.1 FULL RADIUSED ELBOWS.
.7 OBSTRUCTION DEFLECTORS: MAINTAIN FULL CROSS-SECTIONAL AREA.
.5 FIRE STOPPING
.1 FIRE STOPPING MATERIAL AND INSTALLATION MUST NOT DISTORT DUCT.
.6 GALVANIZED STEEL
.1 LOCK FORMING QUALITY: TO ASTM A525M, Z90 ZINC COATING.
.2 THICKNESS, FABRICATION AND REINFORCEMENT: TO SMACNA.
.3 JOINTS: TO SMACNA
.7 HANGERS AND SUPPORTS
.1 STRAP HANGERS: OF SAME MATERIAL AS DUCT BUT NEXT SHEET METAL THICKNESS HEAVIER THAN DUCT. MAXIMUM SIZE DUCT SUPPORTED BY STRAP HANGER: 20 IN.
.2 HANGER CONFIGURATION: TO SMACNA.
.3 HANGERS: GALVANIZED STEEL ANGLE WITH GALVANIZED STEEL RODS TO SMACNA FOLLOWING TABLE:

DUCT SIZE (MM)	ANGLE SIZE (MM)	ROD SIZE (MM)
UP TO 750	25X25X3	6
751 TO 1050	40X40X3	6

.4 UPPER HANGER ATTACHMENTS:
.1 FOR STEEL JOIST: MANUFACTURED JOIST CLAMP OR STEEL PLATE WASHER.
.2 FOR STEEL BEAMS: MANUFACTURED BEAM CLAMPS.
.3 FOR WOOD FRAMING: 3 IN. LONG, GALVANIZED LAG SCREWS, FASTENED TO STRUCTURAL FRAMING.
.4 FOR ANGLED METAL ROOF: LAG BOLT UNISTRUT P1000 TO PURLINS. RODS SUPPORTED FROM UNISTRUT USING TWO FLAT FITTING NUTS.

.8 GOOSENECK HOODS
.1 THICKNESS: TO ASHRAE AND SMACNA.
.2 FABRICATION: TO ASHRAE AND SMACNA.
.3 JOINTS: TO ASHRAE AND SMACNA AND OR PROPRIETARY MANUFACTURED DUCT JOINT. PROPRIETARY MANUFACTURED FLANGED DUCT JOINT SHALL BE CONSIDERED TO BE A CLASS A SEAL.
.4 SUPPORTS: AS INDICATED.
.5 COMPLETE WITH INTEGRAL BIRD SCREEN OF 2.7 MM DIAMETER STAINLESS STEEL WIRE. USE 19 MM MESH ON INTAKE.

2.3 **THERMAL INSULATION FOR DUCTING**
.1 SCOPE OF WORK
.1 SUPPLY AND INSTALLATION OF EXTERNAL DUCT INSULATION WHERE SHOWN ON THE DRAWINGS
.2 SUPPLY AND INSTALLATION OF EXTERNAL DUCT INSULATION FOR ALL ERV (ERV-1) O/A & E/A DUCTWORK.
.3 SUPPLY AND INSTALLATION OF EXTERNAL DUCT INSULATION ON ALL DUCTS CONNECTED TO THE EXTERIOR OF THE BUILDING. THE INSULATION SHALL EXTEND 10 FEET FROM THE EXTERIOR WALL OR UNTIL THE FIRST MODULATING DAMPER, WHICHEVER IS LONGER.
.2 GENERAL
.1 COMPONENTS OF INSULATION SYSTEM TO HAVE MAXIMUM FLAME SPREAD RATING OF 25 AND MAXIMUM SMOKE DEVELOPED RATING OF 50 IN ACCORDANCE WITH CAN/ULC-S102.
.2 MATERIALS TO BE TESTED IN ACCORDANCE WITH ASTM C411.
.3 D-2 MINERAL FIBRE BLANKET WITH VAPOUR BARRIER -40 TO +600 C
.1 MATERIAL:
.1 ACCEPTABLE MATERIAL: KNAUF DUCT WRAP OR APPROVED EQUAL
.2 THICKNESS:
.1 FRESH AIR INTAKES: 2 IN.
.2 EXHAUST DUCTS WHERE NOTED: 1 ½ IN.
.3 SUPPLY AIR DUCTS: 1 ½ IN.
.4 ACCESSORIES
.1 VAPOUR RETARDER LAP ADHESIVE:
.1 WATER BASED, FIRE RETARDANT TYPE, COMPATIBLE WITH INSULATION.
.2 INDOOR VAPOUR RETARDER FINISH:
.1 VINYL EMULSION TYPE ACRYLIC, COMPATIBLE WITH INSULATION.
.3 TAPE: SELF-ADHESIVE, ALUMINUM, 3-INCH-WIDE MINIMUM.

2.4 **DAMPERS**
.1 BALANCING DAMPER
.1 SCOPE OF WORK
.1 SUPPLY AND INSTALLATION OF BALANCING DAMPERS FOR SUPPLY AND RETURN BRANCHES OF ERV-1.
.2 GENERAL.
.1 MANUFACTURE TO SMACNA STANDARDS.
.3 SPLITTER DAMPERS
.1 OF SAME MATERIAL AS DUCT BUT ONE SHEET METAL THICKNESS HEAVIER, WITH APPROPRIATE STIFFENING.
.2 SINGLE THICKNESS CONSTRUCTION.
.3 CONTROL ROD WITH LOCKING DEVICE AND POSITION INDICATOR.
.4 ROD CONFIGURATION TO PREVENT END FROM ENTERING DUCT.
.5 PIVOT: PIANO HINGE.
.6 FOLDED LEADING EDGE.
.4 MULI-BLADE DAMPERS
.1 FACTORY MANUFACTURED GALVANIZED STEEL OR ALUMINUM.
.2 OPPOSED BLADE: CONFIGURATION, METAL THICKNESS AND CONSTRUCTION TO RECOMMENDATIONS OF SMACNA.
.3 MAXIMUM BLADE HEIGHT: 6 IN.
.4 BEARINGS: PIN IN CELCON BUSHINGS.
.5 LINKAGE: SHAFT EXTENSION WITH LOCKING QUADRANT.
.6 CHANNEL FRAME OF SAME MATERIAL AS ADJACENT DUCT, COMPLETE WITH ANGLE STOP.
.7 ACCEPTABLE MATERIAL: TAMCO SERIES 1000 (UN-INSULATED), TAMCO SERIES 9000 (INSULATED) OR APPROVED EQUAL.
.2 MOTORIZED DAMPER
.1 SCOPE OF WORK
.1 SUPPLY AND INSTALLATION OF OPERATING DAMPERS FOR MECHANICAL FORCED AIR VENTILATION AND AIR CONDITIONING SYSTEMS.
.2 GENERAL.
.1 MANUFACTURE TO SMACNA STANDARDS.
.3 MULTIBLADE DAMPERS
.1 OPPOSED BLADE FLANGED TO DUCT TYPE.
.2 EXTRUDED ALUMINUM FRAME AND AIR FOIL BLADES, COMPLETE WITH EXTRUDED EPDM BLADE SEALS AND EXTRUDED SILICONE FRAME SEALS.
.3 MAINTENANCE-FREE BEARINGS.
.4 LINKAGE: PLATED STEEL TIE RODS, BRASS PIVOTS AND PLATED STEEL BRACKETS, COMPLETE WITH PLATED STEEL CONTROL ROD.
.5 PERFORMANCE:
.1 LEAKAGE: IN CLOSED POSITION LESS THAN 15.2 L/S/M^2 OF RATED AIR FLOW AT 250 PA DIFFERENTIAL STATIC PRESSURE ACROSS DAMPER.
.6 APPROVED PRODUCT: TAMCO SERIES 9000 OR APPROVED EQUAL
.1 DAMPER TO COME COMPLETE WITH BELIMO ACTUATOR, WITH POSITION INDICATOR, POWER TO OPEN SPRING CLOSE. VOLTAGE TO BE CONFIRMED BY ELECTRICAL.
.4 BACK DRAFT DAMPERS
.1 AUTOMATIC GRAVITY OPERATED, MULTI LEAF, ALUMINUM CONSTRUCTION WITH NYLON BEARINGS, CENTRE PIVOTED.
.3 FIRE DAMPER
.1 SCOPE OF WORK
.1 SUPPLY, INSTALLATION AND COMMISSIONING OF FIRE AND SMOKE DAMPERS SHALL BE IN STRICT ACCORDANCE WITH APPLICABLE CODES, REGULATIONS AND AUTHORITIES HAVING JURISDICTION.
.2 REFER TO ARCHITECTURAL DRAWINGS TO DETERMINE ALL FIRE SEPARATIONS. PROVIDE DAMPERS AT ALL DUCT PENETRATIONS. ENSURE NO EXITS ARE PENETRATED BY DUCTS. CHECK FOR FIRE RATED ENCLOSURES AROUND COMBUSTION AIR, DRIER EXHAUST AND DUCTS THROUGH EXITS. REVIEW ALL DAMPERS AND SEPARATIONS WITH THE ENGINEER EARLY IN THE PROJECT.
.3 COMPLETE INSTALLATION, TESTING AND SUBMIT DAMPER REPORT WITH ALL TESTS SUCCESSFUL; BEFORE SUBSTANTIAL COMPLETION/OCCUPANCY.
.2 PRODUCT
.1 FIRE DAMPER ARRANGEMENT TYPE B; FIRE DAMPERS SHALL MEET ALL N.B.C. REQUIREMENTS FOR FIRE DAMPERS AND BE CONSTRUCTED IN ACCORDANCE WITH NFPA STANDARD NO. 90A. FIRE DAMPERS AND FUSIBLE LINKS SHALL BE TESTED AND APPROVED BY ULC OR ANOTHER NATIONALLY RECOGNIZED TESTING AGENCY ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION AND BEAR THE APPROPRIATE LABEL.
.2 FIRE DAMPERS SHALL BE OF INTERLOCKING BLADE DESIGN. USE LOW RESISTANCE TYPE FIRE DAMPERS WITH BLADES OUT OF THE AIR STREAM (TYPE B).
.3 GENERALLY, USE FUSIBLE LINKS AT 70°C (160 °F) ON EXHAUST AND RECIRCULATION DUCTS, 105°C (220 °F) ON SUPPLY DUCTS AND KITCHEN EXHAUST DUCTS. REVISE, WITH ENGINEER'S APPROVAL, AS REQUIRED TO MEET THE NEEDS OF SPECIAL LOCATIONS. FUSIBLE LINKS SHALL BE READILY REMOVABLE BY HAND TO FACILITATE TESTING. ALL DAMPERS TO BE FACTORY TESTED FOR PROPER OPERATION.

2.5 **GRILLES, REGISTERS AND DIFFUSERS**
.1 SCOPE OF WORK
.1 SUPPLY AND INSTALLATION OF GRILLES, REGISTERS AND DIFFUSERS AS SHOWN ON DRAWINGS.
.2 GENERAL
.1 TO MEET CAPACITY, PRESSURE DROP, TERMINAL VELOCITY, THROW, NOISE LEVEL, NECK VELOCITY.
.2 FRAMES:
.1 FULL PERIMETER GASKETS.
.2 PLASTER FRAMES WHERE SET INTO PLASTER OR GYPSUM BOARD AT ALL LOCATIONS AND AS SPECIFIED.
.3 CONCEALED FASTENERS.
.4 CONCEALED OPERATORS.
.5 COLOUR: STANDARD.
.3 REFER TO DRAWINGS FOR GRILLE AND DIFFUSER SIZES.
.4 ACCEPTABLE PRODUCT: PRICE OR APPROVED EQUAL

Part 3 **PIPING REQUIREMENTS**

3.1 **DOMESTIC WATER SYSTEMS**
.1 PIPING
.1 DOMESTIC HOT, COLD AND RECIRCULATION SYSTEMS, WITHIN BUILDING.
.1 ABOVE GROUND: COPPER TUBE, HARD DRAWN, TYPE L: TO ASTM B 88M.
.2 BURIED OR EMBEDDED: COPPER TUBE, SOFT ANNEALED, TYPE K: TO ASTM B 88M, IN LONG LENGTHS AND WITH NO BURIED JOINTS.
.2 FITTINGS
.1 BRONZE PIPE FLANGES AND FLANGED FITTINGS, CLASS 150: TO ANSI/ASME B16.24.
.2 CAST BRONZE THREADED FITTINGS, CLASS 125: TO ANSI/ASME B16.15.
.3 CAST COPPER, SOLDER TYPE: TO ANSI/ASME B16.18.
.4 WROUGHT COPPER AND COPPER ALLOY, SOLDER TYPE: TO ANSI/ASME B16.22.
.5 NPS 2 AND LARGER: ANSI/ASME B16.18 OR ANSI/ASME B16.22 ROLL GROOVED TO CSA B242.
.6 NPS 1 ½ AND SMALLER: WROUGHT COPPER TO ANSI/ASME B16.22 OR CAST COPPER TO ANSI/ASME B16.18; WITH 304 STAINLESS STEEL INTERNAL COMPONENTS AND EPDM SEALS. SUITABLE FOR OPERATING PRESSURE TO 1380 KPA.
.3 JOINTS
.1 RUBBER GASKETS, LATEX-FREE 1.6MM THICK: TO AWWA C111.
.2 BOLTS, NUTS, HEX HEAD AND WASHERS: TO ASTM A 307, HEAVY SERIES.
.3 SOLDER: 95/5 TIN COPPER ALLOY LEAD FREE.
.4 TEFLON TAPE: FOR THREADED JOINTS.
.5 GROOVED COUPLINGS: DESIGNED WITH ANGLE BOLT PADS TO PROVIDE RIGID JOINT, COMPLETE WITH EPDM GASKET.
.6 DIELECTRIC CONNECTIONS BETWEEN DISSIMILAR METALS: DIELECTRIC FLANGES, NO DIELECTRIC COUPLINGS PERMITTED.
.4 BALL VALVES
.1 NPS 2 AND UNDER, SCREWED:
.1 CLASS 150.
.2 BRONZE BODY, STAINLESS STEEL BALL, PTFE ADJUSTABLE PACKING, BRASS GLAND AND PTFE SEAT, STEEL LEVER HANDLE AS SPECIFIED SECTION 23 05 23.01 - VALVES – BRONZE.
.2 NPS 2 AND UNDER, SOLDERED:
.1 TO ANSI/ASME B16.18, CLASS 150.
.2 BRONZE BODY, STAINLESS STEEL BALL, PTFE ADJUSTABLE PACKING, BRASS GLAND AND PTFE SEAT, STEEL LEVER HANDLE, WITH NPT TO COPPER ADAPTORS AS SPECIFIED SECTION 23 05 23.01 - VALVES - BRONZE.

3.2 **DRAINAGE WASTE AND VENTING**
.1 PIPING AND FITTINGS
.1 FOR BURIED AND/OR ABOVE GROUND DWV PIPING TO:
.1 CAN/CSA B1800
.2 APPROVED PRODUCT: IPEX SYSTEM 15 FOR ALL PIPE NOT RUN IN MAIN FLOOR CEILING SPACE.
.3 APPROVED PRODUCT: IPEX XFR FOR ALL PIPING RUN IN MAIN FLOOR CEILING SPACE.
.2 CEMENT
.1 TO BE FROM THE APPROVED MANUFACTURER.
.2 TO BE COMPATIBLE WITH PIPING MATERIAL.

3.3 **PLUMBING SPECIALTIES AND ACCESSORIES**
.1 PRODUCTS
.1 WC-1 WATER CLOSET - WALL HUNG - BARRIER FREE
.1 ACORN DURA-WARE 2100-W-1--HPS--BCN, BLOWOUT JET TOILET -- OFF FLOOR, WALL THICKNESS 190MM BLOCK, WALL (CONCEALED), OFF-FLOOR, WALL OUTLET, 1.6 GPF, HIGH POLISH INTEGRAL SEAT, BLIND CAP NUTS (3). SLOAN REGAL XL OPTIMA 4153-1.6 ES-S, CONCEALED FLUSH VALVE FOR TOP SPUD TOILET, 6 L (1.6 US GAL) FACTORY SET FLOW, QUIET ACTION DIAPHRAGM TYPE, INFRARED SENSOR, SOLENOID OPERATED FLUSH CONTROLLER CIRCUITRY, COURTESY FLUSH ELECTRONIC OVER-RIDE BUTTON, BACK-CHECK ANGLE STOP (WHEEL HANDLE OPERATED), EXPOSED CP ELBOW FOR TOP SPUD CONNECTION, VACUUM BREAKER, SENSOR LOCATED ABOVE THE TOILET, 5 VA POWER REQUIRED PER UNIT. PROVIDE 4 (102 MM) SQUARE ELECTRICAL BOX FOR MOUNTING SENSOR PLATE. SLOAN #EL-342, BOX MOUNT HARD WIRED TRANSFORMER, 240 / 24 50 VA. WILL OPERATE UP TO 10 'OPTIMA' FLUSH VALVE UNITS. WATTS 4SCA-101-MI1 SINGLE HORIZONTAL ADJUSTABLE TOILET CARRIER, MOUNTED ON CONCRETE FLOOR, ALL EPOXY COATED CAST IRON FITTING, ADJUSTABLE ABS SLIDE NIPPLE WITH INTEGRAL TEST CAP AND NEOPRENE GASKET, PLATED HARDWARE, CHROME CAP NUTS, TILING FRAME, 102 MM (4") NO HUB WASTE, 51 MM (2") NO HUB VENT, 158.8 KG (350 LBS) STATIC LOAD. 305 MM (12") FINISHED STUD WALL TO BACK OF PIPE SPACE. #MI-HUB TR-440 DRAIN COUPLING, COUPLING, NO-HUB, TYPE 300 AISI STAINLESS STEEL BAND, TYPE 300 AISI STAINLESS STEEL EYELETS, ELASTOMERIC COMPOUND GASKET MEETING THE REQUIREMENTS OF ASTM C-564, TYPE 30O AISI STAINLESS STEEL SHIELD, TESTED TO MAINTAIN 4.3 PSI OF WATER PRESSURE AT 60 INCH LB MIN/MAX TORQUE BOLT TIGHTNESS, TESTED AND CERTIFIED TO ASTM STANDARD 1460-2012 AND CSA STANDARD B602-2010 AND LISTED WITH IAPMO. ALL MODELS ARE LISTED TO THE NATIONAL PLUMBING CODE OF CANADA AND RELEVANT CANADIAN STANDARD (S) AND BEAR THE CUP MARK OF CONFORMITY. NON-CONSTANT TEMPERATURE RATING IS 140F.
.2 LAV-1 LAVATORY - WALL HUNG - BARRIER FREE
.1 ACORN MERIDIAN 3701-1-SO-DMJ--PDM STAINLESS STEEL CURVED FRONT UNI-BASIN LAVATORY, OFF-FLOOR, WALL OUTLET, SENSOR OPERATION, DECK MOUNTED SPOUTS, DECK MOUNTED J SPOUT, METERING LIQUID SOAP DISPENSER. LAWLER 41MM-1070, BELOW DECK MECHANICAL WATER MIXING VALVE, BRONZE BODY, TEMPERATURE ADJUSTING DIAL, 10 MM (3/8") INLETS AND OUTLET COMPRESSION FITTINGS, HIGH TEMPERATURE THERMOSTATIC LIMIT STOP, SHUT-OFF WITH AUTOMATIC RESET WHEN TEMPERATURE EXCEEDS 120 F (48.8 C), INTEGRAL CHECKS, OFFER TEMPERATURE RANGE FROM FULL COLD THROUGH 46 C (114.8 F). PRODE TEE, ADAPTORS AND FLEX, COPPER TUBING TO SUIT INSTALLATION. MCGUIRE 4155A OPEN GRID DRAIN, CAST BRASS ONE PIECE TOP, 17 GA. (1.5 MM) TUBULAR 32 MM (1-1/4") TAILPIECE. MCGUIRE #FH165LKN3 FAUCET SUPPLIES, CHROME PLATED FINISH POLISHED BRASS, HEAVY DUTY ANGLE STOPS, 10 MM (3/8") LP.S. INLET X 76 MM (3") LONG RIGID HORIZONTAL NIPPLES, V.P. LOOSE KEYS, ESCUTCHEON AND FLEXIBLE COPPER RISERS. MCGUIRE 48872C P-TRAP, HEAVY CAST BRASS ADJUSTABLE BODY, WITH SUP NUT, 32 MM (1-1/4") SIZE, SHALLOW WALL FLANGE AND SEAMLESS TUBULAR WALL BEND. WATTS 4CA--321 FIXTURE CARRIER, MOUNTED ON CONCRETE FLOOR, EPOXY COATED TOP AND BOTTOM UNIVERSAL STEEL HANGER PLATES, HEAVY GAUGE EPOXY COATED STEEL OFFSET UPRIGHTS WITH WELDED FEET SUPPORTS. FOR ONE UNIT: 102 MM (4") FOR TWO TO SIX UNITS IN A ROW: 152 MM (6") FINISHED METAL STUD WALL TO BACK OF PIPE SPACE.
.3 MS-1 SERVICE / MOP SINK - TWO HANDLE FAUCET
.1 STERN WILLIAMS #4TB-2424 SQUARE SERVICE / MOP SINK, 610 MM (24") X 610 MM (24) X 254 MM (10") DEEP, FLOOR MOUNTED, TERRAZZO COMPOSED OF PEARL-GRAY MARBLE CHIPS AND PORTLAND CEMENT GROUND SMOOTH, SEALED TO RESIST STAIN, CAST BRASS DRAIN WITH STAINLESS STEEL STRAINER, 3"(75MM) OUTLET. AMERICAN STANDARD 48350.243 WALL MOUNTED TWO HANDLE FAUCET, CHROME PLATED, 8 (203MM) CENTERSET, CAST BRASS BODY, SLOW COMPRESSION, UNRESTRICTED HOSE END OUTLET, SPOUT WITH ATMOSPHERIC VACUUM BREAKER AND BUCKET HOOK 173 MM (7-1/4") FROM WALL TO OUTLET REACH, LEVER HANDLES. STERN WILLIAMS T--35 HOSE AND WALL HOOK HOSE 36" (914MM) LONG MTH 3/4 (19MM) CHROME COUPLING, STAINLESS STEEL WALL BRACKET. STERN WILLIAMS T-40 MOP HANGER STAINLESS STEEL 44 FINISH, 24" (610MM) LONG WITH 3 RUBBER SPRING LOADED CLIPS. STERN WILLIAMS BP BACK SPLASH PANEL 20 GAUGE TYPE 304 STAINLESS STEEL. PROVIDE P-TRAP, SAME MATERIAL AS THE CONNECTING PIPE DRAIN.
.4 BFP-1 BACKFLOW PREVENTER – DOUBLE CHECK VALVE ASSEMBLY (DCVA)
.1 ZURN ELKAY 350XL DOUBLE CHECK VALVE ASSEMBLY, MEETS REQUIREMENTS OF NSF/ANSI/CAN 61 ("LEAD FREE"), CSA CERTIFIED B64.5, 1" NOMINAL PIPE SIZE. LOW-LEAD CAST BRONZE MAIN VALVE BODY, REINFORCED NYLON HOUSING, STAINLESS STEEL FASTENERS, SILICONE & BUNA NITRILE ELASTOMERS, DELRIN INTERNALS, STAINLESS STEEL SPRINGS, LOW-LEAD CAST BRONZE BALL VALVES, STAINLESS STEEL STRUTS/HANDLES.
.5 MV-1 MIXING VALVE
.1 WATTS SERIES LFMMV THERMOSTATIC MIXING VALVE, ¾" NOMINAL SIZE, MEETS REQUIREMENTS OF NSF/ANSI/CAN 61. VALVE ALLOWS TEMPERATURE SETTING BETWEEN 80 °F AND 120 °F, WITH TEMPERATURE CONTROL OF ±3 °F. INCLUDES INLET FILTER WASHERS AND CHECK VALVES. LEAD FREE* CAST COPPER SILICON ALLOY BODY, SOLID WAX HYDRAULIC THERMOSTAT, ADJUSTABLE LOCKING CABLE.
.6 FD-1 FLOOR DRAINS - FIN. AREAS - MED. DUTY STRAINER
.1 SMITH SERIES 2005A FLOOR DRAIN, COATED CAST IRON BODY, REVERSIBLE FLASHING CLAMP WITH SEEPAGE OPENINGS AND ADJUSTABLE 5" (127MM) DIAMETER NICKEL BRONZE 1/4" (6.35MM) THICK STRAINER, SECURED WTH S.S. SCREWS, 4" (100MM) THROAT ON STRAINER. (HERE REQUIRED BY LOCAL CODE PROVIDE TRAP SEAL).
.7 WF-1 WATER FOUNTAIN
.1 ZURN ELKAY EHWM214C HEAVY DUTY SINGLE FOUNTAIN NON-FILTERED NON-REFRIGERATED STAINLESS STEEL WATER FOUNTAIN, INCLUDE REAR ACCESS PANEL AP99, MOUNTING PLATE MPW-101, ADJUSTABLE P-TRAP Z8700-8-PC-BD.
.8 CLEANOUTS
.1 CLEANOUT PLUGS: PVC CLEANOUT PLUG
.1 ACCEPTABLE PRODUCT: IPEX
.2 ACCESS COVERS:
.1 WALL ACCESS: FACE OR WALL TYPE, STAINLESS STEEL AND ROUND COVER WITH FLUSH HEAD SECURING SCREWS, BEVELLED EDGE FRAME COMPLETE WITH ANCHORING LUGS.
.2 FLOOR ACCESS: ROUND CAST IRON BODY AND FRAME WITH ADJUSTABLE SECURED NICKEL BRONZE TOP AND:
.1 COVER FOR UNFINISHED CONCRETE FLOORS: NICKEL BRONZE ROUND OR SQUARE, GASKET, VANDAL-PROOF SCREWS.
.2 COVER FOR TILE AND LINOLEUM FLOORS: POLISHED NICKEL BRONZE WITH RECESSED COVER FOR LINOLEUM OR TILE INFILL, COMPLETE WITH VANDAL-PROOF LOCKING SCREWS.
.9 WATER HAMMER ARRESTORS
.1 STAINLESS STEEL CONSTRUCTION, BELLOWS TYPE: TO PDI-WH201.
.10 TRAP SEAL PRIMERS
.1 BRASS, WITH INTEGRAL VACUUM BREAKER, NPS ½ SOLDER ENDS, NPS ½ DRIP LINE CONNECTION.

3.4 **BASES, HANGERS AND SUPPORTS**
.1 GENERAL
.1 ENSURE THAT SUPPORTS, GUIDES, ANCHORS DO NOT TRANSMIT EXCESSIVE QUANTITIES OF HEAT TO BUILDING STRUCTURE.
.2 DESIGN HANGERS AND SUPPORTS TO SUPPORT SYSTEMS UNDER CONDITIONS OF OPERATION, ALLOW FREE EXPANSION AND CONTRACTION, PREVENT EXCESSIVE STRESSES FROM BEING INTRODUCED INTO PIPEWORK OR CONNECTED EQUIPMENT.
.3 PROVIDE FOR VERTICAL ADJUSTMENTS AFTER ERECTION AND DURING COMMISSIONING. AMOUNT OF ADJUSTMENT IN ACCORDANCE WITH MSS SP 58
.4 USE COMPONENTS FOR INTENDED DESIGN PURPOSE ONLY. DO NOT USE FOR RIGGING OR ERECTION PURPOSES.
.2 MIDDLE ATTACHMENT
.1 REQUIREMENTS:
.1 TYPE: THREADED ROD WITH ELECTRO-GALVANIZED FINISH
.2 MATERIAL: GALVANIZED STEEL
.3 PIPE ATTACHMENT
.1 REQUIREMENTS:
.1 MATERIAL TO MSS SP 58
.1 ATTACHMENTS FOR COPPER PIPING: COPPER PLATED BLACK STEEL
.2 USE INSULATION SHIELDS FOR HOT PIPEWORK
.2 ADJUSTABLE CLEVIS:
.1 MATERIAL TO MSS SP 69, CLEVIS BOLT WITH NIPPLE SPACER AND VERTICAL ADJUSTMENT NUTS ABOVE AND BELOW CLEVIS.
.2 ACCEPTABLE PRODUCTS:
.1 GRINNELL FIG. CT-65 (COPPER TUBING), COPPER PLATED OR APPROVED EQUAL
.3 PROVIDE INSULATION PROTECTION SHIELDS FOR INSULATED PIPING
.1 ACCEPTABLE PRODUCTS:
.1 GRINNELL FIG. 167 OR APPROVED EQUAL
.4 SHOP AND FIELD-FABRICATED ASSEMBLIES
.1 STEEL BRACKETS: IN ACCORDANCE WITH THE REQUIREMENTS OF ASME B31.1 AND MSS SP 58.

Rev	Revision Description	Date	Issued by
0	ISSUED FOR CONSTRUCTION	2026-07-16	D.G.

Revision Schedule

ENGINEERS GEOSCIENTISTS MANITOBA
Certificate of Authorization
Alliance Engineering Services Inc.
No.2906

PROVINCE OF MANITOBA
D.A. GOSSEN
Licence No. 50013
July 16th 2026
REGISTERED ENGINEERING LICENSE

Alliance ENGINEERING SERVICES INC

Winnipeg
CITY OF WINNIPEG
2777 Portage Avenue, Winnipeg, MB, R3J 0R3

GRANT'S OLD MILL
MAINTENANCE BUILDING RENOVATION
MECHANICAL SPECIFICATIONS

DESIGN R.D.	CHECKED D.G.	SIZE	DWG. NO. M4.3
DRAWN R.D.	APPROVED D.G.	SCALE AS NOTED	SHEET / REV 0