

**GENERAL NOTES:**

- RESTORE ALL SURFACES TO MATCH EXISTING.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL CONCRETE BASES AND JB SYMBOLS ARE NOT TO SCALE.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE CANADIAN ELECTRICAL CODE (INCLUDING BULLETINS PUBLISHED BY THE BC SAFETY AUTHORITY) AND THE ELECTRICAL SPECIAL PROVISIONS ISSUED WITH THIS CONTRACT.
- LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATING.
- ALL INSTALLATIONS SHALL CONFORM TO CSA C22.1-15 INCLUDING BC ELECTRICAL SAFETY BRANCH AMENDMENTS. ALL UNDERGROUND CONDUITS SHALL BE RIGID PVC CONDUIT; COMPLYING CSA C22.2 NO. 211.2-06 (NOTED AS "RPVC") ON THE DRAWINGS OR OTHERWISE NOTED. ALL OUTDOOR MOUNTED CONDUIT SHALL BE RGS OR OTHERWISE NOTED.
- ALL MANUFACTURER AND CSA LABELS SHALL BE VISIBLE AND LEGIBLE AFTER THE EQUIPMENT IS INSTALLED.
- ALL EQUIPMENT AND MATERIAL SHALL BE CSA CERTIFIED FOR INSTALLATION IN BC.
- NO WORK SHALL INTERFERE WITH CURRENT CONSTRUCTION ACTIVITIES IN THE AREA BY OTHERS.
- ALL WORK INCLUDING SHUTDOWNS AND POWER OUTAGES SHALL BE COORDINATED AND SCHEDULED WITH THE CONSTRUCTION MANAGER.
- LOCK-OUT PROCEDURES SHALL APPLY FOR ALL HOT EQUIPMENT/WIRING THAT REQUIRES DISCONNECTION. CONTRACTOR TO COORDINATE ALL LOCK-OUTS WITH THE CONSTRUCTION MANAGER.
- TRAFFIC CONTROL ON PORTION OF ROADS AFFECTED BY WORK SHALL BE COORDINATED WITH THE CONSTRUCTION MANAGER.
- NOTIFY CONSULTANT OF CHANGES REQUIRED BY ELECTRICAL INSPECTION DEPARTMENT PRIOR TO MAKING CHANGES.
- SUPPLY COPIES OF ALL INSPECTION REPORTS TO ENGINEER WITHIN 24 HOURS OF INSPECTION.
- FURNISH CERTIFICATES OF ACCEPTANCE FROM ELECTRICAL INSPECTION DEPARTMENT ON COMPLETION OF WORK TO ENGINEER.
- UNUSED MATERIAL AND ABANDONED EQUIPMENT SHALL BE DISPOSED OF AT THE CONTRACTORS EXPENSE.
- INSTALLATION FOR ALL EQUIPMENT SHALL INCLUDE ALL NECESSARY CONNECTORS, TERMINATIONS, FASTENERS AND BONDING REQUIRED TO CREATE A FULLY FUNCTIONAL SYSTEM.
- ALL CONDUCTORS SHALL BE STRANDED COPPER, RW90 XLPE INSULATED OR OTHERWISE NOTED.
- ALL GROUNDING AND BONDING SHALL COMPLY WITH THE CANADIAN ELECTRICAL CODE.
- MAINTAIN PHASE SEQUENCE AND COLOUR CODING THROUGHOUT. USE COLOUR CODED WIRES IN COMMUNICATION CABLES, MATCHED THROUGHOUT SYSTEM.
- ALL EMPTY CONDUITS SHALL BE CAPPED.
- ALL CONDUITS SHALL DRAIN TO JUNCTION BOX. SPACING BETWEEN POWER AND COMMUNICATIONS CONDUITS FOR LONGITUDINAL RUNS SHALL BE 300mm (UNLESS CONCRETE ENCASED). THE SPACING MAY BE REDUCED TO 50mm AT CROSSOVER POINTS WHERE THE CONDUITS ENTER AND EXIT JUNCTION BOXES AND PULL PITS.
- THE CONTRACTOR SHALL NOT USE ANY FACTORY BENDS IN THE CONDUIT RUNS EXCEPT WHERE SHOWN ON THE DRAWINGS OR APPROVED BY THE PROJECT ENGINEER IN THE FIELD. WHERE FACTORY 90 DEGREE BENDS ARE APPROVED, THE RADIUS SHALL BE GREATER THAN 900mm.
- ALL CONDUITS SHALL BE VERIFIED AND CLEANED USING THE FOLLOWING PROCEDURE:
  - TO VERIFY INTEGRITY OF CONDUIT, PULL THROUGH EACH CONDUIT DUCT A HARD RUBBER MANDREL, NOT LESS THAN 300mm LONG AND OF A DIAMETER 6mm LESS THAN THE INTERNAL DIAMETER OF THE DUCT, PRECEDED BY A SWAB OF SUITABLE DIAMETER TO REMOVE SAND, EARTH AND OTHER FOREIGN MATERIALS.
  - NOTIFY PROJECT ENGINEER IN THE EVENT OF CONDUIT FAILURE.
  - CLEAN DUCTS BEFORE LAYING. CAP BOTH ENDS DURING CONSTRUCTION AND AFTER INSTALLATION TO PREVENT ENTRY OF ANY FOREIGN MATERIALS.
  - INSTALL PULL LINE.
  - TERMINATE CONDUIT ENDS IN THE JUNCTION BOX.
  - CLEAN AND VACUUM JUNCTION BOXES. LOCATIONS SHALL BE LAID OUT BY THE CONTRACTOR AND FIELD REVIEWED BY THE ENGINEER PRIOR TO INSTALLATION.
- THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY BENDS, COUPLINGS, REDUCERS, BELL END FITTINGS, PLUGS, CAPS AND ADAPTORS OF THE SAME PRODUCT MATERIAL AS THE CONDUIT TO ENSURE A COMPLETE INSTALLATION.
- FOR CABLE INSTALLATION IN DUCTS, CONTRACTOR SHALL USE THE FOLLOWING PROCEDURE:
  - INSTALL CABLES AS INDICATED IN DUCTS.
  - DO NOT PULL SPLICED CABLES INSIDE DUCTS.
  - INSTALL MULTIPLE CABLES IN DUCT SIMULTANEOUSLY.
  - USE CSA APPROVED LUBRICANTS OF TYPE COMPATIBLE WITH CABLE JACKET TO REDUCE PULLING TENSION.
  - AFTER INSTALLATION OF CABLES, SEAL DUCT ENDS WITH DUCT SEALING COMPOUND.
- FOR CABLE SPLICING:
  - REMOVE INSULATION CAREFULLY FROM ENDS OF CONDUCTORS.
  - CONNECTOR SPLICES SHALL BE SECURED WITH SOLDERLESS TWIST-ON (MARRETTE) TYPE CONNECTORS.
  - WHERE THE NUMBER AND/OR SIZE OF CONDUCTORS EXCEEDS THE CAPACITY OF THE TWIST-ON CONNECTOR, BURNDY BIT MULTI TAP CONNECTIONS SHALL BE USED.
  - ALL WIRING SHALL BE NEATLY BUNDLED AND LABELLED IN ALL JUNCTION BOXES, VAULTS, CHAMBERS, HAND HOLES, CONTROL BOXES, DEVICE BOXES AND PANELS.
- SEALING OF OUTDOOR TWIST-ON CONNECTIONS SHALL BE PERFORMED USING DOUBLE DIPPING METHOD SUCH AS 3M "SCOTCHKOTE" OR APPROVED ALTERNATIVE.
- TESTING:
  - PERFORM TESTS USING QUALIFIED PERSONNEL. PROVIDE NECESSARY INSTRUMENTS AND EQUIPMENT.
  - FOR FEEDERS SUPPLYING MOTORS, CHECK PHASE ROTATION AND IDENTIFY EACH PHASE CONDUCTOR OF EACH FEEDER.
  - AFTER INSTALLING CABLE BUT BEFORE SPLICING AND TERMINATING, PERFORM INSULATION RESISTANCE TEST WITH 1000V MEGGER ON EACH PHASE CONDUCTOR.
- TOP OF VAULT/JB COVERS TO BE FLUSH WITH THE FINAL GRADE OR CONCRETE PAD, UNLESS NOTED OTHERWISE.
- ALL THE UNDERGROUND BOXES SHALL BE EQUIPPED WITH GALVANIZED STEEL COVERS. THE COVERS SHALL BE BONDED TO GROUND, AND SHALL BE LABELLED "ELEC" OR "COMM" AS SHOWN IN THE DRAWINGS.
- THE CONTRACTOR SHALL NOT DISTURB OR DESTROY EXISTING PLANTS, BUSHES, TREES, OR ROOTS WHILE INSTALLING THE EQUIPMENT. MANUALLY DIG THROUGH HEDGES.
- THE CONTRACTOR SHALL DISPOSE OF ALL THE REMOVED CONCRETE AND EXCESS NATIVE FILL.
- ON-SITE DOCUMENTS SHALL BE STORED IN A SECURE LOCATION AND SHALL NOT BE LEFT IN VEHICLES OVERNIGHT.
- THERE SHALL BE NO ENERGIZED EXPOSED PARTS INSIDE KIOSKS, CABINETS, CHAMBERS OR EQUIPMENT BOXES.
- CABLE INSTALLATION INCLUDES CABLE TERMINATION, LABELLING, TESTING AND COMMISSIONING. ALL TESTING REPORTS SHALL BE SENT TO THE ENGINEER FOR REVIEW AND APPROVAL.

- ALL THE POWER CABLES INSIDE OF CHAMBERS SHALL BE TECK TYPE AND ALL THE CONNECTORS SHALL BE WATER TIGHT.
- ALL ELECTRICAL EQUIPMENT TO BE REMOVED SHALL BE RETURNED TO THE CRD PUBLIC WORKS YARD.
- WORK SHALL CONFORM TO ALL APPLICABLE REGULATIONS OF WORKSAFE BC.
- IDENTIFY ELECTRICAL EQUIPMENT WITH LABELS. FOR EACH DEVICE, INSTALL LABEL ON EQUIPMENT, PANEL, AND BACKSIDE OF PANEL, WHERE APPLICABLE.
- ARC FLASH LABELS SHALL BE INSTALLED PRIOR TO ENERGIZING STATION.
- CONTRACTOR SHALL COORDINATE WITH BC HYDRO. REFERENCE NUMBER: 4219303. CONTACT: JOHN SMAJLA, PHONE: 250-897-7405, EMAIL: JOHN.SMAJLA@BCHYDRO.COM
- CONTRACTOR SHALL COORDINATE WITH TELUS. FILE ID: NGM-45426. CONTACT: JOHN HARVEY, PHONE 250-304-9830, EMAIL: JOHN.HARVEY@TELECON.CA

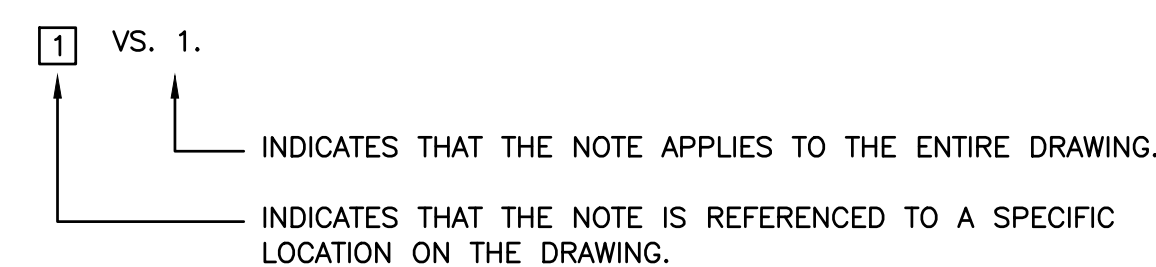
**LABELLING CONVENTION NOTES:**

- ALL CABLES AND CONDUCTORS SHALL BE LABELLED AS SHOWN ON THESE DRAWINGS. CONDUCTORS SHALL BE LABELLED IN ALL JB'S, HANDHOLES, VAULTS, CONTROL CABINETS AND ALL OTHER ACCESSIBLE POINTS.
- "LOCAL" SPECIFIES THE TERMINATION INSIDE THE CONTROL CABINET AND "REMOTE" INDICATES TERMINATION OUTSIDE.
- IF THERE IS MORE THAN ONE CONDUCTOR OF THE SAME TYPE WITHIN A BUNDLE OR CABLE, THE CONDUCTORS SHALL BE LABELLED SEQUENTIALLY STARTING FROM ONE.
- HOT AND NEUTRAL CIRCUITS ARE LABELLED HX OR NX, WHERE X IS THE CIRCUIT NUMBER IN THE PANEL.
- ALL CONDUCTORS SHALL BE IDENTIFIED IN ALL JUNCTION BOXES, CABINETS OR OTHER ACCESS POINTS. IDENTIFY WIRING WITH PERMANENT INDELIBLE IDENTIFYING MARKINGS, EITHER NUMBERED AND/OR COLOUR CODED PLASTIC TAPE ON BOTH ENDS OF PHASE CONDUCTORS OF FEEDERS AND BRANCH CIRCUIT WIRING, PRINTED USING A THERMAL HEAT TRANSFER SYSTEM.
- IDENTIFY GROUPS OF CONDUCTORS OR CABLES IN ENCLOSURES AND PANELS USING BRADY #8-342 (HEAT SHRINK SLEEVES) OR APPROVED ALTERNATE. IDENTIFY CABLES OR GROUPS OF CONDUCTORS IN JUNCTION BOXES USING BRADY #B-109 (TY-WRAP STYLE MULTIPURPOSE IDENTIFICATION TAG) OR APPROVED ALTERNATE.

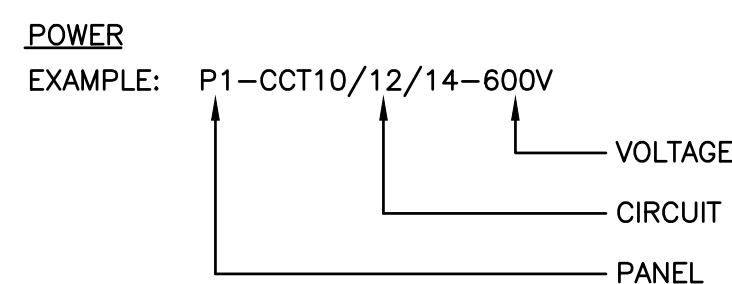
**EQUIPMENT:**

- ALL ELECTRICAL EQUIPMENT SHALL BE AS SPECIFIED OR APPROVED ALTERNATIVE.
- CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR ALL ELECTRICAL EQUIPMENT FOR APPROVAL PRIOR TO PURCHASING.

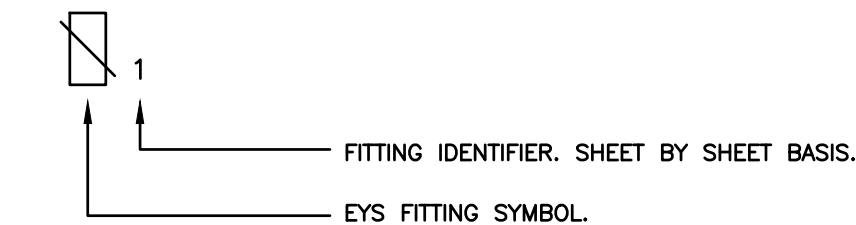
**NOTES LEGEND:**



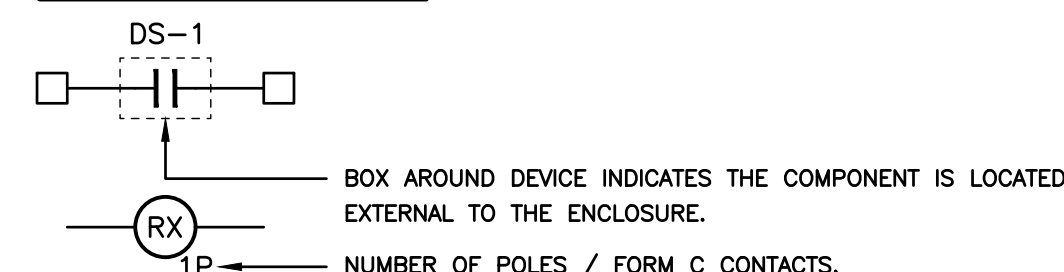
**CABLE LABELLING NOMENCLATURE:**



**EYS FITTING SYMBOLOGY:**



**RELAY SYMBOLOGY:**



**NOMENCLATURE:**

|  |   |
|--|---|
| A - AMBER  | LTG - LIGHTING                                  |
| ACT - ACTUATOR   | LVL - LEVEL                                     |
| AS - AUTOSTART   | MCC - MOTOR CONTROL CENTER                      |
| BATT - BATTERY   | MGB - MASTER GROUND BUS                         |
| BCH - BC HYDRO   | MSM - MULTISMART                                |
| BLK - BLACK  | MM - MILLIMETER                                 |
| C - COIL   | MOT - MOTION SENSOR                             |
| C/W - COMPLETE WITH                                    | N - NEUTRAL                                     |
| Cbx - CIRCUIT BREAKER ("x" DENOTES NUMBER)             | NC - NORMALLY CLOSED                            |
| CCT - CIRCUIT  | NO - NORMALLY OPEN                              |
| CEC - CANADIAN ELECTRICAL CODE, PART 1, LATEST EDITION | NS - NETWORK SWITCH                             |
| CMD - COMMAND  | NTS - NOT TO SCALE                              |
| COMM - COMMUNICATION                                   | OL - OVERLOAD                                   |
| CSA - CANADIAN STANDARDS ASSOCIATION                   | PEC - PHOTOELECTRIC CELL                        |
| CT - CURRENT TRANSFORMER                               | PFC - POWER FACTOR CORRECTION                   |
| CTRL - CONTROL   | PIT - PRESSURE INDICATING TRANSMITTER           |
| DC - DOOR CONTACT                                      | PLC - PROGRAMMABLE LOGIC CONTROLLER             |
| DPDT - DOUBLE POLE DOUBLE THROW                        | PMR - PUMP MONITOR RELAY                        |
| DS - KIOSK DOOR SWITCH                                 | POTS - PLAIN OLD TELEPHONE SERVICE              |
| DWG - DRAWING  | PVC - POLYVINYL CHLORIDE                        |
| EMR - EMERGENCY RUN                                    | PT - POTENTIAL TRANSFORMER/PRESSURE TRANSMITTER |
| ERR - EMERGENCY RUN RELAY                              | PWR - POWER                                     |
| ETM - ELAPSED TIME METER                               | Px - PUMP ("x" DENOTES NUMBER)                  |
| F - FUSE   | QTY - QUANTITY                                  |
| FCV - FLOW CONTROL VALVE                               | R - RED   |
| FE - FLOW ELEMENT                                      | RAD - SCADA RADIO                               |
| FLA - FULL LOAD AMPERAGE                               | RGS - RIGID GALVANIZED STEEL                    |
| FLS - FLYGT LEAKAGE SENSOR                             | RLY - RELAY                                     |
| FM - FLOW METER  | RPVC - RIGID POLYVINYL CHLORIDE                 |
| FRUN - FAN RUN   | RR - REMOTE RUN                                 |
| FS - FLOAT SWITCH                                      | RS - REMOTE START                               |
| G - GREEN  | RSF - RESIDUAL SOLIDS FORCEMAIN                 |
| GA - GAUGE   | RTU - REMOTE TELEMETRY UNIT                     |
| GEN - GENERATOR  | SD - SMOKE DETECTOR                             |
| GFCI - GROUND FAULT CIRCUIT INTERRUPTER                | SLF - SECONDARY LOW FLOAT                       |
| GFLT - GROUND FAULT RELAY                              | SP - SUMP PUMP                                  |
| GND - GROUND   | SPD - SURGE PROTECTION DEVICE                   |
| GRN - GREEN  | SPDT - SINGLE POLE DOUBLE THROW                 |
| HI - HIGH WET WELL LEVEL                               | SS - STAINLESS STEEL                            |
| HIHI - HIGH HIGH WET WELL LEVEL                        | SST - ELECTRONIC SOLID STATE TRIP DEVICE        |
| HLOA - HIGH-LOW-OFF-AUTO                               | TD - TIME DELAY                                 |
| HMI - HUMAN MACHINE INTERFACE                          | TEMP - TEMPERATURE                              |
| HOA - HAND-OFF-AUTO CONTROL                            | TRSW - TRANSFER SWITCH                          |
| HP - HORSE POWER                                       | TYP - TYPICAL                                   |
| HS - HATCH SWITCH                                      | UPS - UNINTERRUPTIBLE POWER SUPPLY              |
| HTR - HEATER   | US - ULTRASONIC SENSOR                          |
| IS - IN SERVICE  | UTS - UP TO SPEED                               |
| JB - JUNCTION BOX                                      | UV - ULTRAVIOLET                                |
| KP - KEYPAD  | VFD - VARIABLE FREQUENCY DRIVE                  |
| LO - LOW WET WELL LEVEL                                | VFR - VENTILATION FAN RELAY                     |
| LOLO - LOW LOW WET WELL LEVEL                          | XFMR - TRANSFORMER                              |
| LS - LEVEL SWITCH                                      | XP - EXPLOSION PROOF                            |
| LSI - LONG-TIME, SHORT-TIME, INSTANTANEOUS             |   |

| LINE | DESCRIPTION                                 |
|------|---|
| ---  | 120/240V CONDUIT/CABLE                      |
| ---  | COMMUNICATIONS OR LOW VOLTAGE CONDUIT/CABLE |
| ---  | 347/600V CONDUIT/CABLE                      |
| ---  | TECK CABLING                                |
| ---  | GROUNDING                                   |
| ---  | CAPPED CONDUIT                              |

**LEGEND**

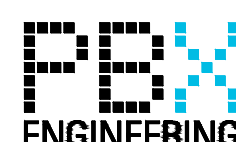
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|--|--|--|---|
|  | POWER/COMMUNICATIONS UTILITY POLE  |  | VENTILATION FAN                                 |
|  | CIRCUIT BREAKER  |  | PUSH BUTTON (NORMALLY OPEN)                     |
|  | FUSE   |  | PUSH BUTTON (NORMALLY CLOSED)                   |
|  | OVERLOAD PROTECTION  |  | HEATING/COOLING THERMOSTAT                      |
|  | TRANSFORMER  |  | FLOAT SWITCH                                    |
|  | LINE REACTOR   |  | ILLUMINATED PUSH BUTTON (INDICATOR LIGHT)       |
|  | BC HYDRO METER AND METER BASE  |  | ACTUATED VALVE                                  |
|  | CURRENT TRANSFORMER  |  | PHASE LOSS MONITOR RELAY                        |
|  | PUMP MOTOR   |  | SURGE PROTECTION DEVICE                         |
|  | GENERATOR  |  | ELAPSED TIME METER                              |
|  | YAGI ANTENNA   |  | HYDROSTATIC PRESSURE SENSOR                     |
|  | DUAL RECEPTACLE 120V (GFCI)  |  | FLOAT SWITCH                                    |
|  | WEATHERPROOF DUAL GFI RECEPTACLE   |  | CONTACTOR/RELAY COIL (NUMBER OF POLES/CONTACTS) |
|  | GROUND ELECTRODE/ROD   |  | NORMALLY OPEN CONTACT                           |
|  | TERMINAL BLOCK LOCATED IN PUMP CONTROL PANEL                               |  | NORMALLY CLOSED CONTACT                         |
|  | TERMINAL BLOCK LOCATED IN MOTOR CONTROL ENCLOSURE                          |  | GROUND  |
|  | TERMINAL BLOCK LOCATED IN KIOSK VENTILATED COMPARTMENT                     |  | LIGHT   |
|  | HATCH SWITCH   |  | EXPLOSION PROOF LIGHT FIXTURE                   |
|  | DISCONNECT   |  | EXTERIOR WALL PACK LUMINAIRE                    |
|  | ASTRONOMICAL TIME SWITCH   |  | BATTERY PACK WITH REMOTE HEADS AND EXIT SIGN    |
|  | OCCUPANCY SENSOR SWITCH  |  | BATTERY PACK WITH REMOTE HEADS                  |
|  | HEATER   |  | REMOTE HEADS                                    |
|  | SECURITY PANEL KEYPAD  |  | WALL MOUNTED MOTION SENSOR                      |
|  | MAGNETIC FLOW METER SENSOR   |  | HEAT DETECTOR                                   |
|  | DOOR CONTACT (ALLEN BRADLEY 802T-A LIMIT SWITCH WITH S.S. LEVER 802MC-W2B) |  |   |

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**WARNING**  
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2020-02-18  
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Professional Seals

| # | Date       | Issue / Revision  | App |
|---|------------|-------------------|-----|
| - | 2020-02-18 | ISSUED FOR TENDER | IN  |
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**URBAN systems**

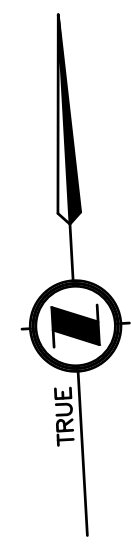
Scale AS SHOWN

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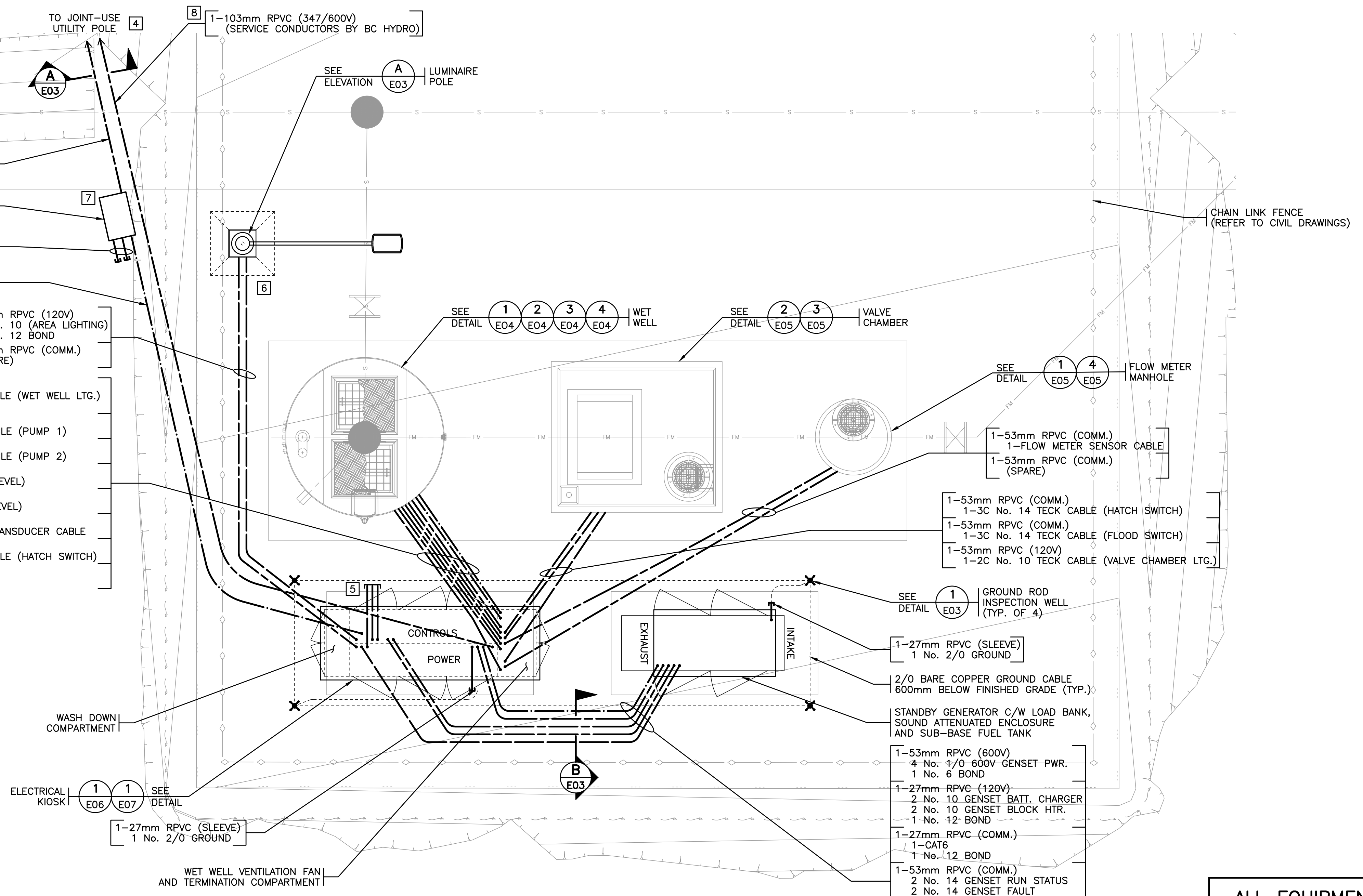
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**GREENWOOD PUMPSTATION**  
NOTES AND LEGEND

|                |         |
|----------------|---------|
| Sheet Number   | 1 of 21 |
| Project Number | 18248   |
| Drawing Number | E01     |
| Revision       | -       |



- 1-103mm RPVC (COMM.)  
(SERVICE CONDUCTORS BY TELECOMMUNICATIONS PROVIDER)
- TELECOMMUNICATIONS SERVICE BOX  
(LOCATION TO BE CONFIRMED)
- 2-103mm RPVC (COMM.)  
(SPARE) (CAPPED)
- 1-53mm RPVC (COMM.)  
(SERVICE CONDUCTORS BY TELECOMMUNICATIONS PROVIDER)
- 1-53mm RPVC (120V)  
2 No. 10 (AREA LIGHTING)  
1 No. 12 BOND
- 1-53mm RPVC (COMM.)  
(SPARE)
- 1-53mm RPVC (120V)  
1-2C No. 10 TECK CABLE (WET WELL LTG.)  
1 No. 6 BOND
- 1-78mm RPVC (600V)  
SUBMERSIBLE PUMP CABLE (PUMP 1)
- 1-78mm RPVC (600V)  
SUBMERSIBLE PUMP CABLE (PUMP 2)
- 1-27mm RPVC (COMM.)  
1 FLOAT CABLE (HIGH LEVEL)
- 1-27mm RPVC (COMM.)  
1 FLOAT CABLE (LOW LEVEL)
- 1-27mm RPVC (COMM.)  
1 ULTRASONIC LEVEL TRANSDUCER CABLE
- 1-53mm RPVC (COMM.)  
1-3C No. 14 TECK CABLE (HATCH SWITCH)
- 1-53mm RPVC (COMM.)  
(SPARE)



- NOTES:**
1. WET WELL, VALVE CHAMBER, METERING MANHOLE, AND VENTILATED TERMINATION COMPARTMENT WITHIN KIOSK ARE CLASS 1 ZONE 2 HAZARDOUS LOCATIONS.
  2. CONTRACTOR TO CONFIRM ALL GENERATOR AND KIOSK CONDUIT STUB-UP AREAS PRIOR TO POURING CONCRETE PADS.
  3. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OTHER TRADES TO ENSURE MINIMUM UTILITY CLEARANCE REQUIREMENTS ARE MET.
  4. CONTRACTOR TO PICK-UP AND DELIVER BC HYDRO SUPPLIED PILASTER AND MECHANICAL GUARD TO CONSTRUCTION SITE. CONTRACTOR TO INSTALL PILASTER AND MECHANICAL GUARD. CONTRACTOR TO COORDINATE INSTALLATION SCHEDULE WITH BC HYDRO.
  5. STUB AND CAP 3-53mm RPVC CONDUITS FOR FUTURE USE. LOCATED CONDUITS APPROXIMATELY 600mm FROM EDGE OF CONCRETE PAD. INCLUDE FINAL LOCATION ON AS-BUILTS.
  6. POSITION LUMINAIRE POLE HANDHOLE ON SOUTH SIDE OF POLE.
  7. REFER TO TELECOMMUNICATION PROVIDER'S INSTALLATION STANDARDS. TELECOMMUNICATION SERVICE BOX LOCATION TO BE CONFIRMED PRIOR TO CONSTRUCTION. CONTRACTOR TO PICK-UP AND DELIVER TELECOMMUNICATION SERVICE PROVIDER SUPPLIED PILASTER, MECHANICAL GUARD, AND SERVICE BOX TO CONSTRUCTION SITE. CONTRACTOR TO INSTALL PILASTER, MECHANICAL GUARD, AND SERVICE BOX. CONTRACTOR TO COORDINATE INSTALLATION SCHEDULE WITH TELECOMMUNICATIONS SERVICE PROVIDER.
  8. CONCRETE ENCASEMENT OF BC HYDRO CONDUCTORS REQUIRED IN AREAS SUBJECT TO EROSION PER SECTION ES54 H0-02.03 OF BC HYDRO'S UNDERGROUND DISTRIBUTION STANDARDS, SEE "BC HYDRO COORDINATION" DRAWING.



- 1-53mm RPVC (COMM.)  
1-3C No. 14 TECK CABLE (HATCH SWITCH)
- 1-53mm RPVC (COMM.)  
1-3C No. 14 TECK CABLE (FLOOD SWITCH)
- 1-53mm RPVC (120V)  
1-2C No. 10 TECK CABLE (VALVE CHAMBER LTG.)
- SEE DETAIL E03 GROUND ROD INSPECTION WELL (TYP. OF 4)
- 1-27mm RPVC (SLEEVE)  
1 No. 2/0 GROUND
- 2/0 BARE COPPER GROUND CABLE  
600mm BELOW FINISHED GRADE (TYP.)
- STANDBY GENERATOR C/W LOAD BANK,  
SOUND ATTENUATED ENCLOSURE  
AND SUB-BASE FUEL TANK
- 1-53mm RPVC (600V)  
4 No. 1/0 600V GENSET PWR.  
1 No. 6 BOND
- 1-27mm RPVC (120V)  
2 No. 10 GENSET BATT. CHARGER  
2 No. 10 GENSET BLOCK HTR.  
1 No. 12 BOND
- 1-27mm RPVC (COMM.)  
1-CAT6  
1 No. 12 BOND
- 1-53mm RPVC (COMM.)  
2 No. 14 GENSET RUN STATUS  
2 No. 14 GENSET FAULT  
2 No. 14 GENSET LOW FUEL  
2 No. 14 COMMON 24V  
12 No. 14 SPARE  
2 No. 14 GENSET INTRUSION  
1 No. 12 BOND
- 1-27mm RPVC (COMM.)  
2 No. 14 GENSET START CMD.  
2 No. 14 LOAD SHED  
1 No. 12 BOND

**ALL EQUIPMENT IS PROPOSED  
UNLESS NOTED OTHERWISE**

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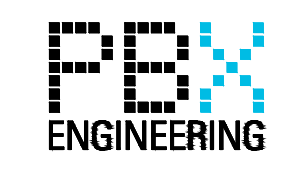
**CHECK BEFORE YOU DIG**  
CONTRACTOR SHALL CONFIRM THE LOCATIONS  
OF ALL UNDERGROUND UTILITIES.



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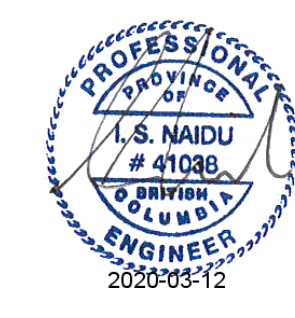
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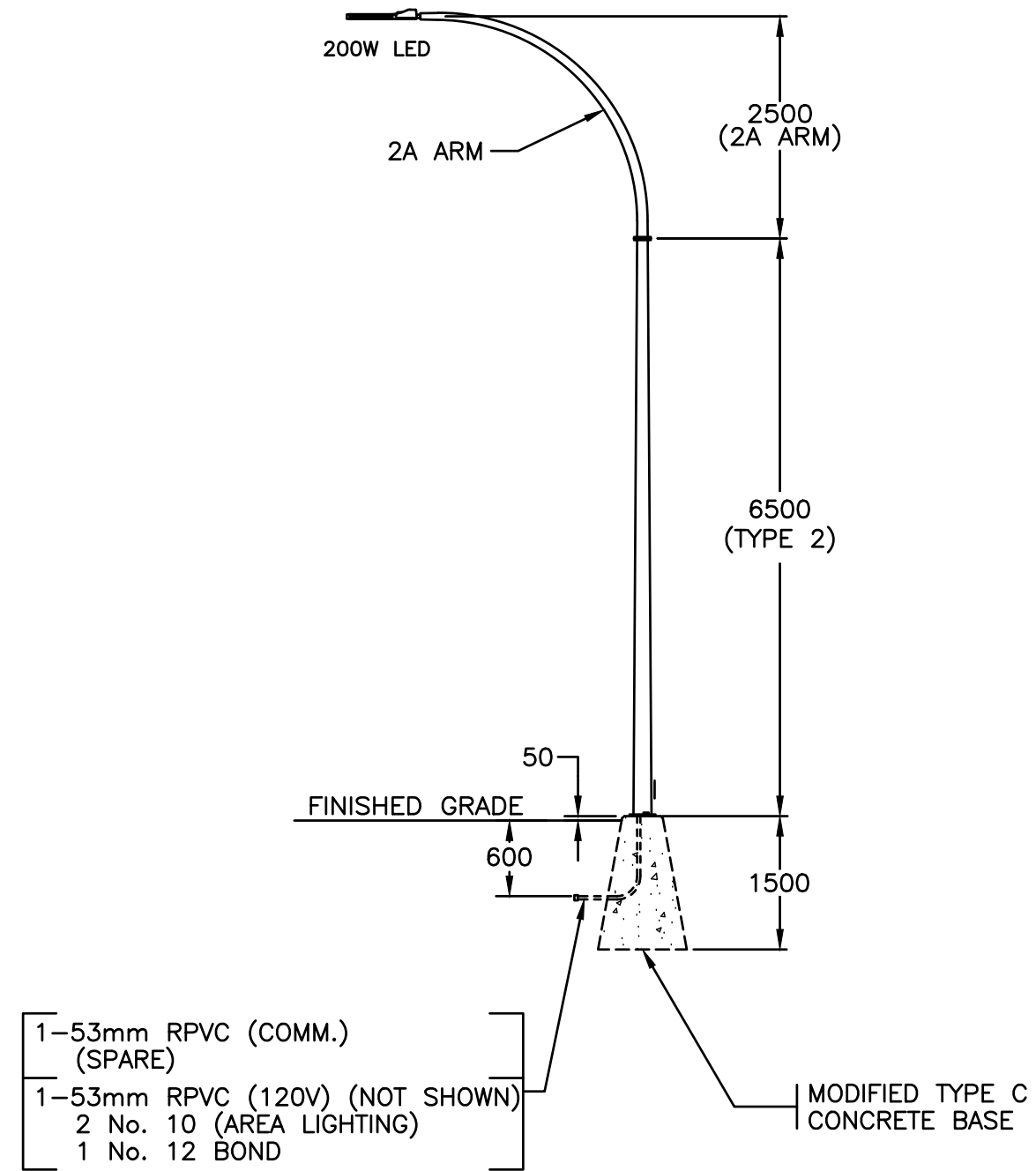
**URBAN systems**

Scale: AS SHOWN

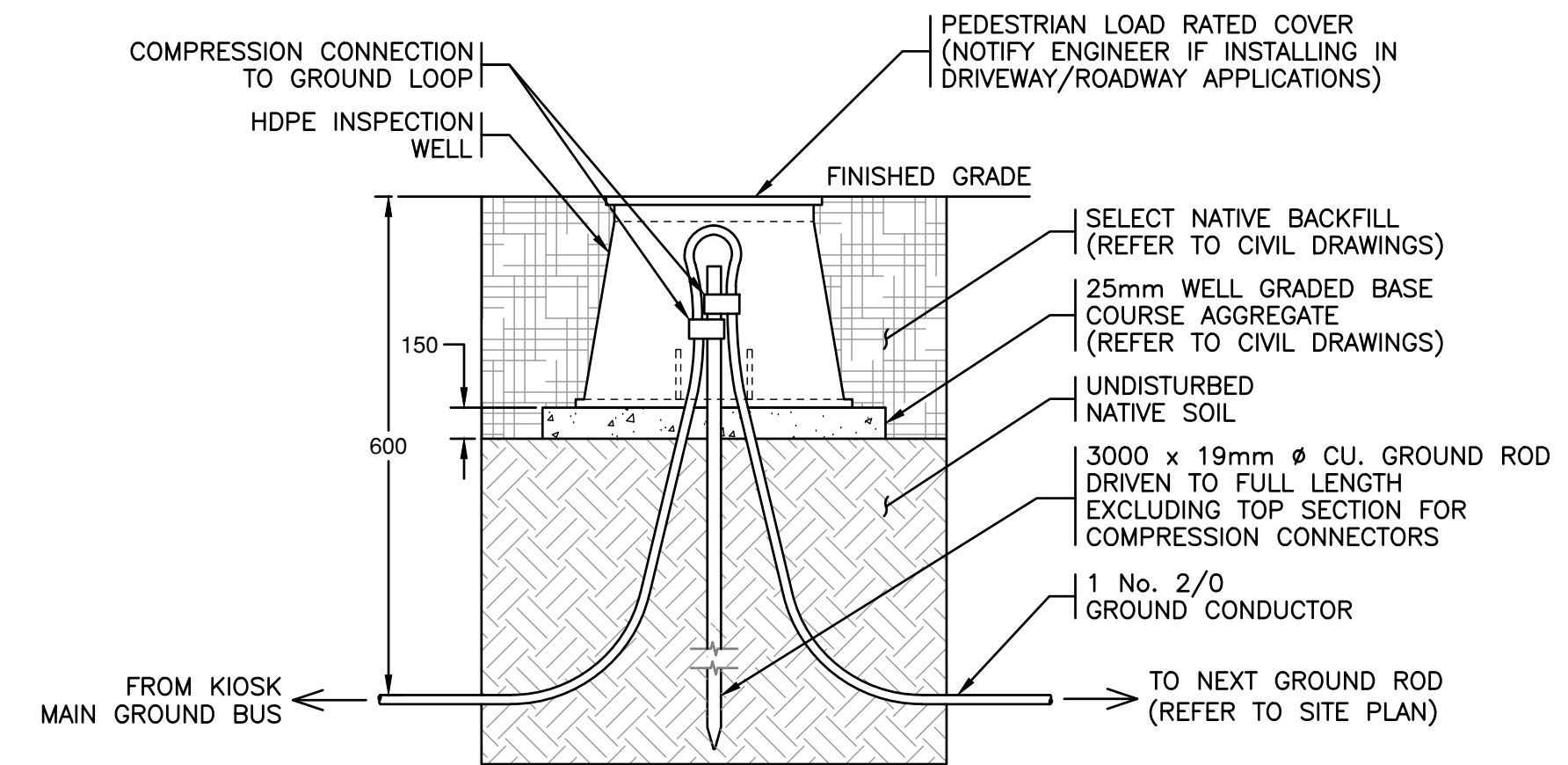
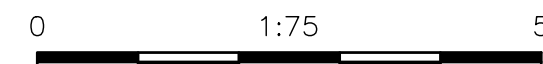
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Designed by: MC/MS  
Drawn by: PBX

**GREENWOOD PUMPSTATION**  
SITE PLAN

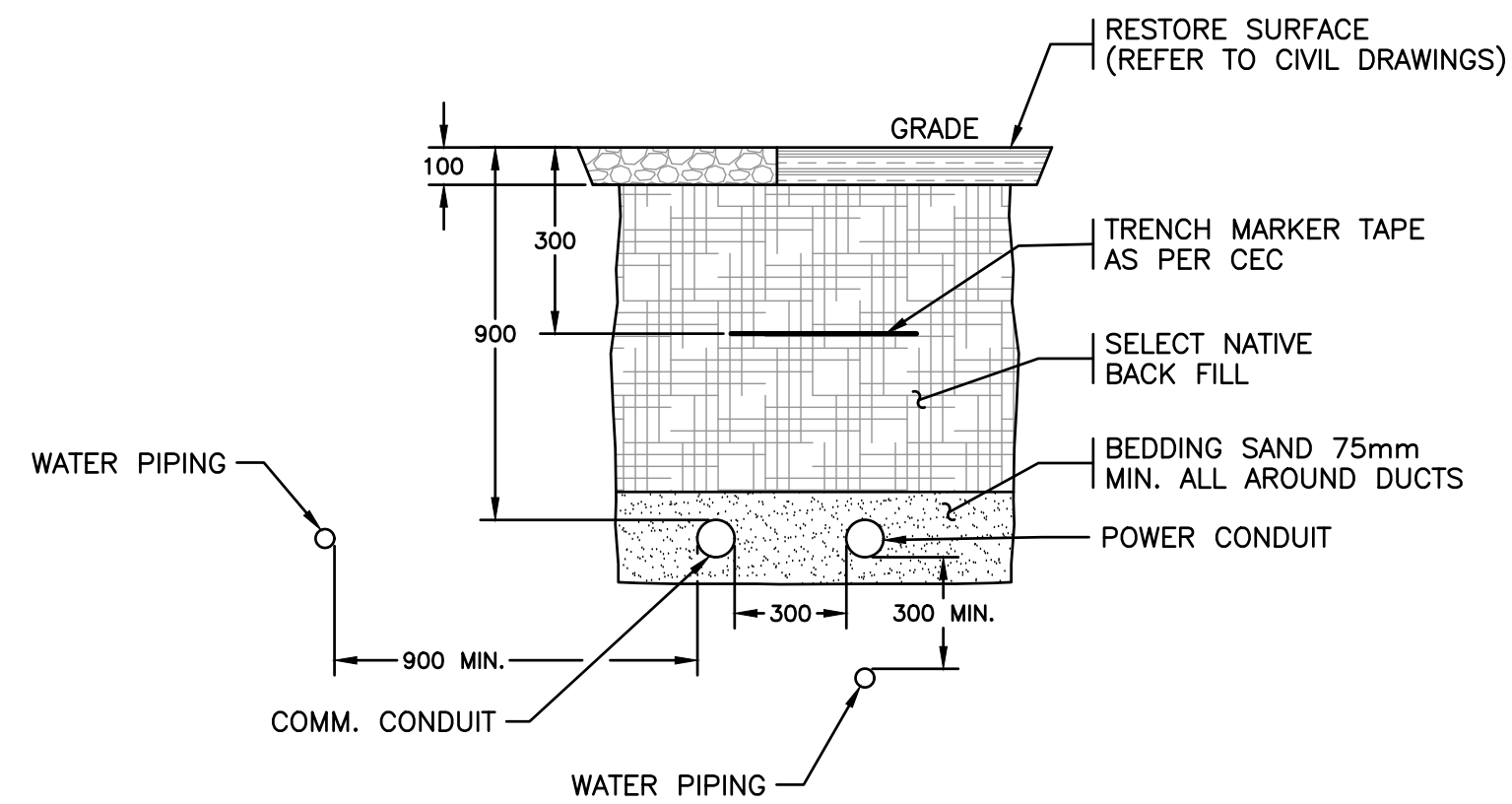
Sheet Number: 2 of 21  
Project Number: 18248  
Drawing Number: E02  
Revision: -



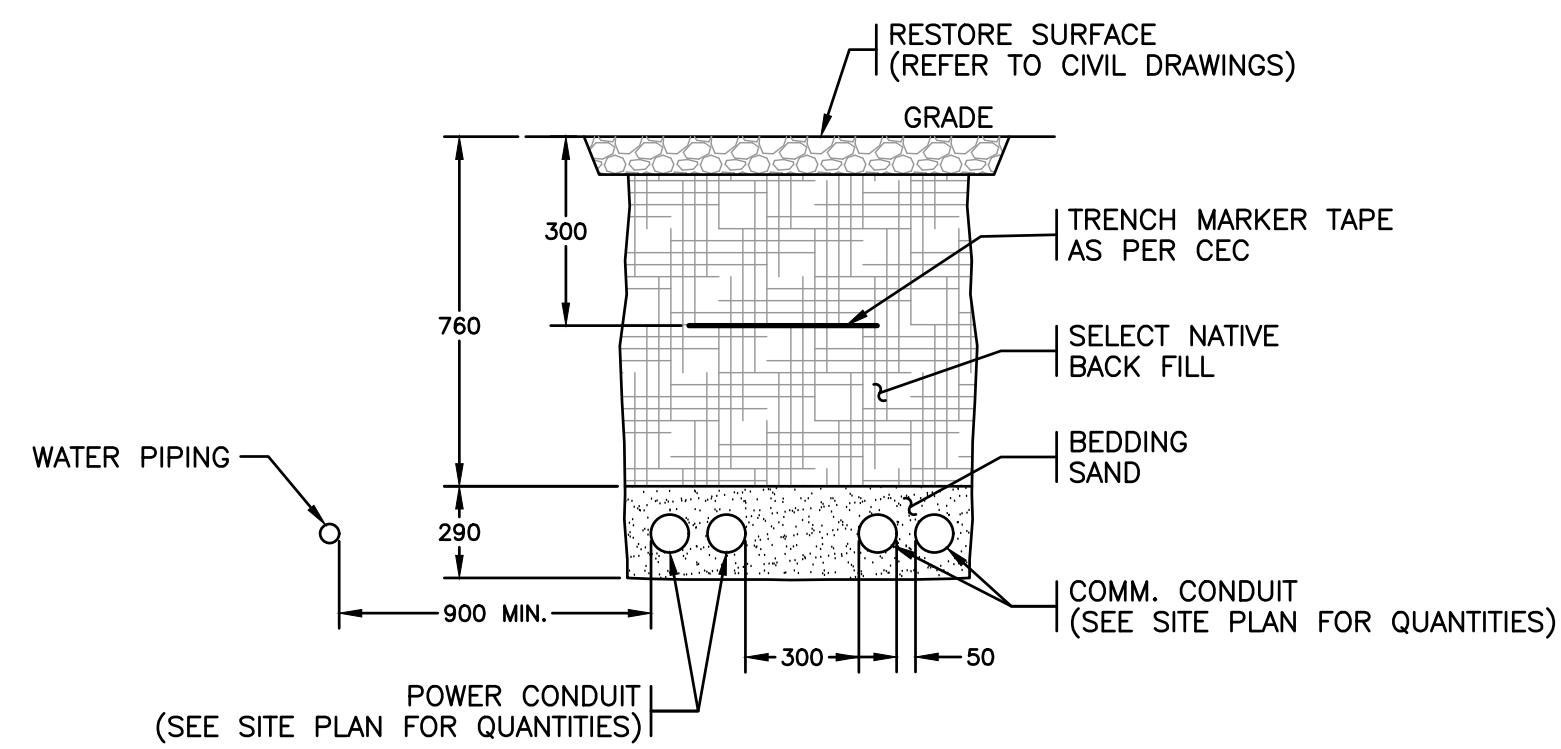
**ELEVATION A LUMINAIRE POLE**  
1:75  
E02



**DETAIL 1 TYPICAL GROUND ROD INSPECTION WELL**  
N.T.S.  
E02



**SECTION A TYPICAL TRENCH SECTION**  
N.T.S.  
E02



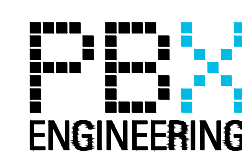
**SECTION B TYPICAL TRENCH SECTION**  
N.T.S.  
E02

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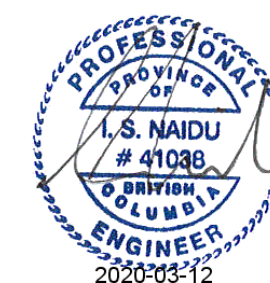
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systems

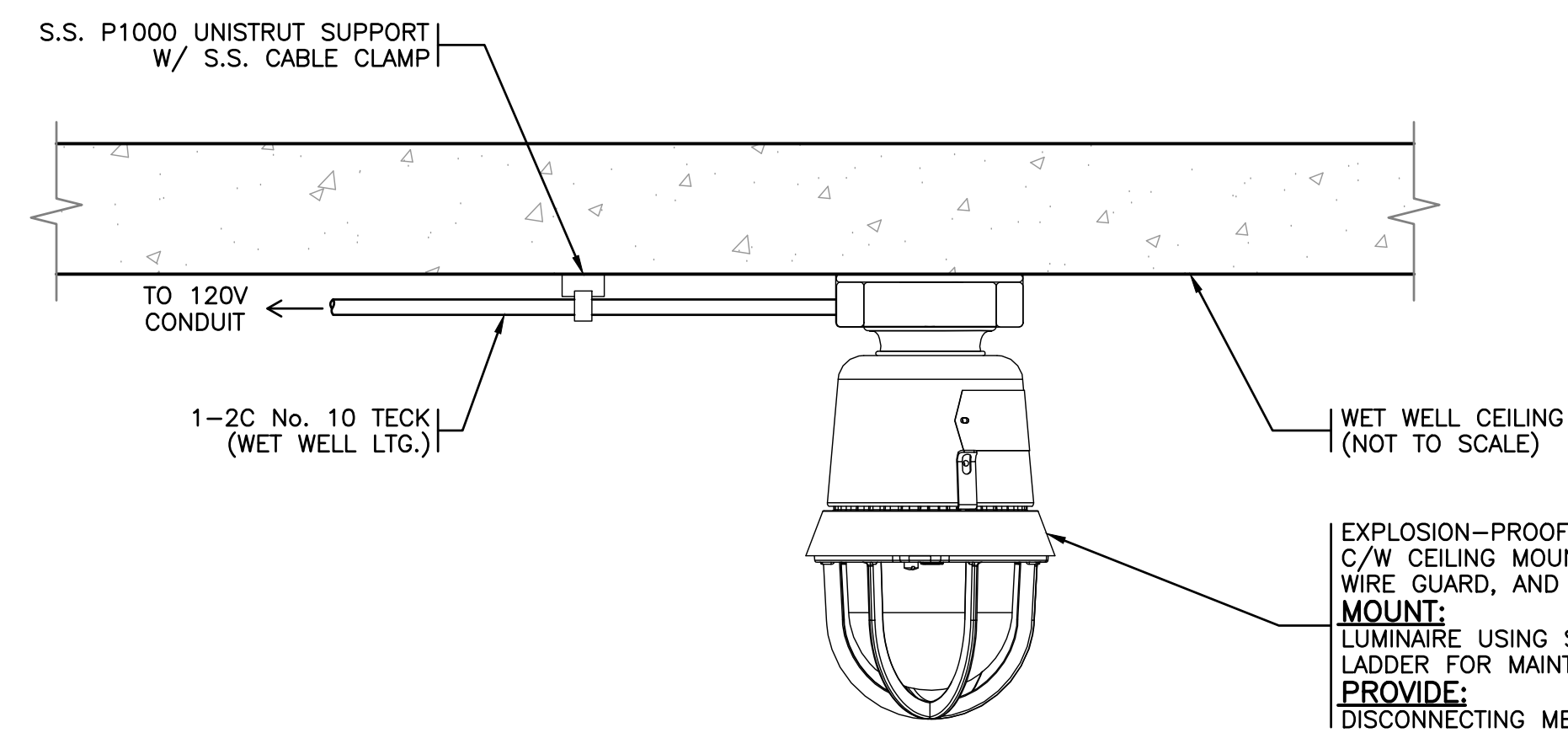
Scale  
AS SHOWN

Quality Control by  
Designed by  
Drawn by

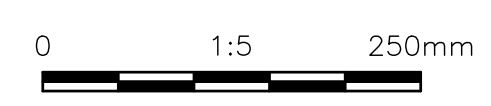
IN  
MC/MS  
PBX

GREENWOOD  
PUMPSTATION  
DETAILS  
(1 OF 3)

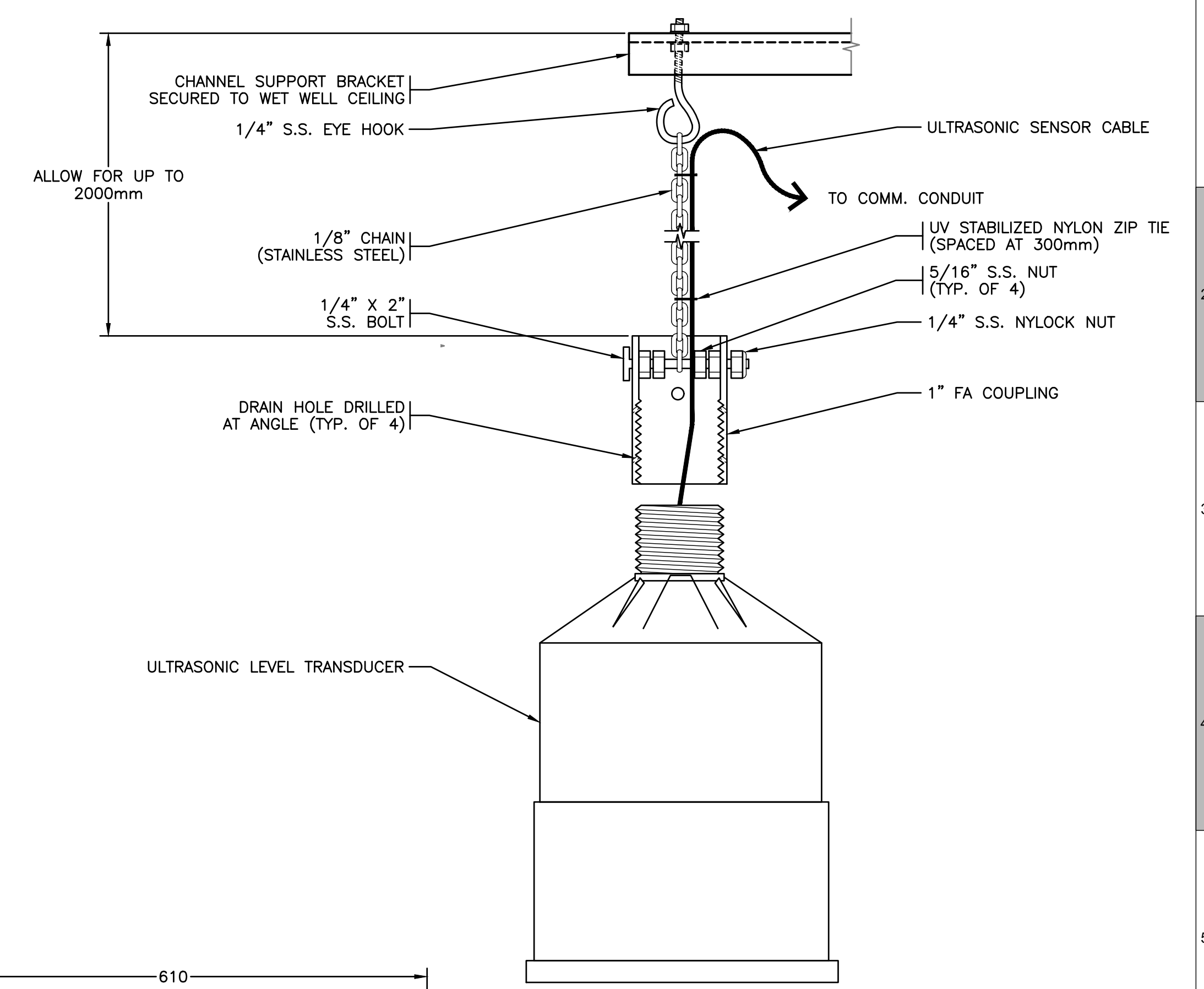
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| Sheet Number   | 3 of 21 |
| Project Number | 18248   |
| Drawing Number | E03     |
| Revision       | -       |



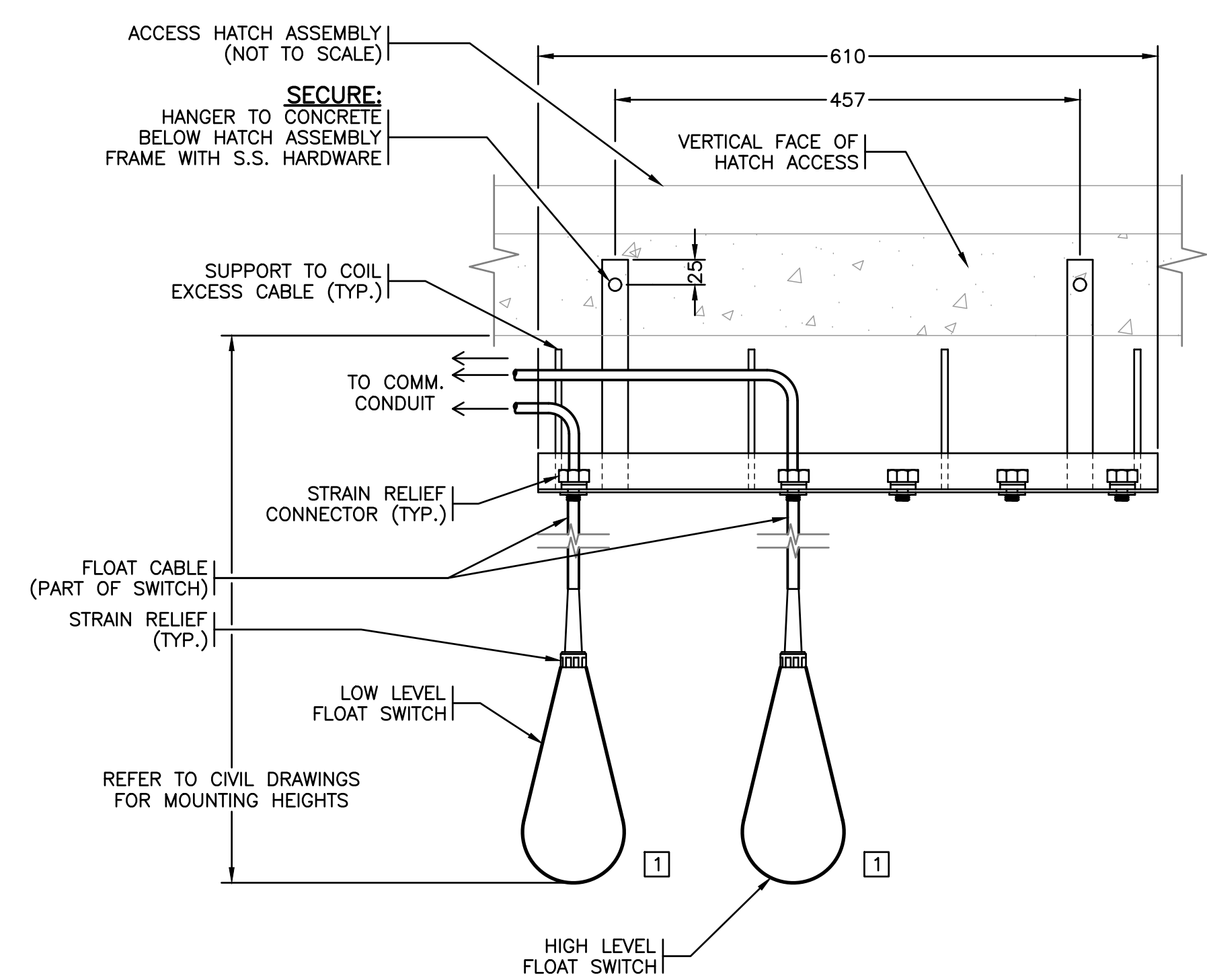
**DETAIL 1 WET WELL LUMINAIRE**  
1:5



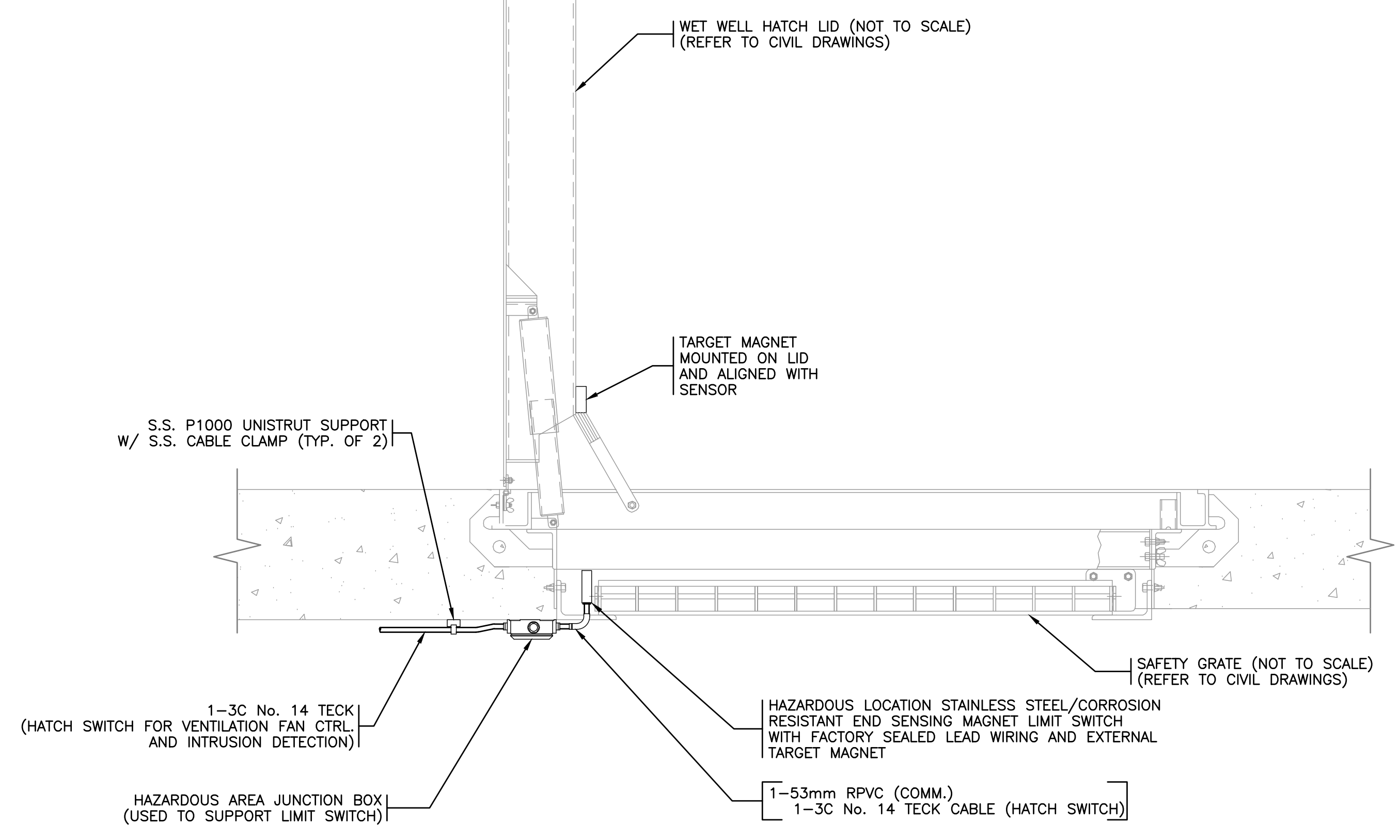
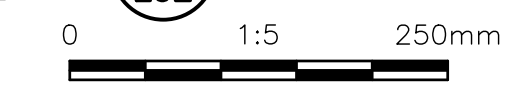
EXPLOSION-PROOF HAZARDOUS LOCATION LED LUMINAIRE C/W CEILING MOUNTING BRACKET, SAFETY CABLE, S.S. WIRE GUARD, AND CLEAR GLOBE ASSEMBLY  
**MOUNT:**  
 LUMINAIRE USING S.S. HARDWARE WITHIN REACH OF LADDER FOR MAINTENANCE ACCESS.  
**PROVIDE:**  
 DISCONNECTING MEANS FOR SAFETY CABLE



**DETAIL 2 ULTRASONIC LEVEL TRANSDUCER MOUNTING**  
N.T.S.



**DETAIL 4 FLOAT HANGER**  
1:2



**DETAIL 3 WET WELL HATCH SWITCH**  
1:10



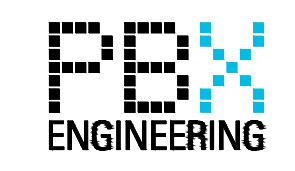
**NOTES:**  
 1 INSTALL INSTRUMENTS/SENSORS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

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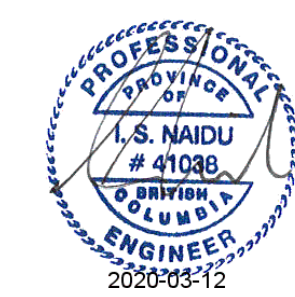
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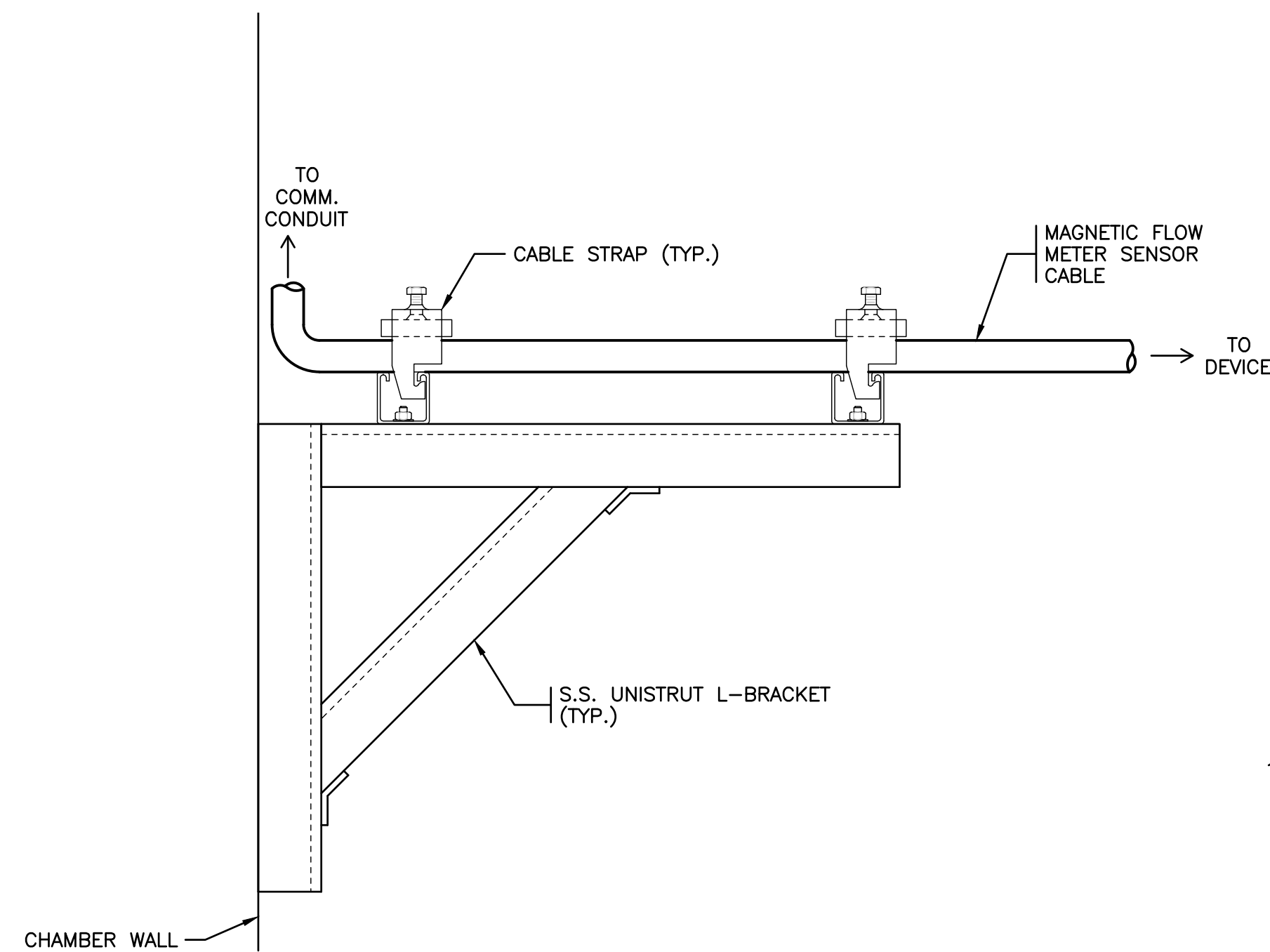
**URBAN systems**

Scale: AS SHOWN

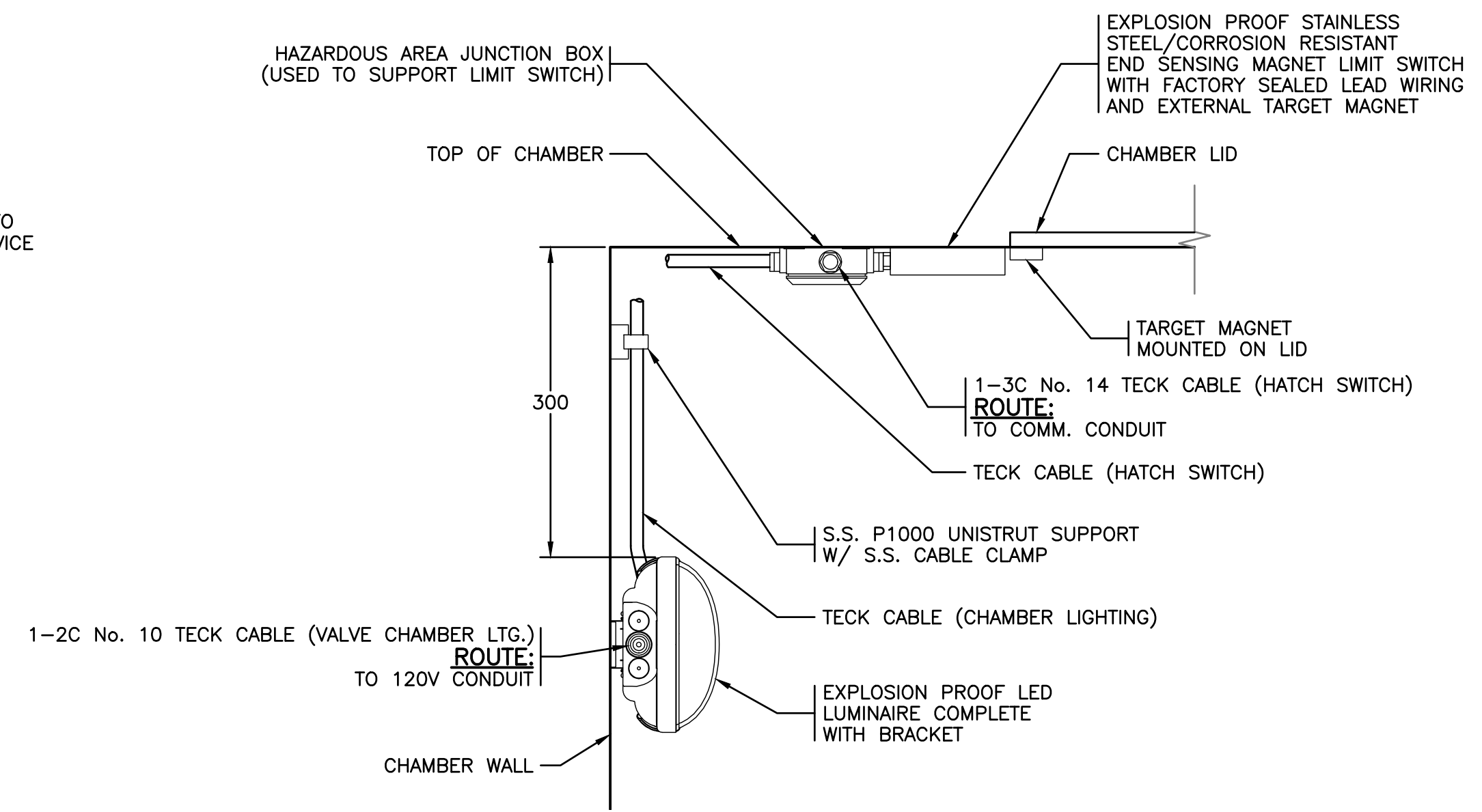
Quality Control by: IN  
 Designed by: MC/MS  
 Drawn by: PBX

GREENWOOD PUMPSTATION DETAILS (2 OF 3)

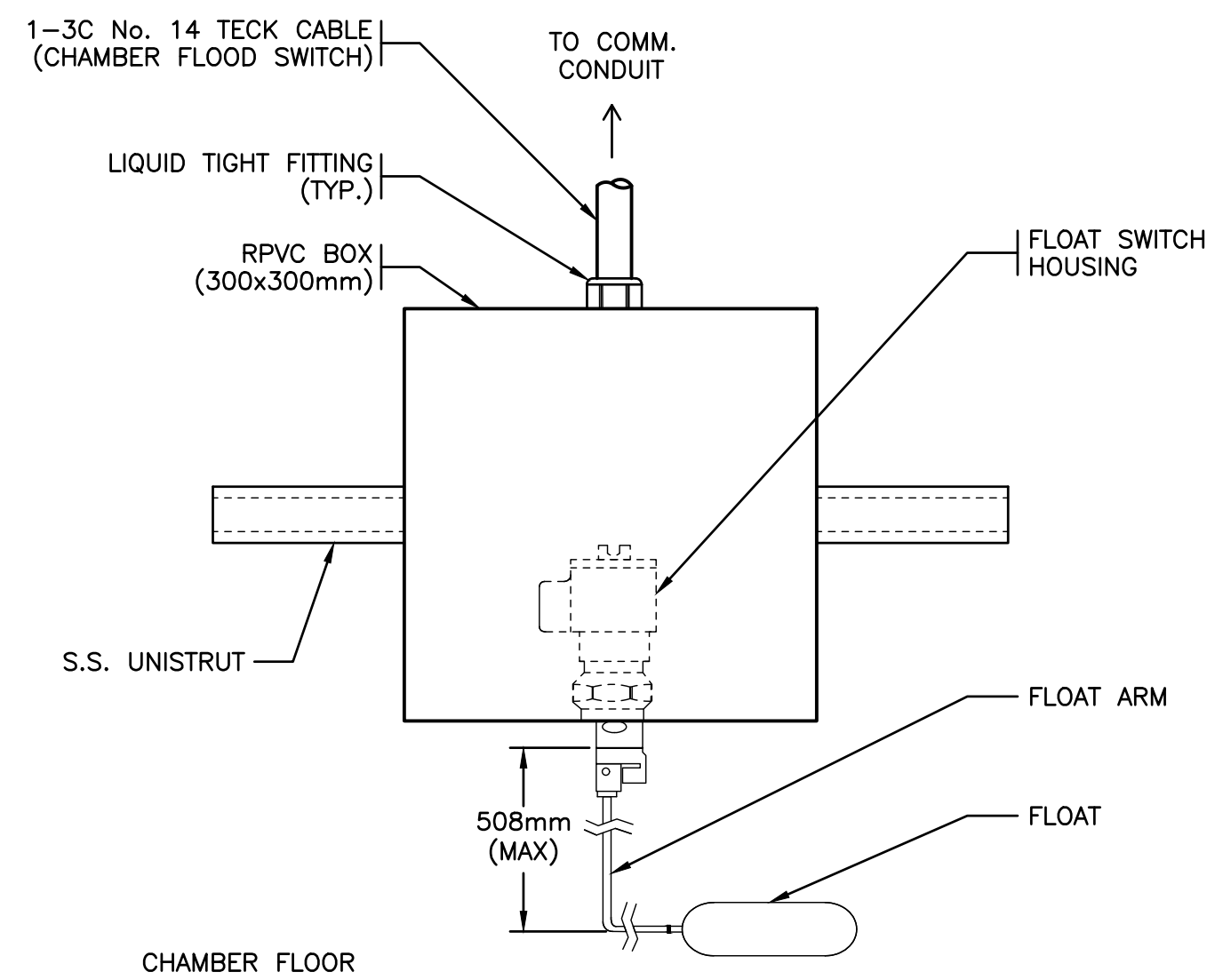
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| Sheet Number   | 4 of 21        |
| Project Number | Drawing Number |
| 18248          | E04            |
| Revision       | 1              |



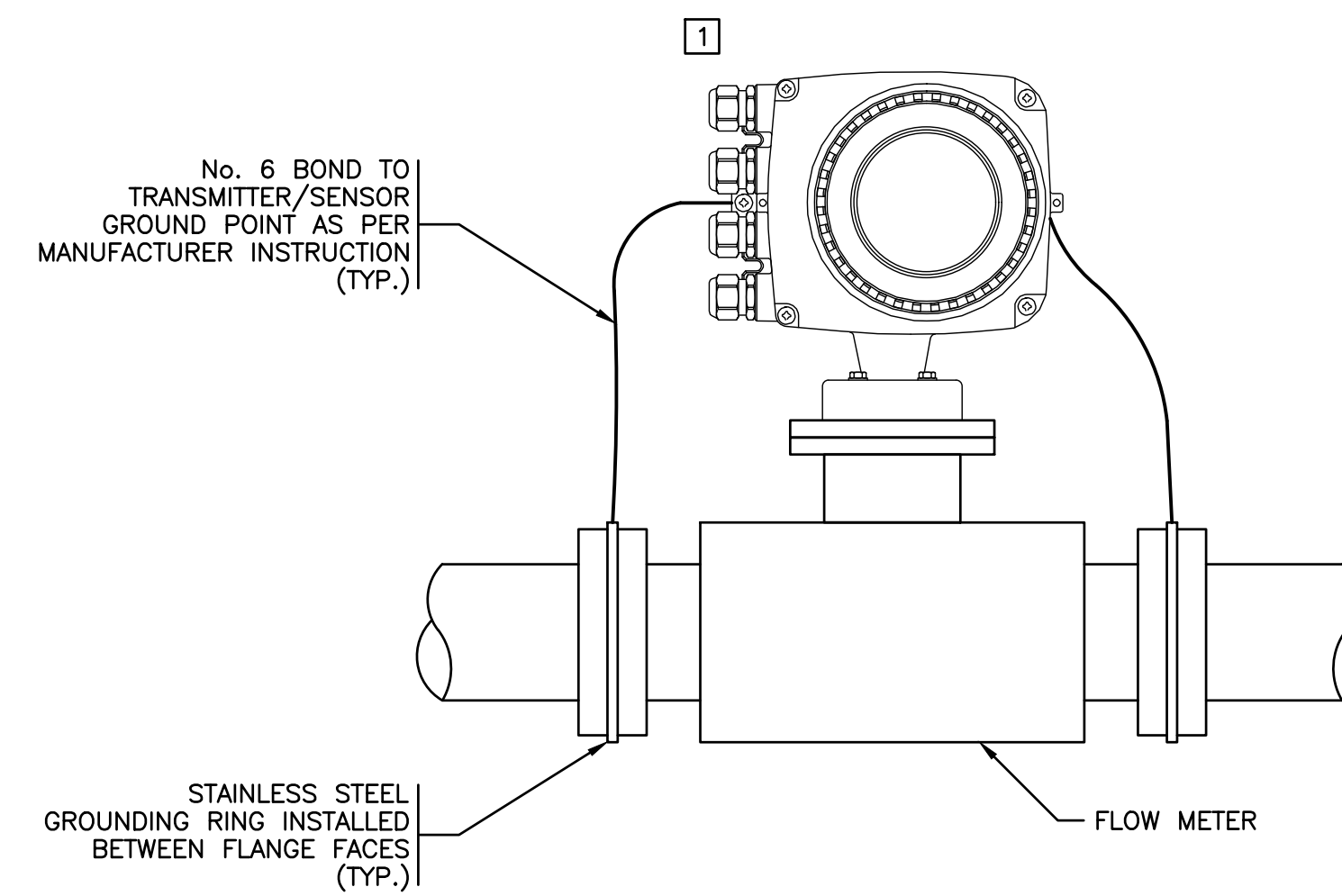
**DETAIL 1 CABLE SUPPORT BRACKET**  
N.T.S. E02



**DETAIL 2 VALVE CHAMBER LUMINAIRE**  
1:5 E02



**DETAIL 3 FLOOD SWITCH**  
N.T.S. E02



**DETAIL 4 MAGNETIC FLOWMETER WITH GROUND RING**  
N.T.S. E02

**NOTES:**

- 1 FLOW METER TRANSMITTER SHOWN FOR CLARITY. REFER TO COMMUNICATIONS BLOCK DIAGRAM FOR LOCATION OF TRANSMITTER.

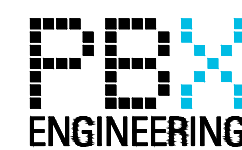
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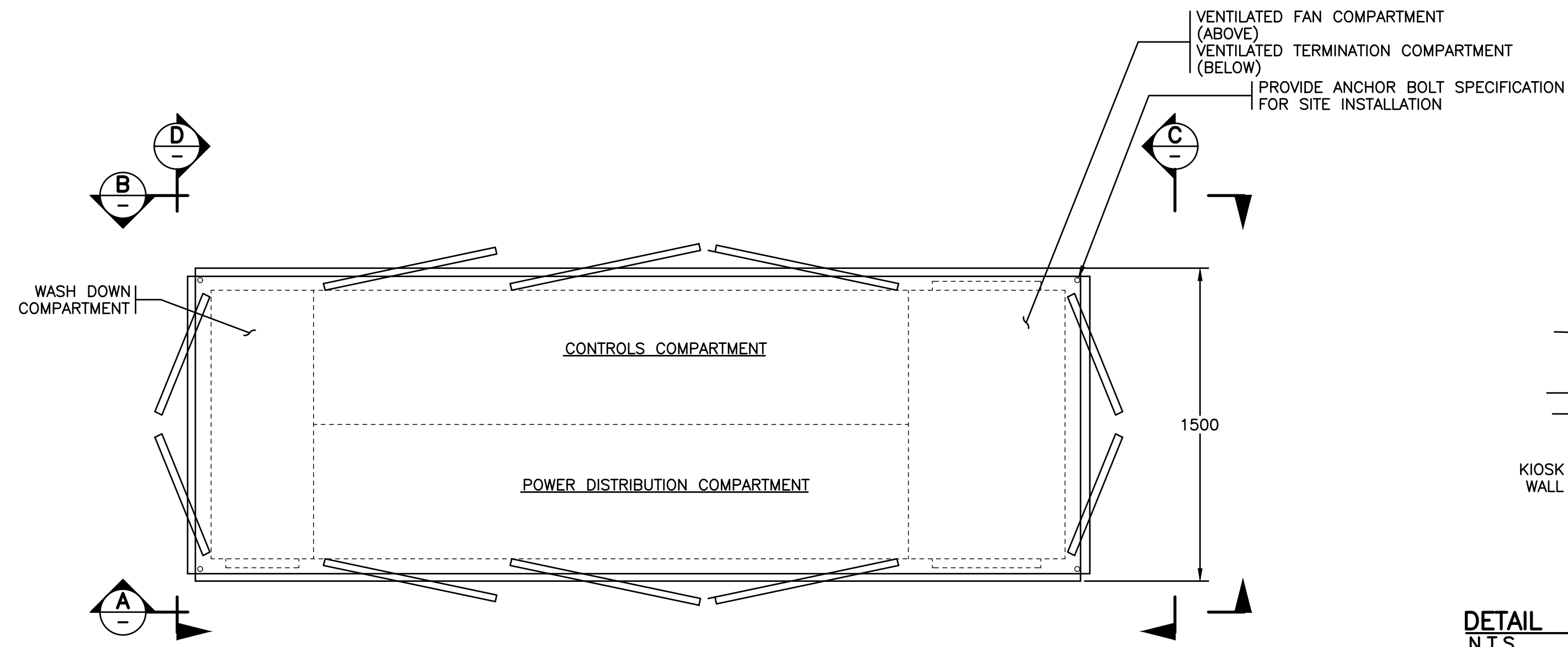
**URBAN**  
systems

Scale AS SHOWN

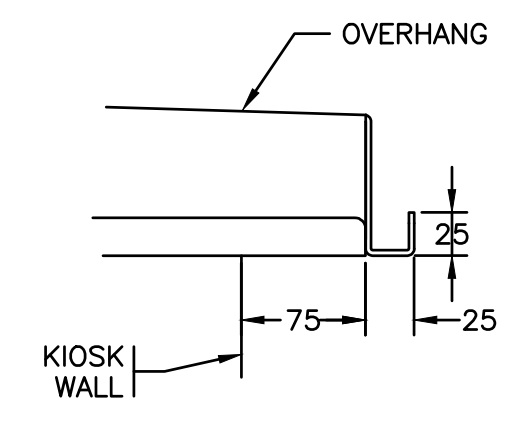
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GREENWOOD  
PUMPSTATION  
DETAILS  
(3 OF 3)

|                |         |
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| Sheet Number   | 5 of 21 |
| Project Number | 18248   |
| Drawing Number | E05     |
| Revision       | 1       |



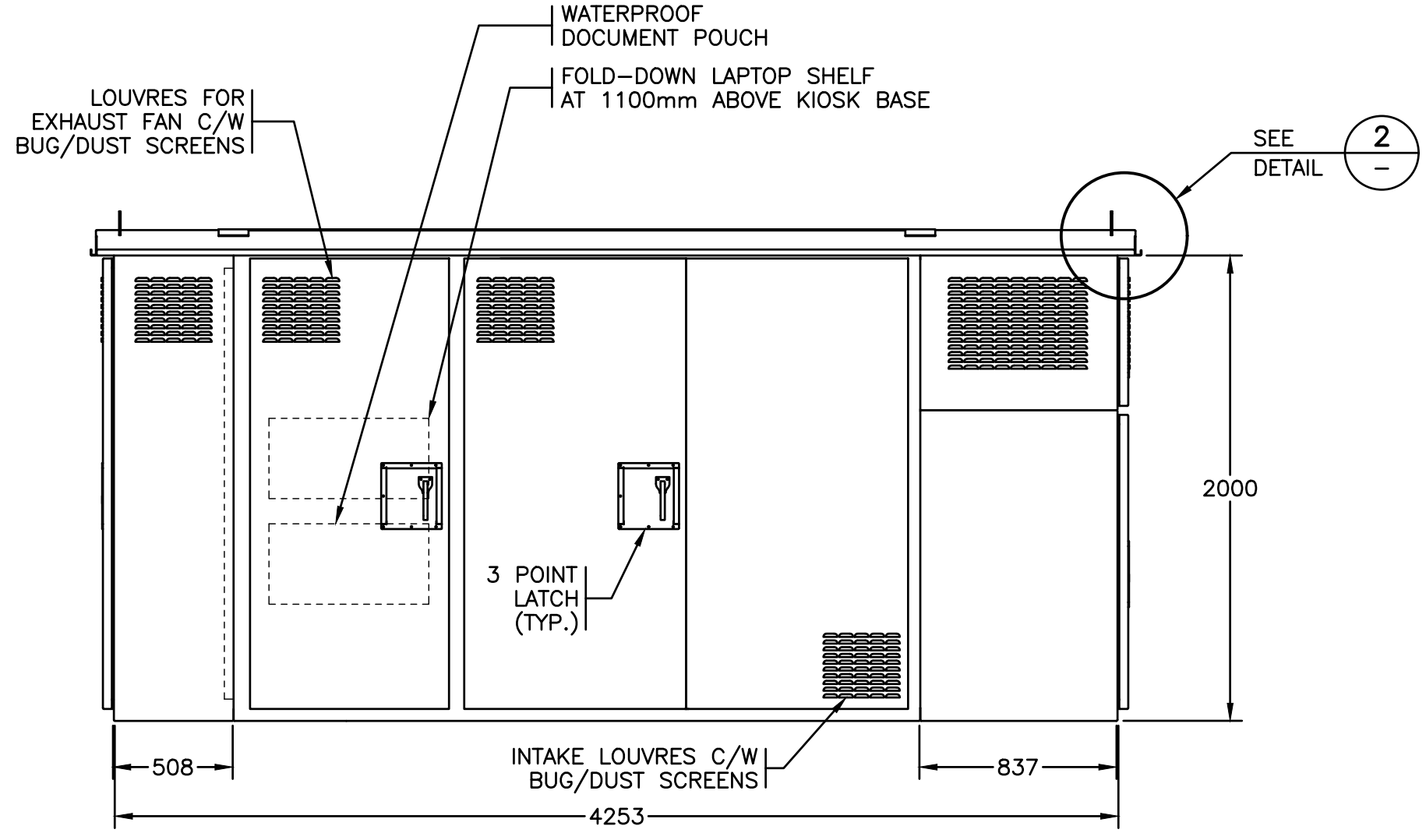
DETAIL 1:20 **1** KIOSK - TOP VIEW  
E02



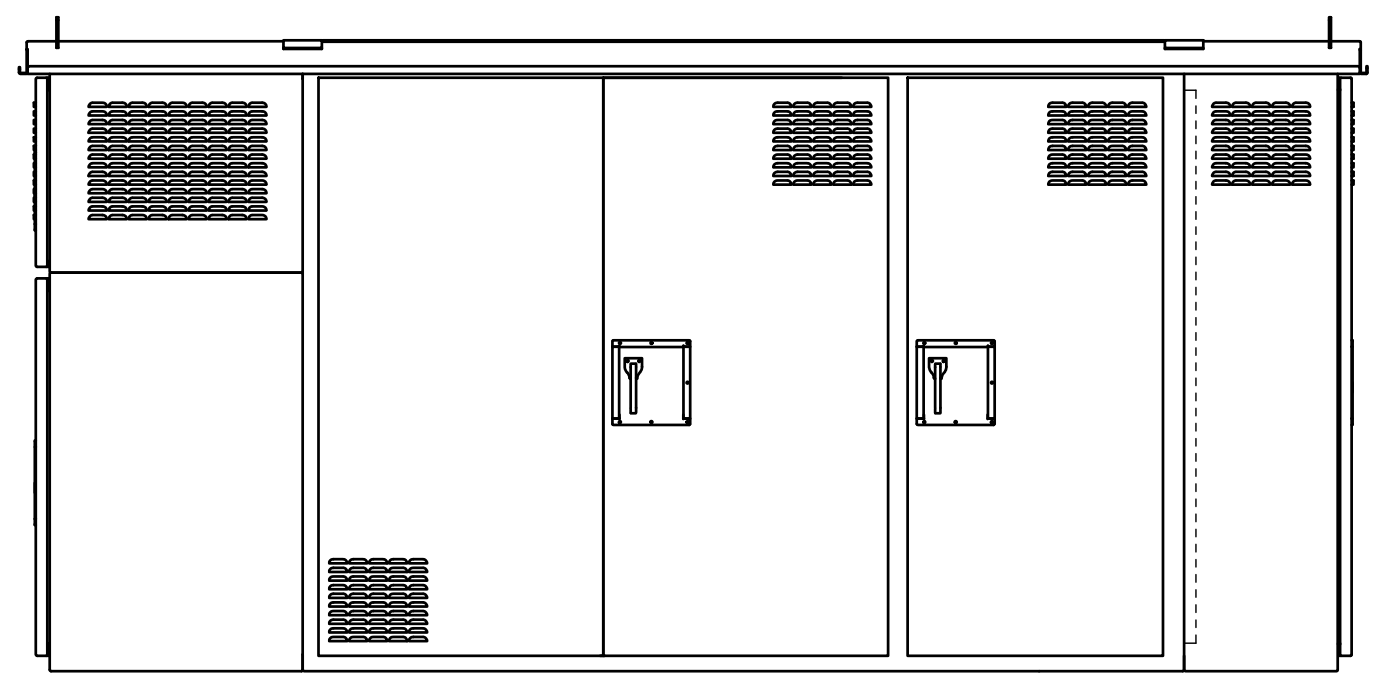
DETAIL N.T.S. **2** KIOSK - ROOF (TYP.)

**NOTES:**

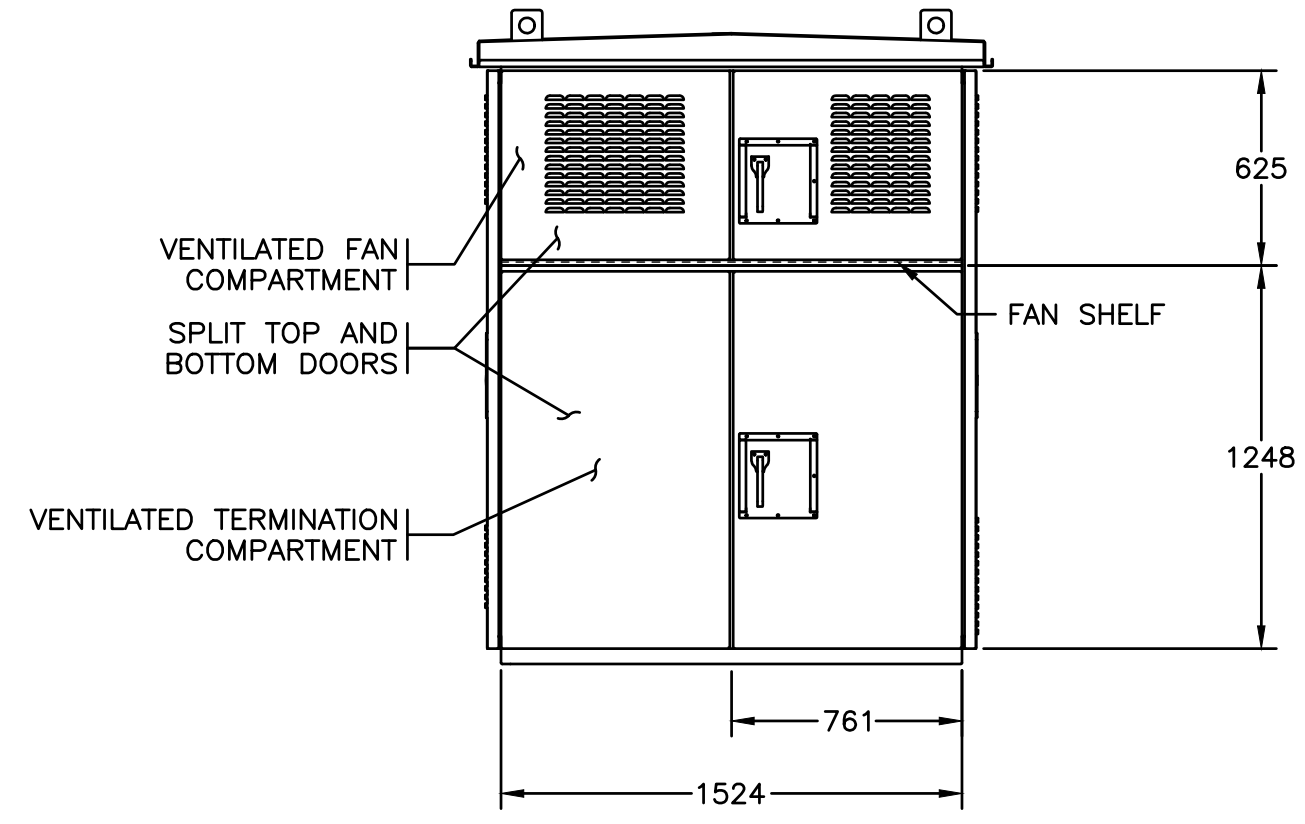
- KIOSK SHALL BE CSA TYPE 3R RATED. OUTER SHELL SHALL BE MARINE GRADE ALUMINIUM AND SHALL BE WELDED TO ROOF ASSEMBLY, EQUIPMENT MOUNTING PANEL MOUNTS AND BASE PLATES. KIOSK SHALL INCLUDE STRUCTURAL BRACING TO ACCOMMODATE TRANSPORTATION, WIND, SNOW AND ICE LOADING. KIOSK MANUFACTURER SHALL BE RESPONSIBLE FOR OBTAINING STRUCTURAL CERTIFICATION FROM APEGBC REGISTERED PROFESSIONAL ENGINEER. STRUCTURAL CERTIFICATION SHALL INCLUDE RECOMMENDATIONS FOR SEISMIC AND FOR FASTENING METHODS.
- KIOSK DIMENSIONS ARE APPROXIMATE ONLY. KIOSK MANUFACTURER SHALL PRODUCE DETAILED SHOP DRAWINGS WHICH SHALL INCLUDE INTERNAL EQUIPMENT LAYOUTS FOR REVIEW BY ENGINEER PRIOR TO PRODUCTION. THE MANUFACTURER SHALL ENSURE THE KIOSK IS SIZED APPROPRIATELY TO HOUSE THE INTENDED EQUIPMENT.
- ALL LOUVERS SHALL HAVE BUG SCREENS.
- DOORS SHALL INCLUDE A GAS SPRING. ALL LATCHES SHALL BE 3-POINT LATCHING SYSTEM WITH PAD LOCKABLE HANDLES.
- KIOSK TO BE POWDER COATED. COLOUR CODE: TO BE CONFIRMED.
- ALL COMPARTMENTS SHALL HAVE REMOVABLE MOUNTING PANELS. ALL INTERIOR PANELS SHALL BE 10 GA. GALVANIZED PAINTED WHITE.
- ALL COUPLINGS BETWEEN THE COMPARTMENTS SHALL BE PLACED AND WELDED AT THE ENCLOSURE FABRICATION SHOP.
- THE FAN COMPARTMENT SHALL BE CONTINUOUSLY WELDED PROVIDING A COMPLETELY SEALED ENCLOSURE. VENTILATED FAN COMPARTMENT SHALL BE SEALED FROM VENTILATED TERMINATION COMPARTMENT.
- KIOSK SUPPLIER TO PROVIDE CONDUIT STUB-UP TEMPLATE FOR USE BY INSTALLATION CONTRACTOR.
- PROVIDE 12mm THICK NEOPRENE CLOSED CELL GASKET BETWEEN KIOSK BASE AND CONCRETE PAD.



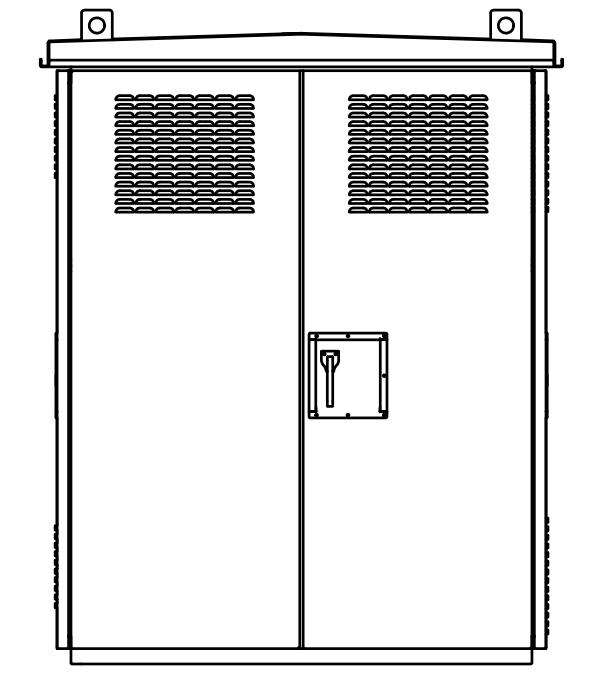
SECTION 1:25 **A** KIOSK - CONTROLS COMPARTMENT



SECTION 1:25 **B** KIOSK - POWER DISTRIBUTION COMPARTMENT



SECTION 1:25 **C** KIOSK - VENTILATED COMPARTMENT



SECTION 1:25 **D** KIOSK - WASH DOWN COMPARTMENT

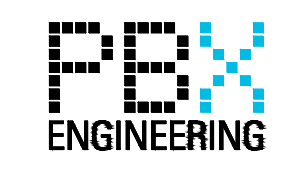
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CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR ENGINEER'S APPROVAL PRIOR TO FABRICATION

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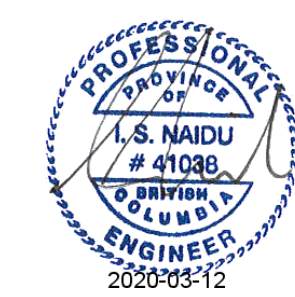
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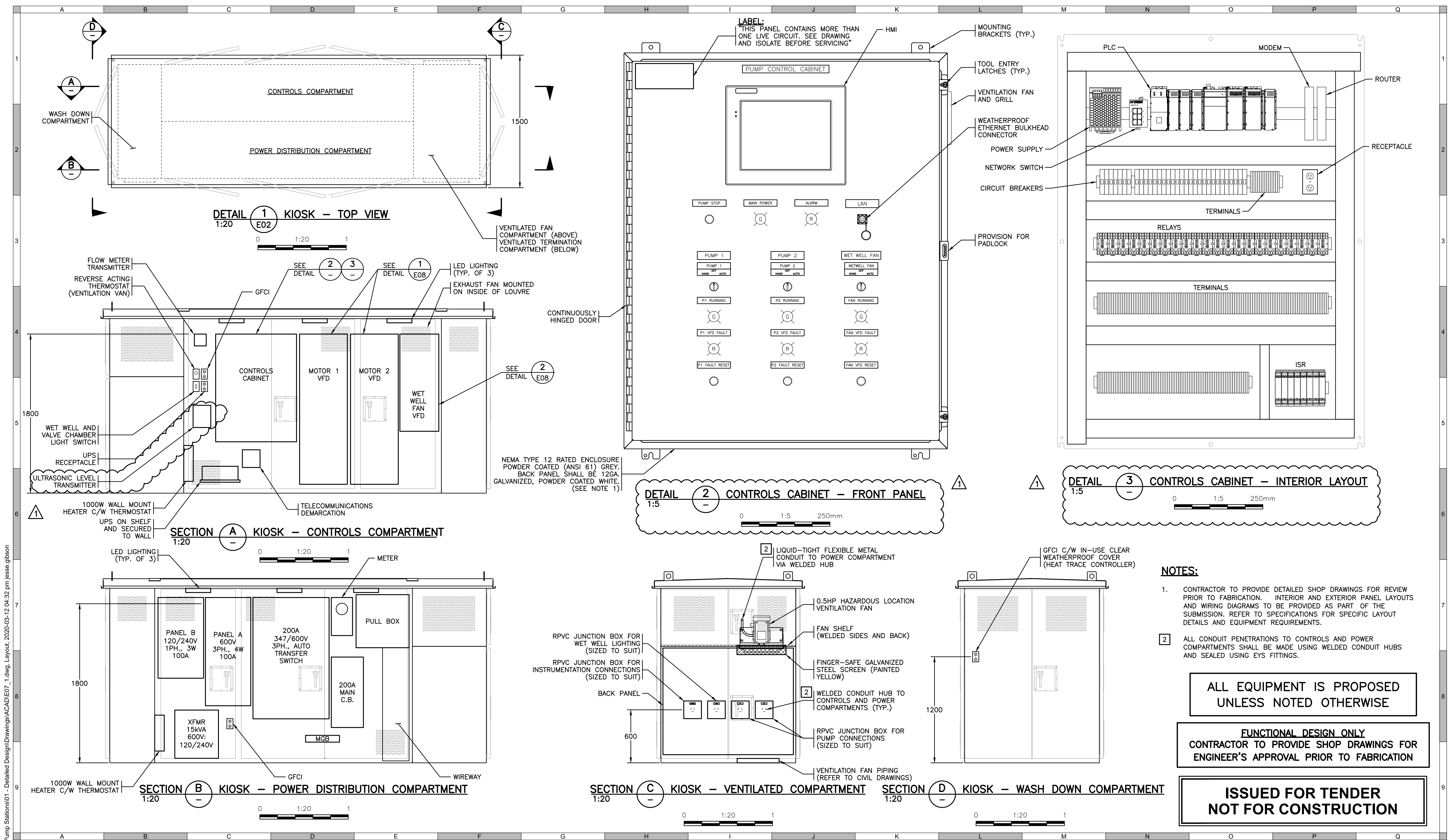


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Designed by: MCM/MS  
Drawn by: PBX

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| GREENWOOD PUMPSTATION KIOSK (1 OF 3) |         |
| Sheet Number                         | 6 of 21 |
| Project Number                       | 18248   |
| Drawing Number                       | E06     |
| Revision                             | -       |



- NOTES:**
- CONTRACTOR TO PROVIDE DETAILED SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION. INTERIOR AND EXTERIOR PANEL LAYOUTS AND WIRING DIAGRAMS TO BE PROVIDED AS PART OF THE SUBMISSION. REFER TO SPECIFICATIONS FOR SPECIFIC LAYOUT DETAILS AND EQUIPMENT REQUIREMENTS.
  - ALL CONDUIT PENETRATIONS TO CONTROLS AND POWER COMPARTMENTS SHALL BE MADE USING WELDED CONDUIT HUBS AND SEALED USING EYS FITTINGS.

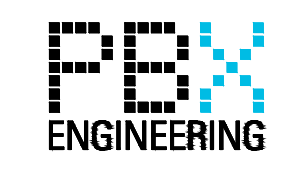
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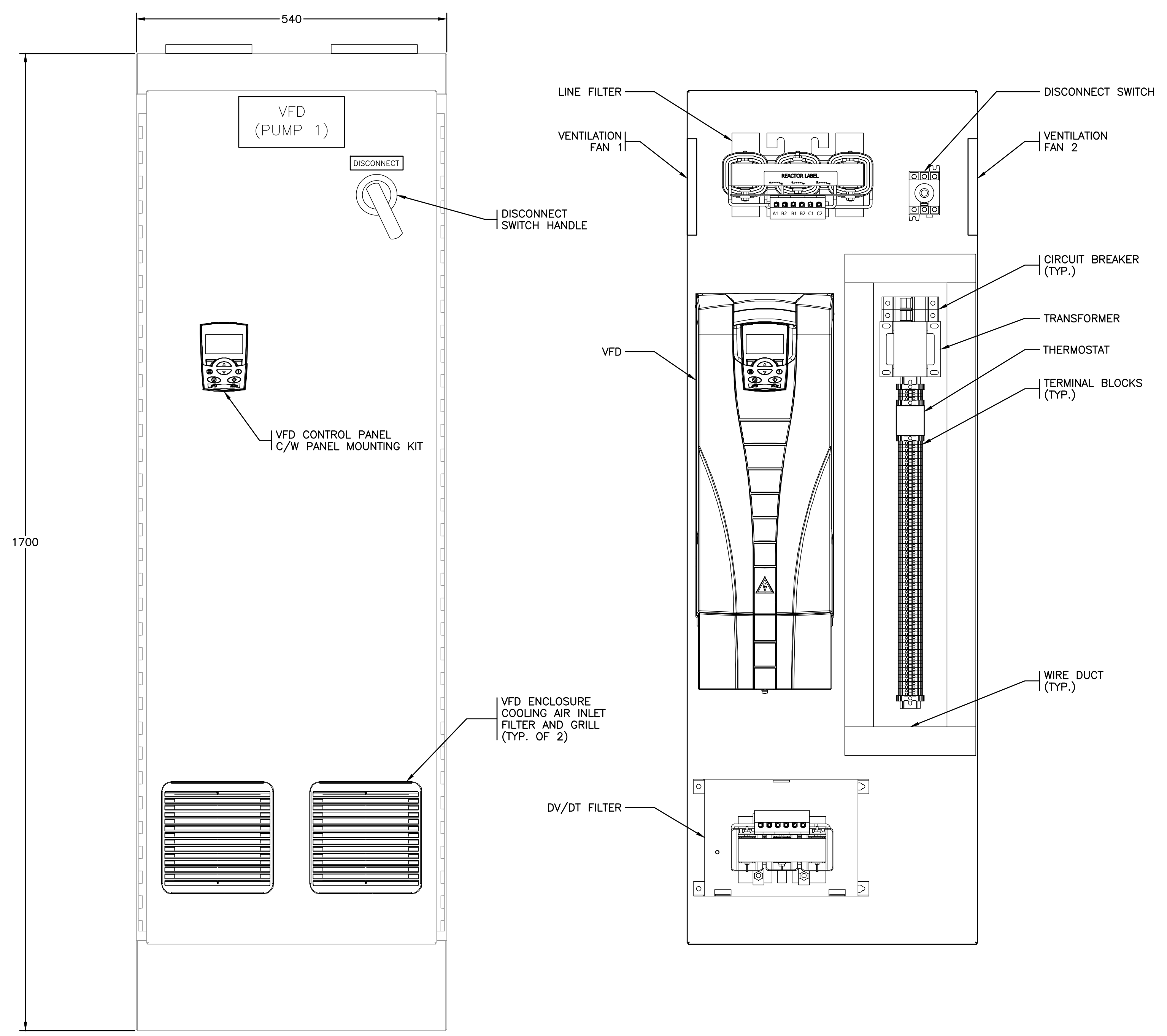
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Quality Control by: IN  
Designed by: MC/MS  
Drawn by: PBX

**GREENWOOD PUMPSTATION KIOSK (2 OF 3)**

Sheet Number: 7 of 21  
Project Number: 18248  
Drawing Number: E07  
Revision: 1

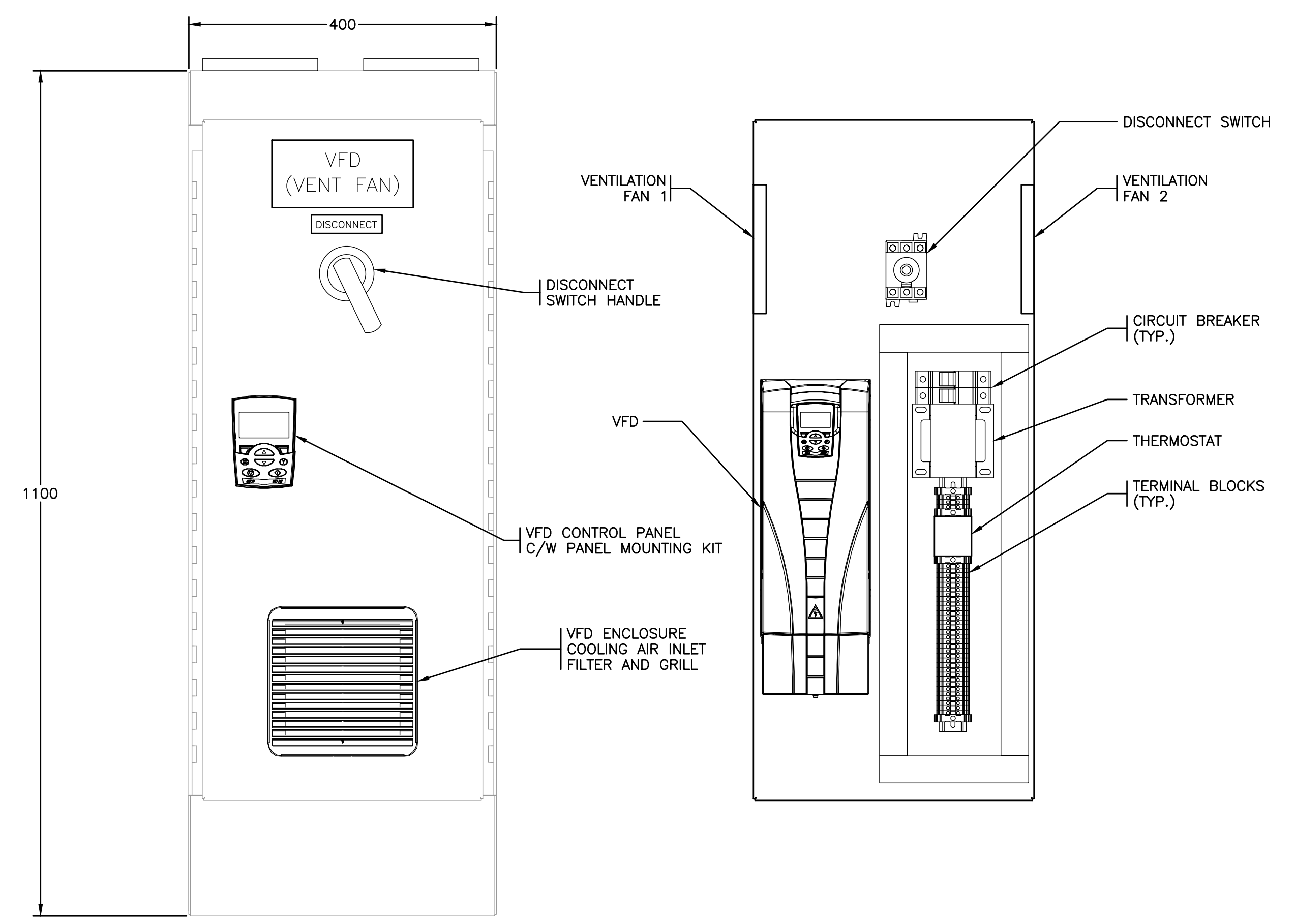
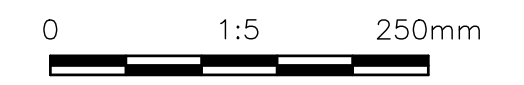
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FRONT LAYOUT

INSIDE LAYOUT

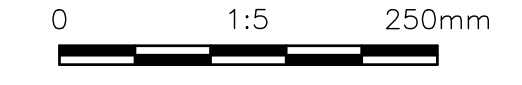
DETAIL 1 600V MOTOR CONTROL ENCLOSURE  
1:5



FRONT LAYOUT

INSIDE LAYOUT

DETAIL 2 600V VENT. FAN CONTROL ENCLOSURE  
1:5

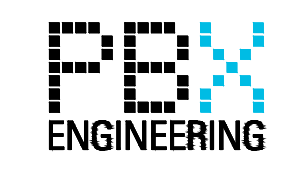


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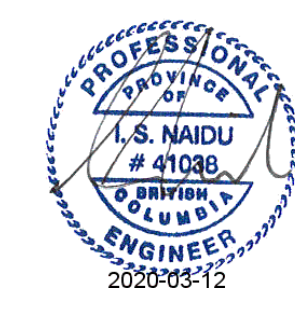
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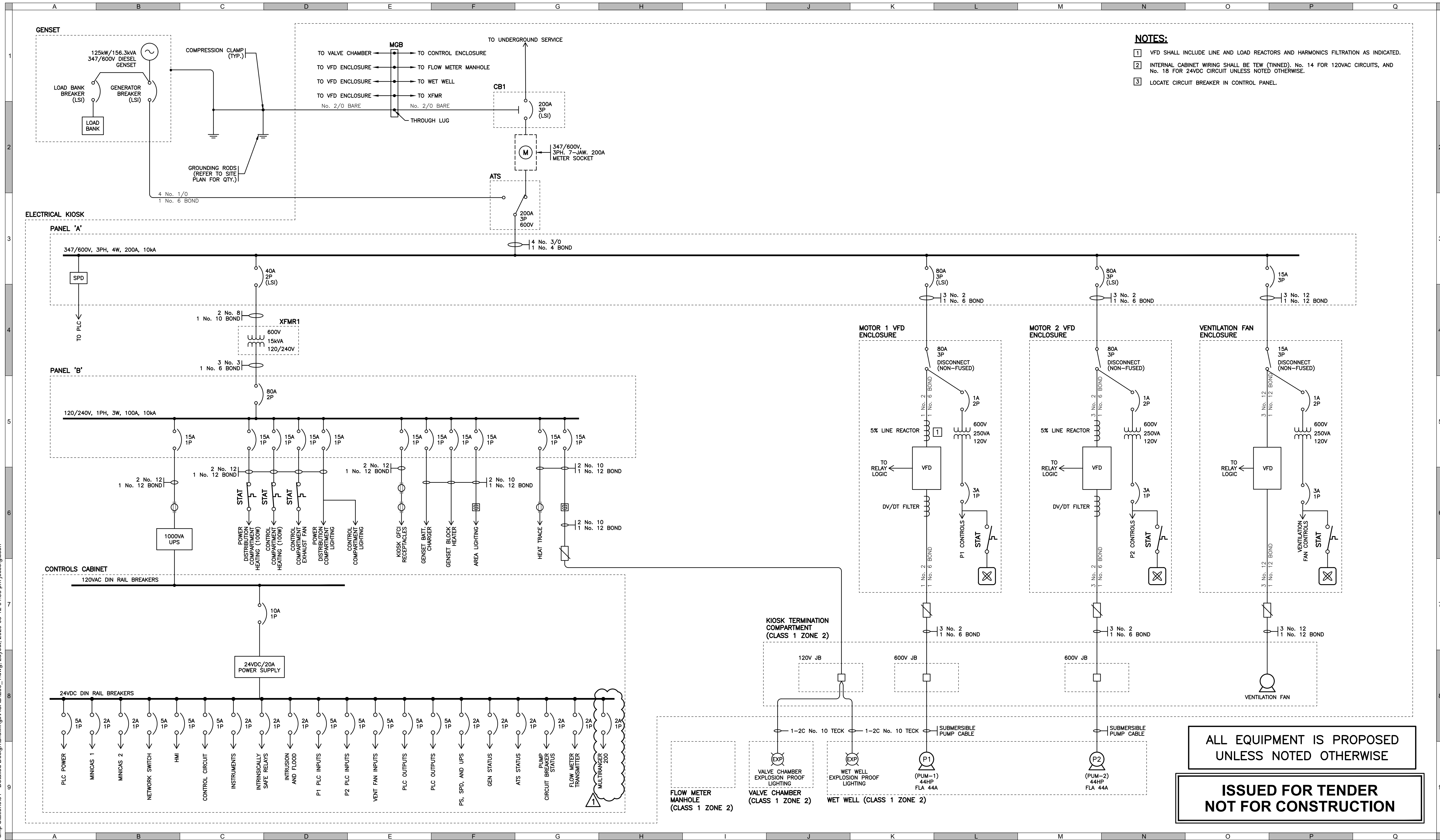
Scale AS SHOWN

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Designed by MC/MS  
Drawn by PBX

GREENWOOD PUMPSTATION  
KIOSK  
(3 OF 3)

Sheet Number 8 of 21  
Project Number 18248  
Drawing Number E08  
Revision -





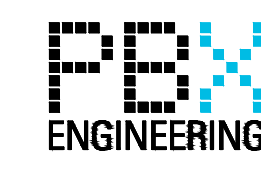
- NOTES:**
- VFD SHALL INCLUDE LINE AND LOAD REACTORS AND HARMONICS FILTRATION AS INDICATED.
  - INTERNAL CABINET WIRING SHALL BE TEW (TINNED), No. 14 FOR 120VAC CIRCUITS, AND No. 18 FOR 24VDC CIRCUIT UNLESS NOTED OTHERWISE.
  - LOCATE CIRCUIT BREAKER IN CONTROL PANEL.

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systems

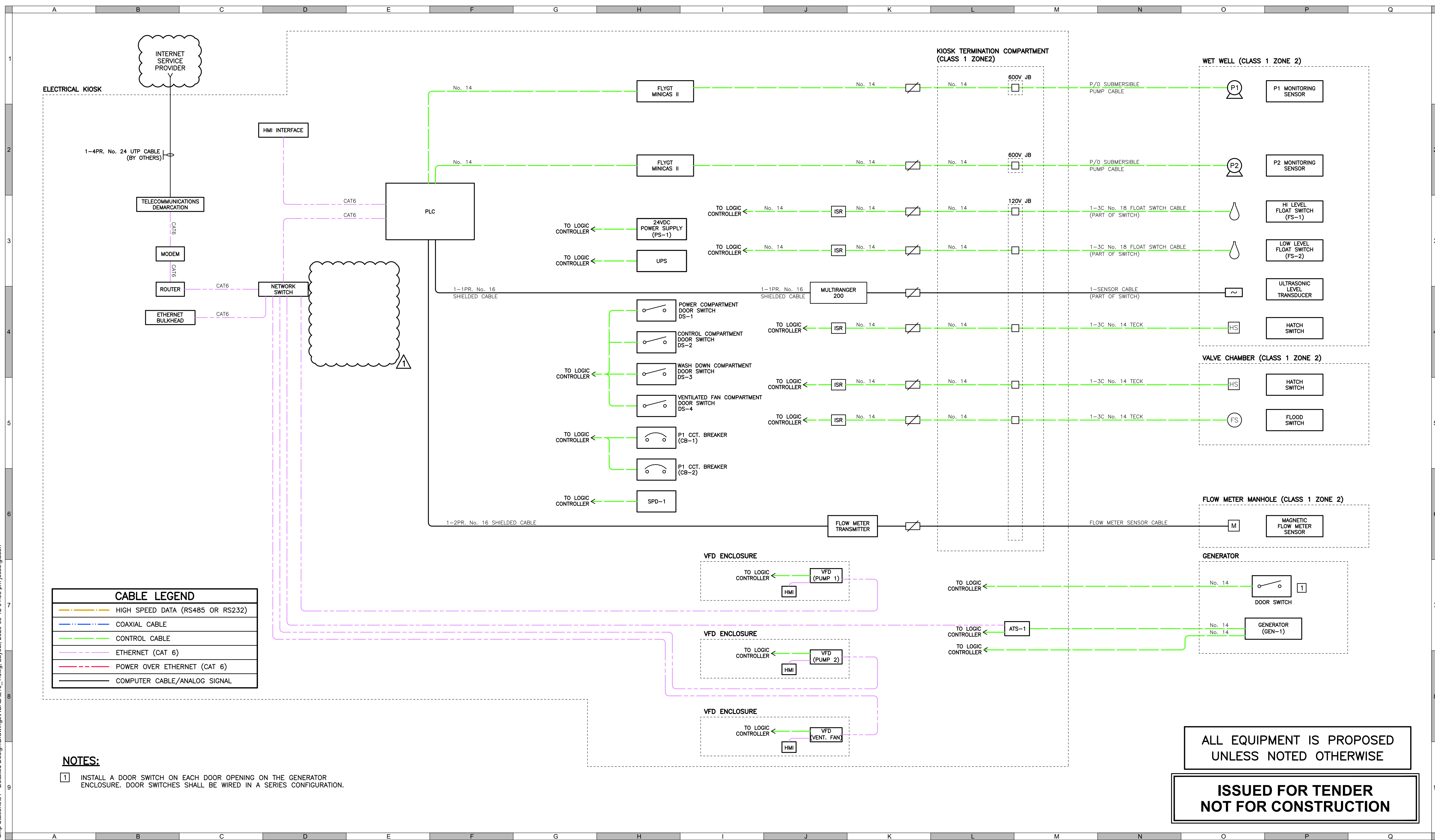
Scale: AS SHOWN

Quality Control by: IN  
Designed by: MC/MS  
Drawn by: PBX

| GREENWOOD PUMPSTATION<br>POWER DISTRIBUTION<br>SINGLE LINE DIAGRAM |                |
|--|----------------|
| Sheet Number   | 9 of 21        |
| Project Number   | Drawing Number |
| 18248  | E09            |
| Revision   | 1              |

P:\18248\_Courtenay Greenwood Pump Stations\01 - Detailed Design\Drawings\ACAD\E09\_1.dwg, 2020-03-12 04:33 pm jesse.gilson

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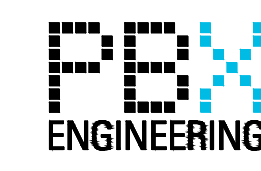
| CABLE LEGEND |                                  |
|--------------|----------------------------------|
|              | HIGH SPEED DATA (RS485 OR RS232) |
|              | COAXIAL CABLE                    |
|              | CONTROL CABLE                    |
|              | ETHERNET (CAT 6)                 |
|              | POWER OVER ETHERNET (CAT 6)      |
|              | COMPUTER CABLE/ANALOG SIGNAL     |

**NOTES:**  
 [1] INSTALL A DOOR SWITCH ON EACH DOOR OPENING ON THE GENERATOR ENCLOSURE. DOOR SWITCHES SHALL BE WIRED IN A SERIES CONFIGURATION.

ALL EQUIPMENT IS PROPOSED  
UNLESS NOTED OTHERWISE

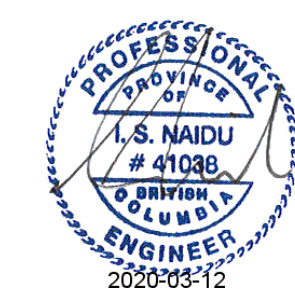
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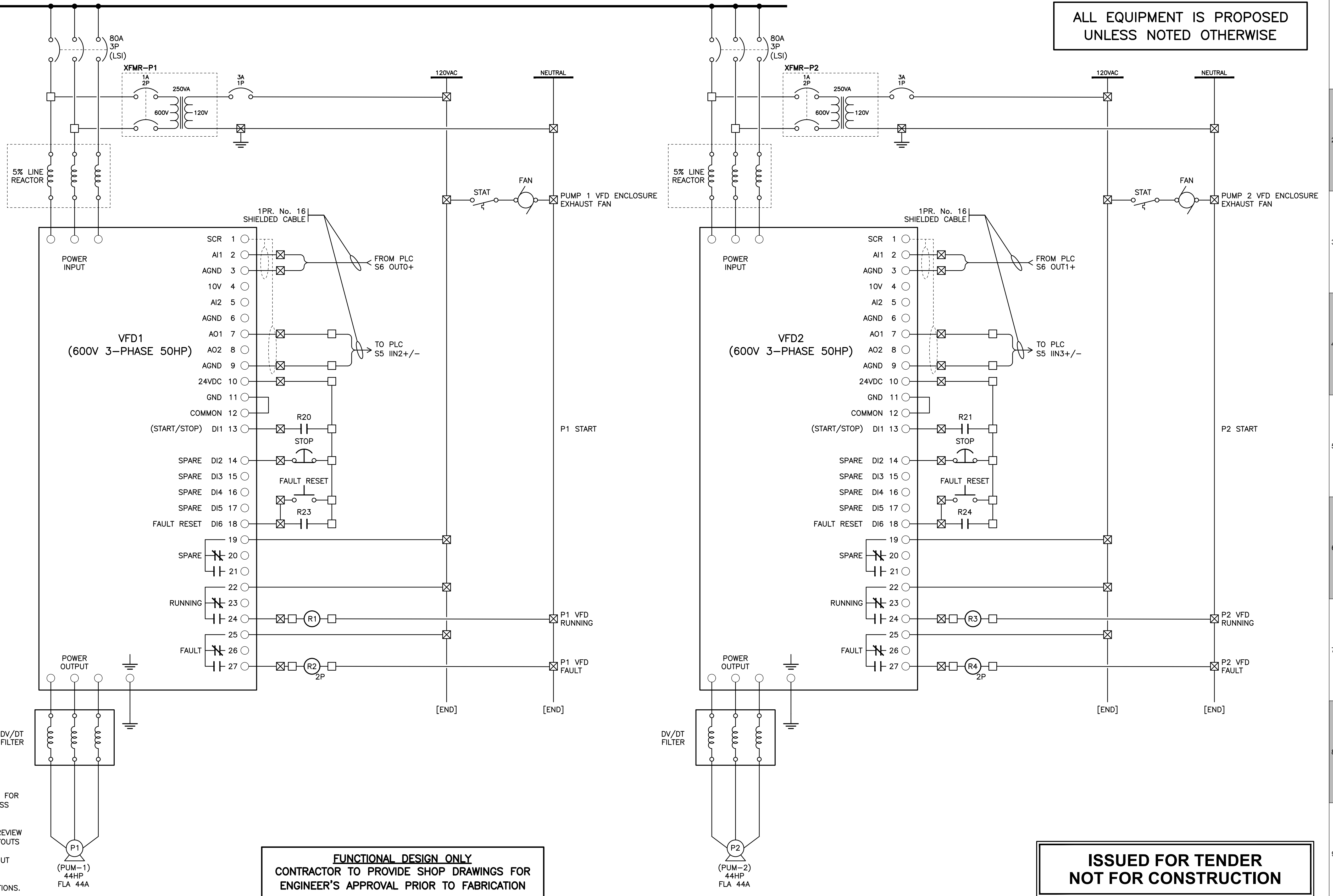
| # | Date       | Issue / Revision  | App |
|---|------------|-------------------|-----|
| - | 2020-02-18 | ISSUED FOR TENDER | IN  |
| 1 | 2020-03-12 | ADDENDUM 1        | IN  |



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 Quality Control by: IN  
 Designed by: MCM/MS  
 Drawn by: PBX

**GREENWOOD PUMPSTATION  
COMMUNICATION AND  
INSTRUMENTATION BLOCK DIAGRAM**  
 Sheet Number: 10 of 21  
 Project Number: 18248  
 Drawing Number: E10  
 Revision: 1

ALL EQUIPMENT IS PROPOSED UNLESS NOTED OTHERWISE



**NOTES:**

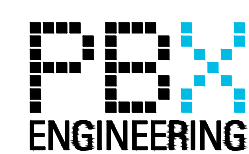
- INTERNAL CABINET WIRING SHALL BE TEW (TINNED), No. 14 FOR 120VAC CIRCUITS, AND No. 18 FOR 24VDC CIRCUITS. UNLESS NOTED OTHERWISE.
- CONTRACTOR TO PROVIDE DETAILED SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION. INTERIOR AND EXTERIOR PANEL LAYOUTS AND WIRING DIAGRAMS TO BE PROVIDED AS PART OF THE SUBMISSION. REFER TO SPECIFICATIONS FOR SPECIFIC LAYOUT DETAILS AND EQUIPMENT REQUIREMENTS.
- FERRULES SHALL BE USED ON CONTROL CABLING TERMINATIONS.

**FUNCTIONAL DESIGN ONLY**  
 CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR  
 ENGINEER'S APPROVAL PRIOR TO FABRICATION

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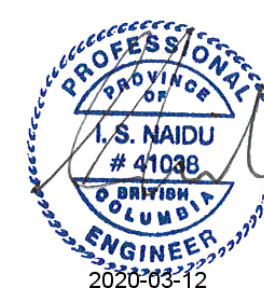
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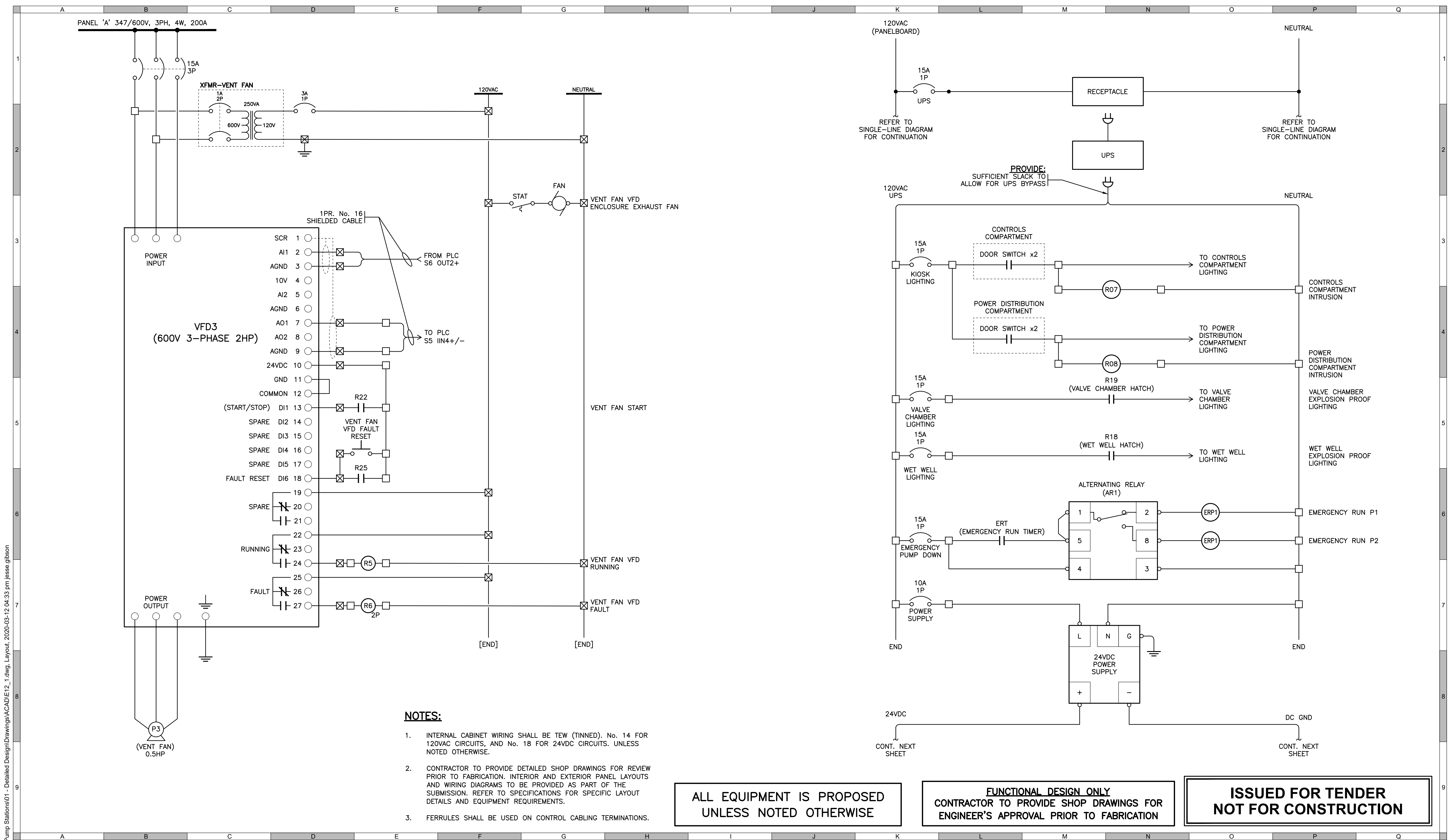
**URBAN**  
 systems

Scale AS SHOWN

Quality Control by IN  
 Designed by MC/MS  
 Drawn by PBX

GREENWOOD  
 PUMPSTATION  
 CONTROLS  
 (1 OF 9)

|                |          |
|----------------|----------|
| Sheet Number   | 11 of 21 |
| Project Number | 18248    |
| Drawing Number | E11      |
| Revision       | 1        |



- NOTES:**
- INTERNAL CABINET WIRING SHALL BE TEW (TINNED). No. 14 FOR 120VAC CIRCUITS, AND No. 18 FOR 24VDC CIRCUITS. UNLESS NOTED OTHERWISE.
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  - FERRULES SHALL BE USED ON CONTROL CABLING TERMINATIONS.

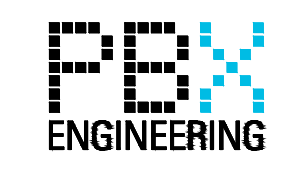
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**ISSUED FOR TENDER NOT FOR CONSTRUCTION**

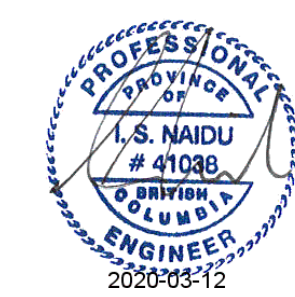
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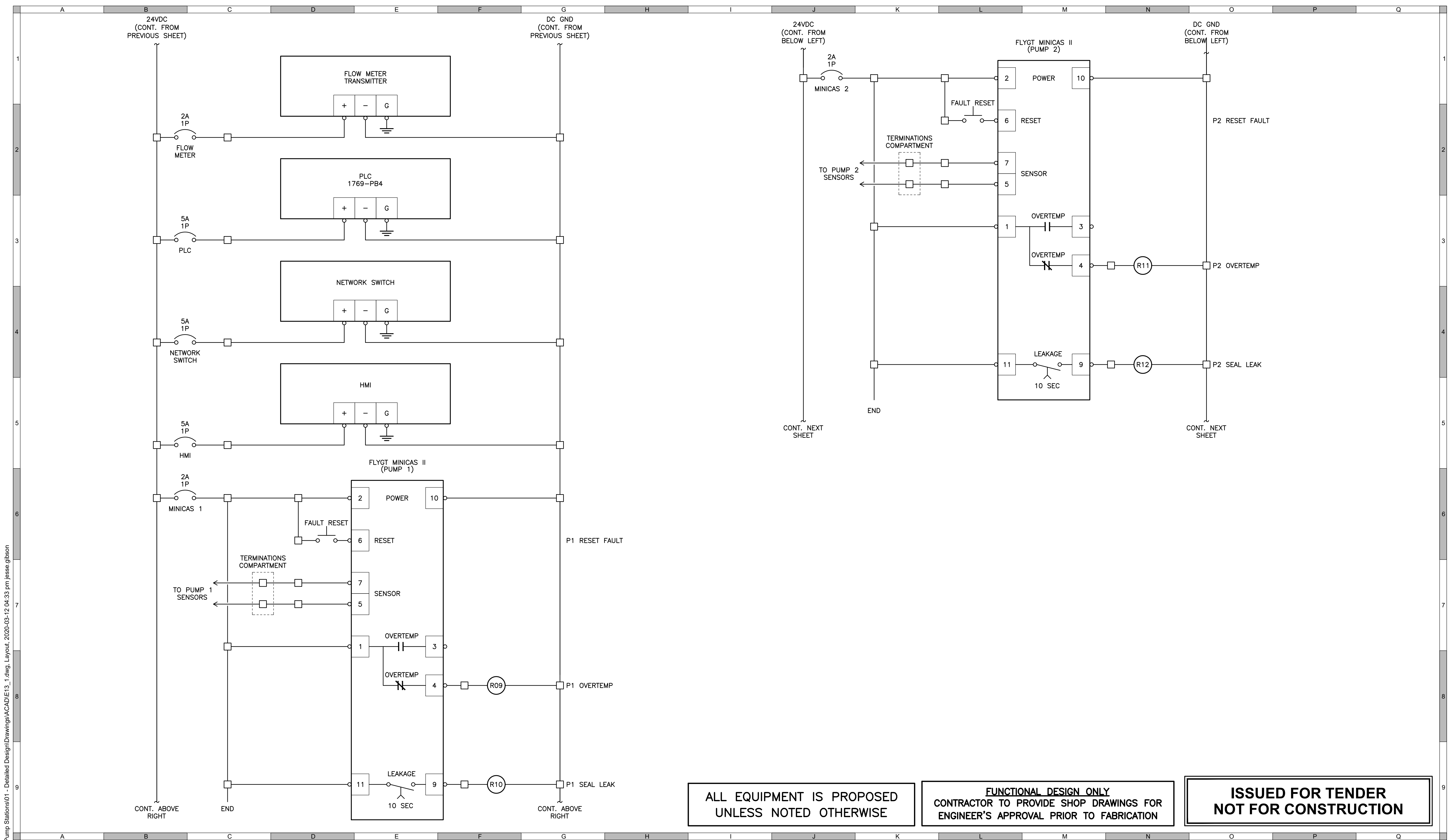
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Designed by: MC/MS  
Drawn by: PBX

**GREENWOOD PUMPSTATION CONTROLS (2 OF 9)**

Sheet Number: 12 of 21  
Project Number: 18248  
Drawing Number: E12  
Revision: 1



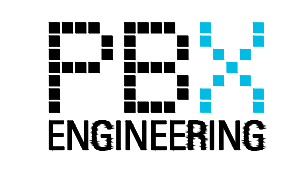
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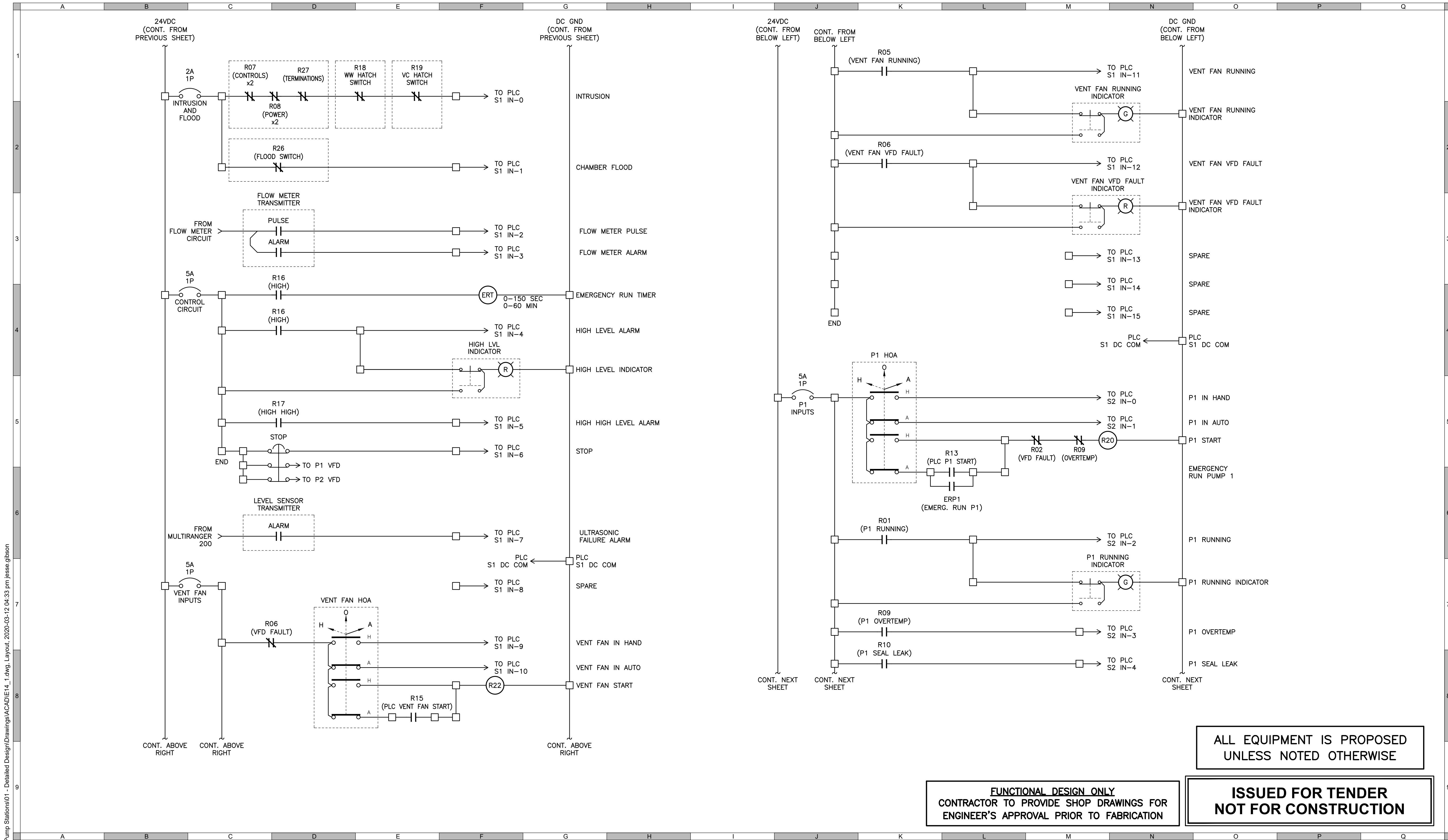
**URBAN systems**

Scale: AS SHOWN

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Designed by: MC/MS  
Drawn by: PBX

**GREENWOOD PUMPSTATION CONTROLS (3 OF 9)**

|                |                |
|----------------|----------------|
| Sheet Number   | 13 of 21       |
| Project Number | Drawing Number |
| 18248          | E13            |
| Revision       | 1              |



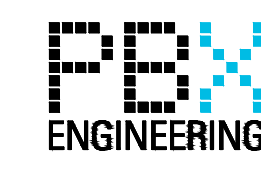
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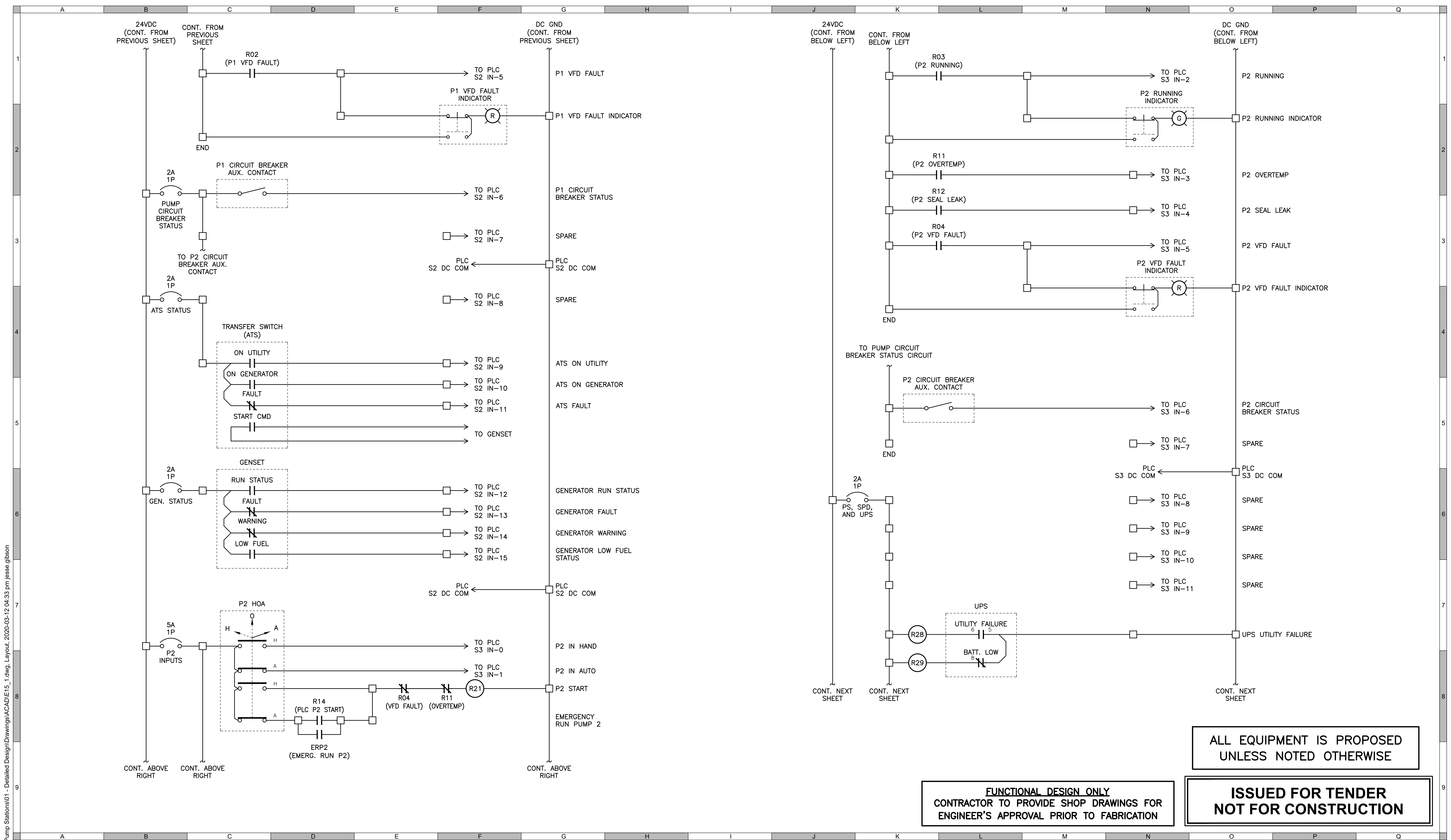
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Designed by: MC/MS  
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**GREENWOOD PUMPSTATION CONTROLS (4 OF 9)**

Sheet Number: 14 of 21  
Project Number: 18248  
Drawing Number: E14  
Revision: 1



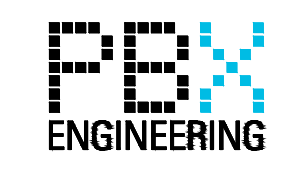
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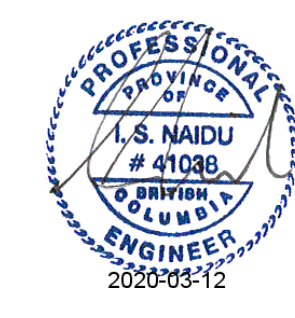
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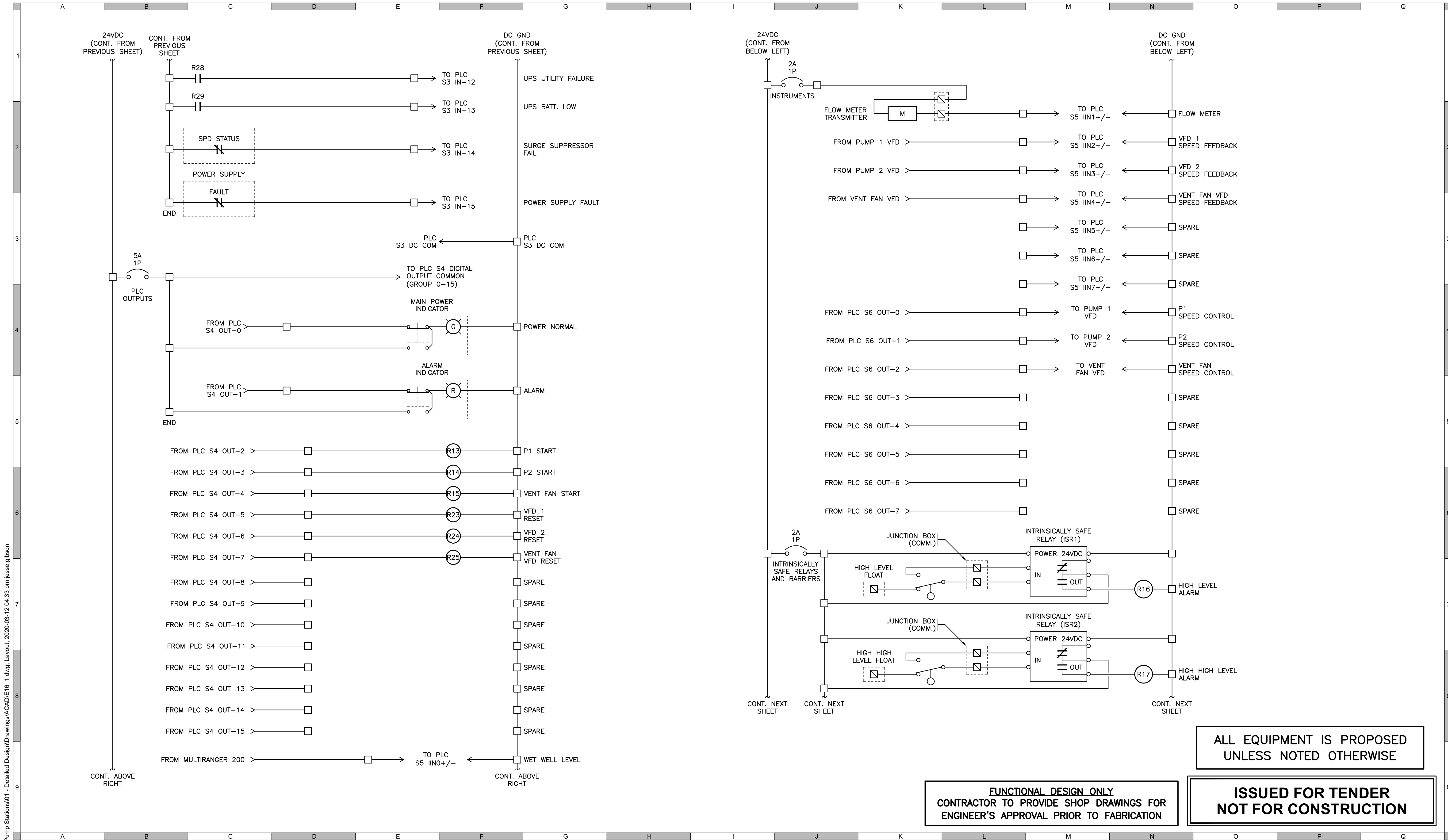


**URBAN systems**

Scale: AS SHOWN

Quality Control by: IN  
Designed by: MC/MS  
Drawn by: PBX

|   |                |
|---|----------------|
| GREENWOOD PUMPSTATION CONTROLS (5 OF 9) |                |
| Sheet Number                            | 15 of 21       |
| Project Number                          | Drawing Number |
| 18248                                   | E15            |
| Revision                                | 1              |



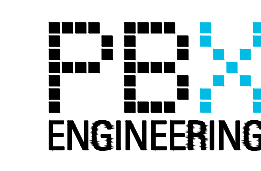
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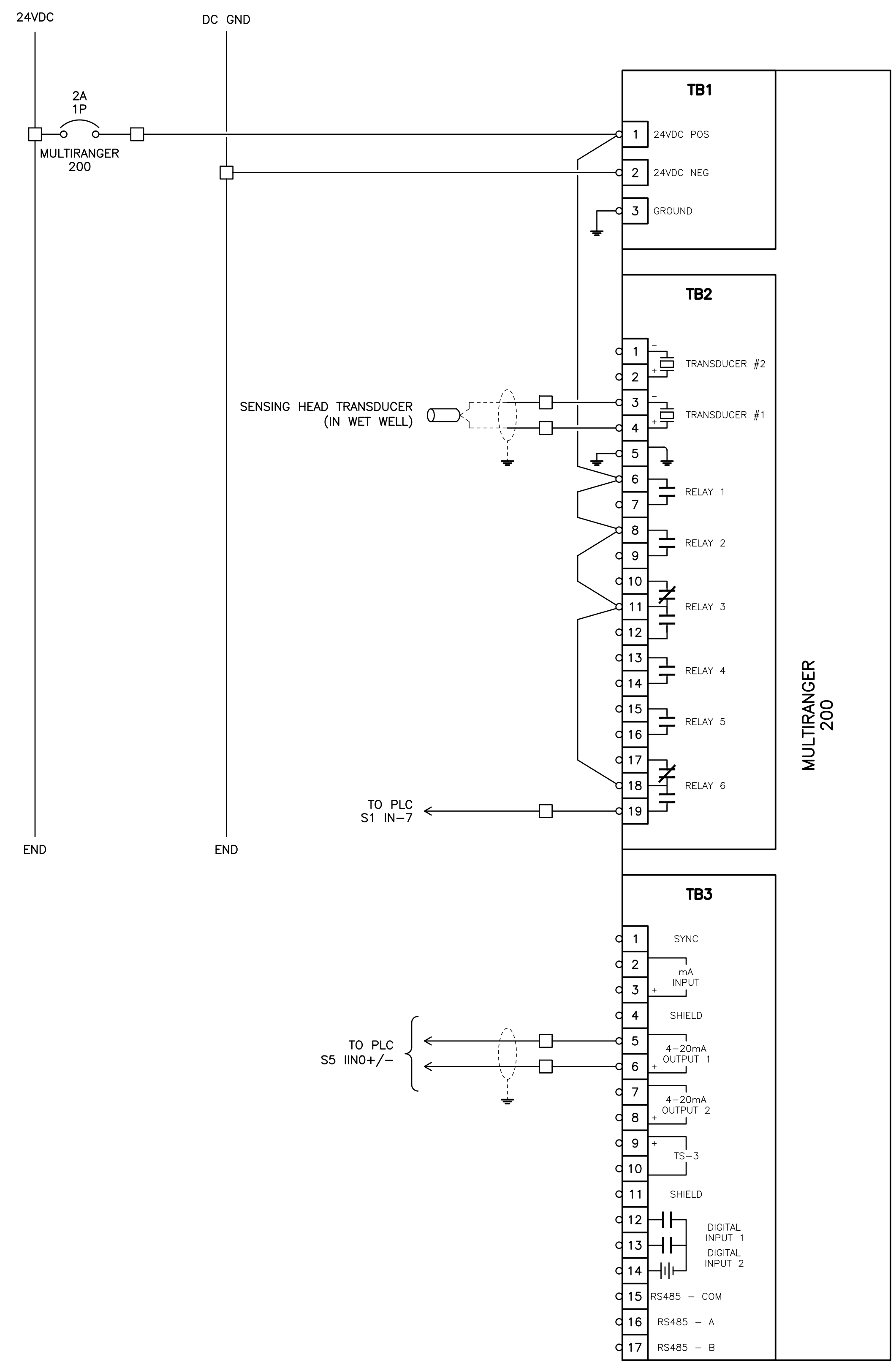
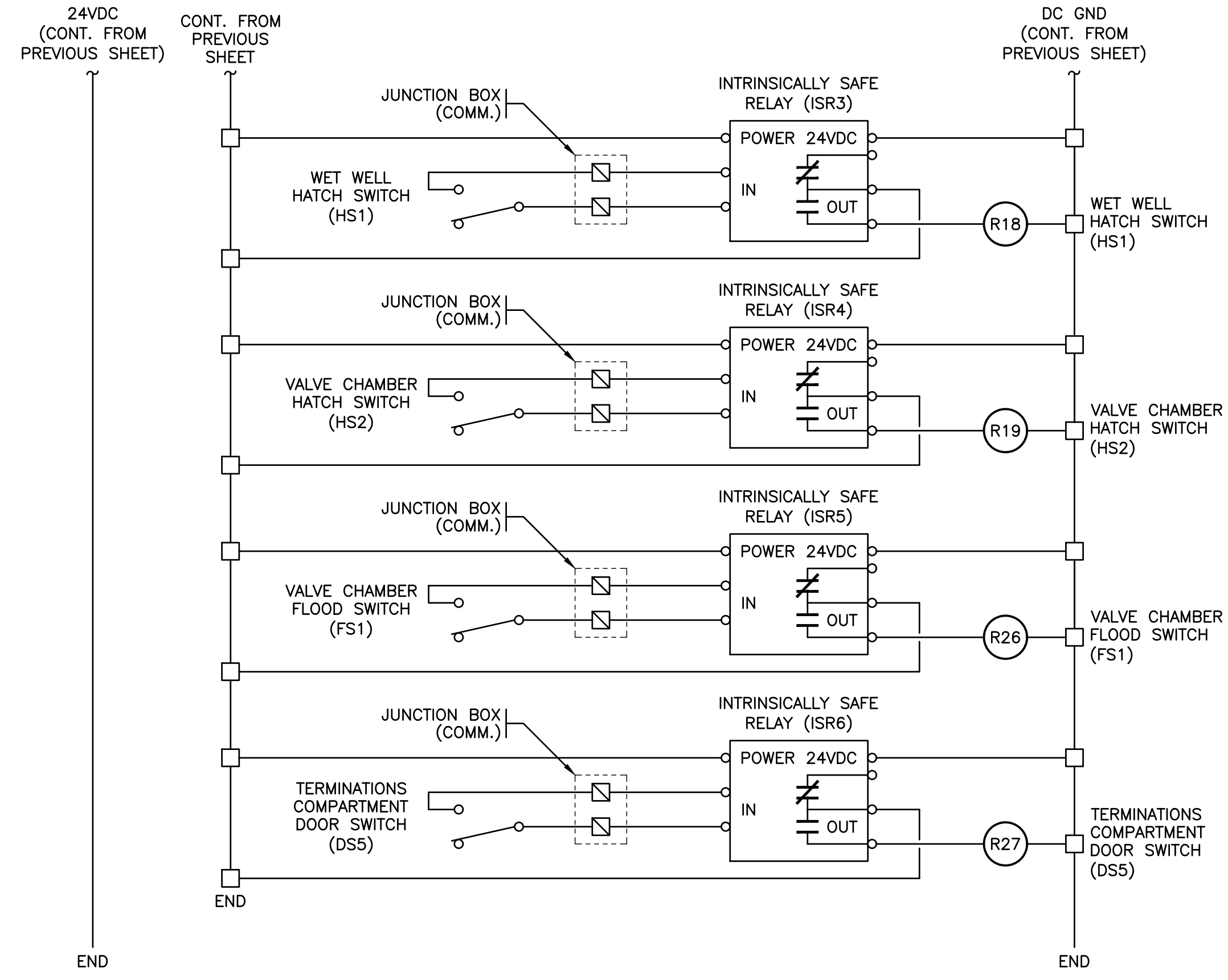
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**GREENWOOD PUMPSTATION CONTROLS (6 OF 9)**

|                |          |
|----------------|----------|
| Sheet Number   | 16 of 21 |
| Project Number | 18248    |
| Drawing Number | E16      |
| Revision       | 1        |





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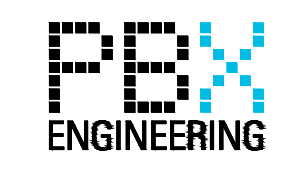
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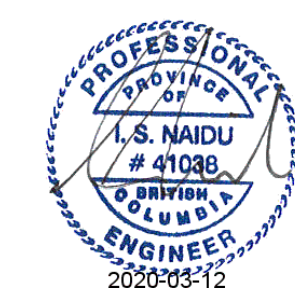
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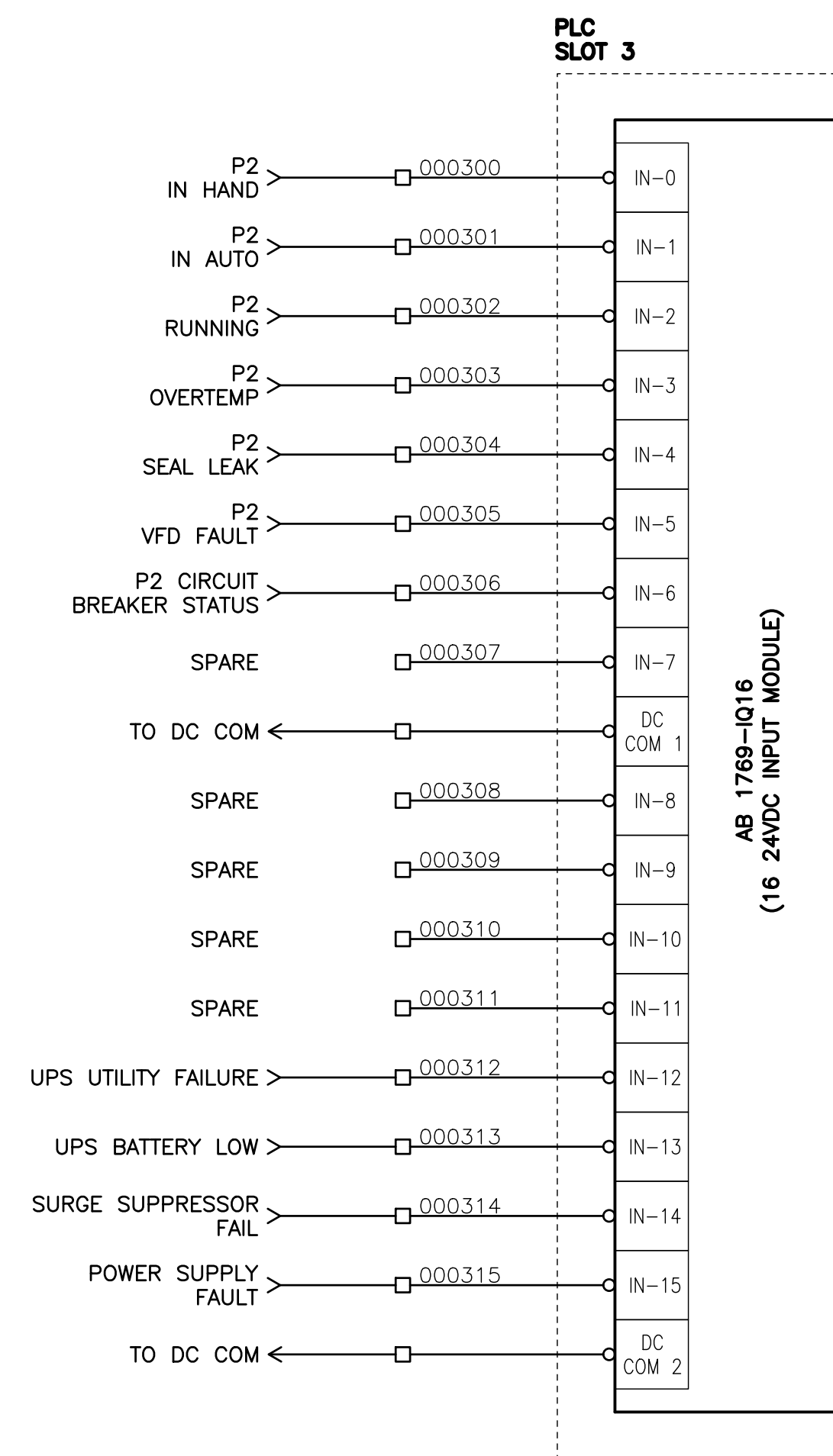
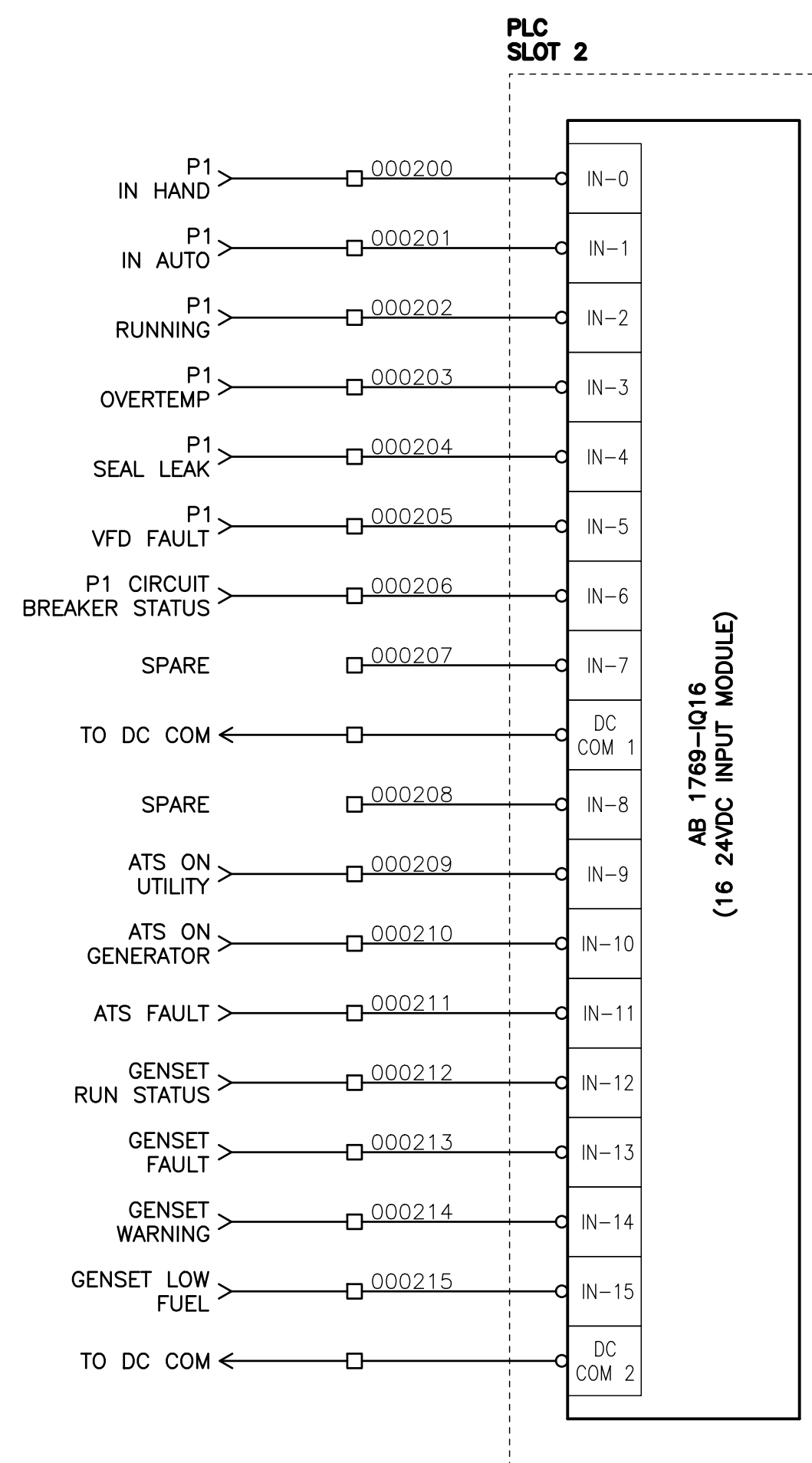
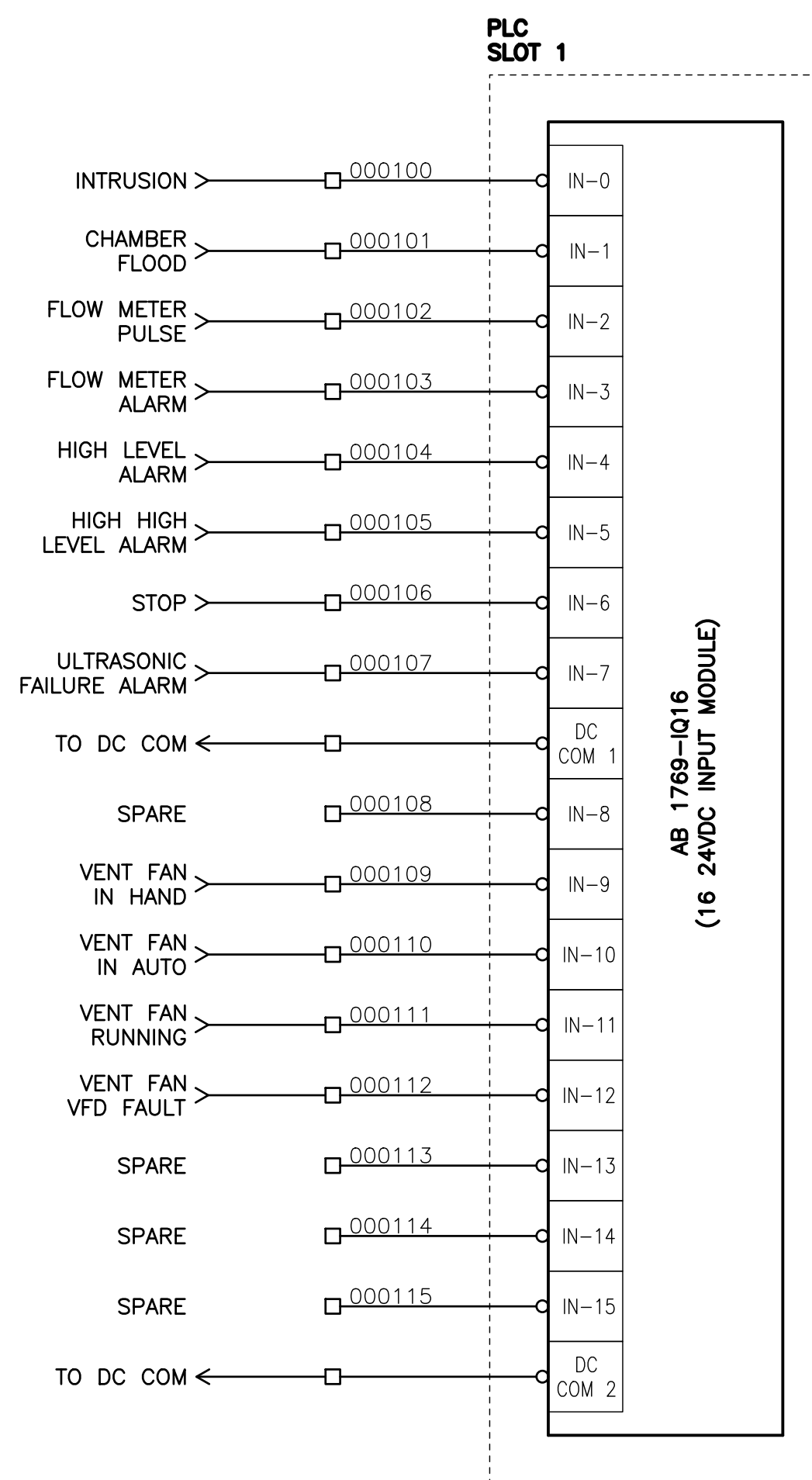
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Quality Control by: IN  
Designed by: MC/MS  
Drawn by: PBX

GREENWOOD PUMPSTATION CONTROLS (7 OF 9)

|                |          |
|----------------|----------|
| Sheet Number   | 17 of 21 |
| Project Number | 18248    |
| Drawing Number | E17      |
| Revision       | 1        |



**NOTES:**

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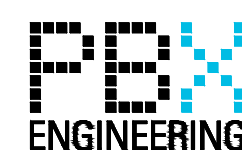
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systems

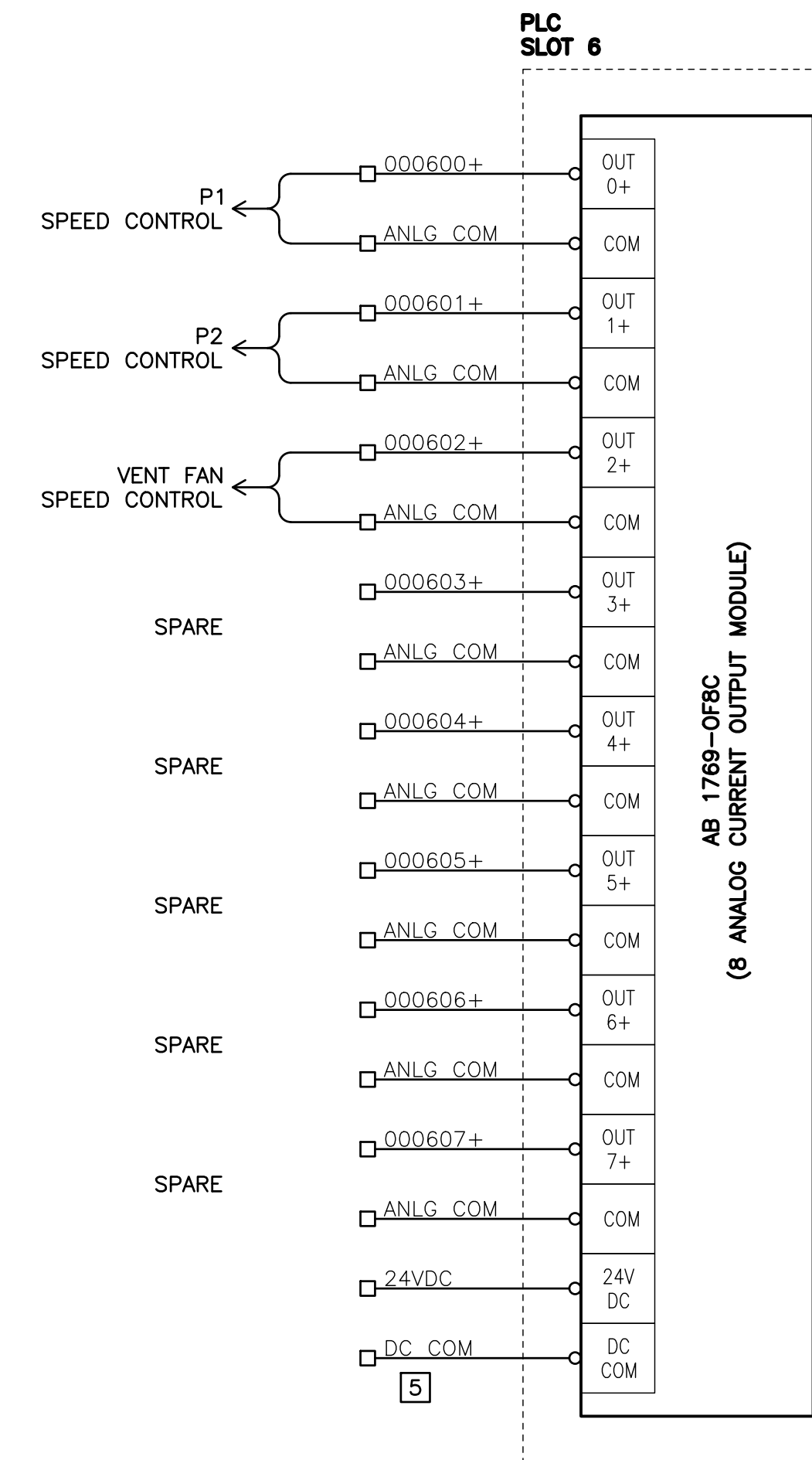
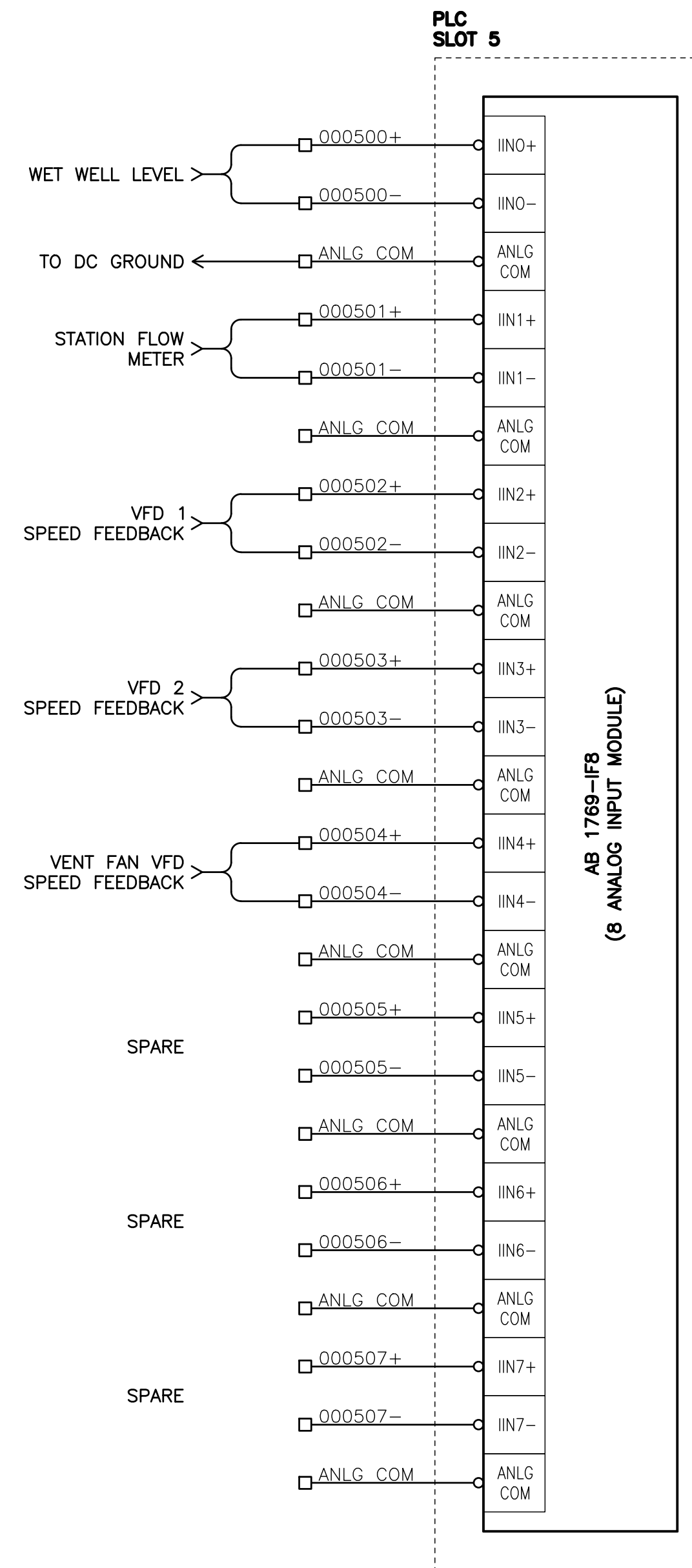
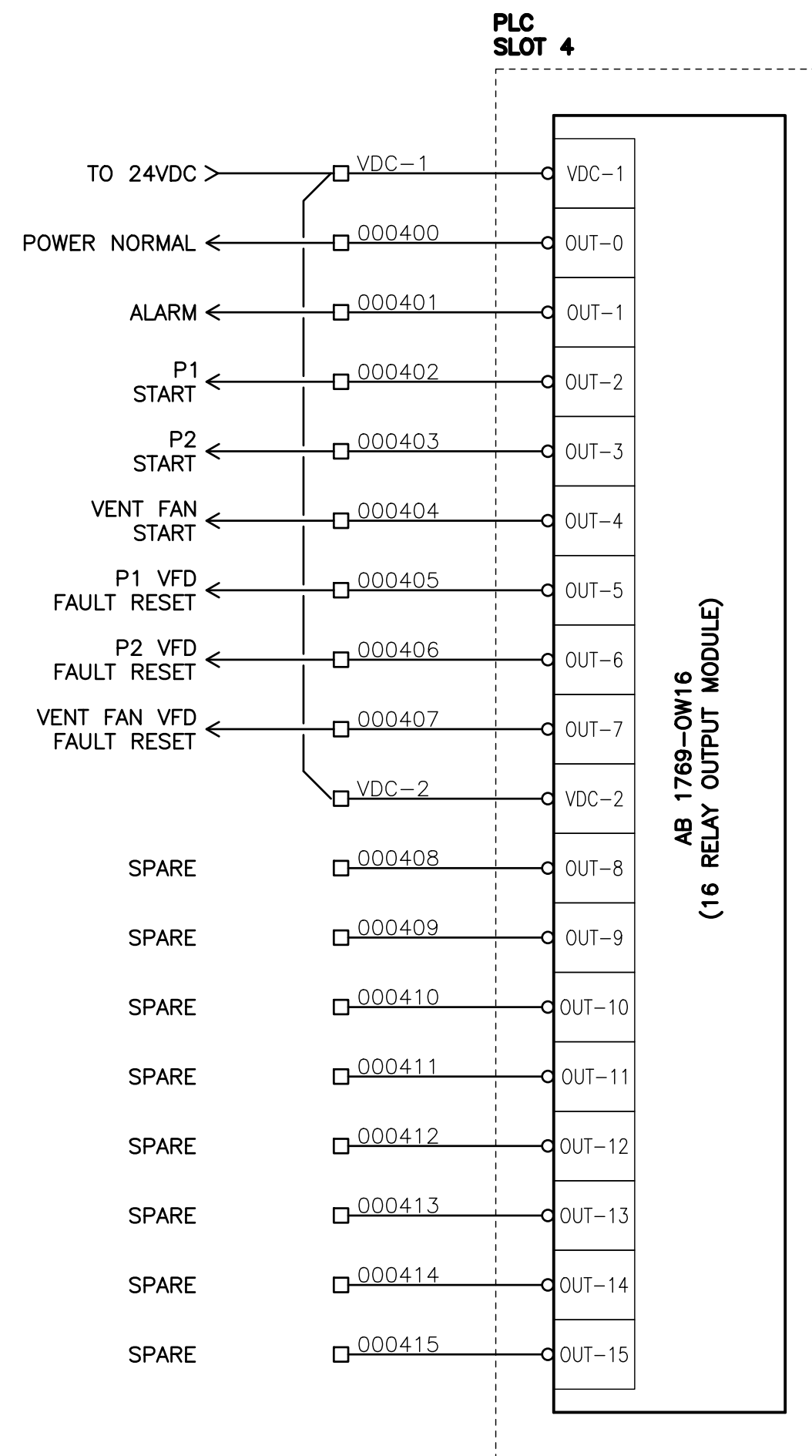
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Designed by  
Drawn by

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MC/MS  
PBX

GREENWOOD  
PUMPSTATION  
CONTROLS  
(8 OF 9)

|                |          |
|----------------|----------|
| Sheet Number   | 18 of 21 |
| Project Number | 18248    |
| Drawing Number | E18      |
| Revision       | 1        |



**NOTES:**

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- [5] DIP SWITCH SETTING ON THE MODULE IS REQUIRED TO USE EXTERNAL VOLTAGE (IF USED). SWITCH IS FACTORY SET DEFAULT TO USE BACKPLANE POWER.

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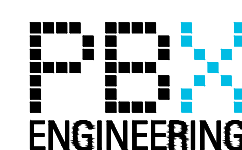
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|---|------------|------------------|-----|
| 1 | 2020-03-12 | ADDENDUM 1       | IN  |



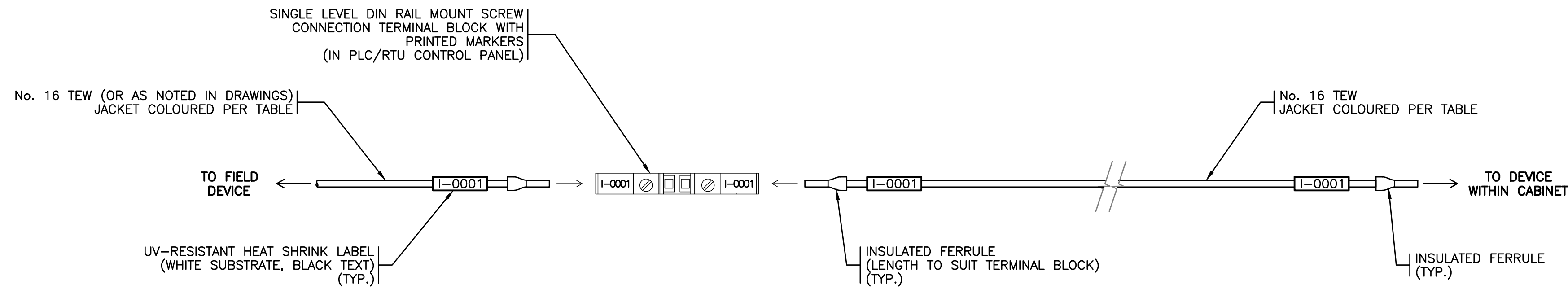
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systems

Scale AS SHOWN

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Designed by MC/MS  
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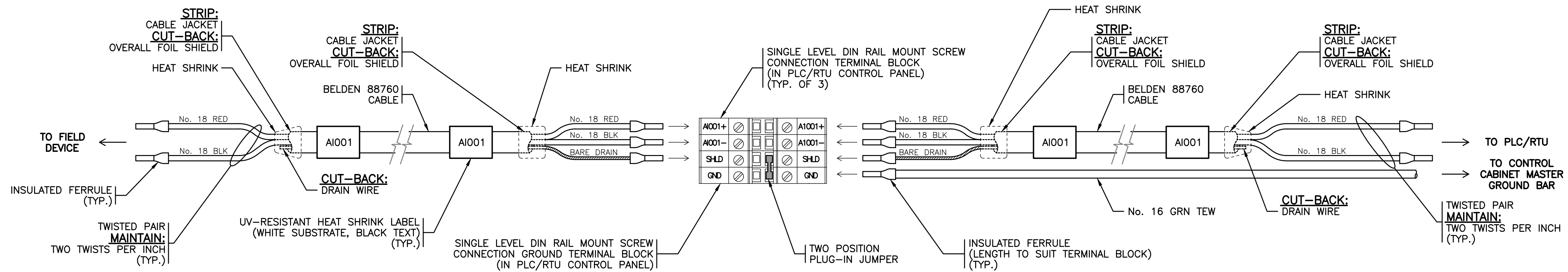
GREENWOOD  
PUMPSTATION  
CONTROLS  
(9 OF 9)

|                |          |
|----------------|----------|
| Sheet Number   | 19 of 21 |
| Project Number | 18248    |
| Drawing Number | E19      |
| Revision       | 1        |

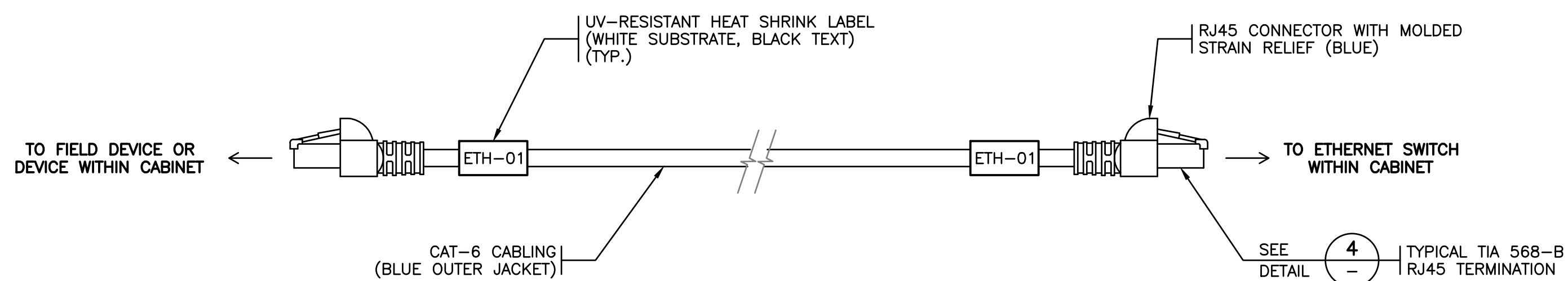


DETAIL 1 TYPICAL DISCRETE CONTROL FIELD WIRING TERMINATION METHOD  
N.T.S.

| INSTRUMENTATION FIELD WIRING COLOUR CODE |        |
|--|--------|
| FUNCTION                                 | COLOUR |
| AC HOT                                   | BLACK  |
| AC NEUTRAL                               | WHITE  |
| DC POSITIVE                              | BLUE   |
| DC NEGATIVE                              | GREY   |
| GENERATOR START                          | YELLOW |
| GROUND                                   | GREEN  |



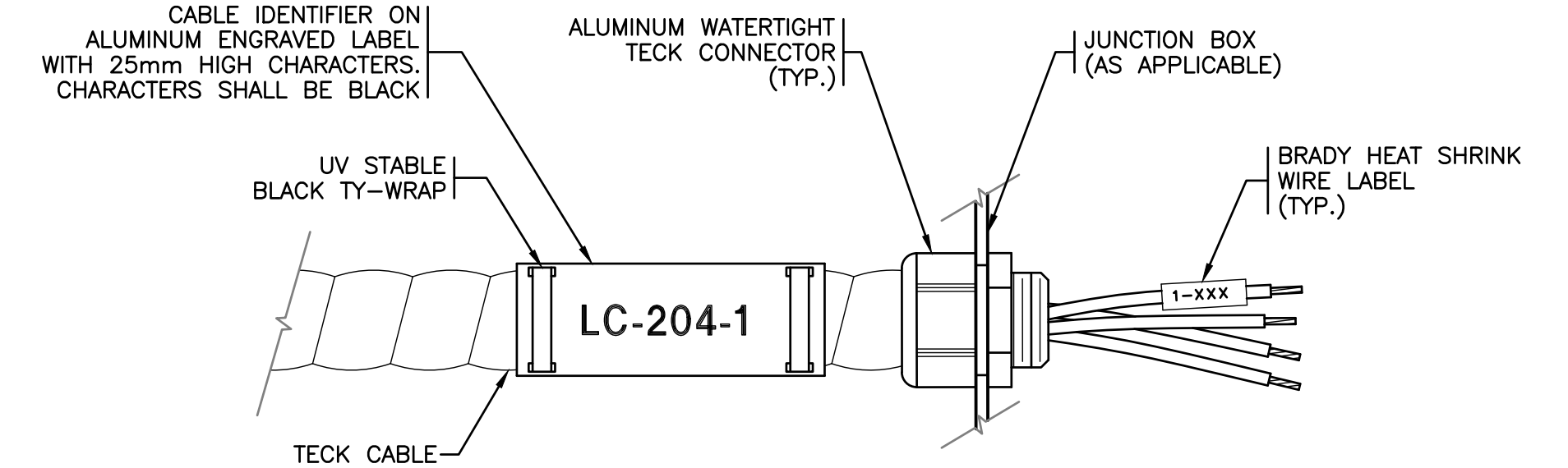
DETAIL 2 TYPICAL ANALOG CONTROL FIELD WIRING TERMINATION METHOD  
N.T.S.



DETAIL 3 TYPICAL ETHERNET CABLING TERMINATION METHOD  
N.T.S.

| PIN | COLOUR  |
|-----|---------|
| 1   | WHT/ORG |
| 2   | ORG     |
| 3   | WHT/GRN |
| 4   | BLU     |
| 5   | WHT/BLU |
| 6   | GRN     |
| 7   | WHT/BRN |
| 8   | BRN     |

DETAIL 4 TYPICAL TIA 568-B RJ45 TERMINATION (CLIP FACING AWAY)  
N.T.S.



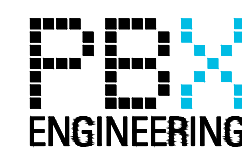
DETAIL 5 TECK CABLE TERMINATION  
N.T.S.

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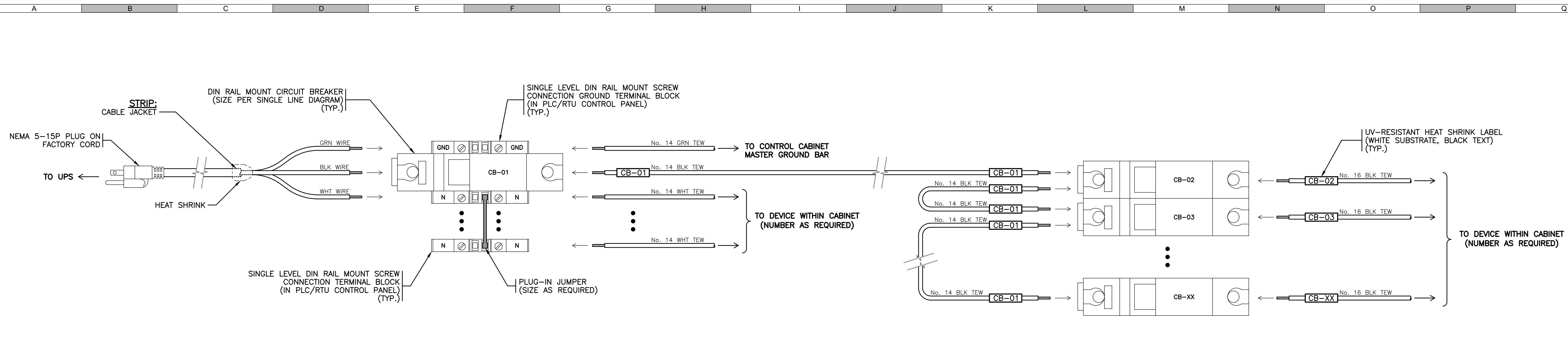
**URBAN**  
systems

Scale AS SHOWN

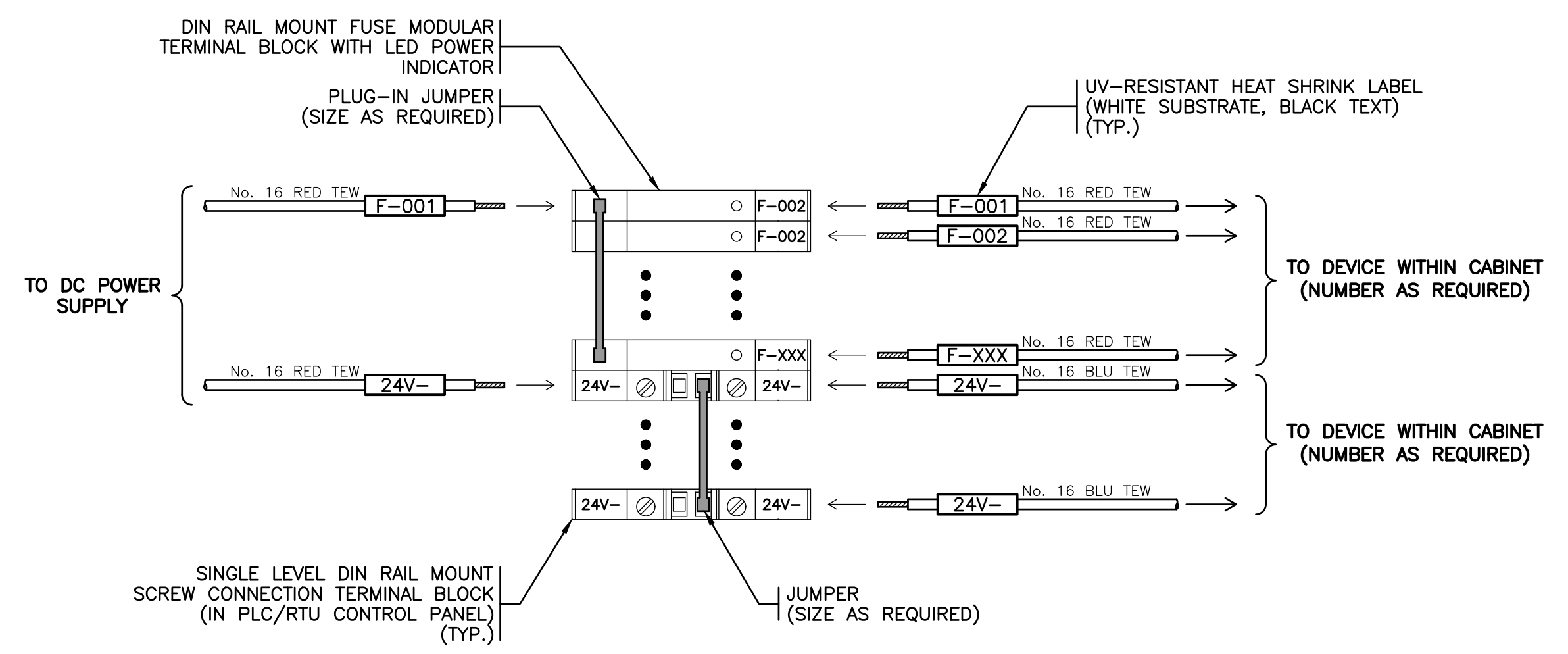
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GREENWOOD PUMPSTATION  
TYPICAL PLC/RTU CABINET WIRING TERMINATIONS (1 OF 2)

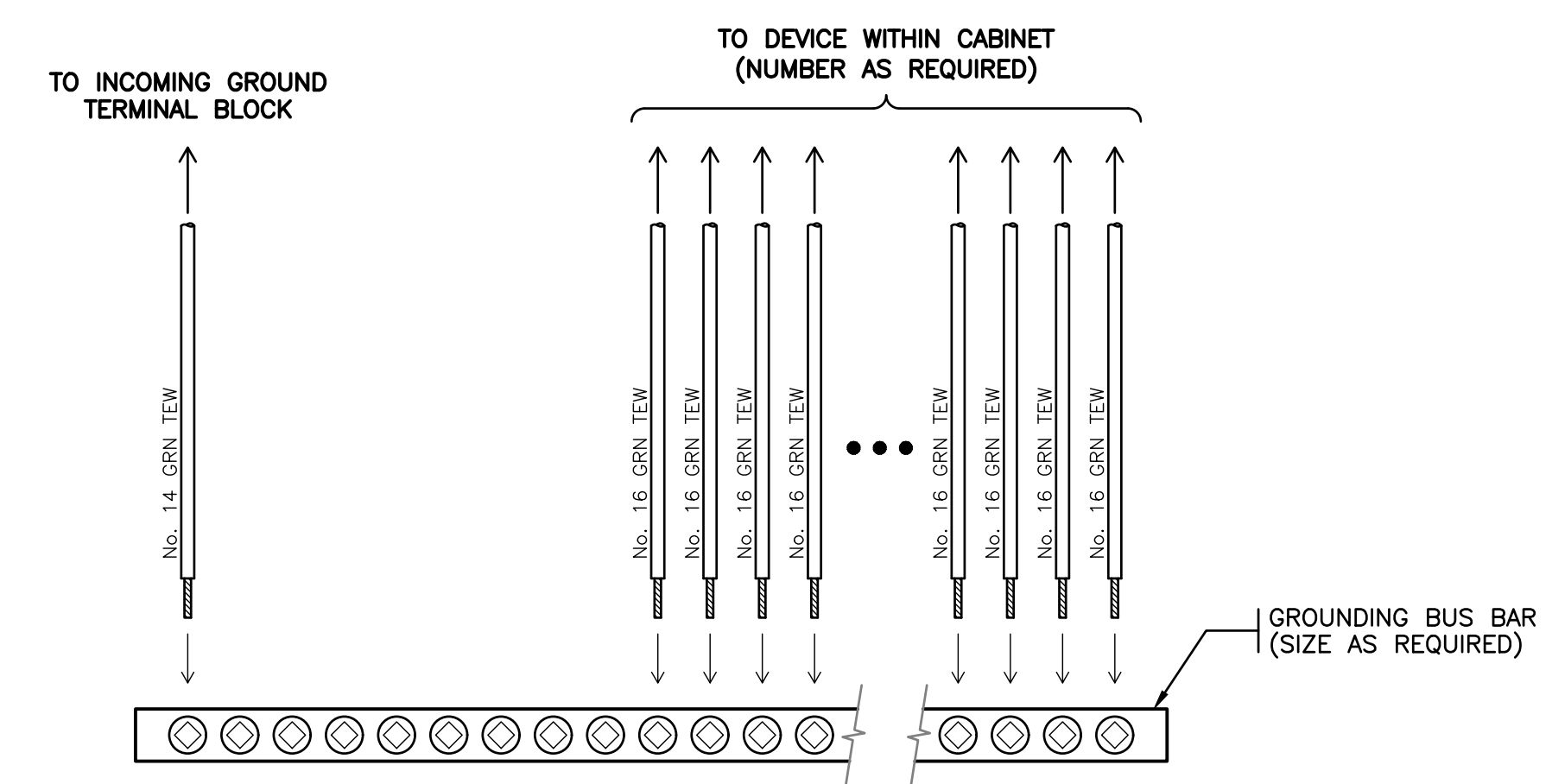
Sheet Number 20 of 21  
Project Number 18248 Drawing Number E20 Revision 1



DETAIL 1 TYPICAL 120V AC DISTRIBUTION  
N.T.S. - WIRING TERMINATION METHOD



DETAIL 2 TYPICAL DC DISTRIBUTION  
N.T.S. - WIRING TERMINATION METHOD



DETAIL 3 TYPICAL MASTER GROUND BUS  
N.T.S. - TERMINATION METHOD

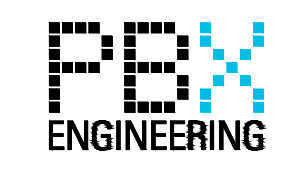
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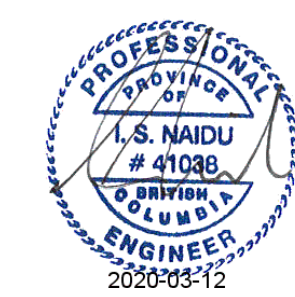
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GREENWOOD PUMPSTATION  
TYPICAL PLC/RTU CABINET WIRING TERMINATIONS (2 OF 2)

|                |                |
|----------------|----------------|
| Sheet Number   | 21 of 21       |
| Project Number | Drawing Number |
| 18248          | E21            |
| Revision       | 1              |