FILE NAME: 2018010MV0.dwg\M5
DATE: 2018.07.26
SHEET TITLE: MECHANICAL SPECIFICATIONS
PROJECT No: 2018-010
ADDRESS: 510 MAIN STREET

MECHANICAL SPECIFICATION

1. GENERAL

1.1. VISIT JOBSITE DURING TENDER. DRAWINGS INDICATE APPROXIMATE LOCATION OF EXISTING MECHANICAL EQUIPMENT AND SERVICES. VERIFY EXACT LOCATIONS OF EXISTING MECHANICAL EQUIPMENT AND SERVICES AND ALLOW FOR NECESSARY RELOCATING OF NOTED SERVICES (OR RECONNECTION TO EXISTING SERVICES) TO SUIT NEW CONSTRUCTION.
1.2. ALL WORK SHALL CONFORM TO MANITOBA BUILDING CODE AND LOCAL AUTHORITIES. APPLY FOR, OBTAIN AND PAY FOR ALL NECESSARY PERMITS.
1.3. COORDINATE INSTALLATION WITH ALL RELATED TRADES, INTERIOR DESIGN PLANS AND REFLECTED CEILING PLANS. VERIFY ALL DIMENSIONS AND LOCATIONS OF EXISTING EQUIPMENT AND SERVICES PRIOR TO PROCEEDING WITH WORK.
1.4. SUBMIT SHOP DRAWINGS FOR ALL EQUIPMENT TO CONTRACT ADMINISTRATOR.
1.5. PROVIDE ONE YEAR GUARANTEE FOR ALL EQUIPMENT.
1.6. ALL CONNECTIONS TO EXISTING BUILDING MECHANICAL SERVICES SHALL BE COORDINATED WITH THE CONTRACT ADMINISTRATOR.
1.7. ALL NECESSARY CUTTING AND PATCHING SHALL BE PERFORMED BY CONTRACTOR. MECHANICAL SUBCONTRACTOR TO CO-ORDINATE ON SITE.
1.8. REFER TO INSTRUCTIONS TO BIDDERS FOR REQUIREMENTS REGARDING PROJECT PHASING, WORKING HOURS, SHUT-DOWN PROCEDURES, ACCESS, ETC.
1.9. PROVIDE MILCOR ACCESS DOORS IN DRYWALL CEILINGS AND WALLS FOR ACCESS TO MECHANICAL EQUIPMENT. MINIMUM SIZE 24" X 18".
1.10. PRIOR TO DRILLING HOLES AND/OR OPENINGS IN EXISTING STRUCTURE, CONTRACTOR SHALL RETAIN SERVICES OF NATIONAL TESTING LABORATORIES LIMITED TO LOCATE AND MARK ALL STRUCTURAL REINFORCING STEEL LOCATED IN AREA WHERE CUTTING OR DRILLING IS PROPOSED. AT NO TIME SHALL REINFORCING STEEL BE CUT WITHOUT PRIOR WRITTEN APPROVAL FROM STRUCTURAL ENGINEER QUALIFIED AND LICENSED TO PRACTICE IN PROVINCE OF MANITOBA. NO HOLES OR OPENINGS WILL BE PERMITTED WITHIN AREA OF STRUCTURAL DROP PANELS LOCATED AT COLUMNS.
1.11. ALL INTERIOR SPACE POWER HAMMERING, DRILLING AND OTHER NOISY WORK SHALL BE PERFORMED BETWEEN HOURS OF 6:00 P.M. AND 8:00 A.M.
1.12. BIDDING QUOTATIONS SHALL BE BASED ON THE USE OF SPECIFIED EQUIPMENT, UNLESS ACCEPTANCE FOR THE USE OF EQUAL MANUFACTURERS IS OBTAINED FROM THE CONTRACT ADMINISTRATOR PRIOR TO BIDDING SUBMISSION.
1.13. FURNISH TO THE CONTRACT ADMINISTRATOR THREE (3) COMPLETE SETS OF MANUFACTURER'S OPERATING AND MAINTENANCE INSTRUCTIONS FOR ALL EQUIPMENT REQUIRING MAINTENANCE. REVIEW INSTRUCTIONS WITH CONTRACT ADMINISTRATOR TO ENSURE A THOROUGH UNDERSTANDING OF THE EQUIPMENT AND ITS OPERATION.
1.14. PROVIDE A MARK-UP OF THE CONTRACT DRAWINGS FOR RECORD "AS-BUILT" DRAWINGS, REVISED AS REQUIRED TO SHOW ANY CHANGES FROM THAT ORIGINALLY SHOWN.
1.15. PROVIDE AS-BUILT DRAWING IN AUTOCAD FORMAT, COMPLETE WITH DISK PAID FOR BY MECHANICAL SUBCONTRACTOR.
1.16. ALL DUCTWORK AND PIPING TO BE INSTALLED STRAIGHT, PARALLEL TO THE BUILDING WALLS.
1.17. PIPE HANGERS SHALL BE GRINNELL FIG. 65 FOR STEEL PIPE AND FIG. CT65 FOR COPPER PIPE, ALL WITH FIG. 140 THREADED ROD ATTACHED TO FIG. 117 EXPANSION CASE SET IN HOLES DRILLED IN CONCRETE, OR ATTACHED TO FIG. 225 OR 227 CLAMP ATTACHED TO JOISTS OR BEAMS.
1.18. ALL EXTRANEOUS MATERIAL IN CEILING SPACE UNRELATED TO NEW AND REVISED WORK SHOWN, INCLUDING PIPING, CONTROL TUBING, DUCTWORK, ETC. SHALL BE REMOVED.
1.19. PROVIDE FIRESTOPPING FOR ALL OPENINGS IN FIRE SEPARATIONS FOR PASSAGE OF PIPES, DUCTS, ETC. TO MAINTAIN INTEGRITY OF FIRE SEPARATIONS AS PER MANUFACTURER'S PUBLISHED RECOMMENDATIONS.
1.20. INSTALLATION OF WORK SHALL BE COORDINATED WITH THE PRIME CONTRACTOR AND SHALL BE SCHEDULED SO AS NOT TO ENDANGER OR DISTURB THE USERS OF THE BUILDING. SHUTDOWN OF EXISTING BUILDING SYSTEMS SHALL BE COORDINATED WITH THE CONTRACT ADMINISTRATOR.
1.21. ALL WIRING FOR EQUIPMENT SPECIFIED HEREIN SHALL BE BY THE ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED.
1.22. CONTRACTOR SHALL REVIEW ALL EQUIPMENT REQUIRING ELECTRICAL HOOK-UP WITH ELECTRICAL CONTRACTOR AND ELECTRICAL DRAWINGS PRIOR TO ORDERING EQUIPMENT. ENSURE PROPER ELECTRICAL CHARACTERISTICS ARE DETERMINED FOR ALL AFFECTED AND RELATED WORK.
1.23. PRIOR TO INSTALLATION OF THE CEILING, NOTIFY THE CONTRACT ADMINISTRATOR AND ARRANGE FOR A FINAL REVIEW OF THE WORK. FOR UNDERTAKING THIS REVIEW, THE FOLLOWING SHALL BE COMPLETED:
  1.23.1. ALL SYSTEMS TO BE FULLY OPERATIONAL, AS-BUILT DRAWINGS SUPPLIED AND OPERATING AND MAINTENANCE MANUALS SUBMITTED. TWO (2) DAYS NOTIFICATION (IN WRITING) IS REQUIRED TO BE GIVEN TO THE CONTRACT ADMINISTRATORS PRIOR TO REVIEWS BEING UNDERTAKEN.
  1.23.2. ALL DEFICIENCIES SHALL BE COMPLETED WITHIN TWO (2) WEEKS OF AN AGREED PERIOD OF TIME AFTER FINAL REVIEW AND A LETTER SHALL BE SUBMITTED TO THE CONTRACT ADMINISTRATOR WITHIN THAT TIME ADVISING OF SUCH. FAILURE TO COMPLETE WORK MAY RESULT IN WORK BEING DONE BY THE CITY AND THE COSTS DEDUCTED FROM FINAL PAYMENT.
1.24. WHERE MECHANICAL SERVICES ARE CONCEALED WITHIN WALLS, FLOORS OR CEILINGS AND CANNOT BE VISUALLY IDENTIFIED, PROVIDE ELECTRONIC SCANNING DEVICES OR OTHER APPROVED MEANS TO LOCATE AND IDENTIFY CONCEALED SERVICES PRIOR TO WORK START. MAKE GOOD ANY DAMAGE TO EXISTING MECHANICAL SERVICES AT NO COST TO THE CONTRACT.
1.25. SILICONE ALL FIXTURES TO ADJACENT WALLS, FLOORS OR COUNTERTOPS ETC.

2. INSULATION

2.1. INSULATE ALL DOMESTIC WATER PIPING WITH 1/2" FIBERGLAS 7 LB. DENSITY, PIPE INSULATION WITH ASJ AS PER MFG. RECOMMENDATIONS. SEAL ALL BREAKS, JOINTS WITH ASJ TAPE.
2.2. INSULATE ALL HEATING PIPING AND ALL CHILLED WATER PIPING WITH 1" FIBERGLAS 5 1/2 LB. DENSITY PIPING INSULATION WITH ASJ AS PER MANF. RECOMMENDATIONS. SEAL ALL BREAKS, JOINTS WITH ASJ TAPE.
2.3. ALL COLD PIPING INSULATION SHALL BE C/W WITH VAPOUR BARRIER.
2.4. ACOUSTIC INSULATION ON SUPPLY DUCTWORK, WHERE SHOWN ON THE DRAWINGS, SHALL BE 1" THICK FIBREGLASS RIGID COATED DUCT LINER. THE DUCT SIZES SHOWN ON THE DRAWING REPRESENTS THE FINAL INTERNAL SIZE REQUIRED. IMPALE ON WELDED STUDS SPACED 16" O.C. PAINT BREAKS AND JOINTS WITH BF-60-30N FIRE RETARDANT MASTIC. COAT EXPOSED EDGES WITH ADHESIVE. PROJECTING FASTENERS AND ENDS CUT OFF VERTICALLY FLUSH.
2.5. INSULATION ON PIPING IN FINISHED AREAS TO BE RECANVASSED OR COVERED WITH WHITE P.V.C. INSULATION COVER.
2.6. INSULATE CONDITIONED AIR DUCTWORK WITH 1" FIBERGLAS RFFRK FLEXIBLE OR RIGID DUCT INSULATION INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

3. PLUMBING

3.1. PROVIDE LABOUR, MATERIAL, EQUIPMENT AND SERVICES NECESSARY FOR AND INCIDENTAL TO SUPPLY AND INSTALLATION OF SYSTEMS SHOWN ON DRAWINGS. GENERALLY THIS SHALL INCLUDE:
  3.1.1. DRAINAGE SYSTEM
  3.1.2. WATER SUPPLY SYSTEM
  3.1.3. VENT SYSTEM
3.2. DRAINAGE SYSTEMS
  3.2.1. PROVIDE COMPLETE SYSTEMS OF DRAINAGE AND VENTING TO SERVE ALL FIXTURES, EQUIPMENT, ETC. AS NOTED ON DRAWINGS AND IN ACCORDANCE WITH LOCAL CODES.
  3.2.2. ALL DRAINAGE PIPING TO W.C.'S SHALL BE 4" DIAM. MIN.
  3.2.3. CLEANOUTS:
    3.2.3.1. INSTALL CLEANOUTS AT ALL CHANGES OF DIRECTION, AT INTERVALS OF NOT OVER FIFTY FEET (50) IN HORIZONTAL RUNS, AT ALL POINTS WHERE OBSTRUCTIONS MIGHT BE FORMED AND AT ALL POINTS REQUIRED BY PLUMBING REGULATIONS OR SHOWN ON DRAWINGS.
3.3. WATER SUPPLY
  3.3.1. PROVIDE COMPLETE SYSTEM OF WATER SUPPLY PIPING AS NOTED ON DRAWINGS.
  3.3.2. GRADE HORIZONTAL RUNS OF PIPING TO DRAIN THROUGH RISERS.
  3.3.3. INSTALL DRAIN VALVES IN MAINS FOR COMPLETE DRAINAGE.
  3.3.4. INSTALL DIELECTRIC INSULATING COUPLINGS BETWEEN ALL PIPES CONSTRUCTED OF DISSIMILAR METALS.
  3.3.5. PROVIDE SHOCK ABSORBER UPSTREAM OF EVERY SOLENOID VALVE OR QUICK CLOSING VALVE. THIS APPLIES ALSO TO NIC EQUIPMENT HAVING SOLENOID VALVES SUPPLIED BY OTHER DIVISIONS, SUCH AS WASHING MACHINES, DISHWASHERS, ETC. REVIEW PROPOSED LOCATION AND TYPE OF SHOCK ABSORBERS WITH CONTRACT ADMINISTRATOR PRIOR TO INSTALLATION.
3.4. INSTALL BACKFLOW PREVENTION DEVICES IN ACCORDANCE WITH CITY OF WINNIPEG BACKFLOW PREVENTION BY-LAW. INCLUDE COSTS OF ALL TESTING.
3.5. DRAIN AND VENT PIPING
  3.5.1. PIPE AND FITTINGS SHALL CONFORM TO STANDARDS LISTED IN APPLICABLE BUILDING CODE (LATEST REVISION).
  3.5.2. ALL CAST IRON SOIL PIPE SHALL BE CLASS 4000.
  3.5.3. NO PLASTIC, ASBESTOS OR ALUMINUM PIPE WILL BE ACCEPTED UNLESS SPECIFICALLY CALLED FOR.
3.6. WATER PIPING
  3.6.1. PIPE - TYPE 'L' THIRD PARTY CERTIFIED HARD COPPER TUBE.
  3.6.2. FITTINGS - WROT OR CAST SOLDER JOINT.
3.7. BALL VALVES
  3.7.1. TOYO FIG. 5049A.
3.8. CLEANOUTS
  3.8.1. CLEANOUTS IN CAST IRON SOIL PIPE SHALL CONSIST OF CAST IRON FERRULE WITH BRASS PLUG HAVING RAISED HEAD.
  3.8.2. CLEANOUTS IN COPPER DRAINAGE TUBE SHALL BE BRASS SCREWED PLUGS WITH RAISED HEAD.
3.9. CLEANOUT ACCESS COVER
  3.9.1. ZURN ZANB-1460-13-7" DIAM. POLISHED NICKEL BRONZE FRAME AND COVER. CLEANOUT ACCESS COVERS IN AREAS HAVING FLOOR FINISH SUCH AS V.A. TILE, TERRAZZO, OR CARPET, SHALL BE SELECTED TO SUIT FINISH. COOPERATE WITH APPROPRIATE TRADES TO APPLY FINISH TO CLEANOUT COVERS SO THAT THEY WILL BE FLUSH WITH FLOOR, INCONSPICUOUS, AND ACCESSIBLE.
  3.9.2. CLEANOUTS IN WALLS SHALL BE LOCATED ADJACENT TO AN ACCESS DOOR, OR SHALL HAVE SUITABLY FINISHED ACCESS COVER FLUSH WITH WALL SO AS TO PRESENT NEAT FINISHED APPEARANCE AND LEAVE CLEANOUT EASILY ACCESSIBLE.
3.10. JOINTING
  3.10.1. MAKE ALL JOINTS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
  3.10.2. BRACE FITTINGS NECESSARY TO PREVENT JOINTS FROM COMING APART UNDER PRESSURE.
  3.10.3. MAKE JOINTS IN DOMESTIC WATER AND DRAINAGE SYSTEMS WITH SOLDER CONTAINING NO LEAD. SOLDER MATERIAL SHALL BE SILVERBRITE 100 OR EQUAL CONSISTING OF COMBINATION OF TIN, COPPER AND SILVER.
3.11. CLEANING AND FLUSHING
  3.11.1. ON COMPLETION, FLUSH OUT PIPING SYSTEM TO REMOVE ANY FOREIGN MATERIAL IN PIPING.
3.12. TESTING
  3.12.1. PRESSURE TEST ALL PIPING SYSTEMS AS FOLLOWS:
    3.12.1.1. PLUMBING SYSTEM - IN ACCORDANCE WITH LOCAL REGULATIONS.
    3.12.1.2. WATER SUPPLY PIPING - TEST WITH WATER TO 100 PSIG AT HIGHEST POINT OF SYSTEM. MAINTAIN PRESSURE WITHOUT LOSS FOR 4 HOURS.
    3.12.1.3. CONTRACT ADMINISTRATOR'S REPRESENTATIVE SHALL WITNESS TESTS. GIVE 48 HOURS NOTICE IN ADVANCE OF TESTS.
    3.12.1.4. NATURAL GAS SYSTEM - IN ACCORDANCE WITH LOCAL REGULATIONS.
3.13. HANGERS
  3.13.1. WATER - GRINNELL CT65 PLATED CLEVIS.
  3.13.2. DRAINAGE - GRINNELL 260 CLEVIS.
  3.13.3. INSTALL HANGERS 6 FT. ON CENTRE FOR PIPES UP TO 1", 8 FT. ON CENTRE FOR PIPES 1 1/4" AND LARGER.
3.14. FIXTURES
  3.14.1. S-1 SINK
    3.14.1.1. KINDRED QSL2020/7, ONE COMPARTMENT SELF RIMMING WITH LEDGE, 3-1/2" BASKET STRAINER AND TAILPIECE ASSEMBLY.
    3.14.1.2. FAUCET: KOHLER MODEL K-15171-XP. THE SINGLE-CONTROL KITCHEN SINK FAUCET SHALL BE OF METAL CONSTRUCTION. PRODUCT SHALL HAVE A MAXIMUM FLOW RATE OF 2.2 GPM WITH LOWER FLOW VANDAL RESISTANT AERATOR (0.5GPM). PRODUCT SHALL FEATURE A ONE-PIECE, SELF-CONTAINED CERAMIC DISC VALVE, WHICH ALLOWS BOTH VOLUME AND TEMPERATURE CONTROL. PRODUCT SHALL FEATURE TEMPERATURE MEMORY, ALLOWING THE FAUCET TO BE TURNED ON AND OFF AT ANY TEMPERATURE SETTING. PRODUCT SHALL FEATURE A HIGH-TEMPERATURE LIMIT STOP SETTING FOR ADDED SAFETY AND GROUND JOINT CONNECTIONS. PRODUCT SHALL BE AVAILABLE WITH AN ADA COMPLIANT LEVER HANDLE. PRODUCT SHALL BE AVAILABLE WITH AN 8-1/2" (21.6 CM) SWING SPOUT REACH. THE AERATOR SHALL BE A 0.5 GPM COMPENSATING SPRAY INSERT. AERATOR SHALL BE KOHLER MODEL 18036-CP.

4. FIRE PROTECTION

4.1. PROVIDE LABOUR, MATERIAL, PLANT, TOOLS, EQUIPMENT AND SERVICES NECESSARY TO COMPLETION OF SPRINKLER SYSTEM AS SHOWN ON DRAWINGS.
  4.1.1. COMPLY WITH ALL REQUIREMENTS OF THE CITY'S FIRE INSURANCE UNDERWRITER AND AUTHORITIES HAVING JURISDICTION. DESIGN AND INSTALLATION SHALL COMPLY WITH THE MOST RECENT EDITION OF NFPA #13 AND ALL APPLICABLE PROVINCIAL AND LOCAL LAWS AND ORDINANCES.
  4.1.2. SUBMIT SHOP DRAWINGS TO THE CITY AND AUTHORITY HAVING JURISDICTION AND OBTAIN APPROVAL PRIOR TO INSTALLATION. SHOP DRAWINGS SHALL SHOW NEW PIPING AND SPRINKLER HEADS, CEILING CONSTRUCTION, HEIGHTS, LIGHTS, MECHANICAL DIFFUSERS, AND CEILING DROPS.
4.2. MATERIALS
  4.2.1. ALL MATERIALS SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF NFPA #13 - SPRINKLER SYSTEMS.
  4.2.2. NO PLASTIC PIPING, SNAPLET, F.I.T. HOOKER, OR SIMILAR TYPE FITTINGS WILL BE PERMITTED.
  4.2.3. INSTALLATION
    4.2.3.1. RUN ALL SPRINKLER PIPING AS HIGH AS POSSIBLE ABOVE SUSPENDED CEILING SYSTEM. MAINTAIN MINIMUM OF 6" CLEARANCE BETWEEN SUSPENDED CEILING SYSTEM AND MAIN AND/OR BRANCH PIPING RUNS.
    4.2.3.2. WHERE REQUIRED MAKE ARRANGEMENTS WITH VENTILATION SUB-TRADE TO PROVIDE EASEMENTS IN DUCTWORK TO FACILITATE INSTALLATION OF SPRINKLER PIPING. COORDINATE INSTALLATION WITH VENTILATION SUB-TRADE, AND PAY COSTS.
    4.2.3.3. ADJUST, RELOCATE AND ADD SPRINKLER HEADS AND PIPING TO SUIT PARTITION LAYOUT IN ACCORDANCE WITH NFPA 13, AND CITY OF WINNIPEG REQUIREMENTS.
    4.2.3.4. THE SPRINKLER CONTRACTOR SHALL VISIT SITE TO CONFIRM SPRINKLER HEAD AND REQUIREMENTS PRIOR TO PRICE SUBMITTAL. NO EXTRA COST SHALL BE PAID FOR WORK DONE THAT HAS TO BE RECTIFIED AS A RESULT OF THE CONTRACTOR'S FAILURE TO EITHER COORDINATE THE WORK OR IDENTIFY ANY POTENTIAL PROBLEMS PRIOR TO INSTALLATION.
    4.2.3.5. NEW SPRINKLER HEADS SHALL BE ULC APPROVED.
    4.2.3.6. NOTIFY CITY PRIOR TO DRAINING AND/OR REFILLING SPRINKLER SYSTEM. DISCONNECT EXISTING SYSTEM FROM MAIN SYSTEM, PERFORM THE WORK, TEST, AND RECONNECT TO THE MAIN SYSTEM.

5. VENTILATION

5.1. DUCTWORK
  5.1.1. 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

  5.1.2. WHERE DUCT WIDTH EXCEEDS 18" IN LARGEST DIMENSION, STIFFEN BY BREAKING SHEETS DIAGONALLY.
  5.1.3. DUCT SIZES SHOWN ARE INSIDE DIMENSIONS. IF DUCTS ARE ACOUSTICALLY LINED, OUTSIDE DUCT SIZE TO BE INCREASED TO SUIT.
  5.1.4. DUCTWORK SHALL BE CONSTRUCTED AS RECOMMENDED IN ASHRAE GUIDE.
  5.1.5. 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.
  5.1.6. SIZE ROUND DUCTS, INSTALLED IN PLACE OF RECTANGULAR DUCTS, FROM ASHRAE TABLE OF EQUIVALENT RECTANGULAR AND ROUND DUCTS.
  5.1.7. PRIOR TO FABRICATION OF DUCTWORK, CHECK ALL CEILING SPACES AND HEIGHTS FOR CONFLICTION WITH OTHER TRADES.
  5.1.8. DUCT AND EQUIPMENT SUPPORTS, HANGERS AND INSERTS
    5.1.8.1. 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.
    5.1.8.2. FOR INSERTS IN EXISTING CONCRETE, USE HILTI H.K.D. STEEL ANCHORS.
  5.1.9. 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.
  5.1.10. 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.
  5.1.11. PROVIDE INSULATED ACCESS DOORS AT ALL FIRE DAMPERS, COILS, AIR VALVES AND WHERE NOTED.
  5.1.12. DIFFUSERS, GRILLES AND REGISTERS
    5.1.12.1. REFER TO SCHEDULE.
  5.1.13. PROVIDE FOR TEMPORARY FILTERS AT EXISTING MAIN RETURN AIR DUCTS DURING CONSTRUCTION ON EACH FLOOR BEING RENOVATED. REPLACE FILTERS REGULARLY DURING THE CONSTRUCTION PERIOD. REMOVE TEMPORARY FILTERS AT END OF CONSTRUCTION AND PRIOR TO AIR BALANCING.
  5.1.14. NEW DUAL DUCT VAV TERMINAL BOXES SHALL BE SET FOR MAXIMUM CFM QUANTITY OF CONNECTED DIFFUSERS. MINIMUM CFM QUANTITY FOR BOTH INTERIOR AND EXTERIOR ZONE BOXES SHALL BE SET AT 30% OF MAXIMUM CFM QUANTITY.
  5.1.15. NEW DUAL DUCT VAV TERMINAL BOXES CONTROL SEQUENCE- ON A RISE IN SPACE TEMPERATURE, THE THERMOSTAT OUTPUT INCREASES WHICH WILL REDUCE THE FLOW OF WARM AIR FROM THE PRE-SELECTED MAXIMUM SETTING. AS THE SPACE TEMPERATURE INCREASE, THE HOT DECK AIRFLOW DECREASES UNTIL THE MINIMUM PRE-SELECTED SETTING IS REACHED. ON A FURTHER INCREASE IN SPACE IN SPACE TEMPERATURE, THE HOT DECK CLOSES AND THE COLD DECK AIR FLOW INCREASES TO THE PRE-SELECTED MAXIMUM COLD DECK SETTING. AIR FLOW IS HELD CONSTANT REGARDLESS OF CHANGES IN DUCT STATIC PRESSURE. NORMALLY OPEN COLD DECK AND NORMALLY CLOSED HOT DECK: ON FAILURE OF THE MAIN AIR SUPPLY THE COLD DECK WILL FAIL OPEN AND THE HOT DECK DAMPER WILL FAIL CLOSED.
  5.1.16. FLEXIBLE AIR DUCTS SHALL CONFORM TO UL-181, NFPA 90A AND SHALL HAVE A FIRE RATING TO SUIT WALL RATING. USE MAXIMUM OF 18" LENGTH STRAIGHT RUN TO EACH BOOT CONNECTION.
  5.1.17. CLEANING OF THE VENTILATION SYSTEM
    5.1.17.1. CLEAN ALL THE EXISTING AND NEW DUCTWORK IN THE RENOVATION AREAS.
5.2. CLEAN ALL MAIN AND BRANCH DUCTS WHERE ENTRY BY WORKERS IS NOT POSSIBLE, USING AIR SKIPPER INSERTED INTO DUCT AT INTERVALS NOT EXEEDING 25 FEET.
5.3. ENSURE EACH BRANCH LINE IS CLEANED FROM EACH DIFFUSER OR GRILLE, ALONG ENTIRE LENGTH OF THE DUCT BACK TO THE MAIN INCLUSIVE.
5.4. PORTABLE VACCUM SYSTEM MAY ONLY BE USED ON DUCTING WITH A CIRCUFERENCE OF LESS THAN 48 IN; USE TRUCK MOUNTED VACUUM SYSTEM ON DUCTING WITH A LARGER CIRCUMFERENCE.
5.5. CLEAN, DUST AND FILM BUILT-UP FROM ALL SURFACESOF BUILDING'S VENTILATION SYSTEM WHICH COME INTO CONTACT WITH CIRCULATING AIR.

6. TESTING AND BALANCING

6.1. AIR SYSTEMS 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 CONTRACT ADMINISTRATOR. SUBMIT TWO COPIES FOR REVIEW UPON COMPLETION. PROVIDE DAMPER STICKER UPON FINAL BALANCING COMPLETION.
6.2. 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:
  6.2.1. 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).
  6.2.2. 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.
  6.2.3. PROVIDE TWO COPIES OF COMPLETED DRAFT VERIFICATION REPORT TO CONTRACT ADMINISTRATOR FOR REVIEW.
  6.2.4. INCORPORATE COMMENTS OR CHANGES REQUESTED BY CONTRACT ADMINISTRATOR AND PROVIDE SUFFICIENT NUMBER OF COPIES OF FINAL REPORT TO MECHANICAL SUBTRADE FOR INCLUSION IN OPERATING & MAINTENANCE MANUALS.
  6.2.5. TESTING SHALL BE PERFORMED AFTER AIR BALANCING HAS BEEN COMPLETED.
  6.2.6. TEST SHALL INCLUDE FOLLOWING:
    6.2.6.1. VISUAL INSPECTION OF EACH DEVICE:
      6.2.6.1.1. CONFIRM APPROPRIATELY RATED DEVICE INSTALLED AND CSA/ULC LABEL AFFIXED AND VISIBLE THROUGH DUCT/CEILING ACCESS DOOR.
      6.2.6.1.2. 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.
      6.2.6.1.3. CONFIRM DEVICE HAS BEEN INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF THE SPECIFICATIONS, MANUFACTURER'S INSTRUCTIONS AND CODES.
      6.2.6.1.4. 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.
      6.2.6.1.5. CONFIRM THAT DEVICE HAS NOT BEEN PAINTED.
    6.2.6.2. OPERATIONAL INSPECTION OF EACH DEVICE TO INCLUDE:
      6.2.6.2.1. MANUAL RELEASE OF FUSIBLE LINK ALLOWING DEVICE TO CLOSE. CONFIRM TIGHT FIT CLOSURE WITHOUT BINDING.
      6.2.6.2.2. CONFIRM THAT APPROPRIATE FUSIBLE LINK IS INSTALLED.
      6.2.6.2.3. RE-OPEN DEVICE AND RESET FUSIBLE LINK CONNECTION.
  6.2.7. 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:
    6.2.7.1. DEVICE IS FULLY ACCESSIBLE.
    6.2.7.2. DEVICE HAS BEEN PROPERLY INSTALLED
    6.2.7.3. DEVICE HAS BEEN SUCCESSFULLY TESTED.
    6.2.7.4. DEVICE HAS BEEN RESET.
    6.2.7.5. NAME OF TESTER.
    6.2.7.6. DATE DEVICE TESTED SUCCESSFULLY.

7. CONTROLS

7.1. PROVIDE ALL LABOUR, MATERIAL, PLANT, TOOLS, EQUIPMENT, AND SERVICES NECESSARY AND REASONABLY INCIDENTAL TO COMPLETION OF TEMPERATURE CONTROLS SYSTEMS AS NOTED HEREIN AND/OR SHOWN ON DRAWINGS.
7.2. PROVIDE COMPLETE DDC SYSTEM OF JOHNSON CONTROLS METASYS FOR SYSTEMS INDICATED.
7.3. ALL NEW WORK RELATED TO NEW AND EXISTING CONTROLS SHALL BE PERFORMED BY A QUALIFIED CONTROLS SUBCONTRACTOR.
7.4. NEW THERMOSTATS WILL BE PROVIDED AND INSTALLED BY CONTROL CONTRACTOR.
7.5. ALL NEW CONTROLS WILL COMMUNICATE USING MSTP AND CONTINUE FROM THE LAST EXISTING MSTP FIELD CONTROLLER AND ADHERE TO BACNET STANDARD PROTOCOL SSPC-135, CLAUSE 9.
7.6. PROVIDE ALL NECESSARY DAMPERS, DAMPER OPERATORS, VALVES, VALVE OPERATORS, CONTROLLERS, INDICATION, RELAYS, CUMULATORS, POSITIONERS, PNEUMATIC ELECTRIC SWITCHES, SOLENOID VALVES, SWITCHES, CLOCKS, TRANSFORMERS, ETC., TO MAKE COMPLETE AND OPERABLE SYSTEM.
7.7. MECHANICAL SUB-CONTRACTOR TO DISTRIBUTE AND MOUNT ALL PIPE CONNECTED EQUIPMENT.
7.8. MECHANICAL CONTRACTOR TO DISTRIBUTE AND MOUNT ALL MOTORIZED DAMPERS IN THEIR RESPECTIVE LOCATIONS.
7.9. ELECTRICAL TO SUPPLY AND INSTALL ALL CONDUIT, WIRE AND CONNECTIONS FROM DISTRIBUTION PANELS TO LINE SIDE OF MAGNETIC STARTERS AND THERMAL OVERLOAD SWITCHES, AND FROM LOAD SIDE OF STARTERS AND SWITCHES TO MOTORS.
7.10. CONTROL CONTRACTOR SHALL SUPPLY AND INSTALL ALL CONDUIT, WIRE, ELECTRIC RELAYS, CONNECTIONS AND OTHER DEVICES REQUIRED FOR CONTROL CIRCUIT WIRING FOR SYSTEMS AS SPECIFIED HEREIN WHETHER LINE OR LOW VOLTAGE. ELECTRICAL WIRING SHALL BE INSTALLED IN CONFORMANCE WITH CSA, ULC, MANITOBA BUILDING CODE AND DIVISION 26 ELECTRICAL REQUIREMENTS.
7.11. SEQUENCES OF OPERATION
  7.11.1. NEW DUAL DUCT VAV TERMINAL BOXES CONTROL SEQUENCE- ON A RISE IN SPACE TEMPERATURE, THE THERMOSTAT OUTPUT INCREASES WHICH WILL REDUCE THE FLOW OF WARM AIR FROM THE PRE-SELECTED MAXIMUM SETTING. AS THE SPACE TEMPERATURE INCREASE, THE HOT DECK AIRFLOW DECREASES UNTIL THE MINIMUM PRE-SELECTED SETTING IS REACHED. ON A FURTHER INCREASE IN SPACE IN SPACE TEMPERATURE, THE HOT DECK CLOSES AND THE COLD DECK AIR FLOW INCREASES TO THE PRE-SELECTED MAXIMUM COLD DECK SETTING. A CONSTANT MIN. AIR FLOW IS MAINTAINED DURING MIXING, REGARDLESS OF CHANGES IN DUCT STATIC PRESSURE. NORMALLY CLOSED COLD DECK AND NORMALLY OPEN HOT DECK: ON FAILURE OF THE MAIN AIR SUPPLY THE COLD DECK WILL FAIL CLOSED AND THE HOT DECK DAMPER WILL FAIL OPEN.
  7.11.2. STORAGE ROOM CIRCULATION FAN F-B1
    7.11.2.1. ROOM THERMOSTAT SHALL CONTROL CIRCULATION FAN AND ELECTRIC BASEBOARD HEATER TO MAINTAIN STORAGE ROOM TEMPERATURE.
    7.11.2.2. PROVIDE INPUTS AND OUTPUTS TO BAS AS FOLLOWS
      7.11.2.2.1. ANALOG INPUTS: ROOM TEMPERATURE
      7.11.2.2.2. BINARY INPUTS: CIRCULATION FAN STATUS
      7.11.2.2.3. BINARY OUTPUTS: CIRCULATION FAN START/OFF

NOTES:

No.	REVISION/DESCRIPTION	BY	DATE
0	ISSUED FOR CONSTRUCTION	JAW	SEPT 24 2018
00	ISSUED FOR 60% CLIENT REVIEW	JAW	AUG 17 2018

SEAL
2018-09-[illegible]
X. WU
Member
[illegible]

DRAWN JAW
CHECKED XYW
DESIGNED XYW
APPROVED XYW
DATE 2018.07.26
USER APPROVAL

THE CITY OF WINNIPEG
PLANNING, PROPERTY AND
DEVELOPMENT DEPARTMENT
MUNICIPAL ACCOMMODATIONS DIVISION
3-65 GARRY STREET, R3C 4K4

PROJECT
WFPS EMERGENCY OPERATIONS CENTRE
INTERIOR RENOVATION

510 MAIN STREET
BID OPP # 870-2018

SHEET TITLE
MECHANICAL SPECIFICATIONS

SCALE AS SHOWN
PROJECT No: 2018-010
SHEET No: M5

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