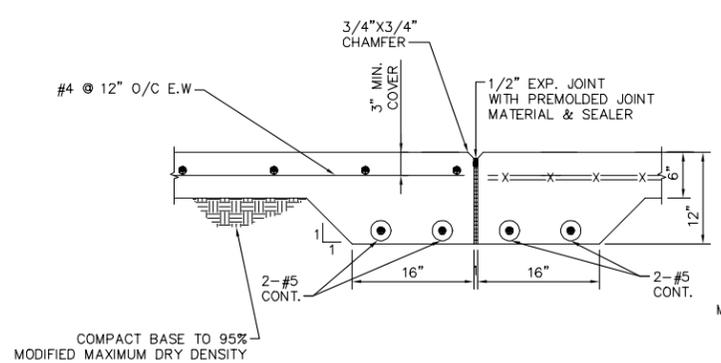
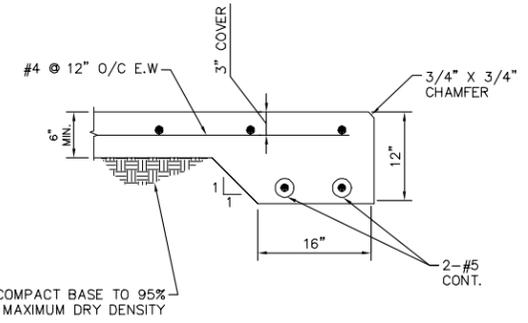


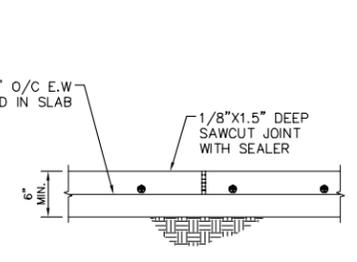
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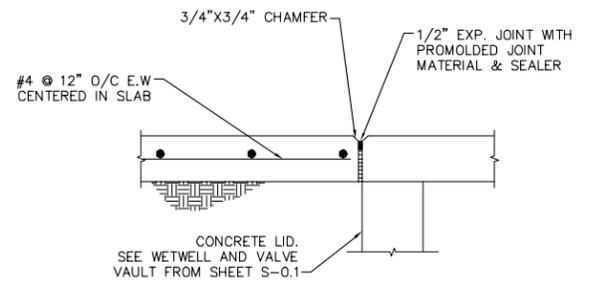
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S-0.4



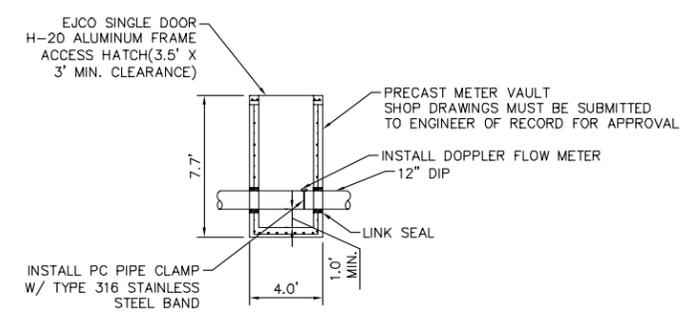
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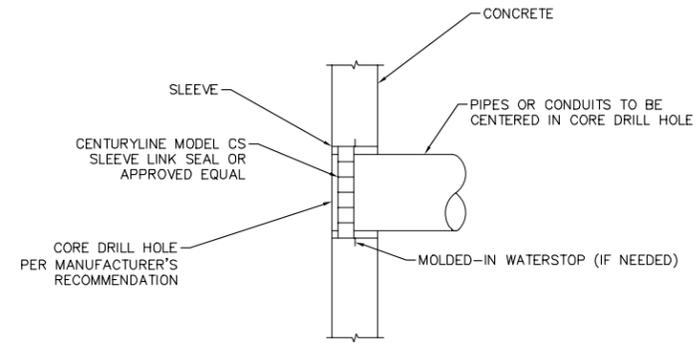
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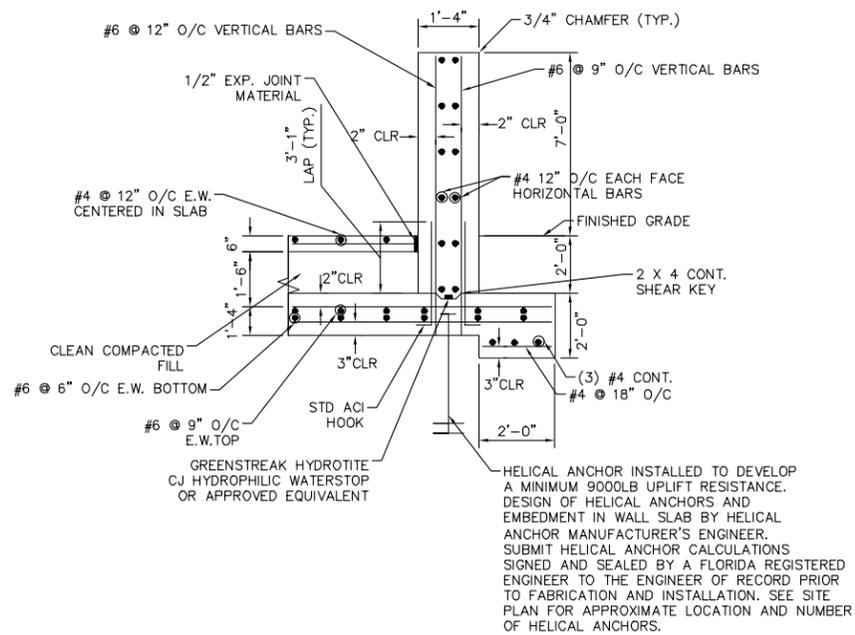
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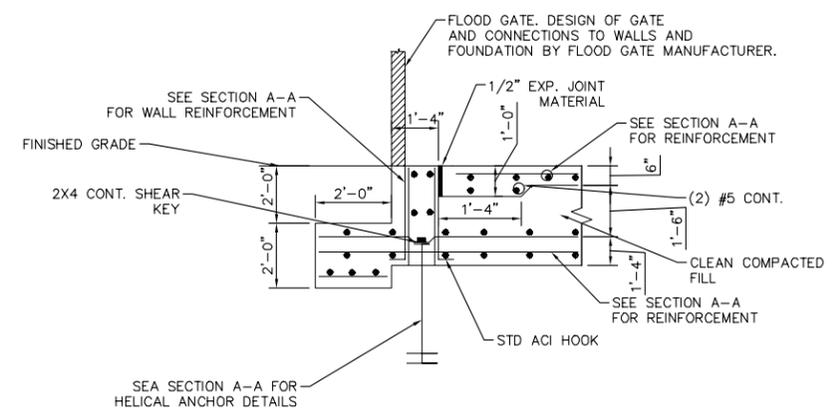
METER VAULT DETAIL
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S-0.4



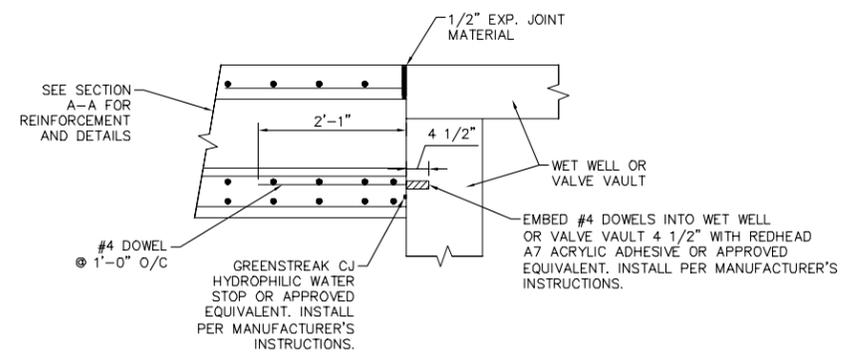
PIPE PENETRATION
N.T.S. 13
S-0.4



TYPICAL FLOOD WALL
SECTION A-A
N.T.S. A
S-0.4



FLOOD GATE
SECTION B-B
N.T.S. B
S-0.4



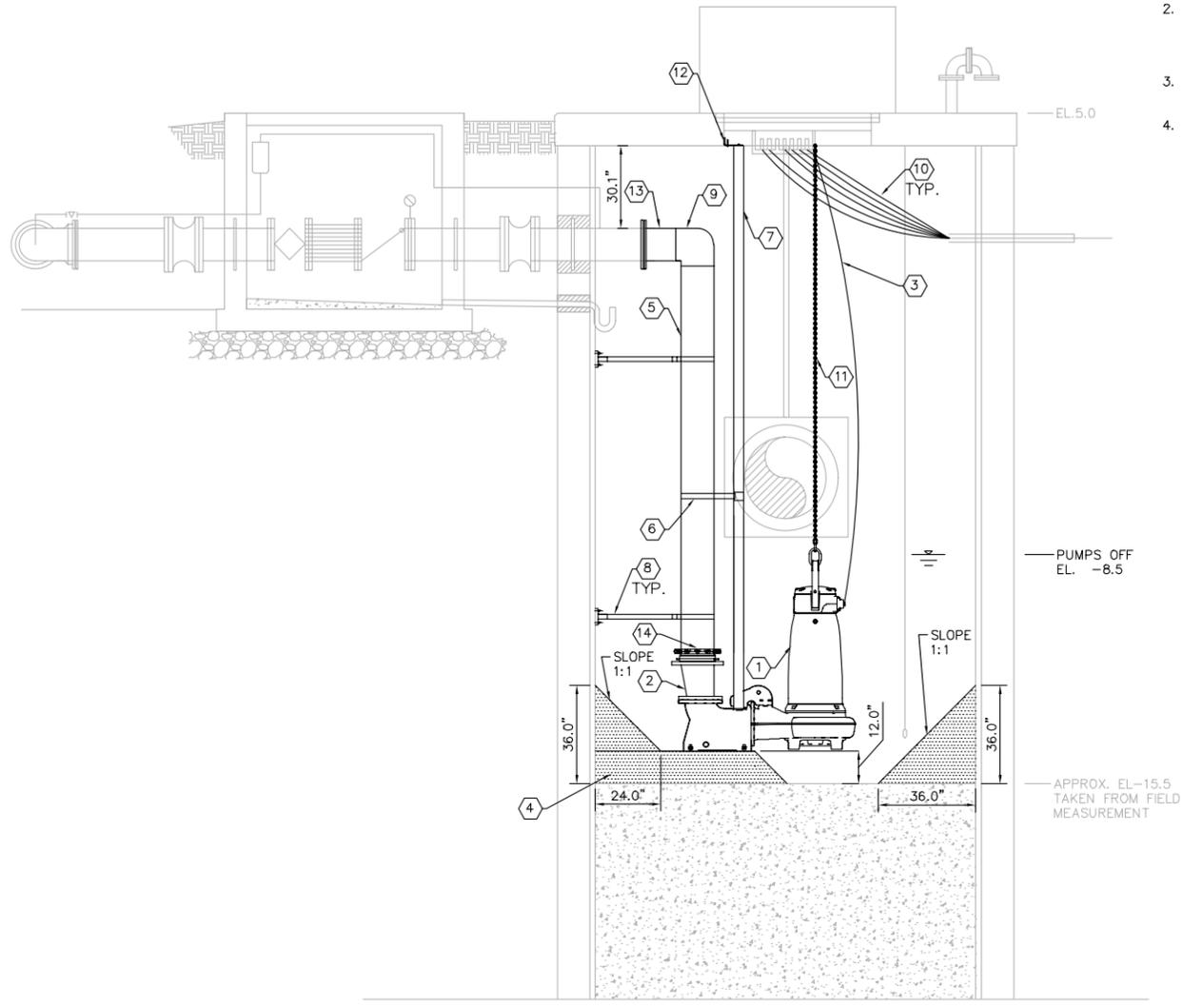
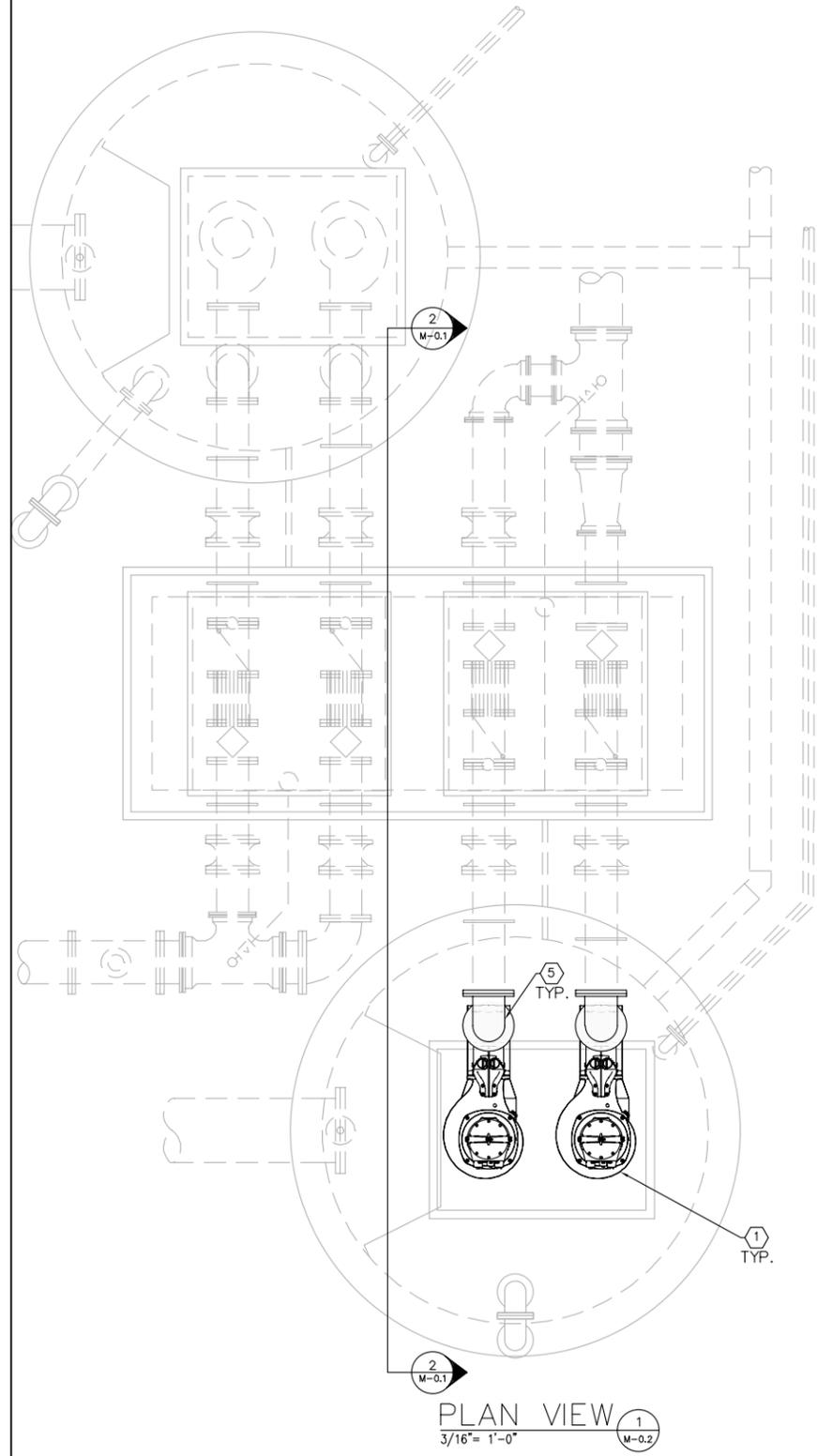
SECTION C-C
N.T.S. C
S-0.4

GROUNDWATER / DEWATERING NOTE:
 THE PRESENCE OF GROUNDWATER SHOULD BE ANTICIPATED ON THIS PROJECT. CONTRACTOR'S BID SHALL INCLUDE CONSIDERATION FOR THIS ISSUE. WHEN PERFORMING GRADING OPERATIONS DURING PERIODS OF WET WEATHER, PROVIDE ADEQUATE DEWATERING, DRAINAGE AND GROUND WATER MANAGEMENT TO CONTROL MOISTURE OF SOILS.



DESIGN ENGINEER: SETH E. SCHMID, P.E. FLORIDA REGISTRATION NUMBER: 54640		DATE: OCTOBER 2013
SCALE: AS NOTED	DESIGNED BY: JWW	PROJECT NO. 148404000
DRAWN BY: JRT	CHECKED BY: WEW	SHEET NUMBER S-0.4
STRUTURAL DETAILS		REVISIONS
CITY OF ST. PETE BEACH PUMP STATION NO. 1 & 2 REHABILITATION		DATE OCTOBER 2013
PINELLAS COUNTY FLORIDA		BY

Drawing name: K:\TAM_Civil\148404 - City of St. Pete Beach\001 - Pump Station No. 1\CADD\PlanSheets\M-0.1 PLAN AND SECTION.dwg PUMP STATION 1 PLAN AND SECTION Oct 25, 2013 10:01 am by Jordan Walker
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- GENERAL NOTES:**
- CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION AND ORDERING EQUIPMENT. CONTRACTOR SHALL NOTIFY ENGINEER OF DISCREPANCIES.
 - CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING EQUIPMENT, UTILITIES, STRUCTURES, AND PERSONNEL FROM DAMAGE OR INJURY DURING CONSTRUCTION.
 - CONSTRUCTION SEQUENCE SHALL BE COORDINATED TO AVOID ANY PUMP STATION INTERRUPTION.
 - EXISTING DRAWING TRACED FROM FDEP PLANS PERMIT #C552-003369-030. DEVIATIONS FOUND FROM FIELD MEASUREMENTS ARE NOTED ON PLANS.

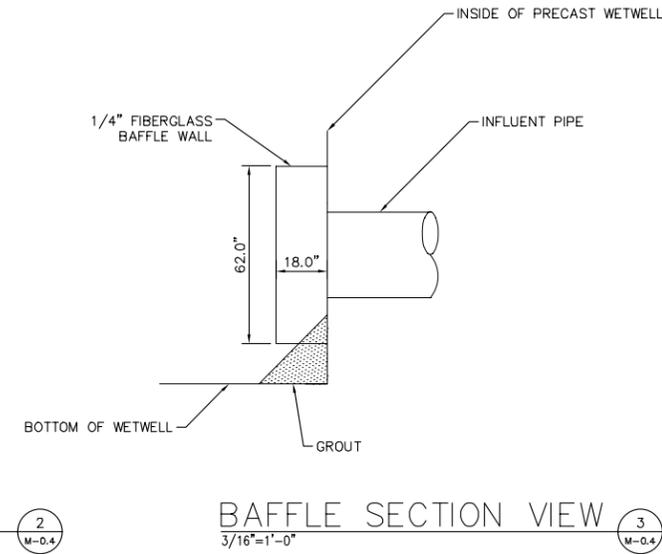
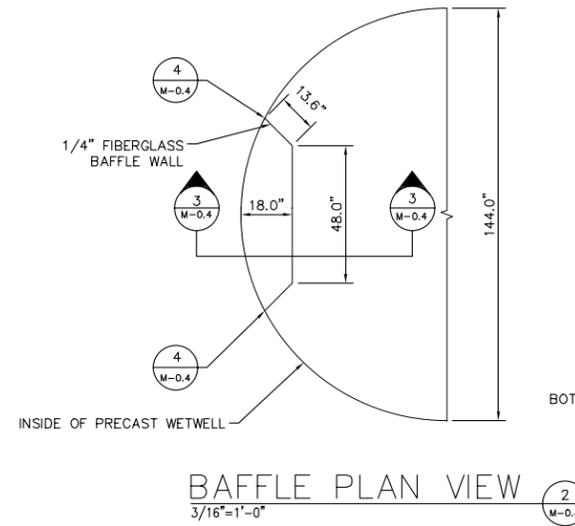
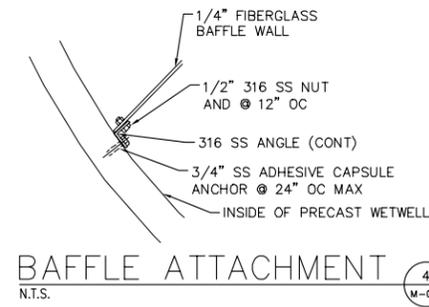
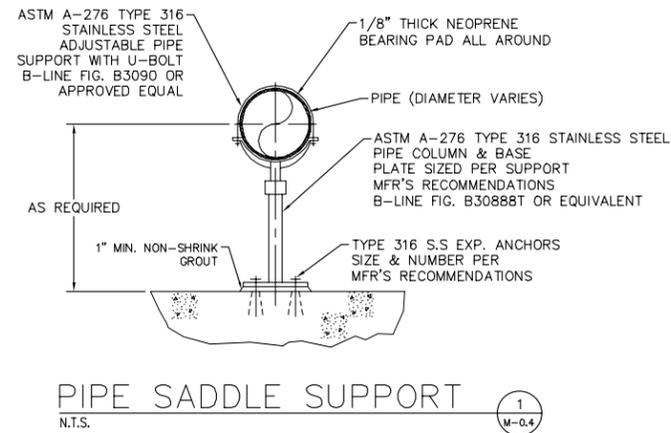
- KEY NOTES**
- INSTALL SUBMERSIBLE PUMP, AND ASSOCIATED CONTROLS AND PIPING
 - INSTALL 12" X 10" DIP ECCENTRIC REDUCER
 - INSTALL PUMP POWER CABLE AND MOUNT TO EXISTING CABLE HOLDER
 - INSTALL GROUT
 - INSTALL 12" HDPE DR 11
 - INSTALL INTERMEDIATE GUIDE BAR BRACKET. SEE DETAIL 9 ON SHEET M-0.2.
 - INSTALL 3" 316 SS GUIDE RAILS
 - INSTALL WALL MOUNTED PIPE SUPPORT ASSEMBLY. SEE DETAIL 1 ON SHEET M-0.3
 - INSTALL 12" HDPE DR 11 MOLDED 90° BEND
 - INSTALL PUMP POWER CABLES
 - INSTALL 316 SS LIFTING CHAIN AND MOUNT TO HATCH FRAME. 6" LONGER THAN WETWELL DEPTH
 - INSTALL 3" UPPER GUIDE BAR BRACKET. SEE DETAIL 4 ON SHEET M-0.3
 - CUT EXISTING 12" DIP AS NEEDED TO INSTALL 12" DIPS BELL MJ ADAPTER TO PLAIN END OF PIPE
 - INSTALL 12" RESTRAINED FLANGED ADAPTER

SCALE AS NOTED DESIGNED BY JWW DRAWN BY JRT CHECKED BY WEW		DESIGN ENGINEER: WAYNE E. WHITE, P.E. FLORIDA REGISTRATION NUMBER: 53232	Kimley-Horn and Associates, Inc. © 2013 KIMLEY-HORN AND ASSOCIATES, INC. 655 NORTH FRANKLIN STREET, SUITE 150, TAMPA, FL 33602 PHONE: 813-820-1460 WWW.KIMLEY-HORN.COM CA 00006986	REVISIONS No. DATE BY
CITY OF ST. PETE BEACH PUMP STATION NO. 1 & 2 REHABILITATION		PINELLAS COUNTY FLORIDA	PUMP STATION 1 PLAN AND SECTION	DATE OCTOBER 2013 PROJECT NO. 148404001 SHEET NUMBER M-0.2

GROUNDWATER / DEWATERING NOTE:
 THE PRESENCE OF GROUNDWATER SHOULD BE ANTICIPATED ON THIS PROJECT. CONTRACTOR'S BID SHALL INCLUDE CONSIDERATION FOR THIS ISSUE. WHEN PERFORMING GRADING OPERATIONS DURING PERIODS OF WET WEATHER, PROVIDE ADEQUATE DEWATERING, DRAINAGE AND GROUND WATER MANAGEMENT TO CONTROL MOISTURE OF SOILS.



Drawing name: K:\TAM_Civil\148404 - City of St. Pete Beach\000 - Pump Station No. 2\CADD\PlanSheets\M-04 MECHANICAL DETAILS.dwg
 MECHANICAL DETAILS.dwg
 Oct 25, 2013 10:01am
 by: Jordan Walker
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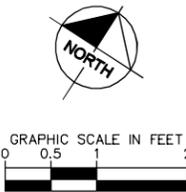
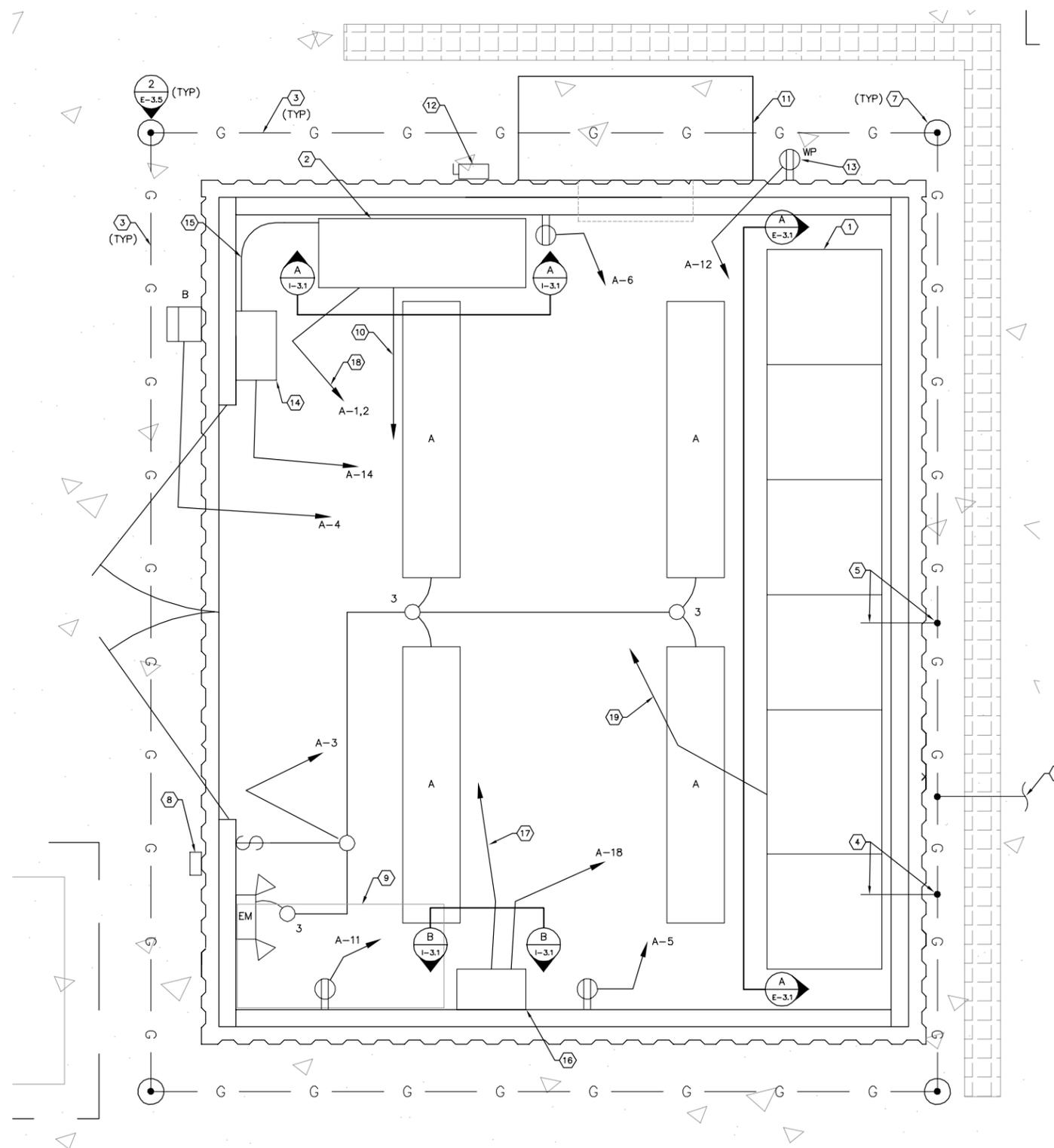


MECHANICAL DETAILS	REVISIONS No. DATE BY
CITY OF ST. PETE BEACH PUMP STATION NO. 1 & 2 REHABILITATION PINELLAS COUNTY FLORIDA	DESIGN ENGINEER: WAYNE E. WHITE, P.E. FLORIDA REGISTRATION NUMBER: 53232 DATE:
SCALE AS NOTED DESIGNED BY JWW DRAWN BY JRT CHECKED BY WEW	Kimley-Horn and Associates, Inc. © 2013 KIMLEY-HORN AND ASSOCIATES, INC. 655 NORTH FRANKLIN STREET, SUITE 150, TAMPA, FL 33602 PHONE: 813-620-1460 WWW.KIMLEY-HORN.COM CA 00006896
PROJECT NO. 148404000	SHEET NUMBER M-0.4
DATE OCTOBER 2013	

GROUNDWATER / DEWATERING NOTE:
 THE PRESENCE OF GROUNDWATER SHOULD BE ANTICIPATED ON THIS PROJECT. CONTRACTOR'S BID SHALL INCLUDE CONSIDERATION FOR THIS ISSUE. WHEN PERFORMING GRADING OPERATIONS DURING PERIODS OF WET WEATHER, PROVIDE ADEQUATE DEWATERING, DRAINAGE AND GROUND WATER MANAGEMENT TO CONTROL MOISTURE OF SOILS.



Drawing name: K:\TAM_Civil\148404 - City of St. Pete Beach\000 - Pump Station No. 2\CADD\Tricon\E-03 CB ELEC PLAN.dwg E-0.3 Oct 25, 2013 11:13am by: Jordan Walker
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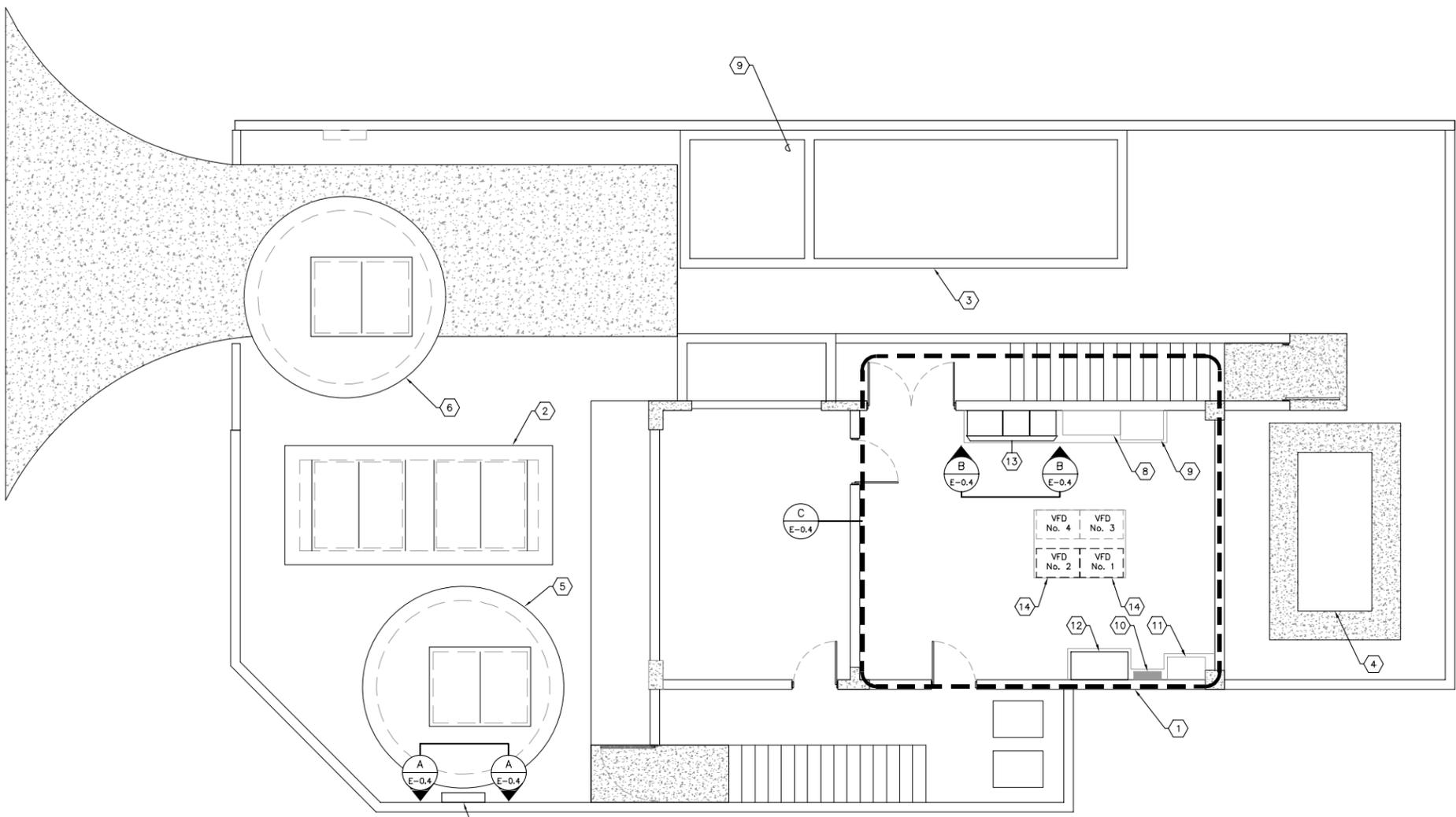
- GENERAL NOTES:**
- CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION AND ORDERING EQUIPMENT. CONTRACTOR SHALL NOTIFY ENGINEER OF DISCREPANCIES.
 - CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING EQUIPMENT, UTILITIES, STRUCTURES, AND PERSONNEL FROM DAMAGE OR INJURY DURING CONSTRUCTION.
 - CONSTRUCTION SEQUENCE SHALL BE COORDINATED TO AVOID ANY PUMP STATION INTERRUPTION.
 - BY-PASS PUMPING WILL BE REQUIRED FROM TWO SEPARATE MANHOLES. COORDINATE ALL BY-PASS OPERATIONS WITH THE CITY OF ST. PETE BEACH.
 - NOT ALL CONDUCTORS/CONDUITS SHOWN FOR CLARITY. REFER TO SITE PLAN, ONE-LINE DIAGRAM AND PLC WIRING DIAGRAM FOR OTHER REQUIREMENTS.

- KEY NOTES:**
- NEW MOTOR CONTROL CENTER ('MCC-1'). REFER TO SHEET E-3.1.
 - NEW PLC CONTROL CABINET. REFER TO SHEET I-3.1.
 - PROVIDE AND INSTALL NEW #2/0 BARE COPPER GROUNDING GRID CONDUCTOR. CONDUCTOR SHALL BE INSTALLED IN A MINIMUM OF 24" OF SOIL (BELOW PROPOSED CONCRETE SLAB).
 - PROVIDE AND INSTALL #2 BARE COPPER GROUNDING CONDUCTOR IN 1" CONDUIT TO GROUNDING ELECTRODE SYSTEM (MCC-1 GROUND). PROVIDE EXOTHERMIC WELD TO GROUNDING ELECTRODE SYSTEM.
 - PROVIDE AND INSTALL #4 BARE COPPER GROUNDING CONDUCTOR IN 1" CONDUIT TO GROUNDING ELECTRODE SYSTEM (PANELBOARD 'A' TRANSFORMER GROUND). PROVIDE EXOTHERMIC WELD TO GROUNDING ELECTRODE SYSTEM.
 - PROVIDE AND INSTALL #2 BARE COPPER GROUNDING CONDUCTOR IN 1" CONDUIT TO GROUNDING ELECTRODE SYSTEM (GENERATOR GROUND). PROVIDE EXOTHERMIC WELD TO GROUNDING ELECTRODE SYSTEM.
 - PROVIDE AND INSTALL NEW 3/4" X 20'-0" COPPER-CLAD GROUND ROD.
 - GENERATOR EMERGENCY SHUT DOWN PUSH BUTTON STATION. MAINTAINED 2 POSITION SWITCH WITH 1-5/8" DIA. OPERATOR, 1 N.O. & 1 N.C. CONTACT MOUNTED IN A NEMA 4X SS ENCLOSURE, 4'-6" ABOVE FINISHED GRADE. BREAK-GLASS OPERATORS ARE NOT AN ACCEPTABLE SUBSTITUTION. PROVIDE PHENOLIC NAMEPLATE ABOVE PUSH BUTTON STATION. NAMEPLATE SHALL BE THREE-PLY PHENOLIC RED-WHITE-RED ENGRAVED THROUGH THE FIRST RED LAYER. LETTERING SHALL BE 1/2" MIN., EDGES OF NAMEPLATE SHALL BE BEVELED 45 DEG. NAMEPLATE SHALL READ AS FOLLOWS: "GENERATOR EMERGENCY SHUT DOWN". PROVIDE AND INSTALL 2-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT TO NEW GENERATOR.
 - PROVIDE AND INSTALL 3'-0" WIDE X 1'-6" DEEP SHELF AT 42" ABOVE FINISHED FLOOR FOR SCADA COMPUTER, DISPLAY, UPS, ETC.
 - PROVIDE AND INSTALL CAT 5e CABLE IN 1" CONDUIT TO SCADA COMPUTER. PROVIDE AND INSTALL JUNCTION BOX 18" AFF (BELOW SHELF IN NOTE #9). PROVIDE AND INSTALL CAT5e RJ45 FEMALE (LEVITON 5G110-RO5) AND ASSOCIATED PLATE.
 - NEW HVAC EQUIPMENT (TO BE PROVIDED AND INSTALLED BY OTHERS).
 - PROVIDE AND INSTALL NEW 30A, 240V, NON-FUSED, 2-POLE DISCONNECT IN NEMA 4X STAINLESS STEEL ENCLOSURE FOR HVAC EQUIPMENT DISCONNECTING MEANS. PROVIDE AND INSTALL 2-#10 THWN CU + 1-#10 THWN CU GND IN 3/4" CONDUIT TO PANEL 'A' CIRCUIT 21/23. PROVIDE SEALTITE, FLEXIBLE CONNECTION TO HVAC UNIT.
 - PROVIDE AND INSTALL NEW 20A RECEPTACLE FOR HVAC EQUIPMENT MAINTENANCE. PROVIDE RECEPTACLE IN WEATHERPROOF ENCLOSURE. INSTALL CONDUCTORS AND CONDUIT AS INDICATED.
 - CONTRACTOR TO PROVIDE AND INSTALL NEW PUMP WATCH CELLULAR MODEM.
 - CONTRACTOR TO PROVIDE AND INSTALL RS485 CABLE IN 1" CONDUIT FOR PLC/PUMP WATCH COMMUNICATIONS. REFER TO SPECIFICATIONS FOR RS485 CABLE REQUIREMENTS.
 - CONTRACTOR TO PROVIDE AND INSTALL NEW AUTODIALER IN NEMA 4X ENCLOSURE. REFER TO ELEVATION ON SHEET 1-3.1.
 - CONTRACTOR TO PROVIDE AND INSTALL 12-#14 + 1-#14 GND IN 1" CONDUIT FROM AUTODIALER TO PLC CONTROL CABINET FOR ALARM SIGNALS.
 - CONTRACTOR TO PROVIDE AND INSTALL 2-#12, 2-#12 NEUTRALS, 1-#12 GND AND 1-#12 ISOLATED GROUND TO PANELBOARD 'A'.
 - CONTRACTOR TO PROVIDE AND INSTALL 2-#12 + 1-#12 GND IN 3/4" CONDUIT FROM TRANSFER SWITCH TO PLC CONTROL CABINET FOR LOSS OF NORMAL POWER SIGNAL.

CITY OF ST. PETE BEACH PUMP STATION NO. 2 REHABILITATION		FLORIDA	
PINELLAS COUNTY		DATE OCTOBER 2013	
PROJECT NO. 148404000		SHEET NUMBER E-0.3	
DESIGN ENGINEER: TIMOTHY THOMAS, P.E.		REVISIONS	
FLORIDA REGISTRATION NUMBER: 47079		No.	
SCALE AS NOTED DESIGNED BY: TDT DRAWN BY: EAK CHECKED BY: DEV		DATE	
 2013 KIMLEY-HORN AND ASSOCIATES, INC. 655 NORTH FRANKLIN STREET, SUITE 150, TAMPA, FL 33602 PHONE: 813-620-1460 WWW.KIMLEY-HORN.COM CA 00006896		BY	



Drawing name: K:\TAM_Civil\148404 - City of St. Pete Beach\000 - Pump Station No. 2\CADD\Tricon\E-0.4 PSI ELEC SITE PLAN.dwg PUMP STATION 1 ELEC SITE PLAN Oct 25, 2013 11:07am by: jordan.walker
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GENERAL NOTES:

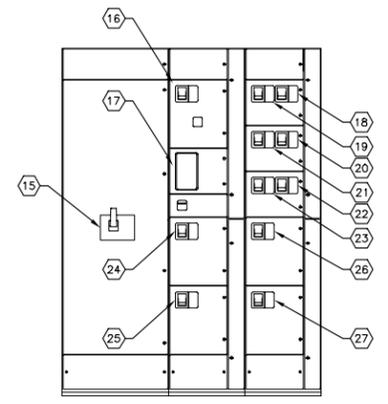
- CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION AND ORDERING EQUIPMENT. CONTRACTOR SHALL NOTIFY ENGINEER OF DISCREPANCIES.
- CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING EQUIPMENT, UTILITIES, STRUCTURES, AND PERSONNEL FROM DAMAGE OR INJURY DURING CONSTRUCTION.
- CONTRACTOR SHALL PROVIDE AND INSTALL NEW SEAL FITTINGS FOR ALL EXISTING RACEWAYS IN WHICH NEW CONDUCTORS ARE TO BE INSTALLED. NEW SEAL FITTING SHALL MATCH EXISTING.

KEY NOTES:

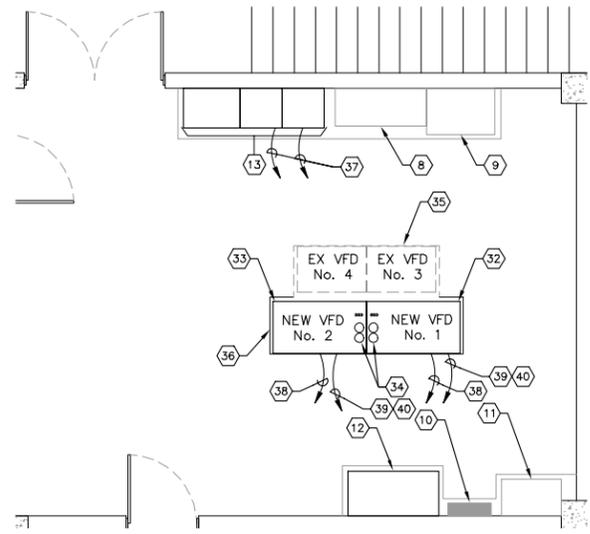
- EXISTING ELECTRICAL AND GENERATOR BUILDING.
- EXISTING VALVE VAULT. CONTRACTOR TO PROVIDE 2-#14 + 1-#14 GND FROM EXISTING LIMIT SWITCH AND 2-#14 + 1-#14 GND FROM EXISTING PRESSURE SWITCH TO NEW VFD. TYPICAL FOR BOTH VFD #1 AND VFD #2. ALL CONDUCTORS SHALL BE INSTALLED IN EXISTING CONDUIT.
- EXISTING ODOR CONTROL SCRUBBER VESSEL. NO WORK REQUIRED.
- EXISTING GENERATOR FUEL STORAGE TANK. NO WORK REQUIRED.
- EXISTING WET WELL FOR PUMP No. 1 AND PUMP No. 2.
- EXISTING WET WELL FOR PUMP No. 3 AND PUMP No. 4. NO WORK REQUIRED.
- EXISTING JUNCTION BOX FOR VFD #1 AND VFD #2 PUMP FEEDERS AND CONTROL WIRING. REFER TO PUMP JUNCTION BOX ELEVATION ON THIS SHEET.
- EXISTING TRANSFER SWITCH. NO WORK REQUIRED.
- EXISTING MAIN CIRCUIT BREAKER. NO WORK REQUIRED.
- EXISTING LIGHTING PANEL "LP-1". NO WORK REQUIRED.
- EXISTING TRANSFORMER. NO WORK REQUIRED.
- EXISTING MASTER PUMP STATION CONTROL PANEL "MPCP". CONTRACTOR SHALL INSURE EXISTING CONTROL METHODOLOGY IS MAINTAINED.
- EXISTING MOTOR CONTROL CENTER "MCC-1" CONTRACTOR TO INSTALL NEW 480V FEEDERS FOR VFD #1 AND VFD #2. 3-#250 kcmil + 1-#4 GND (TYPICAL FOR EACH VFD). CONTRACTOR SHALL UTILIZE EXISTING CONDUITS FOR NEW CONDUCTORS.
- EXISTING 130 HP VFD TO BE REPLACED WITH NEW 480V, 3-PHASE, 140 HP VFD. CONTRACTOR SHALL PROVIDE AND INSTALL NEW VFD FEEDERS (AND PUMP FEEDERS) CONSISTING OF 3-#250 kcmil + 1-#4 GND. NEW CONDUCTORS TO BE INSTALLED IN EXISTING CONDUITS. NEW VFD'S SHALL BE PROVIDED WITH WIRING TROUGH ON VFD BOTTOM TO ACCOMMODATE EXISTING CONDUIT STUB-UP LOCATIONS. REFER ALSO TO SPECIFICATIONS.
- EXISTING 1000 AMP, 480V, 3-POLE MAIN CIRCUIT BREAKER. NO WORK REQUIRED.
- EXISTING SIZE 1 3-POLE SPARE. NO WORK REQUIRED.
- EXISTING POWER METERING EQUIPMENT. NO WORK REQUIRED.
- EXISTING 20A, 480V, 3-POLE CIRCUIT BREAKER FOR ODOR CONTROL PANEL. NO WORK REQUIRED.
- EXISTING 20A, 480V, 3-POLE CIRCUIT BREAKER FOR JACKET WATER HEATER. NO WORK REQUIRED.
- EXISTING 30A, 480V, 3-POLE CIRCUIT BREAKER FOR ELECTRIC GATE OPERATOR. NO WORK REQUIRED.
- EXISTING 30A, 480V, 3-POLE CIRCUIT BREAKER FOR SURGE PROTECTION DEVICE. NO WORK REQUIRED.
- EXISTING 30A, 480V, 3-POLE SPARE CIRCUIT BREAKER. NO WORK REQUIRED.
- EXISTING 20A, 480V, 3-POLE SPARE CIRCUIT BREAKER. NO WORK REQUIRED.
- EXISTING 250 AMP FRAME, 250 AMP TRIP, 480V, 3-POLE CIRCUIT BREAKER FOR WASTEWATER PUMP No. 1 (VIA VFD No. 1).
- EXISTING 250 AMP FRAME, 250 AMP TRIP, 480V, 3-POLE CIRCUIT BREAKER FOR WASTEWATER PUMP No. 2 (VIA VFD No. 2).
- EXISTING 250 AMP FRAME, 250 AMP TRIP, 480V, 3-POLE CIRCUIT BREAKER FOR WASTEWATER PUMP No. 3 (VIA VFD No. 3).
- EXISTING 250 AMP FRAME, 250 AMP TRIP, 480V, 3-POLE CIRCUIT BREAKER FOR WASTEWATER PUMP No. 4 (VIA VFD No. 4).
- EXISTING JUNCTION BOX FOR VFD #1 AND VFD #2 PUMP FEEDERS AND CONTROL WIRING. CONTRACTOR TO INSTALL WASTEWATER PUMP POWER/CONTROL CABLE (CABLE INTEGRAL TO PUMP AND SUPPLIED BY PUMP MANUFACTURER). CONTRACTOR SHALL UTILIZE EXISTING TERMINAL BLOCKS FOR POWER CONDUCTORS. CONTRACTOR TO PROVIDE NEW TERMINAL BLOCKS FOR MINICAS II SENSORS CONDUCTORS. SEPARATE SENSOR TERMINAL BLOCKS FROM POWER CONDUCTOR TERMINAL BLOCKS AND PROVIDE METAL BARRIER ADJACENT TO MINICAS II TERMINAL BLOCKS. BARRIER SHALL BE THE SAME DEPTH AS JUNCTION BOX.
- EXISTING CONDUITS TO WET WELL CONTRACTOR TO INSTALL WASTEWATER PUMP POWER/CONTROL CABLE (CABLE INTEGRAL TO PUMP AND SUPPLIED BY PUMP MANUFACTURER) IN EXISTING CONDUIT. CONTRACTOR SHALL PROVIDE AND INSTALL NEW SEAL FITTINGS TO MATCH EXISTING. TYPICAL FOR PUMP #1 AND PUMP #2.
- EXISTING CONDUITS TO VFD. CONTRACTOR TO INSTALL NEW 3-#250 kcmil + 1-#4 GND IN EXISTING CONDUIT. TYPICAL FOR PUMP #1 AND PUMP #2.
- EXISTING JUNCTION BOX. CONDUCTORS FOR PUMP #1 AND PUMP #2 FLOW AND PRESSURE SWITCHES TO BE REPLACED (REFER TO NOTE #2). CONTRACTOR TO UTILIZE EXISTING CONDUITS FOR NEW CONDUCTOR INSTALLATION. CONTRACTOR SHALL FIELD VERIFY IF FLOW AND PRESSURE SWITCH CONDUCTORS PASS THROUGH JUNCTION BOX SHOWN. CONTRACTOR SHALL PROVIDE AND INSTALL NEW SEAL FITTINGS AS REQUIRED.
- NEW VFD FOR PUMP #1. NEW VFD SHALL BE PHYSICALLY LARGER THAN EXISTING VFD. CONTRACTOR SHALL MODIFY EXISTING HOUSEKEEPING PAD TO ACCOMMODATE NEW VFD DIMENSIONS. NEW VFD WILL BE PROVIDED WITH 10" WIRE TROUGH ON BOTTOM TO ACCOMMODATE THE EXISTING CONDUIT STUB-UP LOCATIONS (REFER ALSO TO SPECIFICATIONS).
- NEW VFD FOR PUMP #2. NEW VFD SHALL BE PHYSICALLY LARGER THAN EXISTING VFD. CONTRACTOR SHALL MODIFY EXISTING HOUSEKEEPING PAD TO ACCOMMODATE NEW VFD DIMENSIONS. NEW VFD WILL BE PROVIDED WITH 10" WIRE TROUGH ON BOTTOM TO ACCOMMODATE THE EXISTING CONDUIT STUB-UP LOCATIONS (REFER ALSO TO SPECIFICATIONS).
- APPROXIMATE LOCATION OF EXISTING CONDUIT STUB-UPS. CONTRACTOR SHALL FIELD VERIFY LOCATIONS.
- EXISTING HOUSEKEEPING PAD.
- EXISTING HOUSEKEEPING PAD TO BE EXTENDED TO ACCOMMODATE NEW VFD DIMENSIONS.
- CONTRACTOR SHALL PROVIDE AND INSTALL NEW 3-#250 kcmil + 1-#4 GND IN EXISTING CONDUIT FOR NEW VFD FEEDER.
- CONTRACTOR SHALL PROVIDE AND INSTALL NEW 3-#250 kcmil + 1-#4 GND AND NEW 2/C-#16 TWISTED SHIELDED (BELDEN 8719) IN EXISTING CONDUIT TO PUMP JUNCTION BOX (REFER TO NOTE #2) FOR NEW PUMP FEEDER AND MINICAS II SENSORS. CONTRACTOR SHALL ALSO INSTALL 4-#14 + 1-#14 GND IN EXISTING CONDUIT FOR PUMP FLOW AND PRESSURE SWITCHES.
- CONTRACTOR SHALL PROVIDE AND INSTALL NEW 12-#14 + 1-#4 GND TO EXISTING "MPCP" (REFER TO NOTE #12) IN EXISTING CONDUIT FOR NEW VFD CONTROL WIRING (CONDUCTOR COUNT INCLUDES SPARES).
- CONTRACTOR SHALL PROVIDE AND INSTALL TWO (2) : 2/C-#18 TWISTED SHIELDED (BELDEN 8760) TO EXISTING "MPCP" IN EXISTING CONDUIT FOR VFD 4-20mA SPEED CONTROL AND 4-20mA SPEED REFERENCE SIGNALS.



PUMP JUNCTION BOX ELEVATION
 N.T.S. A E-0.4



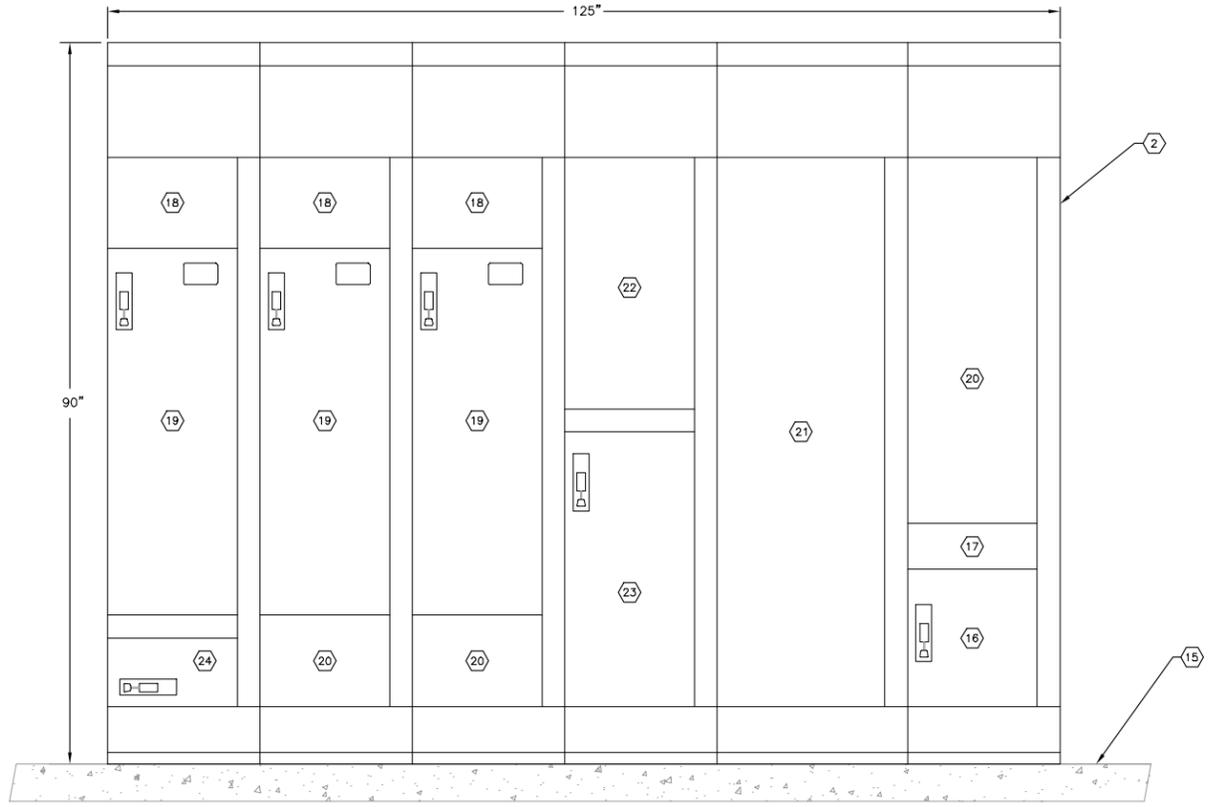
MCC-1 ELEVATION
 N.T.S. B E-0.4



VFD PAD DETAIL
 N.T.S. C E-0.4

DATE	BY
REVISIONS	
No.	
 Kimley-Horn and Associates, Inc. 2013 KIMLEY-HORN AND ASSOCIATES, INC. 655 NORTH FRANKLIN STREET, SUITE 150, TAMPA, FL 33602 PHONE: 813-820-1460 WWW.KIMLEY-HORN.COM CA 0000696	
DESIGN ENGINEER:	TIMOTHY THOMAS, P.E.
SCALE:	AS NOTED
DESIGNED BY:	IDT
DRAWN BY:	EAK
CHECKED BY:	DEV
DATE:	4/7/09
FLORIDA REGISTRATION NUMBER:	47079
PUMP STATION 1 ELECTRICAL SITE PLAN	
CITY OF ST. PETE BEACH PUMP STATION NO. 1 REHABILITATION	FLORIDA
PINELLAS COUNTY	
DATE	OCTOBER 2013
PROJECT NO.	148404001
SHEET NUMBER	E-0.4
TRICON CONSULTING ENGINEERS 775 S. Harbour Blvd. Suite 810, Tampa, FL 33602 813.227.9190 FAX 813.227.9196 Certificate of Authorization No. 00008363	

Drawing name: C:\Users\jordan_walker\AppData\Local\Temp\33260\LE-01 ELEC.dwg E-31 Oct 25, 2013 11:04am by: jordan_walker
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LOAD SUMMARY	
CONNECTED LOAD	
35 HP LIFT STATION VFD #1 =	42.0 AMPERES
35 HP LIFT STATION VFD #2 =	42.0 AMPERES
35 HP LIFT STATION VFD #3 =	42.0 AMPERES
+ 25% OF LARGEST MOTOR =	10.5 AMPERES
LOAD FROM PANEL 'A' (13.8 KVA @ 480, 3φ) =	16.6 AMPERES
ODOR CONTROL UNIT =	3.4 AMPERES
TOTAL =	156.5 AMPERES
DEMAND LOAD	
NOTE : THE PLC CONTROL SYSTEM SHALL NOT ALLOW MORE THAN TWO (2) VFD'S TO RUN AT ONE TIME.	
35 HP LIFT STATION VFD'S (2 X 42) =	84.0 AMPERES
+ 25% OF LARGEST MOTOR =	10.5 AMPERES
LOAD FROM PANEL 'A' =	16.6 AMPERES
ODOR CONTROL UNIT =	3.4 AMPERES
DEMAND TOTAL =	114.5 AMPERES
1. ELECTRICAL SERVICE WILL BE RATED FOR 200 AMPERES	
2. THE NEW GENERATOR WILL BE 100 KW AND WILL BE EQUIPPED WITH A 150 AMPERE CIRCUIT BREAKER	

SHORT CIRCUIT CALCULATION

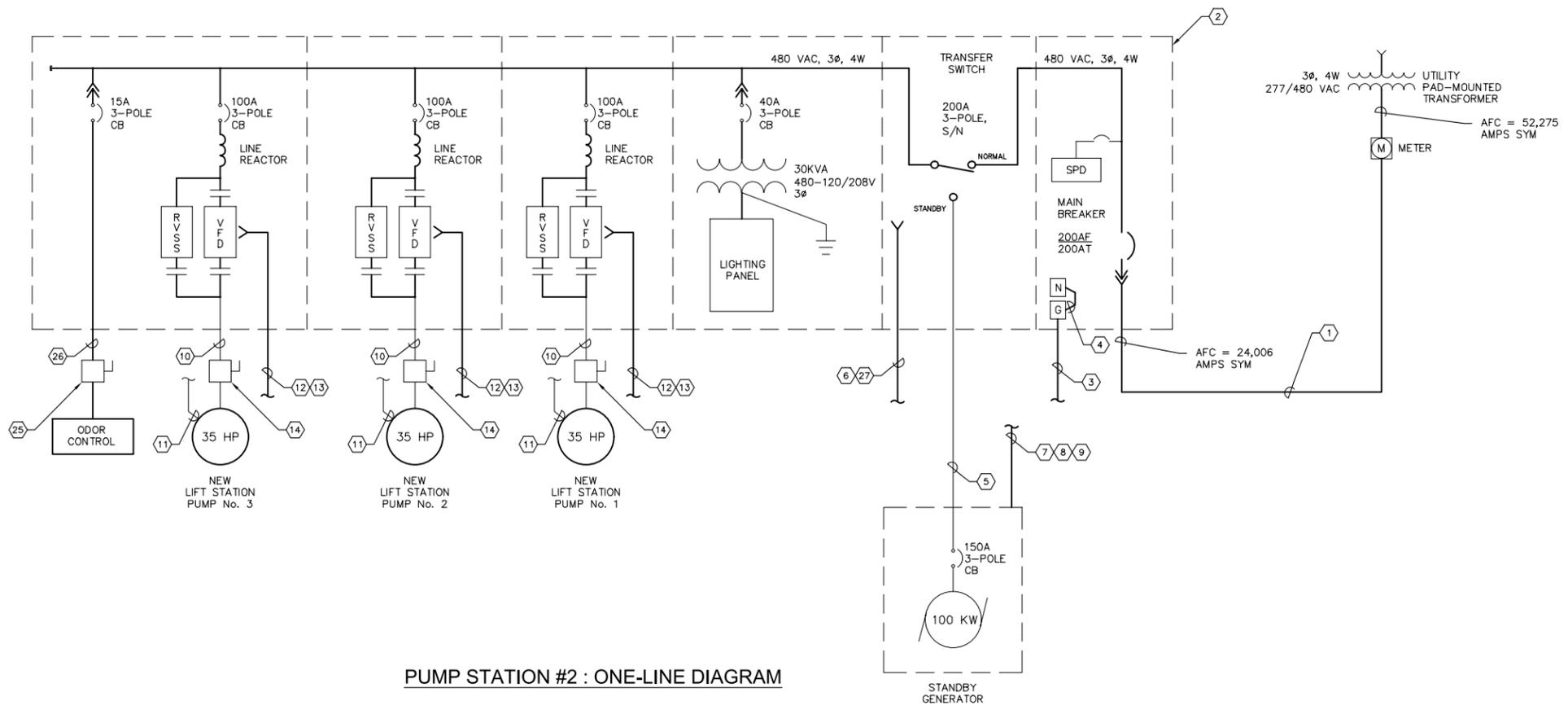
UTILITY SERVICE:
 480V, 3φ, 4-WIRE
 VIA 2,500 KVA PAD-MOUNTED TRANSFORMER.
 MAXIMUM AVAILABLE FAULT CURRENT AT SECONDARY SIDE OF THE UTILITY TRANSFORMER --
 52,275 AMP RMS SYM.
 SERVICE CONDUCTOR LENGTH: 65 FEET
 SERVICE CONDUCTOR SIZE: 3/0 THWN CU

ISCA AT THE MAIN BREAKER:

$$ISCA = \left[\frac{1}{1 + \frac{(1.73)(65)(52,275)}{(10,400)(480)}} \right] \times (52,275)$$

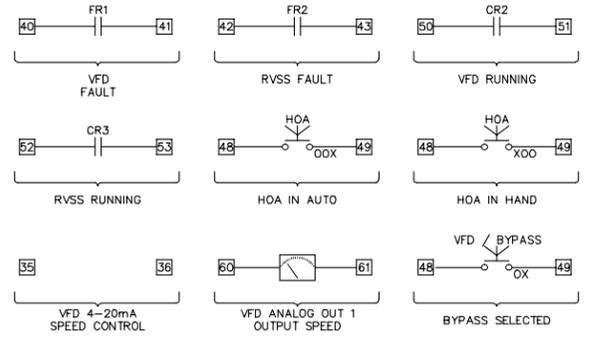
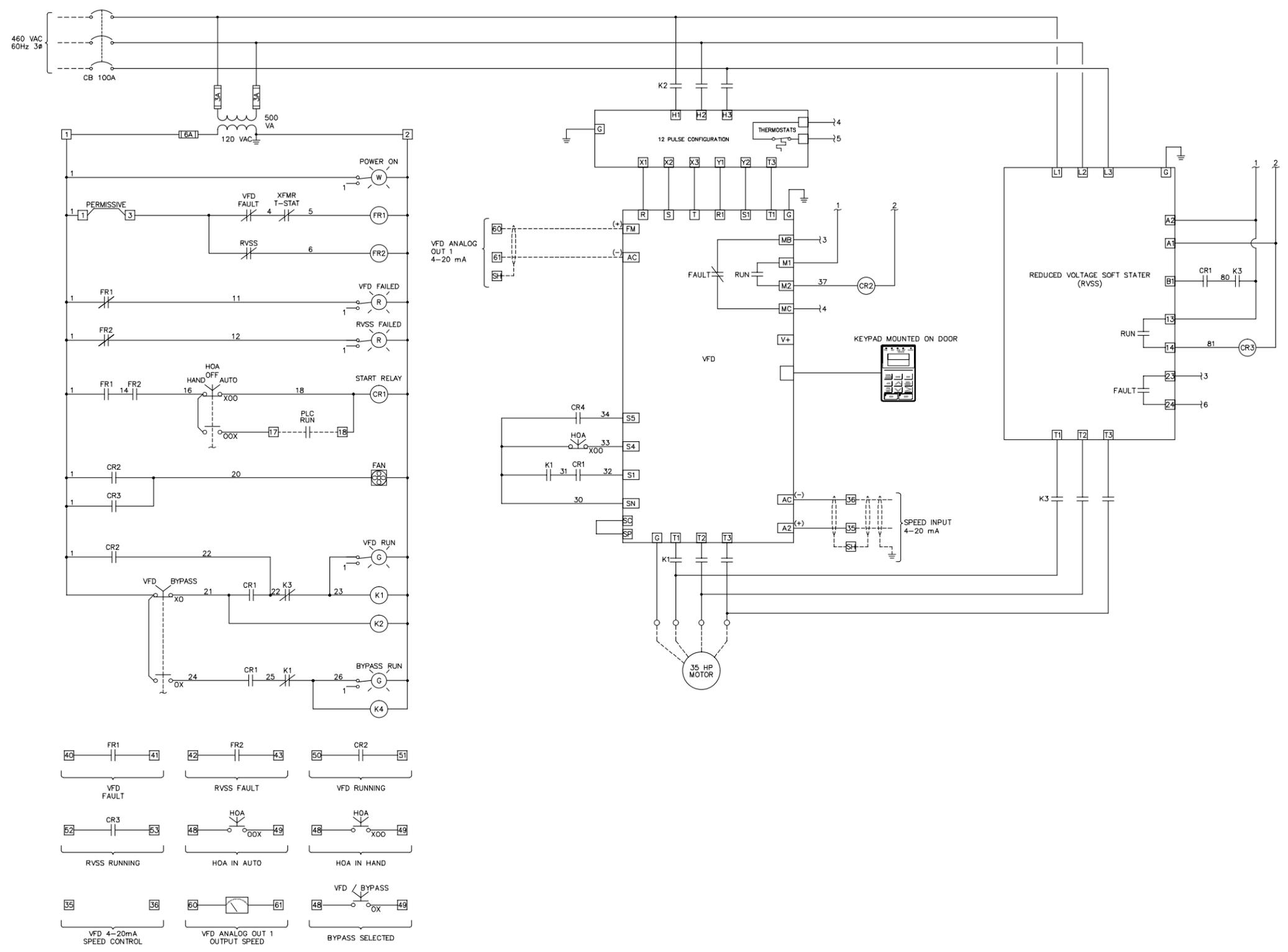
ISCA = 24,006 AMPS RMS SYM.
 MAIN BREAKER RATED 35KAIC
 BUS RATED 42KAIC

- GENERAL NOTES:**
- CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER OF DISCREPANCIES.
 - CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING EQUIPMENT, UTILITIES, STRUCTURES, AND PERSONNEL FROM DAMAGE OR INJURY DURING CONSTRUCTION.
 - CONSTRUCTION SEQUENCE SHALL BE COORDINATED TO AVOID ANY TREATMENT PROCESS INTERRUPTION.
- KEY NOTES:**
- PROVIDE AND INSTALL NEW SERVICE ENTRANCE FEEDER. 3-#3/0 THWN CU + 1-#1/0 THWN CU NEUTRAL IN 2-1/2" C. CONTRACTOR SHALL COORDINATE NEW SERVICE ENTRANCE WITH JOHN KRUSZONA OF DUKE ENERGY (727) 409-5845.
 - PROVIDE AND INSTALL NEW MOTOR CONTROL CENTER (MCC-1).
 - PROVIDE AND INSTALL NEW #2 CU GROUNDING ELECTRODE CONDUCTOR TO GROUNDING ELECTRODE SYSTEM.
 - PROVIDE AND INSTALL NEW #2 CU BONDING CONDUCTOR BETWEEN THE GROUND AND NEUTRAL BUS.
 - PROVIDE AND INSTALL NEW GENERATOR FEEDER. 3-#1/0 THWN CU + 1-#1/0 THWN CU NEUTRAL + 1-#6 THWN CU GND.
 - PROVIDE AND INSTALL 4-#12 THWN CU + 1-#12 CU GND IN 3/4" C. FROM TRANSFER SWITCH TO GENERATOR FOR GENERATOR START SIGNAL. CONTRACTOR VERIFY CONTROL REQUIREMENTS WITH GENERATOR AND TRANSFER SWITCH MANUFACTURERS.
 - PROVIDE AND INSTALL 4-#14 THWN CU + 1-#14 THWN CU GND IN 3/4" C. TO NEW PLC CONTROL CABINET (2-#14 FOR GENERATOR RUNNING SIGNAL, 2-#14 FOR GENERATOR FAULT SIGNAL).
 - PROVIDE AND INSTALL 4-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" C. TO NEW PANEL 'A' (2-#12 FOR GENERATOR BATTERY CHARGER, 2-#12 FOR GENERATOR BLOCK HEATER).
 - PROVIDE AND INSTALL 2-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" C. TO NEW GENERATOR EMERGENCY STOP PUSHBUTTON.
 - PROVIDE AND INSTALL 3-#6 THWN CU + 1-#6 GND IN 2" CONDUIT TO NEW LIFT STATION PUMP MOTOR.
 - PROVIDE AND INSTALL 2-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT TO NEW PLC CONTROL CABINET FOR MINICAS II SENSOR.
 - PROVIDE AND INSTALL 24-#14 THWN CU (2-#14 PLC RUN COMMAND, 2-#14 VFD FAULTED, 2-#14 VFD RUNNING SIGNAL, 2-#14 DRIVE IN AUTO MODE SIGNAL, 2-#14 DRIVE IN HAND MODE SIGNAL, 2-#14 RVSS RUNNING SIGNAL, 2-#14 RVSS FAULTED, 2-#14 BYPASS SELECTED, 2-#14 MOTOR TEMP, 2-#14 SEAL FAILURE, 4-#14 SPARE) + 1-#14 THWN CU GND IN 1-1/4" CONDUIT TO NEW PLC CONTROL CABINET FOR VFD CONTROL SIGNALS.
 - PROVIDE AND INSTALL TWO (2) : 2/C-#18 TWISTED SHIELDED CABLES (BELDEN 8760, EACH) IN 1" CONDUIT TO NEW PLC CONTROL CABINET FOR VFD 4-20mA SPEED CONTROL AND 4-20mA SPEED REFERENCE SIGNALS.
 - PROVIDE AND INSTALL NEW 60A, 600V, NON-FUSED, 3-POLE DISCONNECT IN NEMA 4X STAINLESS STEEL ENCLOSURE.
 - 3" HOUSEKEEPING PAD.
 - NEW 200A, 480V, 3-POLE MAIN CIRCUIT BREAKER.
 - NEW SURGE PROTECTION DEVICE.
 - NEW LIFT STATION PUMP VFD LINE REACTOR.
 - NEW LIFT STATION PUMP VFD AND SOFTSTARTER BYPASS.
 - SPACE.
 - NEW 200A, 480V, 3-POLE, S/N TRANSFER SWITCH.
 - NEW 100A, 120/208V, 3φ, 4-WIRE PANELBOARD 'A'.
 - NEW 30KVA, 480V-120/208V, 3φ TRANSFORMER.
 - NEW 15A, 480V, 3-POLE CIRCUIT BREAKER FOR ODOR CONTROL UNIT
 - PROVIDE AND INSTALL NEW 30A, 600V, NON-FUSED, 3-POLE DISCONNECT IN NEMA 4X STAINLESS STEEL ENCLOSURE.
 - PROVIDE AND INSTALL 3-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT.
 - PROVIDE AND INSTALL 2-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT FROM TRANSFER SWITCH TO PLC CONTROL CABINET FOR LOSS OF NORMAL POWER SIGNAL.



MOTOR CONTROL CENTER & ONE-LINE DIAGRAM	REVISIONS No. DATE BY
CITY OF ST. PETE BEACH PUMP STATION NO.2 REHABILITATION	FLORIDA PINELLAS COUNTY
SCALE: AS NOTED DESIGNED BY: TDT DRAWN BY: EAK CHECKED BY: DEV	DESIGN ENGINEER: TIMOTHY THOMAS, P.E. FLORIDA REGISTRATION NUMBER: 47079 DATE:
TRICON CONSULTING ENGINEERS <small>777 S. Harbour Island Blvd. STE 210, TAMPA, FL 33602 813.227.9190 FAX 813.227.9195 Certificate of Authorization No. 00008383</small>	DATE: OCTOBER 2013 PROJECT NO.: 148404000 SHEET NUMBER: E-3.1

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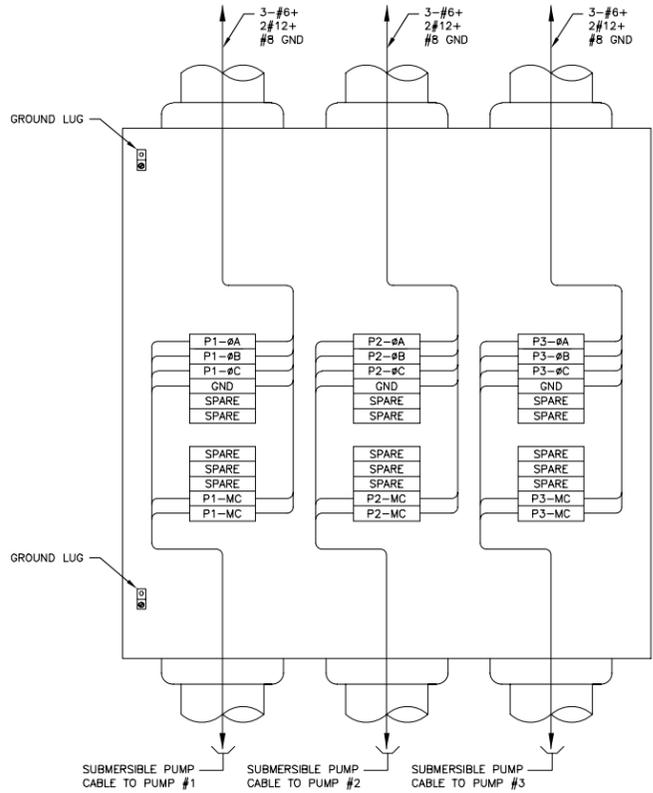
TYPICAL VFD/SOFSTARTER WIRING DIAGRAM

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 - CONSTRUCTION SEQUENCE SHALL BE COORDINATED TO AVOID ANY TREATMENT PROCESS INTERRUPTION.
 - MAINTAIN PROPER PHASING AS SHOWN ON SCHEMATIC DIAGRAM. IF THIS REQUIREMENT IS NOT MET, DIRECTION OF MOTOR ROTATION COULD CHANGE WHEN SWITCHING FROM DRIVE TO BYPASS.
 - THE WIRING DIAGRAMS PRESENTED ARE BASED ON THE SPECIFIC INFORMATION FROM A PARTICULAR MANUFACTURER. ACTUAL WIRING MAY DIFFER BASED ON THE FINAL EQUIPMENT SELECTED/PROVIDED. THE INFORMATION PRESENTED IS TO PROVIDE THE INTENDED FUNCTION OF THE COMBINATION OF THE VFD AND BYPASS/SOFTSTARTER ONLY.

CITY OF ST. PETE BEACH PUMP STATION NO.2 REHABILITATION		FLORIDA	
PINELLAS COUNTY		DATE: OCTOBER 2013	
PROJECT NO. 148404000		SHEET NUMBER E-3.2	
DESIGN ENGINEER: TIMOTHY THOMAS, P.E.		REVISIONS	
DESIGNED BY: TDT		No.	
DRAWN BY: EAK		DATE	
CHECKED BY: DEV		BY	
FLORIDA REGISTRATION NUMBER: 47079			
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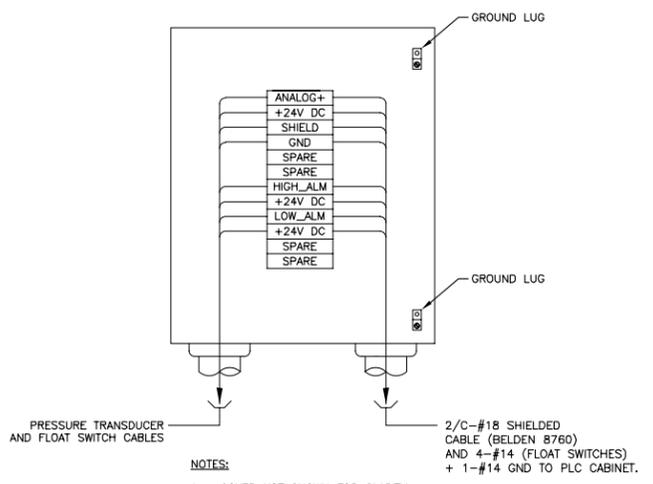


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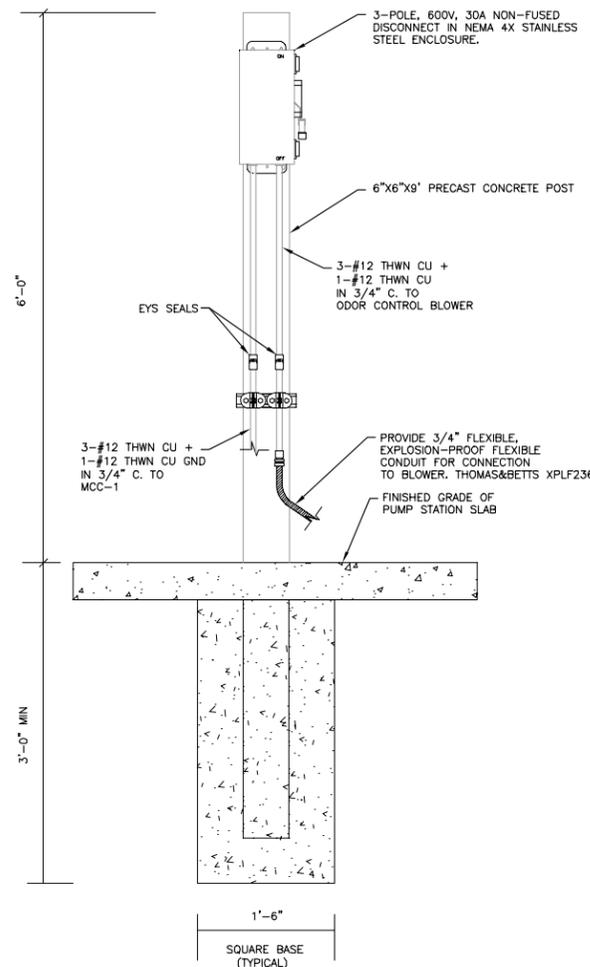
- NOTES:
- COVER NOT SHOWN FOR CLARITY
 - BOND GROUNDING CONDUCTORS TO ENCLOSURE BACK PANEL.

POWER JUNCTION BOX DETAIL
 N.T.S. 1 E-3.4



- NOTES:
- COVER NOT SHOWN FOR CLARITY
 - BOND GROUNDING CONDUCTORS TO ENCLOSURE BACK PANEL.

24V DC JUNCTION BOX DETAIL
 N.T.S. 2 E-3.4



ODOR CONTROL DETAIL
 N.T.S. 3 E-3.4

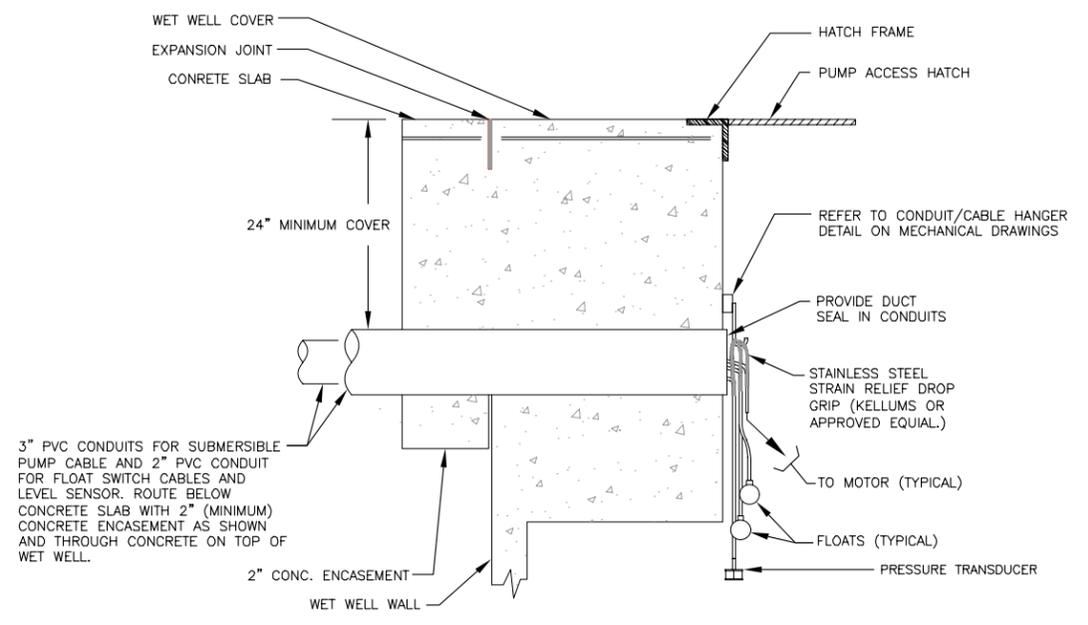
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PINELLAS COUNTY		
DATE	OCTOBER 2013	
PROJECT NO.	148404000	
SHEET NUMBER	E-3.4	
DESIGN ENGINEER:	TIMOTHY THOMAS, P.E.	
FLORIDA REGISTRATION NUMBER:	47079	
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DESIGNER:	TIMOTHY THOMAS, P.E.	
FLORIDA REGISTRATION NUMBER:	47079	
SCALE	AS NOTED	
DESIGNED BY	TDT	
DRAWN BY	EAK	
CHECKED BY	DEV	
DATE:		
DESIGNER:	TIMOTHY THOMAS, P.E.	
FLORIDA REGISTRATION NUMBER:	47079	
SCALE	AS NOTED	
DESIGNED BY	TDT	
DRAWN		

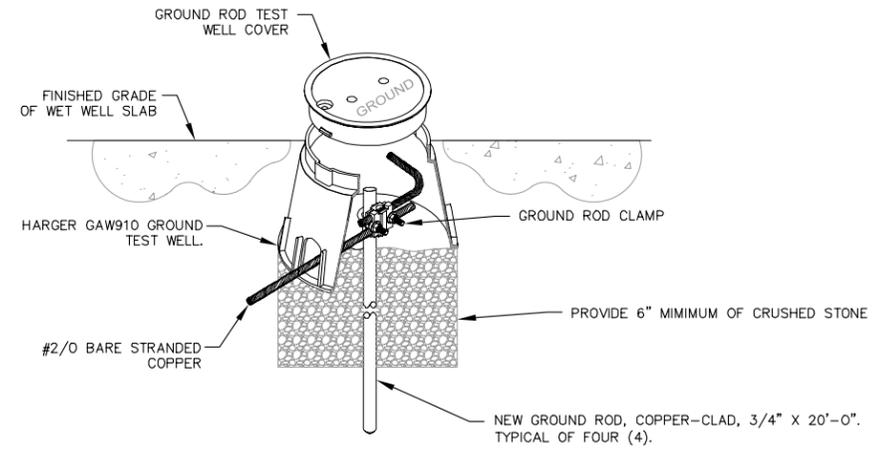
Drawing name: C:\Users\jordan_walker\appdata\local\temp\AcPublish_33260\E-01 ELEC.dwg E-3.5 Oct 25, 2013 11:04am by: Jordan Walker
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EXISTING PANEL SCHEDULE																
PANEL 'A'				SQUARE D CO. : NQOD				120/208 VOLTS, 3Ø, 4W				100 AMP MAIN SURFACE ENCLOSURE : TOP AT 5'-6" AFF				
EQUIPMENT SERVED	CIRCUIT BREAKER			KVA/PHASE			CIRCUIT BREAKER			KVA/PHASE			CIRCUIT BREAKER			EQUIPMENT SERVED
	POLE	AMPS	FRAME	A	B	C	NO.	NO.	A	B	C	POLE	AMPS	FRAME		
PLC CONTROL CABINET POWER	1	20	QO	0.8			1	2	0.8			1	20	QO	PLC CONTROL CABINET POWER	
BUILDING INTERIOR LIGHTING	1	20	QO	0.9			3	4	0.4			1	20	QO	OUTSIDE BUILDING LIGHTS	
BUILDING RECEPTACLE	1	20	QO			0.2	5	6			0.2	1	20	QO	BUILDING RECEPTACLE	
WET WELL LIGHT/RECEPTACLE	1	20	QO	0.5			7	8	1.2			1	20	QO	GENERATOR BLOCK HEATER	
FLOW METER	1	20	QO			0.4	9	10			1.2	1	20	QO	GEN BATTERY CHARGER	
SCADA COMPUTER (UPS)	1	20	QO			0.5	11	12			0.2	1	20	QO	HVAC MAINTENANCE RECEPTACLE	
SPACE	---	---	---				13	14	0.1			1	20	QO	POWER WATCH	
SPACE	---	---	---				15	16			0.2	1	20	QO	EXTERIOR LIGHTING	
SPACE	---	---	---				17	18			0.2	1	20	QO	AUTODIALER	
SPACE	---	---	---				19	20				---	---	---	SPACE	
HVAC	2	30	QO	3.0			21	22				---	---	---	SPACE	
" "	---	---	---				3.0	23				---	---	---	SPACE	
SUB-TOTAL KVA				1.5	4.3	3.7				2.1	1.8	0.6				
TOTAL CONNECTED LOAD = 13.8 KVA							TOTAL DEMAND LOAD = 13.8 KVA									
NOTES :																
(1) PROVIDE PANELBOARD WITH ISOLATED BUS BAR																

LIGHTING FIXTURE SCHEDULE						
TYPE	MANUFACTURER	CATALOG NUMBER	LAMP(S)	VOLTS	MOUNTING	REMARKS
A	LITHONIA	DMW232120GEB10IS	(2) 32W T8	120	CEILING MOUNT	
EM	CORNERSTONE	NV5-WGEL-VRS	W/FIXTURE	120/277	UNIVERSAL	EMERGENCY LIGHT WITH WIRE GUARD
B	LITHONIA	TWS LED 1 50K 120 PE	W/FIXTURE	120	WALL	PROVIDE FIXTURE WITH INTEGRAL PHOTOCCELL
C	LITHONIA	TWH LED 30C 1000 50K T3M 120 DDBXD	W/FIXTURE	120	WALL	



WET WELL CONDUIT DETAIL
N.T.S. 1 E-3.5

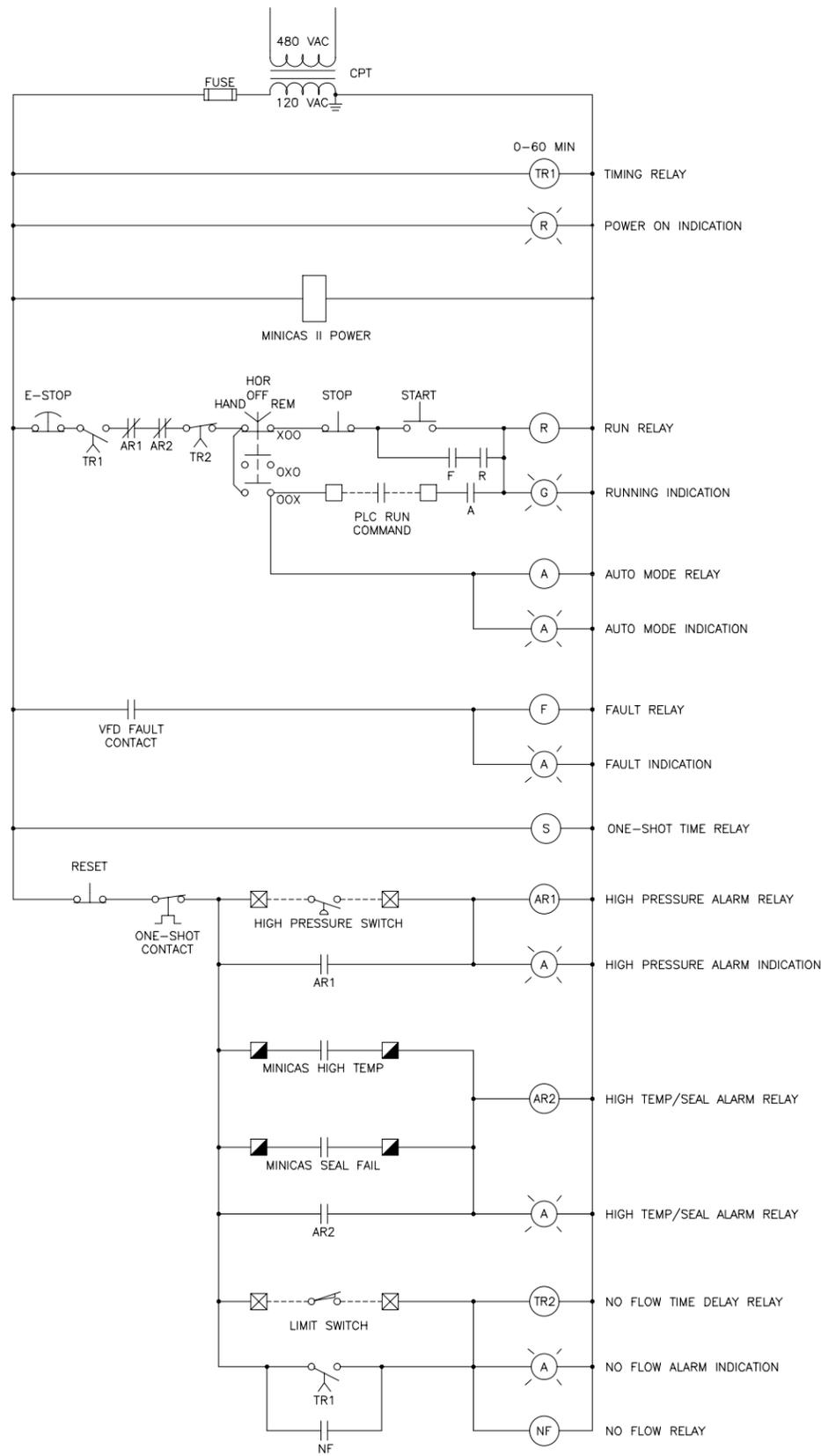


GROUND ROD TEST WELL
N.T.S. 2 E-3.5



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DESIGN ENGINEER: TIMOTHY THOMAS, P.E. FLORIDA REGISTRATION NUMBER: 47079	DATE:
SCALE AS NOTED DESIGNED BY: TDT DRAWN BY: EAK CHECKED BY: DEV	REVISIONS No. DATE BY
ELECTRICAL DETAILS AND SCHEDULES	
CITY OF ST. PETE BEACH PUMP STATION NO.2 REHABILITATION PINELLAS COUNTY FLORIDA	
DATE: OCTOBER 2013 PROJECT NO: 148404000 SHEET NUMBER: E-3.5	

Drawing name: K:\TAM_Civil\148404 - City of St. Pete Beach\000 - Pump Station No. 2\CADD\Tricon\E-0.4 PSI ELEC SITE PLAN.dwg SCHEMATICS Oct. 25, 2013 11:07am by Jordan Walker
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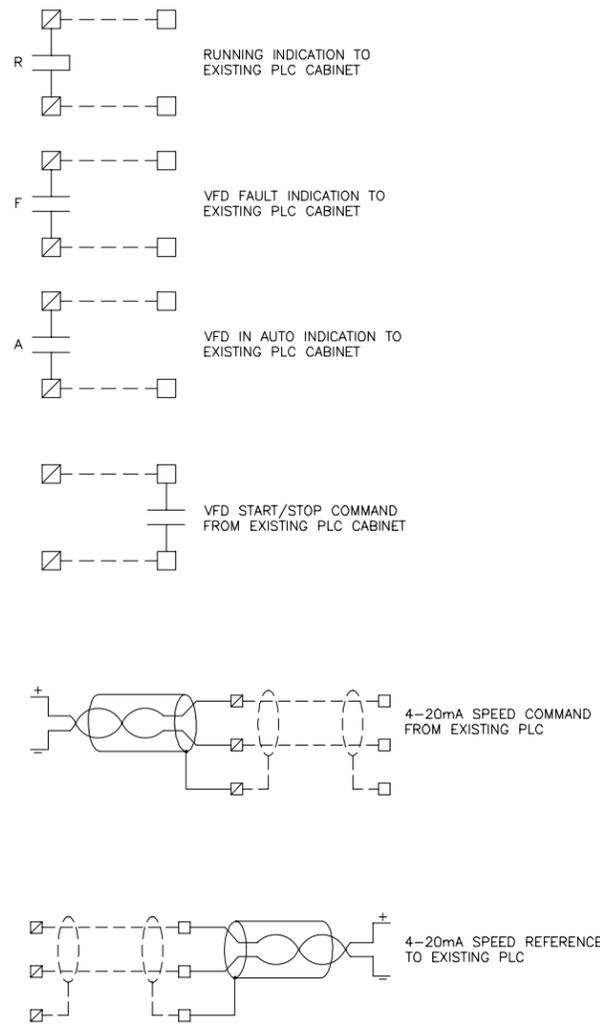


TYPICAL VFD WIRING SCHEMATIC
 BASED ON RECORD DRAWING INFORMATION

LEGEND

- DENOTES TERMINAL IN EXISTING PLC CABINET
- DENOTES EXISTING FIELD WIRING
- DENOTES TERMINAL ON MINICAS II UNIT
- ⊗ DENOTES TERMINAL EXISTING FIELD DEVICE
- ⊗ DENOTES TERMINAL IN NEW VFD

VFD I/O (TYPICAL)



GENERAL NOTES:

- CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION AND ORDERING EQUIPMENT. CONTRACTOR SHALL NOTIFY ENGINEER OF DISCREPANCIES.
- CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING EQUIPMENT, UTILITIES, STRUCTURES, AND PERSONNEL FROM DAMAGE OR INJURY DURING CONSTRUCTION.
- CONTRACTOR SHALL PROVIDE AND INSTALL NEW CONDUCTORS FOR ALL CONTROL CIRCUITS AND 4-20mA SIGNALS FROM EACH NEW VFD TO THE EXISTING PLC CONTROL CABINET. THE CONTRACTOR SHALL UTILIZE THE EXISTING RACEWAYS FOR NEW CONDUCTOR INSTALLATION.
- CONTRACTOR SHALL PROVIDE AND INSTALL NEW CONDUCTORS FOR ALL 480V POWER FROM VFD'S TO EXISTING WET WELL JUNCTION BOX, AS WELL AS, 2/C-#16 TWISTED SHIELDED CABLE (BELDEN 8719) FOR MINICAS II SENSORS. THE CONTRACTOR SHALL UTILIZE THE EXISTING RACEWAYS FOR NEW CONDUCTOR INSTALLATION.
- CONTRACTOR SHALL PROVIDE AND INSTALL NEW CONDUCTORS FOR EXISTING FLOW AND PRESSURE SWITCHES. THE CONTRACTOR SHALL UTILIZE THE EXISTING RACEWAYS FOR NEW CONDUCTOR INSTALLATION.



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CITY OF ST. PETE BEACH PUMP STATION NO. 1 REHABILITATION		FLORIDA	
PINELLAS COUNTY		DATE: OCTOBER 2013	
PROJECT NO. 148404001		SHEET NUMBER	
E-3.6		REVISIONS	
No.	DATE	BY	

SCALE AS NOTED
 DESIGNED BY TDT
 DRAWN BY EAK
 CHECKED BY DEV

DESIGN ENGINEER: TIMOTHY THOMAS, P.E.
 FLORIDA REGISTRATION NUMBER: 47079

**PUMP STATION 2
 VFD SCHEMATICS
 AND DIAGRAMS**

**Kimley-Horn
 and Associates, Inc.**
 655 NORTH FRANKLIN STREET, SUITE 150, TAMPA, FL 33602
 PHONE: 813-820-1460
 WWW.KIMLEY-HORN.COM CA 00006986

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FUNCTION SYMBOL SCHEDULE

IDENTIFICATION LETTERS					
	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		PROGRAMMER		
C	CONDUCTIVITY			CONTROL	CLOSED
D	DENSITY	DIFFERENTIAL			
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	GAGING		GLASS VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTOR	MOMENTARY			MIDDLE, INTERMEDIATE
N	VIBRATION		IGNITOR	ISOLATOR	
O	OPERATION	OFFSET	ORIFICE, RESTRICTION		OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY, EVENT	INTEGRATE, TOTALIZE	INTEGRATE		
R	RADIATION		RECORD, PRINT		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE	TREND	MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VISCOSITY	VACUUM		VALVE, DAMPER, LOUVER, GATE	
W	WEIGHT, FORCE, TORQUE		WELL		
X	UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y				RELAY, COMPUTE, CONVERT	
Z	POSITION			FINAL CONTROL ELEMENT	UNCLASSIFIED

LINE DESIGNATIONS

INSTRUMENTATION SIGNAL ———
 ELECTRICAL POWER — . —
 DATA LINK — D — D —
 RADIO LINK — R — R —
 FIBER OPTIC DATA — F — F —

MISCELLANEOUS NOTATIONS

S/D = SHUTDOWN
 O/R = OVERRIDE
 MCS = MASTER CONTROL STATION
 VFD = VARIABLE FREQUENCY DRIVE
 PCC = PROCESS CONTROL CABINET
 LCP = LOCAL CONTROL PANEL
 ES = ELECTRICAL SUPPLY (120VAC)

CONTROLLER NOTATION

PV= PROCESS VARIABLE INPUT
 SP= SET POINT INPUT
 C= CONTROL OUTPUT

EQUIPMENT NOTATION

B = BLOWER OR FAN
 E = ENGINE
 G = GENERATOR
 F = FILTER
 GS = GRINDER/SCREEN
 K = COMPRESSOR
 H = HOIST
 ME = MECHANICAL EQUIPMENT
 MX = MIXER
 P = PUMP
 T = TANK OR SUMP

INPUT/OUTPUT NOTATIONS

AI = ANALOG INPUT
 AO = ANALOG OUTPUT
 DI = DISCRETE INPUT
 DO = DISCRETE OUTPUT

HAND SWITCH NOTATION

HOA = HAND-OFF-AUTO
 S/S = START/STOP
 SEL = SELECTOR
 O/C = OPEN/CLOSE
 O/O = ON/OFF
 LOS = LOCKOUT-START
 LOR = LOCAL-OFF-REMOTE
 OAC = OPEN-AUTO CLOSE
 CAO = CLOSED-AUTO OPEN

VALVE DESIGNATIONS

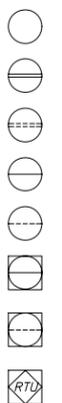
MOV = MOTOR OPERATED VALVE

GENERAL ABBREVIATIONS

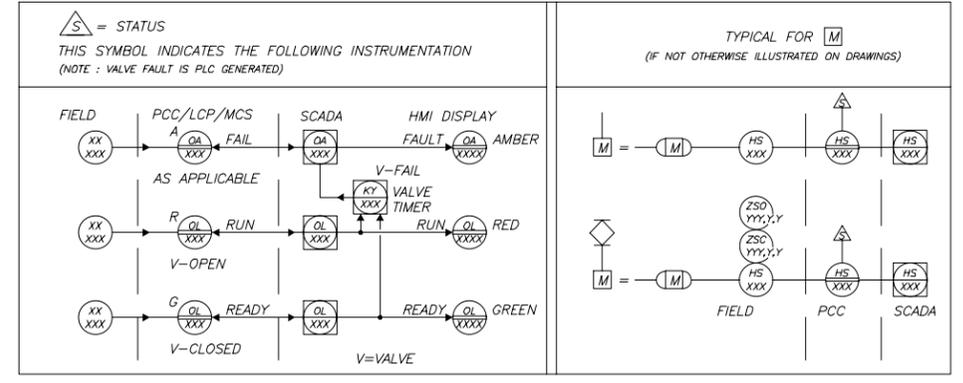
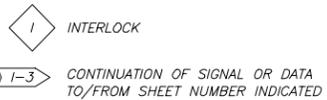
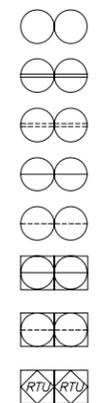
SCADA - SUPERVISORY CONTROL AND DATA ACQUISITION.
 PLC - PROGRAMMABLE LOGIC CONTROL
 SA - SURGE SUPPRESSOR DEVICE

BASIC SYMBOLS

SINGLE FUNCTION



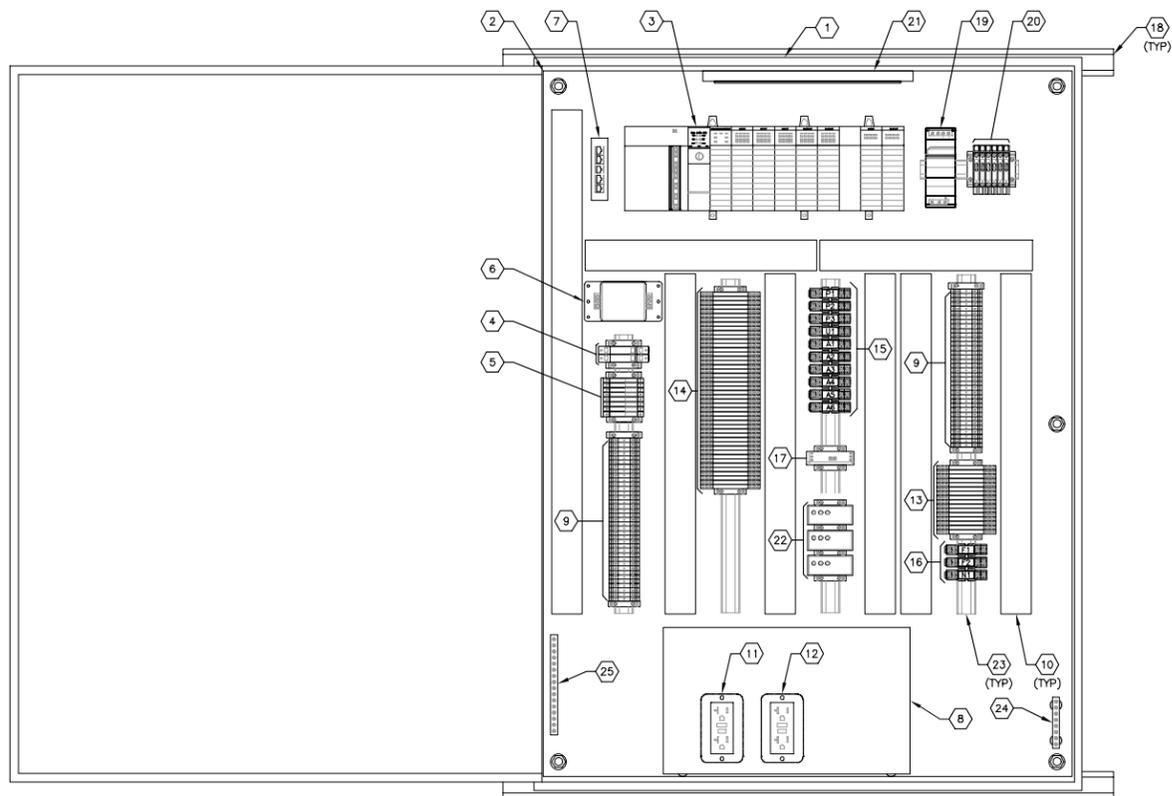
MUTIPLE FUNCTION



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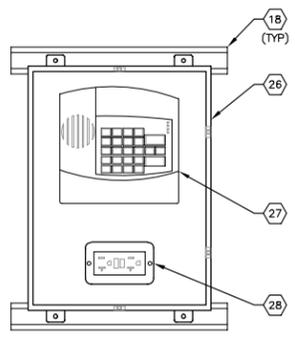
SCALE AS NOTED DESIGNED BY TDT DRAWN BY EAK CHECKED BY DEV	DESIGN ENGINEER: TIMOTHY THOMAS, P.E. FLORIDA REGISTRATION NUMBER: 47079	KIMLEY-HORN AND ASSOCIATES, INC. 655 NORTH FRANKLIN STREET, SUITE 150, TAMPA, FL 33602 PHONE: 813-820-1460 WWW.KIMLEY-HORN.COM CA 00006986	REVISIONS	DATE	BY
INSTRUMENTATION LEGEND			CITY OF ST. PETE BEACH PUMP STATION NO.2 REHABILITATION PINELLAS COUNTY FLORIDA		
DATE OCTOBER 2013			PROJECT NO. 148404000		
SHEET NUMBER I-0.1			SHEET NUMBER		

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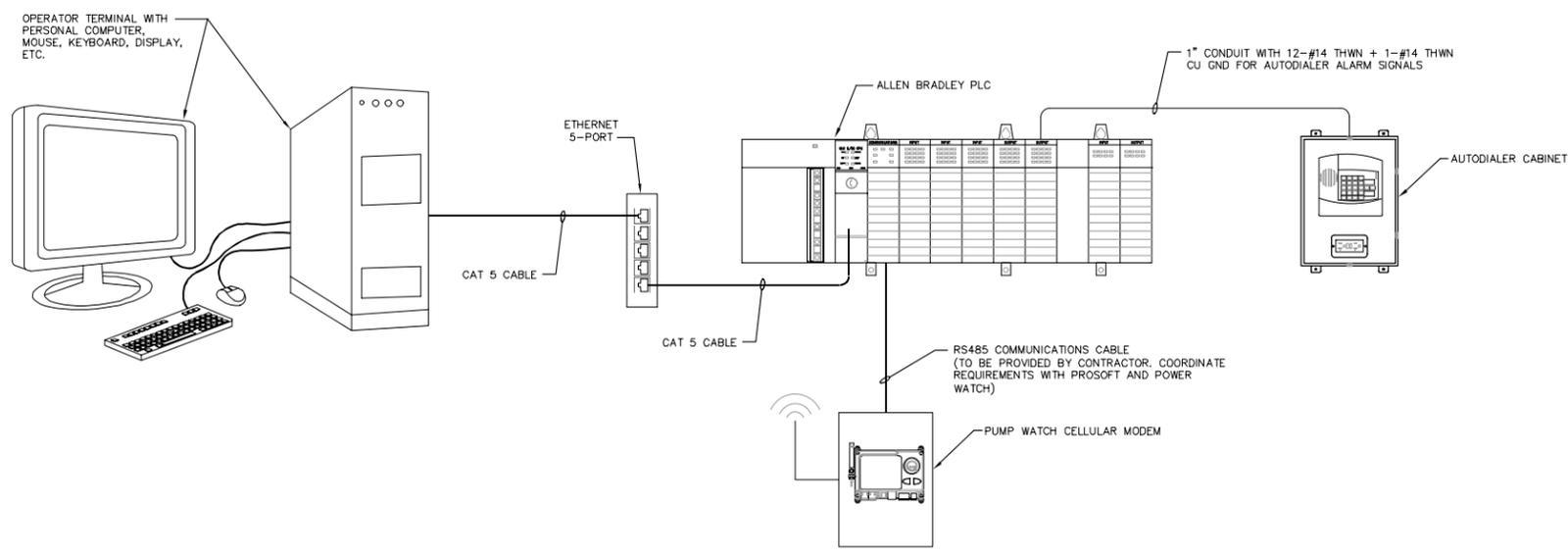


EXTERIOR OF CABINET SHOWN WITH DOOR OPEN

PLC CONTROL CABINET
 N.T.S. A 1-3.1



AUTODIALER CABINET
 N.T.S. B 1-3.1



COMMUNICATIONS SCHEMATIC

- GENERAL NOTES:**
- CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER OF DISCREPANCIES.
 - CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING EQUIPMENT, UTILITIES, STRUCTURES, AND PERSONNEL FROM DAMAGE OR INJURY DURING CONSTRUCTION.
 - GROUND PLC AND ALL EQUIPMENT PER MANUFACTURER'S SPECIFICATIONS. ISOLATED GROUND BUS PROVIDED FOR ALL SIGNAL CONDUCTORS.

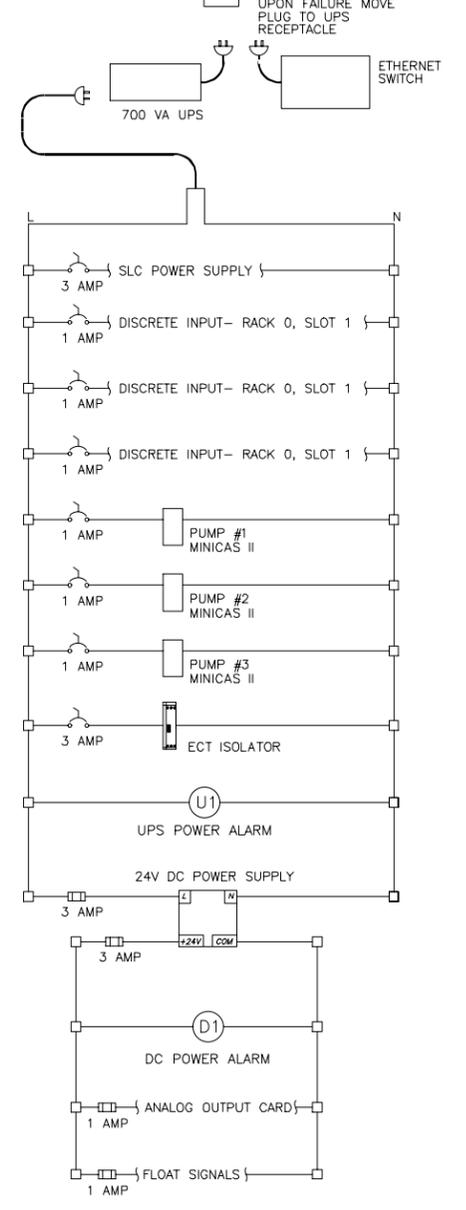
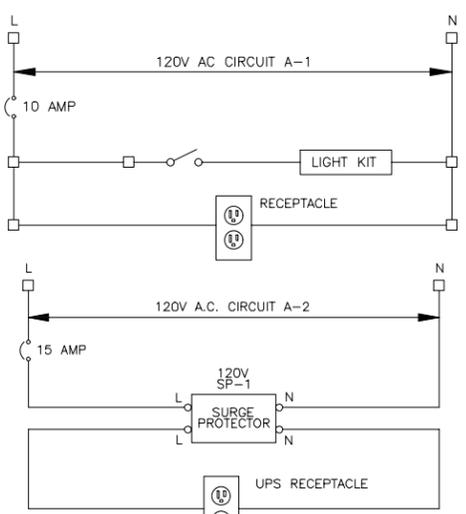
- KEY NOTES:**
- PROVIDE AND INSTALL 48" X 36" X 12" NEMA 12 ENCLOSURE WITH BACK PANEL, 3-POINT LATCHING SYSTEM AND DOOR-STOP KIT.
 - PROVIDE AND INSTALL PLC CONTROL CABINET BACK PANEL.
 - PROVIDE AND INSTALL ALLEN-BRADLEY PLC, PROCESSOR: 1747-L553; PROSOFT, MODBUS MODULE: MV146-MCM; THREE (3) AC INPUT MODULES: 1746-IA16; TWO (2) RELAY OUTPUT MODULES: 1746-OR8; ONE (1) ANALOG INPUT MODULE: 1746-NI8; ONE (1) ANALOG OUTPUT MODULE: 1746-NO8; POWER SUPPLY: 1746-P2; 10-SLOT RACK: 1746-A10; BLANK FILLER: 1746-N2.
 - PROVIDE AND INSTALL 120V CIRCUIT BREAKERS, 15 AMPERE SQUARE-D QOU115 AND 10 AMPERE SQUARE-D QOU110 AS REQUIRED.
 - PROVIDE AND INSTALL 120V, THERMAL CIRCUIT BREAKERS. REFER TO PLC WIRING DIAGRAM FOR QUANTITY/SIZE. ALL THERMAL CIRCUIT BREAKERS SHALL BE PHOENIX CONTACT TCP TYPE.
 - PROVIDE AND INSTALL 120V SURGE PROTECTION DEVICE. EDCC HSP121BT-1RU.
 - PROVIDE AND INSTALL 5-PORT ETHERNET SWITCH, HIRSCHMANN 5TX.
 - PROVIDE AND INSTALL 700VA UPS, POWERWARE FW9120-700.
 - PROVIDE AND INSTALL DIN-RAIL MOUNTED TERMINAL BLOCKS, ALLEN-BRADLEY 1492-W10.
 - PROVIDE AND INSTALL 2"x2" PANDUIT (OR EQUAL) WIRING SYSTEM WITH COVERS.
 - PROVIDE AND INSTALL DUPLEX GFI RECEPTACLE, HUBBELL, GFR53521A OR EQUAL FOR UPS. REFER ALSO TO PLC WIRING DIAGRAM. RECEPTACLE TO BE LOCATED BEHIND UPS.
 - PROVIDE AND INSTALL DUPLEX GFI RECEPTACLE, HUBBELL, GFR53521A OR EQUAL FOR CONVENIENCE. RECEPTACLE TO BE LOCATED BEHIND UPS.
 - PROVIDE AND INSTALL DIGITAL SURGE PROTECTION DEVICES AS REQUIRED. MTL CATALOG # SD32.
 - PROVIDE AND INSTALL 120V DIGITAL SURGE PROTECTION DEVICES AS REQUIRED. MTL CATALOG # SD150X.
 - PROVIDE AND INSTALL SPDT CONTROL RELAYS, 120V COILS, SQUARE-D CLASS 8501, TYPE R, MINIATURE PLUG-IN WITH RELAY BASE.
 - PROVIDE AND INSTALL SPDT CONTROL RELAYS, 24V COILS, SQUARE-D CLASS 8501, TYPE R, MINIATURE PLUG-IN WITH RELAY BASE.
 - PROVIDE AND INSTALL SIGNAL ISOLATOR/LOOP POWER UNIT FOR LEVEL TRANSMITTER, MOORE INDUSTRIES TYPE ECT, WITH 2-WIRE TRANSMITTER EXCITATION OPTION FOR TRANSMITTER LOOP POWER.
 - PROVIDE AND INSTALL 1-5/8" STAINLESS STEEL UNISTRUT (OR EQUAL). ALL HARDWARE TO BE STAINLESS STEEL.
 - PROVIDE AND INSTALL 75W, 24V DC POWER SUPPLY. MEAN WELL MODEL DR-75-24.
 - PROVIDE AND INSTALL FUSE TERMINAL BLOCKS AS REQUIRED FOR DC POWER. PHOENIX CONTACT UK 10 OR UK 6 AS REQUIRED.
 - PROVIDE AND INSTALL 120V, 8W, CABINET LIGHT. PRESCOLITE UCS12-1-08-PH-120-WSW WITH INTEGRAL SWITCH. PROVIDE FB75/GW LAMP AND BRACKET TO MOUNT FIXTURE TO BACKPANEL. PROVIDE AND INSTALL SEALED PLUNGER LIMIT SWITCH ON CABINET DOOR FOR AUTOMATIC LIGHT ACTIVATION.
 - MINICAS II PUMP MOTOR SEAL FAILURE AND THERMAL INDICATION. MINICAS II UNITS TO BE PROVIDED BY PUMP MANUFACTURER (XYLEM).
 - PROVIDE AND INSTALL DIN RAIL AS REQUIRED.
 - PROVIDE AND INSTALL ISOLATED GROUND BUS BAR.
 - PROVIDE AND INSTALL EQUIPMENT GROUND BUS.
 - PROVIDE AND INSTALL 16" X 12" X 6" NEMA 12 ENCLOSURE, HOFFMAN A161206LP OR EQUAL WITH BACKPANEL.
 - PROVIDE AND INSTALL AUTODIALER, SENSAPHONE MODEL 800.
 - PROVIDE AND INSTALL DUPLEX GFI RECEPTACLE, HUBBELL, GFR53521A OR EQUAL FOR AUTODIALER POWER ADAPTER.

DESIGN ENGINEER:	TIMOTHY THOMAS, P.E.	DATE:	
DESIGNED BY:	IDT	REVISIONS:	
DRAWN BY:	EAK	DATE:	
CHECKED BY:	DEV	DATE:	
SCALE:	AS NOTED	NO.	
PLC CONTROL CABINET DETAILS			
CABINET DETAILS			
CITY OF ST. PETE BEACH PUMP STATION NO.2 REHABILITATION		FLORIDA	
PINELLAS COUNTY		DATE OCTOBER 2013	
PROJECT NO. 148404000		SHEET NUMBER I-3.1	

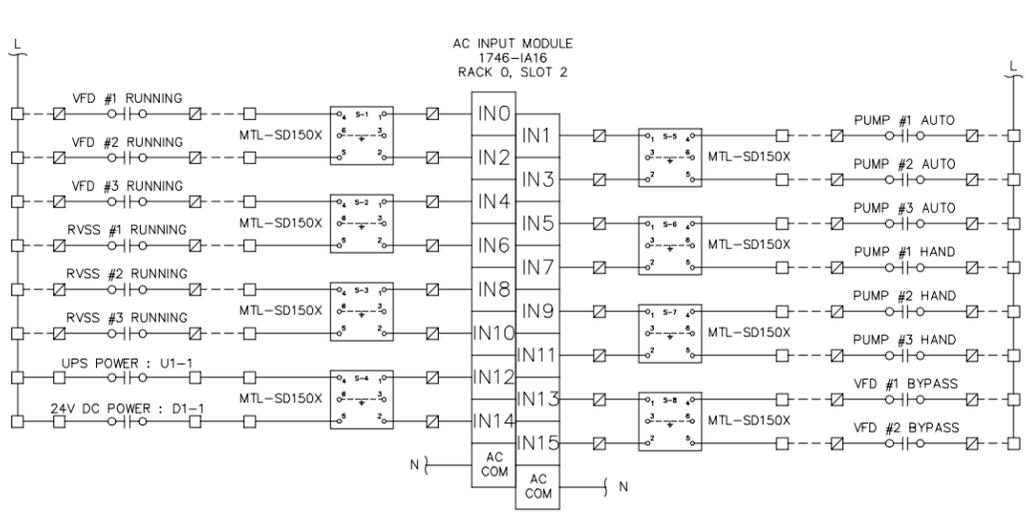


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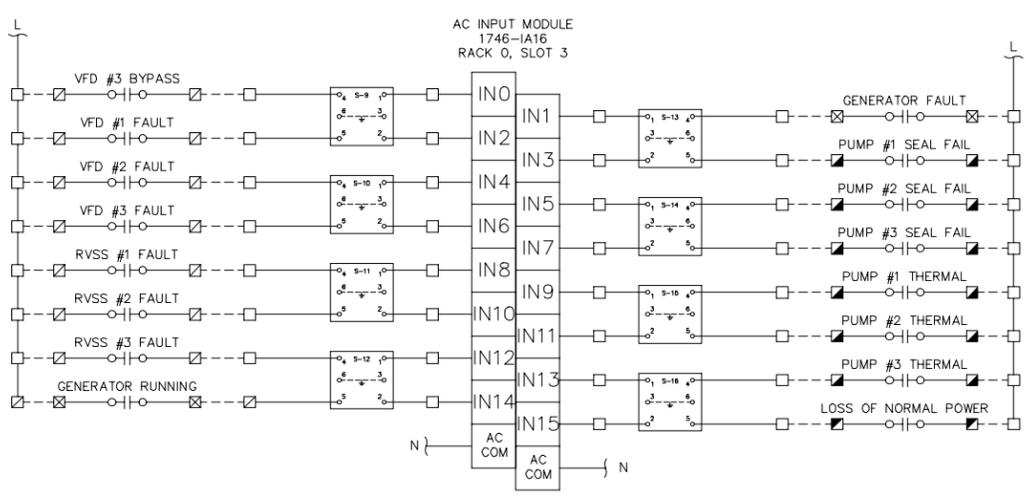
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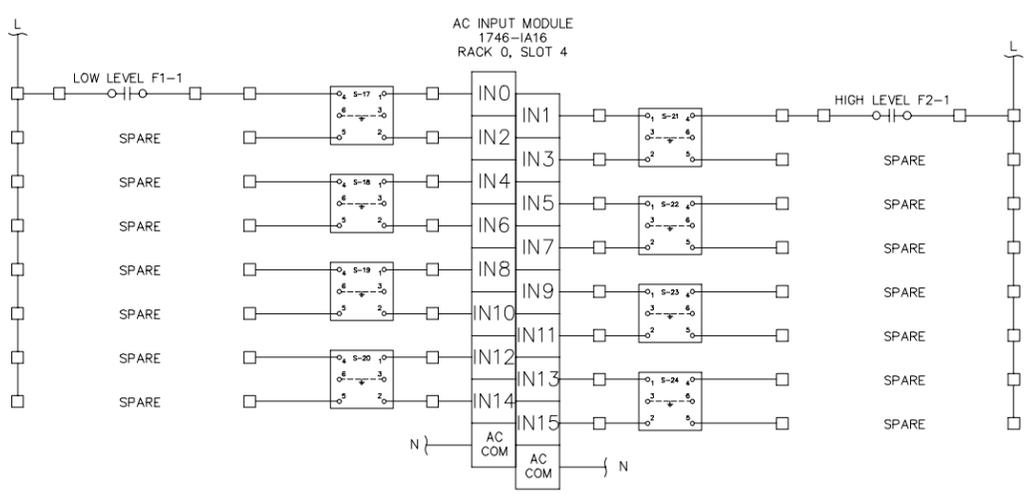
PLC - POWER WIRING DIAGRAM



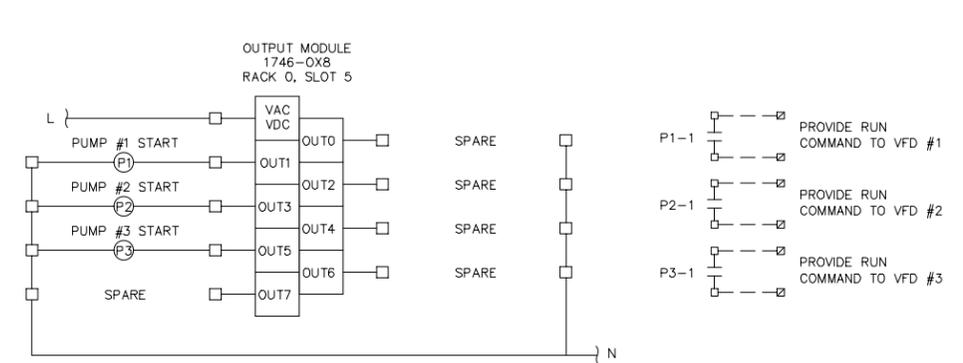
PLC - 120V DISCRETE INPUT CARD WIRING DIAGRAM



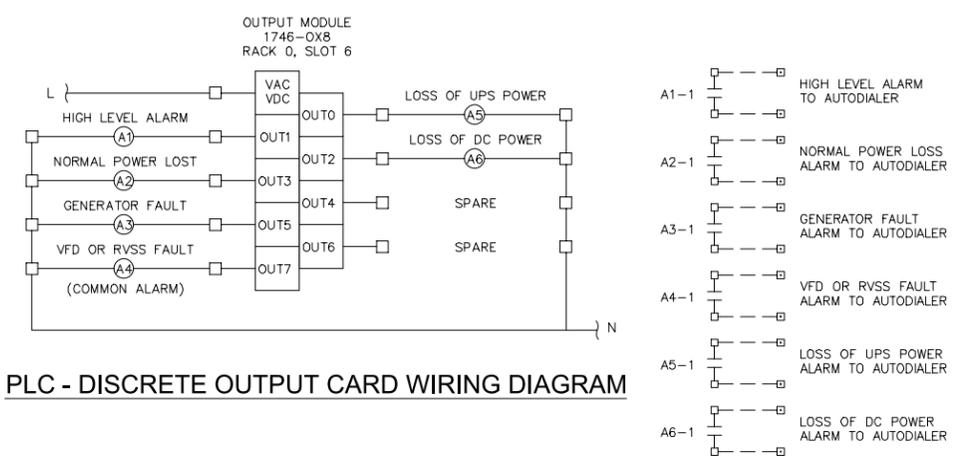
PLC - 120V DISCRETE INPUT CARD WIRING DIAGRAM



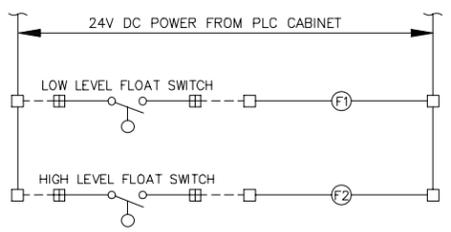
PLC - 120V DISCRETE INPUT CARD WIRING DIAGRAM



PLC - DISCRETE OUTPUT CARD WIRING DIAGRAM



PLC - DISCRETE OUTPUT CARD WIRING DIAGRAM

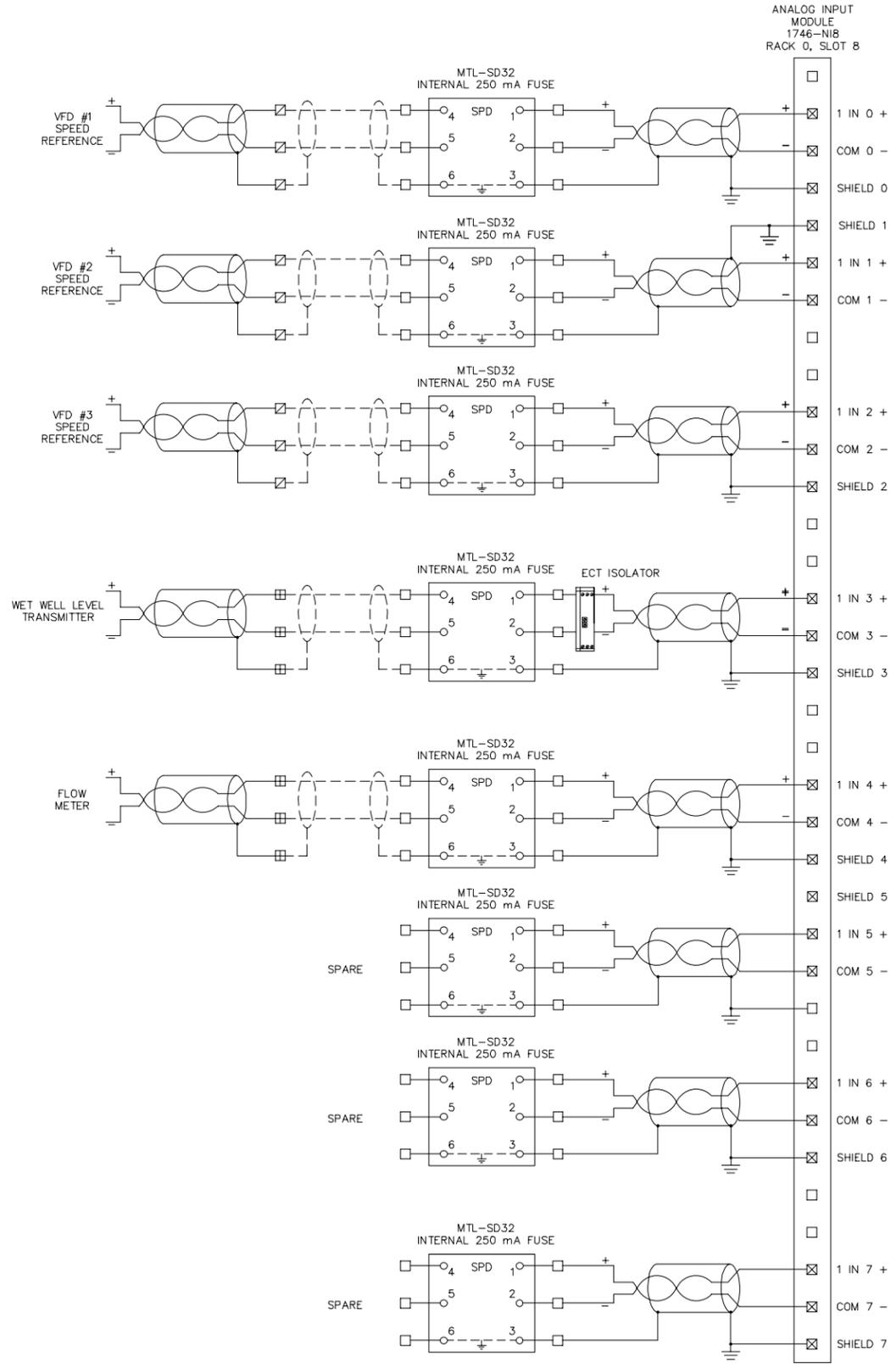


LEGEND

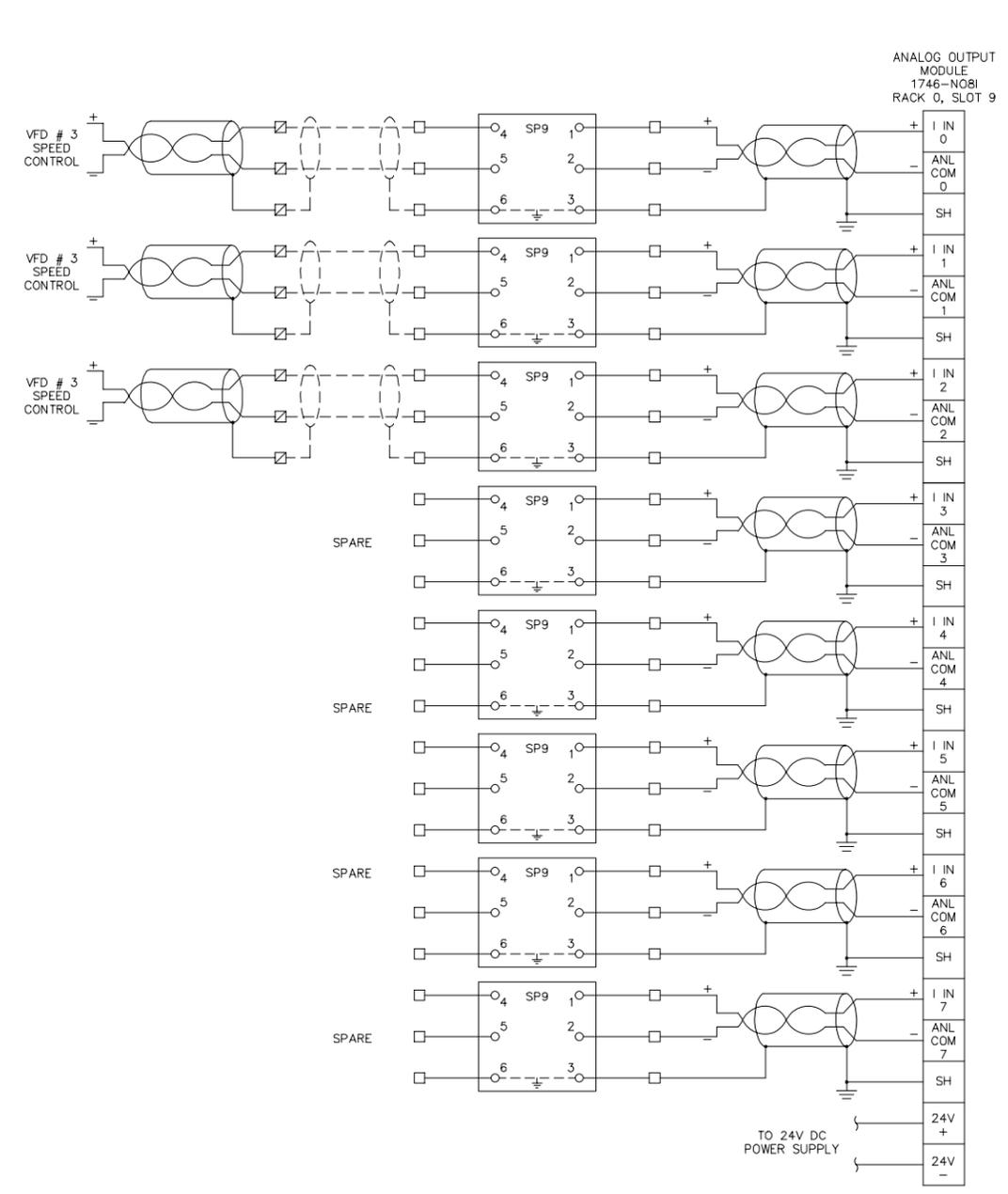
- DENOTES TERMINAL IN PLC CABINET
- ▣ DENOTES TERMINAL ON ASSOCIATED MINICAS II
- DENOTES NEW FIELD WIRING
- ▣ DENOTES TERMINAL ON FILED DEVICE
- ⊠ DENOTES TERMINAL ON VFD/RVSS
- ▣ DENOTES TERMINAL ON AUTODIALER
- ⊠ DENOTES TERMINAL ON GENERATOR
- ▣ DENOTES TERMINAL ON ATS

SCALE	AS NOTED	DESIGNED BY	TIMOTHY THOMAS, P.E.	FLORIDA REGISTRATION NUMBER	47079	DATE	
DESIGNED BY	IDT	DRAWN BY	EAK	CHECKED BY	DEV	REVISIONS	
CITY OF ST. PETE BEACH PUMP STATION NO.2 REHABILITATION PINELLAS COUNTY FLORIDA							
TRICON CONSULTING ENGINEERS 771 S. Harbour Island Blvd. STE 410, TAMPA, FL 33602 813.227.9198 FAX 813.227.9198 Certificate of Authorization No. 00008383							
DATE OCTOBER 2013 PROJECT NO. 148404000 SHEET NUMBER I-3.2							

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PLC - ANALOG INPUT CARD WIRING DIAGRAM



PLC - ANALOG OUTPUT CARD WIRING DIAGRAM



PLC WIRING SCHEMATICS	FLORIDA PINELLAS COUNTY
CITY OF ST. PETE BEACH PUMP STATION NO.2 REHABILITATION	DATE OCTOBER 2013 PROJECT NO. 148404000 SHEET NUMBER I-3.3
SCALE AS NOTED DESIGNED BY TDT DRAWN BY EAK CHECKED BY DEV	DESIGN ENGINEER: TIMOTHY THOMAS, P.E. FLORIDA REGISTRATION NUMBER: 47079
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REVISIONS	DATE BY