NORTH CHARLESTON SEWER DISTRICT
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Weston & Sampson
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NORTH CHARLESTON SEWER DISTRICT

PURCHASING DEPARTMENT

Purchasing Manager: Kimberly Caver, P.O. Box 63009 or
7225 Stall Road (BLDG C), North Charleston, SC 29419
PHONE: (843) 764-2653

TO: All Prospective Offerors

FROM: Kimberly Caver, Purchasing Manager

RFP TITLE: Turkey Creek Pump Station Upgrade

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ADDENDUM NUMBER 2 – April 28, 2025 – 03 PAGES

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Acknowledge receipt of this addendum by inserting its number and date in the space provided on the BID FORM, Section 00 41 00 Page 2, for receipt of Addenda. Failure to do so may subject Bidder as non-responsive. This addendum should be attached to and become part of the Contract Documents.

Attachments to this Addendum:

1. Updated Plan Sheets G001, D102, and SK1
2. VFD & PLC control panel owner supplied data and drawings

Questions/Clarifications:

1. Plans reference pipe and pipe fittings shall be coated per section 33 34 00 which does not exist. Shall contractors follow section 09 90 00 for this work?
    - All painting and coating should follow section 09 90 00, plans corrected to reflect this.

2. Regarding the temporary bypass, the drawing calls for the primary pump to be electric-driven with secondary and back up to be diesel-driven, while the specs display that pumps may be electric or diesel powered. Is it acceptable to have a diesel-driven primary pump?
    - We are ok with either an electric or diesel pump as primary. The cost for the energy (whether through the temporary power connection from Dominion, or diesel fuel) is the burden of the contractor.

3. Regarding the temporary bypass, the spec displays that one standby pump system of each size be maintained onsite. Does that mean N+1?
    - As far as redundancy for the bypass pumping configuration. We only want to require that they have/there is redundancy built in so that if any one of the pumps in their configuration (primary or secondary) goes down, that they still have one backup pump that would afford them the ability to handle the bypass flows as required by the plans

4. Bar Screens: The notes indicate to replace the Bar Screens with Stainless Steel Bar Screens in each channel. However, the drawing shows only one section being replaced in each channel.
   Question: Are we replacing all the screens in the channels, or just one on each side?
    - Only one section of screens is being replaced in each channel, and is appropriately marked on the plans.

5. Exterior Paint: The note on the drawings that addresses exterior paint states to paint all vertical concrete surfaces & exposed piping. However, the schedule of values indicates to paint all paintable non-brick surfaces.
   Question: Can you provide a more detailed scope regarding exterior paint?
    - Exposed piping and concrete sides on the pumpstation shall be coated in accordance with spec section 09 90 00.

6. Would the owner consider I&I Guard-PRF an improved polyurethane inject grout per Section 03 64 01 Part 2.01?
    - It is not approved at this time.

7. Would the owner consider Quadex Structure Guard an approved epoxy liner for Wet Well Rehabilitation?
    - Structure Guard, as manufactured by Quadex is approved with a minimum finished thickness of 250 mil (1/4-inch)

8. It appears in the coating spec that there is a section for coating the channel drop pipe. There doesn't appear to be one at this station and it could be a carry-over from another project. Please confirm.
    - This is a standard specification section on wetwell rehab, this is not expected to be used on this project

9. There appears to be a section about exposed steel coating. Only situation it appears that there is exposed steel is the hoist, but that isn't called for on the plans. Confirm this is carry-over as well.
    - This is a standard specification section on wetwell rehab, this is not expected to be used on this project

10. Sheet D101 Key Note #6 on Plans talks about sand blasting and the presence of asbestos, confirm what we are directing the contractor to do and what does/does not need to be sand blasted.

- Refer to the asbestos report in the appendix to identify areas with and without asbestos. Any area identified by the report should remain undisturbed.

<u>The following changes are made to the Contract Documents:</u>

Plans:

1. Sheets G001, D102, and SK1 have been updated. Replace these sheets with the updated sheets provided in this addendum.

Specifications:

1. Addition to Appendix E - VFD & PLC control panel owner supplied data and drawings

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END ADDENDUM NUMBER 2

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GENERAL CONSTRUCTION NOTES:

1. THE BASE MAP, PROPERTY LINE, EXISTING CONDITIONS, AND EXISTING UTILITIES WERE TAKEN FROM RECORD/CONSTRUCTION DRAWINGS PROVIDED BY THE OWNER ALONG WITH SUPPLEMENTAL SITE SURVEY AND SURFICIAL FIELD OBSERVATIONS FROM THE ENGINEER. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF FIELD MEASUREMENTS OR SIZES SIGNIFICANTLY DIFFER FROM THAT SHOWN ON THE PLANS. CHANGE ORDERS WILL NOT BE GIVEN FOR ORDERED MATERIALS THAT WERE NOT, OR WERE INCORRECTLY, MEASURED PRIOR TO ORDERING.
2. WASTEWATER INSTALLATION SHALL BE IN ACCORDANCE WITH TEN STATES STANDARDS, SCDHEC GUIDELINES, AND NCSD STANDARDS FOR SANITARY SEWER SYSTEMS.
3. THE PUMP STATION SITE SHALL REMAIN SECURED DURING ALL CONSTRUCTION ACTIVITIES. AT NO TIME SHALL THE PUMP STATION BE LEFT OPEN OR UNSECURED WHILE THE SITE IS UNATTENDED BY THE CONTRACTOR'S PERSONNEL. WORK SPACE AND PUMP STATION SECURITY IS THE RESPONSIBILITY OF THE CONTRACTOR.
4. ALL MATERIALS SHALL CONFORM TO NCSD SPECIFICATIONS AS TO TYPE AND DESIGN.
5. CONTRACTOR SHALL NOT ORDER MATERIALS UNTIL APPROVED SHOP DRAWING HAS BEEN ISSUED BY THE ENGINEER.
6. SEE "LIMITED ASBESTOS SURVEY REPORT" IN THE APPENDICES SECTION OF THE PROJECT MANUAL. CONTRACTOR SHALL FOLLOW ALL REQUIREMENTS AS OUTLINED IN THIS REPORT.

6.1. IF ASBESTOS ABATEMENT IS TO OCCUR, CONTRACTOR SHALL BE LICENSED THROUGH SCDHEC FOR ASBESTOS ABATEMENT.

6.2. CONTRACTOR SHALL FOLLOW ALL FEDERAL, LOCAL, AND STATE REGULATIONS (INCLUDING BUT NOT LIMITED TO USEPA, SCDHEC REGULATION 61-86.1, OSHA, CHARLESTON COUNTY, AND CITY OF NORTH CHARLESTON), REGARDING WORKING WITH ACM (ASBESTOS CONTAINING MATERIALS).

6.2.1. IF ASBESTOS CONTAINING MATERIALS ARE DISTURBED, LICENSED PROFESSIONALS MUST:

6.2.1.1. ASSESS ASBESTOS LEVELS

6.2.1.2. MONITOR EXPOSURE LEVELS TO ENSURE IT IS UNDER THE PERMISSIBLE EXPOSURE LIMIT

6.2.1.3. ESTABLISH ENGINEERING CONTROLS AND WORK PRACTICES

6.2.1.3.1. CONTRACTOR SHALL ENCLOSE OR ISOLATE THE WORK AREA (AREA WHERE ASBESTOS RELATED WORK OR REMOVAL OPERATIONS ARE PERFORMED) TO PREVENT THE SPREAD OF ASBESTOS DUST, FIBERS, OR DEBRIS, AND THE ENTRY OF UNAUTHORIZED PERSONNEL. THIS WORK AREA IS REGULATED BY CFR 1926. THIS WORK AREA IS CONSIDERED A CONTAMINATED SPACE BETWEEN THE TIME PREPARATION BEGINS AND THE TIME THE AREA IS CERTIFIED CLEAN.

6.2.1.3.2. USE VENTILATION SYSTEMS EQUIPPED WITH HEPA FILTERS AND OTHER WORK PRACTICES TO REDUCE LEVELS OF ASBESTOS IN THE AIR

6.2.1.3.3. DISPOSE OF ASBESTOS CONTAINING MATERIALS IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS

6.3. CONTRACTOR MUST PROVIDE SCDHEC WITH WRITTEN NOTIFICATION OF PLANNED ABATEMENT AND REMOVAL ACTIVITIES PRIOR TO THE COMMENCEMENT OF ACTIVITIES (4 DAYS FOR NON-FRIABLE, 10 DAYS FOR FRIABLE).

7. EXISTING ELECTRIC MONORAIL CRANE WILL BE AVAILABE AT SITE FOR USE DURING CONSTRUCTION. MAXIMUM MONORAIL CAPACITIES WILL BE APPROXIMATELY 6,000 LBS.
8. CONTRACTOR IS RESPONSIBLE FOR TRANSPORTING WET WELL DEBRIS FROM THE PUMP STATION TO THE FELIX C. DAVIS WASTEWATER TREATMENT PLANT. THE CONTRACTOR SHALL DECANT SLUDGE AS MUCH AS POSSIBLE PRIOR TO REMOVAL FROM WETWELL AND DUMPING.THE STATION MUST BE ON BY-PASS FOR THIS STEP.
9. CONTRACTOR IS RESPONSIBLE FOR PICKING UP, INCLUDING CRANE AND RIGGING, AND TRANSPORTING ANY EQUIPMENT/MATERIALS THAT ARE PROVIDED BY NCSD. CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR ALL EQUIPMENT/MATERIALS ONCE THEY ARE PICKED UP FROM NCSD. LOGISTICS SHALL BE COORDINATED WITH NCSD.
10. FOR ALL OWNER PROVIDED MATERIALS, CONTRACTOR SHALL REVIEW OWNER'S PURCHASE ORDERS (PROVIDED IN THE PROJECT MANUAL) AND WILL BE RESPONSIBLE FOR FILLING ANY GAPS BETWEEN OWNER PROVIDED MATERIAL AND THE SPECIFICATIONS. CONTRACTOR WILL BE RESPONSIBLE TO PROVIDE ANY ADDITIONAL MATERIALS NEEDED TO COMPLETE INSTALLATION AND SHALL PROPERLY INSTALL ALL OWNER PROVIDED MATERIALS.
11. ANY QUANTITIES SHOWN ON PLANS ARE FOR COMPARATIVE BIDDING PURPOSES ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VISIT THE PROJECT SITE TO VERIFY ALL QUANTITIES AND CONDITIONS PRIOR TO SUBMITTING BID.
12. JOBSITE SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR.
13. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER.

CONSTRUCTION SEQUENCING:

1. PROVIDE SCHEDULE OF PROPOSED WORK ACTIVITIES TO OWNER AND ENGINEER PRIOR TO BEGINNING ANY WORK ACTIVITY.
2. MOBILIZE TO TURKEY CREEK PUMP STATION.
3. PERFORM ALL WORK THAT CAN BE DONE IN PREPARATION FOR, AND PRIOR TO, DE-ENERGIZING THE PUMP STATION.
4. CONTRACTOR SHALL WORK IN A DILIGENT MANNER AS TO MINIMIZE THE TIME THAT A PUMP STATION IS DE-ENERGIZED AND ON BYPASS.
5. ONCE ALL PROPOSED WORK AT ALL PUMP STATIONS HAS BEEN COMPLETED, CONTRACTOR SHALL PROVIDE RECORD DRAWINGS TO OWNER AND ENGINEER AND COMPLETE ALL REMAINING TASKS NEEDED TO CLOSEOUT THE PROJECT AS SPECIFIED IN THE CONTRACT DOCUMENTS.

LEGEND: (SYMBOLS ARE NOT TO SCALE AND ARE SHOWN LARGER ON THE PLANS FOR CLARITY)

EXISTING

- TBM (TEMPORARY BENCH MARK)
- IP — PROPERTY IRON PIN
- LP — LIGHT POLE
- PP — POWER POLES
- >> — GUY WIRES
- S — SEWER MANHOLE
- OHP — OVERHEAD POWER LINE
- x — FENCELINE
- x — GATE POST
- PROPERTY LINES
- 10 — CONTOUR
- PAVEMENT
- CONCRETE
- GATE VALVE
- CHECK VALVE
- PUMP
- FLANGED PIPE
- RPZ — REDUCED PRESSURE ZONE
- WM — WATER METER

PROPOSED

- x — GATE POST
- KNIFE VALVE
- KNIFE VALVE
- PLUG VALVE
- PLUG VALVE
- CHECK VALVE
- PUMP
- PUMP
- FLANGED PIPE
- x — FENCELINE
- LOD — LIMIT OF DISTURBANCE
- SF — SILT FENCE
- CONCRETE
- DEMOLITION
- GRAVEL
- PAVEMENT

ABBREVIATIONS

ARV	AIR RELEASE VALVE
DIP	DUCTILE IRON PIPE
FOG	FATS, OILS, GREASE
FM	SEWER FORCE MAIN
GRAVITY	GRAVITY SEWER MAIN
IE	INVERT ELEVATION
NCSD	NORTH CHARLESTON SEWER DISTRICT
SCDHEC	SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
SS	SANITARY SEWER

PUMP STATION NOTES:

1. LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE AS SHOWN. CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES FOUND IN THE FIELD OR ON THE DRAWINGS PRIOR TO BEGINNING OR CONTINUING WORK.
2. ANY DEVIATIONS FROM THE CONSTRUCTION PLANS SHALL BE APPROVED IN WRITING BY NCSD.
3. CONNECTION TO EXISTING SEWER SYSTEM FOR BYPASS PUMPING SHALL BE MADE IN THE PRESENCE OF NCSD PERSONNEL WITH AT LEAST 72 HOURS ADVANCED NOTICE.
4. CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND COORDINATING WITH THE OWNER, ENGINEER, SUBCONTRACTORS, VENDORS, AND ALL OTHER ASSOCIATED PARTIES FOR PUMP, PLC, MECHANICAL BAR SCREEN AND ALL OTHER EQUIPMENT STARTUPS.
5. CONTRACTOR SHALL KEEP AND MAINTAIN AN UPDATED SET OF RED-LINED PLANS OF THE CONSTRUCTION DRAWINGS ON SITE AT ALL TIMES.
6. UPON COMPLETION OF THE WORK, THE FOLLOWING APPROVAL PROCEDURES MUST BE FOLLOWED:

6.A. THE CONTRACTOR SHALL SCHEDULE ALL REQUIRED TESTS AND INSPECTIONS WITH NCSD AT LEAST 72 HOURS IN ADVANCE

6.B. THE CONTRACTOR SHALL SUPPLY TO THE OWNER'S ENGINEER AN AS-BUILT SURVEY THAT IS TO SCALE AND HAS ALL REQUIRED MEASUREMENTS CLEARLY DISPLAYED SO THAT ENGINEER CAN DRAFT THE RECORD DRAWINGS.

6.C. THE ENGINEER SHALL SUBMIT THE TEST RESULTS, RECORD DRAWINGS, AND ALL OTHER REQUIRED DOCUMENTS TO NCSD FOR REVIEW AND APPROVAL.

6.D. THE ENGINEER SHALL SCHEDULE A FINAL INSPECTION WITH NCSD AT LEAST 72 HOURS IN ADVANCE.

6.E. THE PROJECT SHALL BE COMMISSIONED IN ACCORDANCE WITH THE RELEVANT SPECIFICATION SECTION.

7. ALL FORCE MAIN PIPING AND FITTINGS SHALL BE PRESSURE CLASS 350 DUCTILE IRON. ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE LINED WITH TNEMEC PERMA SHIELD 431. PIPE AND FITTINGS SHALL BE PAINTED IN ACCORDANCE WITH SPECIFICATION SECTION 09 90 00. ALL DUCTILE IRON PIPE AND FITTINGS THAT ARE BURIED SHALL HAVE A BITUMASTIC EXTERNAL COATING. CONTRACTOR SHALL INSTALL ALL OWNER PROVIDED MATERIALS. CONTRACTOR SHALL FURNISH AND INSTALL ALL MATERIALS (HARDWARE, PIPING, FITTINGS, ETC.) THAT ARE NOT OWNER PROVIDED, BUT ARE NEEDED IN ORDER TO COMPLETE CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. 5
8. ALL METAL STRUCTURES SHALL BE GROUNDED, INCLUDING BUT NOT LIMITED TO THE CONTROL PANEL AND GENERATOR PER NCSD GROUNDING SPECIFICATIONS.
9. CONTRACTOR SHALL PROVIDE AND USE A SCDHEC APPROVED BACKFLOW DEVICE WHEN USING WATER SUPPLY AVAILABLE AT EACH PUMP STATION.
10. CONTRACTOR SHALL PATCH ALL VOIDS/CORES IN WALLS AND FLOORS RESULTANT FROM THE REMOVAL OF EXISTING CONDUITS, PIPING, OR FROM ANY OTHER REASON DURING CONSTRUCTION.
11. ALL PIPING HARDWARE SHALL BE 316 STAINLESS STEEL.

DEMOLITION & SITE PREPARATION NOTES:

1. ONCE THE ITEMS HAVE BEEN DEMOLISHED, CONTRACTOR SHALL CONTACT NCSD REPRESENTATIVE TO GIVE THEM FIRST OPTION OF SALVAGING/KEEPING THE ITEMS REMOVED. IF NCSD DECLINES THEN ALL DEMOLISHED ITEMS BECOME PROPERTY OF THE CONTRACTOR AND ARE TO BE REMOVED AND DISPOSED OF OFF-SITE IN A SATISFACTORY MANNER.
2. ALL SURFACE AREAS DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO PROVIDE POSITIVE DRAINAGE AWAY FROM PUMP STATION. CONTRACTOR SHALL SEED AND RESTORE SITE UPON COMPLETION.
3. CONTRACTOR SHALL BE HELD SOLELY RESPONSIBLE FOR ANY EXISTING EQUIPMENT/FEATURES MARKED "TO REMAIN" OR NOT TO BE DEMOLISHED THAT IS NOT FUNCTIONING AS IT SHOULD FOLLOWING COMPLETION OF CONSTRUCTION. THIS EQUIPMENT SHALL BE REPLACED OR RESTORED TO ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE OWNER. PROTECTION OF SUCH EQUIPMENT IS THE RESPONSIBILITY OF THE CONTRACTOR
4. AREAS BACKFILLED AFTER DEMOLITION OF STRUCTURE(S) AND/OR ASSOCIATED APPURTENANCES SHALL BE COMPACTED TO MEET 95% MODIFIED PROCTOR.
5. ALL EXISTING SITE FEATURES TO REMAIN SHALL BE PROTECTED THROUGHOUT THE CONSTRUCTION PERIOD. ANY FEATURES DAMAGED DURING CONSTRUCTION OPERATIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE AT NO ADDITIONAL COST.
6. DEMOLITION INCLUDES REMOVAL AND LEGAL DISPOSAL.

STANDARD EROSION CONTROL NOTES:

1. IF NECESSARY, SLOPES, WHICH EXCEED EIGHT (8) VERTICAL FEET SHOULD BE STABILIZED WITH SYNTHETIC OR VEGETATIVE MATS, IN ADDITION TO HYDROSEEDING. IT MAY BE NECESSARY TO INSTALL TEMPORARY SLOPE DRAINS DURING CONSTRUCTION. TEMPORARY BERMS MAY BE NEEDED UNTIL THE SLOPE IS BROUGHT TO GRADE.
2. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) DAYS AFTER WORK HAS CEASED, EXCEPT AS STATED BELOW.
   - WHERE STABILIZATION BY THE 14TH DAY IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS STABILIZATION MEASURES MUST BE INITIATED AS SOON AS PRACTICABLE.
   - WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH-DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 14 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE.
3. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED ONCE CALENDAR EVERY WEEK. IF PERIODIC INSPECTION OR OTHER INFORMATION INDICATES THAT A BMP HAS BEEN INAPPROPRIATELY OR INCORRECTLY INSTALLED, THE PERMITTEE MUST ADDRESS THE NECESSARY REPLACEMENT OR MODIFICATION REQUIRED TO CORRECT THE BMP WITHIN 48 HOURS OF IDENTIFICATION.
4. PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED, AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE UTILITY INSTALLATION. FILL, COVER, AND TEMPORARY SEEDING AT THE END OF EACH DAY ARE RECOMMENDED. IF WATER IS ENCOUNTERED WHILE TRENCHING, THE WATER SHOULD BE FILTERED TO REMOVE ANY SEDIMENTS BEFORE BEING PUMPED BACK INTO ANY WATERS OF THE STATE.
5. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.
6. THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO PAVED ROADWAY(S) FROM CONSTRUCTION AREAS AND THE GENERATION OF DUST. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM PAVEMENT, AS MAY BE REQUIRED.
7. RESIDENTIAL SUBDIVISIONS REQUIRE EROSION CONTROL FEATURES FOR INFRASTRUCTURE AS WELL AS FOR INDIVIDUAL LOT CONSTRUCTION. INDIVIDUAL PROPERTY OWNERS SHALL FOLLOW THESE PLANS DURING CONSTRUCTION OR OBTAIN APPROVAL OF AN INDIVIDUAL PLAN IN ACCORDANCE WITH S.C REG. 72-300 ET SEQ. AND SCR100000.
8. TEMPORARY DIVERSION BERMS AND/OR DITCHES WILL BE PROVIDED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UPSLOPE RUNOFF AND/OR TO DIVERT SEDIMENT-LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS.
9. ALL WATERS OF THE STATE (WOS), INCLUDING WETLANDS, ARE TO BE FLAGGED OR OTHERWISE CLEARLY MARKED IN THE FIELD. A DOUBLE ROW OF SILT FENCE IS TO BE INSTALLED IN ALL AREAS WHERE A 50-FOOT BUFFER CAN'T BE MAINTAINED BETWEEN THE DISTURBED AREA AND ALL WOS. A 10-FOOT BUFFER SHOULD BE MAINTAINED BETWEEN THE LAST ROW OF SILT FENCE AND ALL WOS.
10. LITTER, CONSTRUCTION DEBRIS, OILS, FUELS, AND BUILDING PRODUCTS WITH SIGNIFICANT POTENTIAL FOR IMPACT (SUCH AS STOCKPILES OF FRESHLY TREATED LUMBER) AND CONSTRUCTION CHEMICALS THAT COULD BE EXPOSED TO STORM WATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE IN STORM WATER DISCHARGES.
11. INITIATE STABILIZATION MEASURES ON ANY EXPOSED STEEP SLOPE (3H:1V OR GREATER) WHERE LAND-DISTURBING ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED, AND WILL NOT RESUME FOR A PERIOD OF 7 CALENDAR DAYS.
12. MINIMIZE SOIL COMPACTION AND, UNLESS INFEASIBLE, PRESERVE TOPSOIL.
13. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING, WHEEL WASH WATER, AND OTHER WASH WATERS. WASH WATERS MUST BE TREATED IN A SEDIMENT BASIN OR ALTERNATIVE CONTROL THAT PROVIDES EQUIVALENT OR BETTER TREATMENT PRIOR TO DISCHARGE;
14. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM DEWATERING OF TRENCHES AND EXCAVATED AREAS. THESE DISCHARGES ARE TO BE ROUTED THROUGH APPROPRIATE BMPS (SEDIMENT BASIN, FILTER BAG, ETC.).
15. THE FOLLOWING DISCHARGES FROM SITES ARE PROHIBITED:
   - WASTEWATER FROM WASHOUT OF CONCRETE, UNLESS MANAGED BY AN APPROPRIATE CONTROL;
   - WASTEWATER FROM WASHOUT AND CLEANOUT OF STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS;
   - FUELS, OILS, OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE;
   - AND SOAPS OR SOLVENTS USED IN VEHICLE AND EQUIPMENT WASHING.
16. IF EXISTING BMPS NEED TO BE MODIFIED OR IF ADDITIONAL BMPS ARE NECESSARY TO COMPLY WITH THE REQUIREMENTS OF THIS PERMIT AND/OR SC'S WATER QUALITY STANDARDS, IMPLEMENTATION MUST BE COMPLETED BEFORE THE NEXT STORM EVENT WHENEVER PRACTICABLE. IF IMPLEMENTATION BEFORE THE NEXT STORM EVENT IS IMPRACTICABLE, THE SITUATION MUST BE DOCUMENTED IN THE SWPPP AND ALTERNATIVE BMPS MUST BE IMPLEMENTED AS SOON AS REASONABLY POSSIBLE.

WETWELL REHABILITATION NOTES:

1. THIS PROJECT WILL NOT CONSIST OF A "FULL" WETWELL LINING SYSTEM REHABILITATION.
2. NCSD PARTIALLY REHABILITATED THE LINING SYSTEM IN 2016. THE REHAB CONSISTED OF REMOVING LOOSE/DELAMINATED MATERIAL AND PATCHING AREAS WITH RAVEN LINING, OR AN APPROVED EPOXY LINING THAT IS COMPATIBLE TO OVERLAY THE EXISTING RAVEN 401 LINER.
3. NCSD ESTIMATES ABOUT 60% OF THE WETWELL WAS REHABILITATED.
4. THE BOTTOM OF THE INFLUENT CHANNEL SLAB, THE INFLUENT CHANNEL ITSELF, AND THE "CHAMBER" AREA BETWEEN THE SIDEWALLS OF THE STATION AND THE INFLUENT CHANNEL WERE ALMOST FULLY REHABILITATED.
5. THE CONTRACTOR SHALL DECANT AS MUCH WATER FROM THE WET WELL AND REMOVE AS MUCH OF THE FLOATING FOG AS POSSIBLE TO ALLOW A VISUAL INSPECTION AND MEASUREMENT OF THE AMOUNT OF SLUDGE ON THE BOTTOM OF THE WET WELL. AT THAT TIME THE CONTRACTOR AND OWNER WILL AGREE ON THE QUANTITY OF SOLIDS TO BE REMOVED. FOR BIDDING PURPOSES, THE CONTRACTOR SHALL ASSUME A TOTAL OF 44 CUBIC YEARDS OF SLUDGE TO BE REMOVED (INCLUDING THE SURFACE FOG). THE BID AMOUNT WILL BE ADJUSTED BASED ON THE UNIT PRICE FOR REMOVAL OF SOLIDS PROVIDED IN THE BID FORM.
6. ONCE ALL SLUDGE IS REMOVED, CONTRACTOR SHALL WASH DOWN ALL SURFACES INSIDE OF THE WETWELL AND INFLUENT CHANNEL FOR A VISUAL INSPECTION OF THE LINING.
7. CONTRACTOR, OWNER, AND LINING SUBCONTRACTOR SHALL THEN COMPLETE AN INSPECTION OF THE EXISTING WETWELL AND INFLUENT CHANNEL LINING SYSTEM.
8. CONTRACTOR SHALL REMOVE ALL DAMAGED, DE-LAMINATED, OR COMPROMISED COATINGS FROM THE POINT OF IMPAIRMENT OUT TO SOUND LINING. CONTRACTOR SHALL PEFORM POINT REPAIRS ON THESE AREAS IN ACCORDANCE WITH SPECIFICATION SECTION 03 01 30.61.
9. CONTRACTOR SHALL ASSUME 500 SQUARE FEET OF REPAIR (20% OF THE SURFACE AREA IN THE INFLUENT CHANNELS AND WETWELL). IF SURFACE AREA OF REHABILITATED LINING EXCEEDS 500 SQUARE FEET, CONTRACTOR WILL BE COMPENSATED FOR EACH SQUARE FOOT AT THE RATE OUTLINED IN THE BID FORM.
10. IF THE WETWELL IS IN NEED OF A FULL REHAB, NCSD WILL PURSUE THIS AT A LATER DATE AND THE WETWELL LINING REHABILITATION WILL BE REMOVED FROM THE SCOPE OF WORK.

OWNER PROVIDED MATERIAL LIST

ITEM	QUANTITY
GENERATOR AND ALUMINUM PLATFORM	1
24" KNIFE GATE VALVES	3
20" CHECK VALVES	3
20" PLUG VALVES	3
AIR RELEASE VALVE	1
CHANNEL GRINDER	1
VFD'S, RVSS AND CABINETRY	3
SUMP PUMP	1
SUMP PUMP CONTROL PANEL	1
LEVEL TRANSDUCERS AND LEVEL PROBE	1
EXTERIOR ENCLOSED CIRCUIT BREAKER	1
PORTABLE GENERATOR CONNECTION	1
AUTOMATIC TRANSFER SWITCH	1
DISTRIBUTION PANEL	1
PANELBOARD	1
PLC CONTROL PANEL	1

Weston & Sampson
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www.westonandsampson.com

ISSUED FOR BID

SOUTH CAROLINA WESTON & SAMPSON ENGINEERS, INC. No. 4208 CERTIFICATE OF AUTHORIZATION
03/21/25

No.	Date	Dr.By	Ck.By	App.By	Description
5	4/22/2024	JDW	WRF	KRG	ADDENDUM NUMBER 2
4	3/27/2025	JDW	WRF	KRG	ADDENDUM NUMBER 1
3	3/21/2025	JDW	WRF	KRG	ISSUED FOR BID
2	3/7/2025	RCS	WRF	KRG	100% DESIGN
1	4/10/2024	BJR	WRF	KRG	90% DESIGN
0	8/10/2023	BJR	MEM	KRG	30% DESIGN

NORTH CHARLESTON, SOUTH CAROLINA
NORTH CHARLESTON SEWER DISTRICT

TURKEY CREEK PUMP STATION UPGRADE

CIVIL NOTES AND LEGEND

CADD NO.	SCALE:	CONTRACT:	JOB NO.	DR.BY	DSN.BY	CHK.BY	APP.BY
	NTS	-	ENG23-0243	BJR	BJR	WRF	KRG

FILE NO. -

G001

NOTES:

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY PIPING DIMENSIONS.

KEYNOTES:

1. INSTALL NEW 24" SUCTION AND 20" DISCHARGE LEGS FOR EACH PUMP (3X). NEW PLUG VALVES SHALL BE INSTALLED SUCH THAT THE SEAT END OF THE VALVE FACES TOWARDS THE DISCHARGE MANIFOLD PIPING FOR THE VALVES ON THE DISCHARGE SIDE OF THE PUMPS

2. RE-INSTALL EXISTING PUMPS.

3. INSTALL (6X, 2 FOR EACH PUMP) CONCRETE PUMP SUPPORT PIERS. SEE DETAILS.

4. ~~CONNECT NEW 316 SST PRESSURE TRANSDUCER PIPING TO EXISTING 3" LEVEL CONTROL PIPING INTO WET WELL. INSTALL NEW OWNER PROVIDED PRESSURE TRANSDUCER. SEE DETAIL ON SHEET D502.~~ 4

5. INSTALL NEW 3" SCHEDULE 80 PVC SUMP PUMP PIPING FROM EXISTING SUM PUMP TO THE WETWELL. PIPING SHALL BE CORED THROUGH THE WETWELL WALL AT THE EXISTING SUMP PUMP PIPING PENETRATION WITH A DOUBLE LINK SEAL. SUPPORT THE PIPE EVERY 5' WITH STAINLESS STEEL UNI-STRUT BRACKETS.

6. INSTALL (3X) FORMED CONCRETE PIPE SUPPORTS UNDER KNIFE GATE VALVES ON PUMP SUCTION LEGS. INSTALL NEW COURSE THREADED STAINLESS STEEL PIPE SUPPORTS UNDER NEW SUCTION AND DISCHARGE LEGS, AS WELL AS EXISTING HEADER PIPING.

7. AFTER REHABILITATION OF CHANNEL AND WETWELL, INSTALL NEW STAINLESS STEEL BAR SCREENS IN BOTH THE EAST AND WEST CHANNELS. THE FULL CHANNEL BAR SCREEN IN THE EAST CHANNEL WILL ATTACH TO THE BOTTOM OF THE CHANNEL AND WILL BE FLUSH WITH THE GRATING COVERING THE CHANNEL. THE OVER SCREEN FOR THE WEST CHANNEL WILL BE INSTALLED DOWNSTREAM OF THE NEW GRINDER. THERE SHOULD BE A 1/4-1/2" GAP BETWEEN THE GRINDER AND THE SCREEN TO ALLOW THE GRINDER TO BE REMOVED WITHOUT REMOVING THE SCREEN. THE CHANNEL DIMENSIONS ARE APPROXIMATELY 4 FT WIDE X 8 FT TALL, AND THE DOWNSTREAM SIDE OF THE GRINDER IS APPROXIMATELY 39" TALL. CONTRACTOR SHALL TAKE FIELD MEASUREMENTS TO CONFIRM DIMENSIONS BEFORE ORDERING THE SCREENS. SEE DETAIL OF SCREENS ON SHEET D501. INSTALL ANCHOR BOLTS REQUIRED FOR MOUNTING THE NEW SCREENS PRIOR TO REHABILITATION OF THE CHANNEL 4

8. PAINT ELECTRICAL ROOM, STAIRWELL CMU WALLS, AND NEWLY ENCLOSED ELECTRICAL ROOM FLOOR IN ACCORDANCE WITH SPECIFICATION SECTION 09 90 00.

9. INSTALL NEW ALUMINUM HANDRAILS ON TOP FLOOR AROUND STAIRWELL.

10. INSTALL NEW FLUSH SST HATCHES PER SHEET S200

11. ALL EXPOSED STATION DUCTILE IRON PIPING (NEW AND EXISTING, INTERIOR AND EXTERIOR) AND PUMP SUPPORTS SHALL BE PAINTED PER SPECIFICATION SECTION 09 90 00. THIS INCLUDES THE PUMP SKIRT BASE. EXPOSED STAINLESS STEEL SHALL NOT BE PAINTED. 5

12. CONTRACTOR SHALL PERFORM POINT REPAIRS ON ALL DAMAGED, DE-LAMINATED, OR COMPROMISED AREAS OF THE LEVEL A / LEVEL C LINING IN ACCORDANCE WITH SPECIFICATION SECTION 03 01 30.16. THIS INCLUDES REMOVAL OF UNSOUND MATERIAL, CONCRETE REPAIR, (MIN 1" CEMENTITIOUS LINING (LEVEL A), 125 MILS EPOXY COATING APPLICATION. COATING IS NOT NEEDED IN THE BOTTOM 5 FEET OF THE WETWELL.CONTRACTOR SHALL ASSUME 500 SQUARE FEET OF REPAIR (20% OF THE SURFACE AREA IN THE INFLUENT CHANNELS AND WETWELL). CLEAN AND COAT DROP PIPE IN ACCORDANCE WITH SPECIFICATION SECTION 09 90 00.

13. FURNISH AND INSTALL NEW IN LINE CERABAR PRESSURE TRANSDUCER AND TAP WITH DIAPHRAGM ISOLATOR ON DISCHARGE HEADER PIPE. SEE DETAILS

14. CONTRACTOR SHALL INSTALL NEW ELECTRICAL ROOM WALLS, SEE STRUCTURAL DETAIL SHEET. ALL SURFACES SHALL BE PRIMED AND COATED IN ACCORDANCE WITH THE PROJECT SPECIFICATION SECTION 09 90 00.

15. SEAL EXISTING GENERATOR CONDUIT PENETRATIONS WITH INJECTABLE CHEMICAL GROUT.

16. INSTALL ROOF HATCH OVER EXISTING GRINDER IN CHANNEL. SEE SHEETS S300 AND S301 FOR DETAILS. CONTRACTOR TO VERIFY LOCATION IN THE FIELD SO THAT THE HATCH IS CENTERED OVER THE GRINDER.

17. INSTALL NEW STAINLESS STEEL DOORS AS MANUFACTURED BY PS INDUSTRIES, MODEL SWGS, OR APPROVED EQUAL.

18. INSTALL NEW OWNER PROVIDED GRINDER WITH ADAPTER PLATE, INCLUDING NEW AC CONTROLLER TYING INTO NEW MCC PANEL. INSTALL ANCHOR BOLTS REQUIRED FOR MOUNTING THE NEW GRINDER PRIOR TO REHABILITATION OF THE CHANNEL 4

19. INSTALL NEW 3" SCH 80 DRAIN LINE WITH HANGERS. DIRECT DRAIN TO DISCHARGE INTO THE EXISTING SUMP. 4

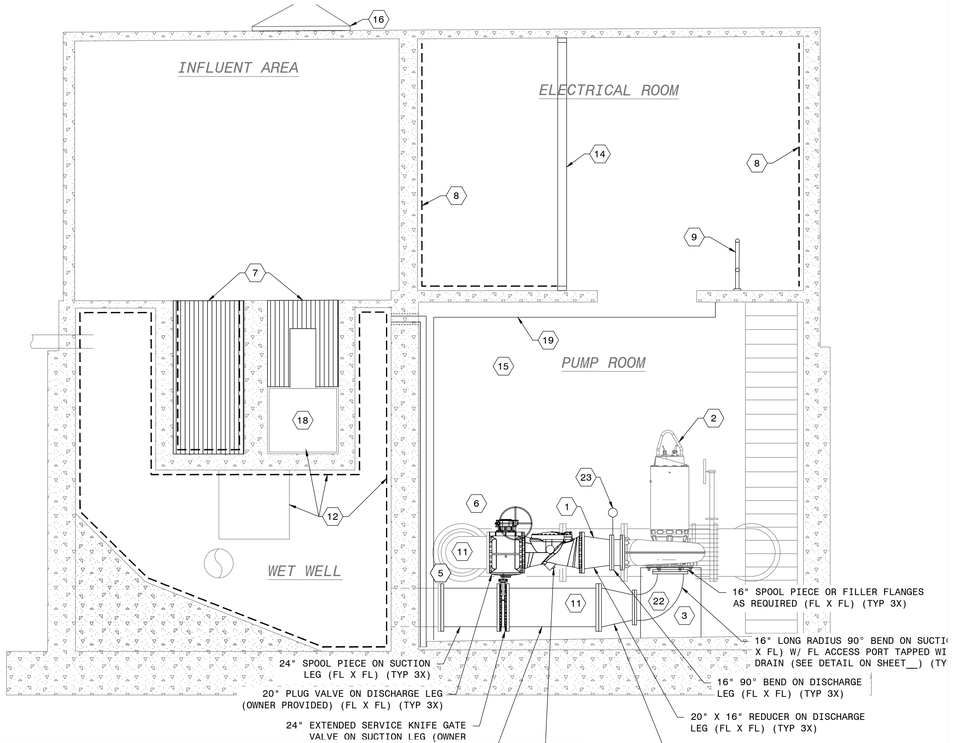
20. INSTALL NEW 4" SCH 80 ROOF DRAIN LINE WITH HANGERS. USE EXISTING PENETRATION THROUGH THE BUILDING WALL.

21. INSTALL NEW 1" PEX WATER SUPPLY PIPE. USE EXISTING WATER SUPPLY PENETRATION THROUGH OUTER WALL.

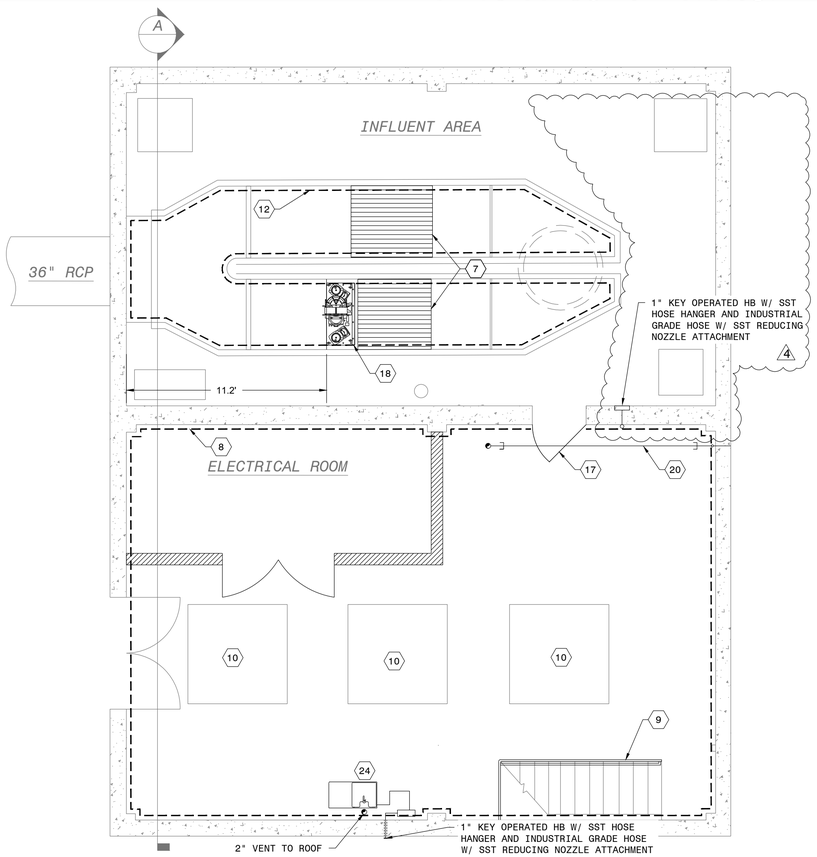
22. 90 DEG PUMP INLET FITTINGS SHALL HAV DRAINAGE/ACESS PORTS WITH A BLIND FLANGE COVER. FLANGE COVER SHALL BE TAPPED FOR 1-1/2" DRAINAGE HOSE ASSEMBLY TO BE ROUTED TO THE PUMP ROOM DRAINAGE THROUGH TO THE SUMP WELL.

23. INSTALL GLYCERIN FILLED PRESSURE GAUGES, 0-60 PSI RANGE, WITH 316 SST PRESSURE TAPS, 316 SST BLEED OFF DIAPHRAGM SEAL WITH BLACK RUBBER HOSES ROUTED TO THE PUMP ROOM DRAINAGE THROUGH TO THE SUMP WELL.

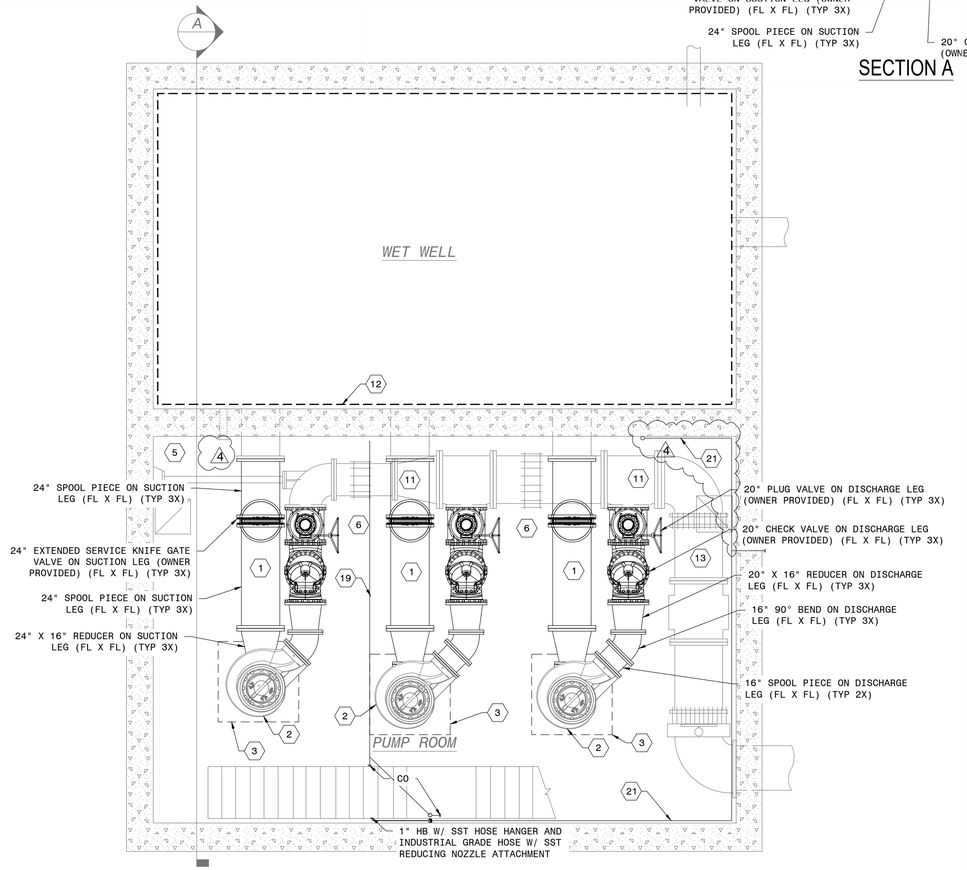
24. INSTALL NEW SST INDUSTRIAL GRADE SINK AND ELECTRIC TANKLESS WATER HEATER. SEE DETAILS AND NOTES ON SHEET D505.



SECTION A



INFLUENT ROOM AND ELECTRICAL ROOM FLOOR PLAN



PUMP ROOM FLOOR PLAN

GRAPHIC SCALE

4 0 2 4

(IN FEET)

1 inch = 4 ft.

Weston & Sampson
Weston & Sampson Engineers, Inc.
3955 Faber Place Dr., Suite 300
North Charleston, SC 29405
843.881.9804
800.SAMPSON
www.westonandsampson.com

ISSUED FOR BID

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER

WESTON & SAMPSON ENGINEERS, INC. No. 4208 CERTIFICATE OF AUTHORIZATION

03/21/25

No.	Date	Dr.By	Ck.By	App.By	Description
5	4/22/2024	JDW	WRF	KRG	ADDENDUM NUMBER 2
4	3/27/2025	JDW	WRF	KRG	ADDENDUM NUMBER 1
3	3/21/2025	JDW	WRF	KRG	ISSUED FOR BID
2	3/7/2025	RCS	WRF	KRG	100% DESIGN
1	4/10/2024	BJR	WRF	KRG	90% DESIGN
0	8/10/2023	BJR	MEM	KRG	30% DESIGN

NORTH CHARLESTON, SOUTH CAROLINA
NORTH CHARLESTON SEWER DISTRICT

TURKEY CREEK PUMP STATION UPGRADE

PROPOSED PROCESS PLAN

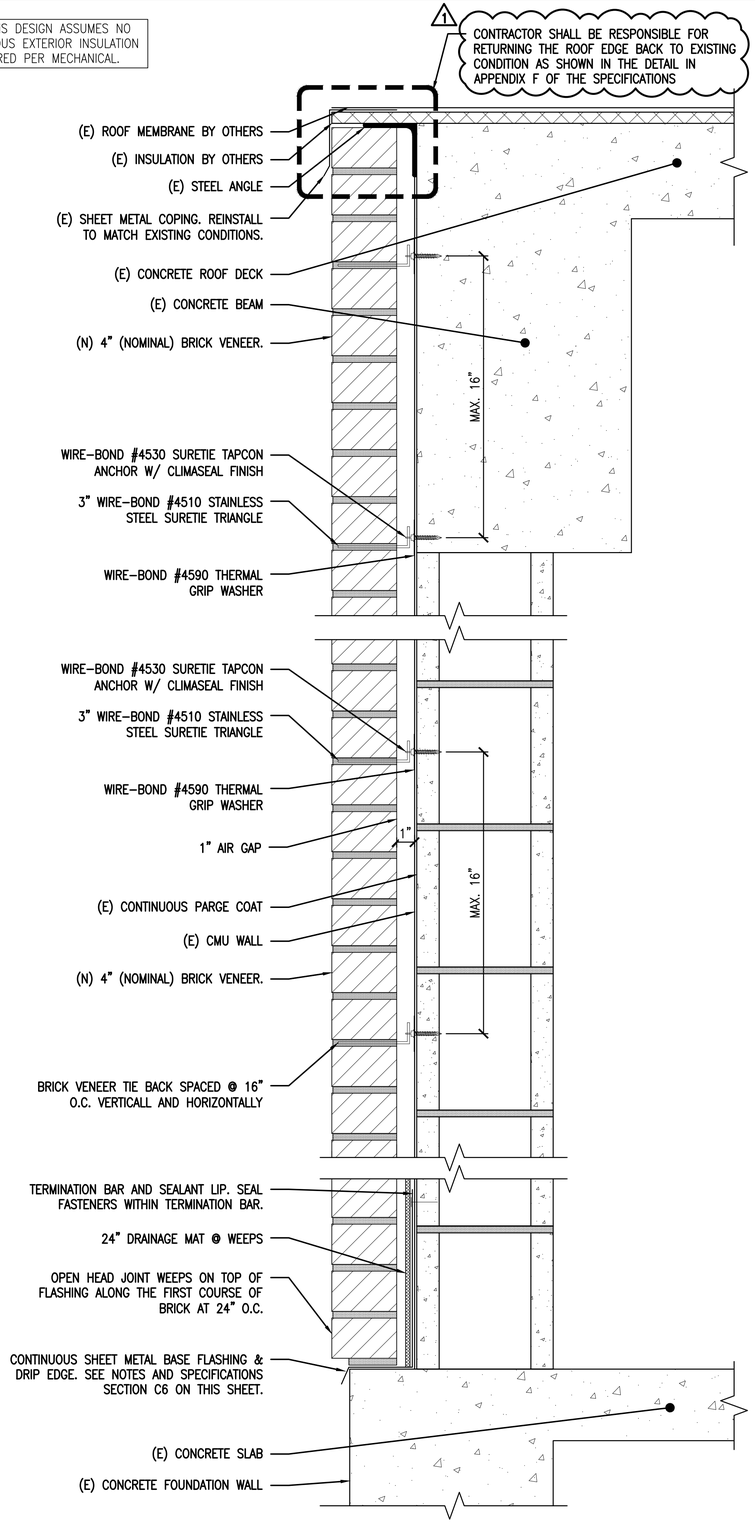
CADD NO.	SCALE:	CONTRACT:	JOB NO.	DR.BY	DSN.BY	CHK.BY	APP.BY
-	1" = 4'	-	ENG23-0243	BJR	BJR	WRF	KRG

D102

FILE NO. -

P:\SC\CHARLESTON\NCSD\TURKEY CREEK PS\03 DESIGN SERVICES\01 CIVIL\10 CAD\SHT DWG PLOTTED 4/28/2025 9:15:34 AM BY Wellmore, Joshua

NOTE: THIS DESIGN ASSUMES NO CONTINUOUS EXTERIOR INSULATION IS REQUIRED PER MECHANICAL.



1 WALL SECTION: BRICK VENEER REPLACEMENT
SCALE: 3" = 1'-0"

NOTES AND SPECIFICATIONS

Jason Gregorie Digitally signed by Jason Gregorie Date: 2025.04.21 15:21:07 -04'00'

A. GENERAL

1. THE PURPOSE OF THESE DRAWINGS IS TO ADDRESS EXTERIOR REPAIRS TO THE EXISTING STRUCTURE, LIMITED TO THE REMOVAL AND REPLACEMENT OF THE BRICK VENEER.
2. IT IS POSSIBLE THAT ADDITIONAL AND PREVIOUSLY UNKNOWN DAMAGE MAY BE UNCOVERED DURING THE WORK. CONTRACTOR SHALL NOTIFY ENGINEER OF ADDITIONAL DAMAGE IMMEDIATELY UPON BEING UNCOVERED SO THAT IT CAN BE EVALUATED.
3. ALL WORK SHALL CONFORM TO THE APPLICABLE BUILDING CODE, INDUSTRY STANDARDS, AND MANUFACTURERS' INSTALLATION INSTRUCTIONS.
4. CONTRACTOR IS RESPONSIBLE FOR ADEQUACY OF BRACING, SCAFFOLDING, SHORING, TEMPORARY SUPPORTS, ETC. DURING CONSTRUCTION.
5. CONTRACTOR SHALL PROTECT FROM DAMAGE THOSE PORTIONS OF THE EXISTING STRUCTURE, SITE, AND ADJACENT PROPERTIES WHICH ARE TO REMAIN.
6. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND DIMENSIONS AND SHALL NOTIFY ENGINEER OF ANY CONDITIONS WHICH DO NOT COMPLY WITH THESE PLANS.
7. CONTRACTOR SHALL ENSURE THAT LAY DOWN, STORAGE, AND INSTALLATION PROCEDURES OF ALL CONSTRUCTION MATERIALS ARE IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS.
8. CONTRACTOR SHALL HAUL OFF AND PROPERLY DISPOSE OF ALL DEBRIS RESULTING FROM THE WORK.
9. NO PRODUCT/MATERIAL SUBSTITUTIONS SHALL BE PERMITTED WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
10. SCALES PROVIDED IN THESE DRAWINGS ARE FOR GENERAL INFORMATION PURPOSES ONLY. CONTRACTOR SHALL FIELD MEASURE EXISTING DIMENSIONS PRIOR TO ORDERING MATERIAL.
11. THESE PLANS DEPICT BOTH EXISTING (E) AND NEW (N) CONDITIONS. (E) DENOTES EXISTING. ALL OTHER COMPONENTS SHALL BE CONSIDERED NEW.

B. DESIGN

1. CODES

APPLICABLE: 2021 INTERNATIONAL EXISTING BUILDING CODE (2021 IEBC)
2021 INTERNATIONAL BUILDING CODE (2021 IBC)
TMS 402/602-16 BUILDING CODE REQUIREMENTS AND SPECIFICATIONS FOR MASONRY STRUCTURES (TMS 402/602)
BRICK INDUSTRY ASSOCIATION (BIA) TECH NOTE 7

2. WIND LOADS: ASCE 7-16

V = 153 MPH
RISK CATEGORY III
EXPOSURE C

COMPONENTS & CLADDING (C&C): Kd = 0.85, Kzt = 1.0, Kz = Kh = 0.86, qh = 43.8 PSF, GC_{pi} = ±0.18;

WALL DESIGN PRESSURES (10 SF OR LESS TRIBUTARY AREA):
ZONE 4: P = +48.0 / -52.0 PSF (ULTIMATE)
ZONE 4: P = +29.0 / -32.0 PSF (ALLOWABLE)
ZONE 5: P = +48.0 / -64.0 PSF (ULTIMATE)
ZONE 5: P = +29.0 / -39.0 PSF (ALLOWABLE)

3. SEISMIC LOADS: 2021 IBC / ASCE 7-16 / ASCE DESIGN HAZARD TOOL RISK CATEGORY III, SITE SOIL CLASS D (DEFAULT)

APPLICABLE SEISMIC DESIGN CATEGORY: D

SITE HAZARD RESPONSE SPECTRUM PARAMETERS:

S_s = 1.78 g, S_1 = 0.519 g

S_{MS} = 2.136 g

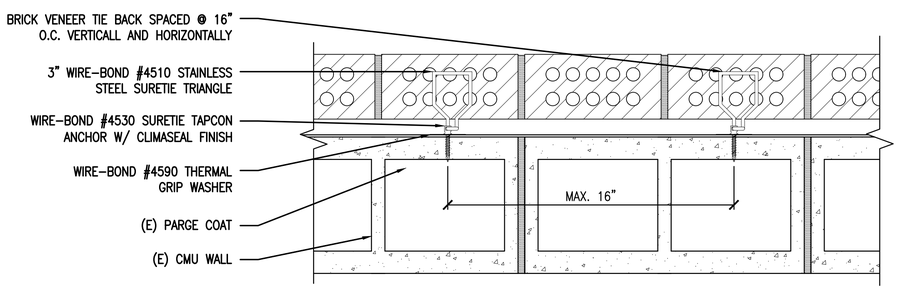
S_{DS} = 1.424 g

C. CLAY MASONRY (BRICK VENEER)

1. MASONRY CONSTRUCTION AND MATERIALS SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES" (TMS 402-16) AND "SPECIFICATION FOR MASONRY STRUCTURES" (TMS 602-16) PUBLISHED BY THE MASONRY SOCIETY.
2. THE MINIMUM MASONRY COMPRESSIVE STRENGTH (f'm) SHALL BE 2000 PSI.
3. HEAD JOINT AND BED JOINT MORTAR SHALL BE TYPE N OR TYPE S MORTAR. CONTRACTOR SHALL SUBMIT PRODUCT DATA FOR BRICK VENEER TIES/ANCHORS TO ARCHITECT FOR APPROVAL PRIOR TO CONSTRUCTION. BRICK VENEER ANCHORS SHALL MEET THE FOLLOWING REQUIREMENTS:
   - 3.1. BRICK VENEER ANCHORS SHALL BE INSTALLED AT 16" O.C. MAX. HORIZONTALLY AND 16" O.C. MAX. VERTICALLY AND WITHIN 12" OF OPENINGS LARGER THAN 16" IN EITHER DIRECTION INTO WOOD FRAMING.
   - 3.2. BRICK VENEER ANCHORS TO BE SIZED TO EXTEND INTO THE BRICK VENEER A MINIMUM OF 1-1/2", WITH AT LEAST 5/8" MORTAR COVER TO OUTSIDE FACE. CONTRACTOR TO FIELD VERIFY DIMENSIONS TO PROVIDE PROPERLY SIZED ANCHORS TO MEET THESE REQUIREMENTS.
   - 3.3. PROVIDE WIRE-BOND #4530 SURETIE TAPCON BRICK VENEER ANCHORS WITH CLIMASEAL FINISH COATING FOR TIE ANCHORAGE TO CMU BACK-UP.
   - 3.4. PROVIDE 3" WIRE-BOND #4510 STAINLESS STEEL SURETIE TRIANGLES FOR VENEER TIES.
   - 3.5. PROVIDE (1) WIRE-BOND #4590 THERMAL GRIP WASHER PER BRICK VENEER ANCHOR PER MANUFACTURER'S INSTRUCTIONS.
4. EXPANSION JOINTS:
   - 4.1. INSTALL VERTICAL EXPANSION JOINTS IN BRICK VENEER SPACED AT 20' MAX AND WITHIN 8' FROM OUTSIDE WALL CORNERS.
   - 4.2. EXPANSION JOIST SHALL HAVE A WIDTH OF ½".
   - 4.3. INSTALL VERTICAL EXPANSION JOISTS AT INSIDE WALL CORNERS.
   - 4.4. BOND BREAKER/BACKER ROD SHALL BE CLOSED CELL NEOPRENE/SBR FILLER, ½" WIDE, COMPLYING WITH ASTM D1056 GRADE 2A 1.
   - 4.5. CAULK/SEALANT SHALL BE A SINGLE COMPONENT, MEDIUM-MODULUS, UV-STABLE, NON-SAG POLYURETHANE COMPLYING WITH ASTM C920, TYPE S, GRADE NS, CLASS 50, USE NT, T, M, A, O, I. USE PRIMER WHERE REQUIRED BY THE MANUFACTURER'S INSTRUCTIONS.
   - 4.6. SEALANT COLOR SHALL BE APPROVED BY THE OWNER.
5. WEEPS SHALL BE STANDARD SIZE CELL VENTS COMPOSED OF UV-RESISTANT POLYPROPYLENE.
   - 5.1. INSTALL 24" WIDE POLYMERIC DRAINAGE AND VENTILATION MAT AT WEEPS.
6. FLASHING:
   - 6.1. THROUGH-WALL FLASHING AND WEEPS SHALL BE INSTALLED AT THE HEADS OF MASONRY OPENINGS AND AT THE BASE OF WALL. FLASHING SHALL BE LAPPED OUTSIDE LINTELS AND SHELVES.
   - 6.2. THROUGH-WALL FLASHING SHALL BE TYPE 316 STAINLESS-STEEL FABRIC FLASHING, APPROVED FOR COASTAL ENVIRONMENTS AND CAVITY WALL MASONRY VENEER CONSTRUCTION, SUCH AS PROSOCO R-GUARD SS THRU-WALL COASTAL OR EQUIVALENT.
   - 6.3. SECURE STAINLESS STEEL FABRIC FLASHING TO BACK-UP WALL WITH A TERMINATION BAR AND TOP SEALANT LIP. SEAL FASTENERS WITHIN TERMINATION BAR.
   - 6.4. AT FOUNDATION SILL FLASHING, APPLY BEAD OF MANUFACTURER APPROVED SEALANT OR ADHESIVE TO CONCRETE OR MASONRY SUBSTRATE. WET SET STAINLESS STEEL FABRIC FLASHING IN APPROVED SEALANT/ADHESIVE AND TOP WITH BED OF MORTAR.
   - 6.5. INSTALL PRE-FABRICATED END DAMS, INSIDE CORNERS, OUTSIDE CORNERS, AND DRIP EDGES WITH STAINLESS STEEL FABRIC FLASHING, AS REQUIRED.
7. CONSTRUCTION TOLERANCE FOR BRICK VENEER IS ±1/4" IN 10-FEET VERTICALLY AND MAX. 1/2" BEYOND 20-FEET.
8. OPENINGS:
   - 8.1. LINTELS FOR MASONRY OPENINGS SHALL BE L4X4X⅜.
   - 8.2. LINTELS SHALL BE ASTM A500 GRADE STEEL.
   - 8.3. LINTELS SHALL BE HOT-DIPPED GALVANIZED PER ASTM A123-15.
   - 8.4. LINTELS SHALL HAVE MINIMUM 6" BEARING ON EACH END.

D. ADDITIONAL SPECIFICATIONS

1. SEE ATTACHED TECHNICAL SPECIFICATIONS.



2 PLAN SECTION: BRICK VENEER TIE BACK
SCALE: 3" = 1'-0"

SOUTH CAROLINA LLC APPLIED BUILDING SCIENCES, INC No. C02897 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 27551 03/25/2025 JASON D. GREGORIE

Jason D. Gregorie

APPLIED BUILDING SCIENCES
2308 COSGROVE AVENUE
NORTH CHARLESTON, SC 29405
OFFICE: (843) 724-1456

REPAIRS AT
NCSD PUMP STATION
TURKEY CREEK
1900 HAWTHORNE DRIVE
NORTH CHARLESTON, SOUTH CAROLINA 29406

DATE:	07/07/2023
REVISION:	1 03/25/2025
DESIGN BY:	YSS
DRAWING BY:	YSS
CHECKED BY:	JDG
PROJECT NO.:	650.23006

DETAILS

SHEET
SK1

PETE DUTY & ASSOCIATES, INC.

1121 Drayton Street
Newberry, South Carolina 29108
Phone: (803) 276-3211
Fax: (803) 276-3212
www.peteduty.com

Transmittal Letter

April 23, 2025

Mr. Brian Graham
North Charleston Sewer District
P.O. Box 63009
North Charleston, South Carolina 29419

Re: North Charleston – Turkey Creek VFD Panel Submittal

Enclosed please find the following items for the above job.

Item	Qty.	Description
1.	1	North Charleston - Turkey Creek VFD Panel Submittals

Please Return:

1. **One Copy Marked Approved Or Noted With Correction For Release To Final Production. Confirm Voltage And Phase Before Ordering.**

SUBMITTAL

PETE DUTY & ASSOCIATES

South Carolina Office
1121 Drayton Street
Newberry, SC 29108
(803) 276-3211

Project: NCSD - Turkey Creek VFD Panels

Engineer: Weston & Sampson

Contractor: TBD

Note: Due To An Unexpectedly High Volume Of Orders And Delays In Receiving Essential Materials, We Are Currently Experiencing Longer Than Usual Processing And Shipping Times.

PETE DUTY & ASSOCIATES, INC.
1121 Drayton Street • Newberry, South Carolina 29108 • (803) 276-3211 • Fax (803) 276-3212

SUBMITTAL LETTER

April 23, 2025 Via E-Mail

To: Brian Graham @ North Charleston Sewer District

From: Keith Weeks @ Pete Duty & Associates, Inc.

Re: NCSD - Turkey Creek - Variable Frequency Drive Panels

Pete Duty & Associates, Inc. is pleased to submit the following equipment for your approval:

(3) Variable Frequency Drive Panels With Schneider ATV630 Drives And RVSS Bypass & Isolation For 140 HP, 480/3 ABS Pumps With NEMA 12 Vented Enclosures, 3 Phase Loss Voltage/Sequence Monitors, Harmonic Filters, Circuit Breaker Disconnects, Output Filters, Ethernet IP Communication, Derag Function, Full Pump Monitoring System with Vibration, Pilot Devices, 65 KAIC Rated, 2 Year Warranty (From Date Of Startup) And Harmonic Study

If you have any questions, or need additional information, please feel free to contact me.

Cordially,

Keith Weeks

517 Commercial Drive
Fairfield, Ohio 45014
p/888.874.2062 f/513.874.2099
w/www.controlinterface.com

Panel	**L-978-1**
Status	**Submittal**
Date	**18 Apr 2025**

Data Sheet

Job Name	Turkey Creek PS	**Supply**	480V, 3 Phase, 3 Wire (No Ntrl)
Loc	North Charleston	**Panel FLA**	178.00 A
Client	Pete Duty & Associates (SC)	**SCCR**	65kA RMS Sym; 480V Max
Panel Name	VFD Control Panel	**Control**	115/120V
		UL Cert	508A

Motor / Valve Data

Qty	Name	Model	HP	FLA	Volt	Ph	AWG
1	Pump	-	140	176	460	3	3/0

Bill of Materials: Control Panel

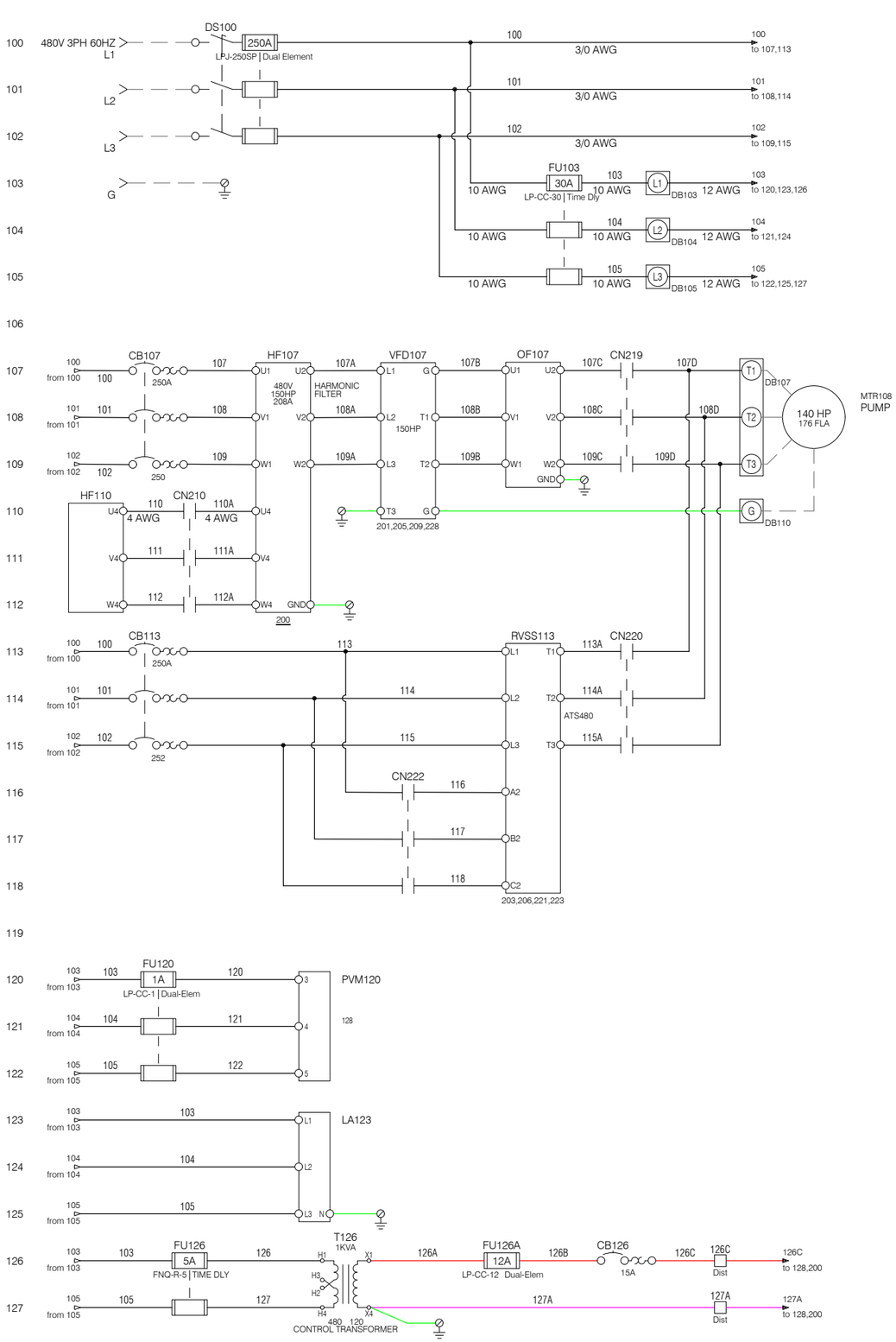
Qty	Name	Manufacturer	Number	Description
2	Breaker	Square D	JJL36250	600V 250A 3P 100k/65k
1	Breaker	Square D	QOU115	120/240V 15A 1P Q Frame
2	Breaker - Aux Contact	Square D	S29450	NO/NC H/J/L/M Frame
2	Breaker Oper Handle	Square D	9421LH3	3 in NEMA 3R Lockable
2	Breaker Oper Shaft	Square D	9421LS13	12-16" Powerpact H/J Frame
2	Breaker Operator	Square D	9421LJ7	Mech Powerpact H/J Frame
2	Contact	Square D	9001KA1	30mm NO/NC Fingersafe
3	Contact	Square D	9001KA2	30mm NO Fingersafe
3	Contact	Square D	9001KA3	30mm NC Fingersafe
3	Contactor	Square D	8502SGO2V02S	230/460V 3PH 100/200HP NEMA (5) Inrush 2970VA; Sealed 212VA
1	Contactor	Square D	LC1D80G7	230/460V 30/60HP IEC 80A
1	DVDT Filter	MTE	DVTK0200E	480VAC 3PH 200A 150 HP dV-E Series Kit Type
1	Disc Handle	Square D	GS2AH130	30-400A Black
1	Disc Oper Guide Cone	Square D	GS2AEH12	Shaft Guide For GS2 Fuse Disc Switches
1	Disc Oper Shaft	Square D	GS2AE23	30-400A 19.7 IN
1	Disc Oper Shaft Support	Square D	GS2AESB	Use With GS2AE23
1	Disc Switch - Fusible	Square D	GS2QU3N	600V 400A Class J Fuse
1	Disc Switch Lugs	Square D	GS1AW606	2 #1/0-250 kcmil OR 1 #4-600MCM set of 6
2	Disc Terminal Shroud	Square D	GS2AP53	400A 3P Line or Load set of 3
3	Dist Block	Marathon	EPBAP45	600V 200A 1P (1) Line 3/0-14 (4) Load 2-14
1	Dist Block	Square D	9080LBA162101	600V 175A 1P (1) Line 2/0-14 (1) Load 2/0-14

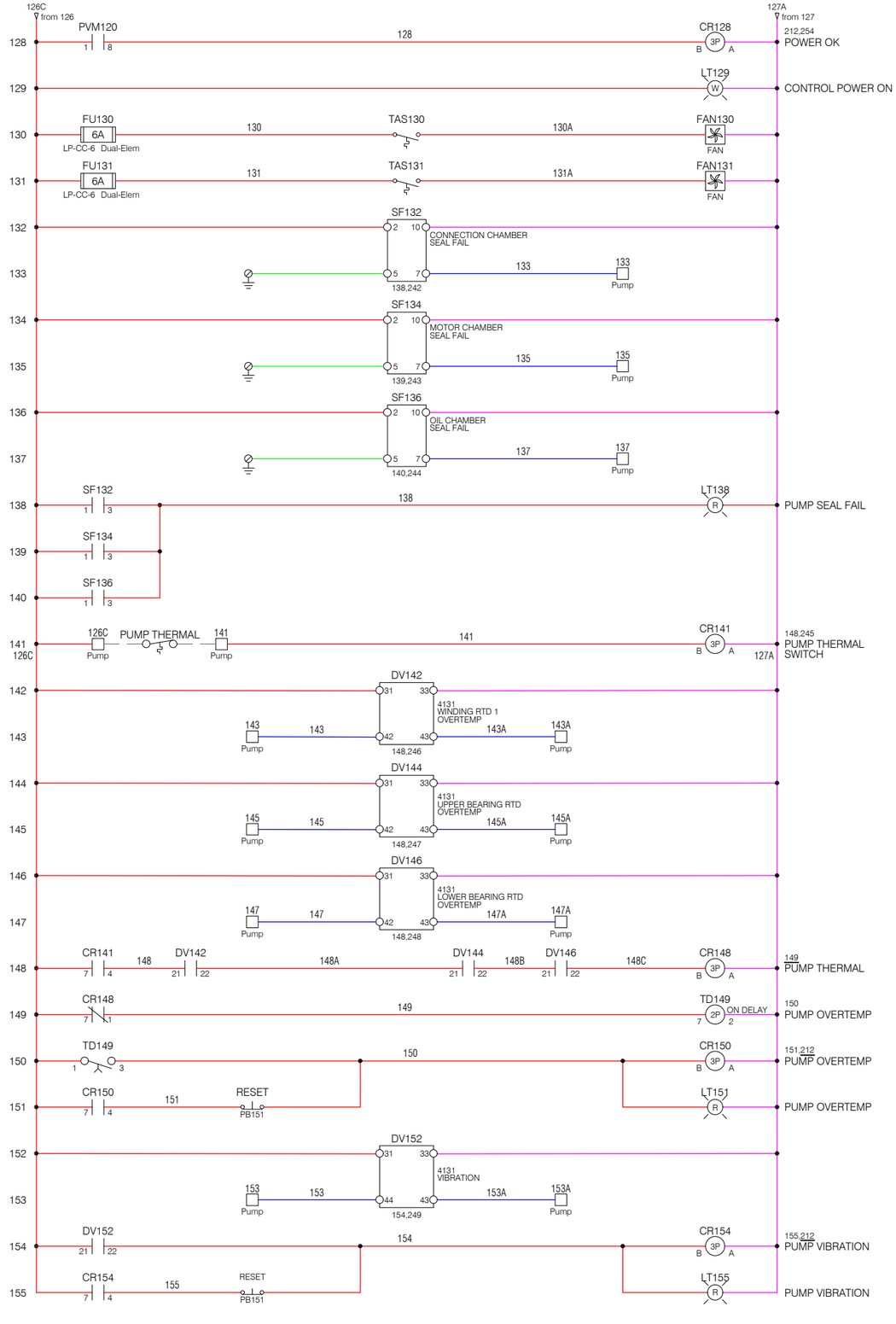
1	Dist Block	Square D	9080LBA3652021	600V 760A 3P (2) Line 500-4 (2) Load 500-4
1	Enclosure	Hoffman	A907224FSD	90 x 72 x 24 Type 12 Steel 2 Door Free Standing
2	Exhaust Filter	Pfannenberg	11760004055	NEMA 12 PFA 60000 Gray
2	Fan	Pfannenberg	11667154055	115VAC 368 CFM3 NEMA 12 PF 67000 Gray
2	Fuse	Bussman	FNQ-R-5	600V 5A Time-Dly Class CC
3	Fuse	Bussman	LP-CC-1	600V 1A Time-Dly Class CC
1	Fuse	Bussman	LP-CC-12	600V 12A Time-Dly Class CC
1	Fuse	Bussman	LP-CC-2	600V 2A Time-Dly Class CC
3	Fuse	Bussman	LP-CC-30	600V 30A Time-Dly Class CC
2	Fuse	Bussman	LP-CC-6	600V 6A Time-Dly Class CC
3	Fuse	Bussman	LPJ-250SP	600V 250A Time-Dly Class J
4	Fuse Block	Marathon	6SM30A1I	600V 30A 1P Midget Rail Mnt Trip Ind
1	Fuse Block	Marathon	6SM30A2I	600V 30A 2P Midget Rail Mnt Trip Ind
2	Fuse Block	Marathon	6SM30A3I	600V 30A 3P Midget Rail Mnt Trip Ind
1	Gasket	Redington Counters	721-0004	Lg Meter
2	Ground Lug	Ilsco	AU-2/0	2/0G Double
1	Ground Lug	Square D	PK7GTA	#14-4AWG Ground Bar
1	Harmonic Filter	MTE	MAPP0208D	480VAC 3PH 208A 150HP Without Contactor Open Type
1	Light - Pilot	Square D	9001SKP38LGG9	120V 30mm NEMA 4X LED Green
5	Light - Pilot	Square D	9001SKP38LRR9	120V 30mm NEMA 4X LED Red
1	Light - Pilot	Square D	9001SKP38LWW9	120V 30mm NEMA 4X LED White
1	Mechanical Interlock	Square D	31099-002-50	Size 5
1	Monitor - Phase/Volt	Diversified Electronics	SUA-440-ASA	430-480 VAC 3PH 1P Adjustable 8 pin pulg in
1	Operator - PB	Square D	9001SKR1B	30mm NEMA 4X Black
1	Operator - SW	Square D	9001SKS11B	30mm NEMA 4X 2 POS Cam E
1	Operator - SW	Square D	9001SKS46B	30mm NEMA 4X 3 POS Cam F
1	Panel	Hoffman	A90P72F1	90 x 72 Steel Free Standing
1	Panel Support Kit	Hoffman	A90FSHDPS	Heavy Duty Panel Support for 90 inch Tall Free-Stand Enclosure
1	Panel Support Kit	Hoffman	APS9	
1	Potentiometer	Square D	9001SK2108	30mm NEMA 4X 10k Ohm
11	Relay	Idec	RR3B-ULAC120V	115/120V 3P 11 Blade Ind Light
4	Relay - Amplifier	PR Electronics	4131	24...230 VAC/DC UL508 Universal Input, 2 Relay Outputs Isolated Input/Output/Supply
4	Relay - Amplifier Display	PR Electronics	4510	Programming Display For 3114, 4000 and 9000
5	Relay - Industrial	Square D	CAD32G7	115/120V 3 NO/2 NC IEC Tesys
3	Relay - Seal	Diversified Electronics	SPM-120-AAA-100K	115/120V 2P 11 Pin DPDT
2	Relay - Timer Attach	Square D	LADR2	115/120V 1 NO/ 1NC IEC Pneumatic Off Delay 0.1-30 S
1	Socket	Custom Connector	RB08-PC	600V 8-Pin Panel Mount
1	Socket	Idec	SR2P-06	300V 2P 8 Pin
11	Socket	Idec	SR3B-05	300V 3P 11 Blade Double Tier
3	Socket	Idec	SR3P-06	300V 3P 11 Pin
1	Softstart	Square D	ATS480C21Y	208/230/460V 3PH 60/75/150HP Altivar ATS480
1	Surge Prot Device	Square D	SDSA3650	600Y/347V 3P

41	Term Block	Square D	NSYTRV42	600V 30A 26-10AWG Gray 6mm
13	Term Block	Square D	NSYTRV42BL	600V 30A 26-10AWG Blue 6mm
6	Term Block	Square D	NSYTRV44	600V 30A 6.2mm 26-10AWG GRAY 2 tier
4	Term End Anchor	Square D	NSYTRAABV35	Gray
4	Term End Barrier	Square D	NSYTRAC22	Gray For 2.5-10mm TB
2	Term End Barrier	Square D	NSYTRAC24	Gray for NSYTRV44
2	Thermostat	Pfannenberg	17121000010	NO
1	Time Meter	ENM Counting	T55A2A	115/120V 9,999.9 Hrs Reset
1	Time Meter	Redington Counters	722-0004	115/120V Type 12, 4X w/ gasket 99,999.9 Hrs
1	Timer	Idec	GT3A-3AF20	100-240VAC 2P 5A Multi Func: Dly/Int/Cycle 0.1sec-180hr
1	Transformer	Square D	9070T1000D1	240/480V 1 KVA 120V sec Open
2	VFD - Comm Card	Square D	VW3A3720	ATV630/650; ATS480 E/IP, MB/TCP 2 RJ45
2	VFD - Keypad	Square D	VW3A1111	ATV630 keypad
2	VFD - Keypad Door Mount Kit	Square D	VW3A1112	NEMA 4X ATV630/650/320
1	Variable Frequency Drive	Square D	ATV630C11N4	480VAC 3PH 211A Output 150hp (110kW) Altivar 630 with Keypad Frame 6

Bill of Materials: Ring Terminal

Qty	*Name*	*Manufacturer*	*Number*	*Description*
30	Ring Terminal	Thomas Betts	RK737	3/0GA. 3/8 Nylon Insulated Yellow





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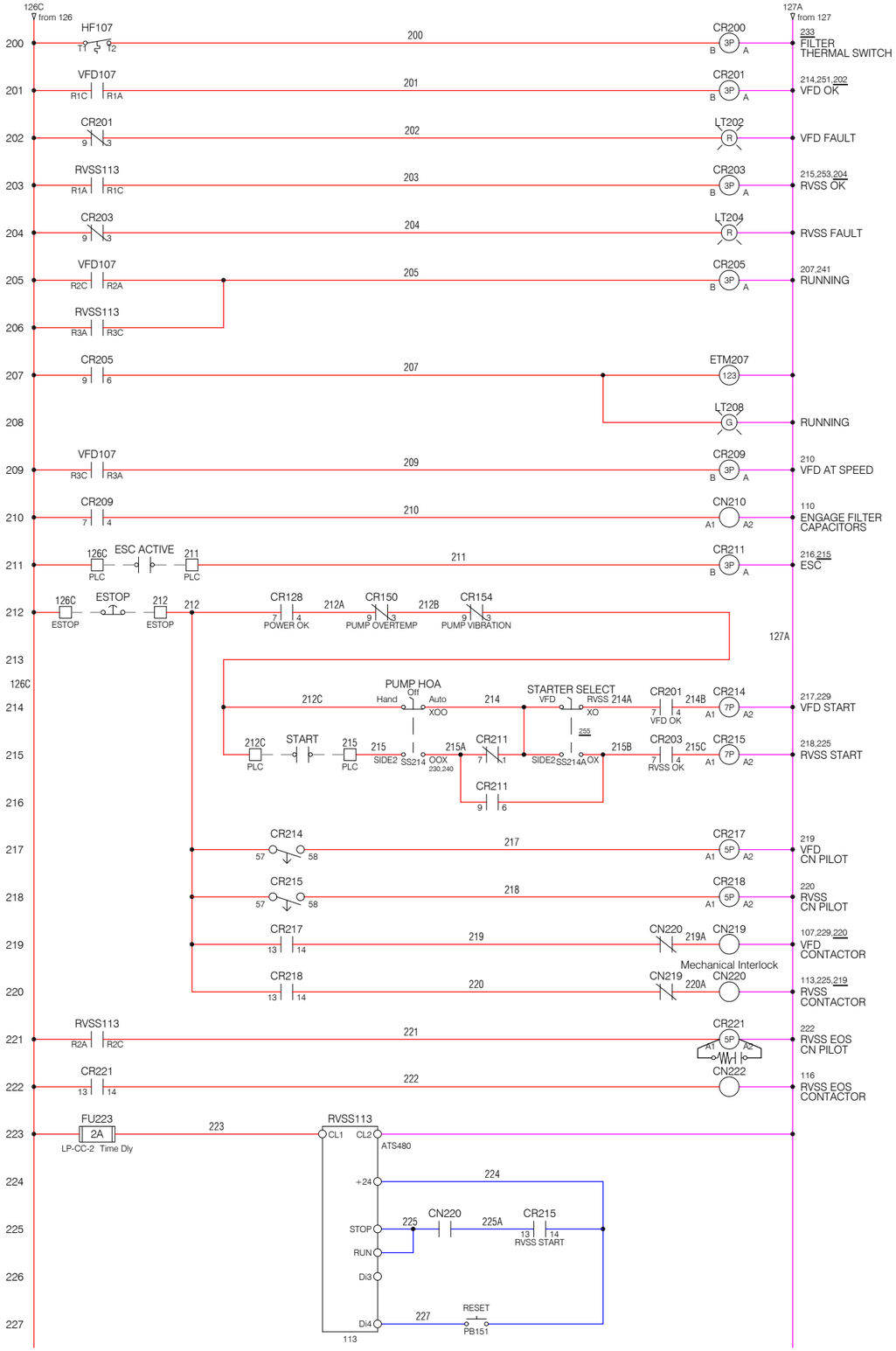
NOTES

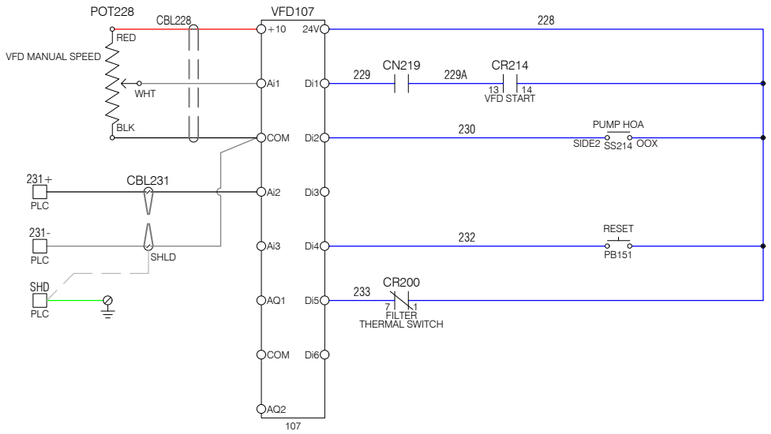
UL LISTED | 508A
ENCLOSED INDUSTRIAL CONTROL PANEL

REVISIONS

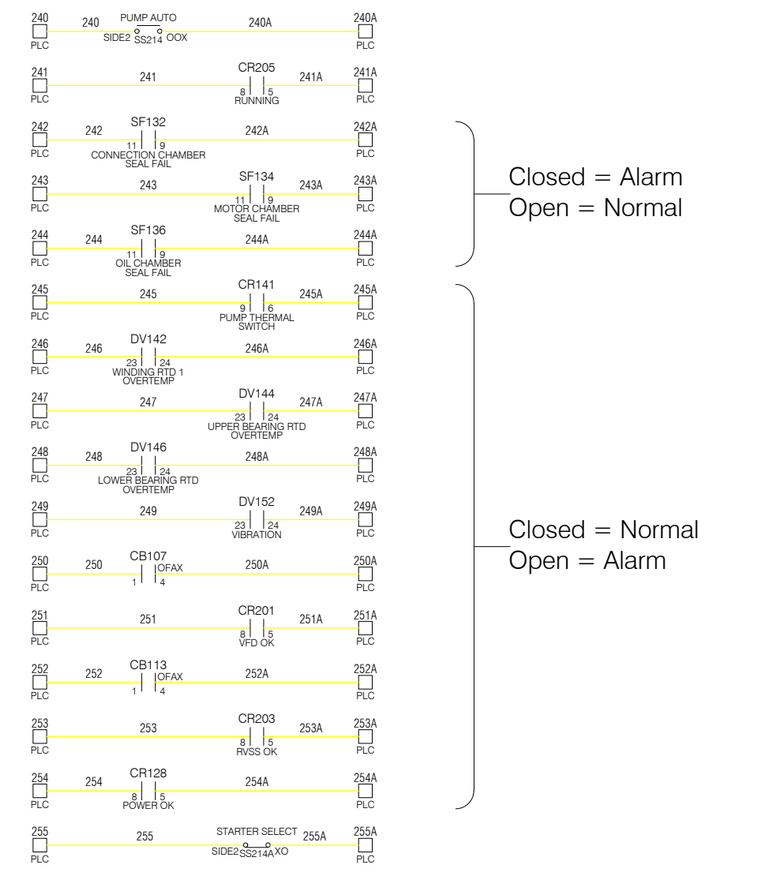
CLIENT: Pete Duty & Associates (SC)	
CLIENT REF: n/a	
LOCATION: North Charleston	
DRAWN BY: C Fox	CHECKED BY: n/a

JOB: Turkey Creek PS	
PANEL: VFD Control Panel	
DWG: L-978-1	SHEET: 1
STATUS: Submittal	DATE: 18 Apr 2025





Dry contacts for remote indication



Closed = Alarm
Open = Normal

Closed = Normal
Open = Alarm

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NOTES

UL LISTED | 508A
ENCLOSED INDUSTRIAL CONTROL PANEL

REVISIONS

CLIENT	Pete Duty & Associates (SC)
CLIENT REF	n/a
LOCATION	North Charleston
DRAWN BY	C Fox
CHECKED BY	n/a

JOB	Turkey Creek PS
PANEL	VFD Control Panel
DWG	L-978-1
SHEET	2
STATUS	Submittal
DATE	18 Apr 2025

PLC

Terminal	Description
126C	ESC ACTIVE
211	ESC ACTIVE
212C	START
215	START

PLC

Terminal	Description
240	PUMP IN AUTO
240A	PUMP IN AUTO
241	VFD RUNNING
241A	VFD RUNNING
242	CONNECTION CHAMBER SF
242A	CONNECTION CHAMBER SF
243	MOTOR CHAMBER PROBE SF
243A	MOTOR CHAMBER PROBE SF
244	OIL CHAMBER SF
244A	OIL CHAMBER SF
245	THERMAL SWITCH
245A	THERMAL SWITCH
246	WINDING RTD 1 OT
246A	WINDING RTD 1 OT
247	UPPER BEARING RTD OT
247A	UPPER BEARING RTD OT
248	LOWER BEARING RTD OT
248A	LOWER BEARING RTD OT
249	PUMP VIBRATION
249A	PUMP VIBRATION
250	VFD BREAKER TRIP
250A	VFD BREAKER TRIP
251	VFD OK
251A	VFD OK
252	RVSS BREAKER TRIP
252A	RVSS BREAKER TRIP
253	RVSS OK
253A	RVSS OK
254	POWER FAIL
254A	POWER FAIL
255	VFD SELECTED
255A	VFD SELECTED
231+	4-20MA SPEED COMMAND
231-	4-20MA SPEED COMMAND
SHD	4-20MA SPEED COMMAND

ESTOP

Terminal	Description
126C	E-STOP
212	E-STOP

Pump

Terminal	Pin	Description
133	20	CONNECTION CHAMBER PROBE
135	21	MOTOR CHAMBER PROBE
137	22	OIL CHAMBER PROBE
126C	10	PUMP 1 THERMAL SWITCH
141	11	PUMP 1 THERMAL SWITCH
143	30	WINDING RTD 1
143A	31	WINDING RTD 1
145	34	UPPER BEARING RTD
145A	35	UPPER BEARING RTD
147	36	LOWER BEARING RTD
147A	37	LOWER BEARING RTD
153	50	VIBRATION SENSOR
153A	51	VIBRATION SENSOR

Control INTERFACE

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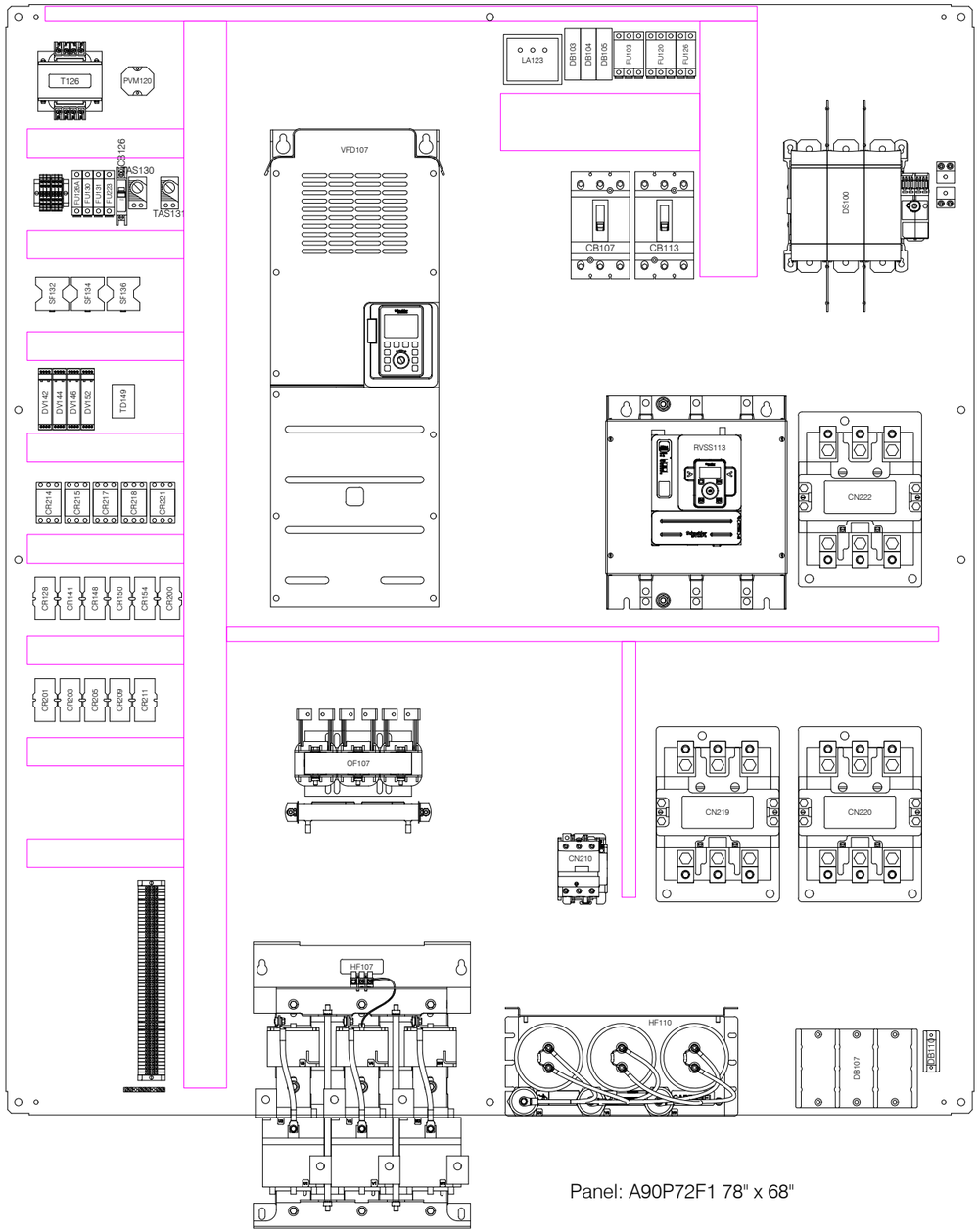
NOTES

UL LISTED | 508A
ENCLOSED INDUSTRIAL CONTROL PANEL

REVISIONS

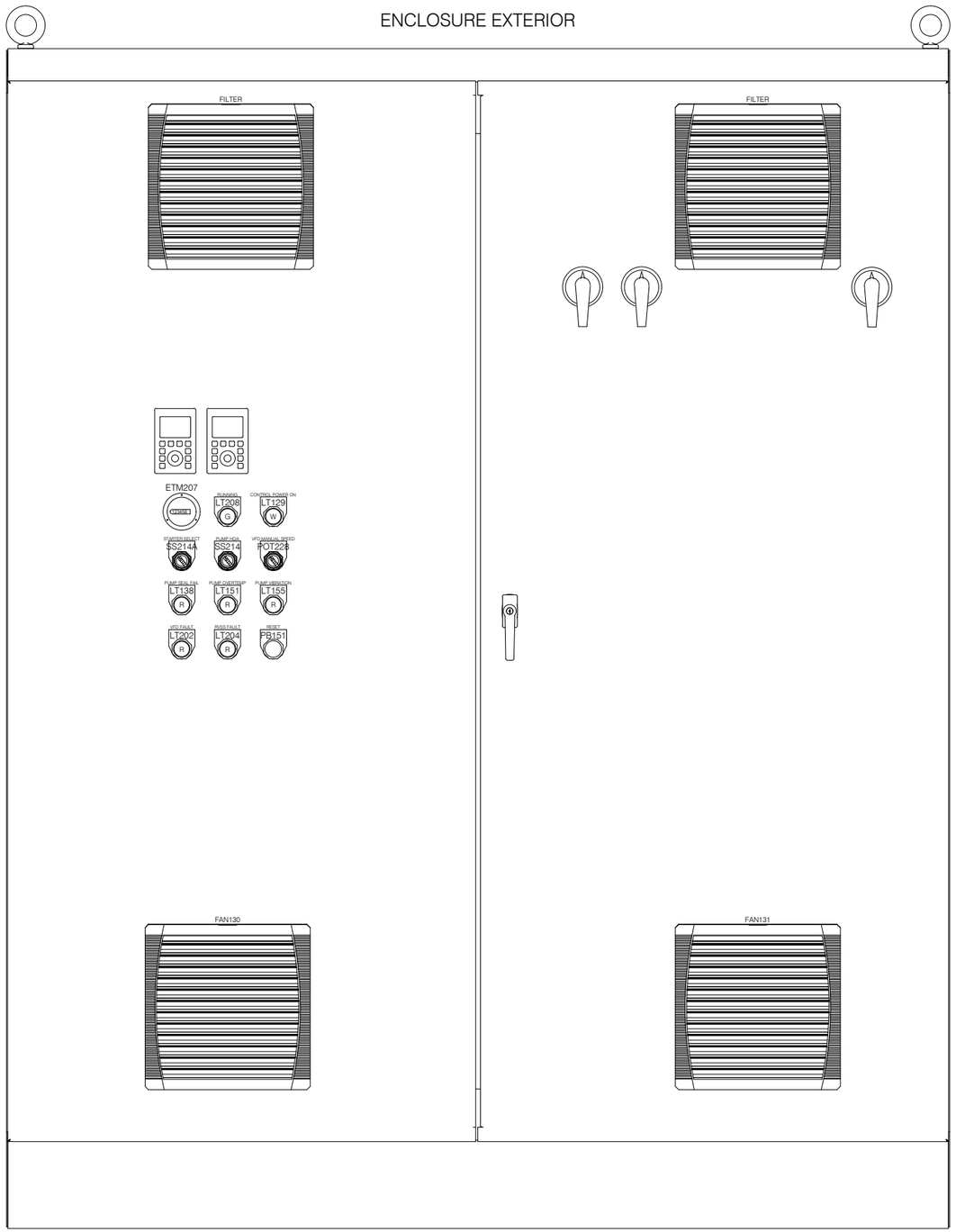
CLIENT	Pete Duty & Associates (SC)
CLIENT REF	n/a
LOCATION	North Charleston
DRAWN BY: C Fox	CHECKED BY: n/a
JOB	Turkey Creek PS
PANEL	VFD Control Panel
DWG: L-978-1	SHEET: 3
STATUS: Submittal	DATE: 18 Apr 2025

Panel Layout



Panel: A90P72F1 78" x 68"

ENCLOSURE EXTERIOR



Enclosure: 90"H x 72"W x 24"D
Type 12

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NOTES

UL LISTED | 508A
ENCLOSED INDUSTRIAL CONTROL PANEL

REVISIONS

CLIENT: Pete Duty & Associates (SC)	
CLIENT REF: n/a	
LOCATION: North Charleston	
DRAWN BY: C Fox	CHECKED BY: n/a

JOB: Turkey Creek PS	
PANEL: VFD Control Panel	
DWG: L-978-1	SHEET: 4
STATUS: Submittal	DATE: 18 Apr 2025

PETE DUTY & ASSOCIATES, INC.

1121 Drayton Street
Newberry, South Carolina 29108
Phone: (803) 276-3211
Fax: (803) 276-3212
www.peteduty.com

Transmittal Letter

April 23, 2025

Mr. Brian Graham
North Charleston Sewer District
P.O. Box 63009
North Charleston, South Carolina 29419

Re: North Charleston – Turkey Creek PLC Panel Submittal

Enclosed please find the following items for the above job.

Item	Qty.	Description
1.	1	North Charleston - Turkey Creek PLC Panel Submittals

Please Return:

1. **One Copy Marked Approved Or Noted With Correction For Release To Final Production. Confirm Voltage And Phase Before Ordering.**

SUBMITTAL

PETE DUTY & ASSOCIATES

South Carolina Office
1121 Drayton Street
Newberry, SC 29108
(803) 276-3211

Project: NCSD - Turkey Creek PLC Panel

Engineer: Weston & Sampson

Contractor: TBD

Note: Due To An Unexpectedly High Volume Of Orders And Delays In Receiving Essential Materials, We Are Currently Experiencing Longer Than Usual Processing And Shipping Times.

PETE DUTY & ASSOCIATES, INC.
1121 Drayton Street • Newberry, South Carolina 29108 • (803) 276-3211 • Fax (803) 276-3212

SUBMITTAL LETTER

April 23, 2025 Via E-Mail

To: Brian Graham @ North Charleston Sewer District

From: Keith Weeks @ Pete Duty & Associates, Inc.

Re: NCSD - Turkey Creek PLC Control Panel

Pete Duty & Associates, Inc. is pleased to submit the following equipment for your approval:

(1) Triplex Pump Control Panel To Include: AB CompactLogix 5380 PLC, Primary Wet Well Control for 2 Wet Wells, Endress Hauser (by NCSD), Pump Flush and De-Ragging Functions, Surge Protection Per Spec's, Terminals For VFD's, RVSS And SCADA Connections, Secondary Backup Control For 1 Dry Well Endress Hauser (by NCSD) Emergency Standby Control For 2 Wet Wells MPE Controller Probe And ISB. AB Panel View 5310 OIT, NEMA 12 Enclosure, UPS, Full Monitoring with Vibration, Spare OIT, Spare Processor & I/O Module, Remote Mount Light And Horn, Drawings And Complete Interconnections, SCADA And Remote Equipment Coordination
(1) MPE LP-115-10-100 Level Probes w/ 10 Points And 100' Cables
(1) MPE LPC420R-RM Level Probe Converters w/ Reverse Mount Faceplate
(1) ISB-10 Intrinsically Safe Barriers
(1) Start-Up/Training

If you have any questions, or need additional information, please feel free to contact me.

Cordially,

Keith Weeks

517 Commercial Drive
Fairfield, Ohio 45014
p/888.874.2062 f/513.874.2099
w/www.controlinterface.com

Panel	**L-978-4**
Status	**Submittal**
Date	**18 Apr 2025**

Data Sheet

Job Name	Turkey Creek PS	***Supply***	480V, 3 Phase, 3 Wire (No Ntrl)
Loc	North Charleston	***Panel FLA***	2.20 A
Client	Pete Duty & Associates (SC)	***SCCR***	65kA RMS Sym; 480V Max
Panel Name	PLC Panel	***Control***	Dual 24V-115/120V
		UL Cert	508A

Bill of Materials: Control Panel

Qty	*Name*	*Manufacturer*	*Number*	*Description*
1	Breaker	Square D	HJL36015	600V 15A 3P 100k/65k/25k AIC
1	Breaker Oper Handle	Square D	9421LH3	3 in NEMA 3R Lockable
1	Breaker Oper Shaft	Square D	9421LS12	12-16 in Powerpact H/J Frame Shaft only, no Bracket
1	Breaker Operator	Square D	9421LJ7	Mech Powerpact H/J Frame
2	Contact	Square D	9001KA2	30mm NO Fingersafe
3	Contact	Square D	9001KA3	30mm NC Fingersafe
1	Enclosure	Hoffman	A606012LP	60 x 60 x 12 NEMA 12
1	Exhaust Filter	Pfannenberg	11740004055	NEMA 12 PFA 40000 Gray
1	Fan	Pfannenberg	11643154055	115VAC 122 CFM3 NEMA 12 PF 43000 Gray
1	Folding Shelf	Hoffman	AASHLF1218	12 x 18 NEMA 12
2	Fuse	Bussman	FNQ-R-5	600V 5A Time-Dly Class CC
1	Fuse	Bussman	LP-CC-1	600V 1A Time-Dly Class CC
1	Fuse	Bussman	LP-CC-12	600V 12A Time-Dly Class CC
1	Fuse	Bussman	LP-CC-15	600V 15A Time-Dly Class CC
6	Fuse	Bussman	LP-CC-2	600V 2A Time-Dly Class CC
1	Fuse	Bussman	LP-CC-20	600V 20A Time-Dly Class CC
1	Fuse	Bussman	LP-CC-5	600V 5A Time-Dly Class CC
2	Fuse	Bussman	LP-CC-6	600V 6A Time-Dly Class CC
11	Fuse Block	Bussman	CHCC1DI-48U	48VDC 30A 1P Class CC Indicator
2	Fuse Block	Marathon	6SM30A1I	600V 30A 1P Midget Rail Mnt Trip Ind
1	Fuse Block	Marathon	6SM30A2I	600V 30A 2P Midget Rail Mnt Trip Ind
1	Ground Lug	Ilsco	AU-2/0	2/0G Double
1	Ground Lug	Square D	PK15GTA	#14-2/0 Ground Bar Extended
1	Intrinsic Safe Barrier	PR Electronics	5104BB2B	24-230V AC/DC 4-20mA in; 4-20mA out 2 channel
1	Light - Pilot	Square D	9001SKP35LRR9	24V AC/DC 30mm NEMA 4X LED Red
2	Light - Pilot	Square D	9001SKP35LWW9	24V AC/DC 30mm NEMA 4X LED WHITE
1	Light - Pilot	Square D	9001SKP38LWW9	120V 30mm NEMA 4X LED White
2	Operator - PB	Square D	9001SKR1B	30mm NEMA 4X Black
1	Operator - SW	Square D	9001SKS11B	30mm NEMA 4X 2 POS Cam E

1	PLC - HMI	Allen Bradley	2715P-T15CD	24VDC 1.13A 15 inch NEMA 4X Panelview 5510 Touch
5	PLC - I/O Module	Allen Bradley	5069-IB16	16 DC IN Compact 5000 IO MOD 75mA; SA 200mA DC
1	PLC - I/O Module	Allen Bradley	5069-IF8	8 Alg In Compact 5000 IO MOD 75mA; SA 100mA DC
1	PLC - I/O Module	Allen Bradley	5069-OF8	8 Alg Out Compact 5000 IO MOD 75mA; SA 250mA DC
1	PLC - I/O Module	Allen Bradley	5069-OW16	16 Rly Out Compact 5000 IO MOD 75mA; SA 150mA DC
1	PLC - Network	Hirshmann	942132002	24VDC 63mA 8 Port Sprider III Unmanaged 10/100 Ethernet Switch
1	PLC - Processor	Allen Bradley	5069-L320ER	24VDC 2MB CompactLogix 5380 16 I/O, 40 E/IP nodes
8	PLC - Terminal Block	Allen Bradley	5069-RTB18-SCREW	Compact 5000 IO Screw Type IO Module Terminals
1	PLC - Terminal Block	Allen Bradley	5069-RTB64-SCREW	Compact Logix 5380 Includes MOD and SA RTBs
1	Panel	Hoffman	A60P60	60 x 60 Steel
1	Power Supply	Puls	CP20.241	120-240AC/24VDC 20A 480W Din Rail Mount
1	Relay	Idec	RR3B-ULAC120V	115/120V 3P 11 Blade Ind Light
36	Relay	Idec	RR3B-ULDC24V	24VDC 3P 11 Blade Ind Light
1	Relay - Intrinsic Safe	Macromatic	ISEUR1	10-120VDC, 120VAC 5A Din Rail Mount
4	Socket	Idec	SR2P-06	300V 2P 8 Pin
37	Socket	Idec	SR3B-05	300V 3P 11 Blade Double Tier
19	Term Block	Square D	NSYTRV42	600V 30A 26-10AWG Gray 6mm
167	Term Block	Square D	NSYTRV42BL	600V 30A 26-10AWG Blue 6mm
6	Term Block	Square D	NSYTRV44	600V 30A 6.2mm 26-10AWG GRAY 2 tier
15	Term End Anchor	Square D	NSYTRAABV35	Gray
7	Term End Barrier	Square D	NSYTRAC22	Gray For 2.5-10mm TB
2	Term End Barrier	Square D	NSYTRAC24	Gray for NSYTRV44
6	Term End Barrier	Square D	NSYTRAP22	Gray Partition For 2.5-10mm TB
1	Thermostat	Pfannenberg	17121000010	NO
4	Timer	Idec	GT3A-3AD24	24VAC/DC 29mA 2P 5A Multi Func: Dly/Int/Cycle 0.1sec-180hr
1	Transformer	Square D	9070T1000D1	240/480V 1 KVA 120V sec Open
1	UPS - Battery	Puls	UZK24.121	24VDC 12AH
1	Uninterruptable Power Supply	Puls	UB20.241	24VDC 20A Din Rail Mount FOR BATTERIES 3.9Ah to 150Ah

Bill of Materials: Remote Mounted

Qty	*Name*	*Manufacturer*	*Number*	*Description*
1	Box	Federal Signal	WB-NM	Type 4X non metallic For 450E horn
1	Horn & Grille	Federal Signal	450E-024	12-24VDC 99DB 0.22 Amps
1	Light - Strobe	Federal Signal	LP3P-012-048R	12-48VDC 0.21A NEMA 4X Red

Bill of Materials: Spare Parts

Qty	*Name*	*Manufacturer*	*Number*	*Description*

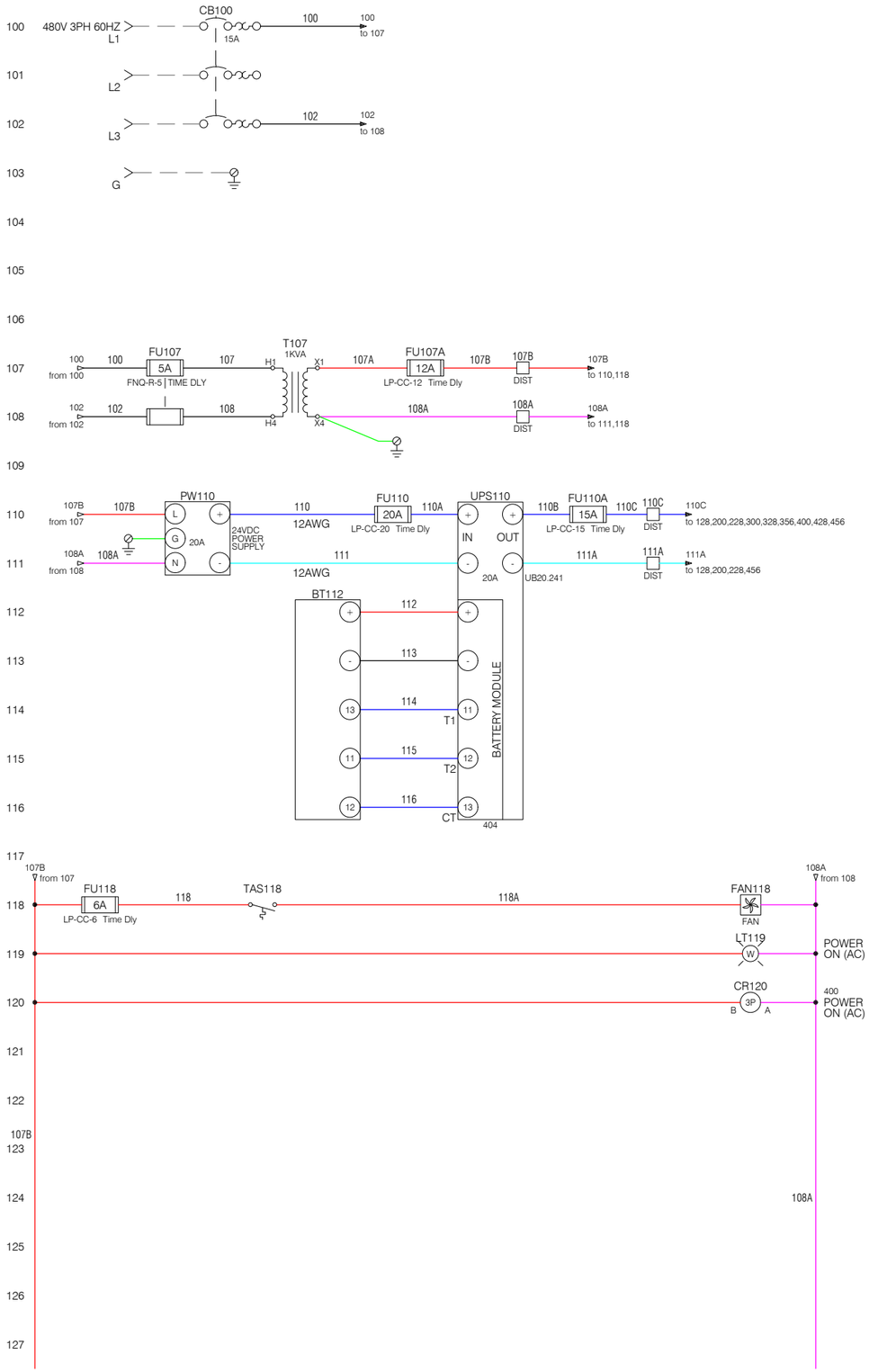
1	PLC - HMI	Allen Bradley	2715P-T15CD	24VDC 1.13A 15 inch NEMA 4X Panelview 5510 Touch
1	PLC - I/O Module	Allen Bradley	5069-IB16	16 DC IN Compact 5000 IO MOD 75mA; SA 200mA DC
1	PLC - I/O Module	Allen Bradley	5069-IF8	8 Alg In Compact 5000 IO MOD 75mA; SA 100mA DC
1	PLC - I/O Module	Allen Bradley	5069-OF8	8 Alg Out Compact 5000 IO MOD 75mA; SA 250mA DC
1	PLC - I/O Module	Allen Bradley	5069-OW16	16 Rly Out Compact 5000 IO MOD 75mA; SA 150mA DC
1	PLC - Processor	Allen Bradley	5069-L320ER	24VDC 2MB CompactLogix 5380 16 I/O, 40 E/IP nodes

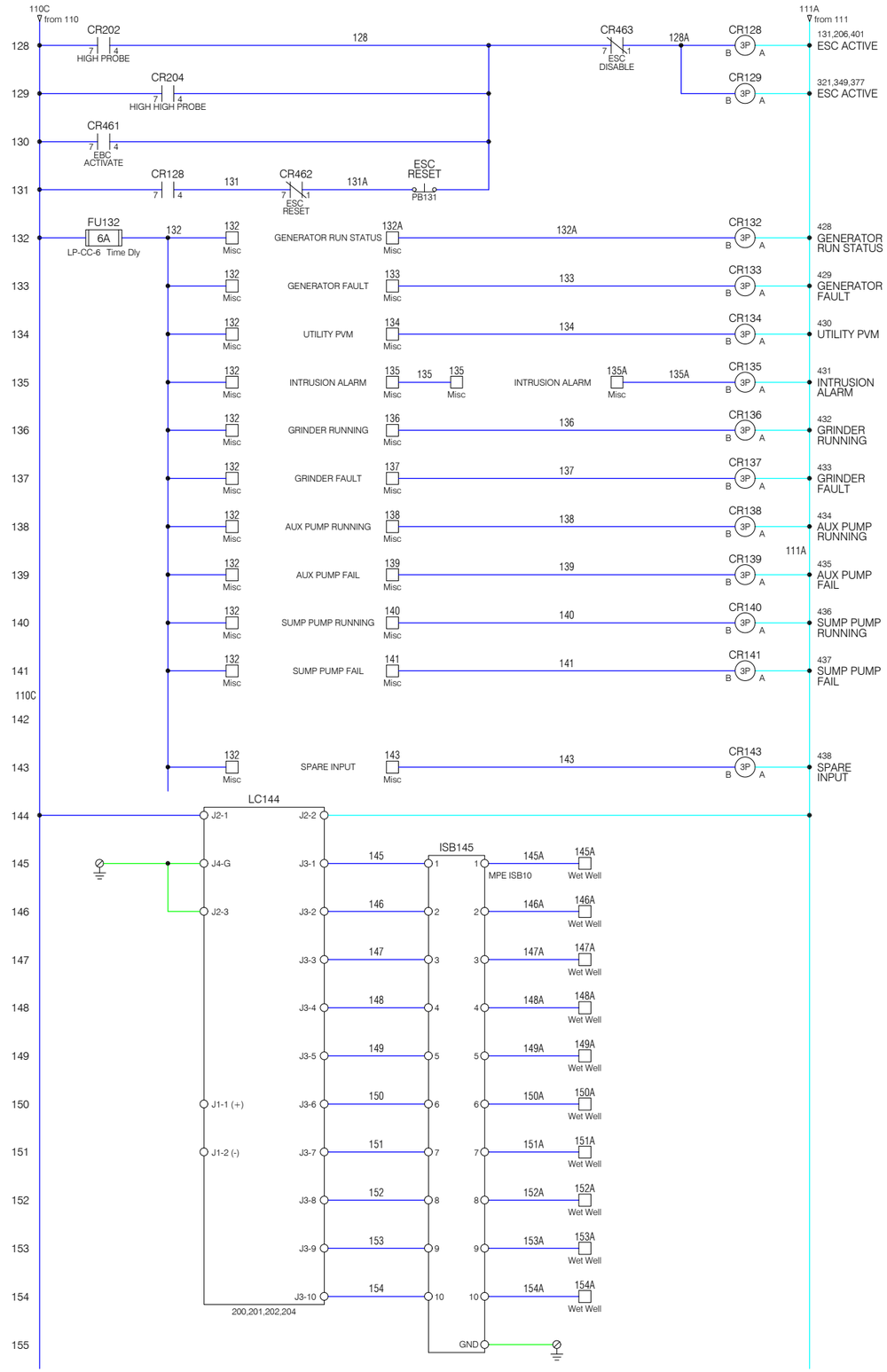
Bill of Materials: Supplied By Others

Qty	*Name*	*Manufacturer*	*Number*	*Description*
1	Modem	Misc Supply	UNKNOWN	

Bill of Materials: Supplied By PDA

Qty	*Name*	*Manufacturer*	*Number*	*Description*
1	Intrinsic Safe Barrier	Motor Protection Electronics	ISB10	
1	Level Controller	Motor Protection Electronics	LPC420R-RM	120VAC / 24VDC Level Probe Converter W/ Relays Door Mount





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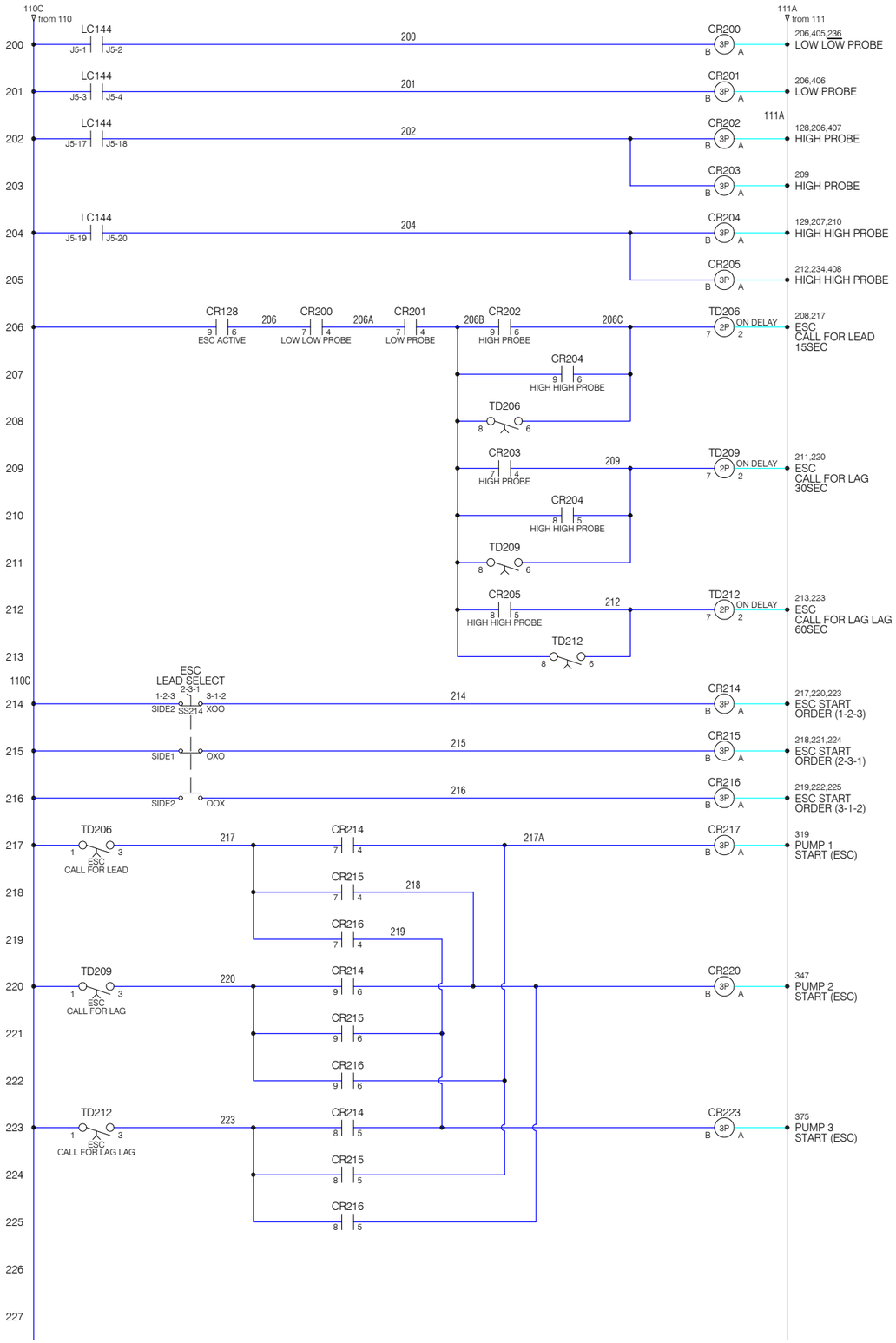
NOTES

UL LISTED | 698A
ENCLOSED INDUSTRIAL CONTROL PANEL RELATING TO HAZARDOUS LOCATIONS

REVISIONS

CLIENT	Pete Duty & Associates (SC)
CLIENT REF	n/a
LOCATION	North Charleston
DRAWN BY: C Fox	CHECKED BY: n/a

JOB	Turkey Creek PS
PANEL	PLC Panel
DWG: L-978-4	SHEET: 1
STATUS: Submittal	DATE: 18 Apr 2025



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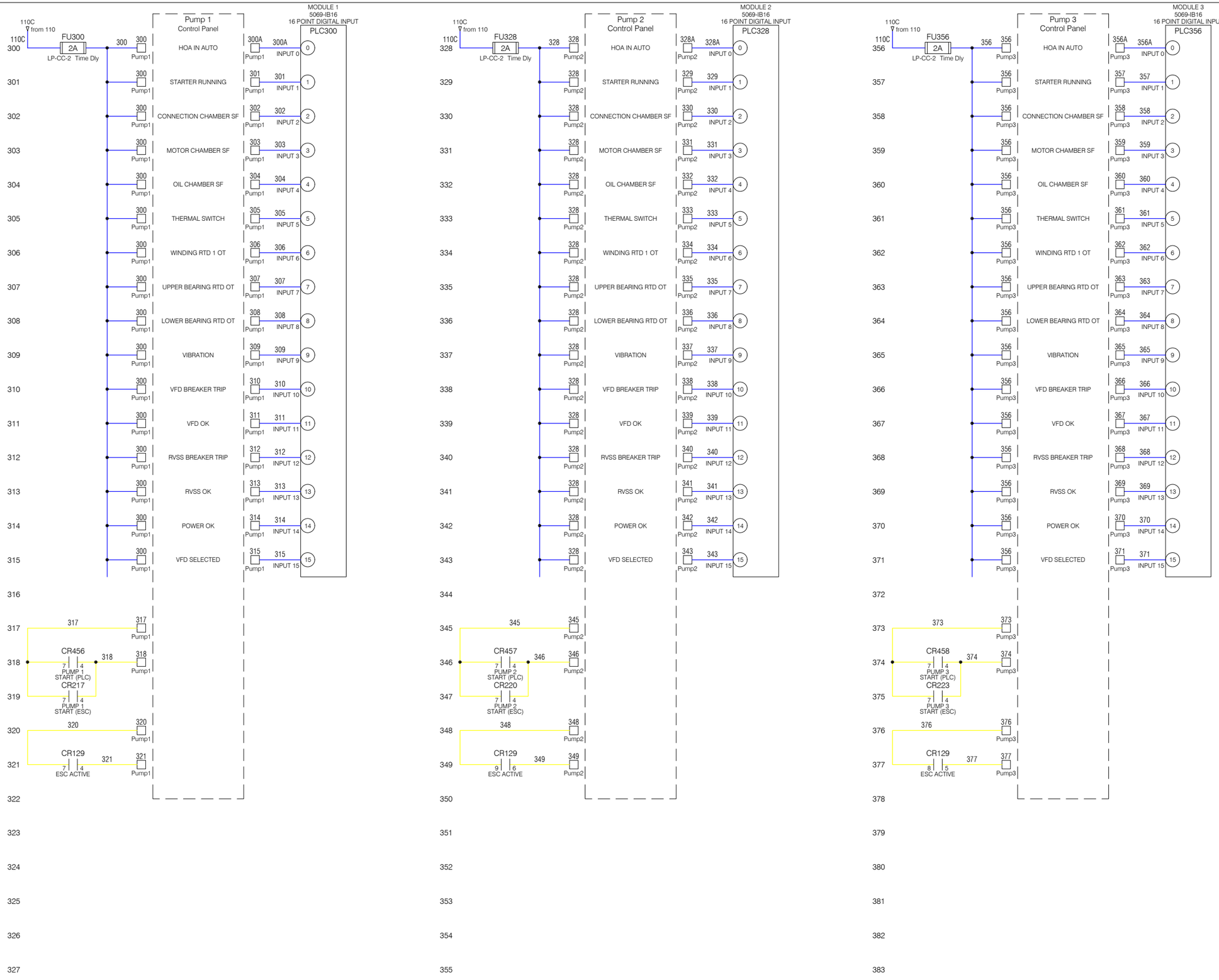
DRAWN BY	C Fox
CHECKED BY	n/a
JOB	Turkey Creek PS
PANEL	PLC Panel
DWG	L-978-4
SHEET	2
STATUS	Submittal
DATE	18 Apr 2025



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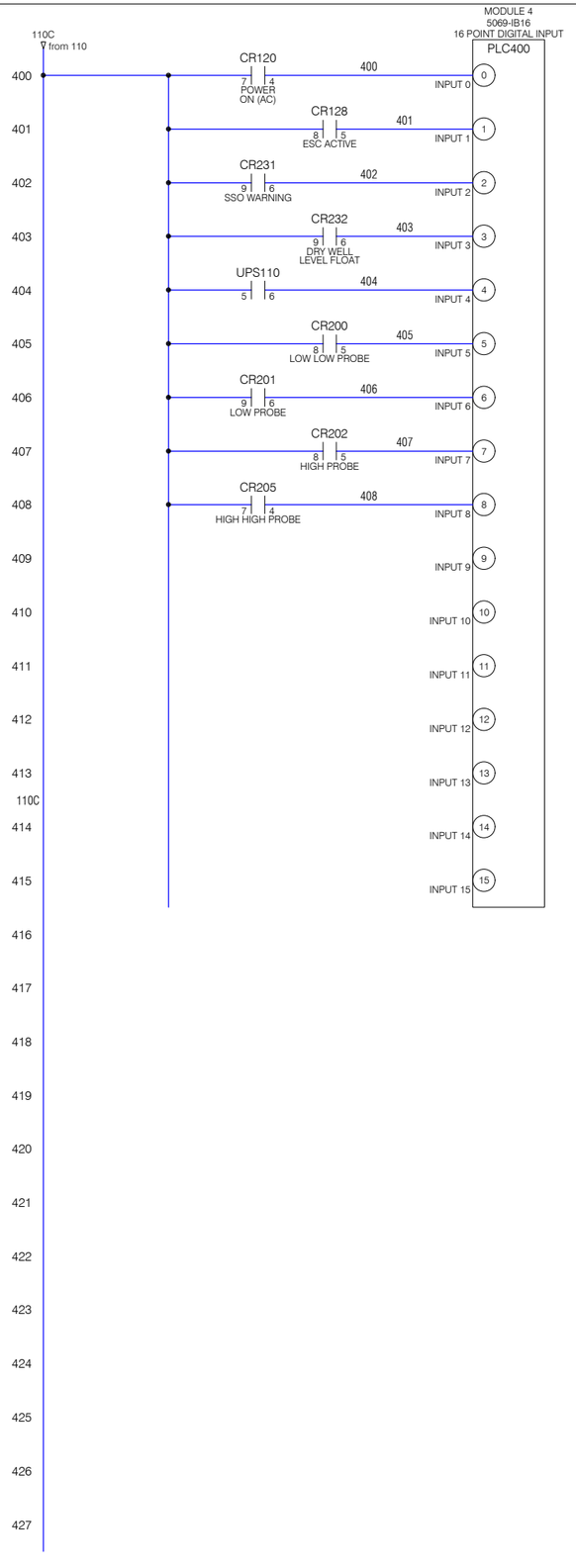
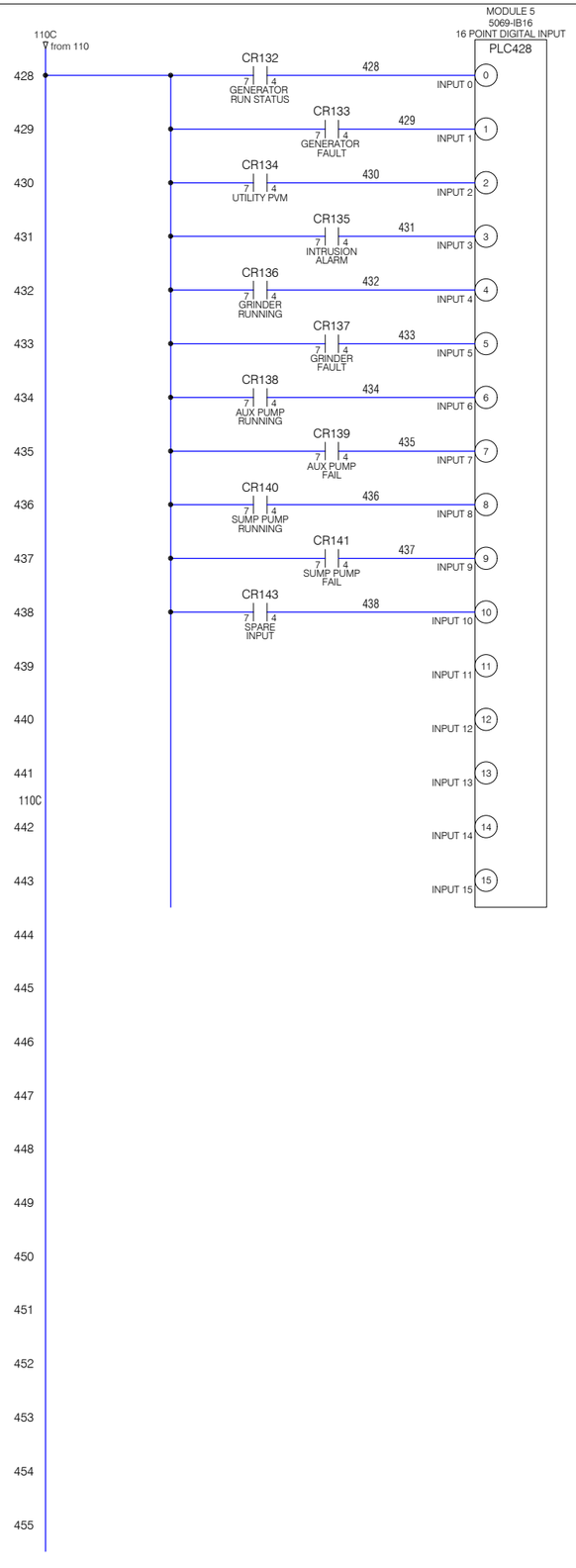
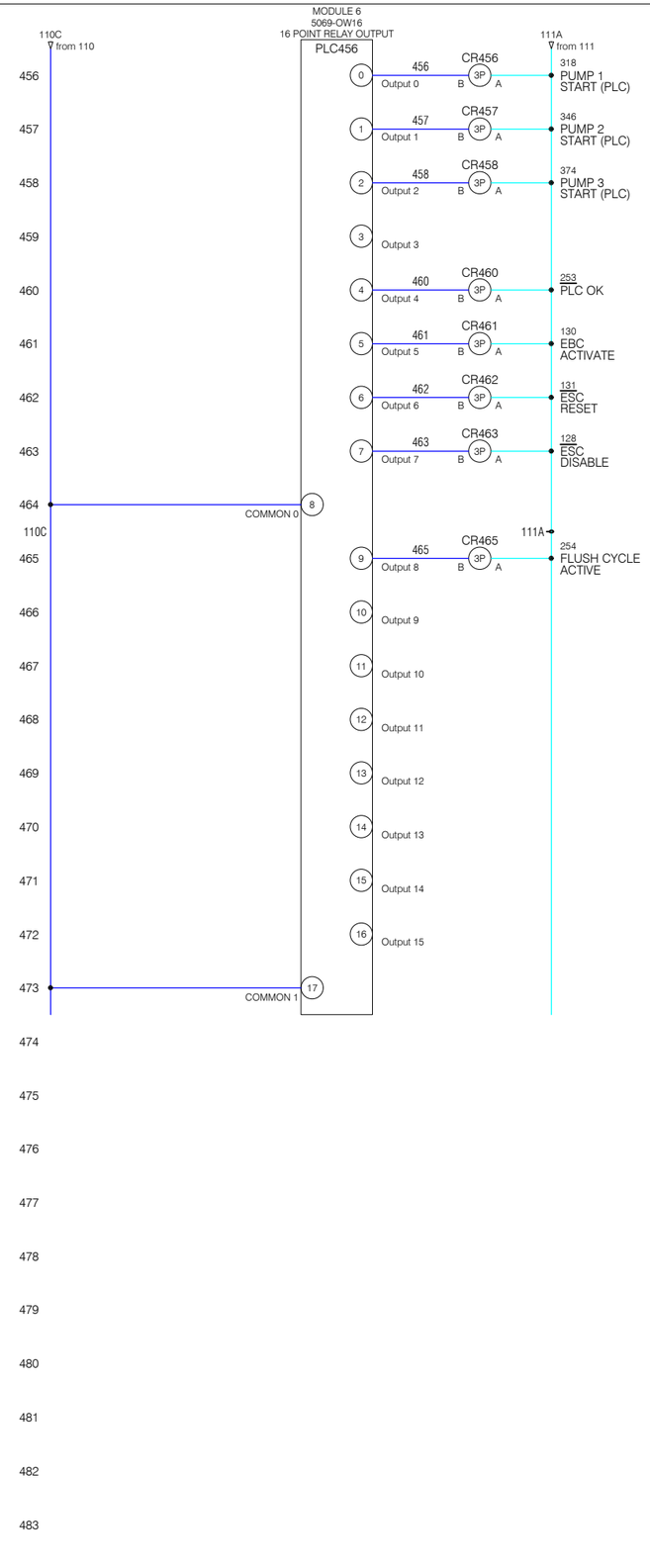
LOCATION	North Charleston
DRAWN BY: C Fox	CHECKED BY: n/a

JOB	Turkey Creek PS
PANEL	PLC Panel
DWG: L-978-4	SHEET: 3
STATUS: Submittal	DATE: 18 Apr 2025







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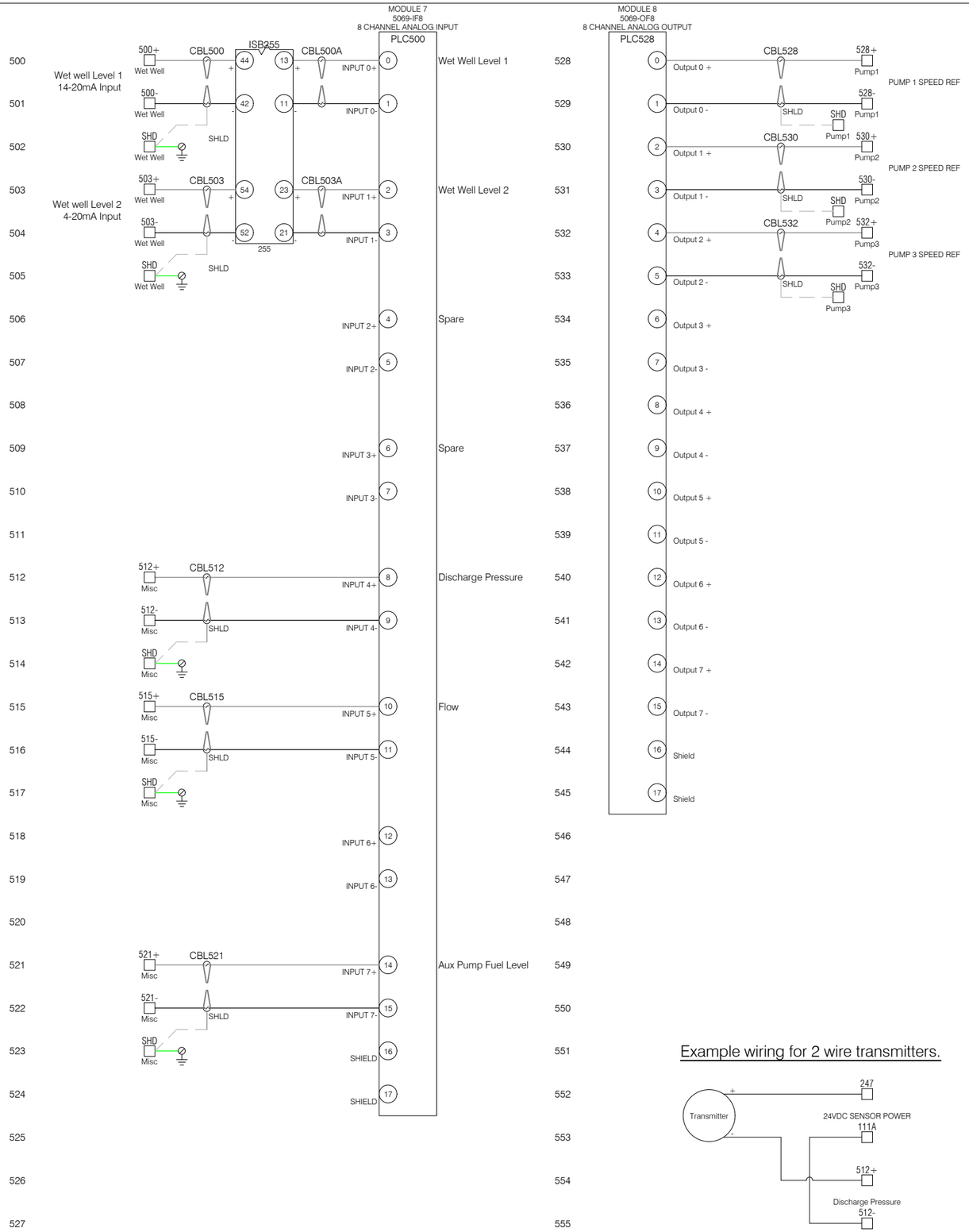
RELATING TO HAZARDOUS LOCATIONS

REVISIONS

CLIENT: Pete Duty & Associates (SC)	
CLIENT REF: n/a	
LOCATION: North Charleston	
DRAWN BY: C Fox	CHECKED BY: n/a

JOB: Turkey Creek PS	
PANEL: PLC Panel	
DWG: L-978-4	SHEET: 4
STATUS: Submittal	DATE: 18 Apr 2025



Example wiring for 2 wire transmitters.

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REVISIONS

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CLIENT REF: n/a	
LOCATION: North Charleston	
DRAWN BY: C Fox	CHECKED BY: n/a

JOB: Turkey Creek PS	
PANEL: PLC Panel	
DWG: L-978-4	SHEET: 5
STATUS: Submittal	DATE: 18 Apr 2025

PUMP 1 SPEED REF	528+	Pump1
PUMP 1 SPEED REF	528-	
	SHD	
PUMP 1 START	317	
PUMP 1 START	318	
ESC ACTIVE	320	
ESC ACTIVE	321	
HOA IN AUTO	300	Pump1
HOA IN AUTO	300A	
STARTER RUNNING	300	
STARTER RUNNING	301	
CONNECTION CHAMBER SF	300	
CONNECTION CHAMBER SF	302	
MOTOR CHAMBER SF	300	
MOTOR CHAMBER SF	303	
OIL CHAMBER SF	300	
OIL CHAMBER SF	304	
THERMAL SWITCH	300	
THERMAL SWITCH	305	
WINDING RTD 1 OT	300	
WINDING RTD 1 OT	306	
UPPER BEARING RTD OT	300	
UPPER BEARING RTD OT	307	
LOWER BEARING RTD OT	300	
LOWER BEARING RTD OT	308	
VIBRATION	300	
VIBRATION	309	
VFD BREAKER TRIP	300	
VFD BREAKER TRIP	310	
VFD OK	300	
VFD OK	311	
RVSS BREAKER TRIP	300	
RVSS BREAKER TRIP	312	
RVSS OK	300	
RVSS OK	313	
POWER OK	300	
POWER OK	314	
VFD SELECTED	300	
VFD SELECTED	315	

PUMP 2 SPEED REF	530+	Pump2
PUMP 2 SPEED REF	530-	
	SHD	
PUMP 2 START	345	
PUMP 2 START	346	
ESC ACTIVE	348	
ESC ACTIVE	349	
HOA IN AUTO	328	Pump2
HOA IN AUTO	328A	
STARTER RUNNING	328	
STARTER RUNNING	329	
CONNECTION CHAMBER SF	328	
CONNECTION CHAMBER SF	330	
MOTOR CHAMBER SF	328	
MOTOR CHAMBER SF	331	
OIL CHAMBER SF	328	
OIL CHAMBER SF	332	
THERMAL SWITCH	328	
THERMAL SWITCH	333	
WINDING RTD 1 OT	328	
WINDING RTD 1 OT	334	
UPPER BEARING RTD OT	328	
UPPER BEARING RTD OT	335	
LOWER BEARING RTD OT	328	
LOWER BEARING RTD OT	336	
VIBRATION	328	
VIBRATION	337	
VFD BREAKER TRIP	328	
VFD BREAKER TRIP	338	
VFD OK	328	
VFD OK	339	
RVSS BREAKER TRIP	328	
RVSS BREAKER TRIP	340	
RVSS OK	328	
RVSS OK	341	
POWER OK	328	
POWER OK	342	
VFD SELECTED	328	
VFD SELECTED	343	

PUMP 3 SPEED REF	532+	Pump3
PUMP 3 SPEED REF	532-	
	SHD	
PUMP 3 START	373	
PUMP 3 START	374	
ESC ACTIVE	376	
ESC ACTIVE	377	
HOA IN AUTO	356	Pump3
HOA IN AUTO	356A	
STARTER RUNNING	356	
STARTER RUNNING	357	
CONNECTION CHAMBER SF	356	
CONNECTION CHAMBER SF	358	
MOTOR CHAMBER SF	356	
MOTOR CHAMBER SF	359	
OIL CHAMBER SF	356	
OIL CHAMBER SF	360	
THERMAL SWITCH	356	
THERMAL SWITCH	361	
WINDING RTD 1 OT	356	
WINDING RTD 1 OT	362	
UPPER BEARING RTD OT	356	
UPPER BEARING RTD OT	363	
LOWER BEARING RTD OT	356	
LOWER BEARING RTD OT	364	
VIBRATION	356	
VIBRATION	365	
VFD BREAKER TRIP	356	
VFD BREAKER TRIP	366	
VFD OK	356	
VFD OK	367	
RVSS BREAKER TRIP	356	
RVSS BREAKER TRIP	368	
RVSS OK	356	
RVSS OK	369	
POWER OK	356	
POWER OK	370	
VFD SELECTED	356	
VFD SELECTED	371	

ALARM LIGHT	234	Alarm
ALARM LIGHT	111A	
ALARM HORN	235A	
ALARM HORN	111A	
GENERATOR RUN STATUS	132	Misc
GENERATOR RUN STATUS	132A	
GENERATOR FAULT	132	
GENERATOR FAULT	133	
UTILITY PVM	132	
UTILITY PVM	134	
INTRUSION ALARM	132	
INTRUSION ALARM	135	
INTRUSION ALARM	135	
INTRUSION ALARM	135A	
GRINDER RUNNING	132	
GRINDER RUNNING	136	
GRINDER FAULT	132	
GRINDER FAULT	137	
AUX PUMP RUNNING	132	
AUX PUMP RUNNING	138	
AUX PUMP FAIL	132	
AUX PUMP FAIL	139	
SUMP PUMP RUNNING	132	
SUMP PUMP RUNNING	140	
SUMP PUMP FAIL	132	
SUMP PUMP FAIL	141	
SPARE INPUT	132	
SPARE INPUT	143	
DRY WELL FLOAT	110C	Floats
DRY WELL FLOAT	232	
24VDC SENSOR POWER +	247	Misc
24VDC SENSOR POWER -	111A	
24VDC SENSOR POWER +	247	
24VDC SENSOR POWER -	111A	
24VDC SENSOR POWER +	247	
24VDC SENSOR POWER -	111A	
DISCHARGE PRESSURE	512+	
DISCHARGE PRESSURE	512-	
DISCHARGE PRESSURE	SHD	
FLOW METER	515+	
FLOW METER	515-	
FLOW METER	SHD	
AUX PUMP FUEL LEVEL	521+	
AUX PUMP FUEL LEVEL	521-	
AUX PUMP FUEL LEVEL	SHD	

Wet Well

145A	146A	147A	148A	149A	150A	151A	152A	153A	154A
PROBE 1 (HIGH)	PROBE 2	PROBE 3	PROBE 4	PROBE 5	PROBE 6	PROBE 7	PROBE 8	PROBE 9	PROBE 10 (LOW)

Floats

229	230
SSO WARNING	SSO WARNING

Wet Well

500+	500-	SHD	503+	503-	SHD
WET WELL LEVEL 1	WET WELL LEVEL 1	WET WELL LEVEL 1	WET WELL LEVEL 2	WET WELL LEVEL 2	WET WELL LEVEL 2

Network Map

Cat V Shielded

Modem	
IP Address:	TBD
Net Mask:	TBD
Gateway:	TBD

Modem-PLC

PLC port A1	
IP Address:	192.168.1.1
Net Mask:	255.255.255.0
Gateway:	192.168.127.254

Unmanaged 8 Port Switch

1 — EthSw-PLC

PLC port A2	
IP Address:	192.168.127.1
Net Mask:	255.255.255.0
Gateway:	192.168.127.254

2 — EthSw-HMI

HMI	
IP Address:	192.168.127.2
Net Mask:	255.255.255.0
Gateway:	192.168.127.254

3 — EthSw-P1

VFD	
IP Address:	192.168.127.11
Net Mask:	255.255.255.0
Gateway:	192.168.127.254

VFD-RVSS

Softstart	
IP Address:	192.168.127.21
Net Mask:	255.255.255.0
Gateway:	192.168.127.254

4 — EthSw-P2

VFD	
IP Address:	192.168.127.12
Net Mask:	255.255.255.0
Gateway:	192.168.127.254

VFD-RVSS

Softstart	
IP Address:	192.168.127.22
Net Mask:	255.255.255.0
Gateway:	192.168.127.254

5 — EthSw-P3

VFD	
IP Address:	192.168.127.13
Net Mask:	255.255.255.0
Gateway:	192.168.127.254

VFD-RVSS

Softstart	
IP Address:	192.168.127.23
Net Mask:	255.255.255.0
Gateway:	192.168.127.254

6

7

8

CONTROL INTERFACE, INC.
517 Commercial Drive
Fairfield, OH 45014
p/888.874.2062 f/513.874.2099
www.controlinterface.com

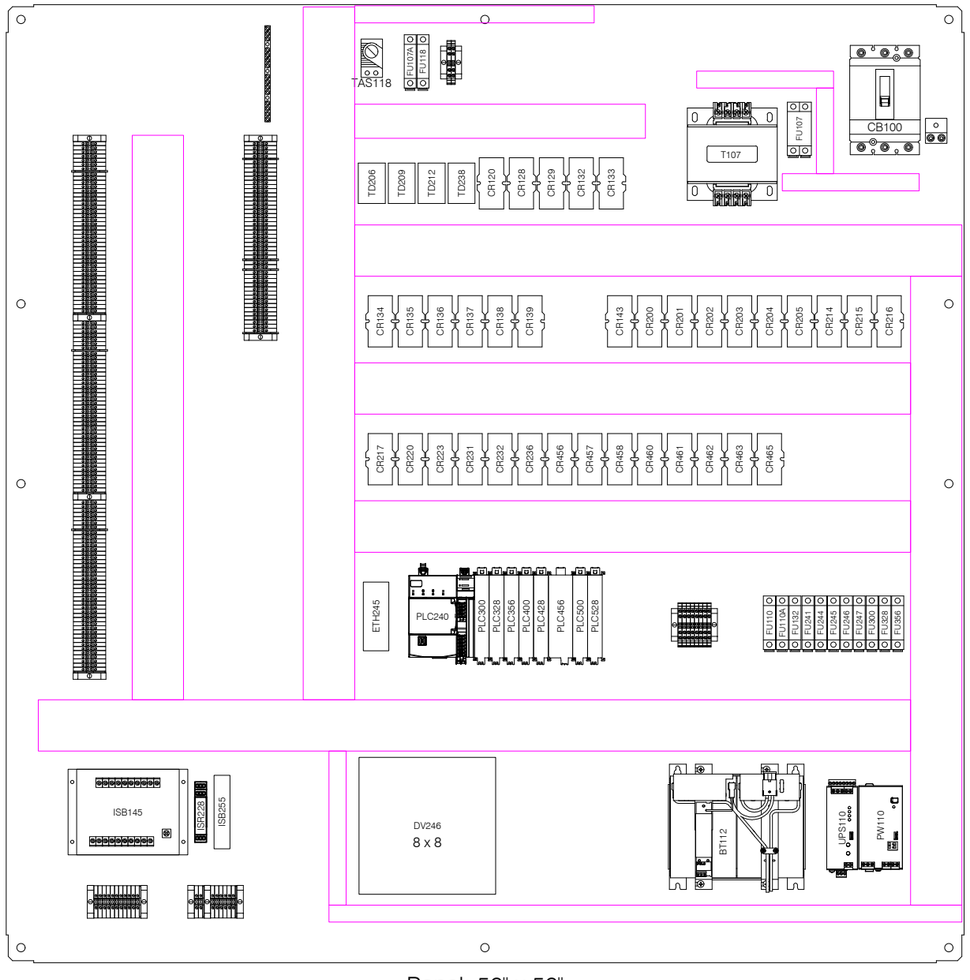
NOTES

UL LISTED | 698A
ENCLOSED INDUSTRIAL CONTROL PANEL
RELATING TO HAZARDOUS LOCATIONS

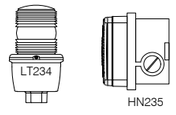
REVISIONS

CLIENT	Pete Duty & Associates (SC)
CLIENT REF	n/a
LOCATION	North Charleston
DRAWN BY	C Fox
CHECKED BY	n/a
JOB	Turkey Creek PS
PANEL	PLC Panel
DWG	L-978-4
SHEET	6
STATUS	Submittal
DATE	18 Apr 2025

PANEL LAYOUT

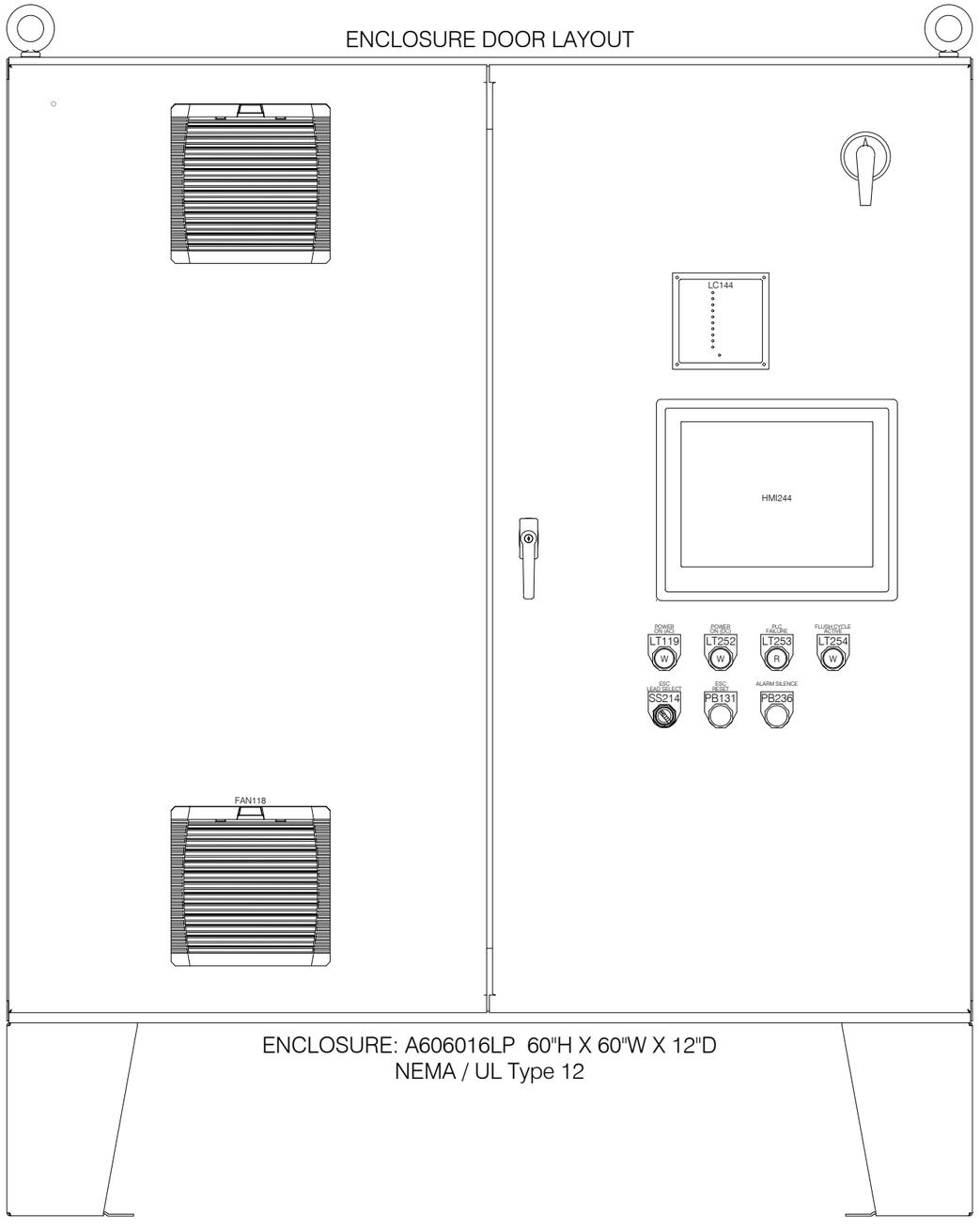


Panel: 56" x 56"



Remote mounted Alarm Light and Horn

ENCLOSURE DOOR LAYOUT



ENCLOSURE: A606016LP 60"H X 60"W X 12"D
NEMA / UL Type 12

CONTROL INTERFACE, INC.
517 Commercial Drive
Fairfield, OH 45014
p/888.874.2062 f/513.874.2099
www.controlinterface.com

NOTES

UL LISTED | 698A
ENCLOSED INDUSTRIAL CONTROL PANEL
RELATING TO HAZARDOUS LOCATIONS

REVISIONS

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CLIENT REF	n/a
LOCATION	North Charleston
DRAWN BY	C Fox
CHECKED BY	n/a

JOB	Turkey Creek PS
PANEL	PLC Panel
DWG	L-978-4
SHEET	7
STATUS	Submittal
DATE	18 Apr 2025

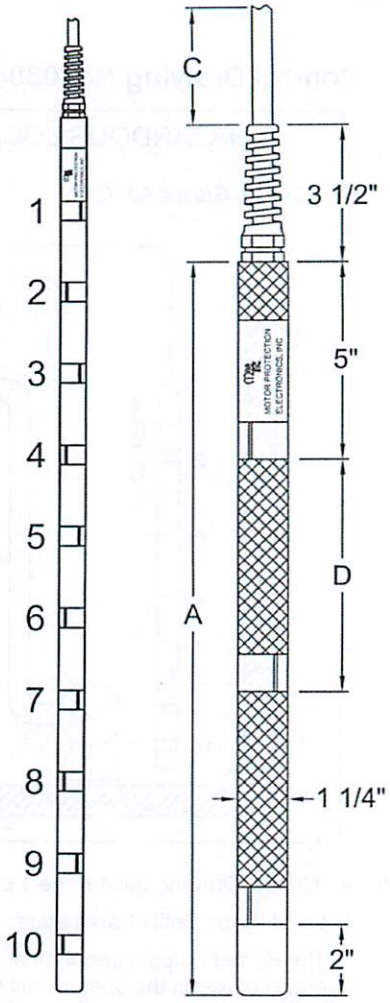
LEVEL PROBE

MOTOR PROTECTION ELECTRONICS INC.

MADE IN THE U.S.A.

TYPICAL APPLICATION

For use with any of MPE's pump controllers or conductance relays designed to operate with conductance probe.



DESCRIPTION

The Level Probe provides a rugged, safe, reliable and cost-effective means to measure liquid level for water and waste water pumping applications. The Level Probe may be ordered with one or ten electrodes with various spacing in between.

The Level Probe is typically connected to a pump controller (or conductance relay) that is designed to monitor a conductance probe and perform level measurement. The level is detected when the liquid level is high enough to touch one or more of the stainless steel electrodes on the Level Probe. The controller (or conductance relay) sends out a level sense signal to each electrode on the Level Probe. The signal typically consists of a ±12V square wave, capable of supplying no more than 1.5mA. When the liquid being measured touches one of the electrodes, the square wave signal is diverted to ground through the conductive liquid. The change in the signal is detected by the control device and used to determine the liquid level.

SPECIFICATIONS

Electrode Material:	Avesta 254 SMO High Grade Stainless Steel Alloy
Probe Casing Material:	PVC
Cable: (Multi-conductor)	PVC/PVC
Cable: (Single-Point)	PVC/PVC or EPDM
Operating Temp:	+32°F to +140°F

UL LISTED

UL 913

UL FILE # E189808

Intrinsically Safe; For use in Class 1, Groups A, B, C, D. Hazardous Locations when installed with suitable Intrinsically Safe Barrier, in accordance with Control Drawing No. 0304.

ORDERING INFORMATION

Part Number: LP - A - B - C

Probe Length (inches)
Number of Electrodes
Cable Length (feet)

Available Combinations:

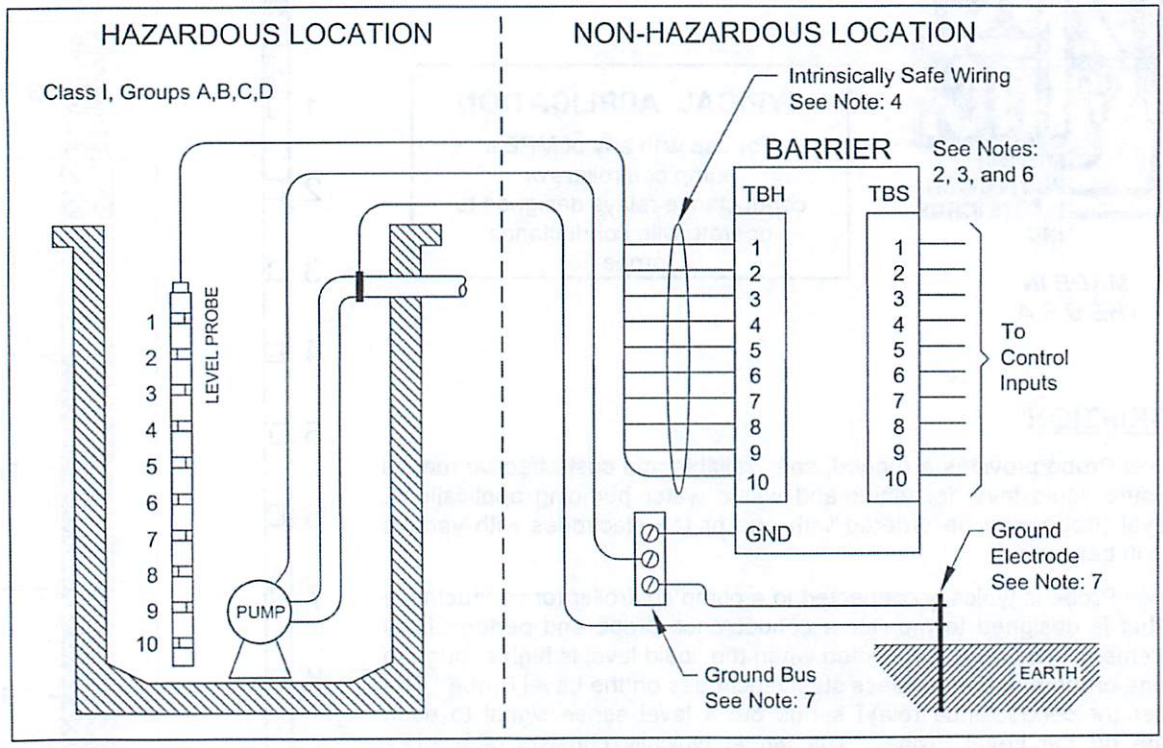
Probe Length (inches) A	Number of Electrodes B	Spacing Between Electrodes (inches) D
7	1	X
19	3	6
52	10	5
61	10	6
79	10	8
97	10	10
115	10	12

Contact M.P. Electronics for custom probe availability.

Cable Length (feet) C 50, 100

LEVEL PROBE

Control Drawing No. 0304 Page 1 of 2 TYPICAL LIFT STATION APPLICATION



Notes for Control Drawing 0304 Page 1 of 2:

1. Level Probe Entity Parameters: Vmax = 30.3 V Imax = 88.6 mA Pmax = 672 mW Ci = 6 nF Li = 20 µH
2. The Barrier output current must be limited by a resistor such that the output voltage versus current plot is a straight line drawn between the open-circuit voltage and the short-circuit current.
3. The Barrier must be third party listed as providing intrinsically safe circuits for the application, and have Voc not exceeding Vmax, Isc must not exceeding Imax, and Po of the Barrier must be less than or equal to the Pmax of the Level Probe, as shown in Table 1.
4. The capacitance and inductance of the cable from the Level Probe to the Barrier shall be calculated and must be included in the system calculations as shown in Table 1. Cable capacitance, Ccable, plus intrinsically safe equipment capacitance, Ci, must be less than the marked capacitance, Ca, shown on the Barrier used. The same applies for inductance (Lcable, Li and La respectively). Where cable capacitance and inductance per foot are not known, the following values shall be used: Ccable = 60 pF/ft, Lcable = 0.2 µH/ft.
5. If Po of the Barrier is not known, it may be calculated using the formula Po = (Voc * Isc)/4.
6. The Barrier must be installed in accordance with its manufacturer's control drawing and Article 504 of the National Electric Code (ANSI/NFPA 70) for installation in the United States, or Section 18 of the Canadian Electrical Code for installations in Canada.
7. The hazardous location ground and the Barrier ground must be connected to the ground bus in the power distribution panel. The ground bus must be connected to a suitable ground electrode per the National Electric Code (ANSI/NFPA 70) or other local codes, as applicable. The resistance of the ground path from the Barrier to the ground electrode must be less than 1 Ohm.
8. This associated apparatus (Barrier) must not be used in combination with another associated apparatus unless permitted by the associated apparatus certification.

Level Probe Part Number: LP - ___ - ___ - ___

Probe Length (inches) ___
Number of Electrodes 1, 2, 3, or 10 ___
Cable Length (feet) (Max Length = 100 ft) ___

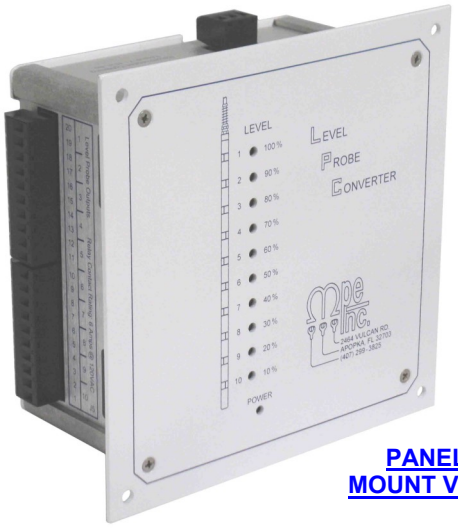
Table 1

Level Probe		Barrier
Vmax	≥	Vt
Imax	≥	It
Pmax	≥	Po
Ci + Ccable	≤	Ca
Li + Lcable	≤	La

Revision Date: 1-8-07

LEVEL PROBE CONVERTER w/ RELAYS

REVERSE MOUNT



PANEL MOUNT VEIW

TYPICAL APPLICATIONS

For use with any 10 electrode conductance probe where an analog 4-20mA level signal, relay outputs and a panel mounted level display are required.

c UL us LISTED

UL FILE # E101681

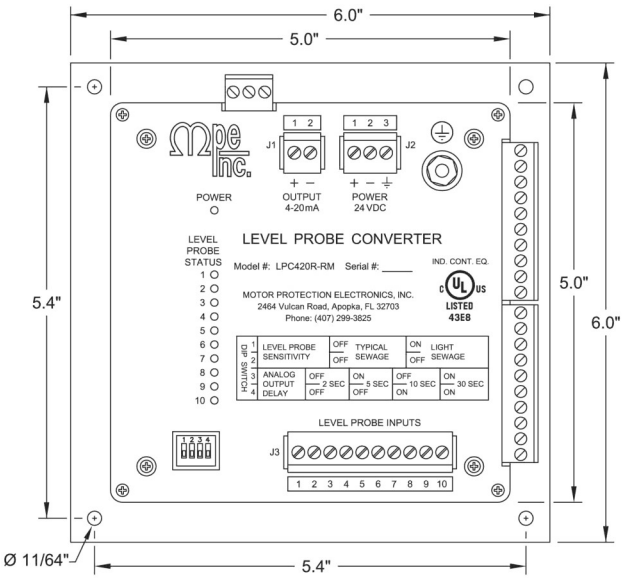
DESCRIPTION

The Reverse Mount LPC420 allows for viewing of the level display with the deadfront door closed, as well as open. Settings and connections are made on rear of unit.

The Level Probe Converter senses liquid level and provides a 4-20mA analog output for use by a pump controller or PLC to control liquid level. The unit monitors the ten electrodes on a Level Probe, and provides an analog signal that is proportional to level. The unit also provides 10 Relay Outputs with contacts that close as the liquid covers the respective Level Probe electrodes. The Relay Outputs may be used for pump control, level alarms or telemetry.

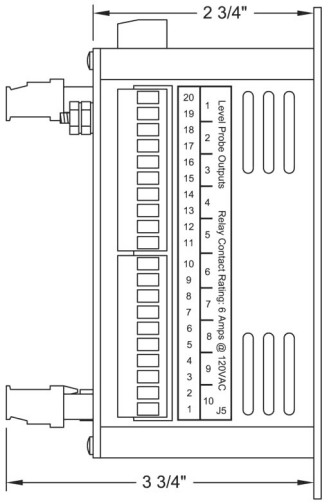
All setup is easily done using the four DIP switches on the unit. The Sensitivity of the unit must be set for the type of liquid being detected (see table below). The Analog Output Delay setting provides control over how fast the analog output transitions from one level output value to another. It takes 10 times the Analog Output Delay setting value to go from 4 mA to 20 mA, when the electrodes are covered quickly. When the electrodes are slowly covered one at a time, the Analog Output Delay is used to provide a smooth transition as the level goes from electrode to electrode.

DIP SWITCH						
1	LEVEL PROBE SENSITIVITY	OFF	TYPICAL SEWAGE	ON	LIGHT SEWAGE	
2		OFF		OFF		
3	ANALOG OUTPUT DELAY	OFF	2 SEC	ON	5 SEC	
4		OFF		ON		
3		OFF	10 SEC	ON	30 SEC	
4		ON		ON		



REAR VEIW

NUMBER OF ELECTRODES COVERED	ANALOG OUTPUT
NONE	4.0 mA
1	5.6 mA
2	7.1 mA
3	8.8 mA
4	10.4 mA
5	12.0 mA
6	13.6 mA
7	15.2 mA
8	16.8 mA
9	18.4 mA
10	20.0 mA



LEFT SIDE VEIW

SPECIFICATIONS

Input Power:	120 VAC ± 10% 7.7 VA max or 24 VDC ± 10% 160 mA max
Analog Output:	Non-Isolated 4-20 mA Maximum Load 600 Ω
Relay Outputs:	6 A @ 120 VAC
Sensor Output Voltage:	±8 V Square Wave @ 60 Hz
Sensor Output Current:	0.8 mA max (per sensor)
Operating Temp:	-20 to +65 °C
Storage Temp:	-45 to +85 °C
Enclosure:	Aluminum, Panel Mounted

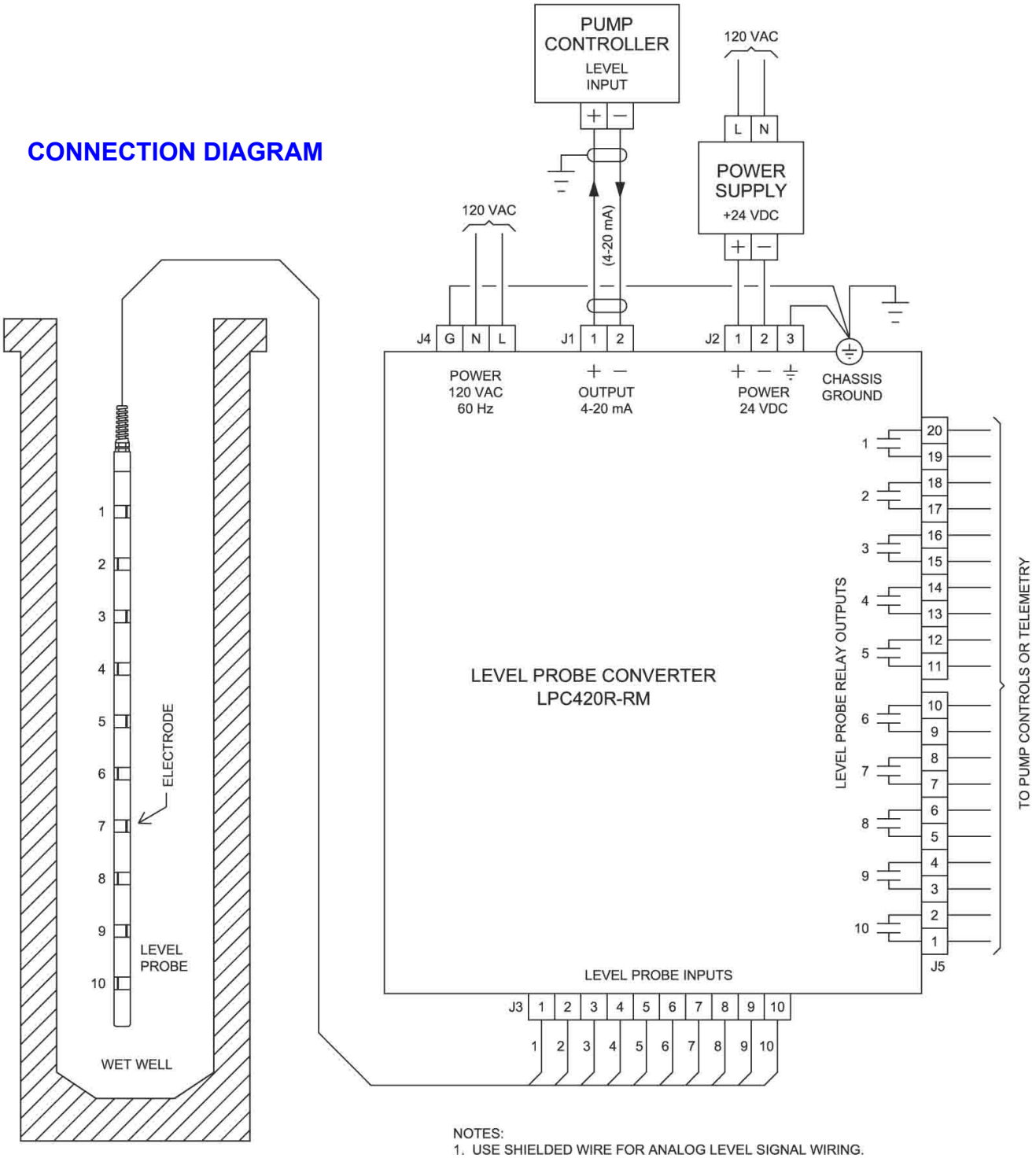
ORDERING INFORMATION

Model Number: **LPC420R-RM**

2464 Vulcan Road, Apopka, Florida 32703 (407) 299-3825 ♦ www.mpelectronics.com

LEVEL PROBE CONVERTER w/ RELAYS

CONNECTION DIAGRAM



NOTES:

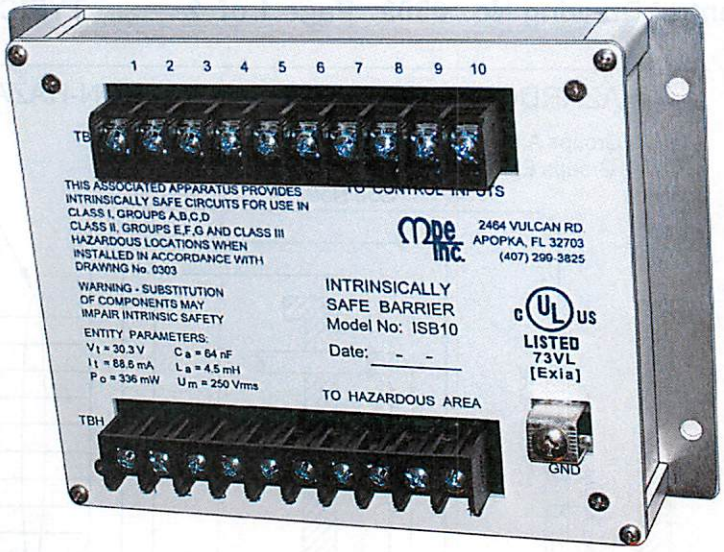
1. USE SHIELDED WIRE FOR ANALOG LEVEL SIGNAL WIRING. GROUND SHIELD AT ONE END.
2. THE LIQUID IN THE WET WELL MUST BE GROUNDED TO THE CONTROL PANEL GROUND. WHERE A SUBMERSIBLE PUMP IS PRESENT THE GROUNDED HOUSING OF THE PUMP IS SUFFICIENT.
3. UNIT MAY BE POWERED BY 24VDC OR 120VAC, BUT NOT BOTH.
4. WHEN THE UNIT IS POWERED FROM 120VAC, A GROUND CONNECTION IS REQUIRED ON BOTH J2 PIN 3 AND J4 PIN G.

2464 Vulcan Road, Apopka, Florida 32703 (407) 299-3825 ♦ www.mpelectronics.com

INTRINSICALLY SAFE BARRIER ISB10

MOTOR PROTECTION ELECTRONICS INC.

MADE IN THE U.S.A.



c UL us LISTED

UL 913

UL FILE #E189808

This associated apparatus provides intrinsically safe circuits for use in Class I, Groups A, B, C, D Class II, Groups E, F, G and Class III Hazardous Locations when installed in accordance with drawing No. 0303.

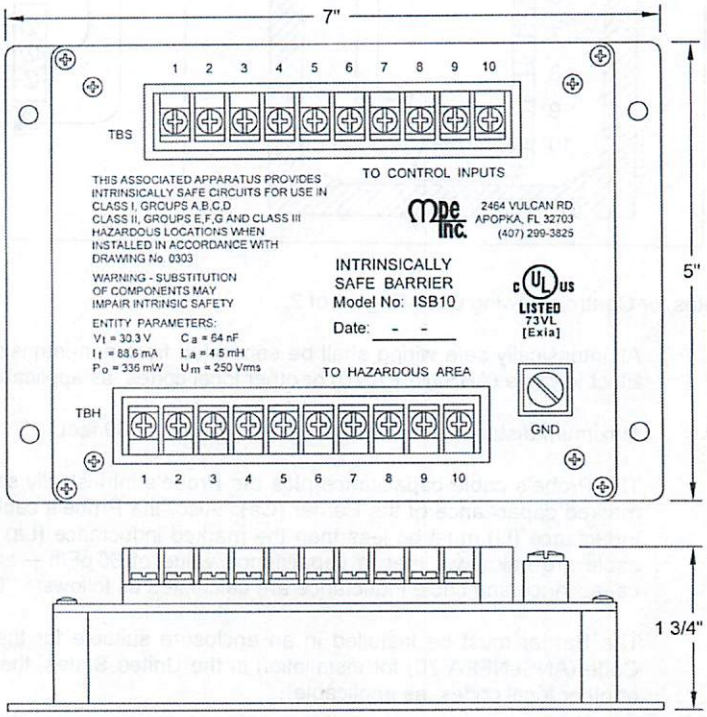
TYPICAL APPLICATIONS

For use with any of MPE's conductance probes where intrinsic safety is required.

DESCRIPTION

The ISB10 provides an intrinsically safe barrier between a 10 channel conductance probe in a hazardous location and pump controls in a non-hazardous area. The barrier is designed to allow the level sense signal (±12V square wave) from the pump control device to pass through unchanged. If an accident or malfunction occurs in the control panel that would potentially connect spark-inducing energy to the probe wiring in the wet well, the barrier clamps to limit the voltage and current to a safe level. The barrier has a fuse in each channel that is capable of disconnecting the barrier from a high energy source that may be present in the control panel.

Fuses are not field replaceable.



SPECIFICATIONS

Operating Temp:	-20°C to +65°C
Storage Temp:	-45°C to +85°C
Enclosure:	Aluminum
Rated Operating Voltage:	±12.0 V
Barrier Clamp Voltage:	±15.15 V
Internal Resistance:	1.92 k Ω Nominal Per Channel

ENTITY PARAMETERS

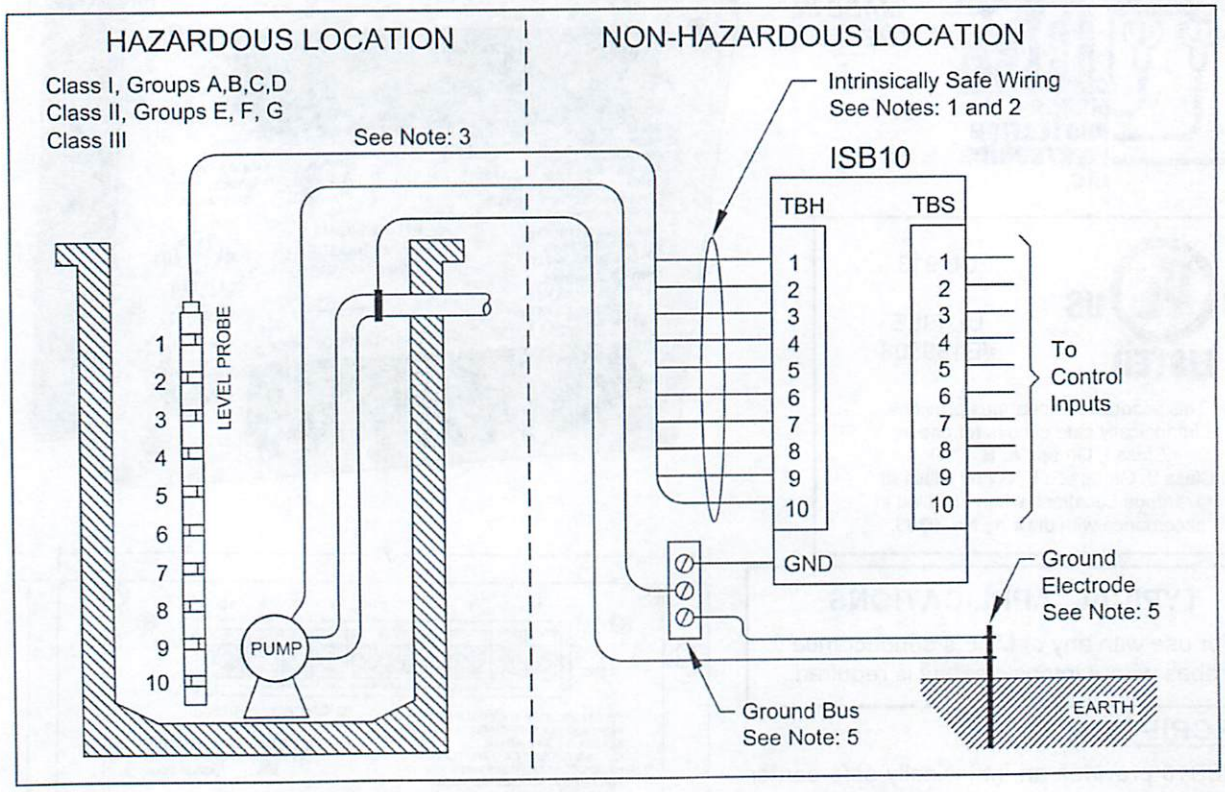
Vt = 30.3 V	Ca = 64 nF
I t = 88.6 mA	La = 4.5 mH
Po = 336 mW	Um = 250 Vrms

ORDERING INFORMATION

Model Number: ISB10

INTRINSICALLY SAFE BARRIER ISB10

Control Drawing No. 0303 Page 1 of 2 TYPICAL LIFT STATION APPLICATION



Notes for Control Drawing 0303 Page 1 of 2:

1. All intrinsically safe wiring shall be separated from non-intrinsically safe wiring. Refer to article 504.2 of the National Electric Code (ANSI/NFPA 70) or other local codes, as applicable.

2. Maximum distance between Barrier and Probe is 100 feet.

3. The Probe's cable capacitance plus the Probe's intrinsically safe equipment capacitance (Ci) must be less than the marked capacitance of the Barrier (Ca). Also, the Probe's cable inductance plus Probe's intrinsically safe equipment Inductance (Li) must be less than the marked inductance (La) shown on Barrier. If the electrical parameters of the cable are unknown, then a capacitance value of 60 pF/ft – and an inductance of 0.20 µH/ft are to be used. Cable capacitance and cable inductance are calculated as follows: 60 pF/ft x 100 ft = 6 nF 0.2 µH/ft x 100 ft = 20 µH

4. The Barrier must be installed in an enclosure suitable for the application in accordance with the National Electric Code (ANSI/NFPA 70) for installation in the United States, the Canadian Electrical Code for installations in Canada, or other local codes, as applicable.

5. The hazardous location ground and the Barrier ground must be connected to the ground bus in the power distribution panel. The ground bus must be connected to a suitable ground electrode per the National Electric Code (ANSI/NFPA 70) or other local codes, as applicable. The resistance of the ground path from the Barrier to the ground electrode must be less than 1 Ohm.

6. The Barrier must not be connected to devices that use or generate more than 250 Vrms or dc with respect to earth.

7. This associated apparatus (Barrier) has not been evaluated for use in combination with another associated apparatus.

Barrier Entity Parameters: Vt = 30.3 V It = 88.6 mA Ca = 64 nF La = 4.5 mH Po = 336 mW Um = 250 Vrms

Revision Date: 11-30-06