SINGLE LINE DIAGRAM SYMBOLOGY

MEDIUM VOLTAGE VACUUM DRAWOUT STARTER

52 — MEDIUM VOLTAGE DRAWOUT BREAKER

THERMAL MAGNETIC CIRCUIT BREAKER
X = LOCATION
LOC
100 — FRAME (AMPS)
20 — TRIP (AMPS)

MCP CIRCUIT BREAKER
X = LOCATION
LOC
7 — CONTINUOUS AMPS
MCP — TRIP SETTING BASED ON MOTOR HORSEPOWER

LOW VOLTAGE DRAWOUT CIRCUIT BREAKER
800/400 (L-S-I-G)
L LONG TIME
S SHORT TIME
I INSTANTANEOUS
G GROUND FAULT

COMBINATION NEMA RATED STARTER WITH MCP DISCONNECT AND CONTROL POWER TRANSFORMER
X
40/MCP
ROMAN NUMERAL = NEMA SIZE
X = LOCATION
* = STARTER TYPE
(BLANK) FULL VOLTAGE NON-REVERSING
FVR FULL VOLTAGE REVERSING
2S2W TWO SPEED TWO WINDING
2S1W TWO SPEED ONE WINDING

X VFD — VARIABLE FREQUENCY DRIVE
X = AMPERE RATING

X RVSS — REDUCED VOLTAGE SOLID STATE STARTER
X = AMPERE RATING

X / Y — PACKAGED EQUIPMENT
X = EQUIPMENT SIZE
Y = TYPE (KW, KVA, OR HP AS INDICATED)

K — KEY INTERLOCK

GENERATOR
RATINGS AS INDICATED

TRANSFER SWITCH (MANUAL OR AUTOMATIC)
RATINGS AS INDICATED

AS — AMMETER SWITCH

VS — VOLTMETER SWITCH

X — METERING DEVICE
X = METER TYPE
WHM WATT HOUR METER
WM WATT METER
AM AMMETER
VM VOLTMETER
PFM POWER FACTOR METER

480/120 (3) — POTENTIAL TRANSFORMER
RATIO AND NUMBER OF PT'S AS INDICATED

100/5 (3) — CURRENT TRANSFORMER
RATIO AND NUMBER OF CT'S AS INDICATED

GROUND FAULT CURRENT TRANSFORMER
RATIO AS INDICATED

5A — FUSE
SIZE AS INDICATED

X — MOTOR
X = HORSEPOWER
* = FULL LOAD AMPS

DELTA-WYE TRANSFORMER WITH SECONDARY KVA SIZE AND VOLTAGE RATIO AS INDICATED

X AMPS
Y SECONDS
51G — DELTA-WYE TRANSFORMER WITH RESISTANCE GROUNDED SECONDARY AND GROUND FAULT RELAYING
X - GROUNDING RESISTOR AMPS
Y - GROUNDING RESISTOR SECONDS

FUSED CONTROL POWER TRANSFORMER

MOV — ELECTRICAL MOTOR OPERATED VALVE, WITH INTEGRAL REVERSING STARTER

30A — DISCONNECT SWITCH
SIZE AS INDICATED

30A / 30A — FUSED DISCONNECT SWITCH
SIZE AS INDICATED

CAPACITOR

SPD — SURGE PROTECTIVE DEVICE

SSM — SOLID STATE METERING DEVICE

SSMP — SOLID STATE MOTOR PROTECTIVE DEVICE

LIGHTNING ARRESTOR AND SURGE CAPACITOR

(#) — ANSI RELAY DEVICE
(#) = QUANTITY
* = ANSI DEVICE
25 SYNCHRONISM CHECK RELAY
27 UNDERVOLTAGE
27/47 UNDERVOLTAGE, PHASE SEQUENCE, UNBALANCED VOLTAGE
32 DIRECTIONAL POWER RELAY
41 FIELD CONTACTOR
43 SELECTOR SWITCH
49 HIGH OIL TEMPERATURE
50/51 INSTANTANEOUS AND TIME OVERCURRENT
50/51N INSTANTANEOUS AND TIME RESIDUALLY CONNECTED GROUND OVERCURRENT
51G GROUND FAULT
60 VOLTAGE BALANCE
62 TIME DELAY
63 SUDDEN PRESSURE
67 AC DIRECTIONAL CURRENT RELAY
71L LOW OIL LEVEL
81 FREQUENCY RELAY
83 CONTROL POWER TRANSFORMER
86 LOCKOUT
87TL TRANSFORMER DIFFERENTIAL
87M MOTOR DIFFERENTIAL

SCHEMATIC DIAGRAM SYMBOLOGY

L O R — THREE - POSITION SELECTOR SWITCH

L R — TWO - POSITION SELECTOR SWITCH

THREE - POSITION SPRING RETURN-TO-CENTER MOMENTARY CONTACT SWITCH

SINGLE POLE TOGGLE SWITCH

VACUUM OR PRESSURE SWITCH
CLOSE ON RISING PRESSURE

VACUUM OR PRESSURE SWITCH
OPEN ON RISING PRESSURE

FLOAT LEVEL SWITCH
CLOSE ON RISING LEVEL

FLOAT LEVEL SWITCH
OPEN ON RISING LEVEL

NORMALLY OPEN

NORMALLY CLOSED

NORMALLY OPEN HELD CLOSED

NORMALLY CLOSED HELD OPEN

MAINTAINED POSITION

TEMPERATURE SWITCH
CLOSE ON RISING TEMPERATURE

TEMPERATURE SWITCH
OPEN ON RISING TEMPERATURE

FLOW SWITCH
CLOSE ON INCREASING FLOW

FLOW SWITCH
OPEN ON INCREASING FLOW

TORQUE SWITCH
OPEN ON INCREASING TORQUE

1 — LOCATION SYMBOL
LEGEND SHOWN ON SCHEMATIC DRAWINGS
ALL DEVICES ARE LOCATED IN THE MCC
UNLESS INDICATED OTHERWISE

DI — DIGITAL INPUT TO PLC/RTU/DCS

DIGITAL OUTPUT FROM PLC/RTU/DCS
NORMALLY OPEN

DIGITAL OUTPUT FROM PLC/RTU/DCS
NORMALLY CLOSED

AI — ANALOG INPUT TO PLC/RTU/DCS
4-20 mA (UNLESS INDICATED OTHERWISE)

AO — ANALOG OUTPUT FROM PLC/RTU/DCS
4-20 mA (UNLESS INDICATED OTHERWISE)

SV — SOLENOID VALVE

SOLENOID VALVE

E-STOP PUSHBUTTON

X — CONTROL RELAY OR COIL
X = DEVICE
CR CONTROL RELAY
TD TIME DELAY RELAY
(TIMING RANGE AS INDICATED)
M MOTOR STARTER
PC PHOTOCELL

NORMALLY OPEN CONTACT

NORMALLY CLOSED CONTACT

XXXX — NORMALLY OPEN CONTACT LINE REFERENCE

XXXX — NORMALLY CLOSED CONTACT LINE REFERENCE

TIMED CONTACTS
CONTACT ACTION IS DELAYED AFTER COIL IS:

ENERGIZED

TD1 — NORMALLY OPEN WITH TIME DELAY CLOSING

TD1 — NORMALLY CLOSED WITH TIME DELAY OPENING

DE-ENERGIZED

TD1 — NORMALLY OPEN WITH INSTANT CLOSING AND TIME DELAY OPENING

TD1 — NORMALLY CLOSED WITH INSTANT OPENING AND TIME DELAY CLOSING

START — NORMALLY OPEN PUSHBUTTON

STOP — NORMALLY CLOSED PUSHBUTTON

OFF ON — NO/NC MAINTAINED PUSHBUTTON

X — PILOT LIGHT
X = LENS COLOR
R RED
G GREEN
A AMBER
W WHITE

X — PILOT LIGHT (PUSH-TO-TEST)
X = LENS COLOR (SEE ABOVE)

HORN

ETM — ELAPSED TIME METER

HEATER

GROUND CONNECTION

CROSSING OF CONDUCTORS - NOT CONNECTED

CROSSING OF CONDUCTORS - CONNECTED

FUSE

VOLTAGE SURGE SUPPRESSOR

Stantec

BOWEN COLLINS & ASSOCIATES

REGISTERED PROFESSIONAL ENGINEER
No 6677342-2202
KEITH E. SMITH
12/09/22
STATE OF UTAH

NO.	DATE	REV. BY	DESCRIPTION
			REVISIONS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

PROJECT
MAGNA WATER DISTRICT
MAGNA WRF REUSE PROJECT
MAGNA, UTAH

REVIEW
CHECKED STANTEC
APPROVED STANTEC

DESIGN
DESIGN STANTEC
DRAWN STANTEC

ELECTRICAL

SYMBOLS - I

PROJECT NUMBER 483-20-02

DATE: DECEMBER 2022

DRAWING NO.
E-01

SHEET 067 OF 126

REV 010119

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PLAN SYMBOLOGY

RECEPTACLES

- X-# — 120V DUPLEX RECEPTACLE, NEMA CONFIGURATION 5-20R (WALL MOUNT)
  X = PANELBOARD DESIGNATION
  # = CIRCUIT DESIGNATION
  * = TYPE
  WP WEATHERPROOF
  XP EXPLOSION PROOF
  GFCI GROUND FAULT CIRCUIT INTERRUPTER
- 120V DUPLEX RECEPTACLE, NEMA CONFIGURATION 5-20R (FLOOR MOUNT)
- X — SINGLE SPECIAL PURPOSE RECEPTACLE, 240V 1 PHASE
  X = AMPERAGE
- X — WELDING RECEPTACLE
  X = AMPERAGE
- X — SPECIAL PURPOSE RECEPTACLE, 480 VAC
  X = AMPERAGE
- TELEPHONE OUTLET - FLOOR TYPE
- TELEPHONE OUTLET - WALL TYPE
- COMPUTER/DATA OUTLET - FLOOR TYPE
- COMPUTER/DATA OUTLET - WALL TYPE

CONDUIT AND RACEWAY SYMBOLOGY

- EXPOSED OR CONCEALED CONDUIT
- CONDUIT RUN (UNDERGROUND OR IN CONCRETE)
- CONDUIT RUN (CHANGE IN ELEVATION)
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- CONDUITS GROUPED TOGETHER BUT SHOWN AS A SINGLE LINE FOR CLARITY
- CONDUIT FROM FLOOR ABOVE TO FLOOR BELOW
- CONDUIT CAPPED, OR SEALED
- HOMERUN TO EQUIPMENT INDICATED (3/4 " CONDUIT, 2 #12, 1 #12 GND UNLESS INDICATED OTHERWISE)
- X — RACEWAY BOX
  X = BOX TYPE
  MH MANHOLE
  HH HANDHOLE
  PB PULLBOX
- J — JUNCTION BOX OR FITTING

MISCELLANEOUS ELECTRICAL SYMBOLOGY

- POWER PANEL
- DISCONNECT SWITCH
- M — MOTOR
- T — THERMOSTAT
- HORN
- COMBINATION STARTER
- $M — MANUAL MOTOR STARTER

REV 010119

FIRE PROTECTION SYMBOLOGY

- F — FIRE ALARM HORN WITH STROBE
- A F — FIRE ALARM LOUDSPEAKER WITH AMPLIFIER
- FA — FIRE ALARM PULL STATION
- F — FIRE ALARM STROBE
- F — FIRE ALARM BELL WITH STROBE
- FS — FIRE SUPPRESSION SWITCH
- ER — END-OF-LINE TERMINATOR
- * — DETECTOR
  X = TYPE
  SD SMOKE DETECTOR
  HD HEAT DETECTOR
  CD COMBINATION DETECTOR

SECURITY & COMM SYSTEMS SYMBOLOGY

- I — INTERCOM SPEAKER
  * = TYPE (REFER TO SPECIFICATIONS)
- I — INTERCOM SPEAKER WITH STROBE LIGHT
  * = TYPE (REFER TO SPECIFICATIONS)
- I — INTERCOM WALL JACK
- HS I — INTERCOM HANDSET - WALL MOUNTED
- VC * — VIDEO CAMERA
  * = TYPE
  F FIXED
  PTZ PAN-TILT-ZOOM
- * — SECURITY ACCESS DEVICE
  * = TYPE
  CR CARD READER
  KS KEY SWITCH
  PS DIGITAL KEYPAD

LIGHTING SYMBOLOGY

- A / X-#a — PENDANT OR CEILING MOUNT LUMINAIRE
  A = LUMINARE TYPE
  X = LIGHTING PANEL DESIGNATION
  # = CIRCUIT NUMBER
  a = SWITCH DESIGNATION
- PENDANT OR CEILING MOUNT LUMINAIRE - UNSWITCHED (NIGHT LIGHT)
- WALL MOUNTED LUMINAIRE
- POLE, BRACKET, ARM, AND STREETLIGHT
- LINEAR LUMINAIRE
- LINEAR LUMINAIRE - UNSWITCHED
- EMERGENCY LUMINAIRE
  BATTERY OPERATED
- EXIT LIGHT, ARROW INDICATE DIRECTION OF EXIT, SHADING INDICATES FACE
- A / * — LUMINAIRE CALLOUT
  A = LUMINAIRE TYPE
  * = APPROXIMATE MOUNTING HEIGHT AFF
  CLG = CEILING MOUNT
  (SEE LUMINAIRE SCHEDULE FOR MORE DETAILS)
- $ X-#a / * — LIGHT SWITCH
  X = LIGHTING PANEL DESIGNATION
  # = CIRCUIT DESIGNATION
  a = SWITCH DESIGNATION
  * = SWITCH TYPE
  3 3-WAY
  4 4-WAY
  D DIMMER
  M MANUAL MOTOR STARTER
- LIGHTING PANEL

GROUNDING SYMBOLOGY

- GROUND ROD AND GROUND WELL
- GROUND ROD (3/4" X 10'-0")
- GROUND CONNECTION - BOLTED TYPE
- GROUND CONNECTION - EXOTHERMIC TYPE
- BARE COPPER GROUND TO GROUND WIRE IN SLAB, OR UNDERGROUND GROUND GRID, SIZE AS NOTED
- EARTH GROUNDING

Stantec

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ELECTRICAL

SYMBOLS - II

PROJECT NUMBER 483-20-02

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DRAWING NO.
E-02

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ELECTRICAL ABBREVIATIONS

A	AMPERE, AUTOMATIC
AC	ALTERNATING CURRENT
AF	CIRCUIT BREAKER FRAME SIZE
AM	AMMETER
ANN	ANNUNCIATOR
AS	ADJUSTABLE SPEED
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BC	BARE COPPER
BKR	BREAKER
C	CONDUIT, CLOSED
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLF	CURRENT LIMITING FUSE
COM	COMMON
COMM	COMMUNICATIONS
COMP	COMPARTMENT
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY, CARD READER
CT	CURRENT TRANSFORMER
DCS	DISTRIBUTED CONTROL SYSTEM
DISC	DISCONNECT
DISTR	DISTRIBUTION
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
E	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
ETM	ELAPSED TIME METER
F	FREQUENCY, FUSE, FIXED
FDR	FEEDER
FLA	FULL LOAD AMPS
FLUOR	FLUORESCENT
FM	FREQUENCY METER
FO	FIBER OPTIC
FVR	FULL VOLTAGE REVERSING
FVNR	FULL VOLTAGE NON-REVERSING
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
H	HAND
HD	HEAT DETECTOR
HH	HAND HOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTOMATIC
HPS	HIGH PRESSURE SODIUM
HS	HAND SWITCH
HZ	HERTZ
IMC	INTERMEDIATE METALLIC CONDUIT
INCAND	INCANDESCENT
IND	INDICATION
INST	INSTANTANEOUS
I/O	INPUT/OUTPUT
Isc	SHORT CIRCUIT CURRENT, AMPS
ISO	ISOLATION
J, JB	JUNCTION BOX
KA	KILO AMPERES
KAIC	KILO AMP INTERRUPTING CURRENT
KCMIL	KILO CIRCULAR MILS
KVA	KILOVOLT AMPERE
L	LOCAL
LCP	LOCAL CONTROL PANEL
LCS	LOCAL CONTROL STATION
LOC	LOCAL
LOR	LOCAL-OFF-REMOTE
LOS	LOCKOUT STOP PUSHBUTTON
LP	LIGHTING PANEL
LRA	LOCKED ROTOR AMPS
LS	LEVEL SWITCH
LTG	LIGHTING
LTS	LIGHTS

M	MOTOR CONTACTOR COIL
mA	MILLIAMPERE
MCP	MOTOR CIRCUIT PROTECTOR
MLO	MAIN LUGS ONLY
MOV	MOTOR OPERATED VALVE
MS	MANUAL MOTOR STARTER
MTS	MANUAL TRANSFER SWITCH
NEUT	NEUTRAL
NP	NAMEPLATE
O	OPEN, OFF
OL	OVERLOAD
PA	PUBLIC ADDRESS
PB	PUSHBUTTON, PULLBOX
PC	PHOTOCELL
PCM	PROCESS CONTROL MODULE
PF	POWER FACTOR
PFM	POWER FACTOR METER
PH	PHASE
PL	PILOT LIGHT
PNLBD	PANELBOARD
PP	POWER PANELBOARD
POS	POSITION
POT	POTENTIOMETER
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PTZ	PAN-TILT-ZOOM
PWR	POWER
R	REMOTE
RECPT	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
RMS	ROOT MEAN SQUARE
RTU	REMOTE TERMINAL UNIT
RVSS	REDUCED VOLTAGE SOLID STATE
SEL SW	SELECTOR SWITCH
SEQ	SEQUENCE
SHLD	SHIELDED
SIG	SIGNAL
SP	SPARE
SP HTR	SPACE HEATER
SPDT	SINGLE POLE DOUBLE THROW
SPST	SINGLE POLE SINGLE THROW
SSM	SOLID STATE METER
SSMP	SOLID STATE MOTOR PROTECTOR
ST, SH	SHUNT TRIP
STR	STARTER
SSTU	SOLID STATE TRIP UNIT
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TACH	TACHOMETER
TB	TERMINAL BOX
TERM	TERMINAL
TM	REPEAT CYCLE TIMER
TD	TIME DELAY RELAY
TS	TEMPERATURE SWITCH
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTAGE, VOLTS
VA	VOLT AMPERE
VAR	VOLT AMPERE REACTIVE
VFD	VARIABLE FREQUENCY DRIVE
VM	VOLTMETER
VP	VAPOR PROOF
W	WATTS, WIRE
WM	WATT METER
WP	WEATHERPROOF
XFMR	TRANSFORMER
XMTR	TRANSMITTER
XP	EXPLOSION PROOF

GENERAL ELECTRICAL NOTES

1. ALL RACEWAYS AND EQUIPMENT SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE 2020 EDITION OF THE NATIONAL ELECTRICAL CODE AND APPLICABLE LOCAL CODES.
2. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF TERMINAL BOXES AND CONDUIT ENTRANCES OF ALL EQUIPMENT AGAINST APPROVED SHOP DRAWINGS BEFORE STUBBING UP CONDUITS.
3. REFER TO SPECIFICATION SECTION 260533 FOR REQUIREMENTS RELATED TO FLEXIBLE CONDUIT INSTALLATION
   CONDUIT RUNS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT OR STRUCTURAL CONDITIONS. EXPOSED CONDUIT SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO BEAMS AND WALLS. REFER TO SPECIFICATION SECTION 260533.
4. CONDUIT STUB-UPS SHALL NOT BE MORE THAN 6 INCHES FROM THE CENTERLINE OF TERMINAL BOXES.
5. IN THE EVENT OF INTERFERENCE BETWEEN ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS AND OTHER EQUIPMENT, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING AND THE ENGINEER SHALL APPROVE PROPOSED CHANGES BEFORE THEY ARE MADE.
6. ALL SURFACE MOUNTED PANELS AND PANELBOARDS ON THE INTERIOR OF EXTERIOR WALLS ABOVE GRADE OR IN OTHER LOCATIONS CONSIDERED DAMP OR WET SHALL BE MOUNTED SO AS TO MAINTAIN A 1/4 INCH (MINIMUM) AIR SPACE BETWEEN THE ENCLOSURE AND THE WALL.
7. LOCATION OF PULLBOXES ARE APPROXIMATE. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION WITH MECHANICAL PIPING AND SHALL BE 6 INCHES (MINIMUM) AWAY FROM MECHANICAL PIPING FLOW LINES.
8. ONLY MAJOR PULLBOXES ARE SHOWN. THE CONTRACTOR SHALL PROVIDE ADDITIONAL PULLBOXES WHERE REQUIRED TO MAKE A WORKABLE INSTALLATION.
9. THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE DETAILS WHETHER OR NOT THEY ARE REFERENCED ON THE DRAWINGS.
10. ALL CONDUIT RUNS CROSSING EXPANSION JOINTS SHALL HAVE EXPANSION OR EXPANSION AND DEFLECTION TYPE FITTINGS. FOR LOCATIONS OF EXPANSION JOINTS, REFER TO THE STRUCTURAL DWGS.
11. LUMINAIRES SHALL BE MOUNTED ACCORDING TO THE MOUNTING HEIGHT GIVEN ON THE DRAWINGS, WITH THE DISTANCE BEING MEASURED FROM THE BOTTOM OF THE LUMINAIRE TO THE FINISHED FLOOR. THE APPROPRIATE MOUNTING BRACKETS AND HARDWARE SHALL BE SUPPLIED.
12. ALL PANELBOARDS SHALL BE MOUNTED SO THAT THE DISTANCE FROM THE CENTERLINE OF THE TOP CIRCUIT BREAKER OPERATING HANDLE IN THE UPPERMOST POSITION TO THE FINISHED FLOOR SHALL NOT EXCEED 6'-7".
13. THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS.
14. CONNECTIONS BETWEEN RIGID CONDUIT AND MOTOR TERMINAL BOXES OR SIMILAR EQUIPMENT SUBJECT TO VIBRATION SHALL BE FLEXIBLE LIQUID-TIGHT CONDUIT.
15. CONDUITS SHALL BE TERMINATED SO AS TO PERMIT NEAT CONNECTION TO MOTORS AND OTHER EQUIPMENT.
16. CONDUITS FOR FUTURE EQUIPMENT OR EXTENSIONS SHALL BE TERMINATED AS SHOWN IN DETAIL OR AS SPECIFIED.
17. MCC AND SWITCHGEAR COMPARTMENT DESIGNATIONS SHALL BE AS FOLLOWS:

    BLANK/SPACE: CONTAINS NECESSARY BUS AND HARDWARE FOR FUTURE ADDITION OF BREAKERS OR STARTERS.

    SPARE: CONTAINS A COMPLETE INSTALLED BREAKER OR STARTER AVAILABLE FOR FUTURE USE.
18. ALL MOTOR STARTER CONTROL POWER TRANSFORMERS SHALL BE SIZED TO PROVIDE SUFFICIENT VOLT-AMPERE CAPACITY FOR OPERATING ALL LOCAL AND REMOTE ELECTRICAL DEVICES ASSOCIATED WITH CONTROL OF THE MOTOR IN ADDITION TO THE STARTER COIL.
19. MOTOR CONTROL CENTERS AND ALL FREE STANDING PANELS SHALL BE SET ON CONCRETE HOUSEKEEPING PADS WITH LEVELING CHANNELS EMBEDDED IN THE PAD.
20. ALL RECEPTACLES IN OUTDOOR AND ANTICIPATED WET AREAS SHALL BE GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLES WITH WEATHERPROOF COVERS.
21. ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING THE PROJECT TO VERIFY THE SCOPE OF WORK WITH FIELD CONDITIONS. PARTICULAR ATTENTION SHOULD BE GIVEN TO NEW CONDUIT RUNS IN EXISTING BUILDINGS.
22. EQUIPMENT LOCKOUTS SHALL BE IN STRICT ACCORDANCE WITH OWNER'S REQUIREMENTS.
23. FOR LIGHTING AND RECEPTACLE SYSTEMS, ONLY CIRCUIT NUMBERS ARE SHOWN. CONTRACTOR SHALL PROVIDE ALL NECESSARY CONDUITS, WIRES, FITTINGS, JUNCTION BOXES AND ALL NECESSARY COMPONENTS SHOWN OR NOT SHOWN ON THE DRAWINGS, TO MAKE THE ELECTRICAL INSTALLATION COMPLETE AND OPERATIONAL. ALL CONDUIT RUNS SHALL BE CONCEALED UNLESS INDICATED OTHERWISE. CIRCUIT LOADING SHALL BE AS INDICATED IN THE PANEL SCHEDULES. ALL LIGHTING AND RECEPTACLE CIRCUITS SHALL INCLUDE GROUND WIRE.
24. HVAC TEMPERATURE CONTROL WIRING SHALL BE THE RESPONSIBILITY OF THE TEMPERATURE CONTROLS SUBCONTRACTOR UNDER DIVISION 23, AND IS NOT SHOWN ON THE ELECTRICAL DRAWINGS. 120, 208, AND 420 VOLT POWER WIRING SHALL BE PROVIDED AS INDICATED AND AS A PART OF THE ELECTRICAL DIVISION 28 WORK.

LIGHTNING PROTECTION NOTES

1. GENERAL
   A SYSTEM OF LIGHTNING PROTECTION SHALL BE PROVIDED AND INSTALLED IN COMPLIANCE WITH THE PROVISIONS OF THE LATEST EDITION OF NFPA 780 LIGHTNING PROTECTION CODE AS ADOPTED BY THE NATIONAL FIRE PROTECTION ASSOCIATION.
2. AIR TERMINALS
   AIR TERMINALS SHALL BE 1/2IN x 24IN SOLID COPPER AND SHALL EXTEND AT LEAST 18 INCHES ABOVE THE TOP OF THE TANK. AIR TERMINALS BASES SHALL BE CAST BRONZE WITH STAINLESS STEEL BOLT PRESSURE CABLE CONNECTIONS.
3. CONDUCTORS
   CONDUCTORS SHALL CONSIST OF U.L. LISTED 29 STRANDS OF 17 GAUGE COPPER WIRE WEIGHING 190 LBS. PER 1000 FEET AND INSTALLED IN ACCORDANCE WITH THE U.L. CODE. (CLASS 1)
4. GROUND TERMINALS
   ALL GROUNDING TERMINALS (RODS) SHALL BE NO LESS THAN 3/4 IN DIA AND 10 FT LONG, AND SHALL BE COPPER-CLAD STEEL OR SOLID COPPER. GROUND TERMINALS SHALL BE DRIVEN TO A MINIMUM DEPTH OF 10 FT. GROUNDING TERMINALS SHALL BE LOCATED AT THE BASE OF THE STRUCTURE AND GROUND CONNECTIONS SHALL BE MADE AROUND THE PERIMETER OF THE STRUCTURE AND IN NO CASE SHALL AVERAGE OVER 100 FT APART.
5. CABLE CONNECTORS
   ALL CABLE CONNECTORS SHALL BE CAST BRONZE WITH SCREW TYPE STAINLESS STEEL BOLTS AND NUTS. CONDUCTOR FASTENERS SHALL BE AN APPROVED TYPE OF NON-CORROSIVE METAL, HAVE AMPLE STRENGTH TO SUPPORT CONDUCTORS AND SHALL BE SPACED 3 FT ON CENTERS.
6. INTERCONNECTION OF METALS
   ALL METAL BODIES WITHIN 6 FT OF THE CONDUCTOR SHALL BE BONDED TO THE SYSTEM WITH APPROVED FITTINGS AND CONDUCTORS. CONNECTIONS BETWEEN DISSIMILAR METALS SHALL BE MADE WITH APPROVED BIMETALLIC CONNECTIONS. PRIMARY BONDS FOR CONDUCTING METAL BODIES SHALL BE BONDED WITH APPROPRIATE FITTINGS AND FULL SIZE CONDUCTORS, AND SHALL CONSIST OF, BUT NOT LIMITED TO THE FOLLOWING: LADDER AND RAIL SYSTEMS, TANK VENTS AND PIPING. ALUMINUM TO COPPER CONNECTIONS SHALL BE MADE WITH BIMETALLIC CONNECTORS.
7. COMMON GROUNDING
   ALUMINUM TO COPPER CONNECTIONS SHALL BE MADE WITH BIMETALLIC CONNECTORS. GROUNDS FOR ELECTRICAL AND TELEPHONE SERVICES, AND LIGHTNING GROUNDS SHALL BE TIED TOGETHER TO FORM A COMMON GROUND.
8. MATERIALS
   ALL LIGHTNING PROTECTION EQUIPMENT SHALL BE MANUFACTURED BY HEARY BROTHERS LIGHTNING PROTECTION CO., THOMPSON LIGHTNING PROTECTION CO., CAPITAL LIGHTNING PROTECTION CO., OR EQUAL.
9. LOCATION
   INSTALL LIGHTNING PROTECTION AT THE FOLLOWING FACILITIES:

   A. REUSE PUMP STATION

GROUNDING NOTES

1. ALL GROUNDING CABLES SHALL BE #4/0 SOFT DRAWN BARE STRANDED COPPER CONDUCTOR UNLESS OTHERWISE NOTED.
2. INSTALL GROUND CABLE AT THE BOTTOM OF THE GRADE BEAM OR A MINIMUM 36" BELOW GRADE.
3. GROUNDING CABLE SHALL BE INSTALLED WITH SUFFICIENT SLACK SO AS TO AVOID DAMAGE TO THE CONDUCTORS.
4. ANY GROUNDING CONDUCTOR EMERGING FROM BELOW GRADE SHALL BE PROTECTED BY PVC SCHEDULE 80 SLEEVE.
5. RESISTANCE TO GROUND MUST BE MEASURED AT 5 OHMS OR LESS. ADDITIONAL GROUND RODS SHALL BE DRIVEN TO OBTAIN THIS VALUE. MEASUREMENT SHALL BE TAKEN IN DRY WEATHER CONDITION, A MINIMUM 48 HOURS AFTER RAINFALL.
6. CONNECT ALL DUCTBANK GROUND CONDUCTORS TO BUILDING GROUND LOOP.
7. PROVIDE BONDING CONNECTION TO ALL UNDERGROUND WATER PIPES (NOT SHOWN).
8. EXTEND THE GROUND CONDUCTORS INTO THE STRUCTURE AND INSTALL ADDITIONAL CONNECTIONS AS REQUIRED BY THE NEC AND THE CONTRACT DOCUMENTS. THESE CONNECTIONS SHALL INCLUDE, BUT ARE NOT LIMITED TO
   THE FOLLOW ING :
   - METALLIC PIPING
   - METALLIC EQUIPMENT/ FRAMES
   - STRUCTURAL STEEL
   - STAIRS AND LADDER
   - ACCESS HATCHES
   - LCP, LCS, VCP
   - LIGHTING AND POWER PANELS
   - INSTRUMENTATION AND COMMUNICATION SYSTEMS
   - ISOLATED GROUND(S) FOR PLC AND CONTROL PANELS.

   CONNECTION CABLES SHALL BE SIZED AS REQUIRED BY THE NEC.
9. GROUNDING SYSTEM SHALL BE COORDINATED WITH THE LIGHTNING PROTECTION SYSTEM IN ACCORDANCE WITH NFPA 70 AND NFPA 780.

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BOWEN COLLINS & ASSOCIATES

REGISTERED PROFESSIONAL ENGINEER
No 6677342-2202
KEITH E. SMITH
12/09/22
STATE OF UTAH

REVISIONS

NO.	DATE	REV. BY	DESCRIPTION

MAGNA WATER DISTRICT
MAGNA WRF REUSE PROJECT
MAGNA, UTAH

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

REVIEW
CHECKED STANTEC
APPROVED STANTEC

DESIGN
DESIGN STANTEC
DRAWN STANTEC

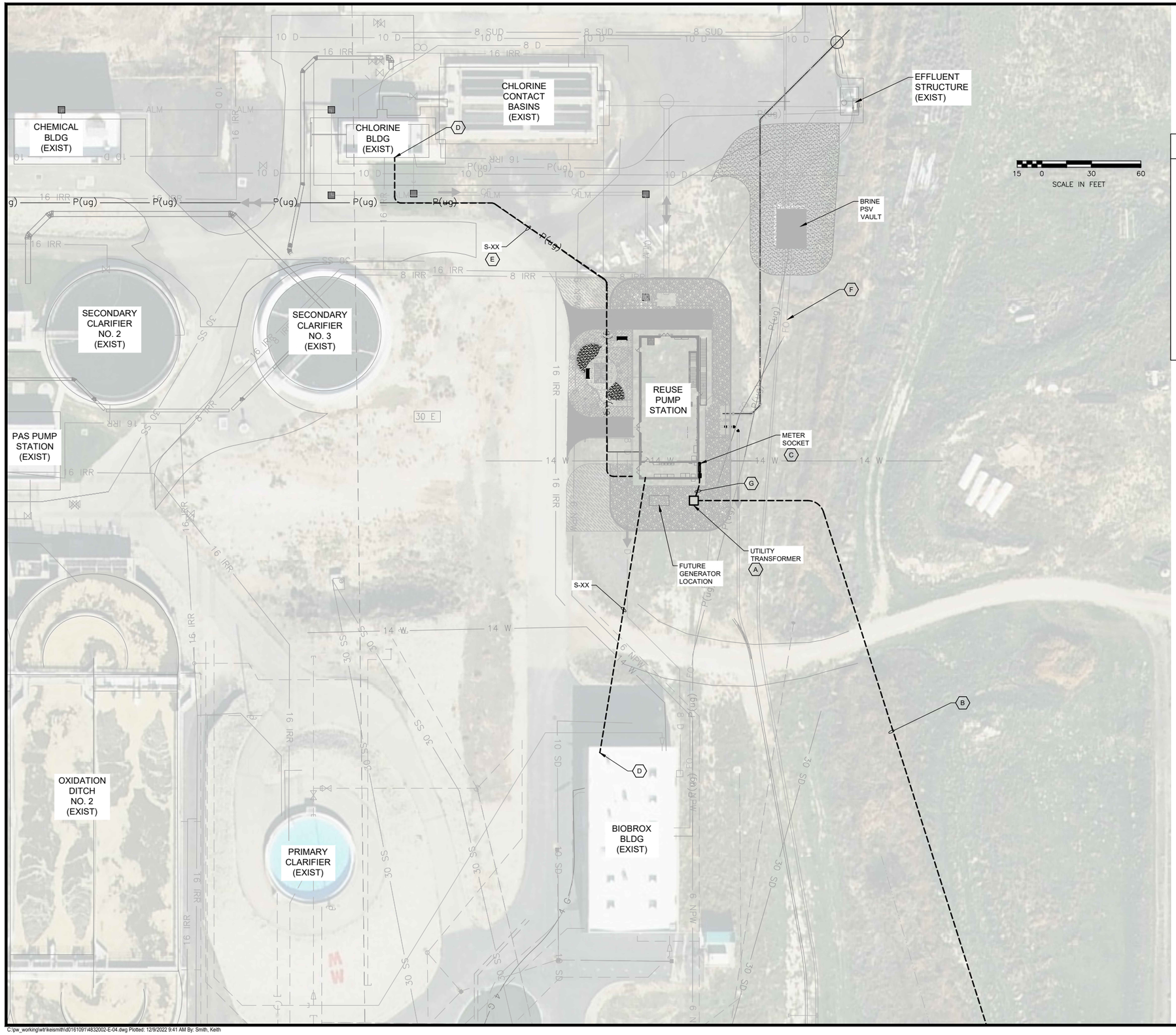
ELECTRICAL

NOTES AND ABBREVIATIONS

DATE: DECEMBER 2022
PROJECT NUMBER 483-20-02

DRAWING NO.
E-03
SHEET 069 OF 126

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REV 010119



SHEET KEYNOTES

A. PROVIDE AND INSTALL TRANSFORMER PAD PER UTILITY STANDARDS. COORDINATE WITH UTILITY DESIGN.
B. PROVIDE AND INSTALL 1-4" CONDUIT IN DUCTBANK PER UTILITY STANDARDS FROM TRANSFORMER PAD TO UTILITY POLE LOCATED ON 2100 S STREET. COORDINATE WITH UTILITY DESIGN
C. PROVIDE AND INSTALL METER SOCKET PER ROCKY MOUNTAIN POWER REQUIREMENTS. COORDINATE WITH UTILITY DESIGN
D. EXTEND CONDUIT AND CABLE TO PLC INSIDE BUILDING. COORDINATE WITH OWNER FOR PLC LOCATION INSIDE BUILDING.
E. CONDUIT SHALL BE INSTALLED IN THE SAME TRENCH AS THE NEW CHEMICAL LINES.
F. REMOVE EXISTING FIBER OPTIC CABLE BETWEEN BIOBROX BUILDING PLC AND LOCAL PANEL AT EFFLUENT STRUCTURE FROM CONDUIT PRIOR TO STARTING EXCAVATION. REMOVE CONDUIT AS NECESSARY FOR EXCAVATION AND CLEANLY CUT AND CAP ENDS FOR FUTURE USE.
G. PROVIDE AND INSTALL 5-4" CONDUITS FROM TRANSFORMER TO UTILITY CT CABINET IN DUCTBANK PER UTILITY STANDARDS. COORDINATE WITH UTILITY DESIGN.

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MAGNA WRF REUSE PROJECT
MAGNA, UTAH

VERIFY SCALE
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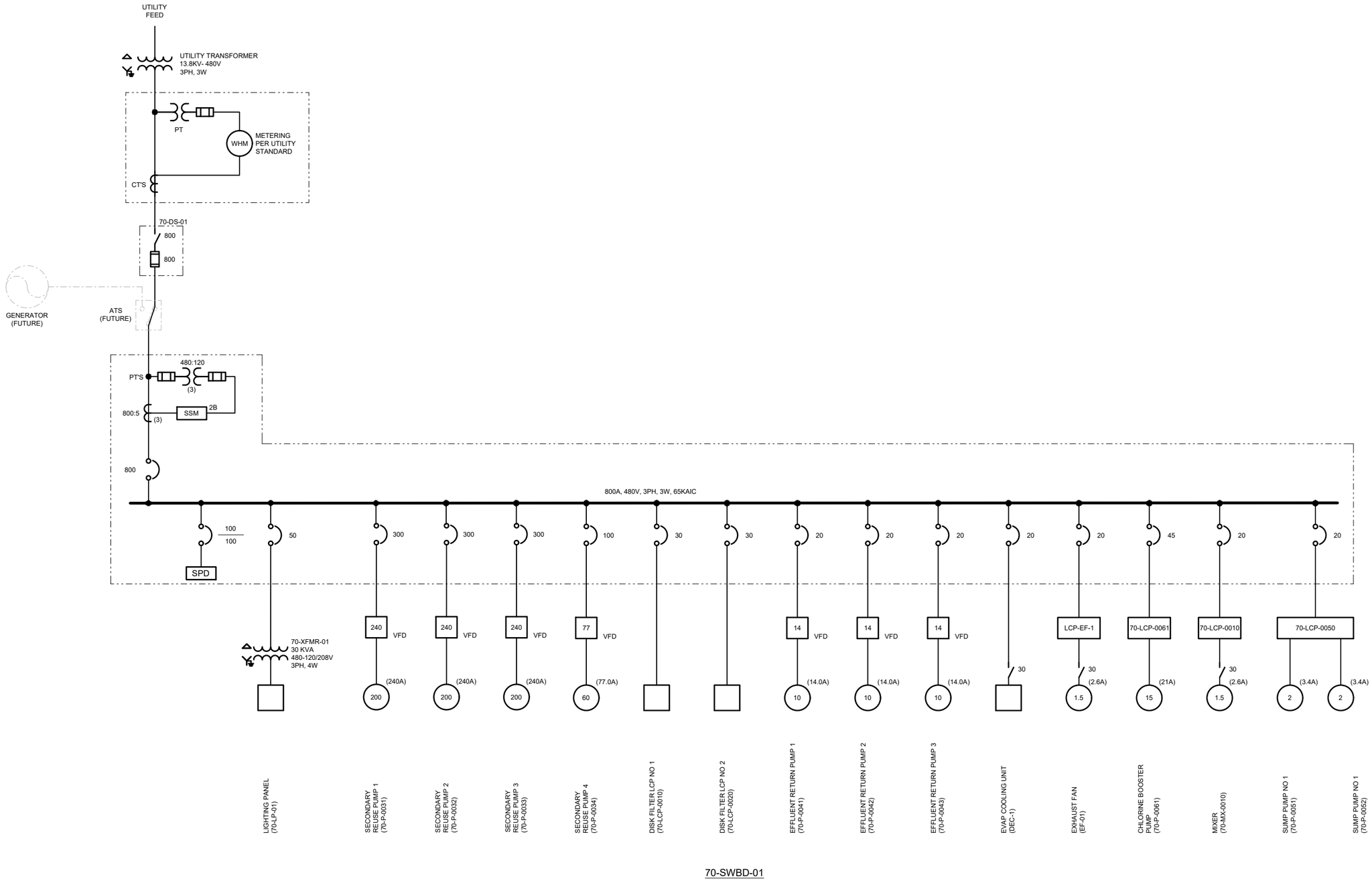
DESIGN K. SMITH
DRAWN K. SMITH
REVIEW
CHECKED K. XXXXXX
APPROVED C. ROGERS

ELECTRICAL
SITE PLAN

DATE: DECEMBER 2022
PROJECT NUMBER 483-20-02

DRAWING NO.
E-04
SHEET 070 OF 126

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70-SWBD-01

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MAGNA WRF REUSE PROJECT
MAGNA, UTAH

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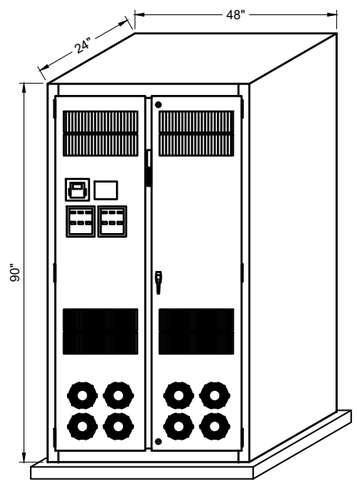
DESIGN K. SMITH
DRAWN K. SMITH
CHECKED B. BUCHANAN
APPROVED C. ROGERS
REVIEW

ELECTRICAL

SINGLE LINE DIAGRAM

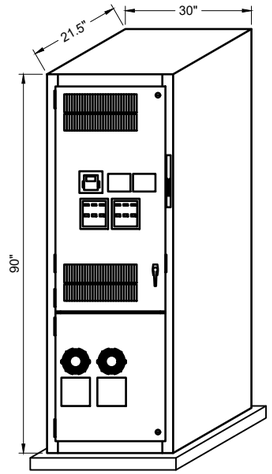
DATE: DECEMBER 2022
PROJECT NUMBER 483-20-02

DRAWING NO.
E-05
SHEET 071 OF 126



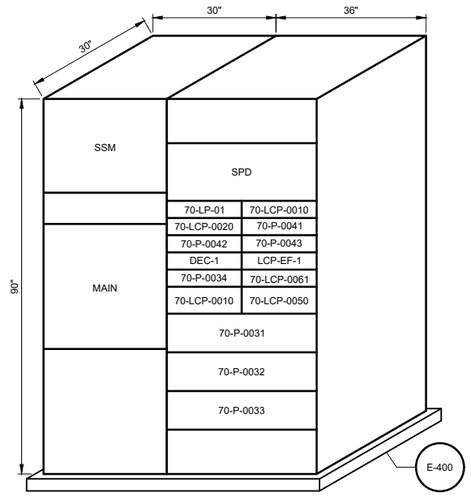
VFD (200HP) ELEVATION

DIMENSIONS BASED ON
EATON "CPX" SERIES VFD



VFD (50 HP) ELEVATION

DIMENSIONS BASED ON
EATON "CPX" SERIES VFD



70-SWBD-01 ELEVATION

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DRAWN K. SMITH

REVIEW
CHECKED B. BUCHANAN
APPROVED C. ROGERS

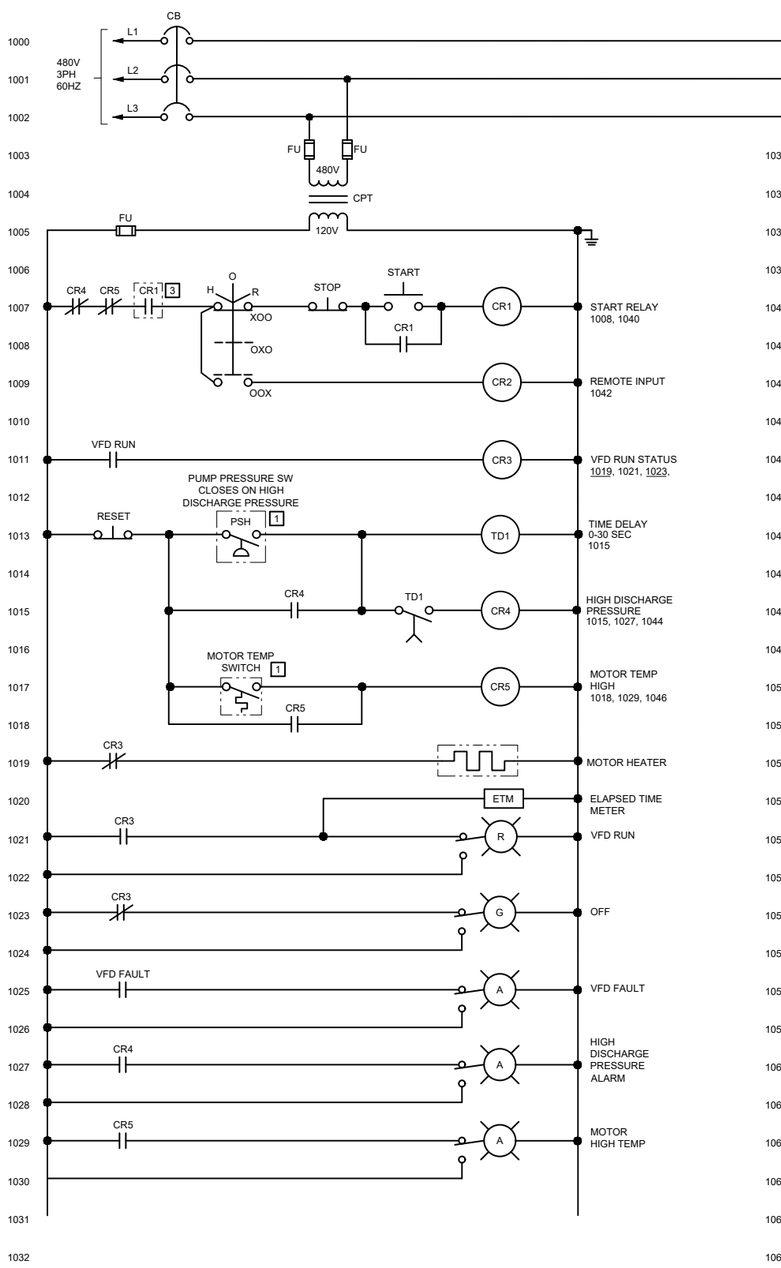
ELECTRICAL

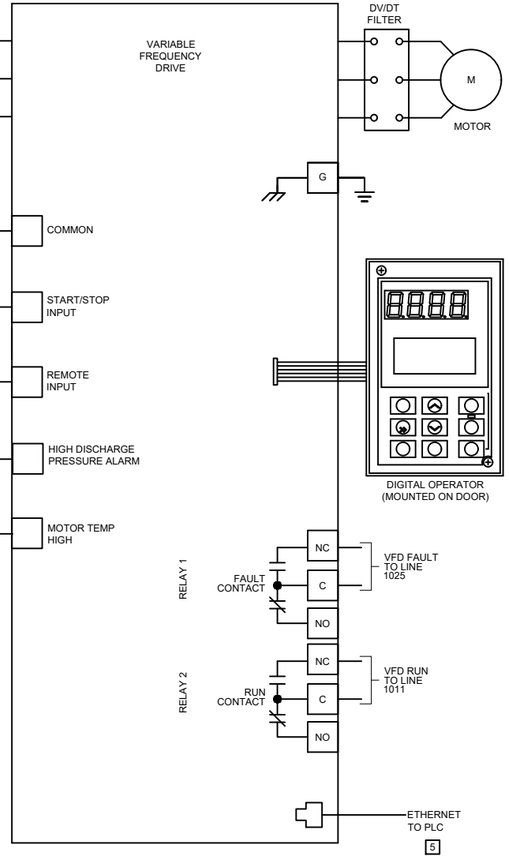
EQUIPMENT ELEVATIONS

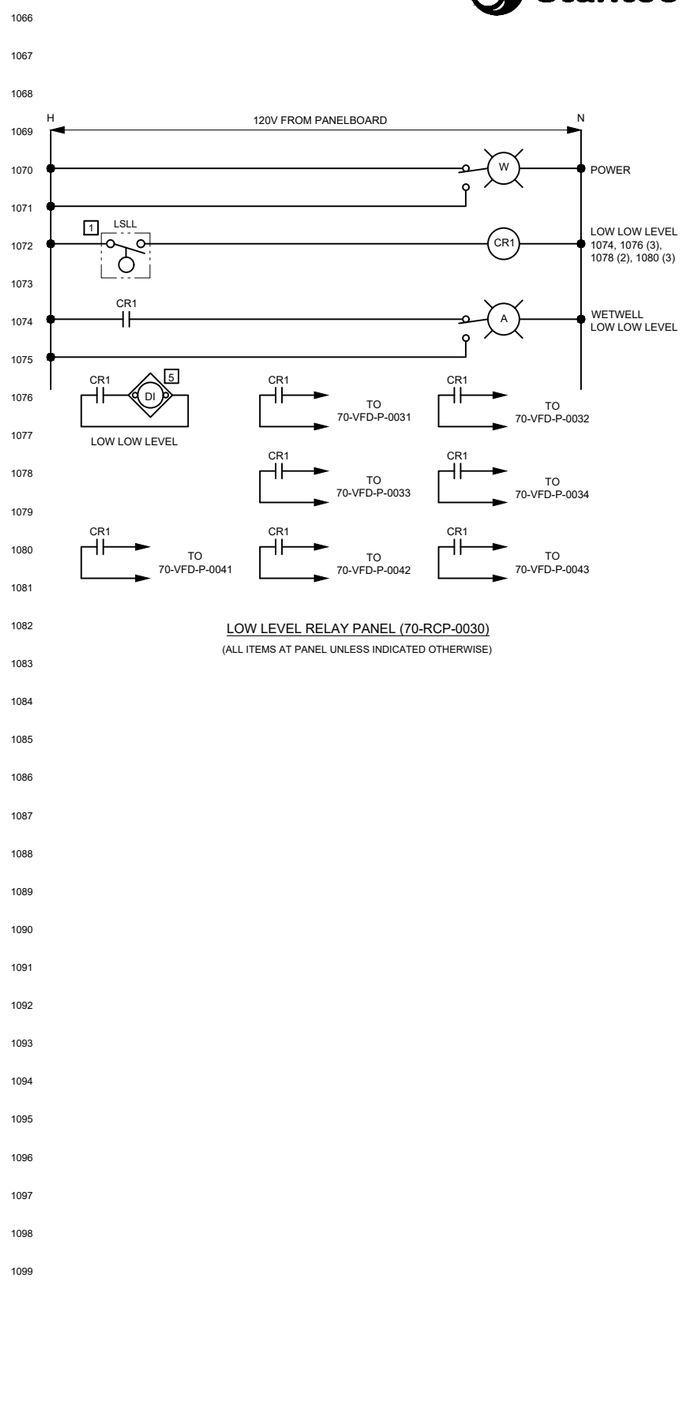
DATE: DECEMBER 2022
PROJECT NUMBER 483-20-02

DRAWING NO.
E-06
SHEET 072 OF 126

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LOW LEVEL RELAY PANEL (70-RCP-0030)

(ALL ITEMS AT PANEL UNLESS INDICATED OTHERWISE)

SECONDARY REUSE PUMP NO 1 (70-P-0031)

TYPICAL FOR 70-P-0032, 70-P-0033 AND 70-P-0034
(ALL ITEMS LOCATED AT VFD UNLESS OTHERWISE NOTED)

EFFLUENT RETURN PUMP NO 1 (70-P-0041)

TYPICAL FOR 70-P-0042 AND 70-P-0043
(ALL ITEMS LOCATED AT VFD UNLESS OTHERWISE NOTED)

LOCATION LEGEND	
1	FIELD
2	LCS
3	LCP
4	MCC
5	PLC
6	VFD

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MAGNA, UTAH

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APPROVED C. ROGERS

DESIGN
DESIGN K. SMITH
DRAWN K. SMITH

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SCHEMATICS - I

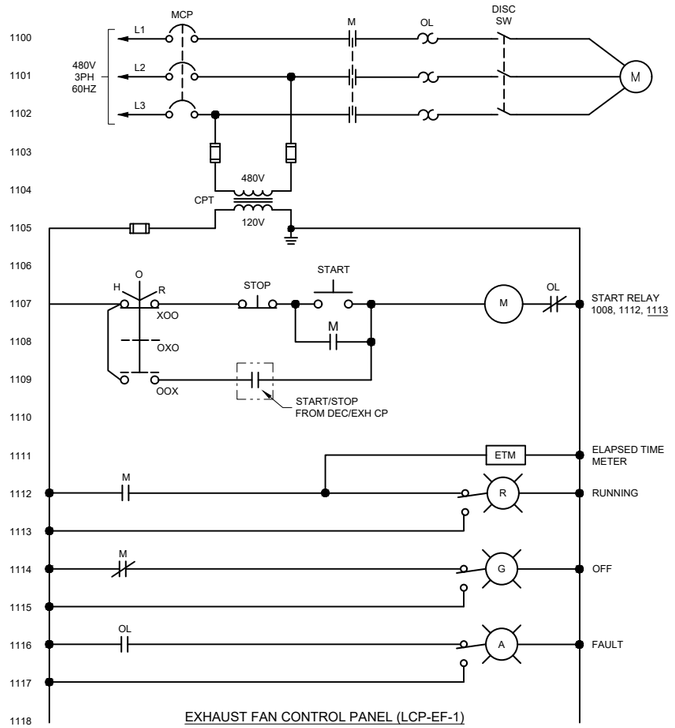
PROJECT NUMBER 483-20-02

DATE: DECEMBER 2022

DRAWING NO.
E-07

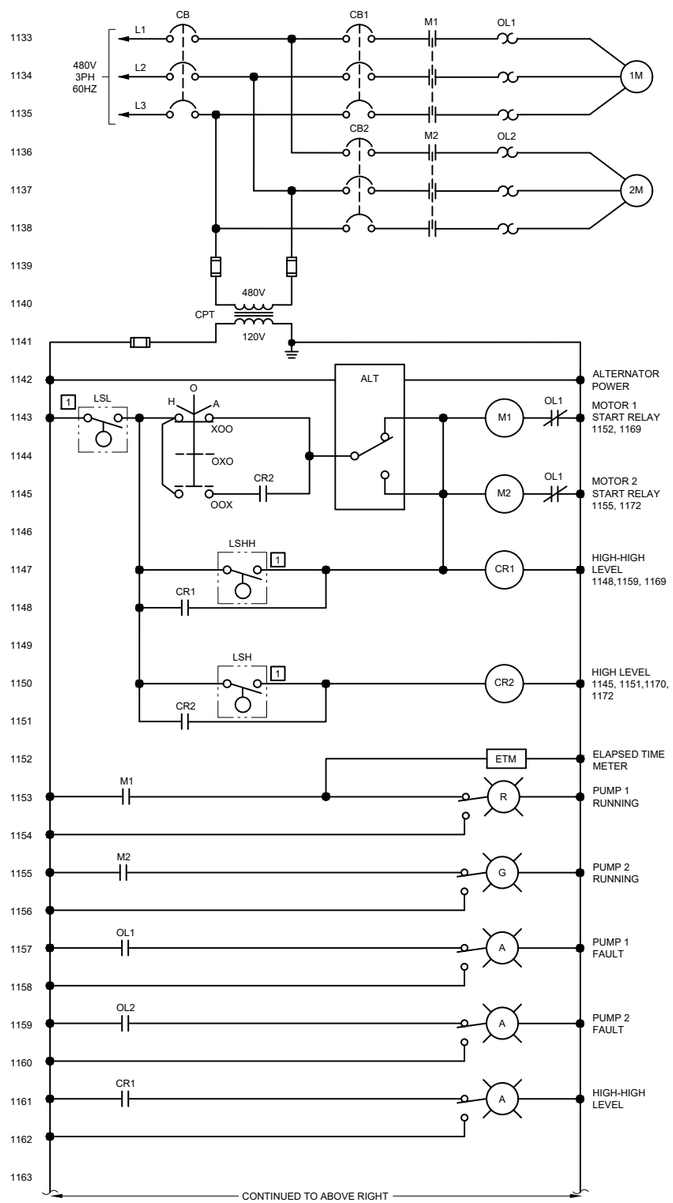
SHEET 073 OF 126

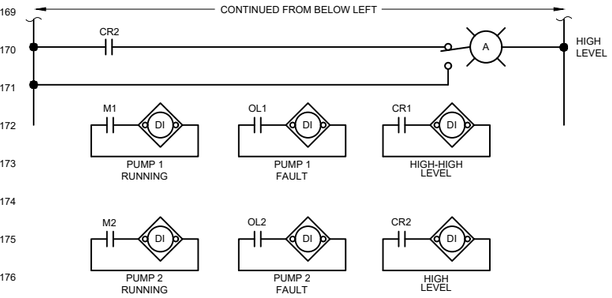
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EXHAUST FAN CONTROL PANEL (LCP-EF-1)

(ALL ITEMS AT LCP UNLESS INDICATED OTHERWISE)





SUMP PUMP CONTROL PANEL (70-LCP-0050)

(ALL ITEMS AT LCP UNLESS INDICATED OTHERWISE)

LOCATION LEGEND	
1	FIELD
2	LCS
3	LCP
4	MCC
5	PLC
6	VFD

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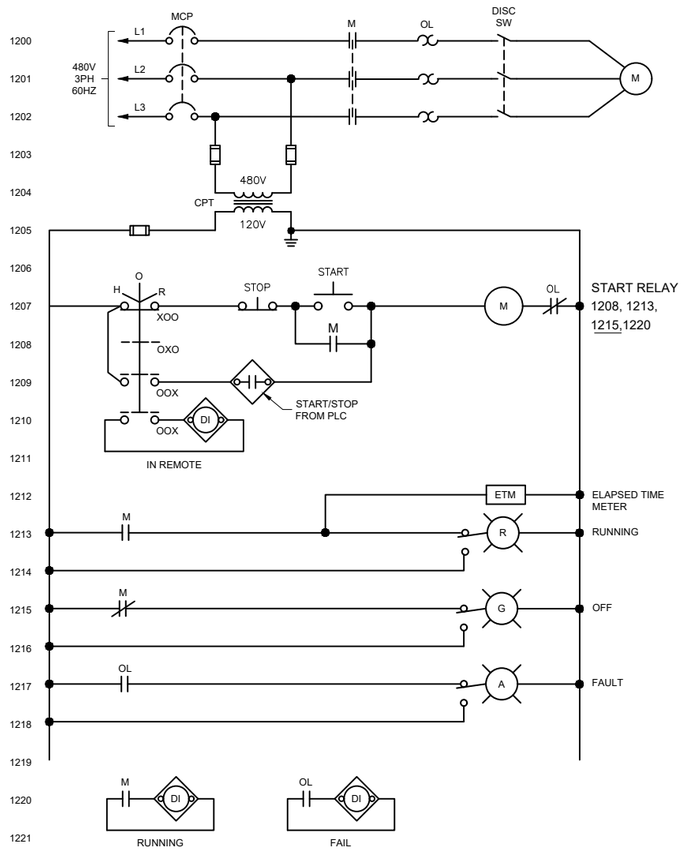
SCHEMATICS – II

DATE: DECEMBER 2022

PROJECT NUMBER 483-20-02

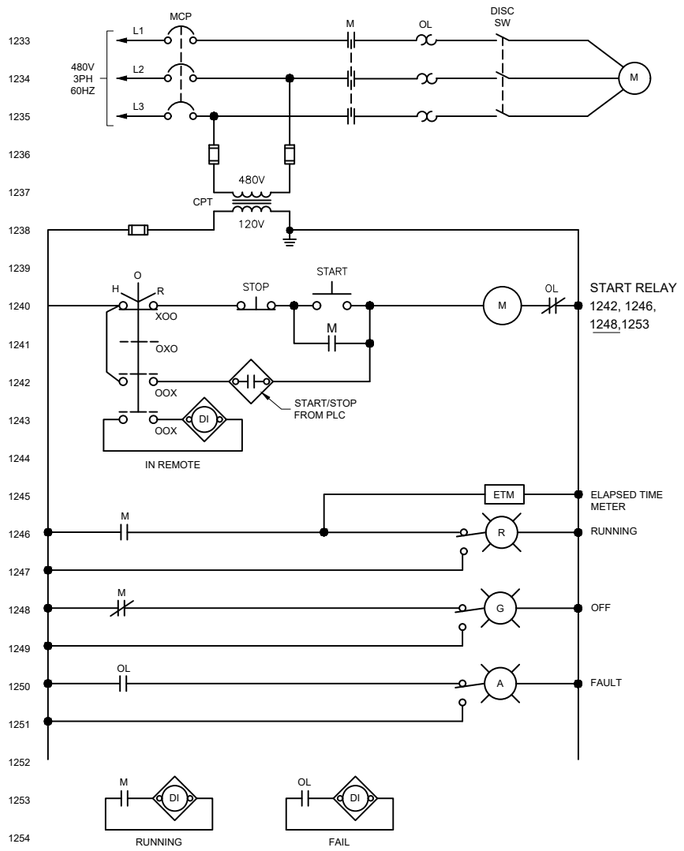
DRAWING NO.
E-08

SHEET 074 OF 126



MIXER CONTROL PANEL (70-MX-0010)

(ALL ITEMS AT LCP UNLESS INDICATED OTHERWISE)



CHLORINE BOOSTER PUMP PANEL (70-P-0061)

(ALL ITEMS AT LCP UNLESS INDICATED OTHERWISE)

LOCATION LEGEND	
1	FIELD
2	LCS
3	LCP
4	MCC
5	PLC
6	VFD

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SCHEMATICS - III

DATE: DECEMBER 2022

PROJECT NUMBER 483-20-02

DRAWING NO.
E-09

SHEET 075 OF 126

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120/208 VOLTS
100 A MAIN BREAKER

3 PH
4 W
150 A

PANELBOARD: 70-LP-01
LOCATION: ELECTRICAL ROOM

FEED: BOTTOM
MOUNTING: SURFACE

LOAD DESCRIPTION	KVA PH A	KVA PH B	KVA PH C	LTG	REC	MIS	CIR	BKR		BKR	CIR	MIS	REC	LTG	KVA PH A	KVA PH B	KVA PH C	LOAD DESCRIPTION
GUH-1	0.3			_	_	1	1	15		20	2	_	_	4	0.23			ELEC RM LIGHTS
GUH-2		0.3		_	_	1	3	15		20	4	_	3	_		0.54		ELEC RM RECPTS
GUH-3			0.3	_	_	1	5	15		20	6	_	_	24			1.35	PUMP RM LIGHTS
WH-1	0.3			_	_	1	7	20		20	8	_	10	_	1.8			PUMP RM RECEPTS
RP-1		0.3		_	_	1	9	20		20	10	_	_	5		0.31		EXTERIOR LIGHTS
DEC/EXH FAN CONTROL PANEL			0.5	_	_	_	11	20		20	12	_	3	_			0.54	EXTERIOR RECPTS
FCU-1	0.15			_	_	1	13	15/2P		20	14	_	_	4	0.23			LOWER RM LIGHTS
		0.15		_	_	_	15			20	16	_	2	_		0.36		LOWER RM RECEPTS
EF-2			0.86	_	_	1	17	15		20	18	1	_	_			0.4	70-PLC-0100
FCU-2	0.15			_	_	1	19	15/2P		20	20	1	_	_	0.25			70-FIT-030
		0.15		_	_	_	21			20	22	1	_	_		0.25		70-FIT-040
SPARE			0.0	_	_	_	23	20		20	24	1	_	_			0.25	70-AIT-030
HP-1	3.0			_	_	1	25	50/2P		20	26	_	_	_	0.07			EFFLUENT CHANNEL LIGHT
		3.0		_	_	_	27			20	28	_	_	_		0.1		70-FSH-0030
SPARE			0.0	_	_	_	29	20		20	30	_	_	_			____	SPARE
HP-2	3.0			_	_	1	31	50/2P		20	32	_	_	_	____			SPARE
		3.0		_	_	_	33			20	34	_	_	_		____		SPARE
SPARE			0.0	_	_	_	35	20		20	36	_	_	_			____	SPARE
SPARE	0.0			_	_	_	37	20		20	38	_	_	_	____			SPARE
SPARE		0.0		_	_	_	39	20		20	40	_	_	_		____		SPARE
SPARE			0.0	_	_	_	41	20		20	42	_	_	_			____	SPARE
	6.9	6.9	1.66				TOTAL			TOTAL					2.58	1.59	2.54	
	PHASE LOAD									TOTAL LOAD								
	9.48	8.49	4.20							22.17 KVA								

LUMINAIRE SCHEDULE

TYPE	WATTS	LAMP TYPE	VOLTS	MOUNTING	MANUFACTURER AND CATALOG NUMBER OR APPROVED EQUAL	DESCRIPTION
C	56.26W	LED	120V	PENDANT	LITHONIA - ZL1F-L48-6000LM-MDD-MVOLT-40K-80CRI-WH	48" LOW PROFILE LED STRIPLIGHT, WHITE, UL LISTED FOR DAMP LOCATIONS
E	10.6W	LED	120V	WALL	LITHONIA - ELM6L-UVOLT-LTP-SDRT	WALL MOUNTED, TWO LAMP, EMERGENCY LIGHT. SEALED LITHIUM IRON PHOSPHATE BATTERY SHALL PROVIDE A MINIMUM OF 90 MINUTE EMERGENCY OPERATION. UNIT SHALL HAVE SELF DIAGNOSTIC AND REMOTE TESTING AND MINIMUM OF 1100 LUMEN OUTPUT
W	39W	LED	120V	WALL	HOLOPHANE - W4GLED-10C1000-30K-T3M-MVOLT-SPD-PCB-GYSPD	WALLPACK, LED, MEDIUM LIGHT DISTRIBUTION, GREY, WITH INEGRAL PHOTOCELL
X		LED	120V	WALL	HOLOPHANE - MEX-S-W-1-R-ELN	EXIT SIGN, UL LISTED FOR DAMP LOCATION, WHITE FACE WITH RED LETTERS, DIE-CAST ALUMINUM COMPACT HOUSING, BRUSHED ALUMINUM FACEPLATE WITH MATTE BLACK TRIM AND CLEAR LACQUER FINISH . DUAL VOLTAGE INPUT, NICKEL CADMIUM EMERGENCY BATTERY BACK UP.
P	42W	LED	120V	WALL	VLT- ILLUMINATOR - LGL42-4-28-W/W-D-MVOLT FIXTURE - RF-MX-AD-PG-SS-303 (REEF SERIES) CABLE - F-MF-EL-PM-8 (MEGOFLEX FIBER)	UNDERWATER LIGHTING SYSTEM CONSISTING OF WALL MOUNTED ILLUMINATOR, FIBER OPTIC CABLES INSTALLED IN CONDUIT AND WALL MOUN UNDERWATER FIXTURES. RATED FOR FULL SUBMERGENCE UP TO 3'. MADE OF MARINE GRADE 316 STAINLESS STEEL.

Stantec

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APPROVED C. ROGERS

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SCHEDULES

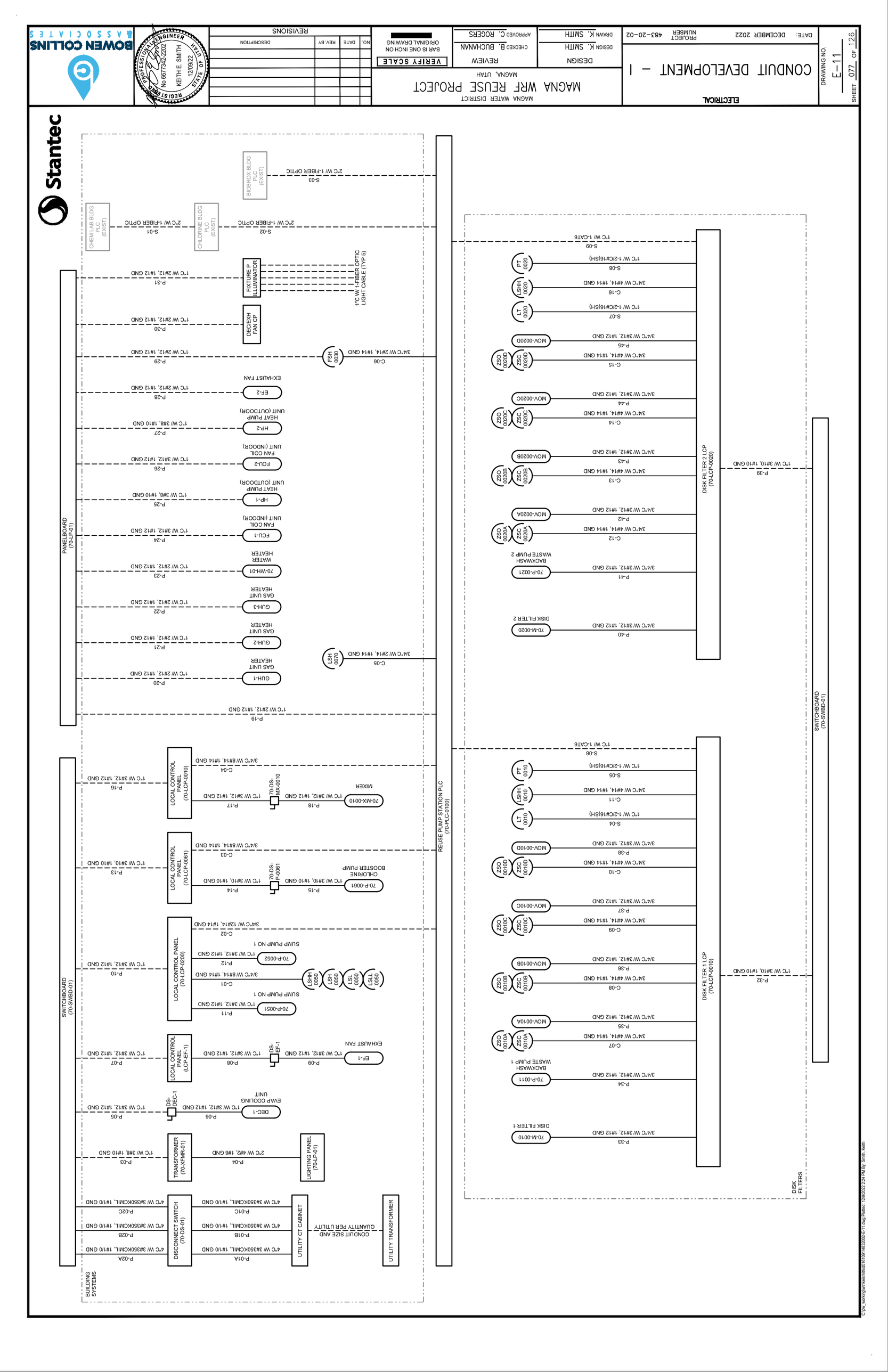
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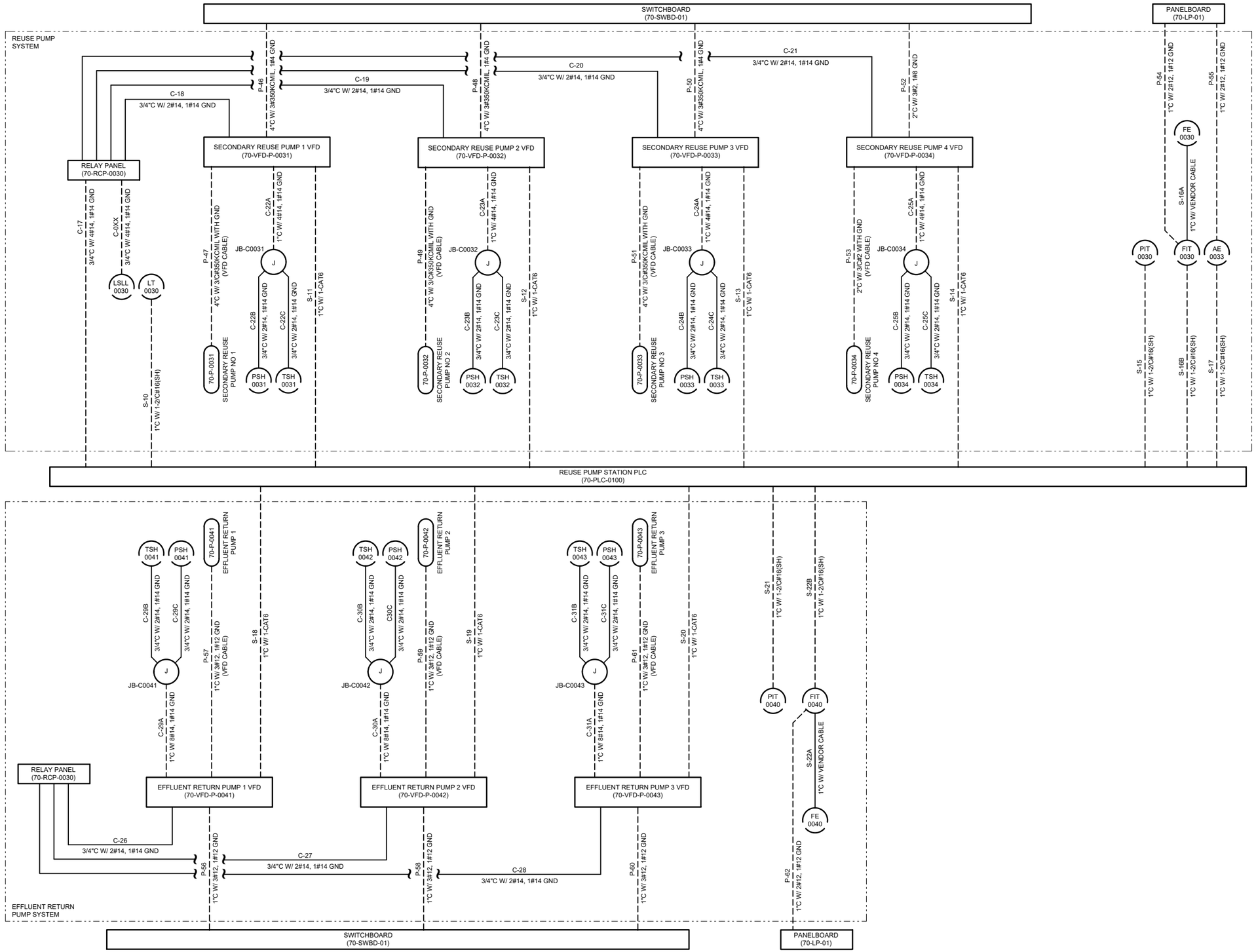
PROJECT NUMBER 483-20-02

DRAWING NO.
E-10

SHEET 076 OF 126

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APPROVED C. ROGERS
DATE: DECEMBER 2022
PROJECT NUMBER 483-20-02
CONDUIT DEVELOPMENT - 1
ELECTRICAL
DRAWING NO. E-11
SHEET 077 OF 126
Stantec
BUILDING SYSTEMS
SWITCHBOARD (70-SWBD-01)
PANELBOARD (70-LP-01)
CHEM LAB BLDG PLC (EXIST)
CHLORINE BLDG PLC (EXIST)
BIOBROX BLDG PLC (EXIST)
2"C W/ 1-FIBER OPTIC
S-01
S-02
S-03
FIXTURE P ILLUMINATOR
1"C W/ 4 FIBER OPTIC LIGHT CABLE (TYP 5)
DEC/EXH FAN CP
FSH 0030
LSH 0070
GUH-1 GAS UNIT HEATER
GUH-2 GAS UNIT HEATER
GUH-3 GAS UNIT HEATER
70-WH-01 WATER HEATER
FCU-1 FAN COIL UNIT (INDOOR)
HP-1 HEAT PUMP UNIT (OUTDOOR)
FCU-2 FAN COIL UNIT (INDOOR)
HP-2 HEAT PUMP UNIT (OUTDOOR)
EF-2 EXHAUST FAN
1"C W/ 2#12, 1#12 GND
3/4"C W/ 2#14, 1#14 GND
1"C W/ 3#8, 1#10 GND
P-19
P-20
P-21
P-22
P-23
P-24
P-25
P-26
P-27
P-28
P-29
P-30
P-31
C-05
C-06
REUSE PUMP STATION PLC (70-PLC-0100)
1"C W/ 1-CAT6
S-09
S-06
DISK FILTER 2 LCP (70-LCP-0020)
DISK FILTER 1 LCP (70-LCP-0010)
PT 0020
LSHH 0020
LT 0020
ZSC 0020D
ZSO 0020D
MOV-0020D
ZSC 0020C
ZSO 0020C
MOV-0020C
ZSC 0020B
ZSO 0020B
MOV-0020B
ZSC 0020A
ZSO 0020A
MOV-0020A
70-P-0021 BACKWASH WASTE PUMP 2
70-M-0020 DISK FILTER 2
PT 0010
LSHH 0010
LT 0010
ZSC 0010D
ZSO 0010D
MOV-0010D
ZSC 0010C
ZSO 0010C
MOV-0010C
ZSC 0010B
ZSO 0010B
MOV-0010B
ZSC 0010A
ZSO 0010A
MOV-0010A
70-P-0011 BACKWASH WASTE PUMP 1
70-M-0010 DISK FILTER 1
1"C W/ 3#10, 1#10 GND
P-32
P-33
P-34
P-35
P-36
P-37
P-38
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P-40
P-41
P-42
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C-09
C-10
C-11
C-04
C-12
C-13
C-14
C-15
C-16
S-04
S-05
S-07
S-08
DISK FILTERS
SWITCHBOARD (70-SWBD-01)
LOCAL CONTROL PANEL (70-LCP-0200)
LOCAL CONTROL PANEL (70-LCP-0061)
LOCAL CONTROL PANEL (70-LCP-0010)
LOCAL CONTROL PANEL (LCP-EF-1)
70-DS-MX-0010
70-DS-P-0061
DS-EF-1
70-MX-0010 MIXER
70-P-0061 CHLORINE BOOSTER PUMP
70-P-0052 SUMP PUMP NO 1
70-P-0051 SUMP PUMP NO 1
EF-1 EXHAUST FAN
3/4"C W/ 12#14, 1#14 GND
3/4"C W/ 8#14, 1#14 GND
HHSH 0050
LSH 0050
TST 0050
TSLL 0050
C-01
C-02
C-03
P-10
P-11
P-12
P-13
P-14
P-15
P-16
P-17
P-18
P-07
P-08
P-09
DEC-1 EVAP COOLING UNIT
DS-DEC-1
P-05
P-06
TRANSFORMER (70-XFMR-01)
LIGHTING PANEL (70-LP-01)
2"C W/ 4#2, 1#6 GND
P-03
P-04
DISCONNECT SWITCH (70-DS-01)
UTILITY CT CABINET
CONDUIT SIZE AND QUANTITY PER UTILITY
UTILITY TRANSFORMER
4"C W/ 3#350KCMIL, 1#1/0 GND
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Stantec

BOWEN COLLINS & ASSOCIATES

REGISTERED PROFESSIONAL ENGINEER
No 6677342-2202
KEITH E. SMITH
12/09/22
STATE OF UTAH

NO	DATE	REV. BY	DESCRIPTION
			REVISIONS

MAGNA WATER DISTRICT
MAGNA WRF REUSE PROJECT
MAGNA, UTAH

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

DESIGN K. SMITH
DRAWN K. SMITH
CHECKED B. BUCHANAN
APPROVED C. ROGERS
REVIEW

ELECTRICAL

CONDUIT DEVELOPMENT – II

DATE: DECEMBER 2022
PROJECT NUMBER 483-20-02

DRAWING NO.
E-12
SHEET 078 OF 126

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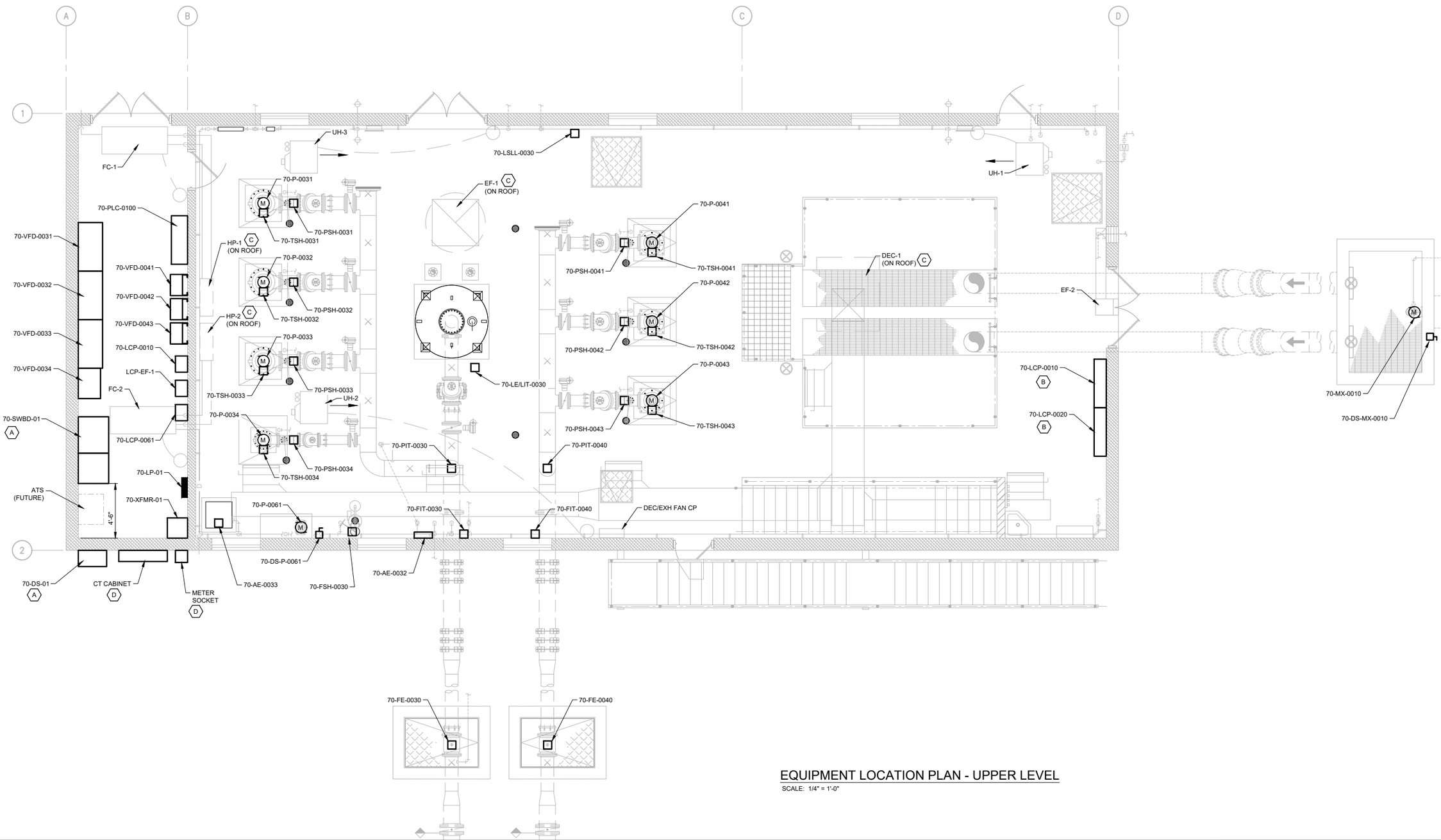
SHEET KEYNOTES

A. CONDUITS BETWEEN 70-DS-01 AND 70-SWBD-01 TO BE EXPOSED ABOVE GROUND TO ALLOW FOR FUTURE INSTALLATION OF ATS BETWEEN THEM.

B. PROVIDE 3-1" CONDUITS FROM EACH FILTER PANEL THROUGH FLOOR TO LOWER LEVEL FOR FUTURE USE. CAP CONDUITS AT BOTH ENDS.

C. LOCATE DISCONNECT SWITCH ON ROOF NEAR UNIT.

D. PROVIDE CT CABINET AND METER SOCKET PER UTILITY STANDARDS



EQUIPMENT LOCATION PLAN - UPPER LEVEL

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

Stantec

BOWEN COLLINS & ASSOCIATES

REGISTERED PROFESSIONAL ENGINEER
No 6677342-2202
KEITH E. SMITH
12/09/22
STATE OF UTAH

NO.	DATE	REV. BY	DESCRIPTION
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MAGNA WATER DISTRICT
MAGNA WRF REUSE PROJECT
MAGNA, UTAH

VERIFY SCALE
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REVIEW
CHECKED B. BUCHANAN
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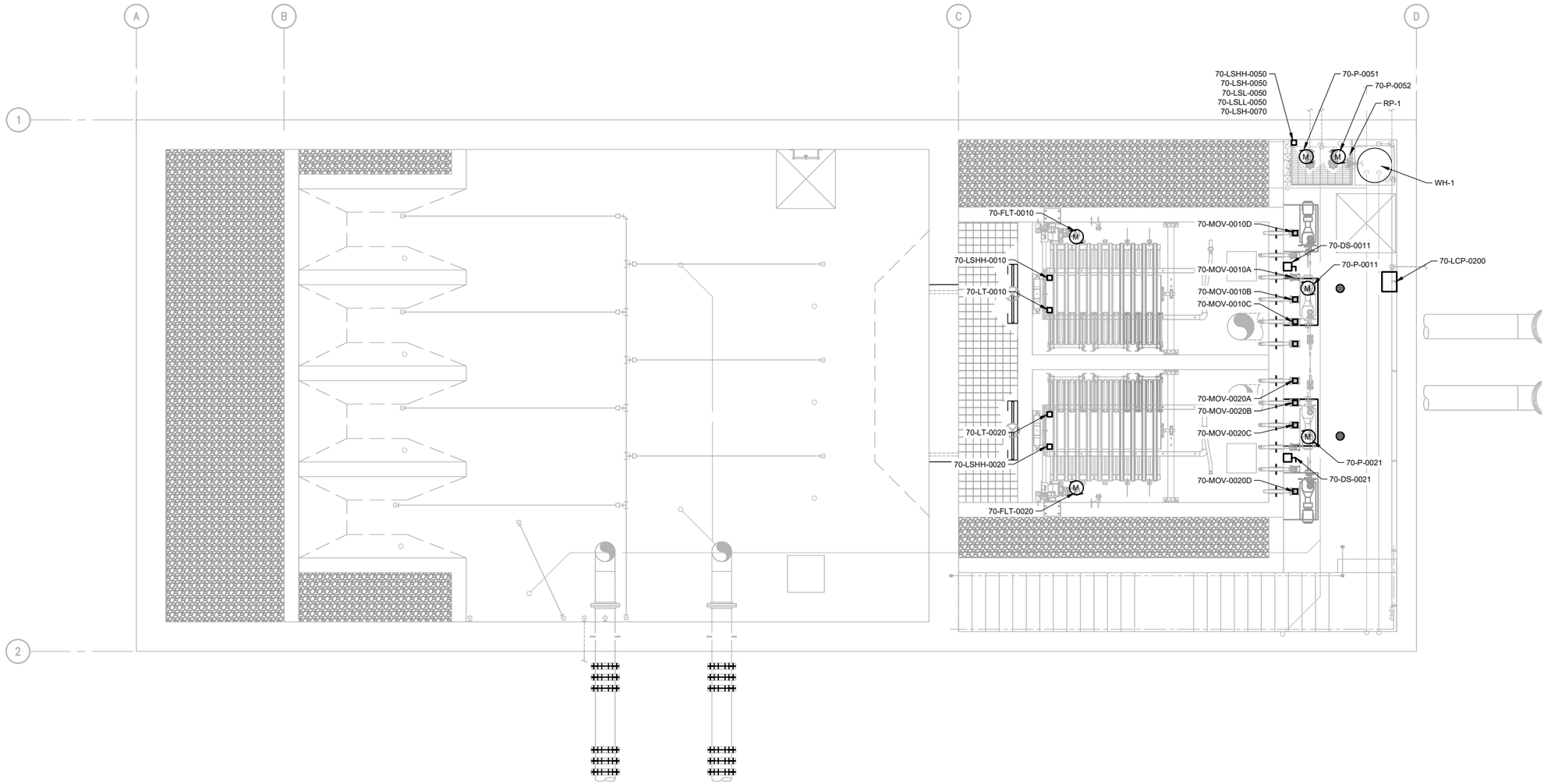
DESIGN
DESIGN K. SMITH
DRAWN K. SMITH

ELECTRICAL
UPPER LEVEL
EQUIPMENT LOCATION PLAN

DATE: DECEMBER 2022
PROJECT NUMBER 483-20-02

DRAWING NO.
E-13
SHEET 079 OF 126

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EQUIPMENT LOCATION PLAN - LOWER LEVEL

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

Stantec

BOWEN COLLINS & ASSOCIATES

REGISTERED PROFESSIONAL ENGINEER
No 6677342-2202
KEITH E. SMITH
12/09/22
STATE OF UTAH

NO.	DATE	REV. BY	DESCRIPTION

REVISIONS

MAGNA WATER DISTRICT
MAGNA WRF REUSE PROJECT
MAGNA, UTAH

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

DESIGN
DESIGN K. SMITH
DRAWN K. SMITH

REVIEW
CHECKED B. BUCHANAN
APPROVED C. ROGERS

ELECTRICAL
LOWER LEVEL
EQUIPMENT LOCATION PLAN

DATE: DECEMBER 2022
PROJECT NUMBER 483-20-02

DRAWING NO.
E-14

SHEET 080 OF 126

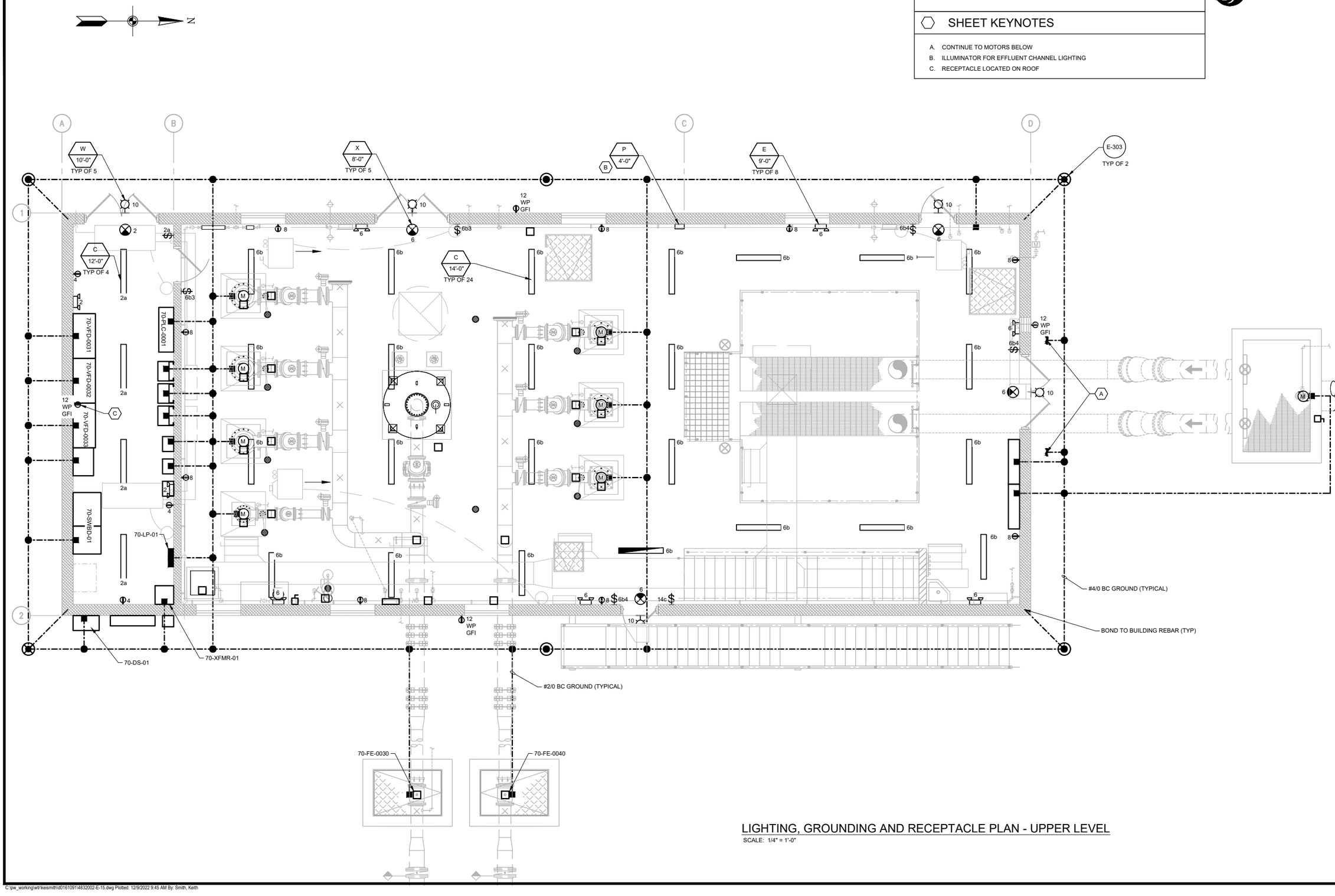
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GENERAL SHEET NOTES

1. ALL LIGHTS AND RECEPTACLES POWERED FROM PANEL 70-LP-01

SHEET KEYNOTES

A. CONTINUE TO MOTORS BELOW
B. ILLUMINATOR FOR EFFLUENT CHANNEL LIGHTING
C. RECEPTACLE LOCATED ON ROOF



LIGHTING, GROUNDING AND RECEPTACLE PLAN - UPPER LEVEL
SCALE: 1/4" = 1'-0"

Stantec

BOWEN COLLINS & ASSOCIATES

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MAGNA WRF REUSE PROJECT
MAGNA, UTAH

VERIFY SCALE
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REVIEW
CHECKED B. BUCHANAN
APPROVED C. ROGERS

DESIGN
DESIGN K. SMITH
DRAWN K. SMITH

ELECTRICAL
UPPER LEVEL
LIGHTING, RECEPTACLE, AND GROUNDING PLAN

DATE: DECEMBER 2022
PROJECT NUMBER 483-20-02

DRAWING NO.
E-15
SHEET 081 OF 126

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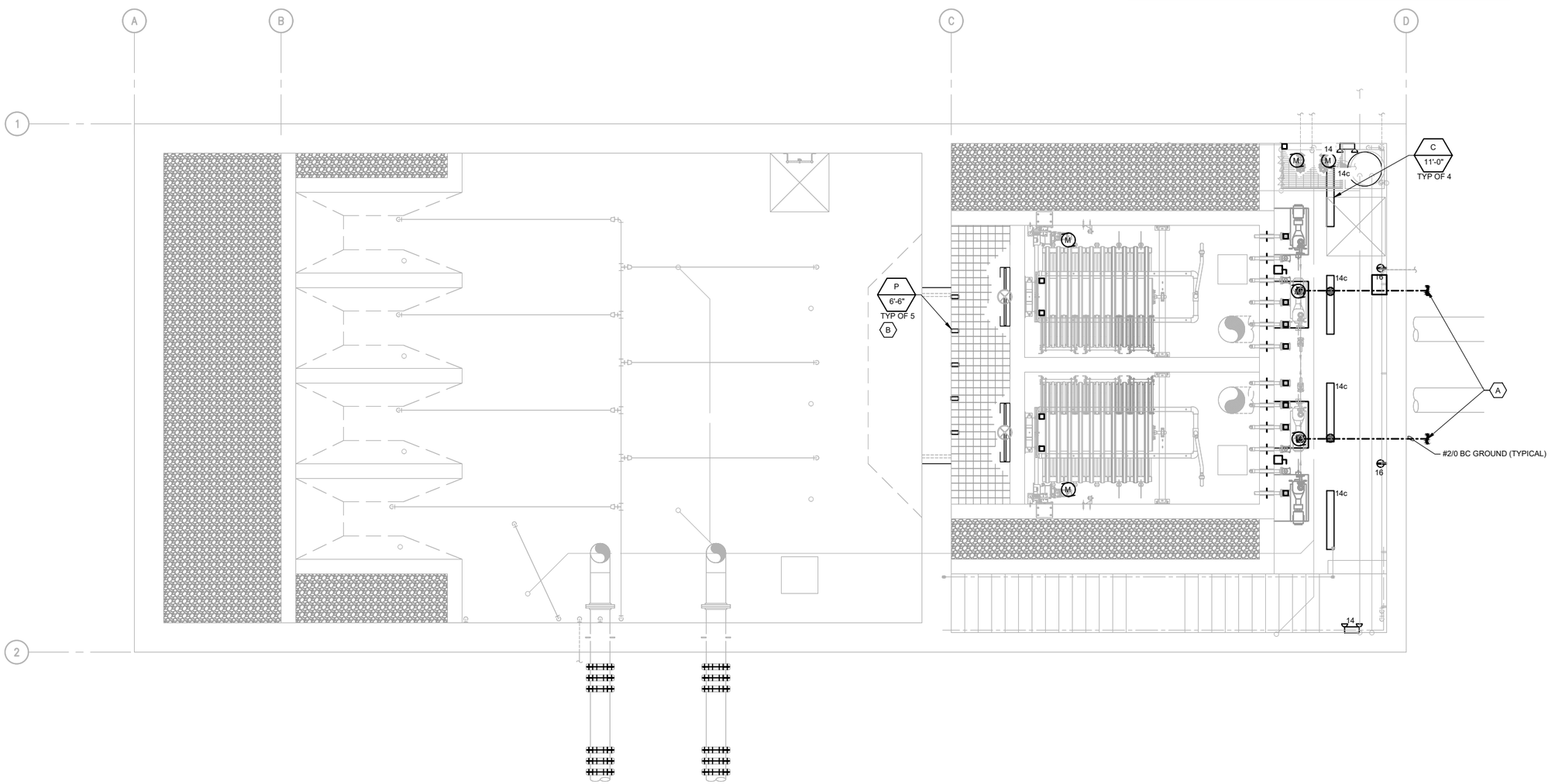
GENERAL SHEET NOTES

1. ALL LIGHTS AND RECEPTACLES POWERED FROM PANEL RP-LP-01

SHEET KEYNOTES

A. CONTINUE TO GROUND GRID ABOVE

B. FIXTURES FOR EFFLUENT CHANNEL LIGHTING. LOCATE FIXTURE APPROXIMATELY 1' BELOW BOTTOM OF WEIR. ROUTE FIBER OPTIC CABLES ALONG WALL UNDER WEIR TO THE WEST THEN UP TO CONDUITS LOCATED NEAR TOP OF EFFLUENT STRUCTURE. SECURE FIBER OPTIC CABLES TO WALL TO PREVENT THEM FROM MOVING.



LIGHTING, GROUNDING AND RECEPTACLE PLAN - LOWER LEVEL

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

Stantec

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MAGNA, UTAH

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

DESIGN
DESIGN K. SMITH
DRAWN K. SMITH

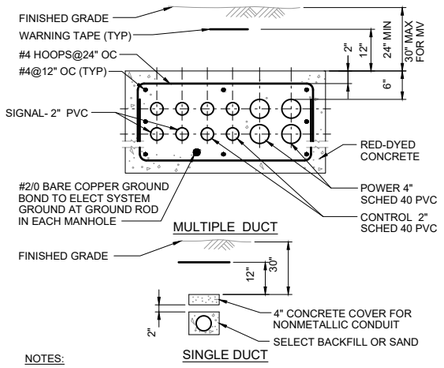
REVIEW
CHECKED B. BUCHANAN
APPROVED C. ROGERS

ELECTRICAL
LOWER LEVEL
LIGHTING, RECEPTACLE, AND GROUNDING PLAN

DATE: DECEMBER 2022
PROJECT NUMBER 483-20-02

DRAWING NO.
E-16
SHEET 082 OF 126

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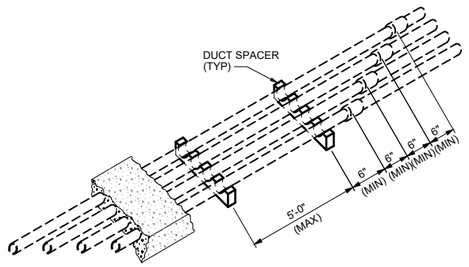


NOTES:

1. AT INTERSECTIONS WITH STRUCTURES HOOK #4'S INTO THE FOOTING OR WALL (TYP.).
2. SEE DUCT BANK SECTIONS AND DETAILS FOR NUMBER AND ARRANGEMENT OF DUCTS.

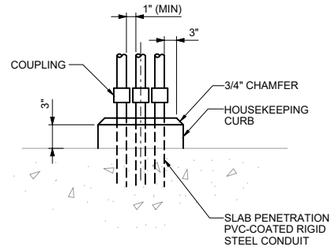
TYPICAL DUCTBANK

REV 110112 — E-103



TYPICAL DUCTBANK

JOINT/SUPPORT SPACING — REV 110112 — E-108

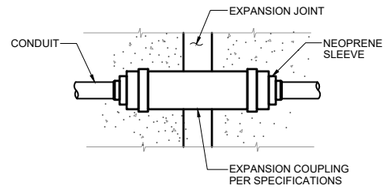


NOTE:

HOUSEKEEPING CURB REQUIRED AT ALL LOCATIONS FOR SINGLE AND MULTIPLE RISERS.

CONCRETE HOUSEKEEPING CURB

NON-HAZARDOUS LOCATIONS — REV 110112 — E-203

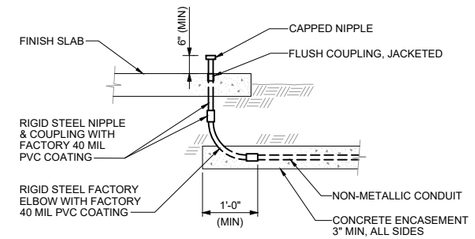


NOTE:

PROVIDE EXTERNAL BONDING JUMPER WITH METALLIC CONDUIT AND WHEN COUPLING HAS NO INTERNAL JUMPER.

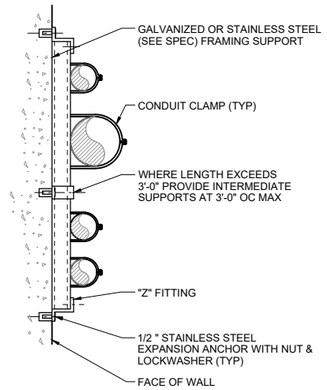
EXPANSION COUPLING

REV 110112 — E-204



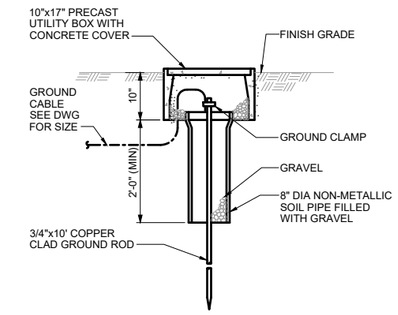
RISER FROM NON-METALLIC DUCT

REV 110112 — E-205



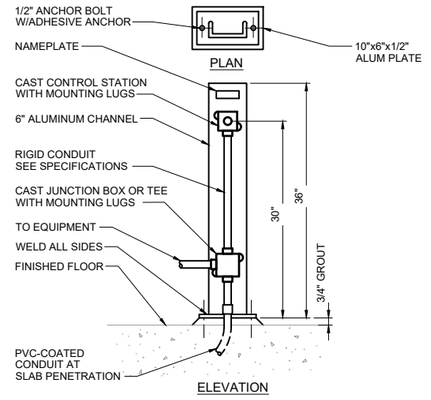
CONDUIT SUPPORT

FLUSH MOUNT — REV 110112 — E-212



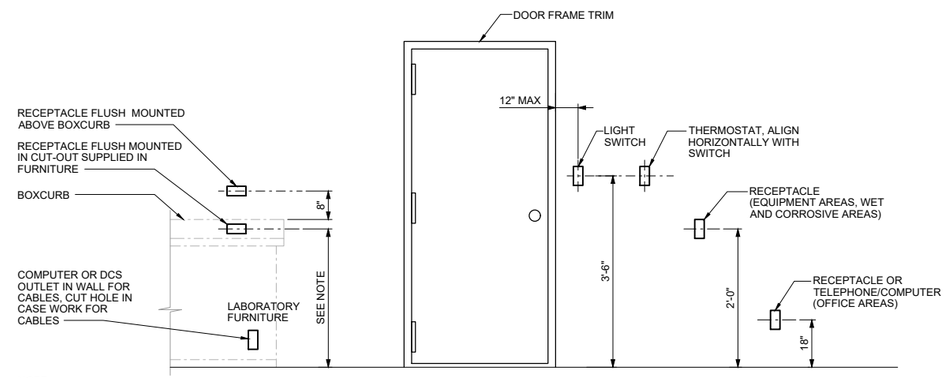
GROUND ROD AND WELL

REV 110112 — E-303



PEDESTAL MOUNTED CONTROL STATION

REV 100114 — E-406

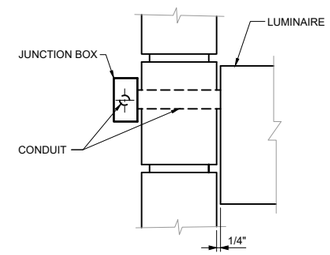


NOTE:

CONTRACTOR SHALL DETERMINE OUTLET BOX MOUNTING HEIGHT TO SUIT LABORATORY EQUIPMENT FURNISHED FOR INSTALLATION

OUTLET BOX MOUNTING

REV 110112 — E-450



NOTES:

1. PROVIDE GASKET BETWEEN LUMINAIRE AND CONDUIT.
2. INSTALLATION SHALL BE WATERTIGHT.

WALL MOUNT LUMINAIRE

EXTERIOR WALL — REV 110112 — E-605

Stantec

BOWEN COLLINS & ASSOCIATES

PROFESSIONAL ENGINEER — REGISTERED — No 6677342-2202 — KEITH E. SMITH — 12/09/22 — STATE OF UTAH

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			REVISIONS

MAGNA WATER DISTRICT
MAGNA WRF REUSE PROJECT
MAGNA, UTAH

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

REVIEW
CHECKED STANTEC
APPROVED STANTEC

DESIGN
DESIGN STANTEC
DRAWN STANTEC

ELECTRICAL

STANDARD DETAILS

PROJECT NUMBER 483-20-02
DATE: DECEMBER 2022

DRAWING NO. GE-01
SHEET 121 OF 126

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REV 010119