STERLING, MASSACHUSETTS

WEST STERLING WELLS ELECTRICAL UPGRADES

ISSUED FOR BIDDING
MARCH 2024

LIST OF DRAWINGS		
SHEET NO.	DRAWING NO.	DRAWING TITLE
1	G-001	COVER SHEET
2	E-001	ELECTRICAL LEGEND
3	E-002	ELECTRICAL GENERAL NOTES
4	E-100	ELECTRICAL SITE PLAN
5	E-101	ELECTRICAL FLOOR PLANS - CHLORINE BUILDING
6	E-102	ELECTRICAL FLOOR PLANS - GENERATOR BUILDING & WELL PUMP STATION #3
7	E-103	ELECTRICAL FLOOR PLANS - WELL PUMP STATION #4 & #5
8	E-501	ELECTRICAL DETAILS
9	E-601	ELECTRICAL ONE-LINE DIAGRAMS
10	E-602	ELECTRICAL SCHEDULES
11	E-603	ELECTRICAL WIRING DIAGRAMS

LOCATION MAP
NO SCALE

PREPARED BY:

Tighe&Bond

JASON CURTIS MECHANICAL No. 52061 REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
03/13/2024

Digitally signed by Jason Curtis
Date: 2024.03.13 17:01:28-04'00'

MATTHEW ROMANO ELECTRICAL No. 48169 REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
03/13/2024

Digitally signed by Matthew J. Romano
Date: 2024.03.13 18:08:13-04'00'

PREPARED FOR:
DEPARTMENT OF PUBLIC WORKS

COMPLETE SET 11 SHEETS

GENERAL SYMBOLS

BOLD LINES AND TEXT INDICATE PROPOSED WORK

LIGHT LINES AND ITALIZED TEXT INDICATE APPROXIMATE EXISTING CONDITIONS

A A — SECTION

1 — PHOTOGRAPH LOCATION

DEMOLITION LEGEND

"X" EXISTING DEVICE TO BE REMOVED. SEE GENERAL DEMO NOTES FOR ADDITIONAL INFORMATION.

"RR" EXISTING DEVICE TO BE REMOVED, RELOCATED, AND REUSED. SEE GENERAL DEMO NOTES FOR ADDITIONAL INFORMATION.

"R" EXISTING DEVICE TO REMAIN ACTIVE AS-IS. SEE GENERAL DEMO NOTES FOR ADDITIONAL INFORMATION.

EQUIPMENT, STRUCTURES, PIPING AND/OR CONDUIT TO BE DEMOLISHED.

RACEWAYS AND WIRING

L4A1-1,3
L4A1-1,3
2#10,#10G,¾"C

HOMERUN TO EQUIPMENT. "L4A1" INDICATES EQUIPMENT ID, "1,3" INDICATES PANELBOARD CIRCUIT NUMBERS, (20A, 1P, UNLESS INDICATED OTHERWISE) SEE DRAWINGS FOR QUANTITY AND SIZE OF WIRE AND CONDUIT. MINIMUM 2#12,#12G, IN ¾"C IF NOT INDICATED OR SCHEDULED OTHERWISE. DASHED LINES INDICATE IN OR UNDER SLAB.

CONDUIT, CONCEALED IN CONSTRUCTION IN FINISHED AREAS, EXPOSED IN UNFINISHED AREAS

E — UNDERGROUND CONDUIT (SHADING INDICATES CONCRETE ENCASED)

NOTES:

1. GREEN GROUND CONDUCTOR NOT INDICATED BUT SHALL BE INCLUDED IN EACH RACEWAY. SIZE SHALL BE #12AWG UNLESS INDICATED OTHERWISE.
2. HOMERUNS TO PANELBOARDS SHALL HAVE A MAXIMUM OF THREE (3) PHASE CONDUCTORS (ONE PER PHASE), (3) NEUTRALS AND (3) GROUND CONDUCTORS IN EACH CONDUIT. DERATE CONDUCTORS AS REQUIRED PER CODE.

BRANCH CIRCUIT WIRING NOTES

1. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
2. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
3. ALL SWITCH CONTROLS SHALL BE FURNISHED WITH WIRING AND CONDUIT AS REQUIRED.
4. ALTHOUGH ALL BRANCH CIRCUIT WIRING AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
5. A GREEN GROUNDING CONDUCTOR SHALL BE RUN WITH ALL CIRCUITS. VERIFY CONDUIT SIZE TO ENSURE IT CAN ACCOMMODATE ALL PHASE, NEUTRAL AND GROUND CONDUCTORS.
6. ALL BRANCH CIRCUITS SHALL HAVE INDIVIDUAL NEUTRALS AND GROUNDS. BRANCH CIRCUITS SHALL NOT SHARE NEUTRALS OR GROUNDS.

MISCELLANEOUS

J — JUNCTION BOX, SIZED PER NEC

BC — BATTERY CHARGER

BH — BLOCK HEATER

HH — HANDHOLE

POWER DISTRIBUTION EQUIPMENT

PANELBOARD, SURFACE MOUNTED

M 2 — MOTOR, "2" INDICATES HORSEPOWER

30A — FUSED DISCONNECT SWITCH. THE DISCONNECT SWITCH RATING SHALL MEET OR EXCEED THE CIRCUIT AMPACITY. "30A" INDICATES FUSE SIZE. FUSE SHALL BE SIZED FOR THE FULL RATING OF THE DISCONNECT SWITCH UNLESS SHOWN OTHERWISE.

T — DRY-TYPE DISTRIBUTION TRANSFORMER

UTILITY POLE

SCHEMATIC SYMBOLS:

SOLID LINES INDICATE WIRING WITHIN CONTROL PANEL OR MCC

DASHED LINES INDICATE FIELD WIRING CONNECTED TO TERMINAL IN CONTROL PANEL OR ELECTRICAL EQUIPMENT

WIRES CROSSING, NOT CONNECTED

WIRES CONNECTED

R — PILOT LIGHT, PUSH TO TEST LED
R=RED, G=GREEN, A=AMBER, W=WHITE, Y=YELLOW, B=BLUE

FU — FUSE

GROUND CONNECTION

STOP START — MOMENTARY CONTACT STOP/START PUSHBUTTONS

CONTROL POWER TRANSFORMER

5% — REACTOR (5% IF NO PERCENTAGE INDICATED)

CR 1 — CONTROL RELAY OPERATING COIL
1=RELAY ID NUMBER

CR-1 — CONTROL RELAY CONTACT (NORMALLY OPEN)

CR-1 — CONTROL RELAY CONTACT (NORMALLY CLOSED)

100 — ENCLOSED CIRCUIT BREAKER (AMPS RATING INDICATED)

VT — VARIABLE FREQUENCY DRIVE
VT=VARIABLE TORQUE

Δ Y — POWER TRANSFORMER

SURGE PROTECTION DEVICE

N E — AUTOMATIC TRANSFER SWITCH

M — UTILITY METER

ABBREVIATIONS

#	WIRE SIZE OR IDENTIFICATION NUMBER
A	AMPERES
AF	AMPERE FRAME (CIRCUIT BREAKER RATING)
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
ARCH	ARCHITECT
AS	AMPERE SENSOR (CIRCUIT BREAKER RATING)
AT	AMPERE TRIP (CIRCUIT BREAKER RATING)
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
C	CONDUIT
CB	CIRCUIT BREAKER
CT	CURRENT TRANSFORMER
CAT	CATALOG
CIR, CKT	CIRCUIT
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER 480 VOLTS - 120/240 VOLTS, UNLESS OTHERWISE INDICATED
COL	COLUMN
Δ	DELTA
CU	COPPER
DISC SW, DS	DISCONNECT SWITCH
DWG	DRAWING
E	WIRED ON EMERGENCY CIRCUIT
EC	ELECTRICAL CONTRACTOR
EM	EMERGENCY
EXP	EXPLOSION PROOF
F	FLUSH
FU	FUSE
FT	FEET
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
G	GROUND
GC	GENERAL CONTRACTOR
GFI, GFCI	GROUND FAULT CIRCUIT INTERRUPTER
ID	IDENTIFICATION
KCMIL, MCM	ONE THOUSAND CIRCULAR MILS
KVA	KILOVOLT-AMPERES
KVAR	KILOVOLT-AMPERES REACTIVE
KW	KILOWATTS
LSIG	LONG/SHORT TIME, INSTANTANEOUS AND GROUND FAULT SETTINGS (FOR CIRCUIT BREAKER)
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MISC	MISCELLANEOUS
MFR	MANUFACTURER
MLO	MAIN LUGS ONLY
NC, NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OL	OVERLOAD
P	POLE
PH, Ø	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PVC	POLYVINYL CHLORIDE
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
R	RECESSED
RGS	RIGID GALVANIZED STEEL CONDUIT
RVNR	REDUCED-VOLTAGE NON-REVERSING
S	SURFACE
SCCR, SCR	SHORT CIRCUIT CURRENT INTERRUPTING RATING
SCH 40	SCHEDULE 40 PVC CONDUIT
SP	SPARE
SPD	SURGE PROTECTION DEVICE
SS	STAINLESS STEEL
SW	SWITCH
TEL	TELEPHONE
TSP	TWISTED SHIELDED PAIR CABLE
TYP	TYPICAL
UG	UNDERGROUND
UPS	UNINTERRUPTABLE POWER SUPPLY
V	VOLT
VFD	VARIABLE FREQUENCY DRIVE (ALSO REFERED TO AS ADJUSTABLE FREQUENCY DRIVE)
Y	WYE
W	WATT, WIRE
XFMR	TRANSFORMER

Tighe&Bond

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03/13/2024

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03/13/2024

West Sterling Wells Electrical Upgrades

Department of Public Works

Sterling, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO:	S5121-002
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DRAWN BY:	RAK / HDA
DESIGNED/CHECKED BY:	HDA / MJR
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ELECTRICAL LEGEND

SCALE: NO SCALE

E-001

GENERAL DEMOLITION NOTES

1. DISCONNECT AND REMOVE EXISTING ELECTRICAL PANELBOARDS, JUNCTION BOXES, BRANCH CIRCUITS, FEEDERS, RACEWAYS, DEVICES, ETC., AS REQUIRED TO ACCOMPLISH THE NEW WORK AS SHOWN OR REASONABLY IMPLIED.
2. EXISTING BRANCH CIRCUITS NO LONGER SERVING ANY EQUIPMENT OR DEVICES SHALL BE PULLED BACK TO AND DISCONNECTED FROM THE PANEL OF ORIGIN. RE-LABEL EXISTING CIRCUIT BREAKERS AS SPARE AND PROVIDE A NEW LABEL/NAMEPLATE OR TYPE-WRITTEN PANEL DIRECTORY.
3. BRANCH CIRCUITS SERVING EXISTING DEVICES TO REMAIN AND EXISTING DEVICES TO BE REMOVED SHALL BE MAINTAINED AND RECONNECTED AS REQUIRED AFTER REMOVAL OF THE EXISTING DEVICES, AS NECESSARY TO ACCOMMODATE THE ALTERATIONS.
4. REFER TO DRAWINGS FOR THE DISCONNECTION AND REMOVAL OF PROCESS, DEVICES, EQUIPMENT, AND CABLING.
5. REFER TO DRAWINGS FOR EXISTING PARTITIONS TO BE REMOVED. DISCONNECT EXISTING BRANCH CIRCUITS SERVING DEVICES IN PARTITIONS TO BE REMOVED. MAINTAIN CONTINUITY OF EXISTING CIRCUITS SERVING EXISTING DEVICES IN OTHER AREAS TO REMAIN. PROVIDE ADDITIONAL CONDUIT AND WIRING AS REQUIRED.
6. REFER TO DRAWINGS FOR EXISTING EQUIPMENT TO BE DISCONNECTED AND REMOVED. DISCONNECT AND REMOVE THE ELECTRIC CONDUIT AND WIRING BACK TO THE POINT OF ORIGIN FOR EACH PIECE OF EQUIPMENT TO BE REMOVED.
7. REMOVE ALL WIRING/CABLING NO LONGER IN USE FROM EXISTING RACEWAYS/CONDUITS IN LOCATIONS INDICATED IN THESE DRAWINGS. RACEWAYS/CONDUITS NO LONGER IN USE THAT ARE EMBEDDED IN FLOOR SLABS SHALL BE CUT BACK AS REQUIRED AND CAPPED. SURFACE-MOUNTED RACEWAYS/CONDUITS NO LONGER IN USE SHALL BE REMOVED.
8. PROVIDE BLANK STAINLESS STEEL COVER PLATES FOR ALL JUNCTION/DEVICE BOXES NO LONGER IN USE THAT ARE EMBEDDED IN FLOOR SLABS OR MASONRY WALLS IN LOCATIONS INDICATED IN THESE DRAWINGS. ALL COVER PLATES SHALL BE PAINTED TO MATCH EXISTING CONDITIONS.
9. REFER TO SPECIFICATIONS FOR ADDITIONAL DEMOLITION CRITERIA.
10. THE EXISTENCE OF UTILITIES AND APPURTENANCES AS SHOWN ON THESE DRAWINGS ARE FOR REFERENCE ONLY. THOROUGHLY INVESTIGATE THE EXACT SIZE, TYPE, LOCATION AND ELEVATION PRIOR TO THE START OF CONSTRUCTION. FIELD MEASURE TO VERIFY EXISTING AND CONTRACT INTERFACE DIMENSIONS, LOCATIONS, AND OTHER CONDITIONS. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE WHICH MIGHT BE OCCASIONED BY FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES.
11. ASSUME MATERIALS TO BE DEMOLISHED ARE POSITIVE FOR HAZARDOUS MATERIALS AND DISPOSE OF AS NECESSARY IN ACCORDANCE WITH APPLICABLE REGULATIONS. REFER TO SPECIFICATIONS FOR MORE DETAILS.
12. OWNER RETAINS RIGHT OF FIRST REFUSAL FOR ALL ITEMS TO BE REMOVED OR DEMOLISHED. TAKE REASONABLE CARE TO AVOID DAMAGE TO ITEMS TO BE RETAINED BY OWNER. NO ADDITIONAL CHARGE WILL BE ALLOWED FOR REMOVAL OF SALVAGEABLE ITEMS.
13. FOR ITEMS BEING DEMOLISHED, REMOVE EXISTING SUPPORTS AND MOUNTING HARDWARE. FILL OPENINGS FROM ANCHOR HOLES AND CONDUIT/PIPE PENETRATIONS (UNLESS CONDUIT IS TO BE REUSED) WITH NON-SHRINK GROUT AND PAINT TO MATCH WALL OR FLOOR.
14. PATCH HOLES IN CONCRETE FROM OLD EQUIPMENT SUPPORTS, CONDUITS, PENETRATIONS, ETC. WITH NON-SHRINK GROUT. PAINT TO MATCH SURROUNDING SURFACE.
15. VOIDS CREATED BY THE REMOVAL OF CONDUIT/WIRE IN FLOORS OR WALLS ABOVE OR BELOW CEILINGS SHALL BE PATCHED AND SEALED WITH MATERIALS MATCHING THE EXISTING CONSTRUCTION.
16. PROPERLY DISPOSE OF DEMOLISHED EQUIPMENT IN COMPLIANCE WITH CODES, REGULATIONS, AND STATE STANDARDS.

GENERAL NOTES

1. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING E-001.
2. BOLD TEXT AND LINES INDICATE PROPOSED WORK, LIGHT TEXT AND LINES INDICATE APPROXIMATE EXISTING CONDITIONS.
3. PROVIDE TEMPORARY POWER AND EQUIPMENT AS REQUIRED TO KEEP SYSTEMS OPERATIONAL, SEE 16050 FOR SEQUENCING AND SCHEDULING.
4. FOR ELECTRICAL DETAILS, REFER TO DETAIL DRAWINGS
5. REFER TO FLOOR PLANS FOR EQUIPMENT LOCATIONS.
6. ALL CONDUIT SHALL BE INSTALLED ATTACHED TO THE TOP OF STEEL (TOP CHORD OF JOIST/GIRDER).
7. COORDINATE ALL DEVICE LOCATIONS WITH GC AND/OR OWNER PRIOR TO ROUGH-IN.
8. COORDINATE ALL REQUIRED OPENINGS/PENETRATIONS THROUGH WALLS, FLOORS, AND CEILING WITH OTHER TRADES AND APPROVED EQUIPMENT SUBMITTALS.
9. ALL PIPES OR OTHER UTILITIES DAMAGED DURING THE CONTRACTOR'S OPERATIONS SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR OR REPLACE AT NO COST TO THE OWNER.
10. SUPPORT ALL UTILITIES AND STRUCTURES DURING CONSTRUCTION AND MAKE REPAIRS IF DAMAGED.
11. THE LOCATIONS OF EXISTING UTILITIES AND EQUIPMENT ARE APPROXIMATE. DETERMINE THE EXACT LOCATION OF EXISTING UTILITIES AND STRUCTURES BEFORE COMMENCING WORK. BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE WHICH MIGHT BE OCCASIONED BY FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES AND STRUCTURES.
12. PREVENT DUST FROM BECOMING A NUISANCE OR HAZARD. CONTROL DUST DURING AND AFTER CONSTRUCTION.

GENERAL SITE NOTES

1. ALL EXCAVATION, TRENCHING, BACK FILL AND COMPACTION OF DUCT BANKS, GENERATOR PADS, BY THE GC.
2. WHERE ROUTING IS SPECIFICALLY INDICATED, CONDUITS SHALL BE ROUTED AS INDICATED ON THE DRAWING. NO EXCEPTION WITHOUT PRIOR WRITTEN PERMISSION FROM THE PROJECT ELECTRICAL ENGINEER.
3. ALL CONCRETE WORK SHALL BE BY THE GC.

GENERAL WIRING DIAGRAM NOTES

1. DASHED LINES ON WIRING DIAGRAMS REPRESENT FIELD WIRING, WHICH SHALL BE RUN IN CONDUIT (¾" MINIMUM).
   A. FIELD WIRING FOR DISCRETE/DIGITAL/DRY CONTACT TYPE SIGNALS (SHOWN CONNECTED TO RELAY CONTACTS, SWITCHES, PUSHBUTTONS, PILOT LIGHTS, ETC.) SHALL BE #14 WIRING RUN IN CONDUIT.
   B. FIELD WIRING FOR EACH ANALOG/TRANSMITTER/SENSOR SIGNAL SHOWN (INCLUDING THERMISTOR & SEAL LEAK/FAIL SENSOR) SHALL BE A #18TSP CABLE (UNLESS OTHERWISE NOTED) RUN IN CONDUIT.
   C. LINES CALLED OUT AS ETHERNET (DASHED OR SOLID) REPRESENT AN ETHERNET CABLE RUN IN CONDUIT.
2. PRIOR TO INSTALLING ANY CONDUITS OR PULLING ANY WIRE, CONFIRM WIRING REQUIREMENTS WITH THE EQUIPMENT AND/OR SYSTEM SUPPLIER'S SUBMITTED WIRING DIAGRAMS. CONTACT THE ENGINEER TO RESOLVE ANY DISCREPANCIES.
3. PRIOR TO PERFORMING WIRING ON VENDOR SUPPLIED CONTROL PANELS AND VENDOR SUPPLIED EQUIPMENT, COORDINATE EXACT WIRING CONNECTIONS FROM VENDOR SUPPLIED WIRING DIAGRAMS. IF THERE ARE ANY DISCREPANCIES, REPORT THIS TO THE ENGINEER AND THE ENGINEER WILL PROVIDE DIRECTION ON HOW TO PROCEED.
4. FIELD WIRING REQUIREMENTS ARE NOT SHOWN ON THE DRAWING. REFER TO SITE/FLOOR PLANS FOR ADDITIONAL FIELD WIRING REQUIREMENTS.
5. #18 TSP SIGNAL CABLE MAY BE COMBINED WITH OTHER #18 TSP SIGNAL CABLE IN CONDUIT (UP TO 2.5") SIZED FOR 40% FILL.
6. #14 CONTROL WIRING MAY BE COMBINED WITH OTHER #14 CONTROL WIRING IN CONDUIT (UP TO 2") SIZED FOR 40% FILL.

Tighe&Bond

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03/13/2024

West Sterling Wells Electrical Upgrades

Department of Public Works

Sterling, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO:	S5121-002
DATE:	FEBRUARY 2024
FILE:	S5121-002-E-002.dwg
DRAWN BY:	RAK / HDA
DESIGNED/CHECKED BY:	HDA / MJR
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ELECTRICAL GENERAL NOTES

SCALE: NO SCALE

E-002

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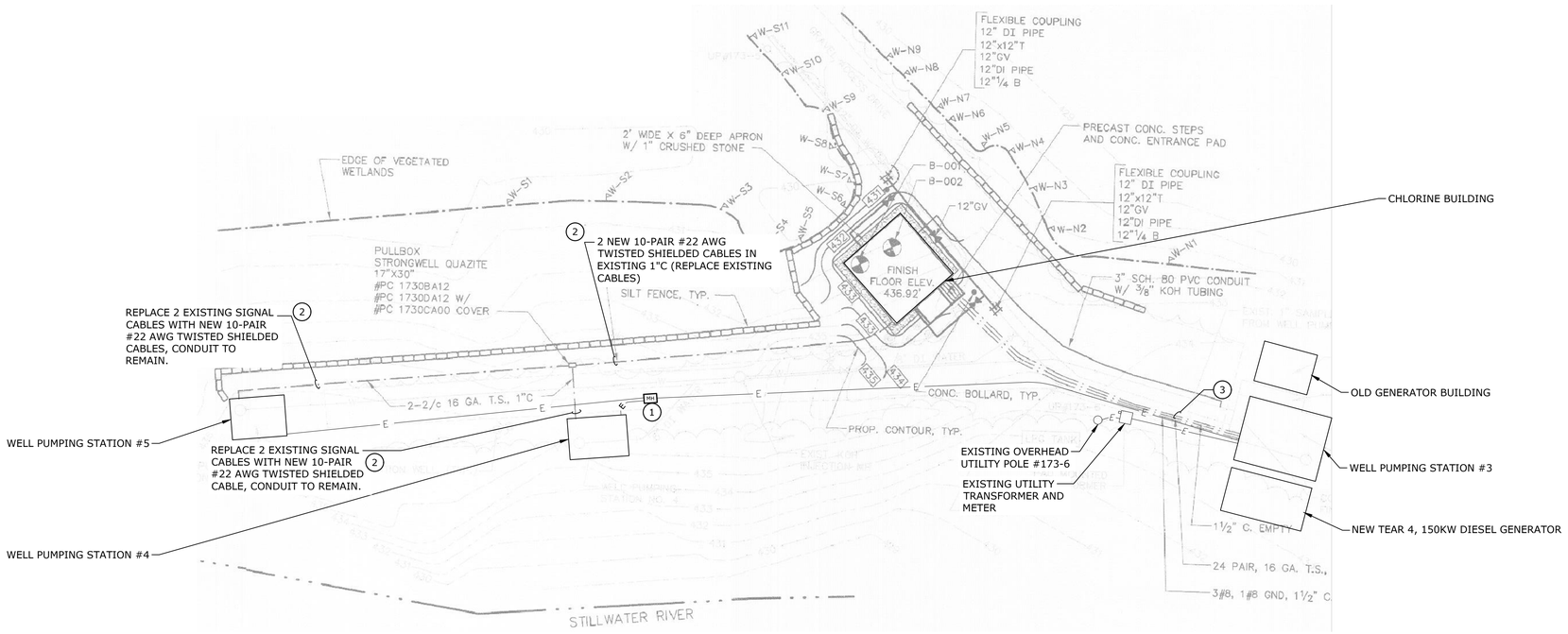

KEY NOTES:

1. REPLACE EXISTING HANDHOLE WITH QUAZITE HANDHOLE - 24"X36"x24"D TIER 15 RATED POLYMER CONCRETE WITH COVER LABELED "ELECTRIC".
2. CURRENTLY THERE ARE 4 SIGNAL CABLES RUNNING TO THE PLC (IN THE FLOW CONTROL PANEL) VIA THE SIGNAL SURGE PANEL IN THE CHLORINE BUILDING FROM WELL PUMP STATIONS #4 & #5 (2 CABLES FROM EACH STATION, ONE FOR WELL LEVEL SIGNAL AND ONE FOR SECURITY). REPLACE THESE EXISTING PUMP STATION SIGNAL CABLES WITH NEW CABLES SHOWN, REUSING THE EXISTING 1" CONDUIT. CONFIRM BOTH CABLES WILL FIT IN THE EXISTING CONDUIT PRIOR TO ORDERING CABLE.
3. CONNECT NEW SIGNAL CABLES FROM THE WELL PUMP #3 VFD, ATS AND GENERATOR TO THE PLC (IN THE FLOW CONTROL PANEL) VIA THE SIGNAL SURGE PANEL IN THE CHLORINE BUILDING. UTILIZE EXISTING 1½"C

0 20' 40'
SCALE: 1" = 20'

Tighe&Bond

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ELECTRICAL SITE PLAN

SCALE: AS SHOWN

E-100

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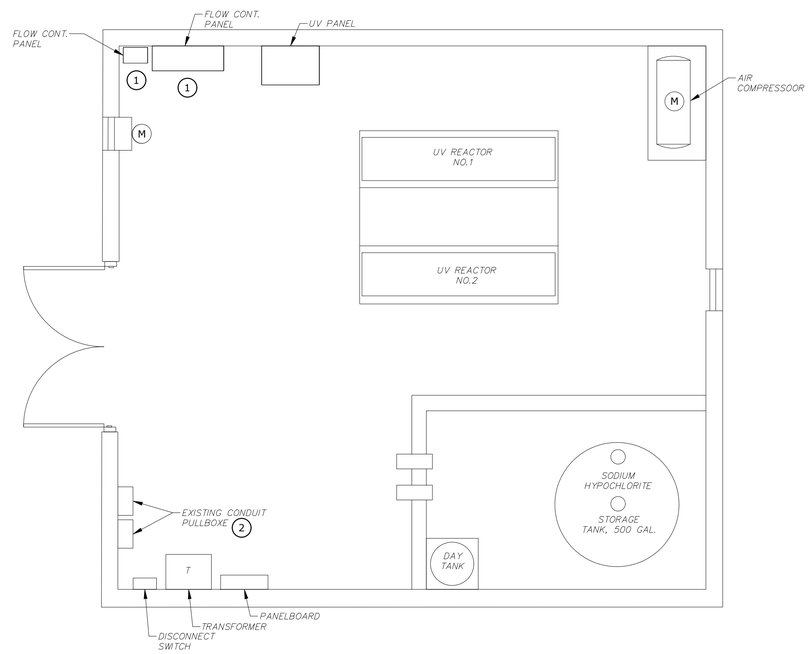

CHLORINE BUILDING - ELECTRICAL PROPOSED FLOOR PLAN
SCALE: 3/8" = 1'-0"

KEY NOTES:

1. RUN NEW SIGNAL CABLES FROM WELL PUMP STATIONS BACK TO THE PLC IN THE EXISTING FLOW CONTROL PANEL VIA THE EXISTING SIGNAL SURGE PANEL; PROVIDE ADDITIONAL ANALOG AND DISCRETE SIGNAL SURGE PROTECTORS IN THE PANEL TO PROTECT NEW SIGNALS BEING ADDED AS A RESULT OF REPLACING THE EXISTING STARTERS WITH VFD'S (EXISTING SURGE PROTECTORS ARE CITEL E280-24V). PROVIDE NEW 2" CONDUIT BETWEEN THE SIGNAL SURGE PANEL AND THE PLC TO ACCOMMODATE NEW SIGNALS.

2. INTERCEPT AND EXTEND EXISTING $1\frac{1}{2}$"C TO SIGNAL SURGE PANEL FOR CONNECTIONS BETWEEN WELL PUMP STATION #3 AND CHLORINE BUILDING.

0 2' 4' 6'
SCALE: 3/8"=1'-0"

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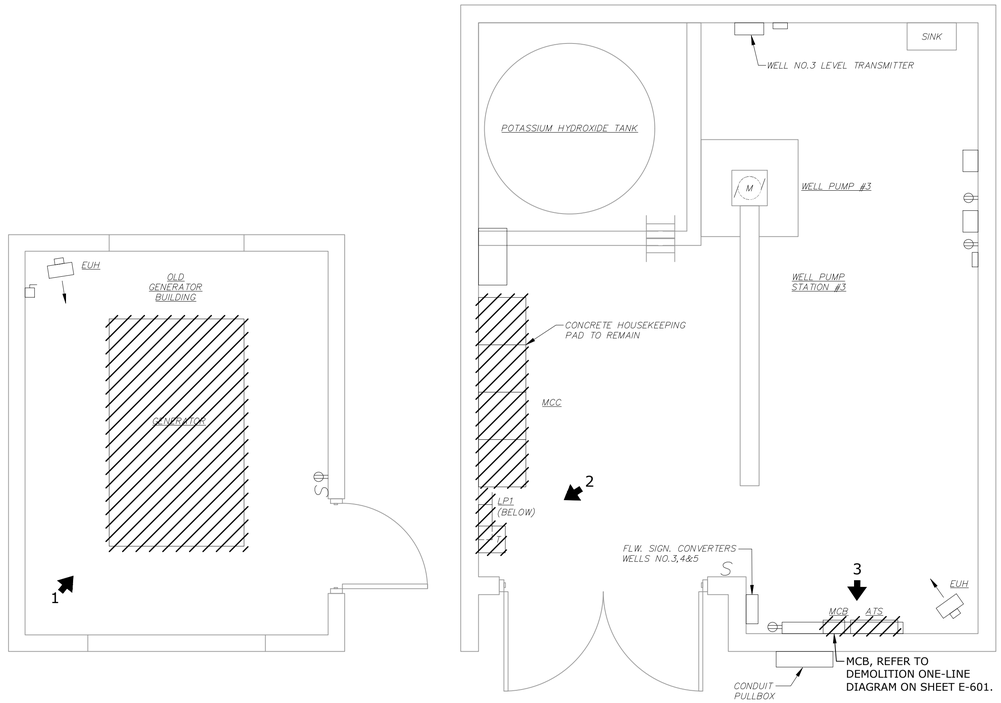
ELECTRICAL FLOOR PLANS - CHLORINE BUILDING

SCALE: AS SHOWN

E-101



ELECTRICAL DEMOLITION FLOOR PLANS
SCALE: 3/8" = 1'-0"

PHOTO 1

PHOTO 2

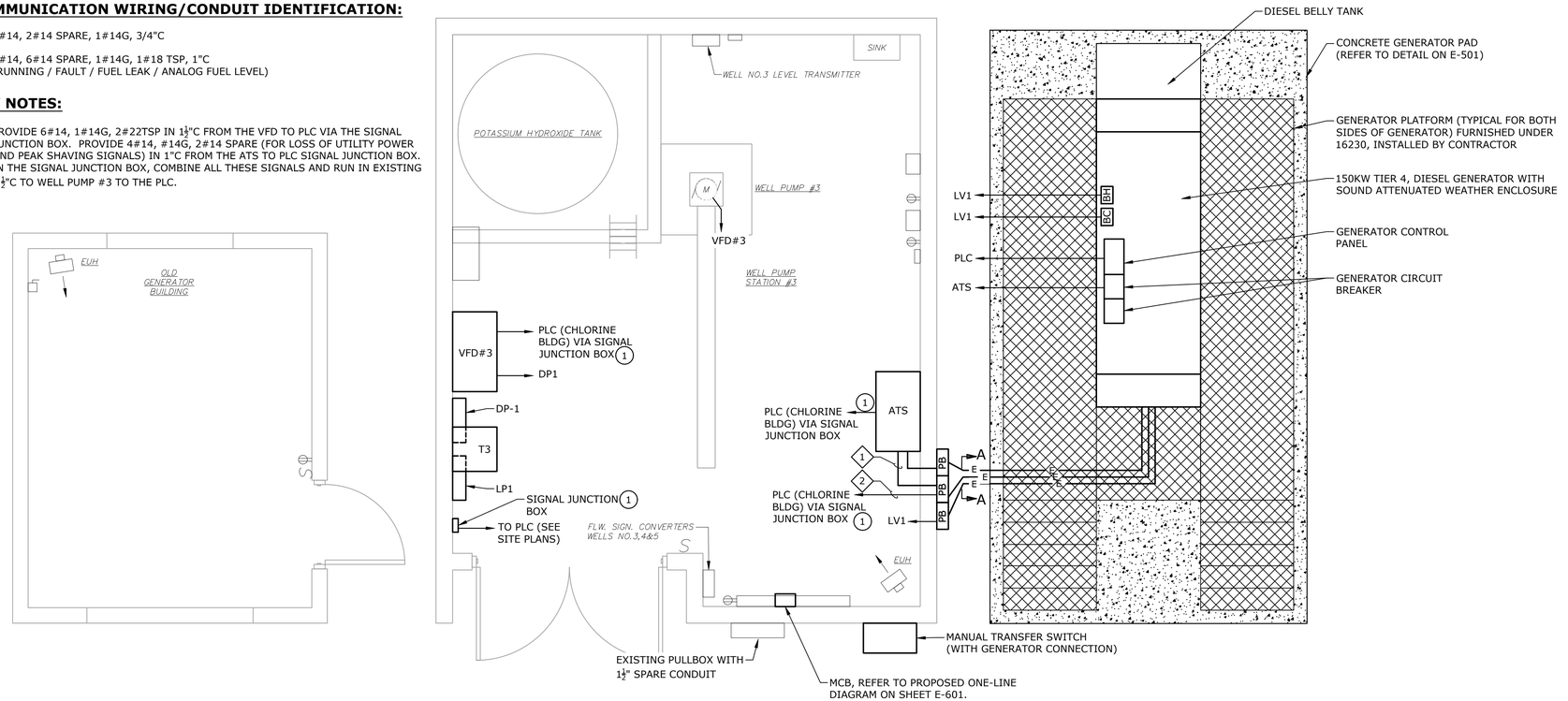
PHOTO 3

COMMUNICATION WIRING/CONDUIT IDENTIFICATION:

1. 2#14, 2#14 SPARE, 1#14G, 3/4"C
2. 6#14, 6#14 SPARE, 1#14G, 1#18 TSP, 1"C (RUNNING / FAULT / FUEL LEAK / ANALOG FUEL LEVEL)

KEY NOTES:

1. PROVIDE 6#14, 1#14G, 2#22TSP IN 1½"C FROM THE VFD TO PLC VIA THE SIGNAL JUNCTION BOX. PROVIDE 4#14, #14G, 2#14 SPARE (FOR LOSS OF UTILITY POWER AND PEAK SHAVING SIGNALS) IN 1"C FROM THE ATS TO PLC SIGNAL JUNCTION BOX. IN THE SIGNAL JUNCTION BOX, COMBINE ALL THESE SIGNALS AND RUN IN EXISTING 1 ½"C TO WELL PUMP #3 TO THE PLC.



ELECTRICAL PROPOSED FLOOR PLANS
SCALE: 3/8" = 1'-0"

0 2' 4' 6'
SCALE: 3/8"=1'-0"

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ELECTRICAL FLOOR PLANS - GENERATOR BUILDING & WELL PUMP STATION #3

SCALE: AS SHOWN

E-102

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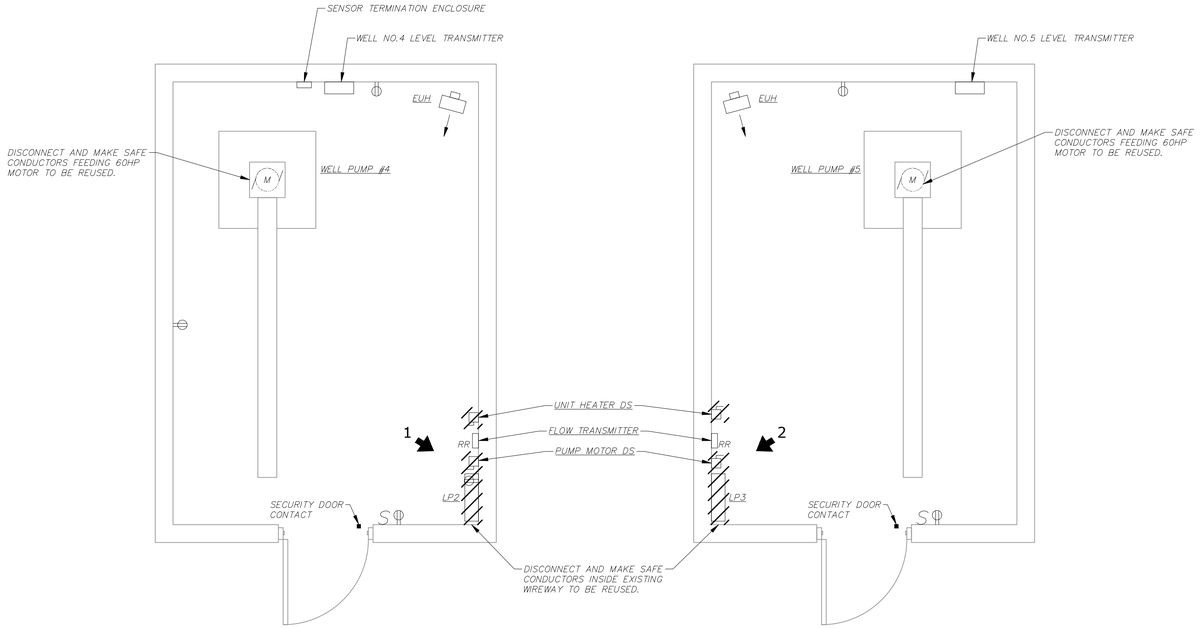


WELL PUMP STATION #4

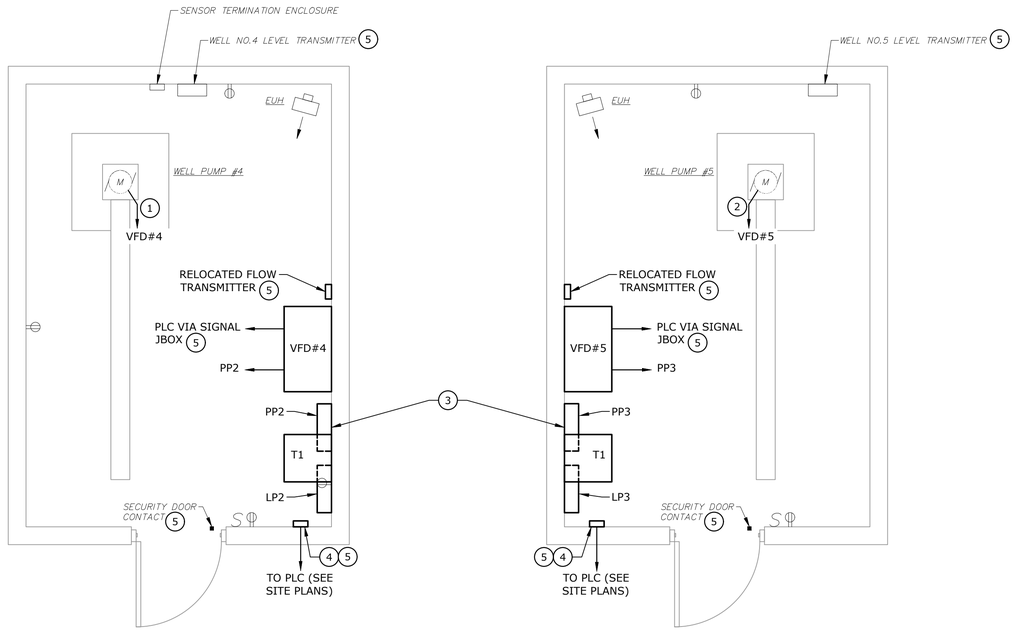
WELL PUMP STATION #5

ELECTRICAL DEMOLITION FLOOR PLANS

SCALE: 3/8" = 1'-0"

PHOTO 1

PHOTO 2



WELL PUMP STATION #4

WELL PUMP STATION #5

ELECTRICAL PROPOSED FLOOR PLANS

SCALE: 3/8" = 1'-0"

KEY NOTES:

1. INTERCEPT, REROUTE AND CONNECT EXISTING 60HP MOTOR FEEDER CONDUIT (CURRENTLY BEING FED VIA DISCONNECT SWITCH) TO NEW VFD POWERED BY NEW PANEL PP2, PROVIDE NEW WIRING AND ADDITIONAL CONDUIT/FITTINGS AS NEEDED FOR EXTENSION. PAINT CONDUIT TO MATCH EXISTING.
2. INTERCEPT, REROUTE AND CONNECT EXISTING 60HP MOTOR FEEDER CONDUIT (CURRENTLY BEING FED VIA DISCONNECT SWITCH) TO NEW VFD POWERED BY NEW PANEL PP3, PROVIDE NEW WIRING AND ADDITIONAL CONDUIT/FITTINGS AS NEEDED FOR EXTENSION. PAINT CONDUIT TO MATCH EXISTING.
3. UTILIZE EXISTING FEEDERS FED THROUGH EXISTING WIREWAY FROM PUMP STATION #3 TO POWER NEW PANELBOARDS PP2 AND PP3. REFER TO ONE-LINE DIAGRAM FOR FURTHER INFORMATION
4. SIGNAL JUNCTION BOX.
5. EXISTING WELL LEVEL TRANSMITTER, FLOW TRANMITTER AND SECURITY DOOR CONTACT ARE CURRENTLY CONNECTED BACK TO THE PLC (CABLES FOR THESE SIGNALS ARE TO BE REPLACED WITH A SINGLE MULTI-PAIR CABLE). PROVIDE 1#22TSP IN 3/4"C FROM EACH OF THESE DEVICES TO THE SIGNAL JUNCTION BOX. PROVIDE 6#14, #14G, 2#22TSP IN 1"C FROM THE VFD TO THE SIGNAL JUNCTION BOX. IN THE SIGNAL JUNCTION BOX, COMBINE THESE SIGNALS INTO A SINGLE MULTI-PAIR CABLE FOR CONNECTION TO THE PLC.

0 2' 4' 6'

SCALE: 3/8"=1'-0"

Tighe&Bond

COMMONWEALTH OF MASSACHUSETTS
MATTHEW ROMANO
ELECTRICAL
No. 48169
REGISTERED PROFESSIONAL ENGINEER
03/13/2024

COMMONWEALTH OF MASSACHUSETTS
JASON CURTIS
MECHANICAL
No. 52061
REGISTERED PROFESSIONAL ENGINEER
03/13/2024

West Sterling Wells Electrical Upgrades

Department of Public Works

Sterling, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO:	S5121-002
DATE:	FEBRUARY 2024
FILE:	S5121-002-E-103.dwg
DRAWN BY:	RAK / HDA
DESIGNED/CHECKED BY:	HDA / MJR
APPROVED BY:	MJR

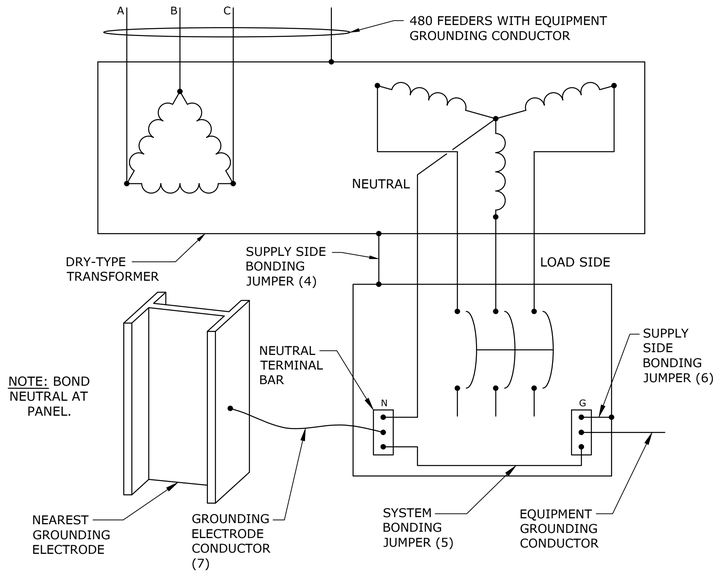
ELECTRICAL FLOOR PLANS - WELL PUMP STATION #4 & #5

SCALE: AS SHOWN

E-103

SEPARATELY DERIVED DRY TYPE TRANSFORMER SCHEDULE

SIZE	KVA	480V AMPS	208V AMPS	480 VOLT PRIMARY MOCP	208 VOLT SECONDARY MOCP (3)	480 VOLT FEEDER (2)	120/208 VOLT FEEDER AND SUPPLY SIDE BONDING JUMPER (1)(2)(4)	SYSTEM BONDING JUMPER (1)(2)(5)	SUPPLY SIDE BONDING JUMPER (1)(2)(6)	GROUNDING ELETRODE CONDUCTOR (1)(2)(7)
T1	9	11	25	15A-3P	35A-3P	3#12 + 1#12G in 3/4" C	4#8 + 1#8G in 3/4" C	1#8	1#8	1#8 in 3/4" C
T2	15	18	42	25A-3P	60A-3P	3#10 + 1#10G in 3/4" C	4#4 + 1#6G in 1-1/4" C	1#6	1#6	1#8 in 3/4" C
T3	30	36	83	45A-3P	110A-3P	3#6 + 1#10G in 1" C	4#1 + 1#6G in 2" C	1#6	1#6	1#6 in 3/4" C
T4	45	54	125	70A-3P	175A-3P	3#4 + 1#8G in 1" C	4#2/0 + 1#4G in 2" C	1#4	1#4	1#4 in 3/4" C
T5	75	90	208	125A-3P	250A-3P	3#1/0 + 1#6G in 1-1/2" C	4#250 KCMIL + 1#2G in 2-1/2" C	1#2	1#2	1#2 in 3/4" C
T6	112.5	135	313	175A-3P	400A-3P	3#2/0 + 1#6G in 2" C	4#600 + 1#1/0G in 4" C	1#1/0	1#1/0	1#1/0 in 3/4" C
T7	150	180	416	225A-3P	600A-3P	3#4/0 + 1#4G in 2" C	8#350 KCMIL + 2#2/0G in (2) 3" C	1#2/0	1#2/0	1#2/0 in 3/4" C
T8	225	271	625	350A-3P	800A-3P	3#500 + 1#3G in 3-1/2" C	8#600 KCMIL+ 2#240G in (2) 4" C	1#3/0	1#3/0	1#3/0 in 3/4" C
T9	300	361	833	500A-3P	1200A-3P	6#250 KCMIL + 2#2G in (2) 2-1/2" C	12#600 KCMIL + 3#250G in (3) 4" C	1#250	1#250	1#3/0 in 3/4" C
T10	500	600	1388	800A-3P	1600A-3P	9#350 KCMIL + 3#1/0G in (3) 3" C	16#600 KCMIL + 4#300G in (4) 4" C	1#300	1#300	1#3/0 in 3/4" C

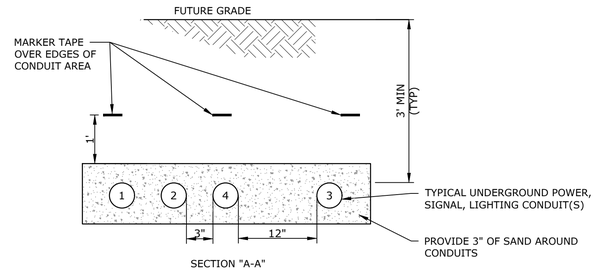


TRANSFORMER SCHEDULE NOTES:

1. SUPPLY SIDE BONDING JUMPER, SYSTEM BONDING JUMPER, AND GROUNDING ELECTRODE CONDUCTOR SHALL BE SIZED PER NEC TABLE 250.102. REFER TO DETAIL.
2. ALL CONDUCTOR SIZES ARE FOR COPPER CONDUCTORS PER NEC TABLE 310.15(B)16.
3. PROVIDE SECONDARY OVERCURRENT PROTECTION. SECONDARY OVERCURRENT PROTECTION SHALL BE LOCATED WITHIN TEN (10) FEET OF THE TRANSFORMER SECONDARY TERMINALS EITHER IN A PANELBOARD (MAIN BREAKER), AN INDIVIDUALLY MOUNTED ENCLOSED CIRCUIT BREAKER, OR FUSED DISCONNECT.
4. SUPPLY SIDE BONDING JUMPER INSTALLED IN FEEDER RACEWAY.
5. SYSTEM BONDING JUMPER INSTALLED INTERNAL TO PANELBOARD, BREAKER ENCLOSURE OR FUSED DISCONNECT ENCLOSURE.
6. SUPPLY SIDE BONDING JUMPER INSTALLED INTERNAL TO PANELBOARD, BREAKER ENCLOSURE OR FUSED DISCONNECT ENCLOSURE.
7. GROUNDING ELECTRODE CONDUCTOR SHALL BE INSTALLED IN CONDUIT.

SEPERATELY DERIVED SYSTEM GROUNDING FOR DELTA - WYE TRANSFORMERS

NO SCALE



SECTION "A-A"

NOTES

1. MAINTAIN MINIMUM 1' SEPARATION BETWEEN ALL CONDUIT AND COMMUNICATIONS CONDUIT
2. CONDUITS SHALL BE SCHEDULE 40 PVC - LIGHTING/POWER/COMMUNICATIONS

(1) 4" CONDUIT FOR 480V POWER

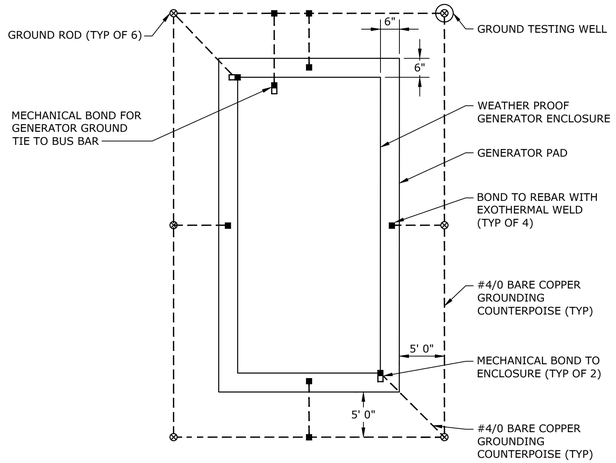
(2) 2" CONDUIT FOR 120V POWER

(3) 2" CONDUIT FOR CONTROLS TO GENERATOR CONTROL PANEL

(4) 4" SPARE CONDUIT WITH PULL STRING (CAP IN GENERATOR ENCLOSURE AND 12" ABOVE GRADE ON BUILDING WALL)

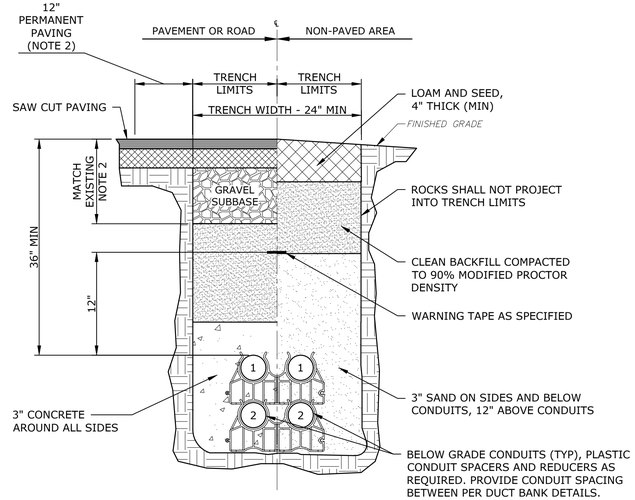
UNDERGROUND CONDUIT SECTIONS (NON-ROADWAY)

NO SCALE



GENERATOR GROUNDING DETAIL

NO SCALE

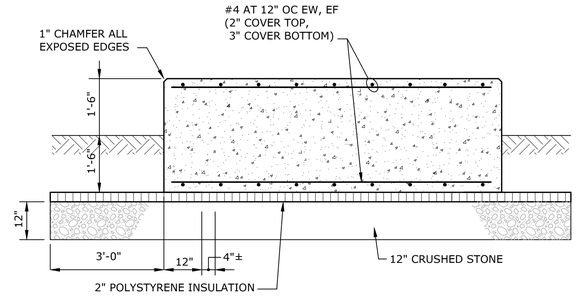


NOTES:

1. REFER TO ELECTRICAL SITE PLAN AND DUCT BANK DETAILS FOR SPECIFIC REQUIREMENTS. (TYP FOR ALL DUCT BANK TRENCHES)
2. MIN OF 1.5" HMA TOP COURSE PAVEMENT, 2.5" HMA BINDER COURSE, AND 12" GRAVEL SUBBASE.

TYPICAL CONDUIT TRENCH DETAIL

NO SCALE



PAD NOTES:

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS OR AT THE EARLIER AGE AT WHICH THE CONCRETE MAY BE EXPECTED TO RECEIVE ITS FULL LOAD.
2. ALL REINFORCED CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", ACI 318-08, 2008 CODE AND ACI 315 "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES".
3. REINFORCING STEEL SHALL BE ASTM A615 DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT, GRADE 60.
4. CONCRETE COVER FOR REINFORCING SHALL BE 2", EXCEPT IN BOTTOM SLABS WHERE IT SHALL BE 3", OR AS OTHERWISE NOTED.
5. SOILS TO BE ADEQUATE TO PROVIDE MINIMUM 1.0 KIPS PER SQUARE FOOT ALLOWABLE BEARING PRESSURE.
6. GENERATOR PAD SHALL EXTEND 4" BEYOND GENERATOR ENCLOSURE ON EACH SIDE.

GENERATOR PAD

NO SCALE

Tighe&Bond

COMMONWEALTH OF MASSACHUSETTS
MATTHEW ROMANO ELECTRICAL No. 48169 REGISTERED PROFESSIONAL ENGINEER
03/13/2024

COMMONWEALTH OF MASSACHUSETTS
JASON CURTIS MECHANICAL No. 52061 REGISTERED PROFESSIONAL ENGINEER
03/13/2024

West Sterling Wells Electrical Upgrades

Department of Public Works

Sterling, Massachusetts

MARK	DATE	DESCRIPTION

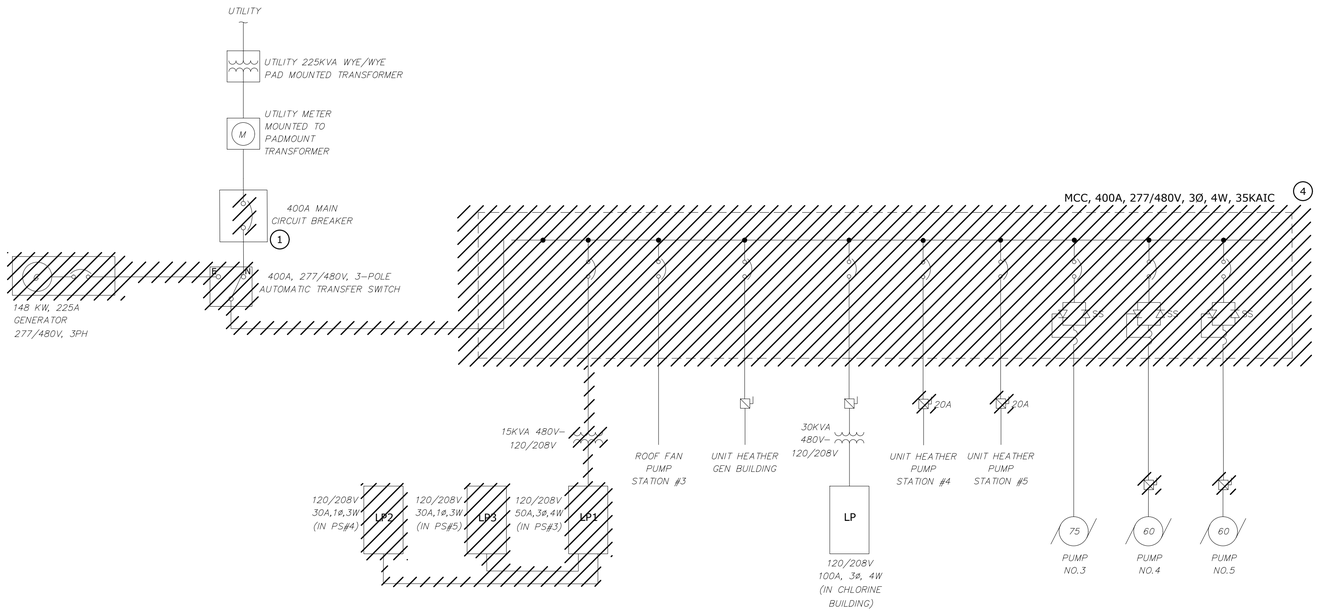
PROJECT NO:	S5121-002
DATE:	FEBRUARY 2024
FILE:	S5121-002-E-501.dwg
DRAWN BY:	RAK / HDA
DESIGNED/CHECKED BY:	HDA / MJR
APPROVED BY:	MJR

ELECTRICAL DETAILS

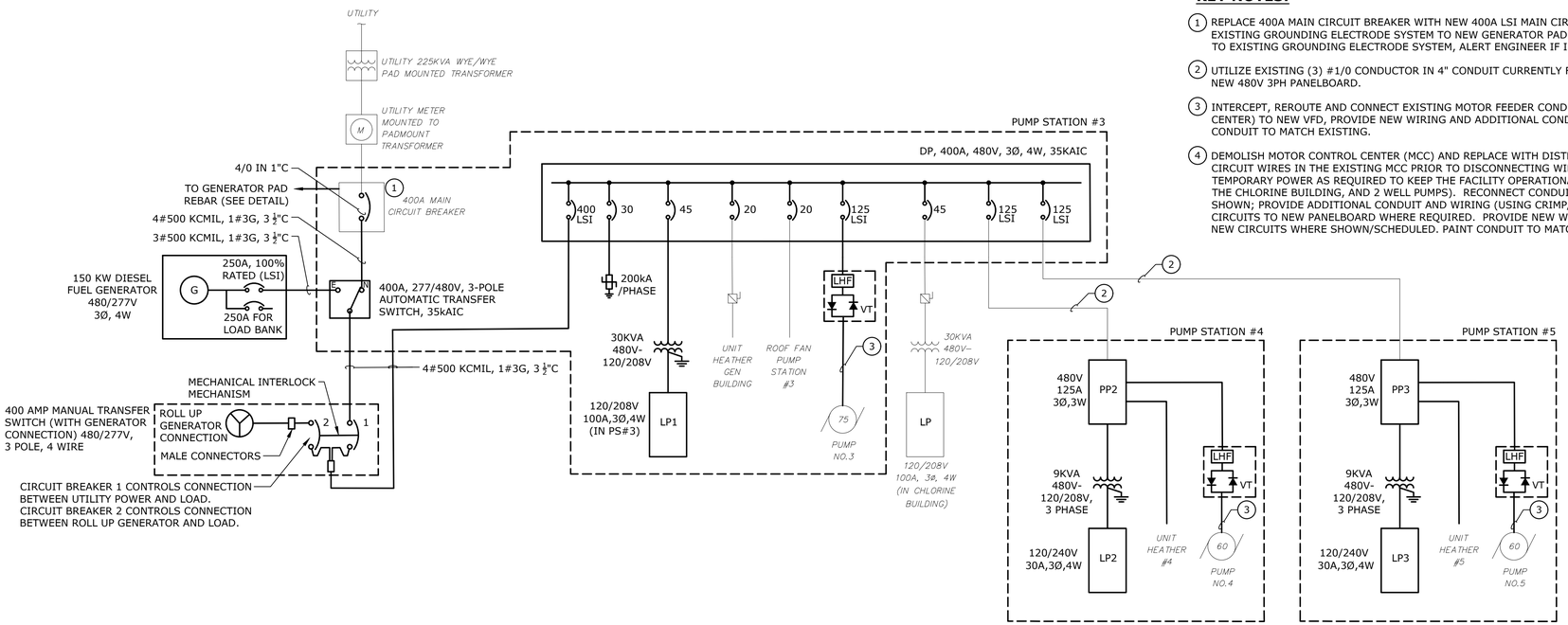
SCALE: NO SCALE

E-501

Last Saved: 3/11/2024
Plotted: Mar 13, 2024 - 4:27pm By: RKnapp
Tighe & Bond: \\tighebond.com\data\Data\Projects\S\S5121 Town of Sterling\002 West Sterling Wells Elec Upgrades\Drawings, Figures\AutoCAD\Sheet\S5121-002-E-501.dwg



DEMOLITION - ONE-LINE DIAGRAM



PROPOSED - ONE-LINE DIAGRAM

KEY NOTES:

1. REPLACE 400A MAIN CIRCUIT BREAKER WITH NEW 400A LSI MAIN CIRCUIT BREAKER UTILIZING EXISTING ENCLOSURE. BOND EXISTING GROUNDING ELECTRODE SYSTEM TO NEW GENERATOR PAD REBAR/GROUND RODS. CONFIRM PROPER CONNECTION TO EXISTING GROUNDING ELECTRODE SYSTEM, ALERT ENGINEER IF IMPROPER GROUNDING IS FOUND.
2. UTILIZE EXISTING (3) #1/0 CONDUCTOR IN 4" CONDUIT CURRENTLY FEEDING 480V 3PH PUMP STATION PUMP MOTOR TO FEED NEW 480V 3PH PANELBOARD.
3. INTERCEPT, REROUTE AND CONNECT EXISTING MOTOR FEEDER CONDUIT (CURRENTLY BEING FED FROM THE MOTOR CONTROL CENTER) TO NEW VFD, PROVIDE NEW WIRING AND ADDITIONAL CONDUIT/FITTINGS AS NEEDED FOR EXTENSION. PAINT CONDUIT TO MATCH EXISTING.
4. DEMOLISH MOTOR CONTROL CENTER (MCC) AND REPLACE WITH DISTRIBUTION PANELBOARD DP AS SHOWN. LABEL ALL CIRCUIT WIRES IN THE EXISTING MCC PRIOR TO DISCONNECTING WIRES. DISCONNECT WIRES AND CONDUIT, PROVIDING TEMPORARY POWER AS REQUIRED TO KEEP THE FACILITY OPERATIONAL AT ALL TIMES (INCLUDING WELL PUMP STATION #3, THE CHLORINE BUILDING, AND 2 WELL PUMPS). RECONNECT CONDUITS AND CIRCUIT WIRES TO NEW PANELBOARD DP AS SHOWN; PROVIDE ADDITIONAL CONDUIT AND WIRING (USING CRIMP/BUTT SPLICES) TO EXTEND/RECONNECT EXISTING CIRCUITS TO NEW PANELBOARD WHERE REQUIRED. PROVIDE NEW WIRE LABELS ON ALL WIRING. CONNECT WIRING FOR NEW CIRCUITS WHERE SHOWN/SCHEDULED. PAINT CONDUIT TO MATCH EXISTING.

Tighe&Bond

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REGISTERED PROFESSIONAL ENGINEER
03/13/2024

West Sterling Wells Electrical Upgrades

Department of Public Works

Sterling, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO:	S5121-002
DATE:	FEBRUARY 2024
FILE:	S5121-002-E-601.dwg
DRAWN BY:	RAK / HDA
DESIGNED/CHECKED BY:	HDA / MJR
APPROVED BY:	MJR

ELECTRICAL ONE-LINE DIAGRAMS

SCALE: NO SCALE

E-601

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Tighe & Bond: \\tighebond.com\data\Data\Projects\S\S5121 Town of Sterling\002 West Sterling Wells Elec Upgrades\Drawings, Figures\AutoCAD\Sheet\S5121-002-E-601.dwg

			VOLTAGE (L-L):	480	PHASE:	3	WIRE:	4	VA, L1	74,250			PANEL NO.	"DP"																	
			VOLTAGE (L-N):	277					VA, L2	74,250																					
			MAIN BUS:	400	AMPS				VA, L3	74,250			LOCATION:	PUMP STATION #3																	
			MAIN BREAKER:	400	A FRAME	400	A TRIP						NOTES:	PROVIDE INTEGRAL SURGE PROTECTION,																	
			MOUNTING:	SURFACE		kAIC:	35		TOTAL VA	222,750				200KA/PHASE. MAIN BREAKER AND PUMP STATION																	
			INCOMING FEEDER SIZE:	REFER TO ONE-LINE DIAGRAM										BREAKERS SHALL INCLUDE LSI SETTINGS.																	
				VA LOAD								VA LOAD																			
PHASE	WIRE SIZE	CONDUIT SIZE	DIRECTORY	L1	L2	L3	CKT.	AMPS		AMPS	CKT.	L1	L2	L3	DIRECTORY	CONDUIT SIZE	WIRE SIZE	PHASE													
3	3#1/0 & 1#6G	1 1/2"	PS#3 75HP PUMP	26,592			1	125		125	2	22,996			PUMP STATION #4 PANEL PP2	1 1/2"	3#1/0 & 1#6G	3													
	-	-			26,592		3	|		|	4		22,996		-	-														
	-	-				26,592	5	|		|	6				-	-														
3	3#1/0 & 1#6G	1 1/2"	PUMP STATION #5 PANEL PP3	22,996			7	125		45	8					1"	3#8 & 1#10G	3													
	-	-			22,996		9	|		|	10			PANEL LP1 VIA 30KVA XFMR	-	-														
	-	-				22,996	11	|		|	12				-	-														
3	3#12 & 1#12G	3/4"	GEN BUILDING UNIT HEATER	1,667			13	20		30	14				SURGE PROTECTION DEVICE	3/4"	3#10 & 1#10G	3													
	-	-			1,667		15	|		|	16				-	-														
	-	-				1,667	17	|		|	18				-	-														
	-	-	SPARE				19	20		20	20				SPARE	-	-														
	-	-					21	|		|	22				-	-														
	-	-					23	|		|	24				-	-														
	-	-	SPACE				25				26				SPACE	-	-														
	-	-	SPACE				27				28				SPACE	-	-														
	-	-	SPACE				29				30				SPACE	-	-														
	-	-	SPACE				31				32				SPACE	-	-														
	-	-	SPACE				33				34				SPACE	-	-														
	-	-	SPACE				35				36				SPACE	-	-														
	-	-	SPACE				37				38				SPACE	-	-														
	-	-	SPACE				39				40				SPACE	-	-														
	-	-	SPACE				41				42				SPACE	-	-														
			SUBTOTAL	51,254	51,254	51,254						22,996	22,996	22,996	SUBTOTAL																

			VOLTAGE (L-L):	208	PHASE:	3	WIRE:	4	VA, L1	0			PANEL NO.	"LP1"																	
			VOLTAGE (L-N):	120					VA, L2	0																					
			MAIN BUS:	100	AMPS				VA, L3	0			LOCATION:	PUMP STATION #3																	
			MAIN BREAKER:	100	A FRAME	100	A TRIP						NOTES:																		
			MOUNTING:	SURFACE		kAIC:	10		TOTAL VA	0																					
			INCOMING FEEDER SIZE:	REFER TO TRANSFORMER SCHEDULE																											
				VA LOAD								VA LOAD																			
PHASE	WIRE SIZE	CONDUIT SIZE	DIRECTORY	L1	L2	L3	CKT.	AMPS		AMPS	CKT.	L1	L2	L3	DIRECTORY	CONDUIT SIZE	WIRE SIZE	PHASE													
	-	-	EXISTING CHEMICAL PUMPS				1	20		20	2				EXISTING LIGHTING THIS ROOM	-	-														
	-	-	EXISTING RTU-1				3	20		20	4				EXISTING P.H. ANALYZER	-	-														
	-	-	EXISTING PUMP SWITCH BY PASS				5	20		20	6				EXISTING UNLOCK PLUG	-	-														
	-	-	EXISTING PLUG ON THROUGH				7	20		20	8				EXISTING LIGHTING GEN BUILDING	-	-														
	-	-	EXISTING FAN GAS HEATER				9	20		20	10				EXISTING PLUGS GEN BUILDING	-	-														
	-	-	EXISTING PUMP HOUSE #1				11	30		20	12				EXISTING EX FAN	-	-														
	-	-	|				13	|		20	14				EXISTING CLZ ANALIZER WELL LVL 1 TRANS	-	-														
	-	-	EXISTING ELECTRIC HEATER				15	30		20	16				EXISTING EX FAN CONTROL THIS BUILDING	-	-														
	-	-	|				17	|		30	18				EXISTING UNKNOWN LOAD	-	-														
	-	-	SPARE				19	20		|	20				|	-	-														
	-	-	SPARE				21	20		20	22				SPARE	-	-														
	-	-	SPARE				23	20		20	24				SPARE	-	-														
	-	-	SPARE				25	20		20	26				SPARE	-	-														
	-	-	SPACE				27				28				SPACE	-	-														
	-	-	SPACE				29				30				SPACE	-	-														
	-	-	SPACE				31				32				SPACE	-	-														
	-	-	SPACE				33				34				SPACE	-	-														
	-	-	SPACE				35				36				SPACE	-	-														
	-	-	SPACE				37				38				SPACE	-	-														
	-	-	SPACE				39				40				SPACE	-	-														
	-	-	SPACE				41				42				SPACE	-	-														
			SUBTOTAL	0	0	0									SUBTOTAL																

			VOLTAGE (L-L):	480	PHASE:	3	WIRE:	3	VA, L1	22,996			PANEL NO.	"PP2"																	
			VOLTAGE (L-N):						VA, L2	22,996																					
			MAIN BUS:	125	AMPS				VA, L3	22,996			LOCATION:	PUMP STATION #4																	
			MAIN BREAKER:	125	A FRAME	125	A TRIP						NOTES:	PROVIDE INTEGRAL SURGE PROTECTION,																	
			MOUNTING:	SURFACE		kAIC:	35		TOTAL VA	68,987				100KA/PHASE. MAIN BREAKER AND PUMP BREAKER																	
			INCOMING FEEDER SIZE:	REFER TO ONE-LINE DIAGRAM										SHALL INCLUDE LSI SETTINGS.																	
				VA LOAD								VA LOAD																			
PHASE	WIRE SIZE	CONDUIT SIZE	DIRECTORY	L1	L2	L3	CKT.	AMPS		AMPS	CKT.	L1	L2	L3	DIRECTORY	CONDUIT SIZE	WIRE SIZE	PHASE													
3	3#1 & 1#8G	1 1/2"	PS#4 60HP PUMP	21,329			1	100		20	2	1,667			PS#4 UNIT HEATER	3/4"	3#12 & 1#12G	3													
	-	-			21,329		3	|		|	4	1,667			-	-														
	-	-				21,329	5	|		|	6		1,667		-	-														
3	3#12 & 1#12G	3/4"	PANEL LP2 VIA 9KVA XFMR				7	20		30	8				SURGE PROTECTION DEVICE	3/4"	3#10 & 1#10G	3													
	-	-					9	|		|	10				-	-														
	-	-					11	|		|	12				-	-														
	-	-	SPACE				13			20	14				SPARE	-	-														
	-	-	SPACE				15			|	16				-	-														
	-	-	SPACE				17			|	18				-	-														
			SUBTOTAL	21,329	21,329	21,329						1,667	1,667	1,667	SUBTOTAL																

			VOLTAGE (L-L):	208	PHASE:	3	WIRE:	4	VA, L1	0			PANEL NO.	"LP2"																	
			VOLTAGE (L-N):	120					VA, L2	0																					
			MAIN BUS:	125	AMPS				VA, L3	0			LOCATION:	PUMP STATION #4																	
			MAIN BREAKER:	100	A FRAME	40	A TRIP						NOTES:																		
			MOUNTING:	SURFACE		kAIC:	10		TOTAL VA	0																					
			INCOMING FEEDER SIZE:	REFER TO TRANSFORMER SCHEDULE																											
				VA LOAD								VA LOAD																			
PHASE	WIRE SIZE	CONDUIT SIZE	DIRECTORY	L1	L2	L3	CKT.	AMPS		AMPS	CKT.	L1	L2	L3	DIRECTORY	CONDUIT SIZE	WIRE SIZE	PHASE													
	-	-	EXISTING EX FAN				1	20		20	2				EXISTING LIGHTS	-	-														
	-	-	EXISTING RECEPTACLE BACK WALL				3	20		20	4				EXISTING RECEPTACLE AT DOOR	-	-														
	-	-	EXISTING LMI OUTLET				5	20		20	6				SPARE	-	-														
	-	-	EXISTING LOAD				7	20		20	8				SPARE	-	-														
	-	-	SPARE				9	20		20	10				SPARE	-	-														
	-	-	SPARE				11	20		20	12				SPARE	-	-														
	-	-	SPACE				13				14				SPACE	-	-														
	-	-	SPACE				15				16				SPACE	-	-														
	-	-	SPACE				17				18				SPACE	-	-														
			SUBTOTAL	0	0	0						0	0	0	SUBTOTAL																

			VOLTAGE (L-L):	480	PHASE:	3	WIRE:	3	VA, L1	22,996			PANEL NO.	"PP3"																	
			VOLTAGE (L-N):						VA, L2	22,996																					
			MAIN BUS:	125	AMPS				VA, L3	22,996			LOCATION:	PUMP STATION #5																	
			MAIN BREAKER:	125	A FRAME	125	A TRIP						NOTES:	PROVIDE INTEGRAL SURGE PROTECTION,																	
			MOUNTING:	SURFACE		kAIC:	35		TOTAL VA	68,987				100KA/PHASE. MAIN BREAKER AND PUMP BREAKER																	
			INCOMING FEEDER SIZE:	REFER TO ONE-LINE DIAGRAM										SHALL INCLUDE LSI SETTINGS.																	
				VA LOAD								VA LOAD																			
PHASE	WIRE SIZE	CONDUIT SIZE	DIRECTORY	L1	L2	L3	CKT.	AMPS		AMPS	CKT.	L1	L2	L3	DIRECTORY	CONDUIT SIZE	WIRE SIZE	PHASE													
3	3#1 & 1#8G	1 1/2"	PS#5 60HP PUMP	21,329			1	100		20	2	1,667			PS#5 UNIT HEATER	3/4"	3#12 & 1#12G	3													
	-	-			21,329		3	|		|	4	1,667			-	-														
	-	-				21,329	5	|		|	6		1,667		-	-														
3	3#12 & 1#12G	3/4"	PANEL LP3 VIA 9KVA XFMR				7	20		30	8				SURGE PROTECTION DEVICE	3/4"	3#10 & 1#10G	3													
	-	-					9	|		|	10				-	-														
	-	-					11	|		|	12				-	-														
	-	-	SPACE				13			20	14				SPARE	-	-														
	-	-	SPACE				15			|	16				-	-														
	-	-	SPACE				17			|	18				-	-														
			SUBTOTAL	21,329	21,329	21,329						1,667	1,667	1,667	SUBTOTAL																

			VOLTAGE (L-L):	208	PHASE:	3	WIRE:	4	VA, L1	0			PANEL NO.	"LP3"																	
			VOLTAGE (L-N):	120					VA, L2	0																					
			MAIN BUS:	125	AMPS				VA, L3	0			LOCATION:	PUMP STATION #5																	
			MAIN BREAKER:	100	A FRAME	40	A TRIP						NOTES:																		
			MOUNTING:	SURFACE		kAIC:	10		TOTAL VA	0																					
			INCOMING FEEDER SIZE:	REFER TO TRANSFORMER SCHEDULE																											
				VA LOAD								VA LOAD																			
PHASE	WIRE SIZE	CONDUIT SIZE	DIRECTORY	L1	L2	L3	CKT.	AMPS		AMPS	CKT.	L1	L2	L3	DIRECTORY	CONDUIT SIZE	WIRE SIZE	PHASE													
	-	-	EXISTING LIGHTS				1	20		15	2				EXISTING EX FAN	-	-														
	-	-	EXISTING RECEPTACLE				3	20		15	4				EXISTING RECEPTACLE	-	-														
	-	-	EXISTING LMI OUTLET				5	20		20	6				EXISTING WELL LVL FLW INDICATOR MTR	-	-														
	-	-	SPARE				7	20		20	8				SPARE	-	-														
	-	-	SPARE				9	20		20	10				SPARE	-	-														
	-	-	SPARE				11	20		20	12				SPARE	-	-														
	-	-	SPACE				13				14				SPACE	-	-														
	-	-	SPACE				15				16				SPACE	-	-														
	-	-	SPACE				17				18				SPACE	-	-														
			SUBTOTAL	0	0	0						0	0	0	SUBTOTAL																

Tighe&Bond

COMMONWEALTH OF MASSACHUSETTS
MATTHEW ROMANO ELECTRICAL No. 48169 REGISTERED PROFESSIONAL ENGINEER
03/13/2024

COMMONWEALTH OF MASSACHUSETTS
JASON CURTIS MECHANICAL No. 52061 REGISTERED PROFESSIONAL ENGINEER
03/13/2024

West Sterling Wells Electrical Upgrades

Department of Public Works

Sterling, Massachusetts

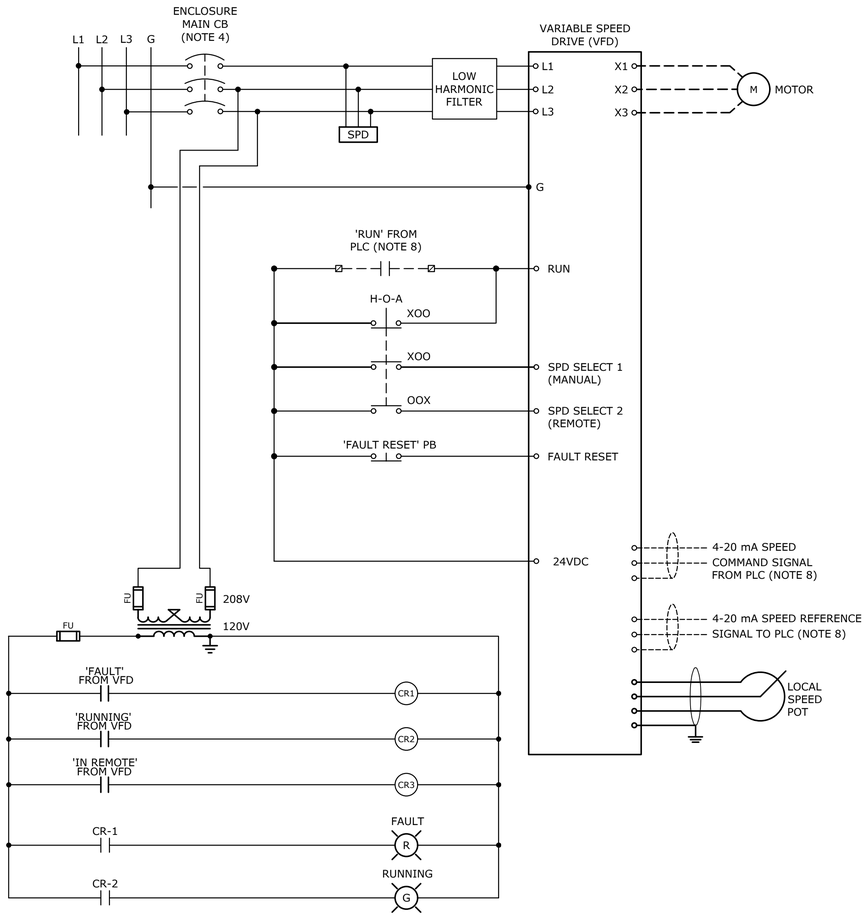
MARK	DATE	DESCRIPTION

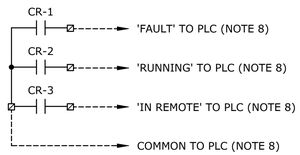
PROJECT NO:	S5121-002
DATE:	FEBRUARY 2024
FILE:	S5121-002-E-602.dwg
DRAWN BY:	RAK / HDA
DESIGNED/CHECKED BY:	HDA / MJR
APPROVED BY:	MJR

ELECTRICAL SCHEDULES

SCALE: NO SCALE

E-602





PUMP WIRING DIAGRAM

TYP. FOR WELL PUMPS #3, #4 AND #5

NOTES:

1. MOUNT ALL PILOT LIGHTS, SWITCHES AND VFD KEYPAD ON DOOR OF VFD ENCLOSURE.
2. CPT SHALL BE SIZED PER MANUFACTURER'S RECOMMENDATIONS.
3. VFD SHALL BE PROVIDED WITH PROPER VENTILATION/COOLING AS REQUIRED PER VFD MANUFACTURER.
4. FUSES AND/OR CIRCUIT BREAKERS SHALL BE SIZED PER NEC IN ACCORDANCE WITH ASSOCIATED LOADS. ENCLOSURE MAIN CIRCUIT BREAKER SHALL HAVE A THROUGH-THE-DOOR HANDLE AND SHALL BE INTERLOCKED WITH THE ENCLOSURE DOOR.
5. DRIVE TO BE PROVIDED WITH SURGE SUPPRESSION (SEE 16265).
6. ALL EQUIPMENT SHALL BE INSTALLED IN NEMA 12 STEEL ENCLOSURE.
7. VFD SHALL BE CONTROLLED BY THE PLC WHEN THE 3-POSITION SWITCH IS IN THE 'AUTO' POSITION AND SHALL RUN (AT SPEED AS INDICATED BY THE POTENTIOMETER) WHEN THE SWITCH IS IN THE 'HAND' POSITION.
8. PLC IS EXISTING, LOCATED IN THE FLOW CONTROL PANEL IN THE CHLORINE BUILDING. RUN SIGNAL CABLES TO PLC VIA SIGNAL SURGE PANEL, SEE CHLORINE BUILDING FLOOR PLAN. COMBINE SIGNALS SHOWN WITH WELL LEVEL SIGNAL AND PUMP STATION SECURITY SIGNAL IN A SINGLE 10-PAIR TWISTED SHIELDED CABLE.

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03/13/2024

West Sterling Wells Electrical Upgrades

Department of Public Works

Sterling, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO:	S5121-002
DATE:	FEBRUARY 2024
FILE:	S5121-002-E-603.dwg
DRAWN BY:	RAK / HDA
DESIGNED/CHECKED BY:	HDA / MJR
APPROVED BY:	MJR

ELECTRICAL
WIRING DIAGRAMS

SCALE: NO SCALE

E-603

Last Saved: 3/11/2024
Plotted: Nov 13, 2024 - 4:28pm By: RKnapp
Tighe & Bond: \\tighebond.com\data\Data\Projects\S5121 Town of Sterling\002 West Sterling Wells Elec Upgrades\Drawings Figures\AutoCAD\Sheet\S5121-002-E-603.dwg