

SPECIFICATIONS (CONT)

ATTEND IMMEDIATELY, AT NO COST TO OWNER, TO ANY AND ALL DEFECTS OCCURRING DURING THE WARRANTY PERIOD.

1.21. OPERATION AND MAINTENANCE DATA

FURNISH THREE SETS OF OPERATING AND MAINTENANCE DATA FOR ALL EQUIPMENTS AND SYSTEMS. DATA SHALL BE ASSEMBLED IN BOOK FORM WITH HARD COVER AND INDEX, IDENTIFY FRONT COVER WITH NAME AND LOCATION OF THE PROJECT, CONSULTING ENGINEER AND CONTRACTOR. PRIOR TO SUBSTANTIAL COMPLETION SUBMIT ONE COPY TO ENGINEER FOR APPROVAL.

1.22. APPROVALS

THE PRICE SUBMITTED FOR THIS CONTRACT SHALL BE BASED ON THE USE OF MATERIALS AND EQUIPMENTS SPECIFIED. IF THIS CONTRACTOR WISHES TO QUOTE ON EQUIVALENT MATERIALS AND EQUIPMENTS, HE MUST QUOTE ON PRODUCTS APPROVED BY THE ENGINEER IN WRITING, AS AN EQUIVALENT TO THE PRODUCT SPECIFIED.

THIS CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY ADDITIONAL WORK OR MATERIALS REQUIRED BY THE MECHANICAL TRADE OR OTHER CONTRACTORS TO ACCOMMODATE APPROVED EQUIVALENT MATERIALS OR EQUIPMENTS. EXTRAS SHALL NOT BE APPROVED TO COVER SUCH WORK.

1.23. VALUATION OF CHANGES

FOR EACH CHANGE, SUBMIT A COMPLETE, ITEMIZED BREAKDOWN OF LABOUR AND MATERIAL AT NET COST, SHOWING QUANTITIES, UNIT COST, HOURS PER EACH ITEM INSTALLED, PROFIT, OVERHEAD ETC.,

ONLY THE NET DIFFERENCE BETWEEN AN EXTRA AND A CREDIT WILL BE SUBJECT TO OVERHEAD AND PROFIT MARK UP.

2.0 PLUMBING

2.1. PIPE AND PIPE FITTINGS

DRAINAGE & VENT PIPING ABOVE GRADE SHALL BE IPEX SYSTEM XFR 15-50 MEETING CSA B181.2 & CAN/ULC S102.2.

ALL BELOW GRADE STORM, SANITARY, DRAINS & VENT STACKS SHALL BE ABS (DWV) PIPING TO CAN/CSA-B181.

DOMESTIC HOT & COLD WATER PIPING ABOVE GRADE AND INSIDE BUILDING SHALL BE TYPE L COPPER.

DOMESTIC HOT & COLD WATER BELOW GRADE SHALL BE PEX MEETING CAN/CSA-B137.10 OR POLYPROPYLENE MEETING CAN/CSA B137.11.

PROVIDE PIPE SLEEVES FOR ALL PIPING PASSING THROUGH FLOOR SLAB. PIPE SLEEVES WILL PROJECT 50 mm ABOVE FINISHED FLOOR LEVEL AND BE CAULKED TO MAKE WATER TIGHT PENETRATION.

PROVIDE CONCRETE THRUST BLOCKS OR APPROVED JOINT RESTRAINT HARNESS, ON UNDERGROUND WATER SUPPLY MAIN AT CHANGES OF PIPE DIRECTIONS, FOR PIPING 2" DIAMETER OR LARGER.

WHERE DISSIMILAR METALS ARE JOINED OR SUPPORTED, THE PIPING SHALL HAVE NON CONDUCTING TYPE CONNECTIONS OR HANGERS TO PREVENT GALVANIC CORROSION.

PROVIDE ALL VALVES AS SHOWN ON THE DRAWINGS OR REQUIRED BY LOCAL BUILDING CODES AND AUTHORITIES HAVING JURISDICTION.

USE BALL VALVES ON ALL DOMESTIC WATER PIPING, 2" OF LESS IN DIAMETER.

PROVIDE BRONZE TYPE BALL VALVES ON MAIN & BRANCH LINES & ISOLATION VALVES FOR EACH PLUMBING FIXTURE SERVED.

PROVIDE TRAP PRIMERS, WATTS 200 OR EQUIVALENT, ON ALL FLOOR DRAINS.

PROVIDE WATER HAMMER ARRESTERS ON GROUP OF PLUMBING FIXTURES, ON TOP OF RISERS & ON ALL EQUIPMENT & DEVICES WITH SOLENOID VALVES SUCH AS DISHWASHER.

CAULK AROUND PLUMBING FIXTURES AT FLOOR & WALL.

PROVIDE ROOF SCUPPERS AT LOCATIONS SHOWN ON ARCHITECTURAL DRAWINGS. ROOF SCUPPERS SHALL BE MINIMUM 3"φ.

PROVIDE ESCUTCHEON ON ALL EXPOSED PIPING PENETRATIONS THROUGH WALL & FLOOR. ESCUTCHEON SHALL BE CHROME OR NICKEL PLATED BRASS OR STAINLESS STEEL.

UPON COMPLETION OF THE INSTALLATION OF THE POTABLE WATER SERVICE, FLUSH, CHLORINATE WITH SODIUM HYDROCHLORIDE TO AWWA C-601 SPECIFICATIONS AND LET STAND FOR 24 HOURS. THOROUGHLY FLUSH AGAIN UNTIL AWWA STANDARD IS MET.

RETAIN AN INDEPENDENT INSPECTION FIRM TO SUPERVISE AND INSPECT THE CHLORINATING AND FLUSHING PROCEDURES AND PERFORM CHEMICAL TEST AS REQUIRED.

ALL PLUMBING VENTS SHALL TERMINATE AT MINIMUM 6" ABOVE ROOF, 6' FROM PROPERTY LINE, 12' FROM OPERABLE WINDOW/DOOR. MINIMUM PIPE SIZE IS 3"φ.

APPROVED FLUE GAS VENTING FOR TYPE BH CLASS II B VENT SYSTEM SHALL BE IPEX SYSTEM 636 SCHEDULE 40 CPVC.

PIPING HANGERS SHALL BE SPACED SO AS TO PREVENT SAG AND PERMIT PROPER DRAINAGE AND SHALL NOT BE SPACED MORE THAN EIGHT FEET APART UNLESS A GREATER SPACE IS DEFINITELY INDICATED ON THE DRAWINGS. A HANGER SHALL BE PLACED WITHIN (1) FOOT OF EACH HORIZONTAL ELBOW.

CLEANOUTS

PROVIDE AND SET CLEANOUTS AT ALL POINTS REQUIRED BY TO CODES AND WHERE INDICATED ON THE DRAWINGS, ALL CLEANOUTS SHALL BE MADE ACCESSIBLE BY EXTENDING BRANCH CONNECTIONS TO FINISHED SURFACE AND FITTING THEM WITH A SUITABLE ACCESS COVER TO ACCEPT FLOOR FINISH.

CLEAN-OUTS IN CONCRETE SHALL BE ADJUSTABLE TYPE FOR LEVEL INSTALLATION.

CLEANOUT IN UNFINISHED AREAS SHALL BE ZURN Z-1500.

CLEANOUT IN FINISHED AREAS SHALL BE ZURN ZN-1508.

GAS PIPING

GAS PIPING SHALL BE CARBON STEEL, SCHEDULE 40, GRADE A, TO ASTM A-53. FITTINGS AND VALVES SHALL BE CGA APPROVED. PAINT ALL OUTSIDE EXPOSED GAS PIPING.

PROVIDE FLEXIBLE METALLIC HOSE CONNECTOR C/W SHUT OFF VALVE ON ALL COMMERCIAL COOKING EQUIPMENTS. FOR EQUIPMENTS INSTALLED ON WHEELS OR ROLLERS, PROVIDE RESTRAINING DEVICE.

PROVIDE PRESSURE REDUCING VALVES REQUIRED FOR COMPATIBILITY BETWEEN EQUIPMENT & BUILDING NATURAL GAS DISTRIBUTION SYSTEM.

2.1. PIPE INSULATION

PROVIDE INSULATION C/W VAPOUR BARRIER TO ALL RAINWATER LEADERS, DOMESTIC HOT & COLD WATER LINES, PIPE INSULATION SHALL BE 1" THICK, EXCEPT FOR PIPE SIZES 3/4" OR SMALLER, USE 1/2" THICK INSULATION.

FINISH INSULATION NEATLY AT HANGERS, SUPPORTS AND OTHER PROTRUSIONS. INSULATE FITTINGS AND VALVES.

PROVIDE INSULATION & COVERS IN ACCORDANCE WITH AUTHORITIES GOVERNING COMBUSTIBILITY AND FIRE PROOFING OF MATERIALS, AS PER MANUFACTURER'S RECOMMENDATIONS & INSTRUCTIONS.

PROVIDE NON COMBUSTIBLE INSULATION, JACKETS & FINISHES HAVING A FLAME SPREAD/SMOKE DEVELOPED RATING OF 25/50 OR LESS, MEETING CAN/ULC S-102 REQUIREMENTS.

INSULATE FITTINGS WITH FABRICATED MITERED OR PREFORMED SECTIONS OF SPECIFIED INSULATION.

3.0 VENTILATION AND AIR CONDITIONING

3.1. DUCTWORK

DUCTWORK SHALL BE GALVANIZED STEEL AND SHALL BE LOCK FORMING QUALITY. ALL DUCTWORK SHALL BE CONSTRUCTED, BRACED, CONNECTED AND JOINTED AS RECOMMENDED IN THE LATEST ISSUE OF ASHRAE GUIDE AND THE DUCT CONSTRUCTION STANDARDS ISSUED BY THE SHEET METAL NATIONAL ASSOCIATION INC. (SMACNA). ALL DUCTWORK SHALL BE INSTALLED TO CONFORM TO THE NATIONAL BUILDING CODE, NFPA PAMPHLETS 90A AND 91 AND IN ACCORDANCE WITH APPLICABLE CODES. THE MINIMUM SHEET METAL THICKNESS FOR DUCTS SHALL BE AS FOLLOWS:

RECTANGULAR DUCTS MAXIMUM WIDTH	GAUGE
UP TO 300mm	0.48mm
300 TO 750mm	0.60mm
751mm TO 1400mm	0.80mm
1401mm TO 2100mm	0.95mm
2200mm AND OVER	1.30mm

ROUND DUCTWORK SHALL BE SUSPENDED BY BAND IRON HANGERS.

RECTANGULAR DUCTWORK SHALL BE SUPPORTED AT MAXIMUM 2400 SPACING.

FLEXIBLE DUCTWORK SHALL BE CORRUGATED ALUMINIUM OR FABRIC SUPPORTED BY HELICALLY WOUND STEEL WIRE OR FLAT STEEL STRIPS WRAPPED WITH 1" THICK FLEXIBLE FIBREGLASS INSULATION, ENCLOSED BY SEAMLESS PLASTIC VAPOUR BARRIER JACKET. FLEXIBLE DUCT SHALL NOT EXCEED (6) FEET IN LENGTH.

ALL DUCTS ASSOCIATED WITH FANS AND OTHER MACHINERY SHALL BE FITTED WITH CANVAS FLEXIBLE CONNECTIONS AT INLET & OUTLET.

KITCHEN EXHAUST DUCTS SHALL BE 16 GAUGE BLACK STEEL WITH LIQUID TIGHT CONTINUOUS WELDED JOINTS AS PER NFPA #96. GALVANIZED STEEL IS NOT APPROVED.

INSTALL APPROVED ACCESS PANEL ON KITCHEN EXHAUST DUCTS AT ALL CHANGES IN DUCT DIRECTIONS.

3.2. FIRE DAMPERS AND FIRE STOP FLAPS

INSTALL FIRE DAMPER AT ALL PENETRATIONS THROUGH FIRE RATED WALLS AND/OR REQUIRED BY BUILDING INSPECTOR AS PER BUILDING CODE.

RIGIDLY SUPPORT FRAME AND SEAL INTO FIRE WALL. PROVIDE ACCESS FOR SERVICING. ACCESS PANELS SHALL BE MINIMUM 12"x12".

PROVIDE UL LISTED AND LABELLED FIRE DAMPERS.

SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF ALL FIRE WALLS, FLOORS & CEILING.

PROVIDE APPROVED FIRE STOPPING & SMOKE SEALS AROUND ALL PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS AND CEILING ASSEMBLIES TO CSA STANDARD CAN4-S115-M85.

FUSIBLE LINKS SHALL BE SET AT 72°C.

3.3. VOLUME DAMPER

INSTALL WHERE SHOWN OR REQUIRED FOR BALANCING, SINGLE BLADE WITH LOCKING QUADRANT.

3.4. AIR OUTLETS

PROVIDE ALL AIR OUTLETS COMPLETE WITH ACCESSORIES AS SPECIFIED HEREIN AND INDICATED ON THE DRAWINGS. COORDINATE LOCATIONS OF ALL AIR OUTLETS WITH LIGHTING. THE POSITIONS INDICATED ARE APPROXIMATE ONLY. THIS CONTRACTOR SHALL CHECK THE LOCATION OF ALL OUTLETS AND SHALL MAKE SUCH ADJUSTMENTS IN POSITION AS NECESSARY TO CONFORM WITH ARCHITECTURAL FEATURES AT NO EXTRA COST TO OWNER

3.5. ACCESS

ACCESS SHALL BE PROVIDED TO ALL NEW & EXISTING MECHANICAL EQUIPMENT, BALANCING DAMPERS, VALVES AND ALL OTHER ITEMS REQUIRING SERVICING ACCESS. ACCESS PANELS SHALL BE FIRE-RATED AS REQUIRED, TO MEET CEILING, WALL & FLOOR RATINGS.

ACCESS PANEL SHALL BE MINIMUM 24"x24" FOR MAN ENTRY AND 8"x8" FOR CLEANOUT ACCESS & HAND ENTRY.

3.6. AIR SYSTEM TESTING, BALANCING AND COMMISSIONING

BALANCE SYSTEM FOR RATED AIR FLOW, ROOM TEMPERATURE CONTROL AND CURRENT DRAW AFTER INSTALLATION IS COMPLETE AND IN FULL WORKING ORDER. ADJUST CONTROL FOR CONTINUOUS AIR CIRCULATION AND MINIMUM ENERGY CONSUMPTION. ADJUST FAN SPEED AS REQUIRED TO OBTAIN SPECIFIC PERFORMANCES. BALANCE SYSTEM FOR OUTSIDE AIR AS GIVEN IN UNIT PERFORMANCE. FAN SHEAVES SHALL BE ADJUSTED OR REPLACED AS REQUIRED, TO ACHIEVE DESIGN AIR FLOW.

THE MECHANICAL CONTRACTOR SHALL HIRE & PAY FOR THE EQUIPMENT MANUFACTURER'S REPRESENTATIVE OR QUALIFIED REFRIGERATION MECHANIC TO STARTUP EACH FAN UNIT, CHECK OUT ALL ASSOCIATED CONTROLS AND SAFETY CUTOUTS. THIS INCLUDES THERMOSTATS, UNIT OUTSIDE AIR DAMPERS, FIRE STARTS, EXHAUST FAN INTERLOCKS ETC.. THIS WORK SHALL BE COMPLETE AND ANY DEFICIENCIES RECTIFIED, PRIOR TO NOTIFYING THE BALANCING CONTRACTOR THAT THE SYSTEMS ARE READY TO BE BALANCED.

COMMISSION ENTIRE MECHANICAL SYSTEM, INCLUDE START UP REPORT IN MAINTENANCE MANUAL.

MECHANICAL SYSTEMS SHALL NOT BE CONSIDERED READY FOR FINAL INSPECTION UNTIL BALANCING RESULTS ARE ACCEPTABLE TO CONSULTANT.

3.7. DUCT INSULATION

ALL COVERINGS SHALL BE APPLIED IN A WORKMANLIKE MANNER TO PRESENT A NEAT AND CLEAN APPEARANCE AT COMPLETION OF THE WORK TO THE SATISFACTION OF THE ENGINEER. INSULATION ASSEMBLIES SHALL COMPLY WITH BRITISH COLUMBIA BUILDING REGULATIONS WITH FLAME SPREAD AND SMOKE DEVELOPED RATINGS NOT EXCEEDING 25 TO 50 RESPECTIVELY.

APPLY 25mm THICK ACOUSTIC INSULATION ON SUPPLY AIR AND RETURN AIR DUCTWORK WHERE SHOWN BY CROSS HATCHING OF DUCTWORK ON THE DRAWING.

APPLY 25mm THICK FLEXIBLE FIBROUS GLASS INSULATION WITH FACTORY APPLIED REINFORCED ALUMINIUM FOIL VAPOUR BARRIER ON SUPPLY AIR DUCTWORK EXCEPT WHERE INTERNAL ACOUSTIC INSULATION IS PROVIDED.

APPLY 3M-615 FIRE BARRIER DUCT WRAP FOR KITCHEN EXHAUST HOOD EXHAUST AIR DUCTS WHERE CLEARANCE TO COMBUSTIBLE CONSTRUCTION CANNOT BE MAINTAINED. INSTALL PER MANUFACTURERS INSTRUCTIONS, TWO LAYERS AS REQUIRED FOR GREASE DUCT LISTINGS.

ALL DUCTWORK ZONES SHALL BE INSULATED WITH 1" THICK INTERNAL DUCT INSULATION, MINIMUM 10' FROM EQUIPMENT.

ALL ADHESIVES, MASTICS, SEALANTS AND COATINGS USED INSIDE THE BUILDING WITH THE INSULATION SHALL BE FIRE RETARDING AND MEET ULC AND NBC STANDARDS WITH A FLAME SPREAD RATING OF NOT OVER 25 & SMOKE DEVELOPED CLASSIFICATION NOT OVER 50.

4.0 CONTROLS

PROVIDE SYSTEM COMPONENTS CONSISTING OF THERMOSTATS, CONTROL VALVES, DAMPERS, OPERATORS, INDICATING DEVICES, INTERFACE EQUIPMENTS AS REQUIRED TO OPERATE MECHANICAL SYSTEM AND TO PERFORM FUNCTIONS SPECIFIED.

CONTROL FOR ECONOMIZER SECTIONS, ALL OUTDOOR & RELIEF DAMPERS TO BE ELECTRIC OR DDC.

PROVIDE PROGRAMMABLE THERMOSTAT WITH LOCKABLE COVER/GUARD.

PROVIDE CURRENT RELAYS ON KITCHEN EXHAUST HOOD FANS TO ENERGIZE MAKE-UP AIR UNIT.

VERIFY LOCATION OF ALL THERMOSTATS BEFORE INSTALLATION. LOCATE THERMOSTAT AT 1500MM ABOVE FLOOR.

TAG AUTOMATIC CONTROLS, ELECTRIC SWITCHES, INSTRUMENTS & RELAYS WITH LAMICOID LABELS WITH 1/2" LETTERS AND KEY WITH CONTROL SWITCHES.

5.0 TURNOVER SEMINAR

AT COMPLETION OF PROJECT, MECHANICAL CONTRACTOR SHALL ORGANIZE AND CONDUCT 1/2 DAY SEMINAR TO INSTRUCT OWNER'S REPRESENTATIVES IN OPERATION AND PREVENTATIVE MAINTENANCE OF EQUIPMENT AND SYSTEMS.

No.	Description	Date
1	ISSUED TO PROJECT ARCHITECT	15.10.30

REVISIONS

- THIS DRAWING IS THE PROPERTY OF A&W FOOD SERVICES OF CANADA INC., & MAY NOT BE USED IN WHOLE OR IN PART FOR ANY PROJECT OTHER THAN THAT DESIGNATED HEREON.
- DO NOT SCALE DRAWINGS - WRITTEN DIMENSIONS TAKE PRECEDENCE.
- CONTRACTOR TO VERIFY JOB SITE DIMENSIONS & CONDITIONS, REPORT ANY & ALL DISCREPANCIES TO THE OWNER & A&W IMMEDIATELY BEFORE PROCEEDING WITH WORK.
- ALL WORK TO CONFORM TO THE LATEST LOCAL BUILDING CODES, BY-LAWS, & NFPA REQUIREMENTS, IN ADDITION TO OTHER REGULATIONS HAVING JURISDICTION.

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Project:
A&W RESTAURANT
"2015 GFMGF CONCEPT DESIGN"
11401 RAILWAY AVE,
NORTH BATTLEFORD, SK

Title:
SPECIFICATIONS

Date Created	February 2016	Prototype Version	2178L (2015 V1.1)
Project Number	14064	Page Number	
Drawn By	RMS	Scale	AS NOTED
Consultant			M0.3