MECHANICAL SPECIFICATIONS:

GENERAL:

.1 PERFORM ALL WORK AS OUTLINED HEREIN AND SHOWN ON THE DRAWINGS. PROVIDE ALL MATERIALS, TOOLS, LABOUR, PLANT AND THE LIKE NECESSARY TO PROVIDE A COMPLETE OPERATING SYSTEM TO THE SATISFACTION OF THE CONTRACT ADMINISTRATOR.

STANDARDS:

.1 STANDARDS REFERENCED SHALL BE MOST RECENT VERSION.

.2 NRC
- .1 PROVINCIAL AND NATIONAL BUILDING CODES
- .2 PROVINCIAL AND NATIONAL FIRE CODES
- .3 PROVINCIAL AND NATIONAL PLUMBING CODES

ACCESSIBILITY:

.1 ENSURE THAT ALL EQUIPMENT, FIXTURES, AND DEVICES REQUIRING NORMAL MAINTENANCE AND/OR CLEANING ARE MOUNTED SUCH THAT THEY ARE FULLY SERVICEABLE. PROVIDE NECESSARY ISOLATION, ACCESS DOORS, UNION TYPE FITTINGS AND THE LIKE.

.2 WHERE NECESSARY PROVIDE EXTENDED LUBRICATION FITTINGS.

.3 PROVIDE U.L.C. RATED ACCESS DEVICES FOR ACCESS THROUGH RATED ENCLOSURES.

1.0 GENERAL MECHANICAL PROVISIONS

1.1 INTENT

.1 THE INTENT OF THIS SPECIFICATION AND THE DRAWINGS IS TO PROVIDE A COMPLETE AND FULLY OPERATING MECHANICAL SYSTEM IN COMPLETE ACCORD WITH APPLICABLE CODES. THE MECHANICAL CONTRACTOR SHALL MAKE PROVISIONS FOR LABOUR, MATERIAL, AND EQUIPMENT NECESSARY TO COMPLETE THE MECHANICAL WORK.

.2 DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY TO EACH OTHER AND WHAT IS CALLED FOR IN ONE IS BINDING AS IF CALLED FOR BY BOTH. SHOULD ANY DISCREPANCY APPEAR BETWEEN DRAWINGS AND SPECIFICATIONS WHICH LEAVES DOUBT AS TO THE TRUE INTENT AND MEANING, OBTAIN A RULING FROM CONTRACT ADMINISTRATOR IN ACCORDANCE WITH B4. FAILING THIS, ALLOW FOR MOST EXPENSIVE ALTERNATIVE.

.3 CONTRACT DOCUMENTS ARE DIAGRAMMATIC ONLY. THEY ARE TO ESTABLISH SCOPE, MATERIAL AND QUALITY. THEY ARE NOT DETAILED INSTALLATION DRAWINGS. MINOR DETAILS USUALLY NOT SHOWN OR SPECIFIED AND ANY INCIDENTAL ACCESSORIES REQUIRED FOR PROPER INSTALLATION OF THE SYSTEM ARE TO BE INCLUDED IN THE WORK.

.4 CONTRACTOR IS TO ENSURE THAT ALL INTENDED EQUIPMENT WILL FIT WITHIN GIVEN SPACES.

1.2 CODE COMPLIANCE

.1 ALL WORK SHALL CONFORM TO CURRENT EDITION OF NATIONAL, PROVINCIAL AND MUNICIPAL CODES, STANDARDS AND ACTS; AND WILL MEET THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.

1.3 CERTIFICATES

.1 GIVE NOTICES, OBTAIN PERMITS AND APPROVALS, AND PAY FEES SO WORK SPECIFIED MAY BE CARRIED OUT. FURNISH CERTIFICATES IF REQUESTED, AS EVIDENCE THAT WORK CONFORMS WITH LAWS AND REGULATIONS OF THE AUTHORITIES HAVING JURISDICTION.

1.4 CUTTING AND PATCHING

.1 ALL WORK SHALL BE COORDINATED WITH OTHER TRADES ESPECIALLY THAT RELATED TO CUTTING AND PATCHING OF REQUIRED OPENINGS; AND LOCATIONS AND INSTALLATION OF SLEEVES, INSERTS, SUPPORT, CURBS, FRAMES AND ACCESS DOORS.

.2 RESTORE ANY AFFECTED AREAS BACK TO ORIGINAL CONDITION.

1.5 MATERIALS AND EQUIPMENT

.1 CONTRACT PRICE SHALL BE BASED ON MATERIALS AND EQUIPMENT SPECIFIED. APPROVAL BY CONTRACT ADMINISTRATOR OF EQUIPMENT SUBMITTED BY THE MECHANICAL TRADE AS EQUAL TO THAT SPECIFIED DOES NOT RELIEVE THE MECHANICAL TRADE OF ANY RESPONSIBILITY.

.2 REVISIONS REQUIRED TO ADAPT ACCEPTED EQUALS SHALL BE INCLUDED IN THE CONTRACT PRICE. NO INCREASE IN THE CONTRACT PRICE WILL BE CONSIDERED TO ACCOMMODATE THE USE OF EQUIPMENT OTHER THAN THAT SPECIFIED.

1.6 SHOP DRAWINGS

.1 SUBMIT ONE ELECTRONIC COPY OF THE SHOP DRAWINGS IN A PORTABLE DOCUMENT FORMAT (PDF) TO CONTRACT ADMINISTRATOR FOR ALL EQUIPMENT SPECIFIED IN THE SPECIFICATION OR DRAWINGS FOR REVIEW. DO NOT ORDER EQUIPMENT OR MATERIALS OR PROCEED WITH WORK AFFECTED BY SUBMITTALS REVIEW IS COMPLETE. FAILURE TO SUBMIT IN AMPLE TIME IS NOT CONSIDERED SUFFICIENT REASON FOR EXTENSION OF CONTRACT TIME AND NO CLAIM FOR EXTENSION BY REASON OF SUCH DEFAULT WILL BE ALLOWED.

.2 PRESENT SHOP DRAWINGS IN SI METRIC UNITS.

.3 NOTIFY CONTRACT ADMINISTRATOR IN WRITING AT TIME OF SUBMISSION, IDENTIFYING DEVIATIONS FROM REQUIREMENTS OF CONTRACT DOCUMENTS STATING REASON FOR DEVIATIONS.

.4 VERIFY FIELD MEASUREMENTS AND AFFECTED ADJACENT WORK IS CO-ORDINATED.

.5 CONTRACTOR'S RESPONSIBILITY FOR ERRORS AND OMISSIONS IN SUBMISSION IS NOT RELIEVED BY CONTRACT ADMINISTRATOR'S REVIEW.

1.7 STANDARD OF MATERIALS AND WORKMANSHIP

.1 MAKE AND QUALITY OF MATERIALS USED ARE SUBJECT TO APPROVAL BY THE CONTRACT ADMINISTRATOR. REMOVE UNACCEPTABLE MATERIALS AND INSTALL SUITABLE MATERIALS IN THEIR PLACE.

.2 MATERIALS SHALL BE NEW AND OF UNIFORM PATTERN THROUGHOUT, UNLESS NOTED OTHERWISE.

.3 EMPLOY ONLY TRADESMEN PROPERLY LICENSED TO PERFORM THE SPECIFIC WORK. CONTRACT ADMINISTRATOR MAY PERFORM SPOT CHECKS FOR TRADE TICKETS AND ACCREDITATION.

SERVICE WATER PIPING AND FITTINGS

1.8 PIPE: STAINLESS STEEL, SEAMLESS, SCHEDULE 10S; ASTM A 312 OR A 409 GRADE TP 304L OR TP316L, WITH ASME B36.19M WELDED JOINTS.

1.8.1 JOINTS: .1 WELDED: FITTINGS AND FLANGES TO CAN/CSA W48.
.2 ROLL GROOVED: COUPLINGS MANUFACTURED IN TWO OR MORE SEGMENTS OF CAST STAINLESS STEEL, CONFORMING TO ASTM A-351, A-743 AND A-744. GASKETS SHALL BE PRESSURE RESPONSIVE, GRADE TO SUIT POTABLE WATER SERVICE. MECHANICAL COUPLING BOLTS SHALL BE STAINLESS STEEL, TYPE 316, MEETING THE PHYSICAL PROPERTIES OF ASTM A-193, GRADE B8M, CLASS 2.

1.8.2 FITTINGS .1 BUTT WELDING, STAINLESS STEEL, SEAMLESS, SCHEDULE 10S; ASTM A403 GRADE WP 304L OR WP 316L, ASME B16.9, AND MSS SP-43.
.2 GROOVED END: STAINLESS STEEL CONFORMING TO ASTM A-403, WPW, WPW/S9 OR CR/S9 OR SHALL BE FABRICATED FROM STAINLESS STEEL PIPE CONFORMING TO ASTM A312 WITH FACTORY GROOVED ENDS. FITTINGS SHALL BE TYPE 304/304SL OR 316/316L.

1.8.3 FLANGES: SLIP-ON TYPE, 150-lb (1035-kPa); MSS OR ASME AS FOLLOWS:
.1 MSS SP-51 FLANGE: DIAMETER AND DRILLINGS IDENTICAL TO 865-kPa FLANGE IN ACCORDANCE WITH ASME B16.1 AND 1035-kPa IN ACCORDANCE WITH ASME B16.5,PLAIN (FLAT) FACED. MATERIAL SHALL CONFORM TO AND COMPLY WITH ASTM A 182 GRADES 304L AND 316L FOR 2 INCH (50mm) SIZE OR SMALLER; ASTM A 351 GRADES CF8 AND CF8M FOR ALL LARGER SIZES.
.2 ASME FLANGE: ASME B16.5 RAISED FACE DIMENSIONS, ASTM A 182 GRADES F304L AND F316L MATERIAL.

1.8.4 WELDING PROCESS:TUNGSTEN INERT-GAS (TIG) PROCESS. FILLER MATERIAL SHALL BE AWS A5.9 CLASS ER 308L FOR TYPE 304L STAINLESS STEEL, AND CLASS ER 316L FOR TYPE 316L STAINLESS STEEL. THE INERT GAS SHALL BE ARGON.

1.9 CHECK VALVES

1.9.1 .1 UP TO NPS 2-1/2 AND OVER OR VERTICAL
.2 1035 kPa, SPRING LOADED CLAPPER, NONSLAM OPERATION, WAFER-TYPE BODY OF DUCTILE IRON, WITH TYPE 316 STAINLESS-STEEL SEAT OR VITON SEAT SEALS FOR HORIZONTAL OR VERTICAL SERVICE AS INDICATED. USE PLASTIC-LINED,NICKEL OR CHROMIUM-PLATED BODIES FOR SERVICE WATER APPLICATIONS.
.3 STANDARD OF ACCEPTANCE: DOU-CHEK SERIES G-15, CENTERLINE SERIES 800.

1.10 BUTTERFLY VALVES

1.10.1 .1 NPS 2-1/2 AND OVER
.2 GRADE CF8M STAINLESS STEEL BODY AND DISC, 316 STAINLESS STEEL STEM, PTFE IMPREGNATED GLASS FABRIC BEARINGS WITH 316 STAINLESS STEEL BACKING, WITH SEAL FOR POTABLE WATER SERVICE. VALVE STEM SHALL BE OFFSET FROM THE DISC CENTERLINE TO PROVIDE FULL 360° CIRCUMFERENTIAL SEATING. BUBBLE TIGHT, DEAD-END OR BI-DIRECTIONAL SERVICE TO 2065kPa CWP. OPERATORS SHALL BE GEAR OPERATED HAND WHEELS.
.3 STANDARD OF ACCEPTANCE: VICTAULIC SERIES 763.

1.11 DIELECTRIC INSULATING FITTINGS

1.11.1 COUPLINGS AND FLANGES SHALL BE CONSTRUCTED SO THAT THE TWO PIPES BEING CONNECTED ARE COMPLETELY INSULATED FROM EACH OTHER WITH NO METAL-TO-METAL CONTACT. THE UNIONS SHALL HAVE FEMALE THREADED-END CONNECTIONS. THE FLANGES SHALL HAVE THREADED CONNECTIONS AND SHALL BE MADE UP WITH COMPLETE INSULATING COMPONENTS CONSISTING OF A DIELECTRIC GASKET, BOLT, INSULATOR SLEEVES, AND BOLT WASHERS. DIELECTRIC INSULATING FITTINGS WITH SOLDER ENDS AND CONNECTIONS SHALL NOT BE USED. ALL DIELECTRIC MATERIAL SHALL BE SUITABLE AND LABELED FOR THE SERVICE CONDITIONS INVOLVED.

HANGERS AND SUPPORTS FOR PIPING EQUIPMENT

PIPE HANGERS

1.12.1 FINISHES:
.1 PIPE HANGERS AND SUPPORTS: GALVANIZED OR CARBON STEEL PAINTED WITH ZINC-RICH PAINT AFTER MANUFACTURER.
.2 USE ELECTRO-PLATING GALVANIZING PROCESS.
.3 ENSURE STEEL HANGERS IN CONTACT WITH COPPER PIPING ARE COPPER PLATED.

1.12.2 UPPER ATTACHMENT STRUCTURAL: SUSPENSION FROM LOWER FLANGE OF I-BEAM.
.1 COLD PIPING NPS 2 MAXIMUM: MALLEABLE IRON C-CLAMP WITH HARDENED STEEL CUP POINT SETSCREW, LOCKNUT AND CARBON STEEL CLIP.
.2 COLD PIPING NPS 2-1/2 OR GREATER, HOT PIPING: MALLEABLE IRON BEAM CLAMP, EYE ROD, JAWS AND EXTENSION WITH CARBON STEEL RETAINING CLIP, TIE ROD, NUTS, AND WASHER, TO MSS-SP58 AND MSS-SP69.

1.12.3 UPPER ATTACHMENT STRUCTURAL: SUSPENSION FROM UPPER FLANGE OF I-BEAM.
.1 COLD PIPING NPS 2 MAXIMUM: DUCTILE IRON TOP-OF-BEAM C-CLAMP WITH HARDENED STEEL CUP POINT SETSCREW, LOCKNUT AND CARBON STEEL RETAINING CLIP, TO MSS SP69.

.2 COLD PIPING NPS 2-1/2 OR GREATER, HOT PIPING: MALLEABLE IRON TOP-OF-BEAM JAW-CLAMP WITH HOOKED ROD, SPRING WASHER, PLAIN WASHER AND NUT.

1.10.4 UPPER ATTACHMENT TO CONCRETE:
.1 CEILING: CARBON STEEL WELDED EYE ROD, CLEVIS PIN AND COTTERS WITH WELDLESS FORGED STEEL EYE NUT. ENSURE EYE OPENING IS 6mm IN LARGER THAN ROD DIAMETER.
.2 CONCRETE INSERTS: WEDGE SHAPED BODY WITH KNOCKOUT PROTECTOR PLATE UL LISTED TO MSS SP69.

1.12.5 SHOP AND FIELD-FABRICATED ASSEMBLIES TO ASTME B31.9 AND MSS-SP69:
.1 TRAPEZE HANGERS.
.2 STEEL BRACKETS.

1.12.6 HANGER RODS: THREADED ROD MATERIAL TO MSS SP58:
.1 ENSURE THAT HANGER RODS ARE SUBJECT TO TENSILE LOADING ONLY.
.2 PROVIDE LINKAGES WHERE LATERAL OR AXIAL MOVEMENT OF PIPEWORK IS ANTICIPATED.

1.10.7 PIPE ATTACHMENTS: MATERIAL TO MSS SP58:
.1 ATTACHMENTS FOR STEEL PIPING: CARBON STEEL GALVANIZED.
.2 ATTACHMENTS FOR COPPER PIPING: COPPER PLATED BLACK STEEL.
.3 OVERSIZED PIPE HANGERS AND SUPPORTS.

1.10.8 ADJUSTABLE CLEVIS: MATERIAL TO MSS SP69 UL LISTED, CLEVIS BOLT WITH NIPPLE SPACER AND VERTICAL NUTS AND BELOW CLEVIS:
.1 ENSURE "U" HAS HOLE IN BOTTOM FOR RIVETING TO INSULATION SHIELDS.

1.12.9 YOKE STYLE PIPE ROLL: CARBON STEEL YOKE, ROD AND NUTS WITH CAST IRON ROLL, TO MSS SP69.

1.12.10 U-BOLTS: CARBON STEEL TO MSS SP69 WITH 2 NUTS AT EACH END TO ASTM A563.
.1 FINISHES FOR STEEL PIPE WORK" GALVANIZED.
.2 FINISHES FOR COPPER, PIPE WORK : BLACK, EPOXY COATED.

1.12.11 PIPE ROLLERS: CAST IRON ROLL AND ROLL STAND WITH CARBON STEEL ROD TO MSS SP69.

RISER CLAMPS

1.13.1 STEEL OR CAST IRON PIPE: GALVANIZED CARBON STEEL TO MSS SP58, TYPE 42, UL LISTED APPROVED.

1.13.2 COPPER PIPE: CARBON STEEL COPPER PLATED TO MSS SP58, TYPE 42.

1.13.3 BOLTS: TO ASTM A307.

1.13.4 NUTS: TO ASTM A563.

INSULATION PROTECTION SHIELDS

1.14.1 INSULATED COLD PIPING:
.1 64 Kg/m³ DENSITY INSULATION PLUS PROTECTION SHIELD TO: MSS SP69, GALVANIZED SHEET CARBON STEEL. LENGTH DESIGNED FOR MAXIMUM 3m SPAN.

HANGER SPACING

1.15.1 WITHIN 300mm OF EACH ELBOW.

| MAX. PIPE SIZ : NPS | MAX. SPACING (STAINLESS STEEL) | MAX. SPACING (COPPER) |
|---|---|---|
| UP TO 1-1/4 | | 1.8m |
| 1-1/2 | | 2.4m |
| 2 | | 2.7m |
| 2-1/2 | 3.6m | |
| 3 | 3.6m | |
| 4 | 4.2m | |
| 6 | 5.1m | |

2.1 PIPE INSULATION

2.1.1 RIGID PIPE INSULATION:
.1 PROVIDE SECTIONAL FIBREGLASS PIPE INSULATION IN COMPLIANCE WITH CAN/ULC-S702 IN PREFORMED SECTIONS, SPLIT AND READY FOR APPLICATION WITH MINIMUM THERMAL CONDUCTIVITY "k" OF 0.033 W/m-°C AT 24°C MEAN TEMPERATURE AND BE CAPABLE OF USE ON SERVICE FROM -40°C TO 260°C AND WITH FACTORY APPLIED VAPOR SEAL JACKET OF VINYL COATED FOIL KRAFT LAMINATE WITH REINFORCING OF OPEN MESH GLASS FIBRE.
.2 RIGID BOARD: 72 kg/m³ DENSITY ULC LISTED GLASS FIBRE BOARD WITH GLASS FIBRE BOARD REINFORCED ALUMINUM FOIL VAPOUR SEAL FACING AND MINIMUM THERMAL CONDUCTIVITY "k" OF 0.035 W/-°C AT 24°C MEAN TEMPERATURE.

.3 INSULATION THICKNESS SHALL BE 38mm.

2.2 INSULATION SECUREMENT

2.2.1 TAPE: SELF-ADHESIVE, ALUMINUM, PLAIN, 50mm WIDE MINIMUM.

2.3 FIELD APPLIED JACKET

2.3.1 FIVE PLY, SELF-ADHESIVE MATERIAL, ZERO PERMEABILITY VAPOUR RETARDER.
.1 THICKNESS: 0.18mm
.2 PEEL ADHESION: 18.0 N/25mm
.3 SHEAR ADHESION: >72hrs @ 15.2kPa.
.4 TENSILE STRENGTH: 316.5 N/25mm
.5 ELONGATION: 85%
.6 PUNCTURE RESISTANCE: 133.4 N
.7 WATER VAPOR TRANSMISSION RATE: 0.00 PERM
.8 SERVICE TEMPERATURE: -40° TO 149°C.
.9 FINISH: WHITE
.10 STANDARD OF ACCEPTANCE: VENTURE CLAD 1577CW-W

2.3.2 CLOSURE SYSTEM: THREE-PLY, SELF ADHESIVE TAPE.
.1 STANDARD OF ACCEPTANCE: VENTURE TAPE 1578CW

2.4 INSULATION PIPE SHIELDS

2.4.1 18 GAUGE GALVANIZED METAL SHIELD ENCOMPASSING THE BOTTOM HALF OF THE PIPE.

3.0 EXPANSION FITTINGS AND LOOPS FOR PIPING

3.1 EXPANSION JOINTS

3.1.1 PROVIDE ADEQUATE QUANTITY OF FLEXIBLE COUPLINGS FOR SERVICE WATER PIPING BETWEEN ANCHOR POINTS ALLOWING FOR THE FOLLOWING:
.1 AN EXPANSION AND CONTRACTION LIMIT OF 2.38mm PER NPS 6 COUPLING.
.2 AN EXPANSION AND CONTRACTION OF STRAIGHT SECTION OF THE STAINLESS STEEL PIPING OF 4mm PER 10 METERS OF PIPE, BASED ON AN INSTALLATION TEMPERATURE OF 27°C AND A MINIMUM OPERATING TEMPERATURE OF 5°C.

3.2 ANCHORS AND GUIDES

3.2.1 ANCHORS:
.1 MATERIAL
- .1 WELDED TO PIPING 304 STAINLESS STEEL
- .2 ALL OTHERS TO BE STRUCTURAL STEEL PAINTED AFTER WELDING WITH A ZINC RICH PAINT.

3.2.2 SPIDER TYPE ALIGNMENT GUIDES:
.1 MATERIAL: 304 STAINLESS STEEL
.2 RADIAL ALIGNMENTS GUIDE WITH BOLT DOWN BASE
.3 TWO PIECE GUIDE SPIDER HAVING 3mm MAXIMUM CLEARANCE WITH GUIDE CYLINDER INSIDE DIAMETER, BOLTED TIGHT TO CARRIER PIPE.
.4 GUIDE CYLINDER TO BE SUFFICIENT SIZE TO CLEAR PIPE INSULATION AND LONG ENOUGH TO PREVENT OVER TRAVEL OF THE SPIDER.

4.1 BACKFLOW PREVENTERS

4.1.1 PREVENTERS: TO CSA-B64 SERIES, APPLICATION REDUCED PRESSURE DOUBLE CHECK VALVE ASSEMBLY

4.1.2 OPERATION: CONTINUOUS-PRESSURE APPLICATIONS UNLESS OTHERWISE INDICATED.

4.1.3 PRESSURE LOSS: 86kPa MAXIMUM, THROUGH MIDDLE THIRD FLOW RANGE.

4.1.4 BODY: EPOXY COATED CAST IRON FOR NPS 2-1/2 (DN 65) AND LARGER.

4.1.5 END CONNECTIONS: FLANGED FOR NPS 2-1/2 (DN 65) AND LARGER.

4.1.6 CONFIGURATION: DESIGNED FOR HORIZONTAL, STRAIGHT-THROUGH FLOW.

4.1.7 ACCESSORIES:
.1 VALVES 2-1/2 (DN65) AND LARGER
- .1 NON-RISING STEAM RESILIENT SEATED GUIDE GATE VALVES WITH FLANGED ENDS ON INLET AND OUTLET.
- .2 ACCEPTABLE MATERIAL: WATTS SERIES LF909

TESTING OF PIPING SYSTEMS

5.1 PIPING SYSTEMS SHALL BE TESTED AS FOLLOWS:

| SYSTEM | TEST | PERMISABLE PERESSURE DROP AND HOLD PERIOD |
|---|---|---|
| DOMESTIC COLD WATER (100 PSIG MAX. W.P.) | 150 PSIG | 1 PSIG - 2HOURS |

5.1.1 DURING PRESSURE TESTS, ALL JOINTS SHALL BE VISUALLY INSPECTED TO ENSURE NO JOINTS ARE LEAKING.

5.1.2 PIPE TESTING: MAKE PRESSURE TESTS ON ALL PIPING INCLUDED IN THIS CONTRACT IN ACCORDANCE WITH THE APPLICABLE CODES AND REGULATIONS.

5.1.3 HYDROSTATIC TESTS SHALL BE CARRIED OUT AT A TEST PRESSURE NOT LESS THAN1-1/2 TIMES THE MAXIMUM WORKING PRESSURE UNLESS SPECIFIED OTHERWISE, OR REQUIRED BY MANDATORY REGULATIONS, AND FOR A MINIMUM PERIOD OF TWO HOURS OR LONGER WHEN REQUESTED BY THE GOVERNING AUTHORITY, DURING THIS TIME THE PRESSURE SHALL REMAIN CONSTANT.

6.0 FILLING AND FLUSHING

6.0.1 FILL AND FLUSH WATER SERVICES WITH POTABLE WATER BEFORE HYDROSTATIC LEAKAGE AND DISINFECTION. PROVIDE A WRITTEN PLAN FOR FILLING AND FLUSHING TO CONTRACT ADMINISTRATOR FOR APPROVAL BEFORE STARTING.

6.0.2 EXPEL AIR FROM THE SECTION BEING TESTED BY OPENING AVAILABLE OUTLETS AND SLOWLY FILLING THE SECTION FROM THE SUPPLY SOURCE TO A MAXIMUM RATE OF 0.3 METERS PER SECOND. LOCATE OUTLETS WITHIN 1.0 METER OF THE END OF EACH SECTION BEING FLUSHED AND TESTED.

6.0.3 PROVIDE A MINIMUM VELOCITY OF 0.76 METERS PER SECOND ONCE THE SECTION HAS BEEN FILLED AND CONTINUE FLUSHING UNTIL TRAPPED AIR AND DEBRIS IS COMPLETELY REMOVED FROM THE SECTION.

6.0.4 FLUSH IN A UNI-DIRECTIONAL MANNER FROM THE SUPPLY SOURCE TO THE OUTLET TO PREVENT CONTAMINATION OF THE EXISTING SYSTEM. ONE CONNECTION TO THE EXISTING SYSTEM AT A TIME WILL BE ALLOWED AS A SUPPLY SOURCE FOR FLUSHING PURPOSES.

7.0 DISINFECTION

7.1.1 PROVIDE AT LEAST 72 HOURS OF NOTICE TO THE ENGINEER IN ADVANCE OF DISINFECTION. PERFORM DISINFECTION IN PRESENCE OF CONTRACT ADMINISTRATOR OR THE CITY.

7.1.2 COMPLETE FLUSHING OPERATION BEFORE BEGINNING WITH THE DISINFECTION.

7.1.3 DISINFECTION MAY BE DONE WITH HYDROSTATIC LEAKAGE TESTING.

7.1.4 NEW VALVES ARE TO BE OPEN TO ENSURE THEY ARE DISINFECTED.

7.1.5 DISINFECTION USING CONTINUOUS-FEED METHOD WITH LIQUID CHLORINE, SOLUTION-FEED CHLORINATOR AND BOOSTER PUMP IN ACCORDANCE WITH AWWA STANDARD C651. INTRODUCE CHLORINE SOLUTION FOR DISINFECTION AT APPURTENANCE USED FOR INITIAL FLUSHING OF TEST SECTION.

7.1.6 DISINFECTION TO BE PERFORMED BY PERSON(S) HAVING A MINIMUM CLASS II WATER DISTRIBUTION OPERATOR AND CLASS II WATER TREATMENT OPERATOR CERTIFICATION FROM THE MANITOBA WATER AND WASTE ASSOCIATION OR APPROVED EQUIVALENT ASSOCIATION.

8.1 CLEANING

8.1.1 THE CONTRACTOR SHALL KEEP THE PREMISES IN A CLEAN AND ORDERLY CONDITION DURING CONSTRUCTION. ALL WASTE AND UNUSABLE MATERIAL SHALL BE PROMPTLY REMOVED FROM THE SITE.

8.1.2 UPON COMPLETION OF THE WORK THE CONTRACTOR SHALL GO OVER ENTIRE INSTALLATION AND CLEAN ALL EQUIPMENT AND AFFECTED ROOMS, REMOVE ALL SURPLUS MATERIAL AND RUBBISH OF EVERY DESCRIPTION INCIDENTAL TO THE WORK.

\\DILLON.CA\DILLON_DFS\WINNIPEG\WINNIPEG CAD\CAD\149749 CITY OF WINNIPEG TRANSIT\07-MECHANICAL\01-CONTRACT\175195-07-MECH-DES.DWG

APEGM
Certificate of Authorization
Dillon Consulting Limited (MB)
No. 1789 Date: _____

| NO. | REVISIONS | DATE | BY |
|---|---|---|---|
| 2 | ISSUED FOR CONSTRUCTION | 5/17/17 | EP |
| 1 | ISSUED FOR REVIEW | 4/12/17 | PDT |

B.M. ELEV.

DESIGNED BY EP
DRAWN BY JV
CHECKED BY PDT
APPROVED BY EP
HOR. SCALE
VERTICAL
DATE

DILLON CONSULTING

RELEASED FOR CONSTRUCTION
DATE

ENGINEER'S SEAL
PROVINCE OF MANITOBA
E. PIANIM
Member
30807
REGISTERED PROFESSIONAL ENGINEER
5/17/2017

CONSULTANT PROJECT NO.
175195

Winnipeg

THE CITY OF WINNIPEG
TRANSIT DEPARTMENT

WINNIPEG TRANSIT FT. ROUGE GARAGE
WATER MAIN P.O.E. UPGRADE

CITY DRAWING NUMBER
P-XXXX- ----

SHEET 2 OF 2

MECHANICAL SPECIFICATIONS

CONSULTANT DRAWING NUMBER
M2