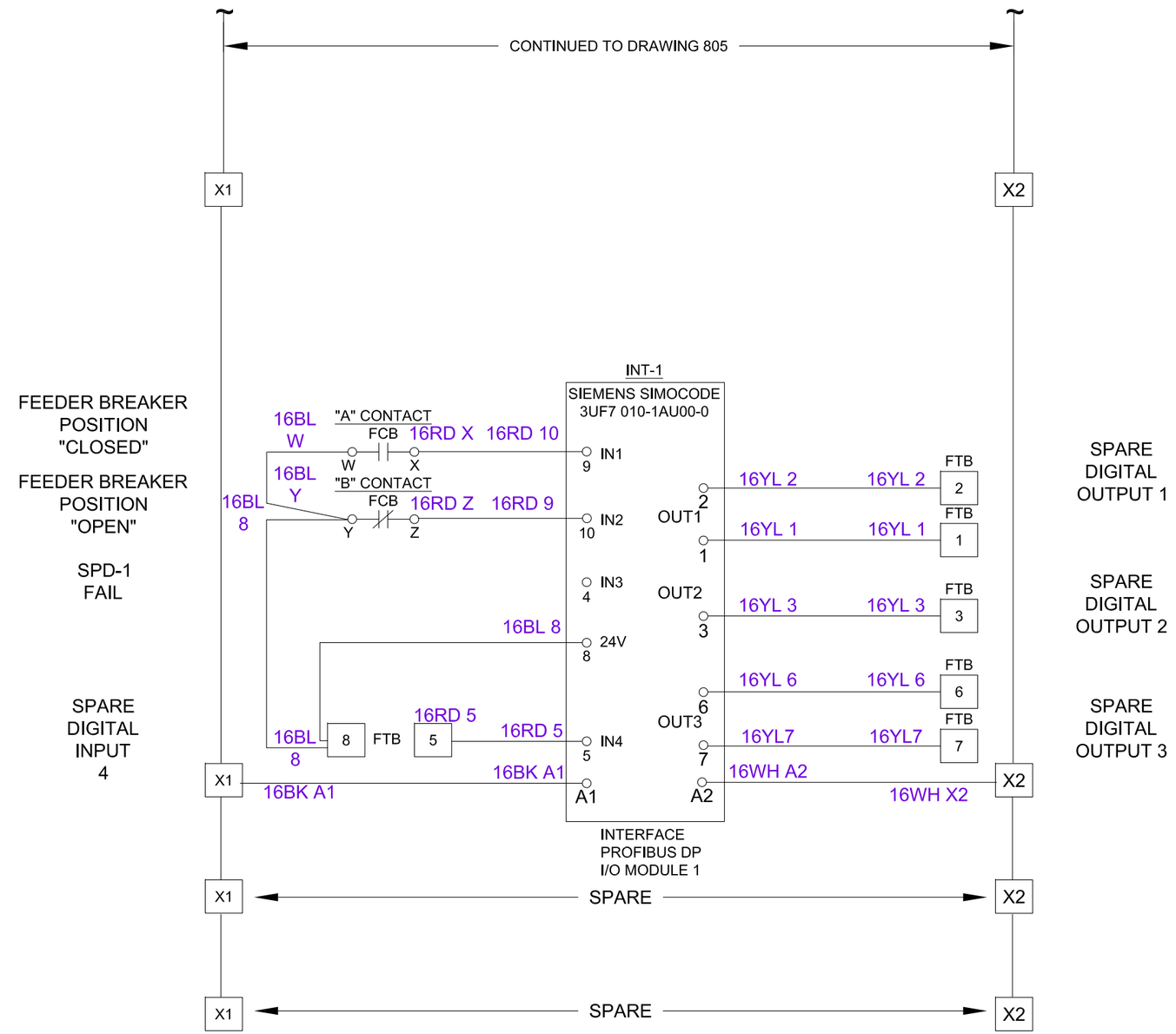


CITY OF ORLANDO	SCALE: N.T.S.	-	-	10-23-2014	JG
		-	-	08-27-2019	FH
	DESIGN: IAG				
	DRAWN BY: JG				
	APPROVED BY: WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,
INDUSTRIAL AUTOMATION GROUP

CITY OF
ORLANDO, FLORIDA

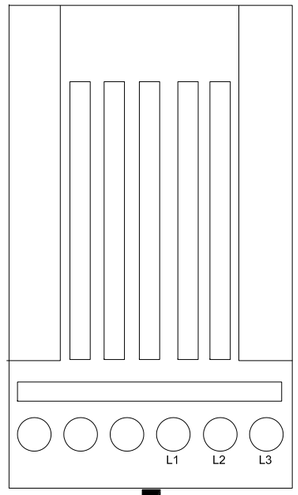
TITLE:

LOW VOLTAGE STANDARDS
FEEDER BREAKER MONITORING
(MCC) 120 VAC CONTROL WIRING

SHEET
806

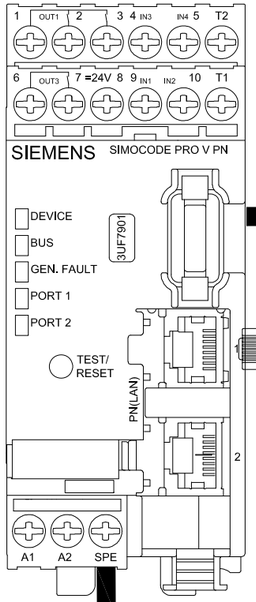
26

CTPT



24

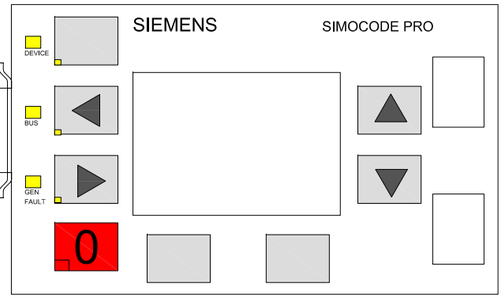
INT-1



ROUND CABLE

23

DISP-1



IEPC
INT_1:PN1

30

IEPC1001

31

SPD-2

1001

ROUND CABLE

NOTE 1

29

FR-BB-XX-SWH-PORT_Z

FROM ETHERNET SWITCH IN MCC

IEPC1001

FLAT CONNECTING CABLES:

3UF7930-0AA00-0: 0.025 m
3UF7931-0AA00-0: 0.1 m
3UF7934-0AA00-0: 0.15 m
3UF7935-0AA00-0: 0.3 m
3UF7932-0AA00-0: 0.5 m

ROUND CONNECTING CABLES:

3UF7932-0BA00-0: 0.5 m
3UF7937-0BA00-0: 1.0 m
3UF7933-0BA00-0: 2.5 m

NOTE:
1. REFER TO DRAWING # 121 FOR STRUCTURE OF CABLE TAGGING CONVENTION

CITY OF ORLANDO

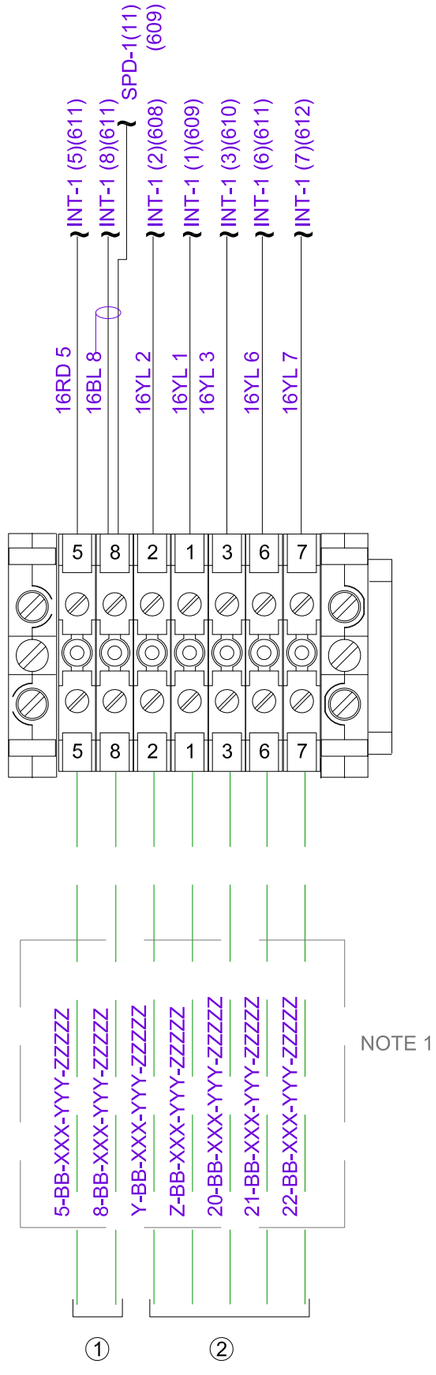
SCALE: N.T.S.	-	-	10-22-2014	JG	WATER RECLAMATION DIVISION, INDUSTRIAL AUTOMATION GROUP CITY OF ORLANDO, FLORIDA
DESIGN: IAG	-	-	04-14-2020	FH	
DRAWN BY: JG	-	REMOVED INT-2	04-22-2025	FH	
APPROVED BY: WW	NO	REVISION	DATE	BY	

TITLE:

LOW VOLTAGE STANDARDS
FEEDER BREAKER MONITORING
(MCC) COMMUNICATIONS WIRING LAYOUT

SHEET

807



FTB

ID	FIELD DEVICE SCHEDULE
①	SIMOCODE INT-1 (1) SPARE 24 VDC DIGITAL INPUT FOR FUTURE USE
②	SIMOCODE INT-1 (3) SPARE DIGITAL OUTPUTS FOR FUTURE USE

NOTE:
1. REFER TO DRAWING # 120 FOR STRUCTURE OF WIRE TAGGING CONVENTION

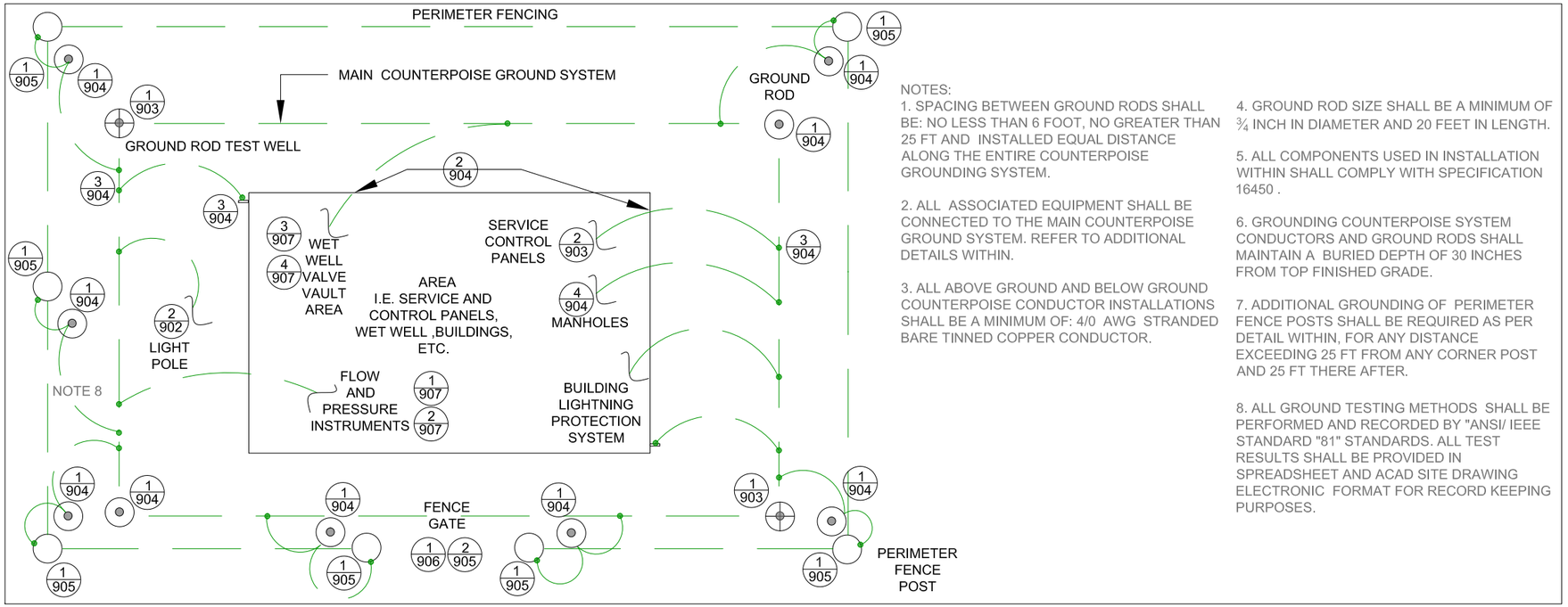
CITY OF ORLANDO

SCALE: N.T.S.	-	-	10-13-2014	JG	WATER RECLAMATION DIVISION, INDUSTRIAL AUTOMATION GROUP CITY OF ORLANDO, FLORIDA
DESIGN: IAG					
DRAWN BY: JG					
APPROVED BY: WW	NO	REVISION	DATE	BY	

TITLE:

LOW VOLTAGE STANDARDS
FEEDER BREAKER MONITORING
(MCC) FIELD TERMINAL ASSIGNMENTS

SHEET
808



NOTES:
1. SPACING BETWEEN GROUND RODS SHALL BE: NO LESS THAN 6 FOOT, NO GREATER THAN 25 FT AND INSTALLED EQUAL DISTANCE ALONG THE ENTIRE COUNTERPOISE GROUNDING SYSTEM.

2. ALL ASSOCIATED EQUIPMENT SHALL BE CONNECTED TO THE MAIN COUNTERPOISE GROUND SYSTEM. REFER TO ADDITIONAL DETAILS WITHIN.

3. ALL ABOVE GROUND AND BELOW GROUND COUNTERPOISE CONDUCTOR INSTALLATIONS SHALL BE A MINIMUM OF: 4/0 AWG STRANDED BARE TINNED COPPER CONDUCTOR.

4. GROUND ROD SIZE SHALL BE A MINIMUM OF ¾ INCH IN DIAMETER AND 20 FEET IN LENGTH.

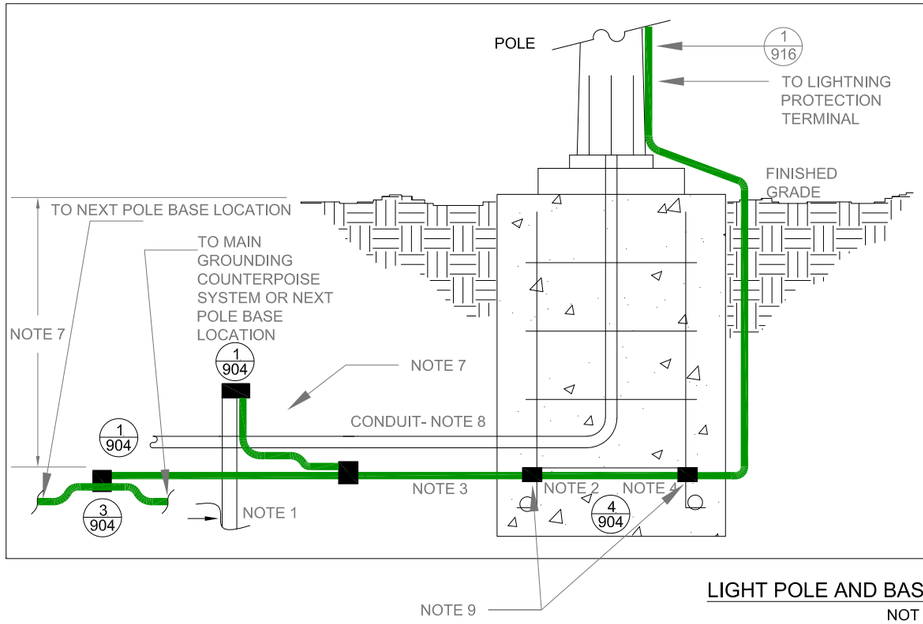
5. ALL COMPONENTS USED IN INSTALLATION WITHIN SHALL COMPLY WITH SPECIFICATION 16450 .

6. GROUNDING COUNTERPOISE SYSTEM CONDUCTORS AND GROUND RODS SHALL MAINTAIN A BURIED DEPTH OF 30 INCHES FROM TOP FINISHED GRADE.

7. ADDITIONAL GROUNDING OF PERIMETER FENCE POSTS SHALL BE REQUIRED AS PER DETAIL WITHIN, FOR ANY DISTANCE EXCEEDING 25 FT FROM ANY CORNER POST AND 25 FT THERE AFTER.

8. ALL GROUND TESTING METHODS SHALL BE PERFORMED AND RECORDED BY "ANSI/ IEEE STANDARD "81" STANDARDS. ALL TEST RESULTS SHALL BE PROVIDED IN SPREADSHEET AND ACAD SITE DRAWING ELECTRONIC FORMAT FOR RECORD KEEPING PURPOSES.

MAIN GROUNDING COUNTERPOISE GROUNDING SYSTEM OVERVIEW DETAIL (1/902)
NOT TO SCALE



NOTES:
1. 3/4 INCH DIAMETER, 20 FEET LONG GROUND ROD.

2. CONDUCTOR SHALL BE AN EXOTHERMIC CONNECTED .

3. 4/0 AWG STRANDED BARE TINNED COPPER CONDUCTOR.

4. EXOTHERMIC CONNECTION TO VERTICAL REBAR STEEL. POLE BASE ANCHOR BOLTS SHALL BE FASTENED TO REBAR WITH TIE WIRE.

5. ALL COMPONENTS USED IN INSTALLATION WITHIN SHALL COMPLY WITH SPECIFICATION 16450.

6. COUNTERPOISE GROUND SYSTEM CONDUCTORS AND GROUND RODS SHALL MAINTAIN A BURIED DEPTH OF 30 INCHES FROM TOP FINISHED GRADE.

7. GROUND ROD SHALL BE LOCATED WITHIN 12 INCHES OF POLE BASE.

8. CONDUIT SHALL BE INSTALLED IN ACCORDANCE OF SPECIFICATION DIVISION 16110

9. FOR CONCRETE PRECAST POLE APPLICATION, EXOTHERMIC CONNECT COUNTERPOISE GROUND TO PROVIDED GROUNDING POINT AT BASE OF POLE FROM MANUFACTURER.

LIGHT POLE AND BASE GROUNDING DETAIL (2/902)
NOT TO SCALE

CITY OF ORLANDO

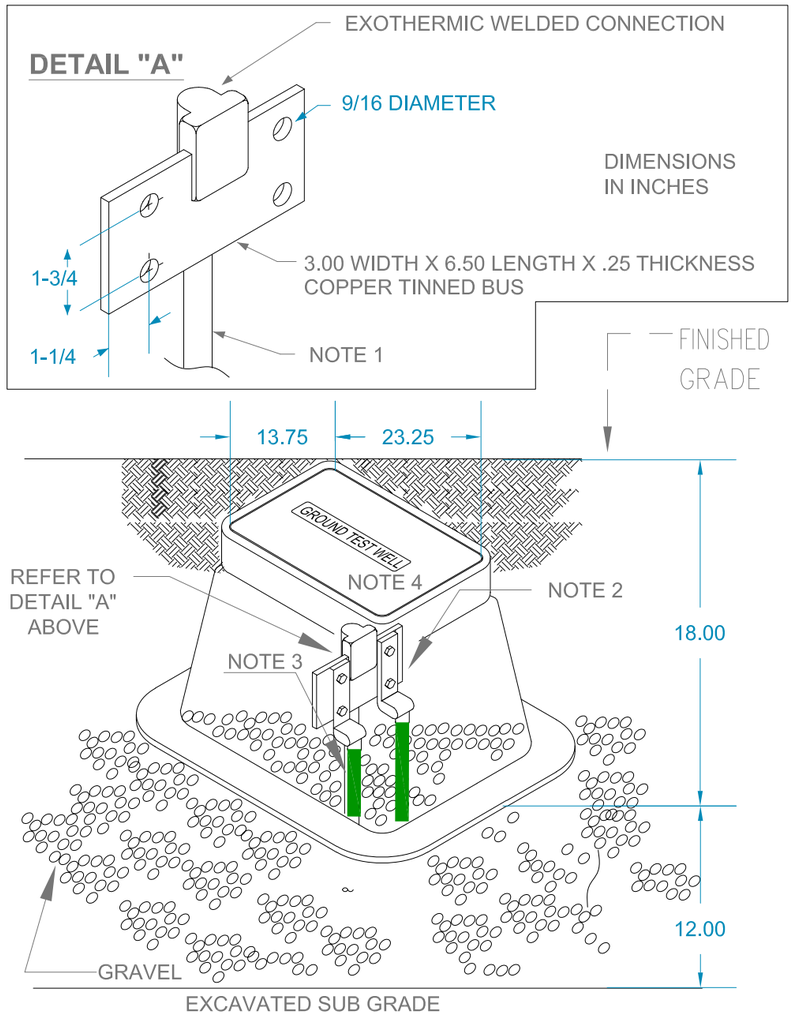
SCALE: N.T.S.	-	ADDED DETAILS TO LIGHT POLE GROUNDING	01-25-2012	JG
DESIGN: IAG	-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG
DRAWN BY: JG	-	REMOVED NOTE 2 AND RENUMBERED NOTES	12-18-2015	JG
APPROVED BY: WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,
INDUSTRIAL AUTOMATION GROUP

CITY OF
ORLANDO, FLORIDA

TITLE: GROUNDING DETAILS - PART 1

SHEET 902



NOTES:

1. 3/4 INCH DIAMETER, 20 FEET LONG GROUND ROD.

2. CONDUCTORS SHALL BE MECHANICALLY CONNECTED WITH A EXOTHERMIC WELDED 2 HOLE LUG AS ILLUSTRATED WITH 1/2-13 INCH BRONZE BOLT, NUT AND LOCK WASHER HARDWARE. SEE DETAIL "A"

3. 4/0 AWG STRANDED BARE TINNED COPPER CONDUCTOR.

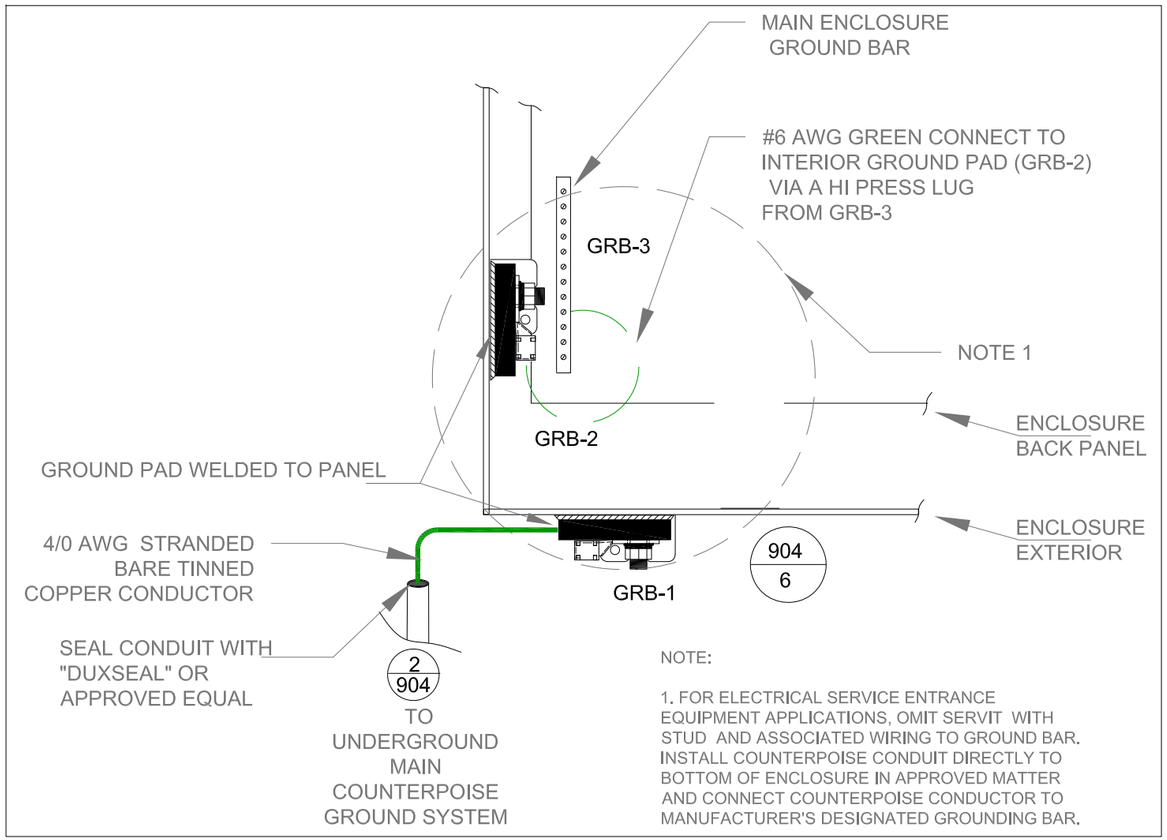
4. POLYMER CONCRETE INSPECTION WELL. 14 INCHES WIDE, 23 INCHES LONG, AND 18" DEEP .TEST WELL SHALL BE LABELED WITH 3 INCH LETTERS AS FOLLOWS: "GROUND TEST WELL".

5. ALL COMPONENTS USED IN INSTALLATION SHALL COMPLY WITH SPECIFICATION 16450.

DIMENSIONS
IN INCHES

GROUND TEST WELL DETAIL 1/903

NOT TO SCALE



NOTE:

1. FOR ELECTRICAL SERVICE ENTRANCE EQUIPMENT APPLICATIONS, OMIT SERVIT WITH STUD AND ASSOCIATED WIRING TO GROUND BAR. INSTALL COUNTERPOISE CONDUIT DIRECTLY TO BOTTOM OF ENCLOSURE IN APPROVED MATTER AND CONNECT COUNTERPOISE CONDUCTOR TO MANUFACTURER'S DESIGNATED GROUNDING BAR.

CONTROL, JUNCTION AND INSTRUMENT PEDESTAL ENCLOSURES GROUNDING DETAIL 2/903

NOT TO SCALE

CITY OF ORLANDO

SCALE:	N.T.S.
DESIGN:	IAG
DRAWN BY:	JG
APPROVED BY:	WW

NO	REVISION	DATE	BY
-	902-3 DETAIL REVISED	11-08-2012	JG
-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG

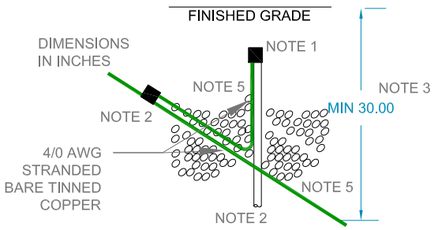
WATER RECLAMATION DIVISION,
INDUSTRIAL AUTOMATION GROUP

CITY OF
ORLANDO, FLORIDA

TITLE:

GROUNDING DETAILS - PART 2

SHEET
903



1. GROUND ROD TO COUNTERPOISE CONDUCTOR SHALL BE CONNECTED BY MEANS OF A EXOTHERMIC WELD. GROUND ROD SHALL BE ¾ INCH IN DIAMETER AND 20 FOOT LENGTH MINIMUM.

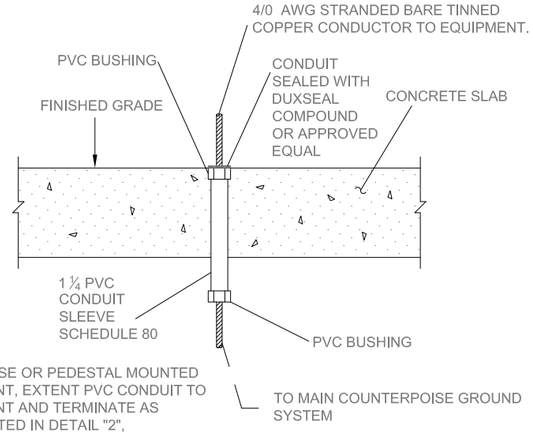
2. COUNTERPOISE CONDUCTOR TO CONDUCTOR CONNECTION SHALL BE CONNECTED BY MEANS OF EXOTHERMIC WELD AND THE CONDUCTOR FROM COUNTERPOISE LENGTH TO GROUND ROD SHALL HAVE A MINIMUM OF 36 INCHES.

3. UNDERGROUND INSTALLATION OF COUNTERPOISE SYSTEM SHALL BE BURIED AT A MINIMUM DEPTH OF 30 INCHES.

4. ALL COMPONENTS USED IN INSTALLATION WITHIN SHALL COMPLY WITH SPECIFICATION 16450.

5.4/0 AWG STRANDED BARE TINNED COPPER CONDUCTOR

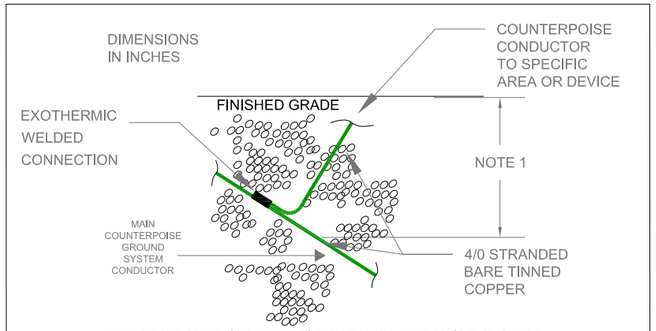
COUNTERPOISE GROUND ROD CONNECTION DETAIL — 1/904
NOT TO SCALE



NOTE:
1. FOR BASE OR PEDESTAL MOUNTED EQUIPMENT, EXTENT PVC CONDUIT TO EQUIPMENT AND TERMINATE AS ILLUSTRATED IN DETAIL "2", DRAWING "903" .

2. ALL COMPONENTS USED IN INSTALLATION WITHIN SHALL COMPLY WITH SPECIFICATION IN DIVISION 16

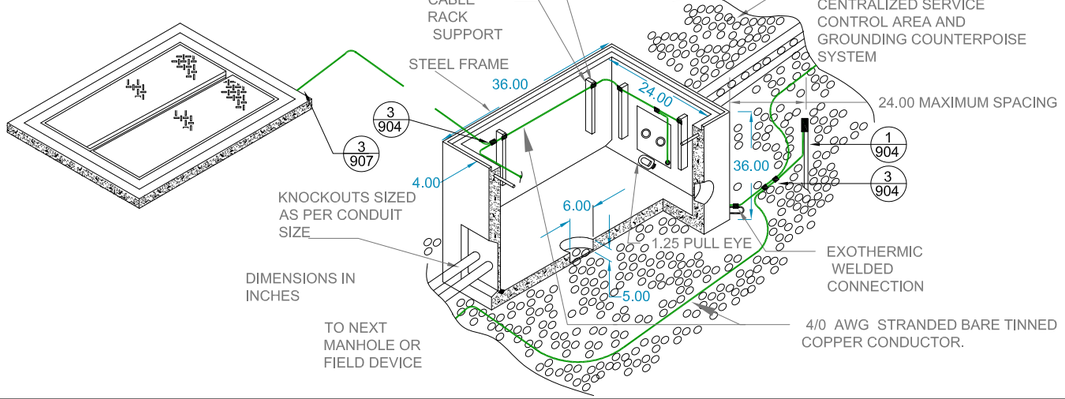
GROUNDING CONDUIT SLEEVE THRU CONCRETE PAD DETAIL — 2/904
NOT TO SCALE



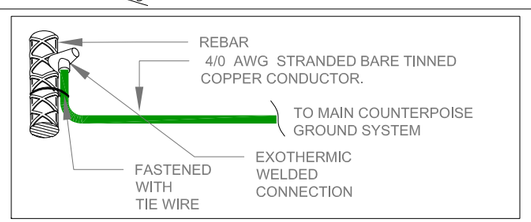
1. UNDERGROUND INSTALLATION OF COUNTERPOISE SYSTEM SHALL BE BURIED AT A MINIMUM DEPTH OF 30 INCHES.

2. ALL COMPONENTS USED IN INSTALLATION WITHIN SHALL COMPLY WITH SPECIFICATION 16450.

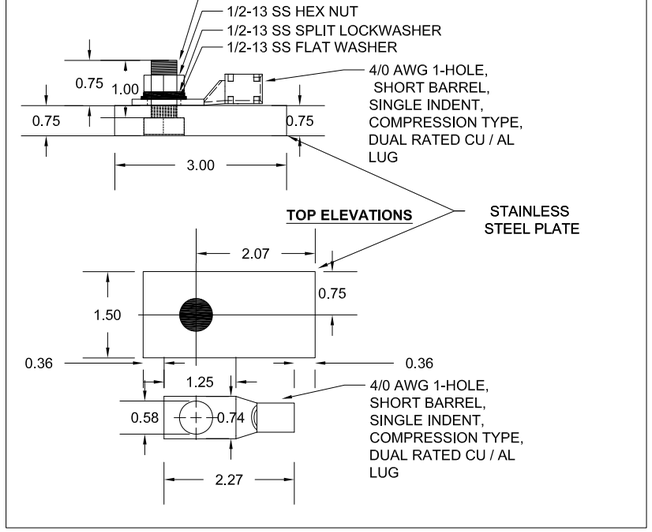
COUNTERPOISE CONDUCTOR CONNECTION DETAIL — 3/904
NOT TO SCALE



MANHOLE AND GROUNDING DETAIL — 5/904
NOT TO SCALE



REBAR GROUNDING CONNECTION DETAIL — 4/904
NOT TO SCALE



PANEL GROUNDING PAD DETAILS — 904/6

CITY OF ORLANDO

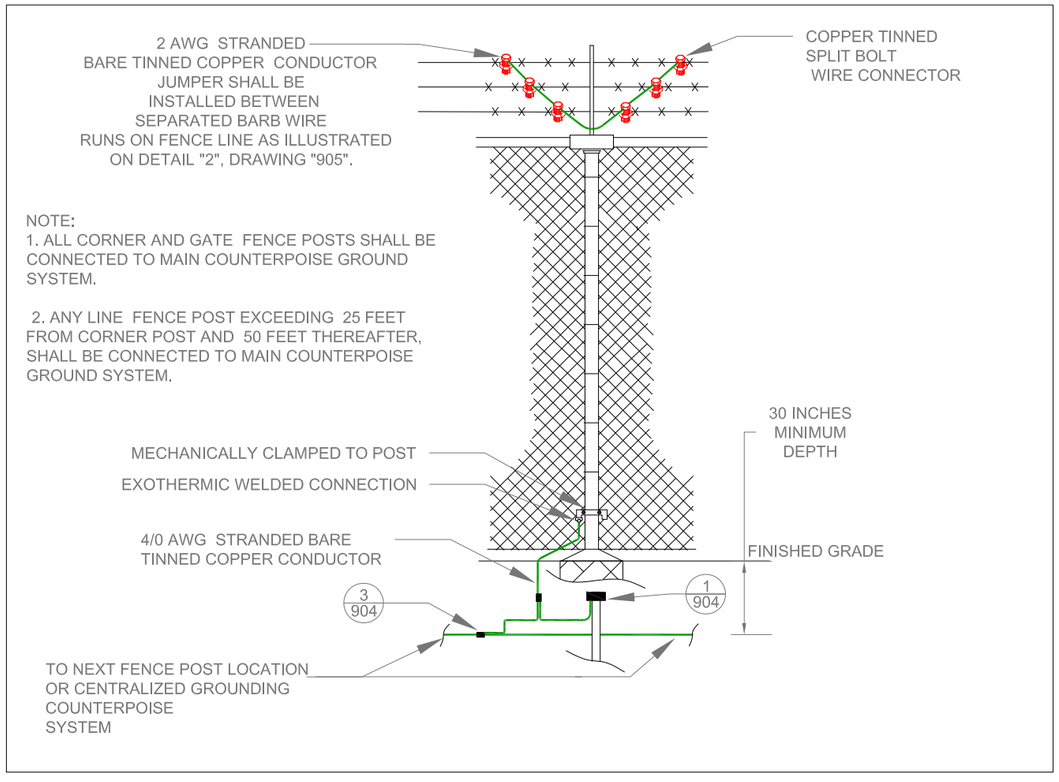
SCALE: N.T.S.	-	ADDED DETAIL 904-6 DETAILS	11-08-2012	JG	
DESIGN: IAG	-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG	
DRAWN BY: JG					
APPROVED BY: WW	NO	REVISION	DATE	BY	

WATER RECLAMATION DIVISION,
INDUSTRIAL AUTOMATION GROUP

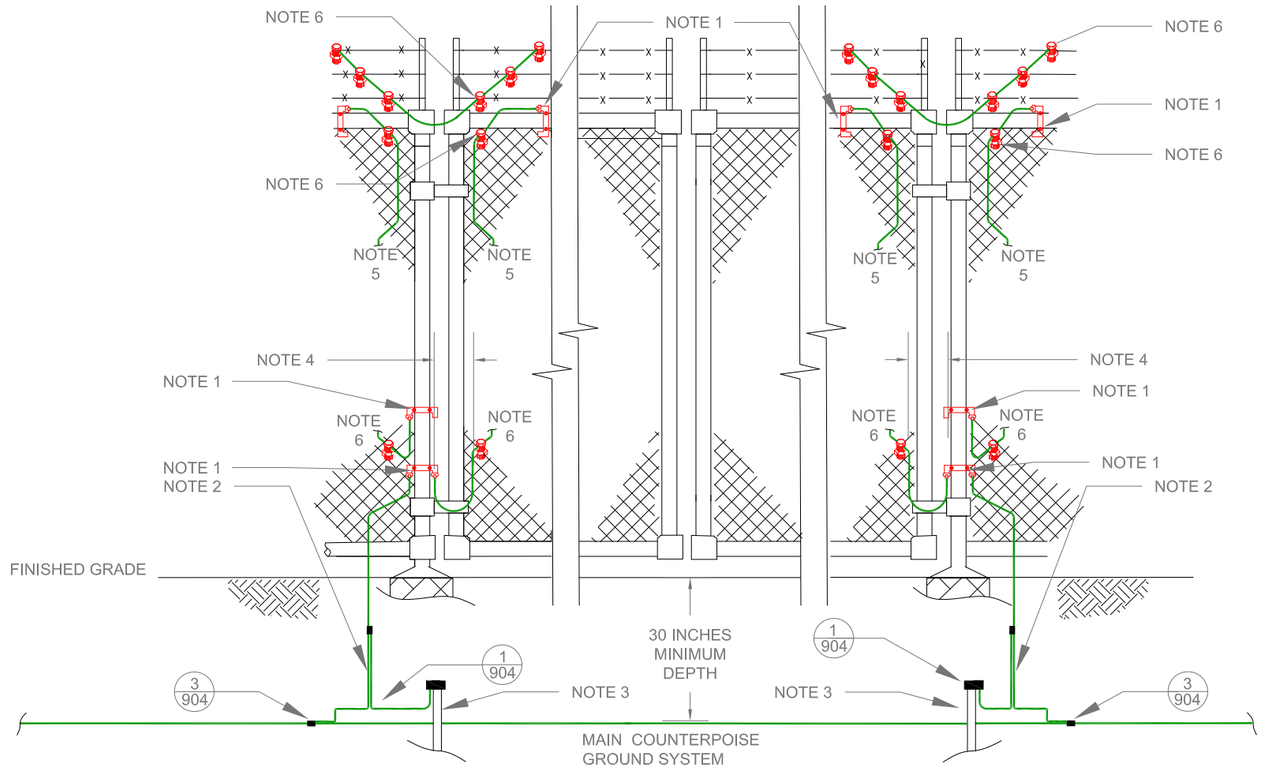
CITY OF
ORLANDO, FLORIDA

TITLE:
GROUNDING DETAILS - PART 3

SHEET
904



CORNER AND LINE FENCE POST GROUNDING DETAIL 1/905
NOT TO SCALE



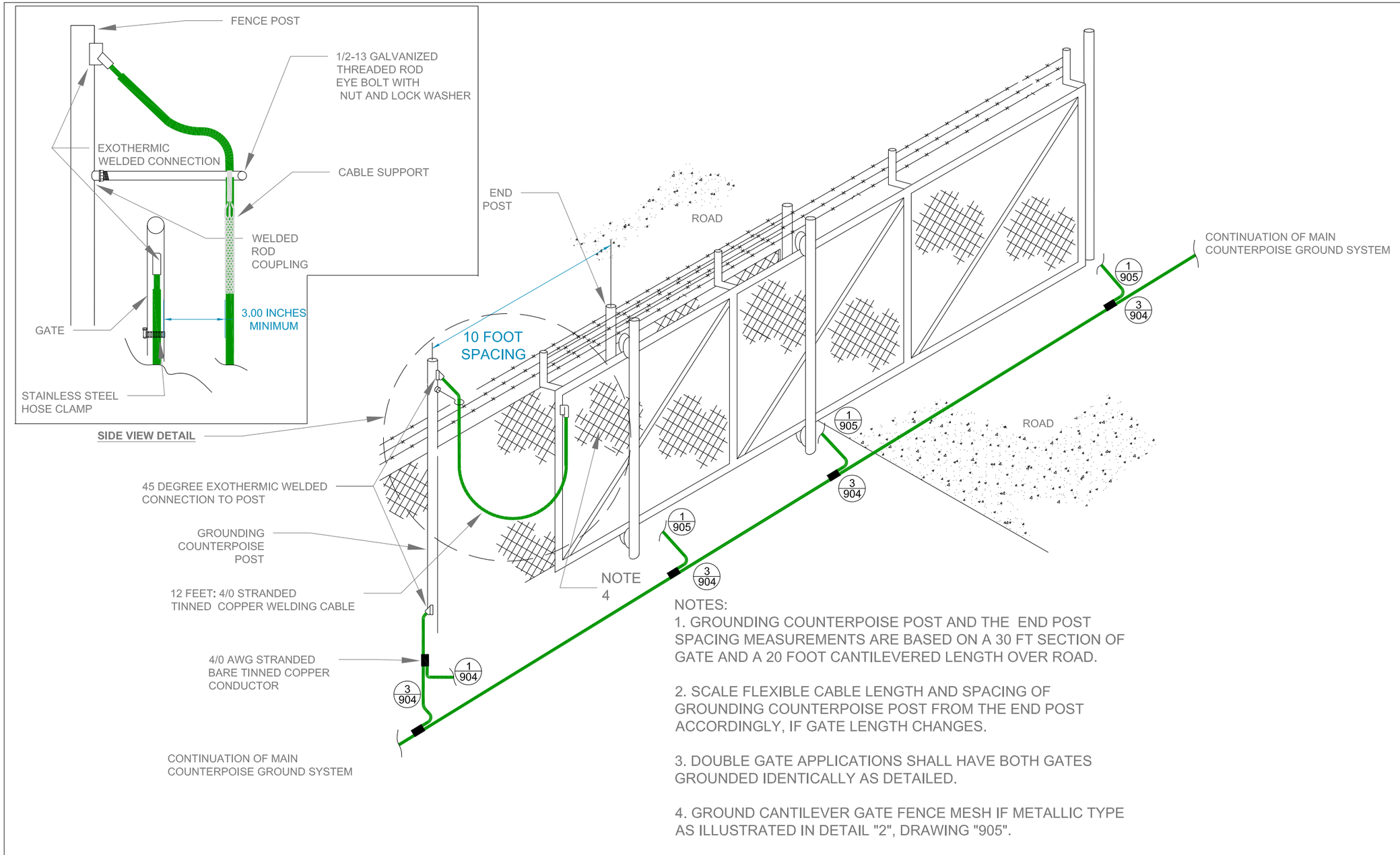
NOTES:

1. MECHANICAL POST CLAMP WITH CONDUCTOR EXOTHERMIC WELDED CONNECTION.
2. 4/0 AWG STRANDED BARE TINNED COPPER CONDUCTOR
3. ¾ INCH DIAMETER, 20 FOOT LONG GROUND ROD SHALL BE INSTALLED WITHIN 24 INCHES OF GATE POST.
4. MINIMUM LOOP BETWEEN GATE POST AND GATE SHALL BE 18 INCHES
5. 2 AWG STRANDED TINNED COPPER WELDING CABLE.
6. BARB WIRE AND FENCE LINK MESH BOND CONDUCTOR CONNECTION BY MEANS OF A COPPER TINNED SPLIT BOLT CONNECTION AT 12 INCH SPACING..

ENTRANCE FENCE GATE GROUNDING DETAIL 2/905
NOT TO SCALE

CITY OF ORLANDO

SCALE: N.T.S.	-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG	WATER RECLAMATION DIVISION, INDUSTRIAL AUTOMATION GROUP
DESIGN: IAG					CITY OF ORLANDO, FLORIDA
DRAWN BY: JG					TITLE: GROUNDING DETAILS - PART 4
APPROVED BY: WW	NO	REVISION	DATE	BY	SHEET 905



NOTES:

1. GROUNDING COUNTERPOISE POST AND THE END POST SPACING MEASUREMENTS ARE BASED ON A 30 FT SECTION OF GATE AND A 20 FOOT CANTILEVERED LENGTH OVER ROAD.

2. SCALE FLEXIBLE CABLE LENGTH AND SPACING OF GROUNDING COUNTERPOISE POST FROM THE END POST ACCORDINGLY, IF GATE LENGTH CHANGES.

3. DOUBLE GATE APPLICATIONS SHALL HAVE BOTH GATES GROUNDED IDENTICALLY AS DETAILED.

4. GROUND CANTILEVER GATE FENCE MESH IF METALLIC TYPE AS ILLUSTRATED IN DETAIL "2", DRAWING "905".

CANTILEVER SLIDE GATE GROUNDING DETAIL (1/906)

CITY OF ORLANDO

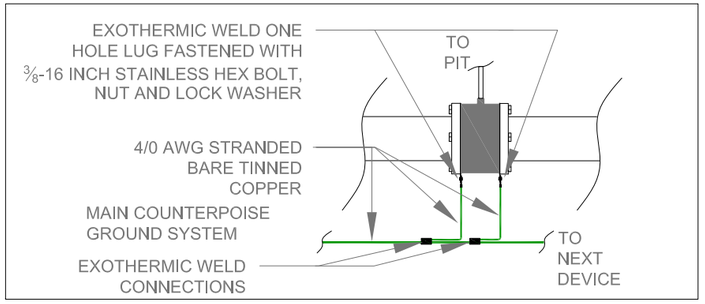
SCALE: N.T.S.	-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG
DESIGN: IAG				
DRAWN BY: JG				
APPROVED BY: WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,
INDUSTRIAL AUTOMATION GROUP

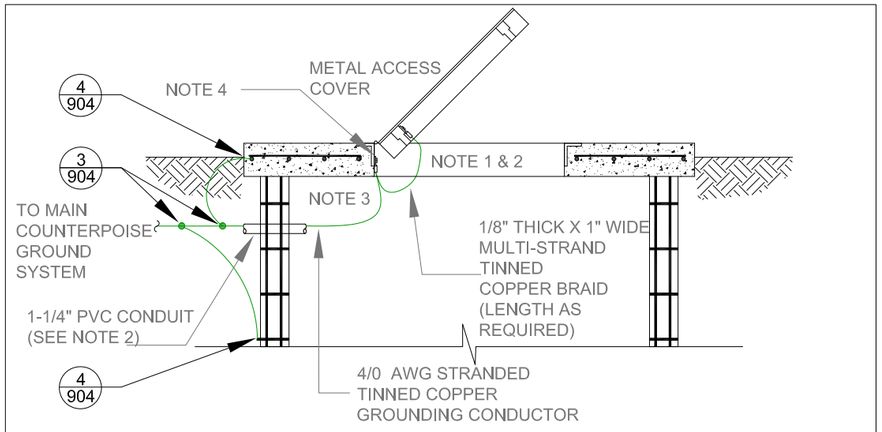
CITY OF
ORLANDO, FLORIDA

TITLE: GROUNDINGN DETAILS - PART 5

SHEET
906



PRESSURE TRANSMITTER PIPE GROUNDING DETAIL 1/907



NOTES:
1. ACCESS AREAS WITH MULTIPLE DOORS, PROVIDE BRAID FROM FRAME TO DOOR ON EACH DOOR .

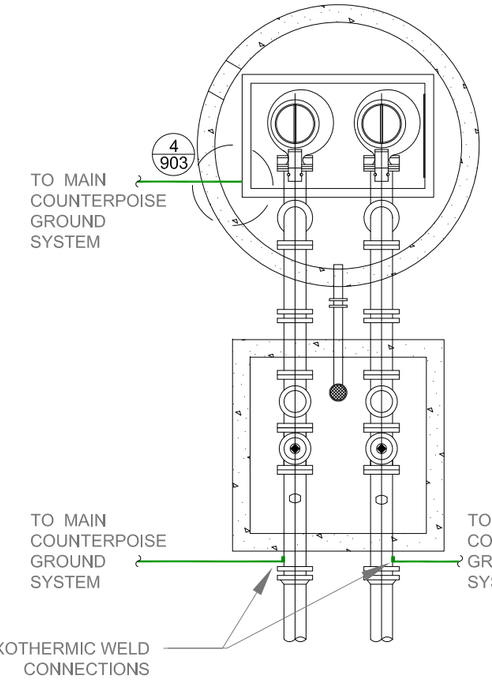
2. INSTALL GROUND WIRE IN SUCH A MATTER IT DOES NOT INTERFERE WITH ACCESS OPENING AND IMPEDED FROM REMOVING WET WELL FLOATS OR PUMPS.

3. PROVIDE WATERPROOF CAULKING WHERE GROUND CABLE AND CONDUIT PENETRATES WET WELL TO PREVENT INTRUSION OF GROUNDWATER AND ESCAPE OF VAPORS FROM WET WELL.

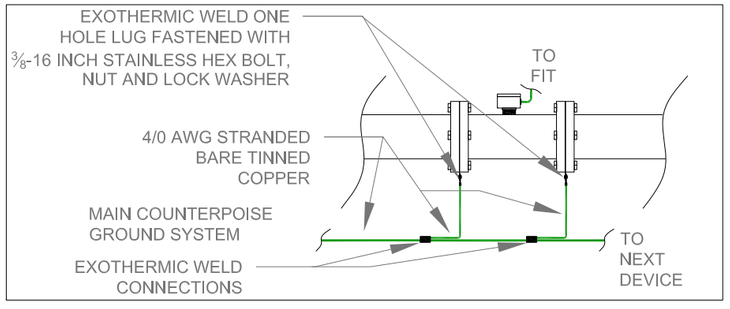
4. FASTENING OF GROUNDING COMPONENTS TO DOOR FRAME AND DOOR,SHALL BE WITH EXOTHERMIC WELDED LUG WITH A 3/8 -16 INCH STAINLESS STEEL BOLT, NUT AND LOCK WASHER.

5. ALL COMPONENTS USED IN INSTALLATION WITHIN SHALL COMPLY WITH SPECIFICATION 16450.

COVER AND DOOR GROUNDING DETAIL 3/907
NOT TO SCALE



WET WELL AND VALVE VAULT GROUNDING DETAIL 4/907
NOT TO SCALE



FLOW METER PIPE GROUNDING DETAIL 2/907
NOT TO SCALE

CITY OF ORLANDO

SCALE:	N.T.S.
DESIGN:	IAG
DRAWN BY:	JG
APPROVED BY:	WW

NO	REVISION	DATE	BY
-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG

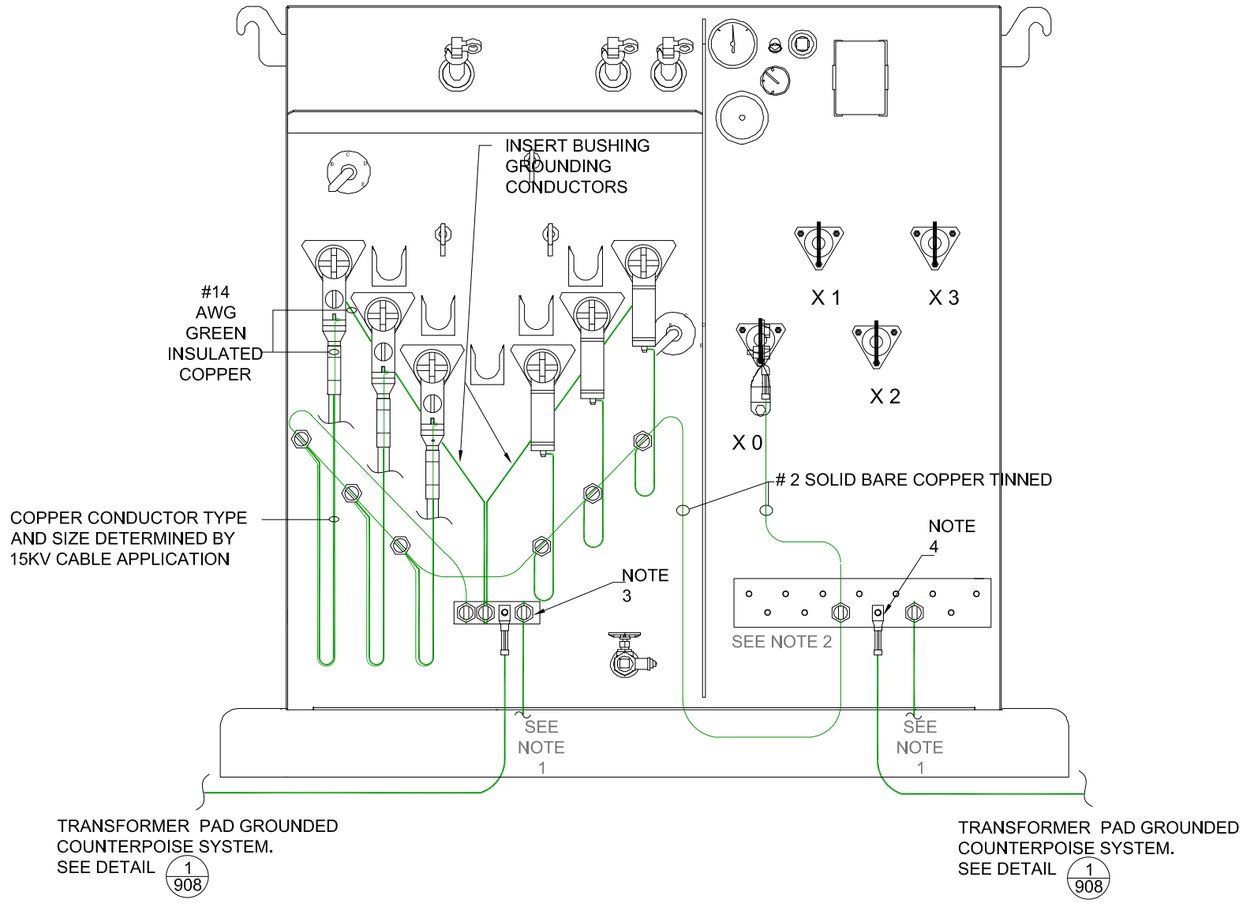
WATER RECLAMATION DIVISION,
INDUSTRIAL AUTOMATION GROUP

CITY OF
ORLANDO, FLORIDA

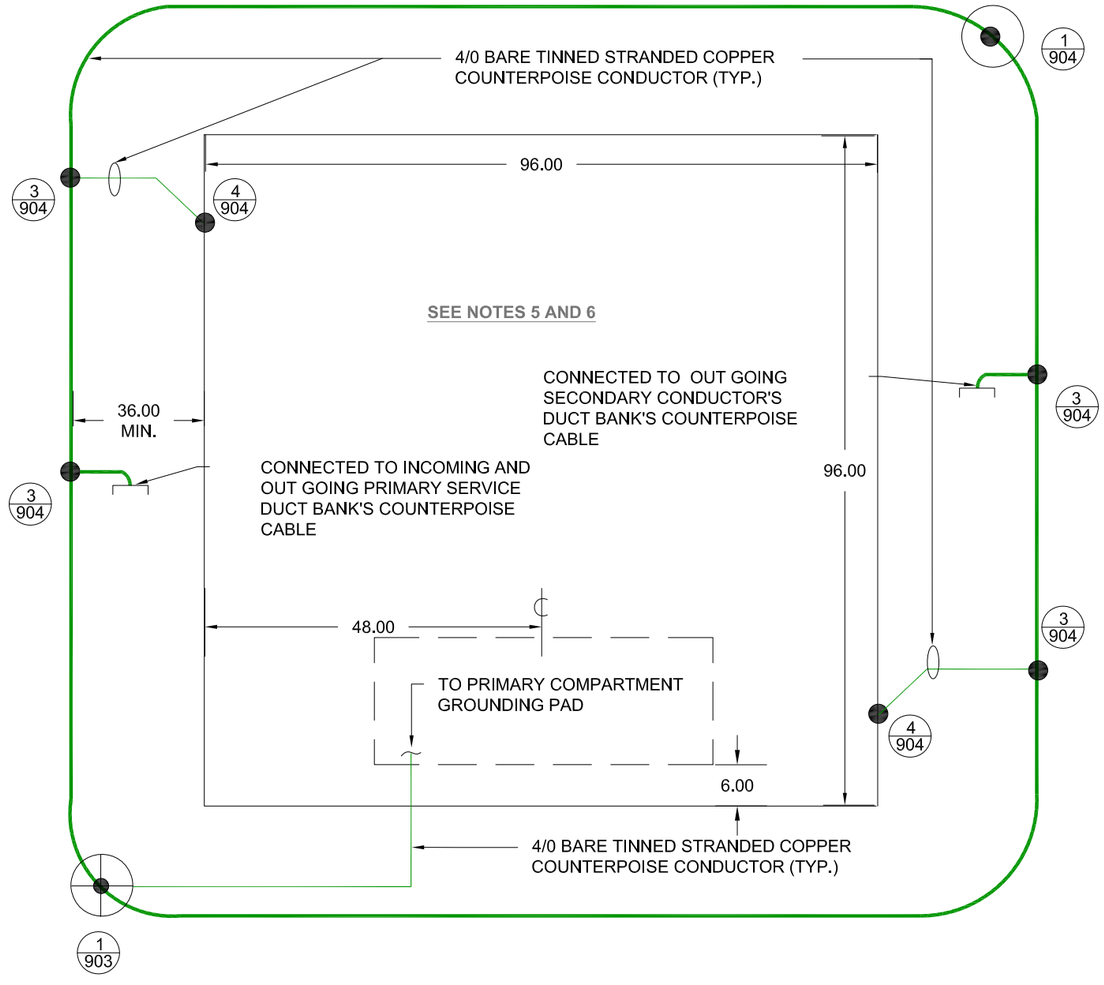
TITLE:
GROUNDING DETAILS - PART 6

SHEET
907

NOTES:
1. ADDITIONAL CABLE GROUNDING CONDUCTORS ARE APPLICATION SPECIFIC, WHEN REQUIRED.
2. REFER TO DETAILS ON DRAWING 921
3. SERVICE POST CONNECTOR
(SP6DS T&B OR EQUAL)
4. LONG BARREL SINGLE HOLE CONNECTOR
(CTL-40L-12 T&B OR EQUAL).
5. ALL DIMENSIONS IN INCHES
6. PROVIDE 2 ACCESS REBAR GROUNDING PROVISIONS TO ATTACH GROUNDING
COUNTERPOISE SYSTEM AT 2 OPPOSITE CORNER POSITIONS, AS INDICATED ON DRAWING.



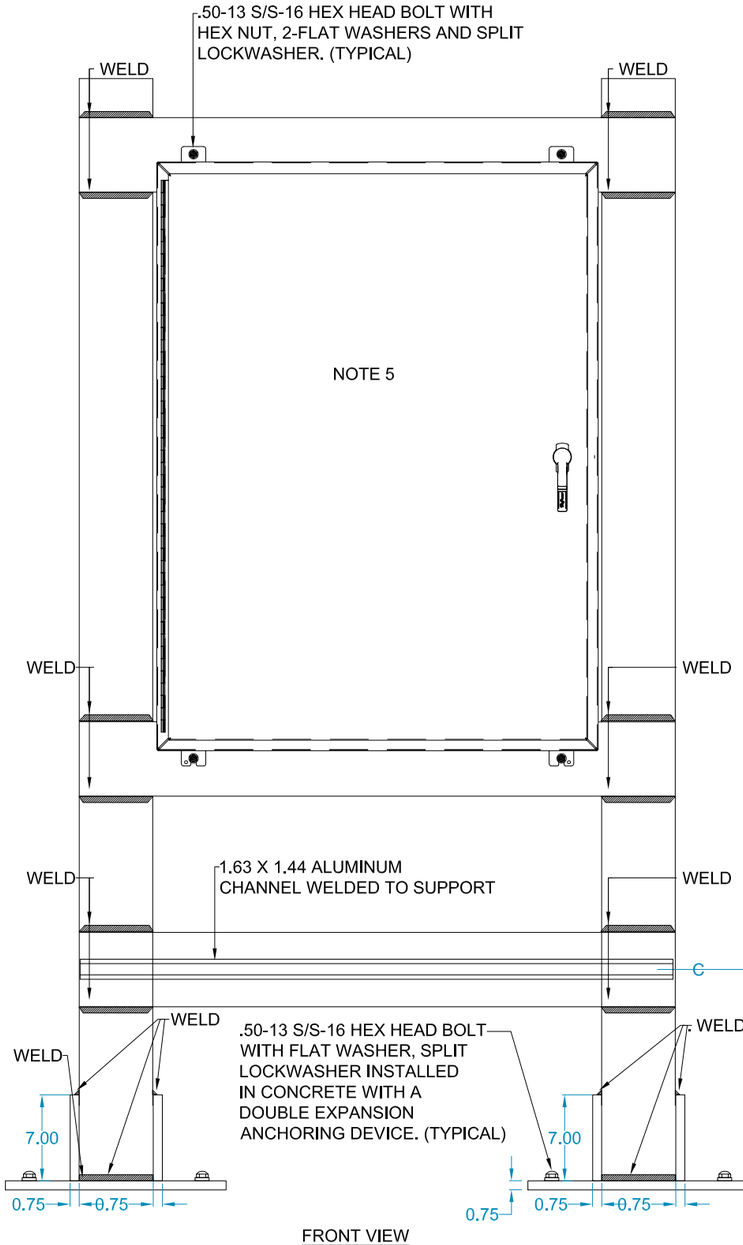
TRANSFORMER INTERIOR COMPARTMENT GROUNDING DETAIL 1/908
NOT TO SCALE



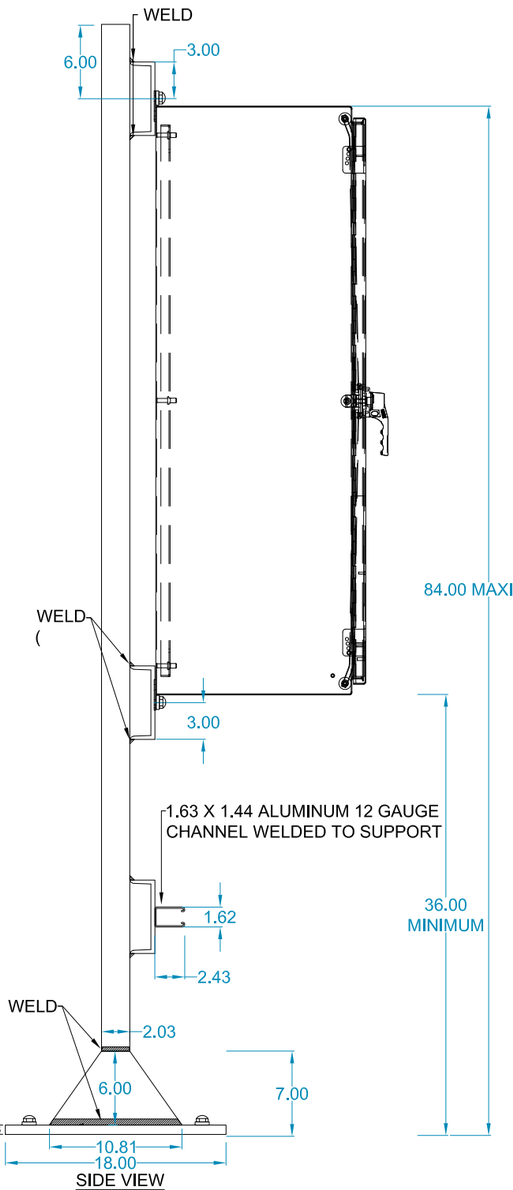
TRANSFORMER PRECAST PAD GROUNDING DETAIL 2/908
NOT TO SCALE

CITY OF ORLANDO

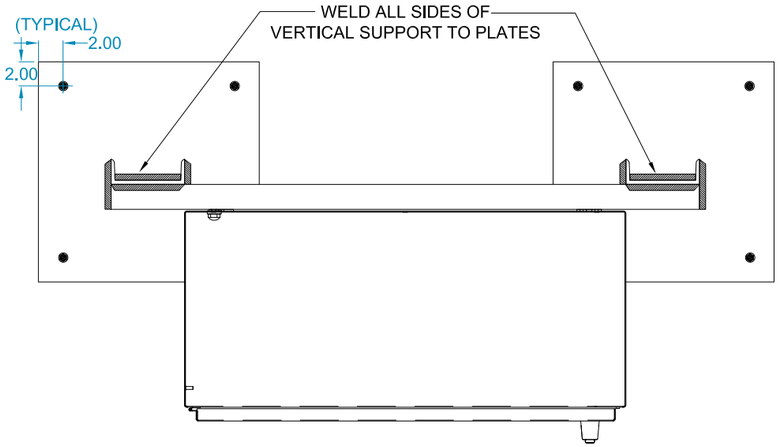
SCALE: N.T.S.	-	-	02-05-2013	JG	WATER RECLAMATION DIVISION, INDUSTRIAL AUTOMATION GROUP
DESIGN: IAG					CITY OF ORLANDO, FLORIDA
DRAWN BY: JG					TITLE: GROUNDING DETAILS - PART 7
APPROVED BY: WW	NO	REVISION	DATE	BY	SHEET 908



FRONT VIEW



SIDE VIEW



TOP VIEW

NOTES:

1. HORIZONTAL MOUNTING SUPPORTS FOR PANEL SHALL BE A SQUARED ALUMINUM STRUT ANGLE , CORNERS / EDGES ROUNDED.

2. ALL MOUNTING HARDWARE FOR CONDUIT SUPPORT SHALL CONSIST OF: .50-13 HEX BOLT, WASHER AND LOCK HEX NUT STAINLESS STEEL-16. ALL HARDWARE SIZE FOR DEVICE OR PANEL ENCLOSURE SHALL BE SIZED BASED ON MANUFACTURER'S MOUNTING PROVISIONS. THE BASE PLATE MOUNTING HARDWARE SHALL CONSIST OF A MINIMUM SIZE OF: .50-13 HEX BOLT, LOCK WASHER, FLAT WASHER AND A DOUBLE EXPANSION SHIELDED ANCHOR.

3. FOR STAND ALONE CONCRETE PAD APPLICATIONS. THE CONCRETE PAD SHALL PROVIDE A MINIMUM CLEARANCE AROUND ALL SIDE OF CONTROL PANEL.

4. CONTROL PANEL BOTTOM SHALL BE MOUNTED AT A MINIMUM 36.00 INCHES ABOVE FINISHED TOP OF CONCRETE

5. RACK MOUNTING METHOD DETAIL TO BE ONLY USED FOR PANELS, 36.00 TO 48.00 WIDE AND 48.00 HIGH.

6. ALUMINUM MATERIAL SHALL BE AS FOLLOWS: STRUCTURAL CHANNEL; 6061-T6 ALUMINUM, FEDERAL SPEC: QQ-A-200/8, WIDTH: 6.00 LEG: 2.03, THICKNESS: 0.31. ALUMINUM PLATE: FINISH: 6061-T651 MILL TYPE, FEDERAL SPEC: QQ-A-250/11, WIDTH : 18.00, LENGTH: 18.00, THICKNESS: 0.75.

7. DIMENSIONS IN INCHES.

CITY OF ORLANDO

SCALE: N.T.S.	-	RENUMBERED SHEET	12-04-2014	JG	WATER RECLAMATION DIVISION, INDUSTRIAL AUTOMATION GROUP CITY OF ORLANDO, FLORIDA
DESIGN: IAG					
DRAWN BY: JG					
APPROVED BY: WW	NO	REVISION	DATE	BY	

TITLE: PEDESTAL MOUNTING FOR CONTROL PANELS

SHEET 909

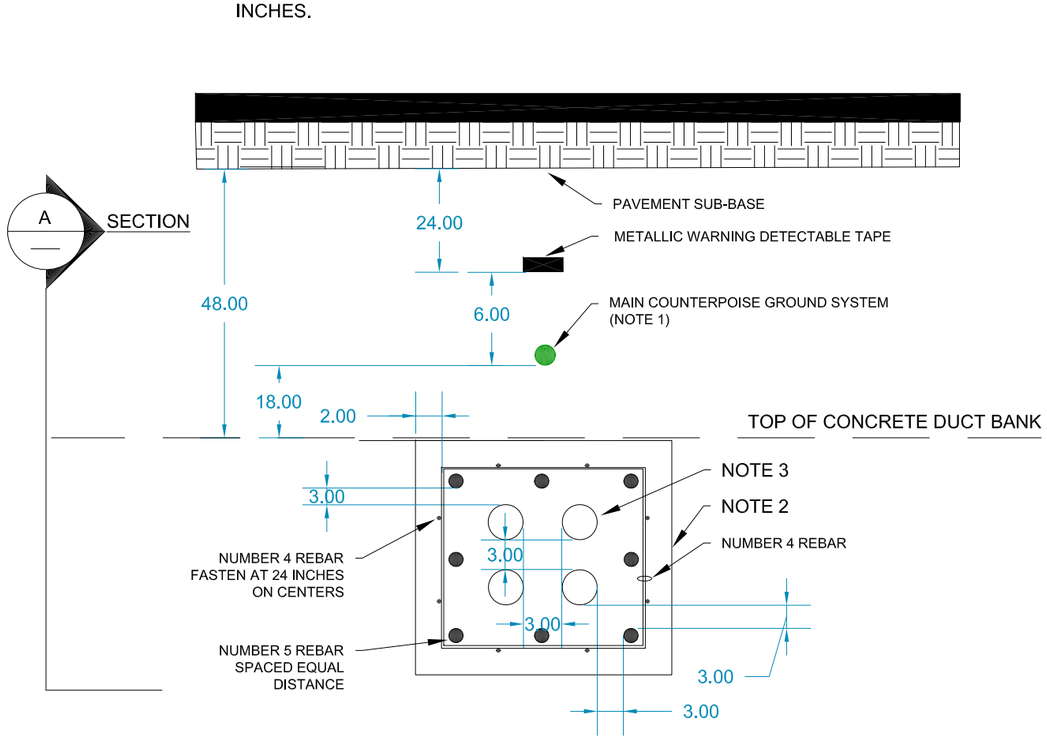
NOTES:

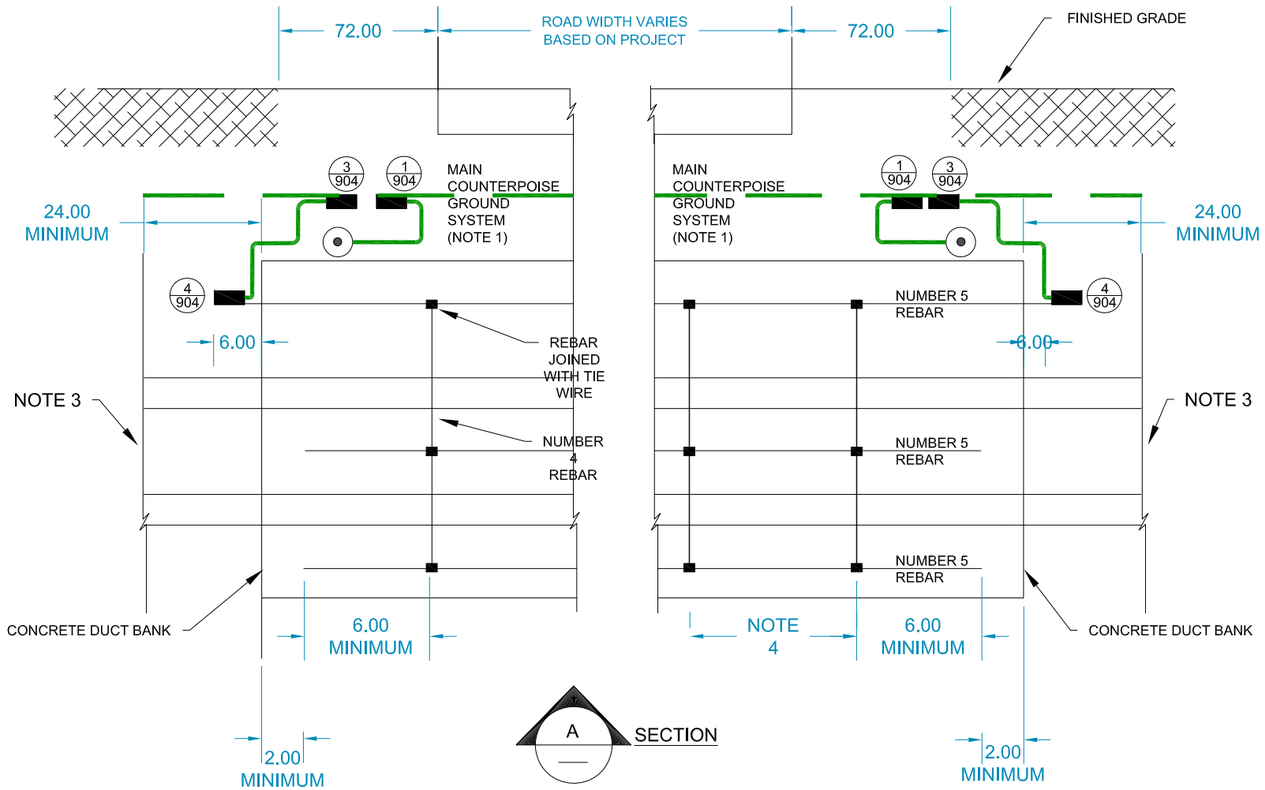
1. 4/0 AWG BARE TINNED COPPER CONDUCTOR

2. CONDUIT DUCT BANK SHALL BE ENCASED IN CONCRETE WITH AT LEAST 5 INCHES OF CONCRETE AT THE TOP, BOTTOM AND SIDE. A HORIZONTAL AND VERTICAL SEPARATION BETWEEN THE DUCTS OF 3 INCHES SHALL BE MAINTAINED BY INSTALLING HIGH IMPACT THERMOPLASTIC SPACERS WITH HORIZONTAL AND VERTICAL LOCKING INTERVALS OF 8 FEET BASED ON MANUFACTURER'S RECOMMENDATIONS.

3. REFER TO CONDUIT SCHEDULE WITHIN FOR REQUIRED SIZE AND AMOUNT OF CONDUITS. PROVIDE ADDITIONAL TWO SPARE CONDUITS NOT INDICATED IN SCHEDULE AND LOCATE AT TOP ROW OF DUCT BANK. SPARE CONDUITS SHALL BE SIZED BASED ON LARGEST CONDUIT SPECIFIED IN THE DUCT BANK. SPARE SHALL TERMINATED IN CLOSEST MANHOLE PULL BOX LOCATED ON EACH SIDE OF THE ROAD CROSSING.

4. REBAR SHALL BE SPACED EQUALLY ALONG ENTIRE CONCRETE DUCT BANK WITH A MAXIMUM SPACING OF 24 INCHES.





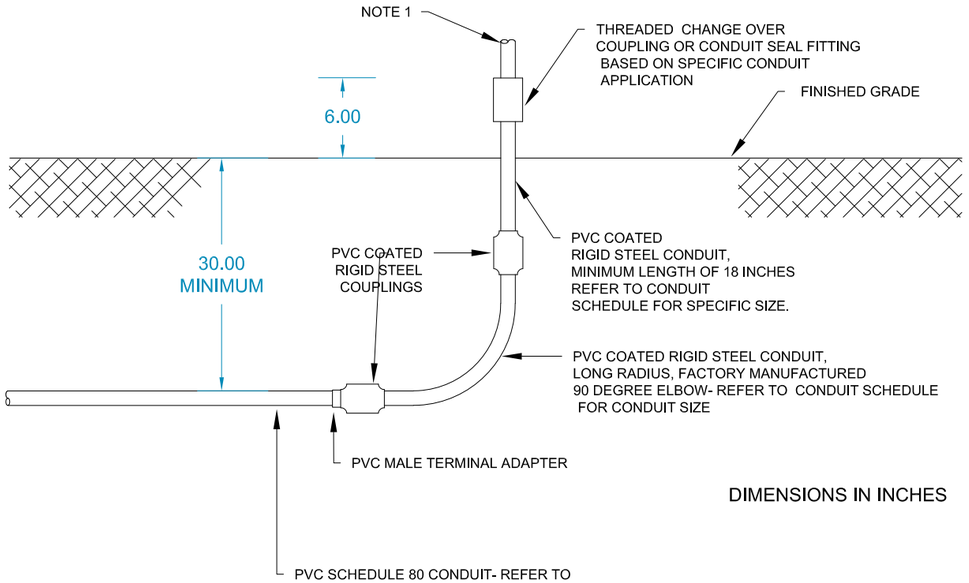
DIMENSIONS IN INCHES

CONCRETE ENCASED DUCT BANK UNDERGROUND ROAD CROSSING DETAIL (1/910)

NOT TO SCALE

CITY OF ORLANDO

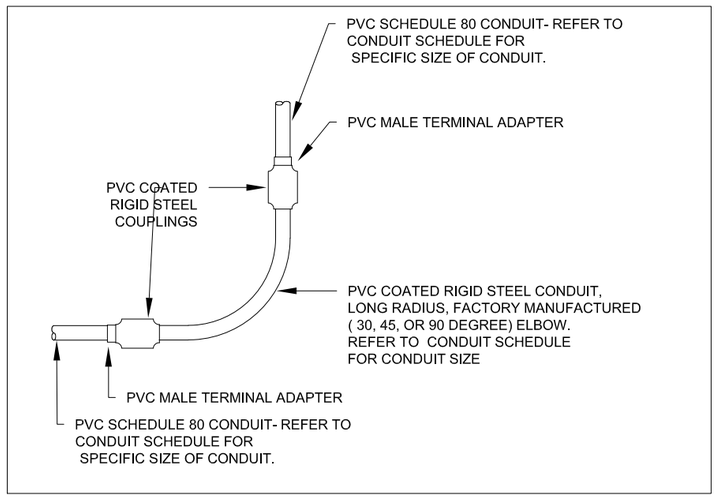
SCALE: N.T.S.	-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG	WATER RECLAMATION DIVISION, INDUSTRIAL AUTOMATION GROUP CITY OF ORLANDO, FLORIDA
DESIGN: IAG					TITLE: UNDERGROUND DUCT BANK DETAILS
DRAWN BY: JG					SHEET 910
APPROVED BY: WW	NO	REVISION	DATE	BY	



DIMENSIONS IN INCHES

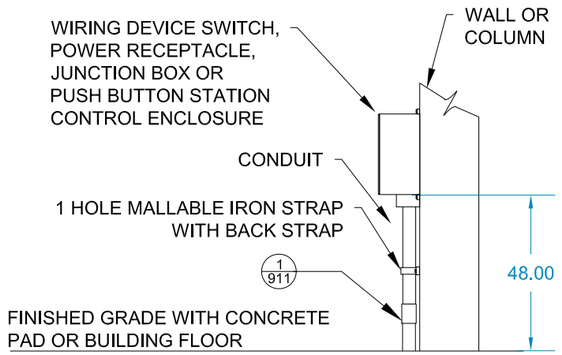
NOTE:
1. ALL CONDUITS AND COMPONENTS SHALL COMPLY WITH SPECIFICATION 16110.

CONDUIT CHANGE OVER FROM UNDER TO ABOVE GROUND APPLICATIONS DETAIL 1/911
NOT TO SCALE



UNDER GROUND CONDUIT ELBOW INSTALLATION FOR BENDS GREATER THAN 22 - 1/2 DEGREES DETAIL 3/911
NOT TO SCALE

DIMENSIONS IN INCHES

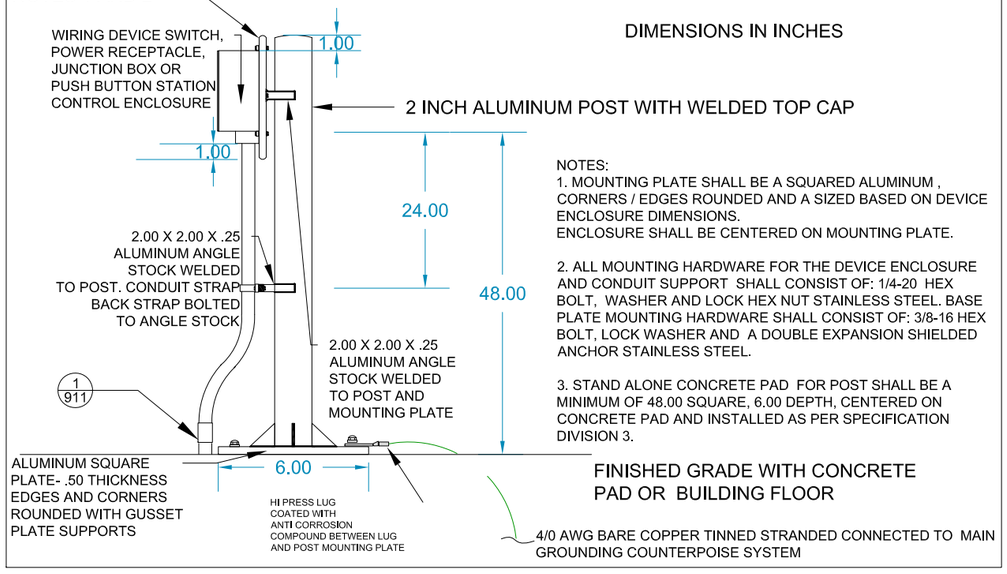


NOTE:
1. ALL MOUNTING OF DEVICE ENCLOSURE AND CONDUIT SUPPORT SHALL CONSIST OF: 1/4-20 HEX BOLT, WASHER AND LOCK HEX NUT STAINLESS STEEL HARDWARE. FOR CONCRETE MOUNTING, HEX NUT SHALL BE SUBSTITUTED BY STAINLESS STEEL 1/4-20 DOUBLE EXPANSION SHIELDED ANCHOR.

SURFACE MOUNTING DETAIL FOR A: SWITCH, POWER RECEPTACLE, OR PUSH BUTTON STATION 2/911
NOT TO SCALE

NOTES 1 AND 2

DIMENSIONS IN INCHES



NOTES:
1. MOUNTING PLATE SHALL BE A SQUARED ALUMINUM , CORNERS / EDGES ROUNDED AND A SIZED BASED ON DEVICE ENCLOSURE DIMENSIONS.
ENCLOSURE SHALL BE CENTERED ON MOUNTING PLATE.

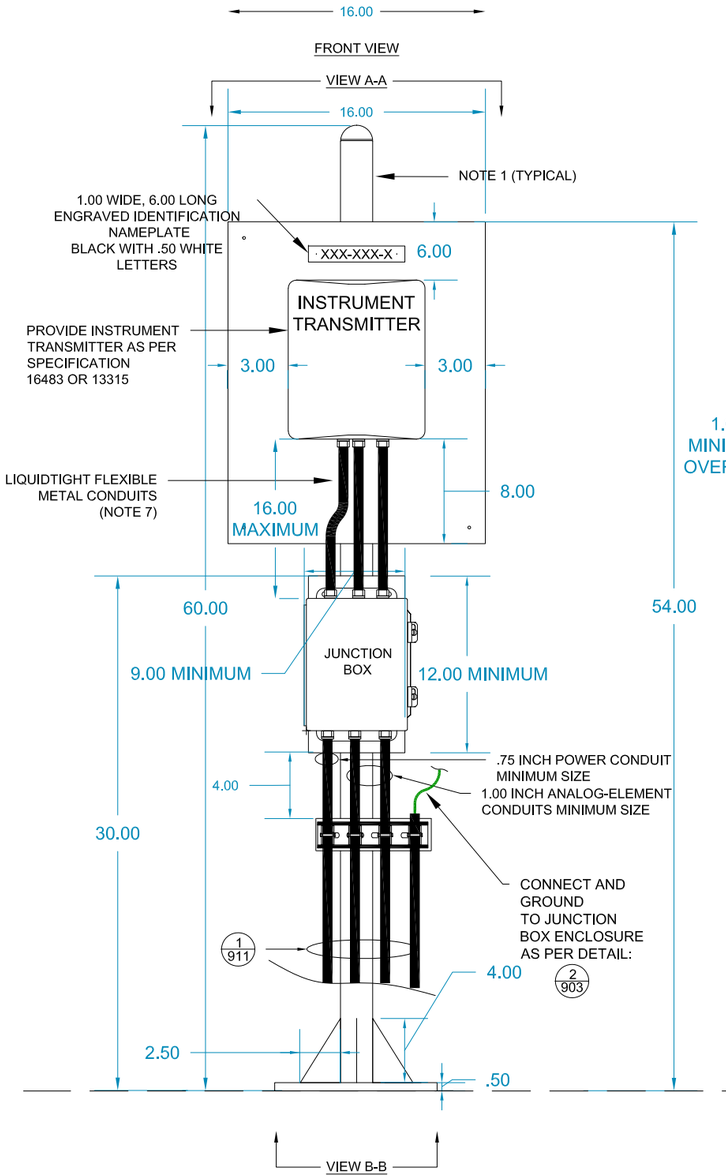
2. ALL MOUNTING HARDWARE FOR THE DEVICE ENCLOSURE AND CONDUIT SUPPORT SHALL CONSIST OF: 1/4-20 HEX BOLT, WASHER AND LOCK HEX NUT STAINLESS STEEL. BASE PLATE MOUNTING HARDWARE SHALL CONSIST OF: 3/8-16 HEX BOLT, LOCK WASHER AND A DOUBLE EXPANSION SHIELDED ANCHOR STAINLESS STEEL.

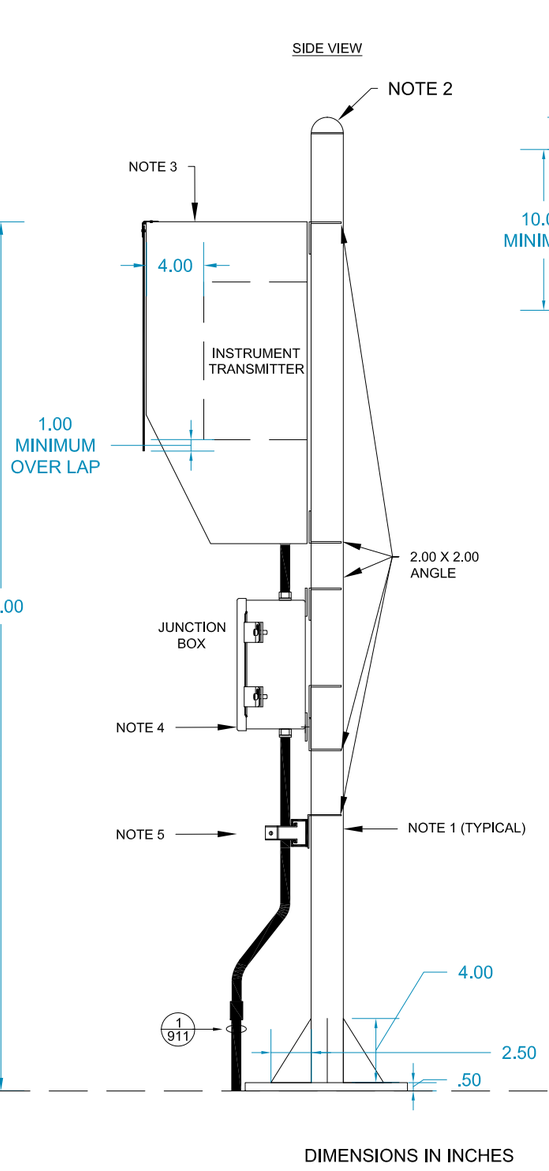
3. STAND ALONE CONCRETE PAD FOR POST SHALL BE A MINIMUM OF 48.00 SQUARE, 6.00 DEPTH, CENTERED ON CONCRETE PAD AND INSTALLED AS PER SPECIFICATION DIVISION 3.

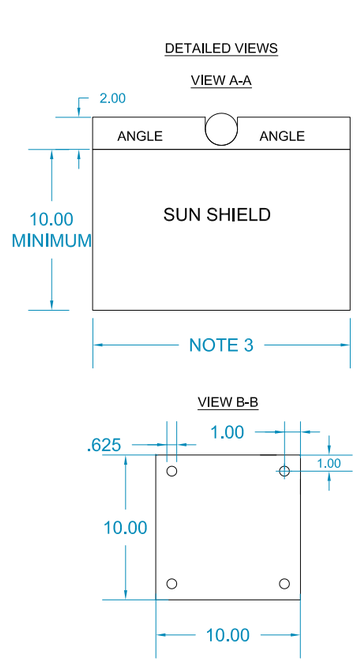
POST MOUNTING DETAIL FOR A: SWITCH, POWER RECEPTACLE, OR PUSH BUTTON STATION 4/911
NOT TO SCALE

CITY OF ORLANDO

SCALE: N.T.S.	-	ADDED GROUNDING TO DETAIL 911-4	10-04-2012	JG	WATER RECLAMATION DIVISION, INDUSTRIAL AUTOMATION GROUP
DESIGN: IAG	-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG	CITY OF ORLANDO, FLORIDA
DRAWN BY: JG					TITLE: UNDERGROUND CONDUIT AND SURFACE / PEDESTAL MOUNT ENCLOSURE DETAILS
APPROVED BY: WW	NO	REVISION	DATE	BY	SHEET 911







NOTES:

1. ALL PEDESTAL COMPONENTS SHALL BE FABRICATED OF ALUMINUM, WHICH SHALL BE COMPLETELY WELDED, FILLED, GROUNDED SMOOTH, AND ALL SLAG DEPOSITS REMOVED AS A FINISHED PRODUCT.

2. PEDESTAL POST SHALL BE 2.00 TRADE SIZE IN DIAMETER AND SHALL BE CAPPED AT TOP WITH A ROUND AND WELDED CAP.

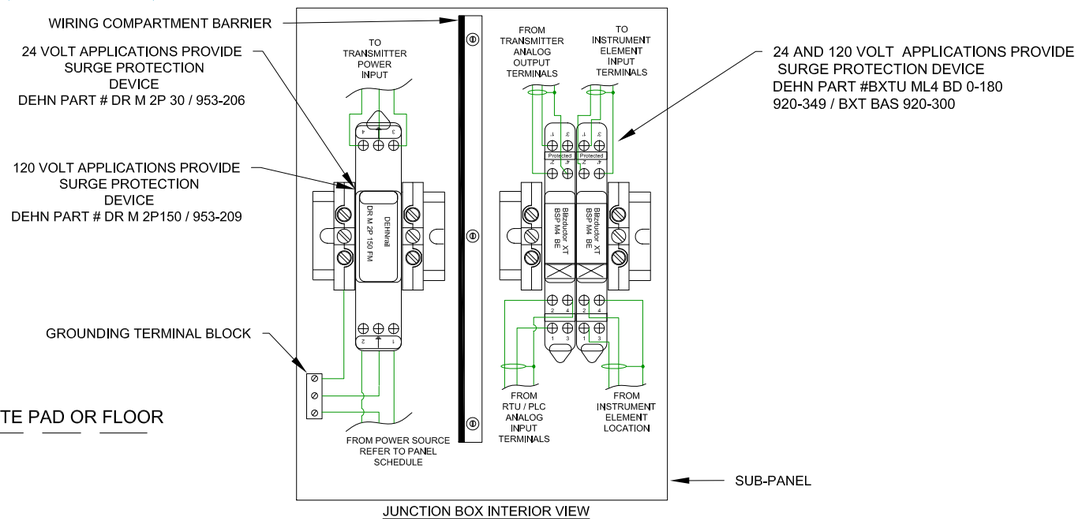
3. FOR OUTDOOR APPLICATIONS A SUN SHIELD SHALL BE INSTALLED AND CONSIST OF THE FOLLOWING: 10 GAUGE ALUMINUM AND SIZED TO ACCOMMODATE SPECIFIC INSTRUMENT WITH MINIMUM MEASUREMENT CLEARANCES INDICATED ON DETAIL.
A BLACK .0125 NEOPRENE RUBBER FLEXIBLE DISPLAY SHIELD WITH A STAINLESS STEEL HINGE SHALL BE BOLTED TO THE FRONT TOP OF THE SUNSHIELD AS INDICATED ON DETAIL.

4. JUNCTION BOX SHALL BE A MINIMUM OF; 10.00 HIGH, 8.00 WIDE, 4.00 DEEP AND, NEMA 4X - 316 L STAINLESS STEEL CONSTRUCTION WITH INTERIOR SUB PANEL AND COMPLY WITH SPECIFICATION 16050.

5. CONDUIT SUPPORT SHALL CONSIST OF; .875 DEEP, 1.625 WIDE STAINLESS STEEL 316 L UNISTRUT WITH END CAPS WITH MANUFACTURER'S RECOMMENDED CONDUIT STRAP. THE UNISTRUT SHALL BE THROUGH BOLTED TO ALUMINUM ANGLE WITH HARDWARE SPECIFIED IN "NOTE 6".

6. ALL HARDWARE USED TO MOUNT DEVICES, JUNCTION BOXES AND CONDUIT SUPPORT COMPONENTS SHALL BE .25-20 STAINLESS STEEL, WHICH SHALL CONSIST OF BOLTS, WASHERS AND LOCK HEX NUTS

7. INSTALLATION CONFIGURATION OF LIQUIDTIGHT METAL FLEXIBLE CONDUITS ARE NOT SPECIFIC TO ALL MANUFACTURES SPECIFIED. CONTRACTOR SHALL RECONFIGURE LIQUIDTIGHT FLEXIBLE METAL CONDUITS TO MANUFACTURER'S RECOMMENDED INSTALLATION METHODS AS NEEDED. .



JUNCTION BOX INTERIOR VIEW
NOT TO SCALE

CONCRETE PAD OR FLOOR

DIMENSIONS IN INCHES

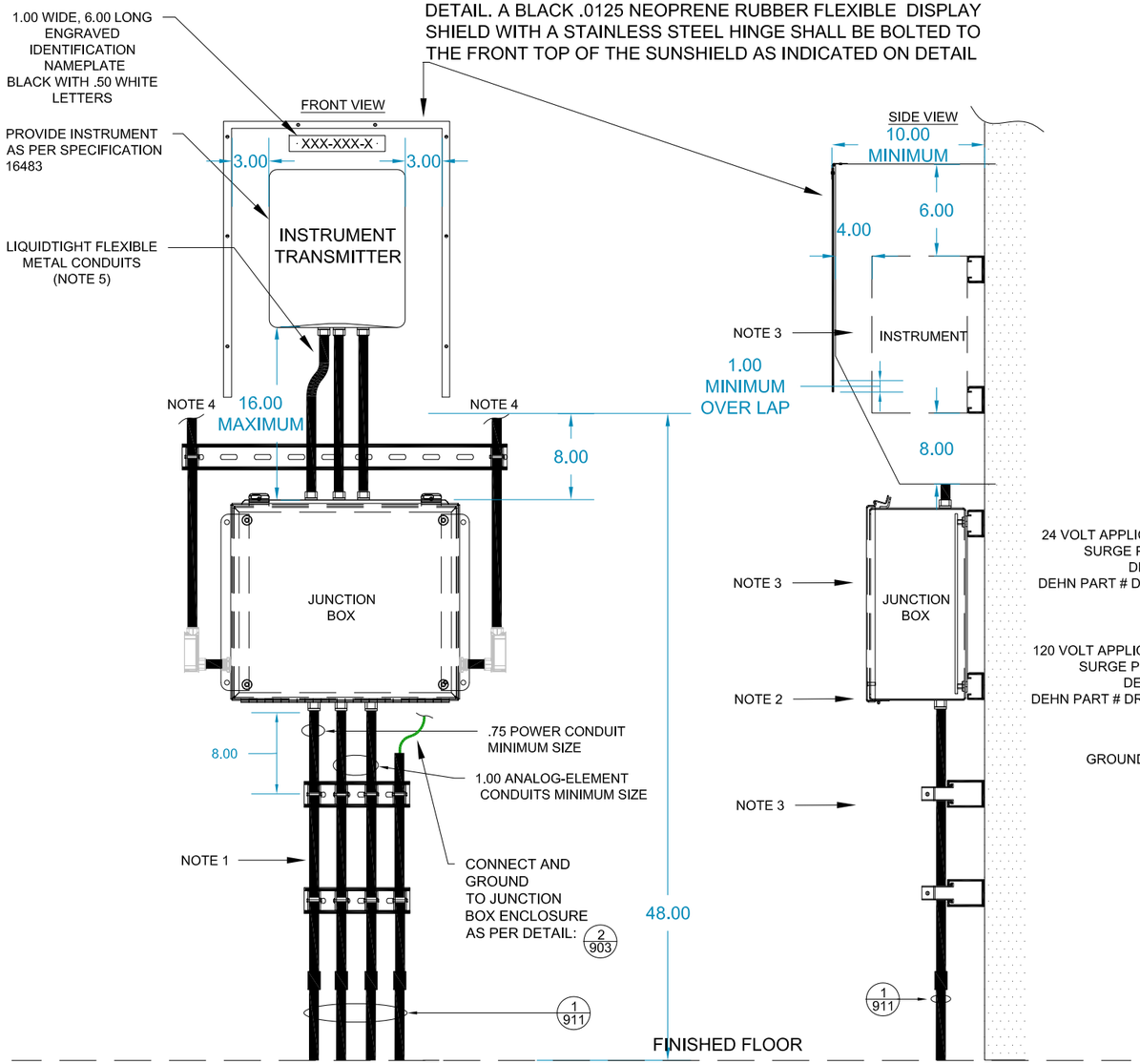
PEDESTAL MOUNTING DETAIL FOR AN INSTRUMENT TRANSMITTER (1/912)

NOT TO SCALE

CITY OF ORLANDO

SCALE: N.T.S.	-	REVISED ID'S FROM FIT TO LIT	02-03-2012	JG	WATER RECLAMATION DIVISION, INDUSTRIAL AUTOMATION GROUP
DESIGN: IAG	-	REVISED ID'S TO TRANSMITER AND ADDED GROUNDING	02-07-2012	JG	CITY OF ORLANDO, FLORIDA
DRAWN BY: JG	-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG	TITLE: PEDESTAL MOUNTING DETAILS FOR INSTRUMENT TRANSMITTER
APPROVED BY: WW	-	UPDATE SPD ORDERING DATA	11-17-2020	JG	SHEET 912
	NO	REVISION	DATE	BY	

FOR OUTDOOR APPLICATIONS A SUN SHIELD SHALL BE INSTALLED AND CONSIST OF THE FOLLOWING: 10 GAUGE ALUMINUM AND SIZED TO ACCOMMODATE SPECIFIC INSTRUMENT WITH MINIMUM MEASUREMENT CLEARANCES INDICATED ON DETAIL. A BLACK .0125 NEOPRENE RUBBER FLEXIBLE DISPLAY SHIELD WITH A STAINLESS STEEL HINGE SHALL BE BOLTED TO THE FRONT TOP OF THE SUNSHIELD AS INDICATED ON DETAIL



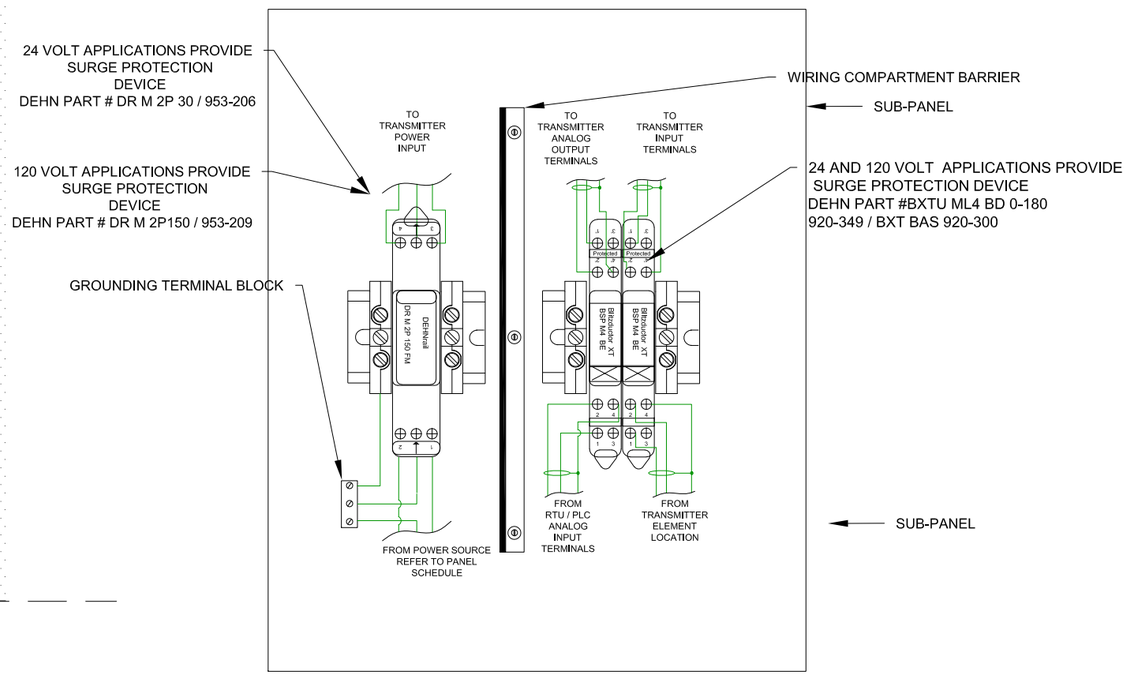
NOTES:
1. FOR EXISTING APPLICATIONS, CONDUIT TYPE SHALL MATCH EXISTING CONDUIT.

2. JUNCTION BOX SHALL BE A MINIMUM OF; 14.00 HIGH, 12.00 WIDE, 6.00 DEEP AND, NEMA 4X - 316 L STAINLESS STEEL CONSTRUCTION WITH INTERIOR SUB PANEL AND COMPLY WITH SPECIFICATION 16050.

3. CONDUIT, INSTRUMENT TRANSMITTER DEVICE AND JUNCTION BOX, SHALL BE SUPPORTED BY STAINLESS STEEL 316 L UNISTRUT WITH END CAPS WITH MANUFACTURER'S RECOMMENDED HARDWARE. THE UNISTRUT SHALL BE FASTENED TO CONCRETE WALL WITH .25-20 STAINLESS STEEL BOLTS, LOCK WASHERS AND DOUBLE EXPANSION ANCHOR.

4. EXISTING LIFT STATION APPLICATION WHERE CONDUITS ARE INSTALLED ABOVE GROUND, THE INSTALLATION SHALL BE INHERED TO AS INDICATED.

5. INSTALLATION OF LIQUIDTIGHT METAL FLEXIBLE CONDUITS ARE NOT SPECIFIC TO ALL MANUFACTURER'S SPECIFIED. CONTRACTOR SHALL RECONFIGURE LIQUIDTIGHT FLEXIBLE METAL CONDUITS TO MANUFACTURER'S RECOMMENDED INSTALLATION METHODS AS NEEDED.



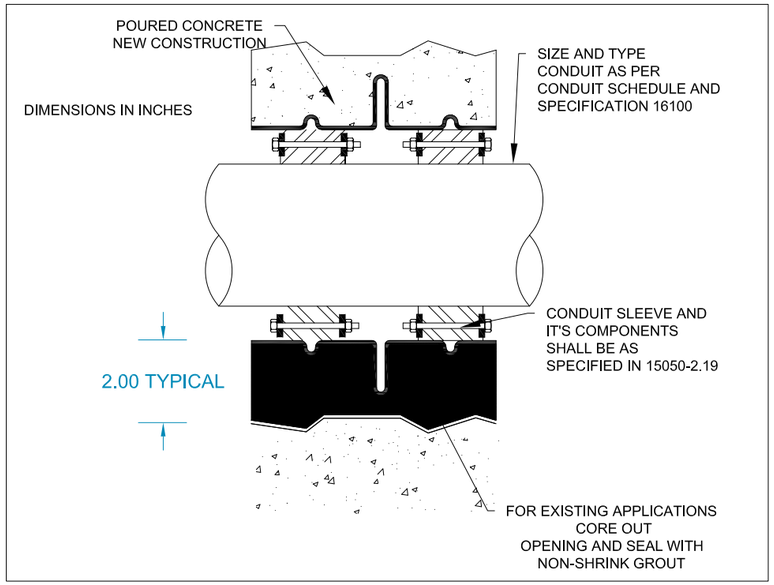
JUNCTION BOX INTERIOR VIEW
NOT TO SCALE

DIMENSIONS IN INCHES

WALL MOUNTING DETAIL FOR INSTRUMENT TRANSMITTER 1/913
NOT TO SCALE

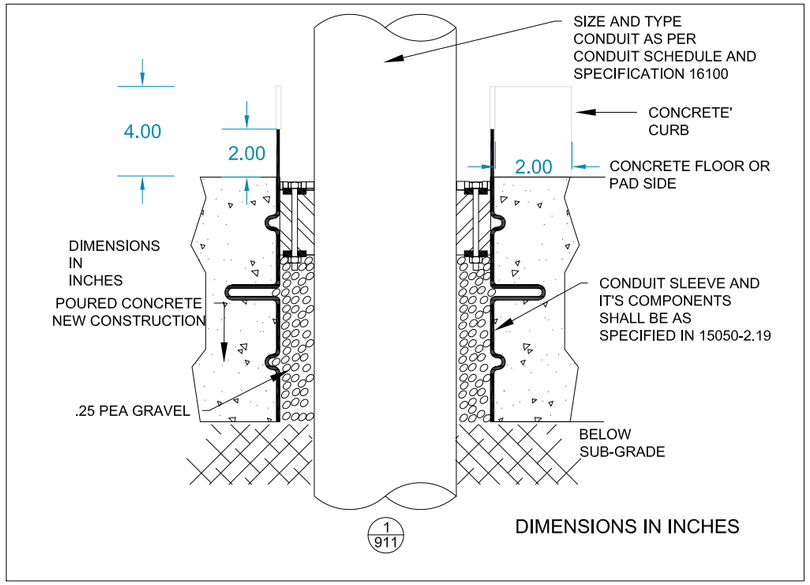
CITY OF ORLANDO

SCALE: N.T.S.	-	REVISED ID'S FROM FIT TO LIT	02-03-2012	JG	WATER RECLAMATION DIVISION, INDUSTRIAL AUTOMATION GROUP
DESIGN: IAG	-	REVISED ID'S TO TRANSMITER AND ADDED GROUNDING	02-07-2012	JG	CITY OF ORLANDO, FLORIDA
DRAWN BY: JG	-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG	TITLE: WALL MOUNT DETAILS FOR INSTRUMENT TRANSMITTER
APPROVED BY: WW	-	UPDATE SPD ORDERING DATA	11-17-2020	JG	SHEET 913
	NO	REVISION	DATE	BY	



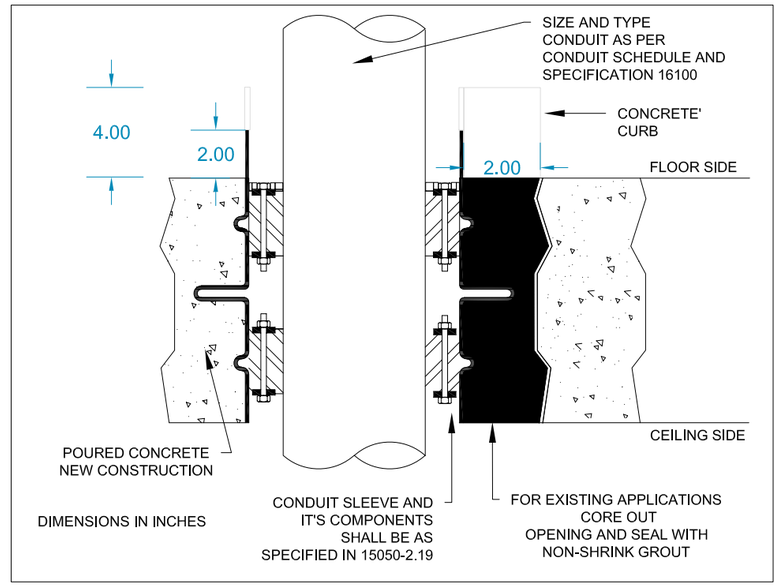
THROUGH WALL CONDUIT SLEEVE DETAIL 2/914

NOT TO SCALE



CONCRETE PAD OR FLOOR SLAB FROM BELOW GROUND CONDUIT SLEEVE DETAIL 1/914

NOT TO SCALE



CEILING / FLOOR CONDUIT SLEEVE DETAIL 3/914

NOT TO SCALE

CITY OF ORLANDO

SCALE: N.T.S.	-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG	WATER RECLAMATION DIVISION, INDUSTRIAL AUTOMATION GROUP
DESIGN: IAG					CITY OF ORLANDO, FLORIDA
DRAWN BY: JG					TITLE: CONDUIT INSTALLATION FOR THROUGH MASONRY WALL DEATILS
APPROVED BY: WW	NO	REVISION	DATE	BY	SHEET 914

NOTES:

1. SPACING BETWEEN GROUND RODS SHALL BE: NO LESS THAN 6 FOOT, NO GREATER THAN 25 FT AND INSTALLED EQUAL DISTANCE ALONG THE ENTIRE COUNTERPOISE GROUNDING SYSTEM.

2. ANY SINGLE GROUND ROD INSTALLATION THAT DOES NOT HAVE A GROUND RESISTANCE OF 5 OHMS OR LESS SHALL BE AUGMENTED BY ADDITIONAL GROUND RODS.

3. ALL ASSOCIATED EQUIPMENT SHALL BE CONNECTED TO THE MAIN COUNTERPOISE GROUND SYSTEM. REFER TO ADDITIONAL DETAILS WITHIN.

4. ALL ABOVE GROUND AND BELOW GROUND COUNTERPOISE CONDUCTOR INSTALLATIONS SHALL BE A MINIMUM OF: 4/0 AWG STRANDED BARE TINNED COPPER CONDUCTOR.

5. EXOTHERMIC CONNECTION TO REBAR STEEL . TOWER BASE SECTION EMBEDDED IN CONCRETE SHALL BE FASTENED TO REBAR WITH TIE WIRE.

6. 4/0 STRANDED BARE TINNED COPPER CONDUCTOR SHALL BE CONNECTED TO ANTENNA MASTER GROUNDING STATION BY MEANS OF A SINGLE HOLE HI PRESS CONNECTOR WITH 3/8-16 BRONZE BOLT WITH LOCKNUT WASHER AND HEX BOLT. A CORROSION INHIBITING COMPOUND SHALL BE APPLIED BETWEEN WIRE CONNECTOR AND TOWER GROUNDING STATION TO PREVENT CORROSION.

7. ALL COMPONENTS USED IN INSTALLATION WITHIN SHALL COMPLY WITH SPECIFICATION 16450.

8. CONDUIT SHALL BE INSTALLED IN ACCORDANCE OF SPECIFICATION DIVISION 16110.

9. ANTENNA CONSTRUCTION AND INSTALLATION SHALL BE ACCORDANCE WITH STRUCTURAL STANDARDS FOR STEEL ANTENNAS TOWERS AND SUPPORTING STRUCTURE "EIA / TIA-222 F AND G".

10. FINAL ANTENNA MOUNTING HEIGHT SHALL BE DETERMINED BY EXECUTED RADIO SURVEY FOR PROJECT SITE AND CONCRETE BASE SIZE AND DEPTH SHALL BE DETERMINED BASED ON FINAL HEIGHT WITH A MINIMUM SIZE AND DEPTH SPECIFIED WITHIN THIS DETAIL.

11. ANTENNA TOWER INSTALLATION SHALL MEET FLORIDA BUILDING CODE WIND LOAD REQUIREMENT WITH THE APPROPRIATE WIND GUST FACTOR FOR THE LOCATION OF INSTALLATION. THE CONTRACTOR SHALL INCLUDE WITH THE SHOP DRAWING SUBMITTAL, A WIND LOADING CALCULATION SIGNED AND SEALED BY A STRUCTURAL ENGINEER, REGISTERED WITH THE STATE OF FLORIDA, SHOWING THAT THE PROPOSED TOWER AND INSTALLATIONS WILL MEET THE GIVEN WIND LOAD REQUIREMENT.

12. AT THE COMPLETION OF THE ANTENNA INSTALLATION WITH BASE RADIO CONNECTED, AS PART OF COMMISSIONING, A "VSWR" TEST SHALL BE PERFORMED WITH FOLLOWING RESULTS; FORWARD POWER EQUAL OR PLUS OR MINUS RADIO RATED POWER AND REFLECT POWER EQUAL TO ZERO .RESULTS SHALL BE PROVIDED WITH SUPPLIED OWN'S OPERATION MANUALS AS REQUIRED.

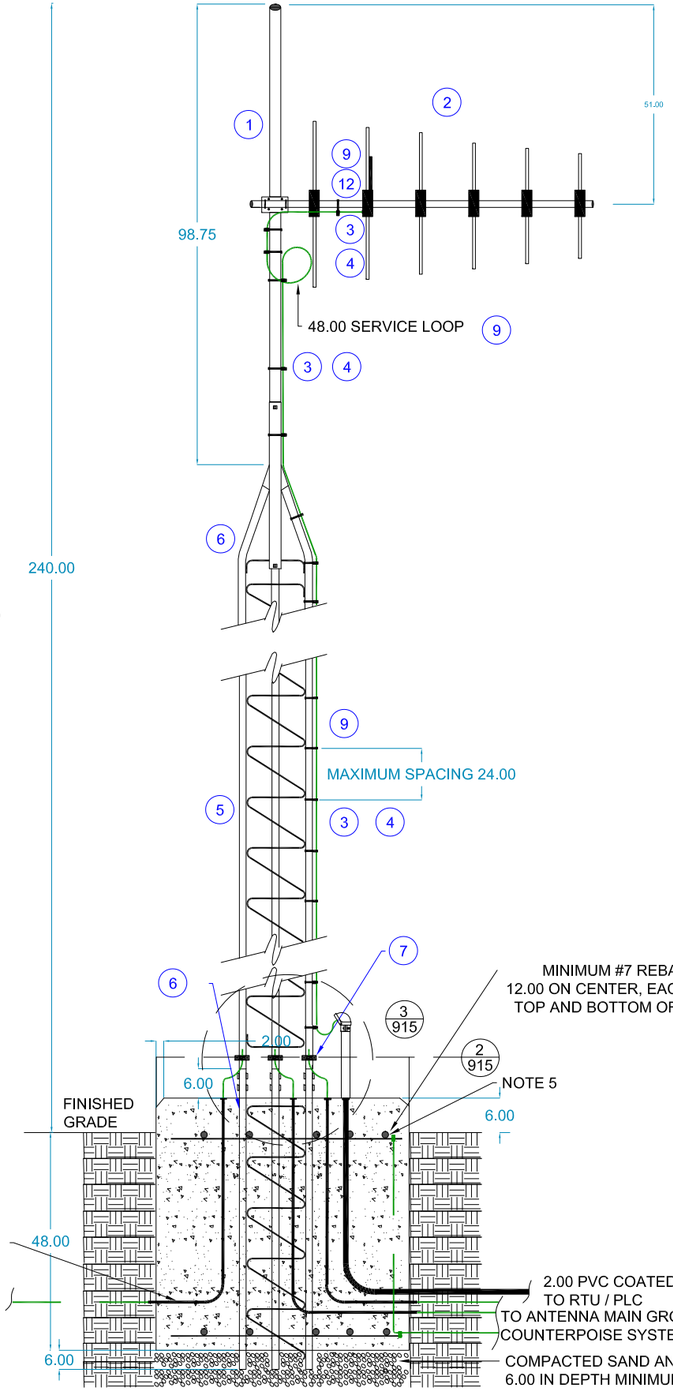
13. GROUND ROD SIZE SHALL BE A MINIMUM OF .75 IN DIAMETER AND 20 FEET IN LENGTH.

14. ALL COMPONENTS USED IN INSTALLATION WITHIN SHALL COMPLY WITH SPECIFICATION 16450 .

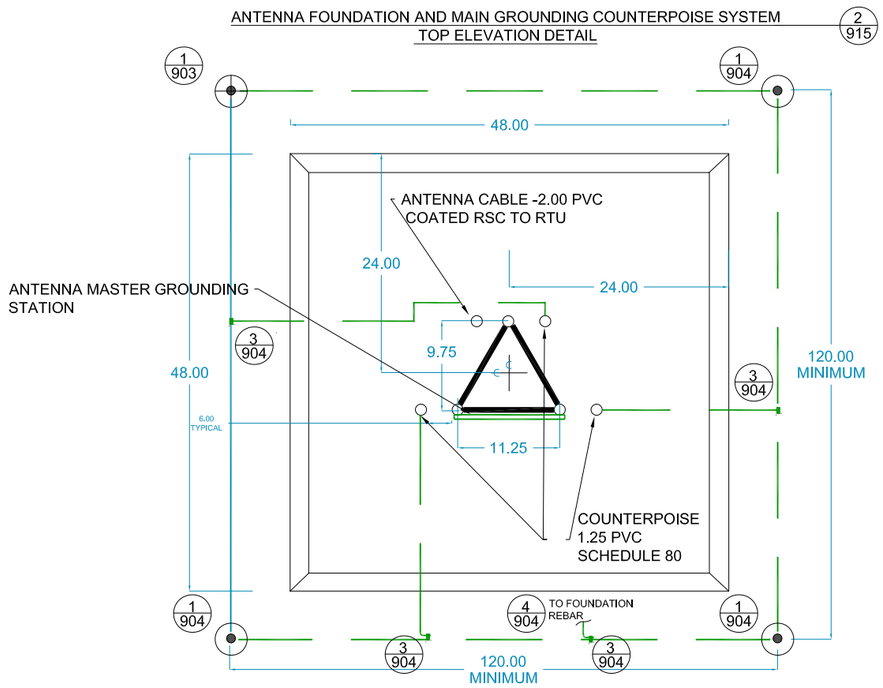
15. UNDERGROUND GROUNDING COUNTERPOISE SYSTEM CONDUCTORS AND GROUND RODS SHALL MAINTAIN A BURIED DEPTH OF 30 INCHES FROM TOP FINISHED GRADE.

16. ALL GROUND TESTING METHODS SHALL BE PERFORMED AND RECORDED BY "ANSI/ IEEE STANDARD "81" STANDARDS. ALL TEST RESULTS SHALL BE PROVIDED IN SPREADSHEET AND ACAD SITE DRAWING ELECTRONIC FORMAT FOR RECORD KEEPING PURPOSES.

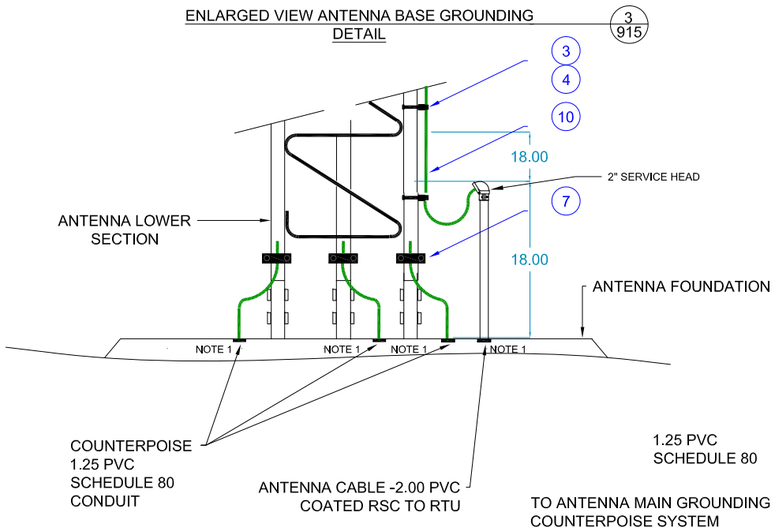
DIMENSIONS IN INCHES



ANTENNA FOUNDATION AND MAIN GROUNDING COUNTERPOISE SYSTEM
TOP ELEVATION DETAIL 2/915



ENLARGED VIEW ANTENNA BASE GROUNDING DETAIL 3/915



NOTE: 1. ALL CONDUITS SHALL BE SEALED WITH DUXSEAL COMPOUND AFTER CONDUCTOR INSTALLATION.

BILL OF MATERIALS

ID	QUAN.	ITEM DESCRIPTION	MANUFACTURER'S PART NUMBER
1	10FT	2.00 O.D. GALVVANIZED PIPE WITH CLOSED WELDED TOP CAP	ALLIED STEEL AND TUBE Zinc Flo-CoatÂ® A500
2	1	HEAVY DUTY, 6 ELEMENT, END MOUNTED YAGI ANTENNA	LAIRD INDUSTRIES PLC-1666
3	20	CABLE SUPPORT TOWER STANDOFF HANGER	ANDREW STS-12
4	20	SNAP IN CABLE HANGER, STAINLESS STEEL	ANDREW 206706A-6
5	1	ANTENNA TOWER TOP 9 FOOT, 3.50 INCH SECTION	ROHN 25AG3
	1	ANTENNA TOWER 10 FOOT SECTION	ROHN 25G
6	1	ANTENNA TOWER 5 FOOT BASE SECTION	ROHN SB25G5
7	3	TINNED BRONZE GROUND PIPE CLAMP	HARGER CPC 1/ 1.25
8	-	-	-
9	1	UHF, MALE, UG STANDARD SOLDER TYPE, PL-259 CONNECTOR	AMPHENOL 083-822
10	50FT	RG8 / U COAXIAL CABLE, 11 AWG COPPER STRANDED EXTERIOR RATED	BELDEN 8214
11	1	50 OHM , "N", MALE, SOLDER TYPE CONNECTOR, UG-21B/U	EMERSON NETWORK POWER 26-8000
12	1	UHF, PL-259, WEATHERPROOF BOOT	CUSH CRAFT 050115

CITY OF ORLANDO

SCALE: N.T.S.
DESIGN: IAG
DRAWN BY: JG
APPROVED BY: GM

NO	REVISION	DATE	BY
1	REVISED TOWER HEIGHT REQUIREMENT	02-20-2012	JG
2	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG
3	REVISED DETAILS ANTENNA-CABLE COMPONENTS	02-20-2013	JG
4	REVISED TITLE SHEET NUMBER	09-06-2013	JG
5	ADDED SERVICE HEAD AND CONDUIT TO ANT. CABLE	10-21-2015	JG

WATER RECLAMATION DIVISION,
INDUSTRIAL AUTOMATION GROUP
CITY OF
ORLANDO, FLORIDA

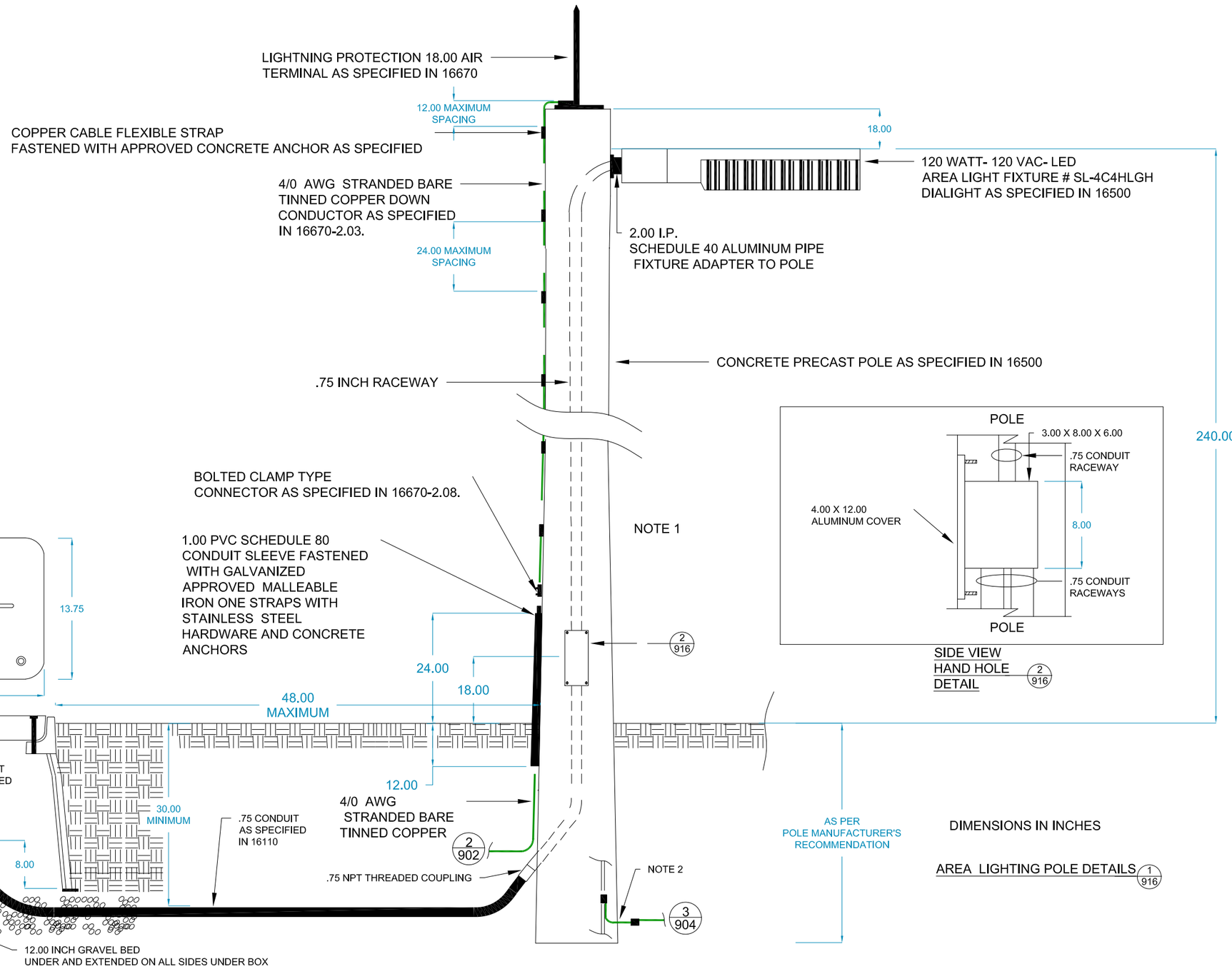
TITLE:
RTU ANTENNA INSTALLATION DETAILS

SHEET
915A

NOTE:

1. LIGHT POLE INSTALLATION SHALL MEET FLORIDA BUILDING CODE WIND LOAD REQUIREMENT WITH THE APPROPRIATE WIND GUST FACTOR FOR THE LOCATION OF INSTALLATION. THE CONTRACTOR SHALL INCLUDE WITH THE SHOP DRAWING SUBMITTAL, A WIND LOADING CALCULATION SIGNED AND SEALED BY A STRUCTURAL ENGINEER, REGISTERED WITH THE STATE OF FLORIDA, SHOWING THAT THE PROPOSED LIGHT POLE AND INSTALLATIONS WILL MEET THE GIVEN WIND LOAD REQUIREMENTS.

2. POLE MANUFACTURER SHALL PROVIDE A 72.00 4/0 AWG STRANDED BARE TINNED COPPER GROUNDING CONDUCTOR, AT BASE OF POLE, WHICH WILL BE CONNECTED TO SECTION OF THE REBAR BY AN EXOTHERMIC CONNECTION INSIDE THE POLE.



CITY OF ORLANDO

SCALE:	N.T.S.
DESIGN:	IAG
DRAWN BY:	JG
APPROVED BY:	WW

NO	REVISION	DATE	BY
-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG
-	REMOVED PHOTOCELL OPTION FROM AREA LIGHT	04-10-2015	JG

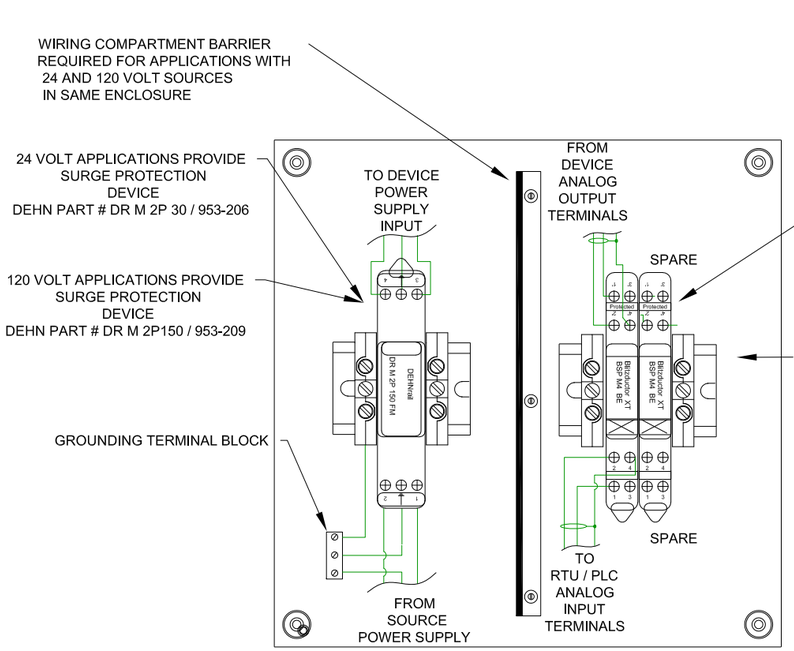
WATER RECLAMATION DIVISION,
INDUSTRIAL AUTOMATION GROUP

CITY OF
ORLANDO, FLORIDA

TITLE:

AREA LIGHTING POLE DETAILS

SHEET
916

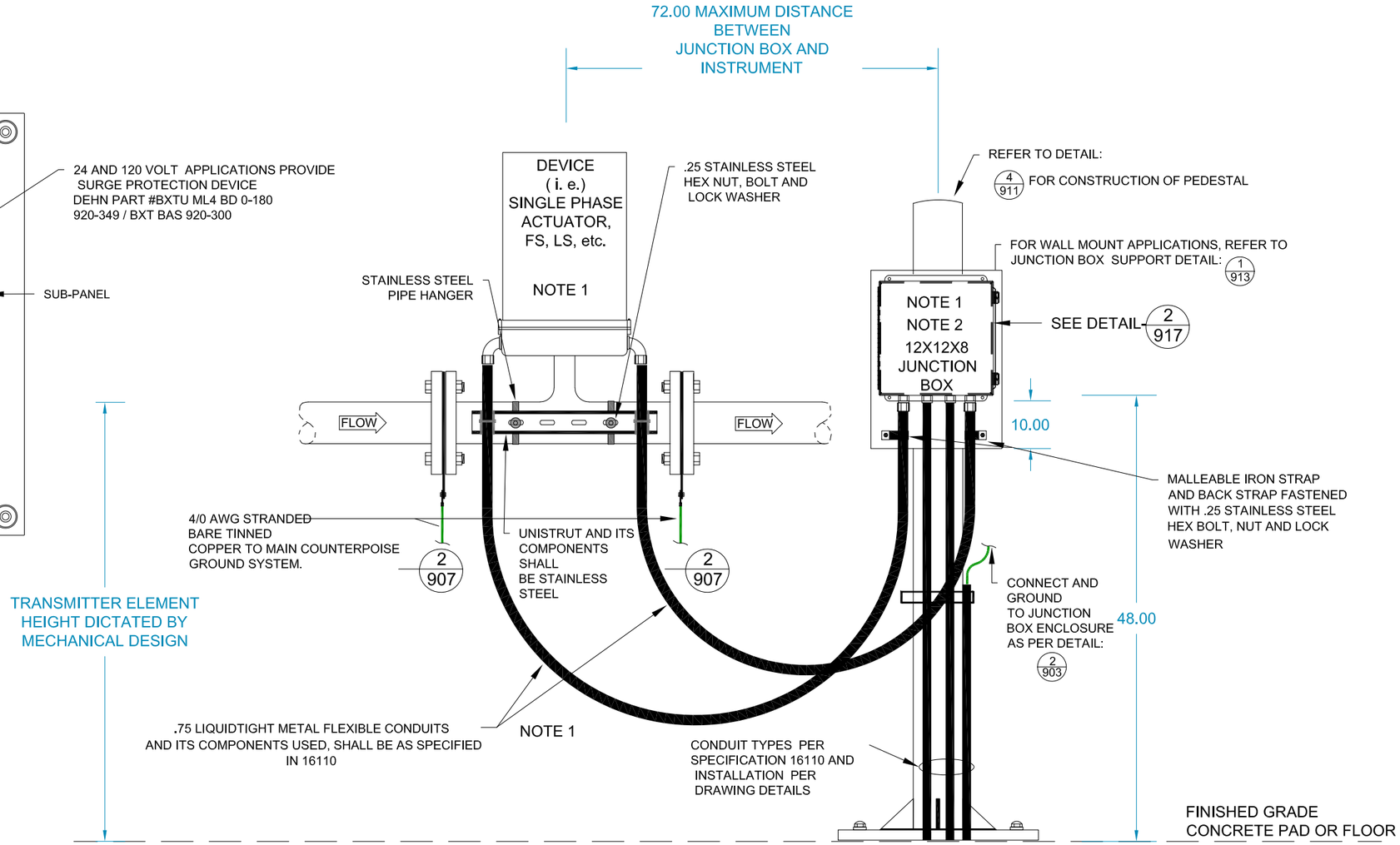


JUNCTION BOX INTERIOR VIEW
NOT TO SCALE
2/917

NOTES:

1. INSTALLATION CONFIGURATION OF LIQUIDTIGHT METAL FLEXIBLE CONDUITS AND POWER REQUIREMENTS ARE NOT SPECIFIC TO ALL MANUFACTURES SPECIFIED. CONTRACTOR SHALL RECONFIGURE LIQUIDTIGHT FLEXIBLE METAL CONDUITS AND POWER REQUIREMENTS TO MANUFACTURER'S RECOMMENDED INSTALLATION METHODS AS NEEDED.

2. JUNCTION BOX SHALL BE NEMA 4X - 316 L STAINLESS STEEL CONSTRUCTION WITH INTERIOR SUB PANEL AND COMPLY WITH SPECIFICATION 16050.



DIMENSIONS IN INCHES

DEVICE POWER AND / OR SIGNAL INSTALLATION DETAILS 1/917
NOT TO SCALE

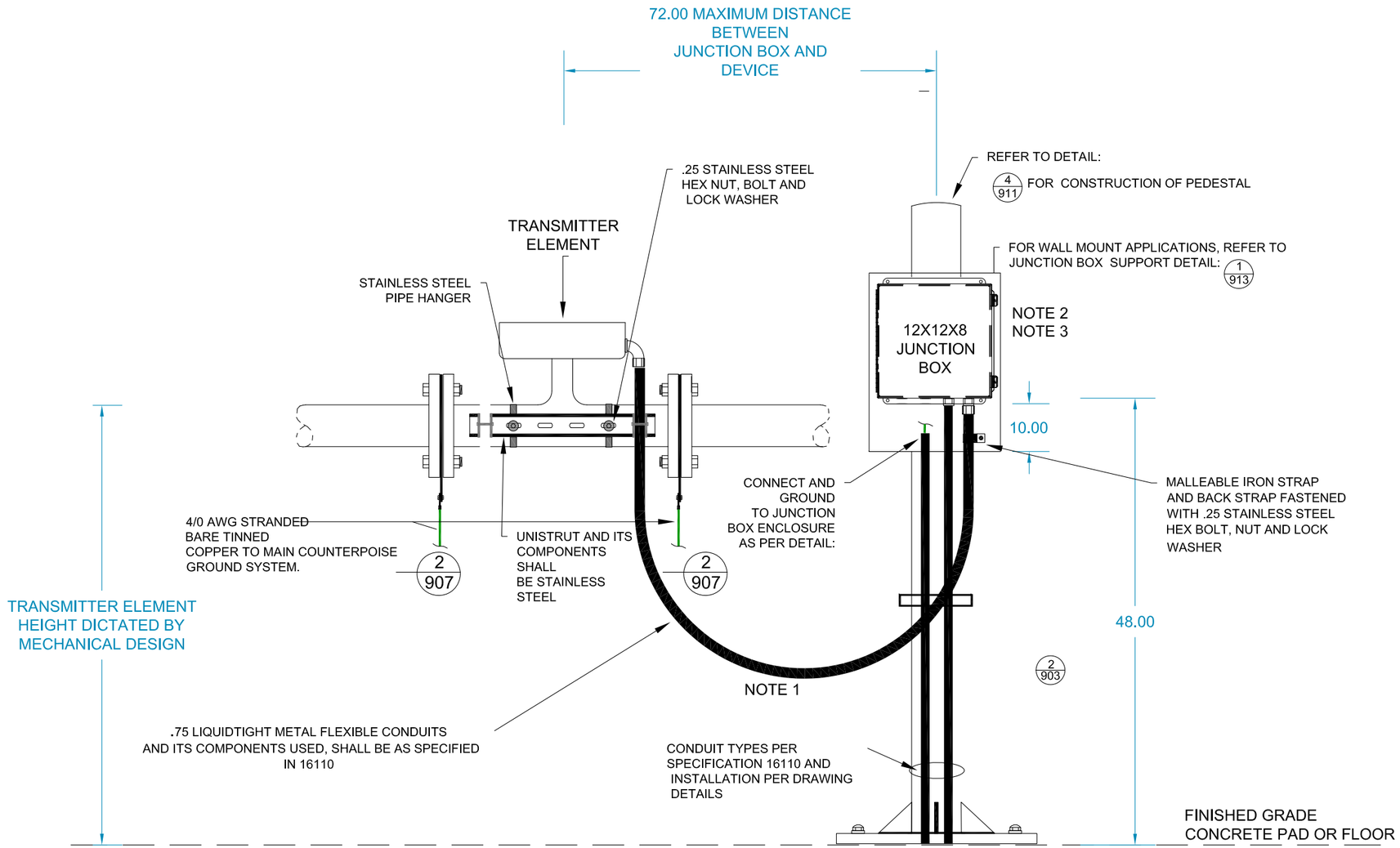
CITY OF ORLANDO

SCALE: N.T.S.	-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG
DESIGN: IAG	-	UPDATE SPD ORDERING DATA	11-17-2020	JG
DRAWN BY: JG				
APPROVED BY: WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,
INDUSTRIAL AUTOMATION GROUP
CITY OF
ORLANDO, FLORIDA

TITLE: DEVICE POWER AND / OR SIGNAL INSTALLATION DETAILS

SHEET 917



NOTES:

1. INSTALLATION CONFIGURATION OF LIQUIDTIGHT METAL FLEXIBLE CONDUITS AND POWER REQUIREMENTS ARE NOT SPECIFIC TO ALL MANUFACTURER'S SPECIFIED. CONTRACTOR SHALL RECONFIGURE LIQUIDTIGHT FLEXIBLE METAL CONDUITS AND PROVIDE POWER REQUIREMENTS TO MANUFACTURER'S ELEMENT AS RECOMMENDED . .

2. TRANSMITTER ELEMENT CABLE SHALL BE MANUFACTURER'S SPECIFIED, INSTALL CABLE CONTINUOUSLY WITH NO SPLICES FROM TRANSMITTER TO ELEMENT. PROVIDE A 36.00 INCH CABLE SERVICE LOOP IN JUNCTION BOX BEFORE INSTALLING CABLE TO ELEMENT.

3. JUNCTION BOX SHALL BE NEMA 4X - 316 L STAINLESS STEEL CONSTRUCTION WITH INTERIOR SUB PANEL AND COMPLY WITH SPECIFICATION 16050.

DIMENSIONS IN INCHES

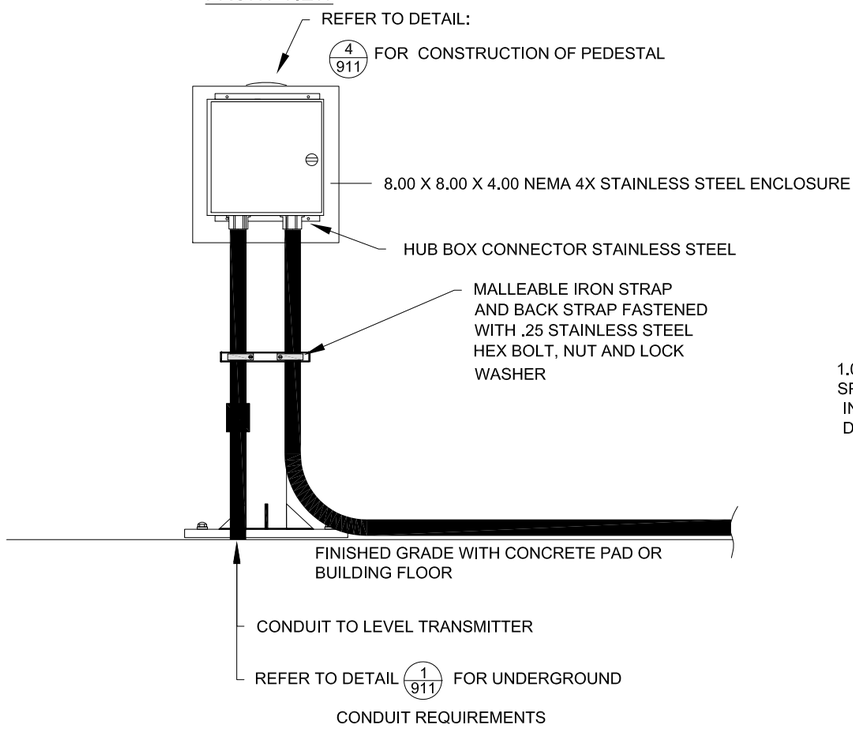
TRANSMITTER ELEMENT INSTALLATION DETAILS 1/918

NOT TO SCALE

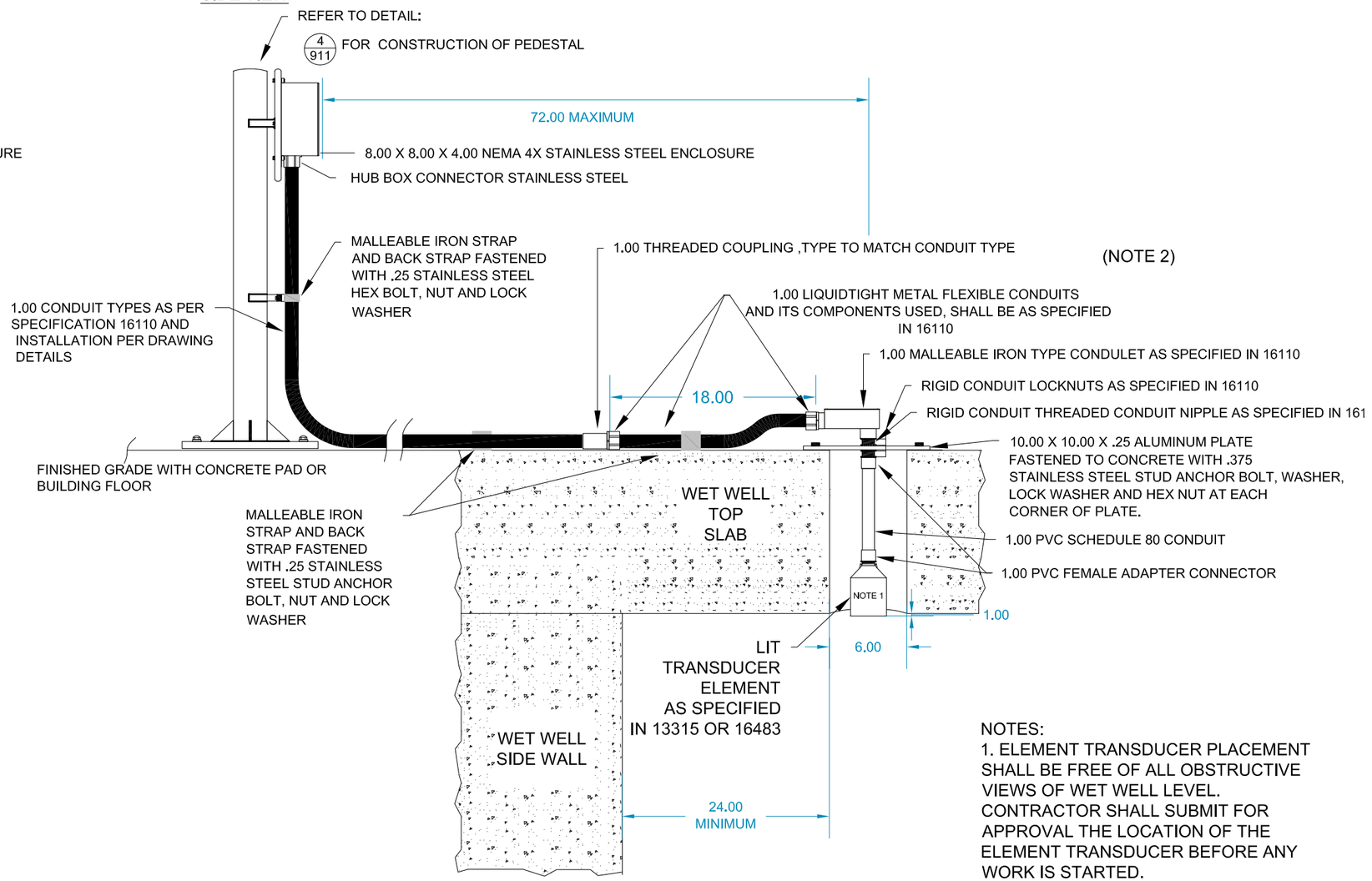
CITY OF ORLANDO

SCALE: N.T.S.	-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG	WATER RECLAMATION DIVISION, INDUSTRIAL AUTOMATION GROUP
DESIGN: IAG					CITY OF ORLANDO, FLORIDA
DRAWN BY: JG					TITLE: TRANSMITTER ELEMENT INSTALLATION DETAILS
APPROVED BY: WW	NO	REVISION	DATE	BY	SHEET 918

PEDESTAL FRONT VIEW



PEDESTAL SIDE VIEW



NOTES:
1. ELEMENT TRANSDUCER PLACEMENT SHALL BE FREE OF ALL OBSTRUCTIVE VIEWS OF WET WELL LEVEL. CONTRACTOR SHALL SUBMIT FOR APPROVAL THE LOCATION OF THE ELEMENT TRANSDUCER BEFORE ANY WORK IS STARTED.

2. APPLY APPROVED ANTI SEIZE COMPOUND ON ALL CONDUIT THREADS BEFORE JOINING .ANTI SEIZE COMPOUND SHALL BE AS SPECIFIED IN 16110

DIMENSIONS IN INCHES

WET WELL LEVEL TRANSMITTER ELEMENT INSTALLATION DETAILS 1/919
NOT TO SCALE

CITY OF ORLANDO

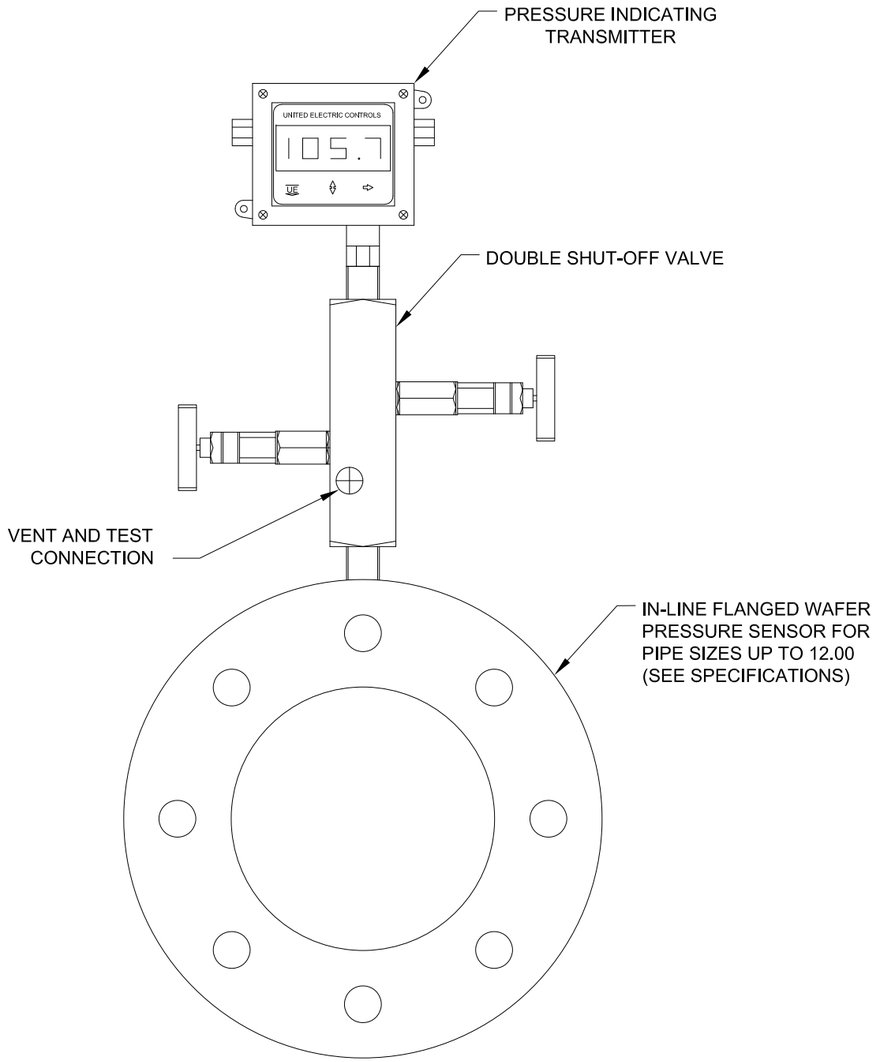
SCALE: N.T.S.
DESIGN: IAG
DRAWN BY: JG
APPROVED BY: WW

NO	REVISION	DATE	BY
-	CONDULET CONSTRUCTION REVISED FROM ALUM. TO IRON	02-20-2012	JG
-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG

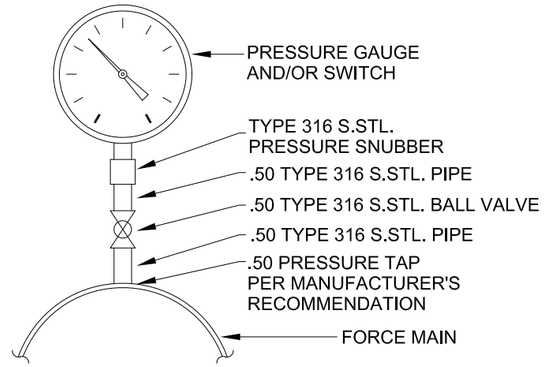
WATER RECLAMATION DIVISION,
INDUSTRIAL AUTOMATION GROUP
CITY OF
ORLANDO, FLORIDA

TITLE:
WET WELL
"LIT" ELEMENTS INSTALLATION DETAILS

SHEET
919



ISO-SPOOL PRESSURE INDICATING TRANSMITTER INSTALLATION 1/920



HOT TAP PRESSURE GAUGE MOUNT 2/920

DIMENSIONS IN INCHES

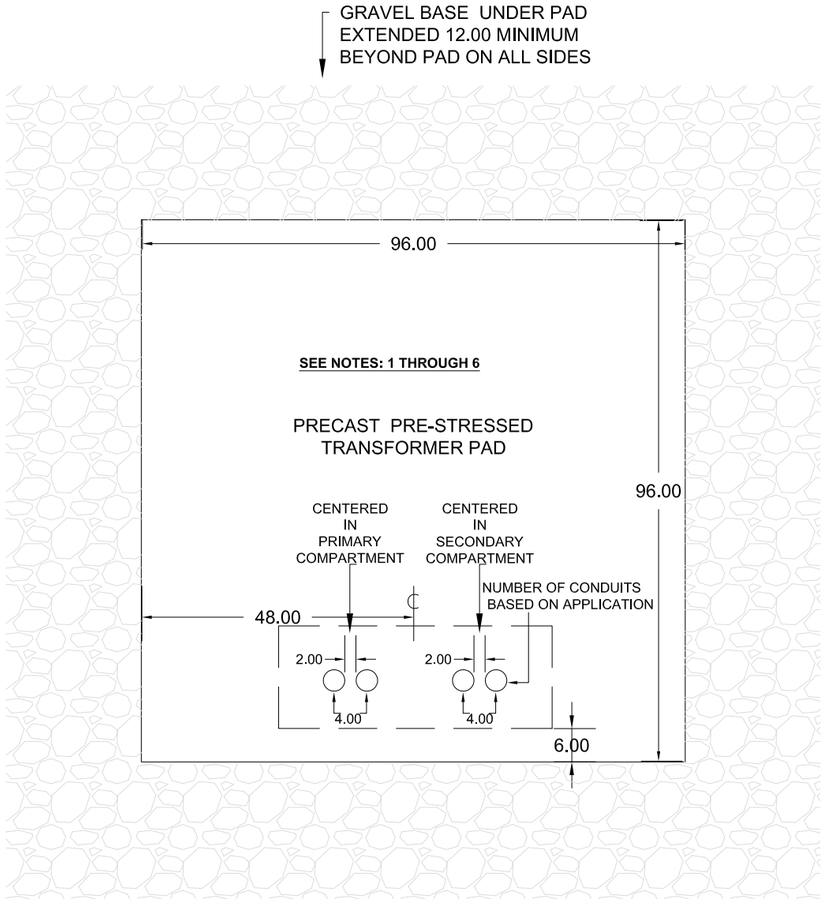
CITY OF ORLANDO

SCALE: N.T.S.	-	REVISED TITLE AND DETAILS FOR GENERIC PURPOSE	12-21-2012	JG	WATER RECLAMATION DIVISION, INDUSTRIAL AUTOMATION GROUP CITY OF ORLANDO, FLORIDA
DESIGN: IAG					
DRAWN BY: JG					
APPROVED BY: WW	NO	REVISION	DATE	BY	

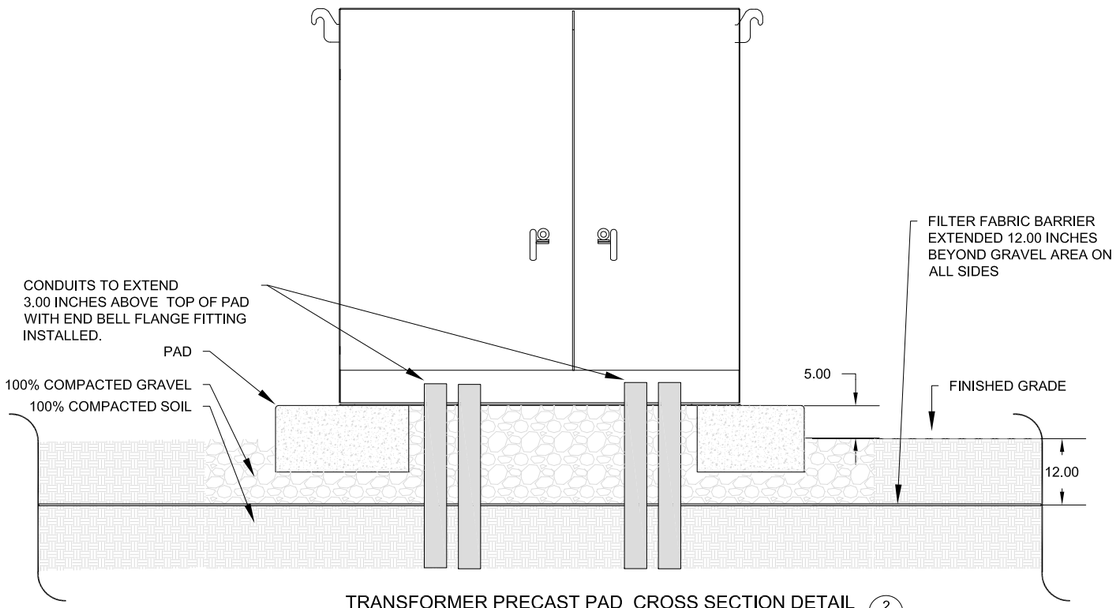
TITLE: INSTRUMENTATION DETAILS PART 1

SHEET 920

NOTES:
1. ALL DIMENSIONS IN INCHES
2. CONCRETE PRECAST PAD THICKNESS SHALL BE 10 INCHES MINIMUM WITH A DESIGN STRENGTH OF 4500 PSI AT 28 DAYS, STEEL REINFORCEMENT TO MEET ASTM A-615 60 REBAR / ASTM A 185 GRADE 65 WELDED WIRE FABRIC, DESIGNED FOR HS-20 LOADING. EMBEDDED LIFTERS AND PULLING IRONS SHALL BE SUPPLIED.
3. EDGE OF CONCRETE PAD SHALL HAVE A 1 INCH BEVEL FORMED INTO THE TOP EDGE .
4. RECTANGULAR WINDOWS SHALL BE SIZED FOR TRANSFORMER COMPARTMENTS BASED ON SPECIFIC TRANSFORMER SUPPLIED.
5. PROVIDE 2 ACCESS REBAR GROUNDING PROVISIONS TO ATTACH GROUNDING COUNTERPOISE SYSTEM AT 2 OPPOSITE CORNER POSITIONS. GROUNDING ACCESS POINT SHALL BE CAPABLE ACCEPTING 4/0 BARE TINNED STRANDED COPPER COUNTERPOISE CONDUCTOR VIA EXOTHERMIC CONNECTION AS ILLUSTRATED IN DETAIL 4 ON DRAWING 904.



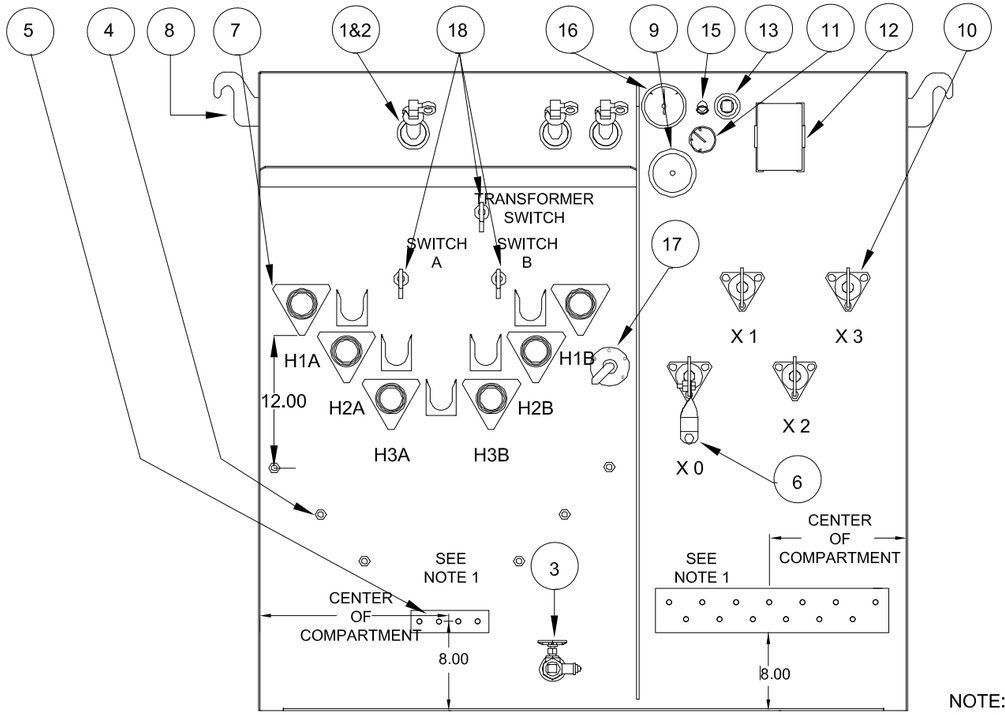
TRANSFORMER PRECAST PAD OVERVIEW DETAIL 1/921
NOT TO SCALE



TRANSFORMER PRECAST PAD CROSS SECTION DETAIL 2/921
NOT TO SCALE

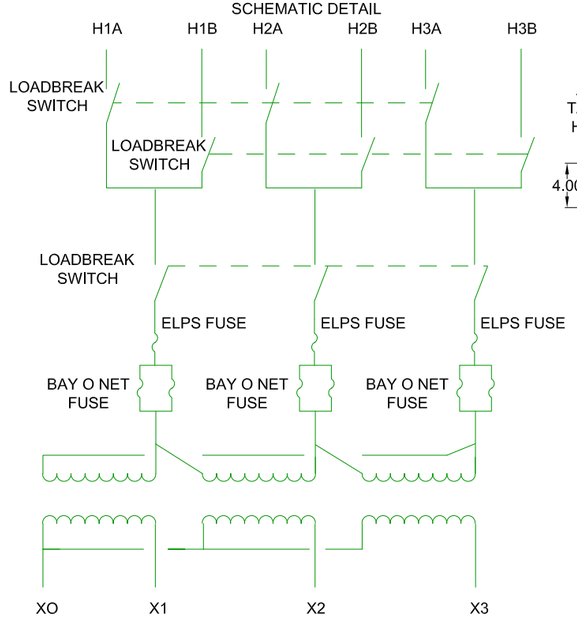
CITY OF ORLANDO

SCALE: N.T.S.	-	-	02-05-2013	JG	WATER RECLAMATION DIVISION, INDUSTRIAL AUTOMATION GROUP
DESIGN: IAG					CITY OF ORLANDO, FLORIDA
DRAWN BY: JG					TITLE: TRANSFORMER PAD INSTALLATION DETAILS
APPROVED BY: WW	NO	REVISION	DATE	BY	SHEET 921

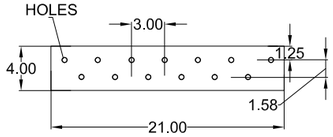


NOTE:
ALL DIMENSIONS IN INCHES

TRANSFORMER SCHEMATIC DETAIL

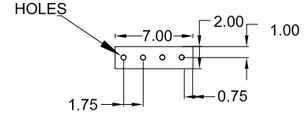


SECONDARY WELDED GROUNDING PAD DETAIL



NOTE:
ALL DIMENSIONS IN INCHES

PRIMARY WELDED GROUNDING PAD DETAIL



ITEM	DESCRIPTION
1	BAYONET FUSING WITH DRIP SHIELD
2	CURRENT LIMITING FUSING (INTERNAL)
3	DRAIN VALVE WITH SAMPLER
4	WELDED GROUND NUT .50-13 TAP
5	WELDED GROUND PAD (AS PER DETAIL)
6	GROUND STRAP AND NUT
7	HIGH VOLTAGE 200 AMP BUSHING WELL AND INSERT
8	LIFTING LUGS
9	LIQUID TEMPERATURE GAUGE
10	LOW VOLTAGE BUSHING WITH MULTI HOLE SPADE BASED ON TRANSFORMER SIZE (REFER TO CHART BELOW)
11	MAGNETIC OIL LEVEL GAUGE
12	NAMEPLATE
13	1- INCH UPPER PRESSURE CONNECTOR AND FILL PLUG
14	PARKING STAND BRACKET
15	PRESSURE RELIEF VALVE
16	PRESSURE / VACUUM GAUGE
17	TAP CHANGER
18	TWO POSITION LOADBREAK SWITCH
19	SERVICE POST CONNECT (SP6DS T & B PRODUCT OR EQUAL)
20	LONG BARREL SINGLE HOLE CONNECTOR (CTL-40L-12 T & B OR EQUAL)

TRANSFORMER SECONDARY MULTI-HOLE SPADE SCHEDULE	
TRANSFORMER SIZE	REQUIRED LOW VOLTAGE SPADE HOLE CONFIGURATION
300KVA	4 HOLES
500KVA	4 HOLES
750KVA	6 HOLES
1000KVA	8 HOLES
1500KVA	10 HOLES
2000KVA	10 HOLES
2500KVA	12 HOLES
3000KVA	12 HOLES

CITY OF ORLANDO

SCALE: N.T.S.
DESIGN: IAG
DRAWN BY: JG
APPROVED BY: WW

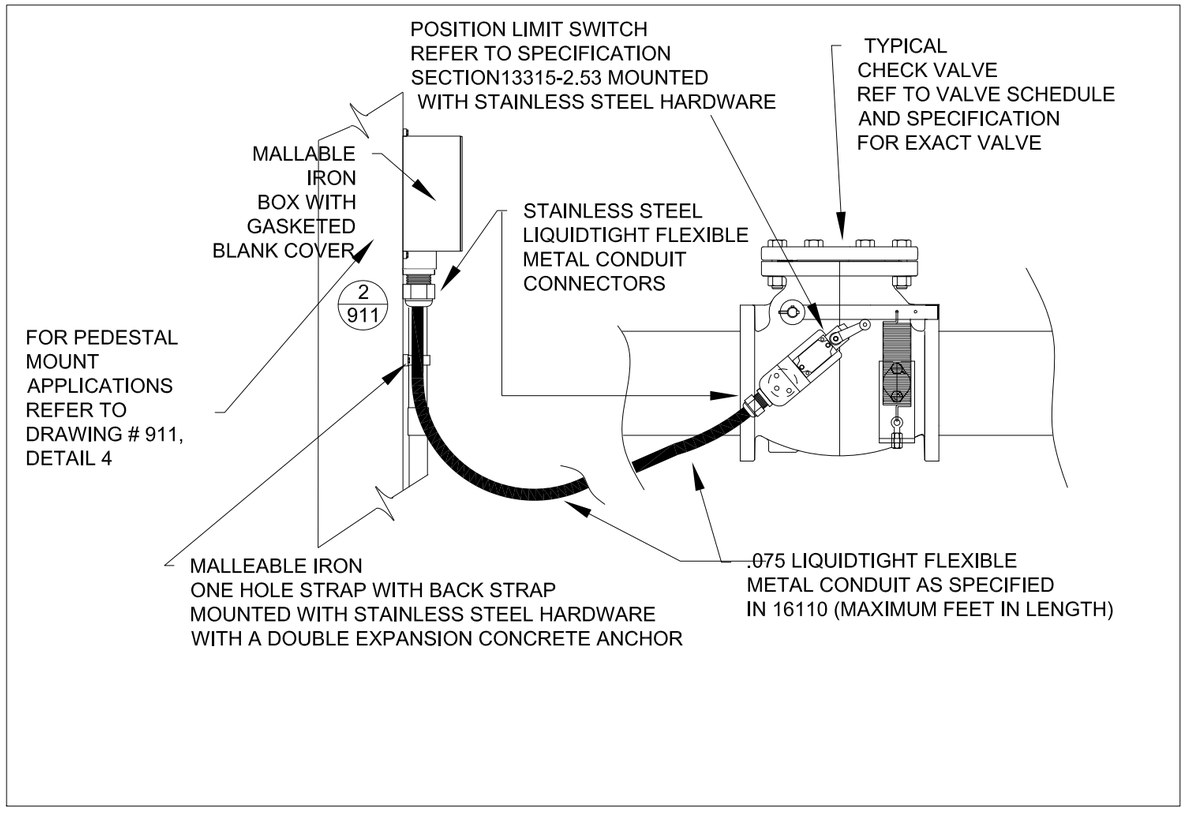
NO	REVISION	DATE	BY
-	-	02-05-2013	JG

WATER RECLAMATION DIVISION,
INDUSTRIAL AUTOMATION GROUP

CITY OF
ORLANDO, FLORIDA

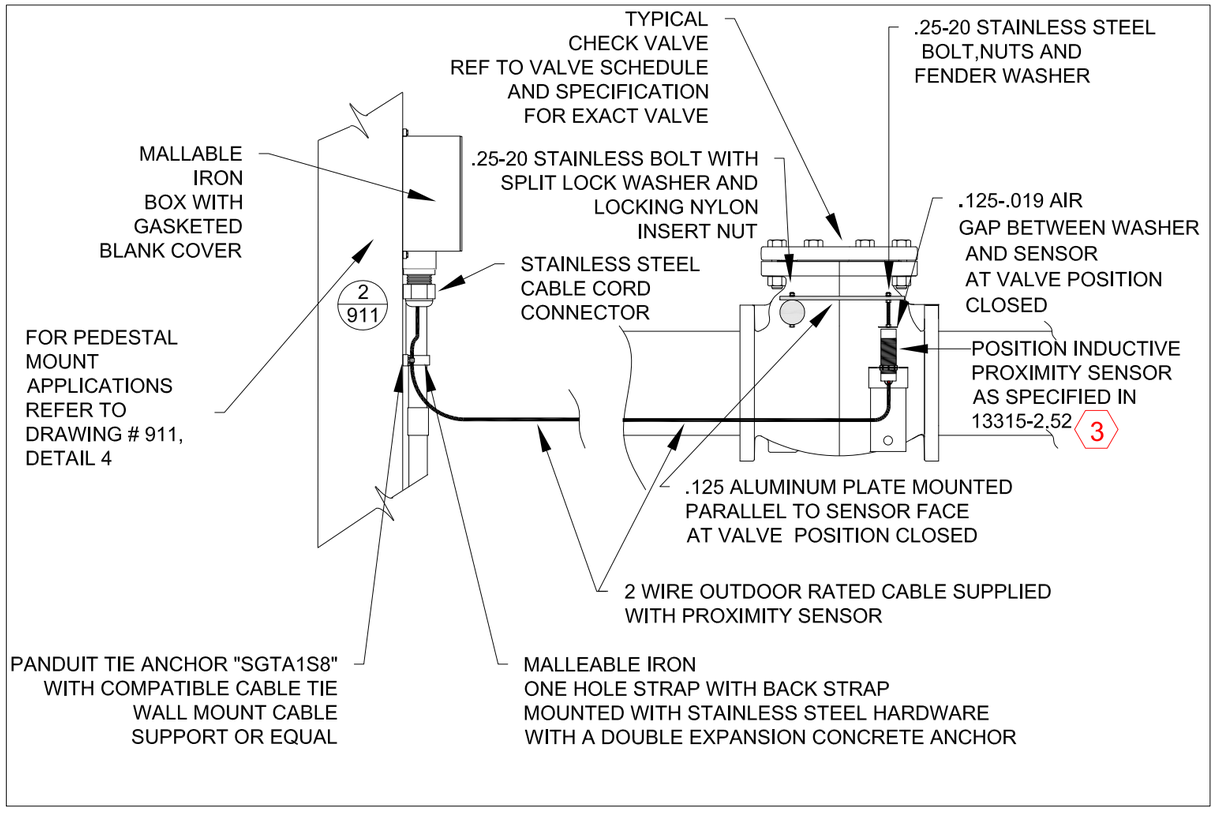
TITLE:
PAD MOUNT TRANSFORMER COMPONENTS DETAILS

SHEET
922



PUMP DISAGREE POSITION LIMIT SWITCH DETAIL 1/923

NOT TO SCALE



PUMP DISAGREE POSITION PROXIMITY SWITCH DETAIL 2/923

NOT TO SCALE

3 * DETAIL1 NOT TO BE USED FOR LIFT STATIONS*

CITY OF ORLANDO

SCALE: N.T.S.
DESIGN: IAG
DRAWN BY: JG
APPROVED BY: WW

NO	REVISION	DATE	BY
-	PROXIMITY SWITCH DETAIL	02-11-2013	JG
1	REVISED DETAIL SPEC AND NOTE ADDED	02-07-2018	JG

WATER RECLAMATION DIVISION,
INDUSTRIAL AUTOMATION GROUP

CITY OF
ORLANDO, FLORIDA

TITLE:
PUMP DISAGREE SWITCH
INSTALLATION DETAILS

SHEET
923

APPENDIX “B”

GEOTECHNICAL REPORT

Geotechnical Engineering Report
Conserv II Water Reclamation Facility
Equalization Pump Station Improvements
City of Orlando, Florida
Orange County, Florida
NADIC Project No.: PR.GEO-CV23044

Prepared for:

Hazen and Sawyer
2420 Lakemont Avenue, Suite 325
Orlando, FL 32814

Prepared by:

Nadic Engineering Services, Inc.
601 N. Hart Blvd
Orlando, Florida 32818
407-521-4771

NADIC
ENGINEERING

July 24, 2024

Hazen and Sawyer
2420 Lakemont Avenue, Suite 325
Orlando, Florida 32814

Attention: Mr. Kenny Blanton, P.E.
Senior Associate

Re: Geotechnical Engineering Report
Conserv II Water Reclamation Facility Equalization Pump Station Improvements
City of Orlando
Orange County, Florida
NADIC Project No. PR.GEO-CV23044

Dear Mr. Blanton:

Nadic Engineering Services, Inc. (NADIC) pleased is to submit this subsurface exploration and geotechnical engineering report for the proposed improvements at the Conserv II Water Reclamation Facility (WRF), located at 5420 L B McLeod Road, Orlando, Florida.

This report presents the findings of our field exploration methods and our recommendations to support the preparation of engineering design plans and technical specifications, as well as construction support services for the proposed Conserv II WRF improvements. This evaluation was authorized through a subconsultant agreement between Hazen and Sawyer and **NADIC** dated March 18th, 2024.

NADIC appreciates the opportunity to be of service to Hazen and Sawyer and City of Orlando in connection with the Conserv II WRF Improvements in Orlando, Florida. We look forward to a continued association. Please contact us if you have any questions, or if we may be of further assistance to you as this project proceeds.

Sincerely,

NADIC ENGINEERING SERVICES, INC.
Engineering Business No. 8214

Maria Bridges, M.S., E.I.
Staff Engineer

Godwin N. Nnadi, Ph.D., P.E.
Principal Engineer
FL Registration No: 50637

New Z Drive\...\Civil (CV)\2023\PR.GEO-CV23044 - Conserv II WRF EQ Pump Station\Project Working File\Report

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APPENDICES

Appendix A

Appendix B

Appendix C

1.0 EXECUTIVE SUMMARY

Nadic Engineering Services, Inc. (NADIC) was retained by Hazen and Sawyer to conduct geotechnical engineering investigation for the proposed improvements at the Conserv II WRF in accordance with the City of Orlando requirements and guidelines. The purpose of the exploration was to explore subsurface conditions and groundwater conditions in order to provide recommendations for the proposed Electrical Building and driveway expansion.

To accomplish the investigation, the following procedures were carried out:

- Visited site to evaluate existing conditions.
- Completed two (2) Standard Penetration Test (SPT) borings to a depth of 30 feet below existing grade.
- Completed two (2) auger borings to depths ranging from 6 to 8 feet below grade.
- Measured existing groundwater table.
- Performed engineering evaluation based on the results of the field exploration.

The investigation focused on the evaluation of the subsurface conditions at the location of the proposed establishments in order to evaluate geotechnical foundation alternatives and site preparation requirements for construction. Based on the results of the exploration, **NADIC** concluded the following:

- Excavation cut for utilities should be a supported vertical cut due to space limitation, where restrictions do not permit excavation to be appropriately sloped.
- Use a maximum allowable bearing pressure of 2,000 pounds per square foot (psf) for footing bearing on top and laterally against the natural soils.
- Use an unfactored coefficient of subgrade reaction of 130 pounds per cubic inch (lb/in3).
- Due to the shallow groundwater level, at the time of construction, some forms of dewatering may be required to achieve the necessary compaction.
- Organic silty sand and muck were encountered in Borings AB-2 and SPT-2 at elevations ranging from about +92.5 feet and +88.0 feet National American Vertical Datum of 1988 (NAVD-88). These areas and any areas of soft yielding or unsuitable materials encountered at the site shall be excavated and replaced with clean sands compacted in accordance with the City of Orlando Engineering Standards Manual.
- Site preparations, excavations, structural filling and backfilling should be in accordance with the City of Orlando Engineering Standards Manual.
- A representative number of in-place field density tests should be performed in each lift of structural fill to ensure the required degree of compaction has been achieved.

The following report presents the results, conclusions, and recommendations resulting from the geotechnical exploration at this site.

2.0 PROJECT LOCATION AND DESCRIPTION

We understand that the City of Orlando plans to improve the existing Conserv II WRF Equalization (EQ) Pump Station located at 5420 L B McLeod Road, Orlando, Florida. We further understand that the current EQ is an existing 25 million gallons per day (MGD) annual average daily flow (AADF) established in 2012 when the master pump station was built. The EQ PS is well beyond its useful life and is obsolete. The existing pumps and associated electrical components do not provide reliable service and require significant maintenance.

We understand the Conserv II WRF project consists among other project elements preparation of design plans and construction bid documents for the following structures:

1. New Electrical building
2. Expansion of the existing driveway

The proposed improvement is generally located within Section 7, Township 23 South, and Range 29 East in Orlando West, Florida. A Vicinity map showing the approximate location of the proposed improvements is shown on **Figure 1** in **Appendix A**.

Project site historical aerials from the Florida Department of Transportation (FDOT) APLUS website and Google Earth Pro were reviewed. The 1969 aerial photographs show some of the facilities of Conserv II had been constructed and the rest of the site generally covered with grass and trees. Construction and expansion of the water treatment facility continued throughout the years, and by year 2015 the EQ Tank had been constructed. Selected Historical Aerial Photographs of the project site are presented in **Appendix A**.

This report presents the findings of our subsurface exploration program, an evaluation of the soil and groundwater encountered, and provides recommendations to support the design and construction of the new Electrical Building and driveway expansion. The dimension and loading conditions of the structure as provided by Hazen and Sawyer are presented below:

Table 1:
Electrical Building Dimension and Loading Conditions

Element	Footprint Dimension (feet)	Depth of Foundation (feet)	Maximum Load
Slab	28.1 x 45.3	0.5	450 psf
North & South Walls	1.3 x 30.7	1.5	1300 plf
East & West Walls	1.3 x 45.3	1.5	3606 plf

psf: pounds per square foot
plf: pounds per linear foot

The recommendations presented in this report are based on the above information. This exploration was performed in accordance with generally accepted soil and foundation engineering practices. No other warranty expressed or implied, is made.

3.0 PURPOSE AND SCOPE OF SERVICES

The purpose of this study was to obtain information on the general subsurface conditions including soil and groundwater conditions in order to provide recommendations relative to the proposed improvements at Conserv II WRF. Our approach is in general accordance with the Florida Department of Transportation (FDOT), "Soils and Foundation Manual" and the City of Orlando Engineering Standards Manual.

The following services were provided in order to achieve the preceding objectives:

1. Performed site reconnaissance to evaluate existing conditions and drilling accessibility.

2. Performed two (2) auger borings to depths ranging from 6 to 8 feet below existing grade within the footprint of the proposed driveway expansion.

3. Performed two (2) Standard Penetration Test (SPT) borings to a depth of 30 feet below existing grade within the footprint of the proposed Electrical Building.

4. Measured encountered groundwater table in the borings and estimated normal wet seasonal high groundwater table depths.

5. Visually classified and stratified representative soil samples as per ASTM D-3282 and D-2487.

6. Prepared this formal engineering report summarizing the field exploration, laboratory tests, engineering analyses, evaluation and recommendations.

4.0 REVIEW OF AVAILABLE PUBLISHED DATA

4.1 General

To obtain general information on soil and ground water conditions at the project site, **NADIC** reviewed data including aerial maps, United States Geological Survey (USGS), Quadrangle Topographic Maps, and the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Soil Survey for Orange County, Florida. A summary of this information is presented below in the following report section. A map of the site location is shown on **Figure 1** in **Appendix A**.

4.2 USGS Topographic Map

The "Orlando West, Florida" USGS Topographic Map issued in 2021 was reviewed. The map shows the ground surface elevation in the project vicinity of about +95 feet, North American Vertical Datum of 1988 (NAVD-88). The project site is shown on an excerpt of the USGS topographic map presented on **Figure 2** in **Appendix A**.

4.3 USDA/NRCS Soil Survey

The "Soil Survey of Orange County, Florida" published by the United States Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS) was reviewed for general near-surface soil information within the general project vicinity. More specifically, the following table describes the primary mapping units within the vicinity of the proposed construction. A reproduction of the USDA/NRCS map for the project is presented on **Figure 3** in **Appendix A.**

Table 2:
USDA/NRCS Soil Survey Summary

Soil Unit	Depth (in)	Soil Description	USCS[1]	AASTHO[2]	USDA SHGWT[3] (ft)	Risk of Corrosion	
						Uncoated Steel	Concrete
Samsula	0-34	Muck	PT	A-8	0-1.0	High	High
	34-80	Sand, fine sand, loamy sand	SP-SM, SM, SP	A-3, A-2-4			
Hontoon	0-80	Muck	PT	A-8			
Basinger (41)	0-6	Fine sand	SP	A-3			Moderate
	6-25	Sand, fine sand	SP, SP-SM	A-3, A-2-4			
	25-35	Sand, fine sand	SP, SP-SM	A-3, A-2-4			
	35-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4			

[1]USCS: Unified Soil Classification System
[2]AASHTO: American Association of State Highway and Transportation Officials
[3]SHGWT: Seasonal High Groundwater Table

The soils classified as A-3 and A-2-4 are appropriate for use as backfill; however, non-select soils, muck, clays or debris, if encountered within the limits, must be removed and replaced with select soils in accordance with FDOT Standard Specifications and Index Nos. 120-002 and 120-001.

Information contained in the NRCS Soil Survey is very general and may be outdated due to recent development in the site vicinity. Therefore, it may not reflect the actual soil and groundwater conditions, particularly where developments may have modified soil conditions or surface and near surface drainage.

4.4 Potentiometric Surface Map

Based on review of data provided by the Florida Department of Environmental Protection, Florida Geological Survey titled “Upper Floridian Aquifer Potentiometric Surface, Florida, 2021”, the elevation of the potentiometric surface in the vicinity of the project alignment appears to range from about +60 feet to +70 feet, North American Vertical Datum of 1988 (NAVD-88).

4.5 Generalized Geology

The geology of the Central Florida area is characterized by sedimentary strata formed during three distinct geologic periods. The surficial stratum is composed of undifferentiated Holocene/Pleistocene/Pliocene age sands containing varying amounts of silt and clay, which extend typically to depths on the order of 40 feet to 60 feet below the ground surface. This upper, mostly sandy zone contains the surficial aquifer (water table). A Miocene age deposit, the Hawthorn Formation, frequently underlies the surficial sands and is typically composed of clay, clayey sands and sandy limestone sometimes containing appreciable amounts of phosphate. This stratum extends to typical depths of 80 to 120 feet beneath the existing ground surface and serves as the confining layer for the underlying Floridian Aquifer.

The Eocene age Ocala and Avon Park limestone formations are contained in the Floridian Aquifer, which is one of the most productive aquifers in the world. The extremely high productivity of this aquifer is directly related to its numerous cavities and interconnected channels. The deepest formation of the Eocene age is the Avon Park limestone. The Avon Park limestone consists mostly of hard brown dolostone and tan, granular limestone. Above the Avon Park limestone is the Ocala limestone. The Ocala limestone is a loose to moderate well cemented mass of very small to large microfossils with much less dolostone than the Avon Park limestone. Typically, the Ocala limestone contains almost pure limestone with no dolostone, although the lower few feet can be partly dolomitized in some areas.

5.0 FIELD EXPLORATION PROGRAM AND METHOD

5.1 Field Exploration Program

To evaluate the subsurface and surface conditions at the proposed construction location; property access, boring locations and utility location was coordinated through Hazen and Sawyer. The subsurface condition at the project site was evaluated by performing two (2) auger borings of 6 feet and 8 feet deep, and two (2) SPT borings to a depth of 30 feet below existing grade within the footprint of the proposed improvements.

The borings were located in the field by **NADIC** based on information provided to us by Hazen and Sawyer. The borings were staked in the field by a representative of **NADIC** with the aid of Garmin GPSMAP64st Global Positioning System (GPS) device and coordinates obtained from Google Earth Pro. Although the locations are given only approximately, the methods used to locate them are, in **NADIC**'s opinion, sufficient to meet the intent of our study.

Upon completion of groundwater level measurement, borings were backfilled with nature soils for safety. The results of the exploration program are presented on **Sheets 1** through **3** in **Appendix B**.

5.2 Field Exploration Methods

5.2.1 Auger Borings

The auger borings were performed to depths ranging from six (6) feet to eight (8) feet below the existing grade by advancing a 4-inch diameter rotating flight auger slowly into the ground in a "corkscrew" fashion. These borings were performed in general accordance with the ASTM test designation D-1452. The flight auger is then retrieved without any rotation and a representative sample is obtained. The soil samples were described in the field with representative portions of the samples placed in airtight bags and transported to our laboratory for further visual classification and testing. After performing the auger borings, groundwater levels, if any, were recorded at the open boreholes.

5.2.2 Standard Penetration Test (SPT) Borings

The SPT borings performed at the proposed project site were conducted in general conformance with American Society for Testing and Materials (ASTM) test designation D-1586. The borings were advanced by the rotary wash method with bentonite based mud as the circulating fluid to stabilize the borehole. Borings were performed continuously from the ground surface to 10 feet and at 5-foot depth intervals thereafter. After seating the sampler six inches, the number of successive blows required to drive the sampler 12 inches into the soil constitutes the test result commonly referred to as the “N” value. Adjacent to the SPT boring profiles are the “N” values. The “N” value has been empirically correlated with various soil properties and is considered indicative of the relative density of cohesionless soils and the consistency of cohesive soils.

All recovered samples were described in the field by the driller and reviewed therein by a senior geotechnical field technician. Representative portions of the samples placed in airtight bags and transported to our office for visual classification by an engineer. Following completion and groundwater measurements, the SPT borings were backfilled for safety.

6.0 GENERALIZED SUBSURFACE CONDITIONS

The results of the field exploration and laboratory testing programs are presented on **Sheets 1** through **3** in **Appendix B**. The profiles include observed soil strata, groundwater levels, and the SPT 'N'-values. The SPT borings were backfilled upon completion of the drilling operation for safety.

Stratification lines… represent the approximate boundaries between soil types... actual transition between soils may be gradual.

The soil classification and stratification shown on the report of SPT Borings are based on visual examination of the recovered soil samples, limited number of laboratory tests and interpretation of the field boring logs by a geotechnical engineer. Stratification lines shown on the boring profiles represent the approximate boundaries between soil types of significantly different engineering properties. The actual transition between soils may be gradual.

The boring profiles indicate subsurface conditions only at the specific boring locations at the time of our field exploration. Subsurface conditions, including groundwater conditions may differ from the conditions we encountered at the boring location at other locations within the project site. In addition, subsurface conditions at the boring locations can change over time.

The following generalized soil descriptions are intended to provide a brief summary of the observed subsurface conditions at the proposed construction location. A specific description of the soil conditions encountered and relative density is provided with the soil profiles.

6.1 Driveway Boring Results

Auger Borings AB-1 and AB-2 were completed for the proposed driveway expansion. The borings generally encountered brown to light brown silty Sand (Stratum 1) to boring termination depth of six (6) to eight (8) feet below existing ground surface. Boring AB-2 encountered brown Muck (Stratum 2) between four (4) to six (6) feet below grade.

The soil stratum encountered, soil descriptions, AASHTO classifications and FDOT Standard Plan Index 120-001 Embankment Soil Utilization designations are summarized below:

Stratum No.	Soil Description	AASHTO	Index 120-001 Classification
1	Brown to light brown silty SAND, occasionally with limerock fragments	A-3	Select (S)
2	Brown MUCK with roots	A-8	Muck (M)

The above subsurface conditions are only general descriptions. For details refer to the boring profiles on **Sheet 2** in **Appendix B**.

6.2 Building Boring Results

Two (2) SPT Borings were completed for the new Electrical Building. The borings encountered the following general soil profile:

Table 3:
Generalized Subsurface Profiles

Boring ID	Approx. Latitude & Longitude	Approx. Layer Elevations (ft, NAVD-88)	Soil Description	Range of N-Values (blows/foot)
SPT-1	28°30'7.36"N, 81°27'4.03"W	+96.2 - +90.2	Loose brown silty SAND, occasionally with limerock fragments (SM)	3* – 4
		+90.2 - +88.2	Medium dense dark brown organic silty SAND with roots (PT)	9
		+88.2 - +66.2	Medium dense light brown to light brown fine SAND with silt (SP-SM) to loose to medium dense light brown to light gray silty SAND (SM) with an interbedded layer of firm gray clayey SAND (SC)	3 – 12
SPT-2	28°30'7.14"N, 81°27'4.02"W	+96.2 - +66.2	Loose dark brown to brown silty SAND, occasionally with limerock fragments (SM) to medium dense light brown fine SAND with silt (SP-SM) followed by very loose to medium dense light brown silty SAND (SM)	2 – 18

3* = Assumed "N" value for hand augered depth

Drilling fluid losses were not encountered in the boring.

6.3 Groundwater

Groundwater was encountered only in Boring SPT-1 at an elevation of approximately +86.5 feet, NAVD-88 at the time of our field investigation (June 2024). Groundwater conditions will vary with environmental variations and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as man-made influences, such as swales, drainage ponds, underdrains, and areas of covered soils (roadway, sidewalks, etc.).

For the purpose of this report, estimated seasonal high groundwater levels are defined as groundwater levels that are anticipated at the end of wet season of a "normal rainfall year" under current site conditions. The estimated seasonal high groundwater levels presented next in the boring profiles (**Sheets 2** and **3** in **Appendix B**) are based on the soil stratigraphy, measured groundwater levels, USDA/NRCS information, and past experience with similar soil conditions.

7.0 LABORATORY TESTING

Representative soil samples were retained from the strata observed in each boring and returned to **NADIC's** laboratory for visual classification and stratification in accordance with the American Association of State Highway and Transportation officials (AASHTO) Soil Classification System and the ASTM D 2487 "Standard Classification of Soils for Engineering Purposes" (Unified Soil Classification System). Selected soil samples were tested to aid in classifying the soils and to help in evaluating the general engineering characteristics of the recovered soils. The results of our laboratory testing are presented on **Table 4** in **Appendix A** and on **Sheets 1** and **3** in **Appendix B**.

Environmental corrosion tests (pH, resistivity, chloride content, and sulfate content) were also performed on selected samples from Boring SPT-2. The corrosion tests were performed in accordance with FDOT Structural Design Guidelines. The environmental classification for the substructure is presented on Report of SPT Borings on **Sheet 3** in **Appendix B** and **Table 5** in **Appendix A** and should be classified as follows:

- Boring SPT-2: Moderately aggressive for use of Steel and slightly aggressive for use of Concrete (pH = 7.1 and Resistivity = 6,400 ohm-cm)

8.0 EVALUATION AND RECOMMENDATIONS

8.1 General

The following recommendations have been developed on the basis of the previously described project characteristics, the results of a limited subsurface exploration, and experience with similar projects. If the proposed improvements change from those previously discussed, **NADIC** request to have the opportunity to review and possibly amend our recommendations with respect to those changes.

Furthermore, evaluation and recommendations contained in this report are based in part on the data obtained from a visual classification and groundwater measurements obtained from the borings. The exploration methods used indicate subsurface conditions at a specific boring location, only at the time it was performed and to the depth penetrated. Borings cannot be relied upon to accurately reflect the variations that usually exist between boring locations and these variations may not become evident until construction. If variations from the conditions described in this report become evident during the course of construction, or project characteristics described in this report change, **NADIC** should be retained to re-evaluate the conclusions and recommendations contained in this report in light of such changes.

The following recommendations are provided based on preliminary concept and design assumptions previously described, and on subsurface conditions encountered during our field exploration. Based on the above we feel that conventional earthwork equipment and techniques can be used during the site clearing, grubbing and densification of in-situ and fill materials. They are deeming adequate and should render the site suitable for construction. Design and construction of the proposed project should be cognizant of the groundwater table at the site.

8.2 Groundwater Control

The groundwater table fluctuates seasonally depending upon intensity and duration of rainfall and presence and proximity of any artificial drainage facilities. Based upon our observations at the site, observations in the borings, review of historical ground water level records in Central Florida and the USDA/NRCS Soil Survey of Orange County, Florida, it is **NADIC's** opinion that the seasonal high groundwater level should be as presented next to the boring profiles (**Sheets 2** and **3** in **Appendix B)**.

Some form of dewatering may be required to achieve the required compaction if construction commences during the wet period. This can be accomplished through the use of pumps and sumps. We recommend the groundwater table be maintained at least two (2) feet below all earthwork and bearing level during construction. Control of groundwater should be completed in accordance with the City of Orlando Engineering Standards Manual.

8.3 Proposed Construction

It is our understanding that the proposed development includes the construction of a new one-story Electrical Building with an area of about 1,430 square feet, and about 1,140 square feet of driveway expansion. The proposed Electrical Building is anticipated to be founded on shallow foundations. For the purposes of our evaluation, wall and floor slab loads were considered as presented in **Table 1**. If actual building loads are different or change, **NADIC** should be immediately notified to amend the recommendations provided herein.

8.4 Site Suitability

Based on the results of our limited exploration, the encountered subsurface materials are generally suitable for construction and support of the anticipated foundation and floor slab provided proper subgrade preparation is performed and removal of unsuitable soils such as plastic and organic soils is achieved.

Prior to construction, the location of any underground utility and impermeable obtrusion within the construction area should be established. In this regard, it should be noted that if abandoned wells and pipes are not properly removed or plugged; they may serve as a conduit for subsurface erosion which subsequently may result in excessive settlement.

It is our recommendation based on the results of the field exploration that the building footprint plus five (5) feet beyond the outside edge of the structure should be prepared with the objective being to minimize settlements and differential settlements. We anticipate differential settlement may occur at locations where clayey sand, sandy clay and organic soils are encountered below foundation base slab depth. We, therefore recommend that these soil types, if encountered at foundation base slab bottom should be removed to a depth of at least two feet below base slab bottom elevation, and replaced with clean sands compacted to a density of at least 95 percent of the materials Modified Proctor maximum dry density (ASTM D-1557).

8.5 Shallow Foundation Considerations

We are assuming all construction will be supported by a shallow foundation system bearing on native soils or newly placed fill. Design recommendations for the shallow foundation are presented below:

- Prepare foundation subgrade soil in accordance with the recommendations presented in the **Construction Considerations** section of this report.

- Use a net allowable bearing pressure of 2,000 pounds per square foot (psf) for thickened slab foundation. The allowable bearing pressure is a net pressure that will increase over and above that due to the overburdened soils.

- The unfactored coefficient of subgrade reaction is estimated to be approximately 130 lb/in3.

- It is estimated that the maximum normal, total foundation settlements should not exceed 1.0 inch. Differential settlement is estimated to be less than 0.5%. It is anticipated that about 80 percent of the settlement will occur during construction.

- To avoid slab moisture problems, it is recommended that the floor slab bearing soils be covered by lapped polyethylene sheeting and the floor slab placed directly on the vapor retarder. The slab designer or contractor should refer to ACI and Florida Building Code (FBC) regarding moisture and radon for procedures and cautions regarding the selection and placement of a vapor retarder.

- Any cuts that are made in the building pads for utility installation should be backfilled with clean granular materials that are compacted at least 95 percent of the ASTM D-1557 maximum dry density.

- Additionally, construction joints that allow relative vertical displacements are recommended when the difference in fill thickness under adjacent portions of the same structure is abrupt and greater than about three (3) feet.

- The foundation slab should be reinforced with steel mesh or similar reinforcement. To avoid potential problems with cracking because of differential settlement, the slab should be sufficiently jointed.

- Over excavate any areas of soft yielding or unsuitable material encountered in the proposed foundation area and replace with clean sands compacted at least 95 percent of the ASTM D-1557 maximum dry density and in accordance with the City of Orlando Engineering Standards Manual.

8.5.1 Foundation Construction Considerations

The base of all foundation excavation should be free of water and loose or soft soil, and debris prior to placement of concrete. If the foundation bearing soils are observed to be suitable as load bearing materials, the soils should be compacted to a density of at least 95 percent of the ASTM D-1557 maximum dry density. The required compaction should be achieved for a depth of at least two feet below the bottom of the footing base.

If soft pockets of soil are encountered in the footing, the unsuitable materials should be excavated and backfilled with suitable material. Over excavation should also extend laterally beyond all edges of the footings at least 8 inches per foot. Backfilling may be done with a well-compacted, suitable fill such as clean sand, gravel, or crushed #57 or #67 stone or with very lean concrete. Sand backfill should be compacted to a density of at least 95 percent of the material's modified Proctor maximum dry density (ASTM D-1557), as previously described.

Immediately prior to placement of foundation reinforcing steel, it is suggested that the bearing surfaces of the mat foundation be compacted using hand operated mechanical tampers. In this manner, any localized areas which have been loosened by excavation operations can be adequately re-compacted.

Soils exposed in the bases of all foundation excavations should be protected against any detrimental change in conditions such as from physical disturbance or rain. Surface water run-off should be drained away from the excavations and not be allowed to pond. If possible, concrete should be placed the same day the excavation is made. If this is not possible, the excavations should be adequately protected.

8.5.2 Floor Slab Construction Considerations

We recommend subgrades should be maintained in a relatively moist condition prior to floor slab construction. If the subgrade should become desiccated, saturated or disturbed the area be scarified, moisture conditioned, and recompacted prior to mat foundation placement. The bearing soils should be compacted to a density of at least 95 percent of the ASTM D-1557 maximum dry density. The required compaction should be achieved for a depth of at least one foot below the bottom of the bearing surface. Any soft/ loose soil or unsuitable materials should be excavated and backfilled with suitable material. Sand backfill should be compacted to a density of at least 95 percent of the material's modified Proctor maximum dry density (ASTM D-1557), as previously described.

The slab design should include at least 6 inches of free drainage compacted granular material with less than 5 percent fines as a capillary break.

The slab designer and contractor should refer to ACI and Florida Building Code (FBC) regarding moisture and radon procedures and precautions regarding the use and placement of vapor barrier.

We recommend minimum testing frequency of one field density test per 2500 square feet or fraction thereof for a depth of 12 inches.

8.6 Driveway Considerations

The results of our limited geotechnical exploration within the proposed driveway indicate that the near-surface soils encountered are generally suitable for support of the proposed improvements except an approximate 2-foot layer of muck encountered in Boring AB-2 at a depth of four (4) feet below existing grade. Non-select soils, muck, clay or debris, if encountered within project limits, should be removed and replaced with select soils in accordance with FDOT Standard Plan Index Nos. 120-001 and 120-002. Roadway construction can proceed in accordance with the latest versions of the FDOT "Standard Specification for Road and Bridge Construction," and the FDOT "Roadway and Traffic Design Standards," including Index 120- 001.

The soils encountered in our borings classified as Stratum No.1 (A-2-4) should be treated as Select (S) material in accordance with Index No. 120-001. Stratum No. 2 (A-8) should be treated as Muck (M) soils in accordance with Index Nos. 120-01 and 120-002. If plastic and/or organic material is encountered along the project alignment during construction, at locations that were not indicated in this report or where soil borings were not performed, these materials should be removed in accordance with Index Nos. 120-01 and 120-002.

Roadway reconstruction can proceed in accordance with the latest versions of the FDOT "Standard Specification for Road and Bridge Construction," and the FDOT "Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System," including Index 120-001. All fill soils placed for the driveway construction should be selected in accordance with Index No. 120-001. In-place density tests should be performed on the fill soils to verify the specified degree of compaction. The minimum test frequency should be in accordance with the FDOT Materials, Sampling, Testing, and Reporting Guide.

9.0 CONSTRUCTION CONSIDERATIONS

9.1 Site Preparation

Site preparation and construction should be in accordance with the City of Orlando Wastewater Division's Reclaimed Water System Design and Construction Specifications. Prior to construction of the proposed development, provisions should then be made to relocate any interfering utility lines within the construction area to appropriate locations consistent with project specifications.

The site should also be cleared and all debris completely removed including vegetation from the ground surface (topsoil, grass, shrubs, stumps and trees identified for removal). At a minimum, extend the clearing and grubbing operations to at least five feet beyond the development perimeter. Any "topsoil" removed from the proposed building area should be stockpiled in designated locations and used in areas to be grassed or be removed from the site as directed by the owner.

After the clearing\grubbing operations, the development areas should be proof rolled. Proof rolling should be carried out by making repeated overlapping coverage of the subgrade; to attain a degree of densification of at least 95 percent of the material's ASTM D-1557 modified Proctor maximum dry density. Undercut any yielding soils such as loose or soft soils and replace with clean sand fill.

9.2 Structural Fill

All structural fill material should consist of clean sands (SP), free of organic matter and other deleterious substances with fine content not exceeding 5 percent (i.e., 5 percent by dry weight passing the U.S. Number 200 sieve). Fills with fines content between 5 percent and 12 percent (SP-SM or SP-SC) may be utilized with strict moisture control during placement. Each lift of the structural fill should be in 12-inch lifts as measured in loose thickness when heavy compaction equipment is used in vibratory mode. Lift thickness should be decreased if static compaction is being used, typically to no more than 8 inches and the required compaction must be achieved. For hand-guided compaction equipment, the fill loose thickness should be between 4 and 6 inches.

Each lift should be uniformly compacted to at least 95 percent of the material's ASTM D-1557 Modified Proctor maximum dry density, prior to placement of the next lift. The fill should be placed at moisture content within 2 percent of optimum required to attain maximum dry density. Subsequent lifts should be placed and constructed in a similar manner.

9.3 Excavations

All excavations shall be executed in accordance with the Central Florida Building Codes, the State of Florida Trench Safety Act (TSA), Occupational Safety and Health Administration (OSHA) requirements and all applicable requirements of Section 6.02 of the City of Orlando Engineering Standards Manual. Where required, slope protection should be provided in accordance with the most recent OSHA regulations.

All foundation excavations should be observed by a representative of **NADIC** to explore the extent of any fill and excessively loose, soft, or otherwise undesirable materials. If the foundation bearing soils are observed to be suitable as load bearing materials, the soils should be prepared for construction by compacting to a density of at least 95 percent of the material's modified Proctor maximum dry density (ASTM D-1557). The required compaction should be achieved for a depth of at least two feet below the bottom of the footing base.

If soft pockets of soil are encountered in the footing excavations, the unsuitable materials should be excavated and backfilled with suitable material. This backfilling may be done with a well-compacted, suitable fill such as clean sand, gravel, or crushed #57 or #67 stone or with very lean concrete. Sand backfill should be compacted to a density of at least 95 percent of the material's modified Proctor maximum dry density (ASTM D-1557), as previously described.

Immediately prior to placement of foundation reinforcing steel, it is suggested that the bearing surfaces of all footing and floor slab areas be compacted using hand operated mechanical tampers. In this manner, any localized areas which have been loosened by excavation operations can be adequately re-compacted.

Soils exposed in the bases of all foundation excavations should be protected against any detrimental change in conditions such as from physical disturbance or rain. Surface water run-off should be drained away from the excavations and not be allowed to pond. If possible, all footing concrete

should be placed the same day the excavation is made. If this is not possible, the footing excavations should be adequately protected.

9.4 Dewatering

Temporary dewatering may be required at the site, if excavation and construction proceed during the wet season. This can be accomplished by a sanded well point system or by open sumps and pumps. The dewatering method used will depend on the level of the groundwater at the time of excavation and the water flow rate. The groundwater table, however, should be maintained at least 24 inches below all earthwork and compacted surfaces. All excavations should be sloped as required to prevent slope failures and to allow proper backfilling. The excavations should be constructed in accordance with current OSHA regulations. Where restrictions do not permit the excavation to be sloped appropriately, the excavation should be shored in accordance with current OSHA criteria and regulations. During excavation, material should not be stockpiled at the top of the slope within a horizontal distance equal to the excavation depth.

10.0 CONSTRUCTION RELATED SERVICES

We recommend the owner retain **NADIC** to review final design plans and specifications so comments can be made regarding interpretation and implementation of geotechnical recommendations in the design and specifications. **NADIC** should also be retained to perform construction inspection services, including materials tests and observations for confirmation adequacy of the earthwork operations. Field tests and observations include verification of foundation subgrades and performing quality assurance tests of compacted structural fill placement. The geotechnical engineering services does not end with advertisement of the construction documents, but is an on-going process throughout construction phase. Because of **NADIC**'s involvement in the design stage, **NADIC** is most qualified to address subsurface related questions that might arise during construction in a timely and cost-effective manner.

11.0 REPORT LIMITATIONS

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. We are not responsible for the conclusions, opinions or recommendations made by others based on these data.

The scope of the exploration was intended to evaluate subsurface soil and groundwater conditions within the influence of shallow spread foundations. The analyses and recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated and does not reflect any variations which may occur among these borings. If any variations become evident during the course of this project, a re-evaluation of the recommendations contained in this report will be necessary after we have had the opportunity to observe the characteristics of the conditions encountered. The applicability of the report should

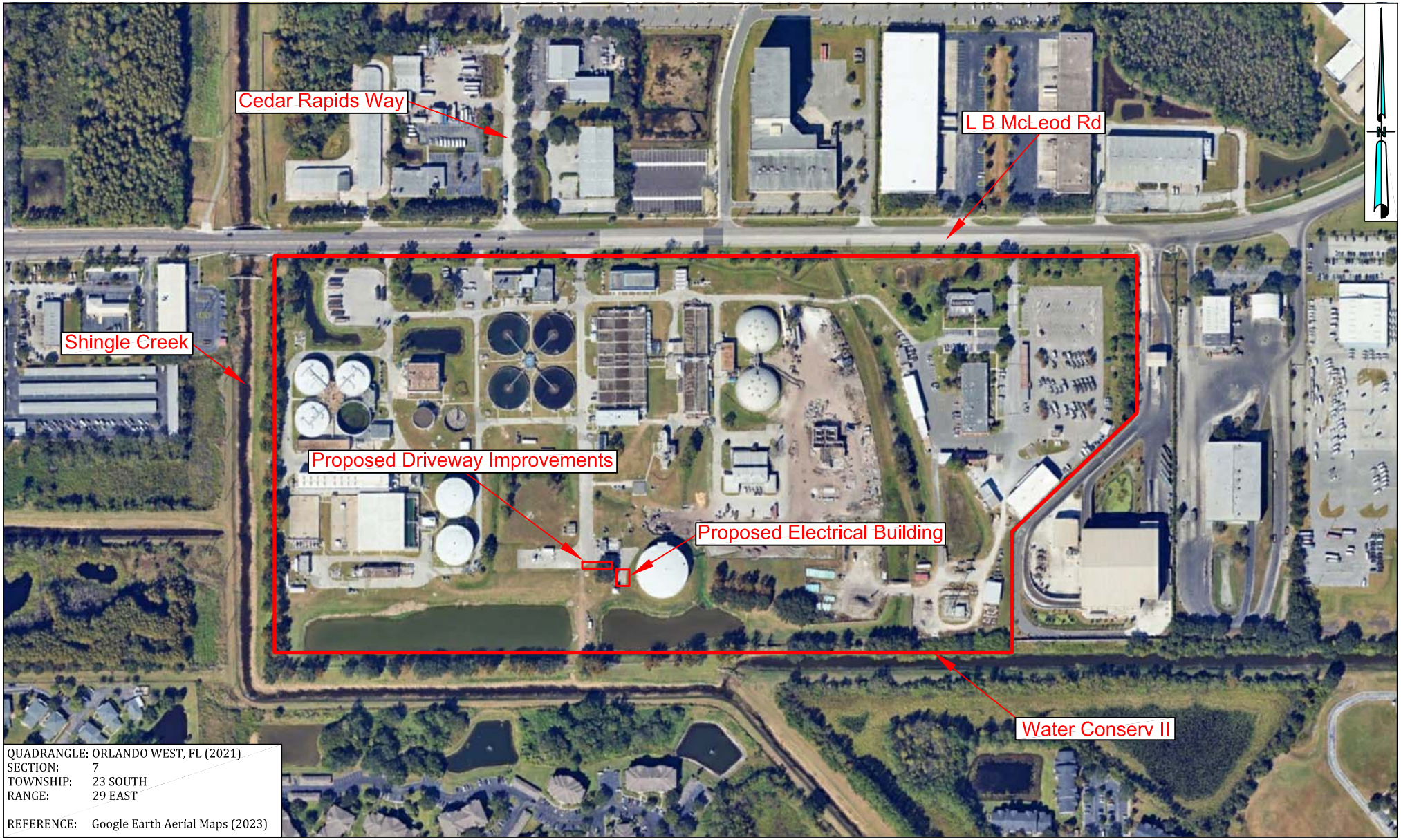
be reviewed in the event significant changes occur in the design, nature or location of the proposed improvements.

The scope of services, included herein, did not include any environmental assessment for the presence or absence of hazardous or toxic materials in the soil, surface water, and groundwater, air on the site, below and around the site. Any statements in this report or on the boring logs regarding odors, colors, unusual or suspicious items and conditions are strictly for the information of the client.

APPENDIX A

Figure 1	**Vicinity Map**
Figure 2	**USGS Topographic Map**
Figure 3	**USDA/NRCS Soils Map**
Table 4	**Summary of Laboratory Test Results**
Table 5	**Summary of Corrosion Test Results**

Historical Aerial Photographs



QUADRANGLE: ORLANDO WEST, FL (2021)
SECTION: 7
TOWNSHIP: 23 SOUTH
RANGE: 29 EAST

REFERENCE: Google Earth Aerial Maps (2023)

NOT TO SCALE

REVISIONS				NAMES	DATES
DATES	BY	DESCRIPTION	DRAWN BY:	MB	05-07-2024
			CHECKED BY:	GNN	05-07-2024
			MODIFIED BY:	N/A	N/A
			CHECKED BY:	N/A	N/A
			APPROVED BY:	GNN	

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CERTIFICATE OF AUTHORIZATION NO. 8214

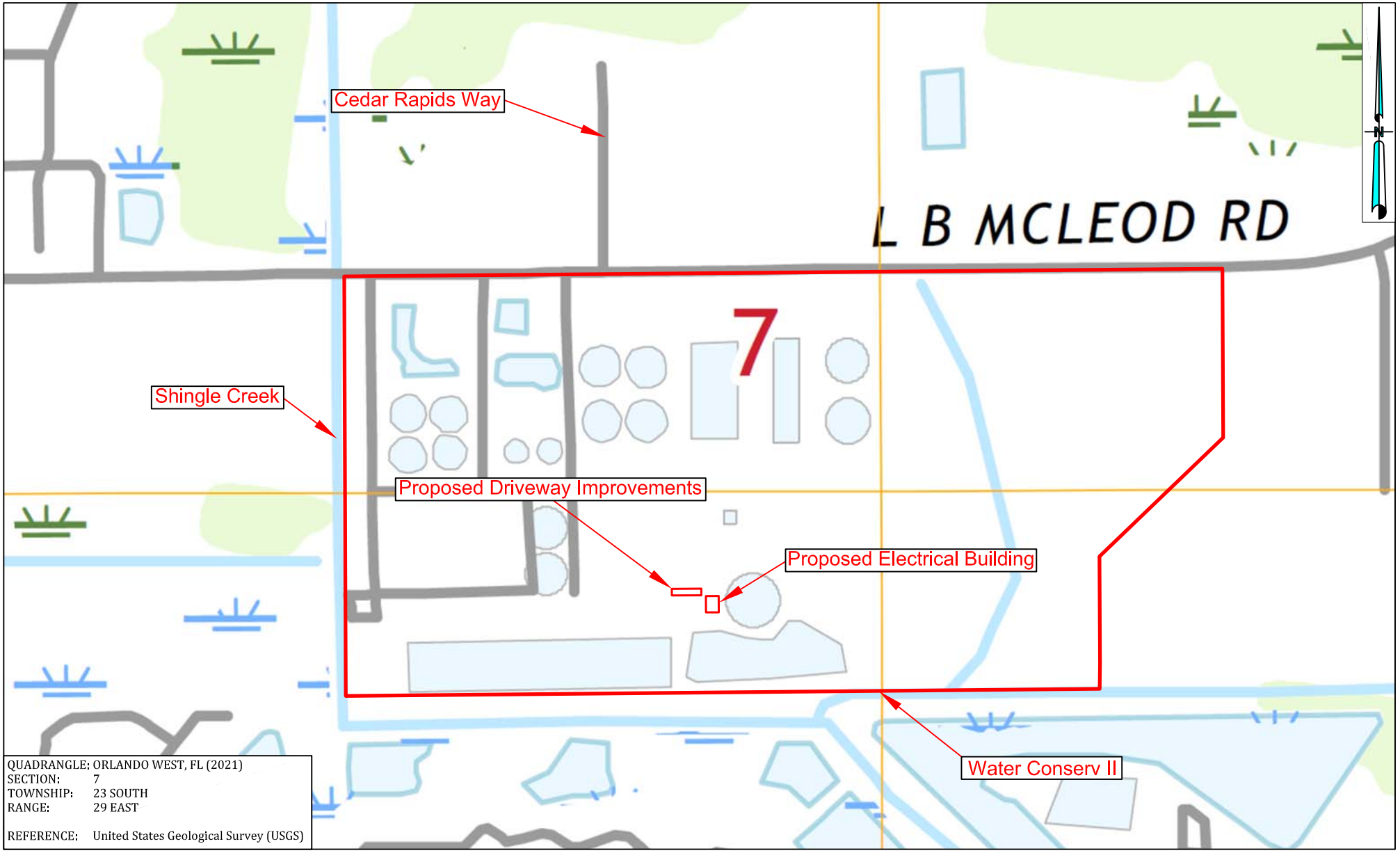
CITY OF ORLANDO, FLORIDA

COUNTY	CONTRACT No.
ORANGE	-

FIGURE 1
VICINITY MAP

PROJECT NAME:
CONSERV II WRF EQ PUMP STATION IMPROVEMENTS

NADIC PROJECT NO.: PR.GEO-CV23044



QUADRANGLE: ORLANDO WEST, FL (2021)
SECTION: 7
TOWNSHIP: 23 SOUTH
RANGE: 29 EAST

REFERENCE: United States Geological Survey (USGS)

NOT TO SCALE

REVISIONS				NAMES	DATES
DATES	BY	DESCRIPTION	DRAWN BY:	MB	05-07-2024
			CHECKED BY:	GNN	05-07-2024
			MODIFIED BY:	N/A	N/A
			CHECKED BY:	N/A	N/A
			APPROVED BY:	GNN	

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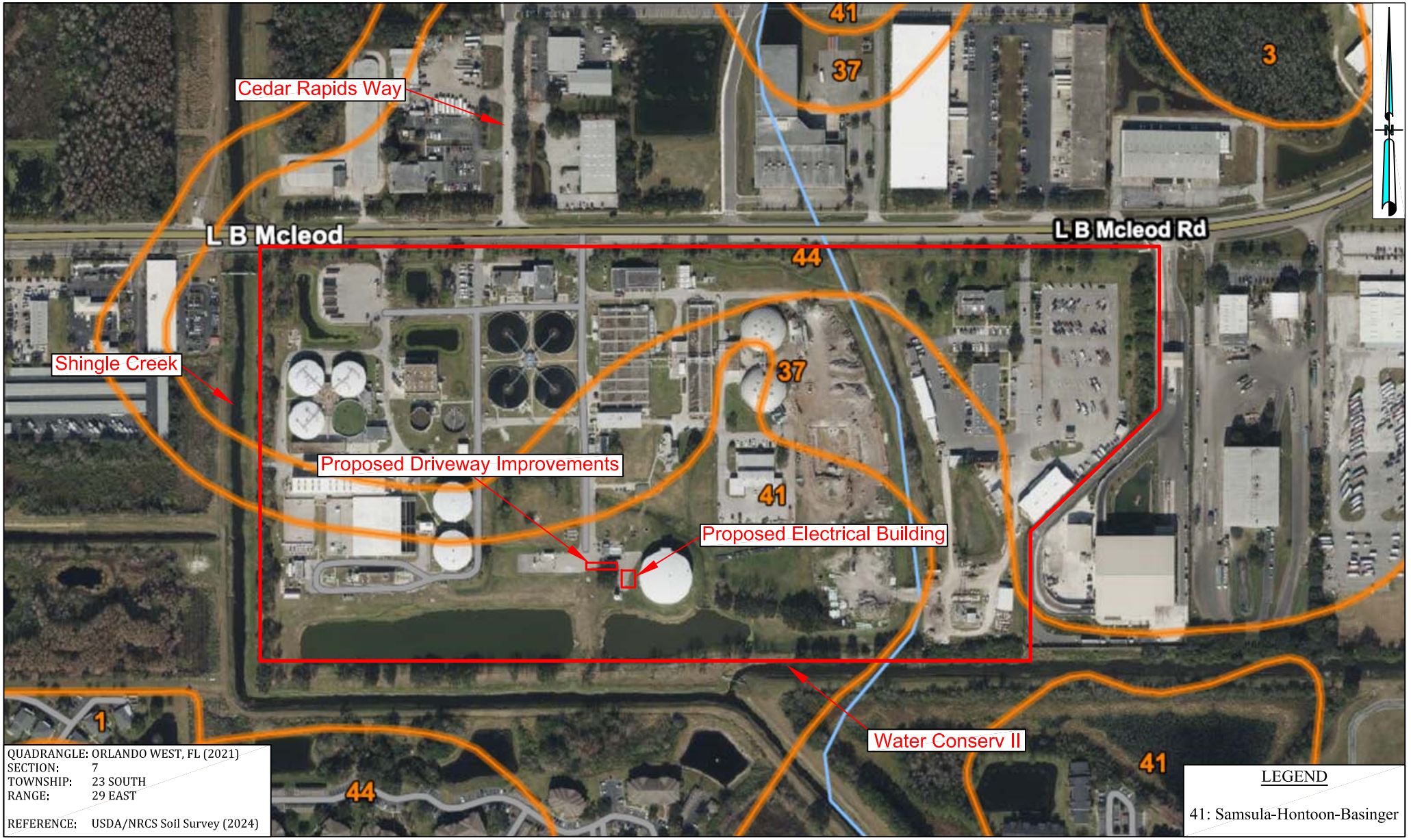
COUNTY	CONTRACT No.
ORANGE	-

FIGURE 2
TOPOGRAPHIC MAP

PROJECT NAME:
CONSERV II WRF EQ PUMP STATION IMPROVEMENTS

NADIC PROJECT NO.: PR.GEO-CV23044



QUADRANGLE: ORLANDO WEST, FL (2021)
SECTION: 7
TOWNSHIP: 23 SOUTH
RANGE: 29 EAST

REFERENCE: USDA/NRCS Soil Survey (2024)

LEGEND

41: Samsula-Hontoon-Basinger

NOT TO SCALE

REVISIONS				NAMES	DATES
DATES	BY	DESCRIPTION	DRAWN BY:	MB	05-07-2024
			CHECKED BY:	GNN	05-07-2024
			MODIFIED BY:	N/A	N/A
			CHECKED BY:	N/A	N/A
			APPROVED BY:	GNN	

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COUNTY	CONTRACT No.
ORANGE	-

FIGURE 3
SOIL SURVEY MAP

PROJECT NAME:
CONSERV II WRF EQ PUMP STATION IMPROVEMENTS

NADIC PROJECT NO.: PR.GEO-CV23044

TABLE 4
SUMMARY OF LABORATORY TEST RESULTS

Boring No.	Approximate Latitude & Longitude	Sample Depth (ft)	Stratum No.	Moisture Content (%)	Organic Content (%)	Sieve Analysis (Cumulative Percent Passing)								Atterberg Limits (%)		AASHTO* Classification
						3/8"	#4	#10	#20	#40	#60	#100	#200	Liquid Limit	Plasticity Index	
AB-1	28°30'7.58"N & 81°27'5.15"W	5	1	8	-	100	100	99	99	94	78	47	12	-	-	A-2-4
AB-2	28°30'7.59"N & 81°27'4.80"W	1	1	4	-	100	97	96	95	91	83	56	12	-	-	A-2-4
		5	2	31	29	100	100	95	88	74	50	31	19	-	-	A-8

*AASHTO: American Association of State Highway Transportation Officials

TABLE 4 Continued
SUMMARY OF LABORATORY TEST RESULTS

Boring No.	Approximate Latitude & Longitude	Sample Depth (ft)	Moisture Content (%)	Organic Content (%)	Percent Passing #200 (%)	Atterberg Limits (%)		Unified Soil Classification System (USCS)
						Liquid Limit	Plasticity Index	
SPT-1	28°30'7.36"N & 81°27'4.03"W	7	14	11	4	-	-	PT
		25	26	-	40	31	11	SC
SPT-2	28°30'7.14"N & 81°27'4.02"W	9	16	-	5	-	-	SP-SM
		20	25	-	19	-	-	SM

**USCS: Unified Soil Classification System

TABLE 5
SUMMARY OF CORROSION SERIES TEST RESULTS

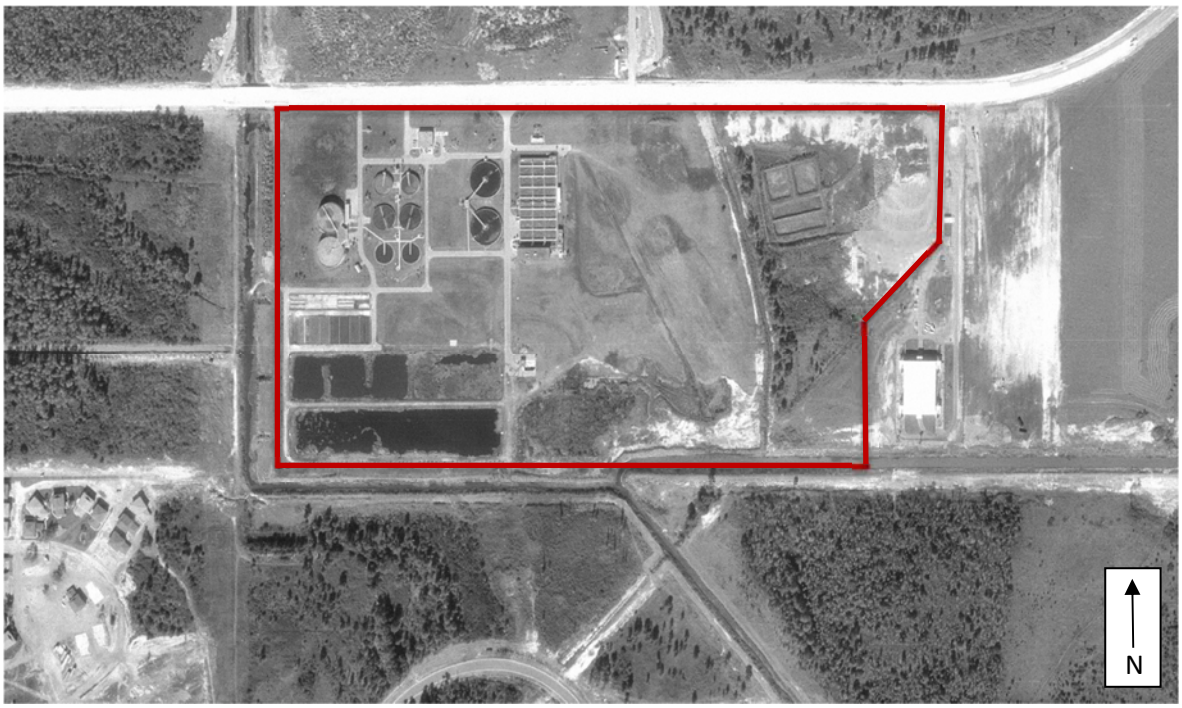
Boring No.	Approximate Latitude & Longitude	Sample Depth (ft)	pH	Chlorides (ppm)	Sulfate (ppm)	Resistivity (ohm-cm)	Substructure Environmental Classification	
							Steel	Concrete
SPT-2	28°30'7.14"N & 81°27'4.02"W	1.5	7.1	Below Detection	15	6,400	Moderately Aggressive	Slightly Aggressive

Historical Aerial Photographs
Obtained from FDOT APLUS and Google Earth Pro

Historical Aerial Photographs
Conserv II WRF – Orlando, Florida

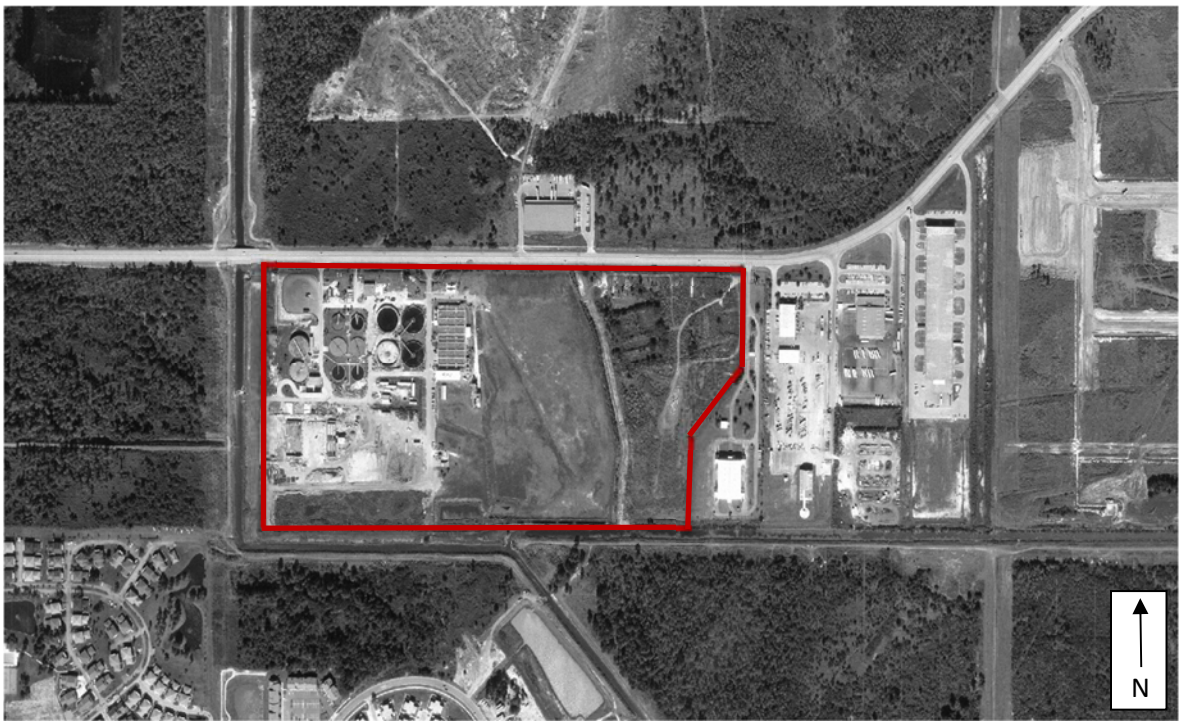
1969

1974



Historical Aerial Photographs
Conserv II WRF – Orlando, Florida

1984



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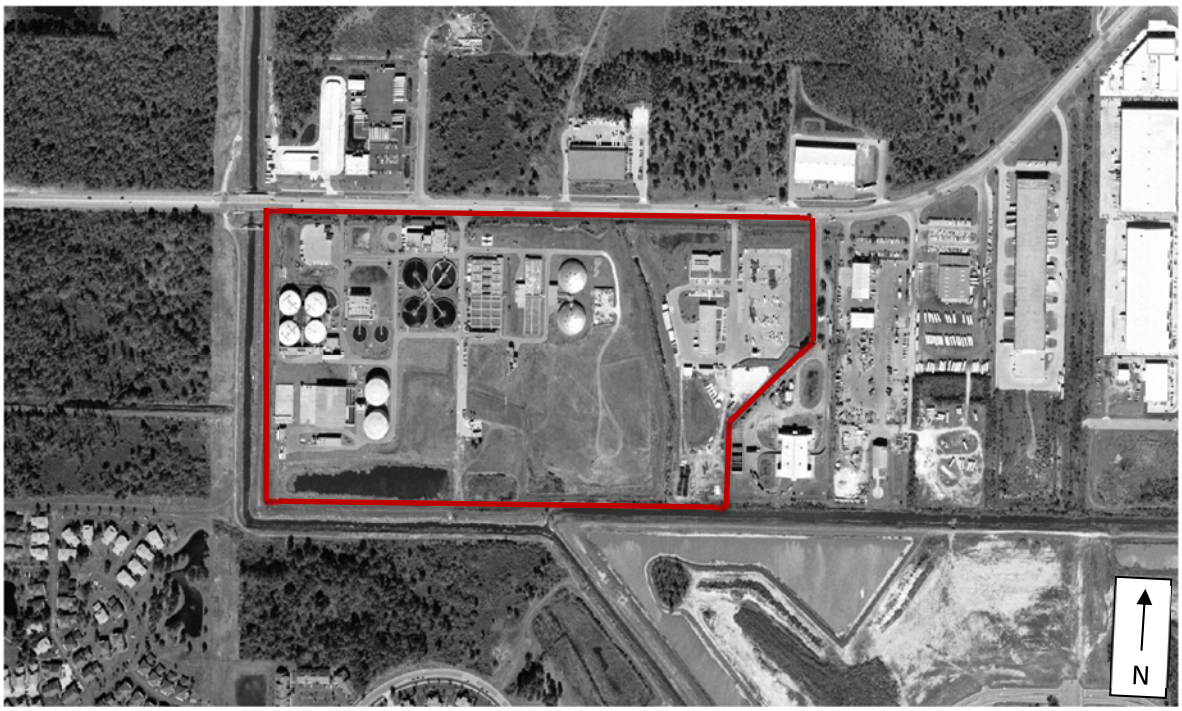


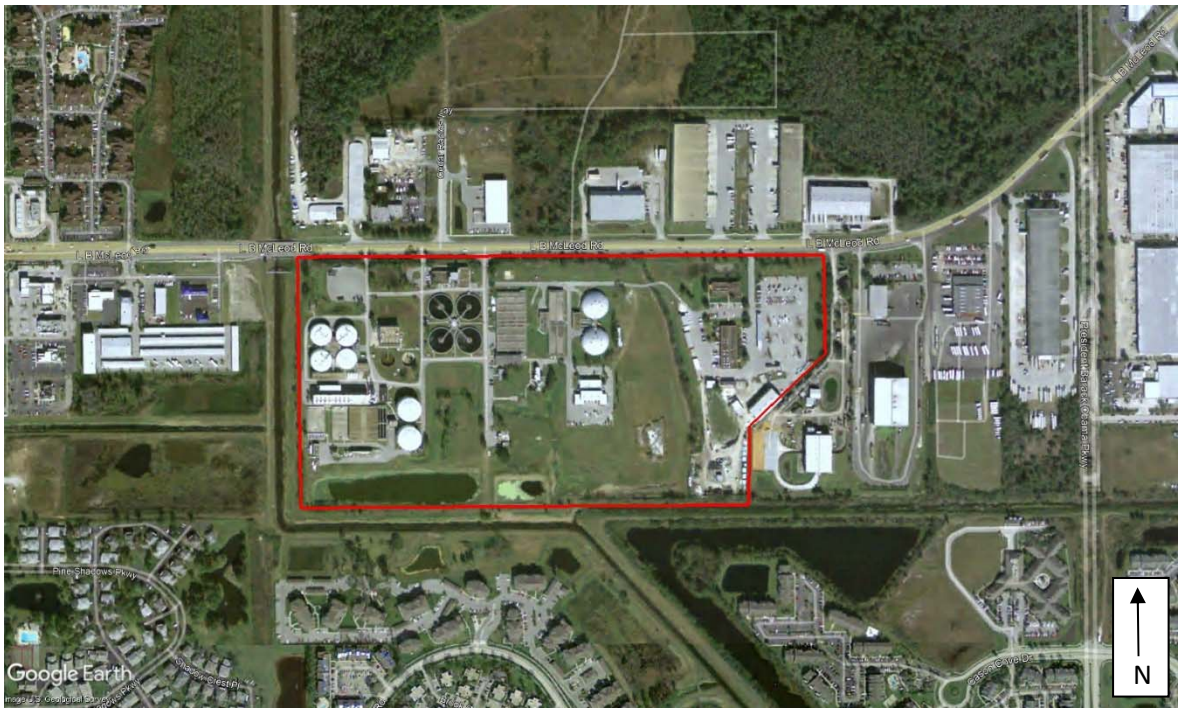
Historical Aerial Photographs
Conserv II WRF – Orlando, Florida

1995

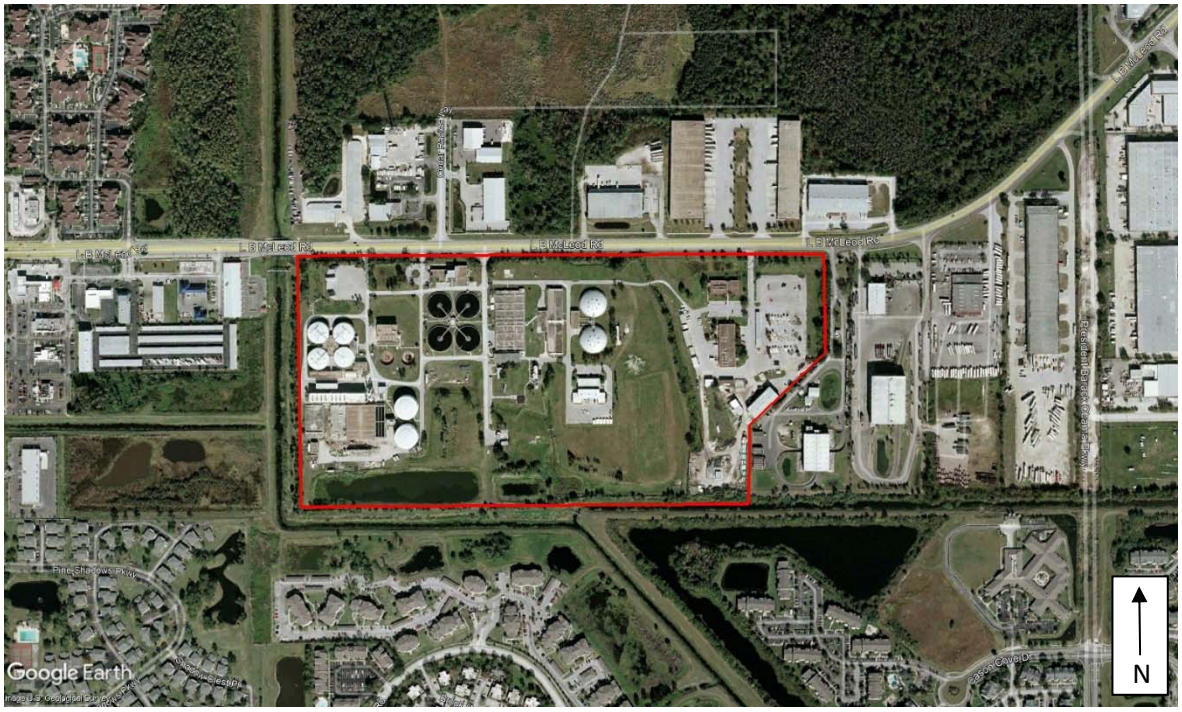
1999

Historical Aerial Photographs
Conserv II WRF – Orlando, Florida

2004

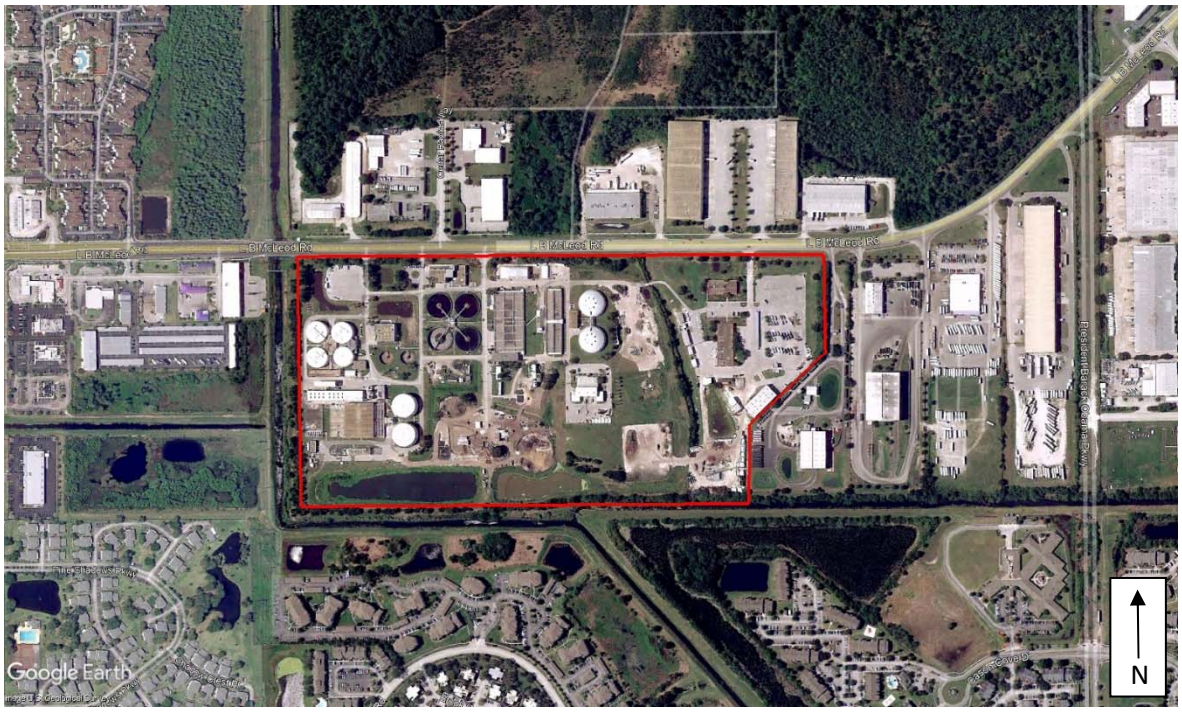


2006



Historical Aerial Photographs
Conserv II WRF – Orlando, Florida

2010

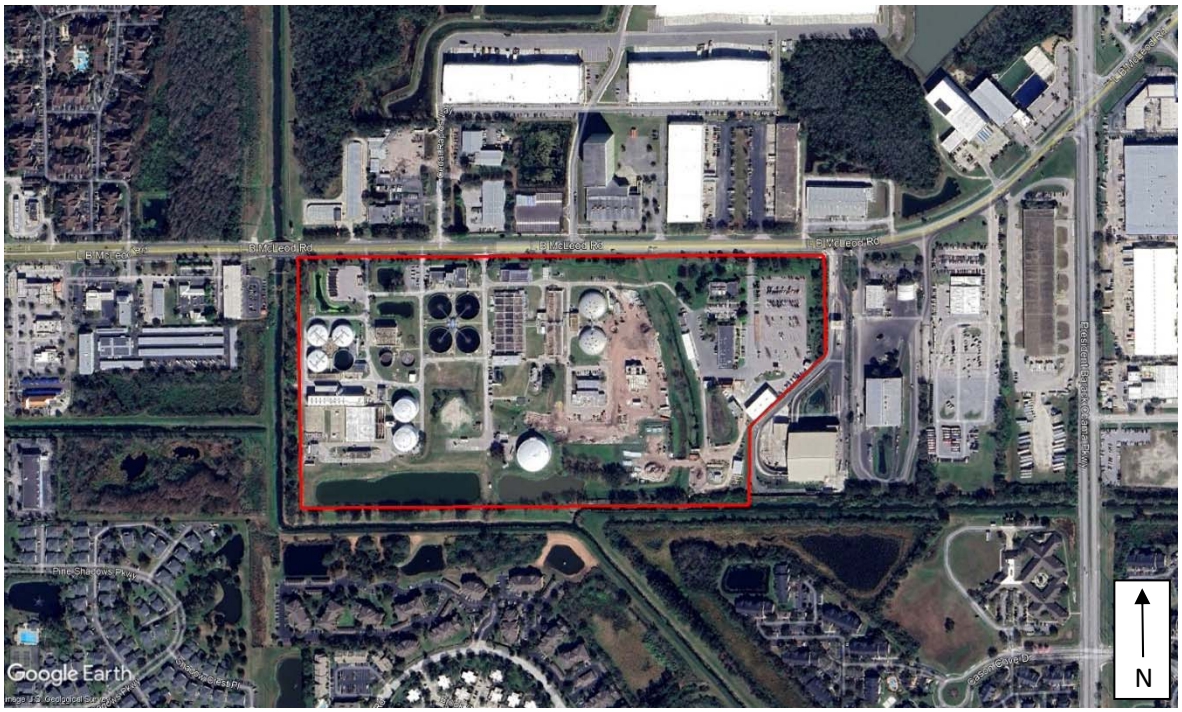


2015

Historical Aerial Photographs
Conserv II WRF – Orlando, Florida

2018

2024



APPENDIX B

Sheet 1	**Driveway Soil Survey**
Sheet 2	**Report of Auger Borings**
Sheet 3	**Report of SPT Borings**

NADIC ENGINEERING SERVICES, INC

DRIVEWAY CROSS SECTION OF SOIL SURVEY

REPORT OF TESTS

PROJECT No.: PR.GEO-CV23044
PROJECT DESCRIPTION: CONSERV II WRF EQ PUMP STATION IMPROVEMENTS
SUBMITTED BY: NADIC

QUADRANGLE: ORLANDO WEST, FLORIDA
SECTION: 7
TOWNSHIP: 23 SOUTH
RANGE: 29 EAST

DATE REPORTED: JULY, 2024

	ORGANIC CONTENT		MOISTURE CONTENT		SIEVE ANALYSIS RESULTS % PASSING						ATTERBERG LIMITS (%)					CORROSION TEST RESULTS					SUBSTRUCTURE ENVIRONMENTAL CLASSIFICATION	
STRATUM NO.	No. OF TESTS	% ORGANIC	No. OF TESTS	% MOISTURE CONTENT	No. OF TESTS	% PASSING 10 MESH	% PASSING 40 MESH	% PASSING 60 MESH	% PASSING 100 MESH	% PASSING 200 MESH	No. OF TESTS	LIQUID LIMIT	PLASTICITY INDEX	AASHTO GROUP	DESCRIPTION	No. OF TESTS	pH	RESISTIVITY OHM-CM	CHLORIDES PPM	SULFATE PPM	CONCRETE	STEEL
1	-	-	2	4-8	2 (FULL)	96-99	91-94	78-83	47-56	12	-	-	-	A-2-4	BROWN TO LIGHT BROWN SILTY SAND, OCCASIONALLY WITH LIMEROCK FRAGMENTS	-	-	-	-	-	-	-
2	1	29	1	31	1 (FULL)	95	74	50	31	19	-	-	-	A-8	BROWN MUCK WITH ROOTS	-	-	-	-	-	-	-

NOTES:

(1) STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. ANY STRATUM CONNECTING LINES SHOWN ARE FOR ESTIMATING EARTHWORK ONLY AND DO NOT INDICATE ACTUAL STRATUM LIMITS. SUBSURFACE VARIATIONS BETWEEN BORINGS SHOULD BE ANTICIPATED AS INDICATED IN FDOT SECTION 2-4. FOR FURTHER DETAILS SEE FDOT STANDARD SPECIFICATIONS SECTION 120-3.

(2) SOIL PARAMETER NOT TESTED DENOTED AS "-" ABOVE.

(3) ▼ INDICATES WATER TABLE WHERE ENCOUNTERED AT THE TIME OF SURVEY.
GNE INDICATES GROUNDWATER LEVEL NOT ENCOUNTERED AT THE TIME OF SURVEY.
▽ INDICATES ESTIMATED SEASONAL HIGH WATER LEVEL.

(4) REMOVAL OF PLASTIC AND HIGH PLASTIC MATERIAL OCCURING WITHIN THE ROADWAY SHALL BE ACCOMPLISHED IN ACCORDANCE WITH FDOT STANDARD INDEX No. 120-002 UNLESS OTHERWISE STATED IN THE PLANS. THE MATERIAL UTILIZED IN EMBANKMENT CONSTRUCTION SHALL BE IN ACCORDANCE WITH FDOT STANDARD INDEX No. 120-001.

(5) STRATUM 1 SHALL BE TREATED AS SELECT (S) MATERIAL PER FDOT STANDARD INDEX No. 120-001.

(6) STRATUM 2 SHALL BE TREATED AS MUCK (M) MATERIAL PER FDOT STANDARD INDEX No. 120-001.

REVISION		
DATE	BY	DESCRIPTION

NADIC ENGINEERING — Civil, Geotechnical, Environmental Consulting Engineering

ENGINEER OF RECORD:
GODWIN N. NNADI, P.E. #50637
NADIC
601 N. Hart Boulevard
ORLANDO, FLORIDA 32818

SEAL:

CITY OF ORLANDO, FLORIDA

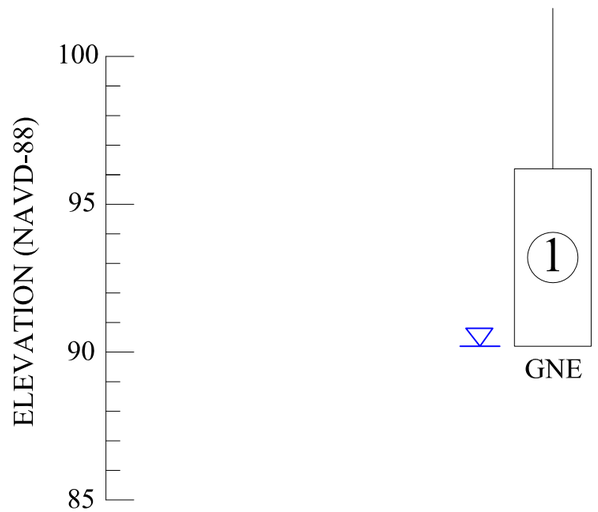
COUNTY	CONTRACT NO.
ORANGE	-

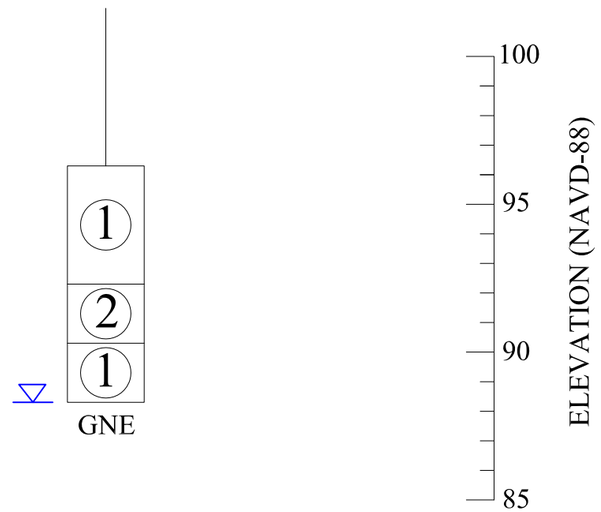
SHEET TITLE: DRIVEWAY SOIL SURVEY
PROJECT NO.
PROJECT NAME: CONSERV II WRF EQ PUMP STATION IMPROVEMENTS
SHEET NO.

NADIC SHEET NO. 1

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

Boring No.:	**AB-1**	**AB-2**
Approximate Latitude:	28°30'7.58"N	28°30'7.59"N
Approximate Longitude:	81°27'5.15"W	81°27'4.80"W
Approximate Elevation:	96.2'	96.3'
Date Drilled:	06-24-2024	06-24-2024





LEGEND

① Brown to light brown silty SAND, occasionally with limerock fragments (A-2-4)

② Brown MUCK with roots, (A-8)

▽ Estimated seasonal high groundwater level

GNE Groundwater not encountered

(A-3) A.A.S.H.T.O.: Soil classification group symbol as determined by visual examination

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

	NAMES	DATES
Drawn by:	MB	07-16-2024
Checked by:	GNN	07-16-2024
Modified by:	N/A	N/A
Checked by:	N/A	N/A
Approved by:	GNN	

ENGINEER OF RECORD:
NADIC ENGINEERING SERVICES, INC.
601 N. HART BOULEVARD
ORLANDO FL, 32818
GODWIN N. NNADI, P.E. NO. 50637

CITY OF ORLANDO, FLORIDA

COUNTY	PROJECT NO.
ORANGE	-

SHEET TITLE:
REPORT OF AUGER BORINGS

PROJECT NAME:
CONSERV II WRF EQ PUMP STATION IMPROVEMENTS

SHEET NO.

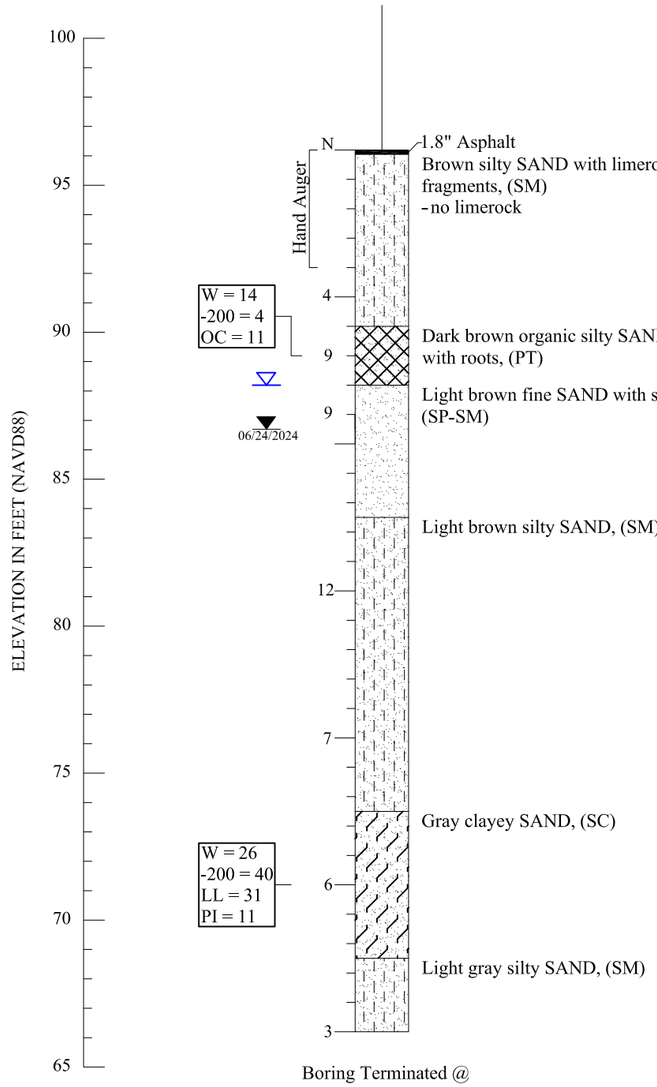
NADIC Project No. PR.GEO-CV23044

NADIC SHEET NO. 2

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

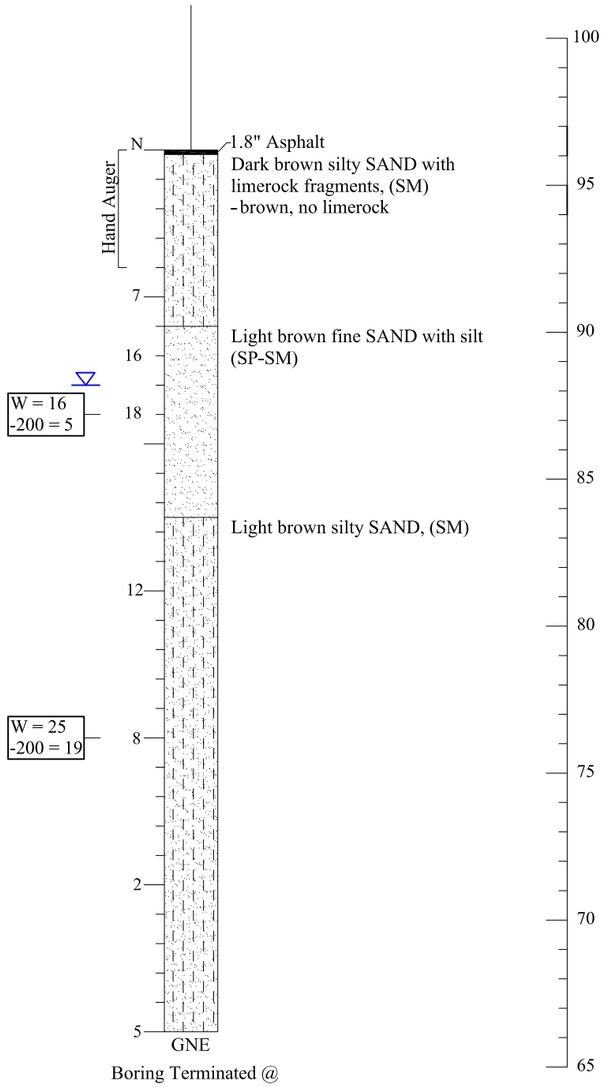
S:\New Z Drive\Engineering\Geotechnical\Orlando\Civil (CV)\2023\PR.GEO-CV23044 - Conserv II WRF EQ Pump Station\Project Working File\Autocad

Boring No.:	SPT-1
Approx. Latitude:	28°30'7.36"N
Approx. Longitude:	81°27'4.03"W
Approx. Elevation:	96.2'
Date Drilled:	06-24-2024



Boring Terminated @
Elevation 66.2'
ASTM Standard Automatic Hammer

Boring No.:	SPT-2
Approx. Latitude:	28°30'7.14"N
Approx. Longitude:	81°27'4.02"W
Approx. Elevation:	96.2'
Date Drilled:	06-24-2024



Boring Terminated @
Elevation 66.2'
ASTM Standard Automatic Hammer

LEGEND

SAND | SILTY SAND | CLAYEY SAND | PEAT

(SP)	Unified soil classification group symbol
W =	Natural Moisture Content (%) (FM 1-T265)
-200 =	Percent Passing No. 200 US Standard Sieve (%) (FM-T088)
OC =	Organic Content (%) (FM 1-T267)
LL =	Liquid Limit (%) (FM 1-T089)
PI =	Plasticity Index (%) (FM 1-T090)
06/24/2024	Groundwater level encountered on date shown
	Estimated seasonal high groundwater level
GNE	Groundwater not encountered within the top 10 feet

Standard Penetration Test Data

N	Standard penetration resistance in blows per foot (18" spoon ASTM D-1586)
	Spoon Inside Diameter 1 3/8 in.
	Spoon Outside Diameter 2 in.
	ASTM Standard Automatic Hammer
	Average Hammer Drop 30 in.
	Hammer Weight 140 lbs.

NOTES

1. Standard Penetration Test borings were performed in accordance with ASTM D-1586. Standard Penetration Resistance are shown on the borings at the test depths in blows per foot unless otherwise noticed
2. Subsurface conditions shown on the boring do not represent conditions between boring locations. Actual conditions between the borings may vary from those shown.
3. Unified Soil Classifications shown on the boring are based on visual examination and limited laboratory testing

GRANULAR MATERIALS

RELATIVE DENSITY	Drop Safety Hammer SPT (BLOWS/FT.)	Automatic Hammer SPT (BLOWS/FT.)
Very loose	Less than 4	Less than 3
Loose	4-10	3-7
Medium Dense	10-30	7-21
Dense	30-50	21-35
Very Dense	Greater than 50	Greater than 35

SILTS AND CLAYS

CONSISTENCY	Drop Safety Hammer SPT (BLOWS/FT.)	Automatic Hammer SPT (BLOWS/FT.)
Very soft	Less than 2	Less than 1
Soft	2-4	1-3
Firm	4-8	3-6
Stiff	8-15	6-11
Very Stiff	15-30	11-21
Hard	Greater than 30	Greater than 21

ENVIRONMENTAL CLASSIFICATION

SPT-2

	SUBSTRUCTURE
STEEL:	Moderately Aggressive
CONCRETE:	Slightly Aggressive

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

	NAMES	DATES
Drawn by:	MB	07-23-2024
Checked by:	GNN	07-23-2024
Modified by:	N/A	N/A
Checked by:	N/A	N/A
Approved by:	GNN	

ENGINEER OF RECORD:
NADIC ENGINEERING SERVICES, INC.
601 N. HART BOULEVARD
ORLANDO FL, 32818
GODWIN N. NNADI, P.E. NO. 50637

CITY OF ORLANDO, FLORIDA

COUNTY	PROJECT NO.
ORANGE	-

SHEET TITLE:
REPORT OF SPT BORINGS

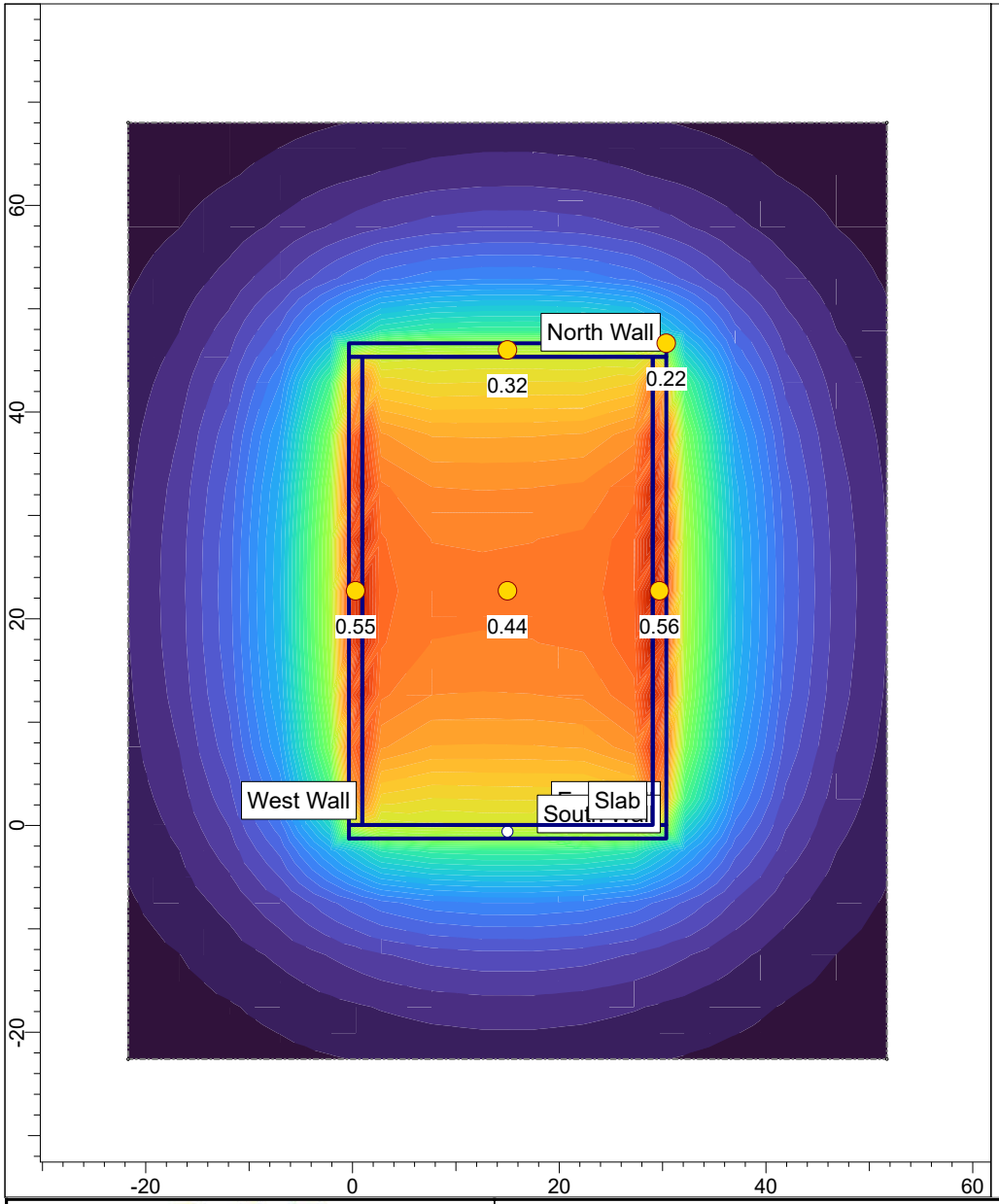
PROJECT NAME:
CONSERV II WRF EQ PUMP STATION IMPROVEMENTS

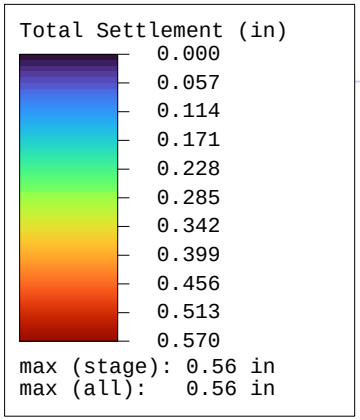
SHEET NO.

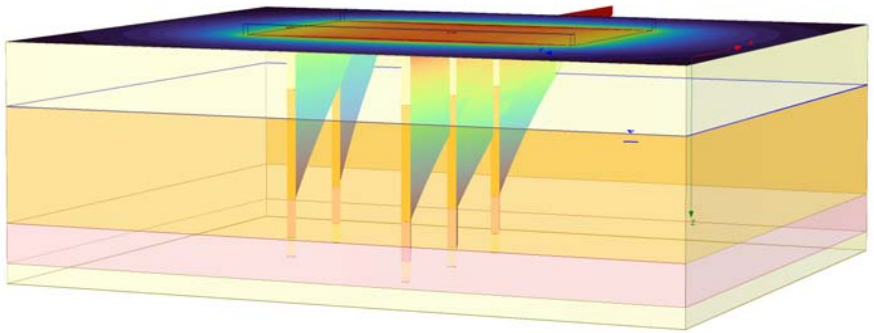
NADIC Project No. PR.GEO-CV23044

APPENDIX C

Settlement Analyses







NADIC ENGINEERING	*Project*	CONSERV II WRF EQ PUMP STATION IMPROVEMENTS	
	Analysis Description	SETTLEMENT - MAT FOUNDATION	
	Drawn By	MB	*Company* NADIC Engineering
	Date	7/18/2024	*File Name* Electrical Building - Mat Foundation - Soil Replacement.s3z

SETTLE3 5.022