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**Please Let Us Know If You Plan To Bid**

City of Tampa  
Contract Administration Department  
306 E. Jackson St. #280A4N  
Tampa, FL 33602  
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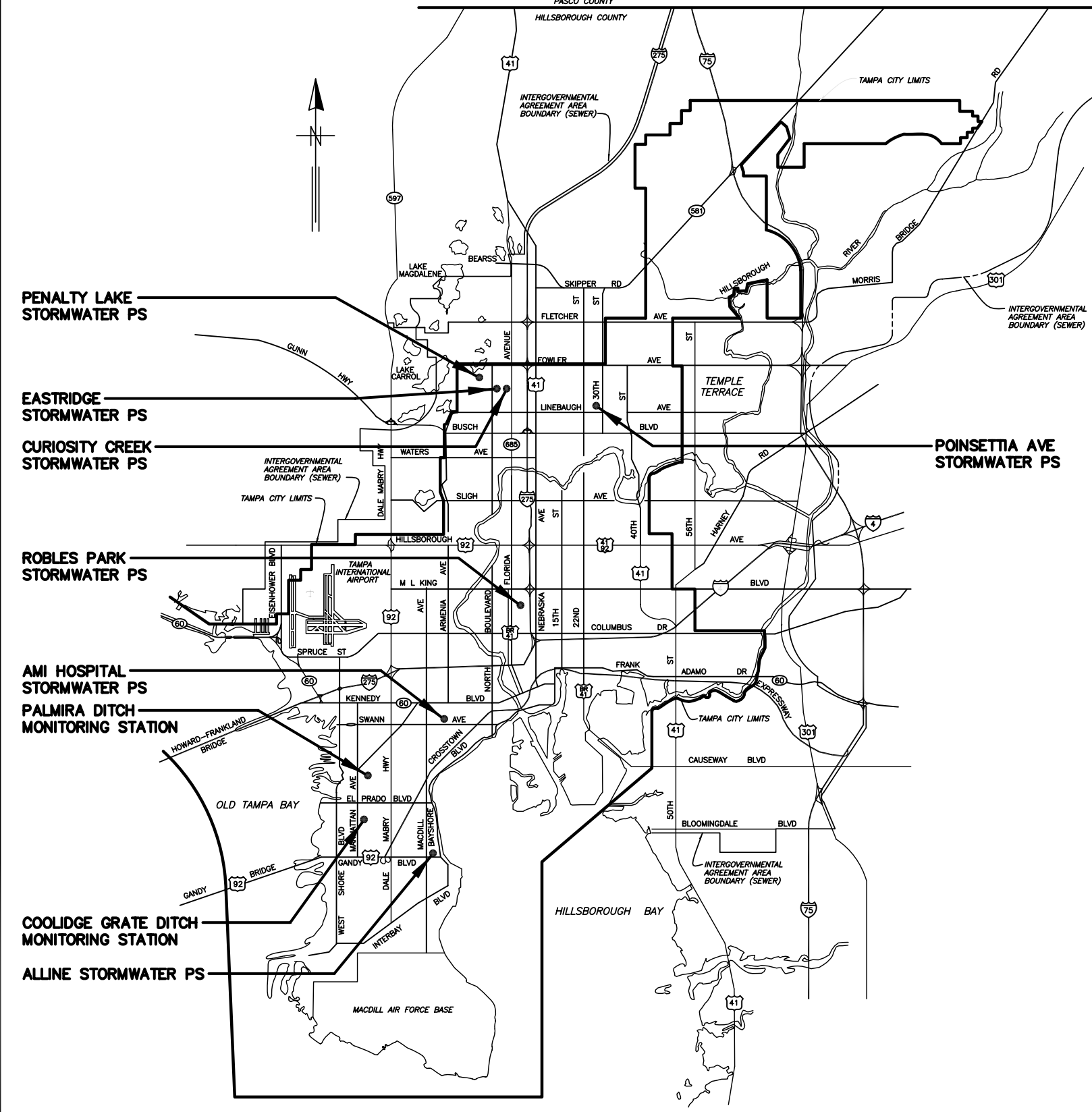
LOCATION MAP

CITY of TAMPA



CONTRACT NUMBER 15-C-00004  
STORMWATER ENGINEERING

PLANS FOR  
SCADA SYSTEM  
SEPTEMBER 18, 2014



**EDT** Engineering Design Technologies Corp.  
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 Tampa, FL 33684-2403  
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Certificate of Authorization Number: 4795

ENGINEER OF RECORD:  
BOB E. HALLMAN, P.E.  
FLORIDA REGISTRATION NO. 20761















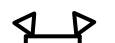


















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DES: STK  
 DRN: RWB  
 CKD:  
 DATE: 09/18/14

CITY of TAMPA  
 Department of Public Works  
 Stormwater Engineering

STORMWATER SCADA SYSTEM  
 COVER SHEET

**LEGEND**

	HEAVY DUTY SAFETY SWITCH		LIMIT SWITCH – NORMALLY CLOSED
	TRANSFORMER		LEVEL SWITCH
	FLUORESCENT FIXTURE – CEILING MTD.		LIQUID LEVEL SWITCH – NORMALLY OPEN
	INCAND. OR HID FIXTURE – CEILING MTD.		LIQUID LEVEL SWITCH – NORMALLY CLOSED
	INCAND. OR FLUORESCENT FIXTURE – STANCHION MTD.		PRESSURE SWITCH – NORMALLY OPEN
	INCAND. OR HID FIXTURE – WALL MTD.		PRESSURE SWITCH – NORMALLY CLOSED
	EMERGENCY EXIT LIGHT		JUNCTION BOX, PULL BOX – SIZED PER NEC
	EMERGENCY LIGHT		CONDUIT – DOWN
	20A, 125V, 3–WIRE DUPLEX RECEPT.		CONDUIT – UP
	BRANCH CIRCUIT PANELBOARD		SELECTOR SWITCH – NORMALLY OPEN
	120V, 1ø CIRCUIT HOMERUN TO 1–POLE BRKR.		MOTOR STARTER COIL, x DESIGNATES MOTOR ID. NO.
	SLASH MARKS DENOTE NO. OF WIRES; LONG – NEUTRAL, X – GROUND.		RELAY COIL, x DESIGNATES ID. NO.
	MOTOR, 75 HP		RELAY CONTACT – NORMALLY OPEN, xx DESIGNATES RELAY ID. NO. & y DESIGNATES CONTACT NO.
	LIMIT SWITCH – NORMALLY OPEN		RELAY CONTACT – NORMALLY CLOSED, xx DESIGNATES RELAY ID. NO. & y DESIGNATES CONTACT NO.
	MOTOR SPACE HEATER		MOTOR OVERLOAD RELAY – x DESIGNATES MOTOR I.D. NO.
	KEYED NOTE		SOLENOID VALVE
			FUSE

**ABBREVIATIONS**

A	AMPERES	HP	HORSEPOWER	THRU	THROUGH
AFF	ABOVE FINISHED FLOOR	JB, JBOX	JUNCTION BOX	TR	TRIP
C	CONDUIT	KW	KILOWATTS	TT	TEMPERATURE TRANSMITTER
CAT	CATALOG	LPX	LIGHTING PANEL X	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
CLG	CEILING	MLO	MAIN LUGS ONLY	TYP	TYPICAL
CKT	CIRCUIT	MNTD	MOUNTED	UON	UNLESS OTHERWISE NOTED
CTR	CENTER	∅	PHASE	V	VOLT
DISC	DISCONNECT	PB	PUSH BUTTON	W	WIRE
DT	DOUBLE THROW	PT	PRESSURE TRANSMITTER	w/	WITH
DWG	DRAWING	PWR	POWER	XFMR	TRANSFORMER
ELEC	ELECTRICAL, ELECTRIC	RECEPT	RECEPTACLE	XFR	TRANSFER
EXH	EXHAUST	SW	SWITCH	XMTR	TRANSMITTER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	SWBD	SWITCHBOARD		

**GENERAL NOTES:**

- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO PURCHASING EQUIPMENT OR COMMENCING CONSTRUCTION.
- ALL CONDUCTORS SHALL BE STRANDED COPPER, AWG 12 MIN. w/ THHN INSULATION, UNLESS OTHERWISE NOTED.
- ALL WIRING SHALL BE IDENTIFIED w/ NUMBERS AT ALL TERMINALS AND ON WIRING DIAGRAMS.
- ALL EXISTING INSTALLATIONS DENOTED ON THE DRAWINGS ARE FOR THE CONTRACTORS REFERENCE ONLY. ALL EXISTING INSTALLATIONS SHALL BE FIELD VERIFIED PRIOR TO SUBMITTING A BID AND PRIOR TO COMMENCING CONSTRUCTION.
- FIELD VERIFY ALL EQUIPMENT LOCATIONS AND CONNECTIONS PRIOR TO COMMENCING CONSTRUCTION.
- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE w/ THE LATEST EDITION OF THE NEC AND ALL APPLICABLE LOCAL ORDINANCES.
- ALL THREADED CONNECTIONS SHALL BE COATED w/ COPPER SHIELD ANTI–SEIZE COMPOUND MANUFACTURED BY THOMAS & BETTS (T & B).
- ALL PANELS, DISCONNECTS, SWITCHES AND EQUIPMENT COVERPLATES SHALL BE LABELED w/ NAMEPLATES. NAMEPLATES SHALL BE THREE–PLY PHENOLIC BLACK–WHITE–BLACK ENGRAVED THROUGH THE FIRST BLACK LAYER. LETTERING SHALL BE 0.5 CM (3/16”) MIN. EDGE OF NAMEPLATE SHALL BE BEVELED 45 DEG.
- ALL CONDUIT SHALL BE SUPPORTED AT MAXIMUM 5’–0” INTERVALS.
- ALL CIRCUITS SHALL HAVE A GROUNDING CONDUCTOR ROUTED INSIDE EACH CONDUIT w/ POWER CONDUCTORS.
- ALL CONDUCTOR LENGTHS SHALL BE CONTINUOUS. NO SPLICES OR CONDUCTOR TERMINATIONS SHALL BE PERMITTED UNLESS SPECIFICALLY DESIGNATED IN THE DRAWINGS.
- NEATLY COIL ALL SPARE CONDUCTORS & TAPE w/ VINYL ELECTRICAL TAPE (SCOTCH 33+). U.O.N.
- PROVIDE A MINIMUM OF 3’–0” CLEARANCE IN FRONT OF ALL ELECTRICAL EQUIPMENT IN ACCORDANCE w/ ARTICLE 110 OF THE NEC. CLEARANCE SHALL NOT BE LESS THAN 42” FOR VOLTAGES GREATER THAN 150V TO GROUND.
- ALL INSTALLATIONS SHALL BE IN ACCORDANCE w/ CITY OF TAMPA CODE 5–111.6.1.5 CITY OF TAMPA CODE CHAPTER 5 ISSUED 10/01/2005.
- ALL FASTENING HARDWARE (SCREWS, BOLTS, NUTS, ETC.) SHALL BE 316 STAINLESS STEEL. FASTENING HARDWARE CONSTRUCTED OF FERROUS MATERIAL ARE NOT ACCEPTABLE.
- ALL CONDUIT EXPOSED ABOVE GRADE SHALL BE RIGID HEAVY WALL ALUMINUM, UNLESS OTHERWISE NOTED. CONDUITS EXTENDING BELOW GRADE SHALL BE RIGID HEAVY WALL ALUMINUM CONDUIT THROUGH AND INCLUDING THE FIRST 90 DEGREE ELBOW (OR EQUIVALENT SET OF FITTINGS) INSTALLED BELOW GRADE. ALL PVC CONDUIT SHALL BE SCHEDULE 80. CONNECTIONS TO PVC CONDUIT SHALL BE MADE w/ A RIGID ALUMINUM TO PVC CONDUIT ADAPTER.
- A 316 STAINLESS STEEL CHANNEL ERECTOR SYSTEM SHALL BE USED TO SUPPORT ALL CONDUITS, BOXES, ETC. USE 316 STAINLESS STEEL MOUNTING HARDWARE.
- SHIELD AND DRAIN WIRE FOR EACH ANALOG SIGNAL (4–20 mA) CABLE SHALL BE GROUNDED AT THE RTU ONLY. THE SHIELD AND DRAIN WIRE AT EACH FIELD DEVICE SHALL BE NEATLY TRIMMED & TAPED w/ (2) LAYERS OF VINYL ELECTRICAL TAPE (SCOTCH 33+).
- ALL CONDUIT PENETRATIONS IN EXTERIOR MOUNTED CONTROL PANELS SHALL BE FROM THE SIDE OR BOTTOM OF THE CONTROL PANEL ONLY. CONDUIT PENETRATIONS IN THE TOP OF EXTERIOR MOUNTED CONTROL PANELS IS NOT ACCEPTABLE.
- ALL WORK ASSOCIATED w/ THE RTU, INCLUDING ALL REMOTE MONITORING AND CONTROL DEVICES AND CONNECTIONS WITHIN THE RTU, SHALL BE PERFORMED BY DCR ENGINEERING OR SCADAONE LLC, FURTHERMORE THIS WORK SHALL INCLUDE PROGRAMMING OF THE RTU AND THE CENTRAL HMI.

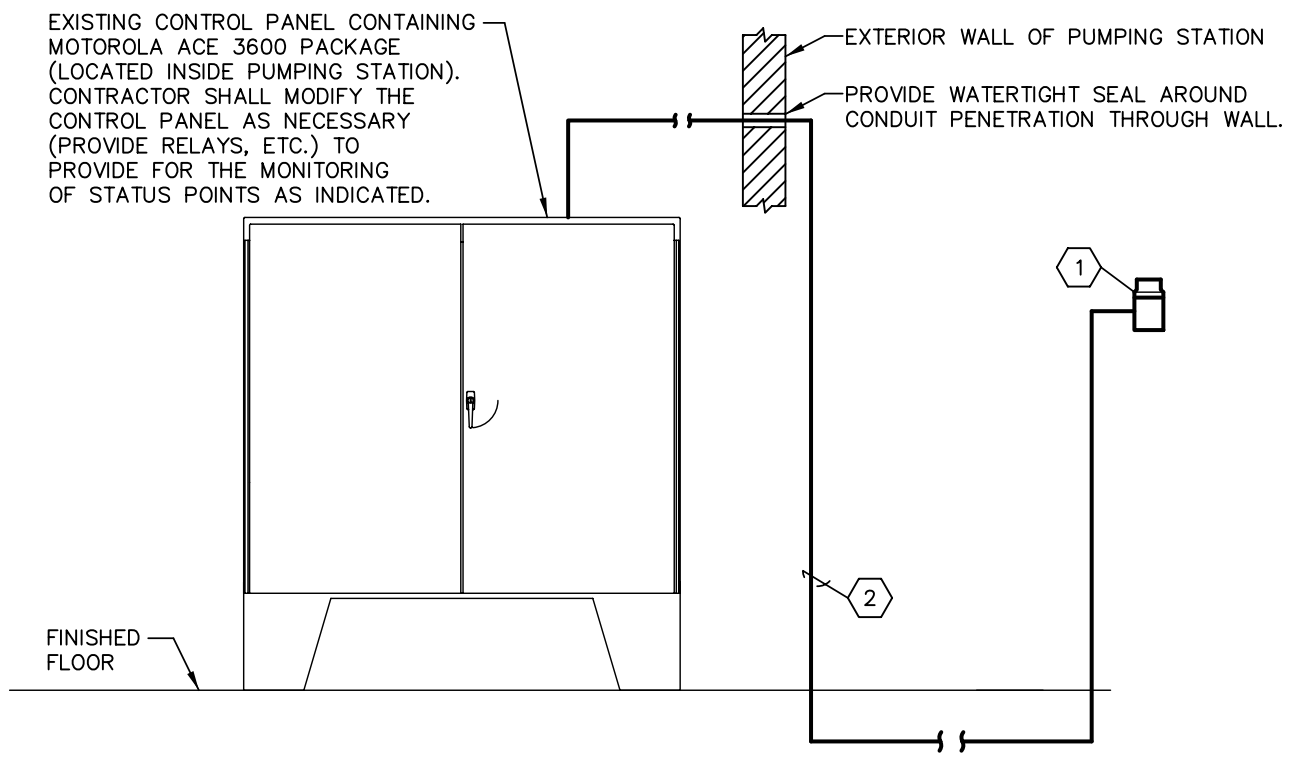
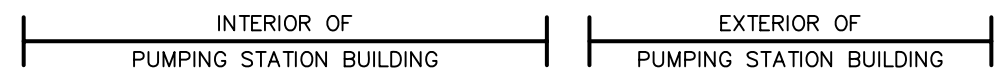
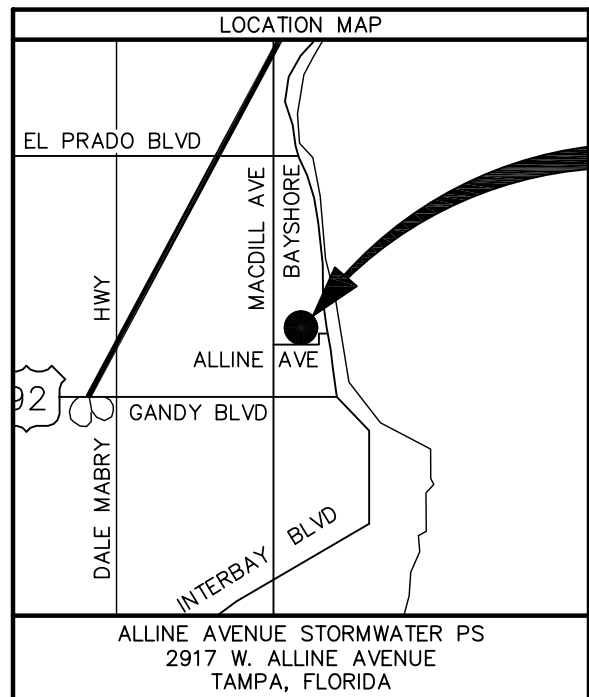
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FLORIDA REGISTRATION NO. 20761



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Certificate of Authorization Number: 4795

No.	DATE	REVISIONS	No.	DATE	REVISIONS	DES: STK DRN: RWB CKD: DATE: 09/16/14	<p><b>CITY of TAMPA</b> Department of Public Works Stormwater Engineering</p>	<p><b>STORMWATER SCADA SYSTEM</b> ELECTRICAL LEGEND &amp; ABBREVIATIONS</p>	W.O. 5952 SHEET <b>E-1</b>
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1			4						



- KEYED NOTES:**
- ① CAMPBELL SCIENTIFIC MODEL TE525-L RAIN GAUGE w/ 6" ORIFICE AND SCALED PULSE OUTPUT. COORDINATE LOCATION w/ OWNER. REFERENCE RAIN GAUGE DETAIL.
  - ② 1-2/C #16 SHLD. (BELDEN 8719), 3/4" C.

- NOTES:**
- 1. THE POINTS TO BE MONITORED SHALL INCLUDE THE FOLLOWING:  
DISCRETE INPUT POINTS  
- RAIN GAUGE DATA

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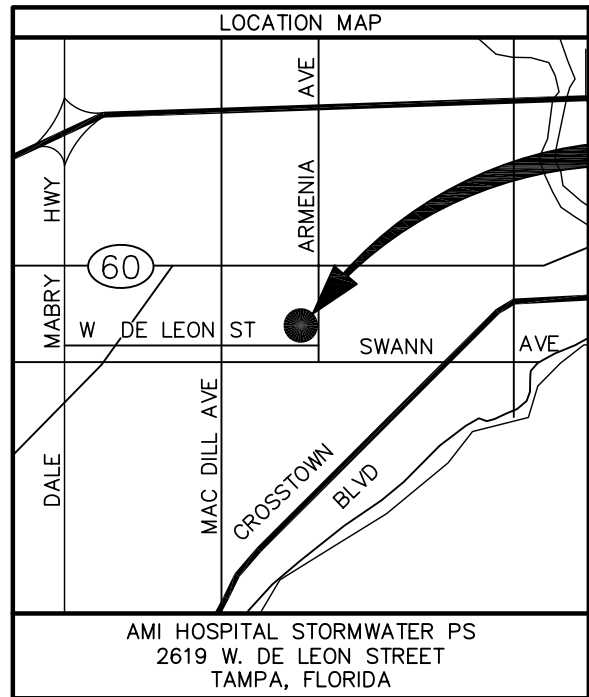
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CITY of TAMPA  
Department of Public Works  
Stormwater Division

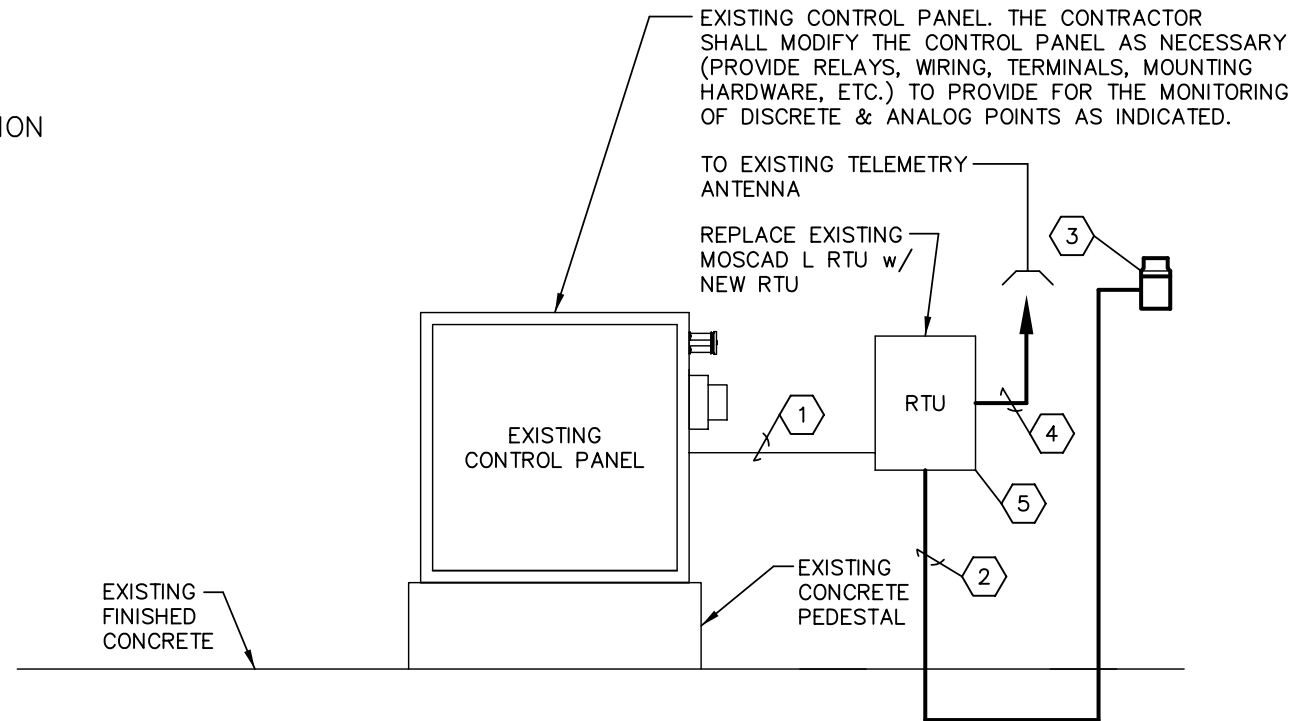
STORMWATER SCADA SYSTEM  
ALLINE AVENUE  
STORMWATER PUMP STATION

W.O. 5952  
SHEET  
E-2



PROJECT LOCATION

AMI HOSPITAL STORMWATER PS  
2619 W. DE LEON STREET  
TAMPA, FLORIDA



AMI HOSPITAL STORMWATER PUMP STATION

KEYED NOTES:

- ① EXISTING 3/4" C. CONTAINING: 1-#12 (120 VAC), 1-#12 NEUT., 4-#14 (WATER LEVEL STATUS) & 1-#12 GND. ROUTE 6-#14 (STATUS) IN EXISTING CONDUIT FOR PROPOSED DISCRETE INPUT POINTS. EXISTING CONDUCTORS SHALL REMAIN.
- ② 1-2/C #16 SHLD. (BELDEN 8719), 3/4" C.
- ③ CAMPBELL SCIENTIFIC MODEL TE525-L RAIN GAUGE w/ 6" ORIFICE AND SCALED PULSE OUTPUT. COORDINATE LOCATION w/ OWNER. REFERENCE RAIN GAUGE DETAIL.
- ④ 1 RG-8/U TYPE (BELDEN 9914), 3/4" C.
- ⑤ REPLACE EXISTING MOTOROLA MOSCAD L RTU w/ RTU PROVIDED AND INSTALLED BY CONTRACTOR. THE RTU SHALL BE A MOTOROLA ACE 3600 PACKAGE AS DISTRIBUTED BY DCR ENGINEERING OR SCADAONE. CONTRACTOR SHALL COORDINATE ALL WORK TO ENSURE SYSTEM COMPATIBILITY. CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE RTU SYSTEM PACKAGE, COMPLETE WITH ALL ASSEMBLY AND PROGRAMMING REQUIRED FOR A FUNCTIONING SYSTEM.

NOTES:

1. THE POINTS TO BE MONITORED SHALL INCLUDE THE FOLLOWING:
- DISCRETE INPUT POINTS
- ELECTRICAL POWER STATUS (ON/OFF)
  - PUMP #1 STATUS (ON/OFF)
  - PUMP #2 STATUS (ON/OFF)
  - WATER LEVEL STATUS (NORMAL/HIGH) - EXISTING
  - RAIN GAUGE DATA

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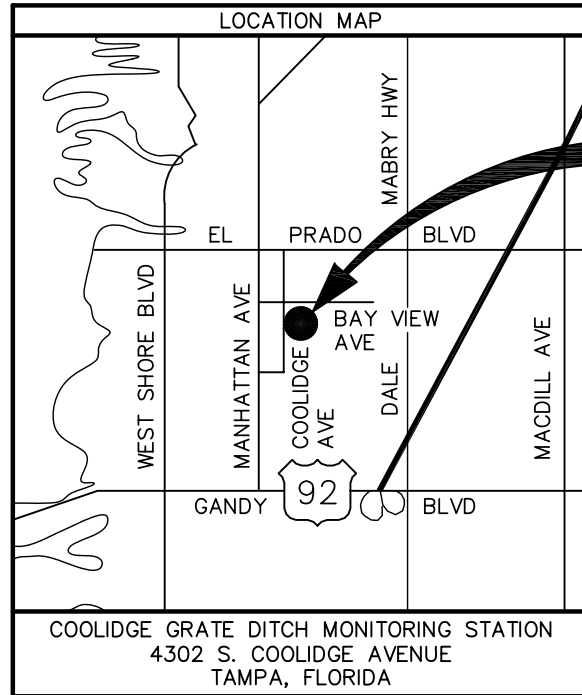
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CITY of TAMPA  
Department of Public Works  
Stormwater Engineering

STORMWATER SCADA SYSTEM  
AMI HOSPITAL  
STORMWATER PUMP STATION

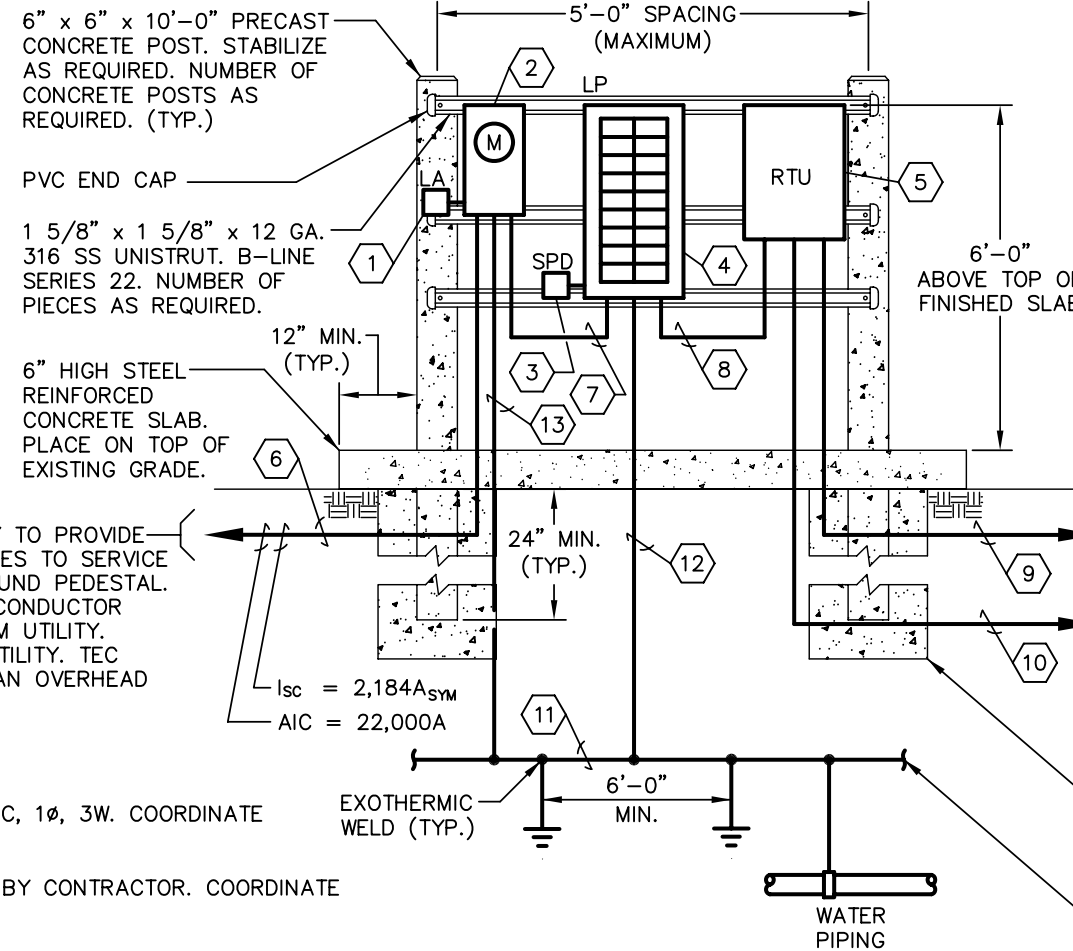
W.O. 5952  
SHEET  
E-3



PROJECT LOCATION



COOLIDGE GRATE DITCH



TO PEDESTAL AT BASE OF UTILITY POLE. UTILITY TO PROVIDE & INSTALL ABOVE GROUND PEDESTAL FOR SPLICES TO SERVICE CONDUCTORS. STUB-UP CONDUIT IN ABOVE GROUND PEDESTAL. PROVIDE 3'-0" CONDUCTOR LENGTH FOR EACH CONDUCTOR FOR CONNECTION TO SERVICE CONDUCTORS FROM UTILITY. COORDINATE LOCATION & REQUIREMENTS WITH UTILITY. TEC SHALL SET A NEW UTILITY POLE AS REQUIRED. AN OVERHEAD SERVICE DROP TO METER IS NOT ACCEPTABLE.

NOTES:

1. ALL EDGES OF UNISTRUT SHALL BE FILED SMOOTH.
2. ALL FASTENING AND MOUNTING HARDWARE SHALL BE 316 SS.
3. PROVIDE A 6" THICK CONCRETE SLAB THAT EXTENDS FROM THE MOUNTING POSTS TO 4' IN FRONT OF MOUNTED ELECTRICAL EQUIPMENT.

KEYED NOTES:

- 1 LIGHTNING ARRESTER (LA): 120/240 VAC, 1 $\phi$ , 3W. COORDINATE REQUIREMENTS w/ UTILITY COMPANY.
- 2 METER SOCKET PROVIDED & INSTALLED BY CONTRACTOR. COORDINATE REQUIREMENTS w/ UTILITY COMPANY.
- 3 SURGE PROTECTIVE DEVICE (SPD): 120/240 VAC, 1 $\phi$ , 3W. ADVANCED PROTECTION TECHNOLOGIES CAT. NO. TE01XCS.
- 4 120/240 VAC, 1 $\phi$ , 3W, 12 CIRCUIT, 20" WIDE, 100A PANELBOARD w/ 2P, 60A FACTORY INSTALLED MAIN CIRCUIT BREAKER, COPPER BUS & GROUND BAR KIT MOUNTED IN A NEMA 3R ENCLOSURE. PANELBOARD SHALL BE SUITABLE FOR USE AS SERVICE EQUIPMENT. MOUNT TOP OF ENCLOSURE 6'-0" ABOVE FINISHED CONCRETE. PROVIDE AND INSTALL A 1P, 15A CIRCUIT BREAKER FOR THE INSTALLATION OF NEW RTU. PROVIDE THREE (3) SPARE 1P, 15A CIRCUIT BREAKERS.
- 5 RTU PROVIDED AND INSTALLED BY CONTRACTOR. THE RTU SHALL BE A MOTOROLA ACE 3600 PACKAGE AS DISTRIBUTED BY DCR ENGINEERING OR SCADAONE. CONTRACTOR SHALL COORDINATE ALL WORK TO ENSURE SYSTEM COMPATIBILITY. CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE RTU SYSTEM PACKAGE, INCLUDING LEVEL TRANSMITTER, COMPLETE WITH ALL ASSEMBLY AND PROGRAMMING REQUIRED FOR A FUNCTIONING SYSTEM.
- 6 2-#4 & 1-#4 NEUT., 1 1/4" C.
- 7 2-#4, 1-#4 NEUT. & 1-#4 GND., 1 1/4" C.
- 8 1-#12, 1-#12 NEUT. & 1-#12 GND., 3/4" C.
- 9 1 RG-8/U TYPE (BELDEN 9914), 3/4" C.
- 10 1" C. CONTAINING LEVEL TRANSMITTER CABLE. CABLE PROVIDED BY TRANSDUCER MANUFACTURER. COORDINATE LENGTH REQUIRED w/ SUPPLIER.
- 11 GROUND SYSTEM - MIN. (2) 5/8" DIA. x 10'-0" COPPER CLAD GND. RODS, MIN. 6'-0" APART, MIN. 10'-0" LENGTH COLD WATER STEEL PIPE (ATTACH w/ GROUNDING CLAMPS) & GROUNDING ELECTRODE AT THE BOTTOM OF CONCRETE SLAB (ATTACH w/ EXOTHERMIC WELD).
- 12 GROUNDING ELECTRODE CONDUCTOR: AWG #4/CU, 3/4" C. BOND TO GROUNDING SYSTEM w/ EXOTHERMIC WELD.
- 13 GROUNDING CONDUCTOR: AWG #4/CU, 3/4" C. BOND TO GROUNDING SYSTEM w/ EXOTHERMIC WELD.

NOTES:

1. THE POINTS TO BE MONITORED SHALL INCLUDE THE FOLLOWING:

DISCRETE INPUT POINT

- ELECTRIC POWER STATUS (ON/OFF)

ANALOG INPUT POINT

- DITCH WATER LEVEL

LOAD SUMMARY

120/240 VAC, 1 $\phi$ , 3W

LOAD	CONNECTED	DEMAND
PANELBOARD LP	1.2 KVA	1.2 KVA
TOTAL	1.2 KVA	1.2 KVA

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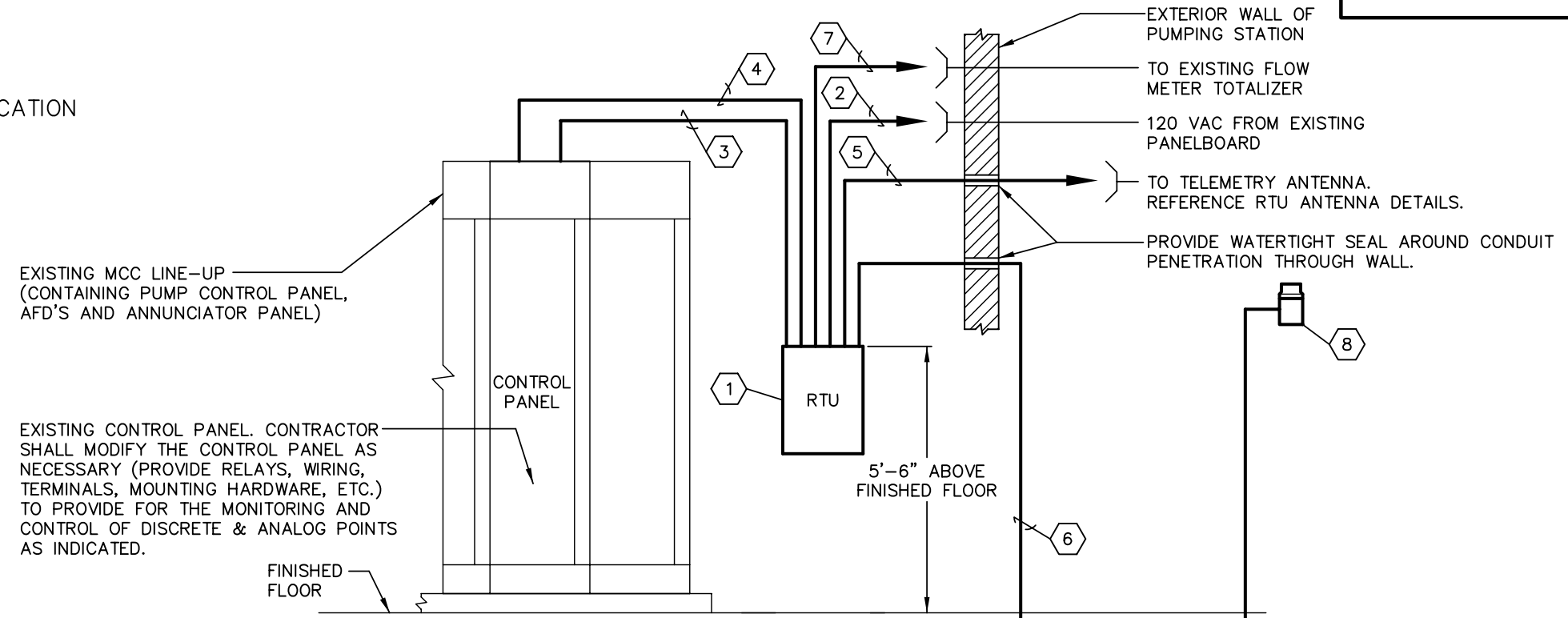
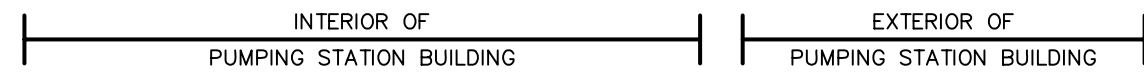
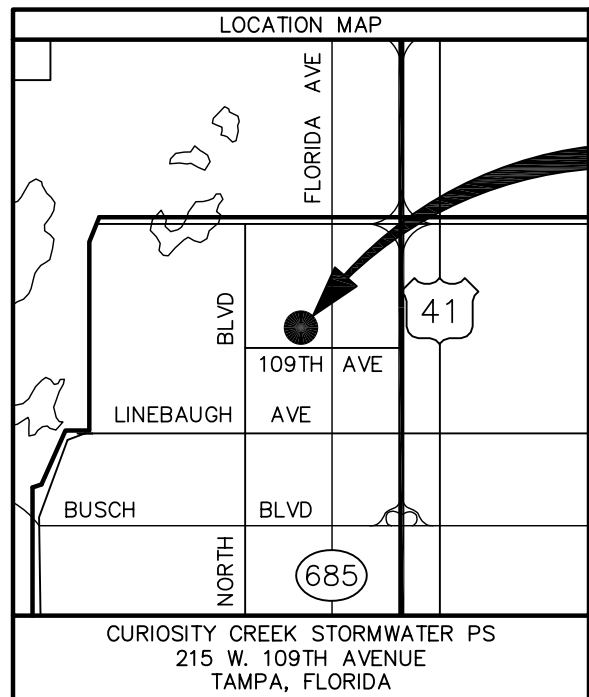
CITY of TAMPA  
Department of Public Works  
Stormwater Engineering

STORMWATER SCADA SYSTEM  
COOLIDGE GRATE DITCH  
MONITORING STATION

W.O. 5952

SHEET

E-4



CURIOSITY CREEK STORMWATER PUMP STATION

KEYED NOTES:

- ① RTU PROVIDED AND INSTALLED BY CONTRACTOR. THE RTU SHALL BE A MOTOROLA ACE 3600 PACKAGE AS DISTRIBUTED BY DCR ENGINEERING OR SCADAONE. CONTRACTOR SHALL COORDINATE ALL WORK TO ENSURE SYSTEM COMPATIBILITY. CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE RTU SYSTEM PACKAGE, COMPLETE WITH ALL ASSEMBLY AND PROGRAMMING REQUIRED FOR A FUNCTIONING SYSTEM. COORDINATE LOCATION OF RTU w/ OWNER.
- ② 1-#12 (120 VAC), 1-#12 NEUT. & 1-#12 GND., 3/4" C. PROVIDE & INSTALL 1P, 15A CIRCUIT BREAKER IN EXISTING PANELBOARD.
- ③ 14-#14 (STATUS), 4-#14 (SPARE) & 1-#14 GND., 1 1/2" C.
- ④ 8-2/C #16 SHLD. (BELDEN 8719), 2" C.
- ⑤ 1 RG-8/U TYPE (BELDEN 9914), 3/4" C.
- ⑥ 1-2/C #16 SHLD. (BELDEN 8719), 3/4" C.
- ⑦ 2-2/C #16 SHLD. (BELDEN 8719), 1" C.
- ⑧ CAMPBELL SCIENTIFIC MODEL TE525-L RAIN GAUGE w/ 6" ORIFICE AND SCALED PULSE OUTPUT. COORDINATE LOCATION w/ OWNER. REFERENCE RAIN GAUGE DETAIL.

NOTES:

- 1. COORDINATE THE CONNECTIONS TO THE AFD w/ ICON TECHNOLOGIES.
- 2. THE POINTS TO BE MONITORED SHALL INCLUDE THE FOLLOWING:
  - DISCRETE INPUT POINTS
  - ELECTRICAL POWER STATUS (ON/OFF)
  - GENERATOR STATUS (ON/OFF)
  - PUMP #1 STATUS (ON/OFF)
  - PUMP #2 STATUS (ON/OFF)
  - PUMP #3 STATUS (ON/OFF)
  - FIRE ALARM (NORMAL/FIRE)
  - POND WATER LEVEL (NORMAL/HIGH LEVEL)
  - RAIN GAUGE DATA

ANALOG INPUT POINTS

- FLOW METER TOTALIZED FLOW FROM FLOW METER
- FLOW METER FLOW RATE FROM FLOW METER
- PUMP #1 SPEED INDICATION FROM AFD #1
- PUMP #2 SPEED INDICATION FROM AFD #2
- PUMP #3 SPEED INDICATION FROM AFD #3
- POND WATER LEVEL

ANALOG OUTPUT POINTS

- PUMP #1 SPEED CONTROL SETPOINT TO AFD #1
- PUMP #2 SPEED CONTROL SETPOINT TO AFD #2
- PUMP #3 SPEED CONTROL SETPOINT TO AFD #3

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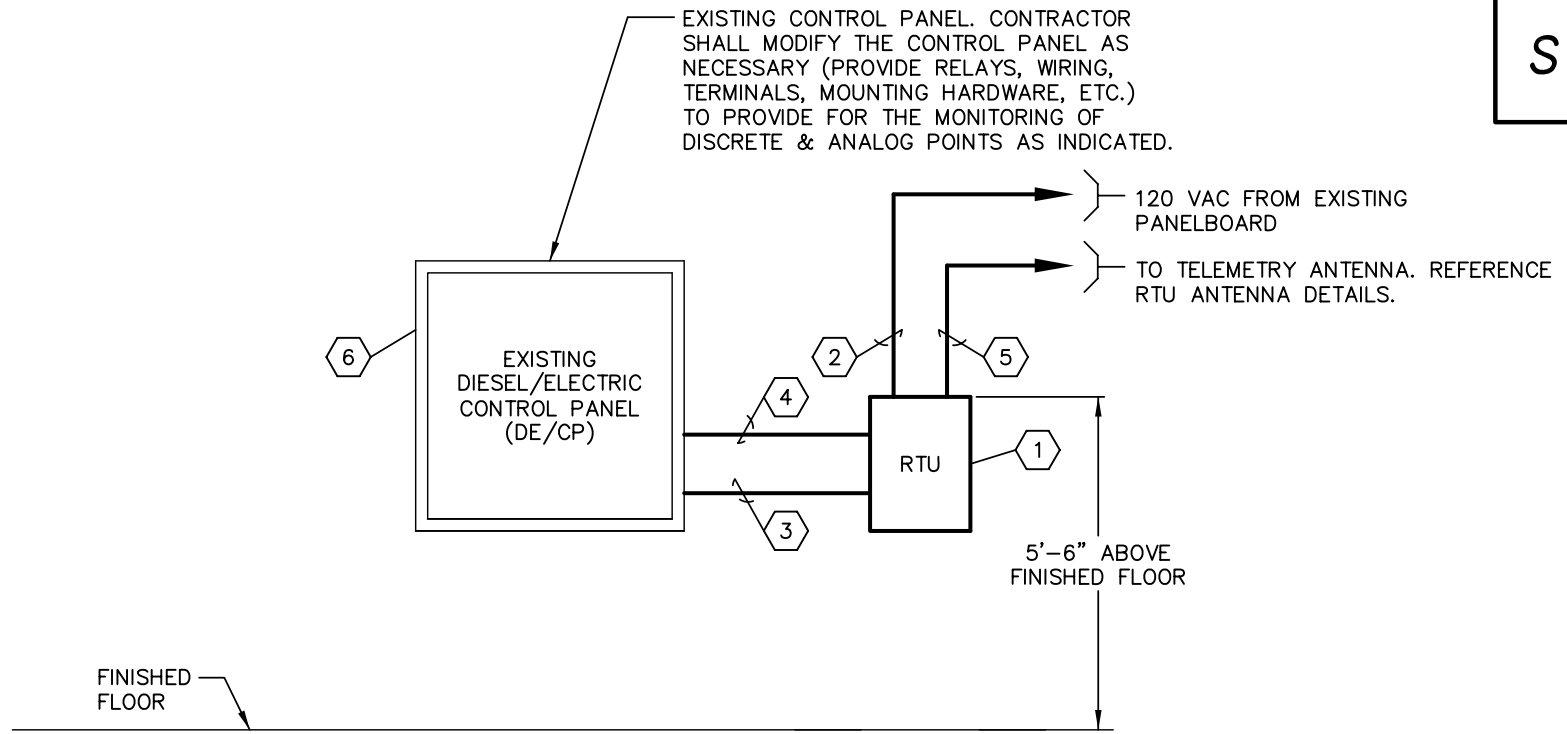
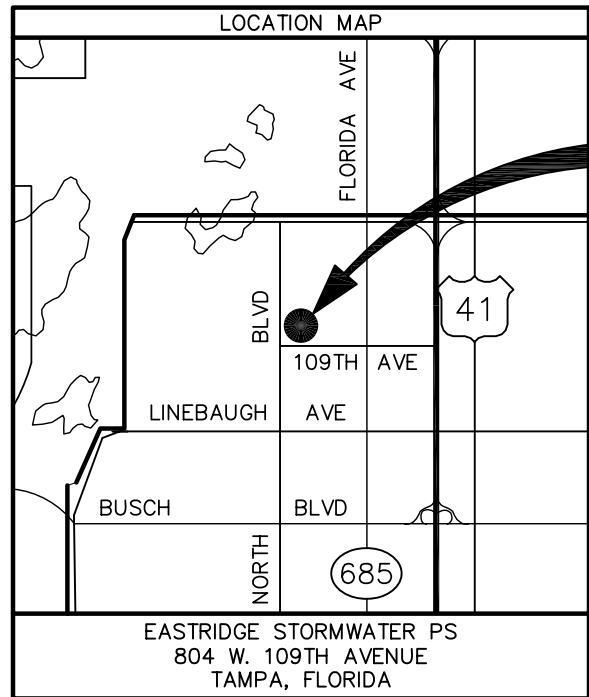
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CKD:  
DATE: 09/16/14

CITY of TAMPA  
Department of Public Works  
Stormwater Engineering

STORMWATER SCADA SYSTEM  
CURIOSITY CREEK  
STORMWATER PUMP STATION



EASTRIDGE STORMWATER PUMP STATION

KEYED NOTES:

- 1 RTU PROVIDED AND INSTALLED BY CONTRACTOR. THE RTU SHALL BE A MOTOROLA ACE 3600 PACKAGE AS DISTRIBUTED BY DCR ENGINEERING OR SCADAONE. CONTRACTOR SHALL COORDINATE ALL WORK TO ENSURE SYSTEM COMPATIBILITY. CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE RTU SYSTEM PACKAGE, COMPLETE WITH ALL ASSEMBLY AND PROGRAMMING REQUIRED FOR A FUNCTIONING SYSTEM. COORDINATE LOCATION OF RTU w/ OWNER.
- 2 1-#12 (120 VAC), 1-#12 NEUT. & 1-#12 GND., 3/4" C. PROVIDE & INSTALL 1P, 15A CIRCUIT BREAKER IN EXISTING PANELBOARD.
- 3 12-#14 (STATUS), 4-#14 (SPARE) & 1-#14 GND., 1 1/2" C.
- 4 1-2/C #16 SHLD. (BELDEN 8719), 3/4" C.
- 5 1 RG-8/U TYPE (BELDEN 9914), 3/4" C.
- 6 THE EXSITING DIESEL/ELECTRIC CONTROL PANEL IS CONTROLLED BY A GE FANUC 9030 PLC. CONTRACTOR SHALL MODIFY, AS NECESSARY, THE EXISTING PROGRAM & PROVIDE THE ADDITIONAL INPUT/OUTPUT CARDS, AS REQUIRED, TO IMPLEMENT THE MONITORING OF THE DESIGNATED DISCRETE & ANALOG POINTS.

NOTES:

1. THE POINTS TO BE MONITORED SHALL INCLUDE THE FOLLOWING:

DISCRETE INPUT POINTS

- ELECTRICAL POWER STATUS (ON/OFF)
- PUMP #1 STATUS (ON/OFF)
- PUMP STATION WET WELL STATUS (NORMAL/HIGH)
- DIESEL ENGINE (ON/OFF)
- HYDRAULIC PRESSURE - DIESEL (NORMAL/LOW)
- HYDRAULIC PRESSURE - ELECTRICAL (NORMAL/LOW)

ANALOG INPUT POINT

- POND WATER LEVEL

ENGINEER OF RECORD:  
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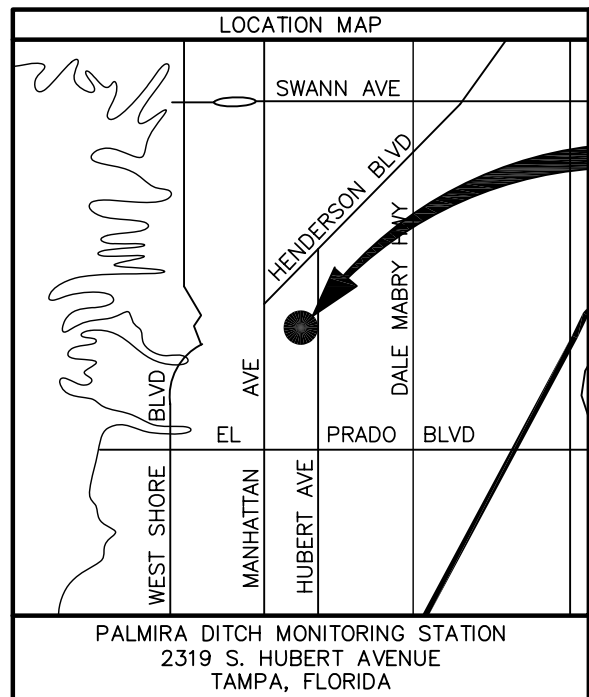
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CITY of TAMPA  
Department of Public Works  
Stormwater Engineering

STORMWATER SCADA SYSTEM  
EASTRIDGE  
STORMWATER PUMP STATION

W.O. 5952  
SHEET  
E-6

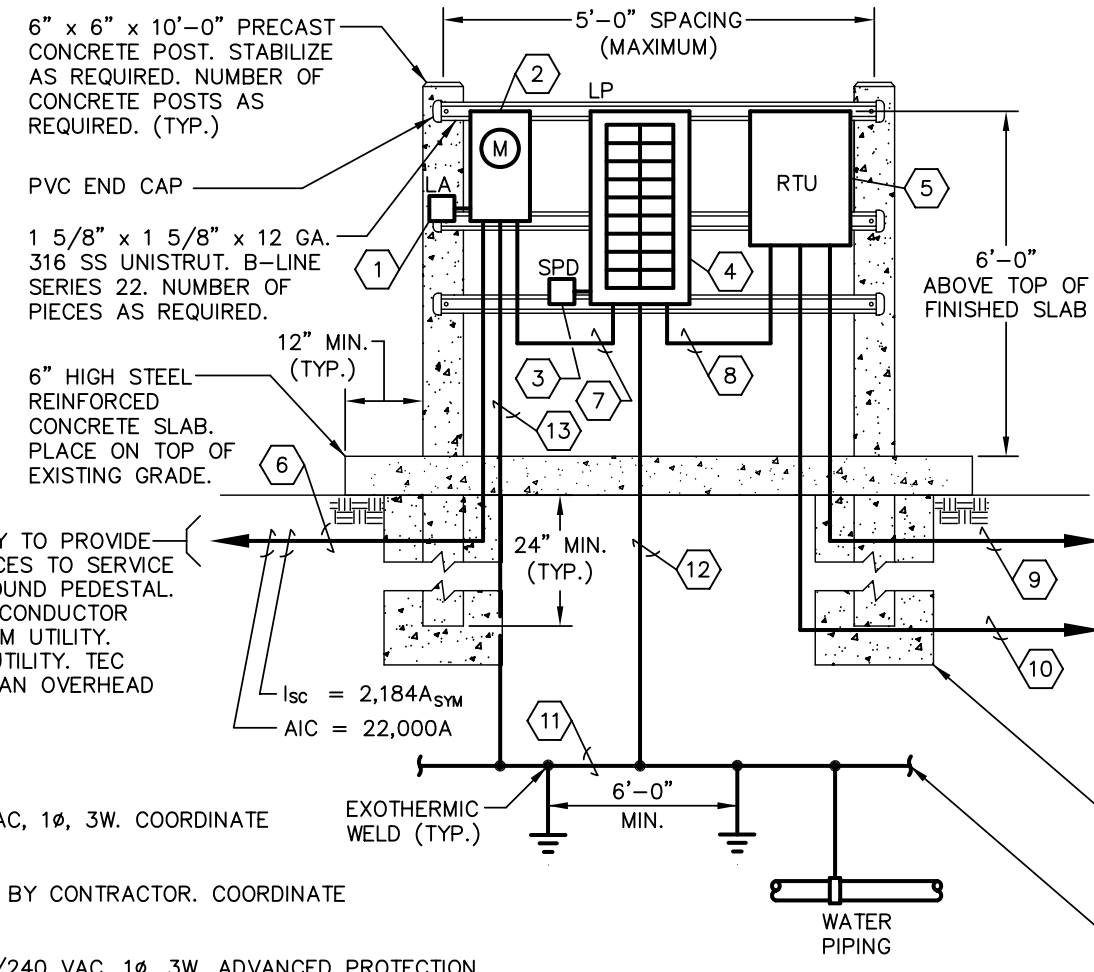




PROJECT LOCATION



PALMIRA DITCH



- NOTES:**
1. ALL EDGES OF UNISTRUT SHALL BE FILED SMOOTH.
  2. ALL FASTENING AND MOUNTING HARDWARE SHALL BE 316 SS.
  3. PROVIDE A 6" THICK CONCRETE SLAB THAT EXTENDS FROM THE MOUNTING POSTS TO 4' IN FRONT OF MOUNTED ELECTRICAL EQUIPMENT.

TO PEDESTAL AT BASE OF UTILITY POLE. UTILITY TO PROVIDE & INSTALL ABOVE GROUND PEDESTAL FOR SPLICES TO SERVICE CONDUCTORS. STUB-UP CONDUIT IN ABOVE GROUND PEDESTAL. PROVIDE 3'-0" CONDUCTOR LENGTH FOR EACH CONDUCTOR FOR CONNECTION TO SERVICE CONDUCTORS FROM UTILITY. COORDINATE LOCATION & REQUIREMENTS WITH UTILITY. TEC SHALL SET A NEW UTILITY POLE AS REQUIRED. AN OVERHEAD SERVICE DROP TO METER IS NOT ACCEPTABLE.

**KEYED NOTES:**

- 1 LIGHTNING ARRESTER (LA): 120/240 VAC, 1 $\phi$ , 3W. COORDINATE REQUIREMENTS w/ UTILITY COMPANY.
- 2 METER SOCKET PROVIDED & INSTALLED BY CONTRACTOR. COORDINATE REQUIREMENTS w/ UTILITY COMPANY.
- 3 SURGE PROTECTIVE DEVICE (SPD): 120/240 VAC, 1 $\phi$ , 3W. ADVANCED PROTECTION TECHNOLOGIES CAT. NO. TE01XCS.
- 4 120/240 VAC, 1 $\phi$ , 3W, 12 CIRCUIT, 20" WIDE, 100A PANELBOARD w/ 2P, 60A FACTORY INSTALLED MAIN CIRCUIT BREAKER, COPPER BUS & GROUND BAR KIT MOUNTED IN A NEMA 3R ENCLOSURE. PANELBOARD SHALL BE SUITABLE FOR USE AS SERVICE EQUIPMENT. MOUNT TOP OF ENCLOSURE 6'-0" ABOVE FINISHED CONCRETE. PROVIDE AND INSTALL A 1P, 15A CIRCUIT BREAKER FOR THE INSTALLATION OF NEW RTU. PROVIDE THREE (3) SPARE 1P, 15A CIRCUIT BREAKERS.
- 5 RTU PROVIDED AND INSTALLED BY CONTRACTOR. THE RTU SHALL BE A MOTOROLA ACE 3600 PACKAGE AS DISTRIBUTED BY DCR ENGINEERING OR SCADAONE. CONTRACTOR SHALL COORDINATE ALL WORK TO ENSURE SYSTEM COMPATIBILITY. CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE RTU SYSTEM PACKAGE, INCLUDING LEVEL TRANSMITTER, COMPLETE WITH ALL ASSEMBLY AND PROGRAMMING REQUIRED FOR A FUNCTIONING SYSTEM.
- 6 2-#4 & 1-#4 NEUT., 1 1/4" C.
- 7 2-#4, 1-#4 NEUT. & 1-#4 GND., 1 1/4" C.
- 8 1-#12, 1-#12 NEUT. & 1-#12 GND., 3/4" C.
- 9 1 RG-8/U TYPE (BELDEN 9914), 3/4" C.
- 10 1" C. CONTAINING LEVEL TRANSMITTER CABLE. CABLE PROVIDED BY TRANSDUCER MANUFACTURER. COORDINATE LENGTH REQUIRED w/ SUPPLIER.
- 11 GROUND SYSTEM - MIN. (2) 5/8" DIA. x 10'-0" COPPER CLAD GND. RODS, MIN. 6'-0" APART, MIN. 10'-0" LENGTH COLD WATER STEEL PIPE (ATTACH w/ GROUNDING CLAMPS) & GROUNDING ELECTRODE AT THE BOTTOM OF CONCRETE SLAB (ATTACH w/ EXOTHERMIC WELD).
- 12 GROUNDING ELECTRODE CONDUCTOR: AWG #4/CU, 3/4" C. BOND TO GROUNDING SYSTEM w/ EXOTHERMIC WELD.
- 13 GROUNDING CONDUCTOR: AWG #4/CU, 3/4" C. BOND TO GROUNDING SYSTEM w/ EXOTHERMIC WELD.

**NOTES:**

1. THE POINTS TO BE MONITORED SHALL INCLUDE THE FOLLOWING:
  - DISCRETE INPUT POINT
    - ELECTRIC POWER STATUS (ON/OFF)
  - ANALOG INPUT POINT
    - DITCH WATER LEVEL

LOAD SUMMARY		
120/240 VAC, 1 $\phi$ , 3W		
LOAD	CONNECTED	DEMAND
PANELBOARD LP	1.2 KVA	1.2 KVA
TOTAL	1.2 KVA	1.2 KVA

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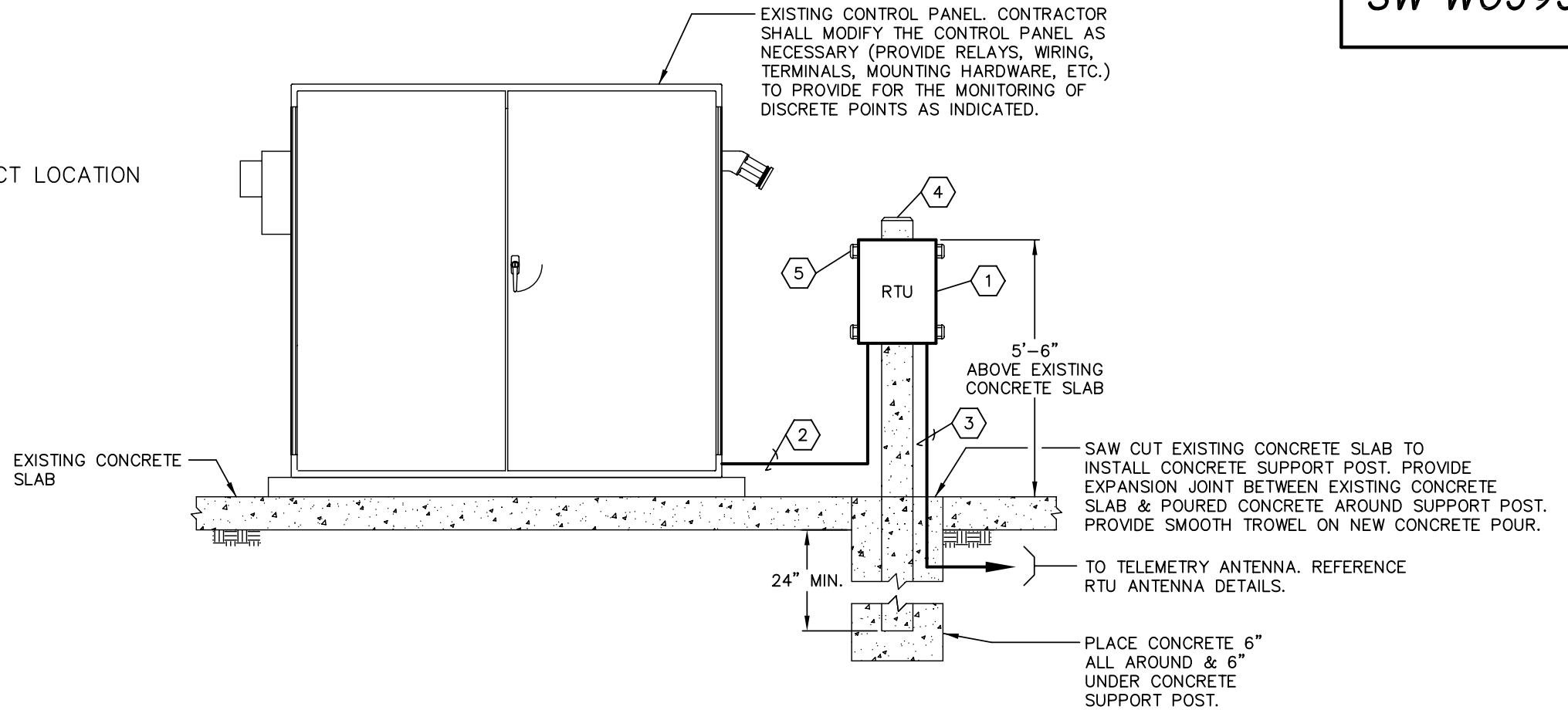
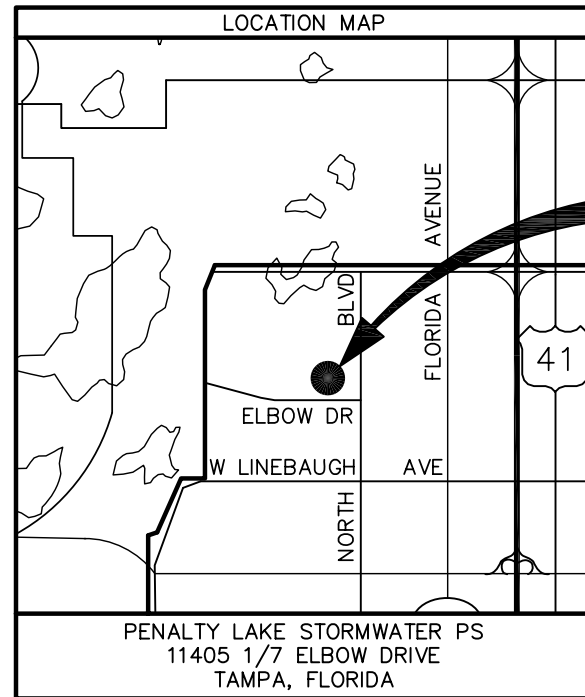
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CITY of TAMPA  
Department of Public Works  
Stormwater Engineering

STORMWATER SCADA SYSTEM  
PALMIRA DITCH  
MONITORING STATION

W.O. 5952  
SHEET  
E-7



PENALTY LAKE STORMWATER PUMP STATION

KEYED NOTES:

- 1 RTU PROVIDED AND INSTALLED BY CONTRACTOR. THE RTU SHALL BE A MOTOROLA ACE 3600 PACKAGE AS DISTRIBUTED BY DCR ENGINEERING OR SCADAONE. CONTRACTOR SHALL COORDINATE ALL WORK TO ENSURE SYSTEM COMPATIBILITY. CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE RTU SYSTEM PACKAGE, COMPLETE WITH ALL ASSEMBLY AND PROGRAMMING REQUIRED FOR A FUNCTIONING SYSTEM. COORDINATE LOCATION OF RTU w/ OWNER.
- 2 1-#12 (120 VAC), 1-#12 NEUT., 8-#14 (STATUS), 4-#14 (SPARE) & 1-#12 GND., 1 1/2" C.
- 3 1 RG-8/U TYPE (BELDEN 9914), 3/4" C.
- 4 6" x 6" x 10'-0" PRECAST CONCRETE POST. STABILIZE AS REQUIRED.
- 5 PROVIDE 1 5/8" x 1 5/8" 316 SS UNISTRUT w/ PVC END CAPS FOR MOUNTING RTU TO CONCRETE SUPPORT. PROVIDE 316 SS MOUNTING & FASTENING HARDWARE.

NOTES:

- 1. THE POINTS TO BE MONITORED SHALL INCLUDE THE FOLLOWING:
  - DISCRETE INPUT POINTS
  - PUMP #1 STATUS (ON/OFF)
  - PUMP #2 STATUS (ON/OFF)
  - PENALTY LAKE WATER LEVEL ALARM (NORMAL/HIGH LEVEL)
  - ELECTRICAL POWER STATUS (ON/OFF)

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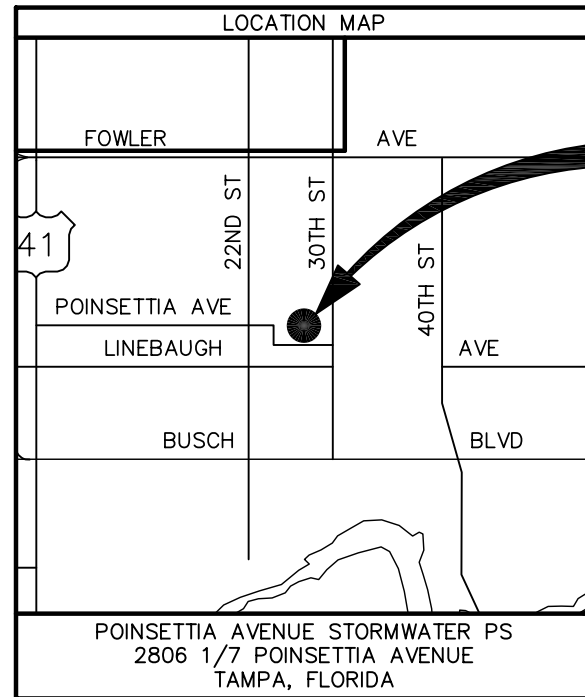
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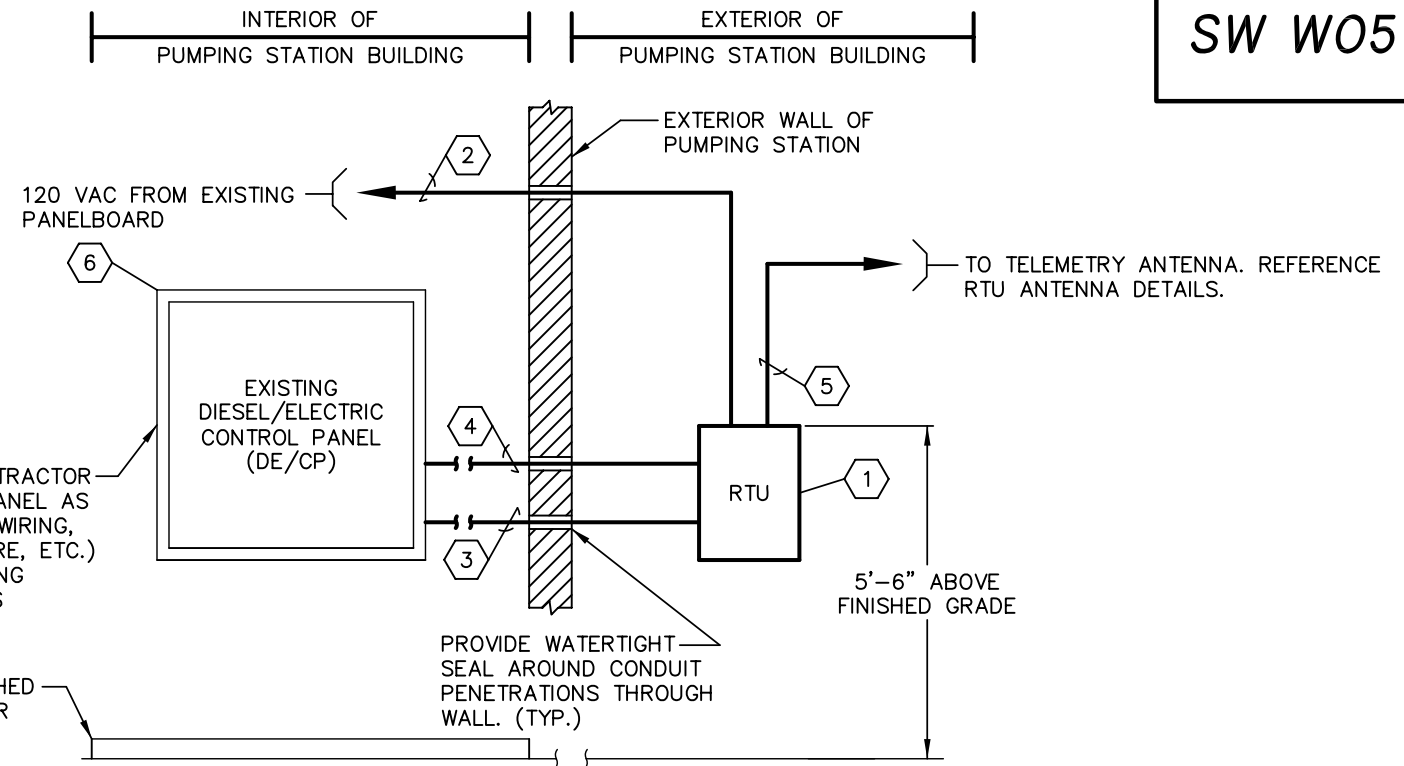
CITY of TAMPA  
Department of Public Works  
Stormwater Engineering

STORMWATER SCADA SYSTEM  
PENALTY LAKE  
STORMWATER PUMP STATION

W.O. 5952  
SHEET  
E-8



PROJECT LOCATION



EXISTING CONTROL PANEL. CONTRACTOR SHALL MODIFY THE CONTROL PANEL AS NECESSARY (PROVIDE RELAYS, WIRING, TERMINALS, MOUNTING HARDWARE, ETC.) TO PROVIDE FOR THE MONITORING OF DISCRETE & ANALOG POINTS AS INDICATED.

KEYED NOTES:

- 1 RTU PROVIDED AND INSTALLED BY CONTRACTOR. THE RTU SHALL BE A MOTOROLA ACE 3600 PACKAGE AS DISTRIBUTED BY DCR ENGINEERING OR SCADAONE. CONTRACTOR SHALL COORDINATE ALL WORK TO ENSURE SYSTEM COMPATIBILITY. CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE RTU SYSTEM PACKAGE, COMPLETE WITH ALL ASSEMBLY AND PROGRAMMING REQUIRED FOR A FUNCTIONING SYSTEM. RTU SHALL BE MOUNTED ON OUTSIDE WALL OF PUMP STATION. COORDINATE LOCATION OF RTU w/ OWNER.
- 2 1-#12 (120 VAC), 1-#12 NEUT. & 1-#12 GND., 3/4" C. PROVIDE & INSTALL 1P, 15A CIRCUIT BREAKER IN EXISTING PANELBOARD.
- 3 14-#14 (STATUS), 4-#14 (SPARE) & 1-#14 GND., 1 1/2" C.
- 4 1-2/C #16 SHLD. (BELDEN 8719), 3/4" C.
- 5 1 RG-8/U TYPE (BELDEN 9914), 3/4" C.
- 6 THE EXISTING DIESEL/ELECTRIC CONTROL PANEL IS CONTROLLED BY AN ALLEN-BRADLEY PLC. CONTRACTOR SHALL MODIFY, AS NECESSARY, THE EXISTING PROGRAM & PROVIDE THE ADDITIONAL INPUT/OUTPUT CARDS, AS REQUIRED, TO IMPLEMENT THE MONITORING OF THE DISCRETE & ANALOG POINTS.

NOTES:

1. THE POINTS TO BE MONITORED SHALL INCLUDE THE FOLLOWING:

DISCRETE INPUT POINTS

- ELECTRICAL POWER STATUS (ON/OFF)
- PUMP #1 (ELECTRICAL) STATUS (ON/OFF)
- PUMP #2 (ELECTRICAL) STATUS (ON/OFF)
- PUMP STATION WET WELL STATUS (NORMAL/HIGH)
- DIESEL ENGINE (ON/OFF)
- HYDRAULIC PRESSURE - PUMP #1 (NORMAL/LOW)
- HYDRAULIC PRESSURE - PUMP #2 (NORMAL/LOW)

ANALOG INPUT POINT

- LAKE POINSETTIA WATER LEVEL



POINSETTIA AVENUE STORMWATER PUMP STATION

ENGINEER OF RECORD:  
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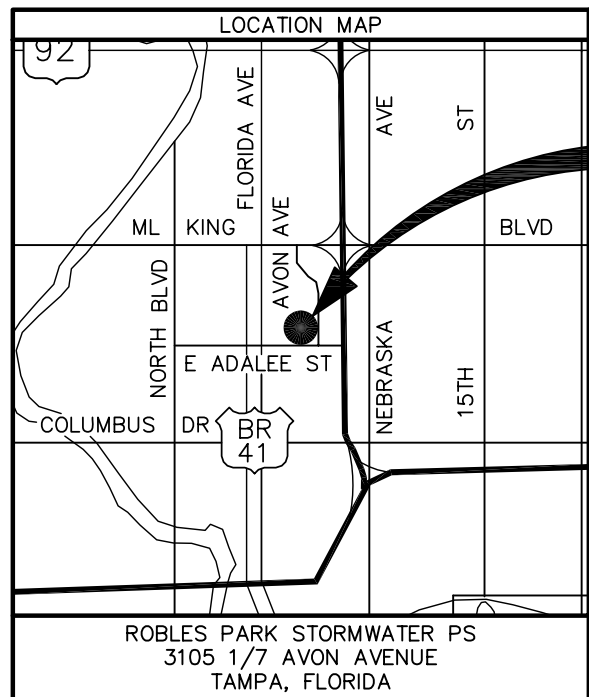
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CITY of TAMPA  
Department of Public Works  
Stormwater Engineering

STORMWATER SCADA SYSTEM  
POINSETTIA AVENUE  
STORMWATER PUMP STATION

W.O. 5952  
SHEET  
E-9

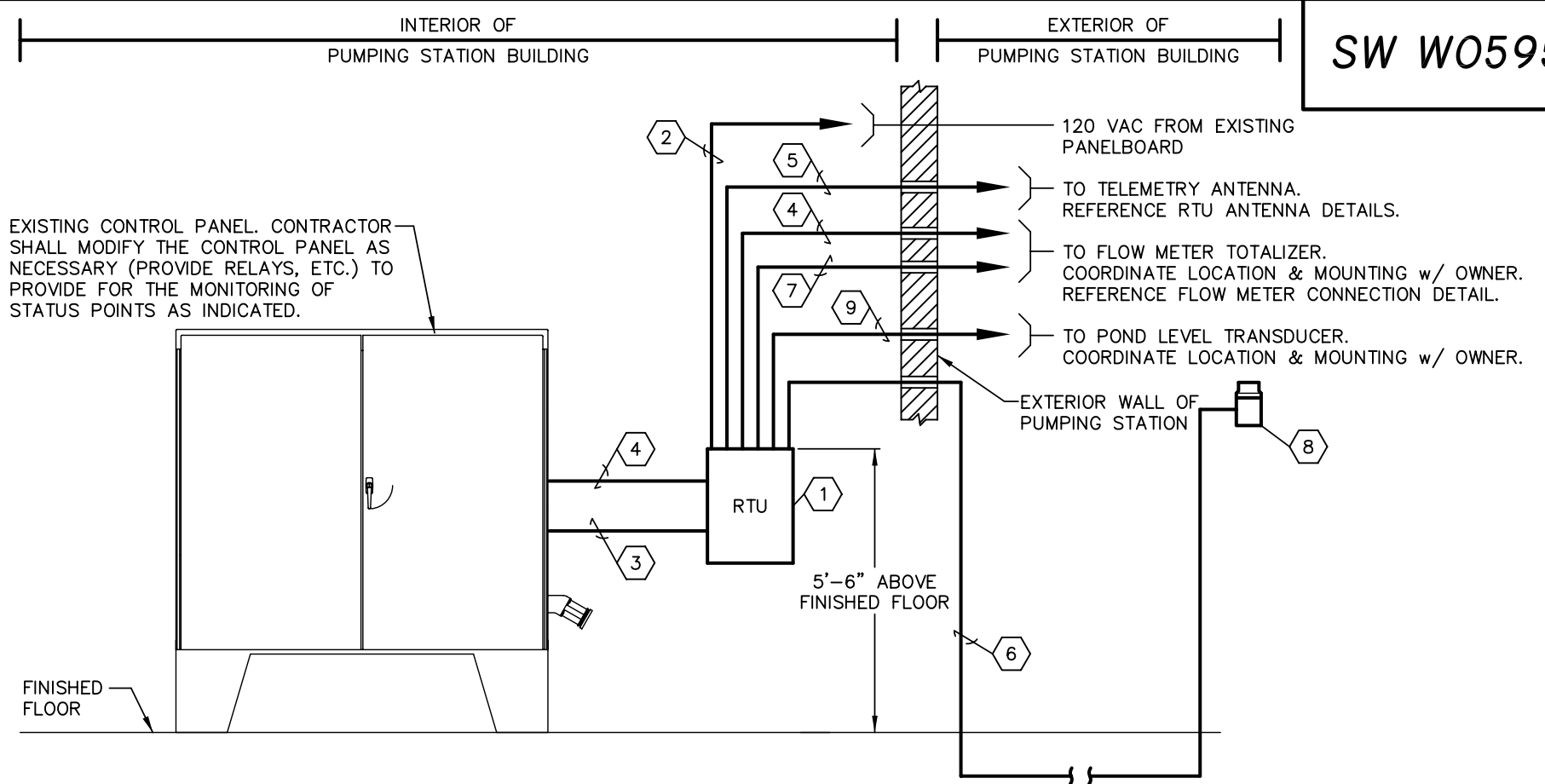


PROJECT LOCATION

ROBLES PARK STORMWATER PS  
3105 1/7 AVON AVENUE  
TAMPA, FLORIDA



ROBLES PARK STORMWATER PUMP STATION



EXISTING CONTROL PANEL. CONTRACTOR SHALL MODIFY THE CONTROL PANEL AS NECESSARY (PROVIDE RELAYS, ETC.) TO PROVIDE FOR THE MONITORING OF STATUS POINTS AS INDICATED.

FINISHED FLOOR

5'-6" ABOVE FINISHED FLOOR

KEYED NOTES:

- 1 RTU PROVIDED AND INSTALLED BY CONTRACTOR. THE RTU SHALL BE A MOTOROLA ACE 3600 PACKAGE AS DISTRIBUTED BY DCR ENGINEERING OR SCADAONE. CONTRACTOR SHALL COORDINATE ALL WORK TO ENSURE SYSTEM COMPATIBILITY. CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE RTU SYSTEM PACKAGE, INCLUDING LEVEL TRANSMITTERS FOR MONITORING THE MANHOLE WATER LEVEL & THE POND WATER LEVEL. COMPLETE WITH ALL ASSEMBLY AND PROGRAMMING REQUIRED FOR A FUNCTIONING SYSTEM. COORDINATE LOCATION OF RTU w/ OWNER.
- 2 2-#12 (120 VAC), 2-#12 NEUT. & 1-#12 GND., 3/4" C. PROVIDE & INSTALL (2) 1P, 15A CIRCUIT BREAKERS IN EXISTING PANELBOARD FOR RTU & FLOW METER TOTALIZER.
- 3 6-#14 (STATUS), 2-#14 (SPARE) & 1-#14 GND., 1 1/2" C.
- 4 2-2/C #16 SHLD. (BELDEN 8719), 1" C.
- 5 1 RG-8/U TYPE (BELDEN 9914), 3/4" C.
- 6 1-2/C #16 SHLD. (BELDEN 8719), 3/4" C.
- 7 1-#12, 1-#12 NEUT. & 1-#12 GND., 3/4" C.
- 8 CAMPBELL SCIENTIFIC MODEL TE525-L RAIN GAUGE w/ 6" ORIFICE AND SCALED PULSE OUTPUT. COORDINATE LOCATION w/ OWNER. REFERENCE RAIN GAUGE DETAIL.
- 9 1" C. CONTAINING LEVEL TRANSMITTER CABLE. CABLE PROVIDED BY TRANSDUCER MANUFACTURER. COORDINATE LENGTH REQUIRED w/ SUPPLIER.

NOTES:

- 1. PROVIDE WATERTIGHT SEALS AROUND ALL CONDUIT PENETRATIONS THROUGH WALL.
- 2. THE POINTS TO BE MONITORED SHALL INCLUDE THE FOLLOWING:
  - DISCRETE INPUT POINTS
    - ELECTRICAL POWER STATUS (ON/OFF)
    - PUMP STATUS (ON/OFF)
    - RAIN GAUGE DATA
    - TOTALIZED FLOW
  - ANALOG INPUT POINTS
    - FLOW RATE
    - POND WATER LEVEL

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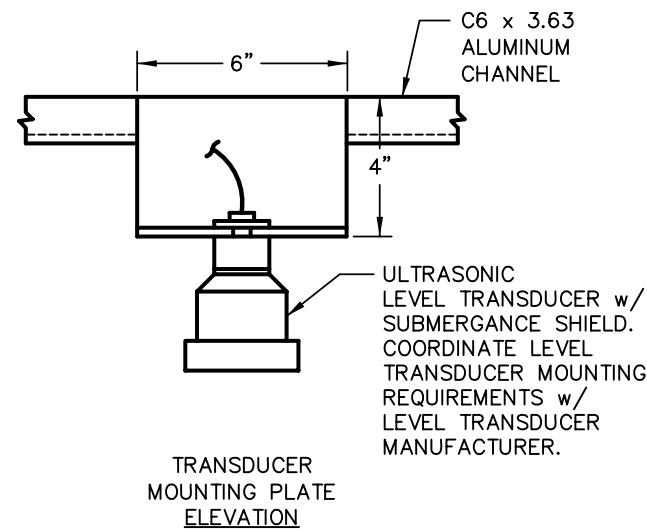
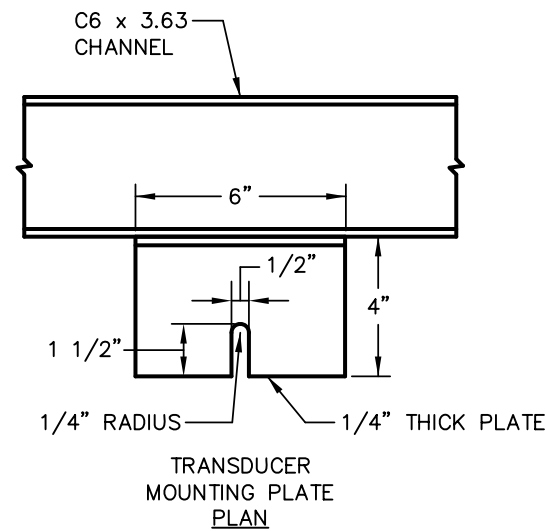
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CITY of TAMPA  
Department of Public Works  
Stormwater Engineering

STORMWATER SCADA SYSTEM  
ROBLES PARK  
STORMWATER PUMP STATION

W.O. 5952  
SHEET  
E-10

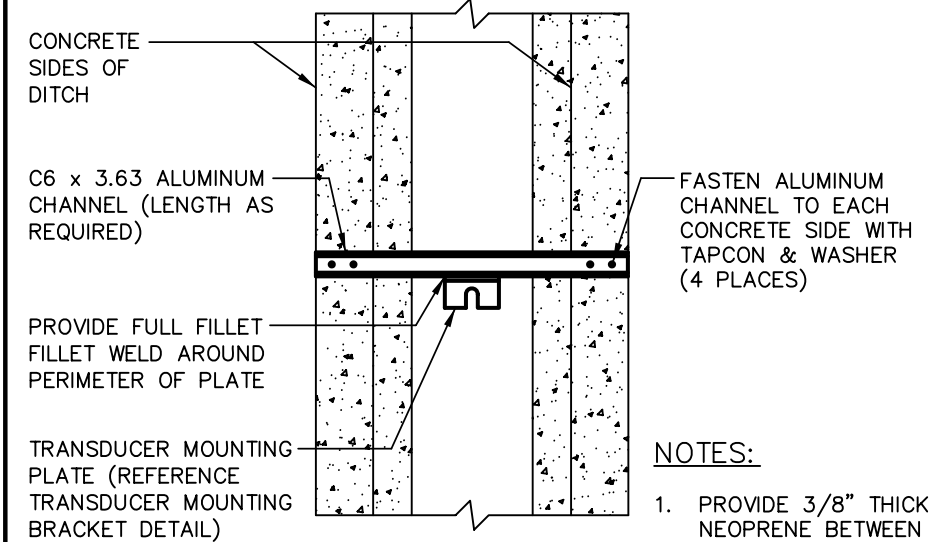


**NOTES:**

1. PROVIDE ALL WELDED CONSTRUCTION.
2. FILE ALL EDGES & CORNERS SMOOTH.
3. ALL SHAPES SHALL BE COPPER FREE ALUMINUM.
4. ENSURE THE TRANSUDUCER BEAM ANGLE IS FREE OF ALL OBSTRUCTIONS THAT WOULD ENCUMBER ACCURATE LEVEL SENSING.

**TRANSUDUCER MOUNTING BRACKET DETAIL**

1

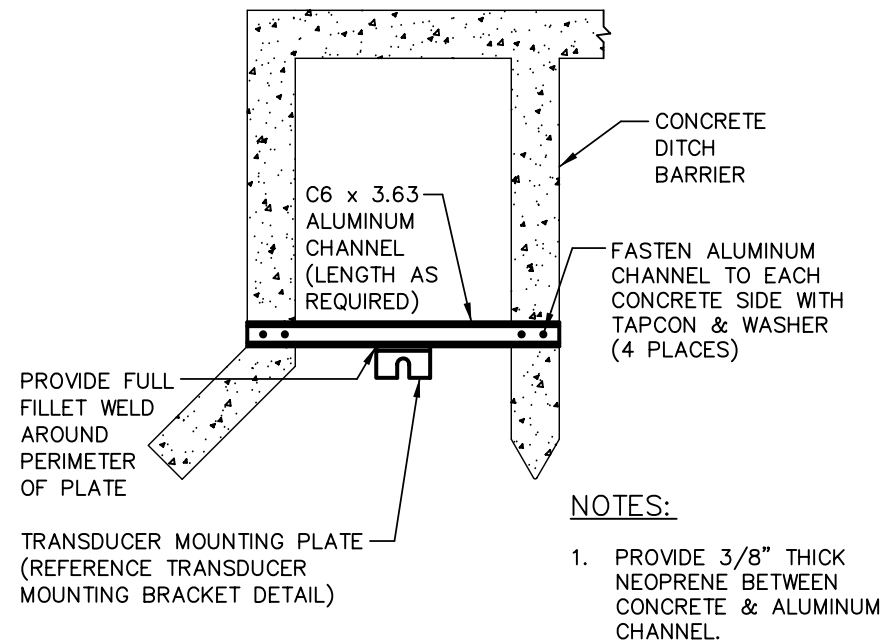


**NOTES:**

1. PROVIDE 3/8" THICK NEOPRENE BETWEEN CONCRETE & ALUMINUM CHANNEL.

**PALMIRA DITCH TRANSUDUCER MOUNTING DETAIL**

3



**NOTES:**

1. PROVIDE 3/8" THICK NEOPRENE BETWEEN CONCRETE & ALUMINUM CHANNEL.

**COOLIDGE GRATE DITCH TRANSUDUCER MOUNTING DETAIL**

4

6

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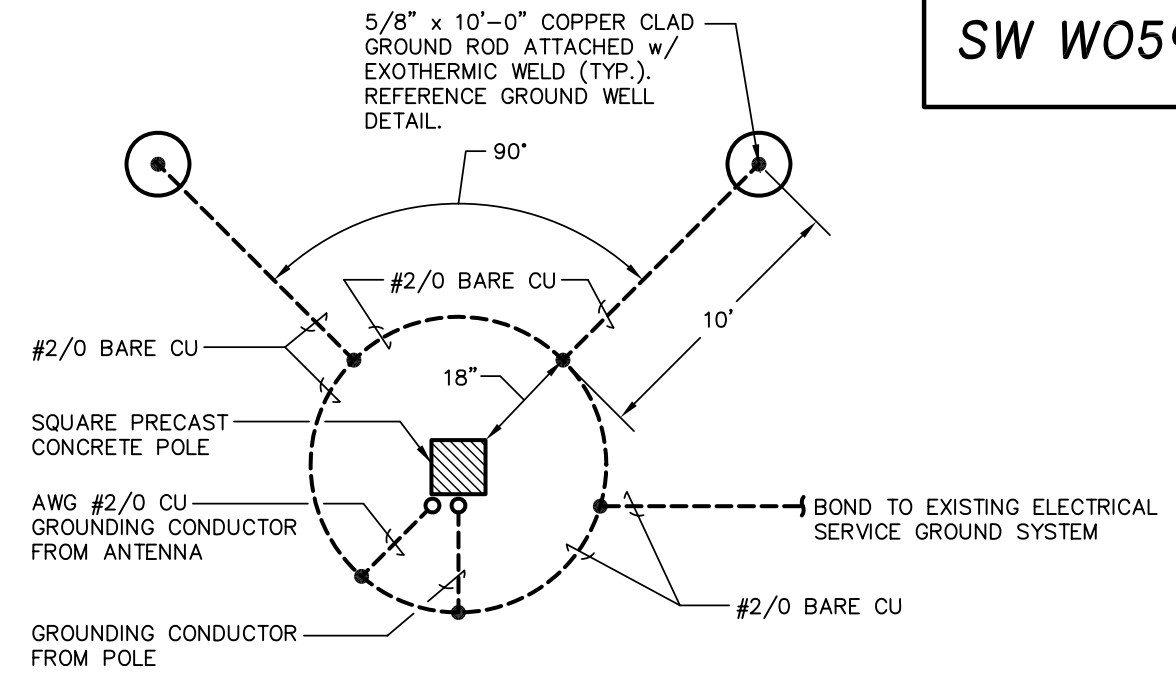
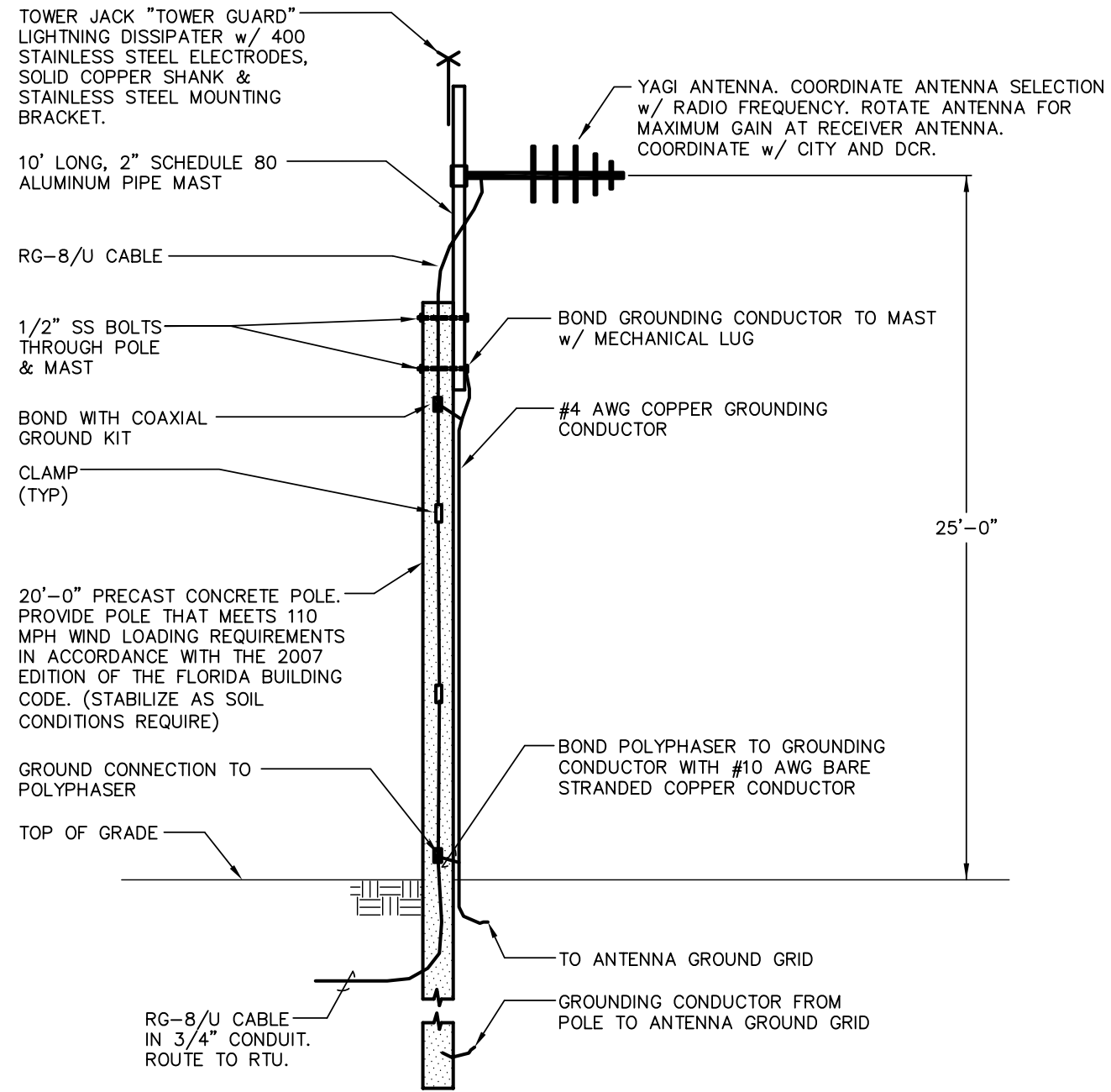
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**CITY of TAMPA**  
Department of Public Works  
Stormwater Engineering

**STORMWATER SCADA SYSTEM**  
**PALMIRA DITCH & COOLIDGE GRATE DITCH**  
**TRANSUDUCER MOUNTING DETAILS**

W.O. 5952  
SHEET  
**E-11**



ANTENNA GROUND GRID DETAIL

NOTES:

- CONTRACTOR SHALL DETERMINE FINAL POLE HEIGHT & WIND LOADING REQUIREMENTS. BURIAL DEPTH OF POLE SHALL BE SUITABLE FOR SOIL CONDITIONS TO ENDURE A 120 MPH WIND SPEED w/ A 3 SECOND GUST OF 150 MPH AS DETERMINED BY A REGISTERED PROFESSIONAL CIVIL ENGINEER. PROVIDE CALCULATIONS.
  - ADJUST PLACEMENT OF GROUND RODS AS NECESSARY SO GROUND GRID DOES NOT EXTEND BEYOND PROPERTY LINE OF STORMWATER SITE.
  - A RADIO COMMUNICATION PATH SHALL LINK THE STORMWATER SITE WITH RECEIVER ANTENNA. AT THE HFC WWTP THE CONTRACTOR SHALL PERFORM A RADIO PATH SURVEY TO ESTABLISH THE RADIO FREQUENCY, POWER, ANTENNA REQUIREMENTS & ANTENNA HEIGHT FOR THIS COMMUNICATION PATH.
- THE COMMUNICATION PATH TO THE HFC WWTP MAY BE ROUTED THROUGH AN EXISTING CITY OF TAMPA WASTEWATER PUMPING STATION SITE (REPEATER SITE) WITH A SCADA LINK TO THE HFC WWTP. THIS REPEATER SITE CAN BE USED TO LINK THE STORMWATER SITE TO THE HFC WWTP IN LIEU OF A DIRECT RADIO LINK BETWEEN THE TWO LOCATIONS.
- SHOP DRAWINGS SHALL BE IN CONFORMANCE WITH CHAPTER 16, SECTION 1609 OF THE FBC2010 FOR A BASIC WIND SPEED OF 120 MPH AS SHOWN IN FIGURE 1609 OF THE CODE. THE SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF FLORIDA.

RTU ANTENNA DETAILS

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Department of Public Works  
Stormwater Engineering

STORMWATER SCADA SYSTEM  
RTU ANTENNA DETAILS

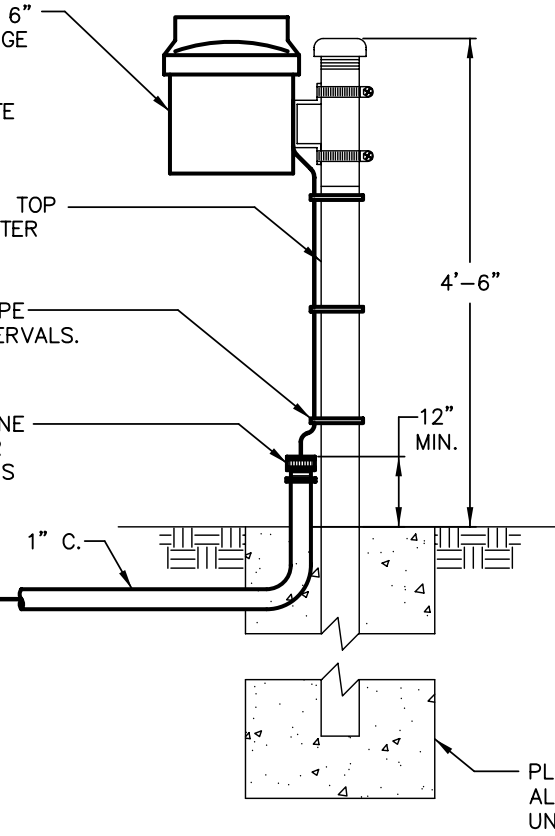
CAMPBELL SCIENTIFIC MODEL TE525-L RAIN GAUGE w/ 6" ORIFICE AND SCALED PULSE OUTPUT. MOUNT RAIN GAUGE TO PIPE USING CAMPBELL SCIENTIFIC MOUNTING KIT AND FOLLOW MANUFACTURER'S INSTRUCTIONS. LOCATE RAIN GAUGE AS SHOWN ON THE SITE PLAN. COORDINATE FINAL LOCATION WITH OWNER.

6' LONG 1 1/2" DIA. SCHEDULE 80 PIPE. WELD CAP ON TOP OF PIPE & HOT DIP GALVANIZE ENTIRE PIPE & CAP AFTER FABRICATION.

SECURE RAIN GAUGE CABLE TO PIPE WITH BLACK TY-RAPS AT 12" INTERVALS. USE T & B TY29MX. (TYP.)

CORD/CABLE FITTING c/w NEOPRENE BUSHING & GLAND NUT SIZED FOR RAIN GAUGE CABLE. CROUSE-HINDS CGB SERIES. (TYP.)

RAIN GAUGE CABLE PROVIDED BY RAIN GAUGE SUPPLIER, ROUTED IN 1" C. COORDINATE LENGTH OF CABLE WITH RAIN GAUGE SUPPLIER. NO SPLICES IN CABLE LENGTH TO CONTROL PANEL WILL BE PERMITTED.



PLACE CONCRETE 6" ALL AROUND & 6" UNDER SUPPORT POST.

**1 RAIN GAUGE DETAIL**

3

4

5

6

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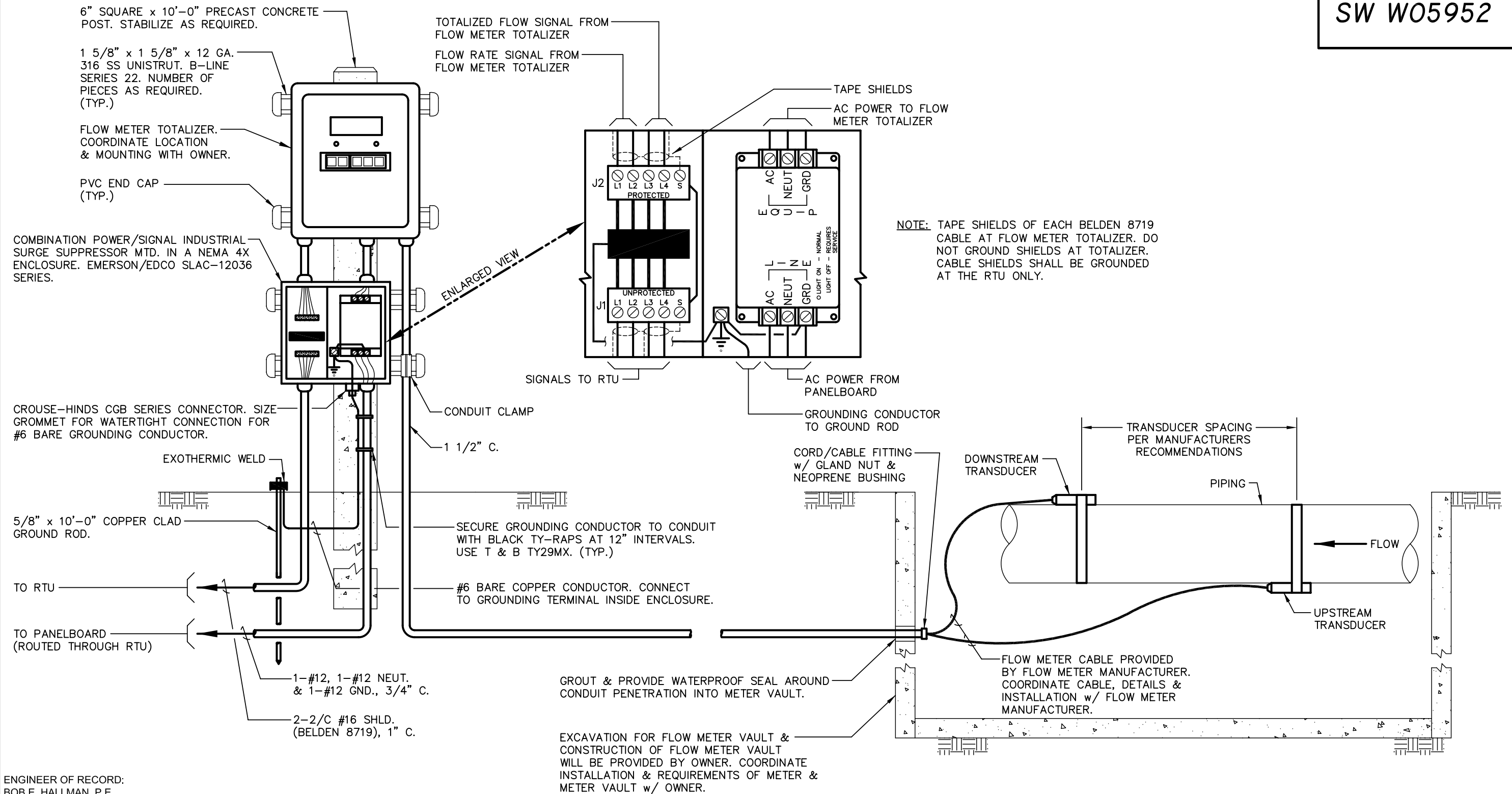
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**CITY of TAMPA**  
Department of Public Works  
Stormwater Engineering

**STORMWATER SCADA SYSTEM**  
ELECTRICAL  
DETAILS

W.O. 5952  
SHEET  
**E-13**



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Certificate of Authorization Number: 4795

### CLAMP-ON ULTRASONIC TRANSIT TIME FLOW METER CONNECTION DETAIL

NOTES:

1. ALL EDGES OF UNISTRUT SHALL BE FILED SMOOTH.
2. ALL FASTENING AND MOUNTING HARDWARE SHALL BE 316 SS.

No.	DATE	REVISIONS	No.	DATE	REVISIONS
3			6		
2			5		
1			4		

DES: STK  
DRN: RWB  
CKD:  
DATE: 09/16/14

CITY of TAMPA  
Department of Public Works  
Stormwater Engineering

STORMWATER SCADA SYSTEM  
CLAMP-ON ULTRASONIC TRANSIT  
TIME FLOW METER CONNECTION DETAIL