

McElhanney Cover D - 2024-02-05
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CLIENT

DISTRICT OF HUDSON'S HOPE

ADDRESS / CONTACT INFO.

9904 DUDLEY DRIVE, HUDSON'S HOPE, BC V0C 1V0

PROJECT NAME

WATER TREATMENT PLANT

DESCRIPTION

UPGRADES - PACKAGE 3
BALANCE OF PLANT:
PROCESS MECHANICAL AND INSTRUMENTATION

McELHANNEY PROJECT

3111-27018-02

OTHER REFERENCE

REV. 1

STATUS

ISSUED FOR QUOTATION



McElhanney

DRAWING LIST		REVISIONS						
SHEET #	SHEET TITLE	0	1	2	3	4	5	6
P3-P000	COVER	■	■					
P3-P001	NOTES	■	■					
P3-P002	NOTES CONTINUED	■	■					
P3-P003	NOTES CONTINUED	■	■					
P3-P004	TYPICAL DETAILS	■	■					
P3-P005	PIPING ISOMETRIC VIEW	■	■					
P3-P006	PIPING ISOMETRIC VIEW	■	■					
P3-P101	LAYOUT - T.O. SLAB	■	■					
P3-P201	SECTION - P3-A	■	■					
P3-P202	SECTION - P3-B	■	■					
P3-P203	SECTION - P3-C	■	■					
P3-P204	SECTION - P3-D	■	■					
P3-P205	SECTION - P3-E	■	■					
P3-P206	SECTION - P3-F	■	■					
P3-P207	SECTION - P3-G	■	■					
P3-P208	SECTION - P3-H	■	■					
P3-P209	SECTION - P3-J	■	■					
P3-P301	DETAILS	■	■					

SUMMARY OF WORKS

- 1. WORKS COVERED BY THE CONTRACTOR SHALL INCLUDE NEW CONSTRUCTION, EQUIPMENT INSTALLATION AND COMMISSIONING OF THE HUDSON'S HOPE WATER TREATMENT PLANT (WTP)... 2. THE SCOPE OF WORK INCLUDES: A. UPGRADED WATER TREATMENT PLANT WITH SUPPLY AND INSTALLATION OF ALL NECESSARY MATERIALS AND COMPONENTS... B. SUPPLY AND INSTALL ALL PIPING WITHIN THE WTP BUILDING AND OTHER APPURTENANCES... C. SUPPLY AND INSTALL WTP VALVES AND APPURTENANCES TO ALLOW FOR ISOLATION AND OPERATION OF THE WTP... D. WTP INSTRUMENTATION AND AUTOMATED PROCESS CONTROL SYSTEM... E. PROCESS MECHANICAL ENGINEERING WORKS AS LISTED IN THE TENDER DOCUMENTS... F. INSTALLATION AND INTEGRATION OF EQUIPMENT AND CONNECTION TO NEW AND EXISTING PROCESS MECHANICAL SYSTEMS...

GENERAL NOTES

- 1. PROVIDE COMPLETE, FULLY TESTED BY THE AUTHORITY HAVING JURISDICTION AND OPERATIONAL MECHANICAL SYSTEMS TO MEET THE REQUIREMENTS DESCRIBED HEREIN AND IN COMPLETE ACCORDANCE WITH ALL APPLICABLE CODES, ORDINANCES... 2. THE DRAWINGS ACCOMPANYING THIS SPECIFICATION ARE TO BE CONSIDERED AS DIAGRAMMATIC ONLY AND DO NOT SHOW ALL THE STRUCTURAL AND CONSTRUCTION DETAILS... 3. THESE DRAWINGS AND SPECIFICATIONS SHALL BE CONSIDERED AN INTEGRAL PART OF THE CONTRACT DOCUMENTS... 4. MOST STRINGENT REQUIREMENTS OF ALL SECTIONS SHALL BE ADHERED TO... 5. THE LOWEST SPECIFICATION SHALL BE ASSUMED INCLUDING BUT NOT LIMITED TO ASTM AND AWWA... 6. ANY ERROR, INCONSISTENCY, CONFLICTS OR WORK NOT INDICATED IN THE CONTRACT DRAWINGS OR SPECIFICATIONS NOTED AFTER THE AWARD OF CONTRACT MUST BE REPORTED TO THE ATTENTION OF THE ENGINEER BEFORE COMMENCING WORK... 7. CONTRACTOR TO PROVIDE ENGINEER WITH MATERIALS AND LABOUR BREAKDOWN FOR EACH ITEM LISTED ON CHANGE NOTICES... 8. FOLLOW MANUFACTURERS RECOMMENDED INSTALLATION DETAILS AND PROCEDURES FOR EQUIPMENT... 9. CONTRACTOR TO ASSUME RESPONSIBILITY FOR DAMAGE CAUSED TO THE OWNER OR OTHERS BY IMPROPER WORK... 10. THE OWNER RESERVES THE RIGHT TO DELETE ANY OF THE WORK FROM THE CONTRACT... 11. INSTALL EQUIPMENT AND PIPING GENERALLY IN LOCATIONS AND ROUTES SHOWN IN THE DRAWING PACKAGE... 12. ALL WORK TO BE COMPLETED IN AN ORGANIZED AND ORDERLY MANNER WITH ATTENTION ALSO DIRECTED TOWARDS CONSERVING HEADROOM AND AVOIDING INTERFERENCE... 13. PROTECT EXISTING SERVICES. MINIMIZE SHUTDOWNS OF EXISTING SERVICES DURING CONSTRUCTION... 14. PROVIDE SEISMIC RESTRAINTS FOR ALL EQUIPMENT, PIPING, AND DUCTWORK WHEN REQUIRED BY CODE... 15. FIELD VERIFY ALL BUILDING AND SITE DIMENSIONS PRIOR TO ANY FABRICATION AND INSTALLATION OF EQUIPMENT OR MATERIALS... 16. THE LAYOUT OF THE MECHANICAL SYSTEMS AND EQUIPMENT IS BASED UPON ESTIMATES OF PHYSICAL DIMENSIONS... 17. INSTALL ALL MECHANICAL EQUIPMENT AND SERVICES IN ORDER THAT MAINTENANCE AND DISASSEMBLY WILL HAVE MINIMUM DISTURBANCE... 18. ALL EQUIPMENT SHALL BE INSTALLED WITH ADEQUATE ACCESS FOR INSPECTION AND SERVICING... 19. COORDINATE WITH ALL OTHER SUB-TRADES AT THE START AND THROUGHOUT THE PROJECT TO PREVENT AVOIDABLE CONFLICTS... 20. PROVIDE FIRE STOPPING MEASURES AT PENETRATIONS OF ALL RATED WALL ASSEMBLIES... 21. COORDINATE LOCATION OF OPENINGS REQUIRED FOR WORK WITH RESPECTIVE TRADES AND CONTRACTORS... 22. KEEP AND MAINTAIN A SET OF CLEARLY MARKED-UP RED LINE DRAWINGS ONSITE THAT REFLECT CURRENT BUILD CONDITIONS... 23. INFORMATION ON EXISTING UNDERGROUND FACILITIES MAY NOT BE COMPLETE OR ACCURATE... 24. ANY PROPOSED DEVIATIONS FROM THE PLANS OR SPECIFICATIONS ARE TO BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION...

GENERAL NOTES CONTINUED

- 24. ANY PROPOSED DEVIATIONS FROM THE PLANS OR SPECIFICATIONS ARE TO BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION... 25. ALL MEASUREMENTS ARE METRIC... 26. THE DESIGN INFORMATION CONTAINED IN THESE DRAWINGS ACCURATELY REFLECTS THE ORIGINAL DESIGN AND THE MATERIAL DESIGN CHANGES MADE DURING CONSTRUCTION... 27. MCHELHANEY DOES NOT WARRANT OR GUARANTEE NOR ACCEPT ANY RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE AS-CONSTRUCTED INFORMATION... 28. REFER TO THE SUPPLEMENTAL SPECIFICATIONS OF THIS TENDER PACKAGE FOR ADDITIONAL SPECIFICATIONS

CIVIL GENERAL NOTES

- 1. ALL CIVIL WORKS TO BE HANDLED BY OTHERS UNDER A SEPARATE CONTRACT.

SHOP DRAWINGS

- 1. GENERAL A. THIS SECTION SPECIFIES GENERAL REQUIREMENTS AND PROCEDURES FOR CONTRACTOR'S SUBMISSIONS OF SHOP DRAWINGS AND PRODUCT DATA TO CONTRACTOR ADMINISTRATOR FOR REVIEW... B. UNTIL SUBMISSION IS REVIEWED, WORK INVOLVING RELEVANT PRODUCT MAY NOT PROCEED... C. PRESENT SHOP DRAWINGS IN METRIC UNITS UNLESS SPECIFIED OTHERWISE... D. CONTRACTOR'S RESPONSIBILITY FOR ERRORS AND OMISSIONS IN SUBMISSION IS NOT RELIEVED BY CONTRACTOR ADMINISTRATOR'S REVIEW OF SUBMISSIONS... E. NOTIFY CONTRACTOR ADMINISTRATOR, IN WRITING AT TIME OF SUBMISSION, IDENTIFYING DEVIATIONS FROM REQUIREMENTS OF CONTRACT DOCUMENTS STATING REASONS FOR DEVIATIONS AND SUPPORTING DATA... F. CONTRACTOR'S RESPONSIBILITY FOR DEVIATIONS IN SUBMISSION FROM REQUIREMENTS OF CONTRACT DOCUMENTS IS NOT RELIEVED BY CONTRACTOR ADMINISTRATOR'S REVIEW OF SUBMISSION... G. MAKE ANY CHANGES IN SUBMISSIONS WHICH CONTRACTOR ADMINISTRATOR MAY REQUIRE CONSISTENT WITH CONTRACT DOCUMENTS AND RESUBMIT AS DIRECTED BY CONTRACTOR ADMINISTRATOR... H. NOTIFY CONTRACTOR ADMINISTRATOR, IN WRITING, WHEN RESUBMITTING, OF ANY REVISIONS OTHER THAN THOSE REQUESTED BY CONTRACTOR ADMINISTRATOR... 2. ADDITIONAL REQUIREMENTS FOR SHOP DRAWING SUBMITTALS ARE PROVIDED IN THE SUPPLEMENTAL SPECIFICATIONS OF THIS TENDER PACKAGE.

EQUIPMENT AND MATERIALS

- 1. PROVIDE EQUIPMENT AS SPECIFIED ON THE DRAWINGS. ALTERNATE EQUIPMENT IS TO BE APPROVED BY THE OWNER IN WRITING... 2. ALL EQUIPMENT AND MATERIALS ARE TO MEET INDUSTRY TESTING STANDARDS, BE APPROPRIATELY RESTRAINED SEISMICALLY FOR THE LOCAL SEISMIC ZONE... 3. ALL MECHANICAL EQUIPMENT AND PIPING MATERIALS SHALL BE NEW AND CURRENT MANUFACTURE... 4. ALL MEASUREMENTS SHOULD BE CONSIDERED APPROXIMATE AND THE CONTRACTOR WILL BE RESPONSIBLE FOR VERIFYING MEASUREMENTS PRIOR TO FABRICATION... 5. ALL PRODUCTS SHALL BE DESIGNED AND SUITABLE FOR POTABLE WATER SERVICE... 6. ALL EQUIPMENT, WIRING, CONNECTORS, AND OTHER APPURTENANCES SHALL BE WATERPROOF AND BE OF AN APPROPRIATE MATERIAL THAT RESISTS CORROSION... 7. THE CONTRACTOR SHALL SUPPLY DIGITAL DRAWINGS (PDF) ILLUSTRATING EXTERNAL DIMENSIONS AND MAJOR STRUCTURAL DETAILS... 8. ALL EQUIPMENT SHALL BE PROTECTED FROM DAMAGE DURING HANDLING, SHIPPING, STORAGE OR INSTALLATION... 9. THE SUPPLIER SHALL INDICATE A LIST OF SPARE PARTS WHICH THEY WOULD RECOMMEND TO BE PURCHASED AND INDIVIDUAL PRICES FOR EACH ITEM... 10. THE CONTRACTOR SHALL SUPPLY A COMPLETE LIST OF ALL SUPPLIED EQUIPMENT, VALVES AND INSTRUMENTATION... 11. CONTRACTOR IS RESPONSIBLE FOR RECEIVING EQUIPMENT, INSPECTING AND CUSTODY OF OWNER SUPPLIED EQUIPMENT... 12. THE CONTRACTOR SHALL FURNISH ALL LABOUR, MATERIALS, AND EQUIPMENT TO PRODUCE, SUPPLY, AND INSTALL PERMANENT, DURABLE, AND LEGIBLE IDENTIFICATION TAGS/DATA PLATES FOR ALL EQUIPMENT AS IDENTIFIED IN THE CONTRACT DOCUMENTS.

INSPECTION AND COMMISSIONING

- 1. ALL NEW COMPONENTS ARE TO BE INSPECTED FOR DAMAGE PRIOR TO INSTALLATION AND ANY DAMAGED COMPONENTS IS TO BE REMOVED FROM THE SITE... 2. THE ENGINEER OR THEIR REPRESENTATIVE MAY CHOOSE TO INSPECT ALL WORK PRIOR TO BEING CONCEALED... 3. THE CONTRACTOR IS TO PROVIDE THE ENGINEER REASONABLE NOTICE (7 DAYS FOR LOCAL SITES) PRIOR TO CALLING AN INSPECTION... 4. CONTRACTOR SHALL KEEP AN ACCURATE RECORD OF ALL FIELD CHANGES AND MODIFICATIONS ON A CLEAN SET OF DRAWINGS AS REQUIRED... 5. ENGINEER SHALL HAVE ACCESS TO STORAGE AREAS FOR INSPECTION AT ANY TIME AT THE CONTRACTORS COST... 6. ALL MECHANICAL PIPING SHALL BE PRESSURE TESTED PRIOR TO CALLING FOR COMMISSIONING AND FLUSHED OF DEBRIS BEFORE CONNECTING TO THE EXISTING SUPPLY MAIN... 7. REFER TO THE SUPPLEMENTAL SPECIFICATIONS OF THE TENDER PACKAGE FOR FUNCTIONAL TESTING REQUIREMENTS INCLUDING DRY TESTING AND WET TESTING... 8. HYDROSTATIC TESTING AT THE CONTRACTORS COST SHALL BE: A. ABOVEGROUND PIPING a. 450PSI FOR 150# FLANGES ON PIPING WELDED... b. 15x WORKING PRESSURE (MIN. 450PSI) FOR GROOVED OR THREADED JOINTS AND WELDED JOINTS... c. 60 MINUTE TEST, ZERO PRESSURE DROP / LEAKAGE AND NO VISIBLE WET AREAS / DRIPS... B. CONFIRM WITH ENGINEER FOR FINAL TEST PRESSURES... C. ENGINEER'S TIME ON SITE WILL BE BACKCHARGED TO THE CONTRACTOR FOR ALL FAILED TESTS OR DELAYS ON SITE... 9. CONTRACTOR SHALL PROVIDE THE FOLLOWING QUALITY ASSURANCE ITEMS: A. COMPLETION AND REPORTING OF A FACTORY ACCEPTANCE TEST (FAT) COMPLETE WITH A CONCISE LIST OF TESTING REQUIRED ON SITE... B. ACCEPTANCE OF SHIPPED GOODS THAT ARE FREE OF DEFECTS OR DAMAGE DUE TO SHIPPING AND ARE COMPLETE IN ALIGNMENT WITH THE SHIPPING BILL OF GOODS... C. ACKNOWLEDGEMENT THAT THE SYSTEM IS READY FOR INSTALLATION... D. ACKNOWLEDGEMENT THAT SYSTEM IS INSTALLED TO THE CONTRACTOR'S SATISFACTION AND SYSTEM CAN BEGIN COMMISSIONING AND START UP... E. ACKNOWLEDGEMENT THAT THE SYSTEM IS FULLY COMMISSIONED AND READY FOR TURN OVER TO OWNER'S OPERATOR OF RECORD... F. ACKNOWLEDGEMENT THAT THE SYSTEM IS FULLY COMMISSIONED AND READY FOR SERVICE TO THE WATER DISTRIBUTION SYSTEM... G. ACKNOWLEDGEMENT THAT THE RECORD DOCUMENTATION HAS BEEN COMPLETED AND DRAWINGS ARE CERTIFIED AS CORRECT... 10. THE CONTRACTOR SHALL ENSURE NEW INSTALLATIONS IN CONTACT WITH POTABLE WATER ARE DISINFECTED TO AWWA 651 AND 653 STANDARDS... 11. COMMISSIONING SHALL ONLY BE SCHEDULED WHEN THE CONTRACTOR HAS INFORMED THE ENGINEER OF READINESS... 12. CONTRACTOR TO PROVIDE A TRAINING PLAN AND SCHEDULE TO PROVIDE ADEQUATE TRAINING TO THE OWNER PRIOR TO TURN OVER TO THE OWNER... 13. ADDITIONAL REQUIREMENTS FOR COMMISSIONING AND PROOF OF PERFORMANCE IS PROVIDED IN THE SUPPLEMENTAL SPECIFICATIONS OF THE TENDER PACKAGE.

SUPPORT, ANCHORS AND SEALS

- 1. PROVIDE ALL THE NECESSARY SUPPORTS AND HANGERS TO SECURE MECHANICAL SYSTEMS AND EQUIPMENT... 2. PROVIDE CODE COMPLIANT FIRE STOPPING MEASURES AT ALL DUCT AND PIPING PENETRATIONS THROUGH RATED WALLS... 3. PROVIDE OVERSIZED HANGERS ON ALL COLD PIPES TO FIT OVER PIPE INSULATION WHERE REQUIRED... 4. PROVIDE ISOLATION AND PREVENT CONTACT WITH DISSIMILAR MATERIALS... 5. ALL EXPOSED PIPING PENETRATIONS SHALL BE PROVIDED WITH ESCUTCHEONS AT THE PENETRATION POINT... 6. ALL DUCT WORK TO BE SUPPORTED AS PER SMACVA... 7. GROUT FOR PIPE SUPPORTS AND PIPING INSERTS: GROUT FOR BASE ELBOW AND PIPE SUPPORTS SHALL BE A HIGH STRENGTH NON-SHRINK GROUT... 8. CONTRACTOR TO SUPPLY SHOP DRAWINGS FOR ALL SUPPORTS, ANCHORS AND SEALS SHOWING SEISMIC RESTRAINT CALCULATIONS AS APPLICABLE... 9. CONTRACTOR TO CONFIRM ALL PROPOSED LOCATIONS OF PIPE HANGERS AND SUPPORTS TO MEET THE INTENT OF THE P-SERIES DRAWING SET AND PROPOSE ADDITIONAL OR ALTERNATE HANGER/SUPPORT LOCATIONS WHERE REQUIRED.

WORK SITE TEMPERATURES

- 1. CONTRACTOR TO PROVIDE TEMPORARY HEAT AS REQUIRED TO PROTECT SYSTEMS FROM FREEZING, CURING, OR TESTING IF LOCAL LOW OVERNIGHT TEMPERATURES ARE LESS THAN + 5°C AS PREDICTED BY ENVIRONMENT CANADA... 2. CONTRACTOR TO FOLLOW COLD AND HOT WEATHER CONCRETING TECHNIQUES AS PER MIMC, AWWA OR STRUCTURAL SPECIFICATIONS.

SAFETY

- 1. THE CONTRACTOR SHALL CONSTRUCT THE FACILITY TO COMPLY WITH ALL APPLICABLE WORK SAFE BC STANDARDS, SUCH AS SIGNAGE, SAFETY GEAR, TRAINING, ATMOSPHERIC MONITORING DEVICES, VENTILATION, AND EYEWASH AND SAFETY SHOWER LOCATIONS.

PIPING

- 1. THE DRAWINGS SHOW ALL PIPING IN THE WATER TREATMENT PLANT... A. SHALL BE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH ASME, AWWA OR CSA STANDARDS... B. USE SEISMICALLY APPROPRIATE PIPE MATERIALS AND CONNECTIONS FOR ALL PIPES... C. USE COMPATIBLE FLANGES OR GROOVED COUPLINGS FOR STEEL PIPE AND EQUIPMENT CONNECTIONS THAT ARE EQUAL TO OR GREATER THAN 75 MM IN DIAMETER... D. USE SOCKET WELDED OR FLANGED EQUIPMENT CONNECTIONS FOR PVC PIPE WHERE POSSIBLE... E. BE APPROPRIATE FOR THE TYPE OF LIQUID TO BE CONVEYED... F. HAVE PROPER ISOLATION THROUGH VALVES, SPECTACLE BLINDS AND PIPE SECTIONS TO ALLOW FOR REPAIR OR REPLACEMENT... G. PROVIDE COUPLINGS DOWNSTREAM OF ISOLATION VALVES TO ALLOW FOR MAINTENANCE OF PIPING... H. BE MADE OF SIMILAR MATERIALS (E.G. PIPE APPURTENANCES); OTHERWISE, DIELECTRIC COUPLINGS... I. SHOULD BE EMPLOYED TO REDUCE GALVANIC CORROSION... J. BE PROVIDED WITH DRAINS AT ALL LOW POINTS AND AIR VALVES AT ALL HIGH POINTS... 2. PIPING MATERIALS ALLOWED WITHIN THIS CONTRACT INCLUDE: A. PVC PIPE SCH 80: a. PVC SCH 80 PIPE CERTIFIED TO CSA B137.3 STANDARD... b. TO ASTM D1785 - STANDARD SPECIFICATION FOR POLY(VINYL CHLORIDE) (PVC) PLASTIC PIPE... c. TO BE COMPATIBLE WITH FITTINGS WITHOUT SPECIAL ADAPTERS... d. FITTINGS SHALL BE OF THE SAME MATERIAL AS THE PIPE AND SHALL CONFORM TO CSA B137.2 STANDARD... 3. 304L STAINLESS STEEL PIPE: a. PIPE SHALL BE SS 304L, SCHEDULE 10S (UNLESS OTHERWISE NOTED)... b. PIPE SHALL BE SS 304L STANDARD WALL FOR ALL DIFFICULT TO ACCESS, CONCEALED, OR COVERED AREAS... c. TO ASTM A312 / A312M - 17 - STANDARD SPECIFICATION FOR SEAMLESS, WELDED, AND HEAVILY COLD WORKED AUSTENITIC STAINLESS-STEEL PIPES... d. TO ASTM A409 / A409M - 15 - STANDARD SPECIFICATION FOR WELDED LARGE DIAMETER AUSTENITIC STEEL PIPE... e. STAINLESS STEEL FITTINGS SHALL BE FABRICATED IN ACCORDANCE WITH ASTM A403/ASME SA403... f. DIMENSIONS AND WALL THICKNESS OF PIPE SHALL BE TO ASME B36.19... g. DIMENSIONS AND TOLERANCES FOR FITTINGS SHALL BE TO ASME B36.19... h. SLIP-ON STAINLESS-STEEL FLANGES SHALL BE TO ASTM A182 AND 304L MATERIAL AND WELDED TO PIPE INSIDE AND OUTSIDE... i. CERTIFICATION STAINLESS STEEL PIPE IS 304L WITH APPROPRIATE WALL THICKNESS... j. CLEANING, DESCALING AND PASSIVATION TO BE UNDERTAKEN PER ASTM A380-17... 4. CHEMICAL PIPEWORK: A. PVC PIPING AND FITTINGS WHERE INDICATED ON THE DRAWINGS SHALL CONFORM TO CSA B137.3 AND SHALL BE SCHEDULE 80... B. ALL CHEMICAL DOING TUBING: CLEAR FOOD GRADE BRAIDED PVC OR PE OR PTFE WITH MIN. 1.035 KPA (10 BAR) PRESSURE RATING... C. TUBING TO BE CONTAINED IN CONDUIT WHERE POSSIBLE... 5. PIPING SYSTEM IN GENERAL SHALL COMPLY WITH THE FOLLOWING COLOUR AND IDENTIFICATION REQUIREMENTS: A. CSA STANDARD CAN/CSA-Z321-96 - SIGNS AND SYMBOLS FOR THE WORKPLACE... B. CGSB STANDARD CAN/CSG-24.3-92 - IDENTIFICATION OF PIPING SYSTEMS... C. ANSI A13.1 - SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS... D. ANSI A13.1 - SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS... E. ANSI STANDARD Z535.1-1991 - SAFETY COLOUR CODE... F. ANSI STANDARD Z535.2 - 1991 - ENVIRONMENTAL AND FACILITY SAFETY SIGNS... G. ISO STANDARD 3864:1984 - SAFETY COLOURS AND SAFETY SIGNS... H. EACH PIPE IDENTIFICATION SHALL CONSIST OF APPROPRIATE LEGEND WITH PROPER LABELING, PICTOGRAMS AND WORDS WHICH INDICATE THE CONTENTS OF THE PIPE IN A CLEAR AND CONCISE MANNER... I. EACH PIPE SHOWN ON THE PROCESS MECHANICAL DRAWINGS HAVE BEEN LABELED WITH A COLOUR TO DIFFERENTIATE EACH PROCESS AREA... J. IN SITUATIONS WHERE TWO COLOURS DO NOT HAVE SUFFICIENT CONTRAST TO EASILY DIFFERENTIATE BETWEEN THEM, A SIX-INCH BAND OF CONTRASTING COLOUR SHALL BE ON ONE OF THE PIPES AT APPROXIMATELY 750 MM (30 INCH) INTERVALS... K. AFFIX APPLICABLE LABEL C/W DIRECTIONAL ARROWS EVERY FLOOR OR 4.5 M (WHICHEVER IS LESS)... L. REFER TO SECTION 44 61 00 70 PROCESS PIPING OF THE SUPPLEMENTAL SPECIFICATIONS, ITEM #24 FOR DESCRIPTION OF PIPE LABELING... 6. REFER TO THE P-SERIES DRAWINGS FOR VALVE, FLANGE, AND FITTING PRESSURE CLASS IDENTIFICATION.

Revision table with columns: Rev, Date, Description, Drawn, Design, App'd. Includes entries for 2026-03-06 ISSUED FOR QUOTATION and 2025-12-05 ISSUED FOR PERMIT APPROVAL.

THIS DRAWING AND DESIGN IS THE PROPERTY OF MCHELHANEY AND SHALL NOT BE USED, REUSED OR REPRODUCED WITHOUT THE CONSENT OF MCHELHANEY... INFORMATION ON EXISTING UNDERGROUND FACILITIES MAY NOT BE COMPLETE OR ACCURATE...

NOT TO SCALE ORIGINAL DWG SIZE: ANSI D (22" x 34")

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PERMIT TO PRACTICE McElhanney Ltd. PERMIT NUMBER: 1003299 Engineers and Geoscientists of BC

PROFESSIONAL ENGINEER seal for M. P. J. DEGAJNE, #28829, BRITISH COLUMBIA ENGINEER

DISTRICT OF HUDSON'S HOPE 9904 DUDLEY DRIVE, HUDSON'S HOPE, BC V0C 1V0 WATER TREATMENT PLANT UPGRADES - PACKAGE 3 PROCESS MECHANICAL NOTES

Drawing No. P3-P001 Project Number 3111-27018-02 Rev. 1

VALVES AND APPURTENANCES

- 1. ALL VALVES TO BE TO APPROPRIATE AWWA STANDARDS AND BE NSF61 RATED.
2. THE VALVES WITH FLANGES SHALL HAVE FLANGES WITH DRILLING TO ANSI B16.1 (CAST IRON), B16.5 (STEEL), OR B16.42 (DUCTILE IRON) AS APPLICABLE.
3. REFER TO VALVE LIST FOR VALVE PRESSURE CLASS. CONTRACTOR TO ENSURE FLANGE BOLT PATTERNS MATCH FOR DIFFERENT CLASSES.
4. MANUFACTURER SHALL HAVE A QUALITY MANAGEMENT SYSTEM THAT IS CERTIFIED TO ISO 9001 BY AN ACCREDITED, CERTIFYING BODY. MANUFACTURERS SHALL DEMONSTRATE A MINIMUM OF TEN (10) YEARS' EXPERIENCE IN THE MANUFACTURE OF VALVES. THE MANUFACTURER SHALL PROVIDE TEST CERTIFICATES, DIMENSIONAL DRAWINGS, PARTS LIST DRAWINGS AND OPERATION AND MAINTENANCE MANUALS.
5. BUTTERFLY VALVES:
A. SHALL BE ONE-PIECE LUG DESIGN
B. FLANGE HOLE DRILLING PER INTERNATIONAL FLANGE STANDARD AS SPECIFIED
C. A NON-CORROSIVE BUSHING AND A SELF-ADJUSTING STEM SEAL SHALL BE PROVIDED. NO FIELD ADJUSTMENT SHALL BE NECESSARY TO MAINTAIN OPTIMUM FIELD PERFORMANCE.
D. DISC EDGE AND HUB ON METAL DISCS SHALL BE SPHERICALLY MACHINED AND HAND POLISHED FOR MINIMUM TORQUE AND MAXIMUM SEALING CAPABILITY.
E. STEM SHALL BE ONE-PIECE DESIGN. DISC TO STEM CONNECTION SHALL BE AN INTERNAL DOUBLE 'D' DESIGN WITH NO POSSIBLE LEAK PATHS IN THE DISC-TO-STEM CONNECTION. EXTERNAL DISC-TO-STEM CONNECTIONS SUCH AS DISC SCREWS OR PINS ARE NOT ALLOWED. STEM SHALL BE MECHANICALLY RETAINED IN THE BODY NECK AND NO PART OF THE STEM SHALL BE EXPOSED TO THE LINE MEDIA.
F. SEAT SHALL BE TONGUE AND GROOVE BONDED SEAT WITH A PRIMARY HUB SEAL AND A MOLDED FLANGE O-RING SUITABLE FOR WELD-NECK AND SLIP-ON FLANGES. THE SEAT SHALL TOTALLY ENCAPSULATE THE BODY ISOLATING IT FROM THE LINE MEDIA AND NO FLANGE GASKETS SHALL BE REQUIRED.
G. VALVE SHALL BE TESTED TO 110% OF THE RATED PRESSURE.
H. VALVE SHALL BE RATED FOR BUBBLE-TIGHT SHUT-OFF AT RATED PRESSURE.
I. VALVES SHALL BE BRAY SERIES 31, TRIM 375N, OR APPROVED EQUAL.
a. SIZE: PER CONTRACT DRAWING
b. BODY: DUCTILE IRON
c. BODY STYLE: LUGGED
d. BODY DRILLING: SUITABLE FOR INSTALLATION BETWEEN ASME 125/150 FLANGES
e. STEM: 416SS
f. SEAT: EPDM
g. DISC: 316SS
h. PRESSURE RATING: 175 PSI
i. OPERATOR: BARE STEM
j. DESIGN STANDARDS: NSF61
k. FOR ACTUATED VALVES: BRAY, 70-E201/K, ELECTRIC ACTUATOR. SEE FURTHER ACTUATOR SPECIFICATION BELOW. 2000 INCH-LBS. NEMA 4, 120VAC C/W LIMIT SWITCHES.
6. BUTTERFLY VALVE ACTUATOR:
A. GENERAL:
a. THE ACTUATOR SHALL BE COMPACT AND LOW PROFILE TO MINIMIZE SPACE REQUIREMENTS.
b. THE ACTUATOR SHALL PROVIDE ADJUSTABLE OPERATION UP TO 90°.
c. THE ACTUATOR SHALL PROVIDE EASY ACCESS FOR FIELD WIRING AND ADJUSTMENT.
d. THE ACTUATOR SHALL BE BUILT TO WITHSTAND LINE VIBRATION AND SHOCK WITHOUT FAILURE.
B. ENCLOSURE:
a. THE ENCLOSURE SHALL BE DIE-CAST ALUMINUM.
b. THE ENCLOSURE SHALL BE PROVIDED WITH CAPTIVE COVER BOLTS TO PREVENT LOSS OF COVER BOLTS WHEN COVER IS REMOVED.
c. THE ENCLOSURE SHALL HAVE TWO CONDUIT CONNECTIONS (ONE FOR POWER WIRING AND ONE FOR CONTROL SIGNAL WIRING) IN EITHER NPT OR METRIC THREADS AS SPECIFIED.
d. THE ACTUATOR ENCLOSURE SHALL BE PROVIDED WITH A HIGH VISIBILITY VALVE POSITION DISPLAY TO INDICATE THE VALVE POSITION THROUGHOUT THE FULL RANGE OF TRAVEL.
C. MOTOR:
a. THE MOTOR SHALL BE A SINGLE PHASE, PERMANENT SPLIT CAPACITOR INDUCTION TYPE WITH CLASS F OR BETTER INSULATION.
b. THE MOTOR SHALL CONTAIN A BUILT-IN UL APPROVED AUTOMATIC RESET THERMAL OVERLOAD PROTECTOR SET AT 275°F (135°C) EMBEDDED IN THE MOTOR WINDINGS.
c. MOTORS SHALL BE 120 VAC OR 220 VAC (230 VAC COMPATIBLE) 50/60 HZ AS SPECIFIED.
D. ACTUATOR GEAR TRAIN SYSTEM MOTOR:
a. THE ACTUATOR SHALL HAVE A SELF-LOCKING GEAR TRAIN SYSTEM CONSISTING OF A WORM AND WORM GEAR OUTPUT DRIVE MECHANISM, WHICH WILL HOLD THE VALVE IN THE DESIRED POSITION WITHOUT THE NEED FOR AN ELECTRO-MECHANICAL BRAKING SYSTEM.
b. THE SPUR GEAR TRAIN SHALL HAVE PRECISION CUT MULT-STAGED GEARS WHICH WILL WITHSTAND LOCKED ROTOR CONDITIONS AND ARE PERMANENTLY LUBRICATED AT THE FACTORY.
c. THE ACTUATOR SHALL HAVE AN OLDFHAM COUPLER TO CORRECT ANY MISALIGNMENT BETWEEN THE OUTPUT GEAR AND THE CAM SHAFT.
E. MECHANICAL TRAVEL STOPS:
a. MECHANICAL STAINLESS STEEL TRAVEL STOPS SHALL BE PROVIDED AND LOCATED OUTSIDE THE ACTUATOR ENCLOSURE FOR EASE OF ADJUSTMENT.
b. STAINLESS STEEL LOCK NUTS SHALL BE PROVIDED TO HOLD THE TRAVEL STOPS IN POSITION.
c. O-RING SEALS FOR WATERPROOF PROTECTION SHALL BE PROVIDED.
d. THE MECHANICAL TRAVEL STOPS SHALL LIMIT THE TRAVEL OF THE ACTUATOR IN EITHER DIRECTION TO THE FULL TRAVEL RANGE OF THE VALVE.
e. STAINLESS STEEL SPACERS SHALL BE PROVIDED TO PREVENT ADJUSTMENT OF TRAVEL STOPS ABOVE 0° AND BELOW 90°.
F. MANUAL OVERRIDE:
a. THE ACTUATOR SHALL BE EQUIPPED WITH A MANUAL OVERRIDE HANDWHEEL TO ROTATE THE VALVE WITHOUT ELECTRICAL POWER.
b. THE MANUAL OVERRIDE SYSTEM SHALL ENSURE EFFICIENT MANUAL OPERATION WITHOUT THE USE OF EXTRA TOOLS OR LEVERS.
c. A MOTOR POWER CUTOFF SWITCH SHALL BE PROVIDED TO CUT POWER TO THE MOTOR WHEN THE ACTUATOR MANUAL OVERRIDE IS ENGAGED.
G. TRAVEL LIMIT SWITCHES:
a. TRAVEL LIMIT SWITCHES SHALL LIMIT THE ACTUATOR TRAVEL IN BOTH THE OPEN AND CLOSED DIRECTION OF TRAVEL.
b. TRAVEL LIMIT SWITCHES SHALL BE HELD IN BRACKETS FOR ACCURATE AND REPEATABLE VALVE POSITION FEEDBACK.
c. TRAVEL LIMIT SWITCH CAMS SHALL BE INFINITELY ADJUSTABLE BY FINGER TOUCH OR SCREW DRIVER.
d. ALL TRAVEL LIMIT SWITCHES SHALL BE:
• SINGLE POLE DOUBLE THROW (SPDT) FORM C, UL LISTED, AND CSA APPROVED.
• 10A AT 125/250 VAC AND 1/2A AT 125 VDC.
e. TRAVEL LIMIT SWITCHES SHALL BE PRE-WIRED TO A TERMINAL BLOCK FOR EASE OF ACCESS AND ALL INTERNAL WIRING SHALL RANGE FROM 12-22 AWG.
H. TESTING:
a. ALL ACTUATORS SHALL BE FACTORY TESTED AT RATED LOAD TO ENSURE PROPER OPERATION.
I. MOUNTING:
a. ALL ACTUATORS SHALL COMPLY WITH ISO 5211 AND MOUNT DIRECTLY TO THE VALVE MOUNTING FLANGE AND STEM WITHOUT THE NEED FOR ANY BRACKETS OR COUPLINGS.
J. ACTUATORS SHALL BE BRAY SERIES 70 ELECTRIC ACTUATOR OR APPROVED EQUAL.
K. REFER TO VALVE LIST FOR ADDITION OF ANY OPTIONAL FEATURES.
7. COMBINATION AIR/VACUUM RELEASE VALVES:
A. AIR-RELEASE, AIR/VACUUM, AND COMBINATION AIR VALVES TO BE SUPPLIED IN ACCORDANCE WITH AWWA C512-07.
B. THE CONTRACTOR SHALL PROVIDE SINGLE BODY, COMBINATION AUTOMATIC AIR RELEASE VALVES DESIGNED TO RELIEVE VACUUM OR AIR WHEN LINE FILLING OR DRAINING, PLUS ACCUMULATED AIR WHEN UNDER PRESSURE. VALVES SHALL BE SUITABLE FOR POTABLE WATER SERVICE AND FITTED WITH INLET ISOLATING BALL VALVE, ISOLATING VALVE AND INSTALLATION FITTINGS SHALL BE STAINLESS STEEL. THE BODY & COVER OF DUCTILE IRON AND MINIMUM 2070 KPA (300 PSIG) WORKING PRESSURE RATING. VAL-MATIC APPROVED OR EQUAL.
8. PRESSURE RELIEF VALVE:
A. SHALL BE PILOT OPERATED AUTOMATIC PRESSURE RELIEF VALVE HAVING A CAST DUCTILE IRON ANGLE PATTERN BODY WITH CLASS 150 FLANGED ENDS, DUCTILE IRON COVER, FUSION BONDED EPOXY COATING CONFORMING TO AWWA C550 AND MEETING NSF-61, 300 SERIES FLUTED STAINLESS STEEL STEM, SPRING, SEAT & RETAINER, PLUS A FULL PORT SEAT NOMINALLY THE SAME SIZE AS THE VALVE END OPENINGS.
B. PILOT SYSTEM TO BE STAINLESS STEEL AND INCLUDE ISOLATION VALVES AND STRAINER, PRESSURE GAUGE TO BE INCLUDED ON THE INLET SIDE.
C. ADJUSTMENT RANGE TO BE 20-200PSI.
D. CLA-VAL 50-01 OR APPROVED EQUAL.
9. PRESSURE REDUCING VALVE:
A. SHALL BE PILOT OPERATED AUTOMATIC PRESSURE REDUCING VALVE HAVING A CAST DUCTILE IRON GLOBE PATTERN BODY WITH CLASS 150 FLANGED ENDS, DUCTILE IRON COVER, FUSION BONDED EPOXY COATING CONFORMING TO AWWA C550 AND MEETING NSF-61, 300 SERIES FLUTED STAINLESS STEEL STEM, SPRING, SEAT & RETAINER, PLUS A FULL PORT SEAT NOMINALLY THE SAME SIZE AS THE VALVE END OPENINGS.
B. PILOT SYSTEM TO BE STAINLESS STEEL AND INCLUDE ISOLATION VALVES, SPEED CONTROL, AND STRAINER. PRESSURE GAUGES TO BE INCLUDED ON INLET AND OUTLET SIDE.
C. VALVE TO BE INSTALLED VERTICALLY.
D. ADJUSTMENT RANGE TO BE 2-30PSI.
E. CLA-VAL 90-01 OR APPROVED EQUAL.
10. PRESSURE SUSTAINING VALVE:
A. SHALL BE PILOT OPERATED AUTOMATIC PRESSURE SUSTAINING VALVE HAVING A CAST DUCTILE IRON GLOBE PATTERN BODY WITH CLASS 150 FLANGED ENDS, DUCTILE IRON COVER, FUSION BONDED EPOXY COATING CONFORMING TO AWWA C550 AND MEETING NSF-61, 300 SERIES STAINLESS STEEL STEM, SPRING, SEAT & RETAINER, PLUS A FULL PORT SEAT NOMINALLY THE SAME SIZE AS THE VALVE END OPENINGS.
B. PILOT SYSTEM TO BE STAINLESS STEEL AND INCLUDE ISOLATION VALVES, SPEED CONTROL, AND STRAINER. PRESSURE GAUGES TO BE INCLUDED ON INLET AND OUTLET SIDE.
C. ADJUSTMENT RANGE TO BE 20-200PSI.
D. CLA-VAL 50-01 OR APPROVED EQUAL.

VALVES AND APPURTENANCES CONTINUED

- 11. STAINLESS STEEL BALL VALVES:
A. VALVES TO BE GRADE CF8M WITH A TWO OR THREE-PIECE BODY, FULL-PORT BALL, PTFE/RRPTE SEAL & SEAT, BLOWOUT PROOF STAINLESS STEEL STEM, ADJUSTABLE PACKING NUT, AND LEVER OPERATOR. VALVES TO HAVE A MINIMUM 1000PSI WORKING PRESSURE RATING. BRAY SERIES 85, BRAY SERIES 7000 AS APPLICABLE OR APPROVED EQUIVALENT.
12. SMALL DIAMETER WATER PVC VALVES:
A. PIPE AND FITTINGS SHALL BE MANUFACTURED FROM A PVC COMPOUND THAT MEETS THE REQUIREMENTS OF CELL CLASSIFICATION 12454 POLYVINYL CHLORIDE AS OUTLINED IN ASTM D1784. MATERIALS FROM WHICH PIPE AND FITTINGS ARE MANUFACTURED SHALL HAVE BEEN TESTED AND APPROVED FOR CONVEYING POTABLE WATER BY NSF INTERNATIONAL, HAYWARD OR APPROVED EQUAL.
13. CHEMICAL DOSING PVC VALVES:
A. MANUAL VALVES FOR CHEMICAL SUCTION AND DISCHARGE PIPING SHALL BE PVC COMPOUND BALL VALVES. TRUE UNION BALL VALVES WITH EPDM SEALS, TEFLON BALL SEATS WITH SOCKET WELD TYPE 21 ENDS. SEATS AND SEALS SHALL BE AS RECOMMENDED BY THE VALVE MANUFACTURER AND ARE TO BE CHEMICALLY COMPATIBLE. CHEMLINE TYPE 24 APPROVED OR EQUAL.
14. SOLENOID VALVES FOR ISOLATING WATER QUALITY ANALYSERS UPON NO FLOW DETECTION THROUGH THE WTP SHALL BE 316 SS GC VALVES OR EQUAL.
CHEMICAL DOSING SYSTEM REQUIREMENTS
1. SUPPLY AND INSTALL CONTRACTOR CHEMICAL STORAGE TANKS, PIPEWORK, AUTOMATED AND MANUAL VALVES, INSTRUMENTATION AND APPURTENANCES IN ALIGNMENT WITH THE PROCESS MECHANICAL AND P&ID DRAWINGS.
2. INSTALL ALL OWNER-SUPPLIED CHEMICAL STORAGE TANKS, SOLIDS HANDLING AND BATCHING SYSTEMS, DOSING PANELS, PIPEWORK, AUTOMATED AND MANUAL VALVES, INSTRUMENTATION AND APPURTENANCES IN ALIGNMENT WITH THE PROCESS MECHANICAL AND P&ID DRAWINGS.
3. ALL CONTRACTOR-SUPPLIED EQUIPMENT MUST BE COMPATIBLE WITH THE CHEMICAL SERVICE.
4. ALL CHEMICAL PIPING CONNECTIONS ARE SCHEDULE 80 PVC SOCKETWELD UNLESS OTHERWISE REQUIRED BY PIPELINE DEVICES OR SHOWN ON THE DRAWINGS. TUBING FOR THE DOSING PUMPS IS 1/2"x3/8" PVC BRAIDED. PVC CEMENT IS IPS WELD-ON P70 PRIMER WITH 724 CEMENT.
5. SEAL MATERIAL IS PTFE AND VITON UNLESS OTHERWISE SPECIFIED BY PIPELINE DEVICES.
6. ALL ISOLATION BALL VALVES PROVIDED AS REQUIRED, CHEMLINE TYPE 24 OR SIMILAR.
7. ALL HARDWARE IS 18-8 SS OR GALVANIZED. ALL PIPE CLIPS/SUPPORTS ARE PLASTIC.
8. EACH USER INTERFACE DISPLAY/KEYPAD SHALL BE FRONT ACCESSIBLE.
9. FOR SODIUM HYPOCHLORITE, THREADED CONNECTIONS WHERE UNAVOIDABLE, CANNOT BE SEALED WITH TEFLON TAPE.
10. PIPE AND FITTINGS SHALL BE MANUFACTURED FROM A PVC COMPOUND THAT MEETS THE REQUIREMENTS OF CELL CLASSIFICATION 12454 POLYVINYL CHLORIDE AS OUTLINED IN ASTM D1784. MATERIALS FROM WHICH PIPE AND FITTINGS ARE MANUFACTURED SHALL HAVE BEEN TESTED AND APPROVED FOR CONVEYING POTABLE WATER BY NSF INTERNATIONAL.
11. SPILL CONTAINMENT FOR ALL CHEMICAL TANKS MUST BE SIZED FOR A MINIMUM CONTAINMENT OF 110% OF CHEMICAL STORAGE VOLUME.
12. THE CHEMICAL DOSING PACKAGES SHALL BE MOUNTED AT A COMFORTABLE WORKING HEIGHT, AS DIRECTED BY THE PROCESS DRAWINGS OR BY THE CLIENT ON SITE DURING INSTALLATION.
13. THE CONTRACTOR SHALL PERFORM FIELD PRESSURE TESTING TO DEMONSTRATE TO THE CONTRACT ADMINISTRATOR THAT THE SYSTEM IS FREE OF ALL LEAKS AND AIR. THIS SHALL INCLUDE ALL LIQUID AND GAS (VENT) CONNECTIONS AND PIPING.
14. THE CONTRACTOR SHALL PROVIDE 'ON-SITE' DOSING PUMP TESTING, COMMISSIONING AND CALIBRATION PRIOR TO EXPOSURE TO CHEMICAL IN THE PRESENCE OF THE OPERATING PERSONNEL AND PROVIDE ALL NECESSARY FIELD TRAINING.
15. SUPPLY ONE CLOSED TOP VERTICAL POLYETHYLENE TANK FOR COAGULANT STORAGE, CUSTOMIZED TO SUIT THE REQUIREMENTS OF THE TENDER DRAWINGS
A. THE STORAGE TANK SHALL BE SUITABLE FOR STORAGE OF COAGULANT AND SHALL BE OF HIGH-DENSITY POLYETHYLENE CONSTRUCTION. THE TANK MUST BE MOULDED WITH A NSF-61 APPROVED POLYETHYLENE MATERIAL.
B. TANK WORKING VOLUME SHALL BE 90 US GALLONS MINIMUM.
C. THE TANK SHALL HAVE A MINIMUM WALL THICKNESS SUITABLE FOR THE CHEMICAL SPECIFIC GRAVITY AND BE FITTED WITH LEAK-PROOF CONNECTIONS.
D. TANK CONNECTIONS SHALL BE INSTALLED BY THE MANUFACTURER OR PER THE MANUFACTURER'S RECOMMENDATIONS TO ENSURE COMPLETE LEAK-PROOF PERFORMANCE.
E. THE TANK SHALL INCLUDE PROVISIONS FOR MOUNTING INSTRUMENTATION, SUCH AS A LEVEL TRANSMITTER, WHICH SHALL BE MOUNTED SECURELY TO AVOID LEAKAGE OR FAILURE UNDER OPERATING CONDITIONS.
F. TANK SHALL BE SUPPLIED COMPLETE WITH THE FOLLOWING CONNECTIONS:
a. TANK OUTLET NOZZLE FOR LIQUID CHEMICAL DOSING PVC SCH80 WITH FULL-PORT BALL VALVE AND UNIONS.
b. LEVEL SENSOR MOUNTING LOCATION (E.G. THREADED COUPLING ON TANK TOP CENTRE OR OFFSET).
G. ALL WETTED CONNECTIONS SHALL BE DOUBLE BOLTED FLANGE FITTING TYPE. REFER TO MANUFACTURER SPECIFICATIONS FOR MAXIMUM SIZE SIDEWALL BOLTED FITTINGS ALLOWED.
H. ALL GASKETS, SEALS, AND MOUNTING HARDWARE SHALL BE MADE OF MATERIALS COMPATIBLE WITH THE CHEMICAL SELECTION.
I. TANK SHALL BE INSTALLED ON A STRUCTURAL STAND TO RAISE IT ABOVE THE HEIGHT OF THE SECONDARY CONTAINMENT WALL WITH CLEARANCE TO FACILITATE PIPING CONNECTIONS. STAND SHALL BE CORROSION RESISTANT AND DESIGNED TO SUPPORT THE FULLY LOADED TANK.
J. TANK SHALL BE SUPPLIED WITH VISIBLE LEVEL MARKINGS IN LITRES OR GALLONS AND SECURED USING MANUFACTURER APPROVED RESTRAINT SYSTEM.
K. 90 USG SNYDER ASM 90G TOTAL DRAIN TANK WITH 18" STAND, TANK 5690001N, STAND 1690001N, AND HINGED LID 1790000N OR APPROVED EQUAL. THE CONTRACTOR SHALL SUBMIT A SHOP DRAWING INCLUDING THE TANK COMPLETE WITH ALL PROPOSED TANK PENETRATIONS, IDENTIFYING LOCATIONS AND SIZES FOR PIPING AND INSTRUMENTATION CONNECTIONS.

STRAINER

- 1. INLINE STRAINER SHALL BE A536 DUCTILE IRON, RATED TO 250PSI, TO INCLUDE AWWA C550 FUSION BONDED EPOXY COATED, BUNA-N/EPDM RUBBER SEAL, 316 STAINLESS STEEL 0.078" MESH OPENINGS, 304/316 STAINLESS STEEL DRAIN COMPLETE WITH BALL VALVE, 304/316 STAINLESS STEEL NPT PLUGS / AIR BLEED VALVE, ASTM F593/594 STAINLESS STEEL BOLTS / NUTS, CLASS 125# OR AWWA C606 GROOVED CONNECTIONS, AND DIFFERENTIAL PRESSURE GAUGE. CLA-VAL X43H OR APPROVED EQUAL.

INJECTION QUILLS

- 1. THE INJECTION QUILL ASSEMBLY SHALL BE CONSTRUCTED OF 316 STAINLESS STEEL OR A CHEMICALLY COMPATIBLE EQUIVALENT, WITH A 3/4" OR 1" NPT MALE THREADED INLET CONNECTION. SHALL INCLUDE A CORPORATION STOP TO ALLOW INSTALLATION AND REMOVAL UNDER PRESSURE WITHOUT SYSTEM SHUTDOWN. THE CORPORATION STOP SHALL BE BALL VALVE OR PLUG VALVE TYPE WITH PTFE SEATS AND SEALS. THE QUILL LENGTH SHALL BE SIZED TO ENSURE CHEMICAL IS DISCHARGED TOWARD THE CENTRE OF THE PIPE TO PROMOTE PROPER MIXING AND PREVENT PIPE WALL DAMAGE. THE UNIT SHALL BE RATED FOR A MINIMUM PRESSURE OF 150 PSI. INCLUDE INTEGRAL CHECK VALVE. INSTALLATION SHALL FOLLOW MANUFACTURER'S RECOMMENDATIONS. SAF-T-FLO EB-162 OR APPROVED EQUAL.

STATIC MIXERS

- 1. THE MIXER SHALL BE MANUFACTURED FROM 316 STAINLESS STEEL AND SUPPLIED WITH ANSI CLASS 150 FLANGE CONNECTIONS. THE UNIT SHALL BE A LOW-HEADLOSS DESIGN FEATURING A PROPRIETARY SINGLE-PLANE VANE ELEMENT TO PROMOTE EFFICIENT MIXING WITH MINIMAL PRESSURE DROP. THE MIXER SHALL BE SIZED TO SUIT THE NOMINAL PIPE DIAMETER AND FLOW RATE SPECIFIED ON THE DRAWINGS, AND SHALL BE SUITABLE FOR INSTALLATION IN BOTH HORIZONTAL AND VERTICAL PIPE ORIENTATIONS. UNIT SHALL BE SUITABLE FOR POTABLE WATER SERVICE AND NSF-61 CERTIFIED. MANUFACTURER TO RECOMMEND BETA RATIO. THE INJECTION QUILLS SHALL BE INTEGRAL TO THE STATIC MIXER. STATIC MIXERS SHALL BE WESTFALL MODEL 2800 WAFER STATIC MIXER OR EQUAL.

INLINE TRANSFER PUMP SKID

- 1. INLINE TRANSFER PUMP SKID SHALL INCLUDE THE TWO VERTICAL MULTI-STAGE WET END PUMPS, ELECTRIC MOTORS, AND ALL APPURTENANT DEVICES TO THE PUMPS. PUMPS TO BE INTEGRATED INTO A PRE-FABRICATED SKID, COMPLETE WITH VFD AND CONTROL PANEL.
A. ELECTRIC MOTOR SUPPLIER SHALL COORDINATE ALL MOTOR REQUIREMENTS WITH THE PUMP SUPPLIER TO ENSURE THE MOTOR MEETS THE MINIMUM PUMP APPLICATION REQUIREMENTS.
B. DESIGN OPERATIONAL INFORMATION FOR EACH PUMP INCLUDES:
a. LOCATION: HUDSON'S HOPE, BC, CANADA (APPROX. 491M ELEVATION)
b. SERVICE: POTABLE WATER, MUST MEET NSF-61
c. OPERATION: INTERMITTENT TO CONTINUOUS, CONTROLLED BY VFD WITH INPUT FROM PRESSURE TRANSMITTER AND FLOWMETER.
• DESIGN FLOW RANGE: 6LS TO 24LS
d. DRIVE: ELECTRIC MOTOR 3,500RPM
e. POWER SUPPLY: 600VAC, 3PH, 60HZ
f. MOUNTING OF PUMP: CONCRETE
g. MAX WORKING PRESSURE: RATED FOR NO LESS THAN 1,035 KPA (150PSI)
C. PUMP SHALL CONFORM TO THE REQUIREMENTS OF HYDRAULIC INSTITUTE AND AWWA E103-21.
D. EACH PUMP AND MOTOR ASSEMBLY TO BE GRUNDFOS HYDRO MPC-EC CRN 64-2-2 A-G-A-E-HQOE PUMP OR APPROVED EQUIVALENT COMPLETE WITH 20HP US MOTOR, BALDOR, WEG, OR APPROVED EQUIVALENT 3PH, 575V, 60HZ DRIVER.

CARTRIDGE FILTERS

- 1. RE-USE THE EXISTING FIL-TREK S4GL-20-40 TYPE CARTRIDGE FILTER HOUSINGS CURRENTLY INSTALLED AT THE PLANT. REPLACE THE EXISTING FILTER CARTRIDGES WITH NEW, LIKE-FOR-LIKE REPLACEMENT CARTRIDGES MATCHING THE ORIGINAL MICRON RATING, MATERIAL, AND DIMENSIONS TO ENSURE COMPATIBILITY WITH POTABLE WATER SERVICE. ALL GASKETS, SEALS, AND INTERNAL COMPONENTS SHALL BE VERIFIED TO BE IN GOOD CONDITION OR REPLACED AS REQUIRED TO MAINTAIN LEAK-FREE OPERATION. INSTALL FILTER HOUSINGS IN THE LOCATION INDICATED ON THE DRAWINGS.

DISTRIBUTION PUMP SKID

- 1. DISTRIBUTION PUMP SKID SHALL INCLUDE TWO VERTICAL MULTI-STAGE WET END PUMPS, ELECTRIC MOTORS, AND ALL APPURTENANT DEVICES TO THE PUMPS. PUMPS TO BE INTEGRATED INTO A PRE-FABRICATED SKID, COMPLETE WITH VFD AND CONTROL PANEL.
A. ELECTRIC MOTOR SUPPLIER SHALL COORDINATE ALL MOTOR REQUIREMENTS WITH THE PUMP SUPPLIER TO ENSURE THE MOTOR MEETS THE MINIMUM PUMP APPLICATION REQUIREMENTS.
B. DESIGN OPERATIONAL INFORMATION FOR EACH PUMP INCLUDES:
a. LOCATION: HUDSON'S HOPE, BC, CANADA (APPROX. 491M ELEVATION)
b. SERVICE: POTABLE WATER, MUST MEET NSF-61
c. OPERATION: INTERMITTENT TO CONTINUOUS, CONTROLLED BY VFD WITH INPUT FROM PRESSURE TRANSMITTER AND FLOWMETER.
• DESIGN FLOW RANGE: 6LS TO 24LS
d. DRIVE: ELECTRIC MOTOR 3,500RPM
e. POWER SUPPLY: 600VAC, 3PH, 60HZ
f. MOUNTING OF PUMP: CONCRETE
g. MAX WORKING PRESSURE: RATED FOR NO LESS THAN 1,035 KPA (150PSI)
C. PUMP SHALL CONFORM TO THE REQUIREMENTS OF HYDRAULIC INSTITUTE AND AWWA E103-21.
D. EACH PUMP AND MOTOR ASSEMBLY TO BE GRUNDFOS HYDRO MPC-EC CR 64-2 A-G-A-E-HQOE PUMP OR APPROVED EQUIVALENT COMPLETE WITH 25HP US MOTOR, BALDOR, WEG, OR APPROVED EQUIVALENT 3PH, 575V, 60HZ DRIVER.

AIR COMPRESSOR

- 1. PROVIDE AND INSTALL A COMPLETE COMPRESSED AIR SYSTEM CONSISTING OF A GARDNER DENVER VR5-8 RECIPROCATING AIR COMPRESSOR FOR THE POLYMER PREPARATION SYSTEM, 5 HP (4 KW), 575/3PH/60HZ, SIMPLEX CONFIGURATION WITH R15 PUMP, OPEN DRIP PROOF (ODP) MOTOR, AND AN 80-GALLON VERTICAL-MOUNTED STANDARD TANK. THE SYSTEM SHALL INCLUDE A CONTROL PANEL, AIR-COOLED AFTERCOOLER, TANK DRAIN, LOW OIL STOP CONTROL, VIBRATION ISOLATORS, INTEGRAL PRESSURE GAUGE, PRESSURE SAFETY VALVE, ISOLATION VALVE, AND CHECK VALVE. INCLUDE A PARKER WILKERSON F26-04-FG0 AIR FILTER AND A PARKER WILKERSON R26-04-G00 AIR PRESSURE REGULATOR. THE COMPRESSOR ASSEMBLY SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND APPLICABLE CODES. COMPLETE WITH START-UP, TESTING, AND COMMISSIONING. SKEANS SUPPLIED GARDNER DENVER VR5-8 RECIPROCATING AIR COMPRESSOR OR EQUAL.
2. CHECK VALVE (AIR):
A. CHECK VALVES ON AIR SUPPLY SHALL BE PROVIDED WITH THE VENDOR PACKAGES FOR AIR COMPRESSORS. CHECK VALVES SHALL BE SUITABLE FOR COMPRESSED AIR SERVICE AND SIZED TO MATCH THE DISCHARGE CONNECTIONS OF THE RESPECTIVE EQUIPMENT.
B. CHECK VALVES SHALL BE OF SWING-TYPE OR LIFT-TYPE, WITH NON-SLAM OPERATION AND LOW CRACKING PRESSURE TO PREVENT BACKFLOW WHEN THE EQUIPMENT IS OFFLINE. MATERIALS SHALL BE SUITABLE FOR THE OPERATING PRESSURE AND TEMPERATURE OF THE AIR SYSTEM AND SHALL BE CORROSION-RESISTANT.
C. THE CHECK VALVES SHALL BE INSTALLED IMMEDIATELY DOWNSTREAM OF EACH COMPRESSOR DISCHARGE CONNECTION TO PREVENT REVERSE FLOW AND PROTECT EQUIPMENT DURING START-UP AND SHUTDOWN CONDITIONS.

PRESSURE TRANSMITTERS

- 1. PROVIDE A PRESSURE TRANSMITTER SUITABLE FOR MEASURING LIQUID PROCESS PRESSURES UP TO 150 PSI. THE PRESSURE TRANSMITTER SHALL BE INSTALLED FOR CONTINUOUS MONITORING.
2. PRESSURE TRANSMITTER SHALL BE INDUSTRIAL GRADE TRANSMITTER WITH 4-20 MA OUTPUT, FACTORY CALIBRATED TO THE SPAN LISTED ON DRAWING P-300 AND OPERATED FROM A 24 VDC POWER SUPPLY.
3. ZERO, AND SPAN SHALL BE FIELD ADJUSTABLE ON-SITE.
4. TRANSMITTERS SHALL BE THREADED WITH 316 STAINLESS WETTED PARTS.
5. TRANSMITTERS SHALL HAVE:
A. ACCURACY SHALL BE ±0.5% OF SPAN OR BETTER.
B. 4-20MA OUTPUT SIGNAL SHALL BE LINEAR WITH PRESSURE.
C. 316 STAINLESS CONSTRUCTION INCLUDING PROCESS CONNECTIONS, CERAMIC DIAPHRAGM.
D. FACTORY CERTIFICATION AND TAGGING TO CONFIRM THE SPAN AND RANGE OF THE TRANSMITTER.
E. ACCEPTABLE MODELS: WIKA MODEL A-10 OR APPROVED EQUAL.

PRESSURE GAUGE ASSEMBLIES

- 1. PRESSURE GAUGES SHALL BE LIQUID-FILLED, WITH A MINIMUM 63mm (2.5 INCH) DIAL DIAMETER, ACCURACY OF ±2/12% OF SPAN IN ACCORDANCE WITH ANSI/ASME B40.1, GRADE A. STAINLESS STEEL INTERNALS AND BOURDON TUBE. CALIBRATION RANGE SHALL BE PER DRAWING P-300 UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
2. EACH PRESSURE GAUGE SHALL BE INSTALLED WITH A STAINLESS STEEL BALL VALVE FOR ISOLATION AND PISTON & ROD TYPE SHUBBER, RAY MODEL 0608, BOSHAFT 2-PGA-B5, OR APPROVED EQUIVALENT.
3. ALL PIPING AND FITTINGS ASSOCIATED WITH THE GAUGE ASSEMBLIES SHALL BE STAINLESS STEEL UNLESS OTHERWISE INDICATED.
4. GAUGES SHALL BE SELECTED SUCH THAT NORMAL OPERATING PRESSURE FALLS IN THE MIDDLE THIRD OF THE DIAL RANGE FOR OPTIMAL READABILITY AND SERVICE LIFE.
5. PRESSURE GAUGES SHALL BE WIKA MODEL 213.53DOW OR APPROVED EQUAL.

HYDROSTATIC LEVEL TRANSMITTER

- 1. PROVIDE A HYDROSTATIC LEVEL TRANSMITTER FOR CONTINUOUS LEVEL MEASUREMENT IN A POTABLE WATER TANK, SUITABLE FOR SUBMERSIBLE INSTALLATION IN POTABLE WATER APPLICATIONS. THE UNIT SHALL PROVIDE A 2-WIRE 4-20 mA OUTPUT SIGNAL, WITH BUILT-IN TEMPERATURE COMPENSATION AND OVERVOLTAGE PROTECTION. SENSOR MATERIAL SHALL BE 316L STAINLESS STEEL OR CHEMICALLY COMPATIBLE EQUIVALENT, WITH A POLYETHYLENE OR FEP CABLE SUITABLE FOR FULL IMMERSION. MEASUREMENT RANGE SHALL BE SELECTED BASED ON THE TANK DEPTH AS INDICATED ON THE DRAWINGS. THE TRANSMITTER SHALL BE FACTORY CALIBRATED AND SUPPLIED WITH A SUSPENSION CLAMP OR MOUNTING ACCESSORIES AS REQUIRED. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. THE TRANSMITTER SHALL BE ENDRESS+HAUSER WATERPILOT FMX21 OR APPROVED EQUAL.

Table with 5 columns: Rev, Date, Description, Drawn, Design, App'd. Row 1: 1, 2026-03-06, ISSUED FOR QUOTATION, JD, ES, MD. Row 2: 0, 2025-12-05, ISSUED FOR PERMIT APPROVAL, JD, ES, MD.

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NOT TO SCALE
ORIGINAL DWG SIZE: ANSI D (22" x 34")

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DISTRICT OF HUDSON'S HOPE 9904 DUDLEY DRIVE, HUDSON'S HOPE, BC V0C 1V0 WATER TREATMENT PLANT UPGRADES - PACKAGE 3 PROCESS MECHANICAL NOTES CONTINUED

Drawing No. P3-P002 Project Number 3111-27018-02 Rev. 1

- RADAR LEVEL TRANSMITTER**
1. PROVIDE AND INSTALL NON-CONTACT RADAR LEVEL TRANSMITTERS FOR LEVEL MEASUREMENT IN POTABLE WATER TANKS AT THE LOCATIONS INDICATED ON THE CONTRACT DRAWINGS.
 2. ALL INSTRUMENTS SHALL BE SUITABLE FOR CONTINUOUS LEVEL MEASUREMENT OF WATER AS APPLICABLE.
 3. RADAR LEVEL TRANSMITTER SHALL BE NON-CONTACT TYPE WITH A MEASURING RANGE PER THE CONTRACT DRAWINGS. ACCURACY OF ±5 MM OR BETTER, AND A NARROW BEAM ANGLE (TYPICALLY ≤ 8°) FOR PRECISE MEASUREMENT WHERE INTERNAL OBSTRUCTIONS EXIST.
 4. OUTPUT SHALL BE 4-20 MA CURRENT LOOP.
 5. PROCESS CONNECTION SHALL BE 1-1/2" NPT OR AS INDICATED ON DRAWINGS.
 6. MATERIALS OF CONSTRUCTION SHALL BE PLASTIC SUITABLE FOR CHEMICAL ENVIRONMENTS WITH SEALS COMPATIBLE WITH APPLICATION FLUIDS.
 7. SUPPLY ALL NECESSARY MOUNTING BRACKETS, ADAPTERS, OR EXTENSION KITS FOR PROPER INSTALLATION. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND APPLICABLE ELECTRICAL CODES.
 8. COORDINATE SENSOR ORIENTATION TO AVOID OBSTRUCTIONS AND ENSURE RELIABLE OPERATION.
 9. EACH LEVEL TRANSMITTER SHALL BE A VEGA VEGAPULS C21 OR APPROVED EQUAL.

- LOCAL MAGNETIC FLOW METER TRANSMITTERS**
1. THE FLOW METER SHALL BE CONSTRUCTED WITH 316L STAINLESS STEEL WETTED PARTS AND LINER MATERIAL COMPATIBLE WITH POTABLE WATER, SUITABLE FOR PIPE SIZES AS SPECIFIED IN THE CONTRACT DOCUMENTS. THE UNIT SHALL INCLUDE AN INTEGRATED TRANSMITTER WITH A DIGITAL DISPLAY, CAPABLE OF PROVIDING 4-20 mA OUTPUT, PULSE OUTPUT, AND COMMUNICATION VIA HART OR FOUNDATION FIELDBUS PROTOCOLS. IN AREAS NOT ACCESSIBLE TO THE OPERATOR, PROVIDED WITH THE METER SHALL BE A REMOTE TRANSMITTER WITH DISPLAY BOARD. THE TRANSMITTERS SHALL BE CAPABLE OF PROVIDING RATE OF FLOW AND TOTALIZATION, OPERATING PARAMETERS AND UNITS OF MEASUREMENT SHALL BE OPERATOR DEFINABLE. THE DEVICE SHALL BE FACTORY CALIBRATED AND SUPPLIED WITH ALL NECESSARY INSTALLATION ACCESSORIES, INCLUDING GASKETS AND FLANGES TO ANSI CLASS 150 STANDARDS. INSTALLATION AND COMMISSIONING SHALL FOLLOW MANUFACTURER'S RECOMMENDATIONS TO ENSURE ACCURATE AND RELIABLE PERFORMANCE. PROVIDE AN ENDRESS+HAUSER PROLINE PROMAG W 400 ELECTROMAGNETIC FLOW METER OR APPROVED EQUAL.

- TURBIDITY ANALYSERS**
1. PROVIDE A HACH TU5300SC LOW-RANGE ONLINE LASER TURBIDIMETER OR APPROVED EQUAL FOR CONTINUOUS MONITORING OF TURBIDITY IN DRINKING WATER. THE UNIT SHALL INCLUDE PREDICTIVE DIAGNOSTICS TO MONITOR INSTRUMENT STATUS AND MAINTENANCE NEEDS (SYSTEM CHECK MODULE), AUTOMATIC CLEANING OPTIONS, AND COMMUNICATION CAPABILITIES WITH AN SC CONTROLLER. THE TURBIDIMETER SHALL PROVIDE HIGH ACCURACY (±2% UP TO 40 NTU), RAPID RESPONSE (T90 < 45 SECONDS), AND OPERATE WITH A SAMPLE FLOW OF 100-1000 ML/MIN AT MAXIMUM PRESSURE OF 6 BAR (87 PSI). THE ELECTRONIC ENCLOSURE SHALL HAVE A MINIMUM IP55 RATING, WITH WETTED PARTS SUITABLE FOR POTABLE WATER SERVICE. SUPPLY ALL NECESSARY MOUNTING HARDWARE, USER MANUALS, AND CERTIFIED CALIBRATION STANDARDS. INCLUDE THE FOLLOWING INSTRUMENT ACCESSORIES: PRESSURE REGULATOR, LOCAL SAMPLE SHUT-OFF VALVE, FLOW SENSOR, FLOW RESTRICTOR, AUTOMATIC CLEANING MODULE AND MAINTENANCE KIT. INCLUDE A DRY CALIBRATION STANDARD CAPABLE OF ACCURATE AND REPEATABLE ZERO AND SPAN CALIBRATION/VERIFICATION. FACTORY START-UP AND TRAINING BY HACH TECHNICIANS SHALL BE PROVIDED, ALONG WITH A ONE-YEAR WARRANTY AND SERVICE AGREEMENT FOR PREVENTATIVE MAINTENANCE AND REPAIRS USING AUTHORIZED PARTS ONLY.

- FREE CHLORINE ANALYSERS**
1. PROVIDE A HACH CL17 CHLORINE ANALYZER OR APPROVED EQUAL FOR CONTINUOUS ONLINE MONITORING OF FREE RESIDUAL CHLORINE USING THE COLORIMETRIC DPD METHOD. THE ANALYZER SHALL MEASURE IN THE RANGE OF 0 TO 5 MGL WITH ±5% ACCURACY, A MINIMUM DETECTION LIMIT OF 0.03 MGL, AND A CYCLE TIME OF 2.5 MINUTES. A MEASUREMENT SHALL BE TAKEN EVERY 2.5 MINUTES AND RESULTS DISPLAYED BY A THREE DIGIT LCD READOUT IN THE RANGE OF 0 TO 5 MGL. THE ANALYZER MUST OPERATE USING 115V OR 230V SELECTABLE AC POWER. THE ANALYZER MUST PERFORM A SELF-TEST AND AUTO-BLANKING BETWEEN ANALYSIS POINTS TO COMPENSATE FOR SAMPLE COLOUR, TURBIDITY, AND CHANGES IN LIGHT INTENSITY DUE TO VOLTAGE FLUCTUATIONS OR LIGHT SOURCE AGING. THE ANALYZER MUST BE ABLE TO OPERATE UNATTENDED FOR 30 DAYS BETWEEN CHEMICAL REAGENT CHANGES AND MEASUREMENT CELL CLEANING. ALARM OPTIONS INCLUDE CONCENTRATION SET POINT, ANALYZER SYSTEM WARNING, AND ANALYZER SYSTEM SHUT DOWN. SUPPLY SHALL INCLUDE Y-STRAINER ASSEMBLY, LOCAL SHUT-OFF VALVE AT Y-STRAINER INLET, SAMPLE BYPASS TUBING, STANDPIPE, DRAINAGE CONNECTIONS, REAGENTS, INSTALLATION AND MAINTENANCE KITS, WALL MOUNTING HARDWARE, AND USER MANUAL. FACTORY START-UP AND TRAINING BY HACH TECHNICIANS SHALL BE PROVIDED, ALONG WITH A ONE-YEAR WARRANTY AND SERVICE AGREEMENT FOR PREVENTATIVE MAINTENANCE AND REPAIRS USING AUTHORIZED PARTS ONLY. THE ANALYZER SHALL BE WALL MOUNTED WITH 1/4" OD POLYETHYLENE TUBING FOR THE SAMPLE INLET, 1/2" ID FLEXIBLE TUBING FOR THE SAMPLE OUTLET, AND 1/2" ID FLEXIBLE TUBING FOR THE OVERFLOW DRAIN.

- ANALYZER CONTROLLER**
1. PROVIDE AND INSTALL HACH SC4500 WATER QUALITY SENSOR CONTROLLER (DUAL CHANNEL), FEATURING A LOCAL USER INTERFACE AND REMOTE ACCESS CAPABILITY. THE SYSTEM SHALL SUPPORT DIGITAL SENSORS FOR A WIDE RANGE OF WATER QUALITY PARAMETERS INCLUDING, BUT NOT LIMITED TO, PH, CONDUCTIVITY, TURBIDITY, AND FREE CHLORINE. THE CONTROLLER MUST CONTINUOUSLY MONITOR INTERNAL COMPONENTS, DISPLAY REAL-TIME DIAGNOSTICS AND MAINTENANCE SCHEDULES, AND ISSUE ALERTS WITH GUIDED WORK FLOWS FOR CALIBRATION AND MAINTENANCE TO REDUCE USER RISK. THE CONTROLLER SHALL SUPPORT CONNECTIVITY FOR PROFIBUS DPV1, MODBUS TCP/IP, PROFINET IO, AND ETHERNET IP PROTOCOLS. THE UNIT SHALL BE DESIGNED FOR AN INDOOR INSTALLATION, CONSTRUCTED WITH CORROSION-RESISTANT MATERIALS, AND RATED NEMA 4X/IP66 FOR DURABILITY. THE CONTROLLER SHALL FEATURE MULTIPLE PROGRAMMABLE ALARMS AND CONTROL OUTPUTS, USB DATA MANAGEMENT, SECURE USER ACCESS, AND SHALL RETAIN SETTINGS IN NON-VOLATILE MEMORY. ONLY FACTORY TRAINED PERSONNEL ARE PERMITTED FOR COMMISSIONING, START-UP, AND SERVICE; WITH A 1-YEAR WARRANTY AND MANDATORY USE OF MANUFACTURER'S PARTS AND REAGENTS. ALL INSTALLATION, CALIBRATION, AND MAINTENANCE WILL BE PERFORMED IN ACCORDANCE WITH MANUFACTURER'S DRAWINGS, SPECIFICATIONS, AND SERVICE AGREEMENTS.

- COAGULANT TANK LOW LEVEL SWITCH**
1. SUPPLY AND INSTALL A COAGULANT TANK LOW LEVEL ALARM FLOAT SWITCH AS SHOWN ON THE DRAWINGS. SWITCH SHALL BE SUSPENDED WITHIN 100mm OF TANK BOTTOM FROM A 32mm PVC PIPE, WHICH SHALL HAVE A 3mm FNPT ADAPTOR AT THE LOWER END TO ACCEPT THE FLOAT SWITCH. FLOAT SWITCH SHALL BE POLYPROPYLENE CONSTRUCTION WITH A MAXIMUM DIAMETER OF 30mm. INTEGRAL REED SWITCH SHALL BE RATED 30W @# 120VAC. FLOAT SWITCH SHALL BE DWYER/ANDERSON MODEL F7-PP.

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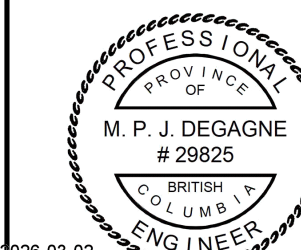
ORIGINAL DWG SIZE: ANSI D (22" x 34")



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Engineers and Geoscientists of BC



2026-03-02
Approved Sealed

DISTRICT OF HUDSON'S HOPE
9904 DUDLEY DRIVE, HUDSON'S HOPE, BC V0C 1V0

WATER TREATMENT PLANT
UPGRADES - PACKAGE 3
PROCESS MECHANICAL
NOTES CONTINUED

Drawing No.

P3-P003

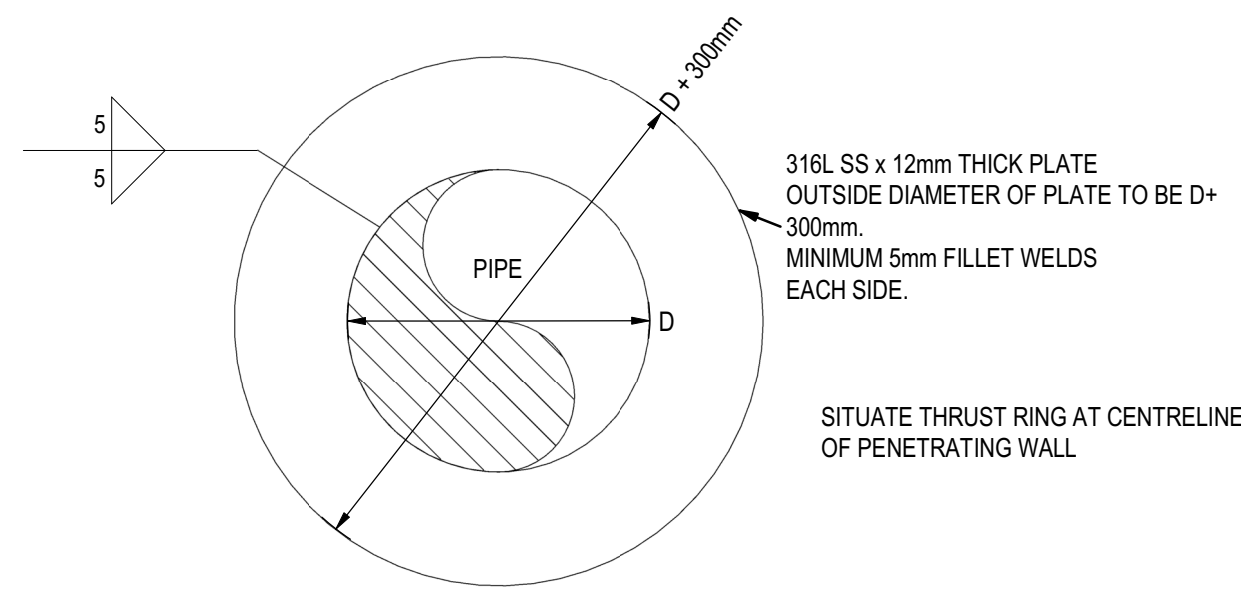
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3111-27018-02

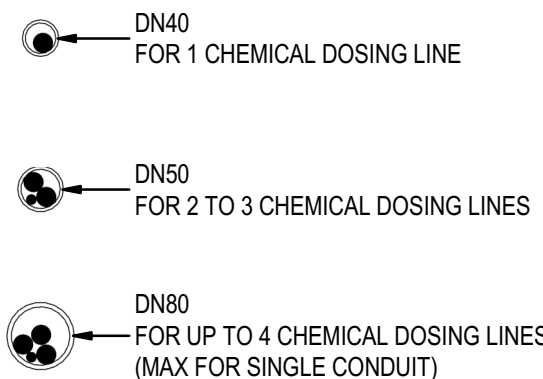
Rev.

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McElhanney ANS D - 2024-02-05
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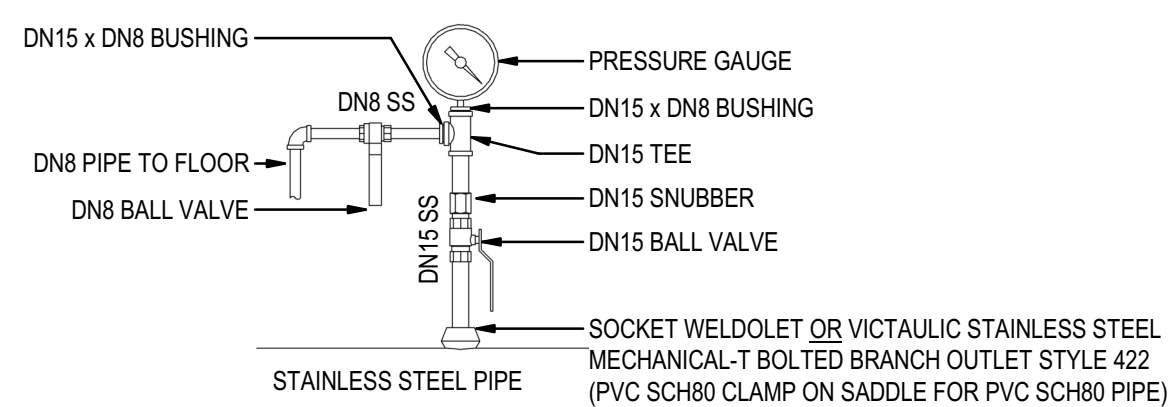


NOTE: SECONDARY CONTAINMENT CONDUIT PIPING TO BE BACK SLOPED TOWARDS CONTAINMENT AREAS, DOSING PANELS, AND SOLUTION TANKS; AVOID SCENARIOS WHERE POTENTIAL LEAKS/SPILLS COULD OCCUR OUTSIDE OF CHEMICAL CONTAINMENT.

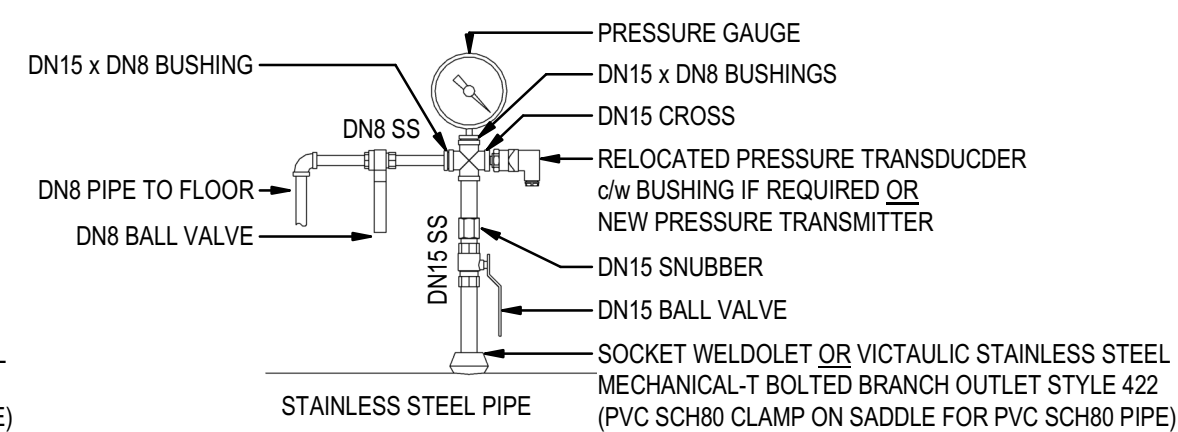


THRUST RING (TYPICAL)

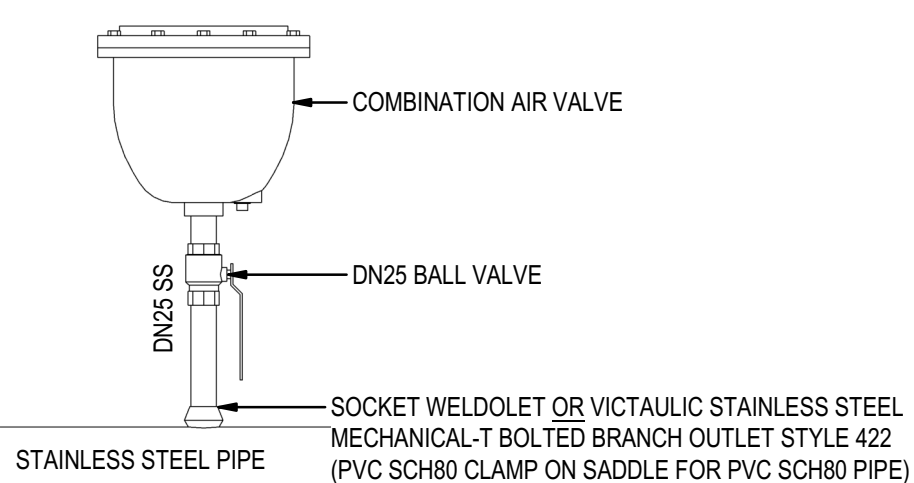
CHEMICAL DOSING SECONDARY CONTAINMENT CONDUIT (TYPICAL)



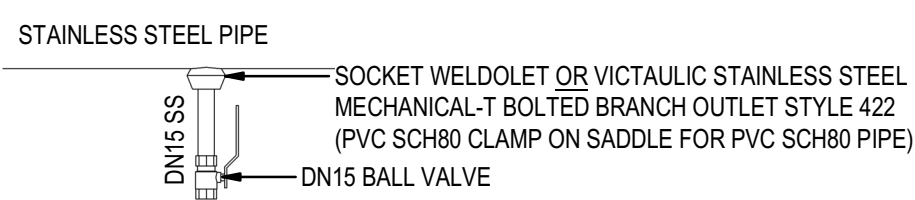
PRESSURE GAUGE ASSEMBLY (TYPICAL)



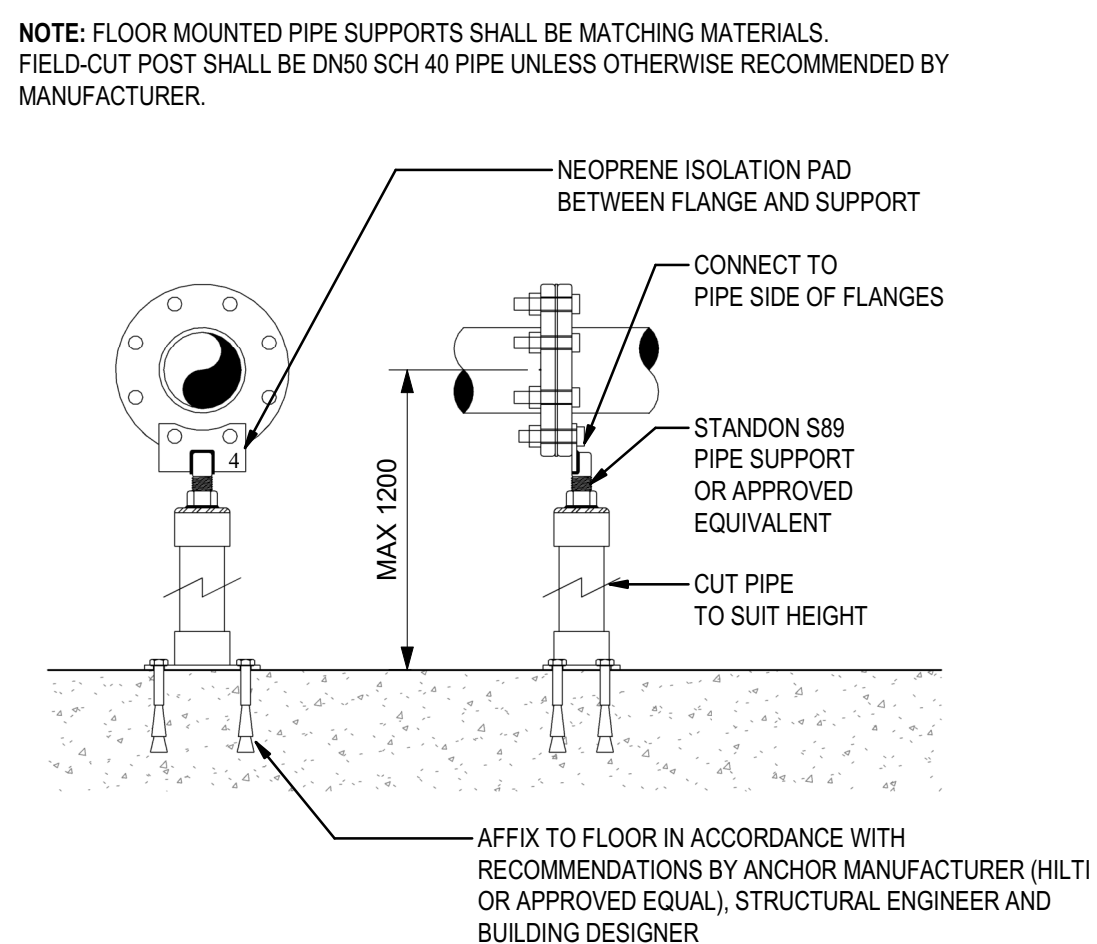
COMBINED PRESSURE GAUGE AND TRANSMITTER ASSEMBLY (TYPICAL)



COMBINATION AIR VALVE ASSEMBLY (TYPICAL)



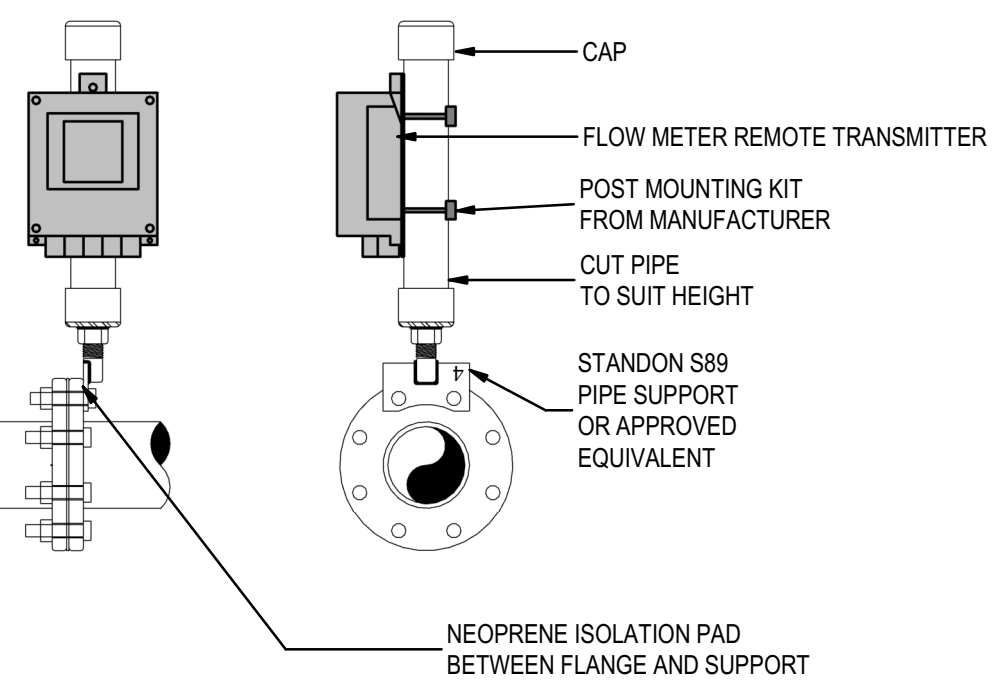
DRAIN VALVE ASSEMBLY (TYPICAL)



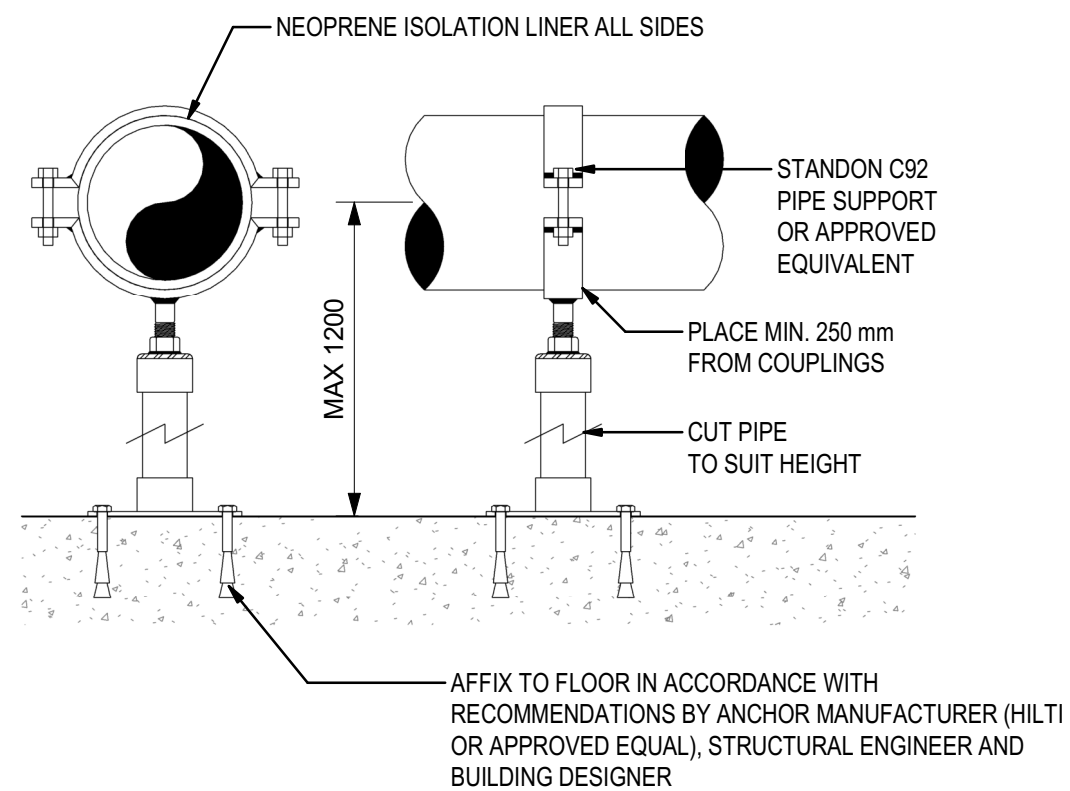
FLOOR MOUNTED PIPE SUPPORT - FLANGE

NOTE: FLOOR MOUNTED PIPE SUPPORTS SHALL BE MATCHING MATERIALS. FIELD-CUT POST SHALL BE DN50 SCH 40 PIPE UNLESS OTHERWISE RECOMMENDED BY MANUFACTURER

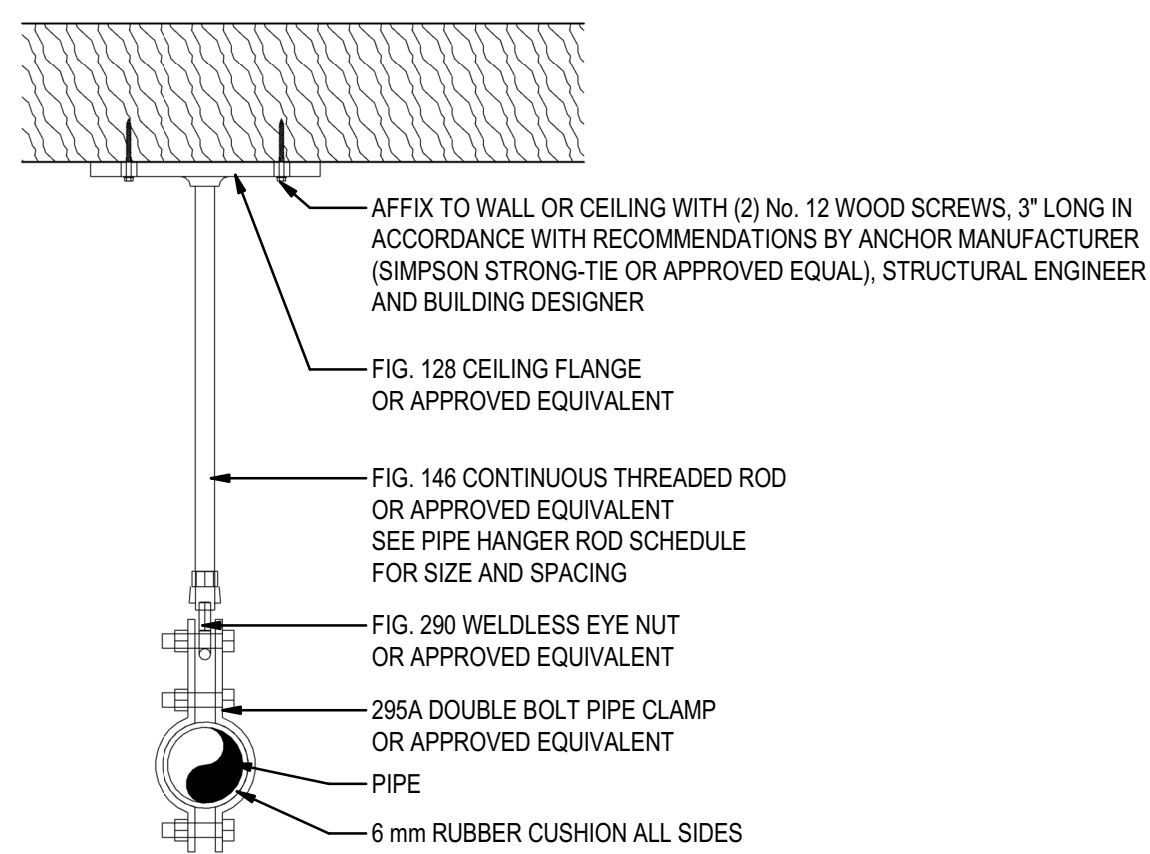
NOTE: FLANGE MOUNTED TRANSMITTER SUPPORTS SHALL BE MATCHING MATERIALS. FIELD-CUT POST SHALL BE DN50 SCH 40 PIPE UNLESS OTHERWISE RECOMMENDED BY MANUFACTURER.



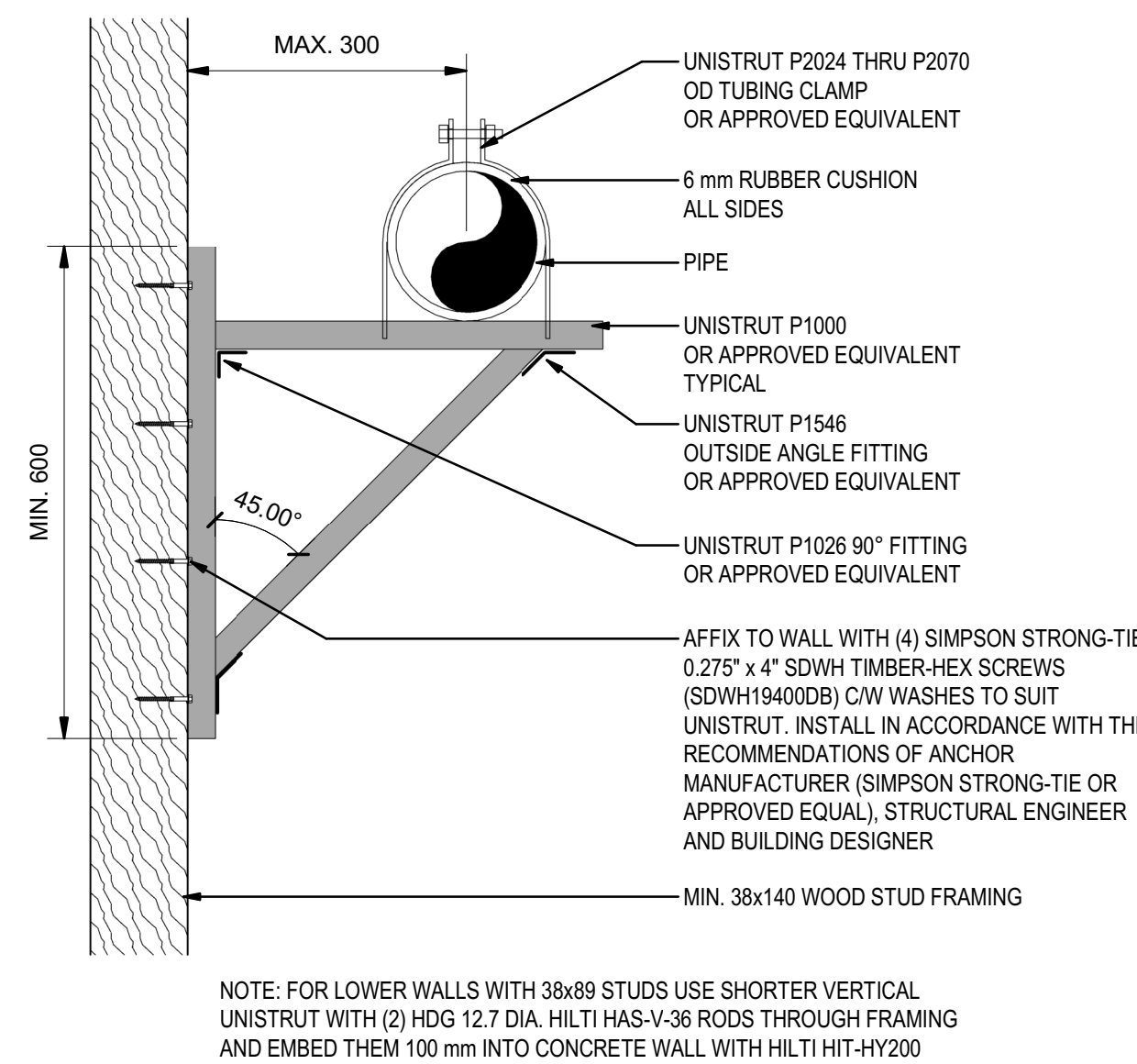
FLANGE MOUNTED TRANSMITTER SUPPORT



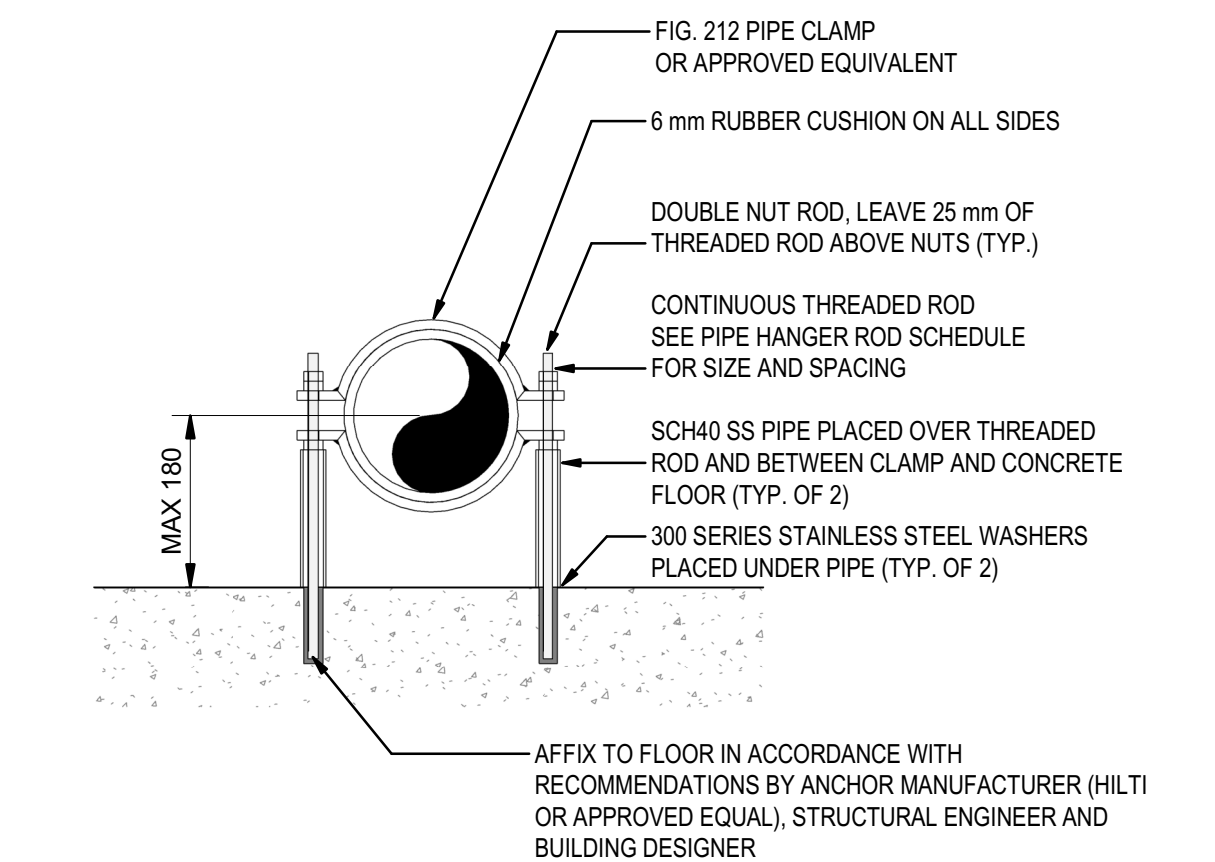
FLOOR MOUNTED PIPE SUPPORT - FULL CIRCLE MORE THAN 180 mm CLEARANCE



TOP OR SIDE LATERAL MOUNTED PIPE SUPPORT



WALL MOUNTED PIPE SUPPORT - DN200 PIPE OR SMALLER



FLOOR MOUNTED PIPE SUPPORT - FULL CIRCLE LESS THAN 180 mm CLEARANCE

NOTES:
 1. CHART FOR STEEL AND PLASTIC PIPE WITH SAME OUTSIDE DIAMETER (IPS) PROVIDED FOR REFERENCE ONLY. CONTRACTOR TO FOLLOW MANUFACTURER'S SPECIFICATIONS AND INSTALLATION PROCEDURES.
 2. HOLE I.D. FOR CAST OR CORE BIT DRILLED ONLY.

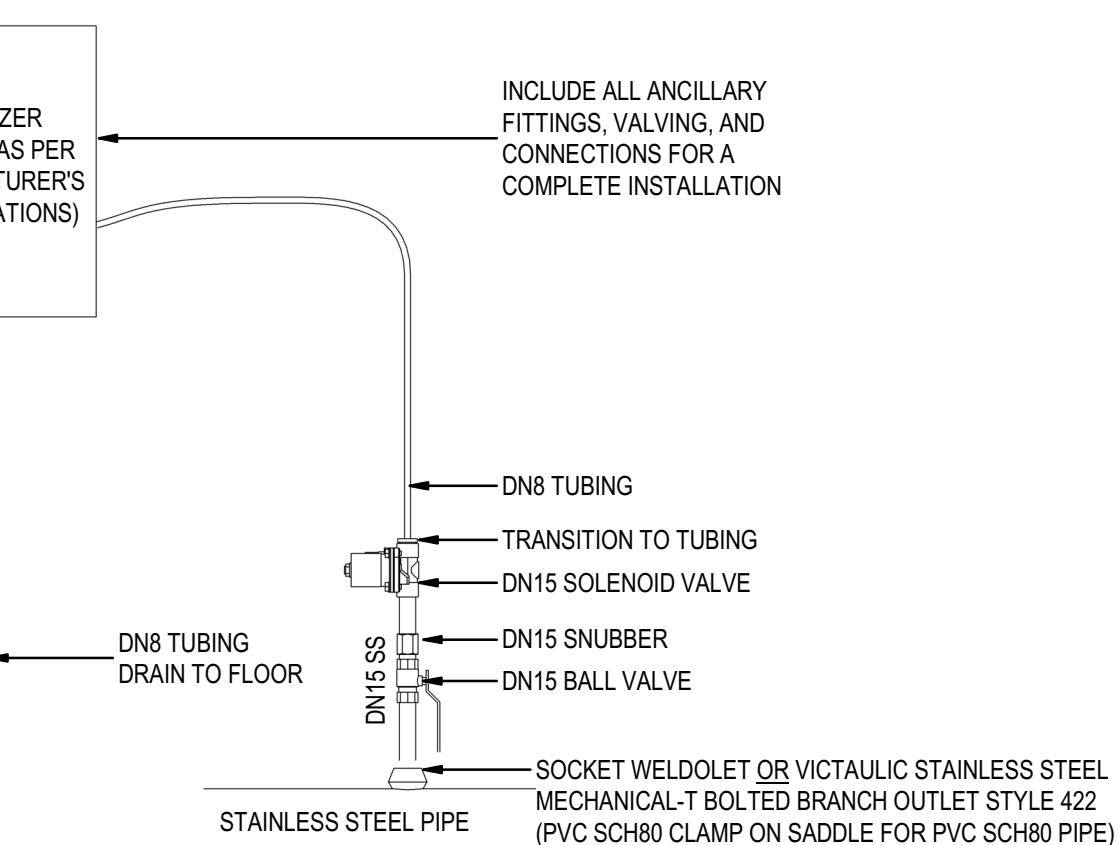
NOM. PIPE SIZE (inches)	DN PIPE SIZE (mm)	HOLE I.D. (inches)
1/2	15	2
3/4	20	3
1	25	3
1-1/4	32	3
1-1/2	40	4
2	50	4
2-1/2	65	4
3	80	5
4	100	6
5	125	8
6	150	10
8	200	12
10	250	14
12	300	16
14	350	18
16	400	20
18	450	22
20	500	24
24	600	26

GARLOCK LINK-SEAL CAST OR CORE BIT DRILLED HOLE SIZING

NOTES:
 1. PIPE SUPPORT ASSEMBLIES INCLUDING FASTENERS TO BE HOT DIPPED GALVANIZED
 2. PIPES TO BE PROVIDED WITH SEISMIC RESTRAINTS BY CONTRACTOR IN ACCORDANCE WITH SMACNA SEISMIC RESTRAINT MANUAL

NOM. PIPE SIZE (mm)	ROD SIZE (mm)	MAX PIPE SUPPORT / HANGER SPACING (m)
≤25	9.5	1.5
50	12.7	3
76	12.7	3
100	12.7	3
150	12.7	3
200	12.7	1.8

PIPE HANGER ROD SIZE & MAX HANGER SPACING (WOOD WALL AND CEILING MOUNTED)



ANALYZER TRANSMITTER ASSEMBLY (TYPICAL)

Rev	Date	Description	App'd	Drawn	Design	App'd
1	2026-03-06	ISSUED FOR QUOTATION	JD	ES	MD	
0	2025-12-05	ISSUED FOR PERMIT APPROVAL	JD	ES	MD	

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NOT TO SCALE

ORIGINAL DWG SIZE: ANSI D (22" x 34")

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PERMIT NUMBER: 1003299
 Engineers and Geoscientists of BC

PROFESSIONAL
 ENGINEER
 M. P. J. DEGAGNE
 #28825
 BRITISH
 COLUMBIA
 ENGINEER

2026-03-02

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DISTRICT OF HUDSON'S HOPE
 9904 DUDLEY DRIVE, HUDSON'S HOPE, BC V0C 1V0

WATER TREATMENT PLANT UPGRADES - PACKAGE 3 PROCESS MECHANICAL TYPICAL DETAILS

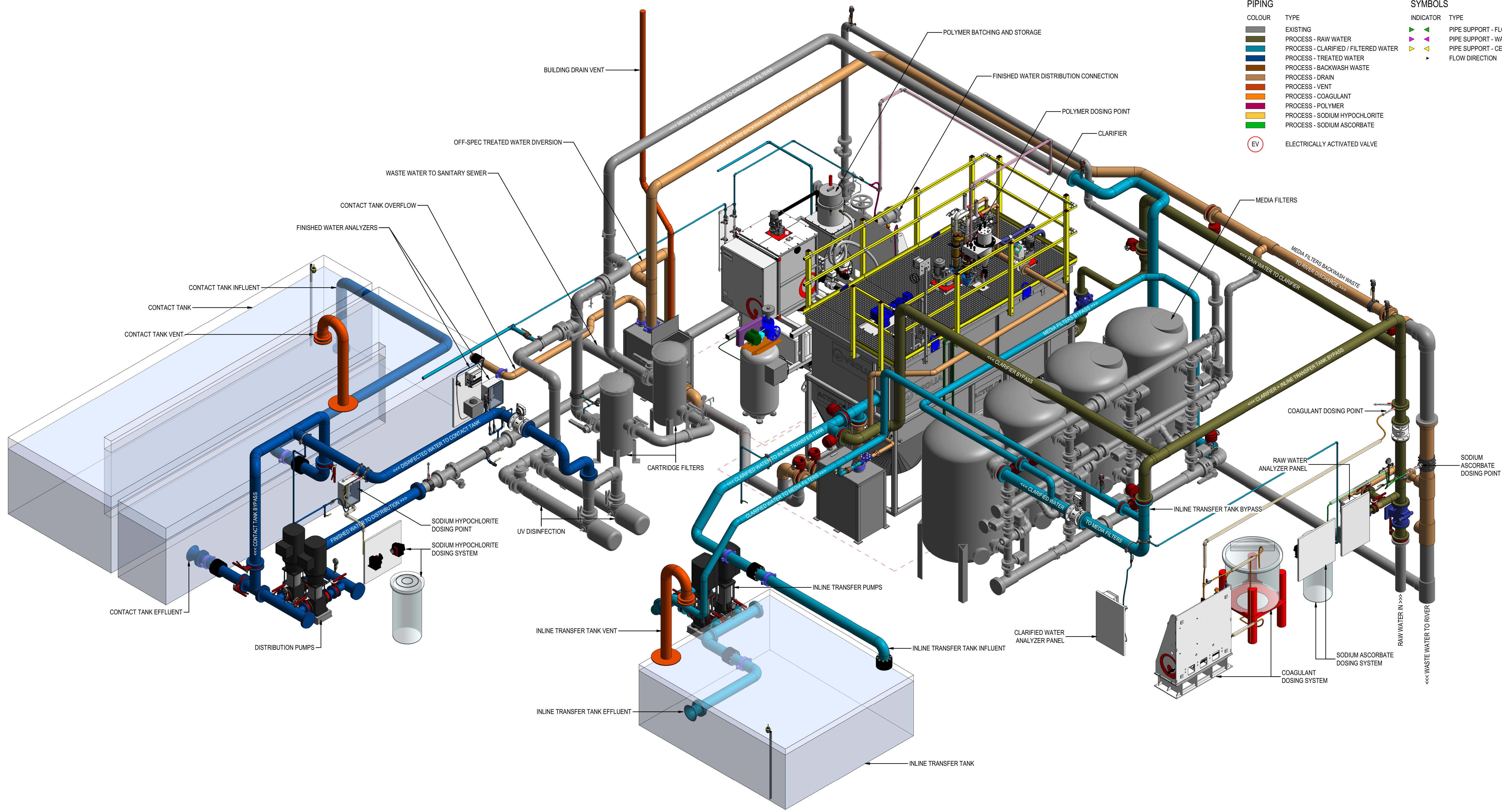
Drawing No. **P3-P004**

Project Number 3111-27018-02

Rev. 1

DESTROY ALL PRINTS BEARING PREVIOUS REVISION

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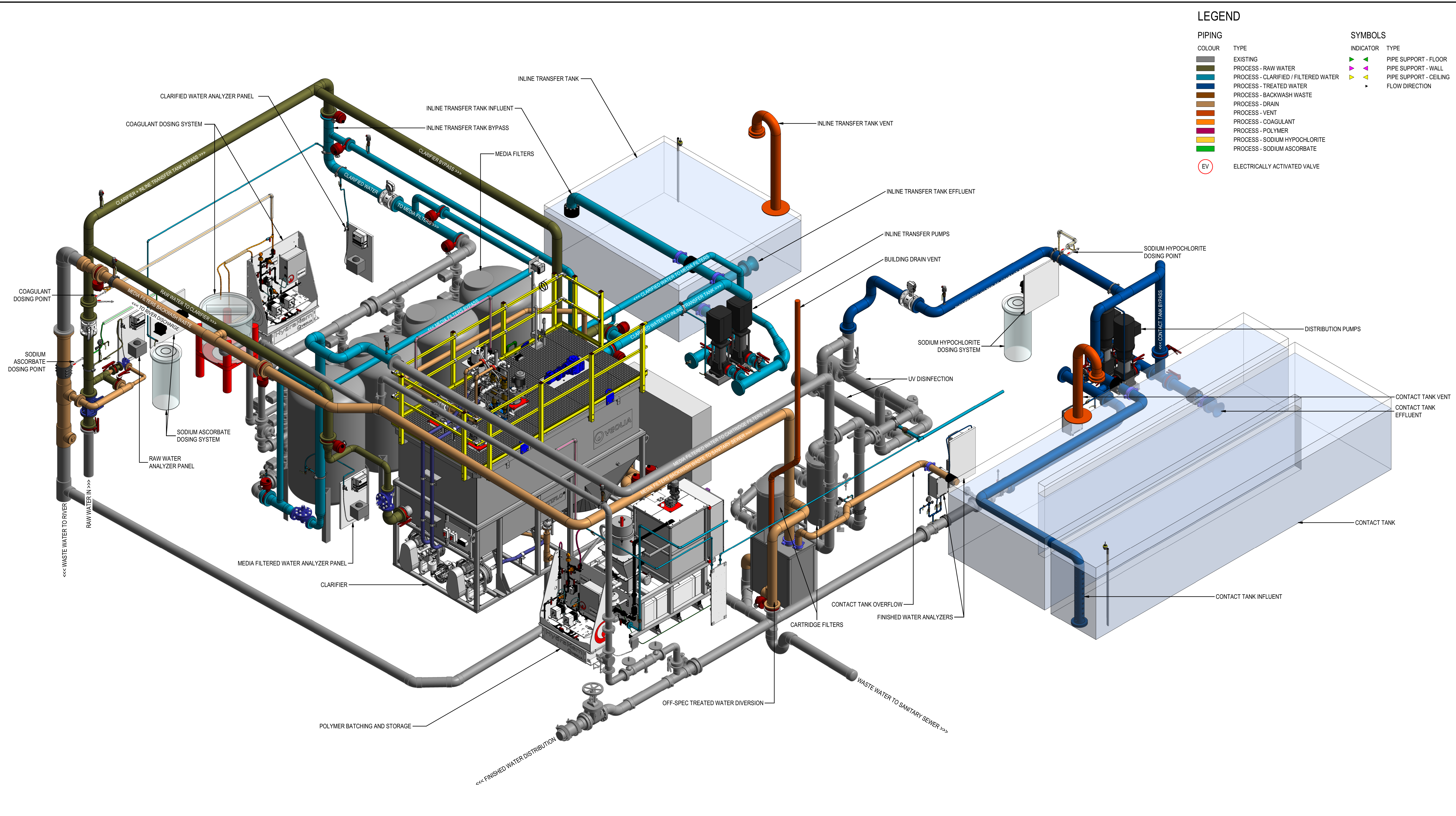


PIPING		SYMBOLS	
COLOUR	TYPE	INDICATOR	TYPE
Grey	EXISTING	Green Triangle	PIPE SUPPORT - FLOOR
Blue	PROCESS - RAW WATER	Purple Triangle	PIPE SUPPORT - WALL
Light Blue	PROCESS - CLARIFIED / FILTERED WATER	Yellow Triangle	PIPE SUPPORT - CEILING
Dark Blue	PROCESS - TREATED WATER	Black Triangle	FLOW DIRECTION
Brown	PROCESS - BACKWASH WASTE		
Orange	PROCESS - DRAIN		
Red	PROCESS - VENT		
Yellow	PROCESS - COAGULANT		
Purple	PROCESS - POLYMER		
Green	PROCESS - SODIUM HYPOCHLORITE		
Light Green	PROCESS - SODIUM ASCORBATE		
Circle with EV	ELECTRICALLY ACTIVATED VALVE		

PIPING - SE ISOMETRIC
SCALE: NOT TO SCALE

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Rev	Date	Description	Drawn	Design	App'd												
1	2026-03-06	ISSUED FOR QUOTATION	JD	ES	MD												
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DESTROY ALL PRINTS BEARING PREVIOUS REVISION



PIPING		SYMBOLS	
COLOUR	TYPE	INDICATOR	TYPE
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Blue	PROCESS - RAW WATER	Green Triangle	PIPE SUPPORT - WALL
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Blue	PROCESS - TREATED WATER	Black Arrow	FLOW DIRECTION
Orange	PROCESS - BACKWASH WASTE		
Brown	PROCESS - DRAIN		
Brown	PROCESS - VENT		
Orange	PROCESS - COAGULANT		
Purple	PROCESS - POLYMER		
Yellow	PROCESS - SODIUM HYPOCHLORITE		
Green	PROCESS - SODIUM ASCORBATE		
Circle with EV	ELECTRICALLY ACTIVATED VALVE		

PIPING - NW ISOMETRIC
SCALE: NOT TO SCALE

Rev	Date	Description	Drawn	Design	App'd
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DISTRICT OF HUDSON'S HOPE
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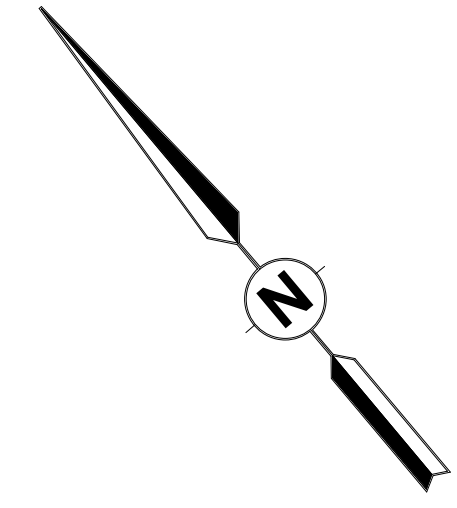
WATER TREATMENT PLANT
UPGRADES - PACKAGE 3
PROCESS MECHANICAL
PIPING ISOMETRIC VIEW

Drawing No. **P3-P006**

Project Number 3111-27018-02

Rev. 1

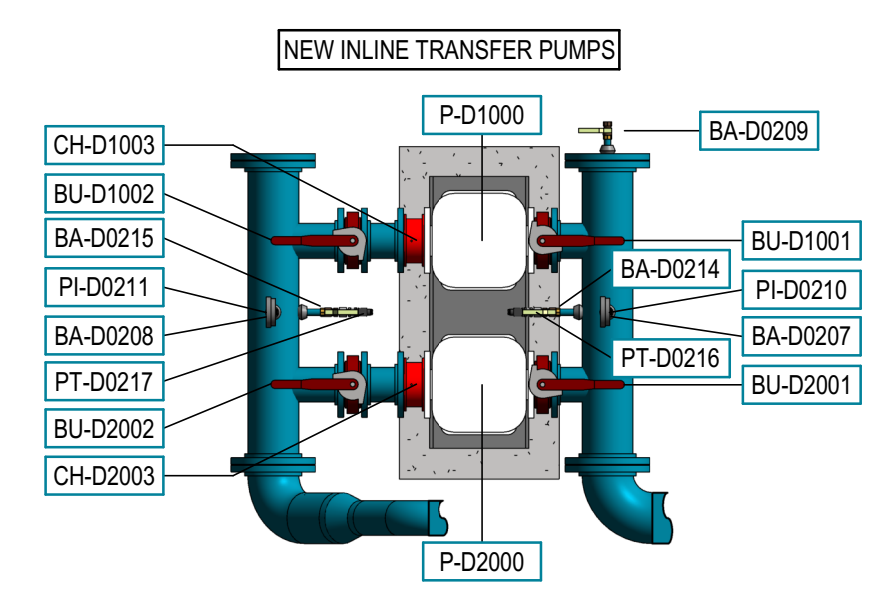
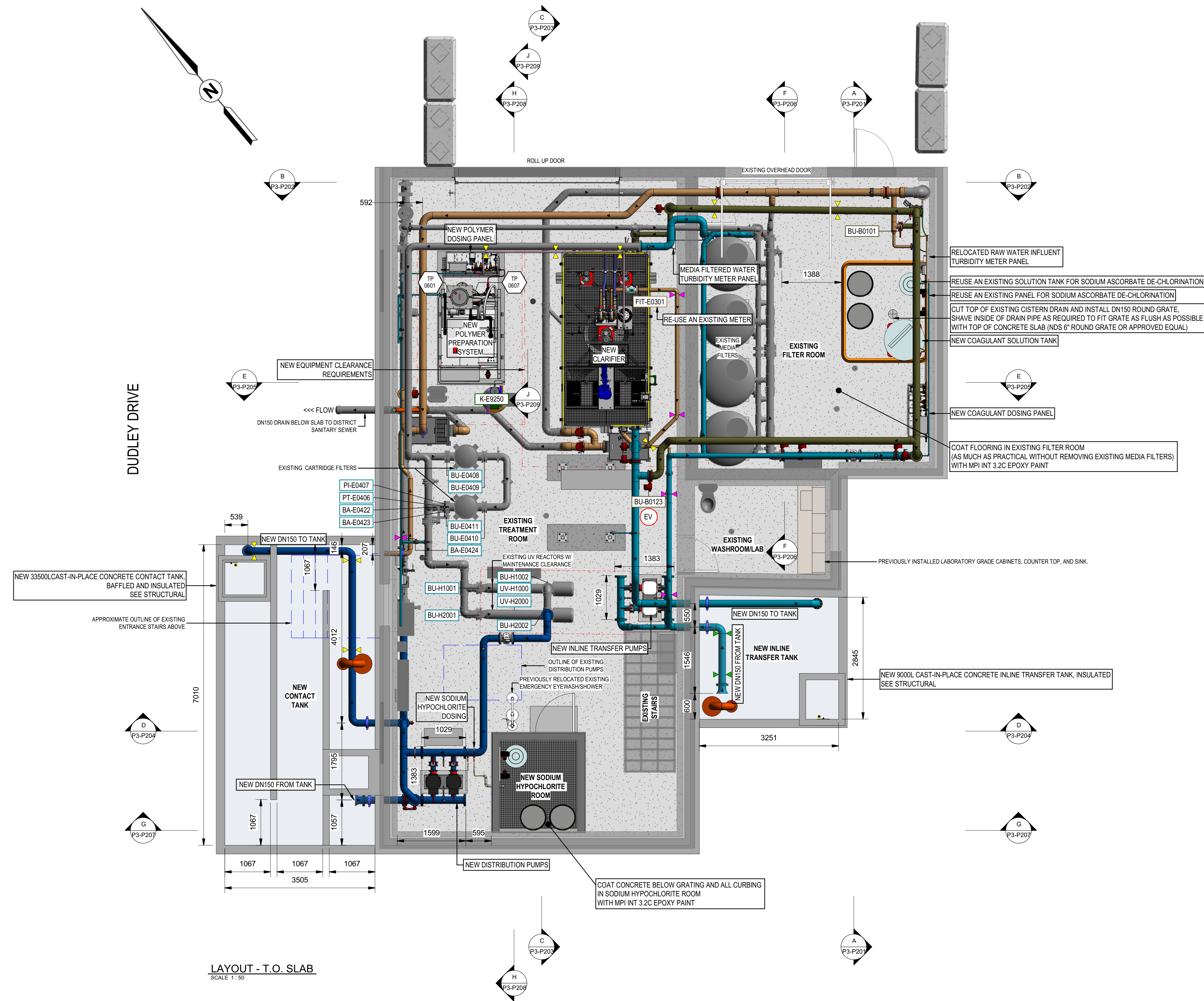
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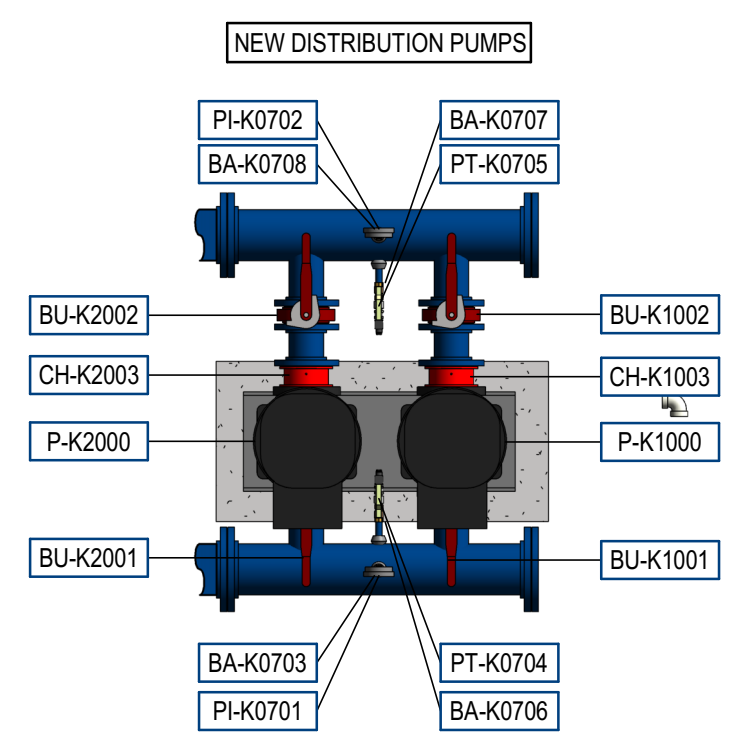
LEGEND

PIPING		SYMBOLS	
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Brown	PROCESS - BACKWASH WASTE		
Orange	PROCESS - DRAIN		
Red	PROCESS - VENT		
Purple	PROCESS - COAGULANT		
Yellow	PROCESS - POLYMER		
Light Green	PROCESS - SODIUM HYPOCHLORITE		
Dark Green	PROCESS - SODIUM ASCORBATE		
Red Circle	ELECTRICALLY ACTIVATED VALVE		

DUDLEY DRIVE

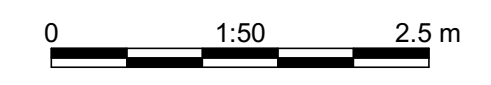


LAYOUT - INLINE TRANSFER PUMPS
SCALE 1:25



LAYOUT - DISTRIBUTION PUMPS
SCALE 1:25

LAYOUT - T.O. SLAB
SCALE 1:50



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Rev	Date	Description	Drawn	App'd
1	2026-03-06	ISSUED FOR QUOTATION	JD	ES MD
0	2025-12-05	ISSUED FOR PERMIT APPROVAL	JD	ES MD

ORIGINAL DWG SIZE: ANSI D (22" x 34")

McElhanney
 8808 Northern Lights Drive,
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 Tel. 250 787 0356

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 PERMIT NUMBER: 1003299
 Engineers and Geoscientists of BC

PROFESSIONAL
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 OF
 M. P. J. DEGAGNE
 # 28825
 BRITISH
 COLUMBIA
 ENGINEER

DISTRICT OF HUDSON'S HOPE
 9904 DUDLEY DRIVE, HUDSON'S HOPE, BC V0C 1V0
**WATER TREATMENT PLANT
 UPGRADES - PACKAGE 3
 PROCESS MECHANICAL
 LAYOUT - T.O. SLAB**

Drawing No. **P3-P101**
 Project Number 3111-27018-02
 Rev. 1

DESTROY ALL PRINTS BEARING PREVIOUS REVISION

LEGEND

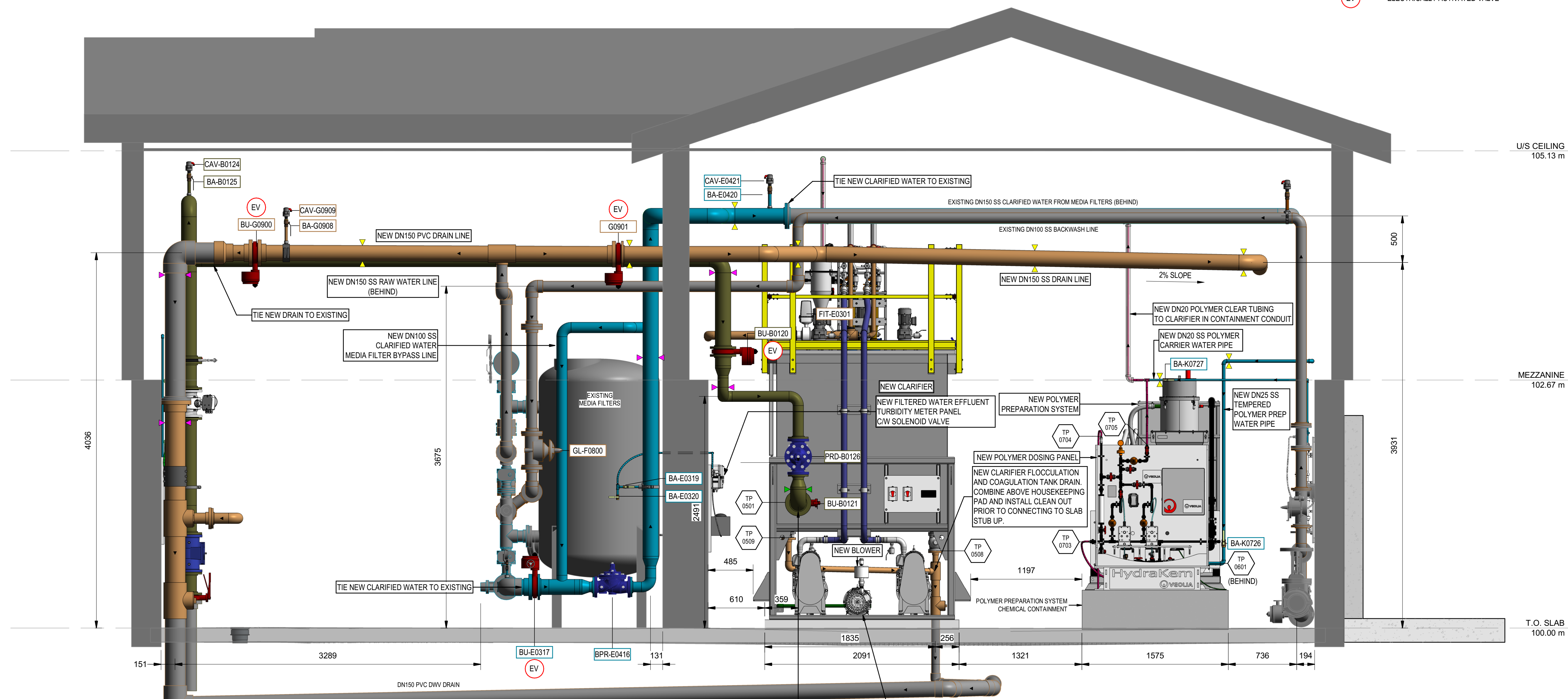
PIPING

COLOUR	TYPE
Grey	EXISTING
Blue	PROCESS - RAW WATER
Light Blue	PROCESS - CLARIFIED / FILTERED WATER
Dark Blue	PROCESS - TREATED WATER
Brown	PROCESS - BACKWASH WASTE
Orange	PROCESS - DRAIN
Red	PROCESS - VENT
Yellow	PROCESS - COAGULANT
Green	PROCESS - POLYMER
Light Green	PROCESS - SODIUM HYPOCHLORITE
Dark Green	PROCESS - SODIUM ASCORBATE

SYMBOLS

INDICATOR	TYPE
Green triangle	PIPE SUPPORT - FLOOR
Blue triangle	PIPE SUPPORT - WALL
Yellow triangle	PIPE SUPPORT - CEILING
Black arrow	FLOW DIRECTION

EV ELECTRICALLY ACTIVATED VALVE



GEODETIC TOP OF BUILDING SLAB ELEVATION: 490.80m
 GEODETIC TIE-IN INVERT ELEVATION: 490.19m
 APPROX. GEODETIC INVERT AT BUILDING OUTLET: 488.30m
 6.69m TO RIVER DISCHARGE MANHOLE
 APPROX. GEODETIC INLET INVERT AT MANHOLE: 488.17m - 488.37m
 APPROX. GEODETIC OUTLET INVERT AT MANHOLE: 487.05m - 487.25m

B SECTION P3-B
P3-P101 SCALE 1:25

<<< WASTE WATER OUT
 DN150 PVC DWV DRAIN
 ADDITIONAL PIPE SUPPORT THIS LOCATION, ANVIL FIGURE 63 PIPE STANCHION OR APPROVED EQUIVALENT
 MOUNT NEW BLOWER (VEOLIA) TO CLARIFIER HOUSEKEEPING PAD ROUTE DN25 PVC30 COMPRESSED AIR LINE TO SIDE OF CLARIFIER (CW LOOP ABOVE WATER LEVEL) AND CONNECT TO TP-0512B

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0 1:25 1 m
 ORIGINAL DWG SIZE: ANSI D (22" x 34")

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 Engineers and Geoscientists of BC

PROFESSIONAL
 M. P. J. DEGAGNE
 # 29825
 BRITISH COLUMBIA
 ENGINEER
 Approved Sealed

DISTRICT OF HUDSON'S HOPE
 9904 DUDLEY DRIVE, HUDSON'S HOPE, BC V0C 1V0
WATER TREATMENT PLANT UPGRADES - PACKAGE 3
PROCESS MECHANICAL SECTION - P3-B

Drawing No. **P3-P202**
 Project Number 3111-27018-02
 Rev. 1

LEGEND

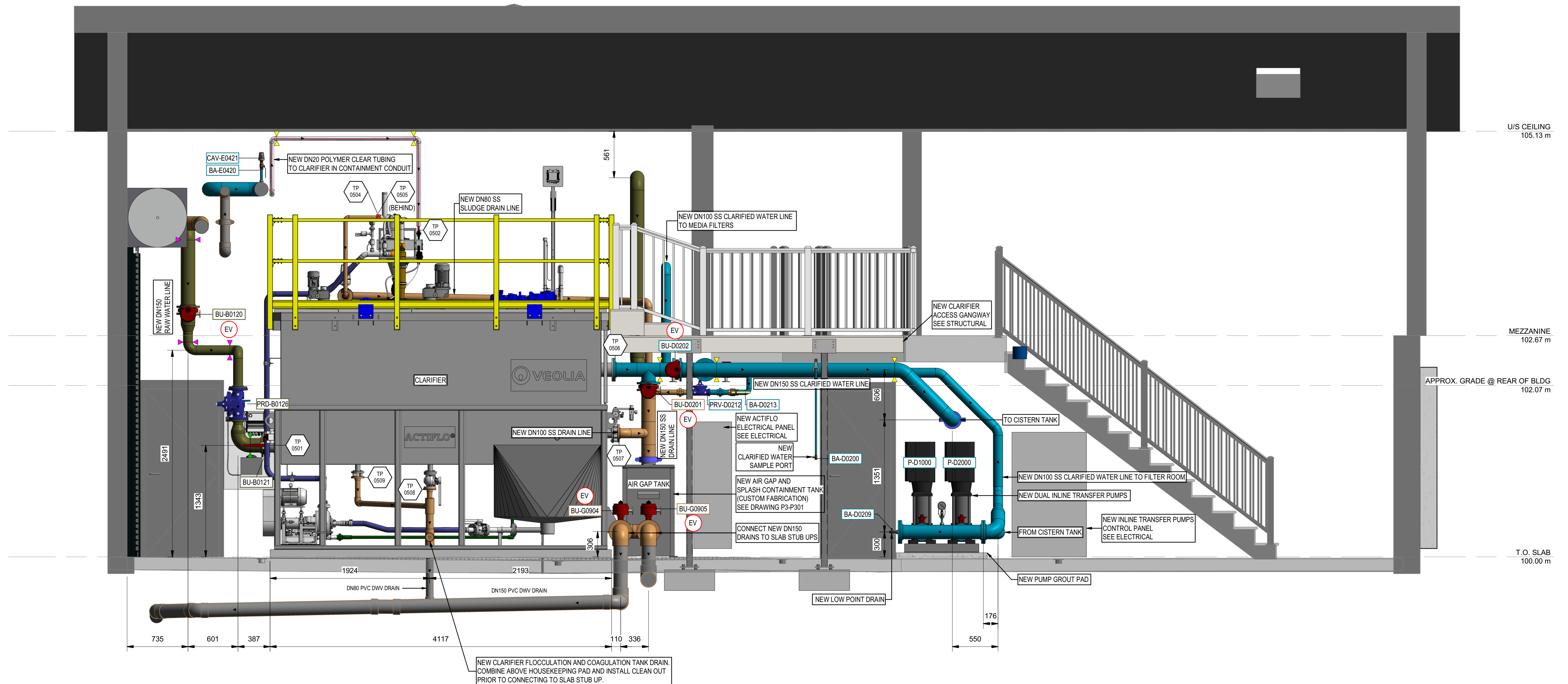
PIPING

COLOUR	TYPE
Grey	EXISTING
Blue	PROCESS - RAW WATER
Light Blue	PROCESS - CLARIFIED / FILTERED WATER
Dark Blue	PROCESS - TREATED WATER
Brown	PROCESS - BACKWASH WASTE
Orange	PROCESS - DRAIN
Red	PROCESS - VENT
Yellow	PROCESS - COAGULANT
Green	PROCESS - SODIUM HYPOCHLORITE
Purple	PROCESS - SODIUM ASCORBATE

SYMBOLS

INDICATOR	TYPE
Green triangle	PIPE SUPPORT - FLOOR
Purple triangle	PIPE SUPPORT - WALL
Yellow triangle	PIPE SUPPORT - CEILING
Black arrow	FLOW DIRECTION

EV ELECTRICALLY ACTIVATED VALVE

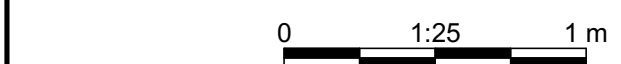


C SECTION P3-C
SCALE: 1:25

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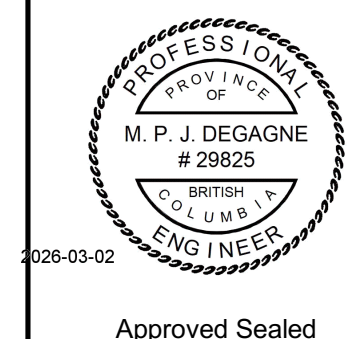
ORIGINAL DWG SIZE: ANSI D (22" x 34")

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WATER TREATMENT PLANT UPGRADES - PACKAGE 3
PROCESS MECHANICAL SECTION - P3-C

Drawing No. **P3-P203**

Project Number 3111-27018-02 Rev. 1

LEGEND

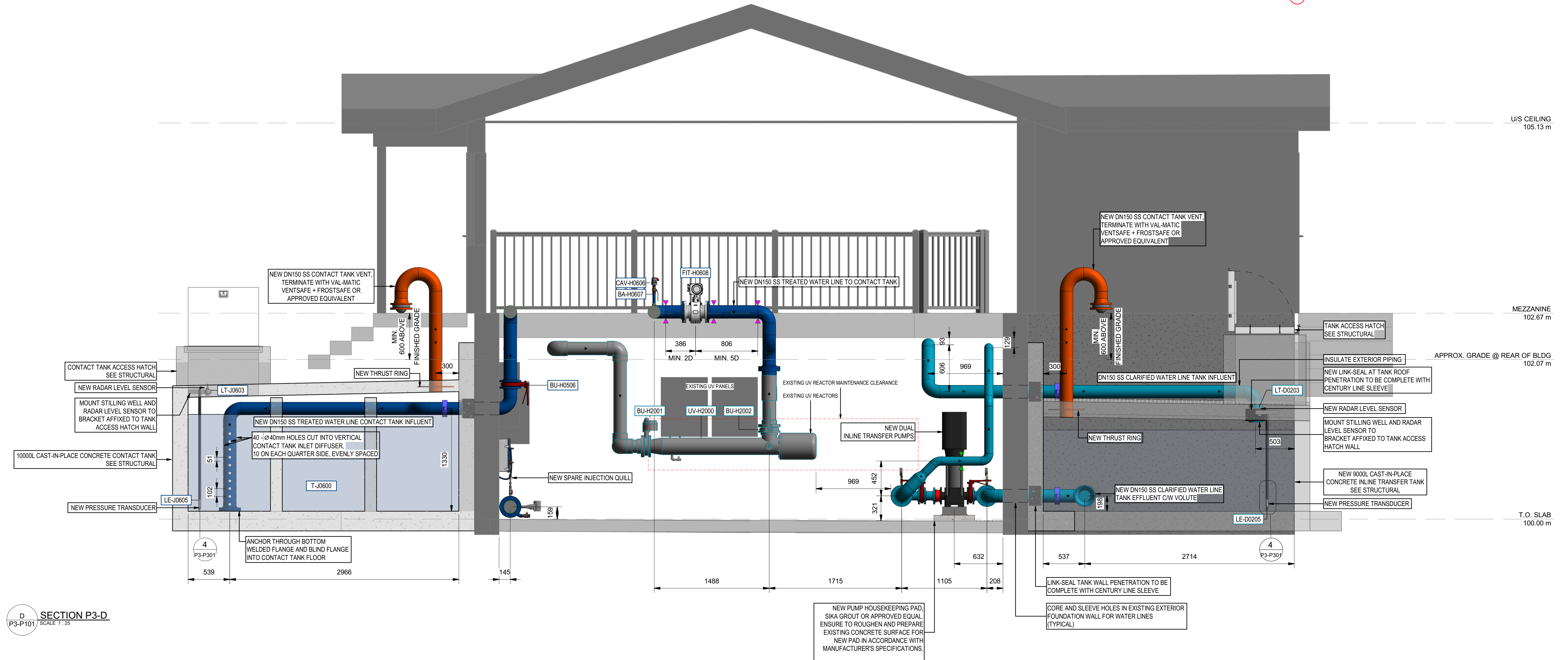
PIPING

COLOUR	TYPE
Grey	EXISTING
Blue	PROCESS - RAW WATER
Light Blue	PROCESS - CLARIFIED / FILTERED WATER
Dark Blue	PROCESS - TREATED WATER
Brown	PROCESS - BACKWASH WASTE
Orange	PROCESS - DRAIN
Red	PROCESS - VENT
Yellow	PROCESS - COAGULANT
Purple	PROCESS - POLYMER
Green	PROCESS - SODIUM HYPOCHLORITE
Light Green	PROCESS - SODIUM ASCORBATE

SYMBOLS

INDICATOR	TYPE
Green triangle	PIPE SUPPORT - FLOOR
Purple triangle	PIPE SUPPORT - WALL
Yellow triangle	PIPE SUPPORT - CEILING
Black arrow	FLOW DIRECTION

EV ELECTRICALLY ACTIVATED VALVE

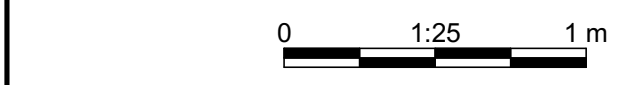


D SECTION P3-D
P3-P101 SCALE 1:25

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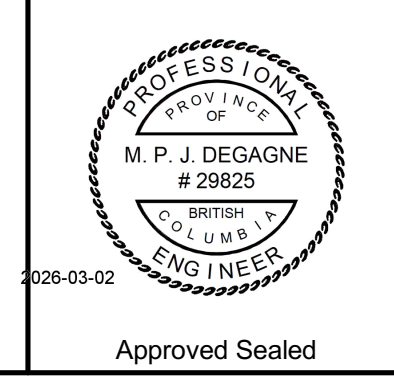
ORIGINAL DWG SIZE: ANSI D (22" x 34")

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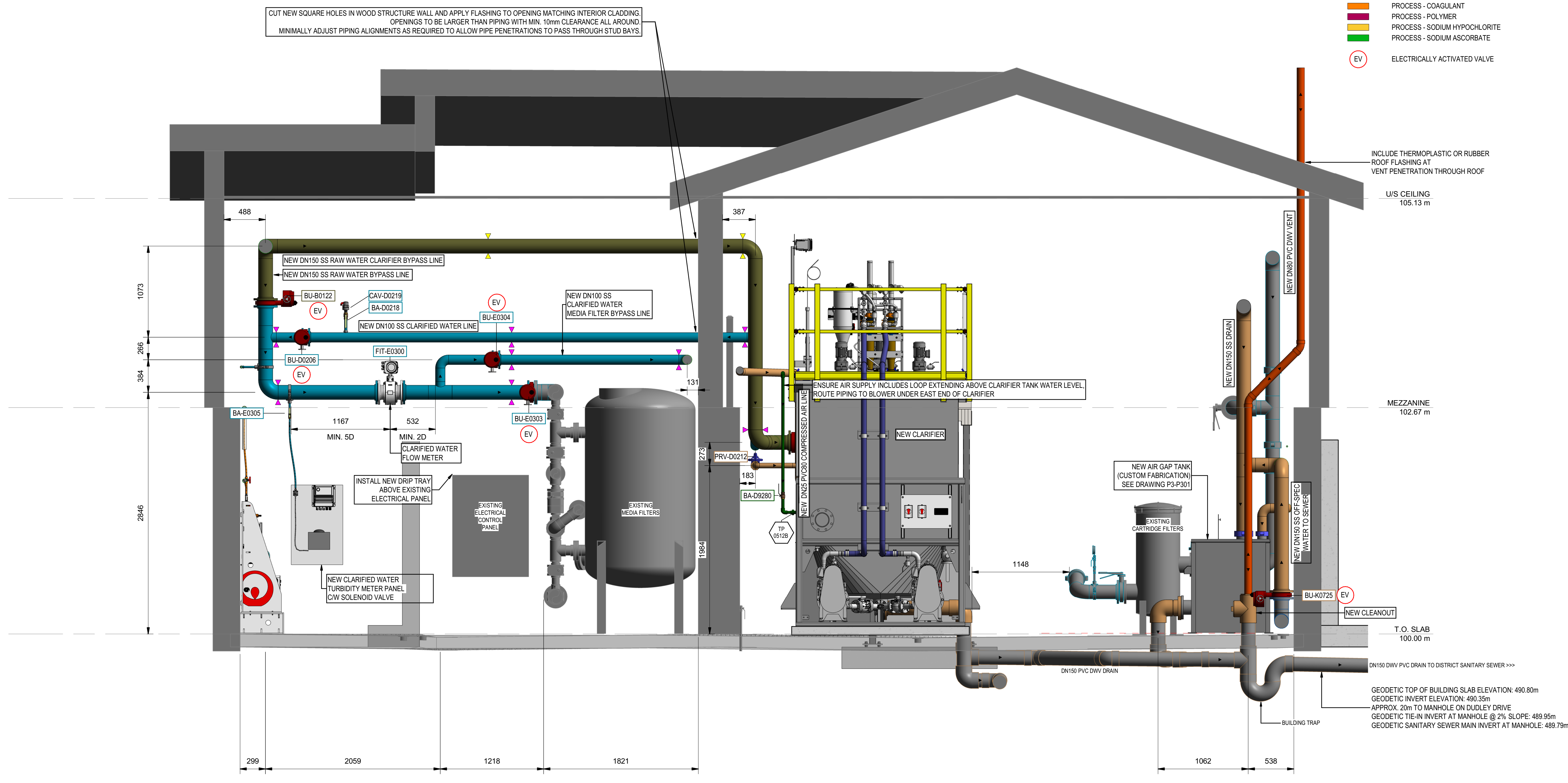
DISTRICT OF HUDSON'S HOPE
9904 DUDLEY DRIVE, HUDSON'S HOPE, BC V0C 1V0

**WATER TREATMENT PLANT
UPGRADES - PACKAGE 3
PROCESS MECHANICAL
SECTION - P3-D**

Drawing No.	P3-P204
Project Number	3111-27018-02
Rev.	1

LEGEND

PIPING		SYMBOLS	
COLOUR	TYPE	INDICATOR	TYPE
Grey	EXISTING	Green Triangle	PIPE SUPPORT - FLOOR
Blue	PROCESS - RAW WATER	Purple Triangle	PIPE SUPPORT - WALL
Light Blue	PROCESS - CLARIFIED / FILTERED WATER	Yellow Triangle	PIPE SUPPORT - CEILING
Dark Blue	PROCESS - TREATED WATER	Black Arrow	FLOW DIRECTION
Brown	PROCESS - BACKWASH WASTE		
Orange	PROCESS - DRAIN		
Red	PROCESS - VENT		
Pink	PROCESS - COAGULANT		
Yellow	PROCESS - POLYMER		
Light Green	PROCESS - SODIUM HYPOCHLORITE		
Dark Green	PROCESS - SODIUM ASCORBATE		
Red Circle	ELECTRICALLY ACTIVATED VALVE		



E SECTION P3-E
P3-P101 SCALE 1:25

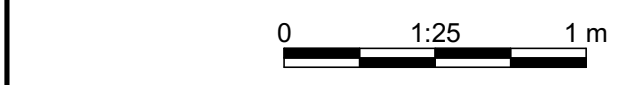
GEODETIC TOP OF BUILDING SLAB ELEVATION: 490.80m
 GEODETIC INVERT ELEVATION: 490.35m
 APPROX. 20m TO MANHOLE ON DUDLEY DRIVE
 GEODETIC TIE-IN INVERT AT MANHOLE @ 2% SLOPE: 489.95m
 GEODETIC SANITARY SEWER MAIN INVERT AT MANHOLE: 489.79m

Rev	Date	Description	Drawn	Design	App'd
1	2026-03-06	ISSUED FOR QUOTATION	JD	ES	MD
0	2025-12-05	ISSUED FOR PERMIT APPROVAL	JD	ES	MD

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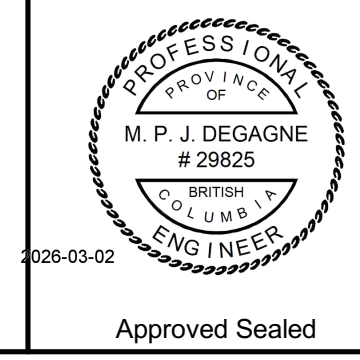
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ORIGINAL DWG SIZE: ANSI D (22" x 34")

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WATER TREATMENT PLANT UPGRADES - PACKAGE 3
PROCESS MECHANICAL SECTION - P3-E

Drawing No.	P3-P205
Project Number	3111-27018-02
Rev.	1

LEGEND

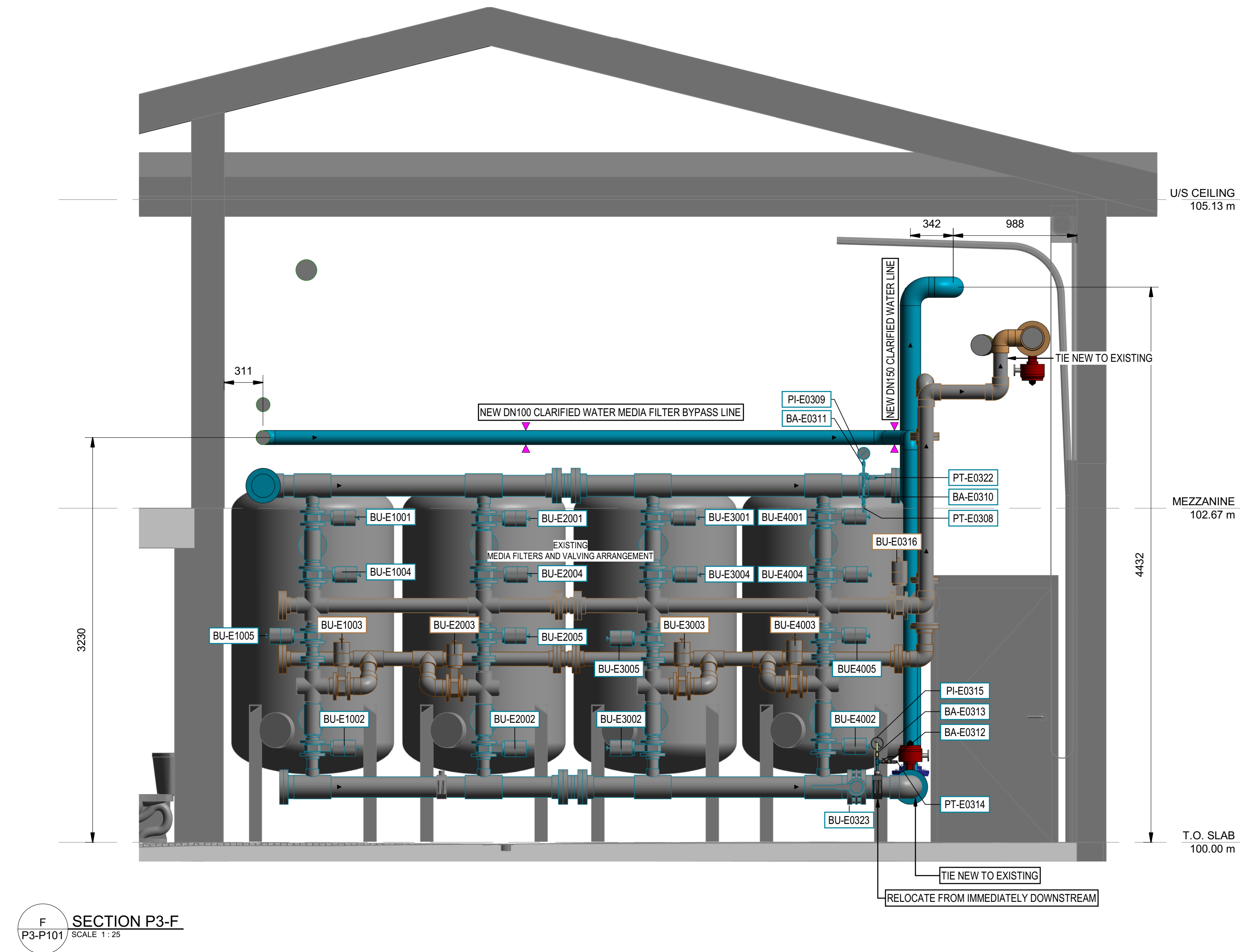
PIPING

COLOUR	TYPE
Grey	EXISTING
Blue	PROCESS - RAW WATER
Light Blue	PROCESS - CLARIFIED / FILTERED WATER
Dark Blue	PROCESS - TREATED WATER
Brown	PROCESS - BACKWASH WASTE
Orange	PROCESS - DRAIN
Red	PROCESS - VENT
Yellow	PROCESS - COAGULANT
Purple	PROCESS - POLYMER
Green	PROCESS - SODIUM HYPOCHLORITE
Light Green	PROCESS - SODIUM ASCORBATE

SYMBOLS

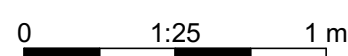
INDICATOR	TYPE
Green triangle	PIPE SUPPORT - FLOOR
Purple triangle	PIPE SUPPORT - WALL
Yellow triangle	PIPE SUPPORT - CEILING
Black arrow	FLOW DIRECTION

EV ELECTRICALLY ACTIVATED VALVE



F SECTION P3-F
P3-P101 / SCALE 1:25

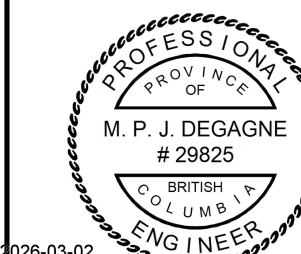
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ORIGINAL DWG SIZE: ANSI D (22" x 34")

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2026-03-02
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DISTRICT OF HUDSON'S HOPE
9904 DUDLEY DRIVE, HUDSON'S HOPE, BC V0C 1V0
**WATER TREATMENT PLANT
UPGRADES - PACKAGE 3
PROCESS MECHANICAL
SECTION - P3-F**

Drawing No. **P3-P206**
Project Number 3111-27018-02
Rev. 1

LEGEND

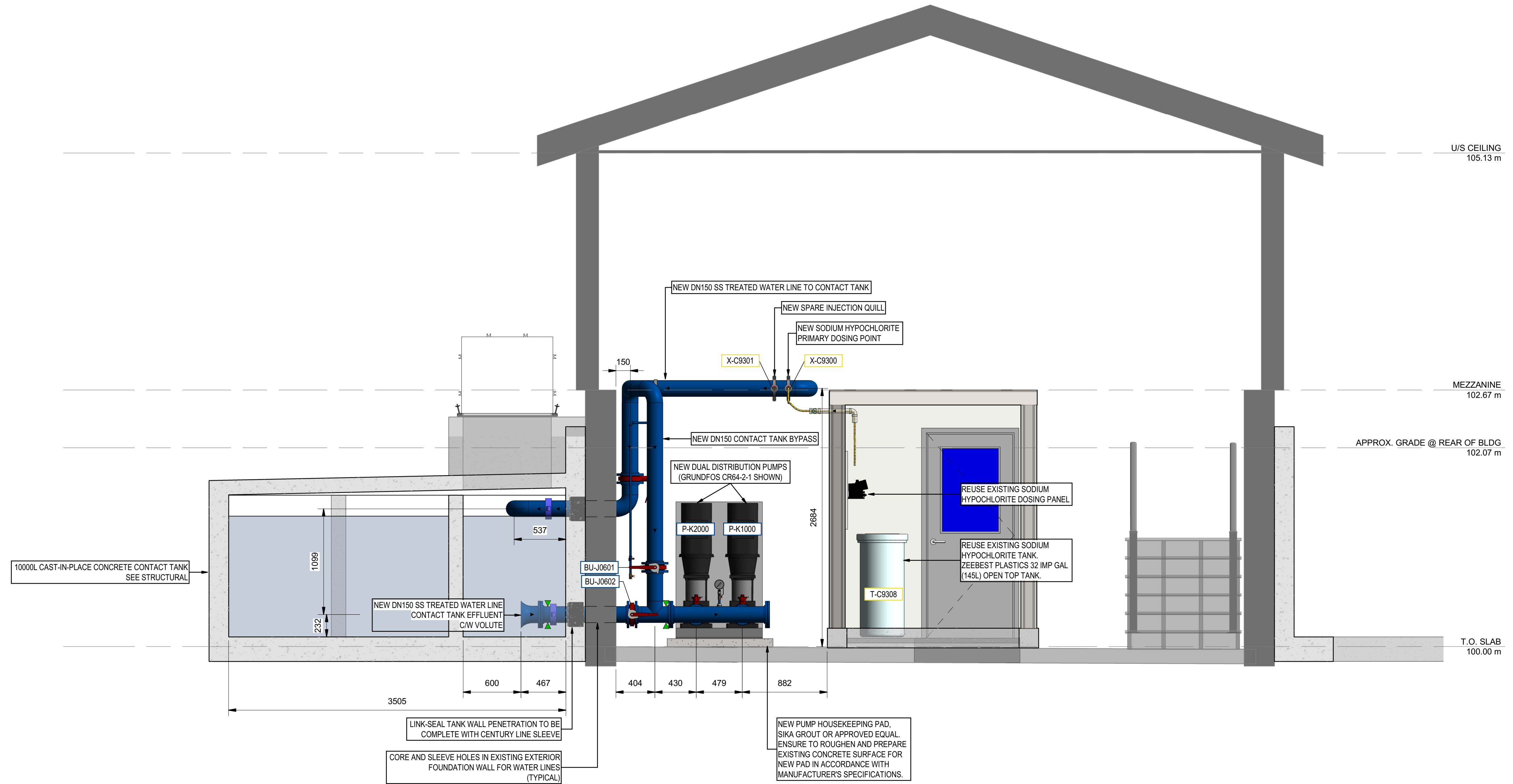
PIPING

COLOUR	TYPE
Grey	EXISTING
Blue	PROCESS - RAW WATER
Light Blue	PROCESS - CLARIFIED / FILTERED WATER
Dark Blue	PROCESS - TREATED WATER
Brown	PROCESS - BACKWASH WASTE
Orange	PROCESS - DRAIN
Red	PROCESS - VENT
Yellow	PROCESS - COAGULANT
Purple	PROCESS - POLYMER
Green	PROCESS - SODIUM HYPOCHLORITE
Light Green	PROCESS - SODIUM ASCORBATE

SYMBOLS

INDICATOR	TYPE
Green triangle	PIPE SUPPORT - FLOOR
Purple triangle	PIPE SUPPORT - WALL
Yellow triangle	PIPE SUPPORT - CEILING
Black arrow	FLOW DIRECTION

(EV) ELECTRICALLY ACTIVATED VALVE



G SECTION P3-G
P3-P101 SCALE 1:25

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Rev	Date	Description	Drawn	Design	App'd
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0	2025-12-05	ISSUED FOR PERMIT APPROVAL	JD	ES	MD

0 1:25 1 m

ORIGINAL DWG SIZE: ANSI D (22" x 34")

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Tel. 250 787 0356

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PROFESSIONAL
ENGINEER
M. P. J. DEGAGNE
29825
BRITISH COLUMBIA
ENGINEERING

2026-03-02

Approved Sealed

DISTRICT OF HUDSON'S HOPE
9904 DUDLEY DRIVE, HUDSON'S HOPE, BC V0C 1V0

**WATER TREATMENT PLANT
UPGRADES - PACKAGE 3
PROCESS MECHANICAL
SECTION - P3-G**

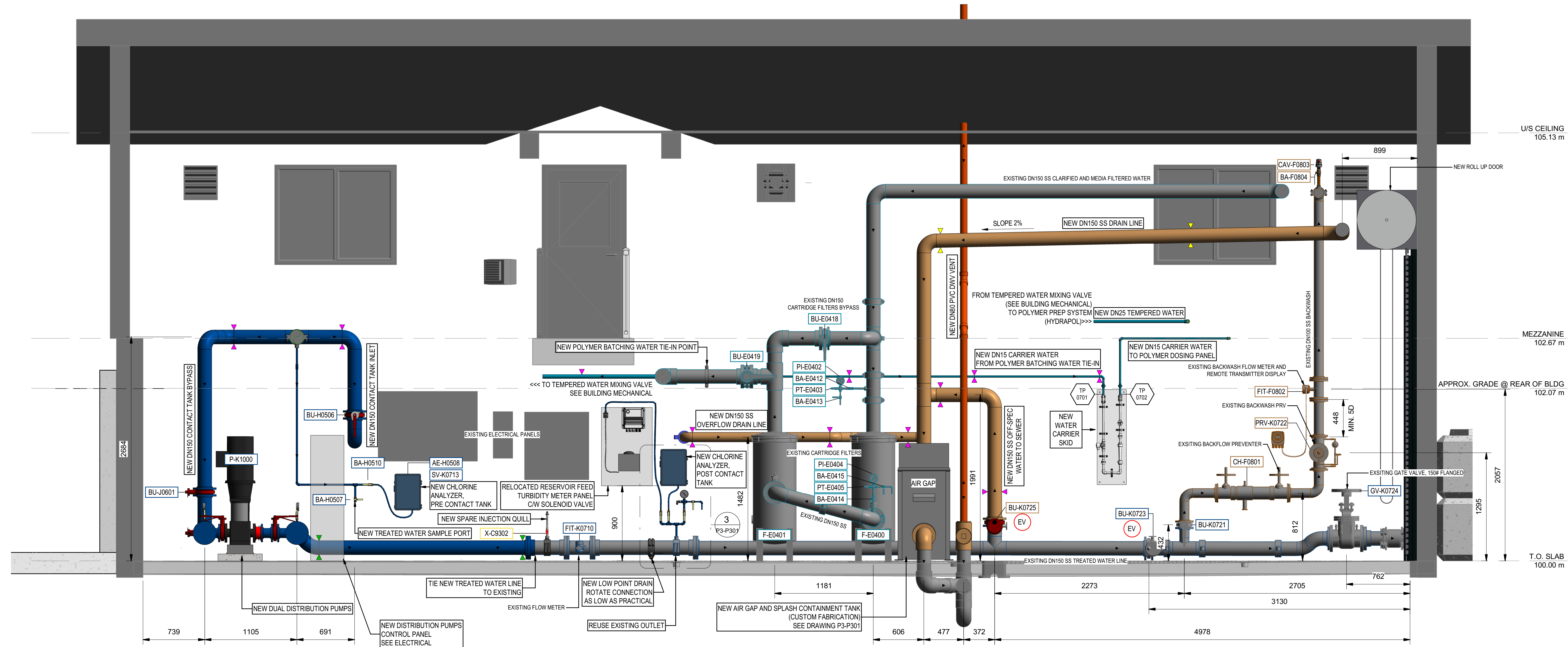
Drawing No. **P3-P207**

Project Number 3111-27018-02 Rev. 1

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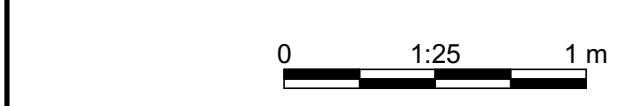
PIPING		SYMBOLS	
COLOUR	TYPE	INDICATOR	TYPE
Grey	EXISTING	Green Triangle	PIPE SUPPORT - FLOOR
Blue	PROCESS - RAW WATER	Purple Triangle	PIPE SUPPORT - WALL
Light Blue	PROCESS - CLARIFIED / FILTERED WATER	Yellow Triangle	PIPE SUPPORT - CEILING
Dark Blue	PROCESS - TREATED WATER	Black Arrow	FLOW DIRECTION
Brown	PROCESS - BACKWASH WASTE		
Orange	PROCESS - DRAIN		
Red	PROCESS - VENT		
Yellow	PROCESS - COAGULANT		
Pink	PROCESS - POLYMER		
Light Green	PROCESS - SODIUM HYPOCHLORITE		
Dark Green	PROCESS - SODIUM ASCORBATE		
Red Circle	ELECTRICALLY ACTIVATED VALVE		



H SECTION P3-H
P3-P101 SCALE 1:25

Rev	Date	Description	Drawn	Design	App'd
1	2026-03-06	ISSUED FOR QUOTATION	JD	ES	MD
0	2025-12-05	ISSUED FOR PERMIT APPROVAL	JD	ES	MD

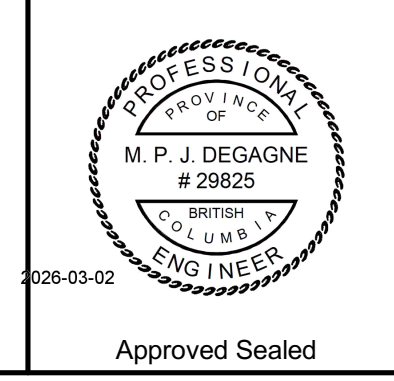
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ORIGINAL DWG SIZE: ANSI D (22" x 34")

McElhanney
 8808 Northern Lights Drive,
 Fort St. John BC V1J 6M2
 Tel. 250 787 0356

PERMIT TO PRACTICE
 McElhanney Ltd.
 PERMIT NUMBER: 1003299
 Engineers and Geoscientists of BC



DISTRICT OF HUDSON'S HOPE
 9904 DUDLEY DRIVE, HUDSON'S HOPE, BC V0C 1V0
WATER TREATMENT PLANT UPGRADES - PACKAGE 3
PROCESS MECHANICAL SECTION - P3-H

Drawing No. **P3-P208**

Project Number	Rev.
3111-27018-02	1

DESTROY ALL PRINTS BEARING PREVIOUS REVISION

LEGEND

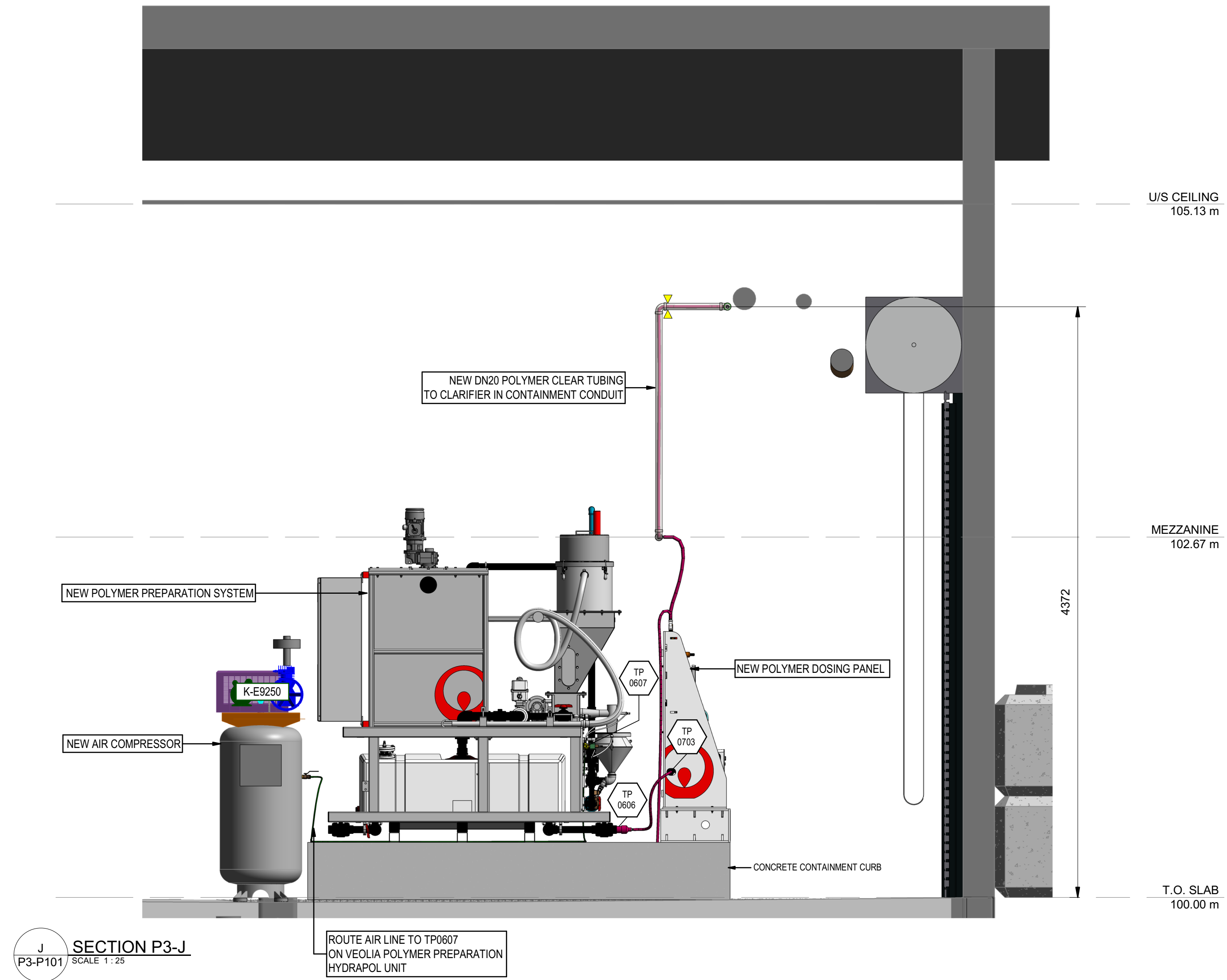
PIPING

COLOUR	TYPE
	EXISTING
	PROCESS - RAW WATER
	PROCESS - CLARIFIED / FILTERED WATER
	PROCESS - TREATED WATER
	PROCESS - BACKWASH WASTE
	PROCESS - DRAIN
	PROCESS - VENT
	PROCESS - COAGULANT
	PROCESS - POLYMER
	PROCESS - SODIUM HYPOCHLORITE
	PROCESS - SODIUM ASCORBATE

SYMBOLS

INDICATOR	TYPE
	PIPE SUPPORT - FLOOR
	PIPE SUPPORT - WALL
	PIPE SUPPORT - CEILING
	FLOW DIRECTION

EV ELECTRICALLY ACTIVATED VALVE



Rev	Date	Description	Drawn	Design	App'd
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Engineers and Geoscientists of BC

PROFESSIONAL ENGINEER
M. P. J. DEGAGNE
29825
BRITISH COLUMBIA
ENGINEER

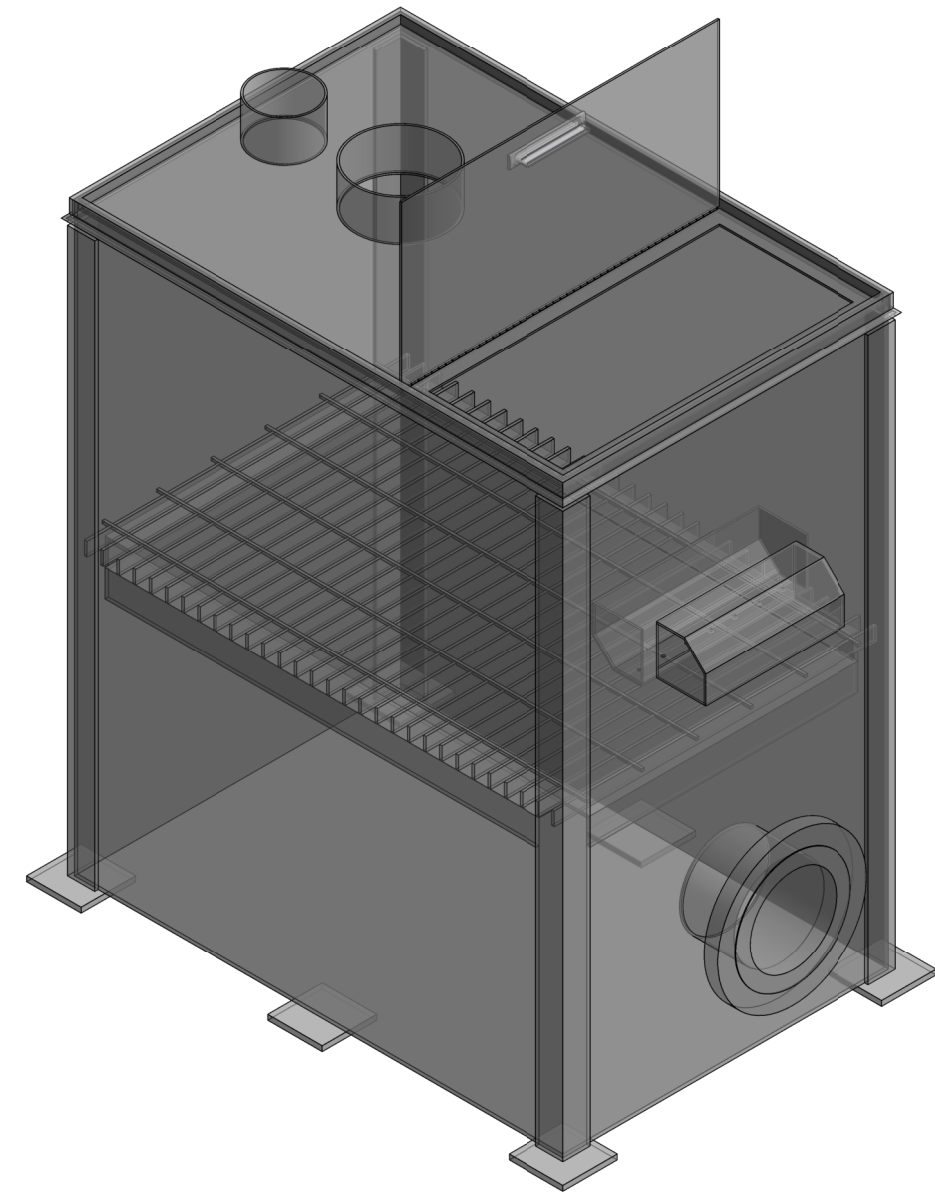
2026-03-02
Approved Sealed

DISTRICT OF HUDSON'S HOPE
9904 DUDLEY DRIVE, HUDSON'S HOPE, BC V0C 1V0

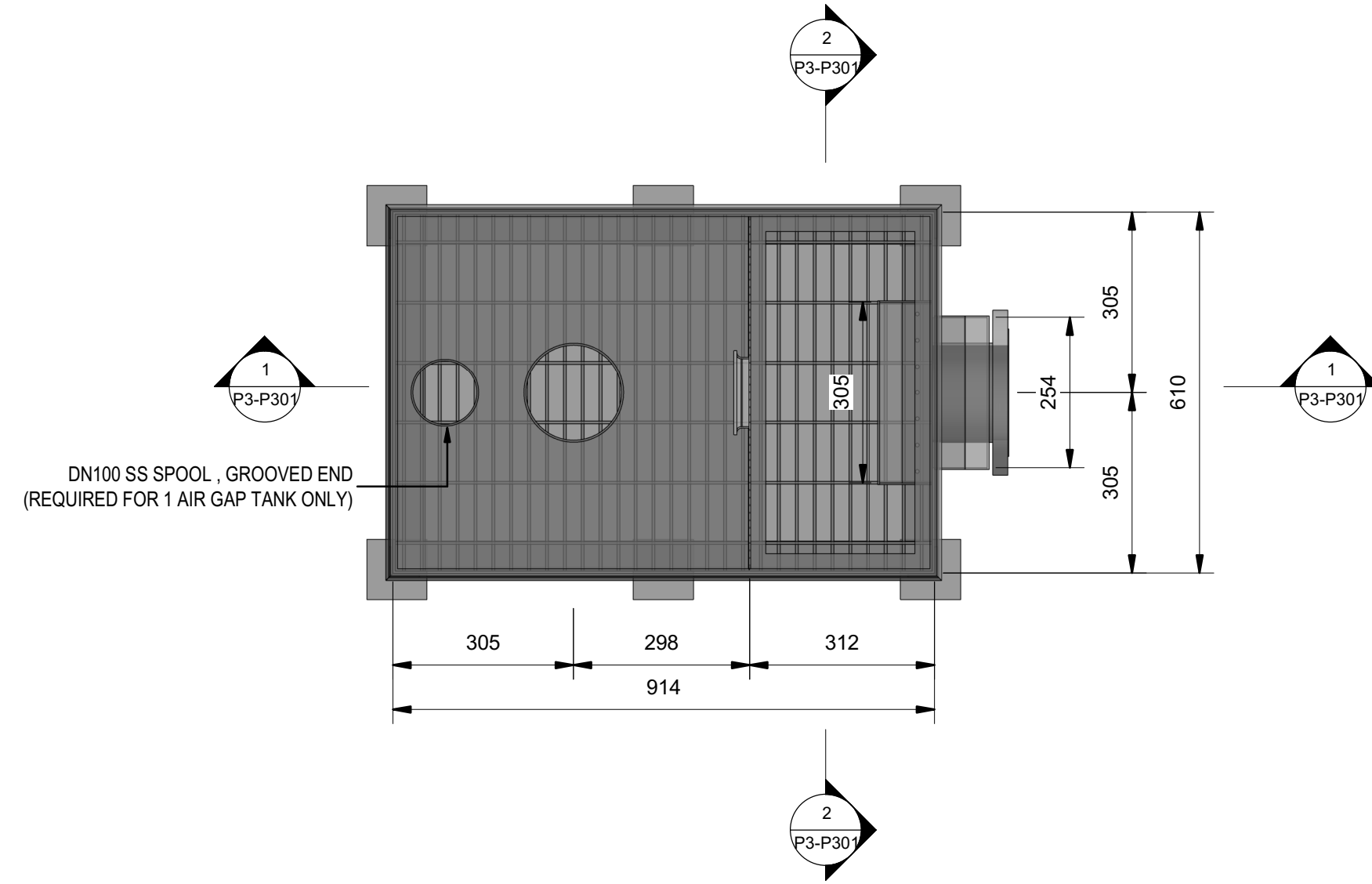
WATER TREATMENT PLANT UPGRADES - PACKAGE 3
PROCESS MECHANICAL SECTION - P3-J

Drawing No. **P3-P209**

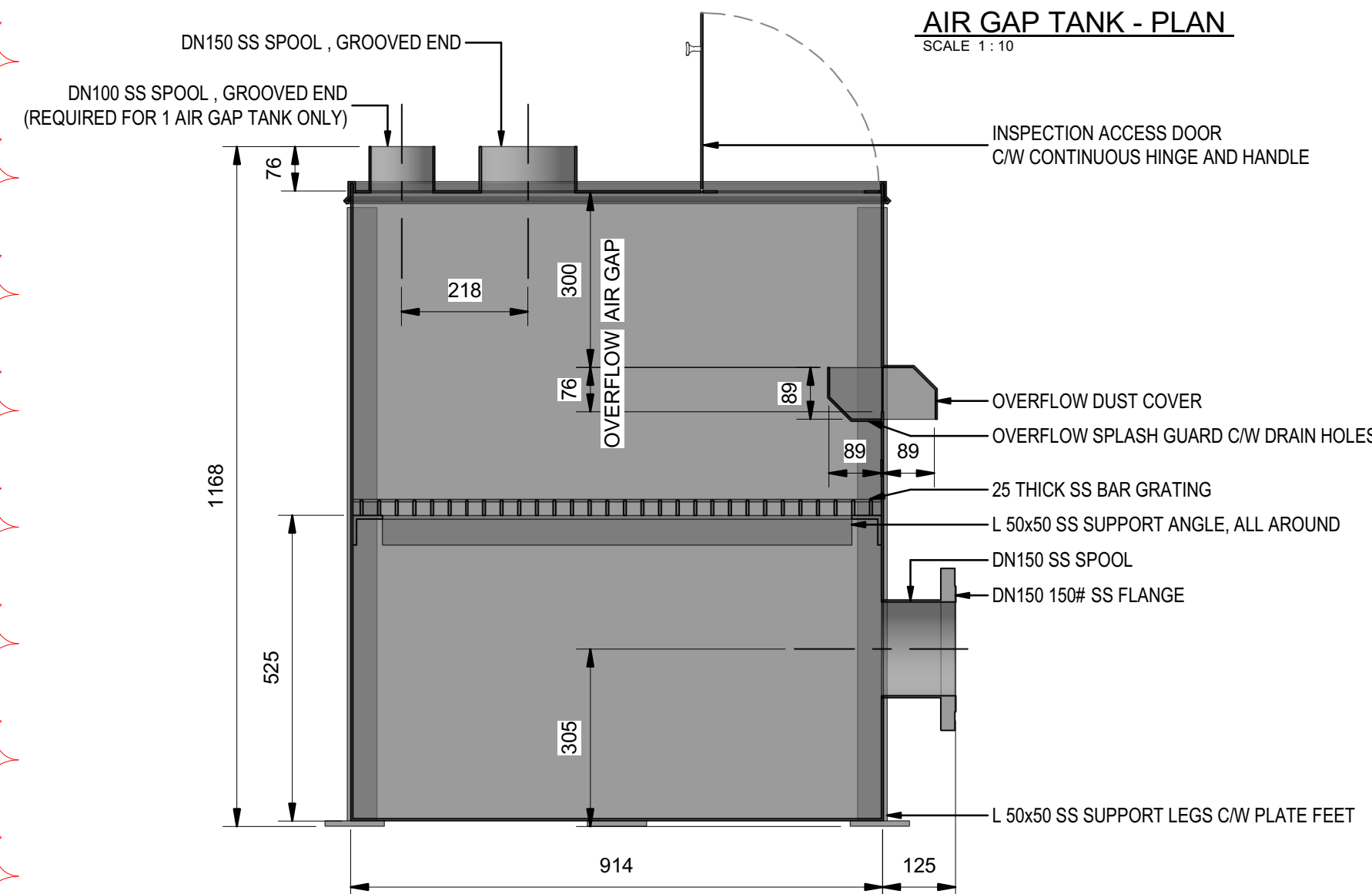
Project Number 3111-27018-02
Rev. 1



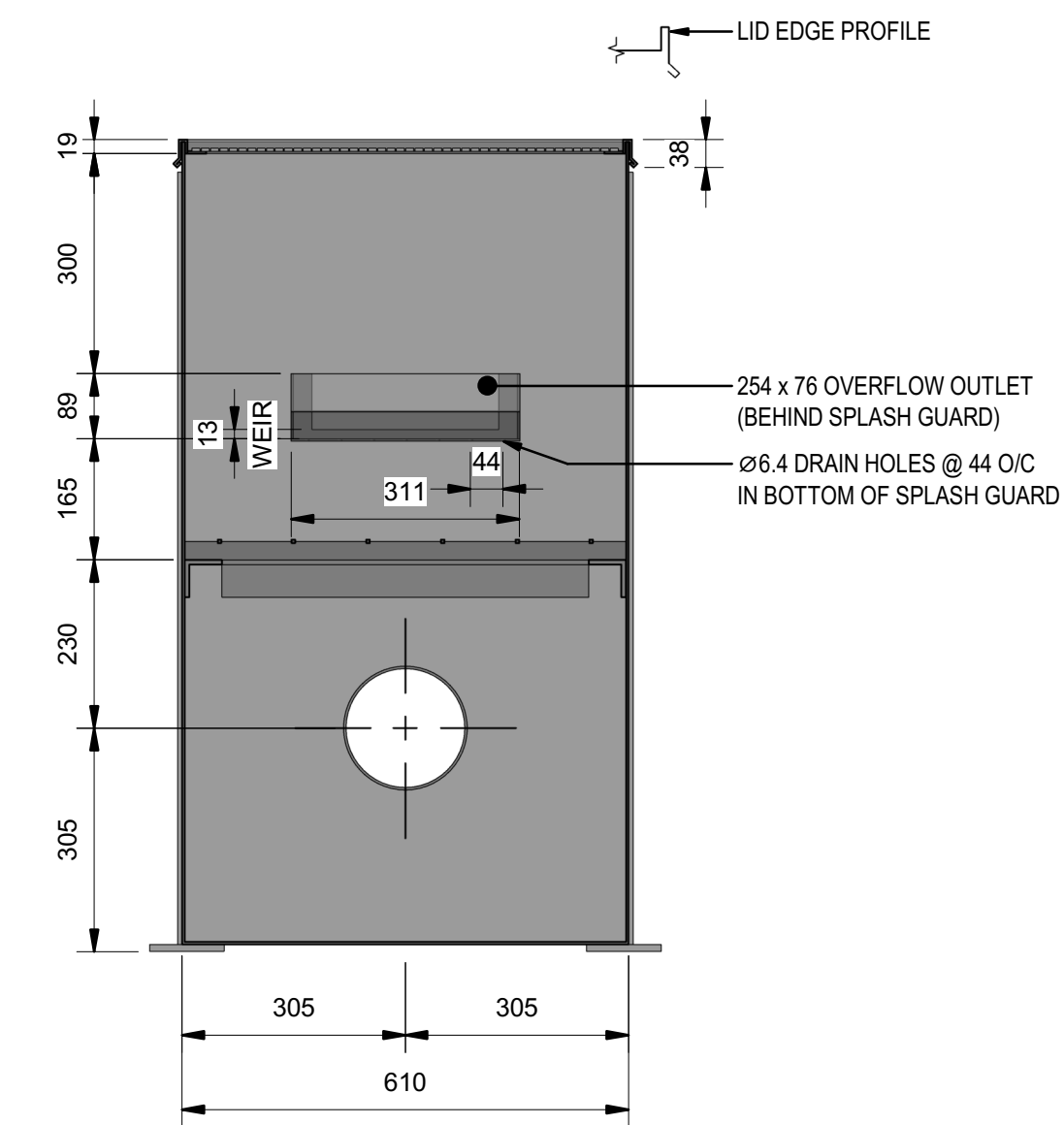
AIR GAP TANK - ISOMETRIC
SCALE



AIR GAP TANK - PLAN
SCALE 1:10

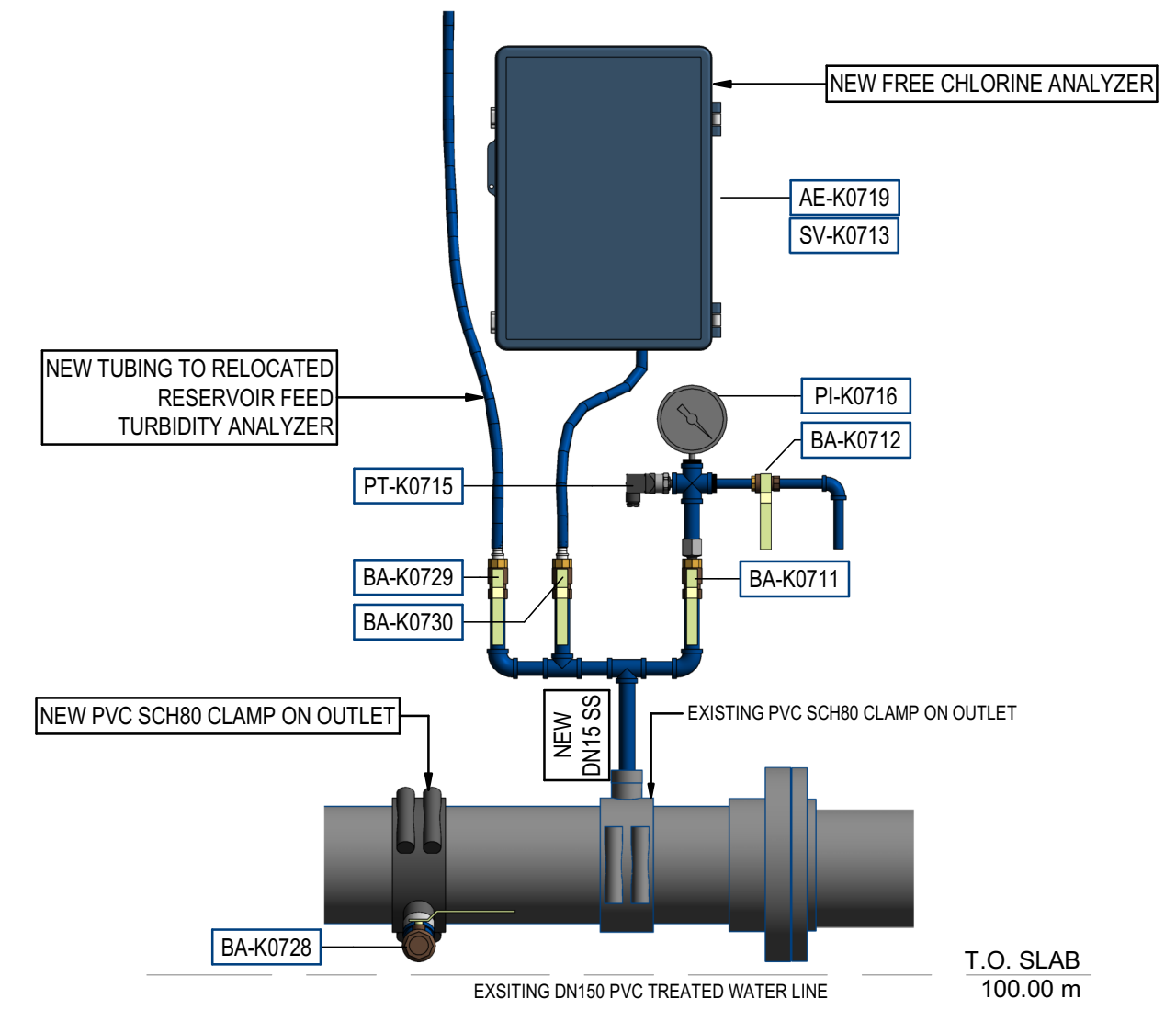


1 AIR GAP TANK SECTION - DETAIL 1
P3-P301 SCALE 1:10

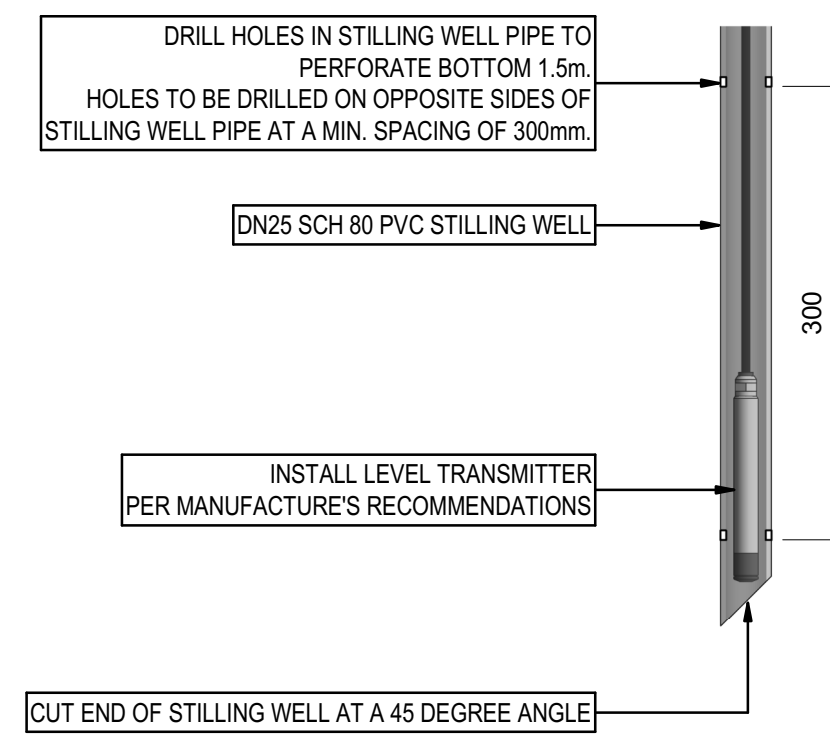


2 AIR GAP TANK SECTION - DETAIL 2
P2-P100 SCALE 1:10

AIR GAP TANK ON HOLD
DETAILS TO BE DETERMINED



3 SECTION P3-H - DETAIL 3
P3-P208 SCALE 1:10



4 SECTION P3-D - DETAIL 4
P3-P204 SCALE 1:5

BOX AND LID TO BE MINIMUM 2mm (14 GAUGE) 316L SS
BENT WITH WELDED SEAMS WHERE REQUIRED.
CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR APPROVAL.

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**WATER TREATMENT PLANT
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PROCESS MECHANICAL
DETAILS**

Drawing No.	
P3-P301	
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3111-27018-02	1