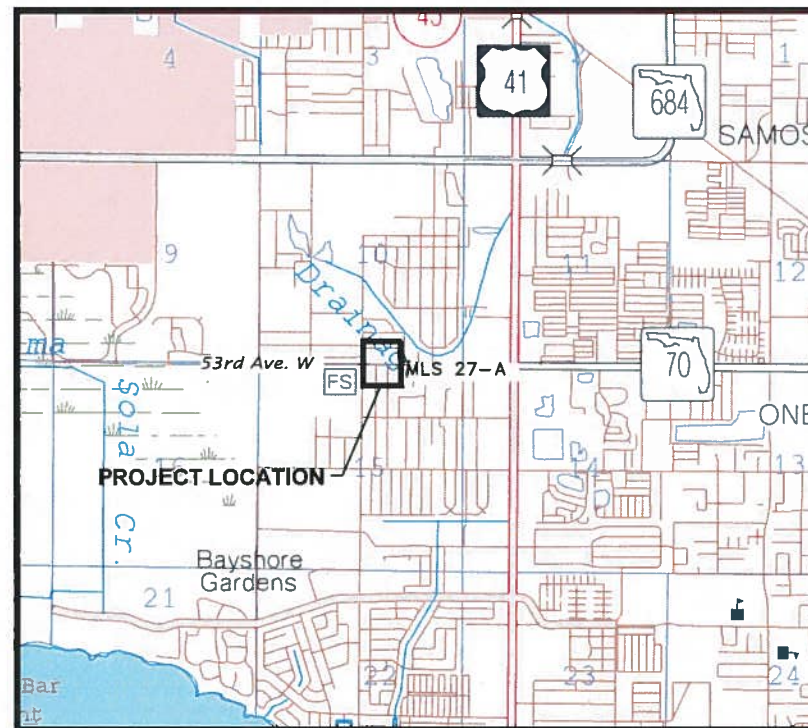




CONTRACT DRAWINGS
MLS 27-A (RTU #138)
EMERGENCY GENERATOR
REPLACEMENT
FOR
MANATEE COUNTY, FLORIDA
COUNTY PROJECT NUMBER: 6022289



INDEX OF SHEETS

SHEET NO	SHEET DESCRIPTION
G-1	COVER
G-2	GENERAL NOTES & SYMBOLOGY
C-1	SITE PLAN
C-2	SITE LAYOUT
C-3	BUILDING LAYOUT - GROUND LEVEL
C-4	SITE PHOTOS
C-5	DETAIL SHEET
E-1 TO E-6	ELECTRICAL SHEETS
S-1	STRUCTURAL SHEET - GENERATOR BUILDING PLAN AND DETAILS

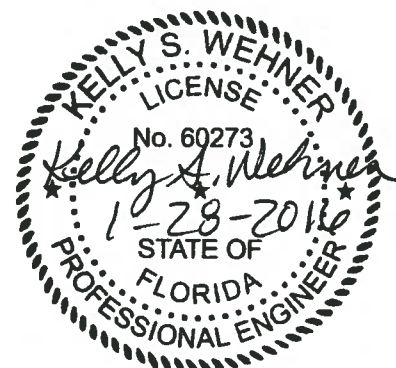


48 HOURS BEFORE DIGGING
"CALL SUNSHINE"
1-800-432-4770

UTILITY WARNING NOTE

ABOVE GROUND AND / OR UNDERGROUND UTILITIES MAY BE IN THE AREA OF THIS PROJECT - PROCEED WITH CAUTION - THE CONTRACTOR SHALL CALL SUNSHINE STATE "ONE CALL" AT 1-800-432-4770 AND THE UTILITY OWNERS IN ADVANCE OF BEGINNING WORK, IN ACCORDANCE WITH CHAPTER 556, FLORIDA STATUTES.

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.



PLANS PREPARED BY:



KELLY S. WEHNER, PE
ENGINEER OF RECORD

60273
FL. LICENSE NO.

REVISIONS		
DATE	BY	DESCRIPTION
01/28/16	DES	ADDENDUM 1

DATE: SEPT 2015
SHEET: G-1

CONDUIT RUN EXPOSED
CONDUIT RUN CONCEALED UNDERGROUND
CONDUIT RUN CONCEALED IN FLOOR OR SLAB
GROUNDING ELECTRODE CONDUCTOR

CONDUIT STUB OUT AND CAP

GROUND ROD

JUNCTION BOX

JUNCTION BOX WITH FLEXIBLE CONNECTION

480V
15 KVA, 1*
120/240V
TRANSFORMER, 480V INDICATED PRIMARY VOLTAGE, 120/240V INDICATES SECONDARY VOLTAGE, 15 KVA REPRESENTS POWER RATING, AND 1* INDICATES SINGLE PHASE (THREE PHASE IF NOT INDICATED)

3P
30A
THERMAL MAGNETIC CIRCUIT BREAKER WITH NUMBER OF POLES AND AMPERE RATING

COMBINATION MAGNETIC STARTER WITH CONTROL POWER TRANSFORMER (SIZED FOR LOAD). LETTERS INDICATE TYPE:
N - NON-REVERSING
R - REVERSING
2S - TWO-SPEED
C - CONTACTOR
SS - SOLID STATE SOFT START

XXX

XXX DEVICE

DESCRIPTION

HLS HIGH LEVEL SWITCH
HOA HAND-OFF-AUTO
LD LEAK DETECTION
LLS LOW LEVEL SWITCH
LOR LOCAL-OFF-REMOTE
PB PUSH BUTTON
RTU REMOTE TERMINAL UNIT
SS SOFT STARTER
SS/B SOFT START OR BYPASS
TS TEMPERATURE SWITCH
TVSS TRANSIENT VOLTAGE SURGE SUPPRESSOR
ZS POSITION SENSOR (LIMIT SWITCH)

FUSE

MOTOR

THERMAL OVERLOAD

UTILITY METER

TRANSFER SWITCH

ELECTRIC PANELBOARD

DISCONNECT OR SAFETY SWITCH

FLOAT SWITCH, OPENS ON LOW LEVEL

FLOAT SWITCH, CLOSING ON LOW LEVEL

NORMALLY OPEN (N.O.) CONTACT

NORMALLY CLOSED (N.C.) CONTACT

GROUND CONNECTION

INDICATING PILOT LIGHT LETTER INDICATES COLOR OF LENS

DISCONNECT OR TOGGLE SWITCH

NORMALLY OPEN MOMENTARY CIRCUIT CLOSING PUSH-BUTTON SWITCH. SPRING OPEN. NUMBER OF ELECTRICAL CONTACTS ON SWITCH SHOWN ON CONTROL SCHEMATIC

NORMALLY CLOSED MOMENTARY CIRCUIT OPENING PUSH-BUTTON SWITCH. SPRING CLOSE. NUMBER OF ELECTRICAL CONTACTS ON SWITCH SHOWN ON CONTROL SCHEMATIC

LIMIT SWITCH NORMALLY CLOSED CONTACT. CONTACT OPENS WHEN ACTUATED

TORQUE SWITCH NORMALLY CLOSED CONTACT. CONTACT OPENS WHEN ACTUATED

PUMP THERMAL SENSOR

3-PHASE, 480V CAPACITOR

ABBREVIATIONS

A AMPS
AFF ABOVE FINISHED FLOOR
AFG ABOVE FINISHED GRADE
ATL ACROSS-THE-LINE
C CONDUIT
CU COPPER
EX EXISTING
ELEC ELECTRICAL
EXP EXPLOSION PROOF
FU FUSE
GFI GROUND FAULT INTERRUPTER
GND GROUNDING CONDUCTOR
HP HORSEPOWER
HZ HERTZ
IG ISOLATED GROUND
KVA KILOVOLT AMPERES
KW KILOWATTS
MAX MAXIMUM
MIN MINIMUM
N/A NOT APPLICABLE
PH PHASE
RECP RECEPTACLE
RPM REVOLUTIONS PER MINUTE
RTU REMOTE TERMINAL UNIT
SPD SURGE PROTECTION DEVICE
TYP TYPICAL
V VOLTS
WP WEATHERPROOF

EXAMPLE OF SECTION CUT AND DETAIL

SECTION

SCALE : 1/4" = 1'-0" E-1 E-2

SHEET NUMBER WHERE SECTION IS CUT

SECTION (LETTERS USED)

SHEET NUMBER WHERE SECTION IS SHOWN

SECTION (LETTERS USED)

DETAIL

SCALE : 1/4" = 1'-0" E-1 E-2

SHEET NUMBER WHERE DETAIL IS SHOWN

DETAIL (NUMBERS USED)

SHEET NUMBER WHERE DETAIL IS ENLARGED

GENERAL NOTES

THE WORK CONSIST OF FURNISHING ALL LABOR, MATERIALS, EQUIPMENT, AND TECHNICAL SUPERVISION TO INSTALL A NEW GENERATOR AND ASSOCIATED EQUIPMENT AS INDICATED AND SHOWN. THE WORK INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO PURCHASING EQUIPMENT OR COMMENCING CONSTRUCTION.
- CONTROL CONDUCTORS SHALL BE STRANDED COPPER, 14AWG MINIMUM, WITH THWN INSULATION, UNLESS OTHERWISE NOTED.
- ALL WIRING SHALL BE IDENTIFIED WITH NUMBERS AT ALL TERMINALS AND ON WIRING DIAGRAMS.
- FIELD VERIFY ALL EQUIPMENT LOCATIONS AND CONNECTIONS PRIOR TO COMMENCING CONSTRUCTION.
- ALL NEW EQUIPMENT SHALL BE PERMANENTLY IDENTIFIED WITH A BLACK ON WHITE LAMACOID TAG ENGRAVED WITH MINIMUM 3/16 INCH LETTERING.
- ALL CIRCUITS SHALL HAVE A GROUNDING CONDUCTOR ROUTED INSIDE EACH CONDUIT WITH POWER CONDUCTORS.
- ALL CONDUCTOR LENGTHS SHALL BE CONTINUOUS. NO SPLICES OR CONDUCTOR TERMINATIONS SHALL BE PERMITTED UNLESS SPECIFICALLY DESIGNATED IN THE DRAWINGS.
- 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.
- CONDUITS SHALL BE RIGID HEAVY WALL ALUMINUM. FLEXIBLE CONDUITS SHALL BE NONMETALLIC LIQUID TIGHT.
- MAKE MODIFICATIONS TO THE EXISTING MOTOR CONTROL CENTER AS SHOWN AND SPECIFIED.
- PROVIDE AND INSTALL GENERATOR WITH WEATHER-PROOF, SOUND ATTENUATED ENCLOSURE AS SHOWN AND SPECIFIED.
- MAKE REQUIRED INTERCONNECTIONS BETWEEN MOTOR CONTROL CENTER COMPONENTS AND NEW GENERATOR AS SHOWN AND SPECIFIED.
- PROVIDE AND INSTALL STAINLESS STEEL CHANNEL ERECTOR SYSTEMS TO MOUNT AND SUPPORT ENCLOSURES, BOXES, CONDUITS AND OTHER EQUIPMENT. ALL MOUNTING HARDWARE SHALL BE 316 SS.
- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2014 NATIONAL ELECTRICAL CODE (NEC).
- AFTER COMPLETING THE EQUIPMENT INSTALLATION, THE SYSTEM SHALL BE TESTED TO SHOW FUNCTIONALITY.
- TEST AND START-UP REPORTS FOR THE GENERATOR SYSTEM AND WIRING SHALL BE INCLUDED IN THE OPERATION AND MAINTENANCE (O&M) MANUALS PROVIDED UNDER THIS CONTRACT.

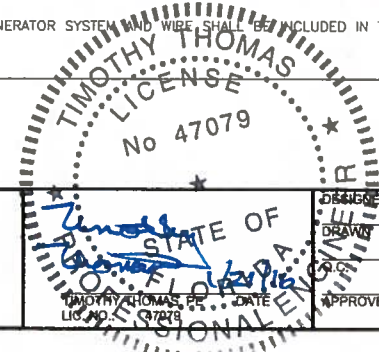
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MANATEE COUNTY

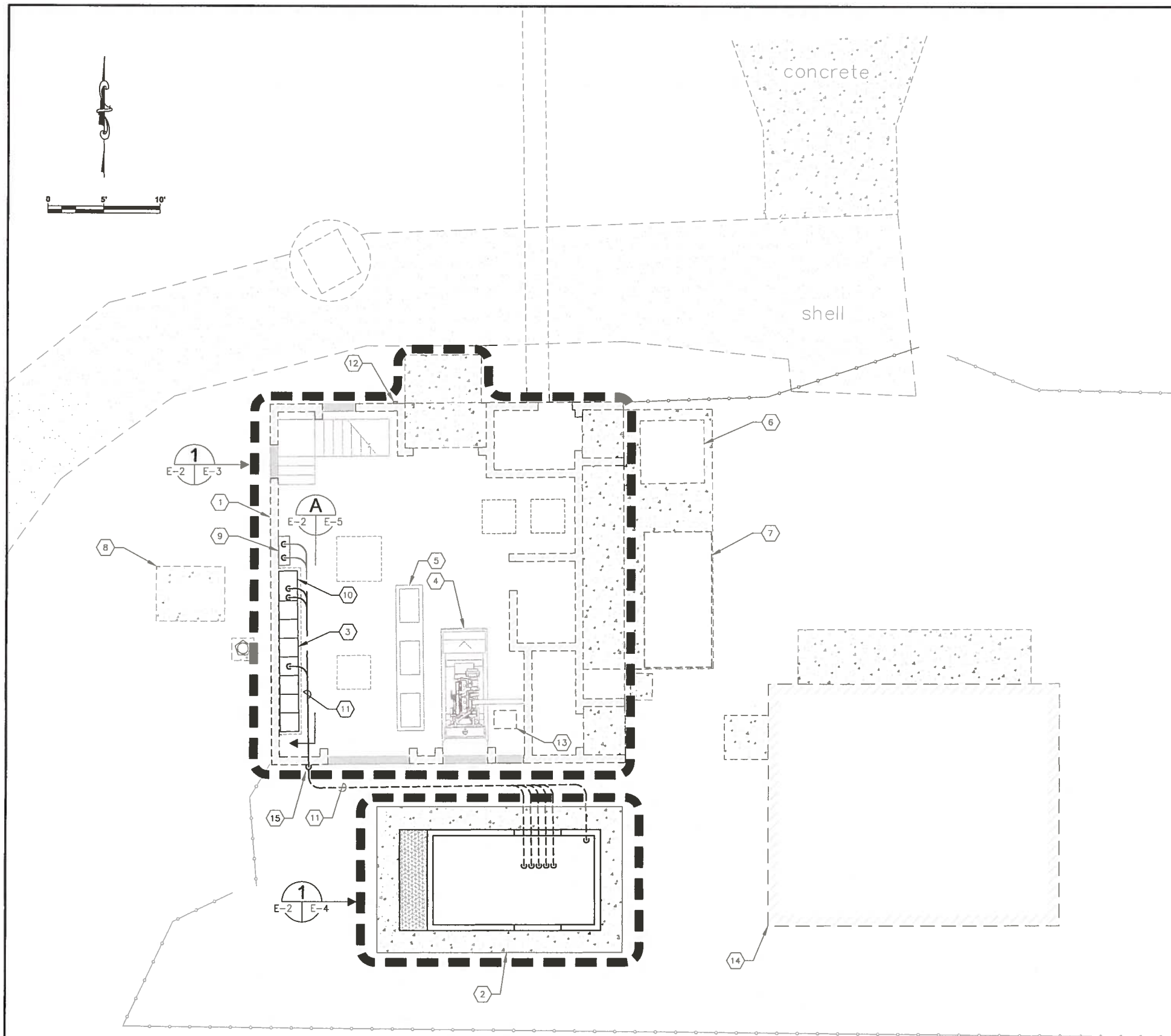
MLS 27A EMERGENCY
GENERATOR REPLACEMENT

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www.cardno.com Certificate of Authorization No. 29815



ELECTRICAL LEGEND
AND ABBREVIATIONS

PROJECT NO:
00193009.07
DATE:
JANUARY 2016
SHEET NO:
E-1



KEYED NOTES:

- 1 EXISTING BUILDING FOR LIFT STATION 27A. REFER TO SHEET E-3 FOR WORK REQUIRED WITHIN THE LIFT STATION BUILDING.
- 2 NEW 480V, 300 KW GENERATOR IN WEATHER-PROOF, SOUND ATTENUATED ENCLOSURE. REFER TO SHEET E-4 FOR GENERATOR DETAILS.
- 3 EXISTING MOTOR CONTROL CENTER (MCC) FOR LIFT STATION 27A. REFER TO SHEET E-5 FOR MCC ELEVATION AND WORK REQUIRED.
- 4 EXISTING GENERATOR SET TO BE REMOVED. REFER TO CIVIL/MECHANICAL SHEETS FOR DETAILS.
- 5 EXISTING VARIABLE FREQUENCY DRIVES (VFD'S) NO WORK REQUIRED.
- 6 EXISTING ODOR CONTROL FILTER. NO WORK REQUIRED.
- 7 EXISTING DIESEL STORAGE TANK. REFER TO CIVIL/MECHANICAL SHEETS FOR ANY WORK REQUIRED.
- 8 EXISTING UTILITY TRANSFORMER. NO WORK REQUIRED.
- 9 EXISTING TRANSFER SWITCH FOR LIFT STATION 27A. EXISTING TRANSFER SWITCH TO BE REPLACED. REFER TO SHEET E-5 FOR WORK REQUIRED.
- 10 EXISTING PLC CONTROL CABINET FOR LIFT STATION 27A. REFER TO SHEET E-5 FOR PLC CONTROL CABINET ELEVATION AND WORK REQUIRED.
- 11 CONTRACTOR TO PROVIDE AND INSTALL THE FOLLOWING :

PROVIDE AND INSTALL 8-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT. FIELD ROUTE CONDUIT FROM PLC CONTROL CABINET TO NEW GENERATOR FOR SCADA MONITORING OF GENERATOR. 2-#12 FOR GENERATOR RUNNING INDICATION, 2-#12 FOR GENERATOR FAIL INDICATION AND 4-#12 SPARE.

PROVIDE AND INSTALL 8-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT TO EXISTING PLC CONTROL CABINET FOR SCADA MONITORING OF DAY TANK. 2-#12 DAY TANK LEAK DETECTION ALARM, 2-#12 FOR DAY TANK FUEL LOW LEVEL ALARM, 2-#12 FOR DAY TANK FUEL HIGH LEVEL ALARM AND 2-#12 SPARE. CONTRACTOR SHALL COORDINATE/VERIFY CONNECTION LOCATION AND TYPE WITH ENCLOSURE MANUFACTURER.

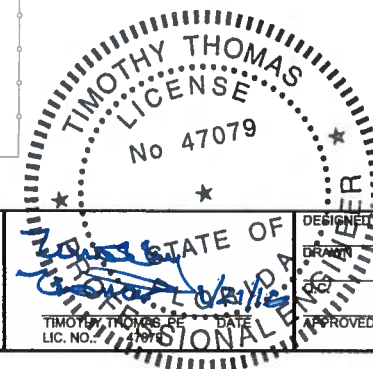
PROVIDE AND INSTALL TWO (2) PARALLEL RUNS CONSISTING OF 3-3/0 THWN CU + 1-#3 THWN CU GND IN 2" CONDUIT. FIELD ROUTE CONDUIT FROM EXISTING TRANSFER SWITCH TO NEW GENERATOR FOR 480V STANDBY POWER FEEDER CIRCUIT.

PROVIDE AND INSTALL 4-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT. FIELD ROUTE CONDUIT FROM EXISTING TRANSFER SWITCH TO NEW GENERATOR FOR GENERATOR START SIGNAL. CONTRACTOR TO COORDINATE/VERIFY GENERATOR STARTER CONTROL REQUIREMENTS WITH GENERATOR AND TRANSFER SWITCH MANUFACTURERS.

PROVIDE AND INSTALL 3-#8 THWN CU + 1-#10 THWN CU GND IN 1" CONDUIT. FIELD ROUTE CONDUIT FROM NEW MCC FEEDER CIRCUIT BREAKER TO NEW GENERATOR DISCONNECT SWITCH FOR 480V ANCILLARY EQUIPMENT FEEDER CIRCUIT.
- 12 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 FOR SHUT DOWN SIGNAL.
- 13 EXISTING DAY TANK TO BE REMOVED. REFER TO CIVIL/MECHANICAL SHEETS FOR DETAILS.
- 14 EXISTING CONCRETE BLOCK GARAGE. NO WORK REQUIRED.
- 15 CORE DRILL PENETRATION 1/4" LARGER THAN CONDUIT DIAMETER. FILL VOID WITH PAINTABLE SILICONE CHALK (BOTH SIDES OF WALL). PAINT WITH COLOR TO MATCH EXISTING WALL. TYPICAL FOR ALL EXTERIOR WALL PENETRATIONS.

GENERAL NOTES :

1. THIS DRAWING SHOWS EXISTING CONDITIONS USING THE BEST AS-BUILT INFORMATION AVAILABLE AT THE TIME OF DESIGN. IT IS PROVIDED FOR REFERENCE ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING INSTALLATIONS PRIOR TO SUBMITTING A BID AND PRIOR TO COMMENCING CONSTRUCTION.
2. CONDUIT ROUTING SHOWN IS DIAGRAMMATICAL. CONTRACTOR SHALL FIELD ROUTE CONDUIT BASED ON EXISTING FIELD CONDITIONS. CONTRACTOR SHALL PROVIDE JUNCTION BOXES, PULL BOXES AND/OR CONDUIT LB FITTING AS REQUIRED TO MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.



NO.	DESCRIPTION	BY	DATE
1	ADDENDUM 1 - ATS REPLACEMENT	TDT	1-15-16

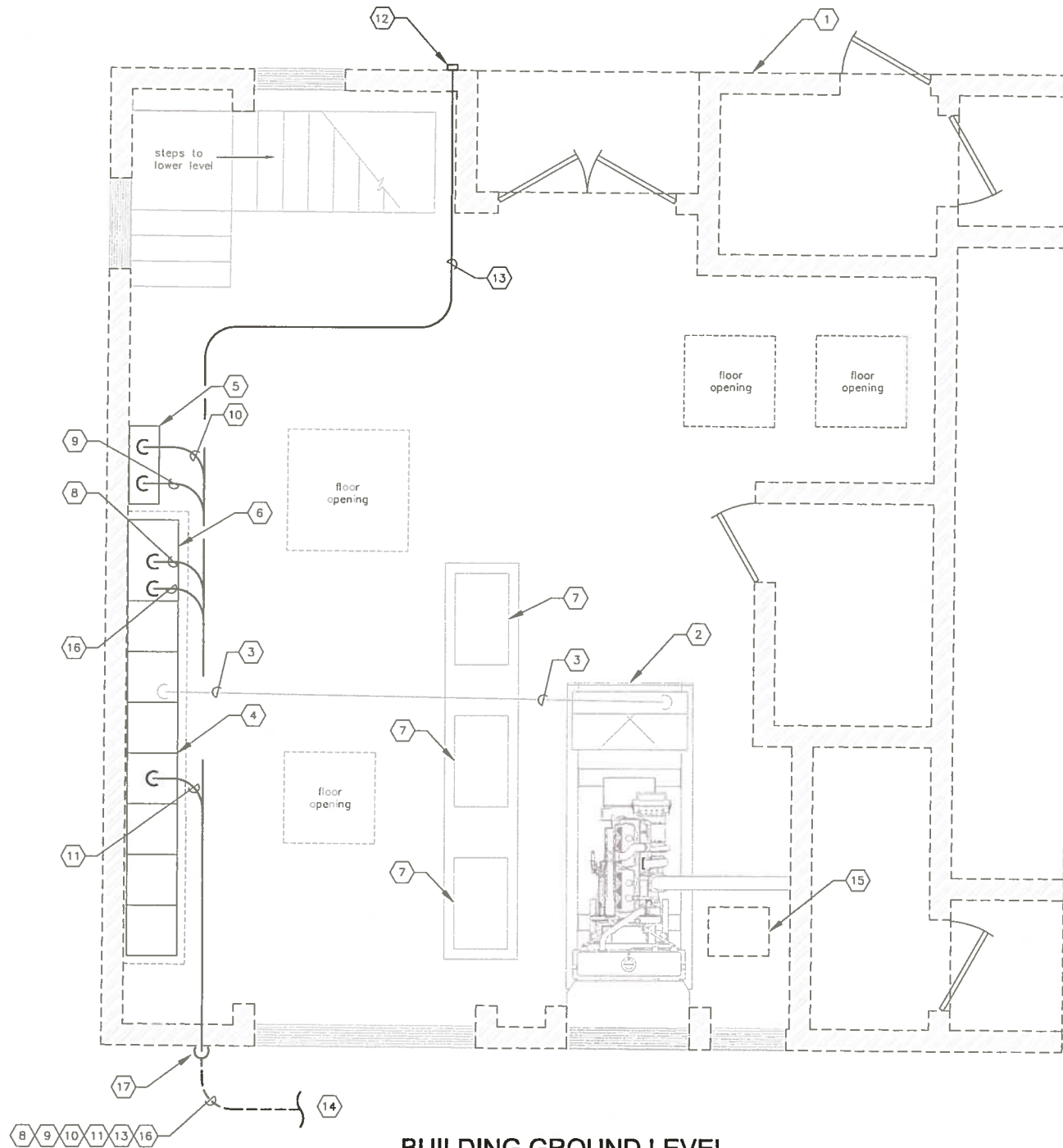
MANATEE COUNTY

MLS 27A EMERGENCY
GENERATOR REPLACEMENT



ELECTRICAL SITE PLAN

PROJECT NO:	00193009.07
DATE:	JANUARY 2016
SHEET NO:	E-2



**BUILDING GROUND LEVEL
FLOOR PLAN**

1
E-2 E-3

KEYED NOTES:

- 1 EXISTING BUILDING FOR LIFT STATION 27A.
- 2 EXISTING GENERATOR SET TO BE REMOVED. REFER TO CIVIL/MECHANICAL SHEETS FOR DETAILS.
- 3 EXISTING GENERATOR 480V FEEDER TO BE REMOVED. FEEDER CONDUCTORS ARE ROUTED TO EXISTING TRANSFER SWITCH THROUGH EXISTING MOTOR CONTROL CENTER (MCC). CONTRACTOR SHALL REMOVE ENTIRE LENGTH OF CONDUCTORS AND CONDUIT. CONTRACTOR SHALL ALSO REMOVE ALL ANCILLARY EQUIPMENT CONDUCTORS AND CONDUIT (BATTERY CHARGER CIRCUIT, GENERATOR STARTER CIRCUIT, ETC., NOT SHOWN FOR CLARITY). CONTRACTOR SHALL REMOVE ENTIRE LENGTH OF CONDUCTORS AND CONDUIT.
- 4 EXISTING MOTOR CONTROL CENTER (MCC) FOR LIFT STATION 27A. REFER TO SHEET E-5 FOR MCC ELEVATION AND WORK REQUIRED.
- 5 EXISTING TRANSFER SWITCH FOR LIFT STATION 27A TO BE REPLCD. REFER TO SHEET E-5 FOR TRANSFER SWITCH ELEVATION AND WORK REQUIRED.
- 6 EXISTING PLC CONTROL CABINET. REFER TO SHEET E-5 FOR ELEVATION OF PLC CONTROL CABINET ELEVATION AND WORK REQUIRED.
- 7 EXISTING VARIABLE FREQUENCY DRIVE (VFD) NO WORK REQUIRED.
- 8 PROVIDE AND INSTALL 8-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT. FIELD ROUTE CONDUIT FROM PLC CONTROL CABINET TO NEW GENERATOR FOR SCADA MONITORING OF GENERATOR. 2-#12 FOR GENERATOR RUNNING INDICATION, 2-#12 FOR GENERATOR FAIL INDICATION AND 4-#12 SPARE.
- 9 PROVIDE AND INSTALL TWO (2) PARALLEL RUNS CONSISTING OF 3-3/0 THWN CU + 1-#3 THWN CU GND IN 2" CONDUIT. FIELD ROUTE CONDUIT FROM EXISTING TRANSFER SWITCH TO NEW GENERATOR FOR 480V STANDBY POWER FEEDER CIRCUIT.
- 10 PROVIDE AND INSTALL 4-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT. FIELD ROUTE CONDUIT FROM EXISTING TRANSFER SWITCH TO NEW GENERATOR FOR GENERATOR START SIGNAL. CONTRACTOR TO COORDINATE/VERIFY GENERATOR STARTER CONTROL REQUIREMENTS WITH GENERATOR AND TRANSFER SWITCH MANUFACTURERS.
- 11 PROVIDE AND INSTALL 3-#8 THWN CU + 1-#10 THWN CU GND IN 1" CONDUIT. FIELD ROUTE CONDUIT FROM NEW MCC FEEDER CIRCUIT BREAKER TO NEW GENERATOR DISCONNECT SWITCH FOR 480V ANCILLARY EQUIPMENT FEEDER CIRCUIT.
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- 13 PROVIDE AND INSTALL 2-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT. FIELD ROUTE CONDUIT FROM PUSH BUTTON STATION TO NEW GENERATOR FOR SHUT DOWN SIGNAL.
- 14 FOR CONTINUATION OF CONDUITS TO GENERATOR REFER TO SHEET E-5.
- 15 EXISTING DAY TANK TO BE REMOVED. REFER TO CIVIL/MECHANICAL SHEETS FOR DETAILS.
- 16 PROVIDE AND INSTALL 8-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT TO EXISTING PLC CONTROL CABINET FOR SCADA MONITORING OF DAY TANK. 2-#12 DAY TANK LEAK DETECTION ALARM, 2-#12 FOR DAY TANK FUEL LOW LEVEL ALARM, 2-#12 FOR DAY TANK FUEL HIGH LEVEL ALARM AND 2-#12 SPARE. CONTRACTOR SHALL COORDINATE/VERIFY CONNECTION LOCATION AND TYPE WITH ENCLOSURE MANUFACTURER.
- 17 CORE DRILL PENETRATION 1/4" LARGER THAN CONDUIT DIAMETER. FILL VOID WITH PAINTABLE SILICONE CHALK (BOTH SIDES OF WALL). PAINT WITH COLOR TO MATCH EXISTING WALL. TYPICAL FOR ALL EXTERIOR WALL PENETRATIONS.

GENERAL NOTES :

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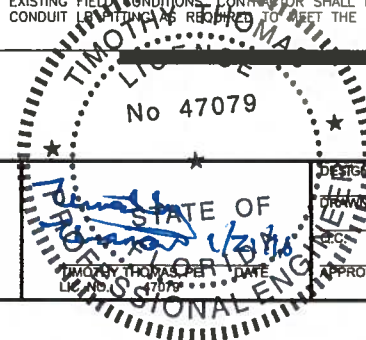
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NO.	DESCRIPTION	BY	DATE
1	ADDENDUM 1 - ATS REPLACEMENT	TDT	1-15-16

MANATEE COUNTY

**MLS 27A EMERGENCY
GENERATOR REPLACEMENT**

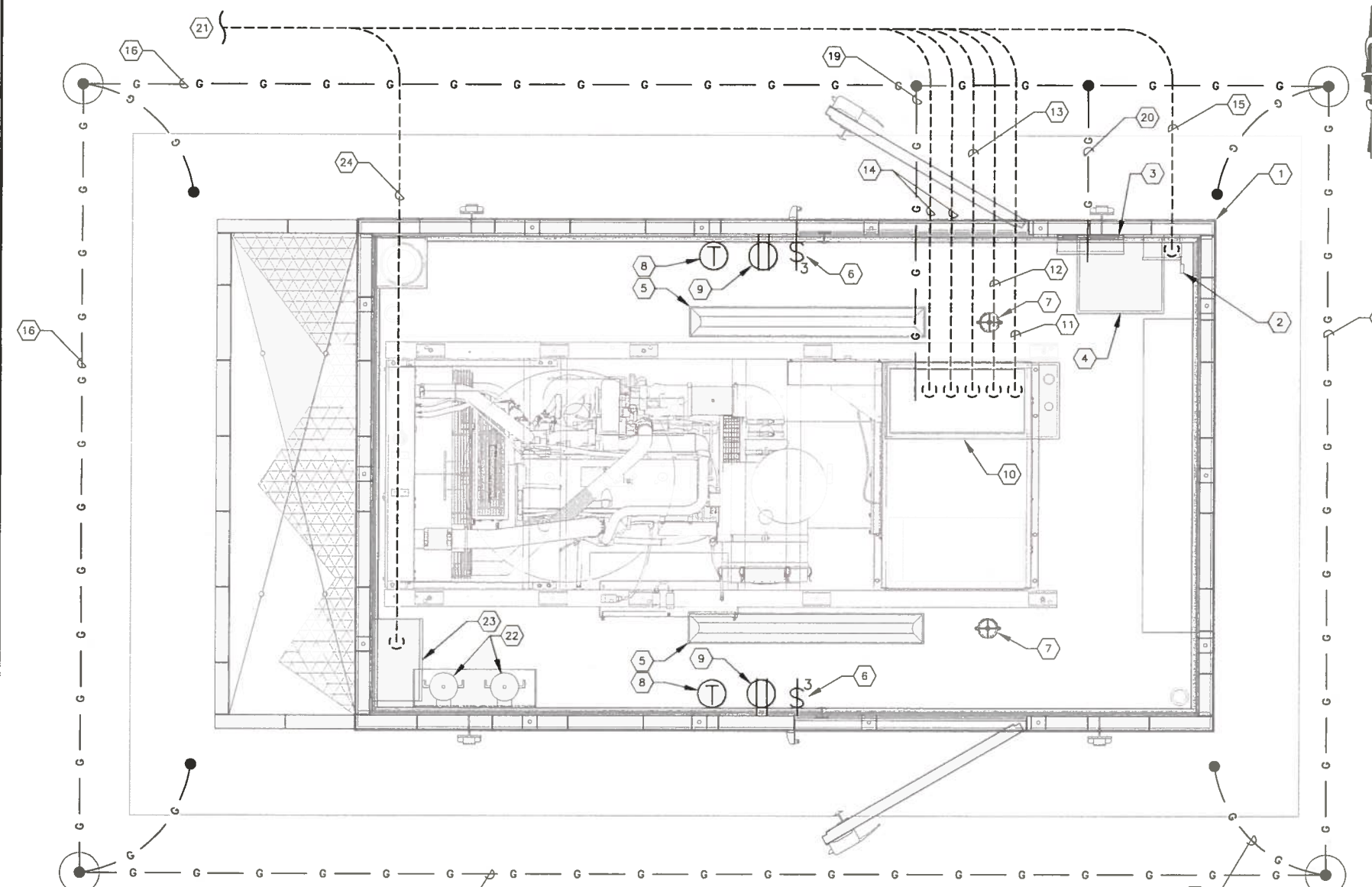
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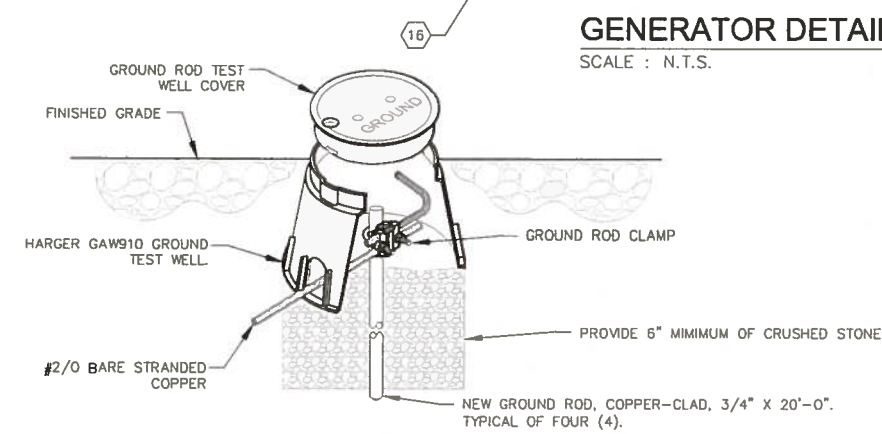
DESIGNED TDT
DRAWN JHL
CHECKED DEV
APPROVED

**BUILDING LAYOUT
GROUND LEVEL**

PROJECT NO:
00193009.07
DATE:
JANUARY 2016
SHEET NO:
E-3



- KEYED NOTES:**
- 1 NEW 480V, 300 KW GENERATOR IN WEATHER PROOF, SOUND ATTENUATED ENCLOSURE REFER ALSO TO SPECIFICATIONS.
 - 2 60 AMPERE FUSED DISCONNECT SWITCH PROVIDED AND INSTALLED AS PART OF THE ENCLOSURE PACKAGE.
 - 3 100 AMPERE, 120/208V, 3Ø, MCB LOADCENTER PROVIDED AND INSTALLED AS PART OF THE ENCLOSURE PACKAGE.
 - 4 25 KVA, 480V-120/208V, 3Ø, TRANSFORMER PROVIDED AND INSTALLED AS PART OF THE ENCLOSURE PACKAGE. TRANSFORMER LOCATED ABOVE DISCONNECT AND LOADCENTER.
 - 5 DUAL TUBE FLUORESCENT LIGHT FIXTURE PROVIDED AND INSTALLED AS PART OF THE ENCLOSURE PACKAGE.
 - 6 3-WAY SWITCHES PROVIDED AND INSTALLED AS PART OF THE ENCLOSURE PACKAGE.
 - 7 DC LIGHT FIXTURES PROVIDED AND INSTALLED AS PART OF THE ENCLOSURE PACKAGE.
 - 8 60 MINUTE TIMER SWITCHES FOR DC LIGHT FIXTURES PROVIDED AND INSTALLED AS PART OF THE ENCLOSURE PACKAGE.
 - 9 20A, 125V DUPLEX GFCI RECEPTACLE PROVIDED AND INSTALLED AS PART OF THE ENCLOSURE PACKAGE.
 - 10 STUBUP LOCATION FOR 480V FEEDER CIRCUIT, GENERATOR STARTER CIRCUIT, GENERATOR SHUT DOWN AND SCADA I/O. COORDINATE/VERIFY EXACT LOCATION WITH ENCLOSURE MANUFACTURER.
 - 11 PROVIDE AND INSTALL 8-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT TO EXISTING PLC CONTROL CABINET FOR SCADA MONITORING OF GENERATOR. 2-#12 FOR GENERATOR RUNNING INDICATION, 2-#12 FOR GENERATOR FAIL INDICATION AND 4-#12 SPARE.
 - 12 PROVIDE AND INSTALL 4-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT TO NEW TRANSFER SWITCH FOR GENERATOR START SIGNAL. CONTRACTOR TO COORDINATE/VERIFY GENERATOR STARTER CONTROL REQUIREMENTS WITH GENERATOR AND TRANSFER SWITCH MANUFACTURERS.
 - 13 PROVIDE AND INSTALL 2-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT TO NEW EMERGENCY SHUT DOWN PUSH BUTTON STATION FOR SHUT DOWN SIGNAL.
 - 14 PROVIDE AND INSTALL TWO (2) PARALLEL RUNS CONSISTING OF 3-3/0 THWN CU + 1-#3 THWN CU GND IN 2" CONDUIT TO NEW TRANSFER SWITCH FOR 480V STANDBY POWER FEEDER CIRCUIT.
 - 15 PROVIDE AND INSTALL 3-#8 THWN CU + 1-#10 THWN CU GND IN 1" CONDUIT TO NEW MCC FEEDER CIRCUIT BREAKER FOR 480V ANCILLARY EQUIPMENT FEEDER CIRCUIT.
 - 16 CONTRACTOR TO PROVIDE AND INSTALL GROUND RING CONSISTING OF #2/0 BARE STRANDED COPPER DIRECT BURIED IN SOIL A MINIMUM OF 24" BELOW GRAVEL BASE.
 - 17 CONTRACTOR TO PROVIDE AND INSTALL NEW GROUND ROD, COPPER-CLAD, 3/4" X 20'-0" AND GROUND ROD TEST WELL. REFER ALSO TO GROUND ROD DETAIL ON THIS SHEET. TYPICAL OF FOUR (4).
 - 18 CONTRACTOR TO PROVIDE AND INSTALL A #2/0 AWG BARE COPPER CONDUCTOR BETWEEN THE GROUND ROD AND THE REINFORCING STEEL EMBEDDED IN THE GENERATOR CONCRETE PAD. PROVIDE EXOTHERMIC WELDS.
 - 19 CONTRACTOR TO PROVIDE AND INSTALL #2/0 BARE STRANDED COPPER GROUNDING ELECTRODE CONDUCTOR FOR GENERATOR FRAME. PROVIDE EXOTHERMIC WELD TO GROUNDING GRID.
 - 20 CONTRACTOR TO PROVIDE AND INSTALL #8 BARE STRANDED COPPER GROUNDING ELECTRODE CONDUCTOR FOR ANCILLARY TRANSFORMER GROUNDING. PROVIDE EXOTHERMIC WELD TO GROUNDING GRID.
 - 21 FOR CONTINUATION OF CONDUITS TO GENERATOR REFER TO SHEET E-3.
 - 22 DAY TANK SUPPLY AND RETURN PUMPS. PUMPS SHALL BE PROVIDED AND INSTALLED AS PART OF THE ENCLOSURE PACKAGE.
 - 23 DAY TANK CONTROLLER. DAY TANK CONTROLLER SHALL BE PROVIDED AND INSTALLED AS PART OF THE ENCLOSURE PACKAGE.
 - 24 PROVIDE AND INSTALL 8 #12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT TO EXISTING PLC CONTROL CABINET FOR SCADA MONITORING OF DAY TANK. 2-#12 DAY TANK LEAK DETECTION ALARM, 2-#12 FOR DAY TANK FUEL LOW LEVEL ALARM, 2-#12 FOR DAY TANK FUEL HIGH LEVEL ALARM AND 2-#12 SPARE. CONTRACTOR SHALL COORDINATE/VERIFY CONNECTION LOCATION AND TYPE WITH ENCLOSURE MANUFACTURER.

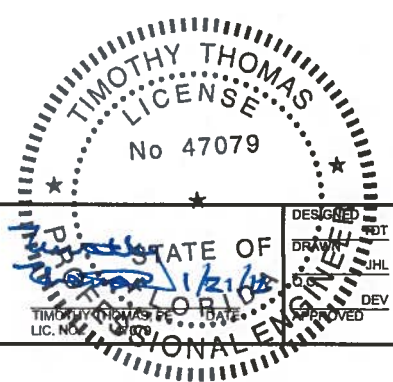


GENERATOR DETAILS
SCALE : N.T.S.
1
E-2 E-4

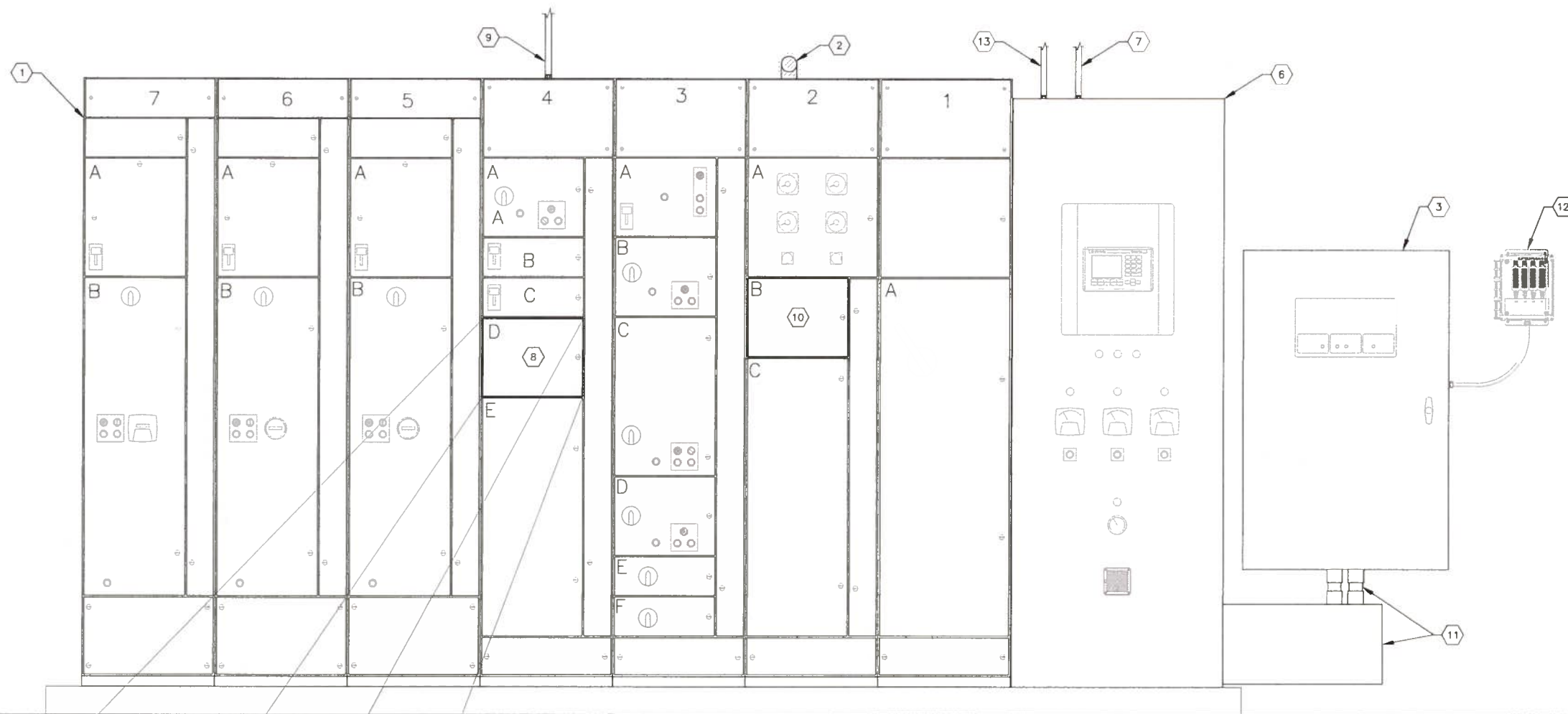


GROUND ROD TEST WELL DETAIL
SCALE : N.T.S.
1
E-4 E-4

- GENERAL NOTES :**
- 1. THIS DRAWING SHOWS LAYOUTS AND DIMENSIONS BASED ON A PARTICULAR MANUFACTURER. THE CONTRACTOR SHALL COORDINATE DIMENSIONS, STUBUP LOCATIONS AND EQUIPMENT LOCATIONS WITH THE MANUFACTURER SUBMITTED/PROVIDED.
 - 2. THE GENERATOR ENCLOSURE SHALL BE PROVIDED WITH A 60 AMPERE DISCONNECT SWITCH, 120/208V, 3Ø, MCB LOADCENTER, 25 KVA, 480V-120/208V, 3Ø, TRANSFORMER, FLUORESCENT LIGHTING FIXTURES, 3-WAY SWITCHES, DC LIGHTING FIXTURES, 60 MINUTE TIMER SWITCHES FOR DC LIGHT FIXTURES, DUPLEX GFCI RECEPTACLES, DAY TANK, DAY TANK SUPPLY AND RETURN PUMPS AND DAY TANK CONTROLLER AS NOTED AND SPECIFIED. ALL EQUIPMENT PROVIDED BY THE SUPPLIER OF THE ENCLOSURE PACKAGE SHALL BE PROVIDED AND INSTALLED WITH ALL ASSOCIATED CONDUIT AND CONDUCTORS FOR POWER AND CONTROLS AS REQUIRED FOR A COMPLETE AND FUNCTIONING UNIT.



				MANATEE COUNTY				MLS 27A EMERGENCY GENERATOR REPLACEMENT				 Cardno Shaping the Future 380 PARK PLACE BLVD, STE 300, CLEARWATER, FL 33759 TEL: (727) 531-3505 (800) 861-8314 www.cardno.com Certificate of Authorization No. 29915								DESIGNED BY: THT DRAWN BY: JHL CHECKED BY: DEV APPROVED BY: THT				PROJECT NO: 00193009.07 DATE: JANUARY 2016 SHEET NO: E-4			



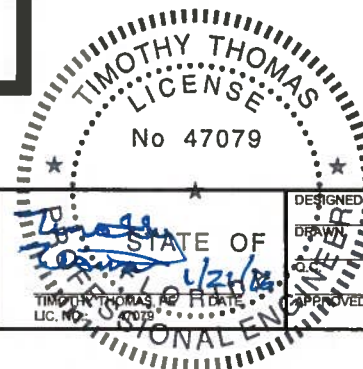
- KEYED NOTES:**
- 1 EXISTING GE 7700 LINE MOTOR CONTROL CENTER FOR LIFT STATION 27A.
 - 2 EXISTING FEEDER FROM EXISTING GENERATOR. EXISTING GENERATOR TO BE REMOVED. CONTRACTOR SHALL REMOVE EXISTING FEEDER (CONDUIT AND CONDUCTORS) FROM TRANSFER SWITCH TO EXISTING GENERATOR.
 - 3 EXISTING 400A, 480V, 3-POLE, S/N TRANSFER SWITCH TO BE REPLACED. REFER TO SHEET E-7 FOR DETAILS.
 - 4 NOTE REMOVED.
 - 5 NOTE REMOVED.
 - 6 EXISTING PLC CONTROL CABINET.
 - 7 PROVIDE AND INSTALL 8-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT. FIELD ROUTE CONDUIT FROM PLC CONTROL CABINET TO NEW GENERATOR FOR SCADA MONITORING OF GENERATOR. 2-#12 FOR GENERATOR RUNNING INDICATION, 2-#12 FOR GENERATOR FAIL INDICATION AND 4-#12 SPARE.
 - 8 EXISTING SPARE 12" SPACE IN GE 7700 LINE MCC (AT 4D). CONTRACTOR SHALL PROVIDE NEW 480V, 3-POLE, 40A CIRCUIT BREAKER FOR THE NEW GENERATOR 480V ANCILLARY EQUIPMENT FEEDER CIRCUIT. CONTRACTOR SHALL PROVIDE CIRCUIT BREAKER AND ALL ASSOCIATED EQUIPMENT (BUCKET, CIRCUIT BREAKER DOOR, CIRCUIT BREAKER THROUGH-DOOR OPERATING HANDLE, CIRCUIT BREAKER STABS, ETC.) FOR COMPLETE INSTALLATION.
 - 9 PROVIDE AND INSTALL 3-#8 THWN CU + 1-#10 THWN CU GND IN 1" CONDUIT. FIELD ROUTE CONDUIT FROM NEW MCC FEEDER CIRCUIT BREAKER TO NEW GENERATOR DISCONNECT SWITCH FOR 480V ANCILLARY EQUIPMENT FEEDER CIRCUIT.
 - 10 ALTERNATE SPARE 12" BUCKET-IN GE 7700 LINE MCC (AT 2B).
 - 11 EXISTING WIREWAY AND CONDUIT USED AS RACEWAY FOR EXISTING EMERGENCY FEEDER CONDUCTORS FROM GENERATOR TO ATS, FOR NORMAL POWER FEEDERS FROM MCC TO ATS AND LOAD FEEDER FROM ATS TO MCC. ALL EXISTING CONDUCTORS SHALL BE REMOVED. CONTRACTOR TO PROVIDE AND INSTALL ALL NEW CONDUCTORS AS REQUIRED. REFER ALSO TO SHEET E-7 FOR DETAILS.
 - 12 EXISTING SURGE PROTECTION DEVICE (SPD). SPD SHALL RECONNECTED TO NEW ATS. CONTRACTOR TO PROVIDE NEW CONDUIT/CONDUCTORS (TO MATCH EXISTING).
 - 13 PROVIDE AND INSTALL 8-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT TO EXISTING PLC CONTROL CABINET FOR SCADA MONITORING OF DAY TANK. 2-#12 DAY TANK LEAK DETECTION ALARM, 2-#12 FOR DAY TANK FUEL LOW LEVEL ALARM, 2-#12 FOR DAY TANK FUEL HIGH LEVEL ALARM AND 2-#12 SPARE. CONTRACTOR SHALL COORDINATE/VERIFY CONNECTION LOCATION AND TYPE WITH ENCLOSURE MANUFACTURER.

LIFT STATION 27A MCC ELEVATION A
NO SCALE E-2 | E-5



GENERAL NOTES:

1. THE CONTRACTOR SHALL PROVIDE FOR THE NEW SCADA INPUT/OUTPUTS (I/O) AS REQUIRED FOR THE NEW GENERATOR INSTALLATION. THE NEW SCADA I/O SHALL CONSIST OF THE FOLLOWING :
 DISCRETE INPUT - GENERATOR RUNNING INDICATION
 DISCRETE INPUT - GENERATOR FAIL INDICATION
 DISCRETE INPUT - DAY TANK LEAK DETECTION ALARM
 DISCRETE INPUT - DAY TANK FUEL LOW LEVEL ALARM
 DISCRETE INPUT - DAY TANK FUEL HIGH LEVEL ALARM
2. THE CONTRACTOR SHALL PROVIDE NEW CONDUCTORS AND CONDUIT AS INDICATED ON THE DRAWINGS FOR THE NEW SCADA I/O. THE CONTRACTOR SHALL TERMINATE ALL NEW CONDUCTORS ON THE EXISTING CONTROLLER AND PROVIDE FOR THE PROGRAMMING OF THE EXISTING CONTROLLER IN ORDER TO INTEGRATE THE NEW I/O INTO THE COUNTY'S EXISTING SCADA SYSTEM. THE CONTRACTOR SHALL COORDINATE THIS WORK WITH MANATEE COUNTY.
3. CONTRACTOR TO REMOVE ALL EXISTING CONTROL CONDUCTORS FROM EXISTING GENERATOR (TO BE REMOVED) TO EXISTING ATS (TO BE REMOVED). PROVIDE NEW CONTROL CONDUCTORS/CONDUIT AS INDICATED ON SHEET E-7.



ADDENDUM 1 - ATS REPLACEMENT	TDT	1-15-16
NO.	DESCRIPTION	BY DATE

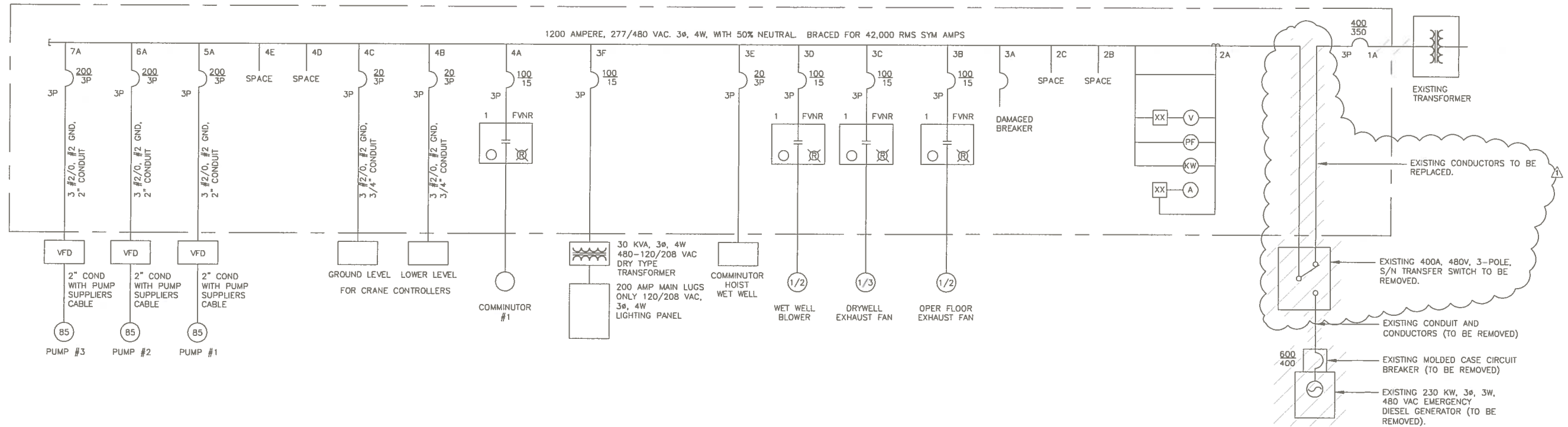
MANATEE COUNTY

**MLS 27A EMERGENCY
GENERATOR REPLACEMENT**

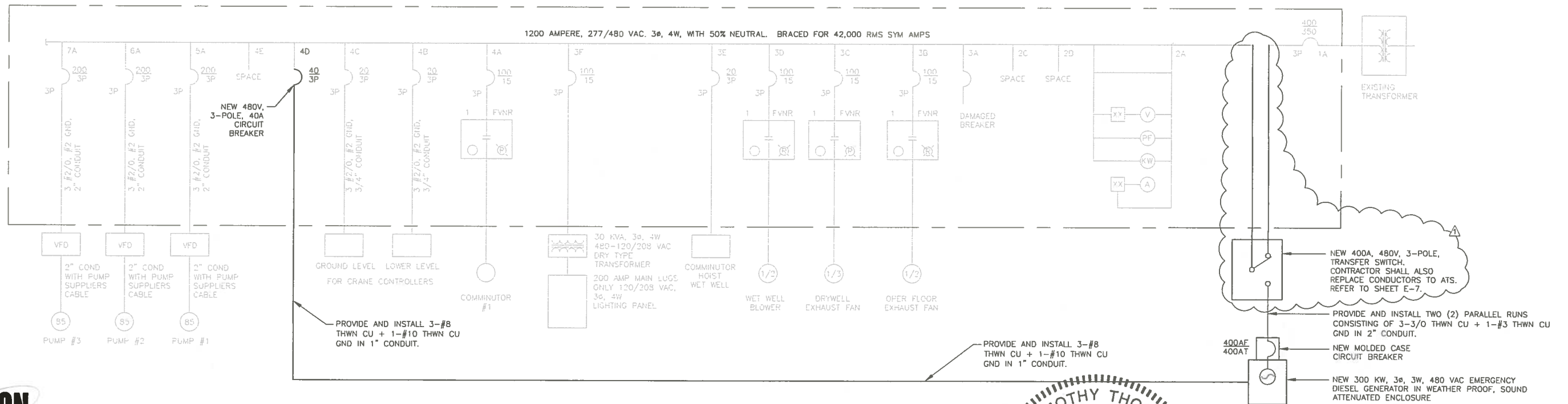


**LIFT STATION 27A
MCC ELEVATION**

PROJECT NO:	00193009.07
DATE:	JANUARY 2016
SHEET NO:	E-5



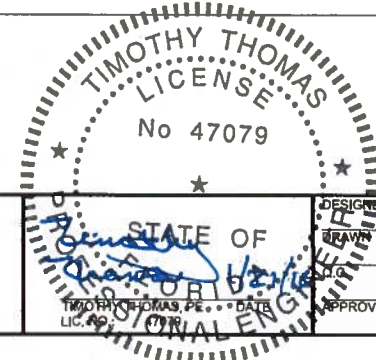
LIFT STATION 27A - EXISTING ONE LINE DIAGRAM



LIFT STATION 27A - PROPOSED ONE LINE DIAGRAM

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ENGINEERING

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NO.	DESCRIPTION	BY	DATE
1	ADDENDUM 1 - ATS REPLACEMENT	TDT	1-15-16

MANATEE COUNTY

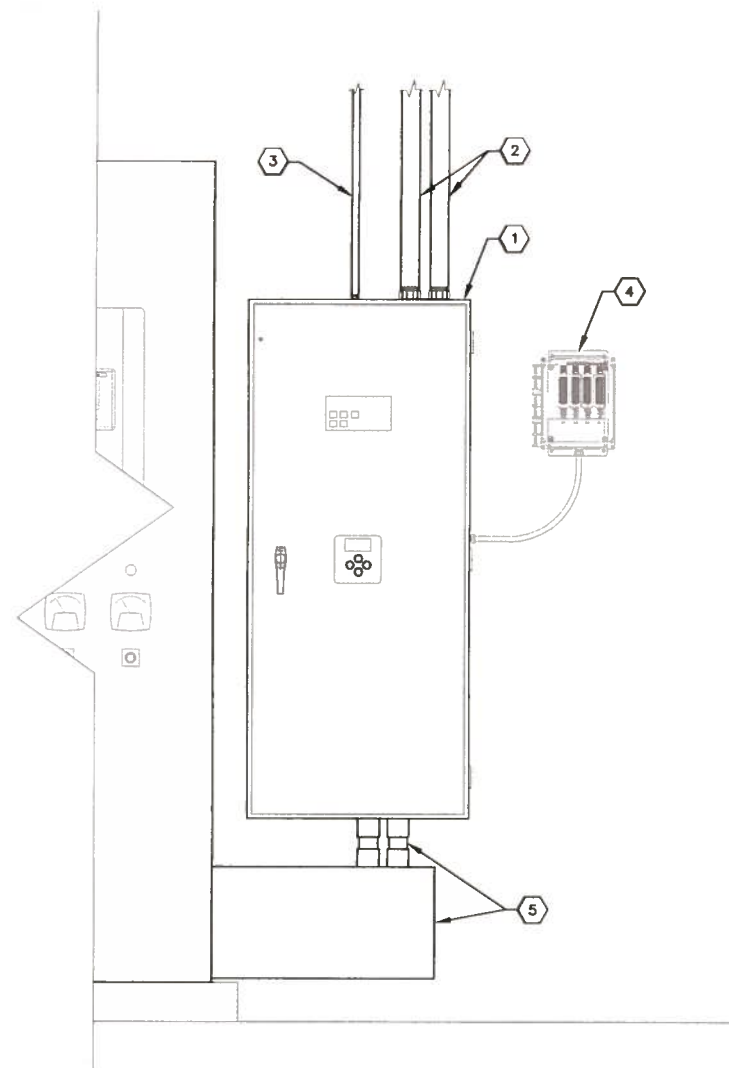
MLS 27A EMERGENCY
GENERATOR REPLACEMENT

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DESIGNED TDT
DRAWN JHL
CHECKED DEV
APPROVED

LIFT STATION 27A
ONE LINE DIAGRAMS

PROJECT NO:
00193009.07
DATE:
JANUARY 2016
SHEET NO:
E-6



NEW ATS INSTALLATION ELEVATION

NO SCALE

KEYED NOTES:

- 1 NEW 400A, 480V, 3-POLE, S/N TRANSFER SWITCH. REFER ALSO TO SPECIFICATIONS. NEW TRANSFER SWITCH DIMENSIONS ARE APPROXIMATELY 24"W x 56"H x 15"D.
- 2 PROVIDE AND INSTALL TWO (2) PARALLEL RUNS CONSISTING OF 3-3/0 THWN CU + 1-#3 THWN CU GND IN 2" CONDUIT. FIELD ROUTE CONDUIT FROM NEW TRANSFER SWITCH TO NEW GENERATOR FOR 480V STANDBY POWER FEEDER CIRCUIT.
- 3 PROVIDE AND INSTALL 4-#12 THWN CU + 1-#12 THWN CU GND IN 3/4" CONDUIT. FIELD ROUTE CONDUIT FROM NEW TRANSFER SWITCH TO NEW GENERATOR FOR GENERATOR START SIGNAL. CONTRACTOR TO COORDINATE/VERIFY GENERATOR STARTER CONTROL REQUIREMENTS WITH GENERATOR AND TRANSFER SWITCH MANUFACTURERS.
- 4 EXISTING SURGE PROTECTION DEVICE (SPD). SPD SHALL RECONNECTED TO NEW ATS. CONTRACTOR TO PROVIDE NEW CONDUIT/CONDUCTORS (TO MATCH EXISTING).
- 5 EXISTING WIREWAY AND CONDUIT USED AS RACEWAY FOR EXISTING CONDUCTORS. CONTRACTOR SHALL -
REMOVE EXISTING NORMAL POWER CONDUCTORS FROM EXISTING MAIN CIRCUIT BREAKER TO EXISTING ATS AND REPLACE WITH TWO (2) PARALLEL RUNS CONSISTING OF 3-3/0 THWN CU + 1-3/0 THWN CU NEUTRAL + 1-#3 THWN CU GND
REMOVE EXISTING ATS LOAD SIDE CONDUCTORS TO MCC AND REPLACE WITH TWO (2) PARALLEL RUNS CONSISTING OF 3-3/0 THWN CU.

ATS GENERAL NOTES:

1. THE CONTRACTOR SHALL PROVIDE LUGS AS REQUIRED TO ACCOMMODATE THE NEW CONDUCTORS TO BE INSTALLED.
2. THE CONTRACTOR SHALL CONNECT ALL EQUIPMENT GROUND CONDUCTORS (NOT SHOWN FOR CLARITY).
3. CONTRACTOR TO REMOVE ALL EXISTING CONTROL CONDUCTORS FROM EXISTING GENERATOR (TO BE REMOVED) TO EXISTING ATS (TO BE REMOVED). PROVIDE NEW CONTROL CONDUCTORS/CONDUIT AS INDICATED ON THIS SHEET.
4. REFER TO SPECIFICATION SECTION 00800 FOR TEMPORARY POWER REQUIREMENTS.
5. CONTRACTOR SHALL DUPLICATE ALL EXISTING CONDUCTOR ROUTES/SIZES/QUANTITIES. CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ORDERING MATERIALS/EQUIPMENT OR COMMENCING CONSTRUCTION.

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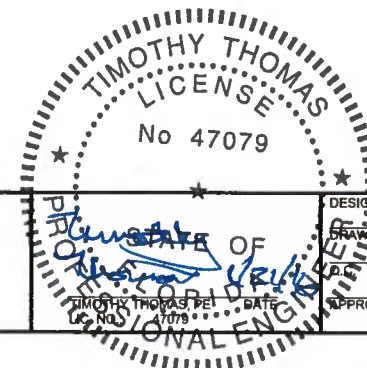
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NO.	ADDENDUM 1 - ATS REPLACEMENT	TDT	1-15-16
DESCRIPTION	BY	DATE	

MANATEE COUNTY

**MLS 27A EMERGENCY
GENERATOR REPLACEMENT**

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**LIFT STATION 27A
ATS REPLACEMENT
DETAILS**

PROJECT NO:
00193009.07
DATE:
JANUARY 2016
SHEET NO:
E-7