

GENERAL SPECIFICATIONS

- THE CONTRACTOR SHALL EXAMINE THE SITE AND THE EXISTING CONDITIONS AFFECTING THE PROJECT. REVIEW THE COMPLETE SET OF CONTRACT DOCUMENTS TO ENSURE THE WORK CAN BE CARRIED OUT WITHOUT SIGNIFICANT CHANGES TO THE INTENT OF THE DOCUMENTS. NO FUTURE ALLOWANCE WILL BE MADE FOR CHANGES UNLESS THE CONTRACT ADMINISTRATOR HAS BEEN NOTIFIED IN ACCORDANCE WITH B6 OF ANY DISCREPANCIES OR INTERFERENCES, PRIOR TO THE CLOSE OF BID OPPORTUNITY. NO ALLOWANCE WILL BE MADE FOR ITEMS THAT SHOULD HAVE BEEN NOTED DURING THE SITE INVESTIGATION.
- THE LOCATION, ROUTING AND ELEVATIONS OF ALL NEW AND EXISTING SERVICES AND UTILITIES AS SHOWN ON THE DRAWINGS ARE TO BE CONSIDERED AS APPROXIMATIONS ONLY. VERIFY THE EXACT LOCATIONS, ROUTINGS AND ELEVATIONS OF ALL SERVICES PRIOR TO COMMENCING WORK, AND ASSUME RESPONSIBILITY FOR LAYING OUT ALL WORK. THE CONTRACTOR SHALL RETAIN RESPONSIBILITY FOR ANY DAMAGE TO EXISTING SERVICES AND UTILITIES.
- ALL ASPECTS OF THE INSTALLATION MUST COMPLY WITH THE MOST STRINGENT OF THE APPLICABLE BUILDING CODES, LOCAL REGULATIONS, AND BY-LAWS. BEFORE PROCEEDING WITH THE WORK, OBTAIN APPROVED DRAWINGS AND SPECIFICATIONS FROM THE AUTHORITIES HAVING JURISDICTION.
- PROVIDE ALL NECESSARY NOTICES, OBTAIN ALL REQUIRED PERMITS, PAY ALL FEES REQUIRED BY LAW, AND ARRANGE FOR ALL INSPECTIONS RELATED TO THE PERFORMANCE OF THE SPECIFIED WORK.
- PROVIDE A COMPLETE AND FUNCTIONING SYSTEM UTILIZING ALL MATERIALS, LABOUR AND EQUIPMENT REQUIRED TO COMPLETE THE WORK AS SHOWN AND AS SPECIFIED.
 - ALL EQUIPMENT AND MATERIALS SHALL BE NEW AND C.S.A. APPROVED, UNLESS SPECIFICALLY NOTED OTHERWISE.
 - ALL SIMILAR EQUIPMENT AND OR MATERIALS SHALL BE BY THE SAME MANUFACTURER.
- REQUEST FOR APPROVAL OF SUBSTITUTE MATERIAL AND/OR EQUIPMENT FOR THAT SPECIFIED, SHALL BE SUBMITTED IN ACCORDANCE WITH B6. REQUESTS SHALL INCLUDE ALL PERFORMANCE SPECIFICATIONS, PHYSICAL DATA AND OTHER PERTINENT INFORMATION REQUIRED FOR THE CONTRACT ADMINISTRATOR TO MAKE A COMPLETE COMPARISON.
- PROVIDE A MINIMUM OF SEVEN COPIES OF SHOP DRAWINGS FOR REVIEW BY THE CONTRACT ADMINISTRATOR. THE SHOP DRAWINGS MUST BE ASSEMBLED INTO COMPLETE BROCHURES, WITH NO LOOSE SHEETS. UNASSEMBLED SUBMISSIONS WILL BE RETURNED AS INCOMPLETE.
 - THE REVIEW OF THE SHOP DRAWINGS IS FOR THE SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH THE GENERAL DESIGN CONCEPT. THE REVIEW SHALL NOT MEAN APPROVAL OF THE DETAILED DESIGN INHERENT IN THE EQUIPMENT, THE RESPONSIBILITY FOR WHICH SHALL REMAIN WITH THE CONTRACTOR. THE REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL REMAIN RESPONSIBLE FOR CONFIRMING AND CORRELATING THE DIMENSIONS ON THE JOBSITE, AND FOR INFORMATION THAT PERTAINS TO THE FABRICATION PROCESS, CONSTRUCTION TECHNIQUES, AND INSTALLATION DETAILS, AND FOR COORDINATING ALL WORK OF THE RELATED SUB-TRADES.
- ALL CUTTING AND PATCHING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. EXISTING EXPOSED SURFACES SHALL BE RETURNED TO AN "AS-FOUND" CONDITION ACCEPTABLE TO THE CONTRACT ADMINISTRATOR.
- EACH CONTRACTOR SHALL COORDINATE THE WORK WITH OTHER CONTRACTORS IN ORDER TO AVOID CONFLICTS.
- NEATLY STORE ALL MATERIALS, AND CLEAN UP REFUSE ON A REGULAR BASIS. PROTECT AND MAINTAIN ALL WORK UNTIL THE PROJECT HAS BEEN COMPLETED AND TURNED OVER TO THE CONTRACT ADMINISTRATOR.
- THE INSTALLATION SHALL BE COMPLETELY TESTED, DEMONSTRATING THE EQUIPMENT AND SYSTEMS INSTALLED ARE PERFORMING IN THE MANNER INTENDED.
- AT THE COMPLETION OF THE INSTALLATION, PROVIDE TWO MARKED-UP COPIES OF THE BID OPPORTUNITY AND AS-BUILT DRAWINGS FOR RECORD PURPOSES. PROVIDE THREE SETS OF OPERATION AND MAINTENANCE MANUALS. PAY ALL COSTS ASSOCIATED WITH THE PRODUCTION OF THE "RECORD" DRAWINGS AND THE MANUALS. SUBMIT THE DOCUMENTS TO THE CONTRACT ADMINISTRATOR FOR REVIEW, AND MAKE ANY REQUESTED CHANGES BEFORE DELIVERING THEM TO THE CITY.
- REVIEW THE OPERATION AND MAINTENANCE OF THE SYSTEMS WITH THE CITY'S MAINTENANCE PERSONNEL AND PROVIDE WRITTEN AND/OR VERBAL INSTRUCTIONS AS REQUIRED.
- PROVIDE CERTIFICATES CONFIRMING THE WORK HAS BEEN INSTALLED TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION.
 - NO CERTIFICATE ISSUED, PAYMENT MADE, OR PARTIAL OR ENTIRE USE OF THE SYSTEMS BY THE CITY, SHALL BE CONSTRUED AS ACCEPTANCE OF DEFECTIVE WORK OR MATERIALS.
- THE CONTRACTOR SHALL PROVIDE A ONE YEAR LABOR AND MATERIAL WARRANTY ON ALL NEW EQUIPMENT AND COMPONENTS, COMMENCING UPON THE DATE OF ACCEPTANCE BY THE CONTRACT ADMINISTRATOR.
 - REPLACE AT NO-CHARGE, ALL ITEMS WHICH FAIL OR PROVE DEFECTIVE WITHIN A PERIOD OF ONE YEAR AFTER THE DATE OF FINAL ACCEPTANCE BY THE CITY, PROVIDED THE FAILURE IS NOT DUE TO IMPROPER USAGE. MAKE GOOD ALL DAMAGES INCURRED AS A RESULT OF THE FAILURE AND OF THE REPAIRS.
- PROVIDE TEMPORARY HEATING AS REQUIRED. DO NOT USE NEW EQUIPMENT FOR THIS PURPOSE WITHOUT THE EXPRESS CONSENT OF THE CONTRACT ADMINISTRATOR.
- SCHEDULING OF ALL WORK SHALL BE ARRANGED WITH THE CITY. COORDINATE THE SHUT-DOWN OF EXISTING UTILITIES AND SERVICES AS REQUIRED FOR CONNECTIONS OF NEW WORK. WORK WITHIN THE BUILDING MAY HAVE TO BE PERFORMED DURING NON-REGULAR HOURS, AND MUST CONFORM TO THE WORK RULES OF THE BUILDING, AS DIRECTED BY THE CITY.
- THE DRAWINGS FOR THE MECHANICAL WORK ARE PERFORMANCE DRAWINGS, DIAGRAMATIC AND APPROXIMATELY TO SCALE, INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE LOCATIONS OF APPARATUS, FIXTURES AND PIPE/DUCT RUNS. THESE DRAWINGS DO NOT INTEND TO SHOW ARCHITECTURAL AND STRUCTURAL DETAILS.
- EVEN THOUGH SOME PIPING AND/OR DUCTWORK IS NOT COMPLETELY SHOWN SCHEMATICALLY, AND ALL DETAILS ARE NOT SHOWN OR SPECIFIED, IT IS EXPECTED THAT THE CONTRACTORS BE FAMILIAR ENOUGH WITH THEIR FIELDS OF WORK TO COMPLETE THE PROJECT TO THE STANDARDS GENERALLY ADHERED TO BY THE LOCAL INDUSTRY, INCLUDING GOOD WORKMANSHIP AND COMMON SENSE. THE CONTRACT ADMINISTRATOR RESERVES THE RIGHT TO FURNISH ANY ADDITIONAL DETAIL DRAWINGS, WHICH IN THE JUDGEMENT OF THE CONTRACT ADMINISTRATOR, MAY BE NECESSARY TO CLARIFY THE WORK, AND SUCH DRAWINGS SHALL FORM PART OF THIS CONTRACT. THE WORK FOR SUCH CLARIFICATIONS SHALL BE AT NO COST TO THE CITY.

MECHANICAL SPECIFICATIONS**SECTION 15100 - GENERAL**

- PROVIDE ONE SET OF SPECIAL TOOLS REQUIRED TO SERVICE EQUIPMENT, AS RECOMMENDED BY THE MANUFACTURERS/SUPPLIERS.
- PROVIDE DI-ELECTRIC COUPLINGS WHEREVER PIPES OF DISSIMILAR METALS ARE JOINED.
- HOISTING AND PLACING OF MECHANICAL EQUIPMENT SHALL BE THE RESPONSIBILITY OF THE SUB-CONTRACTOR PROVIDING THE EQUIPMENT.
- PIPE HANGERS SHALL BE GRINNELL FIGURE 65 FOR STEEL PIPE AND FIGURE CP65 FOR COPPER PIPE, WITH FIGURE 140 THREADED ROD. THREADED ROD SHALL BE ATTACHED TO FIGURE 117 EXPANSION CASE SET IN HOLES DRILLED IN CONCRETE, OR ATTACHED TO FIGURE 225 OR FIGURE 227 CLAMP ATTACHED TO ROOF/FLOOR JOISTS. FOR INSULATED PIPING, PROVIDE FIGURE 167 PROTECTION SADDLES, SIZE HANGERS AND SADDLES TO SUIT INDIVIDUAL PIPE SIZES, INCLUDING INSULATION WHERE APPLICABLE.
- USE THE FOLLOWING SCHEDULE FOR MINIMUM HANGING STANDARDS FOR HORIZONTAL PIPING:

STEEL PIPE	SIZE	ROD DIAMETER	MAXIMUM SPACING
1-1/4" (32 mm) AND SMALLER	3/8" (10mm)	3'-0" (900mm)	
1-1/2" (38 mm) AND 2" (50 mm)	3/8" (10mm)	10'-0" (3000mm)	
2-1/2" (65 mm) AND 3" (75 mm)	1/2" (12mm)	12'-0" (3600mm)	
4" (100 mm) AND 5" (125 mm)	5/8" (16mm)	12'-0" (3600mm)	
6" (150 mm)	3/4" (19mm)	12'-0" (3600mm)	

COPPER PIPE	SIZE	ROD DIAMETER	MAXIMUM SPACING
1" (25 mm) AND SMALLER	3/8" (10mm)	6'-0" (1800mm)	
1.25" TO 2" (32 mm TO 50 mm)	3/8" (10mm)	10'-0" (3000mm)	

- PIPE HANGERS MAY BE PERFORATED GALVANIZED STEEL STRAP HANGERS FOR 2" (50mm) AND SMALLER PIPING IN CONCEALED SPACES.
- PROVIDE ACCESS DOORS AS REQUIRED TO INSTALL, MAINTAIN AND ADJUST EQUIPMENT AND CONTROLS. ACCESS DOORS IN CEILINGS AND WALLS SHALL HAVE PIANO HINGES AND SCREWDRIVER CAM LOCKS.
 - PROVIDE FIRESTOPPING AND/OR INTUMESCENT DONUTS, AS REQUIRED, WHERE PIPING PASSES THROUGH FIRE SEPARATIONS.

SECTION 15180 - INSULATION

- PROVIDE 1/2" (12mm) THICK, FOIL-FACED RIGID PRE-FORMED FIBREGLASS EXTERNAL THERMAL PIPE INSULATION ON ALL NEW DOMESTIC COLD WATER PIPES.
- PROVIDE 1/2" (12mm) THICK, RIGID, PRE-FORMED FIBREGLASS EXTERNAL THERMAL PIPE INSULATION ON ALL NEW DOMESTIC HOT WATER PIPES.
- PROVIDE 1/2" (12mm) THICK, FOIL-FACED RIGID PRE-FORMED FIBREGLASS EXTERNAL THERMAL PIPE INSULATION ON ALL NEW PLUMBING VENTS FOR 10" (300mm) ON WARM SIDE OF A PENETRATION THROUGH A WALL OR CEILING/ROOF TO A COLD SPACE, AND FOR FULL LENGTH IN COLD ATTIC SPACES.
- PROVIDE 1" (25mm) THICK, FOIL-FACED RIGID (FIBREGLASS OR FIBREBOARD) OR FLEXIBLE FIBREGLASS EXTERNAL THERMAL INSULATION ON ALL NEW EXHAUST OR RELIEF DUCTWORK FOR 10'-0" (3.0M) ON THE WARM SIDE OF A PENETRATION THROUGH A WALL/FLOOR/CEILING/ROOF TO A COLD SPACE, WHERE A BACKDRAFT DAMPER IS PROVIDED AT THE PENETRATION TO THE COLD SPACE. WHERE THE BACKDRAFT DAMPER IS PROVIDED IN THE DUCTWORK, INSULATION SHALL EXTEND FROM THE PENETRATION TO 10'-0" (3.0M) UPSTREAM OF THE BACK DRAFT DAMPER
- WHERE 1" ACOUSTIC INSULATION IS PROVIDED, 1" OF THERMAL INSULATION MAY BE DELETED.
- ALL JOINTS AND ELBOWS SHALL BE COMPLETELY INSULATED EXCEPT JOINTS AND ELBOWS MAY BE LEFT UNCOVERED ON HOT PIPING IN CONCEALED SPACES.
- ALL VALVES AND UNIONS SHALL BE COMPLETELY INSULATED, EXCEPT VALVES AND UNIONS MAY BE LEFT UNCOVERED ON HOT PIPING IN CONCEALED SPACES.
- SEAMS OF FOIL-FACED THERMAL INSULATION SHALL BE SEALED WITH ALUMINUM DUCT TAPE.
- PROVIDE ADDITIONAL LAYER OF CANVAS, FIELD APPLIED, ADHERED, LAP SEALED AND FINISHED WITH A BRUSH COAT OF SIZING.
- PROVIDE PVC FITTING COVERS WHERE CANVAS JACKET IS APPLIED.
- COVER BUTT JOINTS WITH A STRIP OF THE SAME MATERIAL AS THE JACKET.
- FLEXIBLE INSULATION SHALL BE INSTALLED IN A MANNER THAT DOES NOT REDUCE ITS THICKNESS.

SECTION 15400 - PLUMBING

- DOMESTIC WATER PIPING ABOVE GROUND SHALL BE TYPE 'L' HARD COPPER, WITH SOLDERED COPPER JOINTS AND FITTINGS. USE LEAD-FREE SOLDER.
- DRAIN AND VENT PIPING ABOVE GROUND SHALL BE AS ALLOWED BY CODE, INCLUDING DWV COPPER, CAST IRON, AND PVC/ABS PLASTIC. JOINTS SHALL BE SOLDERED FOR COPPER, SOLVENT WELDED FOR PLASTIC, AND MECHANICAL JOINT FOR CAST IRON.
- DRAIN AND VENT PIPING BELOW GROUND SHALL BE AS ALLOWED BY CODE, INCLUDING CAST IRON, AND PVC/ABS PLASTIC. JOINTS SHALL BE SOLVENT WELDED FOR PLASTIC, AND MECHANICAL JOINT FOR CAST IRON.
- NATURAL GAS PIPING SHALL BE SCHEDULE 40 STEEL, WITH SCREWED OR WELDED JOINTS AND FITTINGS AS PER CODE.
- DOMESTIC WATER VALVES SHALL BE BALL OR BUTTERFLY TYPE.
- NATURAL GAS VALVES SHALL BE APPROVED PLUG TYPE.
- PROVIDE CHROME PLATED ESCUTCHEONS WHERE VISIBLE PIPING PASSES THROUGH WALLS AND PARTITIONS.
- PROVIDE UNIONS WHERE PIPING CONNECTS TO EQUIPMENT. UNIONS SHALL BE LOCATED SO THAT THE PIPING DOES NOT HAVE TO BE ADJUSTED IN ORDER TO REMOVE THE EQUIPMENT.
- DURING CONSTRUCTION, OPEN ENDED PIPING SHALL BE TEMPORARILY CAPPED TO PREVENT THE ENTRY OF DIRT AND DEBRIS. ON COMPLETION, PIPING SYSTEMS SHALL BE FLUSHED TO REMOVE ANY FOREIGN MATERIAL.
- SLOPE ALL DRAIN LINES AT A MINIMUM OF 1/8" PER FOOT (1%) UNLESS A GREATER SLOPE IS REQUIRED BY CODE, OR A LESSER SLOPE IS NOTED ON THE DRAWINGS.

SECTION 15500 - FIRE PROTECTION

- FIRE PROTECTION PIPING SHALL BE AS ALLOWED BY CODE, INCLUDING COPPER, STEEL, AND PLASTIC.
- SPRINKLER HEADS SHALL BE SEMI-RECESSED AND EXPOSED TYPE.
- SPRINKLER HEADS SHALL BE CHROME PLATED WHERE EXPOSED TO THE PUBLIC IN FINISHED AREAS, AND BRASS IN UNFINISHED AREAS.
- SPRINKLER HEADS SHALL BE INSTALLED IN EVEN ROWS AND COLUMNS. THEY SHALL BE CENTERED ONE-WAY IN T-BAR CEILINGS.

SECTION 15800 - VENTILATION

- ALL DUCTWORK AND RELATED ACCESSORIES SHALL BE INSTALLED AS PER THE LATEST SMACNA STANDARDS.
- DUCTWORK SHALL BE GALVANIZED SHEET METAL UNLESS NOTED OTHERWISE, AND SHALL BE OF THE FOLLOWING GAUGES:

RECTANGULAR


DUCTS UP TO 12" (300 MM) ON LONGEST DIMENSION = 26 GA.
 DUCTS 13" TO 28" (325 TO 700 MM) ON LONGEST DIMENSION = 24 GA.
 DUCTS 29" TO 48" (725 TO 1200 MM) ON LONGEST DIMENSION = 22 GA.
 DUCTS 49" TO 96" (1225 TO 2400 MM) ON LONGEST DIMENSION = 20 GA.

ROUND

DUCTS 8" (200 MM) AND SMALLER = 26 GA.
 DUCTS 9" TO 22" (225 TO 550 MM) = 24 GA.
 DUCTS 24" TO 36" (600 TO 900 MM) = 22 GA.
- ALL DUCTWORK SHALL BE SEALED WITH DUCT SEALANT.
- PROVIDE DUCT ACCESS DOORS AT ALL LOCATIONS REQUIRED FOR INSTALLATION, MAINTENANCE OR ADJUSTMENT OF EQUIPMENT OR CONTROLS. ACCESS DOORS SHALL HAVE GASKETS, PIANO HINGES AND THUMB LATCHES. DOORS SHALL BE INSTALLED TO ALLOW FOR INSTALLATION OF INTERNAL OR EXTERNAL INSTALLATION AS REQUIRED.
 - SUPPORT HORIZONTAL DUCTWORK AT MAXIMUM 8'-0" (2400mm) ON CENTER
 - FOR ROUND DUCTWORK UP TO 36" (900mm) DIAMETER, SUPPORT DUCT USING PERFORATED GALVANIZED STEEL STRAP, SUSPENDED USING THREADED RODS ATTACHED TO THE STRUCTURE. USE 3/8" (10mm) RODS FOR DUCTS 12" (300mm) DIAMETER AND LESS. USE 1/2" (12mm) RODS FOR DUCTS 14" TO 22" (350mm TO 550mm) DIAMETER. USE 5/8" (16mm) RODS FOR DUCTS OVER 24" (600mm) DIAMETER.
 - FOR ROUND DUCTWORK OVER 36" (900mm) DIAMETER, SUPPORT DUCT USING 1" x 1" x 1/8" (25mm x 25mm x 3mm) GALVANIZED ANGLE IRON TRAPEZE, SUSPENDED BY 5/8" (16mm) DIAMETER THREADED RODS ATTACHED TO THE STRUCTURE.
 - FOR RECTANGULAR DUCTWORK 18" (450mm) WIDE OR LESS, SUPPORT DUCT WITH PERFORATED GALVANIZED STEEL STRAP, SUSPENDED USING 1/2" (12mm) THREADED RODS ATTACHED TO THE STRUCTURE.
 - FOR RECTANGULAR DUCTWORK OVER 18" (450mm) WIDE, SUPPORT DUCT WITH 1" x 1" x 1/8" (25mm x 25mm x 3mm) GALVANIZED ANGLE IRON TRAPEZE, SUSPENDED BY 5/8" (16mm) DIAMETER THREADED RODS ATTACHED TO THE STRUCTURE.
 - IN CONCEALED SPACES FOR ROUND AND RECTANGULAR DUCTWORK 12" (300mm) WIDE OR LESS, PERFORATED GALVANIZED STEEL STRAP MAY BE USED IN LIEU OF THREADED ROD SUSPENSION.

NO.	REVISION/DESCRIPTION	BY	DATE
SEALS			

DRAWN BY	DATE	CHECKED BY	APPROVED
	2008.12.01	USER	APPROVAL


CITY OF WINNIPEG
 PLANNING, PROPERTY AND
 DEVELOPMENT DEPARTMENT
 CIVIC ACCOMMODATIONS DIVISION
 300 - 65 GARRY ST. R3C 4K4

PROJECT
 SURPLUS STORAGE FACILITY
 MAIN & SECOND FLOOR RENOVATION

311 ROSS AVENUE

SHEET TITLE

MECHANICAL/PLUMBING SPECIFICATIONS

SCALE	PROJECT NO.	SHEET NO.
AS SHOWN	2008-016-02	M3