SHEET NO.	DRAWING NO.	SHEET TITLE
		GENERAL
1	G-01	COVER SHEET
2	G-02	LOCATION, VICINITY AND SITE MAPS
3	G-03	SHEE INDEX
		ELECTRICAL
4	GE-01	ELECTRICAL LEGEND
5	GE-02	ELECTRICAL ABBREVIATIONS
6	GE-03	ELECTRICAL TYPICAL DETAILS
7	03DE01	OVERALL ONE-LINE DIAGRAM DEMOLITION
8	03DE02	SG-EDA ONE-LINE DIAGRAM DEMOLITION
9	11DE01	EMERGENCY GENERATOR BUILDING DEMOLITION PLAN
10	GE-SE-01	OVERALL SITE PLAN
11	GE-SE-18	SITE PLAN AREA 18
12	GE-SE-19	SITE PLAN AREA 19
13	GE-SE-37	DUCT BANK SECTIONS
14	GE-OL-01	REVISED OVERALL ONE-LINE DIAGRAM
15	GE-OL-11-01	SG-EDA ELEVATION NEW
16	GE-OL-11-02	SG-EDA ONE-LINE DIAGRAM NEW
17	GE-OL-ES5-1	ES-5 ELEVATION
18	GE-OL-ES5-2	ES-5 ONE-LINE DIAGRAM - I
19	GE-OL-ES5-3	ES-5 ONE-LINE DIAGRAM - II
20	GE-OL-ES5-4	ES-5 ONE-LINE DIAGRAM - III
21	GE-OL-ES5-5	ES-5 ONE-LINE DIAGRAM - IV
22	GE-OL-ES5-6	ES-5 ONE-LINE DIAGRAM - V
23	GE-OL-21-1	GRB-MCC-1 ELEVATION
24	GE-OL-21-2	GRB-MCC-1 ONE-LINE DIAGRAM - I
25	GE-OL-21-3	GRB-MCC-1 ONE-LINE DIAGRAM - II
26	GE-OL-21-4	GRB-MCC-1 ONE-LINE DIAGRAM - III
27	11E01	EMERGENCY GENERATOR BUILDING PLAN
28	11E02	EMERGENCY GENERATOR BUILDING LIGHTING PLAN
29	11E03	EMERGENCY GENERATOR BUILDING PANELBOARD SCHEDULE
30	13E01	BLOWER BUILDING 3 PLAN
31	13E01	BLOWER BUILDING 3 PANELBOARD SCHEDULES - 1
32	21E01	GRIT REMOVAL BUILDING LOWER LEVEL PLAN
		INSTRUMENTATION
33	GI-01	SYMBOLS AND ABBREVIATIONS - I
34	GI-02	SYMBOLS AND ABBREVIATIONS - II
35	GI-03	SYMBOLS AND ABBREVIATIONS - III
36	GI-04	SYMBOLS AND ABBREVIATIONS - IV
37	GI-10	CONTROL SYSTEM BLOCK DIAGRAM
38	PI-3510	ENGINE GENERATOR NO. 1 P&ID

REV	DATE	BY	DESCRIPTION

DESIGNED

DRAWN

CHECKED

DATE
MARCH 2021

Digitally signed by Christopher Alan Carvalho
Contact Info: Carollo Engineers, Inc.
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SOUTH VALLEY WATER RECLAMATION FACILITY
GENERATOR REPLACEMENT
GENERAL
SHEET INDEX

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.
10548A.10

DRAWING NO.
G-03

SHEET NO.
3 OF 38

PROJECT NO.
FILE NAME: 10548A10_P2_00G03.dgn

LAST SAVED BY: sfunckes Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Std_Pen_v0905.pen PlotScale: 1:1 User: svcPW Plot Date: 19-MAR-2021 10:03:23 AM

Plot Date: 19-MAR-2021 1:54:20 PM
User: svcPW
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Std_Pen_v0905.pen PlotScale: 1:1
LAST SAVED BY: sfunckes

ELECTRICAL PLAN SYMBOLS

IDENTIFICATION SYMBOLS

EQUIP # EQUIPMENT AND INSTRUMENT IDENTIFICATION

■ EQUIPMENT/INSTRUMENT LOCATOR

b X a c LUMINAIRE IDENTIFICATION
a = CIRCUIT DESIGNATION
b = DEVICE SWITCHED FROM
c = MOUNTING HEIGHT IN FEET TO BOTTOM OF FIXTURE
X = LUMINAIRE TYPE, REFER TO THE LUMINAIRE SCHEDULE

XXXX CONDUIT IDENTIFICATION
XXXX = CONDUIT NUMBER, REFER TO CONDUIT SCHEDULE
UNLESS OTHERWISE NOTED, GROUPED CONDUITS ARE LABELED LEFT TO RIGHT OR TOP TO BOTTOM.

X INDICATES KEYNOTE X
(PERTAINS ONLY TO SHEET WHERE NOTE IS FOUND)

A DISCONNECT SWITCH
A = TYPE, REFER TO DISCONNECT SCHEDULE

LUMINAIRES

LINEAR FIXTURE

2' X 2' LAY-IN TROFFER

2' X 4' LAY-IN TROFFER

LUMINAIRE POLE MOUNTED

R H GO/NO-GO PANEL - STROBE AND HORN
R = RED LIGHT
G = GREEN LIGHT
H = HORN

R G GO/NO-GO PANEL - SOLID

R GO/NO-GO PANEL - STROBE

LUMINAIRE, EMERGENCY BATTERY-POWERED

LUMINAIRE, EMERGENCY/EXIT BATTERY-POWERED

LUMINAIRE, EMERGENCY BATTERY-POWERED REMOTE

LUMINAIRE, SURFACE OR PENDANT MOUNTED

LUMINAIRE, WALL MOUNTED

LUMINAIRE, FLOOD/SPOT

LUMINAIRE, EXIT ONE OR TWO FACES AS INDICATED. ARROW POINTS IN DIRECTION OF EGRESS.

SWITCHES/RECEPTACLES

c S a b SINGLE POLE SWITCH
a = CIRCUIT DESIGNATION
b = DEVICE SWITCHED DESIGNATION
c = TYPE
  2 = DOUBLE POLE SWITCH
  3 = THREE-WAY SWITCH
  3P = THREE POSITION SWITCH
  4 = FOUR-WAY SWITCH
  K = KEY OPERATED SWITCH
  F = SWITCH AND FUSESTAT HOLDER
  P = SWITCH AND PILOT LIGHT
  T = THERMOSTAT
  D = DIMMER SWITCH
  L = LOW VOLTAGE LIGHT SWITCH
  M = MANUAL MOTOR STARTER
  N = NETWORKED SINGLE OR MULTIPLE SWITCH LOCATIONS

REFER TO ABBREVIATIONS LEGEND FOR ALL OTHER DESIGNATIONS.

b X a c OCCUPANCY SENSOR
X = REFERENCE LIGHTING CONTROL COMPONENT SCHEDULE
a = CIRCUIT DESIGNATION
b = DEVICE SWITCHED DESIGNATION
c = MOUNTING HEIGHT IN FEET TO BOTTOM OF SENSOR

PE PHOTOCELL

a b SWITCH AND SINGLE RECEPTACLE
a = CIRCUIT DESIGNATION
b = DEVICE TYPE DESIGNATION

a b DUPLEX RECEPTACLE

a b QUADRUPLEX RECEPTACLE

a b IN FLOOR DUPLEX RECEPTACLE

a b IN FLOOR QUADRUPLEX RECEPTACLE

a b DUPLEX RECEPTACLE w/SPLIT WIRE

a b APPLIANCE RECEPTACLE

a b SPECIAL PURPOSE RECEPTACLE

B a WELDING RECEPTACLE
a = CIRCUIT DESIGNATION
b = DISCONNECT TYPE

a TWIST LOCK RECEPTACLE
a = AMP RATING

a b TELEPHONE OUTLET
a = CIRCUIT DESIGNATION
b = MOUNTING HEIGHT

a b DATA COMMUNICATIONS OUTLET
a = CIRCUIT DESIGNATION
b = MOUNTING HEIGHT

FIRE ALARM

S a d SMOKE DETECTOR
a = TYPE
I = IONIZATION
P = PHOTOELECTRIC
d = DUCT DETECTOR

FACP FIRE ALARM CONTROL PANEL

F FIRE ALARM PULL STATION

F FIRE ALARM HORN/STROBE COMBINATION

F FIRE ALARM STROBE

F FIRE SPRINKLER
F = FLOW SWITCH
T = TAMPER SWITCH

RACEWAY

EXPOSED CONDUIT

BREAK AND CONTINUATION IN CONDUIT RUN

EXPOSED CONDUIT HIDDEN BEHIND WALLS, FLOORS OR OTHER STRUCTURES

UNDERGROUND CONDUIT, DIRECT BURIED OR IN DUCT BANK

CONDUIT IN SLAB

CONDUIT VERTICAL CHANGE IN DIRECTION

CONDUIT CAP

J JUNCTION BOX

CONDUIT SEAL

CONDUIT TEE

DUCT BANK
APPROXIMATE DIMENSIONS
SHOWN ON DUCT BANK SECTIONS

CONDUIT SIZE AND CONDUCTORS

INDIVIDUAL CONDUCTORS

W"C-(3-X (Ø), 1-Y (N) & 1-Z (G))

W"C (WHERE INDICATED): W = CONDUIT TRADE SIZE

3-X (Ø):
  3 = QUANTITY
  X = SIZE OF CONDUCTORS
  (Ø) = DESIGNATES PHASE CONDUCTORS

1-Y (N)(WHERE INDICATED):
  1 = QUANTITY
  Y = SIZE OF CONDUCTORS
  (N) = DESIGNATES NEUTRAL CONDUCTORS

1-Z (G)(WHERE INDICATED):
  1 = QUANTITY
  Z = SIZE OF CONDUCTORS
  (G) = DESIGNATES GROUND CONDUCTORS

U{3-X (Ø) & 1-X (G)}

U = NUMBER OF PARALLEL RUNS

MULTI CONDUCTOR CABLES

K/2/C#16S
  K (WHERE INDICATED) = NUMBER OF PAIRS
  2/C#16S = TWO CONDUCTOR, 16 GAUGE, TWISTED SHIELDED PAIR

K/3/C#16S
  K (WHERE INDICATED) = NUMBER OF TRIPLETS
  3/C#16S = THREE CONDUCTOR, 16 GAUGE, TWISTED SHIELDED TRIPLETS

N/CX
  N = NUMBER OF CONDUCTORS IN THE CABLE
  X = SIZE OF CONDUCTORS

FIBER OPTIC CABLES

FO/N
  N = NUMBER OF INDIVIDUAL FIBERS

GROUNDING

UNDERGROUND GROUND CABLE
#4/0 SDBC UNLESS OTHERWISE NOTED

GROUND ROD

GROUND ROD AND GROUND WELL

ELECTRICAL ONE-LINE SYMBOLS

MEDIUM VOLTAGE

a 52 b CIRCUIT BREAKER, MEDIUM VOLTAGE
a = CIRCUIT BREAKER NUMBER
b = FRAME SIZE

a b ANSI RELAY DEVICE
a = ANSI DEVICE FUNCTION
b = QUANTITY

MEDIUM VOLTAGE DISCONNECT SWITCH NON-FUSED CUT OUT

MEDIUM VOLTAGE DISCONNECTING FUSE SINGLE FUSE CUT OUT

MEDIUM VOLTAGE DISCONNECTING FUSE DOUBLE FUSE CUT OUT

MEDIUM VOLTAGE SINGLE FUSE

MEDIUM VOLTAGE DOUBLE FUSE

MEDIUM VOLTAGE LIVE FRONT TERMINATOR

MEDIUM VOLTAGE ELBOW

MEDIUM VOLTAGE TEE

MEDIUM VOLTAGE CONTACTOR

MEDIUM VOLTAGE STARTER

MOV-ELBOW ARRESTER

LOW VOLTAGE

e b c d a f LOW VOLTAGE CIRCUIT BREAKER
a = TYPE
  MCP = MOTOR CIRCUIT PROTECTOR
  TM = THERMAL MAGNETIC
  SS = SOLID STATE
b = FRAME SIZE (MANUFACTURER TO DETERMINE FRAME SIZE UNLESS INDICATED)
c = NUMBER OF POLES
d = TRIP SETTING (AT = AMP TRIP)
  (AC = MCP CONTINUOUS RATING)
e = DESIGNATION
f = INTERRUPTING RATING

* LOW VOLTAGE CIRCUIT BREAKER AUXILIARY OPERATOR
* = S = SHUNT TRIP
= G = GROUND FAULT INTERRUPTER
= V = SOLENOID KEY RELEASE

A DISCONNECT SWITCH
A = TYPE, REFER TO DISCONNECT SCHEDULE

B b FUSED DISCONNECT SWITCH
B = TYPE, REFER TO DISCONNECT SCHEDULE
b = FUSE RATING

FUSE

a b c d COMBINATION STARTER WITH CONTROL POWER TRANSFORMER
a = CIRCUIT BREAKER DISCONNECT, TYPE AS NOTED
b = STARTER TYPE REFER TO THE SPECIFICATIONS FOR STARTER DEFINITIONS.
c = NEMA STARTER SIZE
d = OVERLOAD

b a c MOTOR STARTER/DRIVES:
a = DEVICE TYPE
  VFD-6 = 6-PULSE VFD
  VFD-18 = 18-PULSE VFD
  VFD-RH = REDUCED HARMONIC VFD (18-PULSE OR ACTIVE FRONT END AS DEFINED IN THE SPECIFICATIONS)
  RVSS = REDUCED VOLTAGE SOLID STATE STARTER
  RVAT = REDUCED VOLTAGE AUTO TRANSFORMER
  a/B = DEVICE WITH BYPASS STARTER. REFER TO THE SPECIFICATIONS

b = INPUT OPTIONS
  LL = LINE REACTOR
  PHF = PASSIVE HARMONIC FILTER

c = OUTPUT OPTIONS
  LR = LOAD REACTOR
  DV/DT = Dv/dt FILTER
  SWF = SINE WAVE FILTER

EQUIPMENT ENCLOSURE

MISCELLANEOUS

HP MOTOR
HP = HORSEPOWER RATING
FULL LOAD AMPS AS NOTED

a b PACKAGED EQUIPMENT
LOAD RATING AS INDICATED
a = RATED LOAD
b = UNIT(HP, KW, KVA) AS INDICATED

f g a b c d e h TRANSFORMER
a = DEVICE I.D.
b = KVA RATING
c = NUMBER OF PHASES
d = PRIMARY VOLTAGE
e = SECONDARY VOLTAGE
f,g = CONNECTION TYPE SYMBOL
h = IMPEDANCE

GROUNDED WYE CONNECTION

△ DELTA CONNECTION

G ~ a b c d e ENGINE-GENERATOR RATINGS AS INDICATED ON THE DRAWINGS
a = KVA/KW
b = VOLTAGE/CONNECTION
c = PHASE
d = WIRE
e = PF

a b CURRENT TRANSFORMER WITH SHORTING TERMINAL BLOCK
a = QUANTITY
b = RATIO

c a d b POTENTIAL TRANSFORMER
a = QUANTITY
b = RATIO
c,d = CONNECTION TYPE SYMBOL

SSM SOLID STATE MULTIFUNCTION METER

ATP AMPERE TEST POINT

VTP VOLTAGE TEST POINT

UTILITY METER

LIGHTNING ARRESTER

SPD SURGE PROTECTIVE DEVICE

DRAWOUT CONNECTION

GROUND

CAPACITOR

BATTERY

K KIRK KEY INTERLOCK

LOAD BANK

REV	DATE	BY	DESCRIPTION

DESIGNED
CE
DRAWN
CE
CHECKED
BJR
DATE
MARCH 2021

Digitally signed by Christopher Alan Carvalho
Contact Info: Carollo Engineers, Inc.
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SOUTH VALLEY WATER RECLAMATION FACILITY
GENERATOR REPLACEMENT
ELECTRICAL
ELECTRICAL LEGEND

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.
10548A.10
DRAWING NO.
GE-01
SHEET NO.
4 OF 38

ABBREVIATIONS

A	AMP
ABS	ABSOLUTE
AC	ALTERNATING CURRENT
ACK	ACKNOWLEDGE
ACTR	ACTUATOR
AF	AMP FRAME
AFC	AUTOMATIC FREQUENCY CONTROL
AIC	AMP INTERRUPTING CAPACITY
AM	AMMETER
ANN	ANNUNCIATOR
ANT	ANTENNA
APU	AUXILIARY POWER UNIT
ARM	ARMORED CABLE
AS	AMMETER SWITCH
ASYM	ASYMMETRICAL
AT	AMP TRIP
ATO	AUTOMATIC THROW OVER
ATP	AMMETER TEST POINT
ATS	AUTOMATIC TRANSFER SWITCH
AUTO XFMR	AUTOMATIC TRANSFORMER
AUX	AUXILIARY
AWG	AMERICAN WIRE GAGE
B	BELL
BAT	BATTERY
BFG	BELOW FINISHED GRADE
BHP	BRAKE HORSEPOWER
BKR	BREAKER
BRF	BELOW RAISED FLOOR
C	CONDUIT / CONTINUOUS LOAD
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CCW	COUNTER CLOCKWISE
CKT	CIRCUIT
COAX	COAXIAL CABLE
COM	COMMON
COMM	COMMUNICATION
CPT	CONTROL POWER TRANSFORMER
CR	CONTROLLED RECEPTACLE
CS	CONTROL SWITCH
CT	CURRENT TRANSFORMER
CV	CONTROL VALVE
CW	CLOCKWISE / COOL WHITE
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DCU - X	DISTRIBUTED CONTROL UNIT NO. X
DEMO	DEMOLITION
DISC	DISCONNECT SWITCH
DM	DEMAND METER
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
DS	DOOR SWITCH
E/G	EMERGENCY GENERATOR
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
ENG	ENGINE
ENT	ELECTRICAL NON-METALLIC TUBING
EP	EXPLOSION PROOF
ETM	ELAPSED TIME METER
F	SUB-FED
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FDR	FEEDER
FLA	FULL LOAD AMPS
FLX	FLEXIBLE CONDUIT
FO	FIBER OPTIC
FRC	FIBERGLASS RIGID CONDUIT
FREQ	FREQUENCY
FU	FUSE
FU	SW FUSED SWITCH
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
FWD	FORWARD
G	GROUND / EQUIPMENT GROUND / GROUND FAULT
GEN	GENERATOR
GRC	GALVANIZED STEEL RIGID CONDUIT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER (RECEPTACLE)
GFI	GROUND FAULT INTERRUPTER (BREAKER)
GFR	GROUND FAULT RELAY
H	HOT-LEG
HF	HIGH FREQUENCY
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HR	HOUR
HSTAT	HUMIDISTAT
HV	HIGH VOLTAGE
HVAC	HEATING/VENTILATION/AIR CONDITIONING
HZ	HERTZ
I	INSTANTANEOUS / INTERMITTENT LOAD
IC	INTERRUPTING CAPACITY
IJB	INSTRUMENT JUNCTION BOX
IMC	INTERMEDIATE METAL CONDUIT
INST	INSTANTANEOUS
INT	INTERLOCK
INTERCOM	INTERCOMMUNICATION

J	JUNCTION BOX
K	KEY INTERLOCK
KA	KILOAMP
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KVAR	KILOVAR (REACTANCE)
KW	KILOWATT
KWD	KILOWATT DEMAND
KWH	KILOWATT HOUR
L	LONG-TIME
L-B	LINE-BUS
L-G	LINE-GROUND
LA	LIGHTNING ARRESTOR
LBL	LABEL
LC	LIGHTING CONTACT OR
LCP- X	LOCAL CONTROL PANEL NO. X
LL	LEAD-LAG LOAD REACTOR
LP	LIGHT POLE
LP - X	LIGHTING PANEL NO. X
LTG	LIGHTING
LV	LOW VOLTAGE
LVL	LEVEL
M-X	MOTOR CONTROLLER NO. X
MA	MILLIAMPERE
MCA	MOTOR CIRCUIT AMPS
MCC - X	MOTOR CONTROL CENTER NO. X
MCP	MOTOR CIRCUIT PROTECTOR
MH	MANHOLE / MOUNTING HEIGHT
MLO	MAIN LUGS ONLY
MOD	MOTOR OPERATED DAMPER
MOV	METAL OXIDE VARISTOR
MPR	MOTOR PROTECTION RELAY
MS-X	MOTOR STARTER NO. X
MSP	MOTOR STARTING PANEL
MTO	MANUAL THROW OVER
MTR-X	MOTOR NO. X
MTS	MANUAL TRANSFER SWITCH
MV	MEGAVOLT
MVA	MEGAVOLT-AMPERES
MVS	MEDIUM VOLTAGE SWITCH
MW	MEGAWATT
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NFC	NONMETALLIC FLEXIBLE CONDUIT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NP	NAMEPLATE
O	OPEN OR OPENED
OH	OVERHEAD
OL	OVERLOAD RELAY
P	POLE
PA	PUBLIC ADDRESS
PB	PUSHBUTTON / PULL BOX
PCS	PVC COATED GALVANIZED STEEL CONDUIT
PCM	PROCESS CONTROL MODULE
PE	PHOTOCELL
PF	POWER FACTOR
PFCC	POWER FACTOR CORRECTION CAPACITOR
PFR	PHASE FAILURE RELAY
PH	PHASE
PNL	PANEL
PPX	POWER PANEL NO. X
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE RIGID PLASTIC CONDUIT
PWR	POWER
RAC	RIGID ALUMINUM CONDUIT
RECPT	RECEPTACLE
REV	REVERSE
RF	RADIO FREQUENCY
RMS	ROOT MEAN SQUARED
RVAT	REDUCED VOLTAGE AUTO TRANSFORMER
RVNR	REDUCED VOLTAGE NON-REVERSING
RVSS	REDUCED VOLTAGE SOLID STATE
S	SHIELD / SHORT-TIME
SA	SURGE ARRESTER
SC	SHORT CIRCUIT
SDBC	SOFT DRAWN BARE COPPER
SFL	SUB FEED LUGS
SLT	SEALTIGHT LIQUIDTIGHT FLEXIBLE CONDUIT
SM	SURFACE MOUNTED
SP	SINGLE POLE
SPD	SURGE PROTECTIVE DEVICE
SPDT	SINGLE POLE DOUBLE THROW
SPST	SINGLE POLE SINGLE THROW
SPKR	SPEAKER
SS	SOLID STATE
STB	SHORTING TERMINAL BLOCK
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMMETRICAL

TACH	TACHOMETER
TB - X	TERMINAL BLOCK - UNIT X
TC	THERMOCOUPLE / TIME CLOCK / TRAY CABLE
TD	TEMPERATURE DETECTOR RELAY
TE	TOTALLY ENCLOSED
TEFC	TOTALLY ENCLOSED FAN COOLED
TENV	TOTALLY ENCLOSED NON-VENTILATED
TERM	TERMINAL
TJB	TERMINAL JUNCTION BOX
TM	THERMAL MAGNETIC
TP	TWISTED PAIR
TS	TEMPERATURE SWITCH
TS1W	TWO SPEED CONSEQUENT POLE, ONE WINDING
TS2W	TWO SPEED SEPARATE WINDING
TSTAT	THERMOSTAT
UHF	ULTRA HIGH FREQUENCY
UNG	UNGROUNDED
UPS	UNINTERRUPTIBLE POWER SUPPLY
UVR	UNDER VOLTAGE RELAY
V	VOLT
VA	VOLT AMPERE
VAR	VARMETER
VCP	VENDOR CONTROL PANEL
VFD	VARIABLE FREQUENCY DRIVE
VHF	VERY HIGH FREQUENCY
VM	VOLTMETER
VP	VAPORPROOF
VR	VOLTAGE REGULATOR
VS	VOLTAGE SWITCH
VT	VOLTAGE TRANSFORMER
VTP	VOLTAGE TEST POINT
W	WATT / WEST
WT	WATER TIGHT
WP	WEATHER PROOF
XFMR	TRANSFORMER

NOTES:

1. REFER TO SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL ABBREVIATIONS.

POWER DEVICE FUNCTION NUMBERS

1	MASTER ELEMENT
2	TIME-DELAY STARTING OR CLOSING RELAY
3	CHECKING OR INTERLOCKING RELAY
4	MASTER CONTACTOR
5	STOPPING DEVICE
6	STARTING CIRCUIT BREAKER
7	ANODE CIRCUIT BREAKER
8	CONTROL POWER DISCONNECTING DEVICE
9	REVERSING DEVICE
10	UNIT SEQUENCE SWITCH
11	MULTIFUNCTION DEVICE
12	OVER-SPEED DEVICE
13	SYNCHRONOUS-SPEED DEVICE
14	UNDER-SPEED DEVICE
15	SPEED OR FREQUENCY MATCHING DEVICE
16	DATA COMMUNICATIONS DEVICE
17	SHUNTING OR DISCHARGE SWITCH
18	ACCELERATING OR DECELERATING DEVICE
19	STARTING-TO-RUNNING TRANSITION CONTACTOR
20	ELECTRICALLY OPERATED VALVE
21	DISTANCE RELAY
22	EQUALIZER CIRCUIT BREAKER
23	TEMPERATURE CONTROL DEVICE
24	VOLTS PER HERTZ RELAY
25	SYNCHRONIZING OR SYNCHRONISM-CHECK DEVICE
26	APPARATUS THERMAL DEVICE
27	UNDERVOLTAGE RELAY
27N	GROUND FAULT UNDERVOLTAGE RELAY
28	FLAME DETECTOR
29	ISOLATING CONTACTOR
30	ANNUNCIATOR RELAY
31	SEPARATE EXCITATION DEVICE
32	DIRECTIONAL POWER RELAY
33	POSITION SWITCH
34	MASTER SEQUENCE DEVICE
35	BRUSH-OPERATING OR SLIP-RING SHORT-CIRCUITING DEVICE
36	POLARITY DEVICE
37	UNDERCURRENT OR UNDERPOWER RELAY
38	BEARING PROTECTIVE DEVICE
39	MECHANICAL CONDITION MONITOR
40	FIELD RELAY
41	FIELD CIRCUIT BREAKER
42	RUNNING CIRCUIT BREAKER
43	MANUAL TRANSFER OR SELECTOR DEVICE
44	UNIT SEQUENCE STARTING RELAY
45	ABNORMAL ATMOSPHERIC CONDITION MONITOR
46	REVERSE-PHASE OR BALANCE CURRENT RELAY
47	PHASE-BALANCE OR PHASE-SEQUENCE VOLTAGE RELAY
48	INCOMPLETE SEQUENCE RELAY
49	MACHINE OR TRANSFORMER THERMAL RELAY
50	INSTANTANEOUS OVERCURRENT RELAY
51	AC TIME OVERCURRENT RELAY
52	AC CIRCUIT BREAKER
53	FIELD EXCITATION RELAY
54	TURNING GEAR ENGAGING DEVICE
55	POWER FACTOR RELAY
56	FIELD APPLICATION RELAY
57	SHORT-CIRCUITING OR GROUNDING DEVICE
58	RECTIFICATION FAILURE RELAY
59	OVERVOLTAGE RELAY
60	VOLTAGE OR CURRENT BALANCE RELAY
61	DENSITY SWITCH OR SENSOR
62	TIME-DELAY STOPPING OR OPENING RELAY
63	PRESSURE SWITCH
64	GROUND DETECTOR RELAY
65	GOVERNOR
66	NOTCHING OR JOGGING DEVICE
67	AC DIRECTIONAL OVERCURRENT RELAY
68	BLOCKING OR OUT OF STEP RELAY
69	PERMISSIVE CONTROL DEVICE
70	RHEOSTAT
71	LIQUID LEVEL SWITCH
72	DC CIRCUIT BREAKER
73	LOAD-RESISTOR CONTACTOR
74	ALARM RELAY
75	POSITION CHANGING MECHANISM
76	DC OVERCURRENT RELAY
77	TELEMETERING DEVICE
78	PHASE-ANGLE MEASURING RELAY
79	AC RECLOSING RELAY
80	FLOW SWITCH
81	FREQUENCY RELAY
82	DC LOAD MEASURING RECLOSING RELAY
83	AUTOMATIC SELECTIVE CONTROL OR TRANSFER RELAY
84	OPERATING MECHANISM
85	PILOT COMMUNICATIONS, CARRIER OR PILOT-WIRE RELAY
86	LOCKOUT RELAY
87	DIFFERENTIAL PROTECTIVE RELAY
88	AUXILIARY MOTOR OR MOTOR GENERATOR
89	LINE SWITCH
90	REGULATING DEVICE
91	VOLTAGE DIRECTIONAL RELAY
92	VOLTAGE AND POWER DIRECTIONAL RELAY
93	FIELD-CHANGING CONTACTOR
94	TRIPPING OR TRIP-FREE RELAY

COMMONLY USED SUFFIX LETTERS APPLIED TO POWER DEVICE FUNCTION NUMBERS

A	ALARM ONLY
B	BUS PROTECTION
G	GROUND FAULT PROTECTION (RELAY CT IN A SYSTEM NEUTRAL CIRCUIT OR GENERATOR PROTECTION)
GS	GROUND FAULT PROTECTION (RELAY CT IN TOROIDAL OR GROUND SENSOR TYPE)
L	LINE PROTECTION
M	MOTOR PROTECTION
N	GROUND FAULT PROTECTION (RELAY COIL CONNECTED IN RESIDUAL CT CIRCUIT)
T	TRANSFORMER PROTECTION
V	VOLTAGE
P	PHASE PROTECTION

ABBREVIATIONS

AFD - ARC FLASH DETECTOR
CLK - CLOCK OR TIMING SOURCE
DDR - DYNAMIC DISTURBANCE RECORDER
DFR - DIGITAL FAULT RECORDER
ENV - ENVIRONMENTAL DATA
HIZ - HIGH IMPEDANCE FAULT DETECTOR
HMI - HUMAN MACHINE INTERFACE
HST - HISTORIAN
LGC - SCHEME LOGIC
MET - SUBSTATION METERING
PDC - PHASOR DATA CONCENTRATOR
PMU - PHASOR MEASUREMENT UNIT
PQM - POWER QUALITY MONITOR
RIO - REMOTE I/O DEVICE
RTU - REMOTE TELEMETRY UNIT/REMOTE TERMINAL UNIT
SER - SEQUENCE OF EVENTS RECORDER
TCM - TRIP CIRCUIT MONITOR

REV	DATE	BY	DESCRIPTION

DESIGNED CE
DRAWN CE
CHECKED BJR
DATE MARCH 2021

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Contact Info: Carollo Engineers, Inc.
Date: 2021.03.23

REGISTERED PROFESSIONAL ENGINEER
No. 366286
CHRISTOPHER A. CARVALHO
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SOUTH VALLEY WATER RECLAMATION FACILITY
GENERATOR REPLACEMENT
ELECTRICAL
ELECTRICAL ABBREVIATIONS

VERIFY SCALES
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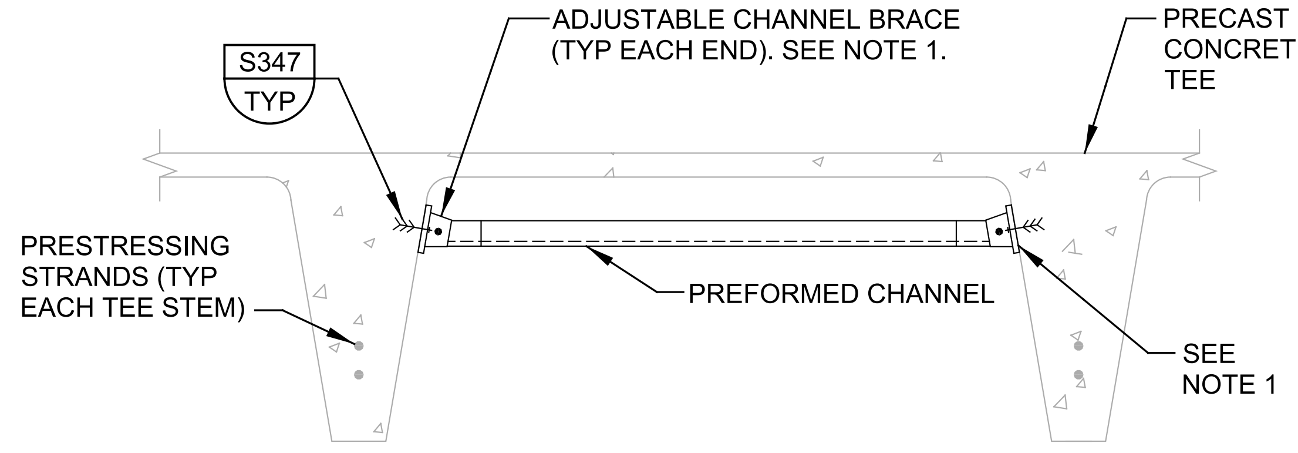
JOB NO. 10548A.10
DRAWING NO. GE-02
SHEET NO. 5 OF 38

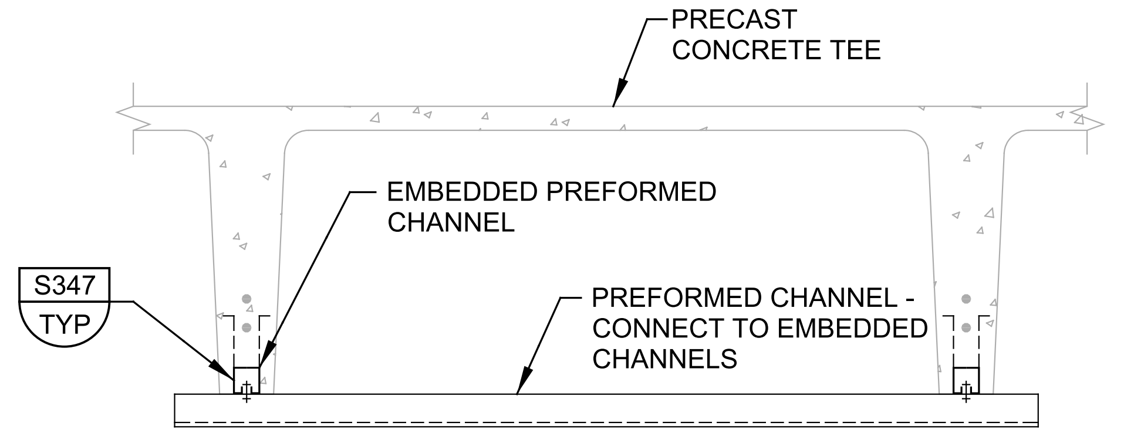
PROJECT NO. 11156A10 FILE NAME: 10548A10_P2_00GE02.dgn

Plot Date: 19-MAR-2021 1:54:35 PM User: svcPW PlotScale: 1:1 DesignScript: Carollo_Std_Pen_v0905.pen ColorTable: gshade.ctb Model: Layout1
LAST SAVED BY: sfunckes

LAST SAVED BY: sfunckes Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Std_Pen_v0905.pen PlotScale: 1:1 User: svcPW Plot Date: 19-MAR-2021 10:13:32 AM



BETWEEN



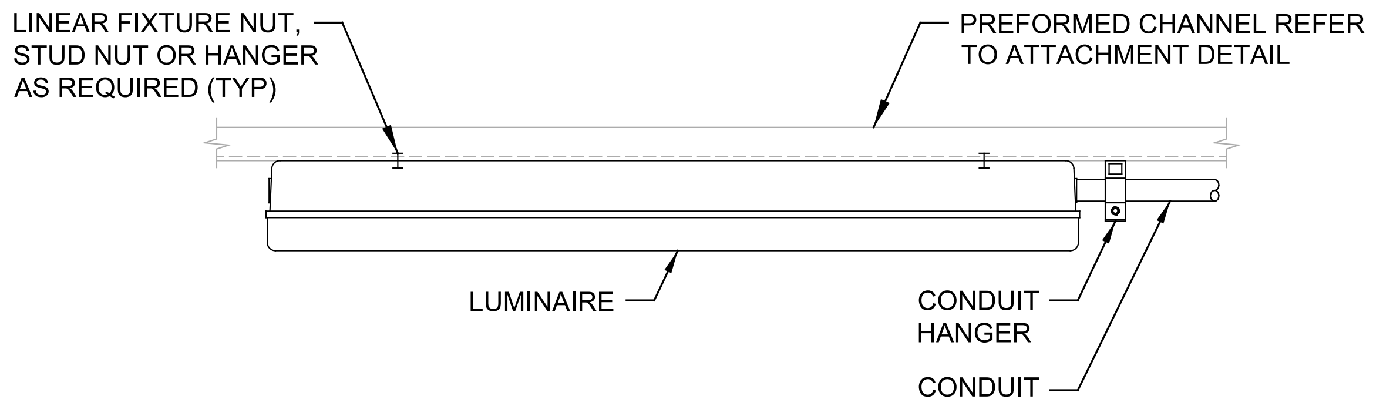
BELOW

NOTES:

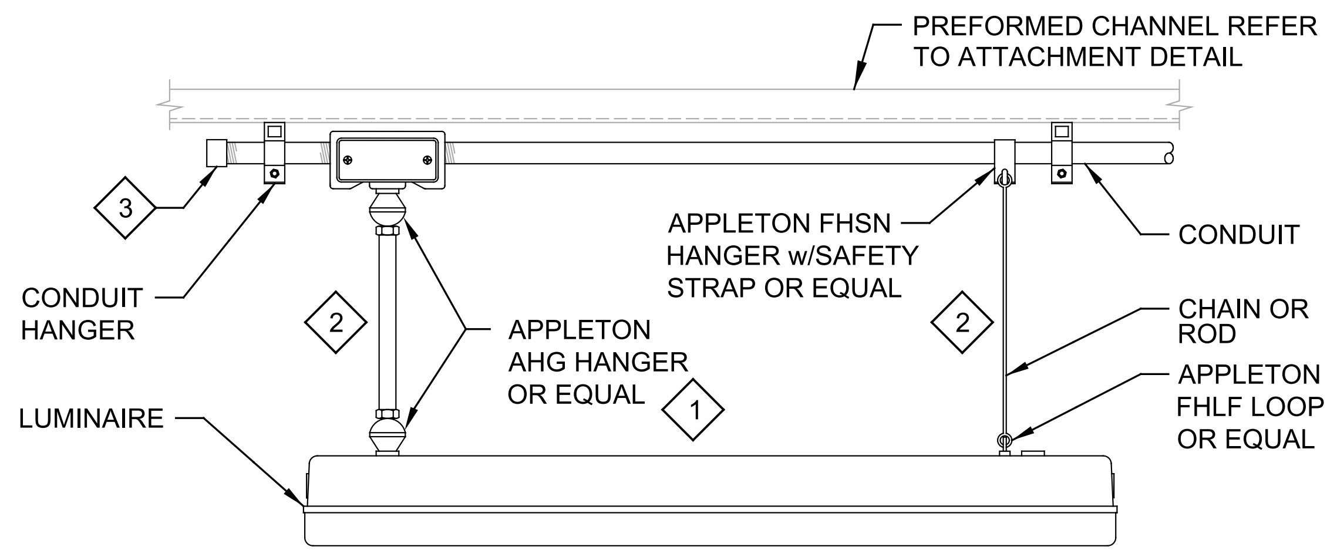
1. FASTEN ADJUSTABLE CHANNEL BRACES TO TEE. SEE STRUCTURAL TYPICAL DETAIL FOR CONNECTION LOCATION.

EA010 ATTACHMENT TO PRECAST TEES

TYP S



FLUSH MOUNTED



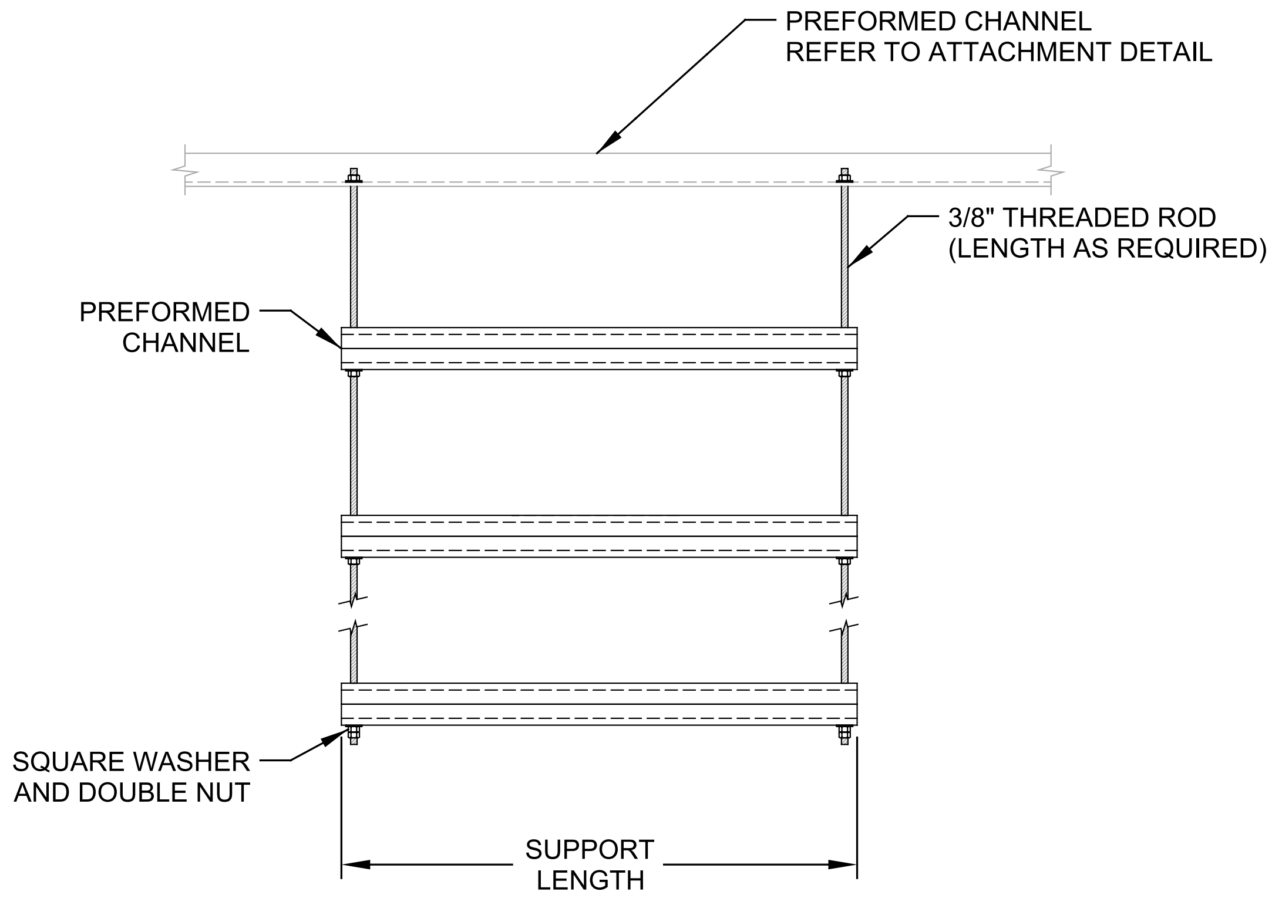
SUSPENDED

KEY NOTES:

- ◇1 USE MEYERS HUB IN WET AND/OR CORROSIVE AREAS.
- ◇2 LENGTH AS REQUIRED FOR INDICATED MOUNTING HEIGHT.
- ◇3 CAP END CONDUIT AS REQUIRED.

EL200 LINEAR LUMINAIRE MOUNTING

TYP S

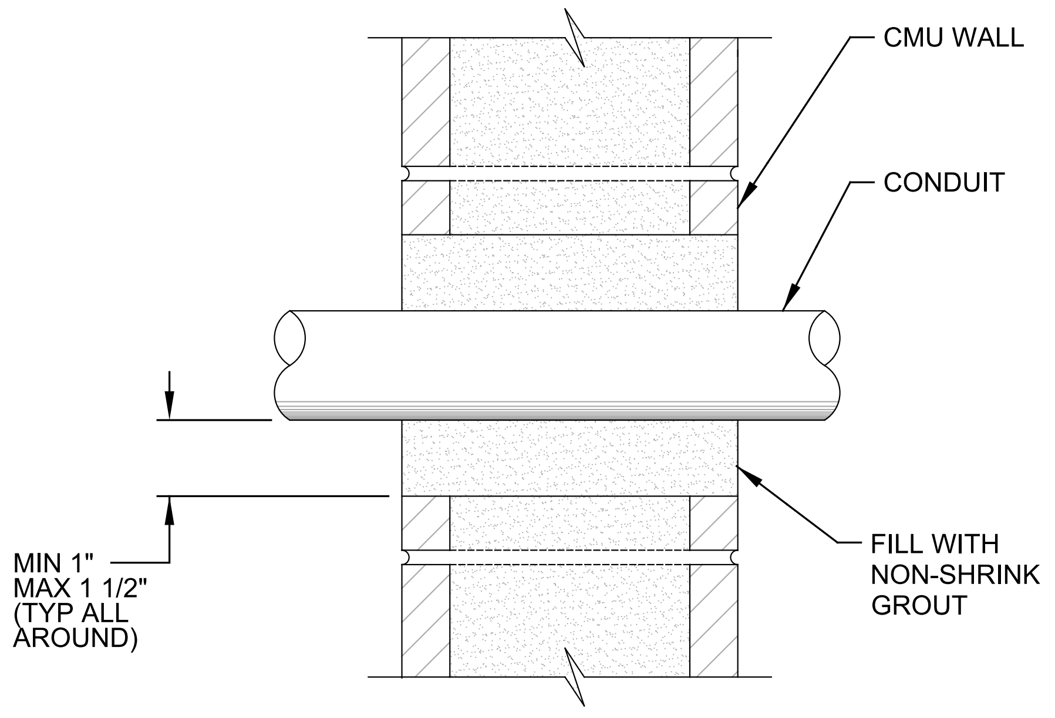


NOTES:

1. PROVIDE NUMBER AND LENGTH OF PREFORMED CHANNEL SUPPORTS AS REQUIRED BY EQUIPMENT AND MATERIALS TO BE INSTALLED.
2. PROVIDE SEISMIC BRACING PER THE SPECIFICATIONS.
3. REFER TO SPECIFICATIONS FOR MATERIAL REQUIREMENTS.

EM102 TRAPEZE SUPPORT

TYP S



NOTES:

1. PROVIDE NON-DESTRUCTIVE TESTING TO DETERMINE LOCATIONS OF REINFORCEMENT. MAINTAIN MIN 2" CLEAR BETWEEN CORE DRILLED OPENING AND REINFORCEMENT.
2. ROUGHEN SURFACE OF OPENING TO A 1/4" AMPLITUDE AND APPLY EPOXY CEMENT BONDING AGENT IMMEDIATELY PRIOR TO GROUTING.
3. PROVIDE 8" MINIMUM CENTER-TO-CENTER SPACING FOR CONDUITS.

EM173 CORE HOLE PENETRATION FULLY GROUTED CMU WALL

TYP S

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MARCH 2021

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No. 366286
CHRISTOPHER A. CARVALHO

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SOUTH VALLEY WATER RECLAMATION FACILITY
GENERATOR REPLACEMENT
ELECTRICAL
TYPICAL DETAILS - ELECTRICAL

VERIFY SCALES
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JOB NO.
10548A.10
DRAWING NO.
GE-03
SHEET NO.
6 OF 38

PROJECT NO. 11156A10 FILE NAME: 10548A10_P2_00GE003.dgn

Plot Date: 19-MAR-2021 1:54:54 PM
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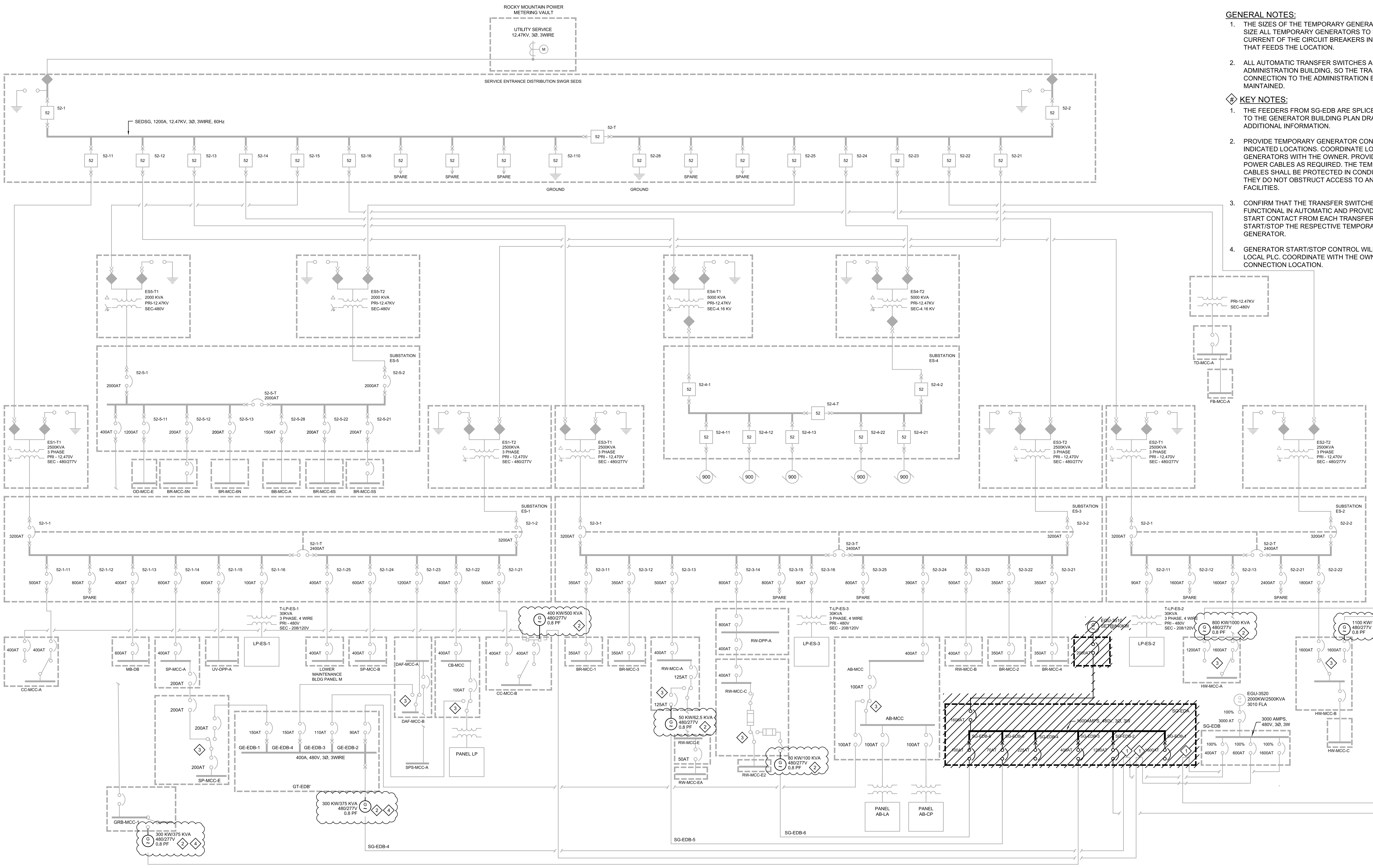

GENERAL NOTES:

1. THE SIZES OF THE TEMPORARY GENERATORS ARE PRELIMINARY. SIZE ALL TEMPORARY GENERATORS TO PROVIDE THE FULL LOAD CURRENT OF THE CIRCUIT BREAKERS IN EITHER SG-EDA OR SG-EDB THAT FEEDS THE LOCATION.

2. ALL AUTOMATIC TRANSFER SWITCHES ARE CONNECTED TO ADMINISTRATION BUILDING, SO THE TRANSFER EQUIPMENT CONNECTION TO THE ADMINISTRATION BUILDING MUST BE MAINTAINED.

KEY NOTES:

1. THE FEEDERS FROM SG-EDB ARE SPLICED IN SG-EDA. REFER TO THE GENERATOR BUILDING PLAN DRAWINGS FOR ADDITIONAL INFORMATION.

2. PROVIDE TEMPORARY GENERATOR CONNECTIONS AT THE INDICATED LOCATIONS. COORDINATE LOCATION OF THE GENERATORS WITH THE OWNER. PROVIDE TEMPORARY POWER CABLES AS REQUIRED. THE TEMPORARY POWER CABLES SHALL BE PROTECTED IN CONDUIT AND ROUTED SO THEY DO NOT OBSTRUCT ACCESS TO ANY EQUIPMENT OR FACILITIES.

3. CONFIRM THAT THE TRANSFER SWITCHES ARE FULLY FUNCTIONAL IN AUTOMATIC AND PROVIDE A GENERATOR START CONTACT FROM EACH TRANSFER SWITCH TO START/STOP THE RESPECTIVE TEMPORARY ENGINE GENERATOR.

4. GENERATOR START/STOP CONTROL WILL BE THROUGH THE LOCAL PLC. COORDINATE WITH THE OWNER FOR THE CONNECTION LOCATION.

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SOUTH VALLEY WATER RECLAMATION FACILITY
GENERATOR REPLACEMENT
ELECTRICAL
OVERALL ONE-LINE DIAGRAM
DEMOLITION AND TEMPORARY POWER

VERIFY SCALES
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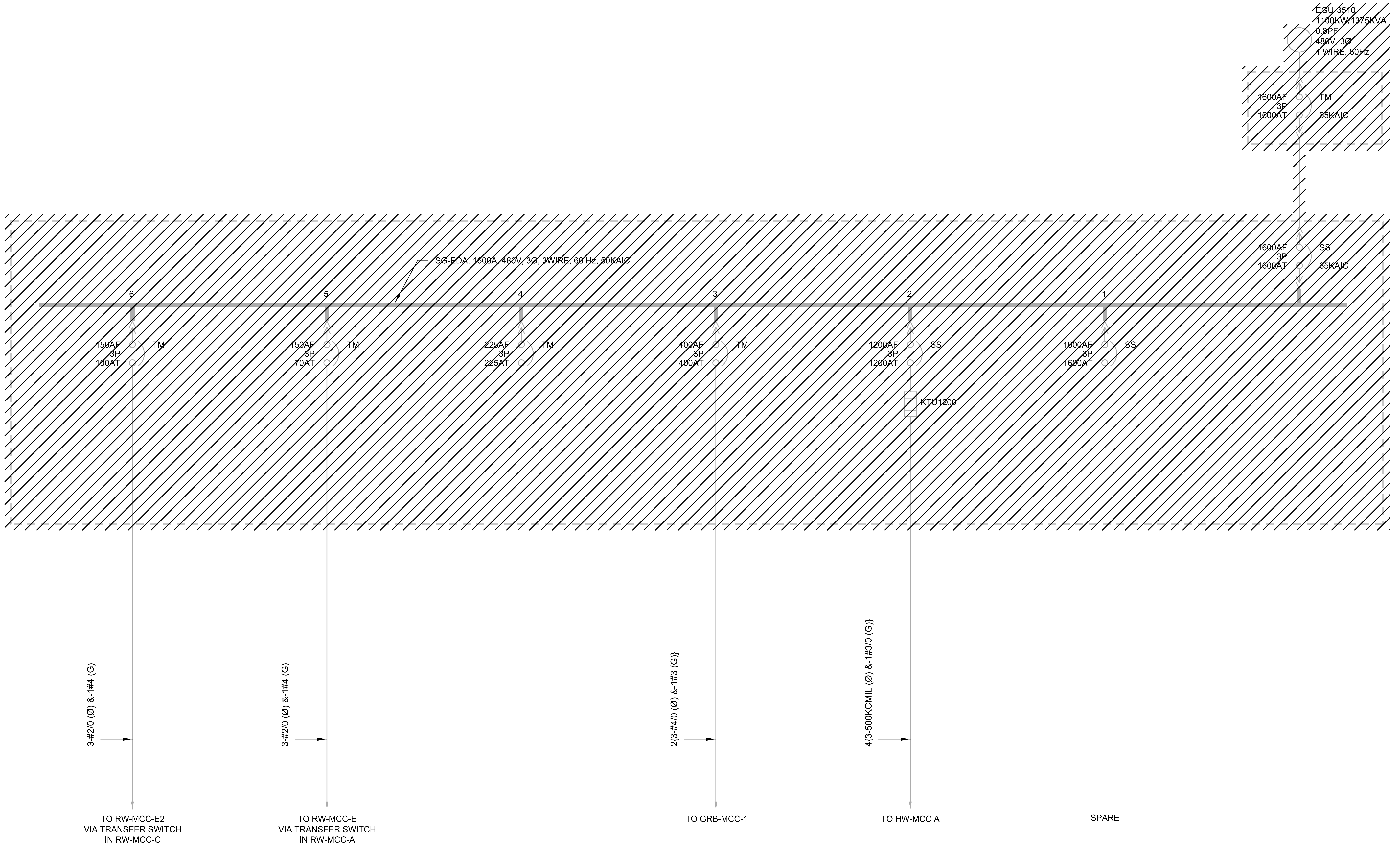
JOB NO.
10548A.10
DRAWING NO.
03DE01
SHEET NO.
7 OF 38

PROJECT NO.
FILE NAME: 10548A10_P2_03DE01.dgn



GENERAL NOTES:

1. PROTECT THE EXISTING OUTGOING FEEDERS FOR CONNECTION TO THE NEW SWITCHBOARD SG-EDA .

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SOUTH VALLEY WATER RECLAMATION FACILITY
GENERATOR REPLACEMENT
ELECTRICAL
SG-EDA ONE-LINE DIAGRAM
DEMOLITION

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JOB NO.
10548A.10
DRAWING NO.
03DE02
SHEET NO.
8 OF 38

PROJECT NO.
FILE NAME: 10548A10_P2_03DE02.dgn

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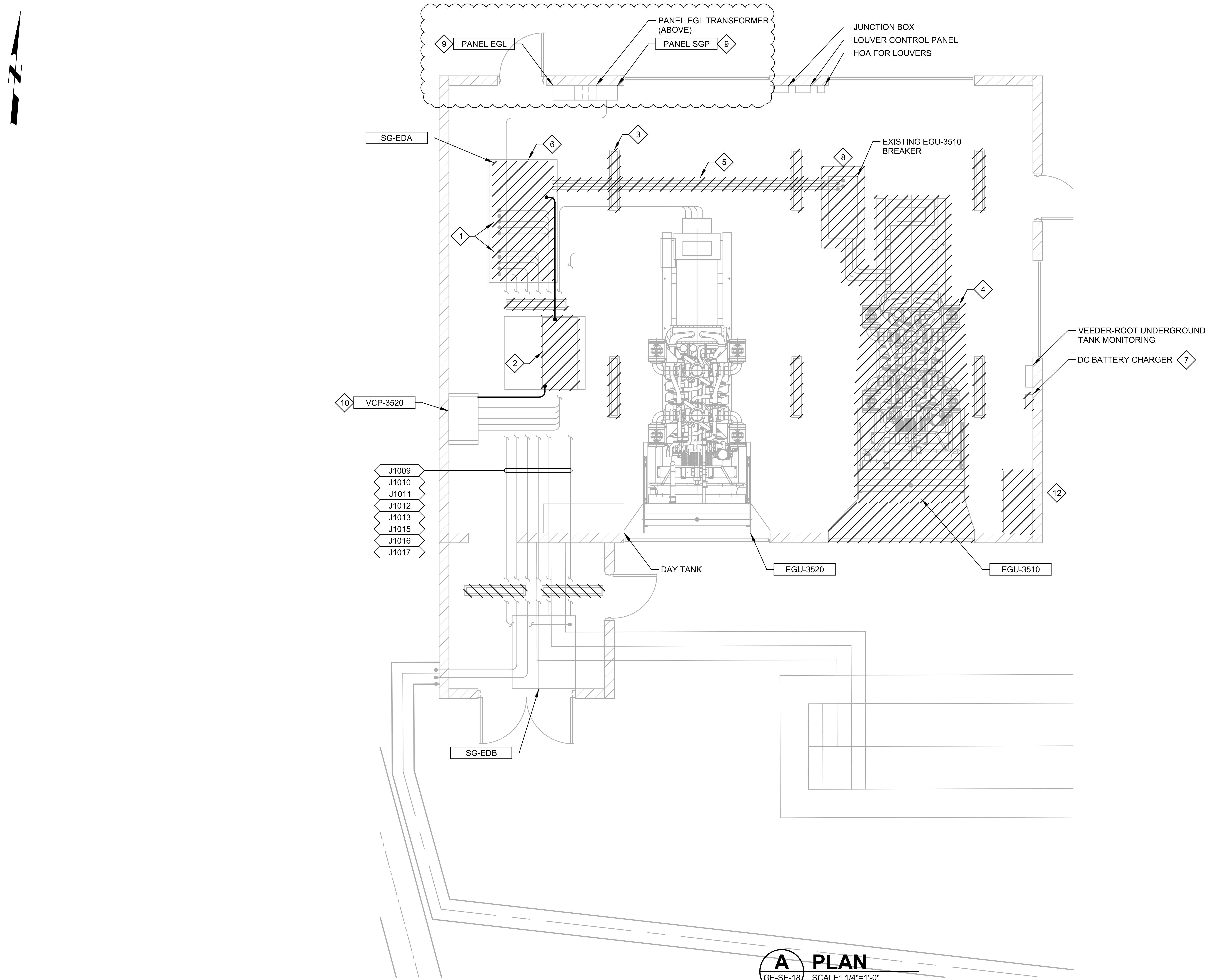

A PLAN

GE-SE-18
SCALE: 1/4"=1'-0"
FILE: 10548A10P211ED9101

GENERAL NOTES:

1. INSTALL THE TEMPORARY GENERATORS BEFORE BEGINNING DEMOLITION WORK IN THE STANDBY GENERATOR BUILDING.

KEY NOTES:

1. CUT AND DEMOLISH THE CONDUCTORS BETWEEN SG-EDA AND SG-EDB. LEAVE ENOUGH CONDUCTOR LENGTH OF THE EXISTING CONDUCTORS THAT ARE IN THE DUCT BANK TO ALLOW SPLICING OF THE NEW CONDUCTORS TO THE EXISTING CONDUCTORS IN THE NEW SG-EDA SWITCHBOARD. DEMOLISH AS MUCH CONDUIT AS REQUIRED TO ALLOW FOR THE DEMOLITION OF SG-EDA.
2. DOCUMENT ALL WIRING CONNECTIONS IN THE EXISTING CONTROL PANEL BEFORE DEMOLITION. PROTECT ALL WIRE AND CABLES FOR CONNECTION TO THE NEW CONTROL PANEL.
3. DEMOLISH THE EXISTING LIGHTS AND WIRING FROM THE SWITCHES TO THE FIXTURES AND BETWEEN THE FIXTURES. PROTECT PORTIONS OF THE EXISTING CONDUITS FOR CONNECTION TO THE NEW FIXTURES. REMOVE ALL EXISTING SUPPORTS THAT WILL NOT BE REUSED.
4. DEMOLISH STANDBY GENERATOR EGU-3510 INCLUDING THE GENERATOR CIRCUIT BREAKER, FUEL CONNECTION, EXHAUST SYSTEM, BATTERIES AND CHARGER, AND OTHER ACCESSORIES.
5. DEMOLISH THE EXISTING GENERATOR BREAKER, POWER CONDUITS AND CONDUCTORS BETWEEN THE EGU-3510 CIRCUIT BREAKER AND SG-EDA.
6. DEMOLISH SG-EDA. PROTECT THE OUTGOING CONDUCTORS FOR RECONNECTION TO SG-EDA AND FOR CONNECTION TO NEW CONDUCTORS FROM THE NEW EGU-3510.
7. DEMOLISH THE EXISTING BATTERY CHARGER. PROTECT THE CONDUIT FOR CONNECTION TO THE NEW CHARGER.
8. DEMOLISH THE EXISTING EQUIPMENT PAD AND REPAIR FLOOR AS NEEDED.
9. DEMOLISH THE EXISTING CONDUIT AND CONDUCTORS FOR EGU-3510 JACKET WATER HEATER AND GENERATOR WINDING HEATERS.
10. PROTECT VCP-3520 IN PLACE. MAINTAIN ALL CONNECTIONS BETWEEN THE VCP AND THE GENERATOR.
11. REFER TO THE PANELBOARD SCHEDULES FOR ADDITIONAL WORK THIS PROJECT.
12. DEMOLISH THE ABANDONED BATTERY CABINET.

REV	DATE	BY	DESCRIPTION

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MARCH 2021

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SOUTH VALLEY WATER RECLAMATION FACILITY
GENERATOR REPLACEMENT
ELECTRICAL
EMERGENCY GENERATOR BUILDING
DEMOLITION PLAN

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JOB NO.
10548A.10
DRAWING NO.
11DE01
SHEET NO.
9 OF 38

PROJECT NO.

FILE NAME: 10548A10_P2_11DE01.dgn

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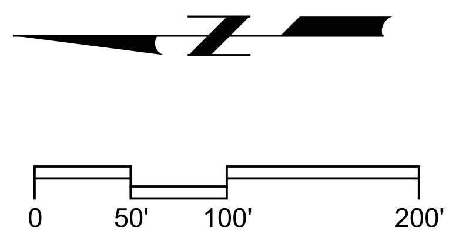

SITE PLAN

FILE: 10548A10P201E100

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SOUTH VALLEY WATER RECLAMATION FACILITY
GENERATOR REPLACEMENT
ELECTRICAL
OVERALL SITE PLAN

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10548A.10
DRAWING NO.
GE-SE-01
SHEET NO.
10 OF 38