

MASTER SPECIFICATION – KILDONAN PARK MAINTENANCE BUILDING – WINNIPEG, MB  
PROJECT #36-087

**MECHANICAL SPECIFICATION**

MECHANICAL SUB-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 REQUIREMENTS OF EQUIPMENT.

**SECTION 15005 – MECHANICAL SCOPE OF WORK**

1. INCLUDE IN MECHANICAL SECTION, PROVISION OF LABOUR, NEW MATERIALS, TOOLS, TRANSPORTATION, SERVICES AND FACILITIES FOR A COMPLETE MECHANICAL INSTALLATION. THE INSTALLATION SHALL BE LEFT COMPLETE AND READY FOR OPERATION. FINAL INSTALLATION SHALL BE INSTALLED TO COMPLETE SATISFACTION OF THE CONTRACT ADMINISTRATOR.
2. THE MECHANICAL SCOPE OF WORK INCLUDES, BUT IS NOT NECESSARILY LIMITED TO THE FOLLOWING PROVISION:
  - 2.1. :
    - 2.1.1. FAMILIARIZE CREW WITH SITE IN ORDER TO DETERMINE APPROPRIATE LOCATIONS, SITE CONDITIONS, ETC. THAT MAY AFFECT WORK.
    - 2.1.2. WORK MAY NEED TO BE PERFORMED AT NON-STANDARD HOURS. DETERMINE SCHEDULE WITH CITY OF WINNIPEG.
    - 2.1.3. O&M MANUALS AND CITY OF WINNIPEG TRAINING.
    - 2.1.4. AS-BUILT DRAWINGS.
  - 2.2. PLUMBING:
    - 2.2.1. PROVISIONS OF ALL PLUMBING EQUIPMENT, PIPING, FIXTURES, PLUMBING BRASS, PIPE FITTINGS, LABOR AND MISCELLANEOUS MATERIALS IS REQUIRE TO COMPLETE THE PROJECT.
    - 2.2.2. PROVISIONS OF ALL GAS PIPING AND VENTING FOR SUPPLIED EQUIPMENT.
  - 2.3. H.V.A.C.:
    - 2.3.1. PROVISIONS OF ALL EXHAUST FANS, DUCTWORK, CONTROL/BALANCE FITTINGS, INSULATION, GRILLES/REGISTERS/DIFFUSERS/LOUVERS, FIRE DAMPERS, LABOR AND MISCELLANEOUS MATERIALS AS REQUIRED TO COMPLETE THE PROJECT.
    - 2.3.2. PROVISION OF TAB REPORTS INCLUDING FIRE DAMPER TESTING AND CERTIFICATION.
  - 2.4. CONTROLS
    - 2.4.1. PROVISION OF COMPLETE ELECTRONIC CONTROLS AS DESCRIBED.

**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 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 CONTRACTOR.
6. THE MECHANICAL SUB-CONTRACTOR SHALL INSTALL PLUMBING, HEATING, VENTILATION, AIR CONDITIONING, AND SPRINKLER SYSTEMS IN COMPLETE ACCORDANCE WITH THE RECOMMENDATIONS OF THE NATIONAL/PROVINCIAL BUILDING CODE, ASHRAE, SMACNA LATEST EDITION DUCT STANDARDS, AND LOCAL PLUMBING CODES, AND N.F.P.A. REQUIREMENTS.
7. COORDINATE WORK WITH WORK OF OTHER TRADES TO AVOID CONFLICT.
8. ALTER THE LOCATION OF DUCTS OR PIPES AT THE DIRECTION OF THE CONTRACT ADMINISTRATOR 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 IN ACCORDANCE WITH B7. THE USE OF AN EQUAL OR ALTERNATE MANUFACTURER SHALL IN NO WAY RELIEVE THE MECHANICAL SUB-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 BIDS IN ACCORDANCE WITH B7. NO SUBMITTALS RECEIVED AFTER BID CLOSING WILL BE ACCEPTED.
10. ALL WRING, SUPPLY AND INSTALLATION OF DISCONNECT SWITCHES FOR EQUIPMENT SPECIFIED HEREIN SHALL BE PERFORMED BY THE ELECTRICAL SUB-CONTRACTOR, UNLESS OTHERWISE NOTED.
11. 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 MECHANICAL SUB-CONTRACTOR FROM A WORKMANLIKE MANNER. NO ALLOWANCE WILL BE MADE AFTER CONTRACT AWARD FOR ANY EXPENSE INCURRED THROUGH A FAILURE TO MAKE THIS EXAMINATION AND INVESTIGATION.
12. 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.
13. AS-BUILT DRAWINGS:
  - 13.1. OBTAIN SETS OF WHITE PRINTS (ONE FOR EACH SYSTEM IE. PLUMBING, HVAC, FIRE PROTECTION) AND KEEP AT JOB SITE AT ALL TIMES.
  - 13.2. RECORD ALL ADDITIONS OR DEVIATIONS FROM THE CONTRACT DOCUMENTS INCLUDING ALL CHANGES INCURRED BY ADDENDA, CHANGE ORDERS, FIELD CHANGES, JOB CONDITIONS, ETC.
  - 13.3. MECHANICAL SUB CONTRACTORS 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 INACCESSIBLE PIPING OR DUCT SYSTEMS, ETC. SHALL BE DIMENSIONED AT EACH CHANGE IN DIRECTION. INCLUDE ALL ROUTING OF SERVICES NOT INDICATED ON ORIGINAL DRAWINGS.
  - 13.4. PROJECT RECORD DRAWINGS SHALL BE TRANSFERRED BY MECHANICAL SUB-CONTRACTOR TO REPRODUCIBLE BOND DRAWINGS AND LABELED AS-BUILT.
  - 13.5. SUBMIT REPRODUCIBLE BOND DRAWINGS TO CONTRACT ADMINISTRATOR FOR REVIEW UPON COMPLETION IF CORRECTIVE MEASURES ARE REQUIRED AFTER THE SECOND CONTRACT ADMINISTRATORS REVIEW (DUE TO MISSING INFORMATION AND/OR IMPROPER DRAFTING STANDARDS), THE MECHANICAL SUB-CONTRACTOR SHALL BE RESPONSIBLE FOR CONTRACT ADMINISTRATOR'S TIME COSTS FOR CORRECTIVE MEASURES, COURIER AND PRINTING COSTS.
  - 13.6. CONTRACTOR SHALL EMPLOY CONTRACT ADMINISTRATOR (OR CAD DRAFTING SERVICE) TO PRODUCE ELECTRONIC COPY AS-BUILT DRAWINGS. MECHANICAL SUB-CONTRACTOR SHALL BEAR ALL COSTS OF PRODUCTION.
  - 13.7. COPY OF FINAL AS-BUILT DRAWING SHALL BE SUBMITTED TO CONTRACT ADMINISTRATOR.
  - 13.8. ALL COSTS OF AS-BUILT DRAWINGS PRODUCTION SHALL BE BORNE BY MECHANICAL SUB-CONTRACTOR.
14. 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.
15. HOISTING OF ALL MECHANICAL EQUIPMENT SHALL BE BY THE MECHANICAL SUB-CONTRACTOR.
16. ASSUME FULL RESPONSIBILITY FOR LAYING OUT ALL WORK AND ENSURING THAT NO DAMAGE IS CAUSED TO THE CITY OF WINNIPEG'S 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.

17. 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: WH 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.
18. IN THE CASE OF DISCREPANCY BETWEEN ARCHITECTURAL AND MECHANICAL DRAWINGS TO NUMBER, TYPE, OR LOCATION OF HVAC EQUIPMENT AND SYSTEMS COMPONENTS, OBTAIN WRITING RULING.
19. ALL TIME/DATA SENSITIVE ELECTRONIC EQUIPMENT AND SOFTWARE PROVIDED ON THIS PROJECT SHALL BE 4 DIGIT YEAR INPUT COMPATIBLE AND SHALL BE BASED ON THE USE OF FULL, UNABBRUVATED, UNAMBIGUOUS DISCRETE TIME AND DATE CODES.
20. MECHANICAL SUB-CONTRACTOR SHALL COORDINATE PROVISION OF POWER TO BUILDING CONTROL TRANSFORMERS WITH DIVISION 16 AND CARRY ALL INCREMENTAL COSTS.
21. COORDINATE THE ELECTRICAL REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH DIVISION 16. DIVISION 16 SHALL PROVIDE THE FOLLOWING:
  - 21.1. ALL POWER WRING TO EQUIPMENT.
  - 21.2. ONE 15 AMP 120V/1PH/60HZ FUSED POWER SUPPLY TO EACH MECHANICAL EQUIPMENT AND/OR JANITOR ROOM.
22. PROVIDE FIRE STOPPING AT ALL PIPING, CONDUIT (CONTROLS) AND DUCTWORK PENETRATIONS OF ALL REQUIRED FIRE SEPARATIONS WITH APPROVED MATERIAL SYSTEMS. ACCEPTABLE MATERIALS: 3M, DOW, CORNING, APSS.
23. MECHANICAL SUB-CONTRACTOR DOCUMENTS ARE DIAGRAMMATIC AND APPROXIMATE TO SCALE; REFER TO ARCHITECTURAL AND/OR STRUCTURAL DRAWINGS, AND SITE VERIFY ALL CRITICAL DIMENSIONS. THE DRAWINGS AND SPECIFICATIONS ESTABLISH SCOPE FOR MATERIAL AND INSTALLATION QUALITY AND ARE NOT DETAILED INSTALLATION INSTRUCTIONS. ANY DISCREPANCIES MUST BE BROUGHT TO THE CONTRACT ADMINISTRATOR'S ATTENTION IN WRITING PRIOR TO THE CLOSE OF BIDS.
24. SHOULD ANY DISCREPANCY APPEAR BETWEEN THE DRAWINGS AND SPECIFICATIONS, WHICH LEAVE THE CONTRACTOR IN DOUBT AS TO THE TRUE INTENT AND MEANING OF THE PLANS AND SPECIFICATIONS, THE CONTRACTOR SHALL OBTAIN A WRITTEN RULING FROM THE CONTRACT ADMINISTRATOR PRIOR TO BID SUBMISSION.
25. FIELD VERIFY ALL BUILDING AND SITE DIMENSIONS AND REVIEW MECHANICAL DRAWINGS AND SPECIFICATIONS PRIOR TO ANY FABRICATION OR INSTALLATION OF EQUIPMENT OR MATERIALS. DO NOT ATTEMPT ANY FABRICATION OR INSTALLATION UNTIL SUCH CLARIFICATION IS PROVIDED. ON CONTRACT REVISIONS WILL BE CONSIDERED FOR FAILURE TO VERIFY THESE DIMENSIONS ON SITE.
26. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY EACH TO THE OTHER, WHAT IS CALLED FOR BY ONE SHALL BE BINDING AS IF CALLED FOR BY BOTH.

**SECTION 15180 – INSULATION**

ALL INSULATING MATERIALS, METHODS, SIZES AND TYPES OF INSULATION FOR ALL PIPING AND DUCT WORK SHALL BE INSTALLED TO THE REQUIREMENTS OF THE ASHRAE STANDARDS 90.1-2010 ENERGY STANDARD FOR BUILDING EXCEPT LOW-RISE RESIDENTIAL BUILDING; NATIONAL ENERGY CODE OF CANADA FOR BUILDING 2011 AND THERMAL INSULATION ASSOCIATION OF CANADA (TIAC) STANDARDS.

1. PROVIDE 1" (25 MM) ON PIPING LESS THAN 2" (50 MM) OR 1 1/2" (38 MM) ON PIPING 2 1/4" (64 MM) OR GREATER THICK RIGID PIPE INSULATION ON ALL DOMESTIC WATER PIPES. INSULATION C/W VAPOUR BARRIER.
2. PROVIDE 1" (25 MM) THICK PIPE INSULATION ON ALL PLUMBING VENTS PASSING THROUGH ROOF FOR A DISTANCE OF 10'-0" (3 M) INSIDE FROM POINT OF COLD TO WARM SURFACE PENETRATION. INSULATION C/W VAPOUR BARRIER.
3. PROVIDE 1 1/2" (38 MM) THICK KNAUF DUCTWRAP, 1.0 PCF DENSITY R6.0 (RSI 1.06) 25X COMPRESSED FLEXIBLE DUCT INSULATION C/W REFRIK FACING ON EXHAUST DUCTWORK & ALL SUPPLY DUCTWORK FROM ALL AIR HANDLING EQUIPMENT. EXHAUST DUCTWORK SHALL BE INSULATED FOR A MINIMUM DISTANCE OF 10'-0" (3 M) FROM PENETRATION OF BUILDING THERMAL ENVELOPE. REFER TO DRAWINGS FOR ADDITIONAL INSULATION REQUIREMENTS. ALL SUPPLY AIR DUCTWORK CONVEYING AIR-CONDITIONED AIR SHALL BE INSULATED.
4. PROVIDE 2" (50 MM) THICK KNAUF DUCTWRAP, 1.6 PCF DENSITY. RR.3 (RSI 1.5) 25X COMPRESSED THERMAL FACED INSULATION ON ALL DUCTWORK CONVEYING OUTDOOR AIR COMPLETE WITH REFRIK FACING FACING. DUCTWORK SHALL BE INSULATED OVER ENTIRE RUN FROM PENETRATION OF BUILDING THERMAL ENVELOPE TO UNIT CONNECTION.
5. ACOUSTICALLY INSULATE DUCTWORK WITH 1" (25 MM) FLEXIBLE DUCT INSULATION WITH FLAME – ATTENUATED FIBRES BONDED WITH THERMOSETTING RESIN; BLACK PLASTIC-COATED MAT FINISH. PROVIDE WHERE NOTED ON DRAWINGS OR AS SHOWN AS HAND-HELD DUCTWORK OR ALLOW FOR UP TO 10 FT. (3 M) FROM SUPPLY AND RETURN AIR OPENINGS OF ROOM MOUNTED EQUIPMENT. ACCEPTABLE PRODUCT: KNAUF AIR DUCT BOARD.
6. DO NOT EXTERNALLY INSULATE ANY DUCTWORK WHICH IS SPECIFIED OR SHOWN TO BE INTERNALLY INSULATED UNLESS NOTED OTHERWISE.
7. INSULATION COVERINGS:
  - 7.1. MASTIC FINISH OVER INSULATION SHALL BE VI-CRYL-CP-10 WHITE WEATHER BARRIER COATING AS MANUFACTURED BY CHILDERS PRODUCTS COMPANY. IT SHALL BE APPLIED IN TWO COATS, THE FIRST COAT BEING A TACK COAT APPLIED AT A RATE OF TWO GALLONS PER 100 SQ. FT. (81 L/SQ.M), AND WHILE STILL WET A LAYER OF CHIL-GLAS 05 OPEN WEAVE GLASS CLOTH MEMBRANE SHALL BE EMBEDDED WITH ALL FABRIC COAT AT A COVERAGE OF FOUR GALLONS PER 100 SQ. FT. (1.6 L/SQ.M) SHALL BE APPLIED, FULLY COVERING THE CLOTH MEMBRANE, SO THAT THE MINIMUM DRY FILM THICKNESS IS 1/16" (0.63") (1.6 MM). THERE SHALL BE NO VOIDS OR HOLLOWES AND THE MASTIC SHALL BE TOWELED, SPRAYED OR WET-BRUSHED TO A SMOOTH EVEN FINISH. PROVIDE ALUMINUM JACKET THREE(3) SIDES. FINISH AS PER CONTRACT ADMINISTRATOR BY CONTRACTOR.
  - 7.2. ALL ADJOINING UNINSULATED SURFACES MUST BE COMPLETELY WATER-PROOFED AND FLASHED EITHER BY EXTENDING THE VI-CRYL-CP-10/11 WEATHER BARRIER COATING AND FABRIC MEMBRANE A MINIMUM OF 4" (102 MM) UP TO THE ADJOINING SURFACE, OR, IF THAT SURFACE WILL ATTAIN TEMPERATURES IN EXCESS OF 180 DEGREES F (82 DEGREES C), USE CHIL-JOINT CP-70 SEALANT AS THE FLASHING COMPOUND.
  - 7.3. ALL INSULATION IN EXPOSED LOCATIONS, AND ALL DUCTWORK IN FAN ROOMS, SERVICE ROOMS, GARAGES, ETC., SHALL BE COVERED WITH CANVAS WRAP. INSULATION EXPOSED TO THE MOISTURE SHALL BE COMPLETE WITH COVER PER 7.1.7.2 ABOVE.
8. PIPE INSULATION:
  - 8.1. ALL PIPING IN EXPOSED LOCATIONS SHALL BE COVERED WITH PVC JACKETING (PROTO, OR EQUAL IN ACCORDANCE WITH B7). THIS SHALL INCLUDE PIPING IN FAN ROOMS, SERVICE ROOMS, GARAGES, ETC.

**SECTION 15400 – PLUMBING**

1. PROVIDE COMPLETE FUNCTIONAL PLUMBING SYSTEM COMPRISED OF DOMESTIC WATER PIPING, VENTS, SANITARY AND DRAINAGE PIPING, ETC.
2. ALL WATER PIPING ABOVE GROUND INSIDE BUILDING SHALL BE TYPE L HARD COPPER; 3RD PARTY CERTIFIED. ALL PIPING BELOW GROUND SHALL BE TYPE K SOFT COPPER; 3RD PARTY CERTIFIED.
3. DRAINS AND VENT PIPING UNDERGROUND INSIDE BUILDING SHALL BE CAST IRON CLASS 4000, OR PVC PLASTIC. FITTINGS SHALL BE MECHANICAL JOINT FOR CAST IRON OR SOLVENT CEMENT FOR PVC.
4. SANITARY WASTE STACKS, HORIZONTAL WASTE, VENT, ABOVE GROUND INSIDE BUILDING, SHALL BE CAST IRON CLASS 4000. VENT PIPING AND FIXTURE RUN-OUTS MAY ALSO BE DWV COPPER OR PVC PLASTIC. FITTINGS SHALL BE MECHANICAL JOINT FOR CAST IRON, SOLDER FOR DWV COPPER AND SOLVENT CEMENT FOR PVC.
5. ALL PVC PLASTIC PIPING USED FOR HIGH-RISE BUILDINGS SHALL HAVE A FLAME SPREAD RATING OF 0, AND A SMOKE DEVELOPED RATING OF 35. PIPING AND FITTINGS SHALL BE OF ONE MANUFACTURE. IPEX SYSTEM 15XR.
6. MECHANICAL SUB-CONTRACTOR SHALL VERIFY ON SITE ALL CONNECTION POINTS TO EXISTING BUILDING SERVICES. COORDINATE ALL NEW PIPING RUNS WITH CONTRACT

ADMINISTRATOR.

7. USE 95/5 TIN-ANTIMONY BRAZING SOLDER ON ALL HOT AND COLD WATER PIPING. USE NON-CORROSIVE NON-LEADED FLUX.
8. ALL VALVES TO BE BY ONE MANUFACTURER. STANDARD OF ACCEPTANCE: JENKINS BROS. LTD.
9. MANUFACTURED SHOCK ABSORBERS, AUTOMATIC AIR VENTS, AND PARTITION STOPS SHALL BE INSTALLED AT THE TOP OF ALL RISERS, AND ON ALL FIXTURES OR BATTERY OF FIXTURES.
10. MECHANICAL SUB-CONTRACTOR SHALL ALLOW FOR IN BIDS 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 CONTRACT ADMINISTRATOR OF ALL DISCREPANCIES PRIOR TO BID COSE.
11. ON COMPLETION, ALL PIPING SYSTEMS SHALL BE CLEANED & FLUSHED OUT TO REMOVE ANY FOREIGN MATERIAL IN THE PIPING.
12. GAS PIPING SHALL BE BLACK STEEL PIPE, EQUAL TO ASTM A-53 SCH. 40 WITH 150 LBS. STANDARD BLACK MALLEABLE IRON SCREWED FITTINGS. ALL WORK SHALL COMPLY WITH C.G.A. B149.1-00 NATURAL GAS AND PROPANE INSTALLATION CODE, COMPLETE WITH DEPARTMENT OF LABOUR GAS NOTICES, AND SHALL BE PERFORMED BY FULLY QUALIFIED GAS FITTERS AND/OR WELDERS LICENSED TO PRACTICE IN THE PROVINCE OF MANITOBA.
13. VALVES IN GAS PIPING SHALL BE GRINNELL FIG. C.G.A. OR EQUAL IN ACCORDANCE WITH B7.
14. RUN GAS PIPING TO SERVE CITY OF WINNIPEG'S SPECIFICATION. TAKE-OUT PERMITS AND CONNECT EQUIPMENT READY FOR USE. PROVIDE GAS REGULATORS TO SERVE NEW GAS FIRED EQUIPMENT. GAS REGULATORS SHALL BE C.G.A APPROVED AS MANUFACTURED BY FISHER, OR EQUAL IN ACCORDANCE WITH B7. PROVIDE GAS COOK DIRT LEG AND FLEXIBLE CONNECTIONS AT EACH PIECE OF EQUIPMENT.
15. CONTRACTOR SHALL COORDINATE SERVICE INSTALLATIONS AND/OR MODIFICATIONS WITH LOCAL UTILITY PRIOR TO COMMENCEMENT OF WORK. PAY ALL COSTS AND/OR FEES.
16. ROOF MOUNTED PIPING SHALL BE SUPPORTED WITH CO-PORT UV RESISTANT RUBBER MOUNTS OF SUITABLE WIDTHS TO ACCOMMODATE INSTALLATION REQUIREMENTS, AS MANUFACTURED BY CLEARLINE TECHNOLOGIES OR APPROVED EQUAL. INSTALLATIONS TO CAN/CSA-B149.1-05.
17. CONTRACTOR SHALL PROVIDE PRE-ASSEMBLED AND PRE-TESTED OVER-PRESSURE RELIEF REGULATORS AND VENT ASSEMBLIES ON ALL PROPANE AND NATURAL GAS PIPING SYSTEMS GREATER THAN 7" W.C., INSTALLED AT EACH APPLIANCE AND/OR EQUIPMENT. INSTALLATION AND REQUIREMENTS TO MEET THE CAN/CSA-B149.1-05 AND TSSA/MB. DEPT. OF LABOUR REQUIREMENTS.
18. PROVIDE DIELECTRIC COUPLINGS WHEREVER PIPES OF DISSIMILAR METALS ARE JOINED.
19. 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	6'
1 1/2" & 2"	3/8"	10	6'
20. PIPE HANGERS WHERE REQUIRED SHALL BE GRINNELL 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.

**PLUMBING FIXTURES AND EQUIPMENT:**

WC-1: FLOOR MOUNTED TOILET – VITREOUS CHINA – FOR FLUSHOMETER – EXPOSED – MANUAL

AMERICAN STANDARD MADERA FLOWISE RIGHT HEIGHT ELONGATED #3461.001.020 HET TOILET, 419 MM HIGH, VITREOUS CHINA WITH EVERCLEAN ANTIMICROBIAL SURFACE WHICH INHIBITS THE GROWTH OF STAIN AND ODOR CAUSING BACTERIA MOLD AND MILDEW, ELONGATED BOWL, WHITE FINISH, FLOOR MOUNTED, SIPHON JET FLUSH ACTION, OPERATES IN THE RANGE OF 4.2 L TO 6 L (1.1 US GAL TO 1.6 US GAL) PER FLUSH, CONDENSATE CHANNEL, 305 MM X 254 MM (12" X 10") WATER SURFACE, SIPHON JET FLUSH ACTION, CONDENSATE CHANNEL, ELONGATED BOWL, 54 MM (2-1/8") FULLY GLAZED INTERNAL TRAPWAY, FLOOR OUTLET, BOLT CAPS, 38 MM (1-1/2") DIA. TOP SPUD, CO-ORDINATE F.V. HEIGHT WITH BACKREST (SEE ARCH. DRAWINGS) CO-ORDINATE F.V. HEIGHT WITH GRAB BARS. (SEE ARCH. DRAWINGS)CENTOCO #500STSC0.001 TOILET SEAT, HEAVY DUTY, FOR ELONGATED BOWL, OPEN FRONT, SOLID PLASTIC, LESS COVER, STAINLESS STEEL CHECK HINGES, METAL FLAT WASHERS STAINLESS STEEL POSTS AND NUTS. SLOAN ROYAL #111-1.6-CP, EXPOSED MANUAL FLUSHOMETER FOR TOP SPUD TOILET, POLISHED CHROME FINISH, 6 L (1.6 US GAL) FACTORY SET FLOW, QUIET ACTION 'PERMEX' DIAPHRAGM TYPE WITH DUAL FILTER BY-PASS, NON-HOLD OPEN FEATURE, A.D.A TRIPLE SEAL OSCILLATING HANDLE, V.P. SMOOTH DESIGN STOP CAP ON BAK-CHEK ANGLE STOP (SCREWDRIVER OPERATED); FLUSH TUBE FOR 292 MM (11-1/2") ROUGH-IN, HIGH PRESSURE VACUUM BREAKER. FRANK COMMERCIAL #401-16104, TOILET BACK REST, SATIN FINISH TYPE 304 18 GA. (1.2 MM) STAINLESS STEEL BAR, 219 MM (8-5/8") BACK TO FRONT, 32 MM (1-1/4") TUBING DIAMETER, ANTIQUE WHITE SOLID CORE PLASTIC LAMINATE PANEL, PROVIDE FLOOR FLANGE, (SAME MATERIAL AS THE CONNECTING PIPE DRAIN), WITH ALL BRASS BOLTS AND WITH RUBBER GASKET.

U-1: WALL HUNG URINAL – FOR FLUSHOMETER – EXPOSED – MANUAL

AMERICAN STANDARD WASHBROCK FLOWS #6590.001.020 URINAL, VITREOUS CHINA, OPERATES IN THE RANGE OF 0.5 L TO 1 L (0.125 US GAL TO 0.26 US GAL) PER FLUSH. WALL HUNG EXTENDED SIDES FOR PRIVACY, WASHDOWN ACTION, WASHBROCK FLOWISE, FLUSHING RIM, DIA. TOP SPUD, ELONGATED RIM, INTEGRAL P-TRAP, OUTLET CONNECTION 51 MM (2"), 2 WALL HANGERS, #7301242-100 CHROME PLATED, NON-METALLIC STRAINER, WHITE FINISH, SLOAN ROYAL #186-0.125-CP, EXPOSED MANUAL FLUSHOMETER FOR TOP SPUD URINAL, POLISHED CHROME FINISH, 0.5 L (0.125 US GAL) FACTORY SET FLOW, QUIET ACTION 'PERMEX' DIAPHRAGM TYPE WITH DUAL FILTER BY-PASS, NON-HOLD OPEN FEATURE, A.D.A TRIPLE SEAL OSCILLATING HANDLE, V.P. SMOOTH DESIGN STOP CAP ON BAK-CHEK ANGLE STOP (SCREWDRIVER OPERATED); FLUSH TUBE FOR 292 MM (11-1/2") ROUGH-IN, HIGH PRESSURE VACUUM BREAKER. WATTS #24-321 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. WATTS #WUCO URINAL WALL ACCESS CLEANOUT, TWO (2) PIECE EXPANDABLE PLUG WITH 102 MM (4") DIAMETER STAINLESS STEEL ACCESS COVER, SECURED WITH VANDAL PROOF STAINLESS STEEL SCREW. CHAMPION MI-TR SERIES #MI-HUB TR DRAIN COUPLING, COUPLING, NO-HUB, TYPE 300 AISI STAINLESS STEEL BAND, TYPE 300 AISI STAINLESS STEEL EJECTS, ELASTOMER COMPOUND GASKET MEETING THE REQUIREMENTS OF ASTM C-564. TYPE 300 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 1460-2010 AND CSA STANDARD B802-2010 AND LISTED WITH IAPMO. ALL MODELS ARE LISTED TO THE NATIONAL PLUMBING CODE OF CANADA AND RELEVANT CANADIAN STANDARD (S) AND BEAR THE CUPC MARK OF CONFORMITY, NON CONSTANT TEMPERATURE RATING IS 140°F

L-1: COUNTER MOUNTED SELF-RIMMING / DROP-IN BASIN – SINGLE HANDLE FAUCET – BELOW DECK MECHANICAL WATER MIXING VALVE

AMERICAN STANDARD CADET UNIVERSAL ACCESS #9494.001.020 BASIN, 3 HOLES, 4" (102 MM) CENTER, 533 MM X 445 MM X 175 MM (21" X 17-1/2" X 6-7/8") HIGH, OVAL, VITREOUS CHINA, WHITE FINISH, SELF-RIMMING / DROP-IN, SIDE REAR OVERFLOW, FAUCET LEDEGE. PROVIDE BASIN RIM SEALANT. CHICAGO FAUCETS 420 SERIES #420-ABCP SINGLE HANDLE FAUCET, CHROME PLATED FINISH, 2 HOLE, 4" (102 MM) CENTERSET, ECACST CONSTRUCTION LEAD FREE (EQUAL OR LESS THAN 0.25%) CAST BRASS BODY, VOLUME CONTROL AND HOT WATER LIMIT STOP CERAMIC CARTRIDGE, 5.7 LPM (1.5 GPM) PRESSURE COMPENSATING LAMINAR FLOW (NON-AERATING) OUTLET, 131 MM (5-3/16") PROJECTION REACH, LEVER HANDLE. LAWLER #MM-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). PROVIDE TEE, ADAPTORS AND FLEX. COPPER TUBING TO SUIT INSTALLATION. PROVIDE TEMPERED WATER TO HOT SIDE OF FAUCET. MCGUIRE #155WC OFFSET OPEN GRID DRAIN, CAST BRASS ONE PIECE TOP, 17 GA. (1.5 MM) MIN TUBULAR 32 MM (1-1/4") TALLPIECE. SUPPLY PROVIDE FAUCET SUPPLIES, CHROME PLATED FINISH ALL METAL CONSTRUCTION, LIGHT DUTY. RESIDENTIAL ANGLE STOPS, ESCUTCHEONS AND FLEXIBLE METAL RISERS, LOW LEAD. PROVIDE

P-TRAP, CHROME PLATED, ADJUSTABLE ALL METAL CONSTRUCTION, 32 MM (1-1/4") SIZE, AND ESCUTCHEON. MCGUIRE PROWRAP #PW2000VC SANITARY COVERING VANDAL-RESISTANT, FLEXIBLE SEAMLESS MOUNTED CLOSED-CELL PVC RESIN, FORMULATED WITH ANTI-MICROBIAL ADDITIVE TO LIMIT THE GROWTH OF FUNGUS AND BACTERIA, TO EXPOSED PIPING (TO PROTECT AGAINST HEAT/CONTAMINANTS) AS PER LOCAL CODES.

L-2: WALL HUNG BASIN – SINGLE HANDLE FAUCET – BELOW DECK MECHANICAL WATER MIXING VALVE

AMERICAN STANDARD MURRO WITH EVERCLEAN #0954.004C.020/0059.020EC BASIN, 3 HOLES, 4" (102 MM) CENTER, 540 MM X 520 MM X 165 MM (21-1/4" X 20-1/2" X 6-1/2") HIGH, VITREOUS CHINA, WHITE FINISH, SELF-RIMMING / DROP-IN, SIDE REAR OVERFLOW, FAUCET LEDEGE. RECESSED SELF-DRAINING FACET LEDEGE. SEMI-PEDESTAL P-TRAP COVER. CHICAGO FAUCETS 420 SERIES #420-ABCP SINGLE HANDLE FAUCET, CHROME PLATED FINISH, 2 HOLE, 4" (102 MM) CENTERSET, ECACST CONSTRUCTION LEAD FREE (EQUAL OR LESS THAN 0.25%) CAST BRASS BODY, VOLUME CONTROL AND HOT WATER LIMIT STOP CERAMIC CARTRIDGE, 5.7 LPM (1.5 GPM) PRESSURE COMPENSATING LAMINAR FLOW (NON-AERATING) OUTLET, 131 MM (5-3/16") PROJECTION REACH, LEVER HANDLE. LAWLER #MM-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). PROVIDE TEE, ADAPTORS AND FLEX. COPPER TUBING TO SUIT INSTALLATION. PROVIDE TEMPERED WATER TO HOT SIDE OF FAUCET. MCGUIRE #155ASAN OPEN GRID DRAIN, CAST BRASS ONE PIECE TOP, SANIGUARD ANTIMICROBIAL PROTECTION, 17 GA. (1.5 MM) TUBULAR 32 MM (1-1/4") TALLPIECE. MCGUIRE #LFIH70BVB8 FAUCET SUPPLIES, CHROME PLATED FINISH POLISHED BRASS, COMMERCIAL DUTY 1/4 TURN BALL VALVE ANGLE STOPS, 13 MM (1/2") I.D. INLET X 127 MM (5") HORIZONTAL EXTENSION TUBES, COMBINATION V.P. LOOSE KEY HANDLES, ESCUTCHEON AND STAINLESS STEEL BRAIDED FLEXIBLE RISERS. PROVIDE P-TRAP, CHROME PLATED, ADJUSTABLE ALL METAL CONSTRUCTION, LIGHT DUTY RESIDENTIAL ANGLE STOPS, ESCUTCHEONS AND FLEXIBLE METAL RISERS, LOW LEAD. PROVIDE P-TRAP, ADJUSTABLE ALL METAL CONSTRUCTION, 38 MM (1-1/2") SIZE, AND ESCUTCHEON.

MS-1: JANITOR MOP SINK – FLOOR MOUNTED

STERN WILLIAMS #MTB-2436 MOP SINK, 24" X 36" X 10" (610MM X 610MM X 254MM) DEEP, FLOOR MOUNTED, PRECAST TERRAZZO, INTEGRAL DRAIN WITH STRAINER AND 'BP' S.S. BACK SPLASH PANELS. #1-10-VB FAUCET, C.P. 8" (203MM) C.C.K. WALL MOUNTED, SOLID CAST BRASS BODY, WITH CAST METAL HANDLES, VACUUM BREAKER, INTEGRAL STOPS, #1-35 S.S. BRACKET 36" (915MM) HOSE WITH COUPLING. #1-40 S.S. MOP (TRIPLE) HANGER. 'P' TRAP, 3" (76MM).

MS-2: JANITOR MOP SINK – TWO HANDLED FAUCET

STERN WILLIAMS #MTB-2424 SQUARE SERVICE / MOP SINK, 610 MM (24") WIDE X 610 MM (24") LONG X 254 MM (10") HIGH DEEP, FLOOR MOUNTED, TERRAZZO COMPOSED OF PEARL GRAY MARBLE CHIPS AND PORTLAND CEMENT GRIND SMOOTH, SEALED TO RESIST STAIN FINISH, CAST BRASS DRAIN WITH STAINLESS STEEL STRAINER, 3"(75 MM) OUTLET. COMPLETE WITH DRAIN GASKET. CHICAGO FAUCETS #897-RCF WALL MOUNTED TWO HANDLES FAUCET, ROUGH CHROME FINISH, 2 HOLE, 8" (203 MM) CENTERSET, SOLID BRASS EXPOSED BODY, CERAMIC 1/4 TURN OPERATING CARTRIDGE, UNRESTRICTED HOSE END OUTLET, 203 MM (8") PROJECTION SPOUT WITH ATMOSPHERIC VACUUM BREAKER AND BUCKET HOOK, 60 MM (2-3/8") METAL VANDAL PROOF LEVER HANDLES WITH BLUE AND RED INDEX BUTTONS, WALL BRACE SUPPORT. STERN WILLIAMS T-35 HOSE AND WALL HOOK 36" (914 MM) LONG HOSE WITH 3/4" (19 MM) CHROME COUPLING, STAINLESS STEEL WALL BRACKET. STERN WILLIAMS #1-40 MOP HANGER, STAINLESS STEEL #4 FINISH, 24" (610 MM) LONG WITH 3 RUBBER SPRING LOADED CLIPS. STERN WILLIAMS BP BACK SPLASH PANEL 20 GA. (0.9 MM) TYPE 304 STAINLESS STEEL. PROVIDE P-TRAP, SAME MATERIAL AS THE CONNECTING PIPE DRAIN.

S-1: COUNTERTOP MOUNT SINK – SINGLE HANDLE FAUCET – BELOW DECK MECHANICAL WATER MIXING VALVE

FRANKE COMMERCIAL #B06408-1/1 DOUBLE BOWL COUNTERTOP MOUNT SINK, 1 HOLE, 794 MM (31-1/4") WIDE X 521 MM (20-1/2") LONG X 203 MM (8") HIGH DEEP, SPILLWAY, COUNTER MOUNTED, BACKLEGE, GRADE 18-10 20 GA. (0.9 MM) TYPE 302 STAINLESS STEEL, SELF-RIMMING, SATIN FINISH RIM AND BOWLS, MOUNTING KIT PROVIDED, FULLY UNDERCOATED TO REDUCE CONDENSATION AND RESONANCE, FACTORY APPLIED RIM SEAL, 3-1/2" (89 MM) CRUMB CUP WASTE ASSEMBLY WITH 1-1/2" (38 MM) TALLPIECE. CHICAGO FAUCETS #430-ABCP SINGLE HANDLE FAUCET, CHROME PLATED FINISH, 3 HOLE, CENTER HOLE ONLY, ECACST CONSTRUCTION LEAD FREE (EQUAL OR LESS THAN 0.25%) ECACST BRASS CONSTRUCTION, VOLUME CONTROL AND HOT WATER LIMIT STOP CARTRIDGE, 5.7 LPM (1.5 GPM) PRESSURE COMPENSATING LAMINAR FLOW (NON-AERATING) OUTLET, 241 MM (9-1/2") PROJECTION RIGID CAST BRASS SPOOL, SINGLE METAL LEVER HANDLE. LAWLER #MM-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). PROVIDE TEE, ADAPTORS AND FLEX. COPPER TUBING TO SUIT INSTALLATION. PROVIDE TEMPERED WATER TO HOT SIDE OF FAUCET. SUPPLY PROVIDE FAUCET SUPPLIES, CHROME PLATED FINISH ALL METAL CONSTRUCTION, LIGHT DUTY RESIDENTIAL ANGLE STOPS, ESCUTCHEONS AND FLEXIBLE METAL RISERS, LOW LEAD. PROVIDE P-TRAP, ADJUSTABLE ALL METAL CONSTRUCTION, 38 MM (1-1/2") SIZE, AND ESCUTCHEON.

S-2: FLOOR MOUNT SINK – TWO HANDLES FAUCET

FRANKE COMMERCIAL #B2448-1/2 DOUBLE BOWL SCULLERY SINK, 2 HOLE, 8" (203 MM) CENTER, 1305 MM (51-3/8") WIDE X 741 MM (29-3/16") LONG X 889 MM (35") HIGH DEEP, FLOOR MOUNTED, BACKLEGE, GRADE 18-10 20 GA. (0.9 MM) TYPE 304 STAINLESS STEEL, SELF-RIMMING, SATIN FINISH RIM AND BOWLS, MOUNTING KIT PROVIDED, FULLY UNDERCOATED TO REDUCE CONDENSATION AND RESONANCE, FACTORY APPLIED RIM SEAL, 3-1/2" (89 MM) CRUMB CUP WASTE ASSEMBLY WITH 1-1/2" (38 MM) TALLPIECE. CHICAGO FAUCETS #540-LDABCP WALL MOUNTED TWO HANDLES FAUCET, CHROME PLATED FINISH, 2 HOLE, 8" (203 MM) CENTERSET, SOLID BRASS EXPOSED BODY, QUATURN COMPRESSION OPERATING CARTRIDGES, 8.3 LPM (2.2 GPM) PRESSURE COMPENSATING SOFTLO AERATOR OUTLET, 152 MM (6") S TYPE SWING SPOUT, 60 MM (2-3/8") METAL VANDAL PROOF LEVER HANDLES WITH BLUE AND RED INDEX BUTTONS. PROVIDE P-TRAP, ADJUSTABLE ALL METAL CONSTRUCTION, 38 MM (1-1/2") SIZE, AND ESCUTCHEON.

S-3: WALL MOUNT SINK – TWO HANDLES FAUCET

FRANKE COMMERCIAL #WS6713-1/2 SERVICE / MOP SINK, 2 HOLE, 8" (203 MM) CENTER, 508 MM (20") WIDE X 483 MM (19") LONG X 635 MM (25") HIGH DEEP, WALL HUNG, FAUCET ON BACKSPLASH, GRADE 18-10 14 GA. (2.0 MM) TYPE 302 STAINLESS STEEL, POLISHED SATIN FINISH RIM AND BOWLS, RADIOUS COVED BOWLS CORNERS, 89 MM (3-1/2") CRUMB CUP WASTE ASSEMBLY WITH 38 MM (1-1/2") BRASS TALLPIECE. CHICAGO FAUCETS #540-LDABCP WALL MOUNTED TWO HANDLES FAUCET, CHROME PLATED FINISH, 2 HOLE, 8" (203 MM) CENTERSET, SOLID BRASS EXPOSED BODY, QUATURN COMPRESSION OPERATING CARTRIDGES, 8.3 LPM (2.2 GPM) PRESSURE COMPENSATING SOFTLO AERATOR OUTLET, 152 MM (6") S TYPE SWING SPOUT, 60 MM (2-3/8") METAL VANDAL PROOF LEVER HANDLES WITH BLUE AND RED INDEX BUTTONS. PROVIDE P-TRAP, ADJUSTABLE ALL METAL CONSTRUCTION, 38 MM (1-1/2") SIZE, AND ESCUTCHEON. WATTS #CA-321 FIXTURE CARRIER, EPOXY COATED TOP AND BOTTOM UNIVERSAL STEEL HANGER PLATES, HEAVY GAUGE PLATES. 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.

SH-1: SHOWER SYSTEM – THERMOSTATIC SHOWER VALVE

AMERICAN STANDARD BOULEVARD #1431.730.002 THERMOSTATIC SHOWER VALVE TRIM, POLISHED CHROME FINISH, METAL WALL PLATE, 201 MM (7-15/16") DIA TRIM FACE PLATE, TEMPERATURE CONTROL SINGLE LEVER HANDLE. AMERICAN STANDARD CERATHERM #R510 THERMOSTATIC IN-WALL SHOWER ROUGH IN VALVE, CAST BRASS BODY, 13 MM (1/2") NPT INLET(S)/OUTLET(S), 35.96 LPM (9.5 GPM) @ 40 PSI, MAX THERMOSTATIC ELEMENT, HOT LIMIT STOP SET TO A MAXIMUM OF 44.4 °C (111.92 °F), BACK-TO-BACK CAPABILITY. AMERICAN STANDARD #1660.650.002 3-FUNCTION RAIN SHOWERHEAD, POLISHED CHROME FINISH, 9.5 LPM (2.5 GPM) MAX FLOW RATE, PRESSURE COMPENSATING FLOW CONTROL DEVICE, 120 MM (4-3/4") FACE DIA, MASSAGE / GENTLE RAIN / HARD RAIN SPRAY PATTERN OPTIONS, EASY CLEAN SPRAY NOZZLES, BRASS BALL JOINT. AMERICAN STANDARD #1660.240.002 WALL MOUNT SHOWER ARM, BRASS CONSTRUCTION, 140 MM (5-1/2") LONG WITH 45° ANGLE, ROUND ESCUTCHEON, POLISHED CHROME FINISH. AMERICAN STANDARD #1660.500.002 3-FUNCTION HAND SHOWER, 240 MM (9-7/16") LONG, 85 MM (3-3/8") FACE DIA, 9.5 LPM (2.5 GPM) MAX FLOW RATE, 240 MM (9-7/16") LONG, CONVENTIONAL SPRAY/ AERATED FLOW / MASSAGE ACTION SPRAY PATTERN OPTIONS, PRESSURE COMPENSATING FLOW CONTROL DEVICE, EASY CLEAN SPRAY NO