

MECHANICAL SPECIFICATION

CONTRACTOR SHALL SUBMIT PRICE FOR THE COST OF SUPPLY AND INSTALLATION OF EQUIPMENT AND MATERIAL NECESSARY TO PROVIDE A COMPLETE AND OPERATING MECHANICAL PACKAGE. MECHANICAL PACKAGE TO CONSIST OF EQUIPMENT AND MATERIALS AS DESCRIBED IN THIS OUTLINE SPECIFICATION. REFER TO MECHANICAL PLANS FOR ACTUAL REQUIREMENTS OF EQUIPMENT.

SECTION 15010 GENERAL CONDITIONS

1. PROVIDE ALL LABOUR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE WORK SHOWN ON DRAWINGS AND AS SPECIFIED HEREIN.
2. ALL NECESSARY PERMITS SHALL BE OBTAINED AND ALL FEES SHALL BE PAID TO CARRY OUT THE SPECIFIED WORK.
3. ALL WORK SHALL BE GUARANTEED FOR ONE YEAR FROM DATE OF COMPLETED WORK ACCEPTANCE BY THE CITY OF WINNIPEG. SUBMIT DOCUMENTATION IDENTIFYING ADDITIONAL EQUIPMENT WARRANTY COVERAGE AND TIME FRAMES.
4. ALL WORK SHALL COMPLY IN EVERY RESPECT WITH ALL NATIONAL, PROVINCIAL AND LOCAL CITY OF WINNIPEG CODES AND BY-LAWS, WHICH SHALL BE CONSIDERED PART OF THIS SPECIFICATION. IN THE CASE OF CONFLICTING REQUIREMENTS, BE GOVERNED BY THE MOST STRINGENT REGULATIONS.
5. ALL CUTTING, PATCHING, FLASHING FOR WORK AS REQUIRED HEREIN SHALL BE BY THE GENERAL CONTRACTOR.
6. THE CONTRACTOR SHALL INSTALL PLUMBING SYSTEMS IN COMPLETE ACCORDANCE WITH THE RECOMMENDATIONS OF THE NATIONAL/PROVINCIAL BUILDING CODE AND LOCAL PLUMBING CODES.
7. COORDINATE WORK WITH WORK OF OTHER TRADES TO AVOID CONFLICT.
8. ALTER THE LOCATION OF DUCTS OR PIPES AT THE DIRECTION OF THE CONSULTANT WITHOUT CHARGE TO THE CITY OF WINNIPEG, PROVIDED THE CHANGE IS MADE BEFORE INSTALLATION AND DOES NOT NECESSITATE ADDITIONAL MATERIALS.
9. QUOTATIONS SHALL BE BASED ON THE USE OF SPECIFIED MANUFACTURERS OR APPROVED EQUAL. THE USE OF AN EQUAL OR ALTERNATE MANUFACTURER SHALL IN NO WAY RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY OF PROVIDING ALL WORK THAT MAY BE REQUIRED BY REASON OF DIFFERENT SPACE, WEIGHT, ELECTRICAL, OR OTHER REQUIREMENT FROM THAT OF THE SPECIFIED MANUFACTURER. ALTERNATES SHALL BE APPROVED PRIOR TO THE CLOSE OF TENDERS. NO SUBMITTALS RECEIVED AFTER TENDER CLOSING WILL BE ACCEPTED.
10. THE CONTRACTOR SHALL PROVIDE SIX (6) SETS OF SHOP DRAWINGS FOR ALL EQUIPMENT FOR REVIEW AND APPROVAL BY THE CONTRACT ADMINISTRATOR.
11. FURNISH TO THE CONSULTANT THREE (3) HARD-COVERED LOOSE-LEAF BINDERS CONTAINING THEREIN ONE (1) COMPLETE SET OF MANUFACTURERS' OPERATING AND MAINTENANCE INSTRUCTIONS SHOWING ALL MAJOR EQUIPMENT AND APPARATUS REQUIRING MAINTENANCE. INSTRUCTIONS SHALL BE COMPLETE FOR INSTALLATION, OPERATION AND MAINTENANCE AND SHALL INCLUDE PERTINENT INFORMATION SUCH AS DETAILED DRAWINGS AND OPERATION CURVES. SPARE PARTS, SUPPLIER LISTS AND ADDRESSES SHALL BE SUPPLIED. INSTRUCTION SHALL BE REQUIRED WITH THE OWNERS' REPRESENTATIVE TO ENSURE A THOROUGH UNDERSTANDING OF THE EQUIPMENT AND ITS OPERATION.
12. ALL WIRING, SUPPLY AND INSTALLATION OF DISCONNECT SWITCHES FOR EQUIPMENT SPECIFIED HEREIN SHALL BE PERFORMED BY THE ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED.
13. CONTRACTOR SHALL EXAMINE THE SITE AND CONDITIONS AFFECTING WORK, METHODS OF CONNECTION AND LOCATION OF ALL SERVICES INVOLVED UNDER THIS CONTRACT. FAILURE TO MAKE THIS VISIT IN NO WAY ALLEVIATES THE CONTRACTOR FROM RESPONSIBILITY FOR COMPLETING THE MECHANICAL WORK OF THIS CONTRACT IN A WORKMANLIKE MANNER. NO ALLOWANCE WILL BE MADE AFTER CONTRACT AWARD FOR ANY EXPENSE INCURRED THROUGH A FAILURE TO MAKE THIS EXAMINATION AND INVESTIGATION.
14. SCHEDULING OF ALL WORK SHALL BE ARRANGED WITH THE CITY OF WINNIPEG, AND THE CITY OF WINNIPEG SHALL BE NOTIFIED AND HIS APPROVAL OBTAINED PRIOR TO SHUTTING OFF EXISTING SERVICES FOR PURPOSES OF CONNECTING NEW WORK. WORK WITHIN THE BUILDING MAY HAVE TO BE PERFORMED DURING NON-REGULAR WORKING HOURS AND MUST CONFORM TO WORK RULES OF THE BUILDING AS DIRECTED BY THE CITY OF WINNIPEG.

15. AS-BUILT DRAWINGS:
 1. OBTAIN SETS OF WHITE PRINTS (ONE FOR EACH SYSTEM IE. PLUMBING, OUTSIDE SERVICES) AND KEEP AT JOB SITE AT ALL TIMES.
 2. RECORD ALL ADDITIONS OR DEVIATIONS FROM THE CONTRACT DOCUMENTS INCLUDING ALL CHANGES INCURRED BY ADDENDA, CHANGE ORDERS, FIELD CHANGES, JOB CONDITIONS, ETC.
 3. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRODUCTION OF AS-BUILT RECORD DRAWINGS WHICH SHALL PROVIDE A COMPLETE AND ACCURATE RECORD OF THE ACTUAL MECHANICAL INSTALLATION. ALL PRINCIPLE BELOW GRADE OR UNACCESSIBLE PIPING OR DUCT SYSTEMS, ETC. SHALL BE DIMENSIONED AT EACH CHANGE IN DIRECTION. INCLUDE ALL ROUTING OF SERVICES NOT INDICATED ON ORIGINAL DRAWINGS.
 4. PROJECT RECORD DRAWINGS SHALL BE TRANSFERRED BY MECHANICAL CONTRACTOR TO REPRODUCIBLE BOND DRAWINGS AND LABELLED "AS-BUILT".
 5. SUBMIT SEPAS TO CONSULTANT FOR REVIEW UPON COMPLETION IF CORRECTIVE MEASURES ARE REQUIRED AFTER THE SECOND CONSULTANT REVIEW (DUE TO MISSING INFORMATION AND/OR IMPROPER DRAFTING STANDARDS), THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSULTANT'S TIME COSTS FOR CORRECTIVE MEASURES, COURIER AND PRINTING COSTS.
 6. COPY OF FINAL "AS-BUILT" DRAWING SHALL BE SUBMITTED TO ARCHITECT.
 7. ALL COSTS OF "AS-BUILT" DRAWINGS PRODUCTION SHALL BE BORNE BY MECHANICAL CONTRACTOR.
 8. CONTRACTOR SHALL PRODUCE ELECTRONIC FORMAT OF "AS-BUILT" RECORD DRAWINGS, AND BEAR ALL COSTS INCURRED.

13. VERIFY SIZES, INVERTS AND LOCATIONS OF ALL SERVICES PRIOR TO COMMENCEMENT OF WORK. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO SANITARY SEWER, STORM SEWER, DOMESTIC WATER MAINS, FORCE MAINS, ETC.
14. ASSUME FULL RESPONSIBILITY FOR LAYING OUT ALL WORK AND ENSURING THAT NO DAMAGE IS CAUSED TO THE CITY OF WINNIPEG EQUIPMENT AND PREMISES DUE TO IMPROPER LOCATION AND EXECUTION OF WORK IN THIS CONTRACT. PROTECT AND MAINTAIN ALL WORK UNTIL WORK HAS BEEN COMPLETED AND ACCEPTED BY THE CITY OF WINNIPEG. STORE ALL MATERIALS AS REQUIRED, AND CLEAN UP REFUSE CAUSED BY ALL WORK.
15. IDENTIFY ALL NEW PIPING WITHIN BUILDING INSTALLED IN THIS CONTRACT SHOWING SERVICE, PIPE SIZE, AND FLOW DIRECTION. USE CAPITAL LETTERS USING EITHER FIRE RESISTANT HIGH GLOSS INTERIOR ENAMEL PAINT OR WATERPROOF, HEAT RESISTANT PLASTIC MARKER TAGS (SIMILAR TO: W.H. BRADY IDENTIFICATION TAPES, BANDS, MARKERS.) IDENTIFY AT MAXIMUM OF EVERY 50 FT. AND AT LEAST ONCE IN EACH ROOM. LOCATE AND SIZE LETTERING SUCH THAT IT CAN BE SEEN FROM FLOOR.

16. IN THE CASE OF DISCREPANCY BETWEEN ARCHITECTURAL AND MECHANICAL DRAWINGS TO NUMBER, TYPE, OR LOCATION OF HVAC EQUIPMENT AND SYSTEMS COMPONENTS, OBTAIN WRITTEN RULING.
17. COORDINATE THE ELECTRICAL REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH DIVISION 16.

SECTION 15400 PLUMBING

1. PROVIDE COMPLETE FUNCTIONAL PLUMBING SYSTEM COMPRISED OF DOMESTIC WATER PIPING, WATER FEATURE PIPING, CHECK VALVE, ETC.
2. ALL WATER PIPING ABOVE GROUND INSIDE BUILDING SHALL BE TYPE "L" HARD COPPER, 3RD PARTY CERTIFIED.
3. ALL PIPING CONNECTION AT AND DOWN-STREAM OF WATER DISTRIBUTION MANIFOLD (SERVING WATER FEATURE) TO BE SCHEDULE 40, FITTINGS SCHEDULE 80 PVC; COORDINATE WITH WATER FEATURE EQUIPMENT SUPPLIER FOR EXACT CONNECTION REQUIREMENTS.
4. CONTRACTOR SHALL VERIFY ON SITE ALL CONNECTION POINTS TO EXISTING BUILDING SERVICES. COORDINATE ALL NEW PIPING RUNS WITH CONSULTANT OR THE CITY OF WINNIPEG REPRESENTATIVE.
5. USE 95/5 SILVER SOLDER ON ALL HOT AND COLD WATER PIPING. USE NON-CORROSIVE NON-LEADED FLUX.
6. ALL VALVES TO BE BY ONE MANUFACTURER. STANDARD OF ACCEPTANCE: JENKINS BROS. LTD.
7. CONTRACTOR SHALL ALLOW FOR IN TENDER QUOTATION ANY ADDITIONAL LABOUR, MATERIALS, ETC. DEEMED NECESSARY DUE TO EXACT SITE CONDITIONS WHICH HAVE NOT BEEN REFLECTED IN MECHANICAL DRAWING OR IN MECHANICAL SPECIFICATION. NOTIFY CONSULTANT OF ALL DISCREPANCIES PRIOR TO TENDER CLOSE.
8. ON COMPLETION, ALL PIPING SYSTEMS SHALL BE CLEANED & FLUSHED OUT TO REMOVE ANY FOREIGN MATERIAL IN THE PIPING.
9. CONTRACTOR SHALL COORDINATE SERVICE INSTALLATIONS AND/OR MODIFICATIONS WITH LOCAL UTILITY PRIOR TO COMMENCEMENT OF WORK. PAY ALL COSTS AND/OR FEES.

10. PROVIDE DIELECTRIC COUPLINGS WHEREVER PIPES OF DISSIMILAR METALS ARE JOINED.

11. USE THE FOLLOWING ROD DIAMETER AND SPACING SCHEDULE TO ESTABLISH MINIMUM HANGING STANDARDS FOR HORIZONTAL PIPING:

PIPE SIZE	ROD DIA.	STEEL	COPPER
UP TO 3/4"	3/8"	6'	6'
1" TO 1 1/4"	3/8"	8'	8'
1 1/2" & 2"	3/8"	10'	8'
2 1/2" & 3"	1/2"	12'	8'
4" & 5"	3/8"	12'	8'
6"	3/4"	12'	
8" & 10"	7/8"	18'	
12"	7/8"	22'	

12. PIPE HANGERS WHERE REQUIRED SHALL BE GRINNEL FIG.65 FOR STEEL PIPE AND FIG.117 EXPANSION CASE SET IN HOLES DRILLED IN CONCRETE OR ATTACHED TO FIG.225 OR 227 CLAMP ATTACHED TO FLOOR JOIST AND ROOF JOIST. FOR INSULATED PIPING, PROVIDE PROTECTION FIG.167 SADDLES SIZE HANGER TO ACCOMMODATE INSULATION WHERE APPLIED.

13. INSTALL BACK FLOW PREVENTION ASSEMBLIES OF TYPE APPROVED BY ADMINISTRATIVE AUTHORITIES, FOR EXISTING POOL SERVICE PIPING AND DOMESTIC WATER SERVICE.

1. DOUBLE CHECK WATTS NO. 709 DOUBLE CHECK VALVE ASSEMBLY OR EQUAL AS MANUFACTURED BY SINGER, FEBCO AND BECO.

SECTION 15450 OUTSIDE SERVICES

1. PROVIDE PIPING SYSTEMS INCLUDING ALL NECESSARY CONNECTIONS TO STREET MAINS FOR WATER SERVICE.
2. RESPONSIBILITY FOR RESTORATION OF PAVED PUBLIC STREETS TO ORIGINAL CONDITION IF THEY HAVE BEEN AFFECTED AS A RESULT OF THE WORK IN THIS SECTION.
3. CONFIRMATION OF EXACT LOCATION AND INVERT ELEVATIONS OF SERVICES PRIOR TO COMMENCING WORK. IF ANY DISCREPANCIES SHOULD BE DISCOVERED, THEN NOTIFY THE CONSULTANT IMMEDIATELY.
4. CONFORM WITH THE REQUIREMENTS OF THE PLANS AND SPECIFICATION, THE LOCAL AUTHORITIES HAVING JURISDICTION AND THE CITY OF WINNIPEG CONSTRUCTION SPECIFICATIONS. IN THE CASE OF CONFLICTING REQUIREMENTS, BE GOVERNED BY THE MOST STRINGENT REGULATIONS.
5. SUBMIT SHOP DRAWINGS IN ACCORDANCE WITH SPECIFICATIONS.
6. PIPE FITTINGS AND JOINTS
 1. WATER SERVICE 67(150MM) AND OVER: IPEX "BLUE BRUTE" AND SHALL CONFORM TO ANWA C300 "POLY VINYL CHLORIDE)(PVC)PRESSURE PIPE FOR WATER", AND CERTIFIED TO CSA B137.2 "RIGID POLY VINYL CHLORIDE)(PVC) PIPE FOR PRESSURE APPLICATIONS".
7. EXAMINE AREA WHERE WORK IS TO BE PERFORMED FOR:
 1. ANYTHING THAT AFFECTS EXECUTION AND QUALITY OF WORK.
 2. PIPING CLEARANCES.
8. WHERE, UNDER THIS CONTRACT, IT IS NECESSARY TO CONNECT EXISTING WEAR MAINS TO THOSE WHICH ARE TO BE LAID, ALL PRECAUTIONARY MEASURES DEEMED NECESSARY BY THE CONSULTANT TO PROTECT EXISTING MAINS, AND TO CAUSE THE LEAST INCONVENIENCE TO USERS OF EXISTING MAINS, SHALL BE CARRIED OUT BY THE OUTSIDE SERVICES CONTRACTOR AT NO ADDITIONAL CHARGE TO THE CITY. THIS CHARGE, IF ANY, TO BE INCLUDED. NO VALVE OR OTHER CONTROL ON THE SYSTEM SHALL BE OPERATED FOR ANY PURPOSE BY THE OUTSIDE SERVICES CONTRACTOR WITHOUT APPROVAL OF THE CONSULTANT, AND ALL CONSUMERS AFFECTED BY SUCH OPERATIONS SHALL BE NOTIFIED BY THE OUTSIDE SERVICE CONTRACTOR, AT LEAST ONE HOUR BEFORE THE OPERATION AND ADVISED OF THE PROBABLE TIME WHEN SERVICE WILL BE RESTORED.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES TO ANY UNDERGROUND OR SURFACE UTILITY STRUCTURES, DRAIN, SEWER, WATER SERVICE, VALVE, SERVICE BOX OR OTHER OBSTRUCTION ENCOUNTERED IN THE PROGRESS OF THE WORK. ANY SERVICE OR OTHER UTILITY DAMAGE, SHALL BE REPAIRED OR REPLACED AT THE OUTSIDE SERVICE CONTRACTOR'S EXPENSE TO THE ENTIRE SATISFACTION OF THE CONSULTANT.
10. PROCURE ALL PERMITS FOR CROSSING STREETS AND SIDEWALKS AND PERFORM NO EXCAVATION WITHOUT APPROVAL BY CITY ENGINEERING DEPARTMENT AND CONSULTANT.
11. WHERE THE SURFACE OF A STREET, DRIVEWAY, BOULEVARD, OR SIDEWALK HAS BEEN CUT TO INSTALL PIPE, THE CROSSING SHALL BE BACKFILLED WITH GRANULAR FILL AND TAMPED IN LIFTS AND RESURFACED TO THE ORIGINAL CONDITION, TO THE SATISFACTION OF THE CONSULTANT AND AUTHORITIES HAVING JURISDICTION.

12. THIS CONTRACTOR SHALL MAKE APPLICATION AND PAY FOR ALL PERMITS, ASSESSMENTS, INSPECTION FEES, CONNECTION CHARGES, STREET CUT PERMITS AND ALL OTHER CHARGES PERTAINING TO THE COMPLETION OF INSTALLATION, TO ALL APPROPRIATE GOVERNMENTAL AUTHORITIES.

13. SEWER PIPES SHALL BE LAID ACCORDING TO THE GRADE AND ALIGNMENT SHOWN ON THE PLANS, WITH A TOLERANCE OF 1 1/2" (38 MM) VERTICAL AND 12" (300 MM) HORIZONTAL. THE OUTSIDE SERVICE CONTRACTOR TO ESTABLISH OWN BATTER BOARDS FOR LINE AND GRADE.

14. ALL PIPES SHALL BE LEFT UNCOVERED FOR INSPECTION AND NO PIPES SHALL BE COVERED UNTIL PERMISSION HAS BEEN GIVEN BY THE CONSULTANT. THE CONTRACTOR SHALL ALLOW 48 HRS. NOTIFICATION PRIOR TO COMMENCEMENT OF WORK. SHOULD ANY PIPE BE COVERED BY THE CONTRACTOR BEFORE THE PERMISSION OF THE CONSULTANT HAS BEEN OBTAINED, THE TRENCH SHALL BE REOPENED AT THE OUTSIDE CONTRACTOR'S EXPENSE.

PIPE BEDDING SHALL CONSIST OF A MINIMUM OF 4" (100 MM) SAND SHALL BE SPREAD AND GRADED OVER THE BOTTOM OF THE TRENCH BEFORE PLACING ANY PIPE. AFTER THE PIPE IS PLACED, FREE RUNNING SAND SHALL BE PLACED TO THE TOP OF THE PIPE AND THEN COMPACTED. PARTICULAR CARE SHALL BE TAKEN IN COMPACTING THIS MATERIAL TO GIVE PROPER SUPPORT TO THE PIPE. MORE SAND SHALL THEN BE PLACED AND THOROUGHLY COMPACTED TO 24" (600 MM) ABOVE THE PIPE IN 6" (150 MM) LIFTS. THE REMAINDER OF THE TRENCH WHERE GOING UNDER SIDEWALK PAVING, FLOOR SLABS, ETC. SHALL BE BACKFILLED WITH GRANULAR MATERIAL COMPACTED IN 12" (300 MM) LIFTS TO THE SATISFACTION OF THE CONSULTANT. WHERE THE TRENCHES RUN THROUGH GRASSED AREAS, OR NON-PAVED AREAS, THE REMAINDER OF THE TRENCH MAY THEN BE BACKFILLED WITH CLEAN EARTH MECHANICALLY COMPACTED IN 12" (300 MM) LIFTS. ALL EXCAVATION SHALL BE CARRIED OUT IN STRICT ACCORDANCE WITH ALL GOVERNING CODES AND PROVINCIAL DEPARTMENT OF LABOUR REGULATIONS. ALL EXCESS MATERIAL SHALL BE REMOVED FROM THE SITE OR BE PLACED AS DIRECTED BY THE ARCHITECT AFTER INSTALLATION OF THE BURIED SERVICE.

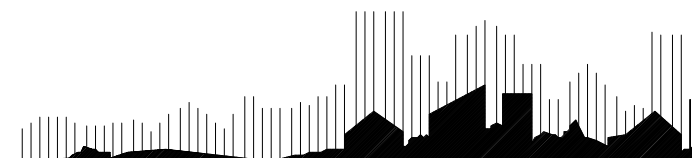
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Client
CITY OF WINNIPEG

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