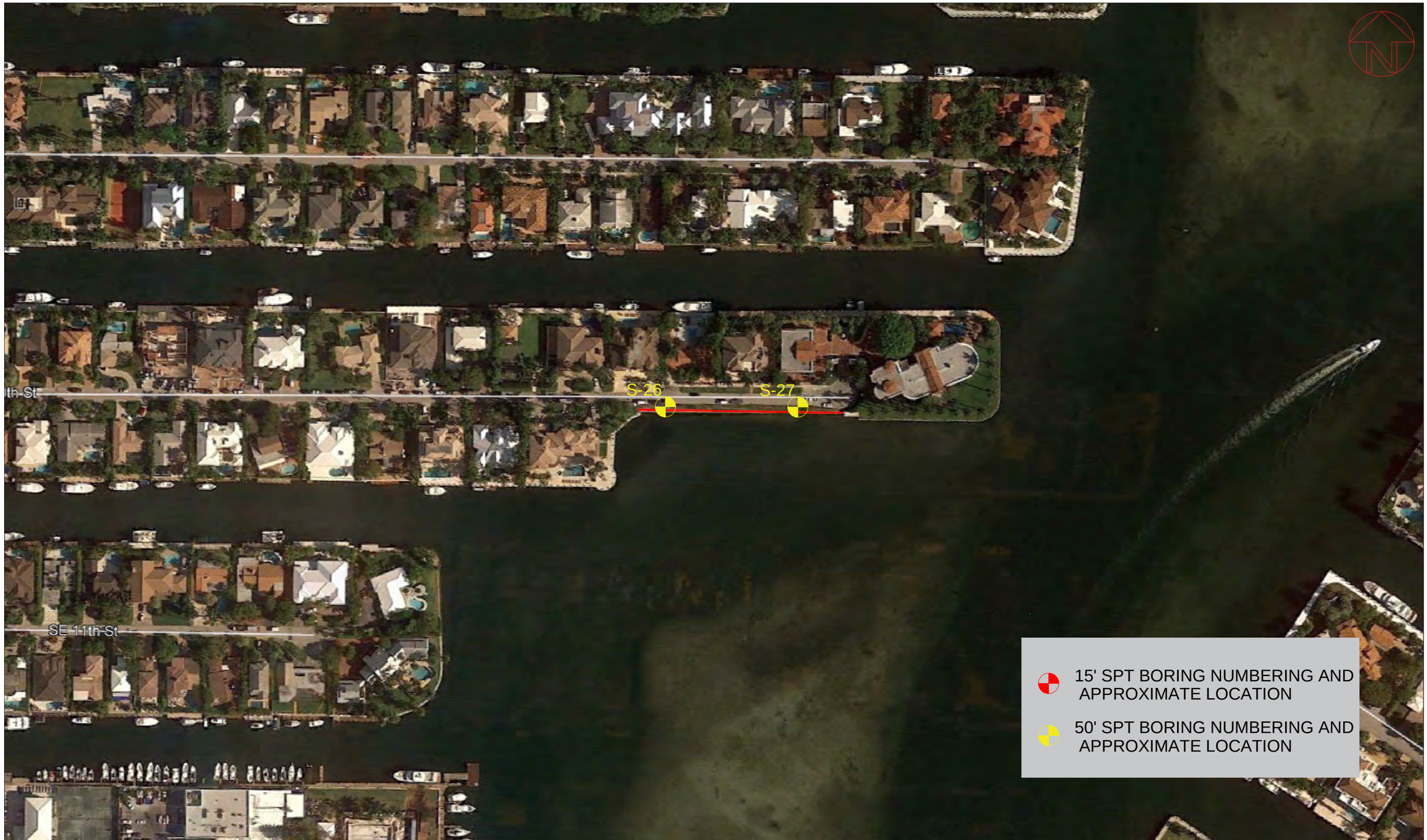
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (SEAWALL 29)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2F

RADISE PROJECT NO: 170901



REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/16/17
						Checked by	AB	11/16/17
						Designed by	KA	11/16/17
						Checked by	AB	11/16/17
						Approved by	AN	07/24/18

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

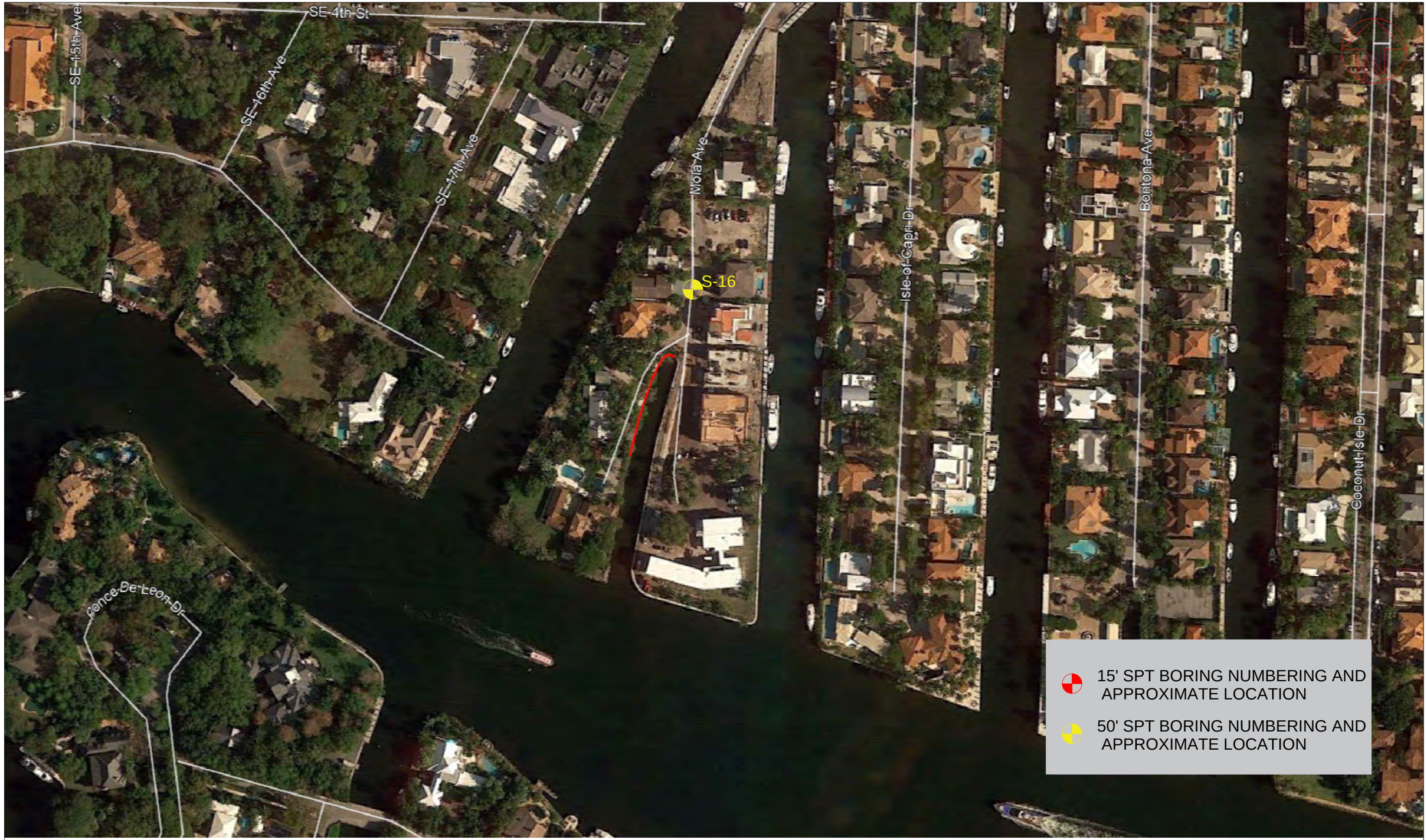
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (SEAWALL 30)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2G

RADISE PROJECT NO: 170901



REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/16/17
						Checked by	AB	11/16/17
						Designed by	KA	11/16/17
						Checked by	AB	11/16/17
						Approved by	AN	07/24/18

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

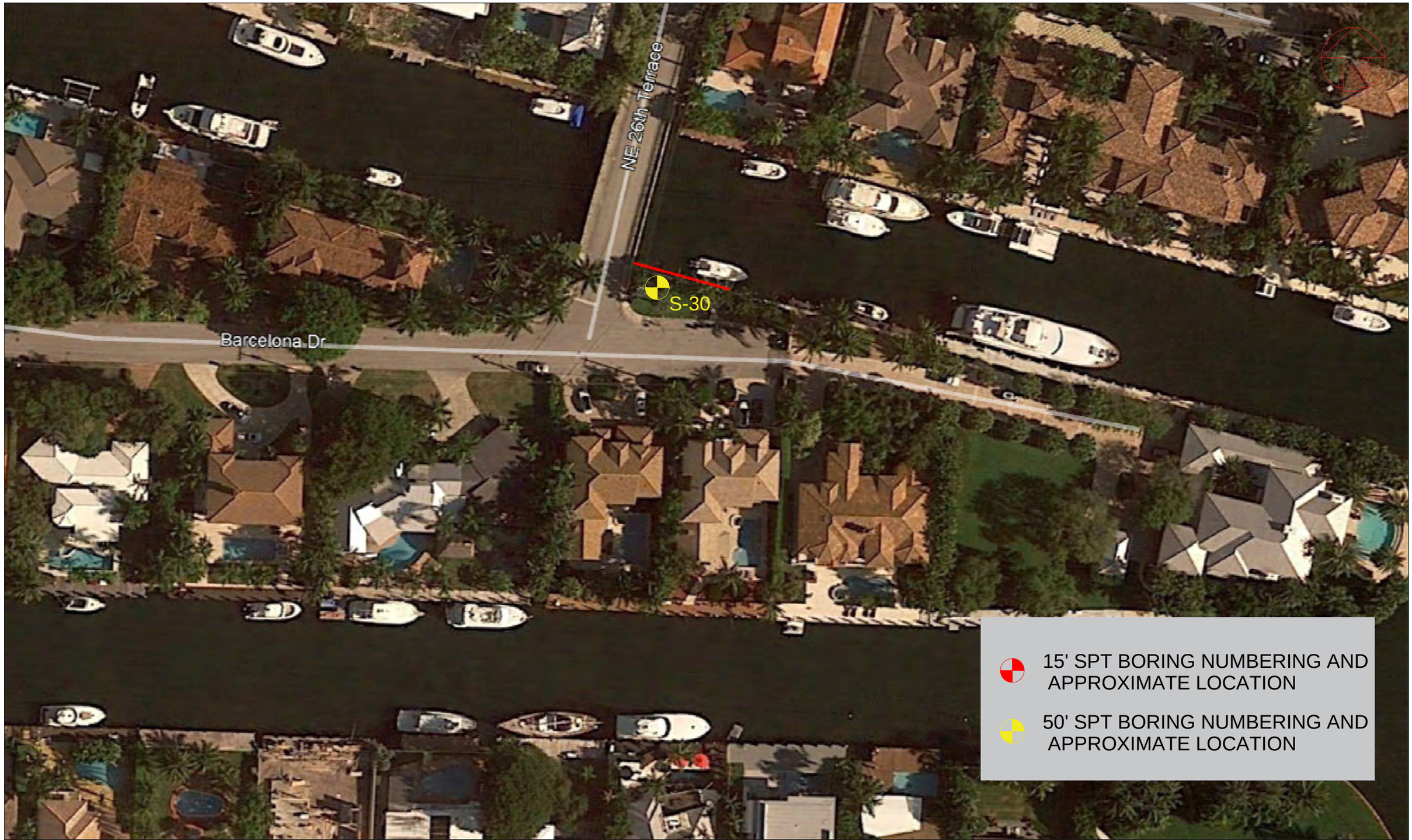
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (SEAWALL 32)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2H

RADISE PROJECT NO: 170901



REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/16/17
						Checked by	AB	11/16/17
						Designed by	KA	11/16/17
						Checked by	AB	11/16/17
						Approved by	AN	07/24/18

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

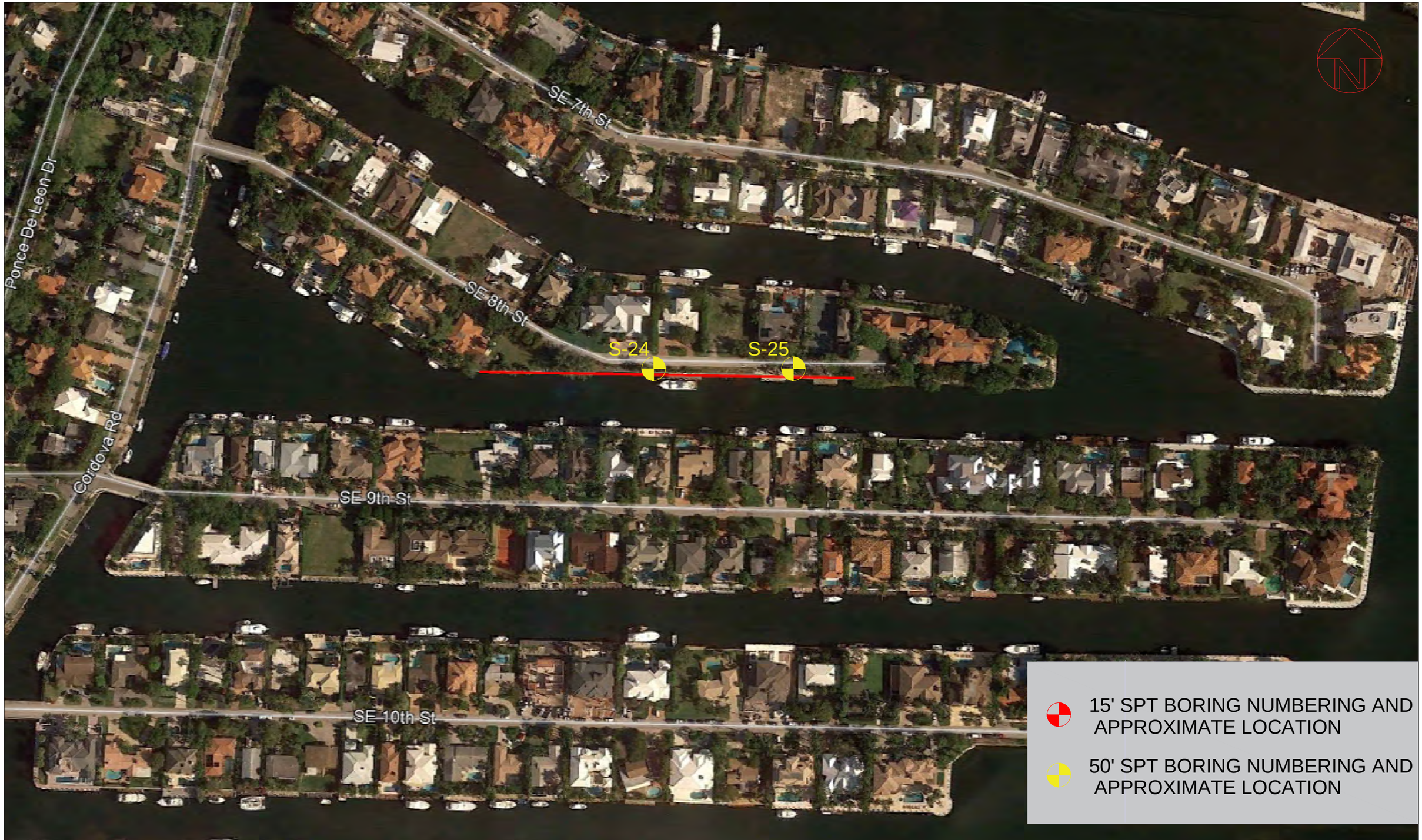
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (SEAWALL 34)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2I

RADISE PROJECT NO: 170901



REVISIONS					
Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/16/17
Checked by	AB	11/16/17
Designed by	KA	11/16/17
Checked by	AB	11/16/17
Approved by	AN	07/24/18

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

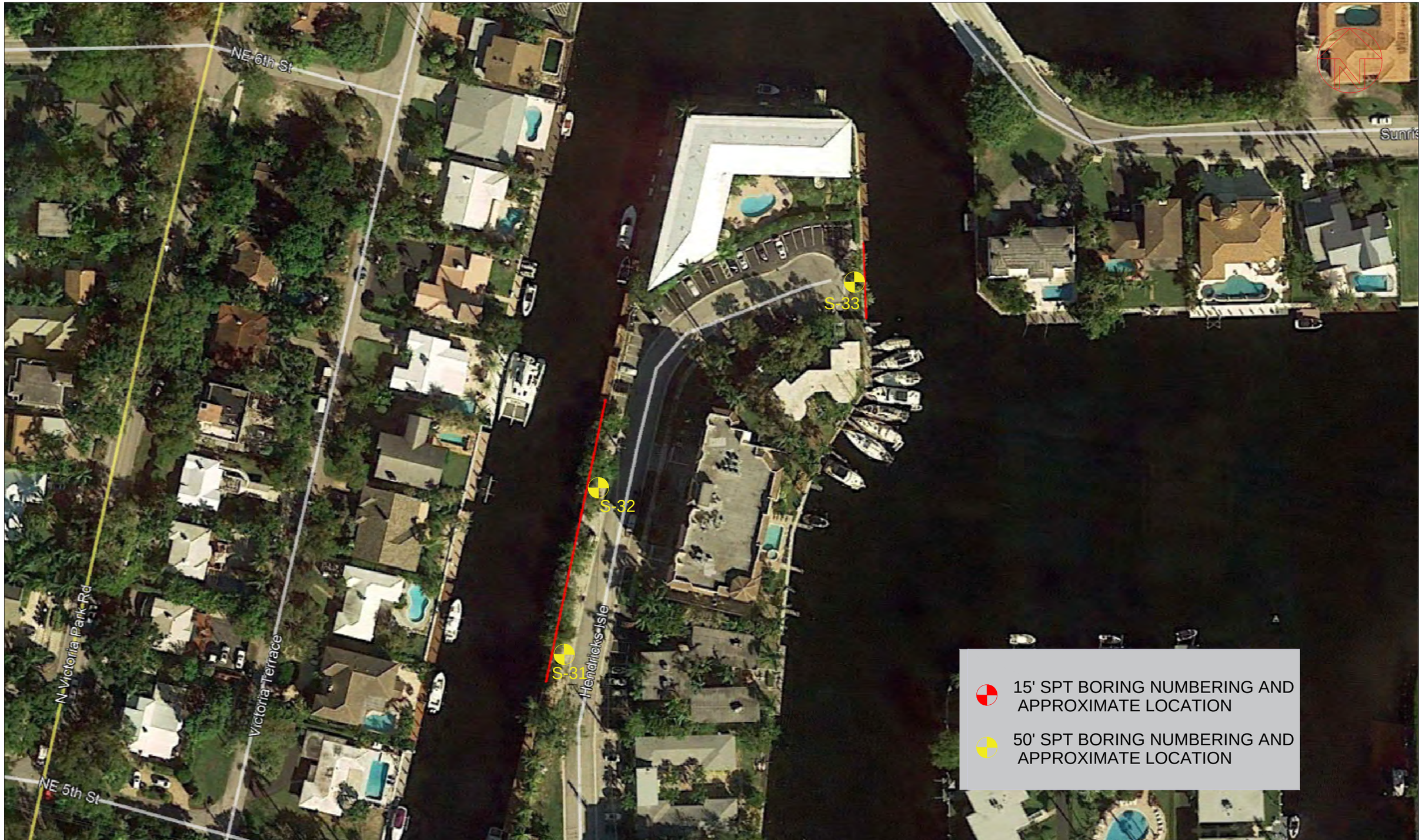
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (SEAWALL 35)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2J

RADISE PROJECT NO: 170901



REVISIONS					
Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	07/24/18
Checked by	AB	07/24/18
Designed by	KA	07/24/18
Checked by	AB	07/24/18
Approved by	AN	07/24/18

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (SEAWALL TBD1 & TBD2)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2K

RADISE PROJECT NO: 170901

REVISIONS					
Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/15/17
Checked by	AB	11/15/17
Designed by	KA	11/16/17
Checked by	AB	11/16/17
Approved by	AN	07/24/17

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

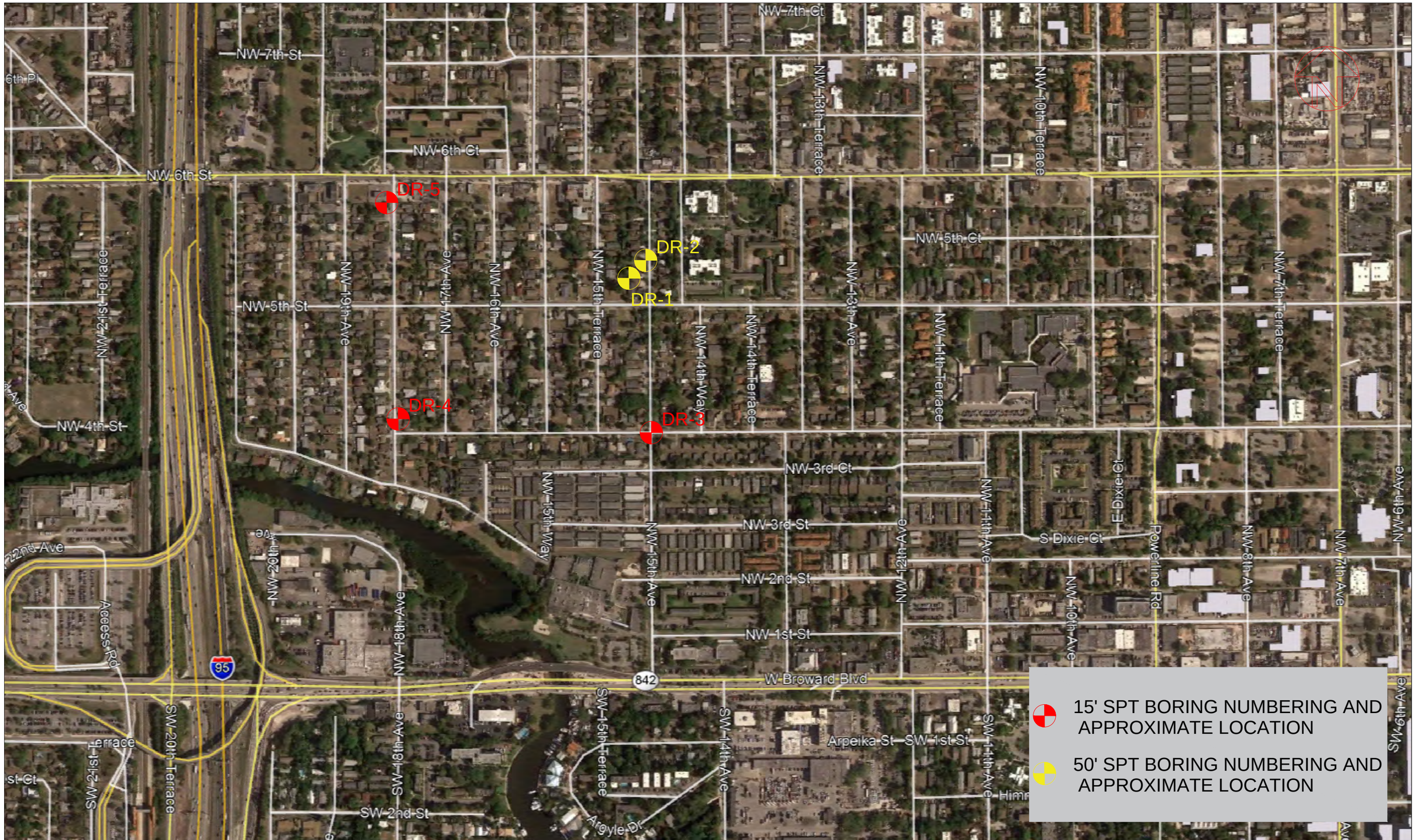
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (SOUTHEAST ISLES)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2L

RADISE PROJECT NO: 170901



REVISIONS								
Date.	By	Descriptions	Date.	By	Descriptions		Names	Dates
						Drawn by	KA	11/14/17
						Checked by	AB	11/15/17
						Designed by	KA	11/16/17
						Checked by	AB	11/16/17
						Approved by	AN	07/24/17

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (DORSY RIVERBEND)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2M

RADISE PROJECT NO: 170901

REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/14/17
						Checked by	AB	11/15/17
						Designed by	KA	11/16/17
						Checked by	AB	11/16/17
						Approved by	AN	07/24/17

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (DURRS)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2N

RADISE PROJECT NO: 170901

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/14/17
Checked by	AB	11/15/17
Designed by	KA	11/16/17
Checked by	AB	11/16/17
Approved by	AN	07/24/17

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

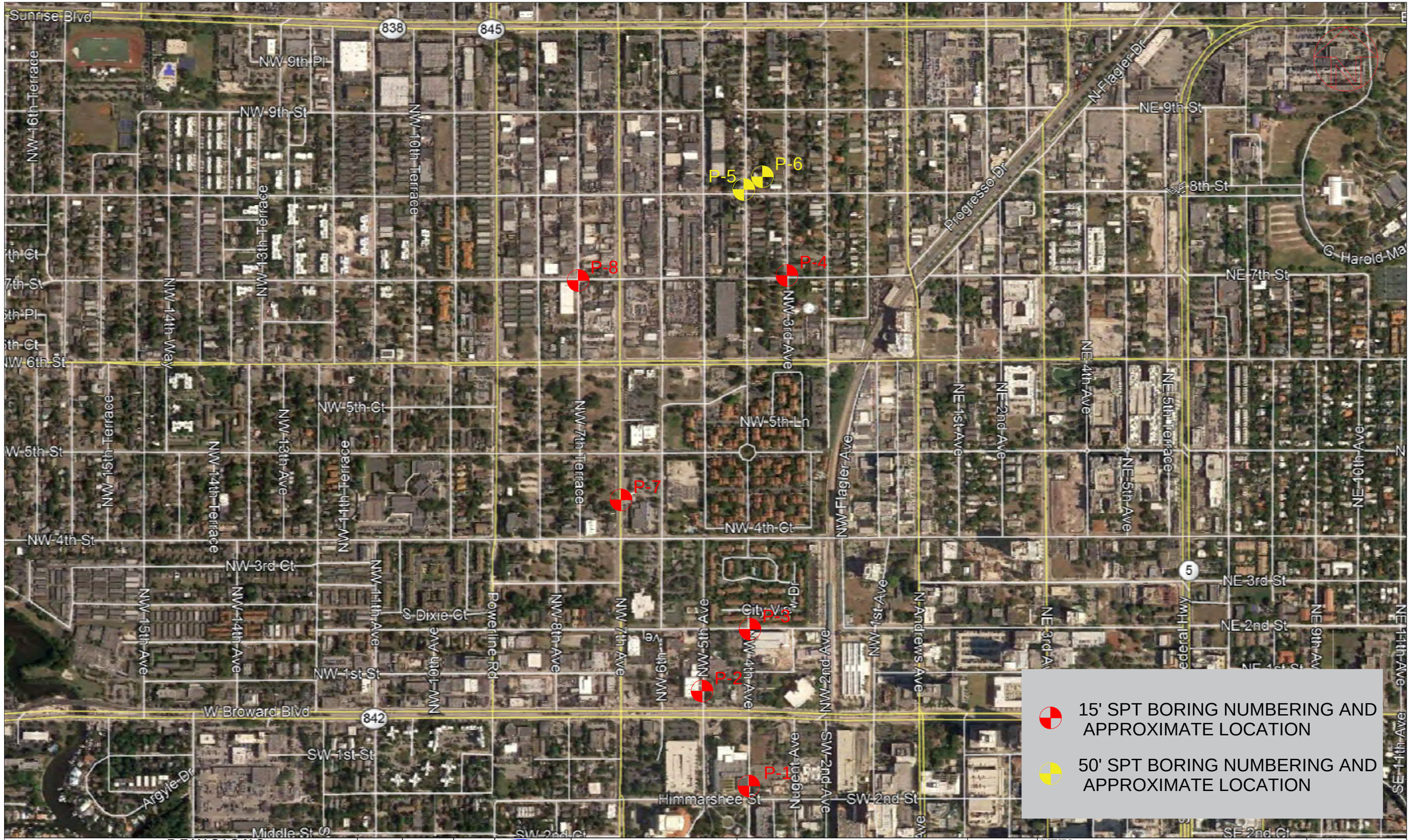
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (EDGEWOOD)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2O

RADISE PROJECT NO: 170901



REVISIONS					
Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/14/17
Checked by	AB	11/15/17
Designed by	KA	11/16/17
Checked by	AB	11/16/17
Approved by	AN	07/24/17

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

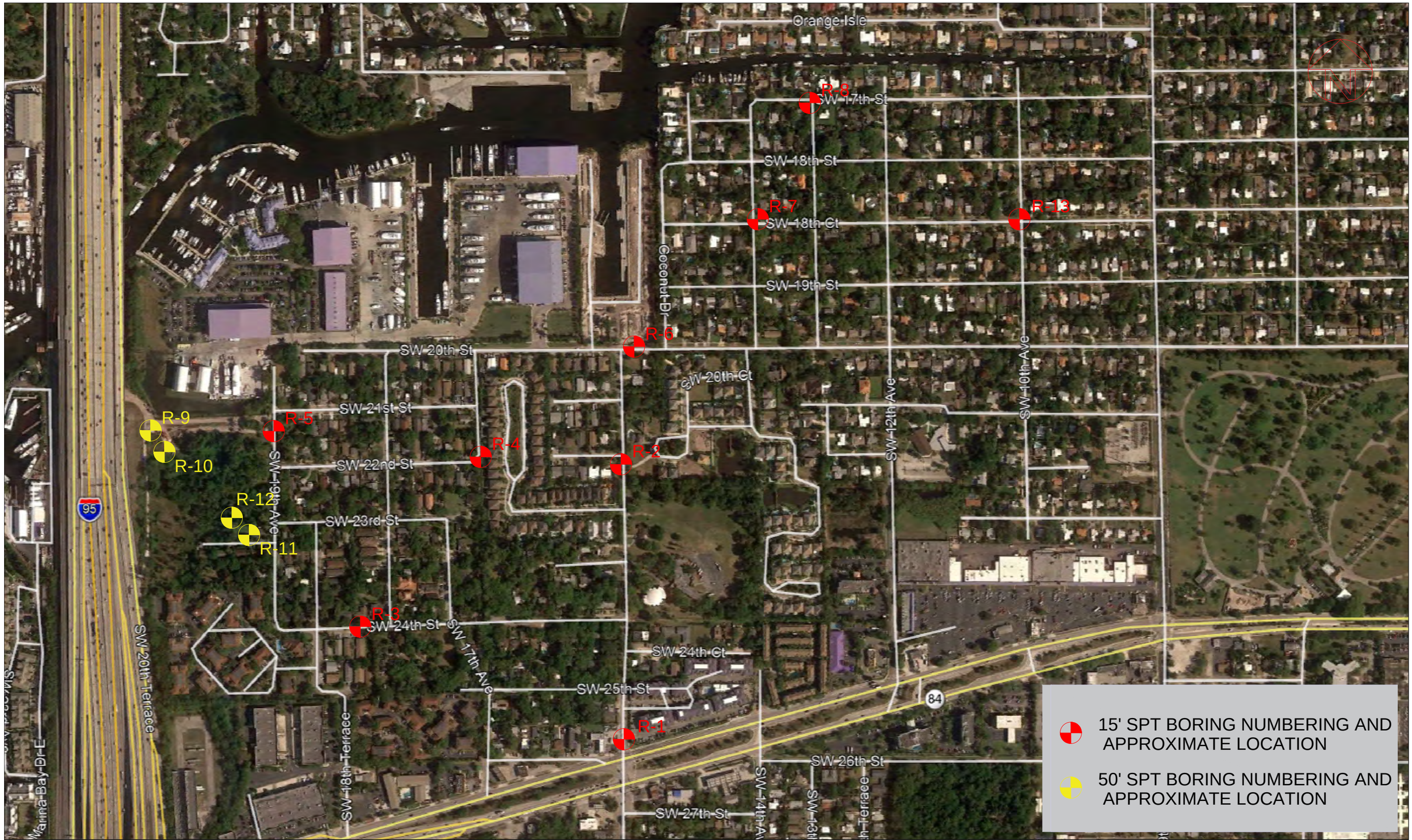
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (PROGRESSO)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2P

RADISE PROJECT NO: 170901



REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/14/17
						Checked by	AB	11/15/17
						Designed by	KA	11/16/17
						Checked by	AB	11/16/17
						Approved by	AN	07/24/17

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

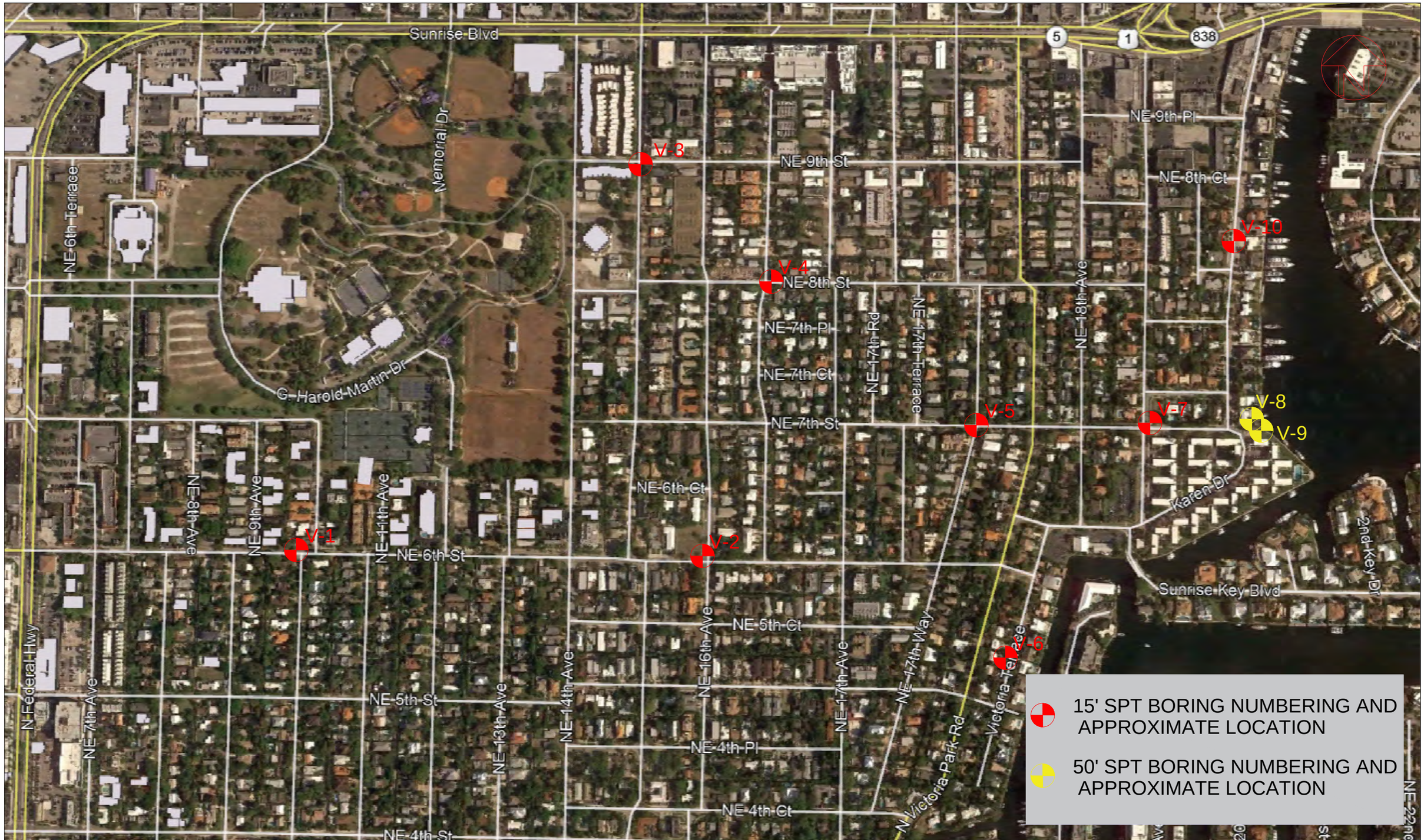
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: BORING LOCATION PLAN (RIVER OAKS)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2Q

RADISE PROJECT NO: 170901



REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/14/17
						Checked by	AB	11/15/17
						Designed by	KA	11/16/17
						Checked by	AB	11/16/17
						Approved by	AN	07/24/17

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

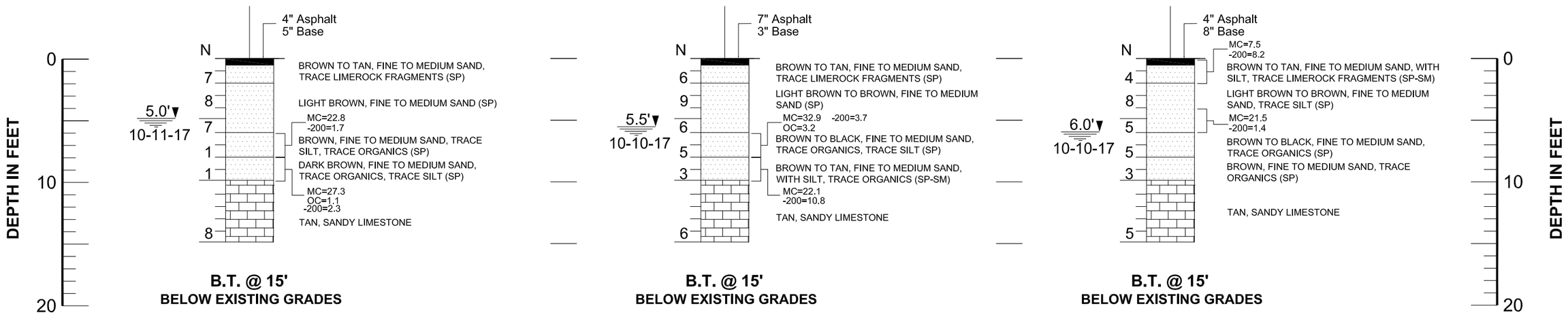
SHEET TITLE: BORING LOCATION PLAN (VICTORIA PARK)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 2R

RADISE PROJECT NO: 170901

	D-1	D-2	D-3
BORING NO.	D-1	D-2	D-3
ELEVATION (NAVD 88):	N/A	N/A	N/A
LATITUDE:	26.1345°	26.1327°	26.1307°
LONGITUDE:	-80.1653°	-80.1639°	-80.1671°
DATE:	10/11/2017	10/10/2017	10/10/2017
DRILLER:	T. FICKLING	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- LIMESTONE
- SAND
- GRAVEL
- SILTY SAND
- ORGANIC MATERIAL

5.0' ▼ GROUNDWATER DEPTH IN FEET
10-11-17 AND DRILLING DATE
N STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, SM	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
D-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/07/17
Checked by	AB	11/07/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida, 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

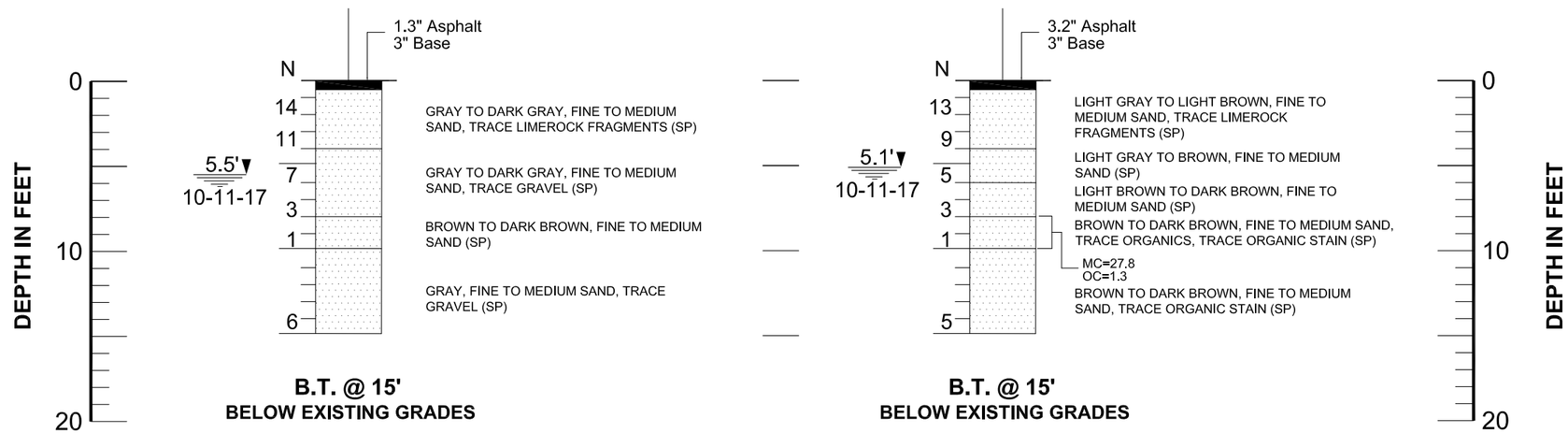
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: SUBSURFACE PROFILES (DURRS)
PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 3A
RADISE PROJECT NO: 170901

	D-4	D-5
BORING NO.	D-4	D-5
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1328°	26.1297°
LONGITUDE:	-80.1590°	-80.1613°
DATE:	10/11/2017	10/11/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- LIMESTONE
- SAND
- GRAVEL
- SILTY SAND
- ORGANIC MATERIAL
- 5.0' / 10-11-17 — GROUNDWATER DEPTH IN FEET AND DRILLING DATE
- N — STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, SM	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
D-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/09/17
Checked by	AB	11/09/17
Designed by		
Checked by		
Approved by		

RADISE — LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

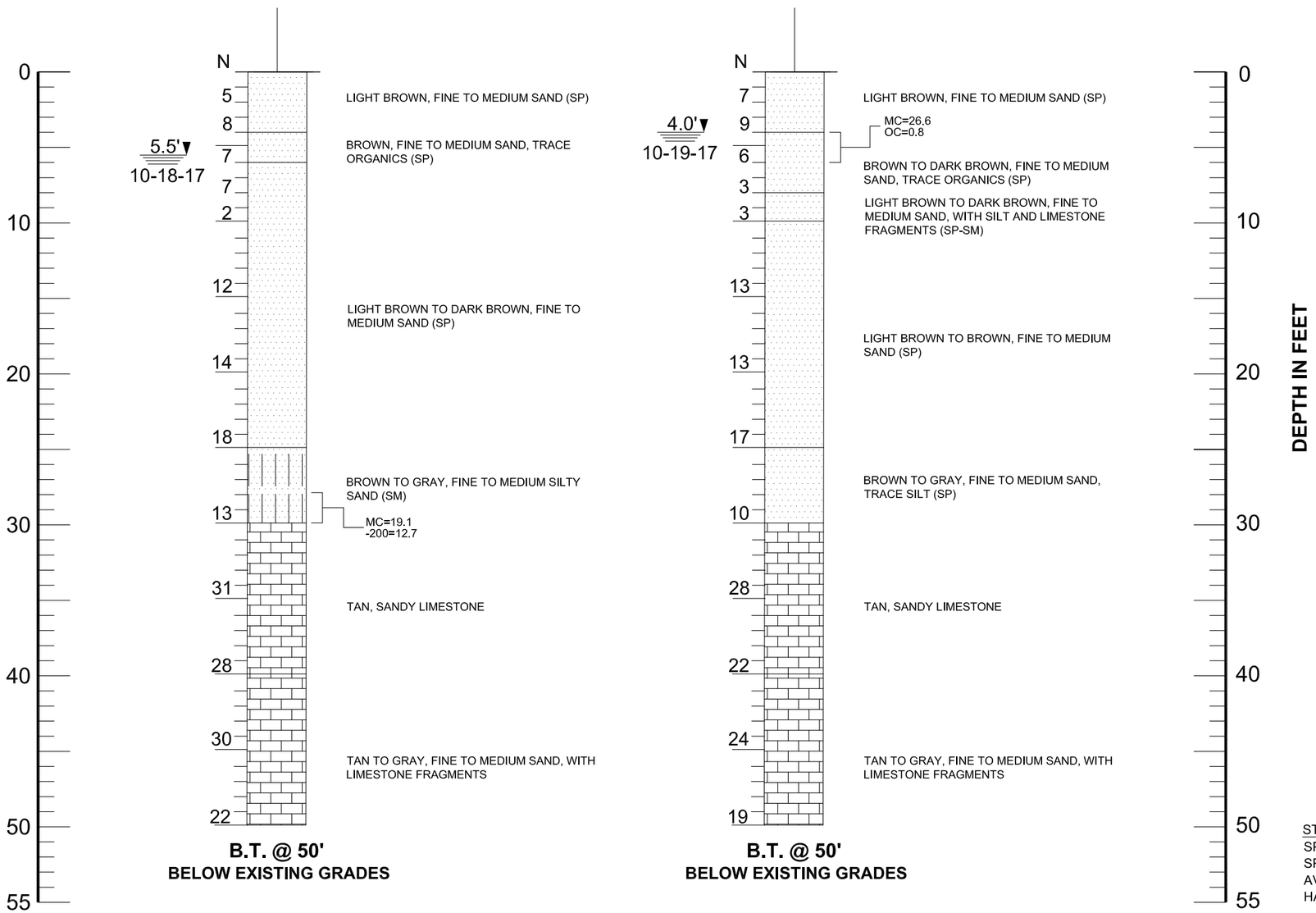
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: SUBSURFACE PROFILES (DRRUS)
PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 3B
RADISE PROJECT NO: 170901

	DR-1	DR-2
BORING NO.	DR-1	DR-2
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1278°	26.1279°
LONGITUDE:	-80.1621°	-80.1619°
DATE:	10/18/2017	10/19/2017
DRILLER:	R. RAMSEWACK	R. RAMSEWACK
RIG:	CME 45	CME 45



LEGEND

SAND	SHELLY SAND
SILTY SAND	LIMESTONE
ORGANIC MATERIAL	GRAVEL

5.5' ▼ 10-18-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, SM	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
DR-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/26/17
Checked by	AB	10/26/17
Designed by		
Checked by		
Approved by		

RADISE

LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

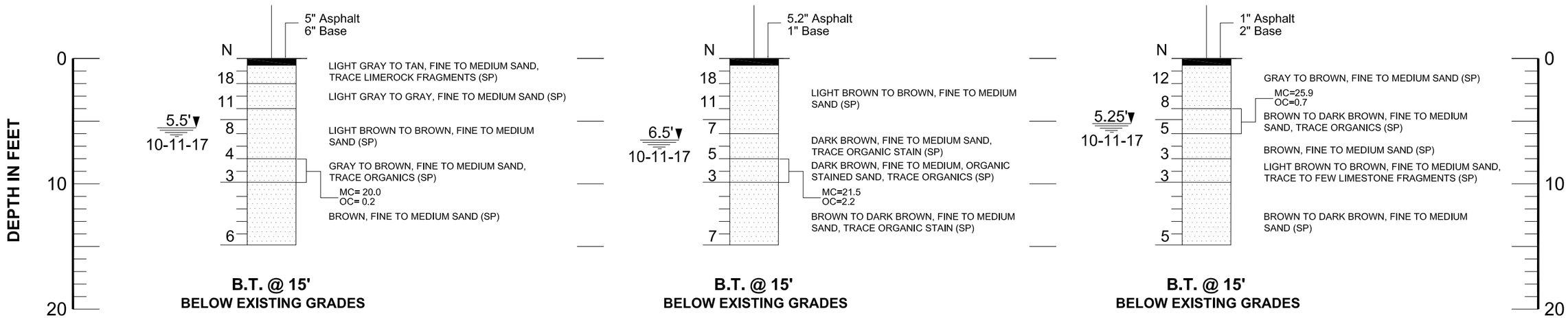
SHEET TITLE: SUBSURFACE PROFILES (DORSEY RIVERBEND)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 4A

RADISE PROJECT NO: 170901

	DR-3	DR-4	DR-5
BORING NO.	DR-3	DR-4	DR-5
ELEVATION (NAVD 88):	N/A	N/A	N/A
LATITUDE:	26.1256°	26.1256°	26.1288°
LONGITUDE:	-80.1617°	-80.1658°	-80.1660°
DATE:	10/11/2017	10/11/2017	10/11/2017
DRILLER:	T. FICKLING	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- SAND
- SILTY SAND
- LIMESTONE
- GRAVEL
- ORGANIC MATERIAL

5.5' / 10-11-17 — GROUNDWATER DEPTH IN FEET AND DRILLING DATE

N — STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, SM	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
DR-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/09/17
Checked by	AB	11/09/17
Designed by		
Checked by		
Approved by		

RADISE — Infrastructure Engineers & Software Developers — LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

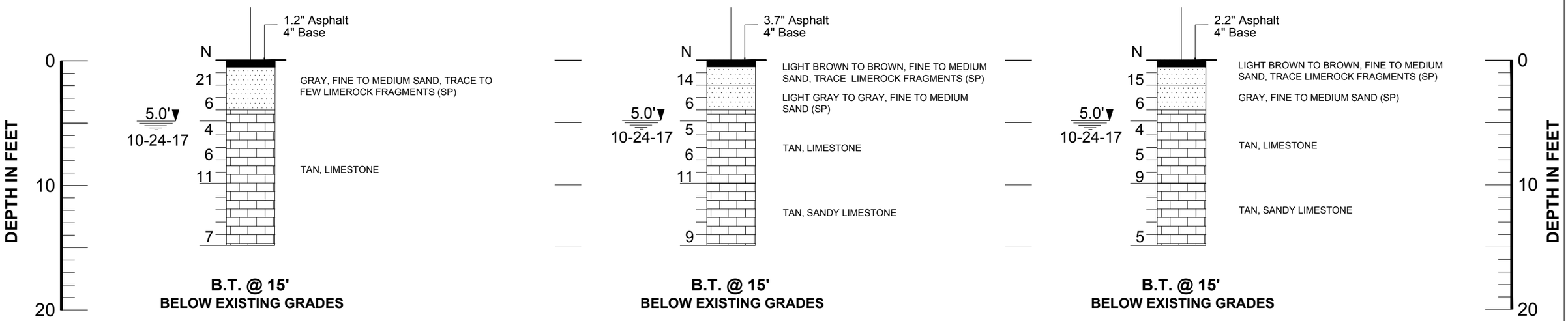
SHEET TITLE: SUBSURFACE PROFILES (DORSEY RIVERBEND)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 4B

RADISE PROJECT NO: 170901

	E-1	E-2	E-3
BORING NO.	E-1	E-2	E-3
ELEVATION (NAVD 88):	N/A	N/A	N/A
LATITUDE:	26.0845°	26.0864°	26.0881°
LONGITUDE:	-80.1607°	-80.1607°	-80.1607°
DATE:	10/24/2017	10/24/2017	10/24/2017
DRILLER:	T. FICKLING	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- LIMESTONE
- SAND
- GRAVEL
- SILTY SAND
- ORGANIC MATERIAL
- 5.0' ▼ / 10-24-17 — GROUNDWATER DEPTH IN FEET AND DRILLING DATE
- N — STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
E-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/06/17
Checked by	AB	11/06/17
Designed by		
Checked by		
Approved by		

RADISE — Infrastructure Engineers & Software Developers

LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

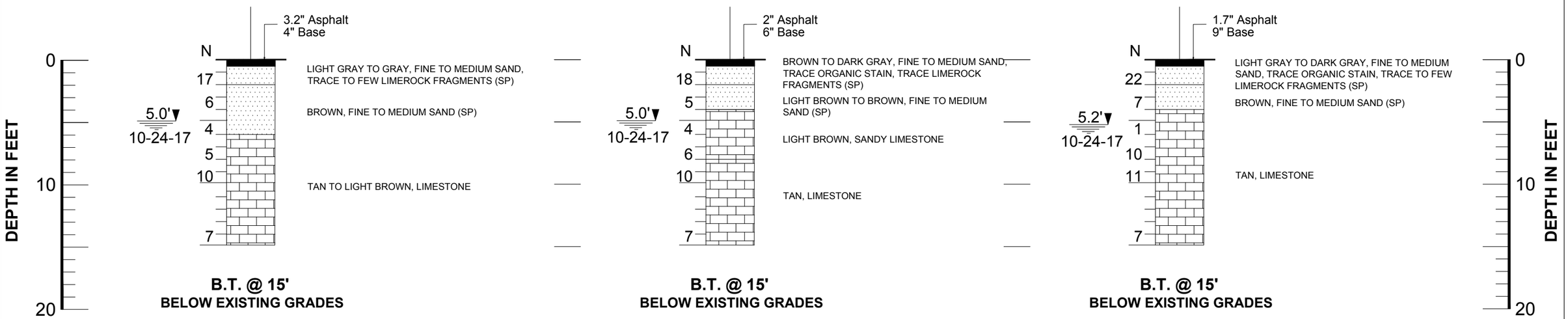
SHEET TITLE: SUBSURFACE PROFILES (EDGEWOOD)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 5A

RADISE PROJECT NO: 170901

	E-4	E-5	E-6
BORING NO.	E-4	E-5	E-6
ELEVATION (NAVD 88):	N/A	N/A	N/A
LATITUDE:	26.0873°	26.0855°	26.0888°
LONGITUDE:	-80.1595°	-80.1595°	-80.1588°
DATE:	10/24/2017	10/24/2017	10/24/2017
DRILLER:	T. FICKLING	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- LIMESTONE
- SAND
- GRAVEL
- SILTY SAND
- ORGANIC MATERIAL

5.0' ▼ GROUNDWATER DEPTH IN FEET
10-24-17 AND DRILLING DATE

N STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, PT UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)

E-1 STANDARD PENETRATION TEST (SPT) BORING AND NUMBER

MC MOISTURE CONTENT (%)

-200 AMOUNT PASSING US STANDARD # 200 SIEVE (%)

OC ORGANIC CONTENTS (%)

LL LIQUID LIMIT (%)

PI PLASTICITY INDEX (%)

B.T. @ 15' BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/06/17
Checked by	AB	11/06/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

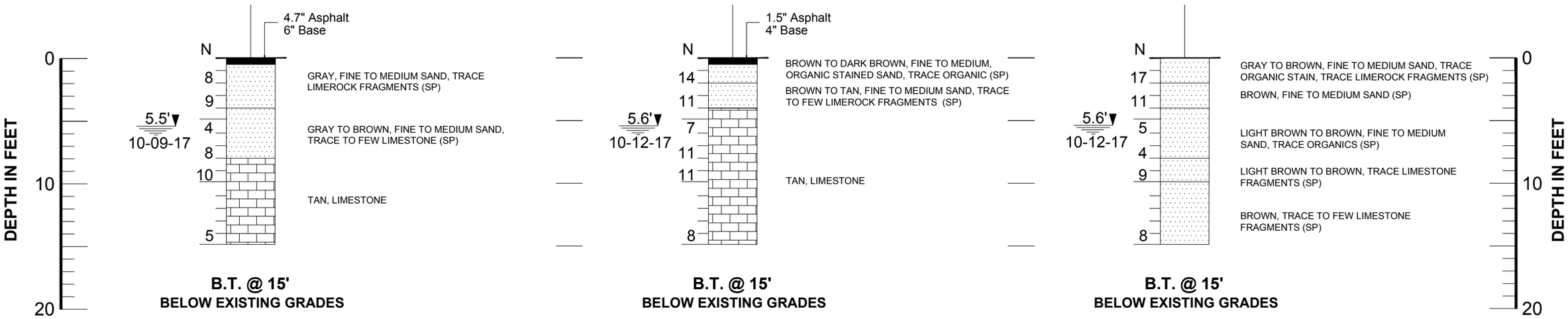
SHEET TITLE: SUBSURFACE PROFILES (EDGEWOOD)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 5B

RADISE PROJECT NO: 170901

	E-7	E-8	E-9
BORING NO.	E-7	E-8	E-9
ELEVATION (NAVD 88):	N/A	N/A	N/A
LATITUDE:	26.0888°	26.0861°	26.0880°
LONGITUDE:	-80.1548°	-80.1567°	-80.1560°
DATE:	10/09/2017	10/12/2017	10/12/2017
DRILLER:	T. FICKLING	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- LIMESTONE
- SAND
- GRAVEL
- SILTY SAND
- ORGANIC MATERIAL
- 5.0' / 10-24-17 — GROUNDWATER DEPTH IN FEET AND DRILLING DATE
- N — STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
E-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/06/17
Checked by	AB	11/06/17
Designed by		
Checked by		
Approved by		

RADISE — Infrastructure Engineers & Software Developers — LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

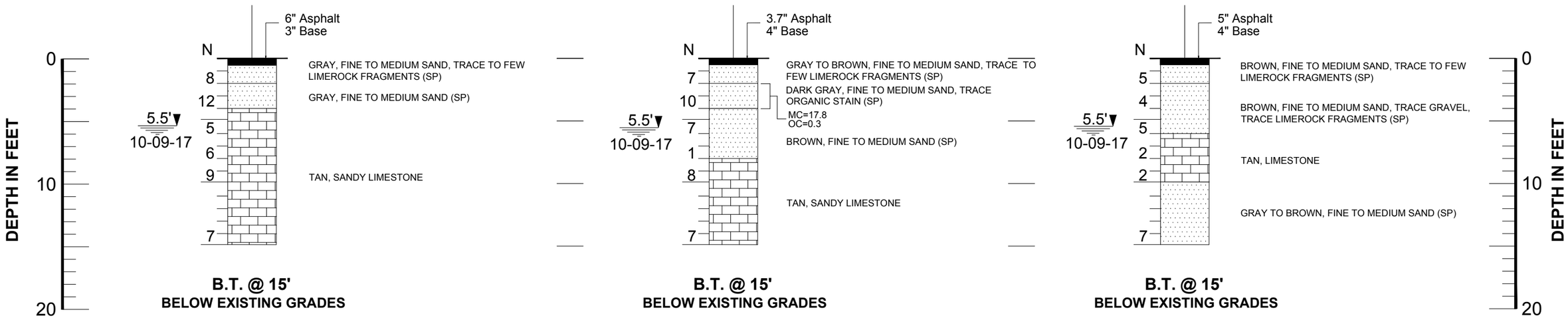
SHEET TITLE: SUBSURFACE PROFILES (EDGEWOOD)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 5C

RADISE PROJECT NO: 170901

	E-10	E-11	E-12
BORING NO.	E-10	E-11	E-12
ELEVATION (NAVD 88):	N/A	N/A	N/A
LATITUDE:	26.0870°	26.0874°	26.0889°
LONGITUDE:	-80.1528°	-80.1507°	-80.1507°
DATE:	10/09/2017	10/09/2017	10/09/2017
DRILLER:	T. FICKLING	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- LIMESTONE
- SAND
- GRAVEL
- SILTY SAND
- ORGANIC MATERIAL
- 5.0' / 10-24-17 — GROUNDWATER DEPTH IN FEET AND DRILLING DATE
- N — STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
E-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/06/17
Checked by	AB	11/06/17
Designed by		
Checked by		
Approved by		

RADISE — Infrastructure Engineers & Software Developers — LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

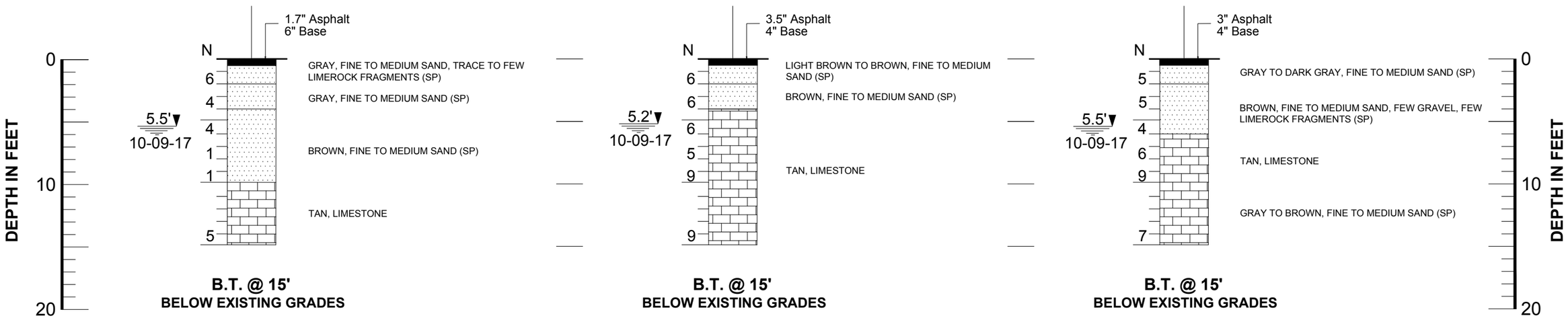
SHEET TITLE: SUBSURFACE PROFILES (EDGEWOOD)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 5D

RADISE PROJECT NO: 170901

	E-13	E-14	E-15
BORING NO.	E-13	E-14	E-15
ELEVATION (NAVD 88):	N/A	N/A	N/A
LATITUDE:	26.0899°	26.0907°	26.0868°
LONGITUDE:	-80.1528°	-80.1401°	-80.1391°
DATE:	10/09/2017	10/09/2017	10/09/2017
DRILLER:	T. FICKLING	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- LIMESTONE
- SAND
- GRAVEL
- SILTY SAND
- ORGANIC MATERIAL
- 5.0' / 10-24-17 — GROUNDWATER DEPTH IN FEET AND DRILLING DATE
- N — STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
E-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/06/17
Checked by	AB	11/06/17
Designed by		
Checked by		
Approved by		

RADISE — Infrastructure Engineers & Software Developers — LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

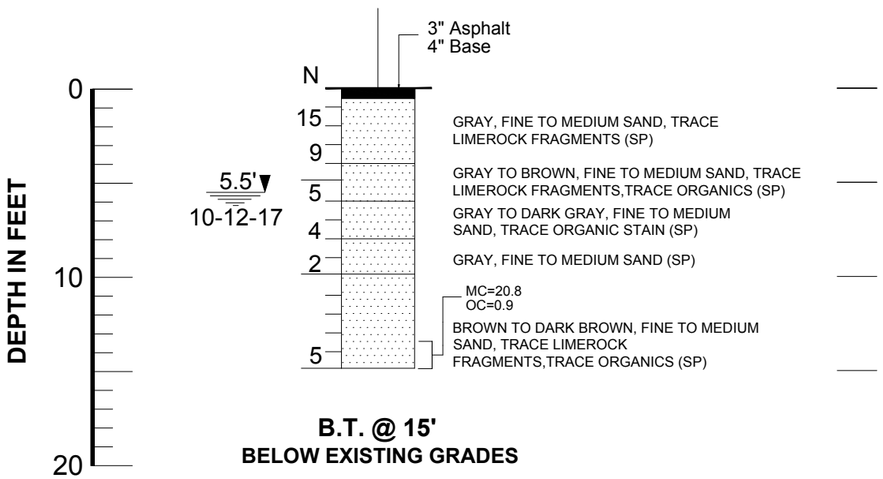
SHEET TITLE: SUBSURFACE PROFILES (EDGEWOOD)

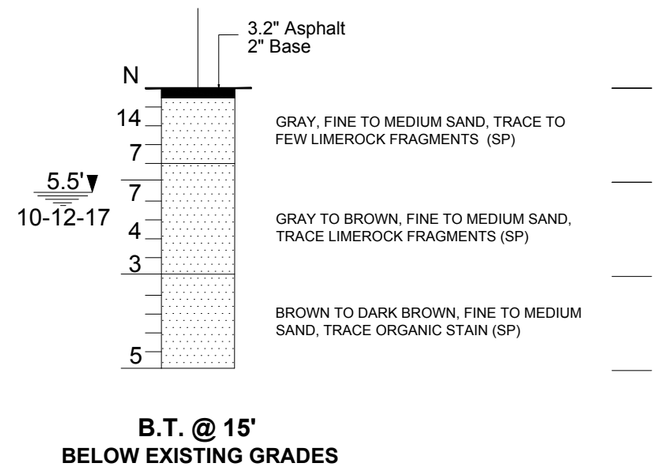
PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

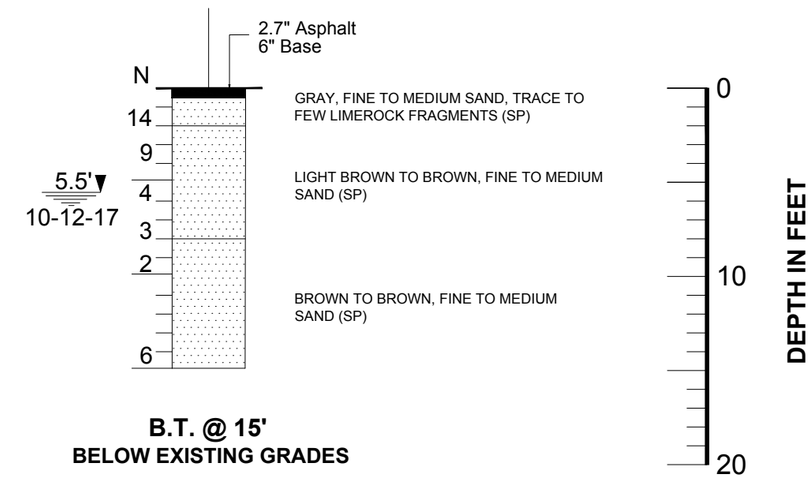
SHEET NO. 5E

RADISE PROJECT NO: 170901

	P-1	P-2	P-3
BORING NO.	P-1	P-2	P-3
ELEVATION (NAVD 88):	N/A	N/A	N/A
LATITUDE:	26.1207°	26.1223°	26.1239°
LONGITUDE:	-80.1474°	-80.1485°	-80.1475°
DATE:	10/12/2017	10/12/2017	10/12/2017
DRILLER:	T. FICKLING	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45	CME 45







LEGEND

- ASPHALT AND BASE
- LIMESTONE
- SAND
- GRAVEL
- SILTY SAND
- ORGANIC MATERIAL
- 5.5' ▼ / 10-12-17 — GROUNDWATER DEPTH IN FEET AND DRILLING DATE
- N — STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
P-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORING WERE DRILLED ON OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/09/17
Checked by	AB	11/09/17
Designed by		
Checked by		
Approved by		

RADISE — Infrastructure Engineers & Software Developers — LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

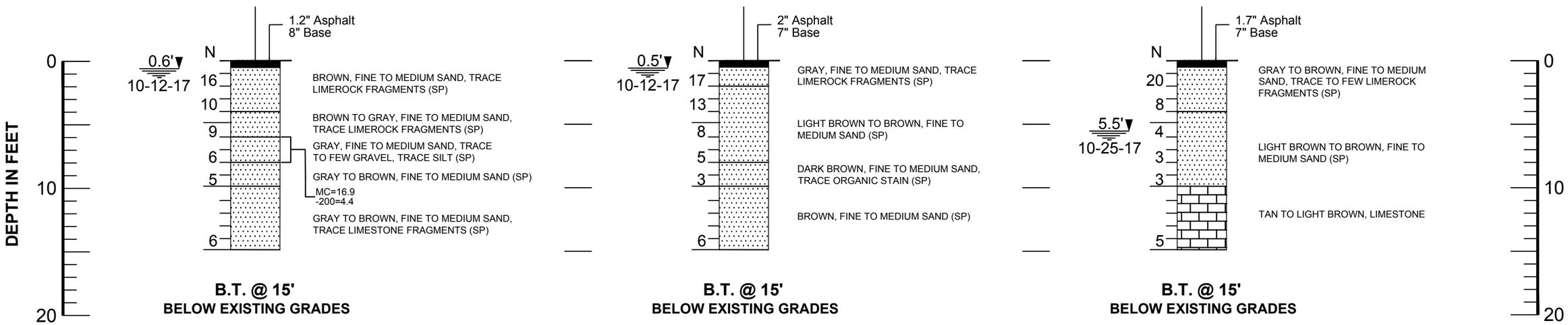
SHEET TITLE: SUBSURFACE PROFILES (PROGRESSO)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 6A

RADISE PROJECT NO: 170901

	P-4	P-7	P-8
BORING NO.	P-4	P-7	P-8
ELEVATION (NAVD 88):	N/A	N/A	N/A
LATITUDE:	26.1315°	26.1266°	26.1312°
LONGITUDE:	-80.1469°	-80.1506°	-80.1517°
DATE:	10/12/2017	10/12/2017	10/25/2017
DRILLER:	T. FICKLING	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- LIMESTONE
- SAND
- GRAVEL
- SILTY SAND
- ORGANIC MATERIAL
- 5.5' / 10-12-17 — GROUNDWATER DEPTH IN FEET AND DRILLING DATE
- N — STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
P-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORING WERE DRILLED ON OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/09/17
Checked by	AB	11/09/17
Designed by		
Checked by		
Approved by		

RADISE — Infrastructure Engineers & Software Developers — LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

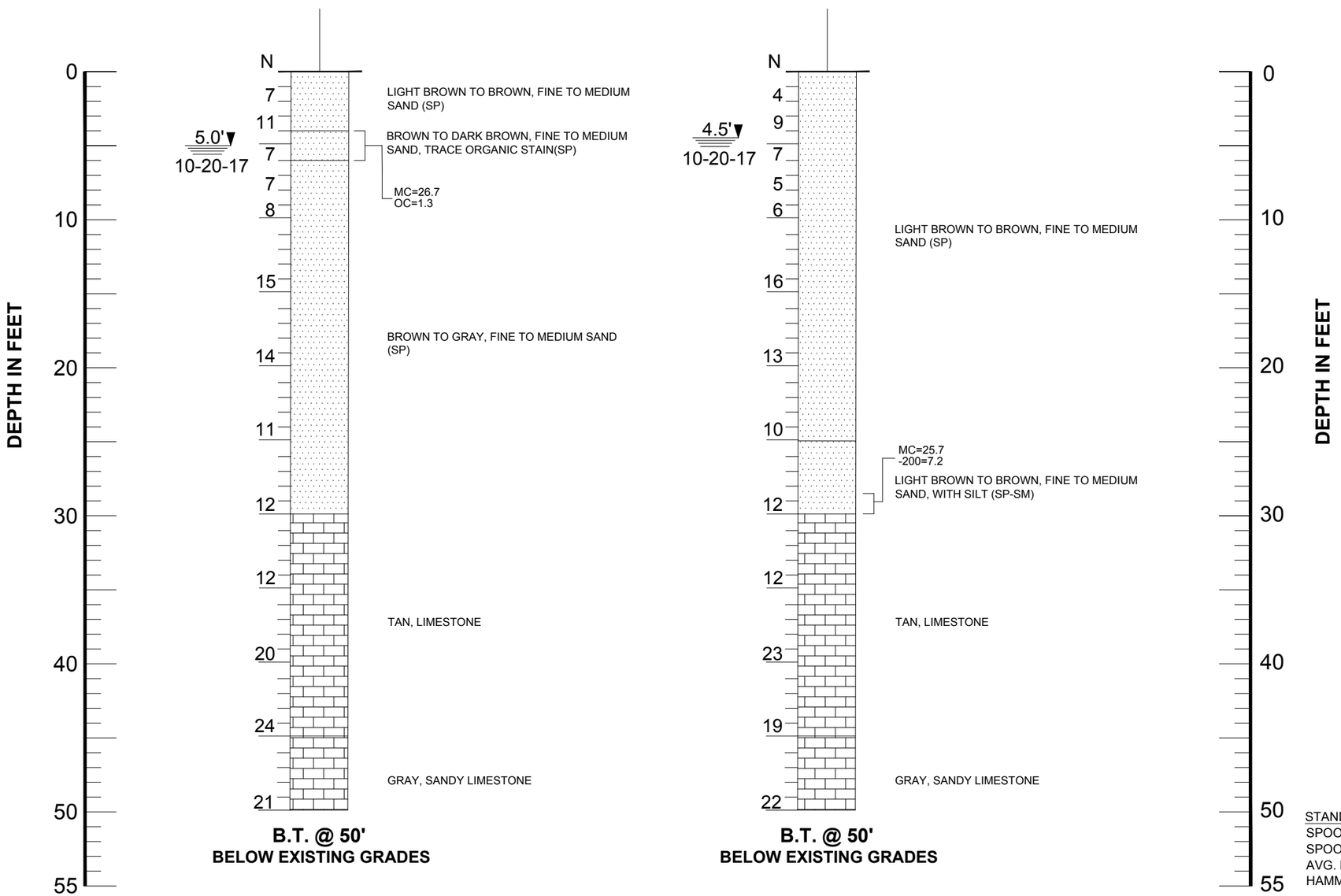
SHEET TITLE: SUBSURFACE PROFILES (PROGRESSO)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 6B

RADISE PROJECT NO: 170901

	P-5	P-6
BORING NO.	P-5	P-6
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1332°	26.1335°
LONGITUDE:	-80.1479°	-80.1476°
DATE:	10/20/2017	10/20/2017
DRILLER:	R. RAMSEWACK	R. RAMSEWACK
RIG:	CME 45	CME 45



LEGEND

- SAND
- SILT
- ORGANIC MATERIAL
- SHELLY SAND
- LIMESTONE
- GRAVEL

5.0' ▼ 10-20-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
P-5	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMERDRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

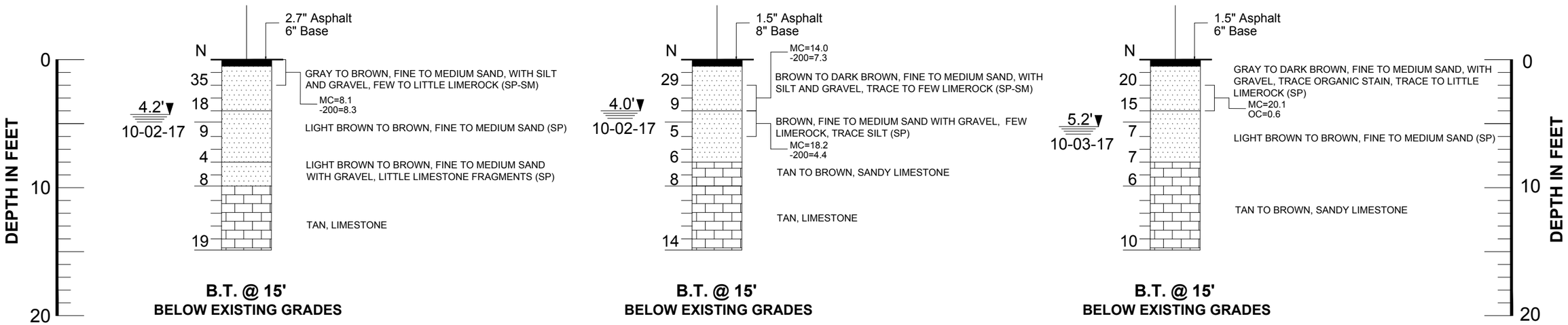
SHEET TITLE: SUBSURFACE PROFILES (PROGRESSO)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 6C

RADISE PROJECT NO: 170901

	R-1	R-2	R-3
BORING NO.	R-1	R-2	R-3
ELEVATION (NAVD 88):	N/A	N/A	N/A
LATITUDE:	26.0909°	26.0945°	26.0924°
LONGITUDE:	-80.1608°	-80.1609°	-80.1648°
DATE:	10/02/2017	10/02/2017	10/03/2017
DRILLER:	P. RAMSEWACK	P. RAMSEWACK	P. RAMSEWACK
RIG:	CME 45	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- LIMESTONE
- SAND
- GRAVEL
- SILTY SAND
- ORGANIC MATERIAL
- 4.2' / 10-02-17 — GROUNDWATER DEPTH IN FEET AND DRILLING DATE
- N — STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
R-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORING WERE DRILLED ON OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/09/17
Checked by	AB	11/09/17
Designed by		
Checked by		
Approved by		

RADISE — Infrastructure Engineers & Software Developers — LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

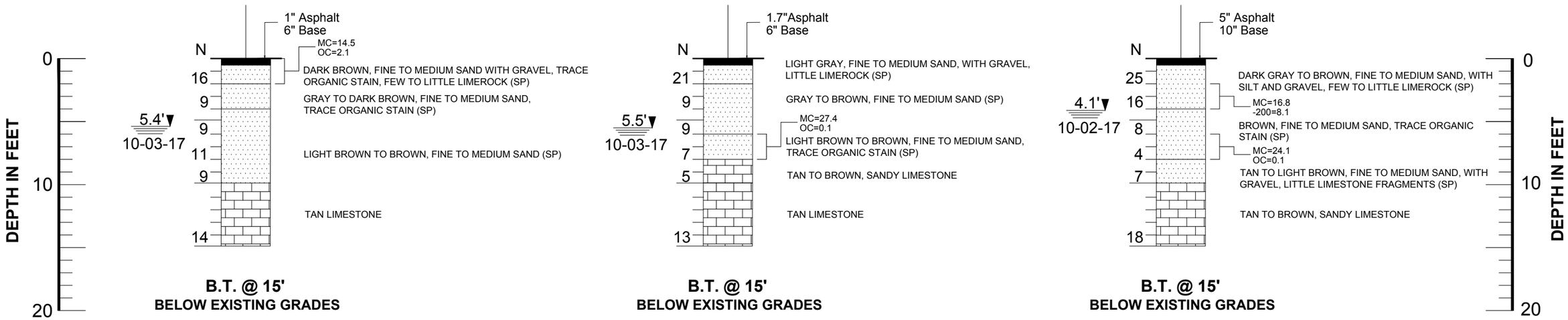
SHEET TITLE: SUBSURFACE PROFILES (RIVER OAKS)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 7A

RADISE PROJECT NO: 170901

	R-4	R-5	R-6
BORING NO.	R-4	R-5	R-6
ELEVATION (NAVD 88):	N/A	N/A	N/A
LATITUDE:	26.0946°	26.0950°	26.0961°
LONGITUDE:	-80.1630°	-80.1661°	-80.1608°
DATE:	10/03/2017	10/03/2017	10/02/2017
DRILLER:	P. RAMSEWACK	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- LIMESTONE
- SAND
- GRAVEL
- SILTY SAND
- ORGANIC MATERIAL
- 4.2' ▼ GROUNDWATER DEPTH IN FEET
- 10-02-17 AND DRILLING DATE
- N STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
R-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORING WERE DRILLED ON OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/09/17
Checked by	AB	11/09/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

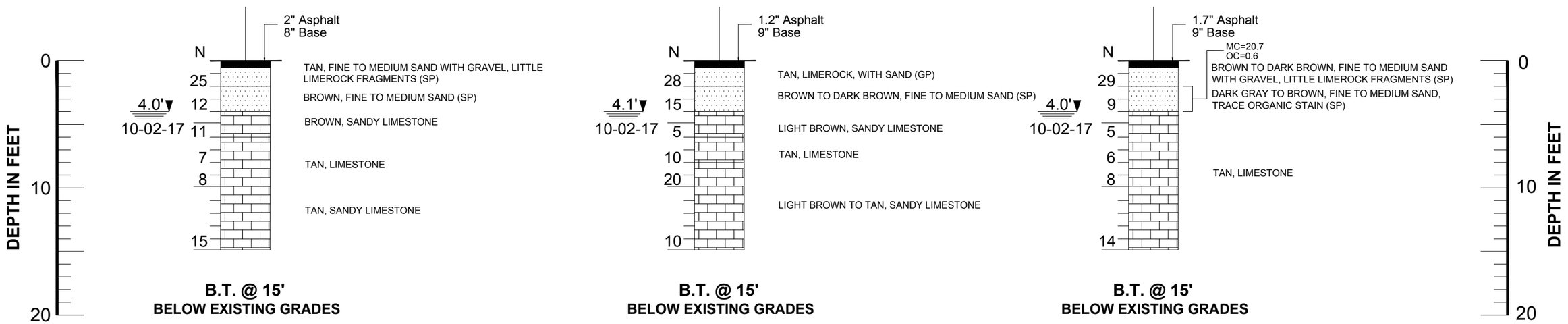
SHEET TITLE: SUBSURFACE PROFILES (RIVER OAKS)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 7B

RADISE PROJECT NO: 170901

	R-7	R-8	R-13
BORING NO.	R-7	R-8	R-13
ELEVATION (NAVD 88):	N/A	N/A	N/A
LATITUDE:	26.0979°	26.0994°	26.0979°
LONGITUDE:	-80.1589°	-80.1582°	-80.1550°
DATE:	10/02/2017	10/02/2017	10/02/2017
DRILLER:	P. RAMSEWACK	P. RAMSEWACK	P. RAMSEWACK
RIG:	CME 45	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- LIMESTONE
- SAND
- GRAVEL
- SILTY SAND
- ORGANIC MATERIAL
- 4.2' / 10-02-17 — GROUNDWATER DEPTH IN FEET AND DRILLING DATE
- N — STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
R-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORING WERE DRILLED ON OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/09/17
Checked by	AB	11/09/17
Designed by		
Checked by		
Approved by		

RADISE — Infrastructure Engineers & Software Developers

LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

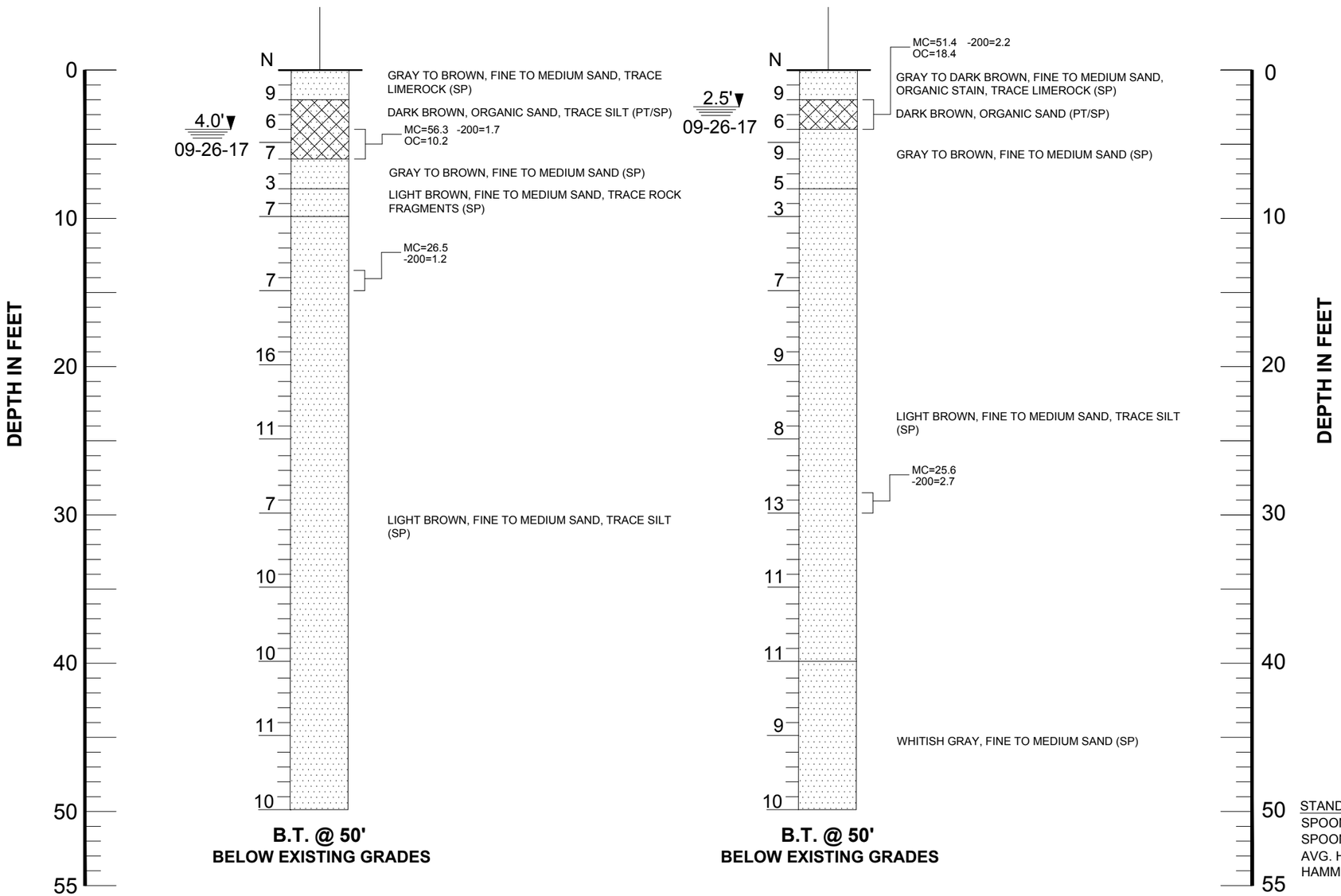
SHEET TITLE: SUBSURFACE PROFILES (RIVER OAKS)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 7C

RADISE PROJECT NO: 170901

	R-9	R-10
BORING NO.	R-9	R-10
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.0949°	26.0947°
LONGITUDE:	-80.1679°	-80.1677°
DATE:	09/26/2017	09/26/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

SAND	SHELLY SAND
SILT	LIMESTONE
ORGANIC MATERIAL	GRAVEL

1.5' ▼ 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-9	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

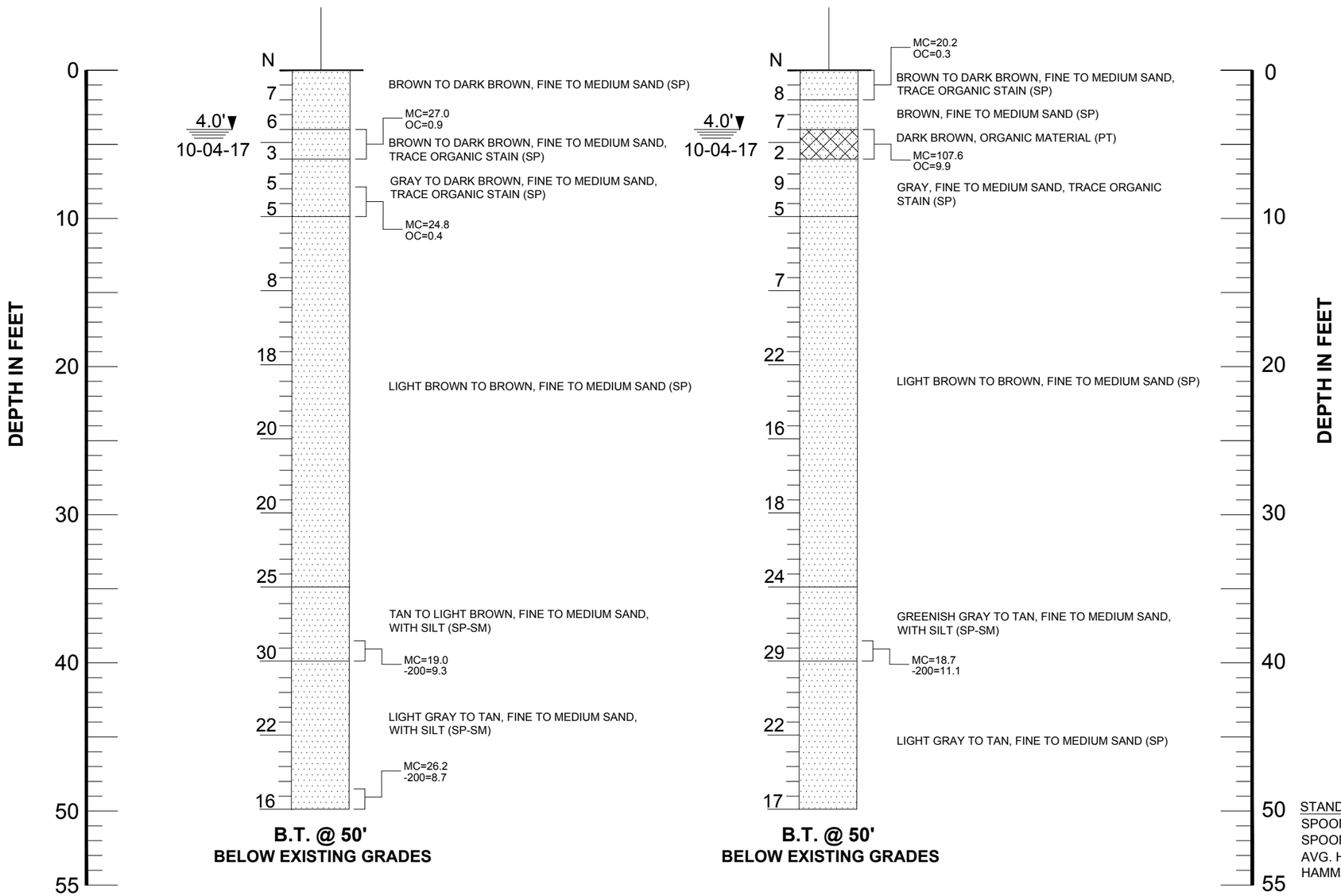
SHEET TITLE: SUBSURFACE PROFILES (RIVER OAKS)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 7D

RADISE PROJECT NO: 170901

	R-11	R-12
BORING NO.	R-11	R-12
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.0936°	26.0938°
LONGITUDE:	-80.1665°	-80.1667°
DATE:	10/04/2017	10/04/2017
DRILLER:	P. RAMSEWACK	P. RAMSEWACK
RIG:	CME 45	CME 45



LEGEND

SAND	SHELLY SAND
SILT	LIMESTONE
ORGANIC MATERIAL	GRAVEL

1.5' ▼ 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-9	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

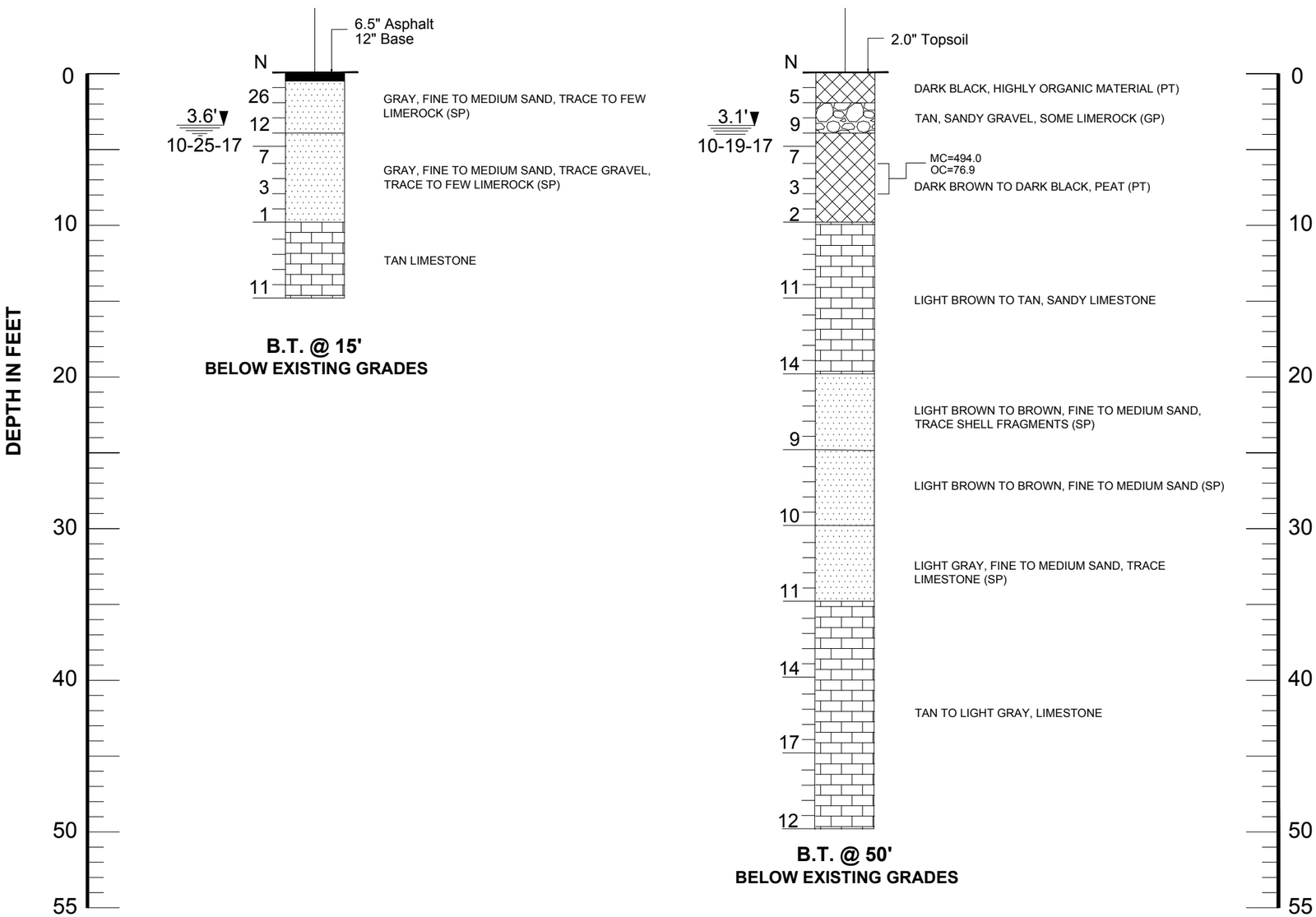
SHEET TITLE: SUBSURFACE PROFILES (RIVER OAKS)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 7E

RADISE PROJECT NO: 170901

	S-1	S-2
BORING NO.	S-1	S-2
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1188°	26.1199°
LONGITUDE:	-80.1244°	-80.1208°
DATE:	10/25/2017	10/19/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

ASPHALT AND BASE	LIMESTONE
SAND	GRAVEL
SILT	ORGANIC MATERIAL

1.5' / 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/06/17
Checked by	AB	11/06/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

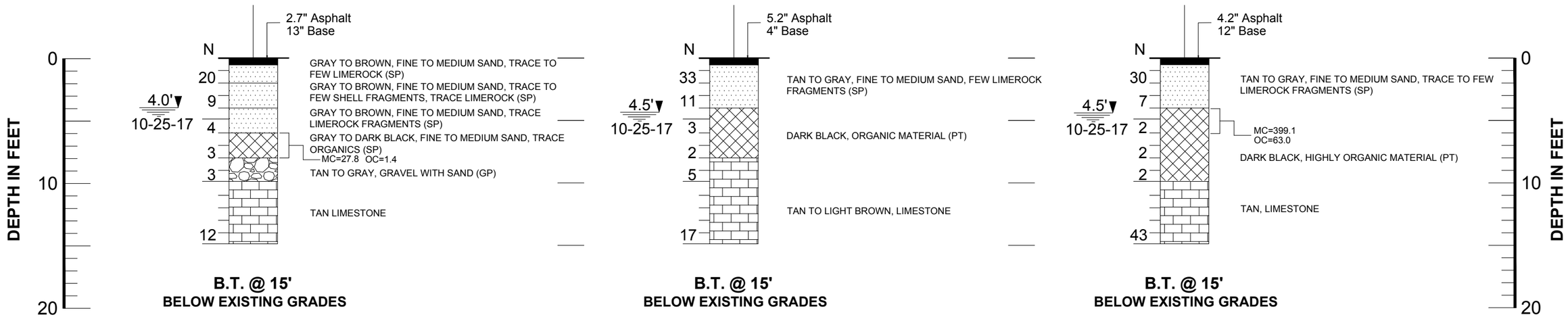
SHEET TITLE: SUBSURFACE PROFILES (SOUTHEAST ISLES)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 8A

RADISE PROJECT NO: 170901

	S-3	S-4	S-5
BORING NO.	S-3	S-4	S-5
ELEVATION (NAVD 88):	N/A	N/A	N/A
LATITUDE:	26.1196°	26.1199°	26.1200°
LONGITUDE:	-80.1209°	-80.1169°	-80.1149°
DATE:	10/25/2017	10/25/2017	10/23/2017
DRILLER:	T. FICKLING	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- SAND
- SILT
- LIMESTONE
- GRAVEL
- ORGANIC MATERIAL
- 5.5' / 10-12-17 — GROUNDWATER DEPTH IN FEET AND DRILLING DATE
- N — STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/06/17
Checked by	AB	11/06/17
Designed by		
Checked by		
Approved by		

RADISE — Infrastructure Engineers & Software Developers — LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

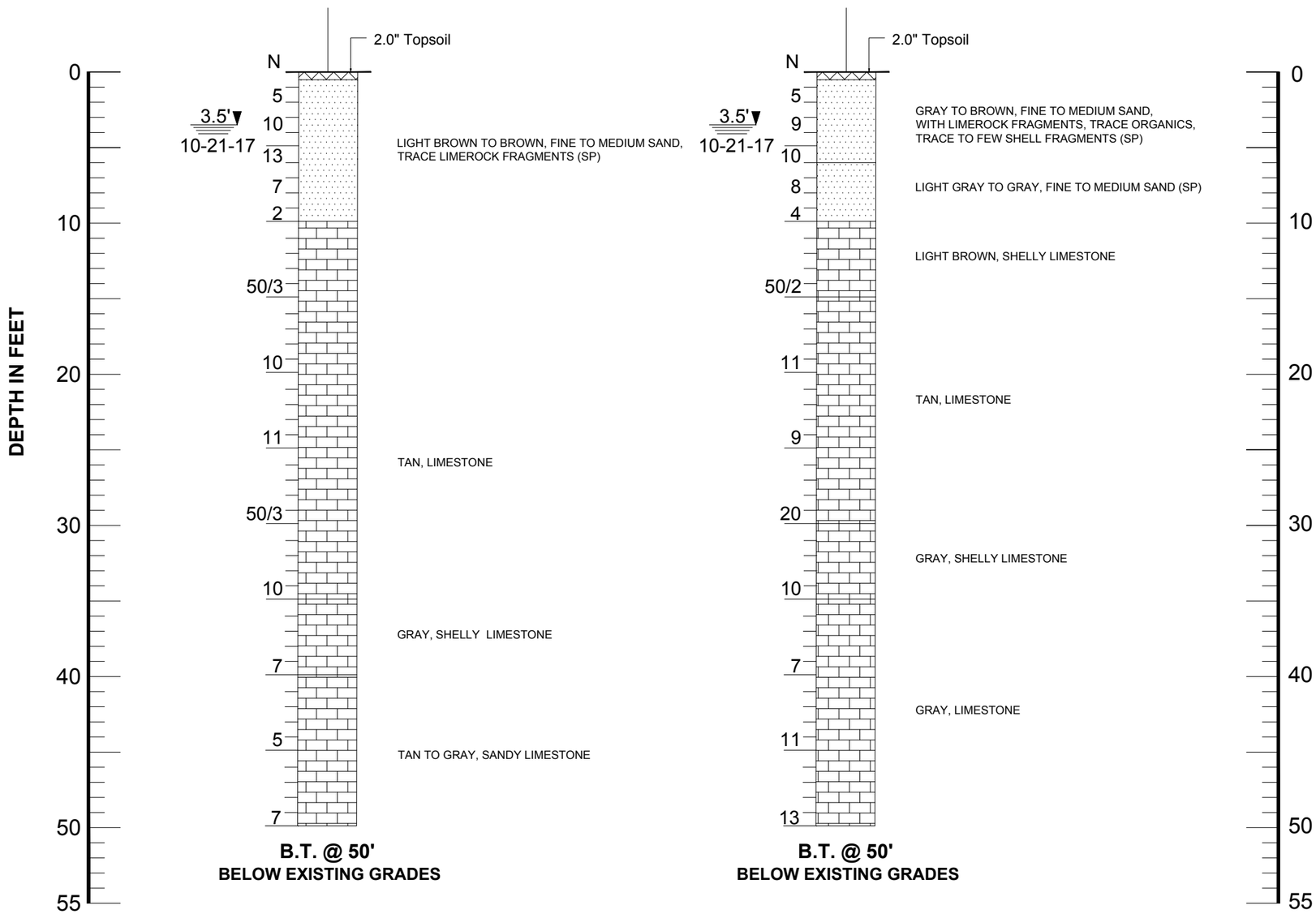
SHEET TITLE: SUBSURFACE PROFILES (SOUTHEAST ISLES)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 8B

RADISE PROJECT NO: 170901

	S-6	S-7
BORING NO.	S-6	S-7
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1198°	26.1196°
LONGITUDE:	-80.1115°	-80.1114°
DATE:	10/21/2017	10/21/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

ASPHALT AND BASE	LIMESTONE
SAND	GRAVEL
SILT	ORGANIC MATERIAL

1.5' / 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

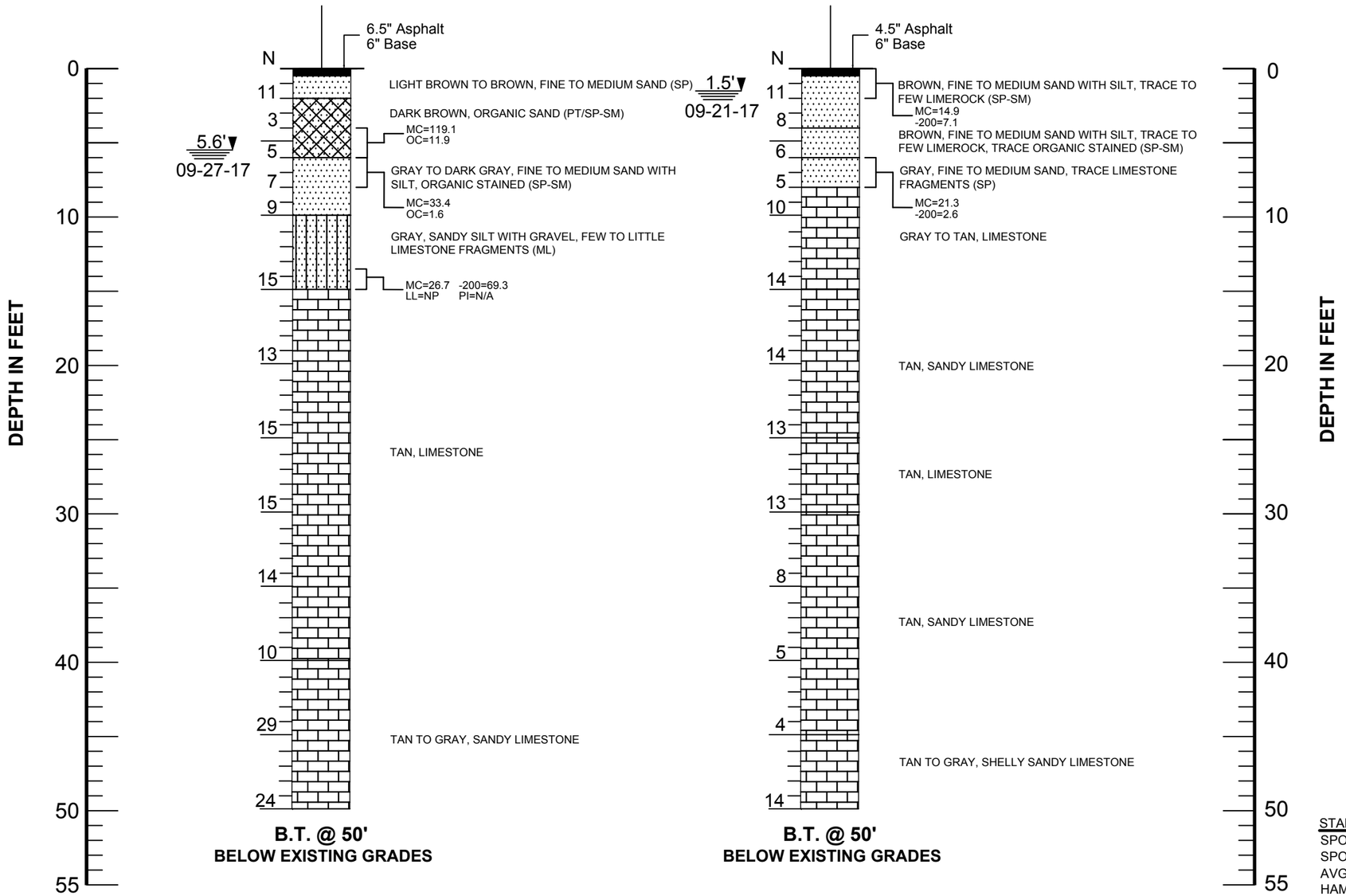
SHEET TITLE: SUBSURFACE PROFILES (SOUTHEAST ISLES)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 8C

RADISE PROJECT NO: 170901

	S-8	S-9
BORING NO.	S-8	S-9
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1171°	26.1178°
LONGITUDE:	-80.1129°	-80.1163°
DATE:	09/27/2017	09/21/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- SAND
- SILT
- LIMESTONE
- GRAVEL
- ORGANIC MATERIAL

1.5' ▼ 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

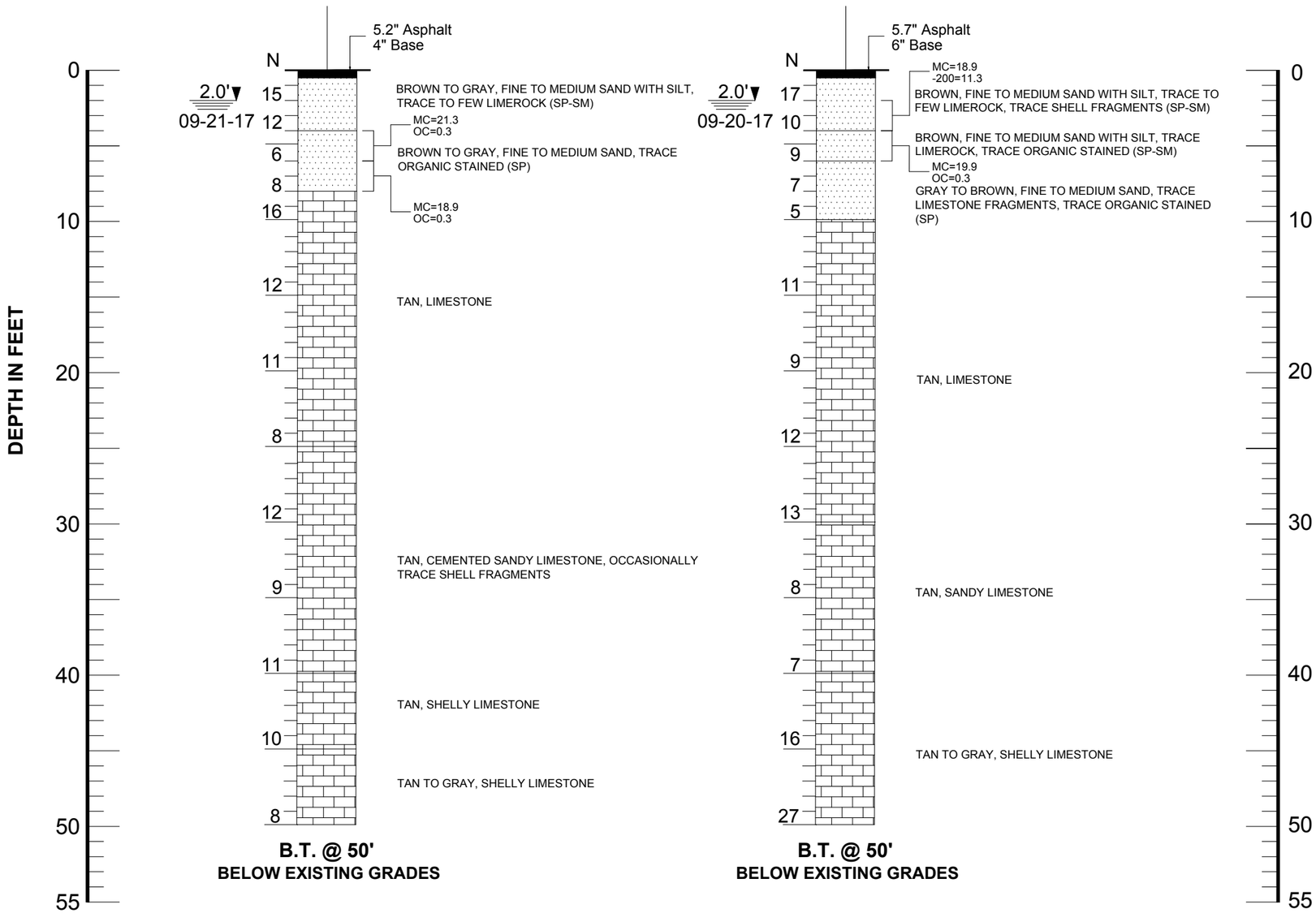
SHEET TITLE: SUBSURFACE PROFILES (SEAWALLS)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 9A

RADISE PROJECT NO: 170901

	S-10	S-11
BORING NO.	S-10	S-11
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1184°	26.1190°
LONGITUDE:	-80.1163°	-80.1163°
DATE:	09/21/2017	09/20/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- SAND
- SILT
- LIMESTONE
- GRAVEL
- ORGANIC MATERIAL

1.5' ▼ 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

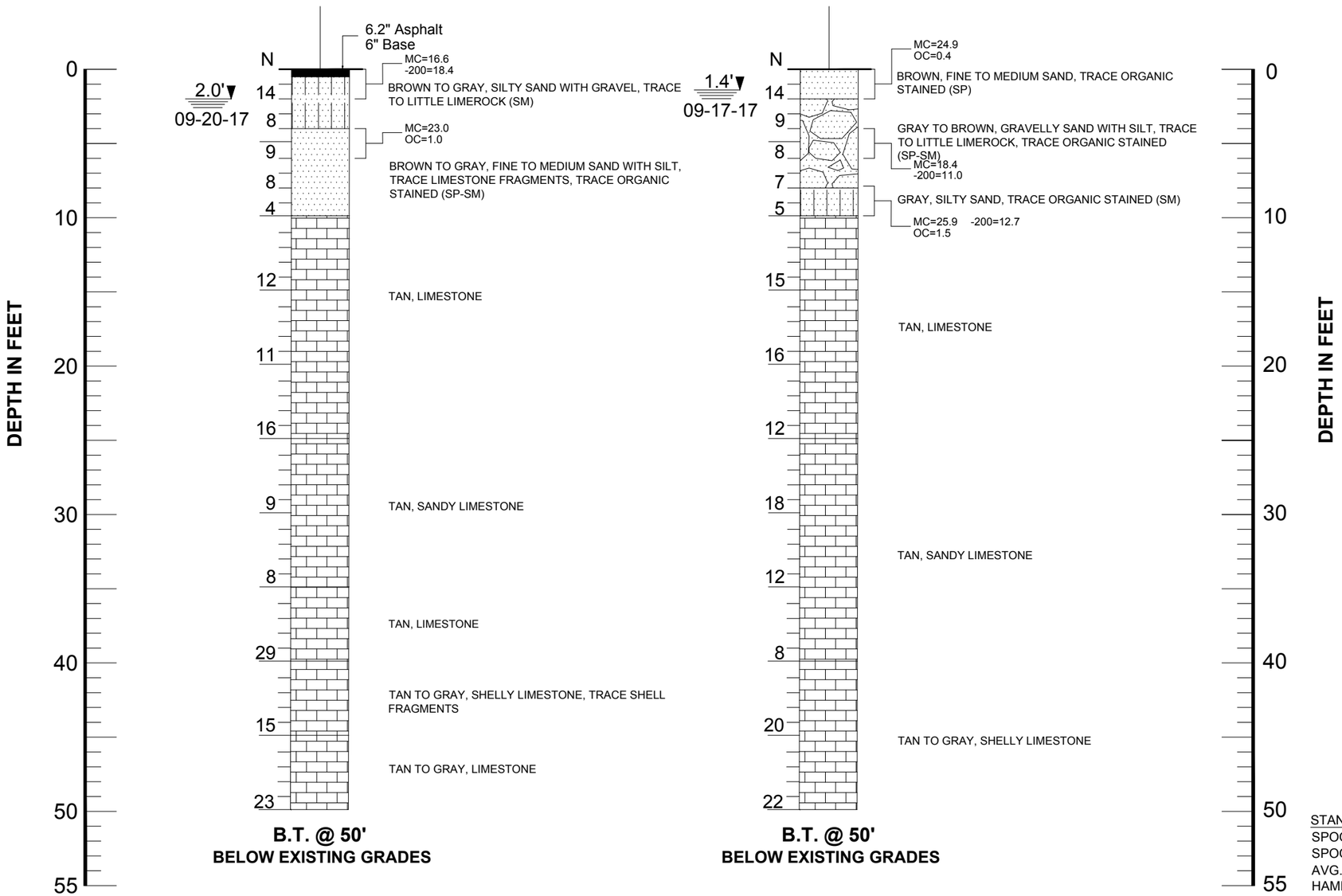
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: SUBSURFACE PROFILES (SEAWALLS)
PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 9B
RADISE PROJECT NO: 170901

	S-12	S-13
BORING NO.	S-12	S-13
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1196°	26.1199°
LONGITUDE:	-80.1163°	-80.1179°
DATE:	09/20/2017	09/17/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

ASPHALT AND BASE	LIMESTONE
SAND	GRAVEL
SILT	ORGANIC MATERIAL

1.5' / 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: SUBSURFACE PROFILES (SEAWALLS)

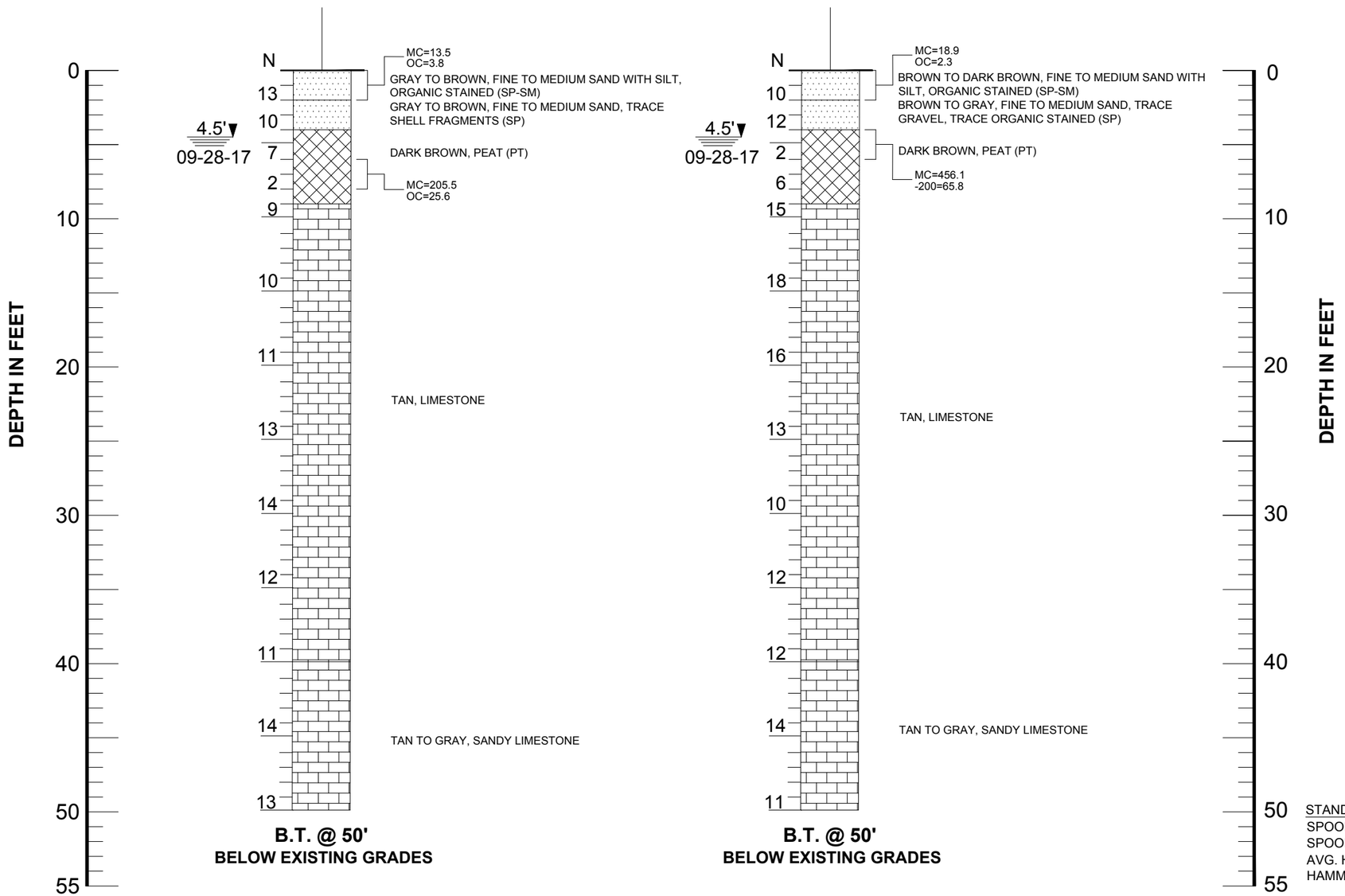
PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 9C

RADISE PROJECT NO: 170901

CAM 19-0646
Exhibit 3 (Part 2 of 3)
Page 42 of 149

	S-14	S-15
BORING NO.	S-14	S-15
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1198°	26.1198°
LONGITUDE:	-80.1189°	-80.1200°
DATE:	09/28/2017	09/28/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- SAND
- SILT
- LIMESTONE
- GRAVEL
- ORGANIC MATERIAL

1.5' ▼ 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

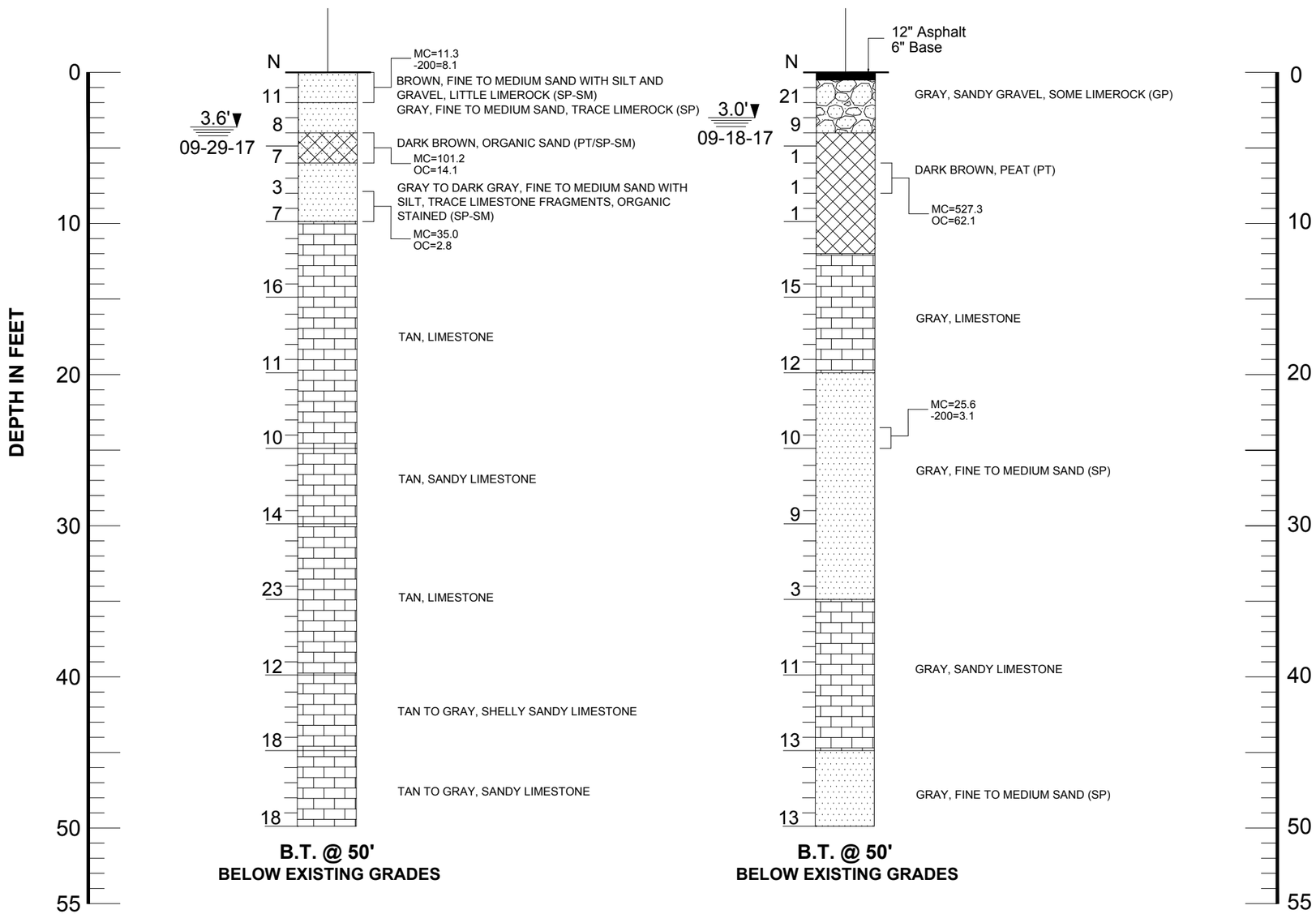
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: SUBSURFACE PROFILES (SEAWALLS)
PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 9D
RADISE PROJECT NO: 170901

	S-16	S-17
BORING NO.	S-16	S-17
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1172°	26.1140°
LONGITUDE:	-80.1252°	-80.1270°
DATE:	09/29/2017	09/18/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

ASPHALT AND BASE	LIMESTONE
SAND	GRAVEL
SILT	ORGANIC MATERIAL

1.5' ▼ 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

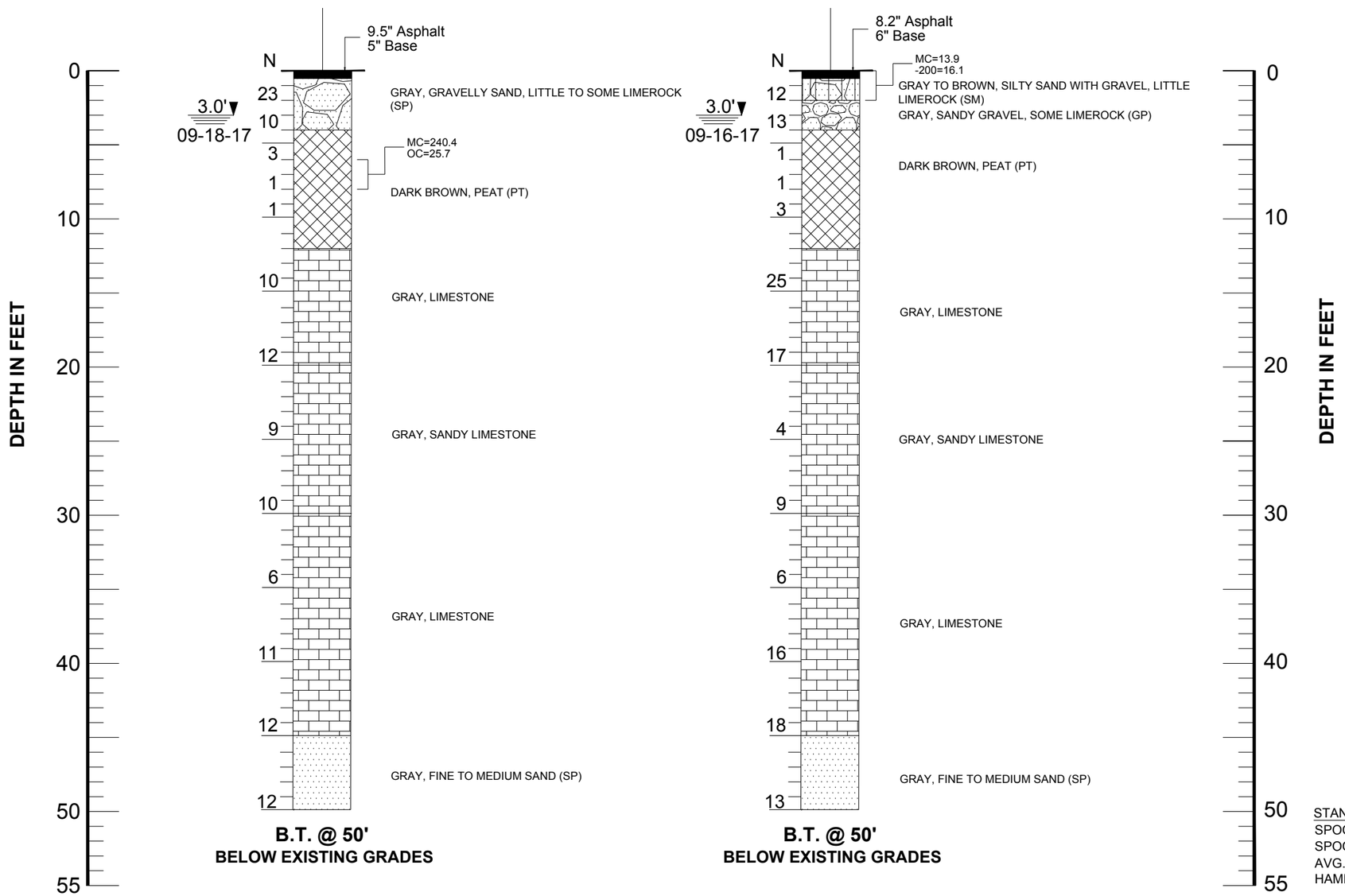
SHEET TITLE: SUBSURFACE PROFILES (SEAWALLS)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 9E

RADISE PROJECT NO: 170901

	S-18	S-19
BORING NO.	S-18	S-19
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1129°	26.1123°
LONGITUDE:	-80.1272°	-80.1274°
DATE:	09/18/2017	09/16/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

ASPHALT AND BASE	LIMESTONE
SAND	GRAVEL
SILT	ORGANIC MATERIAL

1.5' ▼ 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

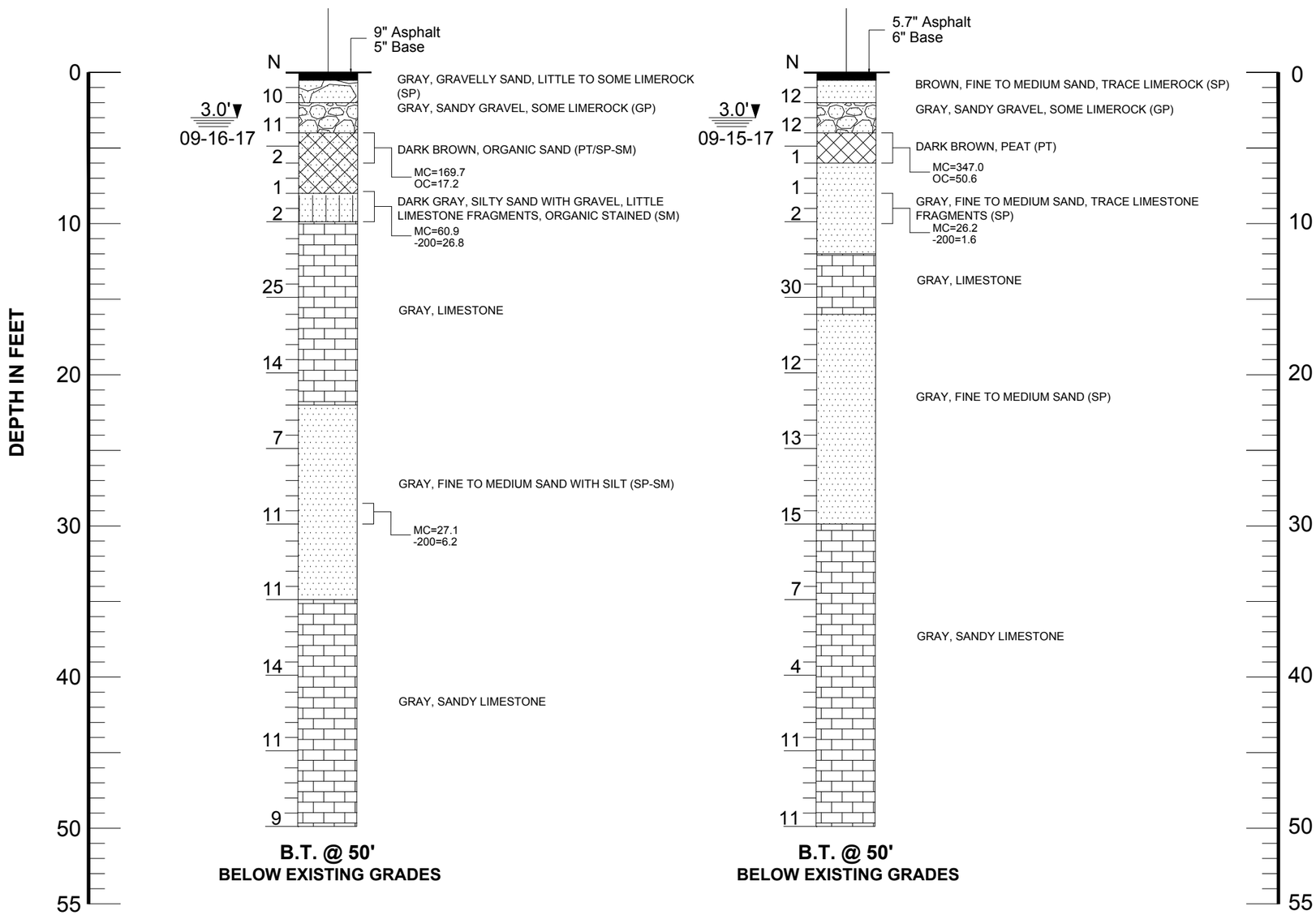
SHEET TITLE: SUBSURFACE PROFILES (SEAWALLS)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 9F

RADISE PROJECT NO: 170901

	S-20	S-21
BORING NO.	S-20	S-21
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1117°	26.1110°
LONGITUDE:	-80.1275°	-80.1280°
DATE:	09/16/2017	09/15/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

ASPHALT AND BASE	LIMESTONE
SAND	GRAVEL
SILT	ORGANIC MATERIAL

1.5' ▼ 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

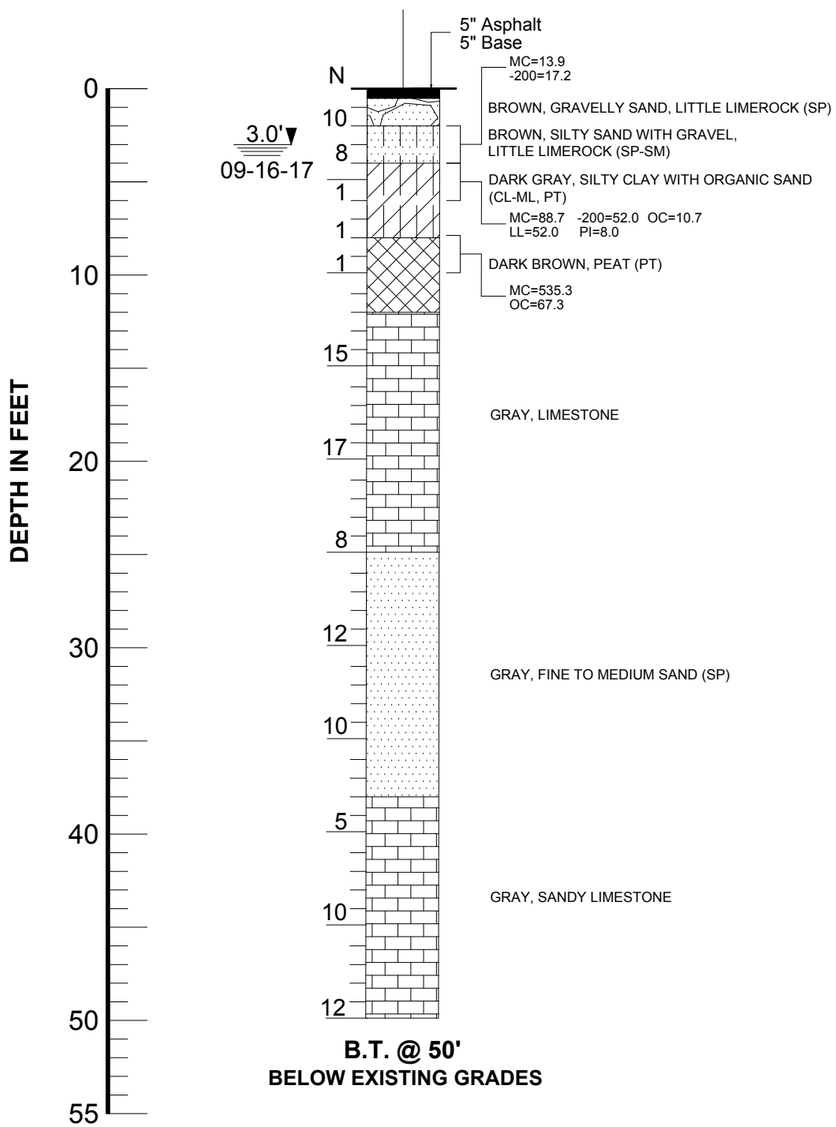
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

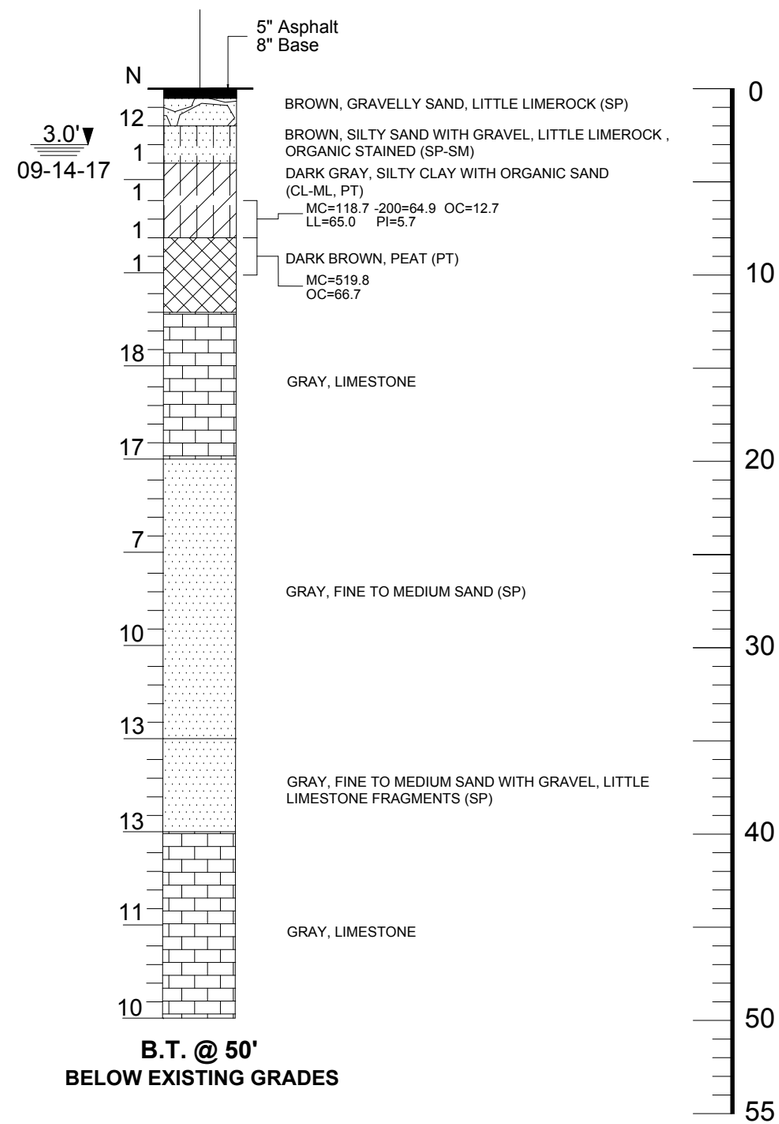
SHEET TITLE: SUBSURFACE PROFILES (SEAWALLS)
PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 9G
RADISE PROJECT NO: 170901

	S-22	S-23
BORING NO.	S-22	S-23
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1097°	26.1086°
LONGITUDE:	-80.1282°	-80.1282°
DATE:	09/16/2017	09/14/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



B.T. @ 50'
BELOW EXISTING GRADES



B.T. @ 50'
BELOW EXISTING GRADES

LEGEND

ASPHALT AND BASE	LIMESTONE
SAND	GRAVEL
SILT	ORGANIC MATERIAL

1.5' / 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

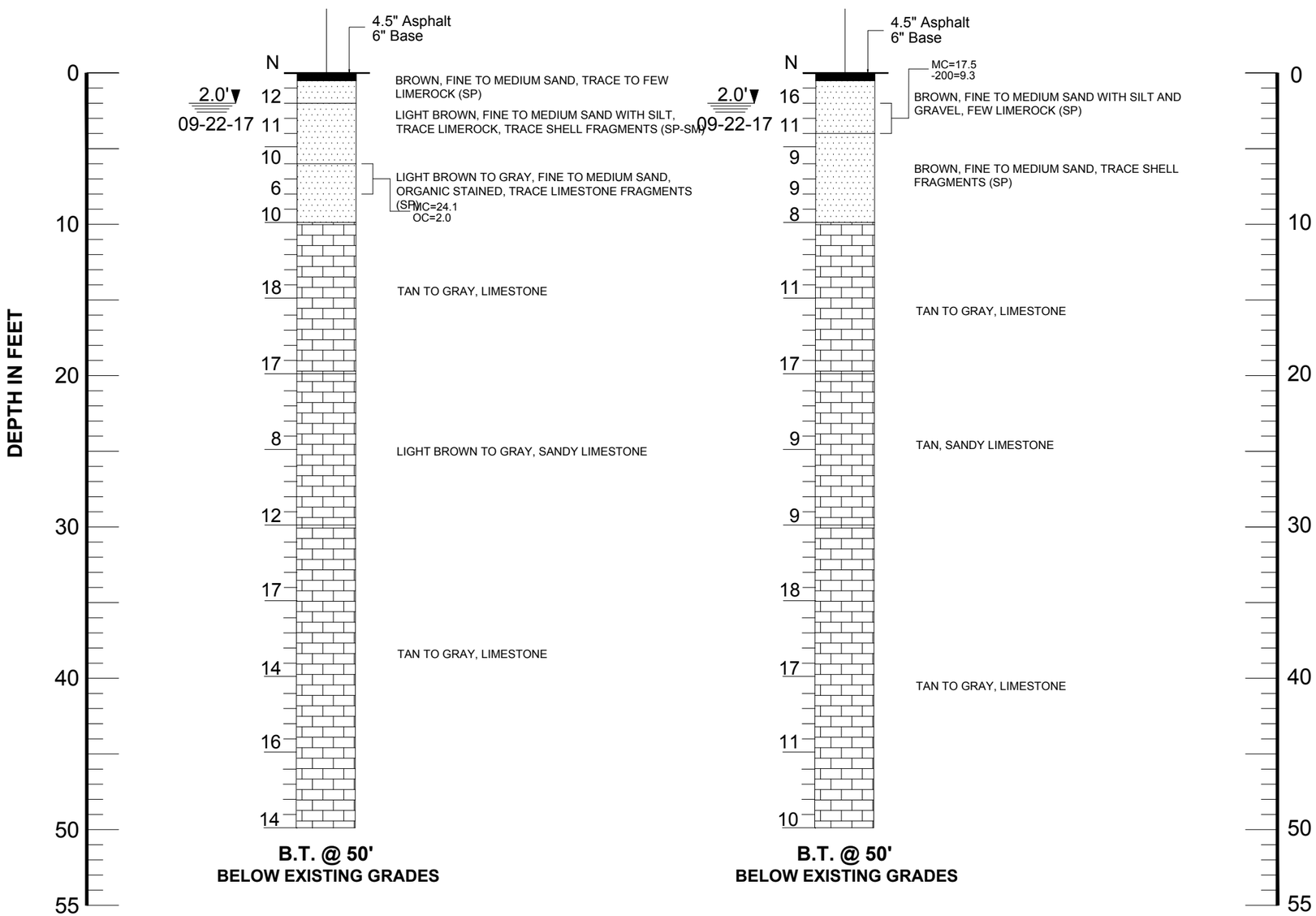
SHEET TITLE: SUBSURFACE PROFILES (SEAWALLS)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 9H

RADISE PROJECT NO: 170901

	S-24	S-25
BORING NO.	S-24	S-25
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1123°	26.1123°
LONGITUDE:	-80.1243°	-80.1235°
DATE:	09/22/2017	09/22/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

ASPHALT AND BASE	LIMESTONE
SAND	GRAVEL
SILT	ORGANIC MATERIAL

1.5' / 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

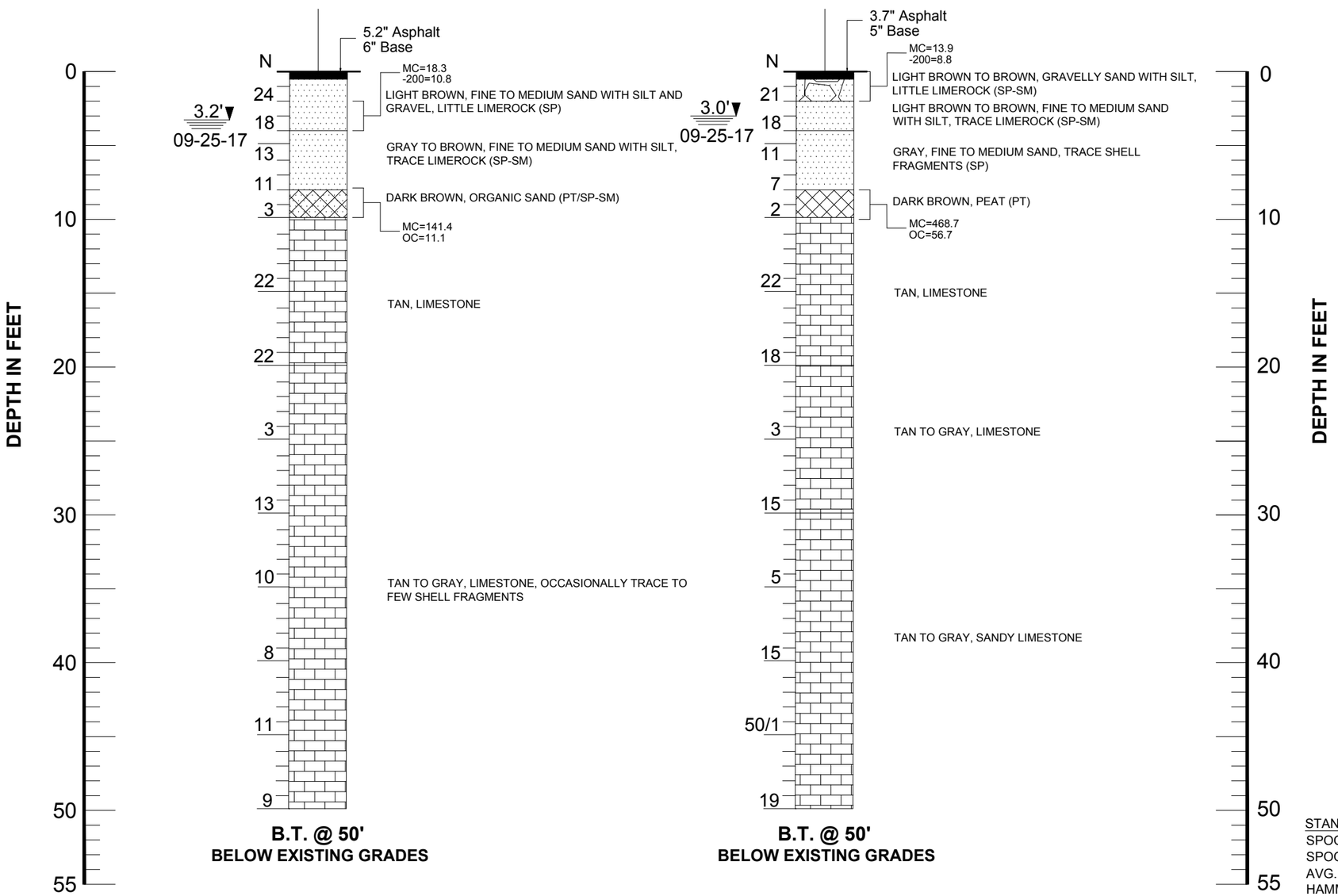
SHEET TITLE: SUBSURFACE PROFILES (SEAWALLS)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 9I

RADISE PROJECT NO: 170901

	S-26	S-27
BORING NO.	S-26	S-27
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1103°	26.1103°
LONGITUDE:	-80.1221°	-80.1214°
DATE:	09/25/2017	09/25/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

ASPHALT AND BASE	LIMESTONE
SAND	GRAVEL
SILT	ORGANIC MATERIAL

1.5' ▼ 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

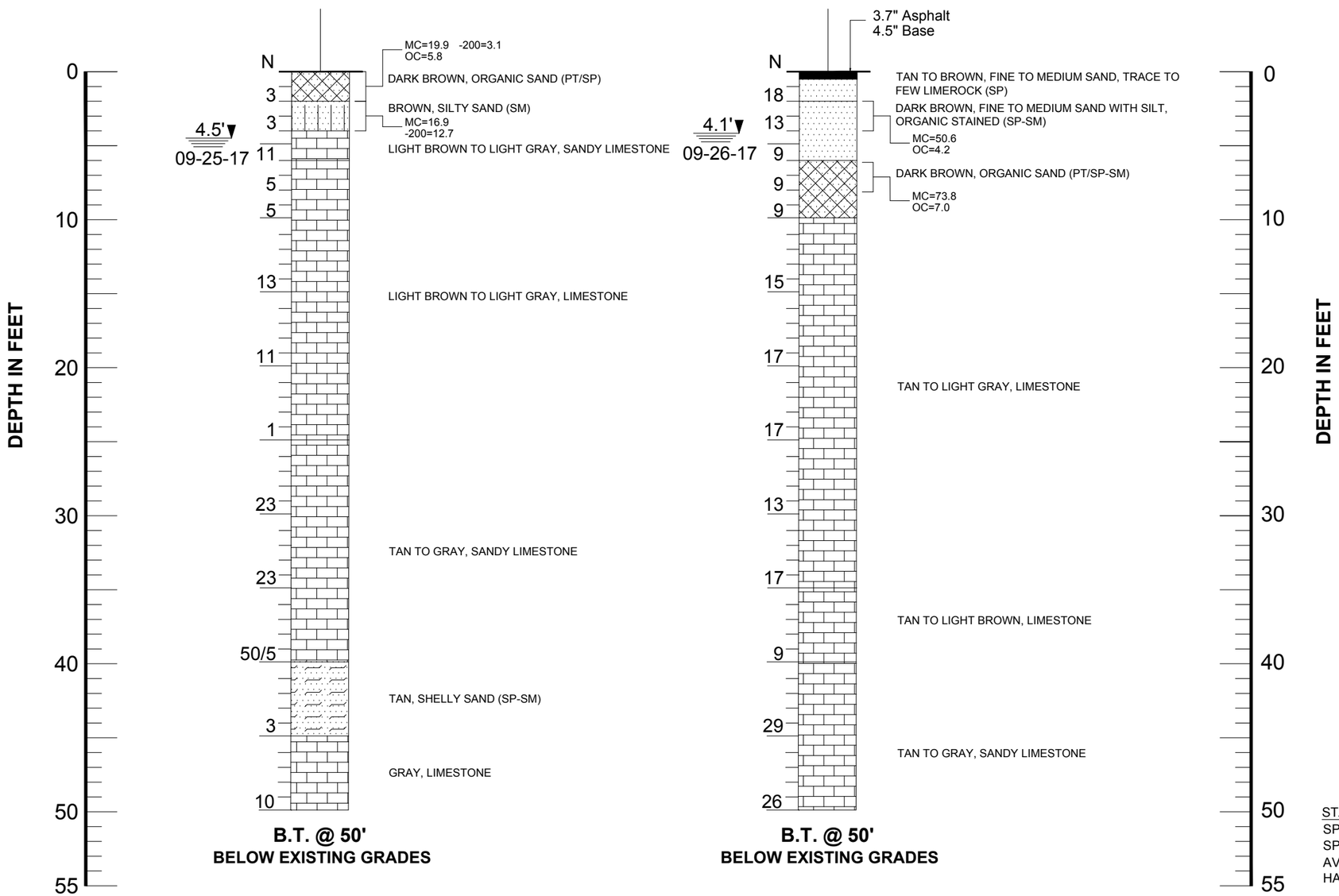
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: SUBSURFACE PROFILES (SEAWALLS)
PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 9J
RADISE PROJECT NO: 170901

	S-28	S-29
BORING NO.	S-28	S-29
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1228°	26.1213°
LONGITUDE:	-80.1242°	-80.1155°
DATE:	09/25/2017	09/26/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

ASPHALT AND BASE	LIMESTONE
SAND	GRAVEL
SILT	ORGANIC MATERIAL

1.5' ▼ 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

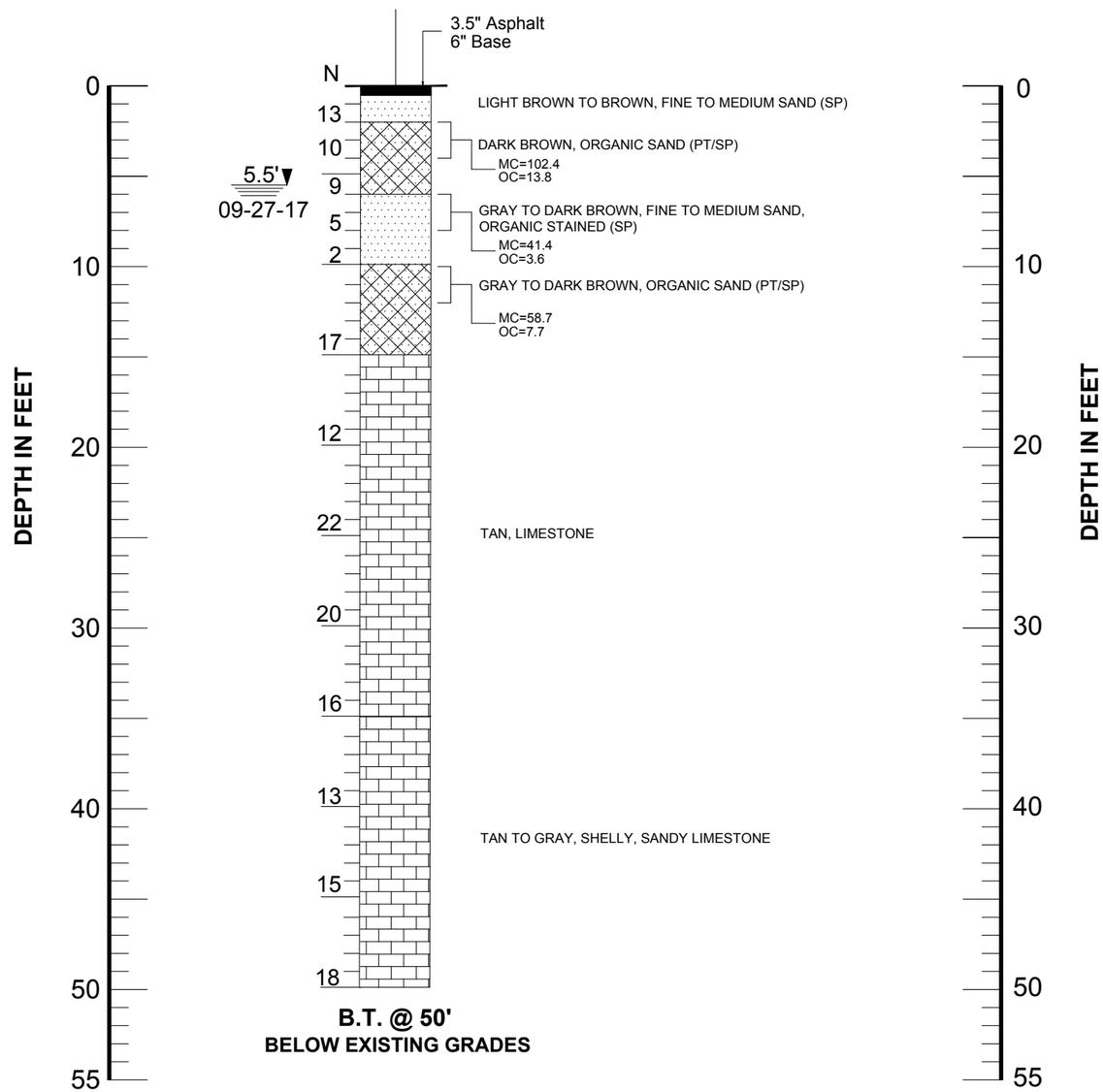
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: SUBSURFACE PROFILES (SEAWALLS)
PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 9K
RADISE PROJECT NO: 170901

BORING NO.	**S-30**
ELEVATION (NAVD 88):	**N/A**
LATITUDE:	**26.1259°**
LONGITUDE:	**-80.1097°**
DATE:	**09/27/2017**
DRILLER:	**T. FICKLING**
RIG:	**CME 45**



LEGEND

ASPHALT AND BASE	LIMESTONE
SAND	GRAVEL
SILT	ORGANIC MATERIAL

1.5' / 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

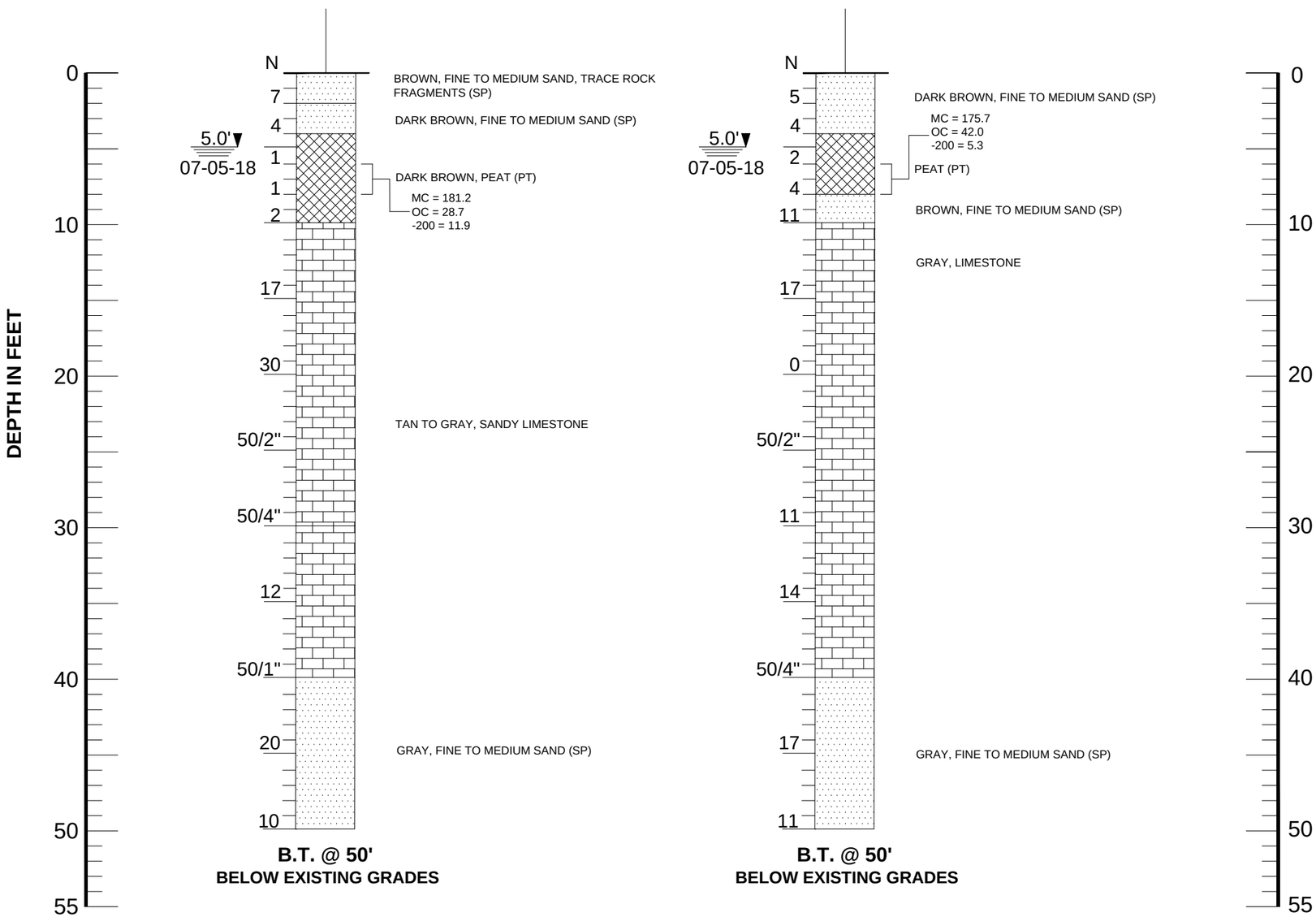
SHEET TITLE: SUBSURFACE PROFILES (SEAWALLS)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 9L

RADISE PROJECT NO: 170901

	S-31	S-32
BORING NO.	S-31	S-32
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1286°	26.1290°
LONGITUDE:	-80.1221°	-80.1220°
DATE:	07/05/2018	07/05/2018
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- SAND
- SILT
- LIMESTONE
- GRAVEL
- ORGANIC MATERIAL

5.0'	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON JULY 07, 2018 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	AK	07/24/18
Checked by	KA	07/24/18
Designed by		
Checked by		
Approved by		

RADISE

LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

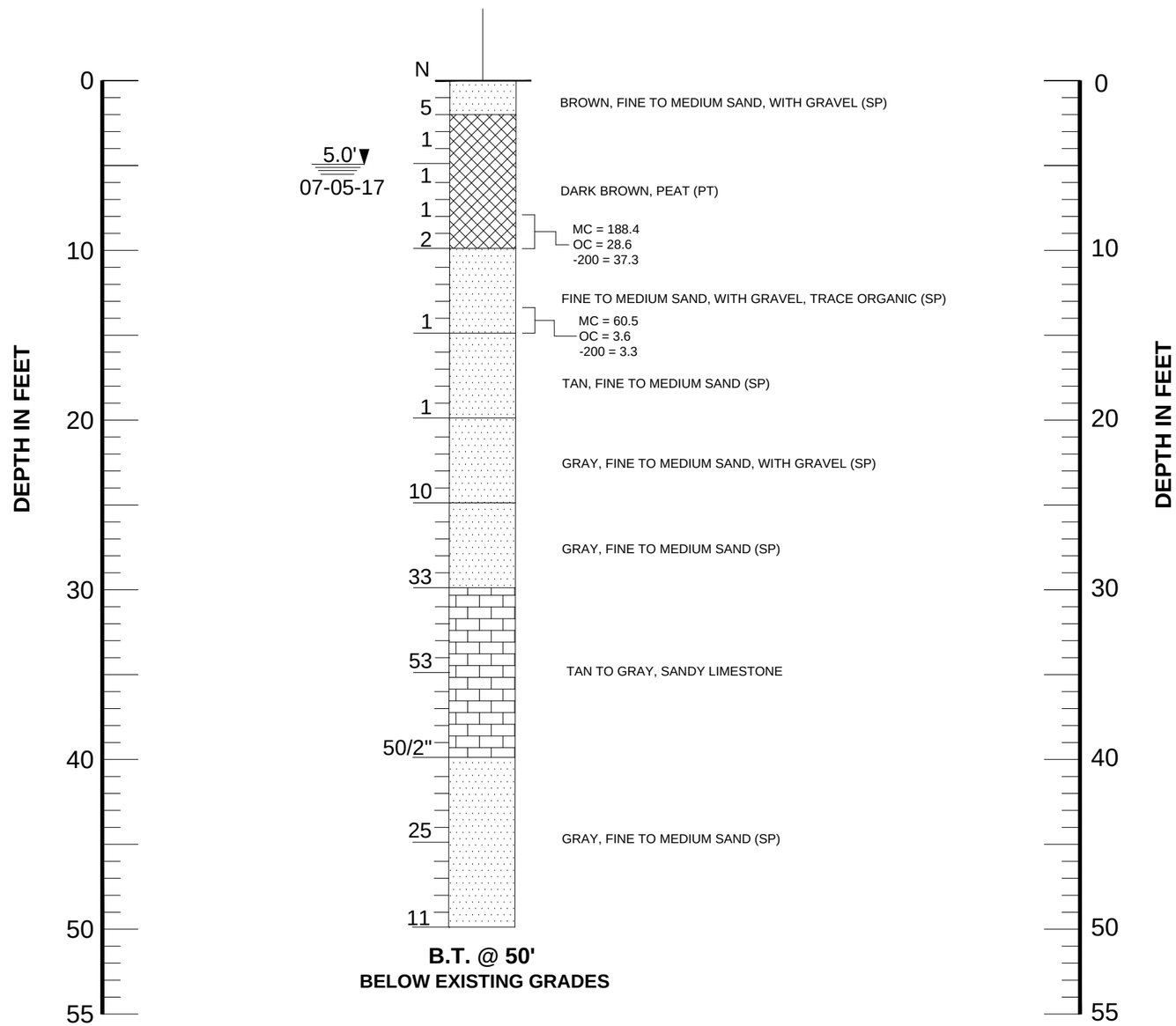
SHEET TITLE: SUBSURFACE PROFILES (SEAWALLS)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 9M

RADISE PROJECT NO: 170901

BORING NO.	**S-33**
ELEVATION (NAVD 88):	**N/A**
LATITUDE:	**26.1296°**
LONGITUDE:	**-80.1213°**
DATE:	**07/05/2018**
DRILLER:	**T. FICKLING**
RIG:	**CME 45**



LEGEND

ASPHALT AND BASE	LIMESTONE
SAND	GRAVEL
SILT	ORGANIC MATERIAL

5.0'	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP, SP-SM, GP, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
S-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON JULY 07, 2018 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	AK	07/24/18
Checked by	KA	07/24/18
Designed by		
Checked by		
Approved by		

RADISE

LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

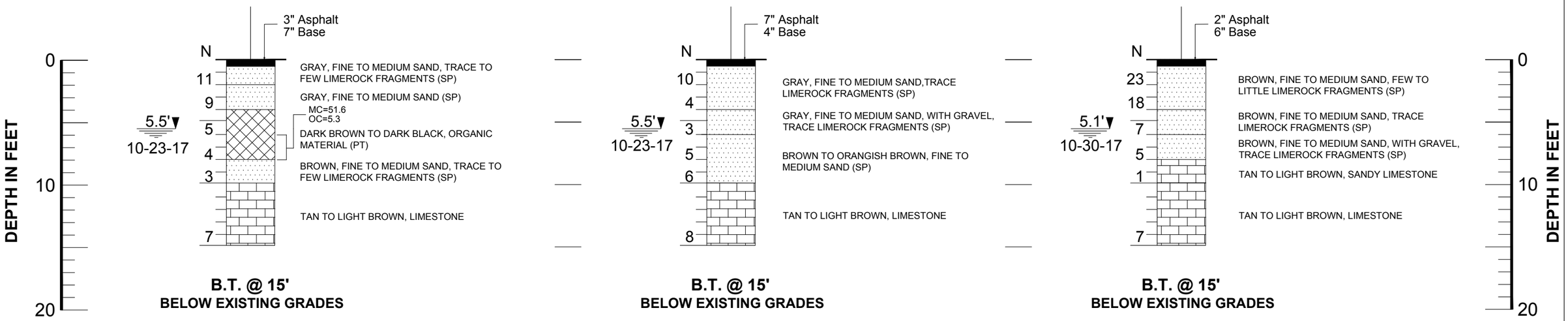
SHEET TITLE: **SUBSURFACE PROFILES (SEAWALLS)**

PROJECT NAME: **STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION**

SHEET NO. **9N**

RADISE PROJECT NO: **170901**

	V-1	V-2	V-3
BORING NO.	V-1	V-2	V-3
ELEVATION (NAVD 88):	N/A	N/A	N/A
LATITUDE:	26.1300°	26.1301°	26.1353°
LONGITUDE:	-80.1335°	-80.1274°	-80.1286°
DATE:	10/23/2017	10/23/2017	10/30/2017
DRILLER:	T. FICKLING	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- LIMESTONE
- SAND
- GRAVEL
- SILTY SAND
- ORGANIC MATERIAL
- 5.5' ▼ / 10-23-17 — GROUNDWATER DEPTH IN FEET AND DRILLING DATE
- N — STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
V-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORING WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/06/17
Checked by	AB	11/06/17
Designed by		
Checked by		
Approved by		

RADISE — Infrastructure Engineers & Software Developers — LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

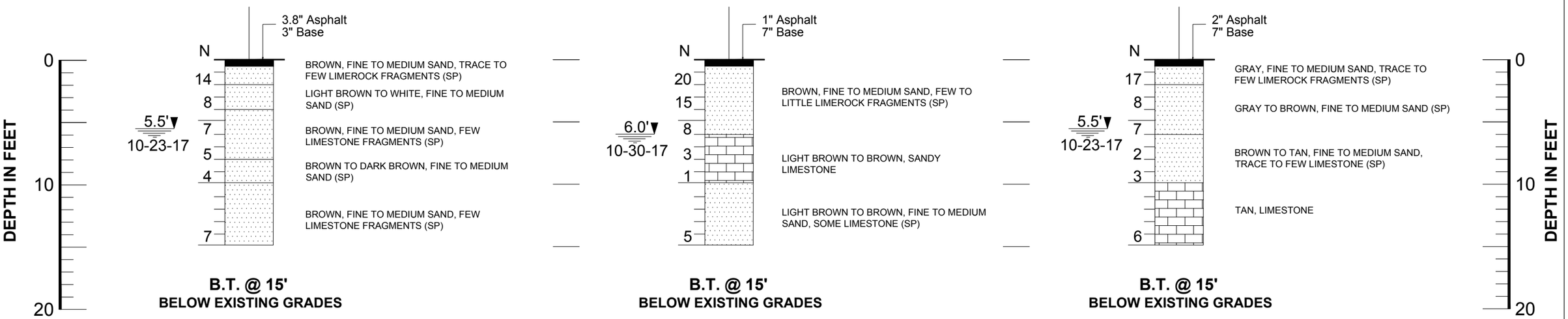
SHEET TITLE: SUBSURFACE PROFILES (VICTORIA PARK)

PROJECT NAME: STORMWATER MASTERPLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 10A

RADISE PROJECT NO: 170901

	V-4	V-5	V-6
BORING NO.	V-4	V-5	V-6
ELEVATION (NAVD 88):	N/A	N/A	N/A
LATITUDE:	26.1338°	26.1320°	26.1289°
LONGITUDE:	-80.1266°	-80.1234°	-80.1229°
DATE:	10/23/2017	10/30/2017	10/23/2017
DRILLER:	T. FICKLING	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- LIMESTONE
- SAND
- GRAVEL
- SILTY SAND
- ORGANIC MATERIAL
- 5.5' ▼ / 10-23-17 — GROUNDWATER DEPTH IN FEET AND DRILLING DATE
- N — STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
V-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORING WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/06/17
Checked by	AB	11/06/17
Designed by		
Checked by		
Approved by		

RADISE — Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

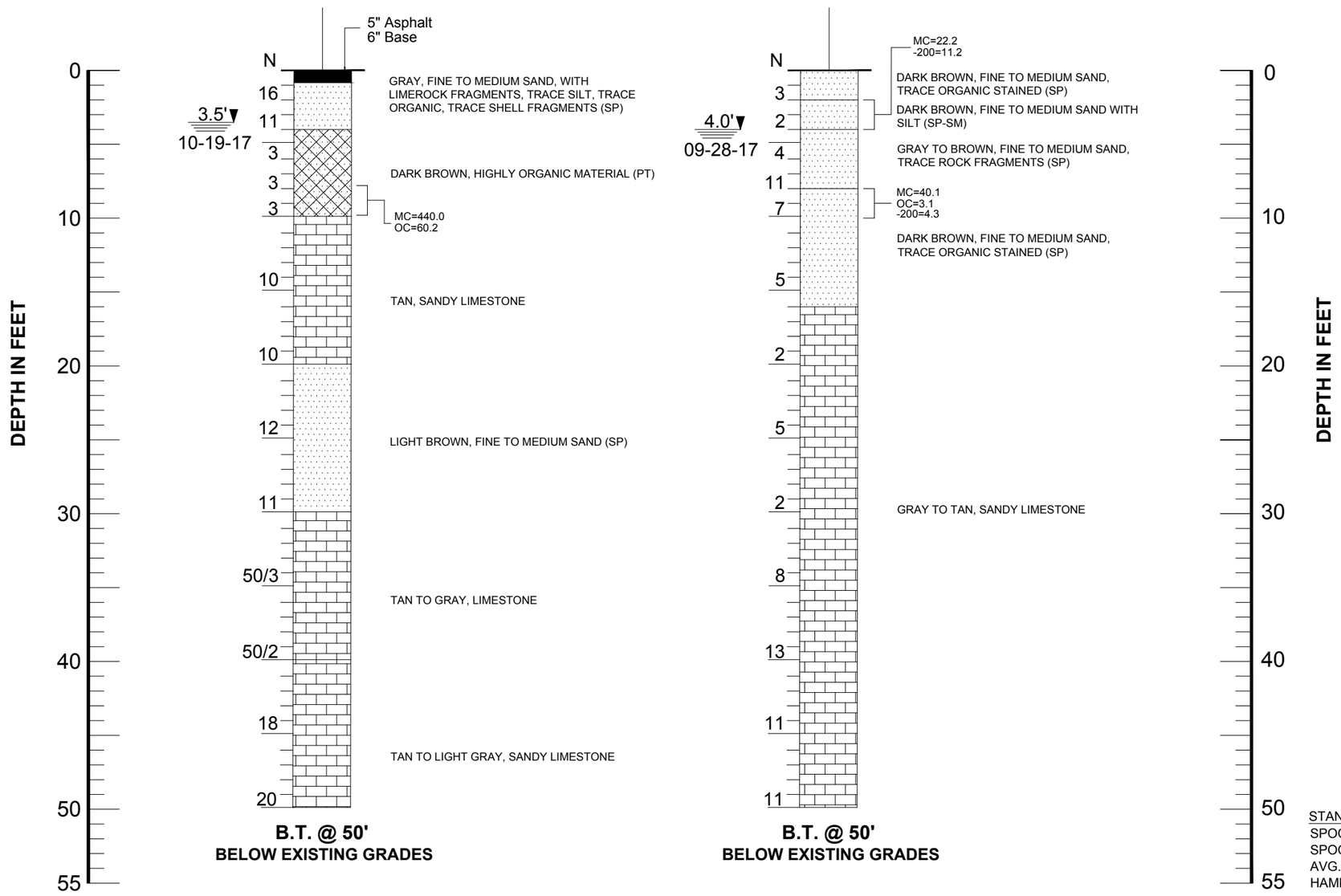
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: SUBSURFACE PROFILES (VICTORIA PARK)
PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 10B
RADISE PROJECT NO: 170901

	V-8	V-9
BORING NO.	V-8	V-9
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1323°	26.1321°
LONGITUDE:	-80.1194°	-80.1192°
DATE:	10/19/2017	09/28/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

SAND	SHELLY SAND
SILT	LIMESTONE
ORGANIC MATERIAL	GRAVEL

1.5' ▼ 09-21-17	GROUNDWATER DEPTH IN FEET AND DRILLING DATE
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
SP	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
V-9	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 50'	BORING TERMINATED AT 50 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORINGS WERE DRILLED ON SEPTEMBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	ML	10/13/17
Checked by	AB	10/13/17
Designed by		
Checked by		
Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

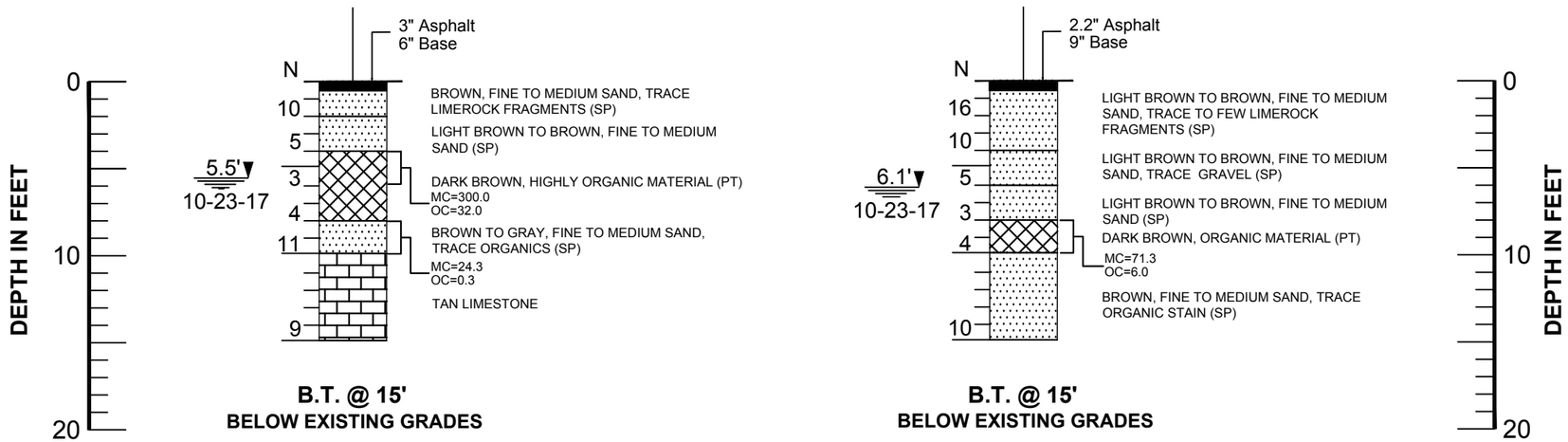
SHEET TITLE: SUBSURFACE PROFILES (VICTORIA PARK)

PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 10C

RADISE PROJECT NO: 170901

	V-7	V-10
BORING NO.	V-7	V-10
ELEVATION (NAVD 88):	N/A	N/A
LATITUDE:	26.1321°	26.1345°
LONGITUDE:	-80.1208°	-80.1196°
DATE:	10/23/2017	10/23/2017
DRILLER:	T. FICKLING	T. FICKLING
RIG:	CME 45	CME 45



LEGEND

- ASPHALT AND BASE
- LIMESTONE
- SAND
- GRAVEL
- SILTY SAND
- ORGANIC MATERIAL
- 5.5' / 10-23-17 — GROUNDWATER DEPTH IN FEET AND DRILLING DATE
- N — STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER

SP, SP-SM, PT	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2488)
V-1	STANDARD PENETRATION TEST (SPT) BORING AND NUMBER
MC	MOISTURE CONTENT (%)
-200	AMOUNT PASSING US STANDARD # 200 SIEVE (%)
OC	ORGANIC CONTENTS (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)
B.T. @ 15'	BORING TERMINATED AT 15 FEET BELOW THE EXISTING GROUND SURFACE

NOTES

(1) BORING WERE DRILLED ON SEPTEMBER AND OCTOBER, 2017 USING A CENTRAL MINING EQUIPMENT MODEL 45 (CME 45) AUTOMATIC HAMMER DRILL RIG.

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVELS WILL FLUCTUATE THROUGHOUT THE YEAR.

(4) LONGITUDE AND LATITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HAND HELD GPS UNIT.

(5) ELEVATIONS WERE NOT AVAILABLE

(6) AFTER COMPLETION OF DRILLING BOREHOLES WERE BACK FILLED WITH GROUT.

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	KA	11/06/17
Checked by	AB	11/06/17
Designed by		
Checked by		
Approved by		

RADISE — Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: SUBSURFACE PROFILES (VICTORIA PARK)
PROJECT NAME: STORMWATER MASTER PLAN MODELING AND DESIGN IMPLEMENTATION

SHEET NO. 10D
RADISE PROJECT NO: 170901

APPENDIX A

TABLE A-1 – LABORATORY TEST RESULTS SUMMARY
GRAIN SIZE DISTRIBUTION

Table A: Laboratory Test Results Summary

Project Name: City of Fort Lauderdale - Stormwater Master Plan Modeling and Design Implementation

Project ID: 170901

						ATTERBERG LIMITS			GRAIN SIZE ANALYSIS U.S STANDARD SIEVE SIZE (% Passing)													
Boring No	Sample Depth	Soil Classification	Moisture Content (%)	Organic Content (%)	-200	LL (%)	PL (%)	PI	3"	1.5"	1"	3/4"	3/8"	#4	#10	#20	#40	#50	#60	#100	#140	#200
DR-1	28.5' - 30'	SM	19.1	-	12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DR-2	4' - 6'	SP	26.6	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DR-3	8' - 10'	SP	20.0	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DR-4	8' - 10'	SP	21.5	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DR-5	4' - 6'	SP	25.9	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D-1	6' - 8'	SP	22.8	-	1.7	-	-	-	100	100	-	100	100	100	100	100	86.2	64.0	49.5	11.5	2.6	1.7
D-1	8' -10'	SP	27.3	1.1	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D-2	6' - 8'	SP	32.9	3.2	3.7	-	-	-	100	100	-	100	100	100	98.9	98.1	88.7	64.4	48.3	8.8	4.2	3.7
D-2	8' - 10'	SP-SM	22.1	-	10.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D-3	0' - 2'	SP-SM	7.5	-	8.2	-	-	-	100	100	-	100	92.1	90.1	88.5	87.0	78.3	62.2	50.5	14.9	9.3	8.2
D-3	4' - 6'	SP	21.5	-	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D-5	8' - 10'	SP	27.8	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P-1	13.5' 15'	SP	20.8	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P-4	6' - 8'	SP	16.9	-	4.4	-	-	-	100	100	-	100	93.9	87.5	83.3	81.1	71.9	57.8	44.5	9.8	5.2	4.4
P-5	4' - 6'	SP	26.7	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P-6	28.5' - 30'	SP-SM	25.7	-	7.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V-1	6' - 8'	PT	51.6	5.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V-7	4' - 6'	PT	300.0	32.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V-7	8' - 10'	SP	24.3	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A: Laboratory Test Results Summary

Project Name: City of Fort Lauderdale - Stormwater Master Plan Modeling and Design Implementation

Project ID: 170901

						ATTERBERG LIMITS			GRAIN SIZE ANALYSIS U.S STANDARD SIEVE SIZE (% Passing)													
Boring No	Sample Depth	Soil Classification	Moisture Content (%)	Organic Content (%)	-200	LL (%)	PL (%)	PI	3"	1.5"	1"	3/4"	3/8"	#4	#10	#20	#40	#50	#60	#100	#140	#200
V-8	8' - 10'	PT	440.5	60.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V-9	2' - 4'	SP-SM	22.2	-	11.2	-	-	-	100	100	-	100	92.3	90.1	88.7	87.5	79.6	67.1	56.9	21.2	12.5	11.2
V-9	8' - 10'	SP	40.1	3.1	4.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V-10	8' - 10'	PT	71.3	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E-11	2' - 4'	SP	17.8	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-1	0' - 2'	SP-SM	8.1	-	8.3	-	-	-	100	100	-	95.1	80.3	75.2	72.1	70.3	62.8	52.1	43.5	15.6	9.7	8.3
R-2	2' - 4'	SP-SM	14.0	-	7.3	-	-	-	100	100	-	90.7	78.8	70.6	64.6	61.1	54.8	46.5	40.1	15.8	9.2	7.3
R-2	4' - 6'	SP	18.2	-	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-3	2' - 4'	SP	20.1	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-4	0' - 2'	SP	14.5	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-5	6' - 8'	SP	27.4	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-6	2' - 4'	SP-SM	16.8	-	8.1	-	-	-	100	100	-	93.0	87.2	82.5	80.4	78.5	72.6	62.3	52.7	17.5	10.3	8.1
R-6	6' - 8'	SP	24.1	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-9	4' - 6'	SP	56.3	10.2	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-9	13.5' - 15'	SP	26.5	-	1.2	-	-	-	100	100	100	100	100	100	100	100	95.4	79.9	64.3	8.8	1.6	1.2
R-10	2' - 4'	SP	51.4	18.4	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-10	28.5' - 30'	SP	25.6	-	2.7	-	-	-	100	100	100	100	100	100	100	99.1	77.8	55.0	43.5	13.8	3.5	2.7
R-11	4' - 6'	SP	27.0	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-11	8' - 10'	SP	24.8	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A: Laboratory Test Results Summary

Project Name: City of Fort Lauderdale - Stormwater Master Plan Modeling and Design Implementation

Project ID: 170901

						ATTERBERG LIMITS			GRAIN SIZE ANALYSIS U.S STANDARD SIEVE SIZE (% Passing)													
Boring No	Sample Depth	Soil Classification	Moisture Content (%)	Organic Content (%)	-200	LL (%)	PL (%)	PI	3"	1.5"	1"	3/4"	3/8"	#4	#10	#20	#40	#50	#60	#100	#140	#200
R-11	38.5' - 40'	SP-SM	19.0	-	9.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-11	48.5' - 50'	SP-SM	26.2	-	8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-12	0' - 2'	SP	20.2	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-12	4' - 6'	PT	107.6	9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-12	38.5' - 40'	SP-SM	18.7	-	11.1	-	-	-	100	100	-	100	100	100	100	98.4	81.6	64.5	54.8	28.0	14.5	11.1
R-13	2' - 4'	SP	20.7	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-2	6' - 8'	PT	494.0	76.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-3	6' - 8'	SP	27.8	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-4	6' - 8'	PT	110.6	12.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-5	4' - 6'	PT	399.1	63.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-8	4' - 6'	PT/SP-SM	119.1	11.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-8	6' - 8'	SP-SM	33.4	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-8	13.5' - 15'	ML	27.6	-	69.3	NP	NP	NA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-9	0' - 2'	SP-SM	14.9	-	7.1	-	-	-	100	100	100	100	96.8	90.6	85.9	82.0	71.8	61.2	52.1	30.2	12.1	7.1
S-9	6' - 8'	SP	21.3	-	2.6	-	-	-	100	100	-	100	99.6	99.2	98.7	97.7	81.9	57.4	42.2	6.3	3.1	2.6
S-10	4' - 6'	SP	21.3	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-10	6' - 8'	SP	18.9	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-11	2' - 4'	SP-SM	18.9	-	11.3	-	-	-	100	100	-	92.5	81.2	77.9	74.8	71.7	62.0	49.1	39.5	15.1	11.7	11.3
S-11	4' - 6'	SP	19.9	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A: Laboratory Test Results Summary

Project Name: City of Fort Lauderdale - Stormwater Master Plan Modeling and Design Implementation

Project ID: 170901

						ATTERBERG LIMITS			GRAIN SIZE ANALYSIS U.S STANDARD SIEVE SIZE (% Passing)														
Boring No	Sample Depth	Soil Classification	Moisture Content (%)	Organic Content (%)	-200	LL (%)	PL (%)	PI	3"	1.5"	1"	3/4"	3/8"	#4	#10	#20	#40	#50	#60	#100	#140	#200
S-12	0' - 2'	SM	16.6	-	18.4	-	-	-	100	100	100	94.0	80.9	72.3	65.9	61.4	54.3	46.0	40.0	23.8	19.9	18.4
S-12	4' - 6'	SP	23.0	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-13	0' - 2'	SP	24.9	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-13	4' - 6'	SP-SM	18.4	-	11.0	-	-	-	100	100	-	100	74.1	66.7	63.1	61.2	55.6	46.2	38.0	15.7	12.3	11.0
S-13	8' -10'	SM	25.9	1.5	12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-14	0' - 2'	SP	13.5	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-14	6' - 8'	PT	205.5	25.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-15	0' - 2'	SP	18.9	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-15	4' - 6'	PT	456.1	65.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-16	0' - 2'	SP-SM	11.3	-	8.1	-	-	-	100	100	-	95.0	85.1	79.2	74.7	72.1	62.7	50.6	42.4	17.8	9.7	8.1
S-16	4' - 6'	PT/SP-SM	101.2	14.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-16	8' - 10'	SP	35.0	2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-17	6' - 8'	PT	527.3	62.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-17	23.5' - 25'	SP	25.6	-	3.1	-	-	-	100	100	-	100	100	100	100	99.4	92.4	82.3	76.5	24.6	5.4	3.1
S-18	6' - 8'	PT	240.4	25.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-19	0' - 2'	SM	13.9	-	16.1	-	-	-	100	100	-	96.3	81.0	69.0	61.8	57.4	48.7	39.9	34.8	21.1	17.6	16.1
S-20	4' - 6'	PT/SP-SM	169.7	17.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-20	8' - 10'	SM	60.9	-	26.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-20	28.5' - 30'	SP-SM	27.1	-	6.2	-	-	-	100	100	-	100	100	100	100	100	97.4	96.5	96.1	53.6	12.0	6.2

Table A: Laboratory Test Results Summary

Project Name: City of Fort Lauderdale - Stormwater Master Plan Modeling and Design Implementation

Project ID: 170901

						ATTERBERG LIMITS			GRAIN SIZE ANALYSIS U.S STANDARD SIEVE SIZE (% Passing)													
Boring No	Sample Depth	Soil Classification	Moisture Content (%)	Organic Content (%)	-200	LL (%)	PL (%)	PI	3"	1.5"	1"	3/4"	3/8"	#4	#10	#20	#40	#50	#60	#100	#140	#200
S-21	4' - 6'	PT	347.0	50.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-21	8' - 10'	SP	26.2	-	1.6	-	-	-	100	100	-	100	100	100	100	98.9	84.8	62.1	48.9	9.8	2.4	1.6
S-22	2 '- 4'	SM	13.9	-	17.2	-	-	-	100	100	-	100	84.3	73.3	66.0	61.3	53.2	45.5	40.6	24.8	19.0	17.2
S-22	4' - 6'	CL-ML/PT	88.7	10.7	54.2	52	44	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-22	8' - 10'	PT	535.3	67.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-23	6' - 8'	CL-ML/PT	118.7	12.7	64.9	65	59.3	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-23	8' - 10'	PT	519.8	66.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-24	6' - 8'	SP	24.1	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-25	2' - 4'	SP-SM	17.5	-	9.3	-	-	-	100	100	100	100	87.7	80.8	75.9	73.0	62.6	49.5	41.7	14.1	10.3	9.3
S-26	2' - 4'	SP-SM	18.3	-	10.8	-	-	-	100	-	100	100	90.0	81.7	75.3	70.0	58.9	45.5	37.8	17.8	12.7	10.8
S-26	8' - 10'	PT/SP-SM	141.4	11.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-27	0' - 2'	SP-SM	13.9	-	8.8	-	-	-	100	-	89.6	89.6	68.6	59.5	53.3	49.3	41.7	33.7	28.2	13.6	9.8	8.8
S-27	8' - 10'	PT	468.7	56.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-28	0' - 2'	PT/SP	19.9	5.8	3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-28	2' - 4'	SM	16.9	-	12.7	-	-	-	100	100	100	100	93.8	92.9	91.8	90.7	80.5	63.3	50.3	17.3	13.6	12.7
S-29	2' - 4'	SP	50.6	4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-29	6' - 8'	PT/SP-SM	73.8	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-30	2' - 4'	PT/SP	102.4	13.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-30	6' - 8'	SP	41.4	3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A: Laboratory Test Results Summary

Project Name: City of Fort Lauderdale - Stormwater Master Plan Modeling and Design Implementation

Project ID: 170901

						ATTERBERG LIMITS			GRAIN SIZE ANALYSIS U.S STANDARD SIEVE SIZE (% Passing)													
Boring No	**Sample Depth**	**Soil Classification**	**Moisture Content (%)**	**Organic Content (%)**	**-200**	**LL (%)**	**PL (%)**	**PI**	**3"**	**1.5"**	**1"**	**3/4"**	**3/8"**	**#4**	**#10**	**#20**	**#40**	**#50**	**#60**	**#100**	**#140**	**#200**
S-30	13.5' - 15'	PT/SP	58.7	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-31	6' - 8'	PT	181.2	28.7	11.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-32	6' - 8'	PT	175.7	42.0	5.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S-33	13.5' - 15'	SP	60.5	3.6	3.3	-	-	-	100	100	-	100	100	95.2	84.8	71.5	51.6	35.5	26.8	9.3	5.3	3.3
S-33	8' - 10'	PT	188.4	28.6	37.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

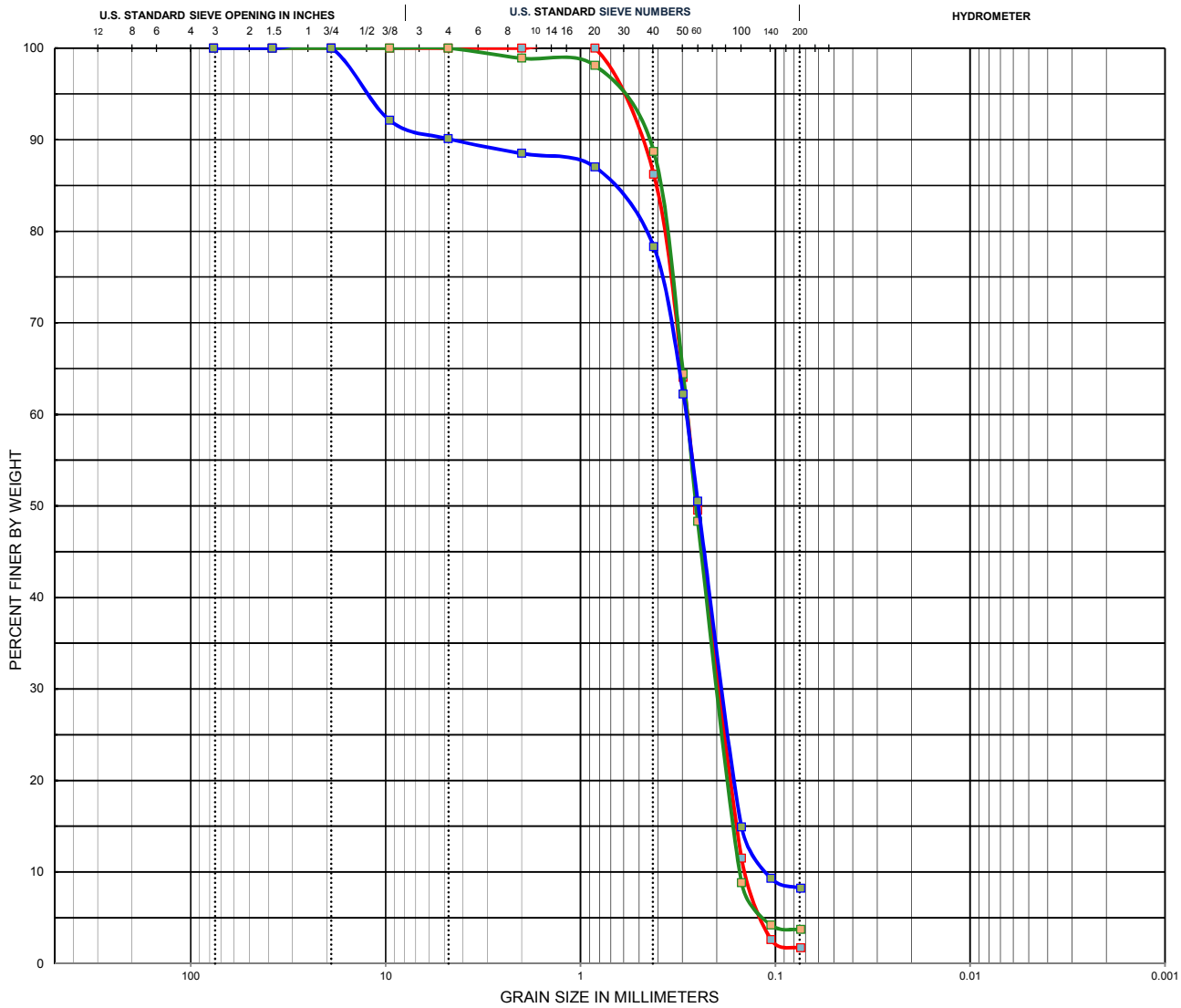
Moisture Content tested in accordance ASTM-D2216,
Organic Content tests are performed with furnace temperature @450 Celsius and tested accordance ASTM-D2974,
Plasticity Index Properties tested with accordance to ASTM-D4318,. LL=Liquid Limit, PL=Plasticity Limit and PI=Plasticity Index and NP=Non-Pastic
Soil Classification tested with accordance to ASTM D 2487,
Grain Size Analysis was tested in general accordance with ASTM-D422

GRAIN SIZE DISTRIBUTION

CLIENT NAME Hazen and Sawyer, P.C.

PROJECT NAME City of Fort Lauderdale - Stormwater Master Modeling and Design Implementation

PROJECT NUMBER 170901



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No, Depth	Classification	LL	PL	PI	Cc	Cu
D-1 , 6-8	**Poorly-graded sand (SP)**	**NP**	**NP**	**NP**	**1.02**	**2**
D-2 , 6-8	**Poorly-graded sand (SP)**	**NP**	**NP**	**NP**	**0.95**	**1.87**
D-3 , 0-2	**Poorly-graded sand with silt (SP-SM)**	**NP**	**NP**	**NP**	**1.13**	**2.64**

Boring No, Depth	D100	D60	D30	D10	% Cobble	%Gravel	%Sand	%Silt	%Clay
D-1 , 6-8	**0.84**	**0.28**	**0.2**	**0.14**	**0**	**0**	**98.3**	**1.7**	
D-2 , 6-8	**4.76**	**0.28**	**0.2**	**0.15**	**0**	**0**	**96.3**	**3.7**	
D-3 , 0-2	**19**	**0.29**	**0.19**	**0.11**	**0**	**9.9**	**81.9**	**8.2**	

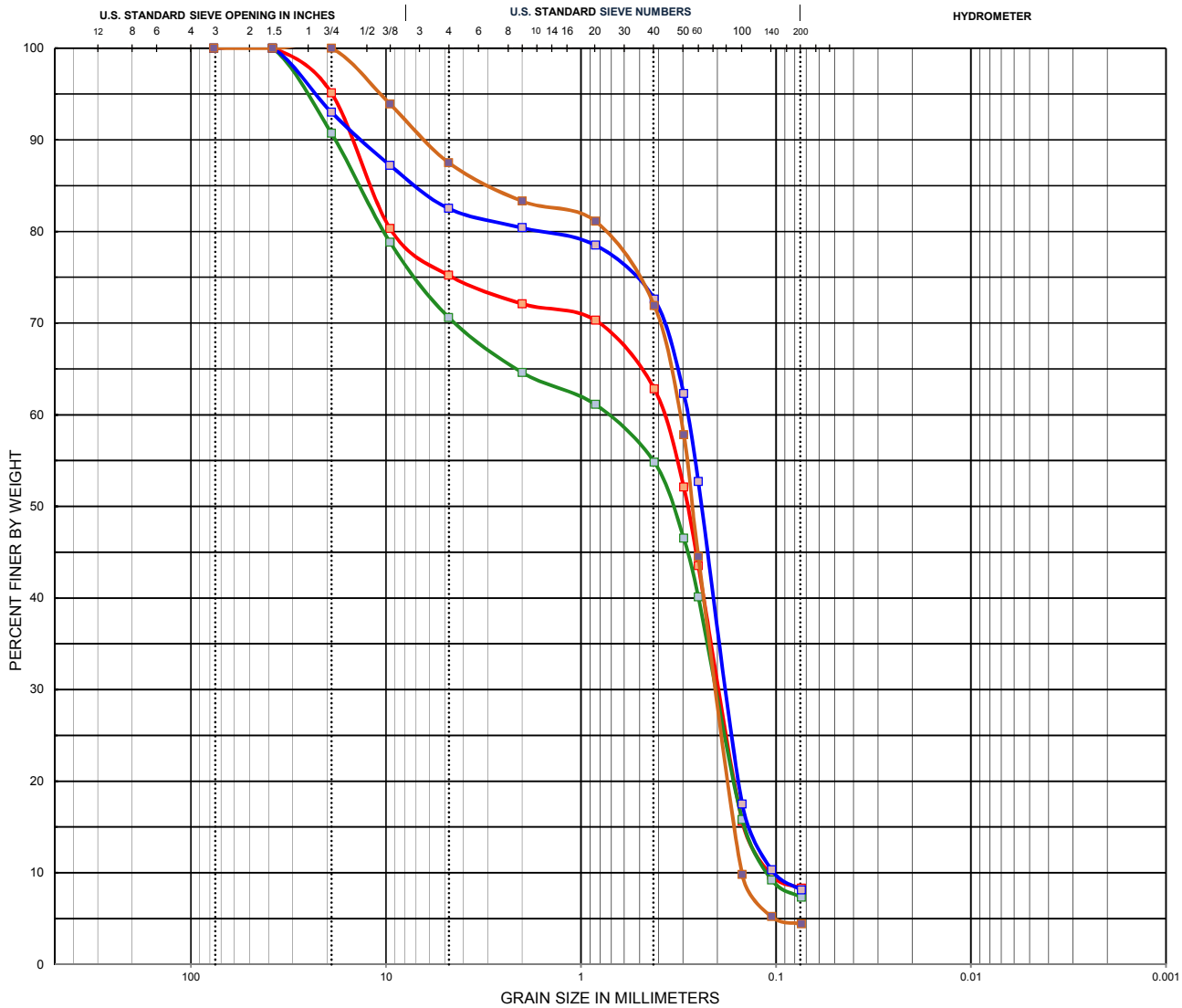
In accordance with ASTM E 329 this report shall not be reproduced, except in full without the prior written approval of RADISE International

GRAIN SIZE DISTRIBUTION

CLIENT NAME Hazen and Sawyer, P.C.

PROJECT NAME City of Fort Lauderdale - Stormwater Master Modeling and Design Implementation

PROJECT NUMBER 170901



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No, Depth	Classification	LL	PL	PI	Cc	Cu
R-1 , 0 - 2'	**Poorly-graded sand with silt and gravel (SP-SM)**	**NP**	**NP**	**NP**	**0.93**	**3.55**
R-2 , 2' - 4'	**Poorly-graded sand with silt and gravel (SP-SM)**	**NP**	**NP**	**NP**	**0.52**	**7**
R-6 , 2' - 4'	**Poorly-graded sand with silt and gravel (SP-SM)**	**NP**	**NP**	**NP**	**1.12**	**2.9**
P-4 , 6' - 8'	**Poorly-graded sand (SP)**	**NP**	**NP**	**NP**	**0.92**	**2.13**

Boring No, Depth	D100	D60	D30	D10	% Cobble	%Gravel	%Sand	%Silt	%Clay
R-1 , 0 - 2'	**38.1**	**0.39**	**0.2**	**0.11**	**0**	**24.8**	**66.9**	**8.3**	
R-2 , 2' - 4'	**38.1**	**0.77**	**0.21**	**0.11**	**0**	**29.4**	**63.3**	**7.3**	
R-6 , 2' - 4'	**38.1**	**0.29**	**0.18**	**0.1**	**0**	**17.5**	**74.4**	**8.1**	
P-4 , 6' - 8'	**19**	**0.32**	**0.21**	**0.15**	**0**	**12.5**	**83.1**	**4.4**	

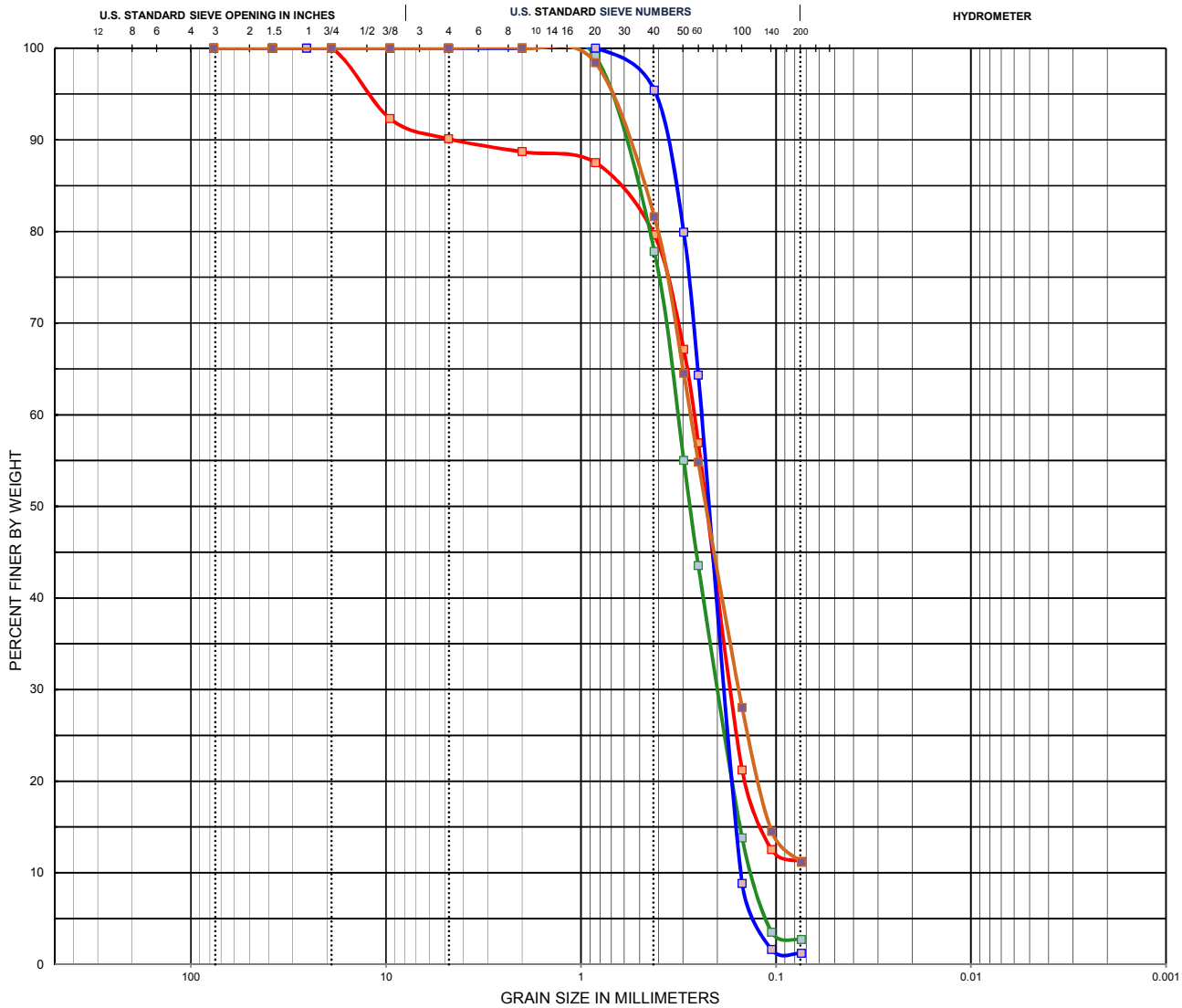
In accordance with ASTM E 329 this report shall not be reproduced, except in full without the prior written approval of RADISE International

GRAIN SIZE DISTRIBUTION

CLIENT NAME Hazen and Sawyer, P.C.

PROJECT NAME City of Fort Lauderdale - Stormwater Master Modeling and Design Implementation

PROJECT NUMBER 170901



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No, Depth	Classification	LL	PL	PI	Cc	Cu
V-9 , 2-4	**Poorly-graded sand with silt (SP-SM)**	**NP**	**NP**	**NP**	**0**	**0**
R-10 , 28.5-30	**Poorly-graded sand (SP)**	**NP**	**NP**	**NP**	**0.96**	**2.46**
R-9 , 13.5-15	**Poorly-graded sand (SP)**	**NP**	**NP**	**NP**	**1**	**1.6**
R-12 , 38.5' - 40'	**Poorly-graded sand with silt (SP-SM)**	**NP**	**NP**	**NP**	**0**	**0**

Boring No, Depth	D100	D60	D30	D10	% Cobble	%Gravel	%Sand	%Silt	%Clay
V-9 , 2-4	**19**	**0.26**	**0.17**	**0**	**0**	**9.9**	**78.9**	**11.2**	
R-10 , 28.5-30	**2**	**0.32**	**0.2**	**0.13**	**0**	**0**	**97.3**	**2.7**	
R-9 , 13.5-15	**0.84**	**0.24**	**0.19**	**0.15**	**0**	**0**	**98.8**	**1.2**	
R-12 , 38.5' - 40'	**2**	**0.28**	**0.16**	**0**	**0**	**0**	**88.9**	**11.1**	

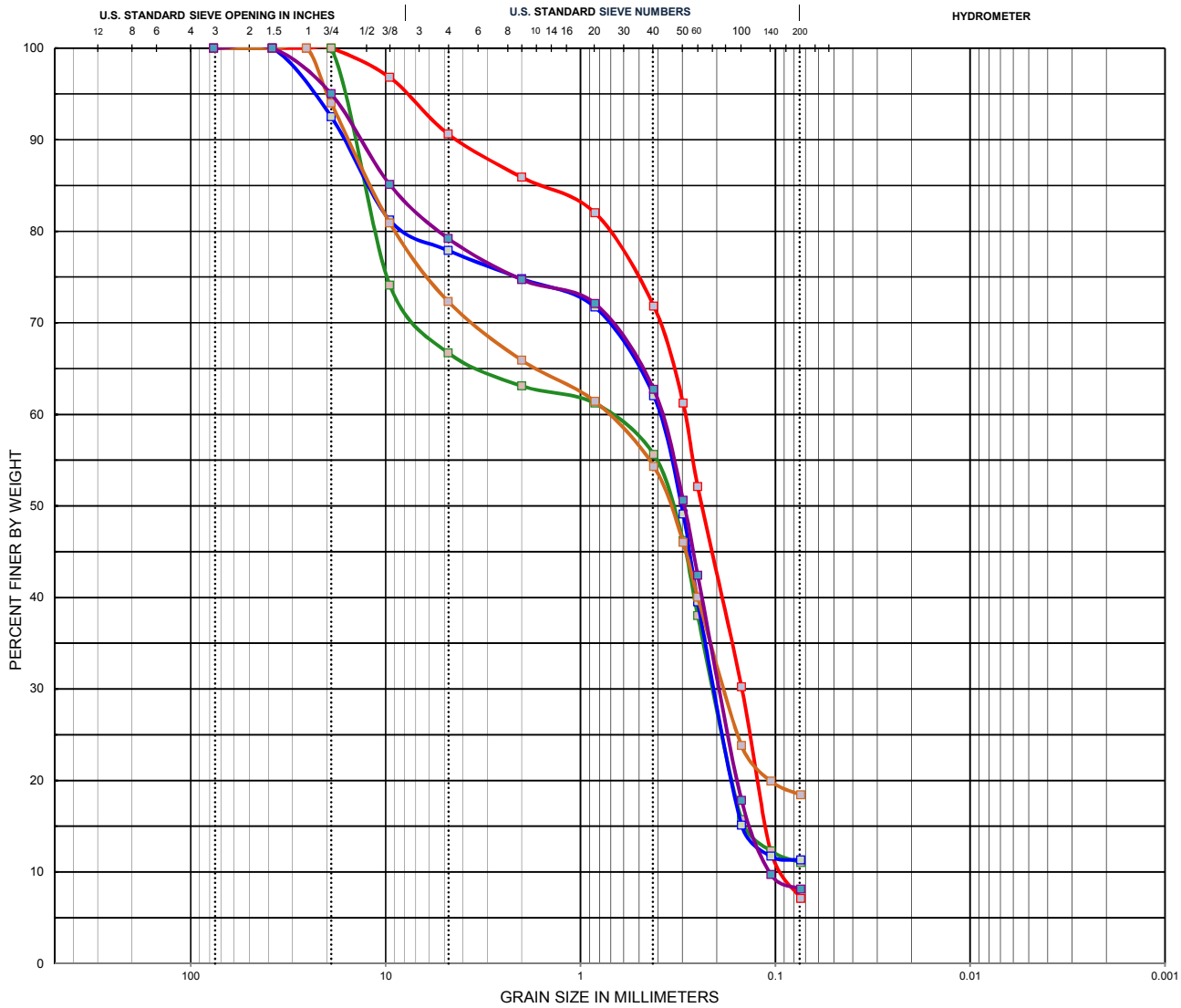
In accordance with ASTM E 329 this report shall not be reproduced, except in full without the prior written approval of RADISE International

GRAIN SIZE DISTRIBUTION

CLIENT NAME Hazen and Sawyer, P.C.

PROJECT NAME City of Fort Lauderdale - Stormwater Master Modeling and Design Implementation

PROJECT NUMBER 170901



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No, Depth	Classification	LL	PL	PI	Cc	Cu
S-9 , 0-2	**Poorly-graded sand with silt (SP-SM)**	**NP**	**NP**	**NP**	**0.86**	**3.22**
S-13 , 4-6	**Poorly-graded sand with silt and gravel (SP-SM)**	**NP**	**NP**	**NP**	**0**	**0**
S-11 , 2-4	**Poorly-graded sand with silt and gravel (SP-SM)**	**NP**	**NP**	**NP**	**0**	**0**
S-12 , 0-2	**Silty sand with gravel (SM)**	**NP**	**NP**	**NP**	**0**	**0**
S-16 , 0-2	**Poorly-graded sand with silt and gravel (SP-SM)**	**NP**	**NP**	**NP**	**0.93**	**3.55**

Boring No, Depth	D100	D60	D30	D10	% Cobble	%Gravel	%Sand	%Silt	%Clay
S-9 , 0-2	**19**	**0.29**	**0.15**	**0.09**	**0**	**9.4**	**83.5**	**7.1**	
S-13 , 4-6	**19**	**0.75**	**0.21**	**0**	**0**	**33.3**	**55.7**	**11**	
S-11 , 2-4	**38.1**	**0.4**	**0.21**	**0**	**0**	**22.1**	**66.6**	**11.3**	
S-12 , 0-2	**25.4**	**0.76**	**0.19**	**0**	**0**	**27.7**	**53.9**	**18.4**	
S-16 , 0-2	**38.1**	**0.39**	**0.2**	**0.11**	**0**	**20.8**	**71.1**	**8.1**	

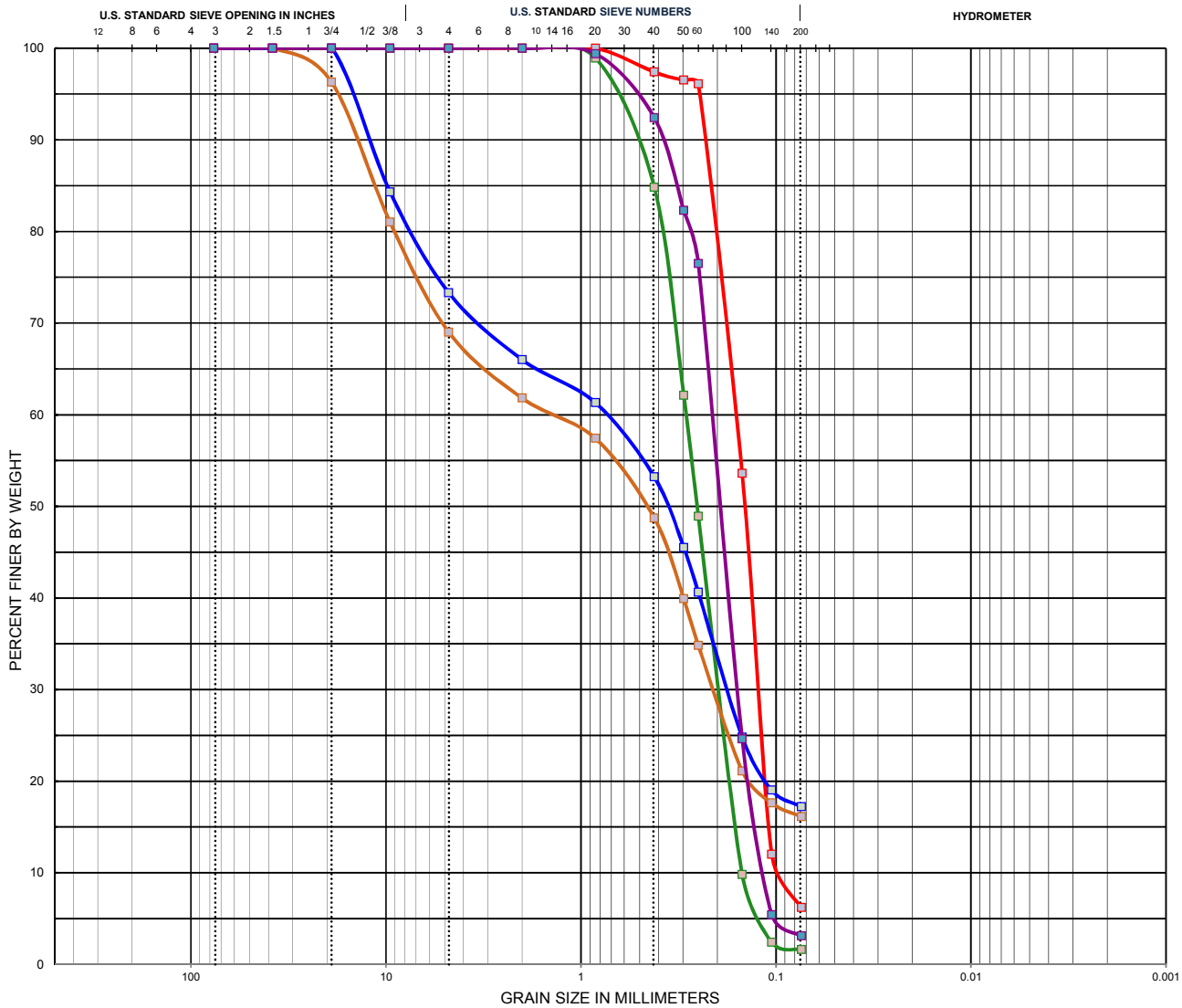
In accordance with ASTM E 329 this report shall not be reproduced, except in full without the prior written approval of RADISE International

GRAIN SIZE DISTRIBUTION

CLIENT NAME Hazen and Sawyer, P.C.

PROJECT NAME City of Fort Lauderdale - Stormwater Master Modeling and Design Implementation

PROJECT NUMBER 170901



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No, Depth	Classification	LL	PL	PI	Cc	Cu
S-20 , 28.5-30	**Poorly-graded sand with silt (SP-SM)**	**NP**	**NP**	**NP**	**1**	**1.78**
S-21 , 8-10	**Poorly-graded sand (SP)**	**NP**	**NP**	**NP**	**0.92**	**1.93**
S-22 , 2-4	**Silty sand with gravel (SM)**	**NP**	**NP**	**NP**	**0**	**0**
S-19 , 0-2	**Silty sand with gravel (SM)**	**NP**	**NP**	**NP**	**0**	**0**
S-17 , 23.5-25	**Poorly-graded sand (SP)**	**NP**	**NP**	**NP**	**0.97**	**1.83**

Boring No, Depth	D100	D60	D30	D10	% Cobble	%Gravel	%Sand	%Silt	%Clay
S-20 , 28.5-30	**0.84**	**0.16**	**0.12**	**0.09**	**0**	**0**	**93.8**	**6.2**	
S-21 , 8-10	**2**	**0.29**	**0.2**	**0.15**	**0**	**0**	**98.4**	**1.6**	
S-22 , 2-4	**19**	**0.77**	**0.18**	**0**	**0**	**26.7**	**56.1**	**17.2**	
S-19 , 0-2	**38.1**	**1.53**	**0.21**	**0**	**0**	**31**	**52.9**	**16.1**	
S-17 , 23.5-25	**2**	**0.22**	**0.16**	**0.12**	**0**	**0**	**96.9**	**3.1**	

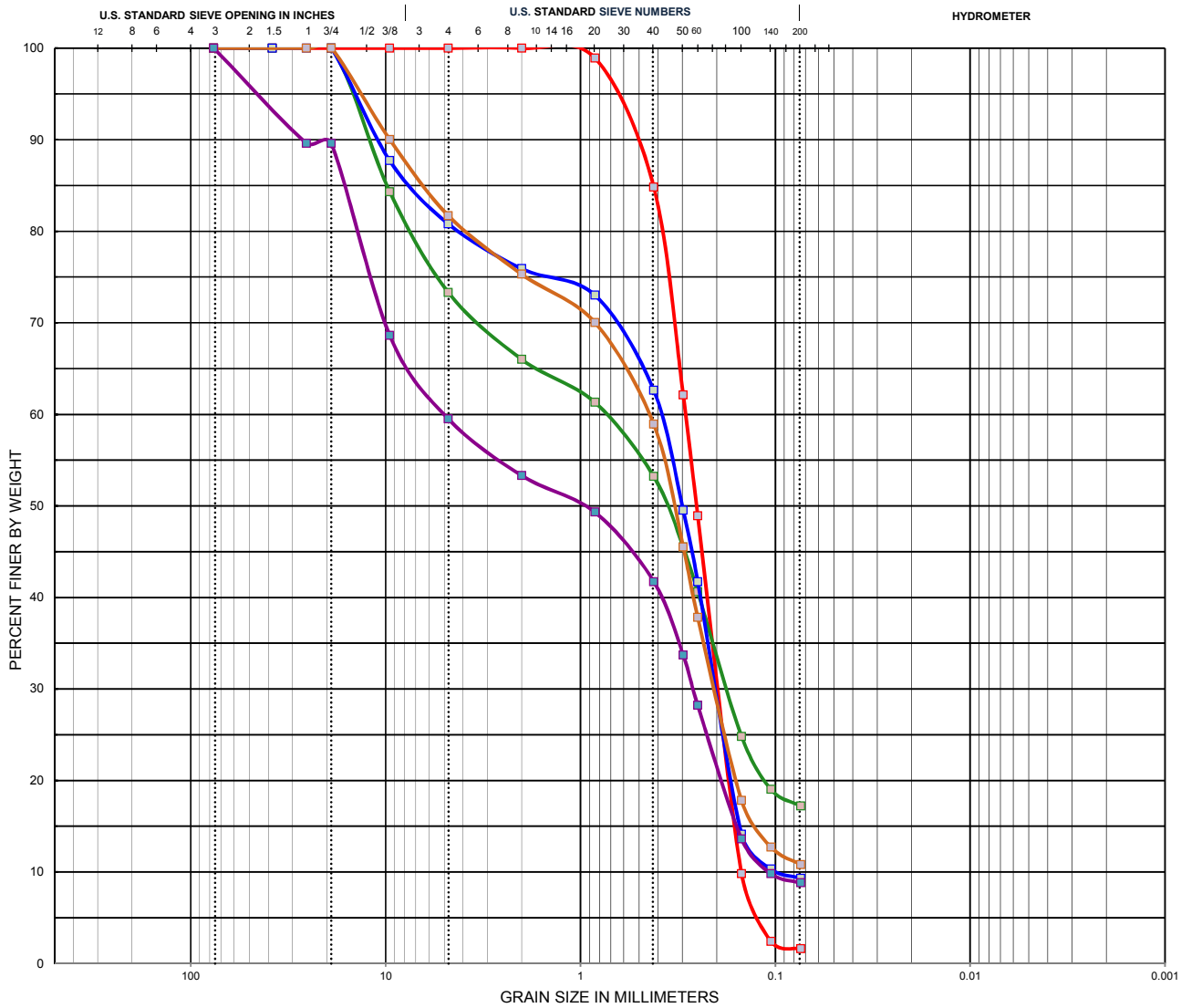
In accordance with ASTM E 329 this report shall not be reproduced, except in full without the prior written approval of RADISE International

GRAIN SIZE DISTRIBUTION

CLIENT NAME Hazen and Sawyer, P.C.

PROJECT NAME City of Fort Lauderdale - Stormwater Master Modeling and Design Implementation

PROJECT NUMBER 170901



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No, Depth	Classification	LL	PL	PI	Cc	Cu
S-21 , 8-10	**Poorly-graded sand (SP)**	**NP**	**NP**	**NP**	**0.92**	**1.93**
S-22 , 2-4	**Silty sand with gravel (SM)**	**NP**	**NP**	**NP**	**0**	**0**
S-25 , 2-4	**Poorly-graded sand with silt and gravel (SP-SM)**	**NP**	**NP**	**NP**	**1.1**	**4**
S-26 , 2-4	**Poorly-graded sand with silt and gravel (SP-SM)**	**NP**	**NP**	**NP**	**0**	**0**
S-27 , 0-2	**Poorly-graded sand with silt and gravel (SP-SM)**	**NP**	**NP**	**NP**	**0.13**	**45.64**

Boring No, Depth	D100	D60	D30	D10	% Cobble	%Gravel	%Sand	%Silt	%Clay
S-21 , 8-10	**2**	**0.29**	**0.2**	**0.15**	**0**	**0**	**98.4**	**1.6**	
S-22 , 2-4	**19**	**0.77**	**0.18**	**0**	**0**	**26.7**	**56.1**	**17.2**	
S-25 , 2-4	**19**	**0.4**	**0.21**	**0.1**	**0**	**19.2**	**71.5**	**9.3**	
S-26 , 2-4	**19**	**0.46**	**0.21**	**0**	**0**	**18.3**	**70.9**	**10.8**	
S-27 , 0-2	**76.2**	**5.02**	**0.27**	**0.11**	**0**	**40.5**	**50.7**	**8.8**	

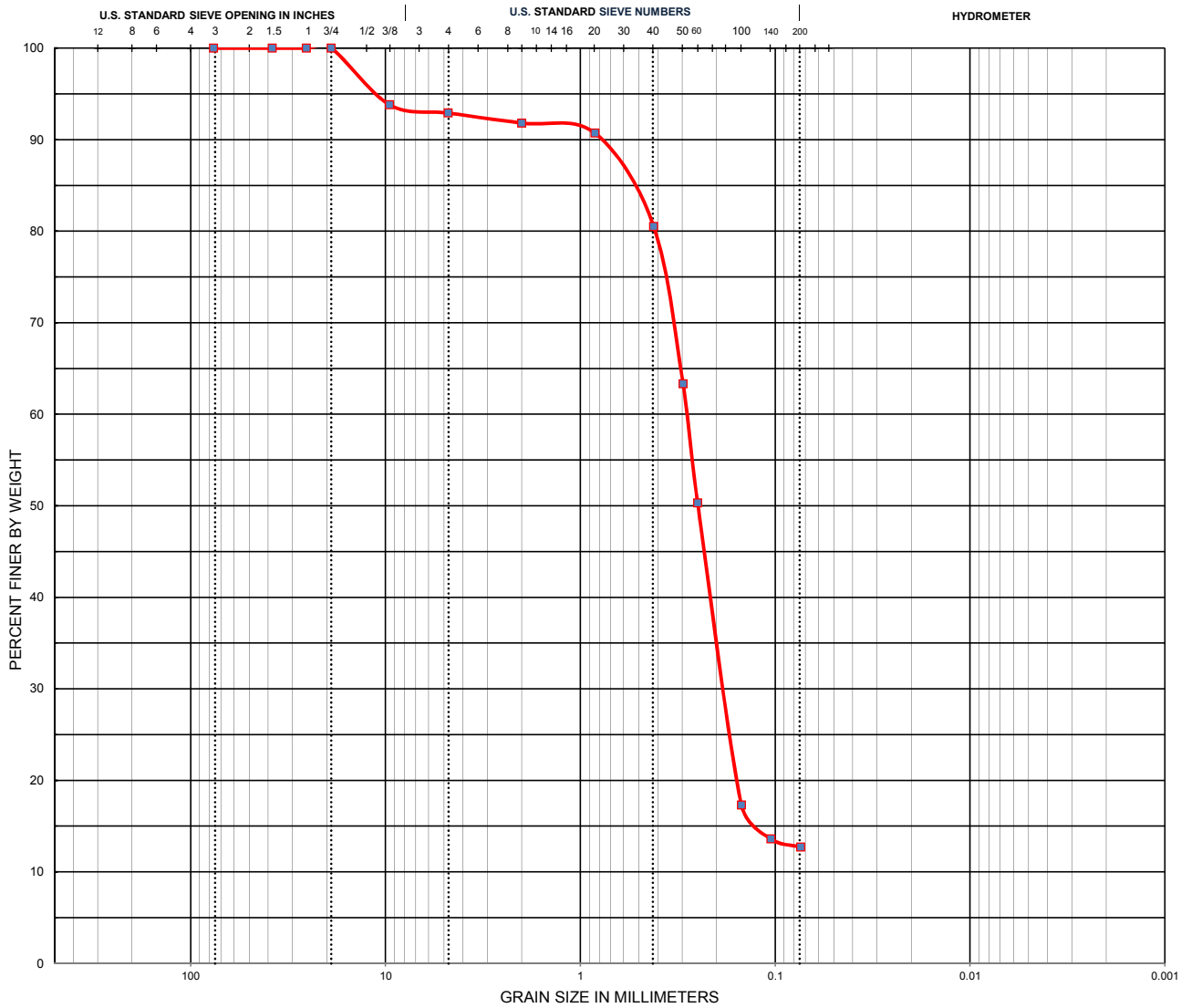
In accordance with ASTM E 329 this report shall not be reproduced, except in full without the prior written approval of RADISE International

GRAIN SIZE DISTRIBUTION

CLIENT NAME Hazen and Sawyer, P.C.

PROJECT NAME City of Fort Lauderdale - Stormwater Master Modeling and Design Implementation

PROJECT NUMBER 170901



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No, Depth	Classification	LL	PL	PI	Cc	Cu
S-28 , 2-4	**Silty sand (SM)**	**NP**	**NP**	**NP**	**0**	**0**

Boring No, Depth	D100	D60	D30	D10	% Cobble	%Gravel	%Sand	%Silt	%Clay
S-28 , 2-4	**19**	**0.29**	**0.19**	**0**	**0**	**7.1**	**80.2**	**12.7**	

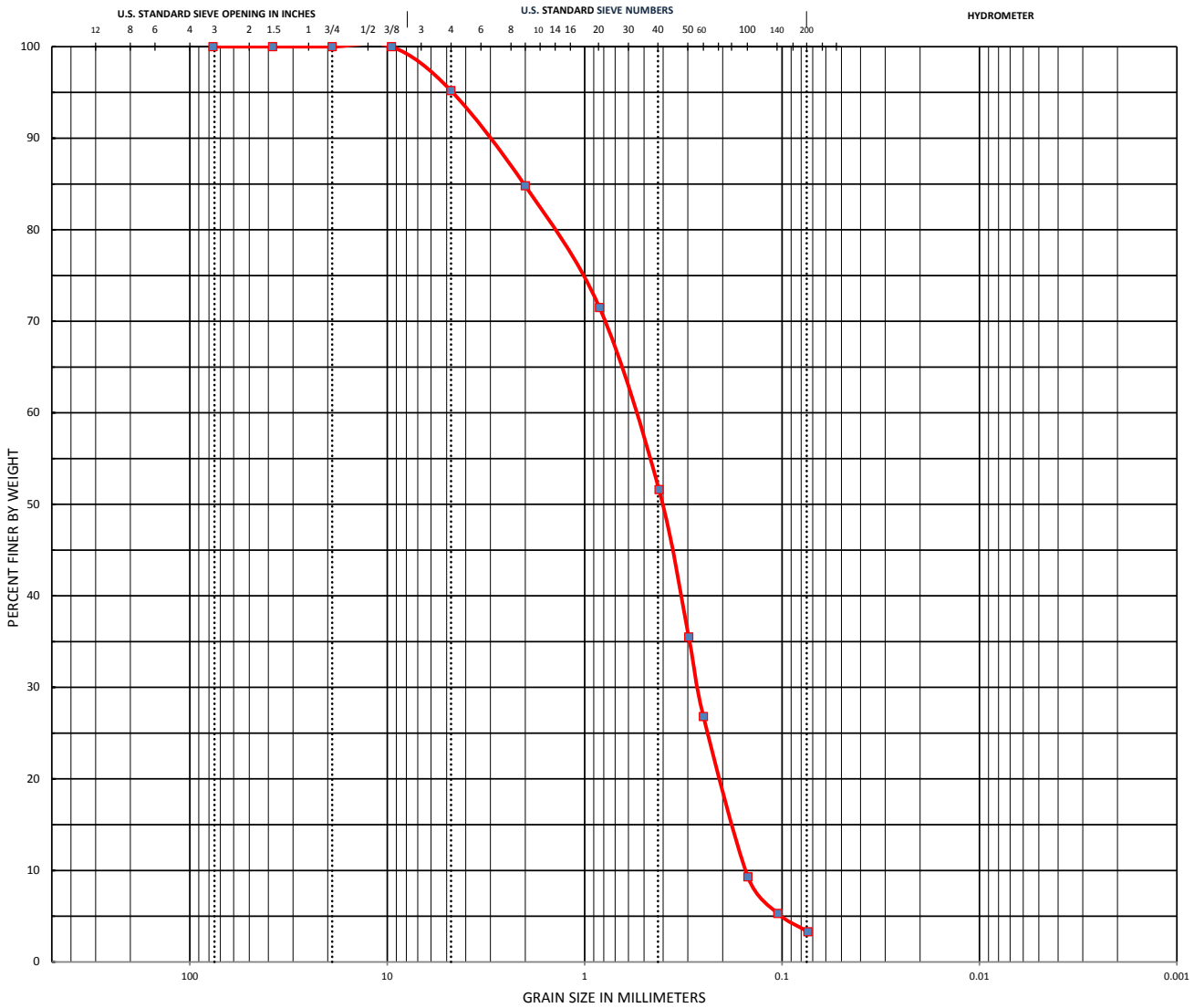
In accordance with ASTM E 329 this report shall not be reproduced, except in full without the prior written approval of RADISE International

GRAIN SIZE DISTRIBUTION

CLIENT NAME Hazen and Sawyer, P.C.

PROJECT NAME City of Fort Lauderdale - Stormwater Master modeling and Design Implentation

PROJECT NUMBER 170901



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No, Depth	Classification	LL	PL	PI	Cc	Cu
S-33, 13.5' - 15'	**Poorly-graded sand (SP)**	**NP**	**NP**	**NP**	**0.81**	**4**

Boring No, Depth	D100	D60	D30	D10	% Cobble	%Gravel	%Sand	%Silt	%Clay
S-33, 13.5' - 15'	**9.51**	**0.6**	**0.27**	**0.15**	**0**	**4.8**	**91.9**	**3.3**	

APPENDIX B

PRELIMINARY DESIGN GEOTECHNICAL SERVICES REPORT

RADISE

January 31, 2017

Hazen and Sawyer
4000 Hollywood Blvd., Suite 750N
Hollywood, Florida 33201

Attn: Mr. Robert B. Taylor, Jr., P.E.
Office: (954) 987- 0066
Cell: (772) 595- 2535
Email: rbtaylor@hazenandsawyer.com

RE: Geotechnical Services Report
City of Fort Lauderdale - 7 Neighborhoods Improvement Projects
Broward County, Florida
RADISE Project No: 160605

Dear Mr. Taylor,

RADISE International, LC (RADISE) is pleased to submit this *Geotechnical Services Report* for the above-referenced project. The purpose of this report is to provide geotechnical information and recommendations to aid in the design and construction of this project. This report describes the field exploration and laboratory testing performed, presents the data obtained, and provides our recommendation regarding geotechnical aspect of the of the proposed project.

The study was performed in general accordance with our agreement executed on October 11, 2016, our scope of work for geotechnical services, and the Florida Department of Transportation (FDOT) Soils and Foundations Handbook.

We appreciate the opportunity to work with Hazen and Sawyer on this project, and trust that the information presented is clear. Should you have any questions with this report, or if we can be of additional assistance as this project develops, please contact us at (561) 841-0103.

Sincerely,

RADISE International
Infrastructure Engineers & Software Developers

Khaled Abdelli
Staff Engineer

Akash Bissoon, P.E.
Project Engineer
Florida Registration
No. 74582

Thomas F. Mullin
LICENSE
No. 43366
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Thomas F. Mullin, P.E.
Chief Engineer &
Geotechnical Group Manager
Florida Registration
No. 34466

5/10/17

4152 West Blue Heron Blvd, Suite 1114, Riviera Beach, FL 33404 Phone: 561.841.0103 / Fax: 561.841.0104 www.radise.net
Offices in Miami-Dade, Broward, Palm Beach and Orange Counties

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 PROJECT DESCRIPTION 1

3.0 PURPOSE AND SCOPE OF WORK 1

4.0 FIELD EXPLORATION 2

4.1 SOIL BORINGS 2
4.2 PERMEABILITY TEST 3
4.3 GROUNDWATER LEVEL MEASUREMENTS 3

5.0 LABORATORY TESTING 3

5.1 GENERAL 3
5.2 LABORATORY TEST RESULTS 3

6.0 SURFACE AND SUBSURFACE EXPLORATION 4

6.1 STRATIGRAPHY 4
6.2 EXFILTRATION TESTING 5
6.3 GROUNDWATER LEVELS 5

7.0 DISCUSSIONS AND RECOMMENDATIONS 5

7.1 CLEARING AND GRUBBING 6
7.2 UNDERGROUND UTILITIES 6
7.3 EXCAVATIONS 6
7.4 DEWATERING 7
7.5 PIPE BEDDING 7
7.6 TRENCH BACKFILL AND COMPACTION 7
7.7 SITE PREPARATION 8
7.8 SELECT FILL COMPOSITION, PLACEMENT AND COMPACTION 8
7.9 PAVEMENT DESIGN CONSIDERATIONS 9
7.10 OBSERVATION AND TESTING 11

8.0 PROTECTION OF EXISTING STRUCTURES 11

9.0 LIMITATIONS 11

ATTACHMENTS

Sheet 1 – Vicinity Map
Sheets 2A through 2G – Test Location Plan
Sheet 3A through 3E – SPT Boring Subsurface Profiles
Table A-1 – Laboratory Test Results Summary
Grain Size Distribution
Table A-2 – Open-Hole Exfiltration Test Results

1.0 INTRODUCTION

RADISE understands that the City of Fort Lauderdale is performing a study for Stormwater master plan modeling and design implementation in the City of Fort Lauderdale. To aid in the evaluation and design of the project, RADISE was requested to provide subsoil investigation and evaluation services that included drilling of exploratory borings and exfiltration testing to determine the subsurface stratigraphy, groundwater levels and physical properties of the soils underlying the site.

The information presented in this report is based upon our interpretation of the subsurface information revealed by the test borings. The report does not reflect variations in subsurface conditions that may exist between or beyond these borings. Variations in soil and groundwater conditions should be expected, the nature and extent of which might not become evident until construction is undertaken. If variations are encountered, and/or the scope of the project altered, we should be consulted for additional recommendations.

2.0 PROJECT DESCRIPTION

The project is located in the City of Fort Lauderdale, Florida and includes seven (7) neighborhoods located east of the interstate (I-95) and between Port Everglades Expressway and Sunrise Boulevard. The approximate limits of the neighborhood projects are shown on the attached *Vicinity Map*, Sheet 1.

3.0 PURPOSE AND SCOPE OF WORK

The purpose of this study was to perform a limited exploration of the subsurface conditions within the project proposed areas, to aid in the planning and design of the overall neighborhood site drainage infrastructure.

More specifically, the purpose of the work included the following:

- Development of the anticipated soil profiles and the subsurface conditions within the depth of influence of the needed and anticipated improvements.
- Identification of critical geotechnical design or construction considerations based on the soil and groundwater conditions encountered in the borings.

RADISE performed the following services in accordance with the proposed scope of work:

1. Performed a site visit to field mark (paint or/and stake) the planned soil boring and percolation test locations and observe existing site conditions.

2. Contacted Sunshine One-Call to request the field location and clearance of underground utilities in the areas of the proposed borings, as per Florida Statutes.

3. Set up basic Maintenance of Traffic (MOT) safety controls prior to and during the field

drilling and testing operations.

4. Mobilized drilling equipment to the site to perform thirty-five (35) Standard Penetration Test (SPT) soil borings to depths of twelve (12) to fourteen (14) feet below the existing ground surface within the various seven (7) neighborhoods. Samples of the subsurface soils encountered were obtained and the depth to the groundwater level was measured in each of the borings. Following completion of the testing, the boreholes were backfilled with neat cement grout.

5. Performed twenty-eight (28) open-hole Exfiltration tests to a depth of fifteen (15) feet below the existing ground surface. Tests were performed along the edge of the streets in the green space adjacent to the SPT borings. Tests were performed in accordance with the South Florida Water Management District (SFWMD) test procedures. Following completion of the testing, the boreholes were backfilled with neat cement grout.

6. Visually classified the SPT soil samples retrieved from the soil borings in accordance with the Unified Soil Classification System (USCS) using the Visual-Manual Procedure in general accordance with the American Society of Testing and Materials (ASTM) test method D 2488, *Description and Identification of Soils*.

7. Performed a limited laboratory testing program for soil index property determinations on selected SPT samples to aid in the classification process in general accordance with the ASTM test method D 2487, *Classification of Soils for Engineering Purposes*.

8. Prepared this geotechnical report which includes, but not necessarily be limited to:

   - Detailed graphical logs of the soil borings showing the groundwater level and subsurface soil stratigraphy and classification.
   - Presentation of the results of the field permeability exfiltration tests.
   - Geotechnical design and construction recommendations for the proposed improvements.

4.0 FIELD EXPLORATION

During this work phase, MOT was used to protect our field personnel, crew, equipment, and the public. The MOT was designed and set up in accordance with the FDOT Design Standards.

4.1 SOIL BORINGS

The field exploration program to evaluate the existing subsurface conditions consisted of drilling thirty-five (35) SPT borings. The SPT borings were drilled to depths of twelve (12) to fourteen (14) feet below the existing ground surface. The approximate locations of the SPT borings are depicted on the attached *Test Location Plan*, Sheets 2A through 2G. Latitude and Longitude coordinates of the test locations were obtained by the field crew using hand-held GPS equipment and are listed on the attached *Subsurface Profiles*, Sheets 3A through 3E. The SPT borings were

performed in general accordance with ASTM D 1586, "*Standard Test Method for the Standard Penetration Test and Split-Barrel Sampling*". Upon retrieval, the split-spoon soil samples were visually classified and placed in moisture proof containers for transportation to our laboratory. Each borehole was backfilled with neat cement grout to the ground surface after the completion of drilling operations.

4.2 PERMEABILITY TEST

To evaluate the hydraulic conductivity of the subsurface soils, twenty-eight (28) Exfiltration Tests were performed along the edge of the streets in the green space adjacent to most of the SPT borings. Exfiltration tests were performed in general accordance with the South Florida Water Management District (SFWMD) procedures in 6-inch diameter by fifteen (15) feet deep auger boreholes. The approximate location of the tests are shown on the attached *Test Location Plan*, Sheets 2A through 2G.

4.3 GROUNDWATER LEVEL MEASUREMENTS

After completion of the borings and after a short stabilization period, the depth to the groundwater was measured from the existing ground surface in each boring. The measured groundwater depth/elevation is plotted adjacent to the soil profiles shown on the attached *Subsurface Profiles*, Sheets 3A through 3E.

5.0 LABORATORY TESTING

5.1 GENERAL

Representative soils samples collected from the borings were visually reviewed in the laboratory by a RADISE Geotechnical Engineer to confirm field classifications. The samples were classified in general accordance with the Unified Soil Classification System (USCS). The classifications were based on visual observations supplemented by laboratory test results performed on selected representative SPT samples. Laboratory index tests consisting of Full Sieve Analysis, Percent Passing No. 200 Sieve, Moisture and Organics Content tests were performed on selected samples.

5.2 LABORATORY TEST RESULTS

The following list summarizes the types and numbers of laboratory tests performed.

- Fifty (50), Moisture Content Tests (ASTM D 2216).
- Nineteen (19), Organics Content Tests (ASTM 2216 D).
- Eighteen (18), Full Sieve Analysis Test (ASTM D422).
- Fourteen (14), Percent Passing No. 200 Sieve Tests (ASTM D 1140).

Test assignments were provided by a geotechnical engineer during the laboratory review of secured soil samples. Laboratory assignments were made to supplement and confirm soil

classification at each general boring location.

All of the laboratory test results are presented on the attached *Subsurface Profiles*, Sheet 3A through 3E, and in the attached Table A-1 - *Laboratory Test Results Summary*.

6.0 SURFACE AND SUBSURFACE EXPLORATION

6.1 STRATIGRAPHY

Stratification of the explored soils is based on visual examination of the recovered soil samples, laboratory classification and index testing, and interpretation of the field boring logs by a geotechnical engineer in accordance with the Unified Soil Classification System (USCS). Subsurface profiles showing the soil stratification at the boring locations were developed and are presented on the attached *Subsurface Profiles*, Sheets 3A through 3E. Stratification lines represent approximate boundaries between soil types, but the actual transition between layers may be gradual or abrupt. Additionally, soil and groundwater conditions will vary between boring locations.

The soils encountered in all thirty-five (35) of the soil borings generally consist of sand with varying amounts of silt and limestone fragments occasionally underlain by limestone. Some of the borings encountered a layer of soil containing appreciable amounts of organic matter. Generalized descriptions of the soil stratigraphy are provided in the following Table 1:

TABLE 1 - STRATIGRAPHY

Stratum No.	Description	USCS Class.
1	Gray, tan, brown to dark brown, fine to medium SAND, trace Organics, trace Limestone, trace Silt	SP
2	Gray, tan, brown to dark brown, fine to medium SAND, trace to few Shell fragments	SP
3	Gray, tan, brown to dark brown Silty SAND, with Limestone Fragments	SM
4	Gray, tan, brown to dark brown SAND, with Silt, trace Limestone fragments	SP, SP-SM
5	Tan LIMESTONE	-
6	Dark Brown PEAT	PT

It is noted that the Layer 6 Dark Brown Peats were primarily encountered in the borings performed in the Seven Isles area of the project. Review of the boring logs indicates there appear to be layers of fill soils which were placed over remnant buried mangrove preserve areas along the Intracoastal

waterway. This land reclamation occurred during early development periods in the history of the coastal Ft. Lauderdale area.

The following Table 2 summarizes the borings, depths and thickness of the Stratum 6 soils that contain 14.7 to 62.5 percent organics encountered:

TABLE 2 – STRATUM 6 SOILS (PEAT)

Boring No.	Depth from (feet)	Depth to (feet)	Organic layer thickness (feet)
B-32	8	10	2
B-33	6	8	2
B-34	4	8	4
B-35	6	8	2

6.2 EXFILTRATION TESTING

The Exfiltration permeability tests were completed in an 8-inch diameter by 15-foot deep auger borehole in general accordance with the SFWMD procedures. The borehole sidewall was stabilized with a 6-inch diameter perforated section of No. 10 slot screen. The annulus space was backfilled with clean 6/20 silica sand. The results of the permeability tests are presented on Table A-2 - *Open-hole Exfiltration Test Results* included in the Attachments.

6.3 GROUNDWATER LEVELS

Groundwater was encountered in each of the auger borings and exfiltration test boreholes. The groundwater level varied between 3.5 to 7 feet below the existing ground surface. However, the groundwater levels will fluctuate with the seasons and variations of precipitation. It is our recommendation that the seasonal high groundwater table levels along the various project infrastructure alignments, be based on the normal high tide water levels of the adjacent waterways existing near the various neighborhood project areas and with additional geotechnical explorations. In inland areas not directly influenced by the water levels in the adjacent waterways and canals, normal high groundwater levels can be expected to be on the order of 2 to 3 feet above currently measured and reported levels herein.

7.0 DISCUSSIONS AND RECOMMENDATIONS

Generally speaking, the soils encountered in the majority of the borings performed for this study will be suitable for the proposed construction. However, it was previously noted that the Seven Isles area is likely a historical land reclamation area. This area as well as several others in the surrounding region, were infilled sometime in the historical past to facilitate the construction of the present residential communities. While no organics were encountered in the limited number of borings performed for the Victoria Park area, it is noted that the eastern area of this development

borders what appears to be the old Intracoastal Waterway footprint. Hence it might be expected that some buried organics may exist in the eastern areas/edges of this development.

The presence of the buried organics will be problematic to the installation of underground utilities especially when the inverts of such systems are founded in the organic layers. Such organics have very low shear strengths and will not support significant excavations made within or through them. As such, it is anticipated that significant shoring/sheet piling will be required to install infrastructure systems in this area.

7.1 CLEARING AND GRUBBING

Clearing and grubbing may be required in some of the proposed construction areas. Clearing and grubbing should include the complete removal and disposal of surficial grasses, associated root systems, topsoil, rubbish, debris, any demolition material/pavement and all other obstructions resting on or protruding through the surface of the existing ground and the surface of excavated areas.

7.2 UNDERGROUND UTILITIES

Existing underground utilities and structures are likely to be present in the proposed construction areas. These utilities need to be properly identified, and located and/or relocated as necessary to construct the new components of the project. The excavation bottoms of any relocated or replacement utilities should be cleaned of any undesirable materials prior to placing any engineered backfill.

Site preparation, excavation, and backfilling for new utilities or re-aligned utilities should follow all of the applicable recommendations of this report.

7.3 EXCAVATIONS

The project construction Contractor is solely responsible for making any utility or other excavations in a safe manner and to provide appropriate measures to retain side slopes to ensure that persons working in or near the excavation are protected.

Excavations shall comply with Occupational Health and Safety Administration (OHSA) stipulations for Trench Excavation Safety including all temporary design and safety requirements. The soils encountered in the majority borings outside of the Seven Isles area, generally consist of relatively clean sands. OSHA 29 CFR part 1926 (Subpart P, Excavations) defines such soils as Type C soils. As such, the granular deposits encountered in the borings are readily capable of being excavated to a depth of several feet with standard backhoe construction equipment. As such, temporary side slopes in fully dewatered excavations could be made at a 1½H:1V inclination or flatter. Adjustment to this inclination and/or the use of sheeting, shoring or sliding trench boxes should be evaluated by the Contractor if other soil strata are encountered. Any structural retaining walls shall be designed and sealed by a structural engineer registered in the State of Florida.

It is noted that in the Seven Isles area, that significant Muck deposits were encountered in the borings. Utilities installed in this area are likely to encounter organic Muck deposits during the utility excavation and installation process.

7.4 DEWATERING

At the time of the field exploration (October, 2016), the groundwater encountered varied between 3.5 to 7 feet below the existing ground surface. In-the-dry construction of the underground utilities may require groundwater lowering and control of groundwater seepage depending on the design installation depths. Dewatering of the excavations may necessitate the use of sumps, wells, wellpoints or combinations thereof. Control of groundwater should be accomplished in a manner that preserves the integrity of the in-situ soils and limestones and does not cause instability of the excavation sidewalls. The dewatering system employed should be capable of maintaining a pre-drained surface a minimum of 24 inches below the excavation bottoms.

7.5 PIPE BEDDING

Most of the sands encountered in the borings are expected to provide good support for utility pipelines without the need for bedding when the invert elevations are at least 24 inches above the groundwater level (natural or pre-drained by dewatering). Should or where organics or other deleterious materials be encountered at or within 2 feet below the pipe invert, such soils shall be considered compressible and unsuitable for pipe support. These soils should be over-excavated and replaced with compacted clean sand or FDOT No. 57 coarse aggregate or an approved equivalent. If FDOT No. 57 stone or an approved equivalent is utilized, such stone material will need to be encapsulated and/or covered with a geosynthetic fabric especially beneath pavement areas. Such fabric material is needed to prevent granular excavation soils and trench backfill from penetrating/settling into the void volumes of the open stone resulting in loss of ground and eventual settlement of the ground surface above the piping.

The bedding surface should be uniformly compacted to a density of not less than 95 percent of the maximum dry density in accordance with ASTM D 1557, the Modified Proctor Method.

7.6 TRENCH BACKFILL AND COMPACTION

Soils used to backfill utility excavations should consist of clean sands having no materials larger than one inch in size, not more than ten (10) percent passing the U.S. Standard No. 200 sieve, and not more than three (3) percent organics or other deleterious materials by weight. Some of the subsurface soils encountered at these neighborhood sites appear to meet these criteria and are suitable for reuse as backfill once inspected, tested and approved.

Granular backfill should be placed at a moisture content within three (3) percent of its ASTM D 1557 determined optimum moisture and in level lifts whose thickness does not exceed eight (8) inches. Each fill lift should be stable, unyielding and uniformly compacted to at least 95 percent of the maximum dry density in accordance with ASTM D 1557, the Modified Proctor Method. We recommend the use of only relatively light, hand-held compaction equipment in the

densification operations around utilities to limit the potential damage to the pipelines and buried structures.

7.7 SITE PREPARATION

The site preparation for any roadway modifications should consist of necessary clearing and grubbing in general accordance with Section 110 of the FDOT Standard Specifications for Road and Bridge Construction or any similar City/County standard design criteria applicable to the project. Any topsoil or other deleterious material encountered in proposed pavement areas, will need to be stripped, removed and replaced with embankment or roadway fill. If buried organic soils, debris or other unsuitable materials are encountered during the construction, which are or are not disclosed by the borings, they should be removed and replaced with a backfill material as described in following sections.

The Strata 1, 2, and 4 soils are select granular soils and are satisfactory to use in the subgrade and embankment when utilized in general accordance with FDOT Standard Index 505 or any similar City/County standard design criteria applicable to the project. Soils exposed at the stripped grades will require moisture conditioning to near the optimum moisture content prior to initiating the densification operations. The densification should normally be accomplished using a self-propelled vibratory compactor which imparts a dynamic drum force of not less than 44,000 pounds however, in residential areas, the use of such heavy vibratory compaction equipment may prove problematic and disruptive or even damaging to existing/adjacent home owner's properties. In such cases, the compaction will need to be performed and achieved with lighter weight, less vibration generation capable equipment such as walk behind (e.g. Whacker) ground pounder or small vibratory rolling equipment.

Each section of the stripped grade should be subjected to multiple, overlapping (minimum of 10 percent overlap) coverages of the compactor as it operates at a travel speed of no more than 1.5 miles per hour (normal walking speed). Compaction should be continued until no further settlement can be visually discerned at the ground surface. The densified areas should include a 3-foot perimeter along proposed new pavement areas.

Density control should be exercised for the exposed subgrade for any roadway repairs. Soils in this interval should be compacted to not less than 95 percent of the maximum dry density in accordance with ASTM D 1557, the Modified Proctor Method. Subgrade soils that noticeably pump or deflect under the weight of the passing compaction equipment, could indicate the presence of soft, weak, overly saturated soils or compressible and loose soil zones existing in the near surface subgrade within the depth of influence of the roller. In such cases, those areas should be remedied by appropriate means to be determined by the inspecting field representative in consultation with representatives of the design team.

7.8 SELECT FILL COMPOSITION, PLACEMENT AND COMPACTION

Site structural and pavement embankment fill and backfill required for construction should consist of clean, granular materials that are free of debris, cinders, combustibles and organic matter. The fines content (i.e., material passing U.S. Standard No. 200 sieve) should not be more than ten (10)

percent by weight, no particle sizes larger than one (1) inches in any direction and the organic content should not exceed three (3) percent by dry weight. The on-site sand soils appear to meet the above criteria and are suitable for use as structural fill and backfill material. Organic laidened soils encountered in several of the borings soils beneath the upper sand layer such as those encountered in the Seven Isles area, will not be suitable for use of Select Fill.

The granular fill should be placed at a moisture content within three (3) percent of its Modified Proctor (ASTM D 1557) determined optimum in level lifts whose loose thickness does not exceed twelve (12) inches. In areas where heavy equipment cannot be operated for compaction, the fill should be placed in six (6) inch thick level lifts. Each fill lift should be stable, unyielding and uniformly compacted to 95 percent of the ASTM D 1557 maximum dry density, as verified by the designated site construction inspecting representative.

Select fill soils will require moisture conditioning to near the optimum moisture content prior to initiating the densification operations. Similar to the subgrade preparation, the fill densification should normally be accomplished using a self-propelled vibratory compactor which imparts a dynamic drum force of not less than 44,000 pounds. However, in residential areas, the use of such heavy vibratory compaction equipment may prove problematic and disruptive or even damaging to existing/adjacent home owner's properties. In such cases, the compaction will need to be performed and achieved with lighter weight, less vibration generation capable equipment such as walk behind (e.g. Whacker) ground pounder or small vibratory rolling equipment.

7.9 PAVEMENT DESIGN CONSIDERATIONS

The following information is intended as a guideline only, as the roadway or any repairs thereof, should be designed specifically for the vehicle load intensities and frequencies anticipated during the life of the project. Flexible pavement systems in this geographic area, typically consist of an asphaltic concrete wearing course, limerock base course and a stabilized pavement subgrade. Based on our preliminary analysis and experience in the area, the typical pavement section thicknesses shown in the following Table 3, are commonly used by local pavement design engineers.

TABLE 3 - TYPICAL FLEXIBLE AND RIGID PAVEMENT DESIGN

TYPE OF PAVEMENT	LAYER	MATERIAL DESCRIPTION	LAYER THICKNESS	
			LIGHT DUTY	HEAVY DUTY
Flexible	Asphaltic concrete	Florida DOT Asphalt Type S	1.5	2.0
	Base course	Crushed limerock with minimum LBR of 100, compacted to 98% of the Modified Proctor maximum dry density	6.0	8.0
	Stabilized subbase	Stabilized sub-base fill with a minimum LBR of 40 compacted to 95% of the Modified Proctor maximum dry density	12.0	12.0
Rigid	Concrete	Florida DOT Portland Cement Concrete	6.0	8.0
	Compacted subgrade	Natural in place soils compacted to at least 95 percent of the materials Modified Proctor maximum dry density	12.0	12.0

The base course material should consist of crushed limestone having a minimum Limerock Bearing Ratio (LBR) of 100. Base materials should meet the requirements presented in the latest revisions of the Florida Department of Transportation "Specifications for Road and Bridge Construction", Section 911 (limestone). The base course should be compacted to at least ninety-eight (98) percent of its maximum dry modified proctor density (AASHTO T 180).

We recommend that the pavement subgrade be stabilized to a depth of twelve (12) inches to achieve a minimum LBR of 40. This LBR can be achieved by blending base material (limerock) with the existing sandy subgrade soils. The required mixing ratio should be determined by laboratory testing. The stabilized subgrade should be compacted to at least ninety-eight (98) percent of its maximum dry as per ASTM D 1557, the Modified Proctor Method.

If it is not feasible to stabilize the subgrade, we recommend that the base course be thickened by an amount equivalent to the structural number of twelve (12) inches of stabilized subgrade.

A Portland concrete pavement thickness in the range of eight (8) inches is recommended for the project if a rigid pavement is to be employed (the thickness would depend on specific pavement use). The concrete should be reinforced to withstand the anticipated traffic loadings and jointed to reduce the chances for rigid pavement crack development. The minimum rigid pavement thickness recommended above is based upon concrete with an unconfined compressive strength of at least 3,000 psi and a modulus of rupture of at least 450 psi.

Actual pavement section thickness should be determined by the Design Civil Engineer based on traffic loads, volume, and the owner's design life requirements. The above sections represent minimum thickness representative of typical local construction practices and, as such, periodic

maintenance should be anticipated. All pavement materials and construction procedures should conform to FDOT, American Concrete Institute (ACI), or appropriate City and County requirements.

7.10 OBSERVATION AND TESTING

It is recommended that a geotechnical engineer be retained to provide soil engineering inspection services during the construction excavation phase of the project. This is to observe compliance with the design concept, specifications and recommendations, and to allow design changes in the event subsurface conditions differ from those anticipated. In addition, an inspection and testing representative of a geotechnical engineer should be present to provide monitoring and testing of both fill and concrete placement during the construction phase of the project.

8.0 PROTECTION OF EXISTING STRUCTURES

Ground vibrations induced upon adjacent structures, primarily by soil compaction equipment or any other construction activities such as pile driving, should be monitored to assure that they do not reach levels which prove damaging to any adjacent/nearby structures. Vibration Monitoring should be performed in general accordance with "Section 108, Protection of Existing Structures" of the current FDOT Standard Specifications for Road and Bridge Construction or other similar local City/County regulations or ordinances.

Vibration levels on adjacent facilities should generally be maintained below a 0.25 ips peak particle velocity level however, more restrictive/lessor levels may be specified for highly sensitive residential or commercial areas. The construction Contractor will need to inventory and provide a pre-construction inspection of adjacent structures and determine suitable vibration monitoring programs and impact limits for their construction activities. Such monitoring will be particularly important for the Seven Isles area as the ground conditions will have a higher tendency and capability to transmit vibrations horizontally from the construction activities. It is noted that the residential homes in this area are all likely founded on short driven piles installed to sound bearing conditions beneath the buried organics. Vibrations in the lower soil/rock layers beneath the organics, from construction activities such as sheet piling installation, will have the potential to be transmitted into the residences via the piling foundations installed for the structures.

9.0 LIMITATIONS

This report is intended for geotechnical purposes only, and not to document or detect the presence, or absence of any environmental conditions at the site, or to perform an environmental assessment of the site.

The analysis and recommendations presented in this report are based upon our interpretation of the subsurface information revealed by the test borings. The report does not reflect variations in subsurface conditions that may exist between or beyond these borings. Variations in soil and groundwater conditions should be expected, the nature and extent of which might not become

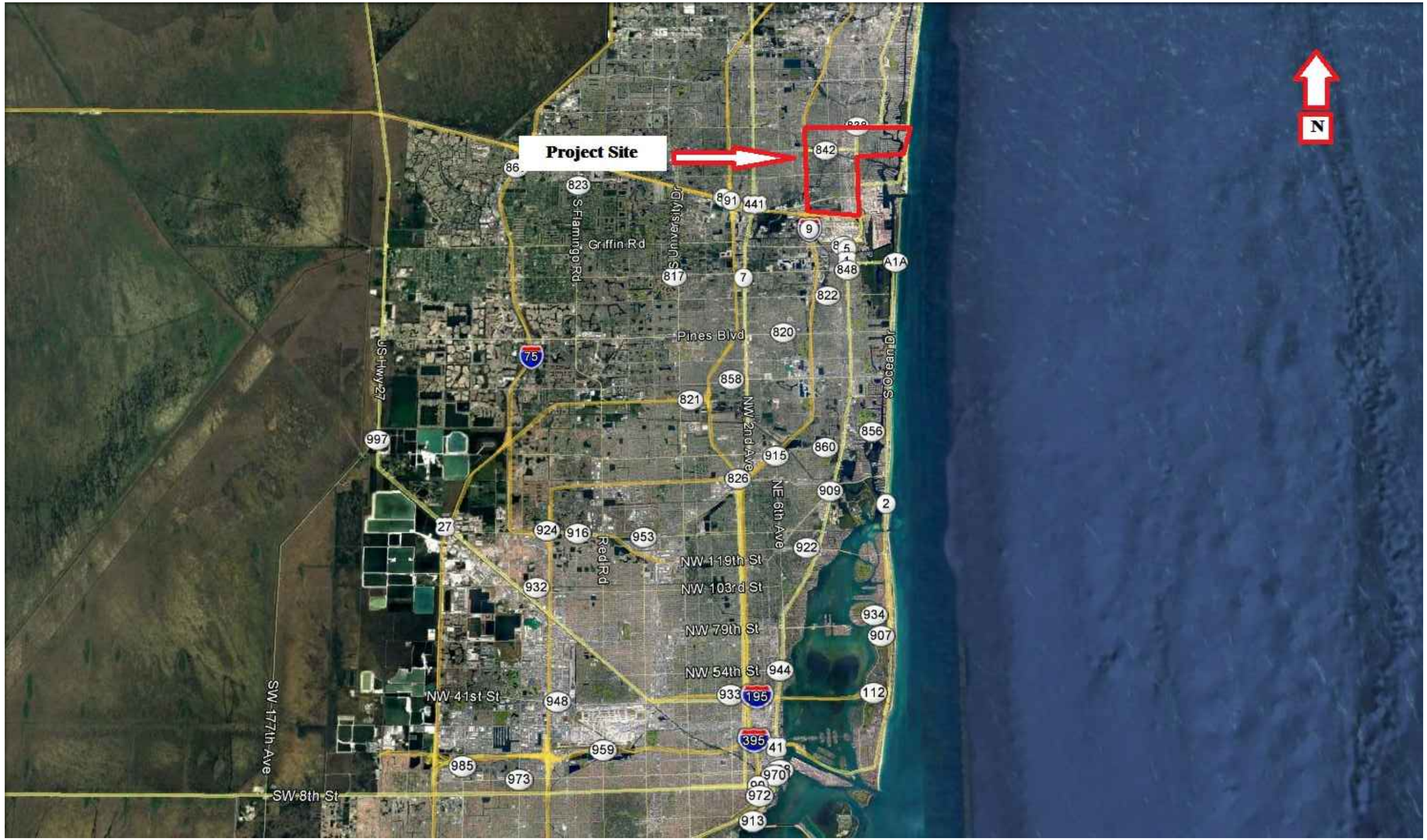
evident until construction is undertaken. If variations are encountered, and/or the scope of the project altered, we should be consulted for additional recommendations.

RADISE International warrants that the professional services performed and presented in this report are prepared for Hazen and Sawyer, and are based upon typical standard of care recognized principles and practices in the discipline of geotechnical engineering and hydrogeology at this place and point in time, for this project site. No other warranties are expressed or implied.

-oOo-

RADISE appreciates the opportunity to be of service to you. Please feel free to contact us at 561-841-0103 if you have any questions or comments regarding this report.

Respectfully submitted
RADISE INTERNATIONAL, L.C.



REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/9/2016
						Checked by	TM	11/9/2016
						Designed by		
						Checked by		
						Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
THOMAS F. MULLIN (P.E.No. 43366)
RADISE International
4152 West Blue Heron Boulevard, Suite # 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

THE CITY OF FORT LAUDERDALE

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: VICINITY MAP

PROJECT NAME: FORT LAUDERDALE - 7 NEIGHBORHOODS IMPROVEMENT

SHEET NO. 1

RADISE PROJECT NO: 160605

LEGEND

TEST NUMBER AND APPROXIMATE LOCATION

REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/9/2016
						Checked by	AB	11/9/2016
						Designed by		
						Checked by		
						Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

THE CITY OF FORT LAUDERDALE

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: TEST LOCATION PLAN

PROJECT NAME: FORT LAUDERDALE - 7 NEIGHBORHOODS IMPROVEMENT

SHEET NO. 2A

RADISE PROJECT NO: 160605

LEGEND

TEST NUMBER AND APPROXIMATE LOCATION

REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/9/2016
						Checked by	AB	11/9/2016
						Designed by		
						Checked by		
						Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

THE CITY OF FORT LAUDERDALE

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: TEST LOCATION PLAN

PROJECT NAME: FORT LAUDERDALE - 7 NEIGHBORHOODS IMPROVEMENT

SHEET NO. 2B

RADISE PROJECT NO: 160605

LEGEND

TEST NUMBER AND APPROXIMATE LOCATION

REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/9/2016
						Checked by	AB	11/9/2016
						Designed by		
						Checked by		
						Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

THE CITY OF FORT LAUDERDALE

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: TEST LOCATION PLAN

PROJECT NAME: FORT LAUDERDALE - 7 NEIGHBORHOODS IMPROVEMENT

SHEET NO. 2C

RADISE PROJECT NO: 160605

LEGEND

TEST NUMBER AND APPROXIMATE LOCATION

REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/9/2016
						Checked by	AB	11/9/2016
						Designed by		
						Checked by		
						Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

THE CITY OF FORT LAUDERDALE

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

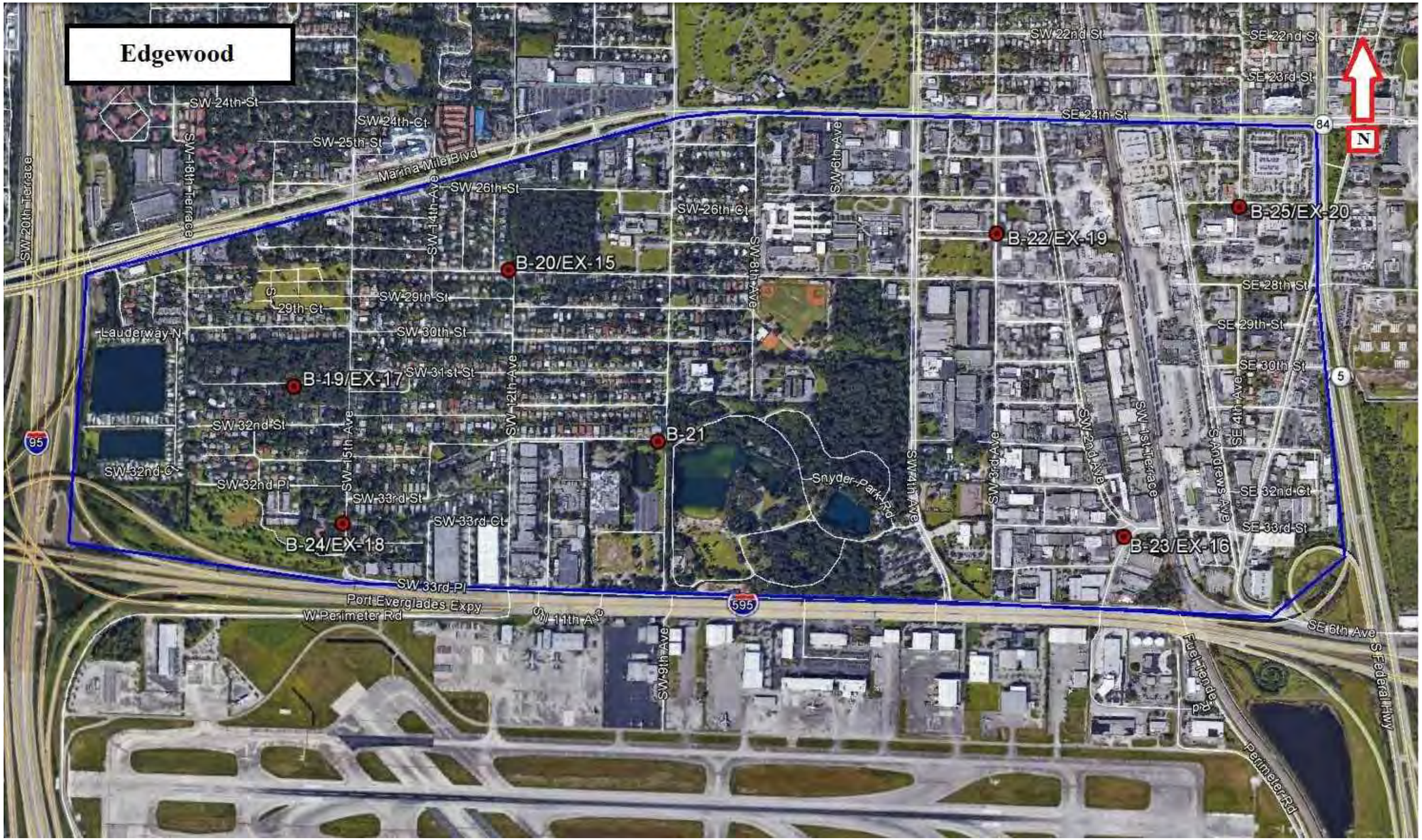
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: TEST LOCATION PLAN

PROJECT NAME: FORT LAUDERDALE - 7 NEIGHBORHOODS IMPROVEMENT

SHEET NO. 2D

RADISE PROJECT NO: 160605



LEGEND

TEST NUMBER AND APPROXIMATE LOCATION

REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/9/2016
						Checked by	AB	11/9/2016
						Designed by		
						Checked by		
						Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida, 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

THE CITY OF FORT LAUDERDALE

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: TEST LOCATION PLAN

PROJECT NAME: FORT LAUDERDALE - 7 NEIGHBORHOODS IMPROVEMENT

SHEET NO. 2E

RADISE PROJECT NO: 160605

LEGEND

TEST NUMBER AND APPROXIMATE LOCATION

REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/9/2016
						Checked by	AB	11/9/2016
						Designed by		
						Checked by		
						Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

THE CITY OF FORT LAUDERDALE

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

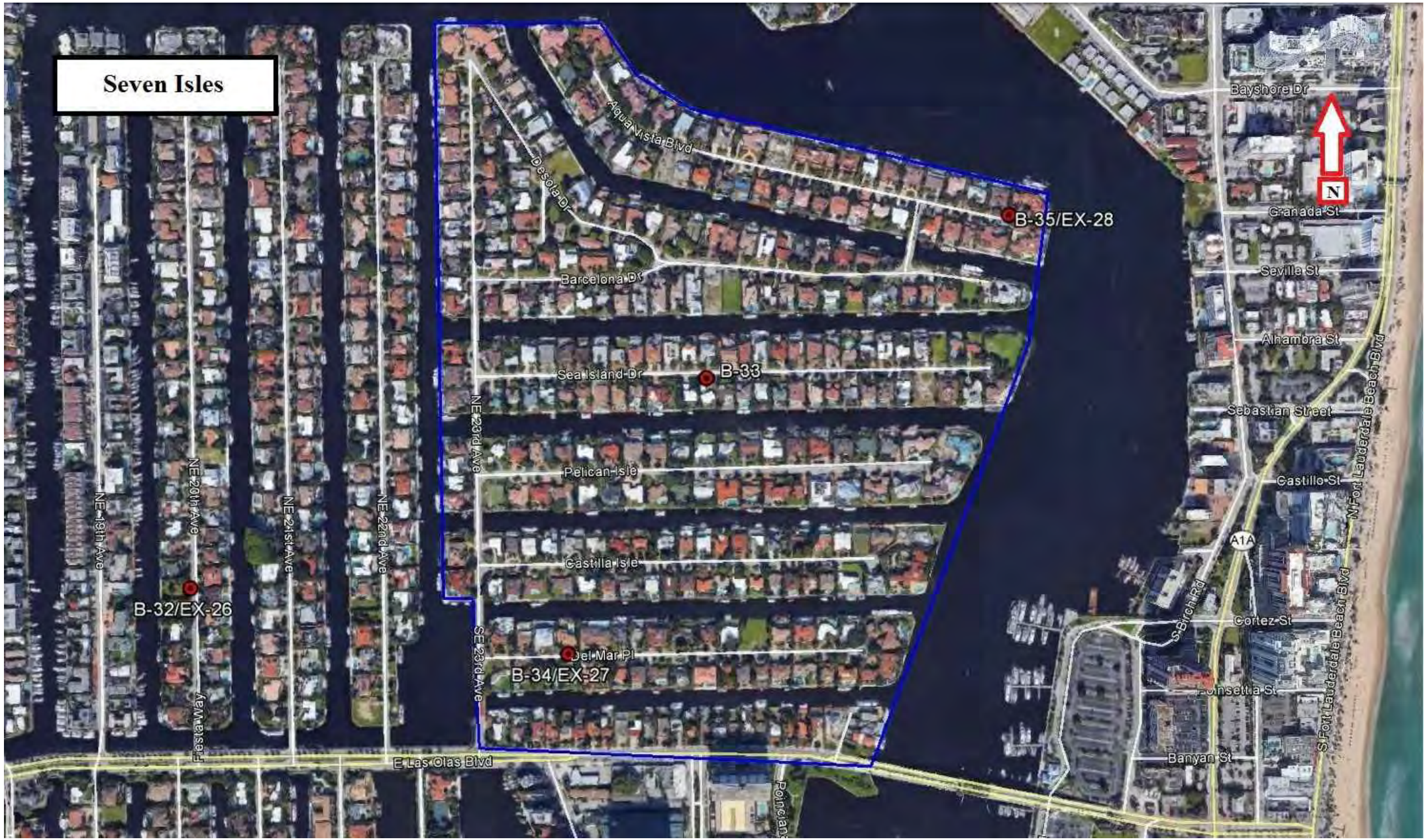
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: TEST LOCATION PLAN

PROJECT NAME: FORT LAUDERDALE - 7 NEIGHBORHOODS IMPROVEMENT

SHEET NO. 2F

RADISE PROJECT NO: 160605



LEGEND

TEST NUMBER AND APPROXIMATE LOCATION

REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	KA	11/9/2016
						Checked by	AB	11/9/2016
						Designed by		
						Checked by		
						Approved by		

RADISE
Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 1114
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

THE CITY OF FORT LAUDERDALE

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

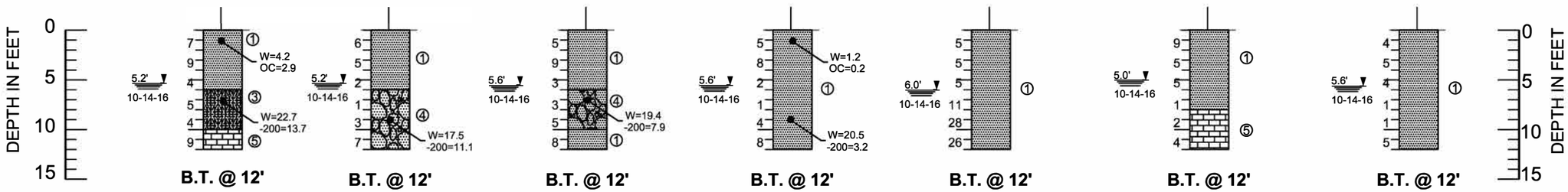
SHEET TITLE: TEST LOCATION PLAN

PROJECT NAME: FORT LAUDERDALE - 7 NEIGHBORHOODS IMPROVEMENT

SHEET NO. 2G

RADISE PROJECT NO: 160605

BORING NO:	B-1	B-2	B-3	B-4	B-5	B-6	B-7
LATITUDE:	26°08'07.1"N	26°08'05.1"N	26°07'51.6"N	26°07'51.6"N	26°07'38.8"N	26°07'24.9"N	26°07'32.7"N
LONGITUDE:	80°09'58.8"W	80°09'36.1"W	80°09'51.2"W	80°09'36.2"W	80°09'57.5"W	80°08'37.7"W	80°09'25.5"W
DATE:	10-14-16	10-14-16	10-14-16	10-14-16	10-14-16	10-14-16	10-14-16
DRILLER:	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING
RIG:	CME 45	CME 45	CME 45	CME 45	CME 45	CME 45	CME 45



LEGEND

1	GRAY, TAN, BROWN TO DARK BROWN, FINE TO MEDIUM SAND, TRACE ORGANIC, TRACE LIMESTONE FRAGMENTS, TRACE SILT (SP)	
2	GRAY, TAN, BROWN FINE TO MEDIUM SAND, TRACE TO FEW SHELL FRAGMENTS (SP)	
3	GRAY, TAN, BROWN TO DARK BROWN SILTY SAND, WITH LIMESTONE FRAGMENTS (SM)	
4	GRAY, TAN, BROWN TO DARK BROWN SAND, WITH SILT, TRACE LIMESTONE FRAGMENTS (SP, SP-SM)	
5	TAN LIMESTONE	
6	DARK BROWN PEAT (PT)	

B.T. @ 12'	BORING TERMINATED AT 12' BELOW THE EXISTING GROUND SURFACE
PT-SP-SM	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2487)
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
W	MOISTURE CONTENT (%)
OC	ORGANIC CONTENT (%)
-200	AMOUNT PASSING US STANDARD 200 SIEVE (%)

NOTES

(1) BORINGS WERE DRILLED IN OCTOBER OF 2016. SPT BORINGS WERE PERFORMED USING A CME-45C AUTOMATIC HAMMER DRILLING RIG (ASTM D1586).

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVEL FLUCTUATIONS SHOULD BE ANTICIPATED THROUGHOUT THE YEAR.

(4) LATITUDE AND LONGITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HELD HAND GPS.

(5) AFTER COMPLETION OF DRILLING, BOREHOLES WERE BACKFILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

SILTS AND CLAYS

CONSISTENCY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY SOFT	LESS THAN 1
SOFT	1 - 3
FIRM	3 - 6
STIFF	6 - 12
VERY STIFF	12 - 24
HARD	GREATER THAN 24

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	K.A.	01/03/2017
Checked by	A.B.	01/03/2017
Designed by		
Checked by		
Approved by		

RADISE
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 228
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

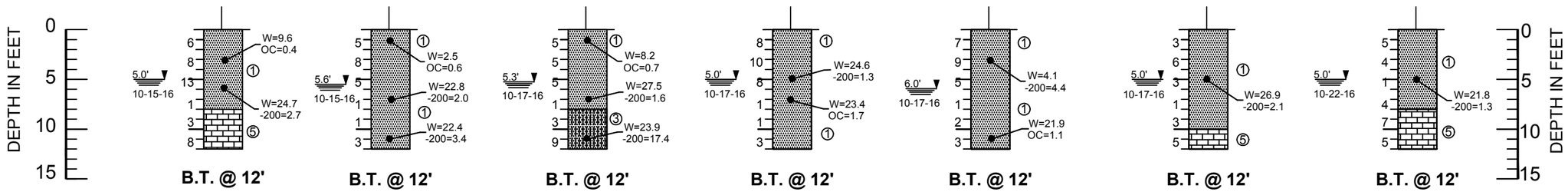
SHEET TITLE: SPT BORING SUBSURFACE PROFILES

PROJECT NAME: FORT LAUDERDALE - 7 NEIGHBORHOODS IMPROVEMENT

SHEET NO. 3A

RADISE PROJECT NO: 160605

BORING NO:	B-8	B-9	B-10	B-11	B-12	B-13	B-14
LATITUDE:	26°07'25.7"N	26°07'39.5"N	26°08'06.1"N	26°08'05.7"N	26°07'47.0"N	26°07'26.7"N	26°06'21.6"N
LONGITUDE:	80°09'07.4"W	80°09'09.3W"	80°08'39.7"W	80°09'06.4"W	80°08'56.0"W	80°08'58.6"W	80°09'26.9"W
DATE:	10-15-16	10-15-16	10-17-16	10-17-16	10-17-16	10-17-16	10-22-16
DRILLER:	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING
RIG:	CME 45	CME 45	CME 45	CME 45	CME 45	CME 45	CME 45



LEGEND

1	GRAY, TAN, BROWN TO DARK BROWN, FINE TO MEDIUM SAND, TRACE ORGANIC, TRACE LIMESTONE FRAGMENTS, TRACE SILT (SP)	
2	GRAY, TAN, BROWN FINE TO MEDIUM SAND, TRACE TO FEW SHELL FRAGMENTS (SP)	
3	GRAY, TAN, BROWN TO DARK BROWN SILTY SAND, WITH LIMESTONE FRAGMENTS (SM)	
4	GRAY, TAN, BROWN TO DARK BROWN SAND, WITH SILT, TRACE LIMESTONE FRAGMENTS (SP, SP-SM)	
5	TAN LIMESTONE	
6	DARK BROWN PEAT (PT)	

B.T. @ 12'	BORING TERMINATED AT 12' BELOW THE EXISTING GROUND SURFACE
PT-SP-SM	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2487)
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
W	MOISTURE CONTENT (%)
OC	ORGANIC CONTENT (%)
-200	AMOUNT PASSING US STANDARD 200 SIEVE (%)

NOTES

(1) BORINGS WERE DRILLED IN OCTOBER OF 2016. SPT BORINGS WERE PERFORMED USING A CME-45C AUTOMATIC HAMMER DRILLING RIG (ASTM D1586).

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVEL FLUCTUATIONS SHOULD BE ANTICIPATED THROUGHOUT THE YEAR.

(4) LATITUDE AND LONGITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HELD HAND GPS.

(5) AFTER COMPLETION OF DRILLING, BOREHOLES WERE BACKFILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

SILTS AND CLAYS

CONSISTENCY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY SOFT	LESS THAN 1
SOFT	1 - 3
FIRM	3 - 6
STIFF	6 - 12
VERY STIFF	12 - 24
HARD	GREATER THAN 24

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	K.A.	01/03/2017
Checked by	A.B.	01/03/2017
Designed by		
Checked by		
Approved by		

RADISE Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 228
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

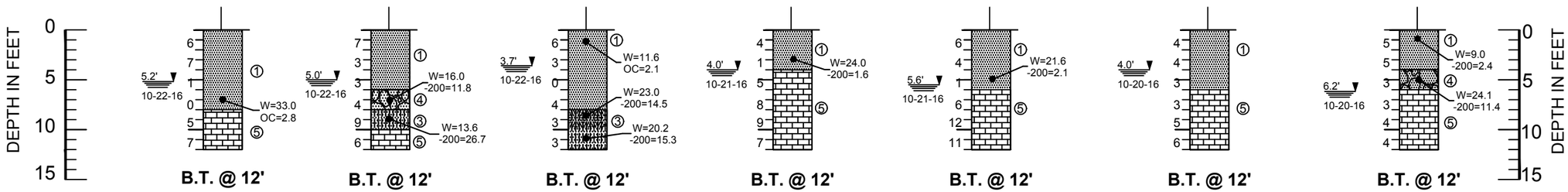
SHEET TITLE: SPT BORING SUBSURFACE PROFILES

PROJECT NAME: FORT LAUDERDALE - 7 NEIGHBORHOODS IMPROVEMENT

SHEET NO. 3B

RADISE PROJECT NO: 160605

BORING NO:	B-15	B-16	B-17	B-18	B-19	B-20	B-21
LATITUDE:	26°06'05.3"N	26°05'49.7"N	26°05'45.8"N	26°05'36.7"N	26°05'10.2"N	26°05'20.0"N	26°05'06.5"N
LONGITUDE:	80°09'19.3"W	80°09'24.9W"	80°09'52.2"W	80°09'58.2"W	80°09'43.8"W	80°09'24.7"W	80°09'10.7"W
DATE:	10-22-16	10-22-16	10-22-16	10-21-16	10-21-16	10-20-16	10-20-16
DRILLER:	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING
RIG:	CME 45	CME 45	CME 45	CME 45	CME 45	CME 45	CME 45



LEGEND

1	GRAY, TAN, BROWN TO DARK BROWN, FINE TO MEDIUM SAND, TRACE ORGANIC, TRACE LIMESTONE FRAGMENTS, TRACE SILT (SP)	
2	GRAY, TAN, BROWN FINE TO MEDIUM SAND, TRACE TO FEW SHELL FRAGMENTS (SP)	
3	GRAY, TAN, BROWN TO DARK BROWN SILTY SAND, WITH LIMESTONE FRAGMENTS (SM)	
4	GRAY, TAN, BROWN TO DARK BROWN SAND, WITH SILT, TRACE LIMESTONE FRAGMENTS (SP, SP-SM)	
5	TAN LIMESTONE	
6	DARK BROWN PEAT (PT)	

B.T. @ 12'	BORING TERMINATED AT 12' BELOW THE EXISTING GROUND SURFACE
PT-SP-SM	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2487)
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
W	MOISTURE CONTENT (%)
OC	ORGANIC CONTENT (%)
-200	AMOUNT PASSING US STANDARD 200 SIEVE (%)

NOTES

(1) BORINGS WERE DRILLED IN OCTOBER OF 2016. SPT BORINGS WERE PERFORMED USING A CME-45C AUTOMATIC HAMMER DRILLING RIG (ASTM D1586).

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVEL FLUCTUATIONS SHOULD BE ANTICIPATED THROUGHOUT THE YEAR.

(4) LATITUDE AND LONGITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HELD HAND GPS.

(5) AFTER COMPLETION OF DRILLING, BOREHOLES WERE BACKFILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

SILTS AND CLAYS

CONSISTENCY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY SOFT	LESS THAN 1
SOFT	1 - 3
FIRM	3 - 6
STIFF	6 - 12
VERY STIFF	12 - 24
HARD	GREATER THAN 24

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	K.A.	01/03/2017
Checked by	A.B.	01/03/2017
Designed by		
Checked by		
Approved by		

RADISE Infrastructure Engineers & Software Developers
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 228
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE

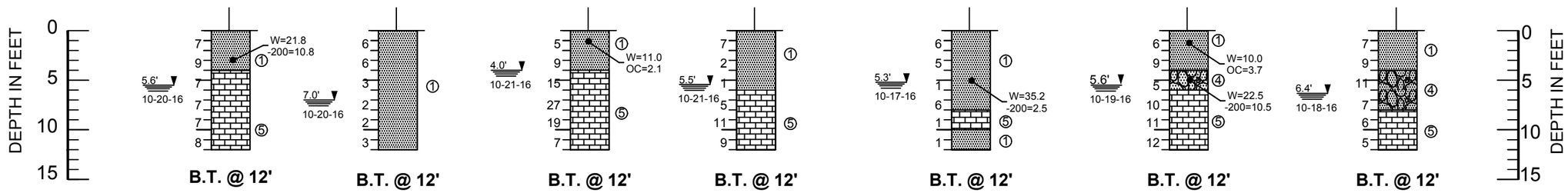
COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: SPT BORING SUBSURFACE PROFILES
PROJECT NAME: FORT LAUDERDALE - 7 NEIGHBORHOODS IMPROVEMENT

SHEET NO. 3C
RADISE PROJECT NO: 160605

BORING NO:	B-22	B-23	B-24	B-25	B-26	B-27	B-28
LATITUDE:	26°05'24.2"N	26°04'59.9"N	26°04'58.9"N	26°05'27.0"N	26°07'53.9"N	26°07'34.9"N	26°07'24.9"N
LONGITUDE:	80°08'40.8"W	80°08'28.3W"	80°09'38.8"W	80°08'18.8"W	80°08'06.7"W	80°07'56.6"W	80°07'35.9"W
DATE:	10-20-16	10-20-16	10-21-16	10-21-16	10-17-16	10-19-16	10-18-16
DRILLER:	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING	TIM FLICKING
RIG:	CME 45	CME 45	CME 45	CME 45	CME 45	CME 45	CME 45



LEGEND

①	GRAY, TAN, BROWN TO DARK BROWN, FINE TO MEDIUM SAND, TRACE ORGANIC, TRACE LIMESTONE FRAGMENTS, TRACE SILT (SP)	
②	GRAY, TAN, BROWN FINE TO MEDIUM SAND, TRACE TO FEW SHELL FRAGMENTS (SP)	
③	GRAY, TAN, BROWN TO DARK BROWN SILTY SAND, WITH LIMESTONE FRAGMENTS (SM)	
④	GRAY, TAN, BROWN TO DARK BROWN SAND, WITH SILT, TRACE LIMESTONE FRAGMENTS (SP, SP-SM)	
⑤	TAN LIMESTONE	
⑥	DARK BROWN PEAT (PT)	

B.T. @ 12'	BORING TERMINATED AT 12' BELOW THE EXISTING GROUND SURFACE
PT-SP-SM	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2487)
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
W	MOISTURE CONTENT (%)
OC	ORGANIC CONTENT (%)
-200	AMOUNT PASSING US STANDARD 200 SIEVE (%)

NOTES

(1) BORINGS WERE DRILLED IN OCTOBER OF 2016. SPT BORINGS WERE PERFORMED USING A CME-45C AUTOMATIC HAMMER DRILLING RIG (ASTM D1586).

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVEL FLUCTUATIONS SHOULD BE ANTICIPATED THROUGHOUT THE YEAR.

(4) LATITUDE AND LONGITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HELD HAND GPS.

(5) AFTER COMPLETION OF DRILLING, BOREHOLES WERE BACKFILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

SILTS AND CLAYS

CONSISTENCY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY SOFT	LESS THAN 1
SOFT	1 - 3
FIRM	3 - 6
STIFF	6 - 12
VERY STIFF	12 - 24
HARD	GREATER THAN 24

REVISIONS

Date.	By	Descriptions	Date.	By	Descriptions

	Names	Dates
Drawn by	K.A.	01/03/2017
Checked by	A.B.	01/03/2017
Designed by		
Checked by		
Approved by		

RADISE Infrastructure Engineers & Software Developers

LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 228
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

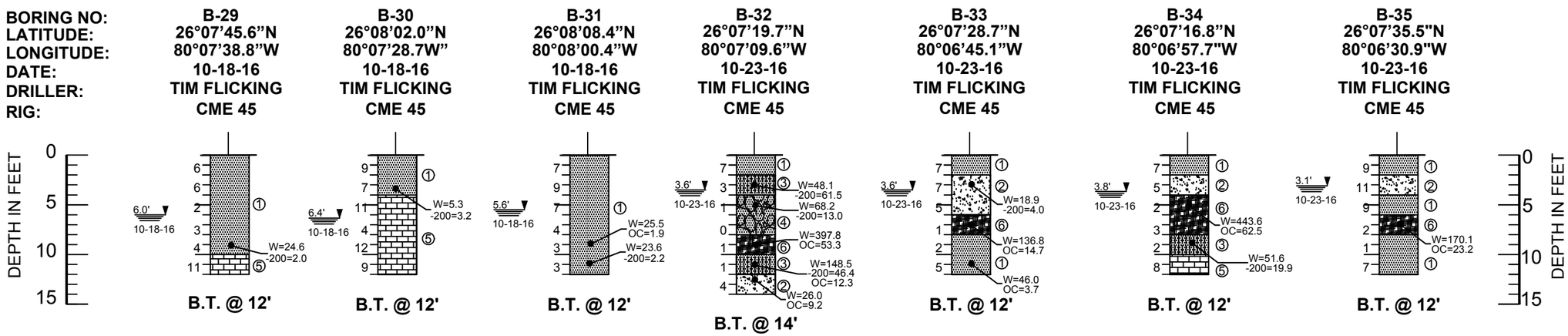
SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: SPT BORING SUBSURFACE PROFILES

PROJECT NAME: FORT LAUDERDALE - 7 NEIGHBORHOODS IMPROVEMENT

SHEET NO. 3D

RADISE PROJECT NO: 160605



LEGEND

1	GRAY, TAN, BROWN TO DARK BROWN, FINE TO MEDIUM SAND, TRACE ORGANIC, TRACE LIMESTONE FRAGMENTS, TRACE SILT (SP)	
2	GRAY, TAN, BROWN FINE TO MEDIUM SAND, TRACE TO FEW SHELL FRAGMENTS (SP)	
3	GRAY, TAN, BROWN TO DARK BROWN SILTY SAND, WITH LIMESTONE FRAGMENTS (SM)	
4	GRAY, TAN, BROWN TO DARK BROWN SAND, WITH SILT, TRACE LIMESTONE FRAGMENTS (SP, SP-SM)	
5	TAN LIMESTONE	
6	DARK BROWN PEAT (PT)	

B.T. @ 12'	BORING TERMINATED AT 12' BELOW THE EXISTING GROUND SURFACE
PT-SP-SM	UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL (ASTM D 2487)
N	STANDARD PENETRATION RESISTANCE- BLOWS PER FOOT USING AUTOMATIC HAMMER
W	MOISTURE CONTENT (%)
OC	ORGANIC CONTENT (%)
-200	AMOUNT PASSING US STANDARD 200 SIEVE (%)

NOTES

(1) BORINGS WERE DRILLED IN OCTOBER OF 2016. SPT BORINGS WERE PERFORMED USING A CME-45C AUTOMATIC HAMMER DRILLING RIG (ASTM D1586).

(2) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. SOIL TRANSITIONS MAY BE MORE GRADUAL THAN IMPLIED.

(3) GROUNDWATER LEVELS SHOWN ON THE SUBSURFACE PROFILES REPRESENT GROUNDWATER SURFACES ON THE DATES SHOWN. GROUNDWATER LEVEL FLUCTUATIONS SHOULD BE ANTICIPATED THROUGHOUT THE YEAR.

(4) LATITUDE AND LONGITUDE COORDINATES WERE MEASURED IN THE FIELD USING A HELD HAND GPS.

(5) AFTER COMPLETION OF DRILLING, BOREHOLES WERE BACKFILLED WITH GROUT.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 INCH
SPOON OUTSIDE DIA.	2.0 INCHES
AVG. HAMMER DROP	30 INCHES
HAMMER WEIGHT	140 POUNDS

GRANULAR MATERIALS

RELATIVE DENSITY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

SILTS AND CLAYS

CONSISTENCY	AUTOMATIC HAMMER SPT N-VALUE BLOWS/FOOT
VERY SOFT	LESS THAN 1
SOFT	1 - 3
FIRM	3 - 6
STIFF	6 - 12
VERY STIFF	12 - 24
HARD	GREATER THAN 24

REVISIONS							Names	Dates
Date.	By	Descriptions	Date.	By	Descriptions	Drawn by	K.A.	01/03/2017
						Checked by	A.B.	01/03/2017
						Designed by		
						Checked by		
						Approved by		

RADISE Infrastructure Engineers & Software Development
LICENSE NO. - 8901

ENGINEER OF RECORD
RADISE International
4152 West Blue Heron Boulevard, Suite 228
Riviera Beach, Florida. 33404
TEL 561-841-0103 FAX 561-841-0104
URL : http:// www.radise.net

CITY OF FORT LAUDERDALE

COUNTY	CLIENT
BROWARD	HAZEN AND SAWYER

SCALE: VERTICAL N.T.S.
SCALE: HORIZONTAL N.T.S.

SHEET TITLE: SPT BORING SUBSURFACE PROFILES

PROJECT NAME: FORT LAUDERDALE - 7 NEIGHBORHOODS IMPROVEMENT

SHEET NO. 3E

RADISE PROJECT NO: 160605

Table A-1 - Laboratory Test Results Summary

Project Name: Fort Lauderdale-7 Neighborhoods

Project ID: 160605

						GRAIN SIZE ANALYSIS U.S STANDARD SIEVE SIZE (% Passing)														
Boring No	**Sample Depth**	**Soil Classification**	**Moisture Content (%)**	**Organic Content (%)**	**-200**	**3"**	**1.5"**	**1"**	**3/4"**	**1/2"**	**3/8"**	**#4**	**#10**	**#20**	**#40**	**#50**	**#60**	**#100**	**#140**	**#200**
B-1	0-2	SP	4.2	2.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-1	6-8	SP-SM	22.7	-	13.7	100	100	-	95.3	-	65.1	55.5	49.7	45.3	38.3	29.7	25.5	17.2	15.0	13.7
B-2	8-10	SP-SM	17.5	-	11.1	100	100	-	100	-	90.4	82.4	77.8	76.5	72.3	57.2	41.9	16.3	13.0	11.1
B-3	6-8	SP-SM	19.4	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-4	0-2	SP	1.2	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-4	8-10	SP	20.5	-	3.2	100	100	-	100	-	96.7	94.1	93.1	92.4	81.7	56.9	42.9	10.7	3.9	3.2
B-8	2-4	SP	9.6	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-8	6-8	SP	24.7	-	2.7	100	100	-	100	-	100	100	100	99.5	87.1	72.4	61.2	22.4	4.7	2.7
B-9	0-2	SP	2.5	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-9	10-12	SP	22.4	-	3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-9	6-8	SP	22.8	-	2.0	100	100	-	100	-	100	100	100	99.7	88.4	67.3	49.0	9.0	2.8	2.0
B-10	0-2	SP	8.2	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-10	10-12	SM	23.9	-	17.4	100	100	-	99.0	-	94.2	87.4	84.9	83.6	65.7	45.7	38.5	26.6	21.9	17.4
B-10	6-8	SP	27.5	-	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-11	4-6	SP	24.6	-	1.3	100	100	-	100	100	100	100	100	99.4	87.2	70.4	57.8	16.2	2.4	1.3
B-11	6-8	SP	23.4	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-12	10-12	SP	21.9	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-12	2-4	SP	4.1	-	4.4	100	100	-	100	-	100	96.9	95.6	94.6	84.9	66.9	53.1	12.6	5.8	4.4
B-13	4-6	SP	26.9	-	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-14	6-8	SP	21.8	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-15	6-8	SP	33	2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-16	6-8	SP-SM	16	-	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-16	8-10	SM	13.6	-	26.7	100	100	-	97.7	-	88.6	75.6	68.1	64.6	58.0	51.1	47.2	34.3	30.9	26.7

B-17	0-2	SP	11.6	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-17	10-12	SM	20.2	-	15.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-17	8-10	SM	23	-	14.5	100	100	-	95.2	-	94.3	88.5	86.3	84.7	78.7	69.1	59.7	22.8	15.5	14.5
B-18	2-4	SP	24	-	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-19	4-6	SP	21.6	-	2.1	100	100	-	100	-	100	100	100	99.1	80.5	57.9	42.8	6.3	2.4	2.1
B-21	0-2	SP	9	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-21	4-6	SP-SM	24.1	-	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-22	2-4	SP-SM	21.8	-	10.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-24	0-2	SP	11	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-26	4-6	SP	35.2	-	2.5	100	100	-	100	-	100	100	100	98.7	83.6	63.4	45.2	6.0	2.9	2.5
B-27	0-2	SP	10	3.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-27	4-6	SP-SM	22.5	-	10.5	100	100	-	76.1	-	72.2	69.6	67.6	66.2	59.3	51.6	45.1	16.4	11.9	10.5
B-29	8-10	SP	24.6	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-30	2-4	SP	5.3	-	3.2	100	100	-	98.1	-	96.7	95.4	94.2	92.7	79.4	61.5	48.3	9.4	3.9	3.2
B-31	10-12	SP	23.6	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-31	8-10	SP	25.5	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-32	10-12	SM	148.5	12.3	46.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-32	12-14	SP-SM	26	-	9.2	100	-	98.1	92.8	-	91.1	85.9	81.0	75.0	65.4	54.5	47.2	21.2	11.9	9.2
B-32	2-4	SM	48.1	-	61.5	100	100	-	93.0	-	90.2	85.1	82.6	81.3	79.3	77.3	75.9	69.5	64.9	61.5
B-32	4-6	SM	68.2	-	13.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-32	8-10	PT	397.8	53.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-33	10-12	SP	46	3.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-33	2-4	SP	18.9	-	4.0	100	100	-	100	-	100	98.7	94.4	78.4	46.5	30.5	23.6	8.5	4.9	4.0
B-33	6-8	PT	136.8	14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-34	4-6	PT	443.6	62.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-34	8-10	SM	51.6	-	19.9	100	100	-	100	-	100	98.1	95.2	92.9	86.7	78.3	72.6	43.0	24.8	19.9
B-35	6-8	PT	170.1	23.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

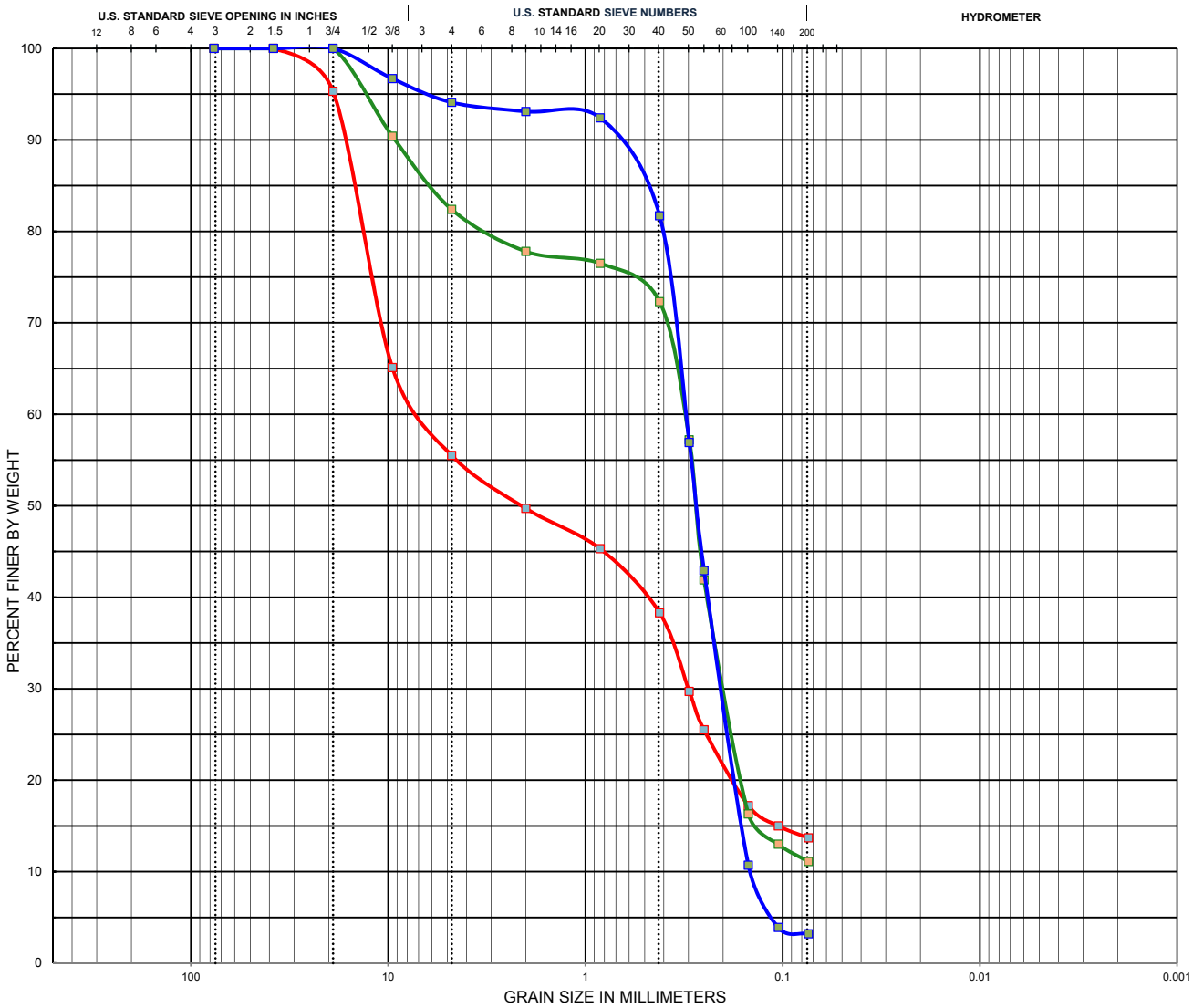
Notes:

Moisture Content tested in accordance ASTM-D2216,
Organic Content tests are performed with furnace temperature @450 Celsius and tested accordance ASTM-D2974,
Soil Classification tested with accordance to ASTM D 2487,
Grain Size Analysis was tested in general accordance with ASTM-D422.

GRAIN SIZE DISTRIBUTION

CLIENT NAME Hazen and Sawyer, P.C. **PROJECT NAME** Fort Lauderdale-7 Neighborhoods - Hazen and Sawyer

PROJECT NUMBER 160605



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No, Depth	Classification	LL	PL	PI	Cc	Cu
B-1 , 6-8	**SP-SM**	**NP**	**NP**	**NP**	**0**	**0**
B-2 , 8-10	**SP-SM**	**NP**	**NP**	**NP**	**0**	**0**
B-4 , 8-10	**SP**	**NP**	**NP**	**NP**	**1.02**	**2.21**

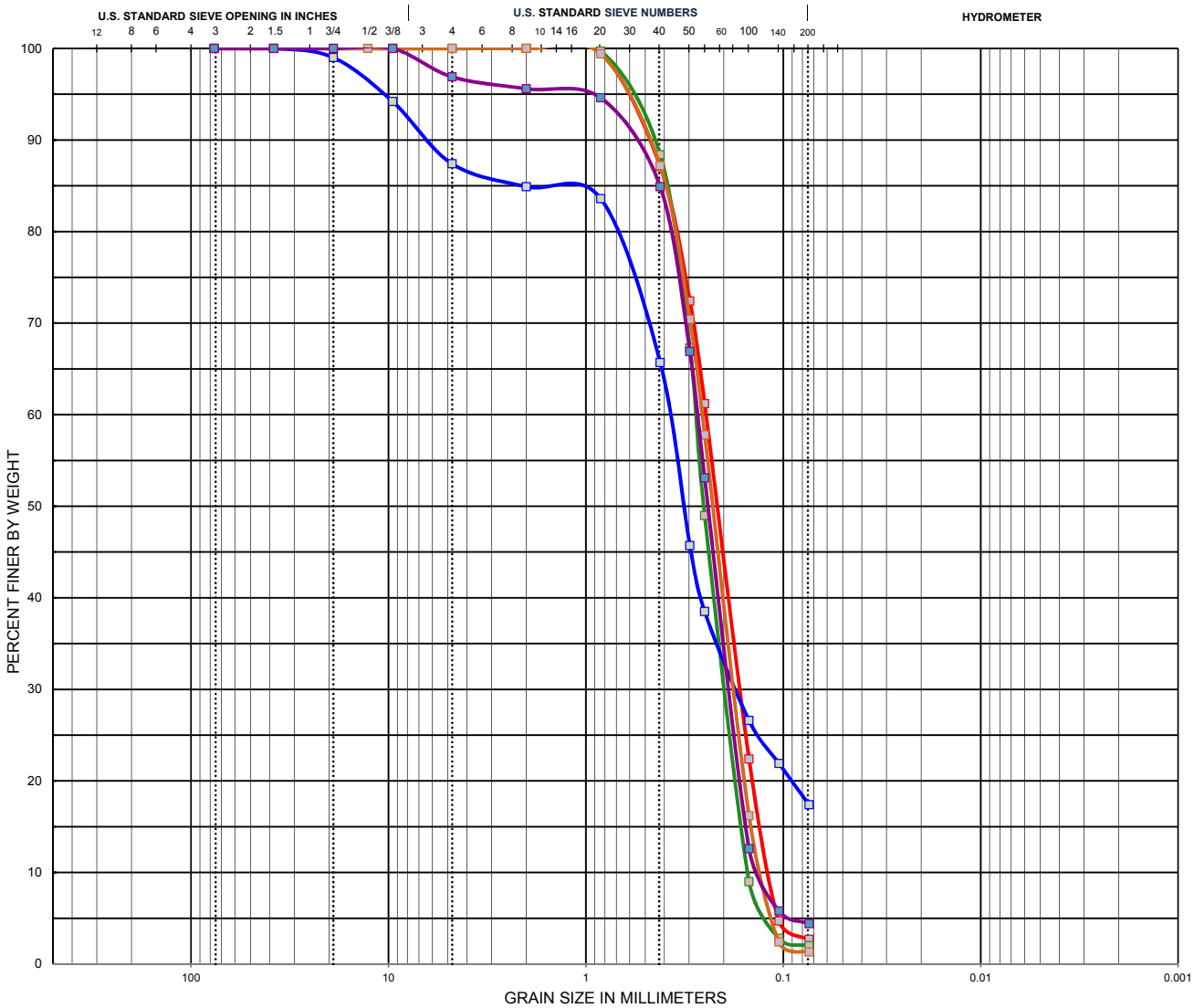
Boring No, Depth	D100	D60	D30	D10	% Cobble	%Gravel	%Sand	%Silt	%Clay
B-1 , 6-8	**38.1**	**6.99**	**0.3**	**0**	**0**	**44.5**	**41.8**	**13.7**	
B-2 , 8-10	**19**	**0.32**	**0.2**	**0**	**0**	**17.6**	**71.3**	**11.1**	
B-4 , 8-10	**19**	**0.31**	**0.21**	**0.14**	**0**	**5.9**	**90.9**	**3.2**	

In accordance with ASTM E 329 this report shall not be reproduced, except in full without the prior written approval of RADISE International

GRAIN SIZE DISTRIBUTION

CLIENT NAME Hazen and Sawyer, P.C. **PROJECT NAME** Fort Lauderdale-7 Neighborhoods - Hazen and Sawyer

PROJECT NUMBER 160605



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No, Depth	Classification	LL	PL	PI	Cc	Cu
B-8 , 6-8	SP	NP	NP	NP	0.96	2.08
B-9 , 6-8	SP	NP	NP	NP	0.95	1.87
B-10 , 10-12	SM	NP	NP	NP	0	0
B-11 , 4-6	SP	NP	NP	NP	0.96	2
B-12 , 2-4	SP	NP	NP	NP	1.03	2.08

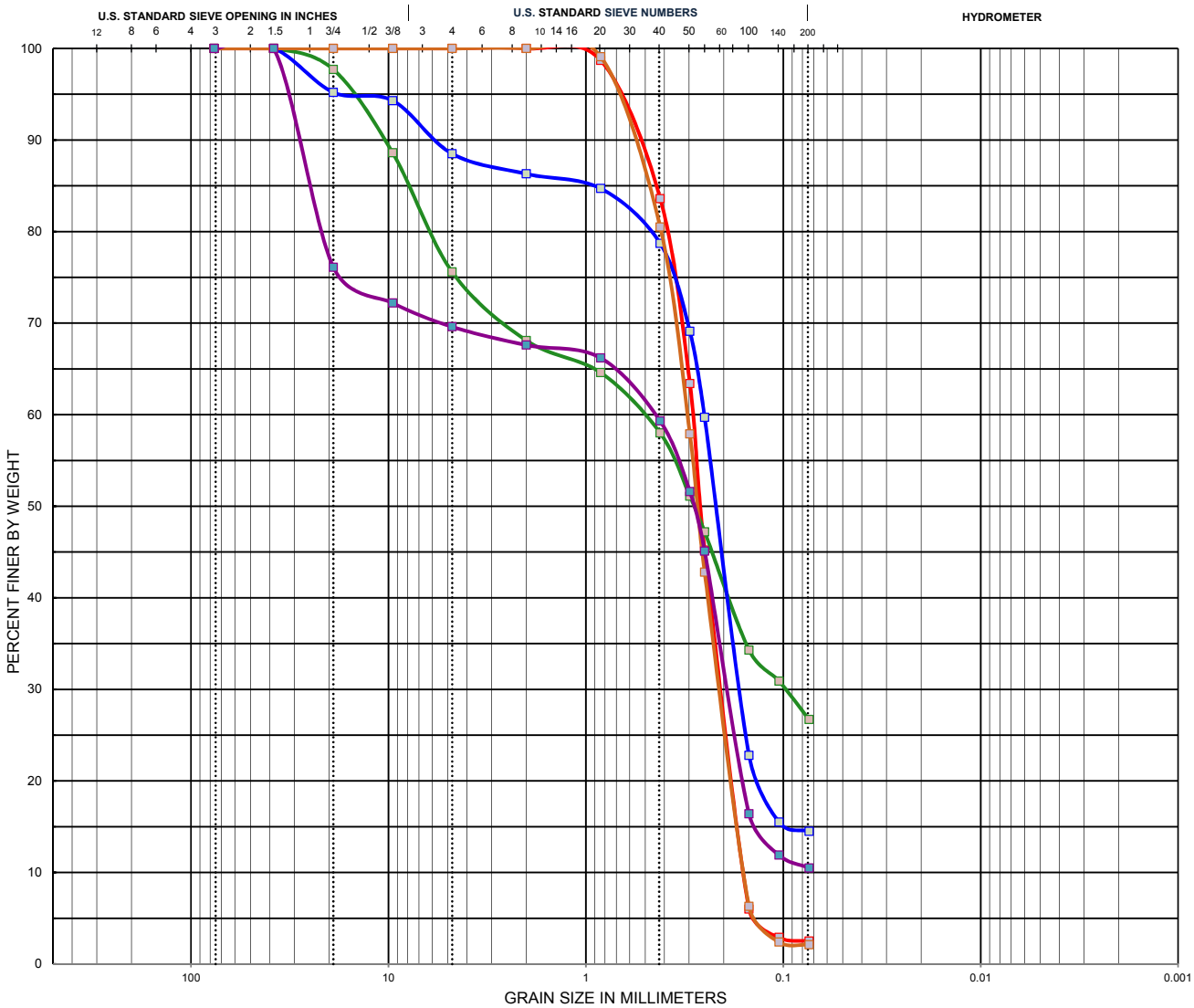
Boring No, Depth	D100	D60	D30	D10	% Cobble	%Gravel	%Sand	%Silt	%Clay
B-8 , 6-8	2	0.25	0.17	0.12	0	0	97.3	2.7	
B-9 , 6-8	2	0.28	0.2	0.15	0	0	98	2	
B-10 , 10-12	38.1	0.38	0.18	0	0	12.6	70	17.4	
B-11 , 4-6	2	0.26	0.18	0.13	0	0	98.7	1.3	
B-12 , 2-4	9.51	0.27	0.19	0.13	0	3.1	92.5	4.4	

In accordance with ASTM E 329 this report shall not be reproduced, except in full without the prior written approval of RADISE International

GRAIN SIZE DISTRIBUTION

CLIENT NAME Hazen and Sawyer, P.C. **PROJECT NAME** Fort Lauderdale-7 Neighborhoods - Hazen and Sawyer

PROJECT NUMBER 160605



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No, Depth	Classification	LL	PL	PI	Cc	Cu
B-26 , 4-6	SP	NP	NP	NP	0.95	1.81
B-16 , 8-10	SM	NP	NP	NP	0	0
B-17 , 8-10	SM	NP	NP	NP	0	0
B-19 , 4-6	SP	NP	NP	NP	0.89	1.94
B-27 , 4-6	SP-SM	NP	NP	NP	0	0

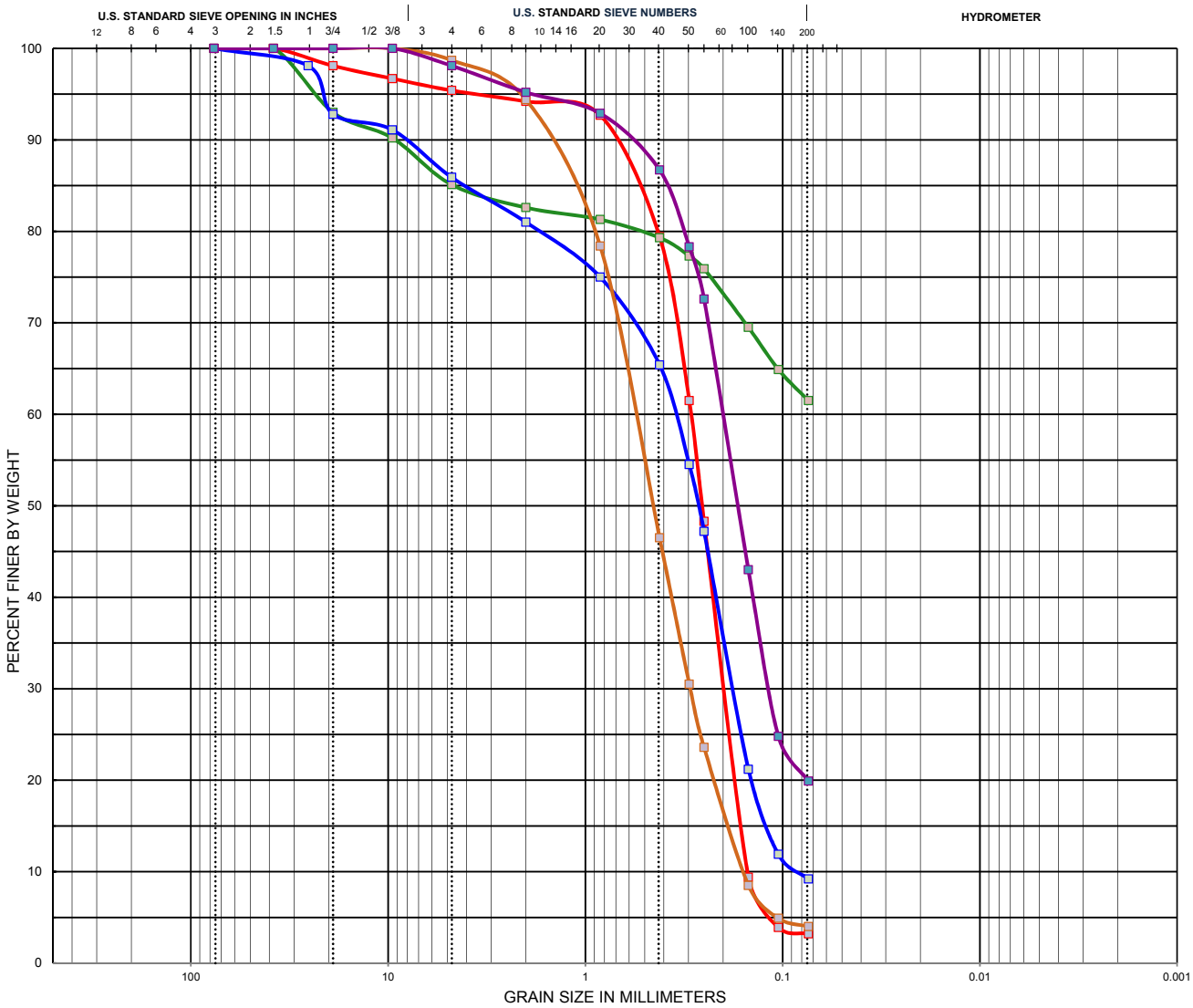
Boring No, Depth	D100	D60	D30	D10	% Cobble	%Gravel	%Sand	%Silt	%Clay
B-26 , 4-6	2	0.29	0.21	0.16	0	0	97.5	2.5	
B-16 , 8-10	38.1	0.55	0.1	0	0	24.4	48.9	26.7	
B-17 , 8-10	38.1	0.25	0.17	0	0	11.5	74	14.5	
B-19 , 4-6	2	0.31	0.21	0.16	0	0	97.9	2.1	
B-27 , 4-6	38.1	0.46	0.2	0	0	30.4	59.1	10.5	

In accordance with ASTM E 329 this report shall not be reproduced, except in full without the prior written approval of RADISE International

GRAIN SIZE DISTRIBUTION

CLIENT NAME Hazen and Sawyer, P.C. **PROJECT NAME** Fort Lauderdale-7 Neighborhoods - Hazen and Sawyer

PROJECT NUMBER 160605



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No, Depth	Classification	LL	PL	PI	Cc	Cu
B-30 , 2-4	SP	NP	NP	NP	0.92	1.93
B-32 , 2-4	SM	NP	NP	NP	0	0
B-32 , 12-14	SP-SM	NP	NP	NP	1.12	4.5
B-33 , 2-4	SP	NP	NP	NP	0.88	3.75
B-34 , 8-10	SM	NP	NP	NP	0	0

Boring No, Depth	D100	D60	D30	D10	% Cobble	%Gravel	%Sand	%Silt	%Clay
B-30 , 2-4	38.1	0.29	0.2	0.15	0	4.6	92.2	3.2	
B-32 , 2-4	38.1	0	0	0	0	14.9	23.6	61.5	
B-32 , 12-14	76.2	0.36	0.18	0.08	0	14.1	76.7	9.2	
B-33 , 2-4	9.51	0.6	0.29	0.16	0	1.3	94.7	4	
B-34 , 8-10	9.51	0.21	0.12	0	0	1.9	78.2	19.9	

In accordance with ASTM E 329 this report shall not be reproduced, except in full without the prior written approval of RADISE International

TABLE A-2 - OPEN-HOLE EXFILTRATION TEST RESULTS
City of Ft. Lauderdale - 7 Neighborhoods Improvement
Broward County, Florida

Boring No.	Test Depth (ft.)	Diameter of the test hole (in.)	Diameter of the test hole, d (ft.)	Length of the exposed soil, L (ft.)	Depth to water table, H_2 (ft.)	Volume of Water (gal.)	Time (sec)	Stabilized flow rate, Q (cfs)	Saturated Hole Depth, Ds (ft)	Hydraulic Conductivity, K (cfs/ft^2 - ft head)
E-1	0 - 15	8	0.67	15	5.50	109.0	600	0.024	9.5	1.70E-04
E-2	0 - 15	8	0.67	15	5.50	53.4	600	0.012	9.5	8.32E-05
E-3	0 - 15	8	0.67	15	5.50	19.1	600	0.004	9.5	2.98E-05
E-4	0 - 15	8	0.67	15	6.00	64.0	600	0.014	9.0	9.33E-05
E-5	0 - 15	8	0.67	15	5.00	80.2	600	0.018	10.0	1.35E-04
E-6	0 - 15	8	0.67	15	5.00	39.7	600	0.009	10.0	6.67E-05
E-7	0 - 15	8	0.67	15	5.50	36.3	600	0.008	9.5	5.65E-05
E-8	0 - 15	8	0.67	15	5.25	93.6	600	0.021	9.8	1.51E-04
E-9	0 - 15	8	0.67	15	6.00	19.0	600	0.004	9.0	2.77E-05
E-10	0 - 15	8	0.67	15	5.00	48.7	600	0.011	10.0	8.18E-05
E-11	0 - 15	8	0.67	15	5.16	167.2	600	0.037	9.8	2.74E-04
E-12	0 - 15	8	0.67	15	3.58	54.1	600	0.012	11.4	1.20E-04
E-13	0 - 15	8	0.67	15	5.00	113.5	600	0.025	10.0	1.91E-04
E-14	0 - 15	8	0.67	15	4.00	126.5	600	0.028	11.0	2.56E-04
E-15	0 - 15	8	0.67	15	4.00	46.3	600	0.010	11.0	9.35E-05
E-16	0 - 15	8	0.67	15	7.00	50.8	600	0.011	8.0	6.62E-05
E-17	0 - 15	8	0.67	15	5.50	116.3	600	0.026	9.5	1.81E-04
E-18	0 - 15	8	0.67	15	4.00	168.9	600	0.038	11.0	3.41E-04
E-19	0 - 15	8	0.67	15	5.50	117.2	600	0.026	9.5	1.83E-04
E-20	0 - 15	8	0.67	15	5.41	254.8	600	0.057	9.6	4.02E-04
E-21	0 - 15	8	0.67	15	5.50	87.0	600	0.019	9.5	1.36E-04
E-22	0 - 15	8	0.67	15	6.33	134.8	600	0.030	8.7	1.89E-04
E-23	0 - 15	8	0.67	15	5.50	51.6	600	0.011	9.5	8.04E-05
E-24	0 - 15	8	0.67	15	6.00	110.3	600	0.025	9.0	1.61E-04
E-25	0 - 15	8	0.67	15	6.33	153.7	600	0.034	8.7	2.15E-04
E-26	0 - 15	8	0.67	15	3.50	16.9	600	0.004	11.5	3.83E-05
E-27	0 - 15	8	0.67	15	3.66	37.8	600	0.008	11.3	8.24E-05
E-28	0 - 15	8	0.67	15	3.50	21.2	600	0.005	11.5	4.80E-05

Notes:

* Equation from SFWMD Manual

$$K = \frac{4 * Q}{\pi * d * (2 * H_2^2 + 4 * H_2 * Ds + H_2 * d)}$$

CITY OF FORT LAUDERDALE
PROJECT NO. 12337
CORDOVA RD. SEAWALL REPLACEMENT

APPENDIX B

PRELIMINARY STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

The attached document is included as part of the Contract Documents.

Prepared by

Hazen and Sawyer
4000 Hollywood Boulevard, Suite 750N
Hollywood, Florida 33021
Phone: 954-987-0066

Preliminary Stormwater Pollution Prevention Plan (SWPPP)

For

City of Fort Lauderdale
Cordova Road Seawall Replacement

Introduction

Hazen and Sawyer is submitting the SWPPP on behalf of the City of Fort Lauderdale (City) for the Cordova Rd. Seawall Replacement project.

This SWPPP is preliminary in nature because the Contractor will ultimately be responsible for drafting a final SWPPP for regulatory approval and enforcing its requirements in accordance with applicable Federal, State, and local regulations. The complete Erosion and Sedimentation Control Plan will be submitted by the Contractor and approved by the Engineer before the start of construction. It is anticipated that the Contractor will provide all labor, materials, and equipment required in the prevention of environmental pollution and degradation and thereby for the protection of all environmental resources encountered during construction.

At minimum, the SWPPP will include the Erosion and Sedimentation Control Plan and associated details in the Contract Drawings. The Contractor will install temporary erosion, sedimentation and turbidity barriers, floating turbidity barriers before construction begins and these measures will remain in place until the project is completed.

Site Description

As part of this project, the City is proposing construction of 2,203 linear feet of seawall at 18 inches from wet face of existing seawall to wet face of proposed seawall along Cordova Rd. The project also includes the installation of new catch basins and outfall, extending existing outfalls, installation of tidal valves and pollution retardant baffles, and surface restoration. The project covers less than 1 acre. There is no substantial change in impervious area.

Notifications

If at any point the construction is not in compliance with this program's provisions, the Engineer will notify the Contractor in writing. The Contractor must submit a corrective action proposal to the Engineer for review. Upon approval of corrective action(s), the Contractor must commence such action(s) in an expeditious manner and in accordance with all applicable Federal, State, and local regulations.

The Contractor will be responsible for documenting and reporting any incidents that may pose an environmental risk or hazard. In such an event, the Contractor must notify in writing both the Engineer and the appropriate regulatory agencies in a suitable timeframe to avoid environmental pollution and degradation.

Personnel Training

The Contractor's personnel will be thoroughly trained in standard methods and equipment for preventing, detecting, containing, and mitigating potential environmental pollutants. Furthermore, the personnel will posses all required certifications, licenses, and/or permits for pertinent construction elements. Lastly, the personnel will perform their duties in accordance with all applicable Federal, State, and local regulations.

Environmental Resource Protection

Erosion and Sedimentation Control

Surface water management during construction is covered in the Technical Specifications under Section 02100 titled "Erosion Control, Sedimentation and Containment of Construction Materials". An Erosion and Sedimentation Control Plan for construction is shown in the Contract Drawings.

Wastes and Hazardous Materials

Only chemicals necessary for completing the project will be brought to the jobsite. The Contractor will instruct all personnel that disposal of any potentially hazardous material into a water source or onto any lands is strictly prohibited and will warrant immediate dismissal. Any accidental or intentional hazardous spill will be immediately reported to the Engineer.

Fuels and oils will be kept secure during equipment operation during construction. The Contractor will ensure that fuel and oil will not contaminate any soil or water resource. Specifically, the Contractor will employ appropriate standard methods for preventing or containing any spills that may occur. All smaller, portable tanks or cans used to transport fuel, for example, will meet OSHA regulations.

Solid wastes will be disposed in accordance with the Contract Documents. Other categorical wastes (e.g., fuels, oils, solvents) will be stored in corrosion resistant containers and will be handled and disposed of by a licensed, specialized commercial service, in accordance with applicable Federal, State, and local regulations.

Soil

In order to prevent or minimize the introduction of pollutants into stormwater runoff from construction areas, temporary erosion and sedimentation control devices will be implemented. These include, but are not limited to, mulching, netting, silt fences, floating barriers, and hay bales. The Contractor will install such devices prior to commencing construction activities, and they will remain in place until all disturbed, exposed areas have been stabilized with permanent vegetation growth or other means, or until other final acceptance of the contractual work.

Construction activities will occur within the limits of construction indicated on the Contract Drawings. Stockpile and staging areas and other temporary buildings will be located therein, with approval from the Engineer. Erosion and sedimentation potential will be reduced by scheduling construction activities to minimize the total disturbed area at any given time and by preserving all vegetation possible outside the limits of construction. The Contractor will use appropriate stormwater diversion and attenuation

structures such as retention/detention basins, swales, or berms as necessary with the Engineer's approval.

Water

The Contractor will monitor construction activities and thereby prevent the contamination of any surface water or groundwater source. The Contractor will report to the Engineer any incident where a construction activity pollutes a water source, whether onsite or offsite.

The Contractor will obtain a dewatering permit, if such activities are necessary for construction. Dewatering disposal, if any, will be in accordance with applicable Federal, State, and local regulations.

Rinsing of concrete trucks will occur in isolated areas so that runoff cannot migrate into water sources, other sensitive onsite areas, or offsite. Any leftover concrete materials will be disposed of accordingly. Temporary chemical toilets will be provided onsite by the Contractor as required by the contract specifications.

Permanent Features

Permanent erosion control measures will consist of sodding all disturbed areas of the site and grading the site with relatively shallow slopes to minimize erosion and "sloughing" of the finished grade as shown on Contract drawings.

Project Closeout

Upon project completion and acceptance by the City, all debris and wastes generated through construction activities will be permanently removed from the jobsite. All disturbed, exposed areas will be graded and seeded/sodded as shown on the Contract Drawings. All temporary structures such as erosion and sedimentation control devices, construction signs, etc. will be permanently removed from the jobsite. Lastly, all temporary utility connections will be terminated.

Implementation Responsibility

It is the full and outright responsibility of the Contractor to implement a SWPPP. Furthermore, it is the Contractor's responsibility to draft and submit a final SWPPP for approval by the governing regulatory agency.

CITY OF FORT LAUDERDALE
PROJECT NO. 12337
CORDOVA RD. SEAWALL REPLACEMENT

APPENDIX C

BENTHIC SURVEY

The attached survey is provided for informational purposes with the Contract Documents. The attached report is not a part of the Contract Documents. The Owner and the Engineer make no guarantee, either expressed or implied, as to its accuracy or completeness.

LOCATION MAP
(NOT TO SCALE)

BENCHMARK / REFERENCE POINT TABLE						
NAME	NORTHING	EASTING	POINT ELEVATION	STATION	OFFSET	DESCRIPTION
TBM#1	650,103.19	943,494.14	6.04	10+15.16	18.57' LEFT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#2	650,213.77	943,939.90	2.21	15+72.70	37.52' LEFT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#3	650,332.39	944,720.42	4.81	23+58.79	31.50' LEFT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#4	650,340.47	945,078.51	3.79	27+16.78	31.09' LEFT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#5	650,349.34	945,425.28	3.03	30+63.68	31.69' LEFT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#6	650,365.20	946,113.73	4.34	37+52.29	31.26' LEFT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#7	650,308.78	946,659.03	1.91	42+96.05	38.10' RIGHT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#8	650,382.36	947,297.43	2.13	49+36.19	20.33' LEFT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#9	650,310.29	943,620.00	2.27	71+96.56	7.55' LEFT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#10	651,066.40	943,786.23	2.13	79+69.37	0.12' RIGHT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#11	648,307.69	942,647.44	2.68	128+55.06	20.33' LEFT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#12	647,141.70	942,361.82	1.56	116+50.62	13.43' RIGHT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#13	646,439.19	942,216.23	1.89	109+0.48	11.58' RIGHT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#14	647,497.11	943,391.46	1.96	90+76.44	5.85' RIGHT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#15	646,793.34	944,187.64	2.11	100+71.06	8.04' RIGHT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#16	649,287.89	947,319.42	2.46	201+93.82	3.35' LEFT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#17	649,365.67	946,149.19	2.25	130+20.17	7.77' LEFT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#18	649,802.48	946,147.92	2.33	134+56.68	8.57' RIGHT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#19	650,766.06	946,395.09	2.75	141+46.74	14.50' RIGHT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#20	652,446.59	946,395.09	2.75	210+87.11	25.61' LEFT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#21	649,102.11	943,147.30	2.35	141+56.52	21.68' RIGHT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#22	649,625.28	945,791.78	2.52	190+14.18	5.56' LEFT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#23	649,874.31	947,329.98	2.28	208+07.21	1.77' RIGHT	SET MAG NAIL & WASHER (L.B. 7335)
TBM#24	650,319.42	947,808.72	2.92	54+52.29	39.69' RIGHT	SET MAG NAIL & WASHER (L.B. 7335)

Global Positioning System (G.P.S.). measurements were conducted in the field to acquire said coordinate values, which are based on the following Horizontal Control Station:

Name: Davie
Code: FTLD
Geographic Coordinates:
Latitude: 26° 07' 14.23359" N
Longitude: 80° 20' 47.49327" W
State Plane Coordinates:
Northing: 650069.42 US Feet
Easting: 870503.57 US Feet
Creation Date: 08-02-2010
Receiver Type: Leica GR 10
Satellite System: GPS and GLONASS
Ellipsoid Height (Meters): -15.332

Name: North Dade
Code: FLND
Geographic Coordinates:
Latitude: 25° 57' 56.76772" N
Longitude: 80° 10' 02.22301" W
State Plane Coordinates:
Northing: 594119.571 US Feet
Easting: 929757.558 US Feet
Creation Date: 09-10-2014
Receiver Type: Leica AR 20
Satellite System: GPS and GLONASS

SURVEYOR'S NOTES:

DATE OF FIELD SURVEY:

The date of completion of the original field Survey was on December 20, 2017.

SURVEY LIMITS:
East Las Olas Boulevard couverage is R/W to R/W from West of S.E. 17th Avenue to east of Poinciana Drive. Side street off East Las Olas Boulevard shown here on coverage R/W to R/W. Seawall Surveys cover 25' into water from seawall and to center of road adjacent to seawall. On both, Cordova and Isles of palm Coverage extended to opposite edge-of-pavementfrom seawall

ACCURACY:

The accuracy obtained by field measurement methods and office calculations of closed geometric figures meets and exceeds the Standards of Practice requirement for Suburban Area (Linear: 1 foot in 7,500 feet) as defined in Rule 5J-17.051, Florida Administrative Code.

Elevations of well identified features as depicted on the Survey Map were measured to an estimated vertical position accuracy of 1/100 of a foot on hard surfaces and 1/10 of a foot on ground surfaces.

Well identified features as depicted on the Survey Map were measured to an estimated horizontal position accuracy of 1/10 of a foot.

This Map of Survey is intended to be displayed at a scale of One inch equals Twenty feet or smaller.

PERTINENT INFORMATION USED FOR SURVEY:

North arrow direction is based on an assumed Meridian.

Bearings as shown hereon are based upon the Centerline of East Las Olas Boulevard with an assumed bearing of N88°38'27"E, said line to be considered a well established and monumented line.

All Mean High Waters(MHW) and Mean Low Waters(MLW) elevation shown hereon are interpolated elevation between tide interpolation points # 90, # 106, # 107 and # 2939 as directed by Lamar Evers, PSM, of the Department of Enviromental Protection.
z
e

Plat of "CORAL ISLES" according to the Plat thereof as recorded in Plat Book 15 at Page 60 of the Public Records of Broward County, Florida.
Plat of "CORAL ISLES" according to the Plat thereof as recorded in Plat Book 15 at Page 47 of the Public Records of Broward County, Florida.
Plat of "CORAL ISLES" according to the Plat thereof as recorded in Plat Book 15 at Page 68 of the Public Records of Broward County, Florida.
Plat of "STILWELL ISLES" according to the Plat thereof as recorded in Plat Book 15 at Page 26 of the Public Records of Broward County, Florida.
Plat of "STILWELL ISLES" according to the Plat thereof as recorded in Plat Book 15 at Page 34 of the Public Records of Broward County, Florida.
Plat of "IDLEWYLD" according to the Plat thereof as recorded in Plat Book 7 at Page 38 of the Public Records of Broward County, Florida.
Plat of "AMENDED PLAT OF A PORTION OF BLOCK 13, IDLEWYLD" according to the Plat thereof as recorded in Plat Book 41 at Page 35 of the Public Records of Broward County, Florida.
Plat of "IDLEWYLD" according to the Plat thereof as recorded in Plat Book 1 at Page 19 of the Public Records of Broward County, Florida.
Plat of "LAUDERDALE SHORES" according to the Plat thereof as recorded in Plat Book 15 at Page 25 of the Public Records of Broward County, Florida.
Plat of "RESUBDIVISION OF BLOCKS 5&6, OF VINCE" according to the Plat thereof as recorded in Plat Book 47 at Page 26 of the Public Records of Broward County, Florida.
Plat of " VINCE" according to the Plat thereof as recorded in Plat Book 8 at Page 12 of the Public Records of Broward County, Florida.
Plat of " VINCE" according to the Plat thereof as recorded in Plat Book 6 at Page 4 of the Public Records of Broward County, Florida.
Plat of " CAPRI OF VINCE" according to the Plat thereof as recorded in Plat Book 52 at Page 39 of the Public Records of Broward County, Florida.
Plat of "RIVER SHORES" according to the Plat thereof as recorded in Plat Book 15 at Page 61 of the Public Records of Broward County, Florida.
Plat of "THE BARANT RESIDENCE PLAT" according to the Plat thereof as recorded in Plat Book 139 at Page 8 of the Public Records of Broward County, Florida.
Plat of "RIO VISTA ISLES" according to the Plat thereof as recorded in Plat Book 7 at Page 47 of the Public Records of Broward County, Florida.
Plat of "RIO VISTA ISLES" according to the Plat thereof as recorded in Plat Book 8 at Page 7 of the Public Records of Broward County, Florida.
Plat of "RIO VISTA ISLES" according to the Plat thereof as recorded in Plat Book 6 at Page 19 of the Public Records of Broward County, Florida.
Plat of " RESUBDIVISION IN BLOCK 3&4 OF VINCE" according to the Plat thereof as recorded in Plat Book 35 at Page 18 of the Public Records of Broward County, Florida.
Plat of " NURMI ISLES " according to the Plat thereof as recorded in Plat Book 21 at Page 29 of the Public Records of Broward County, Florida.
Plat of " NURMI ISLES " according to the Plat thereof as recorded in Plat Book 19 at Page 24 of the Public Records of Broward County, Florida.
Plat of " NURMI ISLES " according to the Plat thereof as recorded in Plat Book 24 at Page 42 of the Public Records of Broward County, Florida.
Plat of " NURMI ISLES " according to the Plat thereof as recorded in Plat Book 24 at Page 43 of the Public Records of Broward County, Florida.
Plat of " MORAL CANAL" according to the Plat thereof as recorded in Plat Book 44 at Page 30 of the Public Records of Broward County, Florida.
Plat of " NAVARRO ISLES" according to the Plat thereof as recorded in Plat Book 15 at Page 40 of the Public Records of Broward County, Florida.
Plat of " AMENDED PLAT OF LAUDERDALE ISLES" according to the Plat thereof as recorded in Plat Book 16 at Page 33 of the Public Records of Broward County, Florida.
Plat of "RIO ISLES" according to the Plat thereof as recorded in Plat Book 8 at Page 7 of the Public Records of Broward County, Florida.
Plat of "RIO VISTA ISLES" according to the Plat thereof as recorded in Plat Book 7 at Page 47 of the Public Records of Broward County, Florida.
Plat of "RIVER SHORES" according to the Plat thereof as recorded in Plat Book 15 at Page 61 of the Public Records of Broward County, Florida.
Plat of " AMENDED PLAT OF LAUDERDALE ISLES" according to the Plat thereof as recorded in Plat Book 16 at Page 33 of the Public Records of Broward County, Florida.
Plat of "RIO VISTA ISLES" according to the Plat thereof as recorded in Plat Book 6 at Page 19 of the Public Records of Broward County, Florida.
Plat of "RIO VISTA ISLES" according to the Plat thereof as recorded in Plat Book 239 at Page 8 of the Public Records of Broward County, Florida.
Plat of "VICTORIA PARK" according to the Plat thereof as recorded in Plat Book 10 at Page 66 of the Public Records of Broward County, Florida.
Plat of "OAK RIDGE" according to the Plat thereof as recorded in Plat Book 10 at Page 48 of the Public Records of Broward County, Florida.
Plat of "SEA ISLAND UNIT FIVE" according to the Plat thereof as recorded in Plat Book 20 at Page 50 of the Public Records of Broward County, Florida.
Plat of "SEA ISLAND" according to the Plat thereof as recorded in Plat Book 27 at Page 50 of the Public Records of Broward County, Florida.
Plat of "LAUDERDALE" according to the Plat thereof as recorded in Plat Book 15 at Page 46 of the Public Records of Broward County, Florida.
Plat of "BARCELONA ISLES ADDITION" according to the Plat thereof as recorded in Plat Book 44 at Page 17 of the Public Records of Broward County, Florida.
Plat of "SEA ISLAND" according to the Plat thereof as recorded in Plat Book 6 at Page 17 of the Public Records of Broward County, Florida.
Plat of "GOULD'S POINT" according to the Plat thereof as recorded in Plat Book 16 at Page 64 of the Public Records of Broward County, Florida.
Plat of "GOULD'S ISLAND" according to the Plat thereof as recorded in Plat Book 15 at Page 62 of the Public Records of Broward County, Florida.
Plat of "RIO VISTA ISLES" according to the Plat thereof as recorded in Plat Book 6 at Page 19 of the Public Records of Broward County, Florida.
Plat of "LAUDERDALE SHORES" according to the Plat thereof as recorded in Plat Book 15 at Page 31 of the Public Records of Broward County, Florida.
Plat of "PALM POINT" according to the Plat thereof as recorded in Plat Book 15 at Page 64 of the Public Records of Broward County, Florida.
Plat of "PELICAN ISLE" according to the Plat thereof as recorded in Plat Book 21 at Page 19 of the Public Records of Broward County, Florida.
Plat of "BARCELONA ISLE" according to the Plat thereof as recorded in Plat Book 16 at Page 64 of the Public Records of Broward County, Florida.
F.D.O.T RIGHT OF WAY MAP for Section 86050-2500 last date October 13, 1994.

For Vertical Control:

All elevations shown hereon are based on the National American Vertical Datum of 1988 (N.A.V.D. 88), and a Benchmark supplied by the Public Works and Waste Management Department of Broward County, Florida.

Benchmark: A-20(DOT Project Network Control),Project ID 230717-2-52-01
Elevation: + 3.55 (N.A.V.D. '88)
Located The Intersection of East las Olas Boulevard and Botona Avenue

Benchmark: A-03(DOT Project Network Control),Project ID 230717-2-52-01
Elevation: + 3.55 (N.A.V.D. '88)
Located The Intersection of East las Olas Boulevard and 400± of Sunset Drive.

For Horizontal Control:

Bearing and coordinates (Northing and Easting) are relative to the Florida State Plane Coordinate System, Florida East Zone 0901, North American Datum (NAD) 1983 adjustment of 2011 (NAD83/2011)-Epoch 2010.0000; with a bearing N87°46'35"E, being established for the centerline of SW 13 STREET, said line to be considered a well established and monumented line.

RESTRICTIONS:

Since no other information were furnished other than that is cited under pertinent information, the Client is hereby advised that there may be legal restrictions on the Subject Property that are not shown on the Survey Map that may be found in the Public Records of Broward Dade County.

The Surveyor makes no representation as to ownership or possession of the Subject Property by any entity or individual that may appear on the Public Records of this County.

No excavation or determination was made as to how the Subject Property is served by utilities.

No improvements were located, other than those shown. No underground foundations, improvements and/or utilities were located or shown hereon.

PURPOSE OF SURVEY:

The purpose of this survey is for drainage, radway and seawall improvements

CLIENT INFORMATION:

This Topographic Survey was prepared at the insistence of and certified to:

City of Fort Lauderdale

SURVEYOR'S CERTIFICATE:

I hereby certify: That this "Topographic Survey" and the Survey Map resulting therefrom was performed under my direction and is true and correct to the best of my knowledge and belief and further, that said "Topographic Survey" meets the intent of the applicable provisions of the Standards of Practice for Land Surveying in the State of Florida, pursuant to Rule 5J-17.051 through 5J-17.052 of the Florida Administrative Code and its implementing law, Chapter 472.027 of the Florida Statutes.

LONGITUDE SURVEYORS LLC., a Florida Limited Liability Company
Florida Certificate of Authorization Number LB7335

By:
_____
Eduardo M. Suarez, PSM
Registered Surveyor and Mapper LS6313
State of Florida

NOTICE: Not valid without the signature and original raised seal of a Florida Licensed Surveyor and Mapper. Additions or deletions to Survey Maps by other than the signing party are prohibited without the written consent of the signing party.

NOT FOR CONSTRUCTION OR BID

SURVEYOR
EDUARDO SUAREZ
PL. PSM NO: 6313
DATE:12\17\2017

TEL: 305-453-0912
FAX: 305-513-5680

DRAWN BY: JM
DATE: 12/21/2017
DESIGNED BY: N/A
SCALE: 1"=20'
CHECKED BY: DR
FIELD BOOK: ELECTRONIC FIELD BOOK

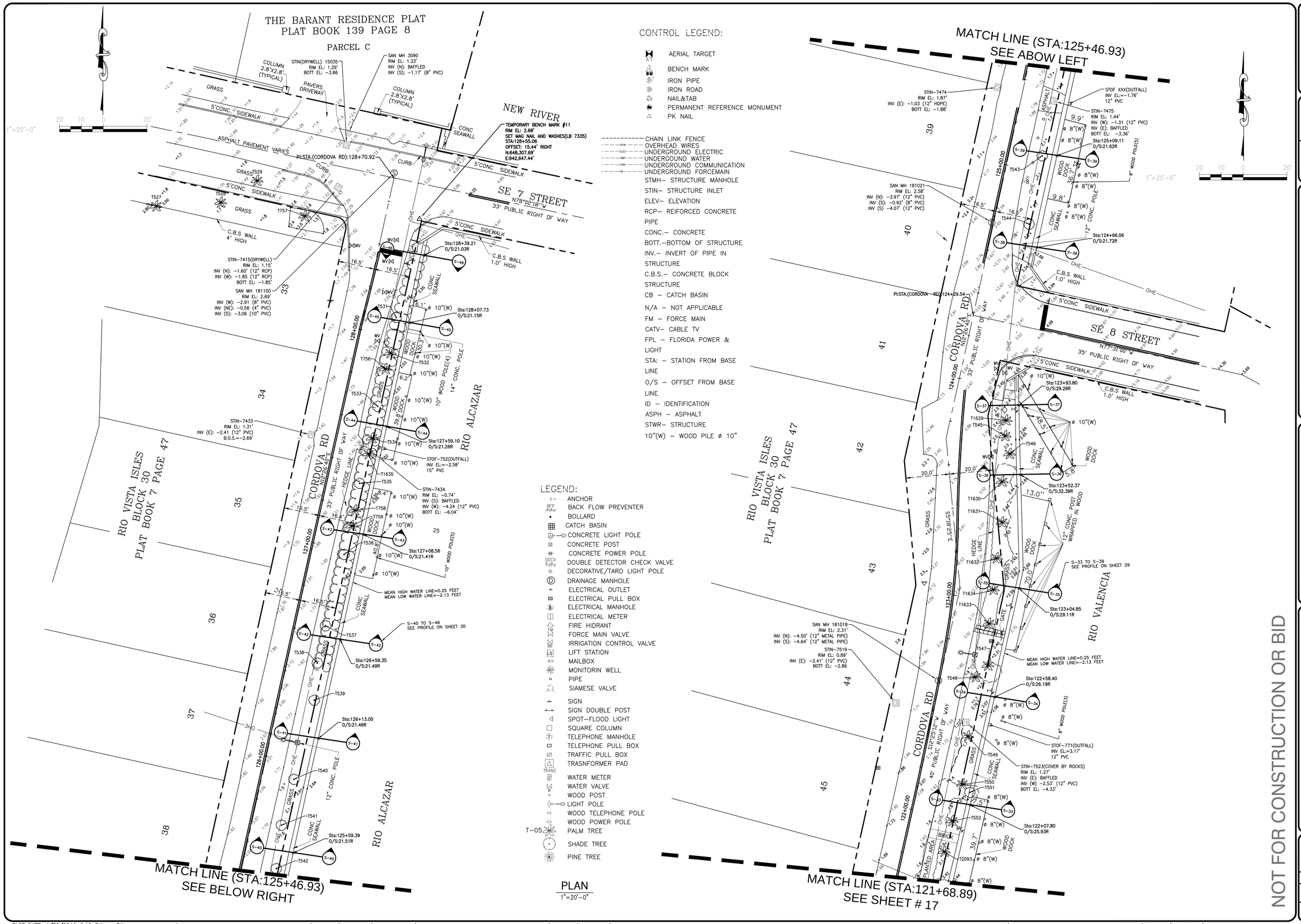
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION
1	01-30-19	ACS		UP DATE TREE SURVEY (CORDOBA DR.)

PROJECT # 12074
STORMWATER IMPROVEMENTS
SOUTHEAST ISLES NEIGHBORHOOD SURVEY

SHEET NO. 01 OF 45
TOTAL: 45
CAD FILE: 17271 TOPOGRAPHIC
DRAWING FILE NO. 17271.0.01



CONTROL LEGEND:

- AERIAL TARGET
- BENCH MARK
- IRON PIPE
- IRON ROAD
- NAIL&TAB
- PERMANENT REFERENCE MONUMENT
- PK NAIL
- CHAIN LINK FENCE
- OVERHEAD WIRES
- UNDERGROUND ELECTRIC
- UNDERGOUND WATER
- UNDERGROUND COMMUNICATION
- UNDERGROUND FORCEMAIN
- STMH– STRUCTURE MANHOLE
- STIN– STRUCTURE INLET
- ELEV– ELEVATION
- RCP– REIFORCED CONCRETE PIPE
- CONC.– CONCRETE
- BOTT.–BOTTOM OF STRUCTURE
- INV.– INVERT OF PIPE IN STRUCTURE
- C.B.S.– CONCRETE BLOCK STRUCTURE
- CB – CATCH BASIN
- N/A – NOT APPLICABLE
- FM – FORCE MAIN
- CATV– CABLE TV
- FPL – FLORIDA POWER & LIGHT
- STA: – STATION FROM BASE LINE
- O/S – OFFSET FROM BASE LINE
- ID – IDENTIFICATION
- ASPH – ASPHALT
- STWR– STRUCTURE
- 10"(W) – WOOD PILE ø 10"

LEGEND:

- ANCHOR
- BACK FLOW PREVENTER
- BOLLARD
- CATCH BASIN
- CONCRETE LIGHT POLE
- CONCRETE POST
- CONCRETE POWER POLE
- DOUBLE DETECTOR CHECK VALVE
- DECORATIVE/TARD LIGHT POLE
- DRAINAGE MANHOLE
- ELECTRICAL OUTLET
- ELECTRICAL PULL BOX
- ELECTRICAL MANHOLE
- ELECTRICAL METER
- FIRE HIDRANT
- FORCE MAIN VALVE
- IRRIGATION CONTROL VALVE
- LIFT STATION
- MAILBOX
- MONITORIN WELL
- PIPE
- SIAMESE VALVE
- SIGN
- SIGN DOUBLE POST
- SPOT–FLOOD LIGHT
- SQUARE COLUMN
- TELEPHONE MANHOLE
- TELEPHONE PULL BOX
- TRAFFIC PULL BOX
- TRASNFORMER PAD
- WATER METER
- WATER VALVE
- WOOD POST
- LIGHT POLE
- WOOD TELEPHONE POLE
- WOOD POWER POLE
- PALM TREE
- SHADE TREE
- PINE TREE

PLAN
1"=20'-0"

NOT FOR CONSTRUCTION OR BID

SURVEYOR
EDUARDO SUAREZ
PL. PSM NO: 6313
DATE:10/17/2017
TEL: 305-463-0912
FAX: 305-513-5680

DATE: 12/21/2017
DRAWN BY: JM
DESIGNED BY: N/A
SCALE: 1"=20'
CHECKED BY: DR
FIELD BOOK: ELECTRONIC FIELD BOOK

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

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION
1	01-30-19	ACS		UP DATE TREE SURVEY (CORDOBA DR.)

PROJECT # 12074
STORMWATER IMPROVEMENTS
SOUTHEAST ISLES NEIGHBORHOOD SURVEY
SEAWALL 29-CORDOVA RD

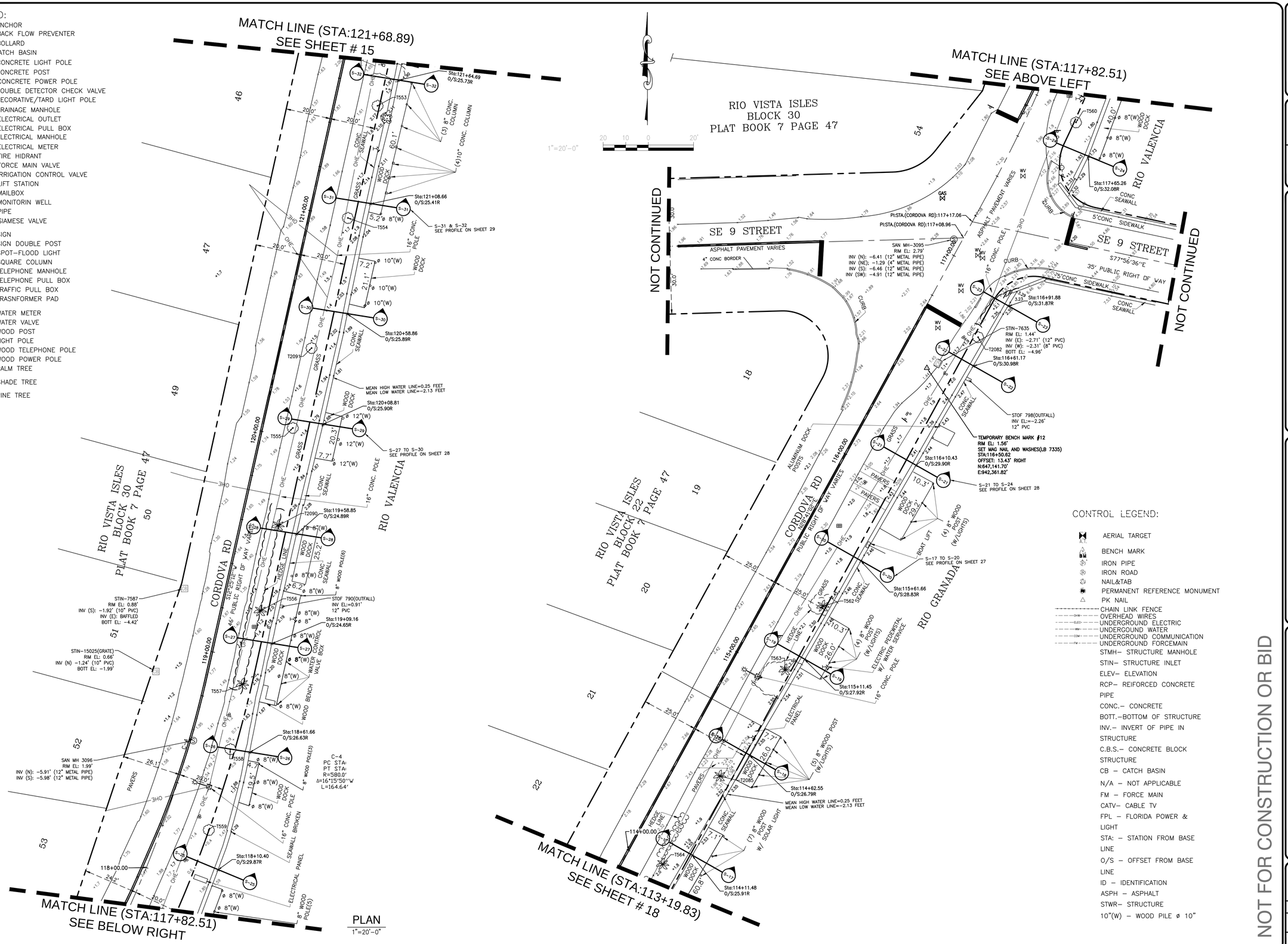
SHEET NO. 15 OF 45
TOTAL: 45
CAD FILE: 17271 TOPOGRAPHIC
DRAWING FILE NO. 17271.0.01

PLOT DATE: 1/30/2019 6:48 PM BY: RMOREJON XREFs= L:\17271 Southeast Isles, Fort Lauderdale, Florida\Outbound\01-30-19\SEISLESTOPO,L:\17271 Southeast Isles, Fort Lauderdale, Florida\Outbound\01-30-19\SEISLESBSLN

File = L:\17271 Southeast Isles, Fort Lauderdale, Florida\Outbound\01-30-19\SEISLESSURV Saved by AZAHEL Save date = 1/30/2019 4:47 PM

LEGEND:

- ANCHOR
- BACK FLOW PREVENTER
- BOLLARD
- CATCH BASIN
- CONCRETE LIGHT POLE
- CONCRETE POST
- CONCRETE POWER POLE
- DOUBLE DETECTOR CHECK VALVE
- DECORATIVE/TARD LIGHT POLE
- DRAINAGE MANHOLE
- ELECTRICAL OUTLET
- ELECTRICAL PULL BOX
- ELECTRICAL MANHOLE
- ELECTRICAL METER
- FIRE HIDRANT
- FORCE MAIN VALVE
- IRRIGATION CONTROL VALVE
- LIFT STATION
- MAILBOX
- MONITORIN WELL
- PIPE
- SIAMESE VALVE
- SIGN
- SIGN DOUBLE POST
- SPOT-FLOOD LIGHT
- SQUARE COLUMN
- TELEPHONE MANHOLE
- TELEPHONE PULL BOX
- TRAFFIC PULL BOX
- TRASNFORMER PAD
- WATER METER
- WATER VALVE
- WOOD POST
- LIGHT POLE
- WOOD TELEPHONE POLE
- WOOD POWER POLE
- T-05 PALM TREE
- SHADE TREE
- PINE TREE



CONTROL LEGEND:

- AERIAL TARGET
- BENCH MARK
- IRON PIPE
- IRON ROAD
- NAIL&TAB
- PERMANENT REFERENCE MONUMENT
- PK NAIL
- CHAIN LINK FENCE
- OVERHEAD WIRES
- UNDERGROUND ELECTRIC
- UNDERGOUND WATER
- UNDERGROUND COMMUNICATION
- UNDERGROUND FORCEMAIN
- STMH- STRUCTURE MANHOLE
- STIN- STRUCTURE INLET
- ELEV- ELEVATION
- RCP- REIFORCED CONCRETE PIPE
- CONC.- CONCRETE
- BOTT.-BOTTOM OF STRUCTURE
- INV.- INVERT OF PIPE IN STRUCTURE
- C.B.S.- CONCRETE BLOCK STRUCTURE
- CB - CATCH BASIN
- N/A - NOT APPLICABLE
- FM - FORCE MAIN
- CATV- CABLE TV
- FPL - FLORIDA POWER & LIGHT
- STA: - STATION FROM BASE LINE
- O/S - OFFSET FROM BASE LINE
- ID - IDENTIFICATION
- ASPH - ASPHALT
- STWR- STRUCTURE
- 10"(W) - WOOD PILE ø 10"

NOT FOR CONSTRUCTION OR BID

SURVEYOR
EDUARDO SUAREZ
PL. PSM NO: 6313
DATE:10/17/2017
TEL: 305-463-0912
FAX: 305-513-5680

DRAWN BY: JM
DATE: 12/21/2017
DESIGNED BY: N/A
SCALE: 1"=20'
CHECKED BY: DR
FIELD BOOK: ELECTRONIC FIELD BOOK

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

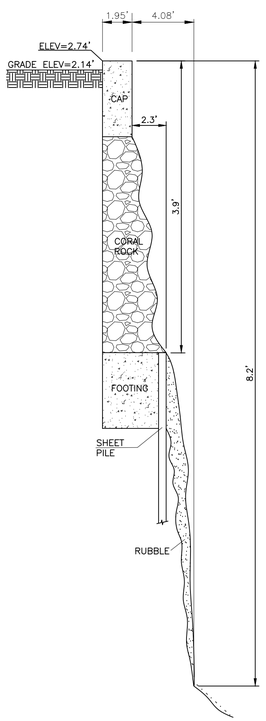
REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION
1	01-30-19	ACS		UP DATE TREE SURVEY (CORDOVA DR.)

PROJECT # 12074
STORMWATER IMPROVEMENTS
SOUTHEAST ISLES NEIGHBORHOOD SURVEY
SEAWALL 29-CORDOVA RD

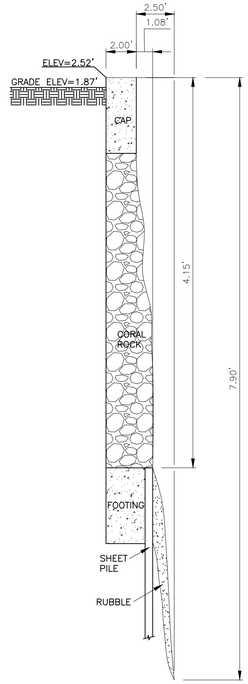
SHEET NO. 16 OF 45
TOTAL: 45
CAD FILE: 17271 TOPOGRAPHIC
DRAWING FILE NO. 17271.0.01

S-1
Sta:105+27.73
O/S:24.25R



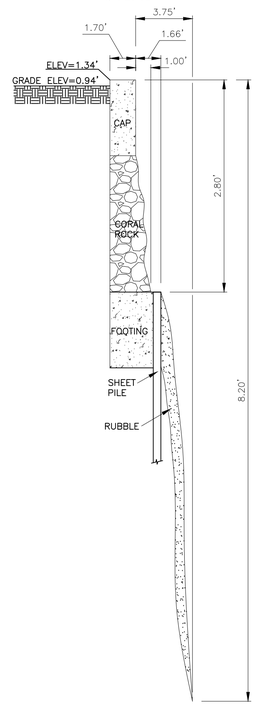
SEE SECTION ON SHEET 17
SCALE: HOR. 1"=5'
VER. 1"=1'

S-2
Sta:105+55.26
O/S:25.44R



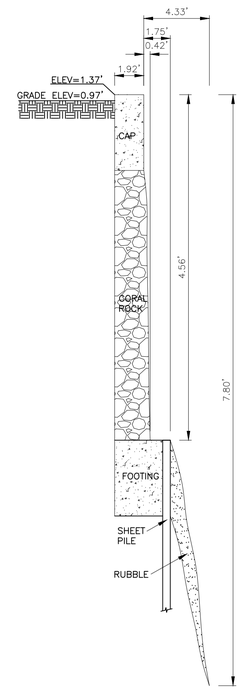
SEE SECTION ON SHEET 17
SCALE: HOR. 1"=5'
VER. 1"=1'

S-3
Sta:106+05.24
O/S:25.52R



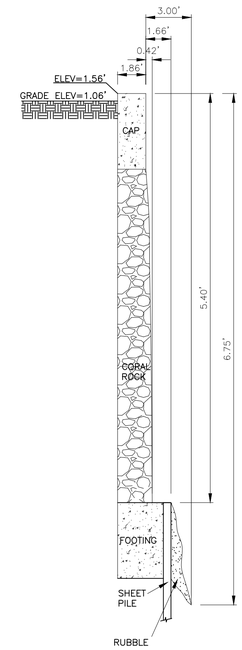
SEE SECTION ON SHEET 17
SCALE: HOR. 1"=5'
VER. 1"=1'

S-4
Sta:106+55.18
O/S:26.76R



SEE SECTION ON SHEET 17
SCALE: HOR. 1"=5'
VER. 1"=1'

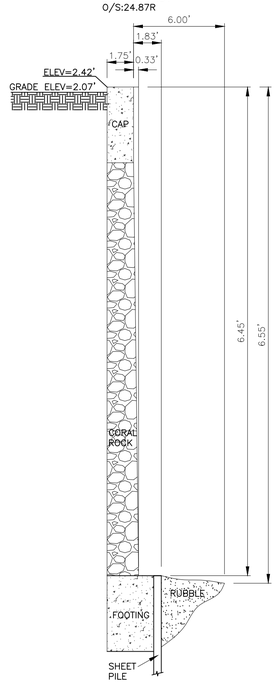
S-5
Sta:107+05.10
O/S:27.31R



SEE SECTION ON SHEET 17
SCALE: HOR. 1"=5'
VER. 1"=1'

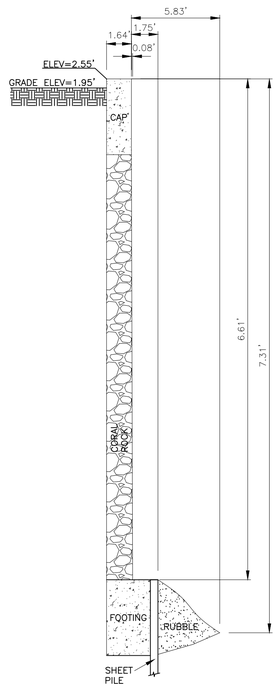
SCALE: HOR. 1"=5'
VER. 1"=1'

S-6
Sta:108+04.84
O/S:24.87R



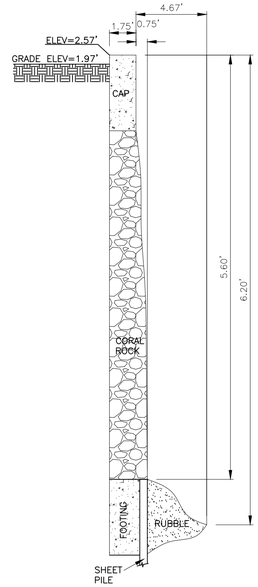
SEE SECTION ON SHEET 17
SCALE: HOR. 1"=5'
VER. 1"=1'

S-7
Sta:108+54.92
O/S:23.27R



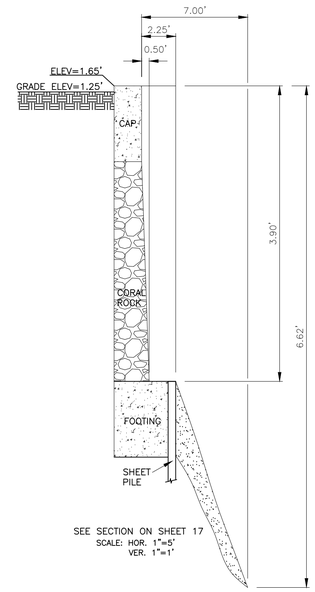
SEE SECTION ON SHEET 17
SCALE: HOR. 1"=5'
VER. 1"=1'

S-8
Sta:109+04.38
O/S:22.42R



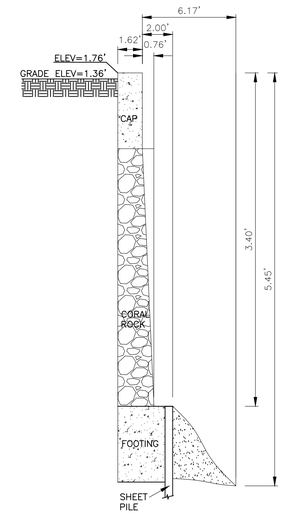
SEE SECTION ON SHEET 17
SCALE: HOR. 1"=5'
VER. 1"=1'

S-9
Sta:109+55.19
O/S:22.07R



SEE SECTION ON SHEET 17
SCALE: HOR. 1"=5'
VER. 1"=1'

S-10
Sta:110+04.53
O/S:21.64R



SEE SECTION ON SHEET 17
SCALE: HOR. 1"=5'
VER. 1"=1'

NOT FOR CONSTRUCTION OR BID

SURVEYOR
EDUARDO SUAREZ
PL. PSM NO: 6313
DATE:12\17\2017
TEL: 305-453-0912
FAX: 305-513-5680

DRAWN BY: JM
DATE: 12/21/2017
DESIGNED BY: N/A
SCALE:
CHECKED BY: DR
FIELD BOOK: ELECTRONIC FIELD BOOK

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

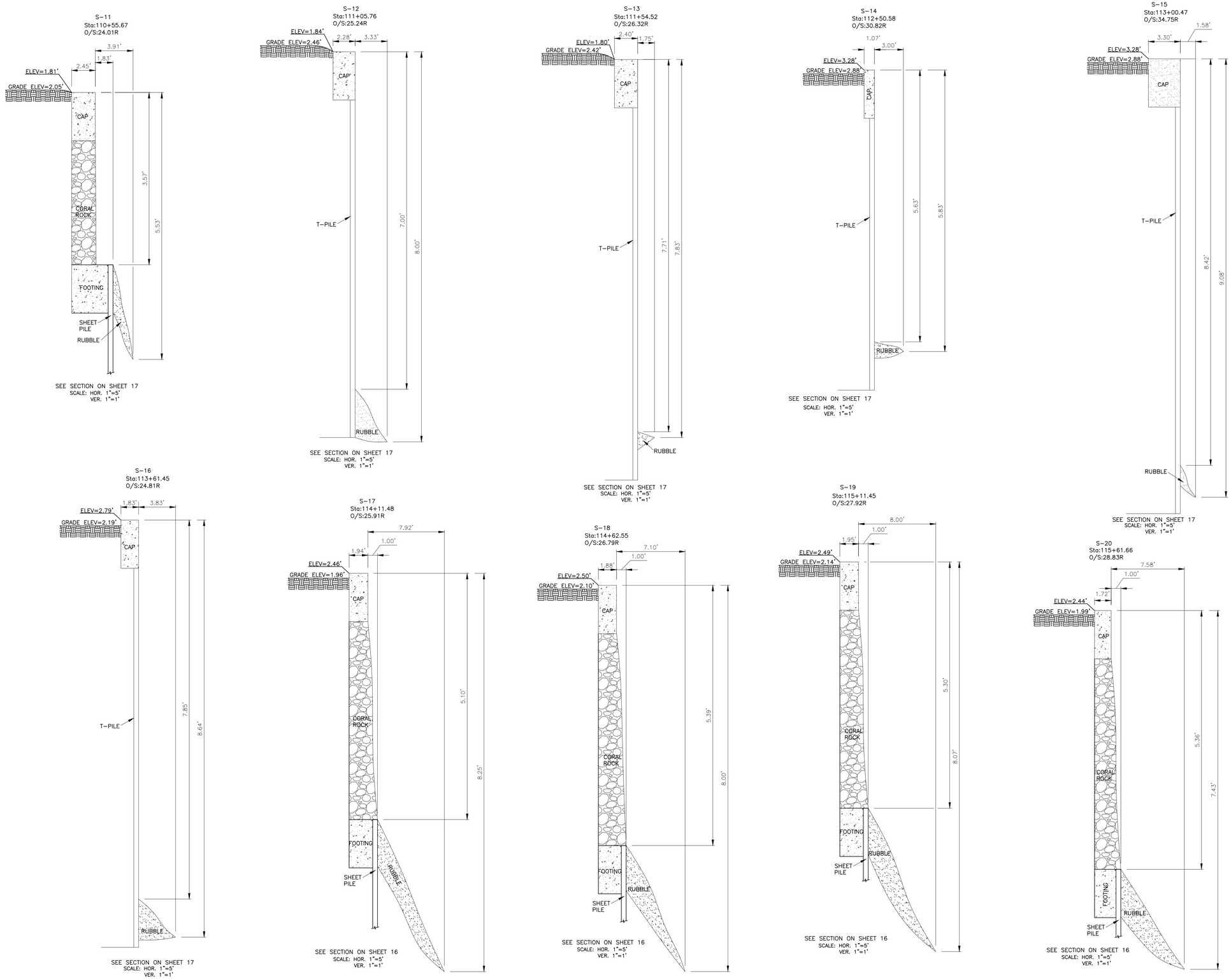
REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION
1	01-30-19	ACS		UP DATE TREE SURVEY (CORDOBA DR.)

PROJECT # 12074
STORMWATER IMPROVEMENTS
SOUTHEAST ISLES NEIGHBORHOOD SURVEY
SEAWALL CROSS SECTION
SHEET 1

SHEET NO. 26 OF 45
TOTAL: 45
CAD FILE: 17271 TOPOGRAPHIC
DRAWING FILE NO. 17271.0.01

PLOT DATE: 1/30/2019 6:59 PM BY: RMOREJON
XREFs= L:\17271 Southeast Isles, Fort Lauderdale, Florida\Outbound\01-30-19\SEISLESTOPO,L:\17271 Southeast Isles, Fort Lauderdale, Florida\Outbound\01-30-19\SEISLESBSLN
File = L:\17271 Southeast Isles, Fort Lauderdale, Florida\Outbound\01-30-19\SEISLESSURV Saved by AZAHEL Save date = 1/30/2019 4:47 PM



NOT FOR CONSTRUCTION OR BID

SURVEYOR
EDUARDO SUAREZ
PL. PSM NO: 6313
DATE:12\17\2017
TEL: 305-453-0912
FAX: 305-513-5680

DRAWN BY:	DATE:
JM	12/21/2017
DESIGNED BY:	SCALE:
N/A	
CHECKED BY:	
DR	
FIELD BOOK:	
ELECTRONIC FIELD BOOK	

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

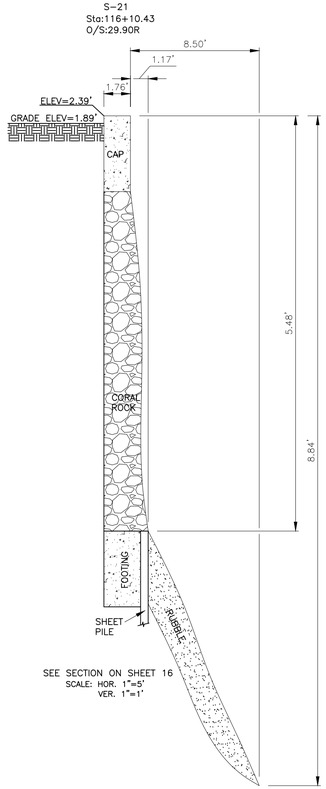
REVISIONS

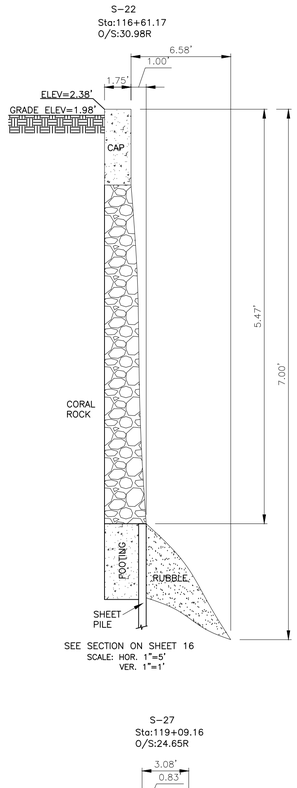
NO.	DATE	BY	CHK'D	DESCRIPTION
1	01-30-19	ACS		UP DATE TREE SURVEY (CORDOBA DR.)

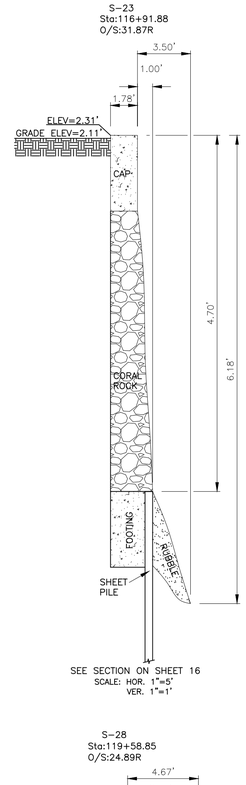
PROJECT # 12074
STORMWATER IMPROVEMENTS
SOUTHEAST ISLES NEIGHBORHOOD SURVEY
SEAWALL CROSS SECTION
SHEET 2

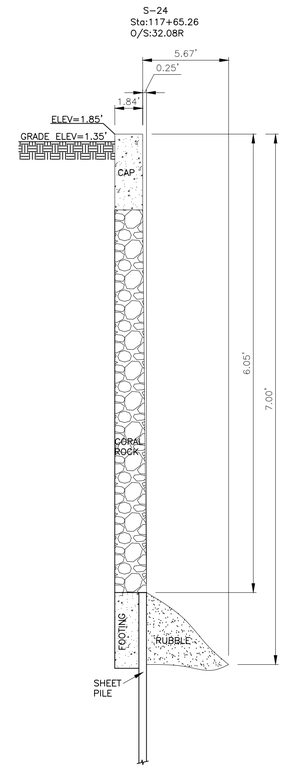
SHEET NO.	OF
27	45
TOTAL:	45

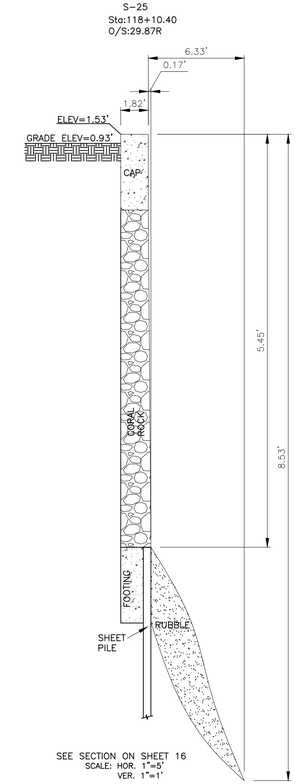
CAD FILE:
17271 TOPOGRAPHIC
DRAWING FILE NO.
17271.0.01

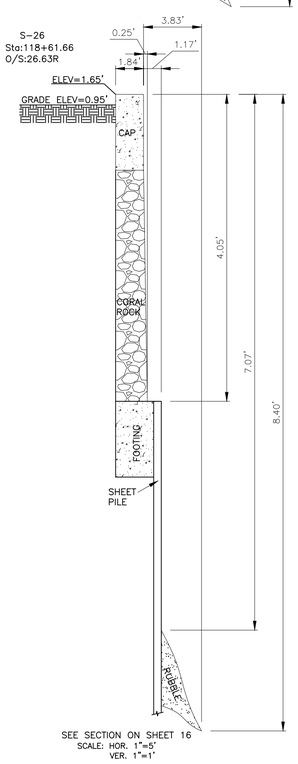


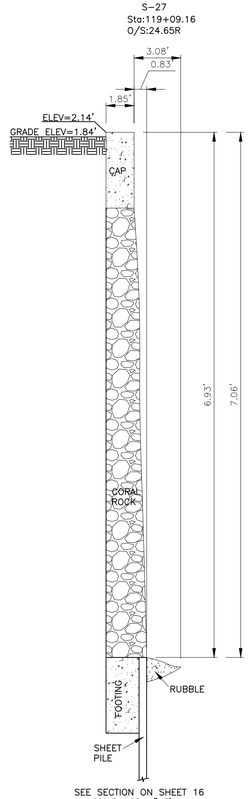


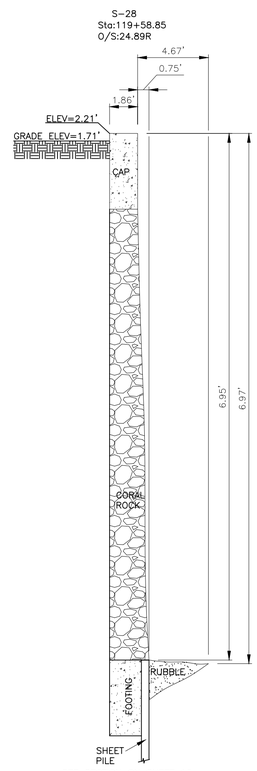


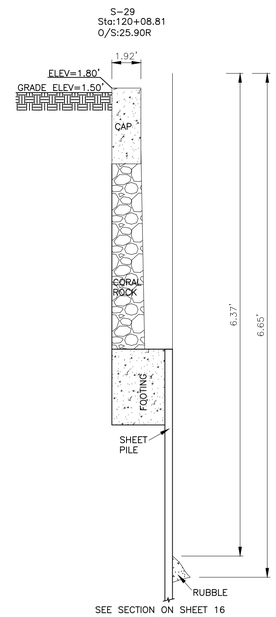


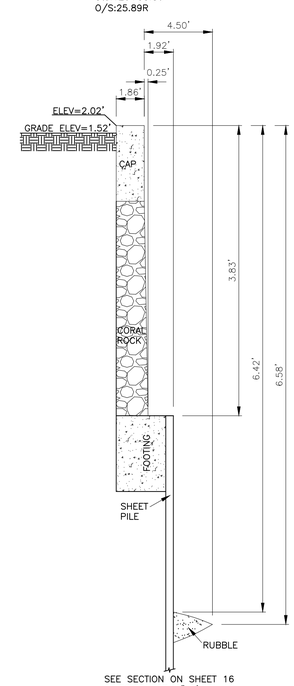












NOT FOR CONSTRUCTION OR BID

SURVEYOR
EDUARDO SUAREZ
PL. PSM NO: 6313
DATE:12\17\2017
TEL: 305-453-0912
FAX: 305-513-5680

DRAWN BY:	DATE:
JM	12/21/2017
DESIGNED BY:	SCALE:
N/A	
CHECKED BY:	
DR	
FIELD BOOK:	
ELECTRONIC FIELD BOOK	

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

REVISIONS

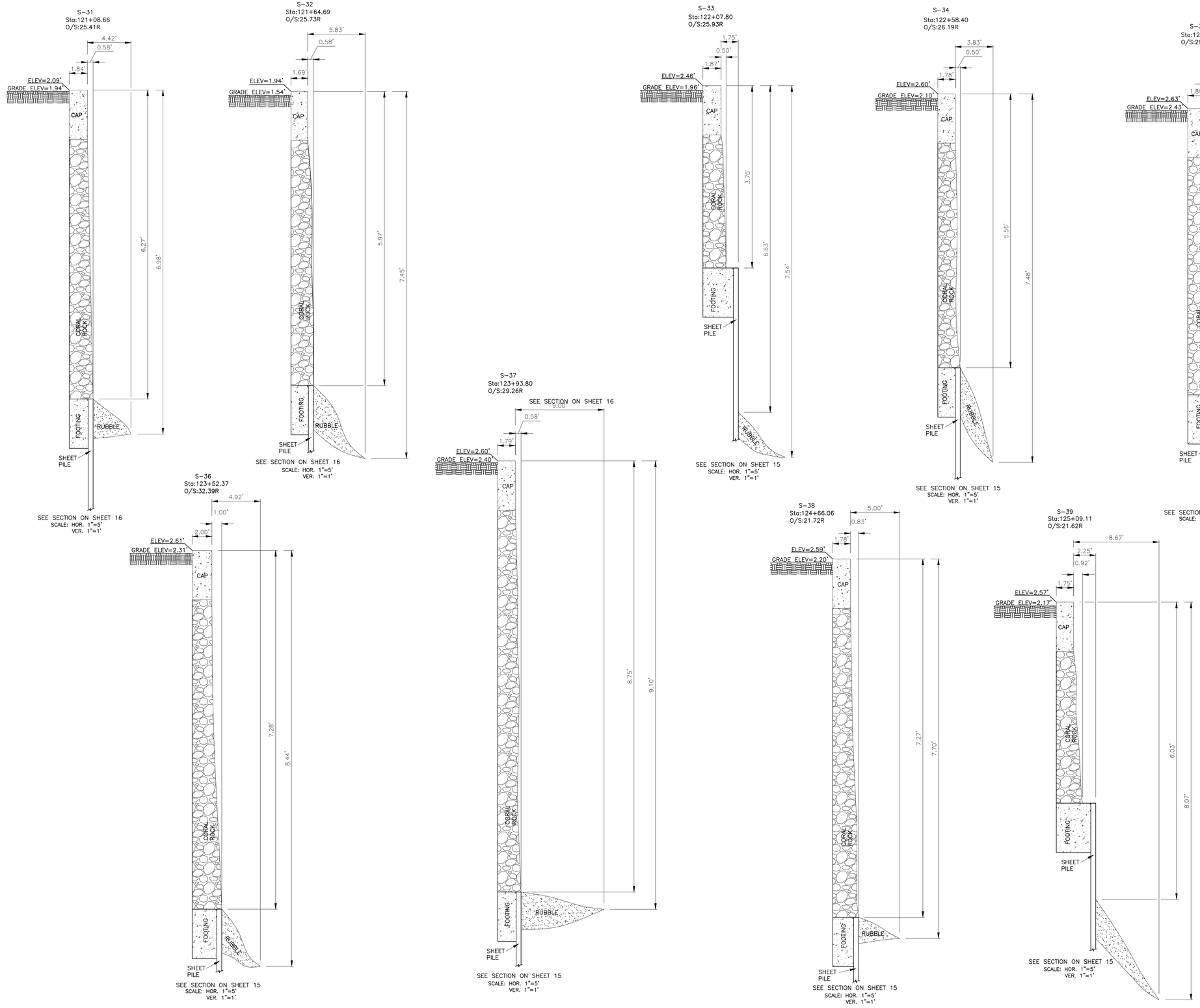
NO.	DATE	BY	CHK'D	DESCRIPTION
1	01-30-19	ACS		UP DATE TREE SURVEY (CORDOBA DR.)

PROJECT # 12074
STORMWATER IMPROVEMENTS
SOUTHEAST ISLES NEIGHBORHOOD SURVEY
SEAWALL CROSS SECTION
SHEET 3

SHEET NO.	OF
28	45
TOTAL:	45

CAD FILE: 17271 TOPOGRAPHIC
DRAWING FILE NO. 17271.0.01

PLOT DATE: 1/30/2019 7:00 PM BY: RMOREJON
XREFs= L:\17271 Southeast Isles, Fort Lauderdale, Florida\Outbound\01-30-19\SEISLESTOPO,L:\17271 Southeast Isles, Fort Lauderdale, Florida\Outbound\01-30-19\SEISLESBSLN
File = L:\17271 Southeast Isles, Fort Lauderdale, Florida\Outbound\01-30-19\SEISLESSURV Saved by AZAHEL Save date = 1/30/2019 4:47 PM



NOT FOR CONSTRUCTION OR BID

SURVEYOR
EDUARDO SUAREZ
PL. PSM NO: 6313
DATE:12\17\2017
TEL: 305-453-0912
FAX: 305-513-5680

DRAWN BY:	DATE:
JM	12/21/2017
DESIGNED BY:	SCALE:
N/A	
CHECKED BY:	
DR	
FIELD BOOK:	
ELECTRONIC FIELD BOOK	

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

REVISIONS

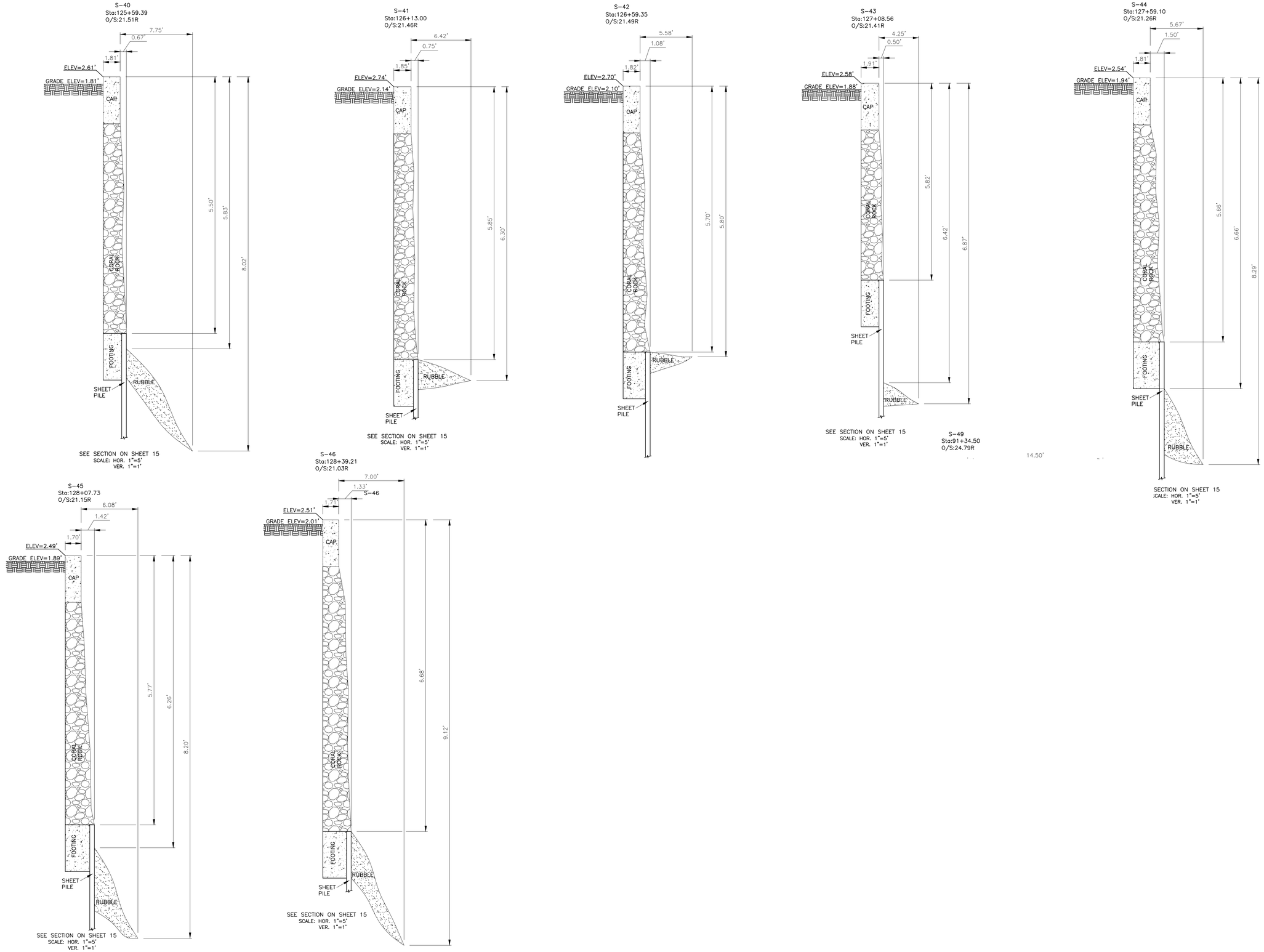
NO.	DATE	BY	CHK'D	DESCRIPTION
1	01-30-19	ACS	UP	DAVE TREE SURVEY (CORDOBA DR.)

PROJECT # 12074
STORMWATER IMPROVEMENTS
SOUTHEAST ISLES NEIGHBORHOOD SURVEY
SEAWALL CROSS SECTION
SHEET 4

SHEET NO.	OF
29	45
TOTAL:	45

CAD FILE:
17271 TOPOGRAPHIC
DRAWING FILE NO.
17271.0.01

PLOT DATE: 1/30/2019 7:00 PM BY: RMOREJON
XREFs= L:\17271 Southeast Isles, Fort Lauderdale, Florida\Outbound\01-30-19\SEISLESTOPO,L:\17271 Southeast Isles, Fort Lauderdale, Florida\Outbound\01-30-19\SEISLESBSLN
File = L:\17271 Southeast Isles, Fort Lauderdale, Florida\Outbound\01-30-19\SEISLESSURV Saved by AZAHEL Save date = 1/30/2019 4:47 PM



NOT FOR CONSTRUCTION OR BID

SURVEYOR
EDUARDO SUAREZ
PL. PSM NO: 6313
DATE:12\17\2017
TEL: 305-453-0912
FAX: 305-513-5680

DRAWN BY:	DATE:
JM	12/21/2017
DESIGNED BY:	SCALE:
N/A	
CHECKED BY:	
DR	
FIELD BOOK:	
ELECTRONIC FIELD BOOK	

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

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION
1	01-30-19	ACS		UP DATE TREE SURVEY (CORDOBA DR.)

PROJECT # 12074
STORMWATER IMPROVEMENTS
SOUTHEAST ISLES NEIGHBORHOOD SURVEY
SEAWALL CROSS SECTION
SHEET 5

SHEET NO.	OF
30	45
TOTAL:	45
CAD FILE: 17271 TOPOGRAPHIC	
DRAWING FILE NO. 17271.0.01	

PLOT DATE: 1/30/2019 7:01 PM BY: RMOREJON
XREFs= L:\17271 Southeast Isles, Fort Lauderdale, Florida\Outbound\01-30-19\SEISLESTOPO,L:\17271 Southeast Isles, Fort Lauderdale, Florida\Outbound\01-30-19\SEISLESBSLN
File = L:\17271 Southeast Isles, Fort Lauderdale, Florida\Outbound\01-30-19\SEISLESSURV Saved by AZAHEL Save date = 1/30/2019 4:47 PM

CONSTRUCTION BID CERTIFICATION

Please Note: All fields below must be completed. If the field does not apply to you, please note N/A in that field. If you are a foreign corporation, you may be required to obtain a certificate of authority from the department of state, in accordance with Florida Statute §607.1501 (visit http://www.dos.state.fl.us/).

Company: (Legal Registration)

Address:

City: State: Zip:

Telephone No. FAX No. Email:

Does your firm qualify for MBE or WBE status: MBE ☐ WBE ☐

If a corporation, state the name of the President, Secretary and Resident Agent. If a partnership, state the names of all partners. If a trade name, state the names of the individuals who do business under the trade name.

Name	**Title**	**Name**	**Title**
Name	**Title**	**Name**	**Name**

ADDENDUM ACKNOWLEDGEMENT - Bidder acknowledges that the following addenda have been received and are included in the bid:

Addendum No.	Date Received	Addendum No.	Date Received	Addendum No.	Date Received	Addendum No.	Date Received

VARIANCES: If you take exception or have variances to any term, condition, specification, or requirement in this bid you must specify such variance in the space provided below or reference in the space provided below all variances contained on other pages within your bid. Additional pages may be attached if necessary. No variances will be deemed to be part of the bid submitted unless such is listed and contained in the space provided below. The City does not, by virtue of submitting a variance, necessarily accept any variances. If no statement is contained in the below space, it is hereby implied that your response is in full compliance with this competitive solicitation. If you do not have variances, simply mark N/A. If submitting your response electronically through BIDSYNC you must also click the "Take Exception" button.

The below signatory affirms that he has or will obtain all required permits and licenses from the appropriate agencies, and that his firm is authorized to do business in the State of Florida. The below signatory agrees to furnish all labor, tools, material, equipment and supplies, and to sustain all the expense incurred in doing the work set forth in strict accordance with the bid plans and contract documents at the unit prices indicated if awarded a contract. The below signatory has not divulged to, discussed, or compared this bid with other bidders, and has not colluded with any other bidder or parties to this bid whatsoever. Furthermore, the undersigned guarantees the truth and accuracy of all statements and answers contained in this bid. The below signatory also hereby agrees, by virtue of submitting or attempting to submit a bid, that in no event shall the City's liability for bodder's direct, indirect, incidental, consequential, special or exemplary damages, expenses, or lost profits arising out of this competitive solicitation process, including but not limited to public advertisement, bid conferences, site visits, evaluations, oral presentations, or award proceedings exceed the amount of Five Hundred Dollars ($500.00). This limitation shall not apply to claims arising under any provision of indemnification or the City protest ordinance contained in this competitive solicitation.

Submitted by:

Name (printed)	Signature
Date:	Date:

TRENCH SAFETY

Bidder acknowledges that included in the appropriate bid items of his bid and in the Total Bid Price are costs for complying with the Florida Trench Safety Act, Florida Statutes 553.60 – 553.64. The bidder further identifies the costs of such compliance to be summarized below:

Trench Safety Measure (Description)	Units of Measure (LF/SF)	Unit (Quantity)	Unit Cost	Extended Cost
A.			$	$
B.			$	$
C.			$	$
D.			$	$

Total: $

The bidder certifies that all trench excavation done within his control in excess of five feet (5') in depth shall be in accordance with the Occupational Safety and Health Administration's excavation safety standards, C.F.R. s. 1926.650 Subpart P., and the Florida Trench Safety Act, Florida Statutes 553.60-553.64.

Failure to complete the above may result in the bid being declared non-responsive.

DATE: _____ _____
(SIGNATURE)

STATE OF: _____ COUNTY OF: _____

PERSONALLY APPEARED BEFORE ME, the undersigned authority,

_____
(Name of Individual Signing)

_____ who, after first being duly sworn by me,
_____ affixed his/her signature in the space provided above on this
_____ day of _____, 20____.

_____
NOTARY PUBLIC

My Commission Expires: _____

5

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

MINORITY BUSINESS ENTERPRISE (MBE) - WOMEN BUSINESS ENTERPRISE (WBE)

PRIME CONTRACTOR IDENTIFICATION FORM

In order to assist us in identifying the status of those companies doing business with the City of Fort Lauderdale, this form must be completed and returned with your bid package.

Name of Firm:

Address of Firm:

Telephone Number:

Name of Person Completing Form:

Title:

Signature:

Date:

City Project Number:

City Project Description:

Please check the item(s) which properly identify the status of your firm:

☐ Our firm is not a MBE or WBE.

☐ Our firm is a MBE, as at least 51 percent is owned and operated by one or more socially and economically disadvantaged individuals.

☐ American Indian ☐ Asian ☐ Black ☐ Hispanic

☐ Our firm is a WBE, as at least 51 percent is owned and operated by one or more women.

☐ American Indian ☐ Asian ☐ Black ☐ Hispanic

MBE/WBE CONTRACTOR INFORMATION

The City, in a continuing effort, is encouraging the increased participation of minority and women-owned businesses in Public Works Department related contracts. Along those lines, we are requiring that each firm provide documentation detailing their own programs for utilizing minority and women-owned businesses.

Submit this information as a part of this bid package and refer to the checklist, to ensure that all areas of concern are covered. The low responsive bidder may be contacted to schedule a meeting to discuss these objectives. It is our intention to proceed as quickly as possible with this project, so your cooperation in this matter is appreciated.

CONTRACTOR CHECKLIST

☐ List Previous City of Fort Lauderdale Contracts

☐ Number of Employees in your firm

--Percent (%) Women

--Percent (%) Minorities

--Job Classifications of Women and Minorities

☐ Use of minority and/or women subcontractors on past projects.

☐ Nature of the work subcontracted to minority and/or women-owned firms.

☐ How are subcontractors notified of available opportunities with your firm?

☐ Anticipated amount to be subcontracted on this project.

☐ Anticipated amount to be subcontracted to minority and/or women-owned businesses on this project.

BID NO. 12256-493 / PROJECT NO. 12337 SPECIFIC REFERENCES FORM

The Contractor shall have previous construction experience in the demolition of existing seawalls, and in the construction of new seawalls, in the State of Florida within the past ten (10) years. Bidder shall submit proof of construction experience for a minimum of three (3) projects of similar scope and scale (or larger) and shall, for each project listed, identify location; dates of construction; project name and overall scope; scope of work that was self-performed by Contractor; and client's name, address, telephone number and e-mail address.
Bidder's are expected to provide information on each project by including these forms in their bid submittals. If these forms are not utilized, the Bidder's must provide identical information to the City for evaluation purposes.
Note: Do not include proposed team members or parent/subsidiary companies as references in your submittals.

A. PRIME BIDDER'S NAME: _____

CLIENT NO.1 - Name of firm to be contacted: _____

Address: _____

Contact Person: _____

Phone No: (___) _____

Contact E-Mail Address: _____

Project Performance Period: _____ to _____
Dates should be in mm/yy format

Project Name : _____

Location of Project: _____

Overall Construction Cost: _____

Description of the overall scope: _____

_____

_____

_____

_____

Description of work that was self-performed by Bidder:

_____

_____

_____

_____

BID NO. 12256-493 / PROJECT NO. 12337 SPECIFIC REFERENCES FORM

CLIENT NO.2 - Name of firm to be contacted: _____

Address: _____

Contact Person: _____

Phone No: (___) _____

Contact E-Mail Address: _____

Project Performance Period: _____ to _____
Dates should be in mm/yy format

Project Name : _____

Location of Project: _____

Overall Construction Cost: _____

Description of the overall scope: _____

_____

_____

_____

_____

Description of work that was self-performed by Bidder:

_____

_____

_____

_____

_____

BID NO. 12256-493 / PROJECT NO. 12337 SPECIFIC REFERENCES FORM

CLIENT NO.3 - Name of firm to be contacted: _____

Address: _____

Contact Person: _____

Phone No: (___) _____

Contact E-Mail Address: _____

Project Performance Period: _____ to _____
Dates should be in mm/yy format

Project Name : _____

Location of Project: _____

Overall Construction Cost: _____

Description of the overall scope: _____

_____

_____

_____

_____

Description of work that was self-performed by Bidder:

_____

_____

_____

_____

_____

BID NO. 12256-493 / PROJECT NO. 12337 SPECIFIC REFERENCES FORM

NON-COLLUSION STATEMENT:

By signing this offer, the vendor/contractor certifies that this offer is made independently and free from collusion. Vendor shall disclose below any City of Fort Lauderdale, FL officer or employee, or any relative of any such officer or employee who is an officer or director of, or has a material interest in, the vendor's business, who is in a position to influence this procurement.

Any City of Fort Lauderdale, FL officer or employee who has any input into the writing of specifications or requirements, solicitation of offers, decision to award, evaluation of offers, or any other activity pertinent to this procurement is presumed, for purposes hereof, to be in a position to influence this procurement.

For purposes hereof, a person has a material interest if they directly or indirectly own more than 5 percent of the total assets or capital stock of any business entity, or if they otherwise stand to personally gain if the contract is awarded to this vendor.

In accordance with City of Fort Lauderdale, FL Policy and Standards Manual, 6.10.8.3,

3.3. City employees may not contract with the City through any corporation or business entity in which they or their immediate family members hold a controlling financial interest (e.g. ownership of five (5) percent or more).

3.4. Immediate family members (spouse, parents and children) are also prohibited from contracting with the City subject to the same general rules.

Failure of a vendor to disclose any relationship described herein shall be reason for debarment in accordance with the provisions of the City Procurement Code.

NAME	RELATIONSHIPS

In the event the vendor does not indicate any names, the City shall interpret this to mean that the vendor has indicated that no such relationships exist.

CONTRACT PAYMENT METHOD

The City of Fort Lauderdale has implemented a Procurement Card (P-Card) program which changes how payments are remitted to its vendors. The City is transitioning from traditional paper checks to credit card payments via MasterCard or Visa as part of this program.

This allows you as a vendor of the City of Fort Lauderdale, to receive your payment fast and safely. No more waiting for checks to be printed and mailed.

In accordance with Article 7, item 7.6 of the contract, payments on this contract will be made utilizing the City's P-Card. Accordingly, bidders must presently have the ability to accept these credit cards or take whatever steps necessary to implement acceptance of a card before the start of the contract term, or contract award by the City.

Please indicate with which credit card you prefer to be paid:

☐ Master Card

☐ Visa Card

Company Name: _____

Signature: _____

Print Name Title: _____

CONTRACTOR'S CERTIFICATE OF COMPLIANCE WITH NON-DISCRIMINATION PROVISIONS OF THE CONTRACT

The completed and signed form should be returned with the Contractor's submittal. If not provided with submittal, the Contractor must submit within three business days of City's request. Contractor may be deemed non-responsive for failure to fully comply within stated timeframes.

Pursuant to City Ordinance Sec. 2-187(c), bidders must certify compliance with the Non-Discrimination provision of the ordinance.

The Contractor shall not, in any of his/her/its activities, including employment, discriminate against any individual on the basis of race, color, national origin, religion, creed, sex, disability, sexual orientation, gender, gender identity, gender expression, or marital status.

1. The Contractor certifies and represents that he/she/it will comply with Section 2-187, Code of Ordinances of the City of Fort Lauderdale, Florida, as amended by Ordinance C-18-33 (collectively, "Section 2-187").

2. The failure of the Contractor to comply with Section 2-187 shall be deemed to be a material breach of this Agreement, entitling the City to pursue any remedy stated below or any remedy provided under applicable law.

3. The City may terminate this Agreement if the Contractor fails to comply with Section 2-187.

4. The City may retain all monies due or to become due until the Contractor complies with Section 2-187.

5. The Contractor may be subject to debarment or suspension proceedings. Such proceedings will be consistent with the procedures in section 2-183 of the Code of Ordinances of the City of Fort Lauderdale, Florida.

Authorized Signature

Print Name and Title

Date

QUESTIONNAIRE SHEET

PLEASE PRINT OR TYPE:

Firm Name:

President

Business Address:

Telephone:

Fax:

E-Mail Address:

What was the last project of this nature which you completed? Include the year, description, and contract value.

The following are named as three corporations and representatives of those corporations for which you have performed work similar to that required by this contract, and which the City may contact as your references (include addresses, telephone numbers and e-mail addresses). Include the project name, year, description, and contract value.

How many years has your organization been in business?

Have you ever failed to complete work awarded to you; if so, where and why?

The name of the qualifying agent for the firm and his position is:

Certificate of Competency Number of Qualifying Agent:

Effective Date: Expiration Date:

Licensed in: Engineering Contractor's License #

(County/State)

Expiration Date:

NOTE: To be considered for award of this contract, the bidder must submit a financial statement upon request.

NOTE: Contractor must have proper licensing and shall provide copy of same with his proposal.

QUESTIONNAIRE SHEET

1. Have you personally inspected the proposed work and have you a complete plan for its performance?

2. Will you sublet any part of this work? If so, list the portions or specialties of the work that you will.

a)

b)

c)

d)

e)

f)

g)

3. What equipment do you own that is available for the work?

4. What equipment will you purchase for the proposed work?

5. What equipment will you rent for the proposed work?

FINANCE DEPARTMENT
ITB PRE-PROPOSAL MEETING SIGN-IN SHEET

DATE: 04/18/2019 TIME: 11:00 (•) AM ( ) PM

OPENING DATE: 05/10/2019 PROCUREMENT CONTACT: Penelope Burger

ITB#: 12256-493 ITB TITLE: Cordova Road Seawall Replacement

NAME	COMPANY	PHONE	EMAIL
Penelope Burger	COFTLAND	954-828-5189	pburger@fortlauderdale.gov
JUAN CARLOS SAMUEL	CITY OF FORT LAUD	954-828-6323	jsamuel@fortlauderdale.gov
Jennifer McMahon	~~City~~ Hazen	954 987-0066	jmcmahon@hazenandsawyer.com
Samuel Smith	Hazen	954 496 5108	ssmith@hazenandsawyer.com
RARES Petrica	CFL	954-828-6720	rpetrica@fortlau
Amy Nunez	Ebsary Foundation	305 325 0530	ynunez@ebsaryfoundationco.com
Dane Kelly	Kelly Brothers, Inc	239-482-7300	estimating@kellybros.net
Chris Bryant	B&M Marine Const	954-421-1700	CBRYANT@BM-Marine.com
FRANCISCO GUARIN	Paccomm Inc.	3053815157	fguarin@paccommnc.com
Bob BEGANO	CustomBuiltMarine Const.	772-333-2383	bob@custombuiltmarine.com
Cebron Atkins	Ferreira Construction	772-925-9910	catkins@ferreiraconstruction.com
JOE STANTON	Shoreline foundation Inc	954 985 0460	jstanton@shorelinefoundation.com
ADOMINGUEZ	DANZ CONTRACTING	786-402-9942	EST@DANZCONTRACTING.COM
Francisco Rios	City of Ft. Laud.	954-828-5807	frios@fortlauderdale.gov
Patrick Murphy	CECOS Environmental	954-571-0290	pm@cecosenvironmental.com

Approved By: Jodi S. Hart, Manager of Procurement and Contracts | Page: 1 of 1 | Rev: 2 | Revision Date: 04/26/18 | Author: LP

FINANCE DEPARTMENT
ITB PRE-PROPOSAL MEETING SIGN-IN SHEET

WE BUILD COMMUNITY

DATE: 04/18/2019 TIME: 11:00 (•) AM ( ) PM

OPENING DATE: 05/10/2019 PROCUREMENT CONTACT: Penelope Burger

ITB#: 12256-493 ITB TITLE: Cordova Road Seawall Replacement

NAME	COMPANY	PHONE	EMAIL
Doug Wyckoff	Holland Pump	954-999-2804	dougw@HollandPump.Com
Javier Quevedo	Poseidon Dredge & Marine	561-296-4991	javierq@pdmarineinc.com
Omar Castellon	CFL	954-828-5064	ocastellon@fortlauderdale.gov

Approved By: Jodi S. Hart, Manager of Procurement and Contracts | Page: 1 of 1 | Rev: 2 | Revision Date: 04/26/18 | Author: LP

City of Fort Lauderdale • Procurement Services Division
100 N. Andrews Avenue, 619 • Fort Lauderdale, Florida 33301
954-828-5933 Fax 954-828-5576
purchase@fortlauderdale.gov

ITB 12256-493

CORDOVA ROAD SEAWALL REPLACEMENT

ADDENDUM NUMBER 1
May 8, 2019

The following Addendum is hereby made a part of the Plans and Specifications and shall be included with all contract documents:

Acknowledge receipt of this Addendum by inserting its number and date on the Construction Bid Certification. **All changes are in bold, red italics.**

1. **CHANGE**: Question and Answer End Date changed from April 29, 2019 to **May 15, 2019**.
2. **CHANGE:** End Date changed from May 10, 2019 to **May 29, 2019**.

All other terms, conditions, and specifications remain unchanged.

Penelope Burger
Procurement Administrator

Company Name: _____
(please print)

Bidder's Signature: _____

Date: _____

City of Fort Lauderdale • Procurement Services Division
100 N. Andrews Avenue, 619 • Fort Lauderdale, Florida 33301
954-828-5933 Fax 954-828-5576
purchase@fortlauderdale.gov

BID NO. 12256-493
CORDOVA ROAD SEAWALL REPLACEMENT

ADDENDUM NUMBER 2

ISSUED: May 15, 2019

The following Addendum is hereby made a part of the Plans and Specifications and shall be included with all contract documents:

Acknowledge receipt of this Addendum by inserting its number and date on the Construction Bid Certification. **All changes are in bold, and red.**

1. **REPLACE**: SPECIAL CONDITIONS Pages SC-2, and SC-3, with the attached Addendum 2. Contract time (Sections 5.2 & 5.3) and Bid Allowance have been changed.

2. **ADD:** Cordova Road Water Main As-Built Drawings, Addendum 2 (attached); 64 pages.

3. **REPLACE:** Construction Drawing Plans with the attached Addendum 2; 29 pages.

4. **REPLACE:** The original Technical sections listed below with Addendum 2 (attached).

DIVISION 1 – GENERAL REQUIREMENTS

a. 01001 General Requirements
b. 01005 Intent of Drawings and Specifications
c. 01010 Summary of Work
d. 01025 Measurement and Payment
e. 01300 Submittals
f. 01310 Progress Schedules
g. 01320 Project Record Documents
h. 01430 Operation and Maintenance Data
i. 01500 Construction Facilities and Temporary Controls
   Supplement 1 - Door Hanger Notification Template.
   Supplement 2 - Project Sign
   Supplement 3 - Standard Manatee Construction Conditions (2011)
j. 01520 Construction Constraints
k. 01526 Traffic Regulations
l. 01780 Contract Closeout
   Subcontractor Identification Form
   Closeout Procedure Punch List CPP-1
   Closeout Procedure Punch List CPP-2

City of Fort Lauderdale • Procurement Services Division
100 N. Andrews Avenue, 619 • Fort Lauderdale, Florida 33301
954-828-5933 Fax 954-828-5576
purchase@fortlauderdale.gov

DIVISION 2 – SITE WORK

m. 02015 Mobilization, Site Preparation and Demobilization
n. 02200 Site Preparation
o. 02220 Demolition
p. 02240 Dewatering
q. 02320 Trench Backfill
r. 02369 Steel Sheet Piling
s. 02481 Tree Relocation and Protection
t. 02575 Surface Restoration
u. 02630 Storm Drainage Facilities
v. 02920 Sodding

DIVISION 9 – FINISHES

w. 09900 Painting

DIVISION 15 – MECHANICAL CONSTRUCTION

x. 15030 Piping and Equipment Identification Systems
y. 15177 Inline Check Valves

5. DELETED: the following Technical specifications have been deleted in its entirety:

a. 01590 Field Office, Equipment and Services
b. 01640 Construction and Demolition Waste Management
c. 02519 Disinfection of Water Systems
d. 02832 Temporary Construction Fence
e. 02930 Landscaping
f. 07199 Vapor Barrier
g. 16000 Electrical Requirements

6. ADD: Bid Item Line 20, *Monitoring and Mitigation of Settlement, Vibration and Noise, added*

7. CHANGED: The descriptions for the following Line Items have been changed:

Item 7 - Preparation of Existing Catch Basins
Item 9 - Inline Check Valves (Tidal Valves)
Item 11 - Pollution Retardant Baffles
Item 12 - Cantilevered Steel Sheet Pile Seawall
Item 18 - Existing Tree Protection and Disposition
Item 19 - Miscellaneous Site Restoration)

City of Fort Lauderdale • Procurement Services Division
100 N. Andrews Avenue, 619 • Fort Lauderdale, Florida 33301
954-828-5933 Fax 954-828-5576
purchase@fortlauderdale.gov

8. **CHANGED:** Question and Answer End Date changed from May 15, 2019 to **May 22, 2019**

9. **CHANGED:** Bid Opening Date changed from May 29, 2019 to **June 3, 2019**

All other terms, conditions, and specifications remain unchanged.

Penelope Burger
Procurement Administrator

Company Name: _____
(please print)

Bidder's Signature: _____

Date: _____

PROJECT 12256-493

5.2 The Work shall be Substantially Completed within **390** calendar days (**279** working days), after the date when the Contract Time commences to run as provided in the Notice to Proceed.

5.3 The Work shall be finally completed on the Final Completion Date and ready for **321** working days), after the date when the Contract Time commences to run as provided in the Notice to Proceed.

The City of Fort Lauderdale reserves the right to waive any informality in any bid and to reject any or all bids. The City of Fort Lauderdale reserves the right to reduce or delete any of the bid items.

At time of award of contract, the City reserves the right to set a maximum dollar limit that may be expended on this project. Contract quantities of any or all items may be increased, reduced, or eliminated to adjust the contract amount to coincide with the amount of work necessary or to bring the contract value to within the established limit. All quantities are estimated and the City reserves the right to increase, reduce, or eliminate the contract quantities in any amount.

The undersigned bidder affirms that he has or will obtain all equipment necessary to complete the work described, that he has or will obtain all required permits and licenses from the appropriate agencies, and that his firm is authorized to do business in the State of Florida.

06. BID SECURITY

A certified check, cashier's check, bank officer's check or bid bond for **FIVE** percent **(5%)** of the bid amount, made payable to the City of Fort Lauderdale, Florida, shall accompany each proposal.

07. REQUIRED LICENSES/CERTIFICATIONS

Contractor must possess the following licenses/certifications to be considered for award.

Florida General Contractor License or a Florida Certified Marine Specialty Contractor License.

Note: Contractor must have proper licensing and be able to provide evidence of same, if requested, at time of award.

08. SPECIFIC EXPERIENCE REQUIRED

The following expertise is required to be considered for this contract. Specific references attesting to this expertise must be submitted with bid.

The contractor shall have at least ten (10) years previous construction experience in the demolition of existing seawalls, and in the construction of new seawalls, in the State of Florida within the last ten (10) years. Bidder shall submit proof of construction experience for a minimum of three (3) projects of similar scope and scale (or larger) and shall, for each project listed, identify location; dates of construction; project name and overall scope; scope of work that was self-performed by Contractor; and client's name, address, telephone number and e-mail address.

PROJECT 12256-493

NOTE: REFERENCES SHALL NOT INCLUDE ONLY CITY OF FORT LAUDERDALE EMPLOYEES OR WORK PERFORMED FOR THE CITY. THE CITY IS ALSO INTERESTED IN WORK EXPERIENCE AND REFERENCES FROM ENTITIES OTHER THAN THE CITY OF FORT LAUDERDALE.

By signing this bid solicitation, contractor is affirming that this expertise will be provided for this contract at no additional charge.

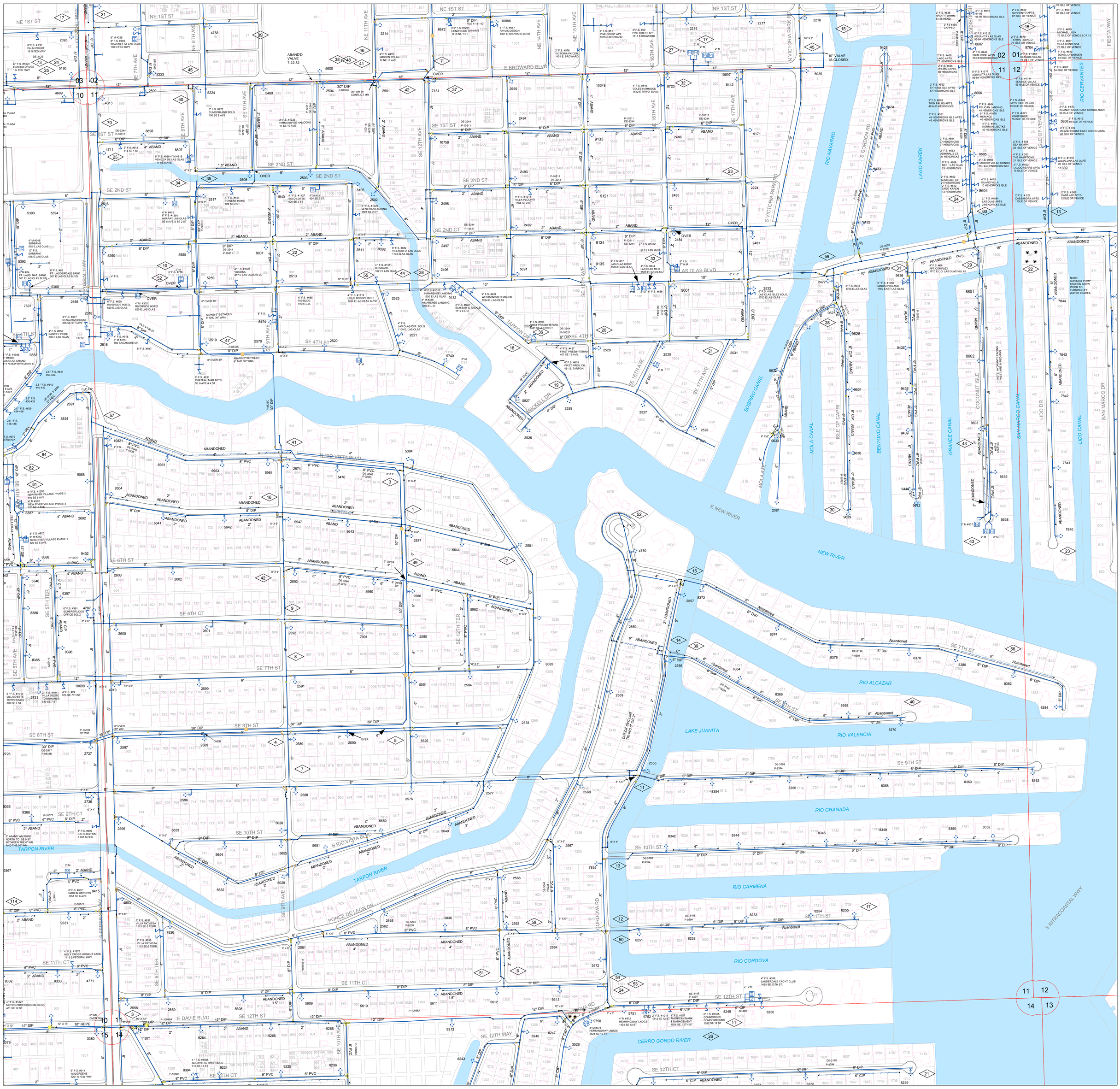
09. BID ALLOWANCE

Allowance for permits: Payments will be made to the contractor based on the actual cost of permits upon submission of paid permit receipts. The City shall not pay for other costs related to obtaining or securing permits.

The amount indicated is intended to be sufficient to cover the entire project. If the City Permit fees exceed the allowance indicated, the City will reimburse the contractor the actual amount of City Permit Fees required for project completion.

Allowance	$
Utilities fee allowance	200,000
TOTAL	$200,000

Note: The City will add this allowance to your bid.



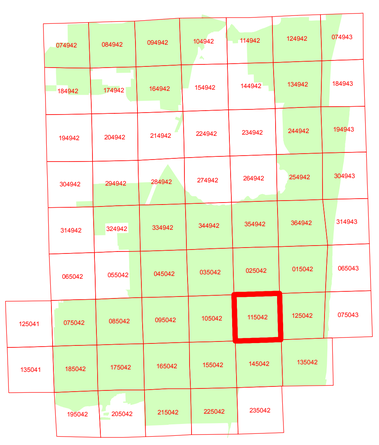
City of Fort Lauderdale
Water Atlas Sheet

N

0 200 feet

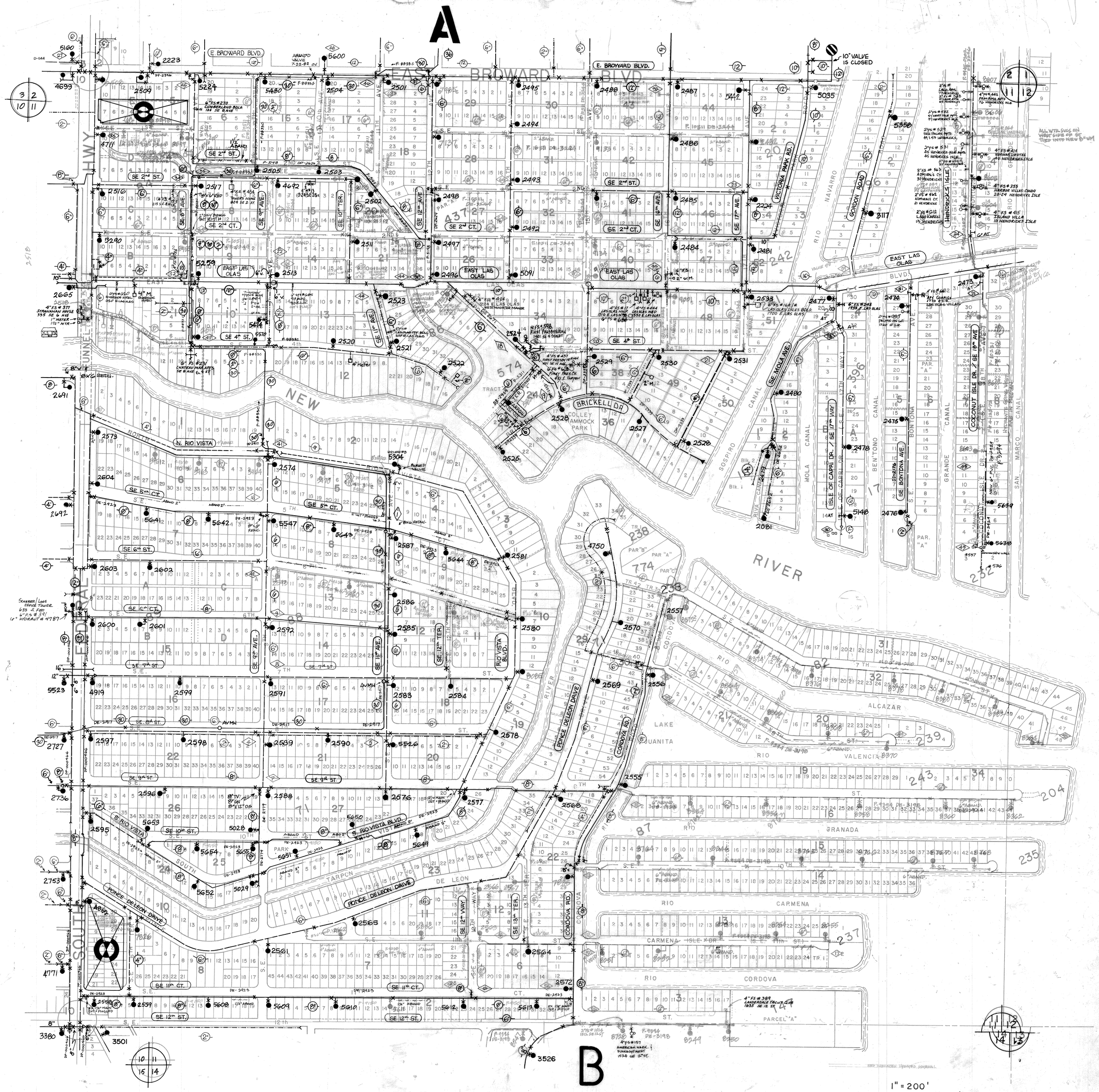
LEGEND

- Valve
- Meter
- Fire Service
- Air Release Valve Manhole
- Fire Hydrant
- Storage Tank
- Flushing Device
- GPS Captured Halo (Woolpert)
- GPS Captured Halo (City)
- Broward County Water Service
- Water Distribution Main
- Raw Water Main
- Abandoned
- Proposed
- Inactive
- Owner Other than City
- Casing Exists
- Production Well
- Monitoring Well
- Plant
- Reducer
- Fitting
- Offset
- Plug
- Detail



Section 115042

P:\Departmental\GIS_Project\ArcGIS_Maps\104_maps\Atlases\wateratlas_121916.mxd PLOT DATE: 12/19/2016 jjs


A
B
E. BROWARD BLVD.
SE 2nd ST.
SE 2nd CT.
EAST LAS OLAS
SE 4th ST.
SE 5th CT.
SE 6th CT.
SE 7th ST.
SE 8th ST.
SE 9th ST.
SE 10th ST.
SE 11th CT.
SE 12th ST.
N. RIO VISTA
S. RIO VISTA
RIO VISTA BLVD.
BRICKELL DR.
COLLEY HAMMOCK PARK
PONCE DE LEON DRIVE
CORDOVA RD.
VICTORIA PARK RD.
GORDON ROAD
HENDRICKS ISLE
COCONUT ISLE DR. / SE 18th AVE.
ISLE OF CAPRI DR. / SE 17th WAY
SE MOLA AVE.
SE BONTONA AVE.
RIO NAVARRO
RIO ALCAZAR
RIO VALENCIA
RIO GRANADA
RIO CARMENA
RIO CORDOVA
CARMENA ISLE DR.
PARCEL "A"
NEW RIVER
SOUTH RIVER
FEDERAL HWY
10" VALVE IS CLOSED
ALL WTR SVCS ON WEST SIDE OF ST. TIED INTO NEW 6" WM
1" = 200'
REV. 7-8-80 RLP
REV. 2-23-81 JAG
REV. 6-12-85 DMO
REV. 5-22-95 BELM.
REV. 7-13-95 D.S.

CITY OF FORT LAUDERDALE

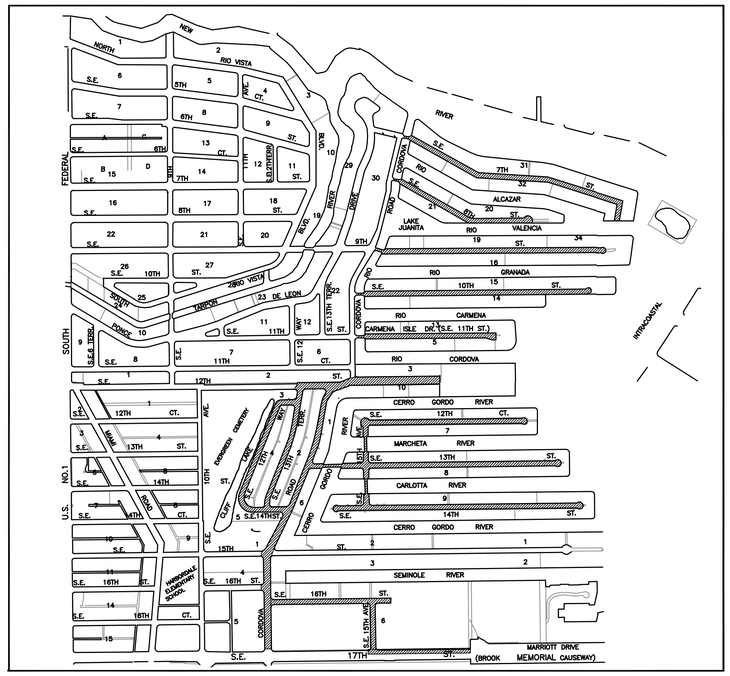
PROJECT NO. 9394

CORDOVA ISLES UTILITY IMPROVEMENT

(WATERMAIN AND FORCEMAIN REPLACEMENT)

LIST OF STREETS

1) CORDOVA ROAD FROM S,E, 17TH STREET TO S.E. 12TH STREET
2) S.E. 7TH STREET FROM CORDOVA ROAD TO EAST END
3) S.E. 8TH STREET FROM CORDOVA ROAD TO EAST END
4) S.E. 9TH STREET FROM CORDOVA ROAD TO EAST END
5) S.E. 10TH STREET FROM CORDOVA ROAD TO EAST END
6) S.E. 11TH STREET (CARMENA ISLE DRIVE) FROM CORDOVA ROAD TO EAST END
7) S.E. 12TH STREET FROM S.E. 13TH TERRACE TO EAST END
8) S.E. 12TH COURT FROM S.E. 15TH AVENUE TO EAST END
9) S.E. 12 WAY FROM S.E. 14TH STREET TO S.E. 13TH TERRACE
10) S.E. 13TH STREET FROM CORDOVA ROAD TO EAST END
11) S.E. 13TH TERRACE FROM S.E. 14TH STREET TO S.E. 12TH STREET
12) S.E. 14TH STREET FROM WEST END TO EAST END
13) S.E. 14TH STREET FROM S.E. 12TH WAY TO CORDOVA ROAD
14) S.E. 15TH AVENUE FROM S.E. 16TH STREET TO S.E. 17 STREET
14) S.E. 16TH STREET FROM CORDOVA ROAD TO S.E. 15 AVENUE
11) S.E. 17TH STREET FROM S.E. 15 AVENUE TO EISENHOWER BOULEVARD



NORTH

LOCATION MAP

NOT TO SCALE

AS BUILT
ALL FIELD INFORMATION
ENTERED BY: A.M.T. DATE: 09/11/02
FIELD BOOK 000 PAGE 00

FORT LAUDERDALE CITY COMMISSION

JIM NAUGLE	MAYOR – COMMISSIONER
GLORIA KATZ	COMMISSIONER – DISTRICT I
TIM SMITH	COMMISSIONER – DISTRICT II
CARLTON MOORE	COMMISSIONER – DISTRICT III
JACK LATONA	COMMISSIONER – DISTRICT IV

PREPARED IN THE OFFICE OF
THE CITY ENGINEER
under the direct supervision
of _____
ASAAD AKAR
FLA. REG. ENG. NO.48069

04–122–74

GENERAL NOTES

1) All work within Broward County right-of-way must be in conformity with the Broward County minimum standard and/or requirements.

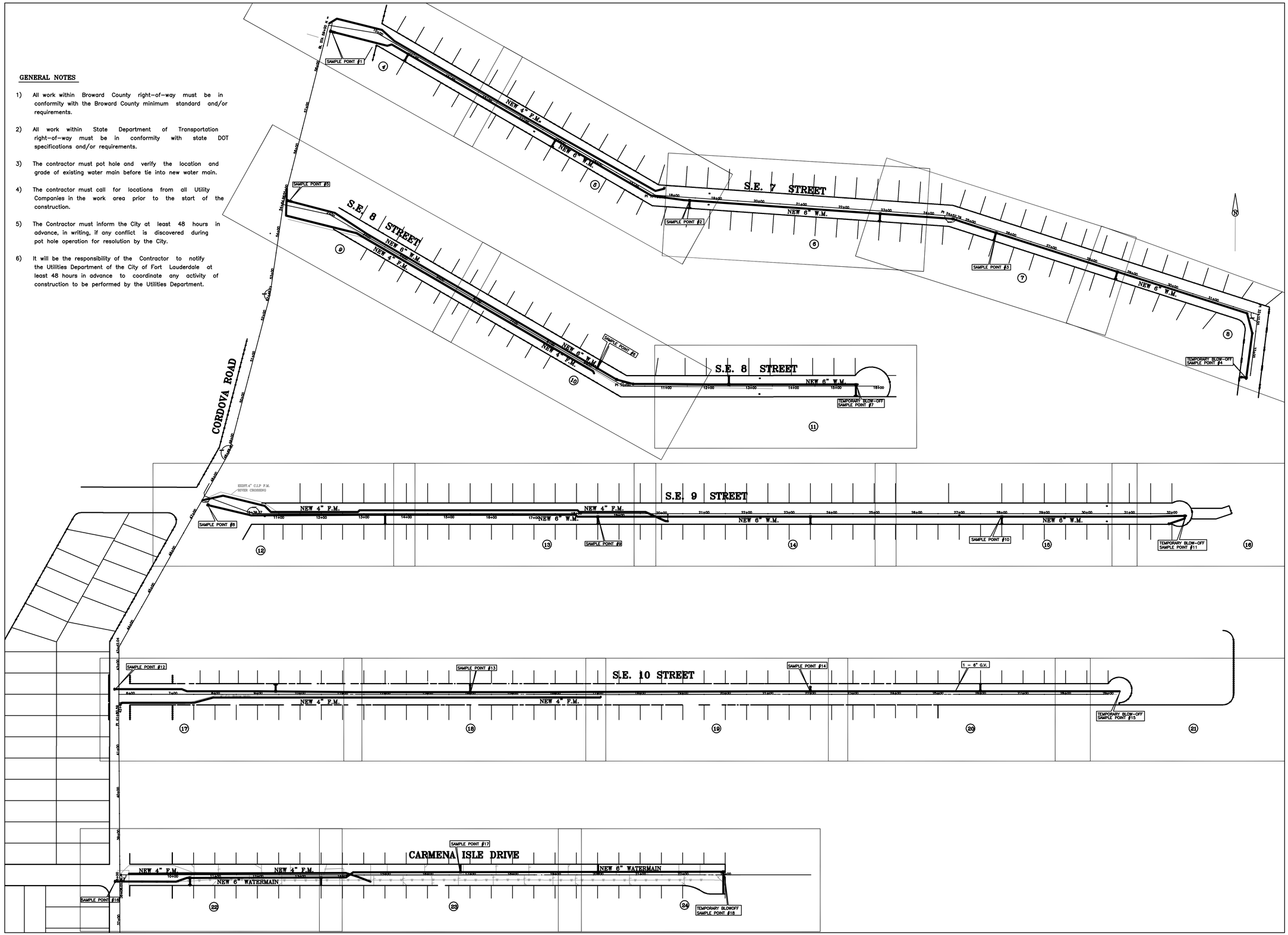
2) All work within State Department of Transportation right-of-way must be in conformity with state DOT specifications and/or requirements.

3) The contractor must pot hole and verify the location and grade of existing water main before tie into new water main.

4) The contractor must call for locations from all Utility Companies in the work area prior to the start of the construction.

5) The Contractor must inform the City at least 48 hours in advance, in writing, if any conflict is discovered during pot hole operation for resolution by the City.

6) It will be the responsibility of the Contractor to notify the Utilities Department of the City of Fort Lauderdale at least 48 hours in advance to coordinate any activity of construction to be performed by the Utilities Department.



03/06/00

FINAL APPROVAL

FLA. REG. ENG. NO. 48069

DRAWN BY:	SCALE:	
BRH	1" = 100'	
DESIGNED BY: AA/BH	DATE: 03/06/00	
CHECKED BY: AA	FIELD BOOK: N/A	

CITY OF FORT LAUDERDALE
PUBLIC SERVICES DEPARTMENT
ENGINEERING DIVISION
FORT LAUDERDALE, FLORIDA

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

PROJECT #9394
CORDOVA ISLES
UTILTIY IMPROVEMENT

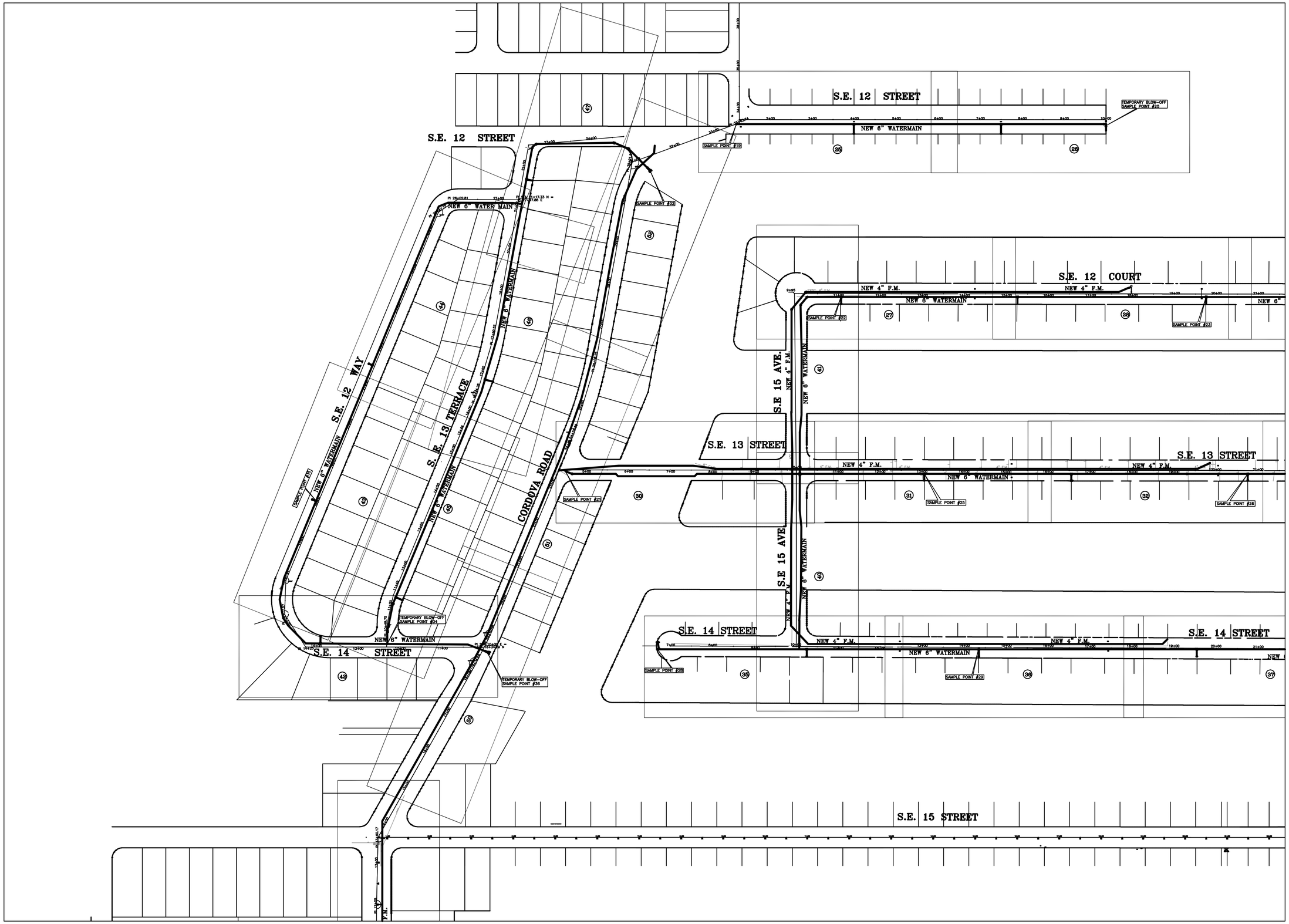
KEY MAP

NO. OF SHEETS: 61

SHEET NO.: 01

CAD FILE NO. 9394-0161-KEY1

FILE NO. 04-122-74



10/27/99

FINAL APPROVAL

FLA. REG. ENG. NO. 48069

DRAWN BY: BRH	SCALE: 1" = 100'
DESIGNED BY: AABH	DATE: 10/25/99
CHECKED BY: AA	FIELD BOOK: N/A

CITY OF FORT LAUDERDALE
PUBLIC SERVICES DEPARTMENT
ENGINEERING DIVISION
FORT LAUDERDALE, FLORIDA

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

PROJECT #9394
CORDOVA ISLES
UTILTIY IMPROVEMENT

KEY MAP

NO. OF SHEETS: 61

SHEET NO.: 02

CAD FILE NO. 9394-0261-KEY2

FILE NO. 04-122-74