MECHANICAL SPEC'S CONTINUED:

4.0 LIQUID HEAT TRANSFER

.1 GENERAL:

.1 RUN PIPING PARALLEL TO WALLS AS UNOBTRUSIVE AS POSSIBLE.

.2 WHERE PIPE CHANGE IN DIRECTION IS SHOWN TO TAKE UP EXPANSION, SPRING PIPING COLD.

.3 USE WELDED PIPING IN CONCEALED AREAS AND AS A RESULT INACCESSIBLE; I.E. PLASTERED CEILINGS, ETC.

.2 PIPE

.1 SCHEDULE 40 CARBON STEEL, CONTINUOUS WELD OR ELECTRIC RESISTANCE WELD PIPE CONFORMING TO ASTM, A53, GRADE B.

.2 FITTINGS - UNIONS TO BE BRASS TO IRON GROUND JOINT TYPE. SCREWED FITTINGS ON STEEL PIPE TO BE BEST QUALITY 1034 KPA (150 PSI) BLACK MALLEABLE IRON, BANDED. NIPPLES TO SUIT PIPE TYPE. THREAD-O-LETS AND WELD-O-LETS TO BE MANUFACTURED TO ASTM A181, GRADE 1.

.3 INSIDE OF ALL PIPE, FITTINGS, VALVES AND ALL OTHER EQUIPMENT TO BE SMOOTH, CLEAN AND FREE FROM BLISTERS, LOOSE MILL SCALE, SAND AND DIRT.

.4 PIPING UP TO AND INCLUDING 50MM (2") TO BE SCREW JOINTED WITH SCREWED FITTINGS. MAKE SCREW JOINTS IRON TO IRON, WITH GRAPHITE AND OIL FILLER OR JOINT COMPOUND. PIPING OVER 2" TO BE WELDED.

.5 USE LONG ELBOWS. FOR PIPE REDUCTIONS USE ECCENTRIC REDUCING SOCKETS.

.6 PROVIDE UNIONS OR FLANGED CONNECTIONS AT ALL PIECES OF EQUIPMENT.

.7 PROVIDE DIELECTRIC COUPLINGS WHERE PIPES OF DISSIMILAR METALS ARE JOINED.

.8 GRADE UP IN FLOW DIRECTION SO AIR MAY PASS THROUGH CONNECTING RISERS, ETC. MINIMUM GRADE TO BE 1" IN 40'-0".

.9 REVISE EXISTING HOT WATER RADIATION SYSTEM AS INDICATED ON THE DRAWING.

.10 PROVIDE CUTS IN EXISTING PERIMETER RADIATION COVER WHERE NEW PARTITION WALLS JOIN OUTSIDE WALL. CUTS SHALL BE CAREFULLY MADE SUCH THAT COVER BUTTS UP TIGHTLY TO NEW WALL SURFACE. PROVIDE OPENING IN WALL ONLY LARGE ENOUGH FOR RADIATION PIPING TO PASS THROUGH, AND IF FINS ON PIPING OCCURS WHERE NEW WALL IS LOCATED, REMOVE FINS TO 1/2" MAX. DISTANCE ON EACH SIDE OF WALL.

.11 PROVIDE AIR VENTS AT HIGH POINTS OF HOT WATER HEATING SYSTEM.

.12 VALVES

.1 GLOBE VALVES - TOYO FIG. 221, TOYO FIG. 400A

.2 GATE VALVES - TOYO FIG. 293, TOYO FIG. 421E

.3 BUTTERFLY VALVES - KEYSTONE FIG. ARI

.4 BALL VALVES - TOYO FIG. 5044A

.5 RAD. VALVES - TOYO FIG. 252, TOYO FIG. 253

.6 CHECK VALVES - TOYO FIG. 263T. CHEK-RITE MODEL 12-CET

.7 DRAIN VALVES - SEDIMENT FAUCET WITH CAP.

.8 BALANCING VALVES - SARCO BALANCEMASTER FIG. W-PP-G.

.13 STRAINER

.1 STRAINERS SHALL BE ERWEL TYPE 'YS', SCREWED ENDS. SCREENS SHALL BE STAINLESS STEEL WITH 1/8" PERFORATIONS.

5.0 VENTILATION

.1 DUCTWORK

.1 GALVANIZED IRON SCHEDULE:

MAX. SIDE	GAUGES (USSG)	BRACING
UP TO 24"	24	NONE
25 TO 30"	24	1" X 1" X 1/8" ANGLE, 4' FROM JOINT.
31 TO 40"	22	1" X 1" X 1/8" ANGLE, 4' FROM JOINT.
ROUND DUCT UP TO 19"	26	NONE

.2 EXTERIOR DUCTWORK TO BE TWO GAUGES HEAVIER THAN INDICATED IN SCHEDULES NOTED ABOVE. CONSTRUCT DUCT SO THAT TOP OF DUCT SLOPES 1:24 MINIMUM TO ENSURE THAT WATER DOES NOT COLLECT ON TOP.

.3 WHERE DUCT WIDTH EXCEEDS 18" IN LARGEST DIMENSION, STIFFEN BY BREAKING SHEETS DIAGONALLY.

.4 DUCT SIZES SHOWN ARE INSIDE DIMENSIONS. IF DUCTS ARE ACOUSTICALLY LINED, OUTSIDE DUCT SIZE TO BE INCREASED TO SUIT.

.5 DUCTWORK SHALL BE CONSTRUCTED AS RECOMMENDED IN ASHRAE GUIDE.

.6 SEAL ALL JOINTS (NEW AND EXISTING) AIRTIGHT WITH DURO-DYNE S-2 DUCT SEALER OR EQUAL, IN STRICT ACCORDANCE WITH MANUFACTURER'S PUBLISHED RECOMMENDATIONS. PRIOR TO APPLICATION, DUCTWORK TO BE DRY AND FREE OF GREASE, ETC. USE 1/4" BEAD OF MATERIAL ALONG JOINTS. MATERIAL, WHEN DRY, TO HAVE 1/8" DEPTH EXTENDING 1" ON EACH SIDE OF JOINT OR SEAM.

.7 ALL DUCTWORK LOCATED OUTDOORS SHALL HAVE SEAMS AND JOINTS SEALED WITH GREY TREMCO 555 ACRYLIC SEALANT APPLIED WITH GUN AND LEVELLED WITH PUTTY KNIFE. USE MATERIAL IN ACCORDANCE WITH MFG. PRINTED RECOMMENDATIONS.

.8 WHERE DUCTWORK CONFLICTS WITH MECHANICAL PIPING AND IT IS NOT POSSIBLE TO DIVERT DUCTWORK OR PIPING TO STAY WITHIN ALLOWABLE SPACE LIMITATIONS, PROVIDE DUCT EASEMENTS. EASEMENTS NOT REQUIRED ON PIPES 100MM (4") AND SMALLER OUTSIDE DIMENSION, UNLESS THIS EXCEEDS 20% OF DUCT AREA. HANGERS AND STAYS IN DUCTWORK TO BE PARALLEL TO AIR FLOW. IF EASEMENT EXCEEDS 20% OF DUCT AREA, DUCT TO BE SPLIT INTO TWO DUCTS WITH ORIGINAL DUCT AREA BEING MAINTAINED. EASEMENTS TO BE APPROVED BY CONSULTANT BEFORE INSTALLATION.

.9 SIZE ROUND DUCTS, INSTALLED IN PLACE OF RECTANGULAR DUCTS, FROM ASHRAE TABLE OF EQUIVALENT RECTANGULAR AND ROUND DUCTS.

.10 PRIOR TO FABRICATION OF DUCTWORK, CHECK ALL CEILING SPACES AND HEIGHTS FOR CONFLICTION WITH OTHER TRADES.

.11 DUCT AND EQUIPMENT SUPPORTS, HANGERS AND INSERTS

.1 SUPPORT HORIZONTAL DUCTS ON MAXIMUM 8'-0" CENTRES BY NON-PERFORATED GALV. STEEL, RIVETTED STRAP FOR DUCTWORK 36" (EITHER DIMENSION) OR LESS, AND MINIMUM 1" X 1" X 1/8" GALV. IRON PASSING UNDER DUCTS 37" OR OVER (EITHER DIMENSION) WITH 3/8" DIAM. THREADED RODS SUSPENDING ANGLES FROM STRUCTURE.

.2 FOR INSERTS IN EXISTING CONCRETE, USE HILTI H.K.D. STEEL ANCHORS.

.12 MANUAL VOLUME DAMPERS TO BE #16 GA. GALV. STEEL, STIFFENED. DAMPERS HARDWARE TO BE DURO-DYNE KS-145, KS-385 OR KS-12 AS RECOMMENDED BY MANUFACTURER.

.13 FIRE DAMPERS SHALL CONFORM TO MANITOBA FIRE CODE AND LOCAL AUTHORITIES. ALL FIRE DAMPERS TO BE TYPE 'B', I.E. BLADES OUT OF AIR STREAM.

.14 PROVIDE INSULATED ACCESS DOORS AT ALL FIRE DAMPERS, COILS, AIR VALVES AND WHERE NOTED.

MECHANICAL SPEC'S CONTINUED:

.15 DIFFUSERS, GRILLES AND REGISTERS

.1 REFER TO SCHEDULE.

.2 MAU-1 AND MAU-2, MINI MAKE UP AIR UNIT: CSA/UL APPROVED MINI MAKE UP AIR UNIT, MANUFACTURED BY THERMOLEC LTD. C/W FILTER AND ELECTRONIC CONTROLLER.

.1 CONSTRUCTION: FRAME SHALL BE CORROSION-RESISTANT AND MADE OF GALVANIZED STEEL OF SUITABLE GAUGE AS REQUIRED BY CSA/UL

.2 HEATER: HEATING COILS SHALL BE OF HIGH GRADE NICKEL CHROMIUM ALLOY AND SHALL BE INSULATED BY FLOATING CERAMIC BUSHINGS FROM THE GALVANIZED STEEL FRAME. COIL TERMINALS SHALL BE STAINLESS STEEL, INSULATED BY MEANS OF NON -ROTATING CERAMIC BUSHINGS

.3 SAFETY CONTROLS:

.1 HI-LIMIT WITH DAMPER SHUTDOWN AND ALARM

.2 LOW-LIMIT WITH DAMPER SHUTDOWN AND ALARM

.3 HIGH TEMPERATURE AUTOMATIC RESET THERMAL CUTOUT THAT WILL RESET AUTOMATICALLY AFTER COOL OFF

.4 MANUAL RESET

.4 STANDARD BUILT IN COMPONENTS:

.1 FAN SPEED CONTROLLER

.2 DUCT TEMPERATURE SENSOR

.3 FAN

.4 DAMPER

.5 WASHABLE FILTER

.6 BUILT IN ELECTRONIC CONTROLLER (SCR) - ON/OFF COMPONENTS WILL NOT BE ACCEPTED.

.7 CURRENT SENSOR AVAILABLE ON ALL UNITS

.5 AIR FLOW

.1 BUILT IN TEMPERATURE SENSOR CONTROLS THE HEATER PROPORTIONALLY TO MAINTAIN THE PRE-SET AIR TEMPERATURE IN THE DUCT

.2 REVERSIBLE MOUNTING AIR FLOW CAPABILITY

.6 SIZE AND CAPACITY: SEE MAU SCHEDULES

.7 INTERNAL WIRING:

.1 ALL INTERNAL WIRING SHALL TERMINATE ON CLEARLY IDENTIFIED TERMINAL BLOCKS.

.2 A WIRING DIAGRAM SHALL BE INSTALLED ON THE CONTROL BOX COVER

.3 PRIOR TO SHIPPING, ALL UNITS SHALL WITHSTAND TESTS AS REQUIRED BY CSA/UL.

.8 MOUNTING METHOD:

.1 UNIT MUST HAVE INLET/OUTLET COLLARS TO ACCOMMODATE JOB REQUIREMENT

.2 THE UNIT SHALL HAVE HANGER BRACKETS DESIGNED TO BE USED WITH THREADED RODS (BY OTHERS).SPRING ISOLATORS OR OTHER MEANS, MAY BE ADDED TO THE RODS AS AN OPTION TO REDUCE VIBRATION (BY OTHERS)

6.0 TESTING AND BALANCING

.1 AIR SYSTEMS IN THE RENOVATION AREAS SHALL BE BALANCED AND TESTED BY AN INDEPENDENT AIR BALANCE AGENCY (AABC) TO PROVIDE AIR QUANTITIES AS SHOWN. PROVIDE AIR BALANCE REPORT FOR REVIEW BY THE CONSULTANT. SUBMIT TWO COPIES FOR REVIEW UPON COMPLETION. PROVIDE DAMPER STICKER UPON FINAL BALANCING COMPLETION.

.2 AIR BALANCE AGENCY SHALL TEST ALL FIRE DAMPERS AND PROVIDE A REPORT FOR REVIEW BY THE CONTRACT ADMINISTRATOR. SUBMIT TWO COPIES FOR REVIEW UPON COMPLETION. THIS WORK SHALL INCLUDE THE FOLLOWING:

.1 PROVIDE INSPECTION, VERIFICATION AND TESTING OF ALL FIRE DAMPERS, FIRE/SMOKE DAMPERS, SMOKE CONTROL DAMPERS AND CEILING FIRE STOPS AFTER INSTALLATION. COORDINATE THE WORK WITH VENTILATION AND CONTROLS CONTRACTOR(S).

.2 PROVIDE DETAILED VERIFICATION REPORT TO INCLUDE ALL FIRE PROTECTION DEVICES NOTED. REPORT SHALL LIST EACH DEVICE AND VERIFICATION OF ITS OPERATION AND INSTALLATION PER THE REQUIREMENTS SPECIFIED.

.3 PROVIDE TWO COPIES OF COMPLETED DRAFT VERIFICATION REPORT TO CONSULTANT FOR REVIEW.

.4 INCORPORATE COMMENTS OR CHANGES REQUESTED BY CONSULTANT AND PROVIDE SUFFICIENT NUMBER OF COPIES OF FINAL REPORT TO MECHANICAL SUBTRADE FOR INCLUSION IN OPERATING & MAINTENANCE MANUALS.

.5 TESTING SHALL BE PERFORMED AFTER AIR BALANCING HAS BEEN COMPLETED.

.6 TEST SHALL INCLUDE FOLLOWING:

.1 VISUAL INSPECTION OF EACH DEVICE:

.1 CONFIRM APPROPRIATELY RATED DEVICE INSTALLED AND CSA/ULC LABEL AFFIXED AND VISIBLE THROUGH DUCT/CEILING ACCESS DOOR.

.2 CONFIRM APPROPRIATE DUCT AND/OR CEILING ACCESS DOOR PROVIDED TO PERMIT SERVICING OF DEVICE. CONFIRM DUCT ACCESS DOOR OPENABLE WITHOUT INTERFERENCE FROM ADJACENT CEILING, PIPES, DUCTS, ETC.

.3 CONFIRM DEVICE HAS BEEN INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF THE SPECIFICATIONS, MANUFACTURER'S INSTRUCTIONS AND CODES.

.4 CONFIRM PROPER INSTALLATION, CLEARANCES, USE OF PROPER ANGLE FRAMING, USE OF PROPER FASTENERS, USE OF FIRE RATED MATERIAL IN WALL OPENING, LOCATION OF BREAKAWAY JOINTS ETC.

.5 CONFIRM THAT DEVICE HAS NOT BEEN PAINTED.

.2 OPERATIONAL INSPECTION OF EACH DEVICE TO INCLUDE:

.1 MANUAL RELEASE OF FUSIBLE LINK ALLOWING DEVICE TO CLOSE. CONFIRM TIGHT FIT CLOSURE WITHOUT BINDING.

.2 CONFIRM THAT APPROPRIATE FUSIBLE LINK IS INSTALLED.

.3 RE-OPEN DEVICE AND RESET FUSIBLE LINK CONNECTION.

.7 VERIFICATION REPORT SHALL INDICATE GENERAL LOCATION (E.G. ROOM NUMBER OR DESCRIPTION) AND SPECIFIC LOCATION (E.G. NORTH WALL ABOVE CEILING) OF ACCESS DOOR TO DEVICE. REPORT SHALL INCLUDE ITEMIZED VERIFICATION OF FOLLOWING, AS APPROPRIATE, FOR EACH DEVICE:

.1 DEVICE IS FULLY ACCESSIBLE.

.2 DEVICE HAS BEEN PROPERLY INSTALLED

.3 DEVICE HAS BEEN SUCCESSFULLY TESTED.

.4 DEVICE HAS BEEN RESET.

.5 NAME OF TESTER.

.6 DATE DEVICE TESTED SUCCESSFULLY.

NOTES:

No.	REVISION/DESCRIPTION	BY	DATE
0	ISSUED FOR CONSTRUCTION	EAG	OCT 28 2021

SEAL

PROVINCE OF MANITOBA
2021-10-28
X. WU
Member
REGISTERED PROFESSIONAL ENGINEER

DRAWN	EAG	CHECKED		DESIGNED	XYW	APPROVED	
DATE	2021.04.14	USER APPROVAL					

THE CITY OF WINNIPEG
MUNICIPAL ACCOMMODATIONS DEPARTMENT
ASSET AND PROJECT MANAGEMENT DIVISION
3–65 GARRY STREET, R3C 4K4

PROJECT

WINNIPEG FIRE PARAMEDIC SERVICES
FIRE STATION #1
INTERIOR RENOVATIONS
65 ELLEN ST.

SHEET TITLE

MECHANICAL
SPECIFICATIONS
SHEET 2 OF 2

SCALE	PROJECT No:	SHEET No:
AS SHOWN	2019-075	M9

DRAWING SHEET SIZE: A1 (841mm x 594mm) PLOT 1:1

ADDRESS: 65 ELLEN ST. | PROJECT No: 2019-075 | SHEET TITLE: MECHANICAL SPECIFICATIONS | DATE: 2021.04.14 | FILE NAME: 2019075MV0.dwg