SET NO.

PADUCAH MCCRACKEN COUNTY JOINT SEWER AGENCY PADUCAH, KENTUCKY

GENERATORS AND AUTOMATIC TRANSFER SWITCHES JANUARY 2025 PHASE 1 & PHASE 2

PADUCAH MCCRACKEN COUNTY
JOINT SEWER AGENCY BOARD OF DIRECTORS

SUSAN CARR	BOARD MEMBER
WILL COX	BOARD MEMBER
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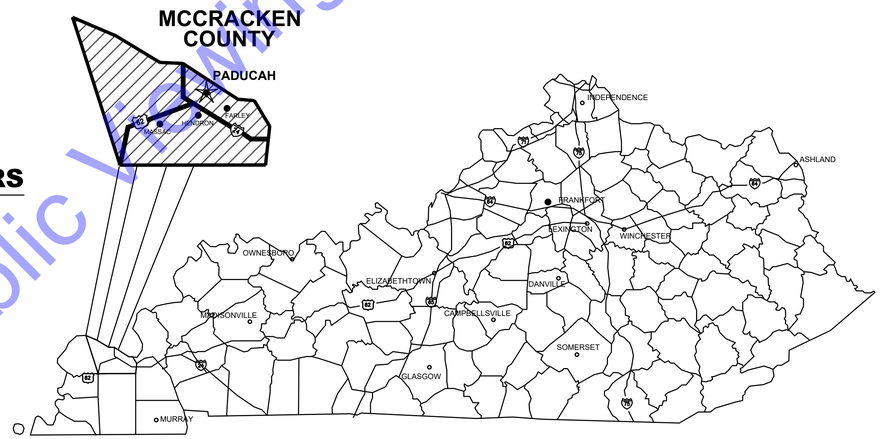


GENERAL LOCATION MAP

COMMONWEALTH™ ENGINEERS, INC.
A wealth of resources to master a common goal.

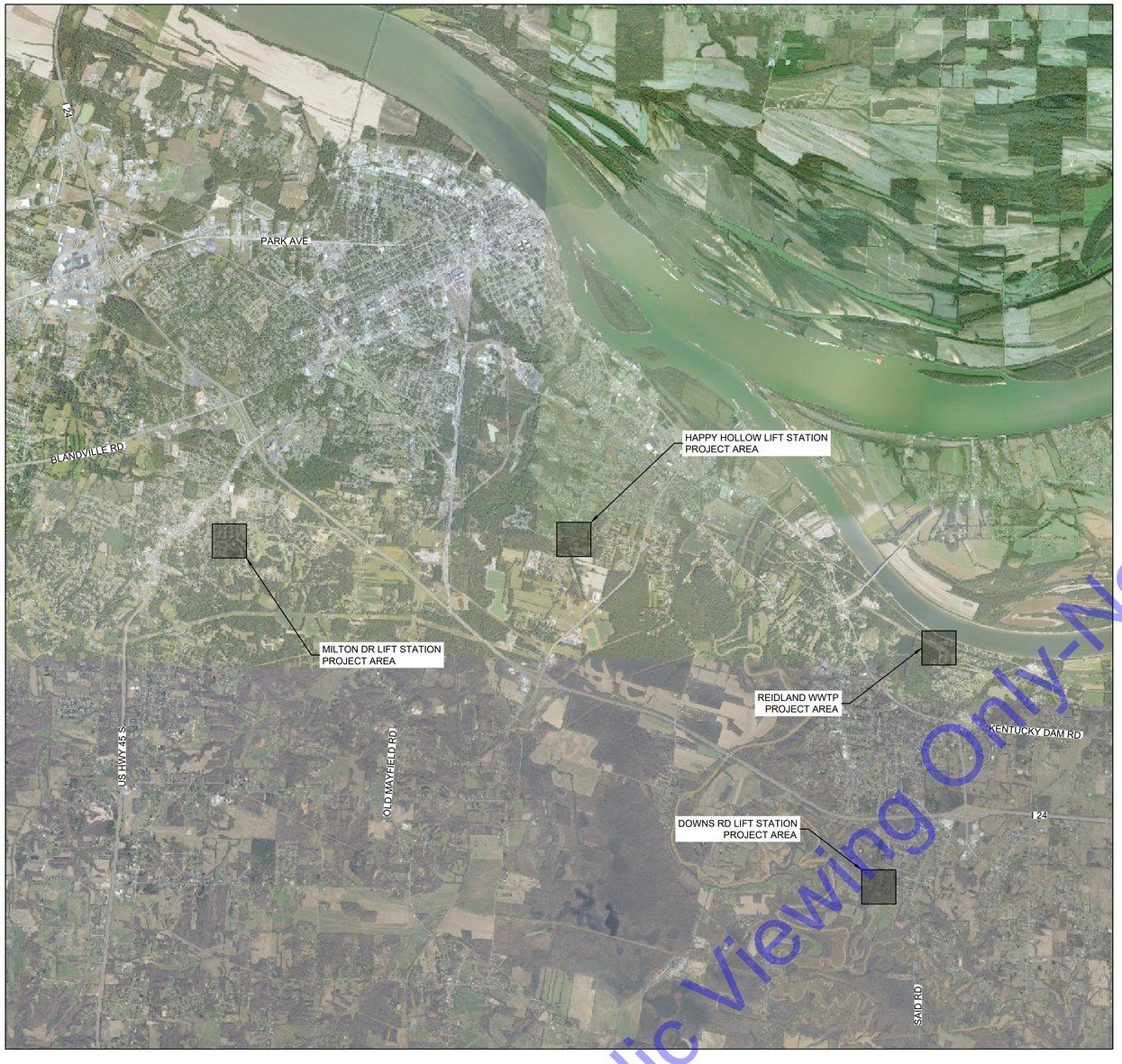
QA/QC BY : TOBY CHURCH — DATE : 1/13/2025

CERTIFIED BY : MARK NORDMEYER, KENTUCKY P.E. No. 30193 — DATE : 1/13/2025

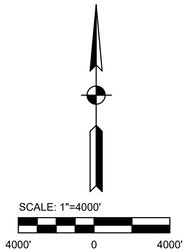
STATE OF KENTUCKY — MARK KENNETH NORDMEYER — 30193 — LICENSED PROFESSIONAL ENGINEER

CONTRACT NO. : S24137

File: Z:\SHARED\KY CLIENTS M-Z\PADUCAH, KY\D S24137 GENERATOR & ATS\06 CAD\A CURRENT FILES\1 DRAWINGS\01-TITLE SHEET.DWG
Saved: 1/14/2025 7:42:33 AM Plotted: 1/14/2025 7:45:58 AM Current User: Jack Sizemore LastSavedBy: jsizemore



VICINITY MAP
SCALE: 1"=4000'-0"



INDEX TO SHEETS

SHEET #	DRAWING #	DESCRIPTION
1	G1	TITLE SHEET
2	G2	VICINITY MAP AND INDEX TO SHEETS (PHASE 1 & PHASE 2)
3	E0-0	ELECTRICAL LEGENDS AND SCHEDULES (PHASE 1 & PHASE 2)
4	E1-0	ELECTRICAL- REIDLAND WWTP DEMOLITION AND RELOCATION (PHASE 1)
5	E1-1	ELECTRICAL- DOWNS ROAD LIFT STATION (PHASE 1)
6	E1-2	ELECTRICAL - DOWNS ROAD LIFT STATION RISER DIAGRAM (PHASE 1)
7	E1-3	ELECTRICAL- DOWNS ROAD LIFT STATION ONE-LINE DIAGRAM (PHASE 1)
8	E2-0	ELECTRICAL- HAPPY HOLLOW LIFT STATION SITE PLAN (PHASE 2)
9	E2-1	ELECTRICAL- HAPPY HOLLOW LIFT STATION RISER DIAGRAM (PHASE 2)
10	E2-2	ELECTRICAL- HAPPY HOLLOW LIFT STATION ONE-LINE DIAGRAM (PHASE 2)
11	E3-0	ELECTRICAL- MILTON LIFT STATION SITE PLAN AND ONE-LINE DIAGRAM (PHASE 2)
12	E3-1	ELECTRICAL- MILTON LIFT STATION RISER DIAGRAM (PHASE 2)

COMMONWEALTH ENGINEERS, INC.
A wealth of resources to master a common goal.
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OFFICE LOCATIONS IN:
INDIANAPOLIS, IN. (2)
EVANSVILLE, IN.
FORT WAYNE, IN.
CROWN POINT, IN.
BOWLING GREEN, KY.
SOUTH BEND, IN.

STATE OF KENTUCKY
MARK KENNETH NORDMEYER
30193
LICENSED PROFESSIONAL ENGINEER
Signature
1/13/2025
Date

PADUCAH MCCRACKEN COUNTY JOINT SEWER AGENCY
PADUCAH, KENTUCKY

GENERATORS AND AUTOMATIC TRANSFER SWITCHES
JANUARY 2025
PHASE 1 & PHASE 2

Know what's below. 811 before you dig.
1-800-382-5544
(ITS THE LAW)

No.	Submittal / Revision	By	Date

Designed By:	Drawn By:	Checked By:
JTS	JTS	TLC
Issue Date:	Project No:	Scale:
01/2025	S24137	AS SHOWN

VICINITY MAP AND INDEX TO SHEETS (PHASE 1 & PHASE 2)

Drawing No:
G2
Sheet: 2 OF 12

File: Z:\SHARED\KY CLIENTS M-Z\PADUCAH, KY\D S24137 GENERATOR & ATS\05 CAD\A CURRENT FILES\01 DRAWINGS\02-VICINITY MAP AND INDEX TO SHEETS.DWG
Saved: 1/13/2025 8:01:38 PM Plotted: 1/14/2025 7:46:14 AM Current User: Jack Sizemore LastSavedBy: jsizemore

PROCESS AND INSTRUMENTATION DIAGRAM LEGEND

INSTRUMENT TAG IDENTIFICATION

AREA — TAG TYPE / TAG NUMBER — TAG FUNCTION — (QUAN)

0350 — PAH / 1234A — HOA — (2)

COMPONENT DESIGNATOR

AREA 035D: BUILDING OR PROCESS AREA NUMBER

TAG TYPE P: FIRST LETTER, SEE ISA TABLE BELOW
AH: SUCCEEDING LETTERS, SEE ISA TABLE BELOW

TAG NUMBER 12: P&ID NUMBER
3: LOOP NUMBER
4: EQUIPMENT NUMBER
A: DEVICE LETTER IF MULTIPLE DEVICES

TAG FUNCTION HOA: TAG FUNCTION ABBREVIATION, SEE LISTING AT RIGHT

(QUANTITY) (2): TOTAL NUMBER OF DEVICES WHERE MORE THAN ONE DEVICE IS REQUIRED. DEVICE NUMBERS ARE SEQUENTIAL BEGINNING WITH THE TAG NUMBER SHOWN. IF QUANTITY IS NOT SHOWN, THEN ONE DEVICE ONLY IS REQUIRED.

COMPONENT DESIGNATOR SEE LISTING AT RIGHT

PLC POINT TYPE

- ANALOG INPUT
- ANALOG OUTPUT
- DISCRETE INPUT
- DISCRETE OUTPUT
- NETWORK CONNECTION

TAG FUNCTION ABBREVIATIONS

ALT ALTERNATE
C CLOSED(C)
CM COMPUTER-MANUAL
DIFF DIFFERENCE OR DIFFERENTIAL
DO DISSOLVED OXYGEN
F FAIL
F(X) CHARACTERIZED
FOR FOWARD-STOP(OFF)-REVERSE(MAINTAINED CONTACT)
FSR FOWARD-STOP-REVERSE(MOMENTARY CONTACT)
HOA HAND-OFF-AUTOMATIC(MAINTAINED CONTACT)
HOR HAND-OFF-REMOTE(MAINTAINED CONTACT)
II CURRENT TO CURRENT
IP CURRENT TO PNEUMATIC
LL LEAD-LAG(MAINTAINED CONTACT)
LOE LOSS OF ECHO(ULTRASONIC SENSOR FAILURE)
LOR LOCAL-OFF-REMOTE(MAINTAINED CONTACT)
LOS LOCKOUT STOP(LOCKABLE IN "STOP" POSITION MOMENTARY CONTACT)
L/R LOCAL/REMOTE(MAINTAINED CONTACT)
MA MANUAL-AUTOMATIC(MAINTAINED CONTACT)
MOA MANUAL-OFF-AUTOMATIC(MAINTAINED CONTACT)

O OPEN
OA OFF-AUTOMATIC
OCA OPEN-CLOSE-AUTOMATIC(MAINTAINED CONTACT)
OC OPEN-CLOSE(D)(MAINTAINED CONTACT)
OSC OPEN-STOP-CLOSE(MOMENTARY CONTACT SPRING RETURN TO CENTER POSITION)
00 ON-OFF(MAINTAINED CONTACT)
OOA ON-OFF-AUTOMATIC(MAINTAINED CONTACT)
OOR ON-OFF-REMOTE(MAINTAINED CONTACT)
R RUN
SBL SLUDGE BLANKET INTERFACE LEVEL
SP SPEED POT
SQRT SQUARE ROOT
SS START-STOP
SSA START-STOP-AUTOMATIC
SSL START-STOP-LOCK (LOCKABLE IN "STOP" POSITION. MOMENTARY CONTACT)
SUM SUMMMATION
VIB VIBRATION
X MULTIPLY

FWD FOWARD
REV REVERSE
F/R FOWARD/REVERSE(MOTOR STARTER COILS)
ESTP ESTOP(EMERGENCY STOP)
SPD (SPEED POT)
SUSP SUSPEND
ALRT ALERT
RSET RESET
STRT START

TAG SYMBOLS

HORIZONTAL BAR SYMBOLS FOR PHYSICAL MOUNTING OF DEVICE

SINGLE FUNCTION SINGLE/MULTI I/O DEVICE NON-CONFIGURABLE NON-PROGRAMMABLE — MULTI FUNCTION MULTI I/O PROGRAMMABLE DEVICE

- FIELD MOUNTED
- MAIN CONTROL ROOM PANEL NORMALLY ACCESSIBLE
- BEHIND MAIN CONTROL PANEL NOT NORMALLY ACCESSIBLE
- LOCAL PANEL NORMALLY ACCESSIBLE
- LOCAL PANEL - NOT NORMALLY ACCESSIBLE

CONTROL AND I/O DEVICES DISPLAY

[ADD APPROPRIATE HORZ. BAR(S)]

- NON-DISPLAYED CONFIGURABLE DEVICE (SEMI-PROGRAMMABLE)
- NON-DISPLAYED PROGRAMMABLE DEVICE (ie: PLC)
- DISPLAYED CONFIGURABLE DEVICE (SEMI-PROGRAMMABLE)
- DISPLAYED PROGRAMMABLE DEVICE
- DISPLAYED PROGRAMMABLE POINT (HMI TOUCH SCREEN OR SCADA SOFTWARE)

INSTRUMENT SOCIETY OF AMERICA TABLE

LETTER	FIRST LETTER(S)		SUCCEEDING LETTER(S)		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM(W. LOGGING)	ANNUNCIATE	
B	BURNER COMBUSTION		USERS CHOICE(*)	USERS CHOICE(*)	USERS CHOICE(*)
C	USERS CHOICE(*)			CONTROL	CLOSE
D	USERS CHOICE(*)	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT		
F	FLOW RATE	RATIO			FEEDBACK
G	USERS CHOICE(*)		GLASS		
H	HAND (MANUAL)				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME OR SCHEDULE	TIME RATE OF CHANGE	KEYPAD(DATA ENTRY)	CONTROL STATION	
L	LEVEL		LIGHT(PILOT)		LOW
M	MOTOR	MOMENTARY			MONITORING
N	USERS CHOICE(*)		USERS CHOICE(*)	USERS CHOICE(*)	USERS CHOICE(*)
O	USERS CHOICE(*)		ORIFICE		
P	PRESSURE OR VACUUM		POINT TEST CONNECTION		
Q	QUANTITY	INTEGRATE			
R	RADIATION		RECORD, TREND, LOG		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSIT	
U	UNIVERSAL/MULTIVARIABLE(*)		MULTIFUNCTION(*)	MULTIFUNCTION(*)	MULTIFUNCTION(*)
V	VIBRATION		VALUE	VALVE	
W	WEIGHT, FORCE, TORQUE		WELL	W	
X	UNCLASSIFIED(*)	X AXIS	UNCLASSIFIED(*)	UNCLASSIFIED(*)	UNCLASSIFIED(*)
Y	EVENT, STATE	Y AXIS		RELAY OR COMPUTE(*)	
Z	POSITION, DIMENSION	Z AXIS		DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

(*) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL

SPECIAL CASES:
ETM - ELAPSED TIME METER
JBX - JUNCTION BOX
NDX - INDEX #
MS - MOTOR STARTER
MOR - MOTOR OVERLOAD RELAY
MPR - MOTOR PROTECTION RELAY

CONDUIT NOTES

PVC SCHEDULE 40 BELOW GRADE.

RIGID ALUMINUM OR PVC COATED RGS CONDUIT ABOVE GRADE OUTDOORS.

RIGID ALUMINUM OR PVC COATED RGS CONDUIT IN CLASSIFIED AND CORROSIVE SPACES.

NO CONDUIT SHALL BE RAN ON TOP OF A DECK, ON A WALKWAY, OR IN AN AREA THAT MAY POSE A TRIP HAZARD. NO CONDUIT SHALL BE RAN ABOVE A DECK, ABOVE A WALKWAY, OR IN AN AREA THAT IS COMMONLY TRAVELED. ALL CONDUIT IN SUCH AREAS SHALL BE COORDINATED WITH THE OWNER/ENGINEER AND SHALL BE RAN BELOW GRADE OR IN THE CONCRETE DECKING OR PAD. CONDUIT RAN IN CONCRETE DECKING OR PAD SHALL BE AVOIDED WHEN POSSIBLE. IF CONDUIT IS TO BE ROUTED IN A STRUCTURAL CONCRETE DECK, PAD, WALL, ETC. IT SHALL BE COORDINATED AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. CONDUIT RAN IN CONCRETE CAN IMPACT THE STRUCTURAL INTEGRITY OF CONCRETE. IT IS THE CONTRACTORS RESPONSIBILITY TO CONFORM TO ANY REQUIREMENTS REQUIRED OF THE STRUCTURAL ENGINEER TO ACCOMMODATE THE INTEGRITY OF THE INSTALLATION AT NO COST TO THE OWNER. FOR A CONDUIT EMBEDDED IN CONCRETE TO BE CONSIDERED IT MUST BE THE ONLY REASONABLE SOLUTION AS DETERMINED BY THE ENGINEER. ALL PROPOSED INSTALLATIONS MUST COMPLY WITH ACI 318 AND BE ENGINEER APPROVED.

ALL UNDERGROUND CONDUITS SHALL BE SEALED AT BOTH ENDS.

NO CONDUIT PENETRATIONS ON THE TOP OF ANY OUTDOOR PANELS/ENCLOSURES.

EMT IS ACCEPTABLE IN CONDITIONED ELECTRICAL ROOMS AND OFFICE/BREAK AREAS ONLY. EMT SHALL BE TRANSITIONED PRIOR TO EXITING NON CORROSIVE SPACES. EMT SHALL NOT BE USED WHEN IT CAN BE EXPOSED TO ANY CORROSIVE GASES.

CONTROL WIRING REQUIREMENTS

EACH ANALOG INPUT REQUIRES AN 18/2 TWISTED SHIELDED PAIR IN 3/4" CONDUIT UNLESS NOTED OTHERWISE.

EACH ANALOG OUTPUT REQUIRES AN 18/2 TWISTED SHIELDED PAIR IN 3/4" CONDUIT UNLESS NOTED OTHERWISE.

EACH DISCRETE INPUT REQUIRES 2 #14's IN 3/4" CONDUIT UNLESS NOTED OTHERWISE.

EACH DISCRETE OUTPUT REQUIRES 2 #14's IN 3/4" CONDUIT UNLESS NOTED OTHERWISE.

CONTROL WIRING OF THE SAME TYPE MAY BE COMBINED INTO THE SAME CONDUIT. EXAMPLES: TWO 4-20MA ANALOG SIGNALS MAY BE COMBINED, TWO 24VDC DISCRETE SIGNALS MAY BE COMBINED, AND TWO 120VAC DISCRETE SIGNALS MAY BE COMBINED.

NOTE: INSTRUMENTS AND CABLE SHALL BE AS REQUIRED BY THE INSTRUMENT MANUFACTURER.

INSTRUMENT POWER

INSTRUMENTS REQUIRING 120 VAC:

1. MAGNETIC FLOW METERS
2. TURBIDITY TRANSMITTERS
3. pH TRANSMITTERS
4. ORP TRANSMITTERS
5. DO TRANSMITTERS
6. ULTRASONIC LEVEL TRANSMITTERS
7. ULTRASONIC FLOW TRANSMITTERS
8. INFLUENT AND EFFLUENT SAMPLERS

NOTE: THIS LIST IS PROVIDED AS A REFERENCE AND IS NOT ALL INCLUSIVE. COORDINATE WITH THE GENERAL CONTRACTOR AND THE EQUIPMENT SUPPLIERS FOR DETAILED WIRING REQUIREMENTS OF INSTRUMENTS, SENSORS, AND EQUIPMENT.

ELECTRICAL GENERAL NOTES

(GENERAL NOTES APPLICABLE TO ALL ELECTRICAL SHEETS)

1. CONTRACTOR SHALL EXAMINE NOT ONLY PLANS AND SPECIFICATIONS FOR ELECTRICAL AND INSTRUMENTATION, BUT PLANS AND SPECIFICATIONS FOR OTHER RELATED SECTIONS. VISIT THE SITE TO BECOME ACQUAINTED WITH ALL PROJECT CONDITIONS INCLUDING EXISTING CONDITIONS. EXECUTION OF CONTRACT IS EVIDENCE THAT THE CONTRACTOR HAS EXAMINED ALL DRAWINGS AND SPECIFICATIONS AND THAT ALL CONDITIONS OF INSTALLING THE WORK IN THIS SECTION ARE VERIFIED. LATE CLAIMS FOR LABOR AND MATERIALS REQUIRED DUE TO DIFFICULTIES ENCOUNTERED, WHICH COULD HAVE BEEN FORESEEN HAD EXAMINATIONS BEEN MADE WILL NOT BE RECOGNIZED.
2. THE DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO INCLUDE EVERY DETAIL OF REQUIRED CONSTRUCTION, EQUIPMENT, AND MATERIALS. PROVIDE ALL MATERIALS AND WORK NOT SPECIFICALLY MENTIONED, SHOWN, OR CAN BE REASONABLY INFERRED ON THE DRAWINGS BUT WHICH ARE NECESSARY TO FULLY COMPLETE THE WORK.
3. WHEN SUBSTITUTING OTHER EQUIPMENT, MATERIALS, AND PRODUCTS THAN SPECIFIED IN THE CONTRACT DOCUMENTS, INCLUDE IN PRICING ALL COSTS FOR OTHER DESIGN CHANGES TO THE PROJECT (ALL DIVISIONS) WHICH WILL RESULT FROM USE OF THE SUBSTITUTED ITEM(S).
4. REVIEW THE CONTRACT DOCUMENTS OF OTHER DIVISIONS, AND COORDINATE ELECTRICAL AND CONTROL WORK WITH THE WORK OF OTHER DISCIPLINES TO AVOID CONFLICTS AND INTERFERENCE.
5. UPON COMPLETION OF THE WORK REQUIRED UNDER THIS CONTRACT, PROVIDE TYPED UPDATED DIRECTORY WITHIN DOOR OF EACH AFFECTED PANELBOARD. LEAVE "SPARE" BREAKERS IN "OFF" POSITION.
6. ALL MOUNTING HEIGHTS INDICATED ON DRAWINGS ARE TO CENTERLINE, UON.
7. PROVIDE LIGHTING FIXTURES COMPATIBLE WITH CEILING CONSTRUCTION. COORDINATE WITH ARCHITECTURAL ROOM FINISH SCHEDULES.
8. IN AREAS HAVING FINISHED CEILINGS, LOCATE CEILING-MOUNTED ELECTRICAL DEVICES AND FIXTURES ACCORDING TO ARCHITECTURAL REFLECTED CEILING PLAN. DO NOT INSTALL CEILING-MOUNTED SMOKE DETECTORS WITHIN 4 FEET OF HVAC SUPPLY DIFFUSERS.
9. IN ELECTRICAL AND MECHANICAL EQUIPMENT SPACES, COORDINATE EXACT LOCATIONS OF LIGHTING FIXTURES WITH CONDUIT BANKS, DUCTWORK, PIPING, STRUCTURE, SUPPORTS, AND OTHER OBSTRUCTIONS. LOCATE FIXTURES SUCH THAT DIALS, GAUGES, METERS, ETC. ARE PROPERLY ILLUMINATED.
10. DO NOT USE ANY LIGHTING FIXTURE AS A RACEWAY FOR CONDUCTORS NOT SERVING THAT PARTICULAR FIXTURE.
11. CONNECT BATTERY-OPERATED EMERGENCY LIGHTING UNITS AND EXIT SIGNS HAVING BATTERY BACK-UP TO UNSWITCHED LEG OF LOCAL LIGHTING CIRCUIT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND NEC SUCH THAT FAILURE OF CIRCUIT TRANSFERS UNIT FROM NORMAL TO EMERGENCY MODE, CAUSING LAMPS TO RE-ENERGIZE.
12. DO NOT INSTALL OUTLET BOXES BACK-TO-BACK IN NON-RATED PARTITIONS. OFFSET AND SEAL, SIMILAR TO REQUIREMENTS FOR RATED PARTITIONS, TO MINIMIZE SOUND TRANSMISSION.
13. COORDINATE ROUTING OF ALL LARGE CONDUITS (2" DIA AND LARGER) AND PULL BOX LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO INSTALLATION TO AVOID CONFLICTS AND TO GUARANTEE REQUIRED CLEARANCE AND ACCESSIBILITY OF ELECTRICAL AND OTHER SYSTEMS.
14. COORDINATE WITH OWNER OR OWNER'S SELECTED VENDOR PRIOR TO ROUGH-IN FOR EXACT LOCATIONS OF SPECIAL PURPOSE OUTLETS DEDICATED TO SPECIFIC EQUIPMENT. VERIFY REQUIRED NEMA CONFIGURATION OF ALL SUCH OUTLETS.
15. PROVIDE APPROPRIATE PULL WIRE IN EACH EMPTY SYSTEMS CONDUIT INCLUDED IN THIS PROJECT.
16. INCLUDE GREEN-INSULATED GROUNDING CONDUCTOR SIZED PER 2002 NEC TABLE 250-122 WITH ALL BRANCH CIRCUIT CONDUCTORS SERVING LIGHTING FIXTURES, RECEPTACLES, MECHANICAL OR OTHER DEVICES INSTALLED AT OR BELOW 8'-0".
17. MATCH A.I.C. RATINGS AND OTHER CHARACTERISTICS OF EXISTING DEVICES IN PANELBOARD WHEN ADDING BREAKERS TO EXISTING PANELBOARDS.
18. ALL WORK SHALL BE IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE - LATEST EDITION ADOPTED BY INDIANA, THE INDIANA CODE AMENDMENT, LOCAL/MUNICIPAL CODE, AND THE AUTHORITIES HAVING JURISDICTION.
19. ALL CONNECTIONS TO EQUIPMENT SUBJECT TO MOVEMENT OR VIBRATION SHALL BE LIQUID TIGHT FLEXIBLE METAL CONDUIT, NOT LESS THAN 12" IN LENGTH, NOR GREATER THAN 36" IN LENGTH.
20. ALL CONDUIT PENETRATIONS SHALL BE SEALED WITH APPROPRIATE CONDUIT SEALING MATERIAL.
21. ALL CABLE SIZES SHALL UTILIZE COPPER CONDUCTORS.
22. FIELD VERIFY LOCATIONS OF BUILDING EXPANSION JOINTS WHEN ROUTING CONDUIT. ALL CONDUITS CROSSING EXPANSION JOINTS SHALL BE INSTALLED WITH THE EXPANSION FITTINGS. EXPANSION FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE NEC AND MANUFACTURERS WRITTEN RECOMMENDATIONS.
23. FEEDERS FROM PANELBOARDS BACK TO MAIN SWITCHBOARD, BETWEEN AUTO TRANSFER SWITCHES AND THEIR SOURCES/LOADS, BETWEEN DRY TRANSFORMERS AND THEIR SOURCES/LOADS ARE NOT INDICATED. FEEDERS ARE PART OF THE WORK, AND SHALL BE SIZED AS INDICATED ON THE LINE DIAGRAM.
24. HOMERUNS SHALL NOT BE COMBINED IN A RACEWAY UNLESS SHOWN ON THE CONTRACT DRAWINGS. SINGLE PHASE BRANCH CIRCUIT HOMERUNS MAY BE COMBINED AT THE CONTRACTORS DISCRETION NOT GREATER THAN (3) PHASE CONDUCTORS, NEUTRAL CONDUCTORS, AND A GROUNDING CONDUCTOR.
25. EACH SINGLE PHASE BRANCH CONDUCTOR SHALL HAVE A DEDICATED NEUTRAL BACK TO THE PANEL.
26. ALL PENETRATIONS BELOW GRADE SHALL USE LINK SEALS.
27. WHERE LOW VOLTAGE (CONTROL) CABLING IS ALLOWED TO BE INSTALLED WITHOUT A RACEWAY, IT SHALL BE SUPPORTED NOT EXCEEDING INTERVALS OF 48", AND NOT MORE THAN 6" FROM THE CABINETS, BOXES, FITTINGS, OUTLETS, RACKS, FRAMES AND TERMINALS.
28. ALL MOUNTING HARDWARE INCLUDING NUTS, BOLTS, SCREWS, WASHERS, ETC. SHALL BE STAINLESS STEEL.
29. MOUNT JUNCTION BOXES AND DISCONNECT SWITCHES ON STAINLESS STEEL UNISTRUT.
30. ALL UNISTRUT, MOUNTING BRACKETS AND SUPPORTING STRUCTURES SHALL BE STAINLESS STEEL.
31. DO NOT MIX CONTROL AND POWER CONDUCTORS IN THE SAME CONDUIT. DO NOT MIX DISCRETE AND ANALOG CONTROL CONDUCTORS IN THE SAME CONDUIT.
32. ADJUSTABLE SPEED DRIVES (ASD) LINE AND LOAD WIRE SHALL BE RUN IN SEPARATE RACEWAYS.
33. CONTRACTOR SHALL COORDINATE WITH HEAT TRACE MANUFACTURER DURING BIDDING AND CONSTRUCTION AND SHALL PROVIDE ALL CONDUIT, WIRING, AND CIRCUITS AS REQUIRED. HEAT TRACE SHALL BE PROVIDED/INSTALLED COMPLETE. ALL HEAT TRACE IS REQUIRED TO BE GFI PROTECTED.
34. CONTRACTOR SHALL NOT COMBINE POWER FEEDS FOR THREE PHASE LOADS.
35. THE BELOW LOCATIONS ARE WHERE GFCI OUTLETS ARE REQUIRED:
    - 35.1. KITCHENS: ALL KITCHEN OUTLETS.
    - 35.2. BATHROOMS: GFCI OUTLETS ARE REQUIRED IN BATHROOMS NEAR THE SINK.
    - 35.3. GARAGES: GFCI OUTLETS ARE REQUIRED IN GARAGES THAT HAVE SINKS.
    - 35.4. BASEMENTS: UNFINISHED BASEMENTS REQUIRE AT LEAST ONE GFCI OUTLET.
    - 35.5. OUTDOOR SPACES: GFCI OUTLETS ARE REQUIRED IN OUTDOOR AREAS THAT ARE ACCESSIBLE OR AT GRADE LEVEL.
    - 35.6. LAUNDRY ROOMS: ALL LAUNDRY ROOM OUTLETS.
    - 35.7. CRAWL SPACES: GFCI OUTLETS ARE REQUIRED IN CRAWL SPACES WHERE MECHANICAL EQUIPMENT IS LOCATED.
    - 35.8. UTILITY ROOMS: ALL UTILITY ROOM OUTLETS.
36. LIMIT CAT 6E INSTALLATION TO 230' MAXIMUM DISTANCE. CONTRACTOR SHALL FURNISH AND INSTALL FIBER OPTIC CABLE AND MEDIA CONVERTERS IF CONDUIT ROUTING EXCEEDS CAT 6E LIMITS.

LEGEND

SYMBOL	DESCRIPTION	MTG HGT AFF TO CL, UON
	OPEN LIGHTING FIXTURE SYMBOLOGY DENOTING FIXTURES CONNECTED TO NORMAL POWER: FIXTURE TYPE DETERMINES MOUNTING.	-----
	SINGLE DIAGONAL LIGHTING FIXTURE SYMBOLOGY DENOTING FIXTURES CONNECTED TO CRITICAL OR EQUIPMENT BRANCH (OR EMERGENCY POWER), UON: FIXTURE TYPE DETERMINES MOUNTING.	-----
	DOUBLE DIAGONAL LIGHTING FIXTURE SYMBOLOGY DENOTING FIXTURES CONNECTED TO LIFE SAFETY BRANCH (OR EMERGENCY POWER), UON: FIXTURE TYPE DETERMINES MOUNTING.	-----
	BATTERY POWERED EMERGENCY LIGHTING UNIT	7'-6"
	EXIT SIGN: ARROWS DENOTE DIRECTIONAL INDICATING CHEVRON RQMTS, SHADING DENOTES FACE(S) ORIENTATION.	-----
	WALLWASH OR OTHER DIRECTIONALLY ADJUSTABLE/AIMABLE FIXTURE: OPEN SIDE DENOTES ORIENTATION. TYPE DETERMINES MOUNTING.	-----
	TRACK LIGHTING FIXTURE: TYPE DETERMINES MOUNTING.	-----
	POLE-MOUNTED SITE LIGHTING FIXTURE: TYPE DETERMINES MTG.	-----
	FLOOD LIGHTING FIXTURE: TYPE DETERMINES MOUNTING.	-----
PC	PHOTO-CELL	-----
	ALL FIXTURES IN THIS SPACE SHALL BE SAME TYPE INDICATED, U.O.N.	
S	SINGLE-POLE TOGGLE SWITCH	3'-10"
$	SINGLE-POLE TOGGLE SWITCH: SLASH DENOTES ESSENTIAL POWER SYSTEM CONNECTION - TYPICAL FOR ALL SWITCHES.	3'-10"
OS_W	DUAL TECHNOLOGY, WALL MNTD OCCUPANCY SENSOR WITH MANUAL OVERRIDE SWITCH	3'-10"
OS_C	DUAL TECHNOLOGY, CEILING MNTD OCCUPANCY SENSOR WITH REMOTE MANUAL OVERRIDE SWITCH	
S_{OR}	SINGLE-POLE REMOTE OVERRIDE SWITCH FOR CEILING MNTD OCCUPANCY SENSOR	3'-10"
S_D	DIMMER SWITCH	3'-10"
S_D^3	THREE-WAY DIMMER SWITCH	3'-10"
S_P	SINGLE-POLE TOGGLE SWITCH WITH PILOT LIGHT	3'-10"
S_M	SINGLE-POLE MOTOR-RATED TOGGLE SWITCH DISCONNECT	3'-10"
S_T	SINGLE-POLE OR DOUBLE-POLE MANUAL MOTOR STARTER WITH MELTING ALLOY ELEMENTS FOR THERMAL OVERLOAD PROTECTION	3'-10"
S_{IR}	OCCUPANCY SENSOR SWITCH	3'-10"
S_{IT}	INTERVAL TIMER RESET AND CONTROL SWITCH	3'-10"
S_J	JOG SWITCH	3'-10"
	MUSHROOM HEAD TYPE PUSHBUTTON STATION	5'-0"
P	AUTO DOOR CONTROL PUSHPLATE	-----
S_V	VARIABLE INTENSITY CONTROLLER INCLUDED WITH OWNER-FURNISHED-CONTRACTOR-INSTALLED SURGICAL LIGHTING FIXTURE	5'-0"
S_{LV}	LOW VOLTAGE CONTROL SWITCH	3'-10"
WS	FACTORY SUPPLIED WALL CONTROLLER FOR CEILING MOUNTED LIGHT-INSTALLED BY ELECTRICAL CONTRACTOR	3'-10"
	120V DUPLEX RECEPTACLE, STANDARD MOUNTING HEIGHT	1'-6"
	120V DUPLEX RECEPTACLE, SPECIAL MOUNTING HEIGHT INSTALL AT SAME HEIGHT AS SWITCHES IF NO HEIGHT IS INDICATED	ABOVE COUNTER
	120V QUADRUPLEX RECEPTACLE, STANDARD MOUNTING HEIGHT	1'-6"
	120V QUADRUPLEX RECEPTACLE, SPECIAL MOUNTING HEIGHT INSTALL AT SAME HEIGHT AS SWITCHES IF NO HEIGHT IS INDICATED	ABOVE COUNTER
	120V SINGLE RECEPTACLE, AMP RATING (IF OTHER THAN 20A) SHOWN: STANDARD MOUNTING HEIGHT, OR OTHER HEIGHT AS NOTED	1'-6", UON
GFCI	120V GFCI DUPLEX RECEPTACLE, STANDARD MOUNTING HEIGHT	1'-6"
	120V GFCI QUADRUPLEX RECEPTACLE, SPECIAL MOUNTING HEIGHT INSTALL AT SAME HEIGHT AS SWITCHES IF NO HEIGHT IS INDICATED	ABOVE COUNTER
	120V GFCI DUPLEX RECEPTACLE, SPECIAL MOUNTING HEIGHT INSTALL AT SAME HEIGHT AS SWITCHES IF NO HEIGHT IS INDICATED	ABOVE COUNTER
	SINGLE RECEPTACLE (OTHER THAN 120V), VOLTAGE, AMP RATING, NEMA CONFIGURATION, AND MOUNTING HEIGHT AS NOTED	-----
	RECPTACLE OR J-BOX CONNECTION FOR X-RAY VIEWER: VERIFY CONNECTION RQMTS WITH UNIT FURNISHED PRIOR TO ROUGH-IN	-----
	120V DUPLEX RECEPTACLE IN FLUSH FLOOR-MOUNTED BOX	-----
TP	TELE-POWER POLE	-----
H	HALON DUMP STATION	-----
F	FIRE ALARM MANUAL PULL STATION	3'-10"
FK	FIRE ALARM MANUAL PULL STATION, KEY-OPERATED	3'-10"
D	FIRE ALARM CEILING-MOUNTED SMOKE DETECTOR	-----
H	FIRE ALARM CEILING-MOUNTED HEAT DETECTOR	-----
D_S	FIRE ALARM SUPPLY AIR DUCT-MOUNTED SMOKE DETECTOR	-----
D_R	FIRE ALARM RETURN AIR DUCT-MOUNTED SMOKE DETECTOR	-----
DR	FIRE ALARM PROJECTED BEAM SMOKE DETECTOR - RECEIVER	AS NOTED
DT	FIRE ALARM PROJECTED BEAM SMOKE DETECTOR - TRANSMITTER	AS NOTED
Y	FIRE ALARM CONNECTION TO SPRINKLER SYSTEM VALVE STATUS SWITCH (TAMPER SWITCH)	-----
FS	FIRE ALARM CONNECTION TO SPRINKLER SYSTEM WATER FLOW SWITCH	-----
F	FIRE ALARM AUDIO/VISUAL NOTIFICATION DEVICE-CHIME & STROBE	6'-8"
F	FIRE ALARM AUDIO/VISIUAL NOTIFICATION DEVICE-HORN & STROBE	6'-8"
F	FIRE ALARM VISUAL ONLY NOTIFICATION DEVICE - STROBE LIGHT	6'-8"
FS FS	FIRE ALARM SPEAKER: CEILING-MOUNTED, WALL-MOUNTED	6'-8"
FH	FIRE ALARM HORN, WALL-MOUNTED	AS NOTED
RI RI	DUCT SMOKE DETECTOR ALARM REMOTE INDICATOR LIGHT: CEILING-MOUNTED, WALL-MOUNTED	6'-8"
SAI SAI	DUCT SMOKE DETECTOR ALARM REMOTE INDICATOR LIGHT AND TEST SWITCH: CEILING-MOUNTED, WALL-MOUNTED	6'-8"
Z	FIRE ALARM ZONE ADDRESSABLE MODULE	-----
I	FIRE ALARM INDIVIDUAL ADDRESSABLE MODULE	-----
	FIRE ALARM ELECTRO-MAGNETIC DOOR HOLDER	6'-4"
FR	FIRE RELAY	-----
ID	DESK MOUNTED INTERCOM	-----
IW	WALL MOUNTED INTERCOM	-----
$X	EXPLOSION PROOF SWITCH	3'-10"
$3	3 WAY SWITCH	3'-10"
$4	4 WAY SWITCH	3'-10"
$WP	NEMA 4X SWITCH	3'-10"

PUMP AND METER LEGEND

SYMBOL	DESCRIPTION
M	MAGNETIC FLOW METER
	SONIC FLOW METER
	CENTRIFUGAL PUMP
	LOBE PUMP
	PERISTALTIC PUMP

LEGEND

ABBREVIATIONS

ABV	ABOVE	IG	ISOLATED GROUND
AFF	ABOVE FINISHED FLOOR	MON	MONITOR
ACLG	ABOVE FINISHED CEILING	MTG	MOUNTING
BFC	BELOW FINISHED CEILING	MV	MULTI-VIEWER
C	CRITICAL BRANCH OR EMERG PWR-RED DEVICE & PLATE, UON.	MW	MICROWAVE OVEN
CL	CENTER-LINE	NEC	NATIONAL ELECTRICAL CODE
CLG	CEILING-MOUNTED	OCPD	OVERCURRENT PROTECTIVE DEVICE
COF	COFFEE MAKER	OFCI	OWNER-FURNISHED-CONTRACTOR-INSTALLED
COP	COPIER	OFE	OWNER-FURNISHED EQUIPMENT
CTR	COUNTER	PRT	PRINTER
ECB	ENCLOSED CIRCUIT BREAKER	PTS	PNEUMATIC TUBE STATION
EMER	EMERGENCY	Q	EQUIP BRANCH OR EMERG PWR-RED DEVICE & PLATE, UON.
EWC	ELECTRIC WATER COOLER	REF	REFRIGERATOR
EWH	ELECTRIC WATER HEATER	RQMTS	REQUIREMENTS
FAX	FACSIMILE MACHINE	WP	WEATHERPROOF
FBO	FURNISHED BY OTHERS	T	TAMPERPROOF DEVICE
GFCI	GROUND FAULT CIRCUIT INTERRUPT-ING - PERSONNEL PROTECTION	UON	UNLESS OTHERWISE NOTED
GFI	GROUND FAULT INTERRUPTING - EQUIPMENT PROTECTION	UCR	UNDER-COUNTER REFRIGERATOR
HGT	HEIGHT		
FPMR	FUSED PER MANUFACTURE'S RECOMMENDATIONS		

SYMBOL	DESCRIPTION	MTG HGT AFF TO CL, UON
	EXPOSED RACEWAY	-----
	RACEWAY CONCEALED IN OR ABOVE CEILINGS AND WITHIN WALLS	-----
	BRANCH CIRCUIT RACEWAY CONCEALED IN OR BELOW FLOOR SLAB OR BELOW GRADE	-----
	FEEDER RACEWAY CONCEALED BELOW FLOOR SLAB OR BELOW GRADE	-----
	LIGHTNING PROTECTION CABLING	-----
	HOMERUN RACEWAY: NUMBER OF ARROWHEADS DENOTES NUMBER OF CIRCUITS.	-----
	RACEWAY TURNING UP AS VIEWED FROM THE LOAD	-----
	RACEWAY TURNING DOWN AS VIEWED FROM THE LOAD	-----
	RACEWAY VERTICAL RISER WITH HORIZONTAL CONTINUATION AT TWO LEVELS SHOWN	-----
	CAPPED RACEWAY	-----
	GENERAL LIGHTING OR OUTLET CIRCUIT - MAY BE DAISY CHAINED	
J	JUNCTION BOX	AS NOTED
	ENCLOSED BREAKER	
	FUSIBLE SAFETY SWITCH (AMP RATING, POLES, FUSE SIZE, AND NEMA ENCLOSURE TYPE IF OTHER THAN 1 NOTED)	-----
	NON-FUSIBLE SAFETY SWITCH (AMP RATING, POLES, AND NEMA ENCLOSURE TYPE IF OTHER THAN 1 NOTED)	-----
	COMBINATION MAGNETIC ACROSS-THE-LINE STARTER WITH MOTOR CIRCUIT PROTECTOR (NEMA STARTER SIZE NOTED)	-----
	CONTROL PANEL FURNISHED INTEGRAL TO EQUIPMENT (SINGLE-POINT ELECTRICAL CONNECTION REQUIRED)	-----
	MOTOR	-----
	FLEXIBLE CONDUIT CONNECTION	-----
	SURFACE- OR FLUSH-MOUNTED LIGHTING/RECEPTACLE PANELBOARD	-----
	POWER DISTRIBUTION PANELBOARD	-----
T T	DRY TYPE TRANSFORMER	-----
XXX	MISCELLANEOUS SYSTEMS PANEL OR CABINET: REFER TO ABBREVIATIONS.	-----

NOTE !! ALL ABBREVIATIONS, NOTES, AND SYMBOLS SHOWN ON THIS DRAWING DO NOT NECESSARILY APPEAR IN THIS SET OF CONTRACT DOCUMENTS. REFER ONLY TO THOSE THAT APPLY.

ABBREVIATIONS

ABBREVIATION	MEANING
GFI	GROUND FAULT INTERRUPTER
WP	WEATHER PROOF
AFF	ABOVE FINISHED FLOOR
UNO	UNLESS NOTED OTHERWISE
FPMR	FUSE PER MANUFACTURERS RECOMMENDATIONS
IG	ISOLATED GROUND-ORANGE RECEPTACLE
M	MONITOR RECEPTACLE- CRITICAL POWER- RED RECEPTACLE- 60"A.F.F. (UNO) (UNLESS VENDOR DRAWINGS REQUIRE DIFFERENT HEIGHT)
TSP	TWISTED SHIELDED PAIR

MOTOR CONTROLLER LEGEND

SYMBOL	DESCRIPTION
MS	ACROSS THE LINE MOTOR STARTER
SS	SOFT STARTER
VFD	VARIABLE FREQUENCY DRIVE
MS	ACROSS THE LINE MOTOR STARTER WITH INTEGRAL DISCONNECT
SS	SOFT STARTER WITH INTEGRAL DISCONNECT
VFD	VARIABLE FREQUENCY DRIVE WITH INTEGRAL DISCONNECT

LIGHTING LEGEND

SYMBOL	DESCRIPTION
	FIXTURE WITH STANDARD BALLAST.
	FIXTURE WITH STANDARD BALLAST AND EMERGENCY BALLAST.

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STATE OF KENTUCKY — MARK KENNETH NORDMEYER — 30193 — LICENSED PROFESSIONAL ENGINEER

Signature — Date 1/13/2025

PADUCAH MCCRACKEN COUNTY JOINT SEWER AGENCY
PADUCAH, KENTUCKY

GENERATORS AND AUTOMATIC TRANSFER SWITCHES
JANUARY 2025
PHASE 1 & PHASE 2

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No.	Submittal / Revision	By	Date

Designed By: JTS	Drawn By: JTS	Checked By: TLC
Issue Date: 01/2025	Project No: S24137	Scale: AS SHOWN

ELECTRICAL LEGENDS AND SCHEDULES (PHASE 1 & PHASE 2)

Drawing No: **E0-0**

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A
1
2
7

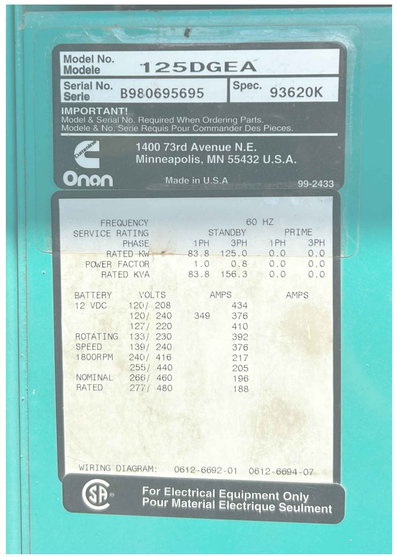
C
3
4

D
EXISTING 600A
MANUAL TRANSFER
SWITCH

F
5
3

NEW 600A AUTOMATIC TRANSFER
SWITCH PRIMARY LOCATION
G

H



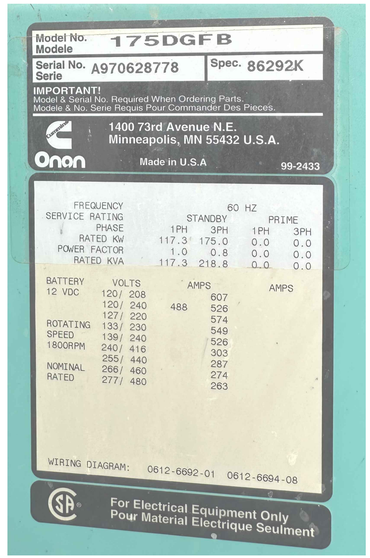
B
2

E

125KW GENERATOR
1 2 7

600A MANUAL TRANSFER SWITCH
3

175KW GENERATOR
6



I
6

ELECTRICAL RELOCATION AND DEMOLITION NOTES:

1. EXISTING 125KW GENERATOR SHALL BE RELOCATED TO THE DOWNS ROAD LIFT STATION. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE RELOCATION OF THE GENERATOR.
2. CONTRACTOR SHALL COORDINATE WITH ONAN TO ENSURE GENERATOR IS INSTALLED CORRECTLY. CONTRACTOR TO ENSURE THE EXISTING PUMPS LOCATED AT THE DOWNS ROAD LIFT STATION RUN PROPERLY WITH THE GENERATOR INSTALLED.
3. THE EXISTING AUTOMATIC TRANSFER SWITCHES FOR THE 125KW GENERATOR AND THE EXISTING MANUAL TRANSFER SWITCH FOR THE 175KW GENERATOR ARE TO BE DEMOLISHED AND REMOVED COMPLETE. EQUIPMENT SHALL BE TURNED OVER TO OWNER.
4. CONTRACTOR SHALL PROVIDE AND INSTALL A NEW NEMA 12 JUNCTION BOX TO ALLOW THE EXTENSION OF THE EXISTING WIRES TO ATS. JUNCTION BOX SHALL BE INSTALLED IN PLACE OF EXISTING AUTOMATIC TRANSFER SWITCH AT THE END OF THE EXISTING CONDUIT. ALL EXISTING CONDUIT AND POWER WIRE SHALL BE TERMINATED ON POWER DISTRIBUTION BLOCKS, ILSCO OR EQUAL, WITHIN THE NEW JUNCTION BOX. ALL WIRES AND TERMINAL BLOCKS SHALL BE CLEARLY LABELED. CONTRACTOR SHALL PROVIDE ALL MOUNTING HARDWARE AND ANY ASSOCIATED APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF THE NEW JUNCTION BOX.
5. EXISTING 600A HEAVY DUTY SAFETY SWITCH IS TO REMAIN.
6. THE 175KW GENERATOR SHALL RECEIVE A NEW NEMA 4X, 480V, 3-PHASE, 600A AUTOMATIC TRANSFER SWITCH. NEW NEMA 4X 600A AUTOMATIC TRANSFER SWITCH SHALL BE INSTALLED WHERE THE EXISTING MANUAL TRANSFER SWITCH IS LOCATED. IF NEW 600A AUTOMATIC TRANSFER SWITCH DOES NOT FIT, THE SECONDARY LOCATION IN IMAGE F SHALL BE USED.
7. CONTRACTOR IS RESPONSIBLE TO RETAP THE CURRENT 240V 3-PHASE SETUP ON THE 125KW GENERATOR TO CONVERT IT TO 480V 3-PHASE TO MATCH THE DOWNS ROAD LIFT STATION FEED REQUIREMENTS. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE RETAP.

IMAGE IDENTIFIER LEGEND

IMAGE	DESCRIPTION	DEMO / RELOCATION NOTES
A	EXISTING 125 KW GENERATOR	TO BE RELOCATED
B	125KW GENERATOR NAMEPLATE	---
C	EXISTING 150A AUTOMATIC TRANSFER SWITCH	TO BE DEMOED
D	EXISTING 600A MANUAL TRANSFER SWITCH	TO BE DEMOED
E	REIDLAND WWTP GENERATORS LAYOUT	---
F	EXISTING 600A SAFETY SWITCH	TO REMAIN
G	NEW 600A AUTOMATIC TRANSFER SWITCH PRIMARY LOCATION	---
H	NEW 600A AUTOMATIC TRANSFER SWITCH SECONDARY LOCATION	---
I	175KW GENERATOR NAMEPLATE	TO REMAIN

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STATE OF KENTUCKY
MARK KENNETH NORDMEYER
30193
LICENSED PROFESSIONAL ENGINEER
Signature
1/13/2025
Date

PADUCAH MCCRACKEN COUNTY JOINT SEWER AGENCY
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ELECTRICAL- REIDLAND WWTP DEMOLITION AND RELOCATION (PHASE 1)

Drawing No:
E1-0
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NOTES:

1. CONTRACTOR SHALL VISIT THE SITE TO BECOME ACQUAINTED WITH ALL PROJECT CONDITIONS INCLUDING EXISTING CONDITIONS. EXECUTION OF CONTRACT IS EVIDENCE THAT THE CONTRACTOR HAS EXAMINED ALL DRAWINGS AND SPECIFICATIONS AND THAT ALL CONDITIONS OF INSTALLING THE WORK IN THIS SECTION ARE VERIFIED. CLAIMS FOR LABOR, MATERIAL, OR TIME EXTENSIONS REQUIRED DUE TO DIFFICULTIES ENCOUNTERED, WHICH COULD HAVE BEEN FORESEEN HAD EXAMINATIONS BEEN MADE, WILL NOT BE RECOGNIZED.

2. NEW AUTOMATIC TRANSFER SWITCH TO BE PROVIDED BY CONTRACTOR. CONTRACTOR SHALL COORDINATE WITH ATS MANUFACTURER AND PROVIDE ALL NECESSARY POWER AND CONTROL WIRING FOR A COMPLETE AND FUNCTIONING SYSTEM. LACK OF COORDINATION IS NOT JUSTIFICATION FOR ADDITIONAL FUNDS.

3. NEW 200A AUTOMATIC TRANSFER SWITCH PANEL SHALL BE MOUNTED ON A STAINLESS STEEL UNISTRUT MOUNTING STRUCTURE. CONTRACTOR SHALL COORDINATE WITH OWNER FOR FINAL APPROVED LOCATION FOR THE AUTOMATIC TRANSFER SWITCH PANEL.

4. A MINIMUM 3' 6" WORKING CLEARANCE IS REQUIRED IN FRONT OF THE CONTROL PANEL PER NEC TABLE 110.26(A)(1).

5. THE PUMP STATION WET WELL IS CLASSIFIED AS CLASS 1 DIVISION 1, GROUP D AREA PER NFPA 820. THE AREA WHICH EXTENDS TO 18" ABOVE THE PUMP STATION TOP OF SLAB AND EXTENDS 3' BEYOND ALL SIDES OF THE HATCH IS A CLASS 1, DIVISION 2 HAZARDOUS LOCATION. ANY EQUIPMENT LOCATED WITHIN THE CLASSIFIED AREA SHALL BE UL LISTED FOR THAT AREA. ALL WIRING METHODS SHALL CONFORM TO THE REQUIREMENTS OF NEC ARTICLE 500 AND 501.

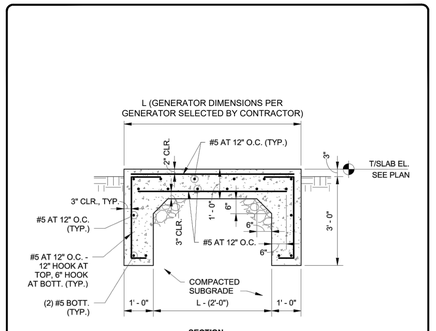
6. EXISTING 125KW GENERATOR SHALL BE RELOCATED FROM REIDLAND WWTP TO THE PROPOSED LOCATION AT THE DOWNS ROAD LIFT STATION. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE RELOCATION OF THE GENERATOR.

7. CONTRACTOR TO COORDINATE WITH OWNER AND PROVIDE A MINIMUM OF 4FT CLEARANCE ON ALL SIDES OF THE EXISTING 125KW GENERATOR THAT ARE PARALLEL TO THE FENCE.

8. CONTRACTOR SHALL COORDINATE WITH ONAN TO ENSURE GENERATOR IS INSTALLED CORRECTLY. CONTRACTOR TO ENSURE THE EXISTING PUMPS LOCATED AT THE DOWNS ROAD LIFT STATION RUN PROPERLY WITH THE GENERATOR INSTALLED.

9. CONTRACTOR IS RESPONSIBLE TO RETAP THE CURRENT 240V 3-PHASE SETUP ON THE 125KW GENERATOR TO CONVERT IT TO 480V 3-PHASE TO MATCH THE DOWNS ROAD LIFT STATION FEED REQUIREMENTS. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE RETAP.

9. CONTRACTOR IS RESPONSIBLE TO INSTALL A NEW NEMA 4X 480/120V STEP DOWN TRANSFORMER WITH TWO DEDICATED CIRCUIT BREAKER INSTALLED INSIDE THE CONTROL PANEL. TRANSFORMER SHALL BE MOUNTED EXTERIOR AND ADJACENT TO THE EXISTING LIFT STATION CONTROL PANEL. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH GENERATOR MANUFACTURER FOR POWER REQUIREMENTS FOR PROPER BREAKER SIZING.

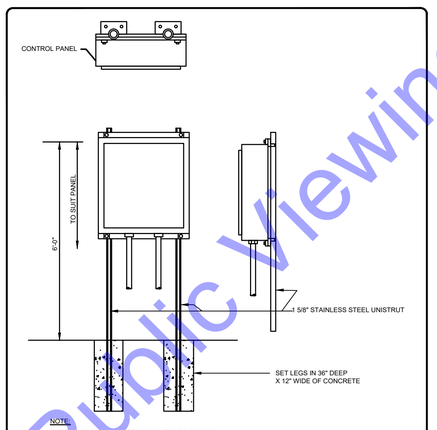


SECTION

NOTES:

1. TOP OF EQUIPMENT PAD SHALL BE FLAT AND LEVEL.
2. COORDINATE EQUIPMENT PADS WITH THE SELECTED MECHANICAL/ELECTRICAL CONTRACTORS.

GENERATOR/EQUIPMENT PAD DETAIL



NOTE:
1. ROUND OFF ALL EXPOSED EDGES & CORNERS.
2. PAINT METAL IN CONTACT WITH CONCRETE ACCORDING TO SPECIFICATIONS FOR PAINTING.
3. ALL BOLTS, ANCHORS, AND OTHER HARDWARE SHALL BE STAINLESS STEEL.

UNISTRUT MOUNT TRANSFER SWITCH PANEL

NOT TO SCALE

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ELECTRICAL- DOWNS ROAD LIFT STATION (PHASE 1)

Drawing No:
E1-1
Sheet: 5 OF 12

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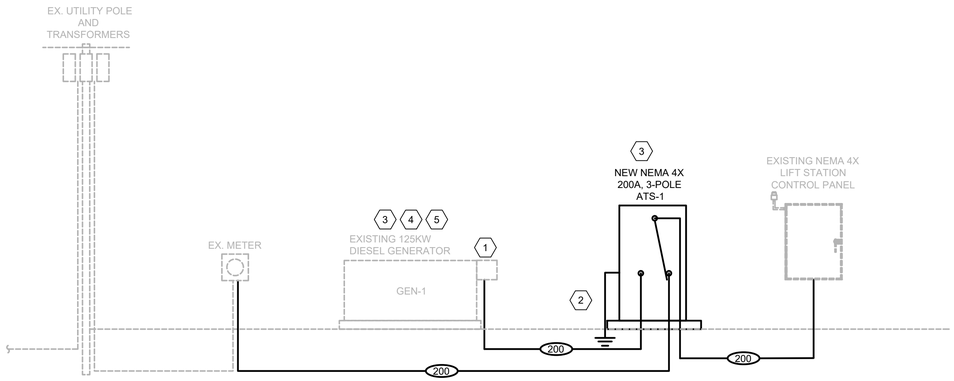


PLAN NOTES

1. CONTRACTOR IS RESPONSIBLE TO PROVIDE GENERATOR INTEGRAL CIRCUIT BREAKER TO PROVIDE MEANS OF CURRENT PROTECTION AND DISCONNECTION AT THE GENERATOR. CONTRACTOR SHALL COORDINATE WITH GENERATOR MANUFACTURER TO ENSURE THE PROPER SIZED CIRCUIT BREAKER IS PROVIDED.
2. PROVIDE TRIAD GROUNDING SYSTEM.
3. COORDINATE WITH GENERATOR AND ATS SUPPLIER/MANUFACTURER FOR WIRING REQUIREMENTS DURING BIDDING AND CONSTRUCTION.
4. VERIFY THAT THE NEUTRAL TO GROUND IS NOT BONDED AT GENERATOR BY THE GENERATOR MANUFACTURER.
5. CONTRACTOR IS RESPONSIBLE TO RETAP THE CURRENT 240V 3-PHASE SETUP ON THE 125KW GENERATOR TO CONVERT IT TO 480V 3-PHASE TO MATCH THE DOWNS ROAD LIFT STATION FEED REQUIREMENTS. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE RETAP.
6. CONTRACTOR SHALL COORDINATE WITH GENERATOR MANUFACTURER AND IS RESPONSIBLE FOR NEW BREAKER TO FEED GENERATOR ANCILLARY DEVICES.

NOTES:

1. SEE E0.0 FOR PROJECT CONDUIT REQUIREMENTS.

FEEDER SCHEDULE

	COPPER WIRE			SERVICE
TYPE NO.	QUANTITIES & WIRE SIZE	CONDUIT	W/O NEUTRAL	GROUND
15	4#12 & #12 GROUND	3/4"	3/4"	#8
20	4#12 & #12 GROUND	3/4"	3/4"	#8
30	4#10 & #10 GROUND	3/4"	3/4"	#8
50	4#8 & #10 GROUND	1"	1"	#8
65	4#6 & #8 GROUND	1-1/4"	1-1/4"	#8
85	4#4 & #8 GROUND	1-1/4"	1-1/4"	#8
100	4#3 & #8 GROUND	1-1/2"	1-1/4"	#8
115	4#2 & #6 GROUND	1-1/2"	1-1/2"	#8
130	4#1 & #6 GROUND	2"	1-1/2"	#6
150	4#1/0 & #6 GROUND	2"	2"	#6
175	4#2/0 & #6 GROUND	2"	2"	#4
200	4#3/0 & #6 GROUND	2-1/2"	2"	#4
225	4#4/0 & #4 GROUND	2-1/2"	2-1/2"	#2
250	4#250MCM & #4 GROUND	3"	2-1/2"	#2
300	4#350MCM & #3 GROUND	3"	3"	#2
380	4#500MCM & #3 GROUND	4"	4"	#1/0
420	4#600MCM & #2 GROUND	4"	4"	#1/0
460	(2 SETS)4#4/0 & #2 GROUND	2-1/2"	2-1/2"	#1/0
500	(2 SETS)4#250MCM & #2 GROUND	4"	3"	#1/0
600	(2 SETS)4#350MCM & #1 GROUND	4"	3"	#2/0
700	(2 SETS)4#500MCM & #1/0 GND	4"	4"	#2/0
800	(3 SETS)4#300MCM & #1/0 GND	3"	3"	#2/0
1000	(3 SETS) 4#500MCM & #2/0 GND	4"	4"	#3/0
1200	(4 SETS) 4#350 MCM & 33/0 GND	4"	4"	#3/0
1600	(5 SETS) 4#600 MCM & #3/0 GND	4"	3 1/2"	#3/0
2000	(6 SETS) 4#600MCM &# 3/0 GND	4"	3 1/2"	#3/0

ALL FEEDERS ARE ASSUMED TO BE 4 CURRENT CARRYING CONDUCTORS (3 PHASE CONDUCTORS AND 1 NEUTRAL) UNLESS NOTED OTHERWISE.

FEEDER KEY IS AS FOLLOWS (PARENTHESIS DENOTES SUBSCRIPT):
= 3 PHASES AND NEUTRAL WITH GROUND
###(N) = 3 PHASES, NO NEUTRAL WITH GROUND
###(2) = 2 PHASES AND NEUTRAL WITH GROUND
ALL CIRCUITS SHALL BE RUN IN PVC BELOW GROUND/PVC COATED RIGID ABOVE GROUND

EXISTING GENERATOR 3 4 5

MINIMUM RATED CAPACITY: 125 KW

BASIS OF DESIGN: MANUFACTURER: CUMMINS

RATED VOLTAGE: 480V 3 PHASE/4-WIRE

ENCLOSURE RATING: SEE SPECIFICATIONS FUEL TYPE: DIESEL

FUEL TANK CAPACITY: 24 HOURS

SEE SPECIFICATIONS FOR ADDITIONAL FEATURES

NEMA 4X TRANSFER SWITCH 3

TRANSFER SWITCH TYPE: AUTOMATIC — CURRENT RATING: 200 A

RATED VOLTAGE: 480V 3 PHASE/4-WIRE — # OF POLES: 3

NEUTRAL CONFIGURATION: SOLID — IN-SYNC TRANSFER: YES

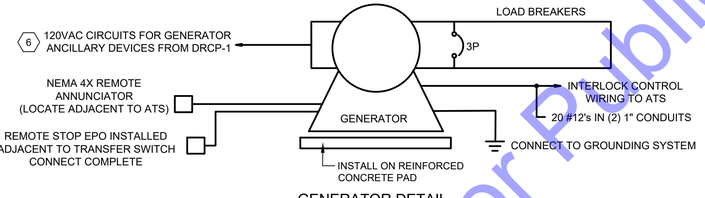
MAIN CIRCUIT BREAKER: 200 A — GROUND FAULT ON MAIN: YES

SERVICE ENTRANCE RATED: YES — REMOTE ANNUNCIATION: NO

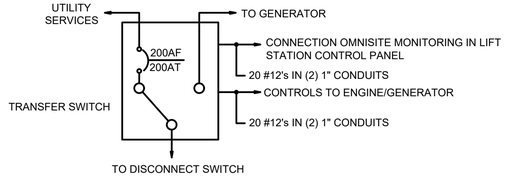
BY-PASS/ISOLATION: NO NEC LOAD BRANCH:702 — KAIC: 20 (CONTRACTOR TO CONFIRM W/ UTILITY)

SEE SPECIFICATIONS FOR ADDITIONAL FEATURES

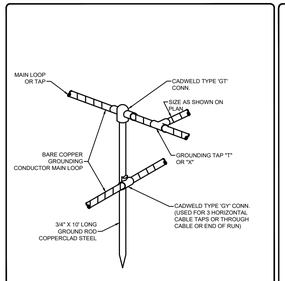
NEMA RATING: NEMA 4X — CYCLE RATING: 3



GENERATOR DETAIL

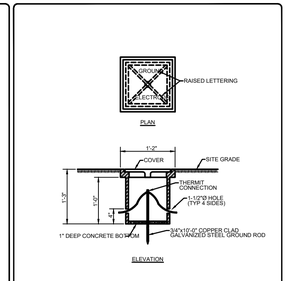


AUTOMATIC TRANSFER SWITCH



CONDUCTOR TO GROUND ROD CONNECTION DETAIL

NOT TO SCALE



TYPICAL GROUND ROD AND ACCESS BOX DETAIL

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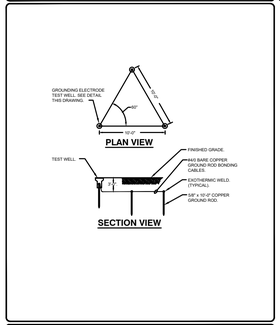

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Date

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GENERATORS AND AUTOMATIC TRANSFER SWITCHES
JANUARY 2025
PHASE 1 & PHASE 2

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ELECTRICAL - DOWNS ROAD LIFT STATION RISER DIAGRAM (PHASE 1)

Drawing No:
E1-2
Sheet: 6 OF 12

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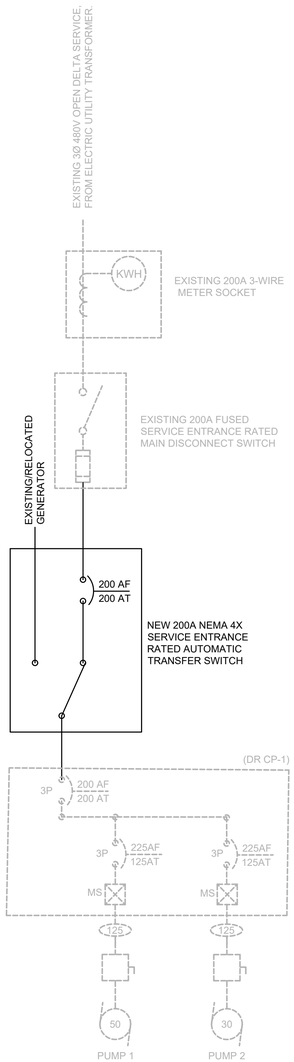

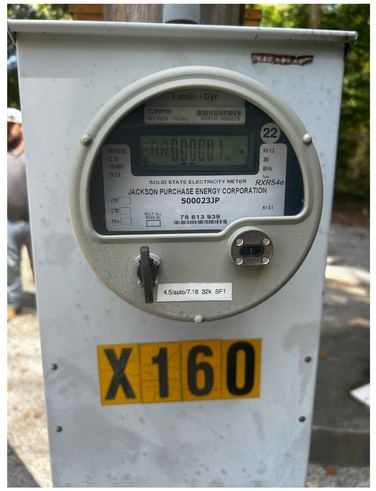

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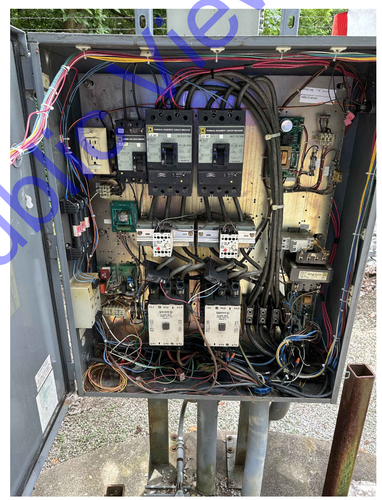

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NOTES:

1. CONTRACTOR SHALL VISIT THE SITE TO BECOME ACQUAINTED WITH ALL PROJECT CONDITIONS INCLUDING EXISTING CONDITIONS. EXECUTION OF CONTRACT IS EVIDENCE THAT THE CONTRACTOR HAS EXAMINED ALL DRAWINGS AND SPECIFICATIONS AND THAT ALL CONDITIONS OF INSTALLING THE WORK IN THIS SECTION ARE VERIFIED. CLAIMS FOR LABOR, MATERIAL, OR TIME EXTENSIONS REQUIRED DUE TO DIFFICULTIES ENCOUNTERED, WHICH COULD HAVE BEEN FORESEEN HAD EXAMINATIONS BEEN MADE, WILL NOT BE RECOGNIZED.
2. NEW AUTOMATIC TRANSFER SWITCH TO BE PROVIDED BY CONTRACTOR. CONTRACTOR SHALL COORDINATE WITH ATS MANUFACTURER AND PROVIDE ALL NECESSARY POWER AND CONTROL WIRING FOR A COMPLETE AND FUNCTIONING SYSTEM. LACK OF COORDINATION IS NOT JUSTIFICATION FOR ADDITIONAL FUNDS.
3. NEW 200A AUTOMATIC TRANSFER SWITCH PANEL SHALL BE MOUNTED ON A STAINLESS STEEL UNISTRUT MOUNTING STRUCTURE. CONTRACTOR SHALL COORDINATE WITH OWNER FOR FINAL APPROVED LOCATION FOR THE AUTOMATIC TRANSFER SWITCH PANEL.
4. A MINIMUM 3' 6" WORKING CLEARANCE IS REQUIRED IN FRONT OF THE CONTROL PANEL PER NEC TABLE 110.26(A)(1).
5. THE PUMP STATION WET WELL IS CLASSIFIED AS CLASS 1 DIVISION 1, GROUP D AREA PER NFPA 820. THE AREA WHICH EXTENDS TO 18" ABOVE THE PUMP STATION TOP OF SLAB AND EXTENDS 3' BEYOND ALL SIDES OF THE HATCH IS A CLASS 1, DIVISION 2 HAZARDOUS LOCATION. ANY EQUIPMENT LOCATED WITHIN THE CLASSIFIED AREA SHALL BE UL LISTED FOR THAT AREA. ALL WIRING METHODS SHALL CONFORM TO THE REQUIREMENTS OF NEC ARTICLE 500 AND 501.
6. EXISTING 125KW GENERATOR SHALL BE RELOCATED FROM REIDLAND WWTP TO THE PROPOSED LOCATION AT THE DOWNS ROAD LIFT STATION. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE RELOCATION OF THE GENERATOR.
7. CONTRACTOR SHALL COORDINATE WITH ONAN TO ENSURE GENERATOR IS INSTALLED CORRECTLY. CONTRACTOR TO ENSURE THE EXISTING PUMPS LOCATED AT THE DOWNS ROAD LIFT STATION RUN PROPERLY WITH THE GENERATOR INSTALLED.
8. CONTRACTOR IS RESPONSIBLE TO RETAP THE CURRENT 240V 3-PHASE SETUP ON THE 125KW GENERATOR TO CONVERT IT TO 480V 3-PHASE TO MATCH THE DOWNS ROAD LIFT STATION FEED REQUIREMENTS. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE RETAP.
9. CONTRACTOR IS RESPONSIBLE TO INSTALL A NEW NEMA 4X 480/120V STEP DOWN TRANSFORMER WITH TWO DEDICATED CIRCUIT BREAKER INSTALLED INSIDE THE CONTROL PANEL. TRANSFORMER SHALL BE MOUNTED EXTERIOR AND ADJACENT TO THE EXISTING LIFT STATION CONTROL PANEL. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH GENERATOR MANUFACTURER FOR POWER REQUIREMENTS FOR PROPER BREAKER SIZING.
10. CONTRACTOR IS RESPONSIBLE TO PROVIDE CONDUIT AND WIRE FOR GENERATOR AND AUTOMATIC TRANSFER SWITCH ALARMS. CONTRACTOR IS RESPONSIBLE TO PROVIDE CONDUIT, WIRE, AND TERMINATION AT THE GENERATOR AND AUTOMATIC TRANSFER SWITCH FOR ALL AVAILABLE ALARMS AND CONNECT TO THE OMNISITE DIALER. OPERATOR IS RESPONSIBLE TO PROVIDE TERMINATORS AT THE OMNISITE PANEL. CONTRACTOR SHALL TAG WIRES AND NOTE WHAT ALARMS ARE CONNECTED FOR OPERATOR.

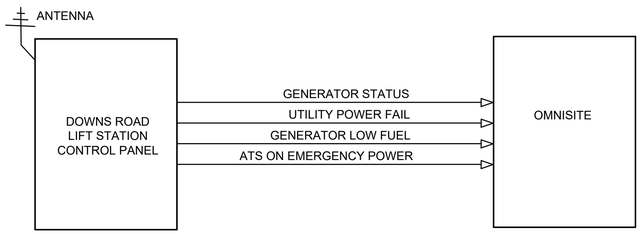

IMAGE IDENTIFIER LEGEND	
IMAGE	**DESCRIPTION**
A	EXISTING UTILITY METER BASE
B	EXISTING SAFETY SWITCH
C	EXISTING CONTROL PANEL

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Signature 1/13/2025 Date

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ELECTRICAL- DOWNS ROAD LIFT STATION ONE-LINE DIAGRAM (PHASE 1)

Drawing No:
E1-3
Sheet: 7 OF 12

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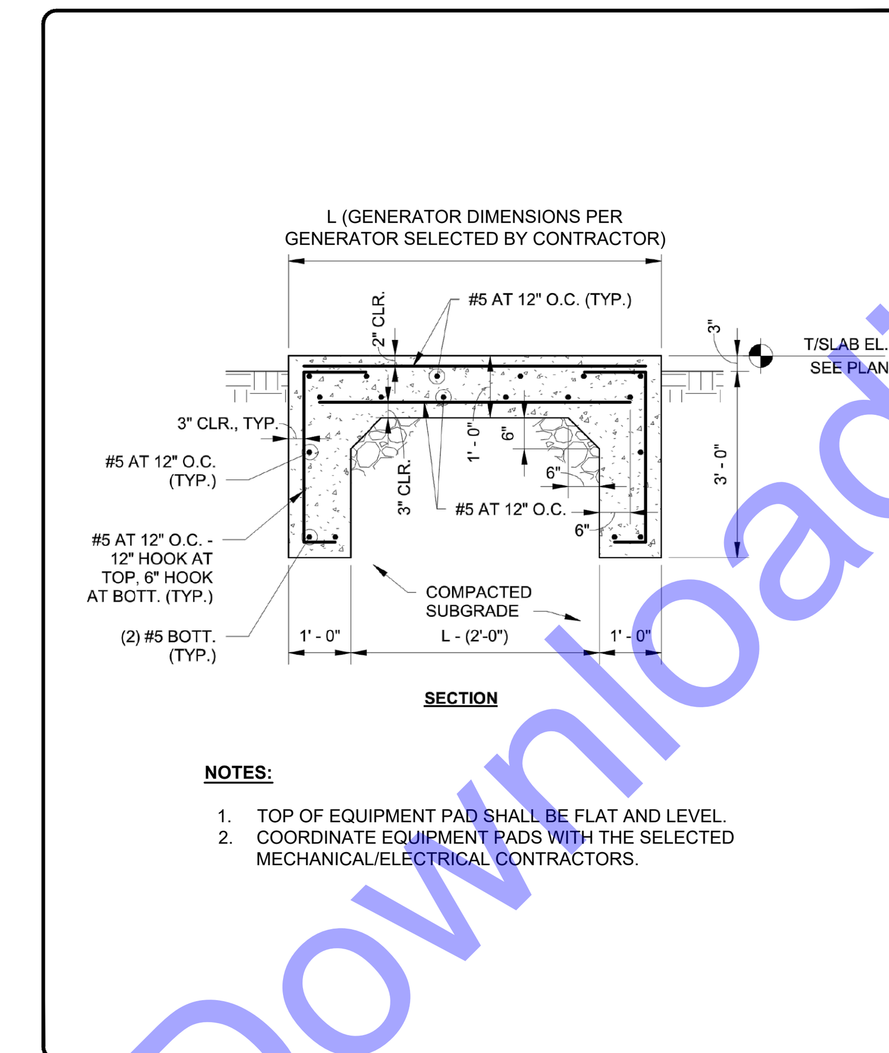
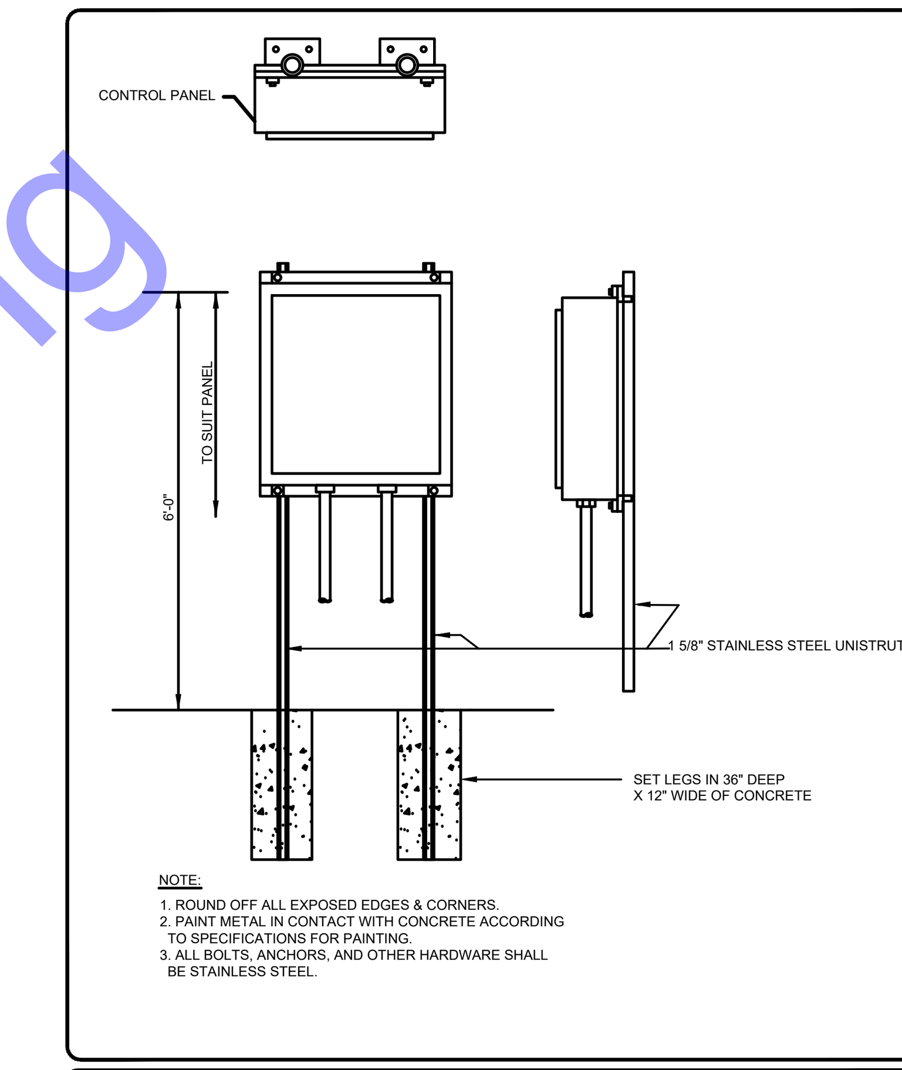
PROPOSED LOCATION OF NEW 60KW GENERATOR

PROPOSED LOCATION OF NEW 200A AUTOMATIC TRANSFER SWITCH


L (GENERATOR DIMENSIONS PER GENERATOR SELECTED BY CONTRACTOR)
2" CLR.
#5 AT 12" O.C. (TYP.)
3"
T/SLAB EL. SEE PLAN
3" CLR., TYP.
#5 AT 12" O.C. (TYP.)
1' - 0"
6"
6"
3' - 0"
3" CLR.
#5 AT 12" O.C.
6"
#5 AT 12" O.C. - 12" HOOK AT TOP, 6" HOOK AT BOTT. (TYP.)
COMPACTED SUBGRADE
(2) #5 BOTT. (TYP.)
1' - 0"
L - (2'-0")
1' - 0"
SECTION
NOTES:
1. TOP OF EQUIPMENT PAD SHALL BE FLAT AND LEVEL.
2. COORDINATE EQUIPMENT PADS WITH THE SELECTED MECHANICAL/ELECTRICAL CONTRACTORS.

GENERATOR/EQUIPMENT PAD DETAIL


CONTROL PANEL
TO SUIT PANEL
6'-0"
1 5/8" STAINLESS STEEL UNISTRUT
SET LEGS IN 36" DEEP X 12" WIDE OF CONCRETE
NOTE:
1. ROUND OFF ALL EXPOSED EDGES & CORNERS.
2. PAINT METAL IN CONTACT WITH CONCRETE ACCORDING TO SPECIFICATIONS FOR PAINTING.
3. ALL BOLTS, ANCHORS, AND OTHER HARDWARE SHALL BE STAINLESS STEEL.

UNISTRUT MOUNT TRANSFER SWITCH PANEL

NOT TO SCALE

NOTES:

1. CONTRACTOR SHALL VISIT THE SITE TO BECOME ACQUAINTED WITH ALL PROJECT CONDITIONS INCLUDING EXISTING CONDITIONS. EXECUTION OF CONTRACT IS EVIDENCE THAT THE CONTRACTOR HAS EXAMINED ALL DRAWINGS AND SPECIFICATIONS AND THAT ALL CONDITIONS OF INSTALLING THE WORK IN THIS SECTION ARE VERIFIED. CLAIMS FOR LABOR, MATERIAL, OR TIME EXTENSIONS REQUIRED DUE TO DIFFICULTIES ENCOUNTERED, WHICH COULD HAVE BEEN FORESEEN HAD EXAMINATIONS BEEN MADE, WILL NOT BE RECOGNIZED.

2. NEW AUTOMATIC TRANSFER SWITCH TO BE PROVIDED BY CONTRACTOR. CONTRACTOR SHALL COORDINATE WITH ATS MANUFACTURER AND PROVIDE ALL NECESSARY POWER AND CONTROL WIRING FOR A COMPLETE AND FUNCTIONING SYSTEM. LACK OF COORDINATION IS NOT JUSTIFICATION FOR ADDITIONAL FUNDS.

3. NEW 200A AUTOMATIC TRANSFER SWITCH PANEL SHALL BE MOUNTED ON A STAINLESS STEEL UNISTRUT MOUNTING STRUCTURE NEXT TO THE EXISTING INCOMING FEED METER AND DISCONNECT.

4. A MINIMUM 3' 6" WORKING CLEARANCE IS REQUIRED IN FRONT OF THE CONTROL PANEL PER NEC TABLE 110.26(A)(1).

5. THE PUMP STATION WET WELL IS CLASSIFIED AS CLASS 1 DIVISION 1, GROUP D AREA PER NFPA 820. THE AREA WHICH EXTENDS TO 18" ABOVE THE PUMP STATION TOP OF SLAB AND EXTENDS 3' BEYOND ALL SIDES OF THE HATCH IS A CLASS 1, DIVISION 2 HAZARDOUS LOCATION. ANY EQUIPMENT LOCATED WITHIN THE CLASSIFIED AREA SHALL BE UL LISTED FOR THAT AREA. ALL WIRING METHODS SHALL CONFORM TO THE REQUIREMENTS OF NEC ARTICLE 500 AND 501.

6. CONTRACTOR SHALL COORDINATE WITH CUMMINS OR ENGINEER APPROVED EQUAL MANUFACTURER TO ENSURE THE NEW 60KW GENERATOR IS INSTALLED CORRECTLY. CONTRACTOR TO ENSURE THE EXISTING PUMPS LOCATED AT THE HAPPY HOLLOW LIFT STATION RUN PROPERLY WITH THE GENERATOR INSTALLED.

7. CONTRACTOR SHALL COORDINATE WITH OWNER FOR FINAL APPROVED LOCATION FOR THE NEW 60KW GENERATOR. GENERATOR SHALL BE INSTALLED ON THE GENERATOR PAD FOOTER PER DETAIL ABOVE.

9. CONTRACTOR IS RESPONSIBLE TO INSTALL A NEW NEMA 4X 240/120V STEP DOWN TRANSFORMER WITH TWO DEDICATED CIRCUIT BREAKER INSTALLED INSIDE THE CONTROL PANEL. TRANSFORMER SHALL BE MOUNTED EXTERIOR AND ADJACENT TO THE EXISTING LIFT STATION CONTROL PANEL. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH GENERATOR MANUFACTURER FOR POWER REQUIREMENTS FOR PROPER BREAKER SIZING.

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ELECTRICAL- HAPPY HOLLOW LIFT STATION SITE PLAN (PHASE 2)

Drawing No:
E2-0

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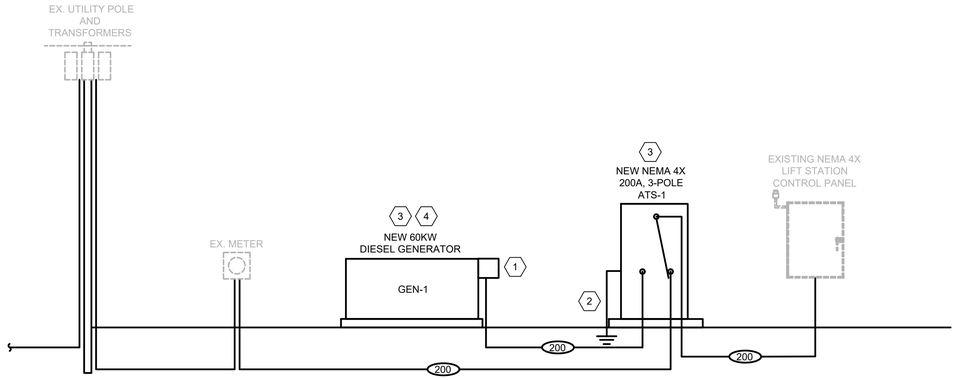


PLAN NOTES

1. CONTRACTOR IS RESPONSIBLE TO PROVIDE GENERATOR INTEGRAL CIRCUIT BREAKER TO PROVIDE MEANS OF CURRENT PROTECTION AND DISCONNECTION AT THE GENERATOR. CONTRACTOR SHALL COORDINATE WITH GENERATOR MANUFACTURER TO ENSURE THE PROPER SIZED CIRCUIT BREAKER IS PROVIDED.
2. PROVIDE TRIAD GROUNDING SYSTEM.
3. COORDINATE WITH GENERATOR AND ATS SUPPLIER/MANUFACTURER FOR WIRING REQUIREMENTS DURING BIDDING AND CONSTRUCTION.
4. VERIFY THAT THE NEUTRAL TO GROUND IS NOT BONDED AT GENERATOR BY THE GENERATOR MANUFACTURER.
5. CONTRACTOR SHALL COORDINATE WITH GENERATOR MANUFACTURER AND IS RESPONSIBLE FOR NEW BREAKER TO FEED GENERATOR ANCILLARY DEVICES.

NOTES:

1. SEE E0.0 FOR PROJECT CONDUIT REQUIREMENTS.

FEEDER SCHEDULE

TYPE NO.	COPPER WIRE QUANTITIES & WIRE SIZE	CONDUIT	W/O NEUTRAL	SERVICE GROUND
15	4#12 & #12 GROUND	3/4"	3/4"	#8
20	4#12 & #12 GROUND	3/4"	3/4"	#8
30	4#10 & #10 GROUND	3/4"	3/4"	#8
50	4#8 & #10 GROUND	1"	1"	#8
65	4#6 & #8 GROUND	1-1/4"	1-1/4"	#8
85	4#4 & #8 GROUND	1-1/4"	1-1/4"	#8
100	4#3 & #8 GROUND	1-1/2"	1-1/4"	#8
115	4#2 & #6 GROUND	1-1/2"	1-1/2"	#6
130	4#1 & #6 GROUND	2"	1-1/2"	#6
150	4#1/0 & #6 GROUND	2"	2"	#6
175	4#2/0 & #6 GROUND	2"	2"	#4
200	4#3/0 & #6 GROUND	2-1/2"	2"	#4
225	4#4/0 & #4 GROUND	2-1/2"	2-1/2"	#2
250	4#250MCM & #4 GROUND	3"	2-1/2"	#2
300	4#350MCM & #3 GROUND	3"	3"	#2
380	4#500MCM & #3 GROUND	4"	4"	#1/0
420	4#600MCM & #2 GROUND	4"	4"	#1/0
460	(2 SETS)4#4/0 & #2 GROUND	2-1/2"	2-1/2"	#1/0
500	(2 SETS)4#250MCM & #2 GROUND	4"	3"	#1/0
600	(2 SETS)4#350MCM & #1 GROUND	4"	3"	#2/0
700	(2 SETS)4#500MCM & #1/0 GND	4"	4"	#2/0
800	(3 SETS)4#300MCM & #1/0 GND	3"	3"	#2/0
1000	(3 SETS) 4#500MCM & #2/0 GND	4"	4"	#3/0
1200	(4 SETS) 4#350 MCM & 3/0 GND	4"	4"	#3/0
1600	(5 SETS) 4#600 MCM & #3/0 GND	4"	3 1/2"	#3/0
2000	(6 SETS) 4#600MCM &# 3/0 GND	4"	3 1/2"	#3/0

ALL FEEDERS ARE ASSUMED TO BE 4 CURRENT CARRYING CONDUCTORS (3 PHASE CONDUCTORS AND 1 NEUTRAL) UNLESS NOTED OTHERWISE.

FEEDER KEY IS AS FOLLOWS (PARENTHESIS DENOTES SUBSCRIPT):
= 3 PHASES AND NEUTRAL WITH GROUND
###(N) = 3 PHASES, NO NEUTRAL WITH GROUND
###(2) = 2 PHASES AND NEUTRAL WITH GROUND
ALL CIRCUITS SHALL BE RUN IN PVC BELOW GROUND/ PVC COATED RIGID ABOVE GROUND

GENERATOR 3 4

MINIMUM RATED CAPACITY: 60 KW

BASIS OF DESIGN: MANUFACTURER: CUMMINS — MODEL: C60D6C OR EQUAL MEETING SPECIFICATIONS

RATED VOLTAGE: 120/240V 3 PHASE/4-WIRE

ENCLOSURE RATING: SEE SPECIFICATIONS — FUEL TYPE: DIESEL

FUEL TANK CAPACITY: 24 HOURS

SEE SPECIFICATIONS FOR ADDITIONAL FEATURES

NEMA 4X TRANSFER SWITCH 3

TRANSFER SWITCH TYPE: AUTOMATIC — CURRENT RATING: 200 A

RATED VOLTAGE: 240V 3 PHASE/4-WIRE — # OF POLES: 3

NEUTRAL CONFIGURATION: SOLID — IN-SYNC TRANSFER: YES

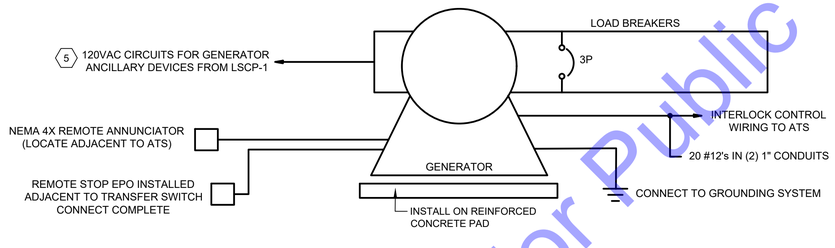
MAIN CIRCUIT BREAKER: 200 A — GROUND FAULT ON MAIN: YES

SERVICE ENTRANCE RATED: YES — REMOTE ANNUNCIATION: NO

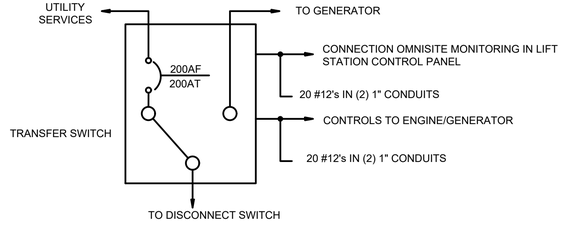
BY-PASS/ISOLATION: NO — NEC LOAD BRANCH:702 — KAIC: 22 (CONTRACTOR TO CONFIRM W/ UTILITY)

SEE SPECIFICATIONS FOR ADDITIONAL FEATURES

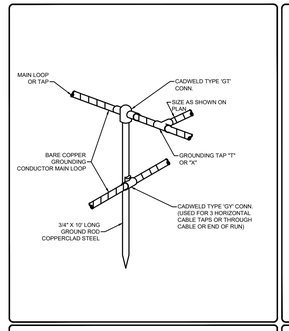
NEMA RATING: NEMA 4X — CYCLE RATING: 3



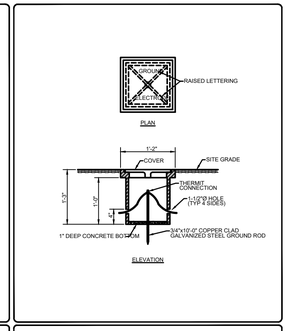
GENERATOR DETAIL



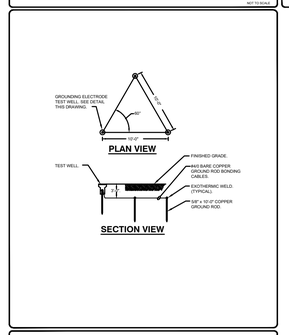
AUTOMATIC TRANSFER SWITCH



CONDUCTOR TO GROUND ROD CONNECTION DETAIL



TYPICAL GROUND ROD AND ACCESS BOX DETAIL



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ELECTRICAL- HAPPY HOLLOW LIFT STATION RISER DIAGRAM (PHASE 2)

Drawing No:
E2-1
Sheet: 9 OF 12

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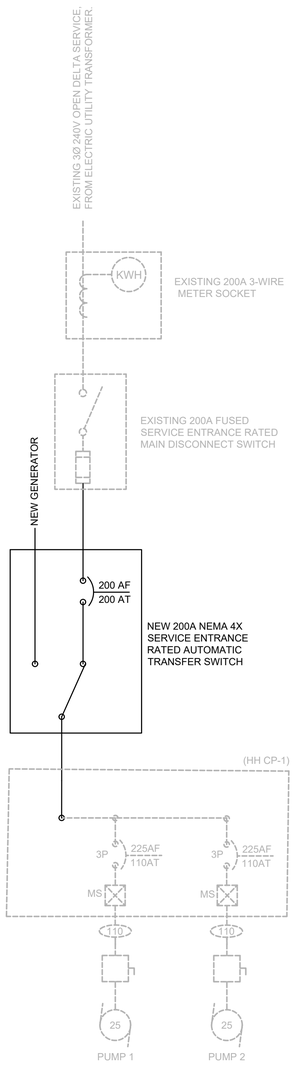

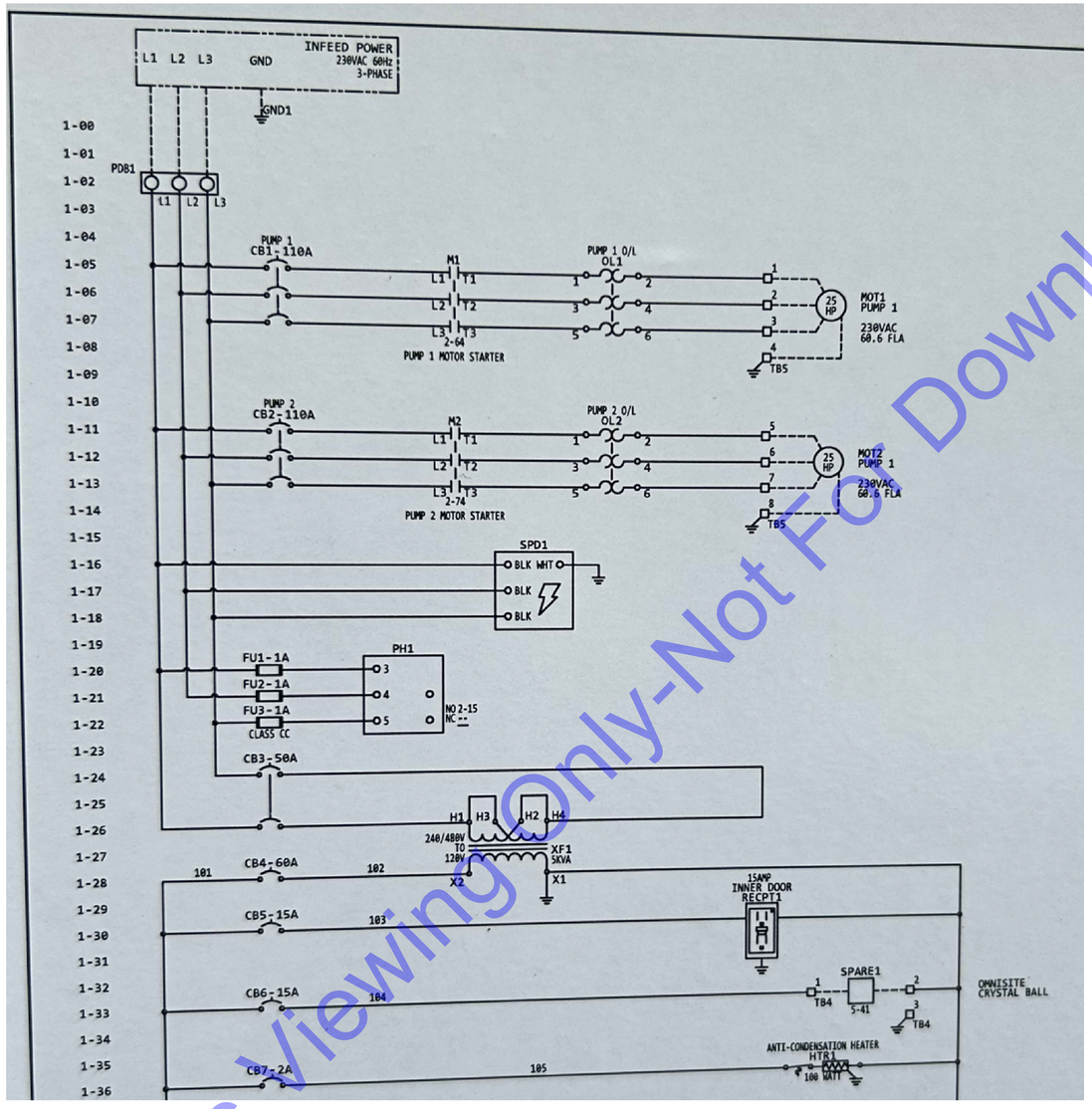

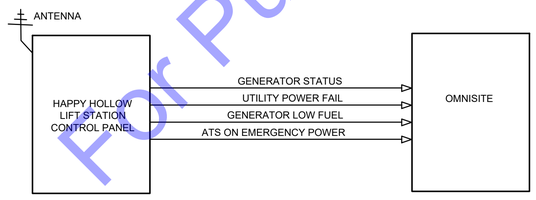

NOTES:

1. CONTRACTOR SHALL VISIT THE SITE TO BECOME ACQUAINTED WITH ALL PROJECT CONDITIONS INCLUDING EXISTING CONDITIONS. EXECUTION OF CONTRACT IS EVIDENCE THAT THE CONTRACTOR HAS EXAMINED ALL DRAWINGS AND SPECIFICATIONS AND THAT ALL CONDITIONS OF INSTALLING THE WORK IN THIS SECTION ARE VERIFIED. CLAIMS FOR LABOR, MATERIAL, OR TIME EXTENSIONS REQUIRED DUE TO DIFFICULTIES ENCOUNTERED, WHICH COULD HAVE BEEN FORESEEN HAD EXAMINATIONS BEEN MADE, WILL NOT BE RECOGNIZED.

2. NEW AUTOMATIC TRANSFER SWITCH TO BE PROVIDED BY CONTRACTOR. CONTRACTOR SHALL COORDINATE WITH ATS MANUFACTURER AND PROVIDE ALL NECESSARY POWER AND CONTROL WIRING FOR A COMPLETE AND FUNCTIONING SYSTEM. LACK OF COORDINATION IS NOT JUSTIFICATION FOR ADDITIONAL FUNDS.

3. A MINIMUM 3' 6" WORKING CLEARANCE IS REQUIRED IN FRONT OF THE CONTROL PANEL PER NEC TABLE 110.26(A)(1).

4. THE PUMP STATION WET WELL IS CLASSIFIED AS CLASS 1 DIVISION 1, GROUP D AREA PER NFPA 820. THE AREA WHICH EXTENDS TO 18" ABOVE THE PUMP STATION TOP OF SLAB AND EXTENDS 3' BEYOND ALL SIDES OF THE HATCH IS A CLASS 1, DIVISION 2 HAZARDOUS LOCATION. ANY EQUIPMENT LOCATED WITHIN THE CLASSIFIED AREA SHALL BE UL LISTED FOR THAT AREA. ALL WIRING METHODS SHALL CONFORM TO THE REQUIREMENTS OF NEC ARTICLE 500 AND 501.

5. CONTRACTOR SHALL COORDINATE WITH CUMMINS OR ENGINEER APPROVED EQUAL MANUFACTURER TO ENSURE THE NEW 60KW GENERATOR IS INSTALLED CORRECTLY. CONTRACTOR TO ENSURE THE EXISTING PUMPS LOCATED AT THE DOWNS ROAD LIFT STATION RUN PROPERLY WITH THE GENERATOR INSTALLED.

9. CONTRACTOR IS RESPONSIBLE TO INSTALL A NEW NEMA 3R 240/120V STEP DOWN TRANSFORMER WITH TWO DEDICATED CIRCUIT BREAKER INSTALLED INSIDE THE PANEL. TRANSFORMER SHALL BE MOUNTED EXTERIOR AND ADJACENT TO THE EXISTING LIFT STATION CONTROL PANEL. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH GENERATOR MANUFACTURER FOR POWER REQUIREMENTS FOR PROPER BREAKER SIZING.

10. CONTRACTOR IS RESPONSIBLE TO PROVIDE CONDUIT AND WIRE FOR GENERATOR AND AUTOMATIC TRANSFER SWITCH ALARMS. CONTRACTOR IS RESPONSIBLE TO PROVIDE CONDUIT, WIRE, AND TERMINATION AT THE GENERATOR AND AUTOMATIC TRANSFER SWITCH FOR ALL AVAILABLE ALARMS AND CONNECT TO THE OMNISITE DIALER. OPERATOR IS RESPONSIBLE TO PROVIDE TERMINATORS AT THE OMNISITE PANEL. CONTRACTOR SHALL TAG WIRES AND NOTE WHAT ALARMS ARE CONNECTED FOR OPERATOR.

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STATE OF KENTUCKY
MARK KENNETH NORDMEYER
30193
LICENSED PROFESSIONAL ENGINEER
Signature
1/13/2025
Date

PADUCAH MCCRACKEN COUNTY JOINT SEWER AGENCY
PADUCAH, KENTUCKY

GENERATORS AND AUTOMATIC TRANSFER SWITCHES
JANUARY 2025
PHASE 1 & PHASE 2

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ELECTRICAL- HAPPY HOLLOW LIFT STATION ONE-LINE DIAGRAM (PHASE 2)

Drawing No:
E2-2
Sheet: 10 OF 12

File: Z:\SHARED\KY CLIENTS M-Z\PADUCAH, KY\D S24137 GENERATOR & ATS\06 CAD\K MECH-ELEC\ELECTRICAL DRAWINGS PHASE 2.DWG
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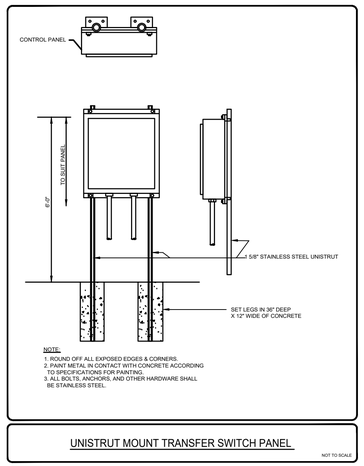
PROPOSED LOCATION OF NEW 200A AUTOMATIC TRANSFER SWITCH

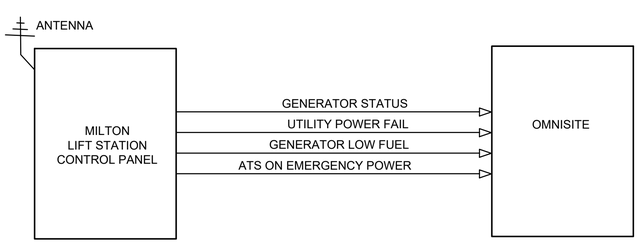
PROPOSED LOCATION OF NEW 50KW GENERATOR

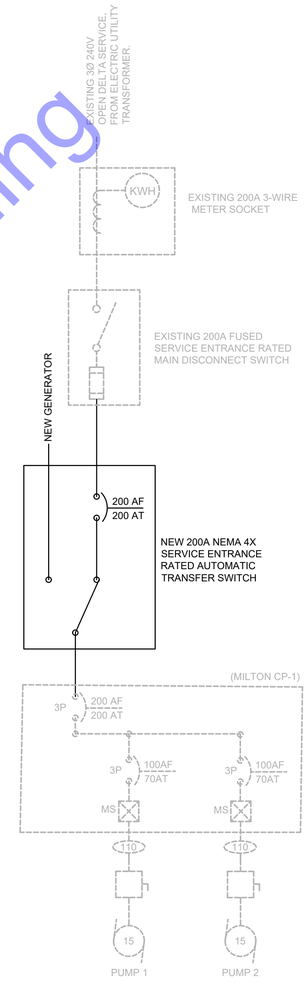
GENERATOR/EQUIPMENT PAD DETAIL



UNISTRUT MOUNT TRANSFER SWITCH PANEL

NOT TO SCALE





NOTES:

1. CONTRACTOR SHALL VISIT THE SITE TO BECOME ACQUAINTED WITH ALL PROJECT CONDITIONS INCLUDING EXISTING CONDITIONS. EXECUTION OF CONTRACT IS EVIDENCE THAT THE CONTRACTOR HAS EXAMINED ALL DRAWINGS AND SPECIFICATIONS AND THAT ALL CONDITIONS OF INSTALLING THE WORK IN THIS SECTION ARE VERIFIED. CLAIMS FOR LABOR, MATERIAL, OR TIME EXTENSIONS REQUIRED DUE TO DIFFICULTIES ENCOUNTERED, WHICH COULD HAVE BEEN FORESEEN HAD EXAMINATIONS BEEN MADE, WILL NOT BE RECOGNIZED.
2. NEW AUTOMATIC TRANSFER SWITCH TO BE PROVIDED BY CONTRACTOR. CONTRACTOR SHALL COORDINATE WITH ATS MANUFACTURER AND PROVIDE ALL NECESSARY POWER AND CONTROL WIRING FOR A COMPLETE AND FUNCTIONING SYSTEM. LACK OF COORDINATION IS NOT JUSTIFICATION FOR ADDITIONAL FUNDS.
3. NEW 200A AUTOMATIC TRANSFER SWITCH PANEL SHALL BE MOUNTED ON A STAINLESS STEEL UNISTRUT MOUNTING STRUCTURE. CONTRACTOR SHALL COORDINATE WITH OWNER FOR FINAL APPROVED LOCATION FOR THE AUTOMATIC TRANSFER SWITCH PANEL.
4. A MINIMUM 3' 6" WORKING CLEARANCE IS REQUIRED IN FRONT OF THE CONTROL PANEL PER NEC TABLE 110.26(A)(1).
5. THE PUMP STATION WET WELL IS CLASSIFIED AS CLASS 1 DIVISION 1, GROUP D AREA PER NFPA 820. THE AREA WHICH EXTENDS TO 18" ABOVE THE PUMP STATION TOP OF SLAB AND EXTENDS 3' BEYOND ALL SIDES OF THE HATCH IS A CLASS 1, DIVISION 2 HAZARDOUS LOCATION. ANY EQUIPMENT LOCATED WITHIN THE CLASSIFIED AREA SHALL BE UL LISTED FOR THAT AREA. ALL WIRING METHODS SHALL CONFORM TO THE REQUIREMENTS OF NEC ARTICLE 500 AND 501.
6. CONTRACTOR SHALL COORDINATE WITH CUMMINS OR ENGINEER APPROVED EQUAL MANUFACTURER TO ENSURE THE NEW 50KW GENERATOR IS INSTALLED CORRECTLY. CONTRACTOR TO ENSURE THE EXISTING PUMPS LOCATED AT THE DOWNS ROAD LIFT STATION RUN PROPERLY WITH THE GENERATOR INSTALLED.
7. CONTRACTOR TO COORDINATE WITH OWNER AND PROVIDE A MINIMUM OF 4FT CLEARANCE ON ALL SIDES OF THE NEW 50KW GENERATOR THAT ARE PARALLEL TO THE FENCE.
8. CONTRACTOR IS RESPONSIBLE TO INSTALL A NEW NEMA 4X 240/120V STEP DOWN TRANSFORMER WITH TWO DEDICATED CIRCUIT BREAKER INSTALLED INSIDE THE CONTROL PANEL. TRANSFORMER SHALL BE MOUNTED EXTERIOR AND ADJACENT TO THE EXISTING LIFT STATION CONTROL PANEL. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH GENERATOR MANUFACTURER FOR POWER REQUIREMENTS FOR PROPER BREAKER SIZING.
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MARK KENNETH NORDMEYER
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PADUCAH MCCRACKEN COUNTY JOINT SEWER AGENCY
PADUCAH, KENTUCKY

GENERATORS AND AUTOMATIC TRANSFER SWITCHES
JANUARY 2025
PHASE 1 & PHASE 2

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Issue Date: 01/2025	Project No: S24137	Scale: AS SHOWN

ELECTRICAL- MILTON LIFT STATION SITE PLAN AND ONE-LINE DIAGRAM (PHASE 2)

Drawing No:
E3-0
Sheet: 11 OF 12

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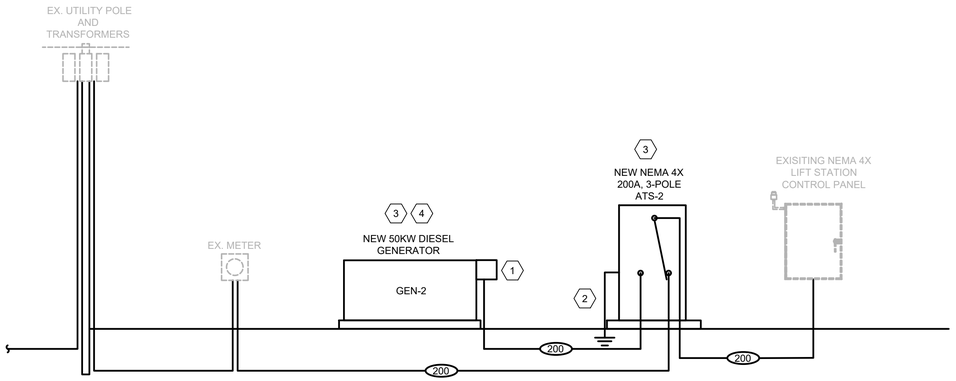


PLAN NOTES

1. CONTRACTOR IS RESPONSIBLE TO PROVIDE GENERATOR INTEGRAL CIRCUIT BREAKER TO PROVIDE MEANS OF CURRENT PROTECTION AND DISCONNECTION AT THE GENERATOR. CONTRACTOR SHALL COORDINATE WITH GENERATOR MANUFACTURER TO ENSURE THE PROPER SIZED CIRCUIT BREAKER IS PROVIDED.
2. PROVIDE TRIAD GROUNDING SYSTEM.
3. COORDINATE WITH GENERATOR AND ATS SUPPLIER/MANUFACTURER FOR WIRING REQUIREMENTS DURING BIDDING AND CONSTRUCTION.
4. VERIFY THAT THE NEUTRAL TO GROUND IS NOT BONDED AT GENERATOR BY THE GENERATOR MANUFACTURER.
5. CONTRACTOR SHALL COORDINATE WITH GENERATOR MANUFACTURER AND IS RESPONSIBLE FOR NEW BREAKER TO FEED GENERATOR ANCILLARY DEVICES.

NOTES:

1. SEE E0.0 FOR PROJECT CONDUIT REQUIREMENTS.

FEEDER SCHEDULE

TYPE NO.	COPPER WIRE QUANTITIES & WIRE SIZE	CONDUIT	W/O NEUTRAL	SERVICE GROUND
15	4#12 & #12 GROUND	3/4"	3/4"	#8
20	4#12 & #12 GROUND	3/4"	3/4"	#8
30	4#10 & #10 GROUND	3/4"	3/4"	#8
50	4#8 & #10 GROUND	1"	1"	#8
65	4#6 & #8 GROUND	1-1/4"	1-1/4"	#8
85	4#4 & #8 GROUND	1-1/4"	1-1/4"	#8
100	4#3 & #8 GROUND	1-1/2"	1-1/4"	#8
115	4#2 & #6 GROUND	1-1/2"	1-1/2"	#8
130	4#1 & #6 GROUND	2"	1-1/2"	#6
150	4#1/0 & #6 GROUND	2"	2"	#6
175	4#2/0 & #6 GROUND	2"	2"	#4
200	4#3/0 & #6 GROUND	2-1/2"	2"	#4
225	4#4/0 & #4 GROUND	2-1/2"	2-1/2"	#2
250	4#250MCM & #4 GROUND	3"	2-1/2"	#2
300	4#350MCM & #3 GROUND	3"	3"	#2
380	4#500MCM & #3 GROUND	4"	4"	#1/0
420	4#600MCM & #2 GROUND	4"	4"	#1/0
460	(2 SETS)4#4/0 & #2 GROUND	2-1/2"	2-1/2"	#1/0
500	(2 SETS)4#250MCM & #2 GROUND	4"	3"	#1/0
600	(2 SETS)4#350MCM & #1 GROUND	4"	3"	#2/0
700	(2 SETS)4#500MCM & #1/0 GND	4"	4"	#2/0
800	(3 SETS)4#300MCM & #1/0 GND	3"	3"	#2/0
1000	(3 SETS) 4#500MCM & #2/0 GND	4"	4"	#3/0
1200	(4 SETS) 4#350 MCM & 33/0 GND	4"	4"	#3/0
1600	(5 SETS) 4#600 MCM & #3/0 GND	4"	3 1/2"	#3/0
2000	(6 SETS) 4#600MCM &# 3/0 GND	4"	3 1/2"	#3/0

ALL FEEDERS ARE ASSUMED TO BE 4 CURRENT CARRYING CONDUCTORS (3 PHASE CONDUCTORS AND 1 NEUTRAL) UNLESS NOTED OTHERWISE.

FEEDER KEY IS AS FOLLOWS (PARENTHESIS DENOTES SUBSCRIPT):
###$_3$ = 3 PHASES AND NEUTRAL WITH GROUND
###$_{(N)}$ = 3 PHASES, NO NEUTRAL WITH GROUND
###$_2$ = 2 PHASES AND NEUTRAL WITH GROUND
ALL CIRCUITS SHALL BE RUN IN PVC BELOW GROUND/PVC COATED RIGID ABOVE GROUND

GENERATOR 3 4

MINIMUM RATED CAPACITY: 50 KW

BASIS OF DESIGN: MANUFACTURER: CUMMINS — MODEL: C50D6 OR EQUAL MEETING SPECIFICATIONS

RATED VOLTAGE: 120/240V 3 PHASE/4-WIRE

ENCLOSURE RATING: SEE SPECIFICATIONS — FUEL TYPE: DIESEL

FUEL TANK CAPACITY: 24 HOURS

SEE SPECIFICATIONS FOR ADDITIONAL FEATURES

NEMA 4X TRANSFER SWITCH 3

TRANSFER SWITCH TYPE: AUTOMATIC — CURRENT RATING: 200 A

RATED VOLTAGE: 240V 3 PHASE/4-WIRE — # OF POLES: 3

NEUTRAL CONFIGURATION: SOLID — IN-SYNC TRANSFER: YES

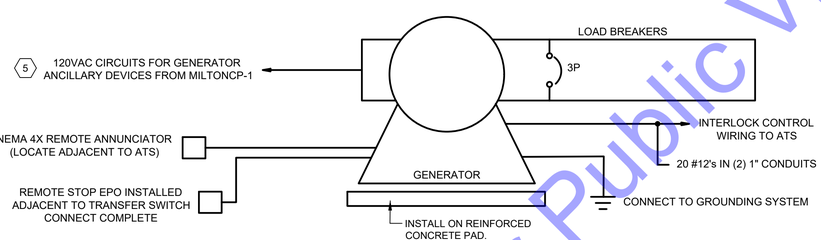
MAIN CIRCUIT BREAKER: 200 A — GROUND FAULT ON MAIN: YES

SERVICE ENTRANCE RATED: YES — REMOTE ANNUNCIATION: NO

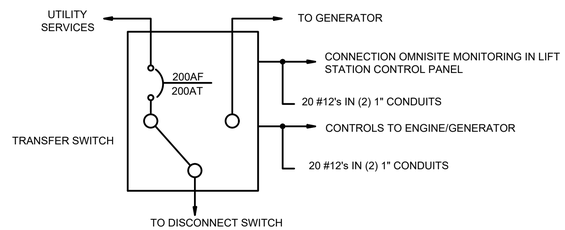
BY-PASS/ISOLATION: NO NEC LOAD BRANCH:702 — KAIC: 22 (CONTRACTOR TO CONFIRM W/ UTILITY)

SEE SPECIFICATIONS FOR ADDITIONAL FEATURES

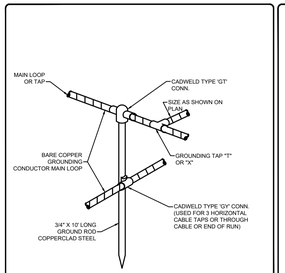
NEMA RATING: NEMA 4X — CYCLE RATING: 3



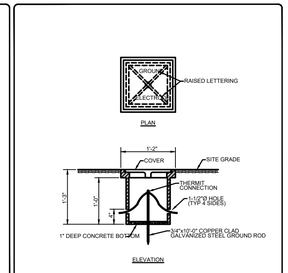
GENERATOR DETAIL



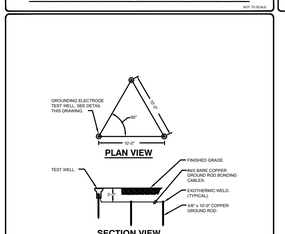
AUTOMATIC TRANSFER SWITCH



CONDUCTOR TO GROUND ROD CONNECTION DETAIL



TYPICAL GROUND ROD AND ACCESS BOX DETAIL



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ELECTRICAL- MILTON LIFT STATION RISER DIAGRAM (PHASE 2)

Drawing No:
E3-1
Sheet: 12 OF 12

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