

US Army Corps
of Engineers®
HUNTINGTON DISTRICT

POTOMAC RIVER SWANTON, MARYLAND JENNINGS RANDOLPH LAKE SPARE HYDRAULIC POWER UNIT

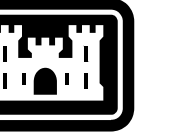
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CERTIFIED FINAL DOCUMENTS

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INDEX

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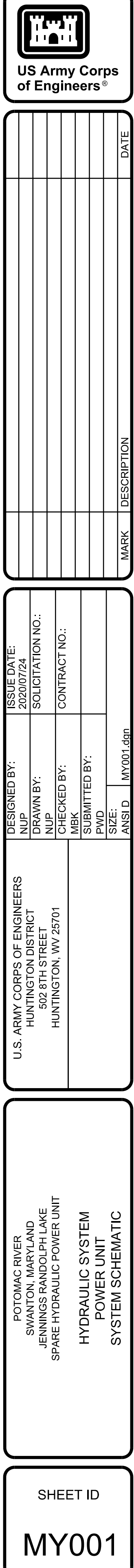
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POTOMAC RIVER
SWANTON, MARYLAND
JENNINGS RANDOLPH LAKE
SPARE HYDRAULIC POWER UNIT

GENERAL INDEX

SHEET ID

GI001





AUX. UNIT TIE-IN POINT AT ELEVATION 1289

20" AIR VENT



HPU PLAN VIEW AT ELEV. 1289



NOTES:

1. LOWER AUXILIARY HPU DOWN TO ELEVATION 1337 IN THE INTAKE TOWER & INSTALL AS INDICATED.
2. UNIT WILL BE LOCATED APPROXIMATELY AS SHOWN.
3. INSTALL APPROVED HYDRAULIC TUBING ALONG THE WALL, DOWN THROUGH EXISTING SQUARE OPENING IN THE FLOOR AND DOWN THE WALL TO THE 1289 ELEVATION LEVEL AS SHOWN. INSTALL 1-1/2" X .120" TUBING FOR ALL SERVICE GATE & EMERGENCY LINES & INSTALL 3/4" X .083" TUBING FOR ALL LOW FLOW GATE LINES. INSTALL A 1" LINE FOR THE TRANSFER PUMP. TRANSITION THE 1-1/2" AND 3/4" LINES TO 1-1/4" & 1/2" NEAR THE EXISTING HPU-1 AS SHOWN. THE EXISTING SERVICE & EMERGENCY GATE LINES ARE 1-1/4" AND THE EXISTING LOW FLOW GATE LINES ARE 1/2". THE USE OF THREADED OR OTHER NON PERMANENT CONNECTIONS IS NOT PERMITTED FOR TUBING INSTALLATION. ONLY TERMINATIONS AT VALVES & OTHER COMPONENTS LOCATED NEAR THE EXISTING OR NEW HPU MAY USE THE THREADED CONNECTORS THAT ARE SPECIFIED IN THE SCOPE OF WORK. ALL OTHER TUBING TO TUBING CONNECTIONS SHALL BE WELDED IN ACCORDANCE WITH ASME B31.1.
4. NEW HYDRAULIC LINES WILL BE CONNECTED TO THE EXISTING HPU LINES AS SHOWN ON THIS DRAWING & AS INDICATED ON SCHEMATIC MY001.
5. CONTRACTOR WILL SUBMIT AN PLAN FOR LOWERING THE UNIT AND INSTALLATION FOR APPROVAL FROM COR PRIOR TO INSTALLATION.
6. CONSULT THE STATE OF WORK FOR ALL FABRICATION, INSTALLATION, AND TESTING REQUIREMENTS.
7. ARRANGEMENT OF THE CONTROL PANEL IN THE POWER UNIT MAY VARY FROM WHAT IS SHOWN ON THIS DRAWING.
8. THE SAMPLE STATION ELEMENT IS TO BE REMOVED BY OTHERS PRIOR TO COMMENCEMENT OF WORK UNDER THIS CONTRACT. THIS INCLUDES THE PIPING, TROUGH, SAMPLING SINK, AND ELECTRICAL COMPONENTS SHOWN IN THIS DRAWING. NEW HYDRAULIC LINES ARE TO BE INSTALLED IN LOCATION CURRENTLY SHOWN AS OCCUPIED BY SOME OF THE SAMPLING EQUIPMENT SHOWN. THE NEW LINES ARE TO BE INSTALLED IN ACCORDANCE WITH THE STATEMENT OF WORK AND ARE TO BE INSTALLED AS TO NOT IMPEDE FUTURE MAINTENANCE ACCESS AROUND THE NEW UNIT.
9. CONTRACTOR IS TO FIELD VERIFY AVAILABLE SPACE FOR THE NEW UNIT & PROVIDE GOVERNMENT WITH A SKETCH OF THE TANK LAYOUT PRIOR TO SUBMITTAL OF SHOP DRAWINGS. 48" OF CLEAR ELECTRICAL SPACE MUST BE MAINTAINED. ADDITIONALLY, THE UNIT IS TO BE INSTALLED TO ALLOW FOR SUFFICIENT ACCESS ALL THE WAY AROUND THE PERIMETER OF THE UNIT.
10. INSTALL SAFETY COVER OVER LINES RUNNING ACROSS FLOOR. COVER MUST ALLOW FOR FOOT TRAFFIC ACROSS INSTALLED LINES.
11. FOR EXISTING HYDRAULIC POWER UNIT DETAILS & REQUIRED MODIFICATIONS, SEE MY501.



BILL OF MATERIAL



- ## LEGEND

Item A

Item M

Item B

Item C

Items D, E, and F

Item G

Items J, K and Q

Item I

Item P

Item H

Items N and O

Item K

Item L



ELECTRICAL ABBREVIATIONS

| | | | | | | |
|---|------------|---------------------------------------|---------|--------------------------------|--------|------------------------------|
| G | A | AMP, AMPERE, AMPERAGE | GND | GROUND | P | POLE |
| | A/C | AIR CONDITIONING | GOVT | GOVERNMENT | PA | PUBLIC ADDRESS |
| | AC | ALTERNATING CURRENT | GP | GENERAL PURPOSE | PB | PUSH BUTTON, PULL BOX |
| | ADJ | ADJACENT, ADJOINING, ADJUSTABLE | GPM | GALLONS PER MINUTE | PBS | PUSH BUTTON STATION |
| | AFF | ABOVE FINISHED FLOOR | GPD | GROUND, GROUND | PC | POWER CONNECTOR, PHOTO CELL |
| | AFG | ABOVE FINISHED GRADE | GRD | | PD | PROTECTIVE DEVICE |
| | AH | AIR HANDLER | HD | HEAVY DUTY, HAND DRYER | PE | PROFESSIONAL ENGINEER |
| | AHU | AIR HANDLING UNIT | HH | HANDHOLE | PED | PEDESTAL |
| | AIC | AMPERE INTERRUPTING CAPACITY | HIC | HIGH INTERRUPTING CAPACITY | PERIM | PERIMETER |
| | ALC | AREA LIGHTING CONTROLLER | HMC | HIGH MAST CONTROLLER | PF | POWER FACTOR |
| F | ALT | ALTERNATE | HMI | HUMAN-MACHINE INTERFACE | PH | PHASE |
| | ALUM | ALUMINUM | HOA | HAND-OFF-AUTO | PKG | PACKAGE |
| | AMP | AMPERE | HORIZ | HORIZONTAL | PL | PILOT LIGHT |
| | ANOD | ANODIZE | PLC | PROGRAMMABLE LOGIC CONTROLLER | PLC | PANELBOARD |
| | ANSI | AMERICAN NATIONAL STANDARDS INSTITUTE | HR | HORSEPOWER, HIGH PRESSURE | PNT | POTENTIOMETER |
| | APPROX | APPROXIMATE | HRS | HOURS | POM | POWER QUALITY METER |
| | ASC | ABOVE SUSPENDED CEILING | HS | HIGH STRENGTH | PRI | PRIMARY |
| | AT | AMPERE TRIP | HT | HEIGHT | PREFAB | PREFABRICATE(D) |
| | ATS | AUTOMATIC TRANSFER SWITCH | HTG | HEATING | PROJ | PROJECT |
| | AUX | AUXILIARY | HTR | HEATER | PT | POTENTIAL TRANSFORMER |
| E | AVG | AVERAGE | HV | HIGH VOLTAGE | PWR | POWER |
| | AWG | AMERICAN WIRE GAUGE | HYDR | HYDRAULIC | QT. | QUART |
| | BATT | BATTERY | Hz | HERTZ | QTR | QUARTER |
| | BFG | BELOW FINISHED GRADE | IC | INTERRUPTING CAPACITY | QTY | QUANTITY |
| | BLDG | BUILDING | ID | INSIDE DIAMETER | | |
| | BR | BRANCH | IG | ISOLATED GROUND | R | RESISTANCE, RECEPTACLE |
| | BKR | BREAKER | IN | INCH | RC | REMOTE CONTROL |
| | C | CONDUIT | INCL | INCLUDED | RCVR | RECEIVER |
| | CAB | CABINET | INST | INSTALLATION | RECT | RECTIFIER |
| | CAP | CAPACITY | INSUL | INSULATION | REF | REFERENCE |
| D | CB | CIRCUIT BREAKER | INT | INTERIOR, INTERNAL | REQD | REQUIRED |
| | CBLR | CABLE REEL | INV | INVERT | RET | RETURN |
| | CCTV | CLOSED CIRCUIT TELEVISION | I.S. | INTRINSICLY SAFE | RH | RIGHT HAND |
| | CHK | CHECK | J | JUNCTION | RMC | RIGID METAL CONDUIT |
| | CHIR | CIRCUIT | JB | JUNCTION BOX | RP | RAIN PROOF |
| | CKT | CIRCUIT | J-BOX | JUNCTION BOX | RR | REST ROOM |
| | CKT BKR | CIRCUIT BREAKER | | | RVSS | REDUCED VOLTAGE SOFT STARTER |
| | CLF | CURRENT LIMITING FUSE | | | RT | RAIN TIGHT |
| | CND | CONDUIT | K | THOUSAND, KEY | RX | RECEIVER |
| | CO2 | CARBON DIOXIDE | KK | KIRK-KEY | S | SOUTH, SWITCH |
| C | COM | COMMON | KP | KEY PAD | SA | SURGE ARRESTER |
| | COMPR | COMPRESSOR | KOP | KNOCKOUT PANEL | SCCR | SHORT CIRCUIT CURRENT RATING |
| | COMPT | COMPARTMENT | KV | KILOVOLTS | SCHED | SCHEDULE |
| | CP | CONTROL PANEL | kVA | KILOVOLT-AMPERES | SCR | SHORT CIRCUIT RATING |
| | CPT | CONTROL POWER TRANSFORMER | kVAR | KILOVOLT-AMPERES REACTIVE | SE | SERVICE ENTRANCE |
| | CR | CONTROL RELAY | KW | KILOWATT | SEC | SECONDARY |
| | CT | CURRENT TRANSFORMER | KWH | KILOWATT-HOUR | SECT | SECTION |
| | CTG | ZERO SEQUENCE CURENT TRANSFORMER | | | SEQ | SEQUENCE |
| | CU | CONDENSING UNIT | L | LINE | SHD | SHIELD |
| | CVT | CONTROL VOLTAGE TRANSFORMER | LA | LIGHTNING ARRESTER | SHT | SHEET |
| B | DB | DECIBEL | LB | POUND, CONDUIT BODY | SP | SINGLE POLE |
| | DBL | DOUBLE | LBL | LABEL | SPDT | SINGLE POLE, DOUBLE THROW |
| | DC | DIRECT CURRENT | LC | LIGHT CONTROL | SPEC | SPECIFICATION |
| | DEG | DEGREE | LD | LOAD | SPKR | SPEAKER |
| | DEMO | DEMOLITION | LED | LIGHT EMITTING DIODE | SPST | SINGLE POLE, SINGLE THROW |
| | DEPT | DEPARTMENT | LG | LONG, LENGTH | SS | SOFT STARTER, SAFETY SWITCH |
| | DET | DETAIL | LH | LEFT HAND(ED) | SSPR | SOLID STATE PROTECTION RELAY |
| | DIA | DIAMETER | LN | LINE | SSIW | SELECTOR SWITCH |
| | DIM | DIMENSION | LO | LOCKOUT | ST | SHUNT TRIP |
| | DISC | DISCONNECT SWITCH | LP | LIGHTING PANEL | STA | STATION |
| A | DIST | DISTRIBUTION | LRA | LOCKED ROTOR AMPS | STD | STANDARD |
| | DISTR PNL | DISTRIBUTION PANEL | LT | LIGHT | STRUCT | STRUCTURAL |
| | DMPR | DAMPER | LTG | LIGHTING | SUBS | SUBCONTRACTORS |
| | DN | DOWN | LV | LOW VOLTAGE | SUSP | SUSPENDED |
| | DP | DUST PROOF | LVR | LOUVER | SW | SWITCH |
| | DPDT | DOUBLE POLE, DOUBLE THROW | M | MOTOR, CONTACTOR | SWBD | SWITCHBOARD |
| | DPST | DOUBLE POLE, SINGLE THROW | MACH | MACHINE | SYS | SYSTEM |
| | DS | DISCONNECT SWITCH | MAG | MAGNETIC | T | TRANSFORMER |
| | DUST TIGHT | | MAG STR | MAGNETIC STARTER | TB | TERMINAL BLOCK |
| | DW | DISH WASHER | MAINT | MAINTENANCE | TD | TIME DELAY |
| G | DWG | DRAWING | MAN | MANUAL | TELE | TELEPHONE |
| | E | EAST, EMERGENCY | MATL | MATERIAL(S) | TEMP | TEMPERATURE |
| | EA | EACH | MAX | MAXIMUM | TEMP | TEMPERATURE |
| | EC | ELECTRICAL CONTRACTOR | MC | MOTOR CONTROL | TEMP | TEMPORARY |
| | EF | EXHAUST FAN | MCC | MAIN CIRCUIT BREAKER | TERM | TERMINAL |
| | ELEC | ELECTRIC | MCCB | MOLDED CASE CIRCUIT BREAKER | TFMR | TRANSFORMER |
| | ELECT | ELECTRICIAN, ELECTRICAL, ELECTRONIC | MDP | MAIN DISTRIBUTION PANELBOARD | TGL | TOGGLE |
| | ELEV | ELEVATOR, ELEVATION | MECH | MECHANICAL | TH | THERMOSTAT |
| | EMER | EMERGENCY | MECH RM | MECHANICAL ROOM | TM | THERMAL MAG |
| | EMLT | EMERGENCY LIGHT | MED | MEDIUM | TR | TAMPER RESISTANT |
| F | ENCL | ENCLOSURE | MFG | MANUFACTURING | TS | TOGGLE SWITCH |
| | ENG | ENGINE, ENGINEERED | MFR | MANUFACTURER | TSTAT | THERMOSTAT |
| | ENGR | ENGINEER | MHz | MEGAHERTZ | TV | TELEVISION |
| | ENTR | ENTRANCE, ENTERING | MIN | MINIMUM | TYP | TYPICAL |
| | EP | ELECTRICAL PANELBOARD | MISC | MISCELLANEOUS | TX | TRANSMITTER |
| | EP | EXPLOSION PROOF | MS | MOTOR STARTER | UGND | UNDERGROUND |
| | EQ | EQUAL | MTR | METER | UF | UNDERGROUND FEEDER |
| | EQUIP | EQUIPMENT | MOD. | MODIFIED | UH | UNIT HEATER |
| | EST | ESTIMATE(D) | MOT | MOTOR | UL | UNDERWRITERS LABORATORIES |
| | ESTOP | EMERGENCY STOP | MS | MOTOR STARTER | UNFIN | UNFINISHED |
| G | ETM | ELAPSED TIME METER | MTD | MOUNTED | VA | VOLT, VOLTAGE |
| | EVH | ELECTRIC WATER HEATER | MTS | MANUAL TRANSFER SWITCH | VAR | VOLT AMPERES |
| | EXH | EXHAUST | MULT | MULTIPLY | VENT | VOLT AMPERES REACTIVE |
| | EXLT | EXTERIOR LIGHT | MV | MEGAVOLT, MEDIUM VOLTAGE | VERT | VENTILATOR(TION) |
| | EXRC | EXTERIOR RECEPTACLE | MVA | MEGAVOLT AMPERES | VFD | VARIABLE FREQUENCY DRIVE |
| | EXT | EXTERIOR | MW | MEGAWATT | VP | VANDLE PROOF |
| | F | FAHRENHEIT, FUSED | N | NORTH | V.T. | VOLTAGE TRANSFORMER |
| | FA | FIRE ALARM | N/A | NOT AVAILABLE, NOT APPLICABLE | VTR | VENT THRU ROOF |
| | FACP | FIRE ALARM CONTROL PANEL | NA | NON-AUTOMATIC | V | VOLT, VOLTAGE |
| | FD | FUSED DISCONNECT | NATURAL | NATURAL | VA | VOLT AMPERES |
| G | FDR | FEEDER | NC | NORMALLY CLOSED | VAR | VOLT AMPERES REACTIVE |
| | FIG | FIGURE | NEC | NATIONAL ELECTRICAL CODE | VENT | VENTILATOR(TION) |
| | FIXT | FIXTURE | NEMA | NATIONAL ELECTRICAL MFR ASSOC. | VERT | VERTICAL |
| | FLA | FLOOR AD AMPS | NEUT | NEUTRAL | VFD | VARIABLE FREQUENCY DRIVE |
| | FLR | FLOOR | NIC | NOT IN CONTRACT | VP | VANDLE PROOF |
| | FLUOR | FLUORESCENT | NO | NORMALLY OPEN, NUMBER | V.T. | VOLTAGE TRANSFORMER |
| | FP | FIRE PROOF | NOM | NOMINAL | VTR | VENT THRU ROOF |
| | FR | FIRE RESISTANT, FIRE RATING | NR | NOT REQUIRED | W | WEST, WATTS |
| | FS | FLOAT SWITCH | N"REQD | NOT REQUIRED | W/ | WITH |
| | FT | FEET | NTS | NOT TO SCALE | WG | WEATHERPROOF & GFCI |
| G | FU | FUSE | OC | OVERCURRENT, ON CENTER | WH | WATER HEATER |
| | GC | GROUND | OCR | OVERCURRENT RELAY | WHM | WATT-HOUR METER |
| | GEN | GENERAL CONTRACTOR | OD | OUTSIDE DIAMETER | W/O | WITHOUT |
| | GF | GROUND FAULT | OH | OVERHEAD | WP | WEATHERPROOF |
| | GFI | GROUND FAULT INTERRUPTER | OHMS | OHMS | WT | WATER TIGHT, WEIGHT |
| | GFCI | GROUND FAULT CIRCUIT INTERRUPTER | OL | OVERLOAD | XFMR | TRANSFORMER |
| | GFP | GROUND FAULT PROTECTION | OPS | OPERATIONS | XP | EXPLOSION PROOF |
| | | | | | | |
| | | | | | | |
| | | | | | | |

ELECTRICAL SYMBOLS

| ONE-LINE DIAGRAM | | SWITCH GEAR DEVICE NUMBERS | |
|------------------|--|--|--|
| | LOAD BREAK SWITCH | 27 - AC UNDERVOLTAGE RELAY | 27 - AC UNDERVOLTAGE RELAY |
| | UNFUSED DISCONNECT SWITCH | 32 - DIRECTIONAL POWER RELAY | 32 - DIRECTIONAL POWER RELAY |
| | FUSED CUTOOUT SWITCH | 37 - UNDERCURRENT OR UNDER POWER RELAY | 37 - UNDERCURRENT OR UNDER POWER RELAY |
| | FUSED DISCONNECT SWITCH | 40 - LOSS OF FIELD PROTECTION RELAY | 40 - LOSS OF FIELD PROTECTION RELAY |
| | DRAW OUT CIRCUIT BREAKER | 46 - PHASE BALANCE CURRENT RELAY | 46 - PHASE BALANCE CURRENT RELAY |
| | CIRCUIT BREAKER | 47 - PHASE SEQUENCE RELAY | 47 - PHASE SEQUENCE RELAY |
| | SPECIAL CIRCUIT BREAKER'S DEVICE INDICATOR LETTER "X" EQUALS DESIGNATION BELOW | 48 - INCOMPLETE SEQUENCE RELAY | 48 - INCOMPLETE SEQUENCE RELAY |
| | POWER CIRCUIT BREAKER W/ FRAME SIZE INDICATION | 49 - AC THERMAL OVERLOAD RELAY | 49 - AC THERMAL OVERLOAD RELAY |
| | LIGHTNING ARRESTER | 49A - TRANSFORMER TEMP RELAY - ALARM | 49A - TRANSFORMER TEMP RELAY - ALARM |
| | SURGE ARRESTER | 49T - TRANSFORMER TEMP RELAY - TRIP | 49T - TRANSFORMER TEMP RELAY - TRIP |
| | CONTACT OR CONTACTOR | 50 - AC INSTANTANEOUS OVERCURRENT RELAY | 50 - AC INSTANTANEOUS OVERCURRENT RELAY |
| | MOTOR STARTER | 51 - AC TIME DELAY OVERCURRENT RELAY | 51 - AC TIME DELAY OVERCURRENT RELAY |
| | DISCONNECT SW. - FUSED | 50/51 - OVERCURRENT & INSTANTANEOUS TRIP RELAY | 50/51 - OVERCURRENT & INSTANTANEOUS TRIP RELAY |
| | DISCONNECT SW. - UN-FUSED | 50/51G - OVERCURRENT GROUND FAULT RELAY | 50/51G - OVERCURRENT GROUND FAULT RELAY |
| | STARTER W/ DISCONNECT | 52 - AC CIRCUIT BREAKER OR CONTACTOR | 52 - AC CIRCUIT BREAKER OR CONTACTOR |
| | STATER / MOTOR CONTROLLER | 59 - AC OVER VOLTAGE RELAY | 59 - AC OVER VOLTAGE RELAY |
| | FUSE | 59G - GROUND FAULT RELAY | 59G - GROUND FAULT RELAY |
| | AUTOMATIC TRANSFER SWITCH OR MANUAL TRANSFER SWITCH | 63 - SUDDEN PRESSURE RELAY | 63 - SUDDEN PRESSURE RELAY |
| | POWER SUPPLY | 64 - GROUND PROTECTION RELAY | 64 - GROUND PROTECTION RELAY |
| | CAPACITOR BANK /W KVAR RATING | 78 - PHASE ANGLE MEASURING RELAY | 78 - PHASE ANGLE MEASURING RELAY |
| | GROUND | 81 - UNDER FREQUENCY RELAY | 81 - UNDER FREQUENCY RELAY |
| | STAB TYPE DISCONNECT | 86 - LOCKOUT RELAY | 86 - LOCKOUT RELAY |
| | KIRK KEY INTERLOCK | 87 - DIFFERENTIAL CURRENT RELAY | 87 - DIFFERENTIAL CURRENT RELAY |
| | TERMINAL, CONNECTOR OR BUSS CONNECTION | 92 - REVERSE POWER RELAY | 92 - REVERSE POWER RELAY |
| | CURRENT TRANSFORMER | 97A - POWER METER | 97A - POWER METER |
| | ZERO SEQUENCE CURRENT TRANSFORMER | | |
| | POTENTIAL TRANSFORMER | | |
| | POWER DISTRIBUTION TRANSFORMER | | |
| | CONTROL POWER TRANSFORMER | | |
| | DELTA TRANSFORMER CONNECTION | | |
| | WYE OR STAR TRANSFORMER CONNECTION | | |
| | PANELBOARD | | |
| | MISC. LOAD | | |
| | VFD | | |
| | GENERATOR | | |
| | MOTOR CONNECTION W/ HORSEPOWER | | |
| | EQUIPMENT NUMBER | | |
| | METER'S DEVICE INDICATOR LETTER "XX" EQUALS DESIGNATION BELOW | | |
| | SWITCHES DEVICE INDICATOR LETTER "XX" EQUALS DESIGNATION BELOW | | |
| | AS - AMMETER SWITCH | | |
| | VS - VOLTMETER SWITCH | | |
| | CS - CLOSING SWITCH | | |
| | INDICATING LIGHTS DEVICE INDICATOR LETTER "X" EQUALS DESIGNATION BELOW | | |
| | A - AMBER | | |
| | G - GREEN | | |
| | R - RED | | |

| NOTE: ALL ABBREVIATIONS AND SYMBOLS SHOWN ARE NOT NECESSARILY USED ON THE DRAWINGS. | | | | | | | | | | | | | |
|---|---|--|---|------|---|-----|-----|--|---------------|--|---------------|--|---------------------------------------|
| PLAN VIEW - RECEPTACLES AND OUTLETS | | PLAN VIEW - MISCELLANEOUS | | | | | | | | | | | |
| | SINGLE RECEPTACLE | | JUNCTION BOX | | | | | | | | | | |
| | DUPLEX RECEPTACLE | | JUNCTION BOX - WALL MOUNT | | | | | | | | | | |
| | DUPLEX RECEPTACLE DEVICE INDICATOR LETTER "XX" EQUALS DESIGNATION BELOW | | PULL BOX | | | | | | | | | | |
| | S - SWITCHED | | HANDHOLE | | | | | | | | | | |
| | TP - TAMPER PROOF | | SMOKE DETECTOR | | | | | | | | | | |
| | VP - VANDLE PROOF | | HEAT DETECTOR | | | | | | | | | | |
| | WP - WEATHER PROOF | | FIRE ALARM BELL | | | | | | | | | | |
| | DUPLEX (QUAD) RECEPTACLE | | FIRE ALARM HORN - STROBE | | | | | | | | | | |
| | DUPLEX RECEPTACLE W/ GFCI | | FIRE ALARM STROBE LIGHT | | | | | | | | | | |
| | DUPLEX (QUAD) RECEPTACLE W/ GFCI | | MANUAL PULL STATION | | | | | | | | | | |
| | OUTLET RECEPTACLE - SPECIAL DEVICE INDICATOR LETTER "X" EQUALS DESIGNATION BELOW | | LOUVER OPERATOR | | | | | | | | | | |
| | D - DRYER | | DAMPER MOTOR | | | | | | | | | | |
| | R - RANGE | | EXHAUST FAN | | | | | | | | | | |
| | SPECIAL PURPOSE OUTLET OR EQUIPMENT CONNECTION DEVICE INDICATOR LETTER "XX" EQUALS DESIGNATION BELOW | COMMON SCHEMATIC SYMBOLS | | | | | | | | | | | |
| | WH - WATER HEATER | | LIGHTING/POWER TRANSFORMER (XFMR) | | | | | | | | | | |
| | EF - EXHAUST FAN | | CONTROL POWER / VOLTAGE TRANSFORMER (PT, CPT,CVT) | | | | | | | | | | |
| | LR - LIGHT RECEPTACLE | | FUSED VISIBLE DISCONNECT | | | | | | | | | | |
| | WD - WELDER | | N.O. & N.C. RELAY OR AUX CONTACTS | | | | | | | | | | |
| | FLOOR OUTLET | | (TYP) CONTROL RELAY & MOTOR CONTROL COIL | | | | | | | | | | |
| | DROP CORD / CORD REEL | | MOTOR STARTER | | | | | | | | | | |
| PLAN VIEW - POWER EQUIPMENT | | | THERMAL OVERLOAD | | | | | | | | | | |
| | DISCONNECT SW. - FUSED | | MOTOR CIRCUIT BREAKER MAGNETIC OVERLOAD | | | | | | | | | | |
| | DISCONNECT SW. - UN-FUSED | | MOTOR CIRCUIT BREAKER THERMAL OVERLOAD | | | | | | | | | | |
| | STARTER W/ DISCONNECT | | PUSHBUTTON (N.O./N.C.) | | | | | | | | | | |
| | STATER / MOTOR CONTROLLER | | LEVEL SWITCH (N.O./N.C.) | | | | | | | | | | |
| | TRANSFORMER | | LIMIT SWITCH (N.O./N.C.) | | | | | | | | | | |
| | METER | | FLOW SWITCH (N.O./N.C.) | | | | | | | | | | |
| | 480V PANELBOARD | | PRESSURE SW. (N.O./N.C.) | | | | | | | | | | |
| | 120/240V PANELBOARD | | TEMPERATURE SW. (N.O./N.C.) | | | | | | | | | | |
| PLAN VIEW - SECURITY | | | EMERGENCY STOP PUSHBUTTON | | | | | | | | | | |
| | DOOR / WINDOW CONTACT | | CONTROL PANEL PILOT LIGHT | | | | | | | | | | |
| | PASSIVE INFRARED DETECTOR | | A - AMBER | | | | | | | | | | |
| | KEYPAD | | G - GREEN | | | | | | | | | | |
| | VIDEO SURVEILLANCE CAMERA (WALL) | | R - RED | | | | | | | | | | |
| | VIDEO SURVEILLANCE CAMERA (CEILING) | | CONTROL FUSE WITH RATING | | | | | | | | | | |
| PLAN VIEW - TECHNOLOGY | | | CONTROL BREAKER | | | | | | | | | | |
| | TELEPHONE OUTLET | | 2 POSITION OFF ON 2 POSITION MAINTAINED SELECTOR SWITCH FOR OFF - ON | | | | | | | | | | |
| | DATA OUTLET, WALL | | 3 POSITION OFF AUTO 3 POSITION MAINTAINED SELECTOR SWITCH FOR HAND - OFF - AUTO | | | | | | | | | | |
| | TELEPHONE / DATA OUTLET, WALL | <table><tr><td>COMPONENT</td><td>NAME</td></tr><tr><td></td><td>2BX</td></tr><tr><td colspan="2">116</td></tr><tr><td colspan="2">DESCRIPTION 1</td></tr><tr><td colspan="2">DESCRIPTION 2</td></tr></table> | COMPONENT | NAME | | 2BX | 116 | | DESCRIPTION 1 | | DESCRIPTION 2 | | GENERIC COMPONENT CONNECTION BLOCK |
| COMPONENT | NAME | | | | | | | | | | | | |
| | 2BX | | | | | | | | | | | | |
| 116 | | | | | | | | | | | | | |
| DESCRIPTION 1 | | | | | | | | | | | | | |
| DESCRIPTION 2 | | | | | | | | | | | | | |
| | WIRELESS ACCESS POINT | | | | | | | | | | | | |
| | TELEPHONE OUTLET, FLOOR | | | | | | | | | | | | |
| | DATA OUTLET, FLOOR | | | | | | | | | | | | |
| | TELEPHONE / DATA OUTLET, FLOOR | | | | | | | | | | | | |
| | NETWORK SWITCH / SERVER | | | | | | | | | | | | |
| | TELEVISION OUTLET | | | | | | | | | | | | |
| | VIDEO PROJECTOR ROUGH-IN | | | | | | | | | | | | |
| PLAN VIEW - COMMUNICATIONS | | NAMING CONVENTION FOR EQUIPMENT FED FROM PANELBOARDS | | | | | | | | | | | |
| | BELL | <table><tr><td>LT</td><td>3</td><td>0</td><td>1</td></tr><tr><td colspan="4"></td></tr></table> | | LT | 3 | 0 | 1 | | | | | | |
| LT | 3 | 0 | 1 | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | BUZZER | SEQUENCE NUMBERED | | | | | | | | | | | |
| | HORN-PAGING | PANELBOARD NUMBER COMPONENT IS FEED FROM (OPTIONAL) | | | | | | | | | | | |
| | WALL MOUNTED SPEAKER (SQUARE) | EQUIPMENT ABBREVIATION | | | | | | | | | | | |
| | WALL MOUNTED SPEAKER (ROUND) | EXAMPLE: THE FIRST LIGHT FIXTURE FEED FROM PANELBOARD (PNL3) WOULD BE NAMED = LT301 | | | | | | | | | | | |
| | CEILING MOUNTED SPEAKER (ROUND) | | | | | | | | | | | | |
| | CEILING MOUNTED SPEAKER (SQUARE) | | | | | | | | | | | | |

JENNINGS RANDOLPH BACKUP HPU 2 PUMP CONTROLLER

200

201 from 112

202

203 P1CR 141 1 TB6 P1PR 2 TB6 PUMP 1 PRESSURE RELIEF SOLENOID

204

205 TON2 142 3 TB6 P2PR 4 TB6 PUMP 2 PRESSURE RELIEF SOLENOID

206

207 SSW4 OFF ON TRANSFER PUMP DRAIN (KEYED) 5 TB6 TD1 6 TB6 TRANSFER DRAIN SOLENOID

208

209 SERV GATE 1 RAISE PB3 7 TB6 SG1R 8 TB6 SERVICE GATE 1 RAISE

210 CR10 256

211

212 SERV GATE 1 LOWER PB4 9 TB6 SG1L 10 TB6 SERVICE GATE 1 LOWER

213 CR11 257

214

215 SERV GATE 2 RAISE PB5 11 TB6 SG2R 12 TB6 SERVICE GATE 2 RAISE

216 CR12 258

217

218 SERV GATE 2 LOWER PB6 13 TB6 SG2L 14 TB6 SERVICE GATE 2 LOWER

219 CR13 259

220

221 EMER GATE 1 RAISE PB7 15 TB6 EG1R 16 TB6 EMERGENCY GATE 1 RAISE

222 CR14 260

223

224 EMER GATE 1 LOWER PB8 17 TB6 EG1L 18 TB6 EMERGENCY GATE 1 LOWER

225 CR15 261

226

227 EMER GATE 2 RAISE PB9 19 TB6 EG2R 20 TB6 EMERGENCY GATE 2 RAISE

228 CR16 262

229

230 EMER GATE 2 LOWER PB10 21 TB6 EG2L 22 TB6 EMERGENCY GATE 2 LOWER

231 CR17 263

232

233

234

235

236

237 to 239

238

239 from 237

240 LF1 RAISE PB11 23 TB6 LF1R 24 TB6 LOW FLOW GATE #1 SOLENOID

241 CR18 264

242

243 LF1 LOWER PB12 25 TB6 LF1L 26 TB6 LOW FLOW 1 LOWER

244 CR19 265

245

246 LF2 RAISE PB13 27 TB6 LF2R 28 TB6 LOW FLOW GATE #2 SOLENOID

247 CR20 266

248

249 LF2 LOWER PB14 29 TB6 LF2L 30 TB6 LOW FLOW 2 LOWER

250 CR21 267

251

252

253

254

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CONTROLS FROM REMOTE STATION REF. E-104

1 TB7 N

2 TB7 340 CR10 211 SERVICE GATE 1 RAISE RELAY

3 TB7 343 CR11 214 SERVICE GATE 1 LOWER RELAY

4 TB7 346 CR12 217 SERVICE GATE 2 RAISE RELAY

5 TB7 349 CR13 220 SERVICE GATE 2 LOWER RELAY

6 TB7 352 CR14 223 EMERGENCY GATE 1 RAISE RELAY

7 TB7 355 CR15 226 EMERGENCY GATE 1 LOWER RELAY

8 TB7 358 CR16 229 EMERGENCY GATE 2 RAISE RELAY

9 TB7 365 CR17 232 EMERGENCY GATE 2 LOWER RELAY

10 TB7 368 CR18 242 LOW FLOW 1 RAISE RELAY

11 TB7 371 CR19 245 LOW FLOW 1 LOWER RELAY

12 TB7 374 CR20 248 LOW FLOW 2 RAISE RELAY

13 TB7 377 CR21 251 LOW FLOW 2 LOWER RELAY

14 TB7 L 251 CR9 165 SYSTEM FAULT LIGHT

15 TB7 336

DESIGNED BY: PWD

ISSUE DATE: 2020/12/01

U.S. ARMY CORPS OF ENGINEERS HUNTINGTON DISTRICT 502 8TH STREET HUNTINGTON, WV 25701

DRAWN BY: DKO

SOLICITATION NO.:

CHECKED BY: PWD

CONTRACT NO.:

SUBMITTED BY: PWD

SIZE: ANS/D E-102, IRL Backup HPU Electrical.dgn

POTOMAC RIVER SWANTON, MARYLAND JENNINGS RANDOLPH LAKE SPARE HYDRAULIC POWER UNIT

BACKUP HPU 2 PUMP CONTROLLER ELECTRICAL

SHEET ID

E-102

[illegible]

| | | | |
|---|---------------|-------------------|--|
| DRAWN BY: 502 8TH STREET HUNTINGTON, WV 25701 | DWG NO. | SOLICITATION NO.: | |
| | CHECKED BY: | CONTRACT NO.: | |
| | DATE: | | |
| | SUBMITTED BY: | | |
| | PWD: | | |
| SIZE: | ANSI/D | | |
| E-102 JRL Backup HPU Electrical.dwg | | | |

JENNINGS RANDOLPH LAKE
SPARE HYDRAULIC POWER UNIT
BACKUP HPU 2
PUMP CONTROLLER
ELECTRICAL

SHEET ID
E-102

A vertical scale with labels A, B, C, D, E, F, and G from bottom to top, with horizontal tick marks.

1. LINE AND NEUTRAL RAILS SHALL BE #12AWG SIS 600V AND LADDER RUNGS SHALL BE #14AWG, SIS, 600V UNLESS OTHERWISE NOTED.
2. BREAKER AUXILIARY CONTACTS SHOWN IN THE DE- ENERGIZED POSITION.
3. RELAYS SHOWN IN THE NORMAL/RESET POSITION.
4. PROVIDE AND INSTALL LOCKABLE MCCB OPERATORS FOR CB1 & CB2.
5. THE CONTROLLER SHALL BE MANUFACTURED BY THE CONTRACTOR TO THE EXACT LOGIC DESCRIBED IN THE DESIGN DRAWINGS. ANY MODIFICATION MUST BE APPROVED IN ADVANCE BY EC-DE.
6. THE CONTRACTOR SHALL SET STARTER OVERLOAD'S TO 125% FULL LOAD AMPS.
7. CR1 SHALL BE RATED TO CARRY THE CPT'S FULL SECONDARY CURRENT CONTINUOUSLY.
8. ALL CONTROL RELAYS AND CONTACTORS SHALL BE RATED FOR THEIR INTENDED LOAD AT LEAST 50% ADDITIONAL CAPACITY.
9. ALL PENETRATIONS SHALL BE VIA COMPONENTS AND/OR FITTINGS WITH RATINGS EQUIVALENT TO THE ENCLOSURE'S INGRESS PROTECTION RATING TO MAINTAIN THE SYSTEM'S LIQUID AND DUST INGRESS INTEGRITY.
10. PHENOLIC ENGRAVED LABELS WITH A WHITE BACKGROUND AND BLACK LETTERS SHALL BE PROVIDED AS INDICATED IN THE ENCLOSURE DESIGN. THEY SHALL BE ADHESIVE BACKED. NO UNNECESSARY HOLES SHALL BE DRILLED IN THE ENCLOSURE.
11. ALL WIRES SHALL BE LABELED (ON BOTH ENDS) WITH AN UN SHRUNK THERMAL PRINTED SLEEVE.
12. ALL INTERIOR COMPONENTS SHALL BE LABELED WITH A THERMAL PRINTED LABEL.
13. THE CONTRACTOR SHALL ENSURE NO DISSIMILAR METAL CONTACT OCCURS THAT WOULD ACCELERATE CORROSION.
14. A DRAWING POCKET SHALL BE INSTALLED IN THE INSIDE OF THE FRONT DOOR. IT SHALL CONTAIN (3) COPIES OF THE CONTROLLER ELECTRICAL SCHEMATICS, HYDRAULICS DRAWINGS, BOM AND OPERATING MANUAL PRINTED ON WATER RESISTANT TESLIN PAPER OR EQUIVALENT.
15. THIS DRAWING REPRESENTS GENERAL DESIGN INFORMATION AND APPROXIMATE COMPONENT LOCATIONS. THE CONTRACTOR IS RESPONSIBLE FOR COMPLETING THE ELECTRICAL AND MECHANICAL DESIGN IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL CODES.
16. IT IS ACCEPTABLE FOR THE CONTRACTOR TO SUBSTITUTE COMPONENTS PROVIDED THE PROPOSED COMPONENTS MEET OR EXCEED ALL THE ELECTRICAL CHARACTERISTICS OF THE SPECIFIED COMPONENT.
17. THE CONTRACTOR SHALL SELECT A SUITABLE ENCLOSURE TO HOUSE THE SPECIFIED CIRCUITRY. IT SHALL BE NEMA 4X. SINGLE OR DUAL DOOR IS ACCEPTABLE.
18. LOUVERS SHALL BE INSTALLED ON THE BOTTOM RIGHT AND TOP LEFT SIDES TO PROMOTE NATURAL DRAFT VENTILATION. THE LOUVERS SHALL BE NEMA 4X. INTERNAL METAL FILTERS SHALL ALSO BE INSTALLED. (2) SPARE FILTERS SHALL BE PROVIDED.
19. THE FOLLOWING SPARES SHALL BE PROVIDED:
 - (QTY. 1) CONTROL POWER TRANSFORMER
 - (QTY. 5) EACH TYPE OF FUSE
 - (QTY. 2) EACH TYPE OF CONTROL RELAY
 - (QTY. 1) COMPLETE MOTOR STARTER
 - (QTY. 1) EACH CONTROL BREAKER
 - (QTY. 1) MOTOR MCCB
 - (QTY. 1) HEATER
 - (QTY. 1) CONTROL CONTACTOR
 - (QTY. 2) EACH TYPE OF PUSH BUTTON
 - (QTY. 1) EACH TYPE OF SELECTOR SWITCH

The diagram illustrates a control panel layout with the following components:

- Emergency Stop (ESP):** A large circular button with an "E-STOP" label.
- Control PWR Reset (PB1):** A push button with a "BLACK" label.
- Control Power On (LT1):** An indicator lamp with an "A" label.
- Pump Motor #1 (CB1):** A rotary operator for the pump motor.
- Pump Motor #2 (CB2):** A rotary operator for the pump motor.
- Emersion Heater (CB3):** A rotary operator for the heater.
- ETM:** An emergency stop timer.
- Pump Control Mode (SSW2):** A selector switch with "LOCAL", "OFF", and "REMOTE" positions.
- Pump Start (PB1):** A push button with a "GRN" (Green) label.
- Pump Stop (PB2):** A push button with a "RED" (Red) label.
- Bypass Start (SSW1):** A selector switch with "OFF" and "ON" positions.
- Transfer Pump Fill (SSW3):** A selector switch with "OFF" and "ON" positions.
- Transfer Pump Drain (SSW4):** A selector switch with "OFF" and "ON" positions.
- Pump 1 Running (LT2):** An indicator lamp with a "G" (Green) label.
- Pump 2 Running (LT3):** An indicator lamp with a "G" (Green) label.
- HPU2 Low Oil Fault (LT4):** An indicator lamp with an "R" (Red) label.
- HPU2 High Oil Fault (LT5):** An indicator lamp with an "R" (Red) label.
- HPU2 High Temp Fault (LT6):** An indicator lamp with an "R" (Red) label.
- HPU1 High Oil Fault (LT7):** An indicator lamp with an "R" (Red) label.
- HPU1 Low Oil Fault (LT8):** An indicator lamp with an "R" (Red) label.
- Serv Gate #1 Raise (PB3):** A push button with a "GRN" (Green) label.
- Serv Gate #2 Raise (PB5):** A push button with a "GRN" (Green) label.
- Emer Gate #1 Raise (PB7):** A push button with a "GRN" (Green) label.
- Emer Gate #2 Raise (PB9):** A push button with a "GRN" (Green) label.
- Low Flow #1 Raise (PB11):** A push button with a "GRN" (Green) label.
- Low Flow #2 Raise (PB13):** A push button with a "GRN" (Green) label.
- Serv Gate #1 Lower (PB4):** A push button with a "RED" (Red) label.
- Serv Gate #2 Lower (PB6):** A push button with a "RED" (Red) label.
- Emer Gate #1 Lower (PB8):** A push button with a "RED" (Red) label.
- Emer Gate #2 Lower (PB10):** A push button with a "RED" (Red) label.
- Low Flow #1 Lower (PB12):** A push button with a "RED" (Red) label.
- Low Flow #2 Lower (PB14):** A push button with a "RED" (Red) label.

SCALE: NTS

[illegible]

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|---|---------------|---------------------------------------|
| U.S. ARMY CORPS OF ENGINEERS HUNTINGTON DISTRICT HUNTINGTON, WV 25701 | PWD | SOLICITATION NO.: |
| | 2020/11/201 | |
| | DRAWN BY: | CONTRACT NO.: |
| | DKO | |
| | CHECKED BY: | |
| | SUBMITTED BY: | |
| | PWD | |
| | SIZE: | E-103 JRL Backup HPU Layout and Notes |

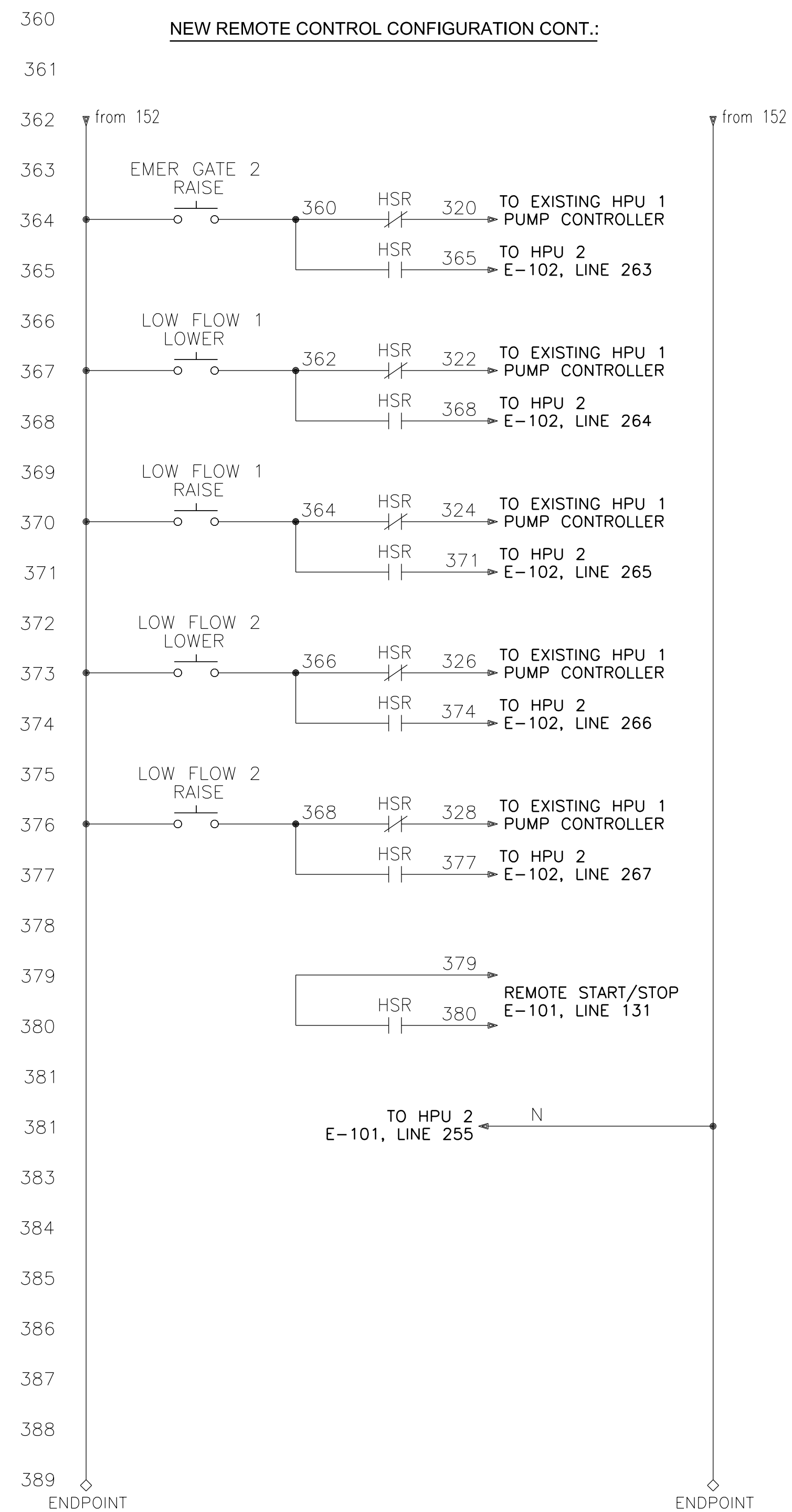
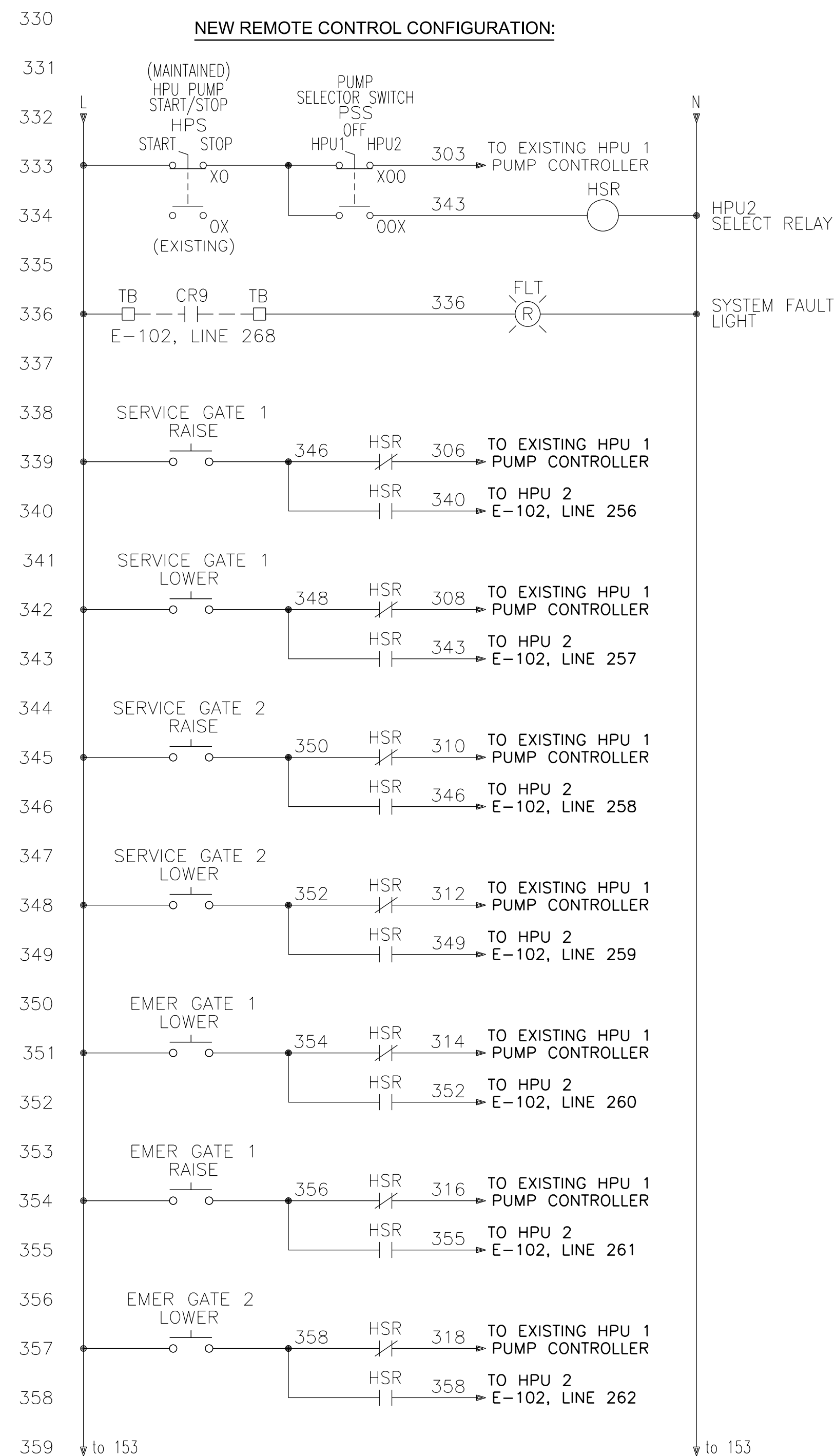
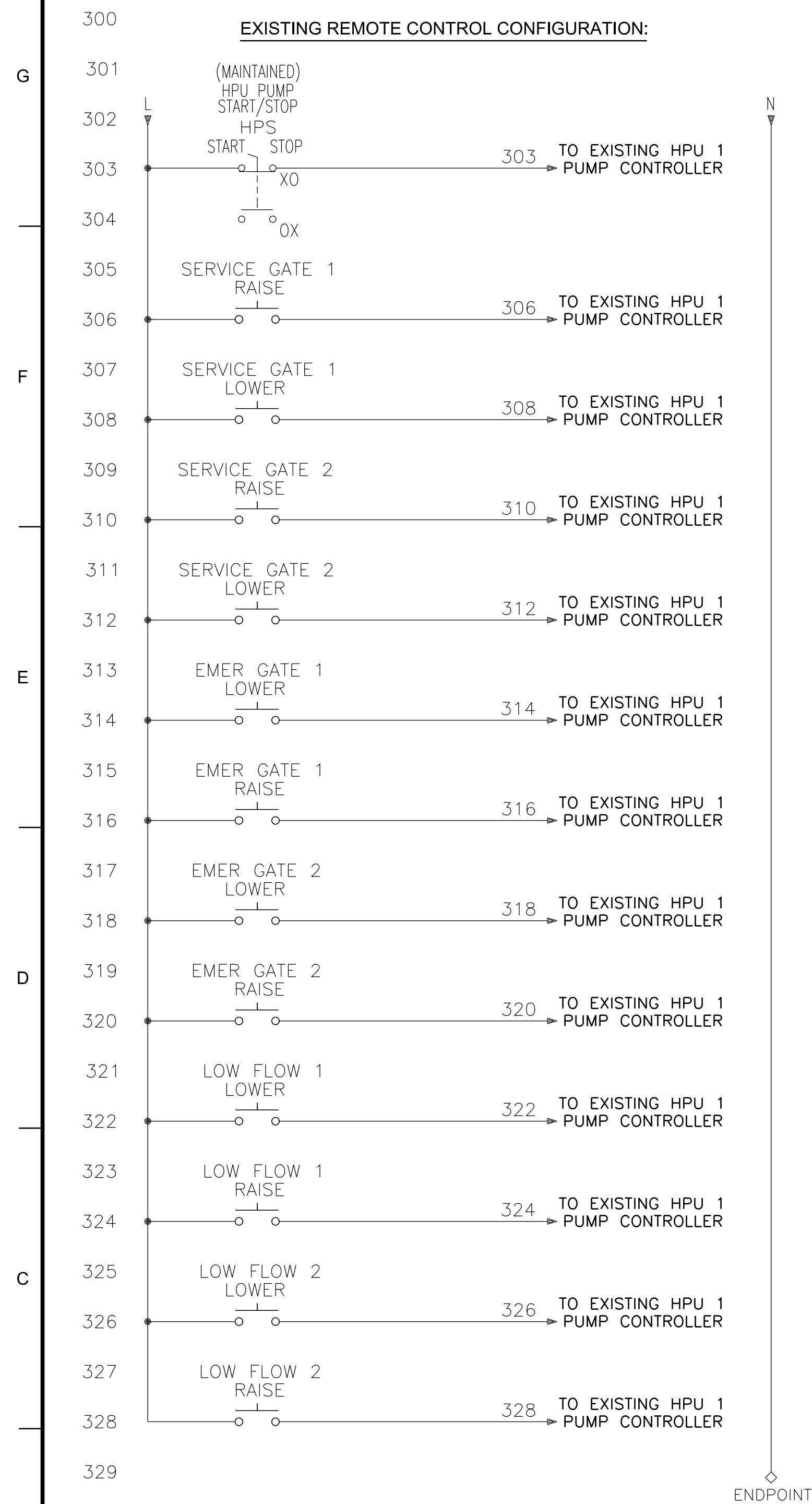
POTOMAC RIVER
SWANTON, MARYLAND
JENNINGS RANDOLPH LAKE
SPARE HYDRAULIC POWER UNIT

BACKUP TIPS 2

SHEET ID

E-103

JENNINGS RANDOLPH REMOTE CONTROL MODIFICATION



NOTES:

1. DRAWING SNIPPETS ARE REPRESENTATIVE IN NATURE. REFER TO THE REFERENCE DRAWINGS AND CONFIRM SITE CONDITIONS FOR ACTUAL WIRING CONFIGURATION.
2. REPURPOSE EXISTING PUMP START/STOP BUTTON (HPS) ASSEMBLY.
3. FABRICATE A STAINLESS STEEL 11GA. PLATE TO MOUNT THE EXISTING PUMP START/STOP BUTTON (HPS) AND THE NEW PUMP SELECTOR SWITCH (PSS) AND ALARM INDICATING LIGHT (FLT).



**S Army Corps
of Engineers®**

[illegible]

| | | |
|---|---------------|------------------------------|
| RUC-1 502 6TH STREET HUNTINGTON, WV 25701 | DRAWN BY: | SOLICITATION NO.: |
| | PWD | |
| | CHECKED BY: | CONTRACT NO.: |
| | PWD | |
| | SUBMITTED BY: | |
| | PWD | |
| | SPC | |
| | ANSI D | E-104 URL Remote Control.dgn |

SWANTON, WARTLAND
JENNINGS RANDOLPH LAKE
SPARE HYDRAULIC POWER UNIT

SHEET ID

E-104

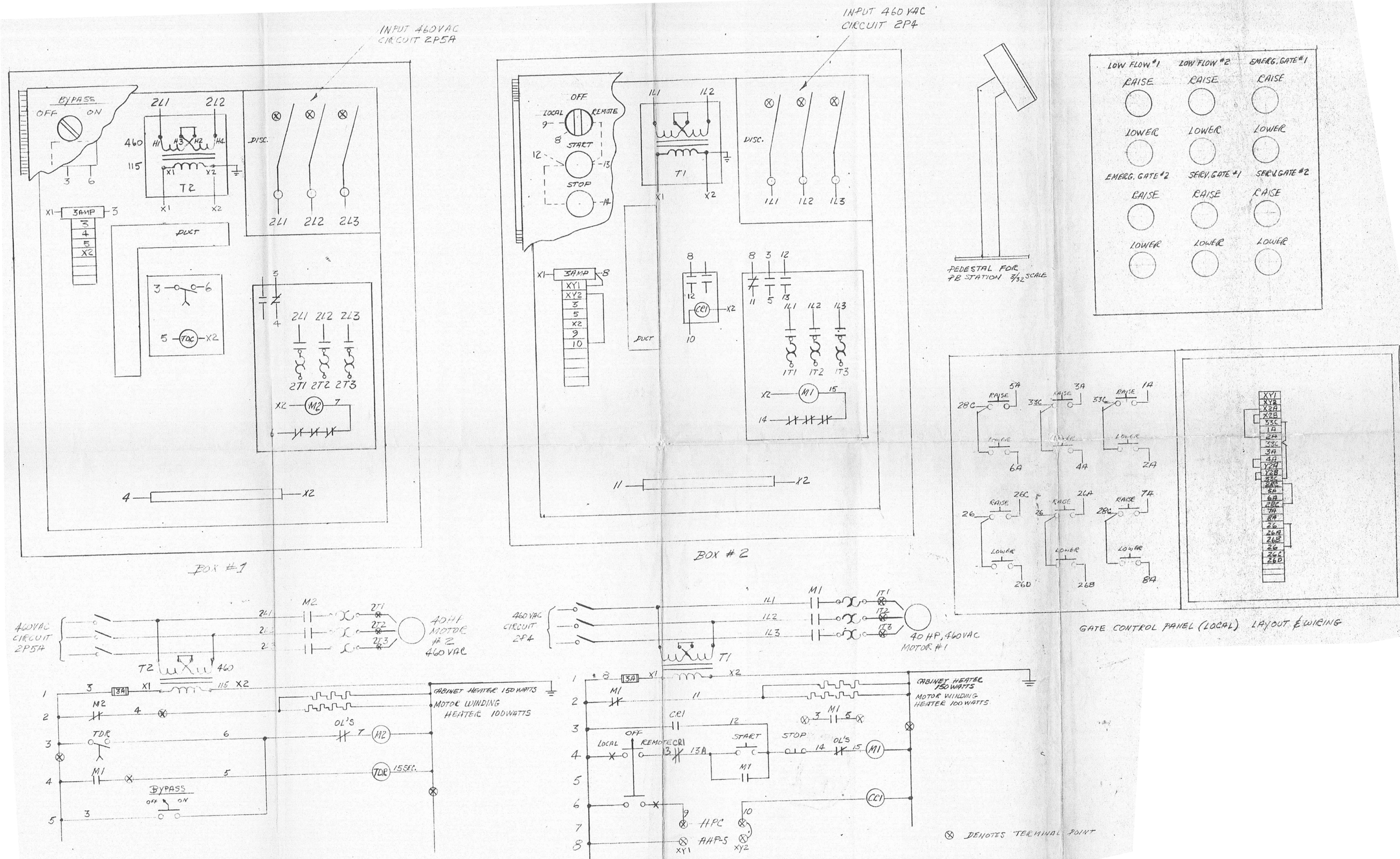
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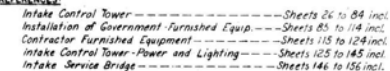
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| | CHECKED BY: MBK | CONTRACT NO.: | |
| | SUBMITTED BY: PWD | | |
| | SIZE: | | |

































POTOMAC RIVER
SWANTON, MARYLAND
JENNINGS RANDOLPH LAKE
SPARE HYDRAULIC POWER UNIT
EXISTING HYDRAULIC POWER UNIT
ELECTRICAL SCHEMATIC

SHEET ID

RE001





| | |
|---|---|
|  | Indicating Light R Denotes Red |
|  | Indicating Light G Denotes Green |
|  | Control Relay or Solenoid Gate or Valve Closing or Opening |
|  | Control Relay |
|  | Time Delay Relay |
|  | Thermal Overload |
|  | Time Delay Closing Contact Time 15 Seconds |
|  | Thermal Overload No. 1 Contact |
|  | Normally Open Contact of Control Relay No. 1 |
|  | Normally Closed Contact |
|  | Torque Limit Switch No. 1 |
|  | Limit Switch Contact No. 1 |
|  | Pushbutton Normally Open Functions as Indicated |
|  | Pushbutton Normally Closed |
|  | Calibrating Resistor |
|  | Three Position Selector Switch |
|  | Conduit Embedded in Wall or Ceiling |
|  | Conduit Exposed on Wall or Ceiling |
|  | Indicates Conduit Turning Up or Out |
|  | Indicates Conduit Turning In or Down |
|  | 120 V. Receptacle, No. 1 Denotes Single (See specs.) (Mounting height 2 ft.) |
|  | Three-Way Light Switch, Upper Number Denotes Circuit |
|  | Light Switch, Number or Letter Denotes Circuit or Light Fixtures |
|  | Light Fixture - Letter Denotes Type and Number Denotes Circuit |
|  | Indicates Junction Box |
|  | 250 V, 3 φ, 50 A, 4-Wire, 3-Pole Receptacle Grounding Type (for 208V Portable Heaters) |
|  | L10 |
|  | Indicates Circuit 10 from Panel L |
|  | Ground Wire, Size as noted |
|  | Disconnect Switch or Transfer Switch as Indicated |
|  | Photo-Electric Control |
|  | Obstruction Light Transfer Relay |

PANEL "L"
208/120 V, 3 ϕ , 4W, 3/W, W/80A, 450A. MAIN BREAKERS
(2-28 POLE PANELS BOLTED TOGETHER)
SEE NOTE 10

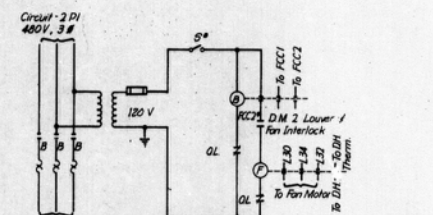
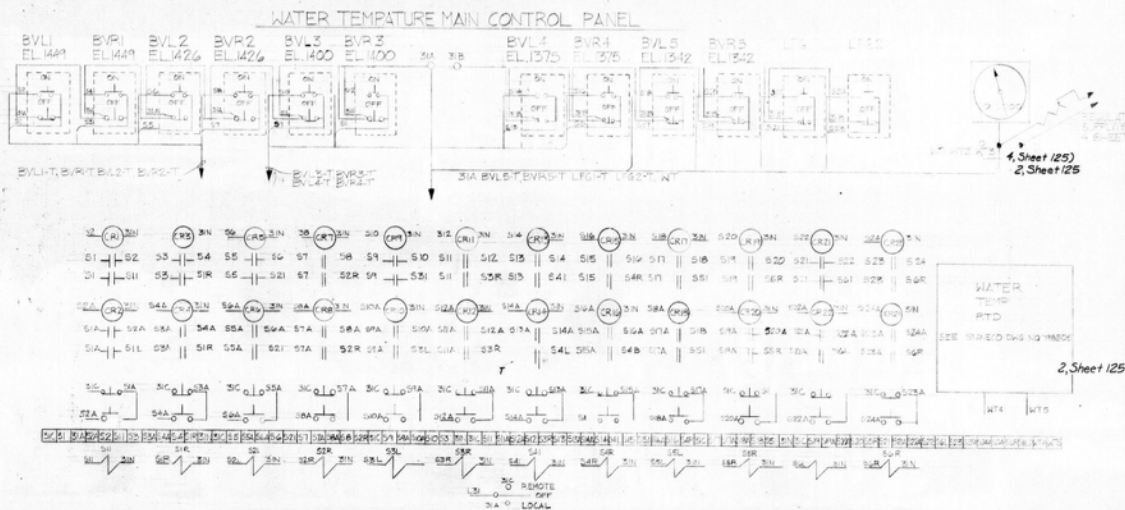
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| SEP 68 | AS | MAILED | |
| REV | DATE | DESCRIPTION | |
| DEPARTMENT OF THE ARMY BALTIMORE DISTRICT, CORPS OF ENGINEERS BALTIMORE, MARYLAND POTOMAC RIVER BASIN NORTH BRANCH POTOMAC RIVER BLOOMINGTON LAKE EMBANKMENT, INTAKE TOWER & OPERATION FACILITY INTAKE CONTROL TOWER ELECTRICAL ONE LINE DIAGRAM CABLE DESIGNATIONS AND GENERAL NOTES | | | |
| PREPARED BY | | DRAWING NUMBER | P.L.# |
| OMAHA, DISTRICT CORPS OF ENGINEERS | | 15136-1 | |
| SCALE | | DATE 2 AUG 76 | SHEET 125 OF |

POWER PANEL "1P" SCHEDULE
480V, 3 Ø 3 Wire, 400 A Main Lugs Only

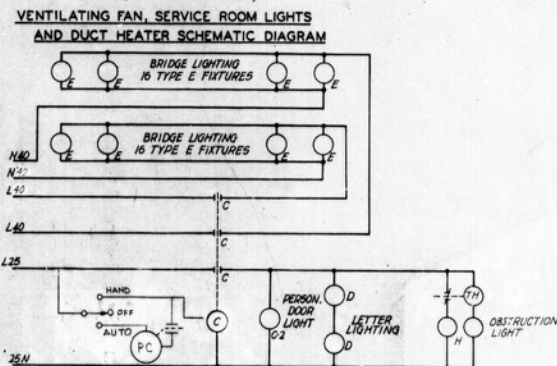
POWER PANEL "2P" SCHEDULE
480V, 3 Ø, 3 Wire, 225 A Main Lugs Only

TOTAL PANEL LOAD: 76305 W - 25800 W = 50505 W (3 Port. Heaters Furnished)
USE 65% DIVERSITY, ACTUAL LOAD 32.83 kW

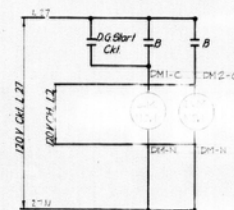
WIRING DIAGRAM - EXTERIOR LIGHTING



* Closes when relay B is energized and energizes DM no. 2 controller which opens ventilating fan louver and energizes relay F which starts ventilating fan.



WIRING DIAGRAM - EXTERIOR LIGHTING



DAMPER MOTOR CONTROL CIRCUIT

GENERAL NOTES:
For Electrical Notes, Legend and designations,
see Sheet 125.
For additional General Notes, see Sheet 2.

REFERENCES:
For References see Sheet 125

| | | | | |
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COPY AS CONSTRUCTED

| REV. | DATE | DESCRIPTION | SHEET NO. |
|---|------|-------------|-----------|
| DEPARTMENT OF THE ARMY BALTIMORE DISTRICT CORPS OF ENGINEERS BALTIMORE, MARYLAND POTOMAC RIVER BASIN NORTH BRANCH POTOMAC RIVER BLUENIGHTING LANE EMBANKMENT, INTAKE TOWER & OPERATION FACILITIES INTAKE CONTROL TOWER PANEL AND FIXTURE SCHEDULES MISC. SCHL., WIRTS & WIRING DIAGRAMS | | | |

| | | |
|---|--------------------------------------|-------|
| PREPARED BY: OHAMA, DISTRICT CORPS OF ENGINEERS | DRAWING NUMBER: 1538-1 | PAGE: |
|---|--------------------------------------|-------|

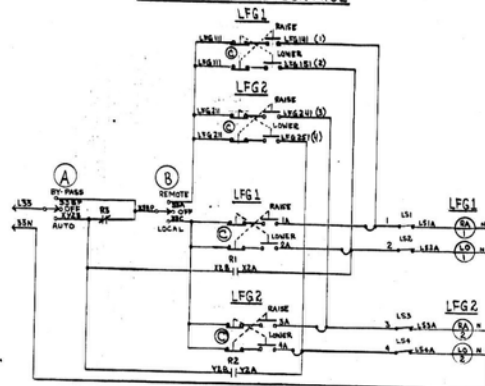
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| SCALE: | DATE: 2 AUG 68 | SHEET: 128 OF |
|--------|----------------|---------------|

Low Flow Gate #1 & #2 Schematic Diagram

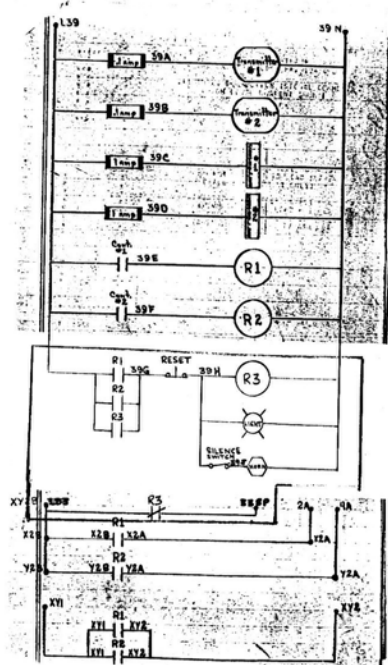
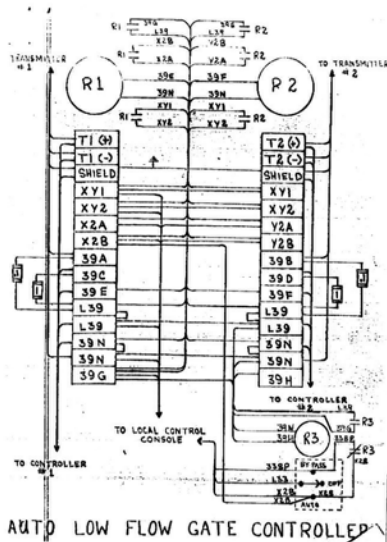
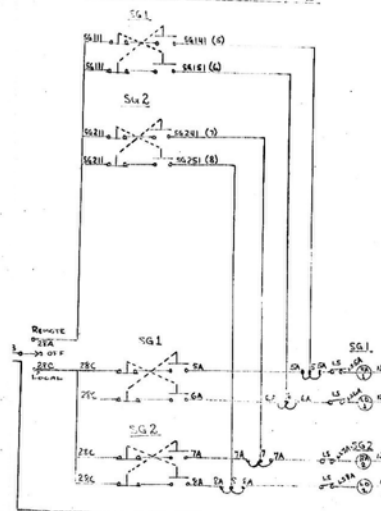
In Normal Conditions:

- Pushbutton/Relay Selector Switch, located on the Differential Pressure Transducer, will be set on Auto.
- Pushbutton/Relay Selector Switch, located on Local Control Console, will be set on Remote for operation from Main Control Room at 150.5 elevation. If it becomes necessary to operate gates from 150.5 elevation, switch to Local. **WARNING: NEVER TO REMOTE** when leaving 150.5 elevation.
- Interlocks prevent raise and lower solenoid valves from being energized simultaneously on the same gate. One can raise one gate and lower another simultaneously though.
- Emergency - gates are operated by holding desired pushbutton until position is reached. From Low Elevation, then in Remote gates operate from Main Control Room at 150.5 elevation, then in Local, gates operate from Local Control Console at 150.5 elevation.
- The Differential Pressure Solenoid Switches located at 150.5 elevation, will override the normal, local or remote operation of the gates, and close them in case of correct pressure differential, which may be completely. Dam gate has its own device so only one gate may be affected. Once one or both devices are actuated at alarm horn and alarm light on the Main Control pressure differential. They will stay energized even if gate closing correct setting has changed. The horn may be silenced by a toggle switch right below the alarm. In a remote station, if pushing this button puts light out and silences horn you can then gate closing has corrected your differential pressure. **WARNING: NEVER TO REMOTE** when leaving 150.5 elevation. If light remains on you still have pressure differential and you cannot operate either gate normally. If you want to operate gates you must go to 150.5 and switch the Solenoid at Differential Pressure Transducer. Then you can operate gates using Differential Pressure Transducer. This will bypass the solenoid device. **WARNING: NEVER TO REMOTE** when leaving 150.5 elevation. This device enables you to raise or lower either gate if problem occurs on just one gate. It also enables you to operate in case of Instrument Malfunction, or to raise the affected gate if label is caught under it. (After Closing Solenoid).

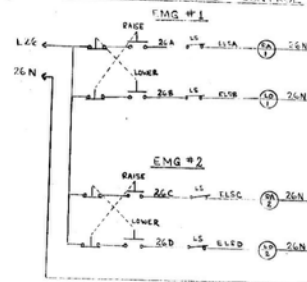
LOW FLOW GATE CONTROL



SERVICE GATES 41 & 2



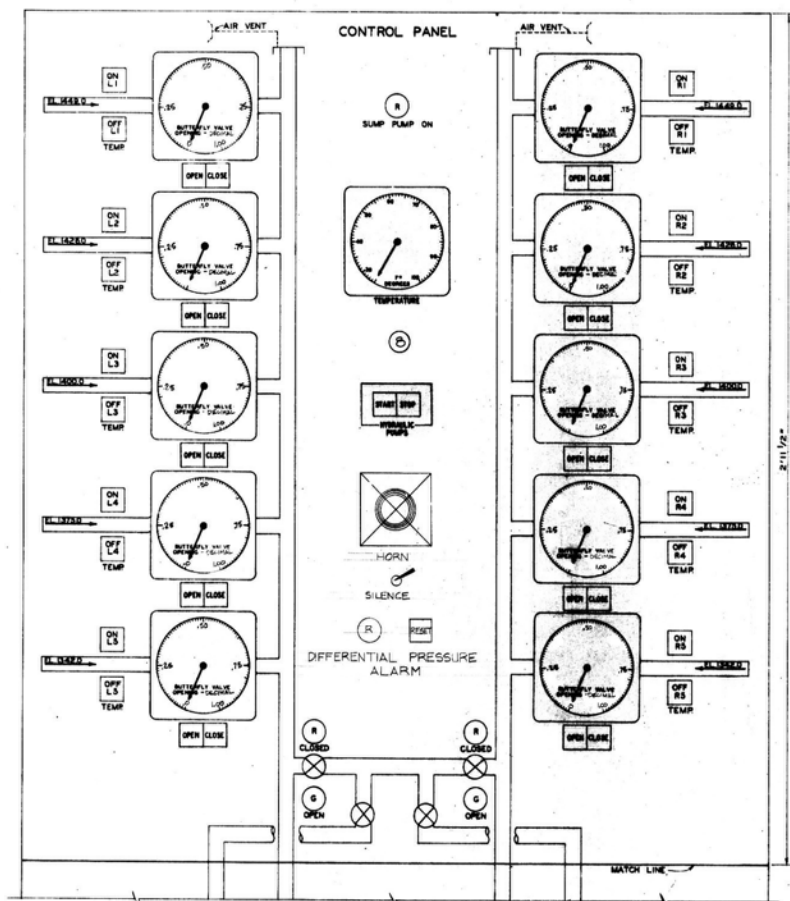
EMERGENCY GATES CONTROL

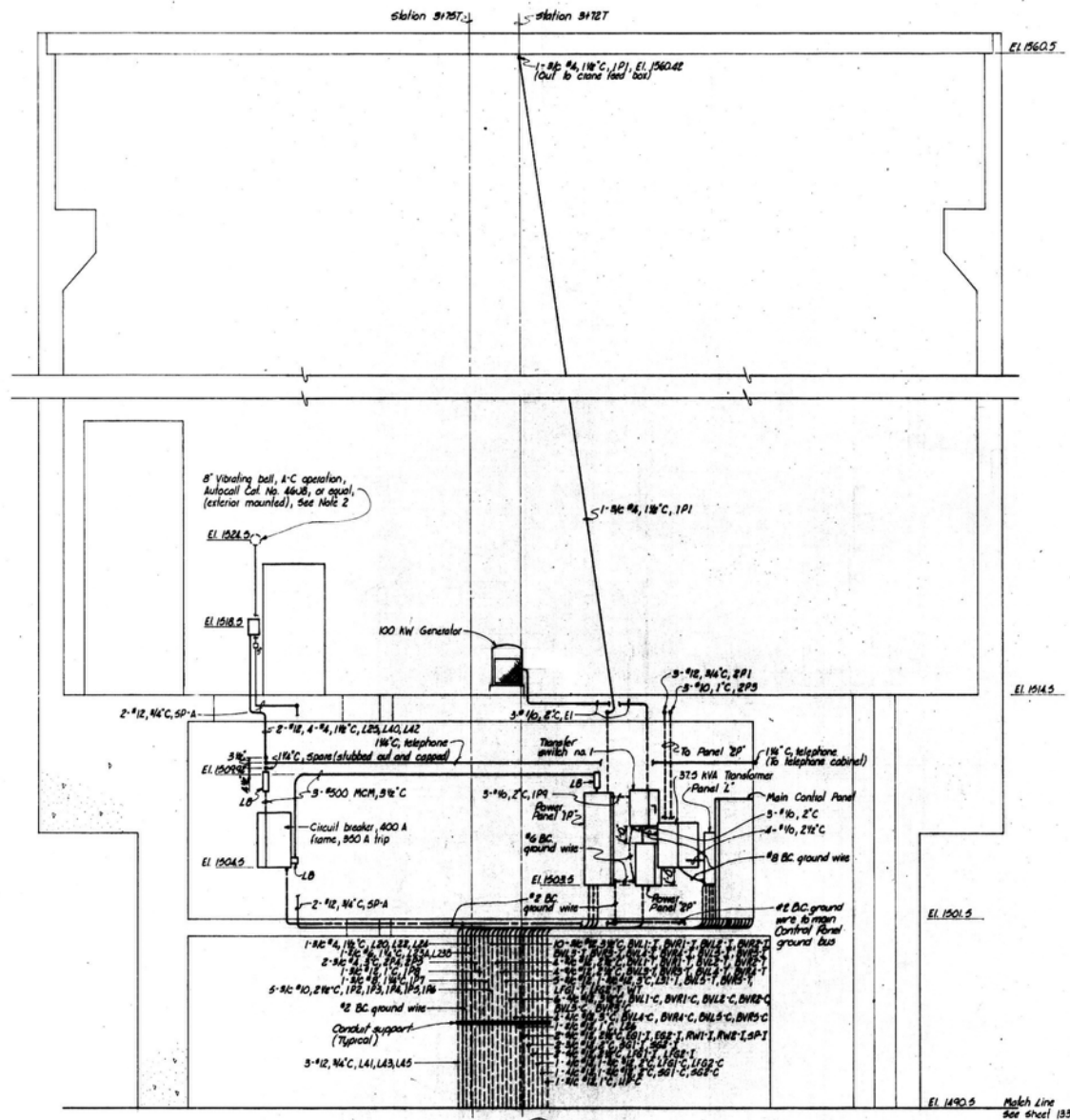


ADDED TO CONTRACT

○ - REVISIONS

| REV | DATE | DESCRIPTION | BY |
|-----|------|--|-------------------------|
| 1 | 1964 | AS CONSTRUCTED | SC |
| 2 | 1964 | DEPARTMENT OF THE ARMY BALTIMORE DISTRICT, CORPS OF ENGINEERS BALTIMORE, MARYLAND BLOOMINGTON LAKE NORTH BRANCH POTOMAC RIVER EMBANKMENT, INTAKE TOWER & OPERATION FACILITIES INTAKE CONTROL TOWER INDICATION CONTROL SCHEMATICS AND WIRING DIAGRAMS | |
| 3 | 1964 | PREPARED BY: CHAGALLA, DISTRICT CORPS OF ENGINEERS | DRAWING NUMBER: 15136-1 |
| 4 | 1964 | DATE: 8 AUG 64 | PLATE: 15136-1 |
| 5 | 1964 | SCALE: 1/8" = 1'-0" | SHEET: 15136-1 |





GENERAL NOTES:

1. For Electrical Notes, Legend and designations, see Sheet 125.
2. Alarm bell and weatherproof bell kit with bell guard shall be furnished and installed.
3. For additional General Notes, see Sheet 2.

REFERENCE:

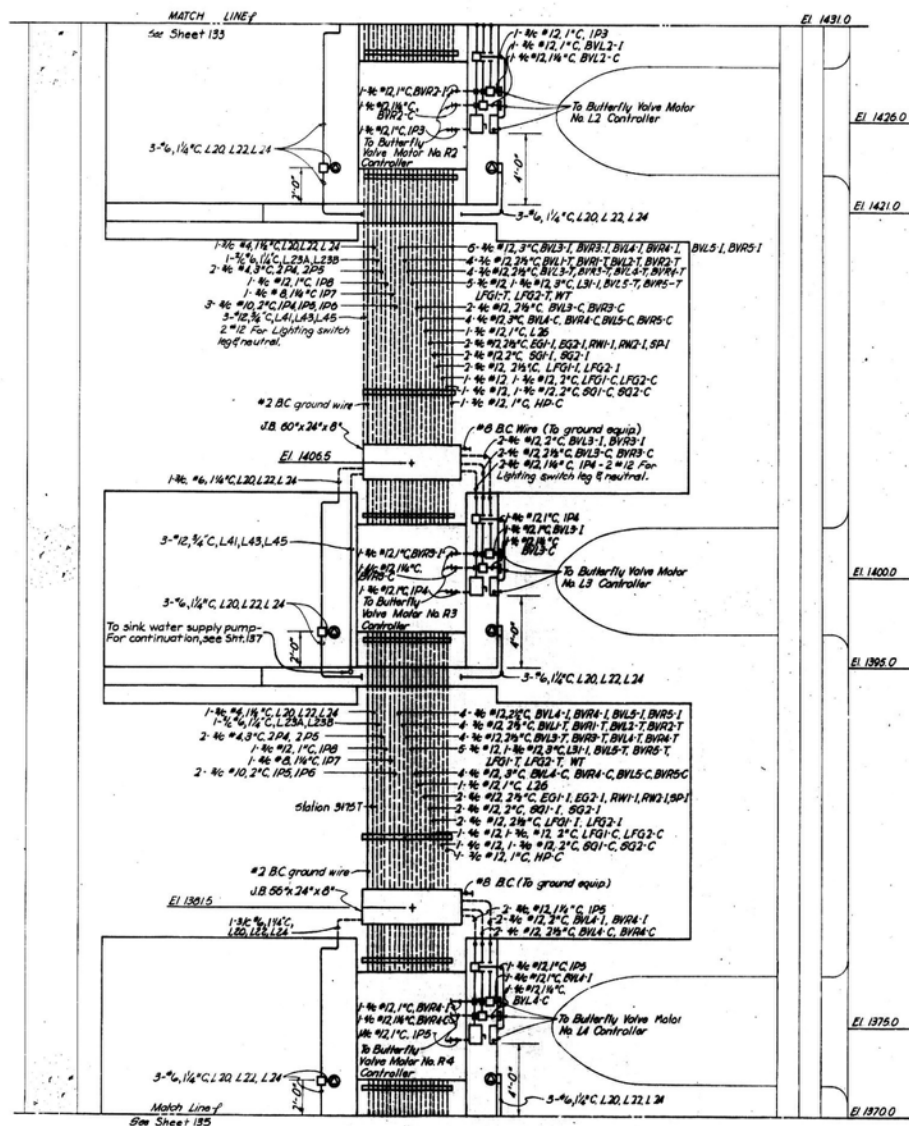
For References see Sheet 125.

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| REV | DATE | DESCRIPTION | BY |
| 1 | SEP 54 | AS CONSTRUCTED | 153 |
| DEPARTMENT OF THE ARMY | | | |
| BALTIMORE DISTRICT, CORPS OF ENGINEERS | | | |
| BALTIMORE, MARYLAND | | | |
| POTOMAC RIVER BASIN | | | |
| NORTH BRANCH POTOMAC RIVER | | | |
| BLOOMINGTON LAKE | | | |
| EMBANKMENT, INTAKE TOWER & OPERATION FACILITIES | | | |
| INTAKE CONTROL TOWER | | | |
| POWER AND CONTROL - SECTION | | | |
| SHEET 1 | | | |
| PREPARED BY: | | DRAWING NUMBER: | |
| OMAHA, DISTRICT | | 15136-1 | |
| CORPS OF ENGINEERS | | PLATE | |
| SCALE | DATE | FILED | SHEET 132W |

SECTION

SECTION 132W

Match Line
See sheet 133



SECTION (A)

SCALE: 1/8\"/>

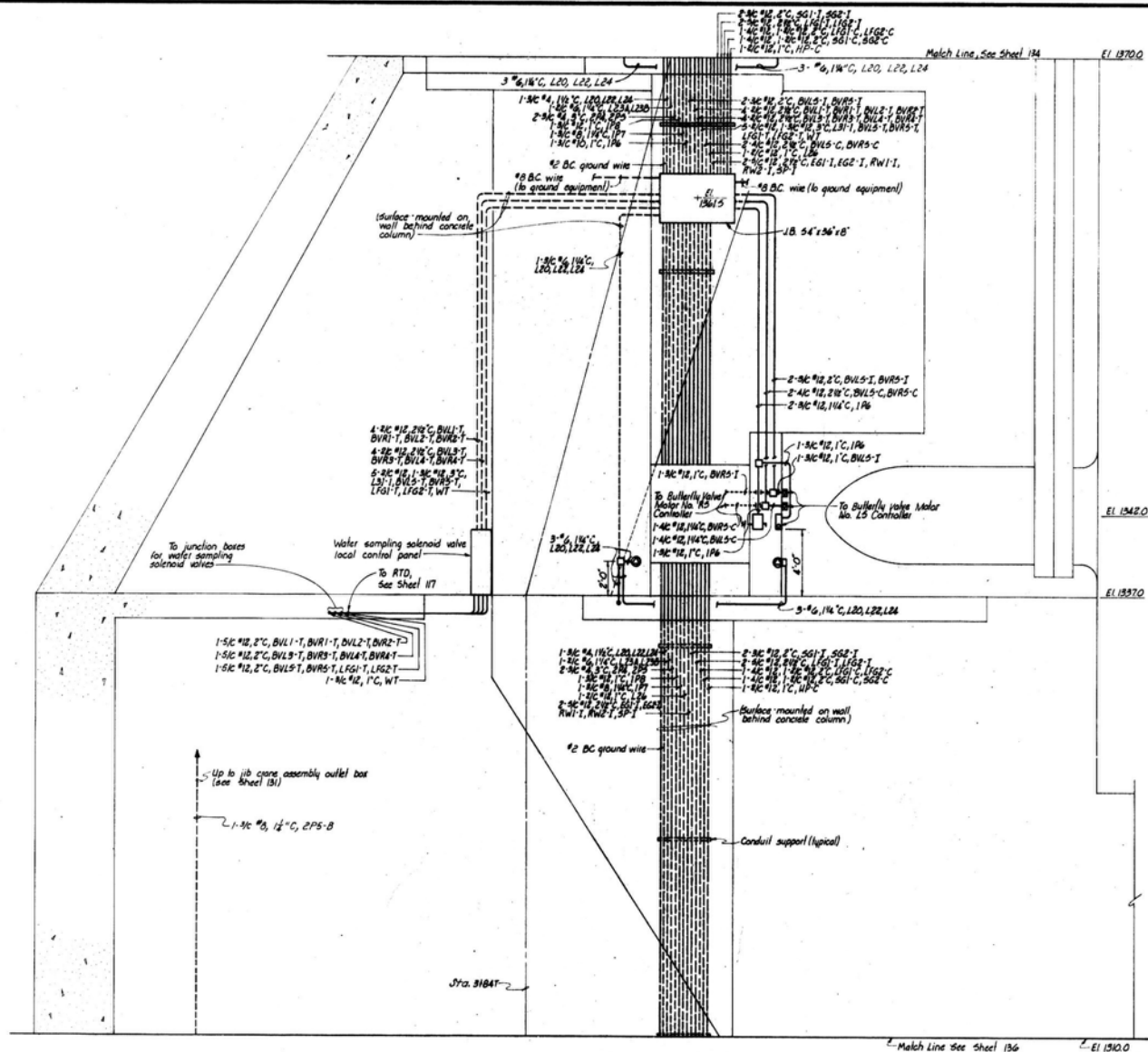
GENERAL NOTES:

For Electrical Notes, Legend and designations, see Sheet 125.
For additional General Notes, see Sheet 2.

REFERENCES:


For References see Sheet 125.

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| REV. | DATE | DESCRIPTION | BY |
| 1 | SEP 54 | AS CONSTRUCTED | |
| DEPARTMENT OF THE ARMY | | | |
| BALTIMORE DISTRICT, CORPS OF ENGINEERS | | | |
| BALTIMORE, MARYLAND | | | |
| POTOMAC RIVER BASIN | | | |
| NORTH BRANCH POTOMAC RIVER | | | |
| BLOOMINGTON LAKE | | | |
| EMBANKMENT INTAKE TOWER & OPERATION FACILITIES | | | |
| INTAKE CONTROL TOWER | | | |
| POWER AND CONTROL - SECTION | | | |
| SHEET 3 | | | |
| PREPARED BY: | | DRAWING NUMBER | PLATE |
| ONAMA, DISTRICT | | 15136-1 | |
| CORPS OF ENGINEERS | | | |
| SCALE | DATE: AUG 57 | SHEET 134 OF | 134 |



GENERAL NOTES:
 For Electrical Notes, Legend and designations,
 see Sheet 125.
 For additional General Notes, see Sheet 2.

REFERENCES:
 For References see Sheet 125.

SECTION 
 SCALE: 1/8\"/>

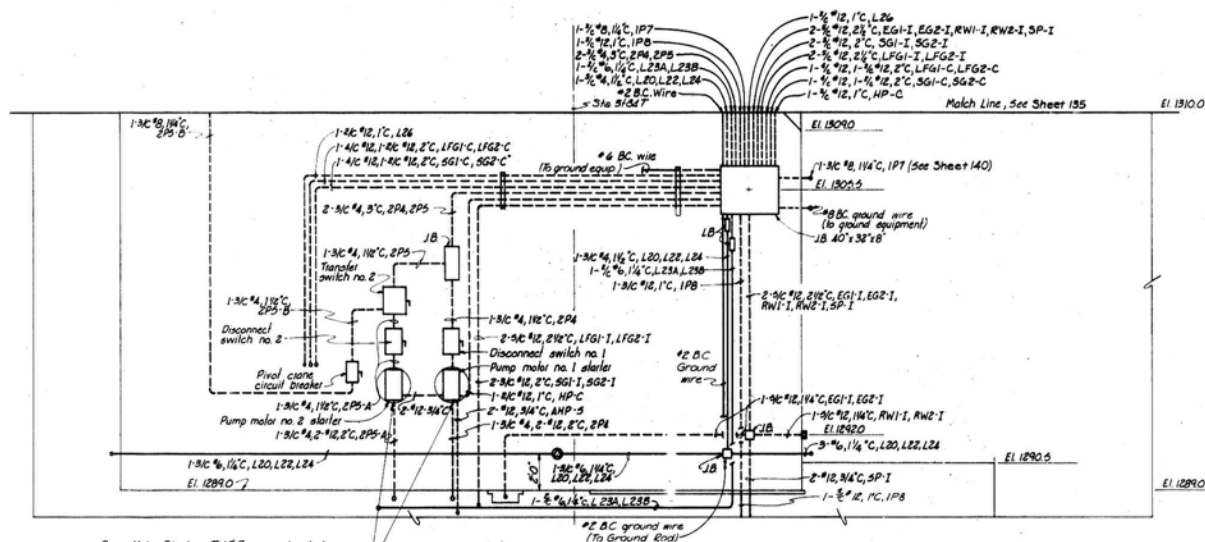
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| REV | DATE | DESCRIPTION | BY |
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DEPARTMENT OF THE ARMY
 BALTIMORE DISTRICT, CORPS OF ENGINEERS
 BALTIMORE, MARYLAND
 POTOMAC RIVER BASIN
 NORTH BRANCH POTOMAC RIVER
 BLOOMINGTON LAKE
 EMBANKMENT, INTAKE TOWER & OPERATION FACILITIES
 INTAKE CONTROL TOWER
 POWER AND CONTROL - SECTION 4
 SHEET 4

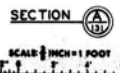
PREPARED BY: OMAHA, DISTRICT
 CORPS OF ENGINEERS

DRAWING NUMBER: 15136-1

SCALE: DATE: 2 AUG 75 SHEET 135 OF 136



Pump Motor Starters #1 & #2 are relocated on Pump support brackets in Combination Starters supplied by pump company on Hydraulic Tank.



GENERAL NOTES:

For Electrical Notes, Legend and designations, see Sheet 125.
For additional General Notes, see Sheet 2.

REFERENCES:

For References see Sheet 125.

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|-------------|--------------------|---|-----------------|
| DATE | 15 AUG 78 | BY | SP4 J.S. COVATZ |
| REV | DATE | DESCRIPTION | BY |
| | | DEPARTMENT OF THE ARMY | |
| | | BALTIMORE DISTRICT, CORPS OF ENGINEERS | |
| | | BALTIMORE, MARYLAND | |
| | | WATSON POWER BASIN | |
| | | NORTH BRANCH POTOMAC RIVER | |
| | | BLOOMINGTON LAKE | |
| | | EMBANKMENT, INTAKE TOWER & OPERATION FACILITIES | |
| | | INTAKE CONTROL TOWER | |
| | | POWER AND CONTROL - SECTION | |
| | | SHEET 5 | |
| PREPARED BY | OMAHA DISTRICT | DRAWING NUMBER | PLATE |
| | CORPS OF ENGINEERS | 15136-1 | |
| SCALE | DATE 2 AUG 78 | SHEET 126 OF | |

