MECHANICAL GENERAL SPECIFICATION

1. MECHANICAL SUB CONTRACTOR SHALL EMPLOY ONLY CERTIFIED JOURNEYMEN NORMALLY ENGAGED IN THE SHEET METAL AND STEAM FITTING TRADES TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION AND/OR CITY OF WINNIPEG.

2. PROVIDE A WRITTEN ONE YEAR WARRANTY ON ALL WORK DONE UNDER THIS CONTRACT FROM DATE OF ACCEPTANCE.

3. THE MANITOBA BUILDING/PLUMBING CODE 2010 SHALL GOVERN THIS PROJECT MECHANICALLY.

4. ALL CHANGES AND ALTERATIONS REQUIRED BY THE AUTHORIZED INSPECTOR OF THE AUTHORITIES HAVING JURISDICTION SHALL BE CARRIED OUT WITHOUT CHARGE OR EXPENSES TO THE CITY OF WINNIPEG.

5. EACH CONTRACTOR SHALL COORDINATE THE WORK WITH OTHER SUBCONTRACTORS IN ORDER TO AVOID CONFLICTS.

6. CONTRACTOR SHALL VERIFY EXACT LOCATIONS, SIZES, INVERTS, ETC PRIOR TO BID CLOSE AND COMMENCEMENT OF WORK.

7. COORDINATE THE EXACT LOCATION OF THE GRILLES AND DIFFUSERS ON SITE WITH THE ELECTRICAL SUB CONTRACTOR, CONTRACTOR, ARCHITECTURAL REFLECTED CEILING PLAN, LIGHTING LAYOUT, ETC. TO ENSURE THAT THERE ARE NO CONFLICTS DURING INSTALLATION.

8. AT THE COMPLETION OF THE INSTALLATION, PROVIDE TWO MARKED UP COPIES OF THE BID DRAWINGS FOR RECORD PURPOSES.

9. ALL PIPING, DUCTWORK, AND EQUIPMENT SHALL BE SECURELY SUPPORTED FROM THE BUILDING STRUCTURE TO ACCEPTABLE BUILDING DESIGN STANDARDS. PERFORATED STRAP HANGERS WILL NOT BE PERMITTED. ALL PIPE HANGERS SHALL BE OVERSIZED WITH BOTTOM SADDLE WHERE EXTERIOR PIPE INSULATION IS USED.

10. PERMANENT SYSTEMS AND/OR EQUIPMENT SHALL NOT BE USED DURING THE CONSTRUCTION PERIOD WITHOUT WRITTEN PERMISSION FROM THE CITY OF WINNIPEG.

11. PROVIDE INSTRUCTIONS TO CITY OF WINNIPEG ON ALL SYSTEMS AND ASSOCIATED EQUIPMENT.

12. TESTING OF ALL SAFETY DEVICES SHALL BE CARRIED OUT BY THE MECHANICAL SUB CONTRACTOR AND WITNESSED BY THE CITY OF WINNIPEG'S REPRESENTATIVE, SIGNED OFF AND FORWARDED TO THE O/M MANUAL.

13. MEET SAFETY REQUIREMENTS OF PROVINCIAL DEPARTMENT OF LABOUR AND LOCAL AUTHORITIES HAVING JURISDICTION.

14. A WRITTEN GUARANTEE COVERING ALL MATERIALS AND WORKMANSHIP FOR ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE OF THE ENTIRE CONTRACT, SHALL BE SUPPLIED BY THE CONTRACTOR. THIS GUARANTEE WILL NOT CANCEL LONGER WARRANTIES.

15. UPON COMPLETION OF THE WORK, THE ENTIRE JOB SITE SHALL BE CLEARED UP AND LEFT IN GOOD OPERATING CONDITION. THOROUGHLY CLEAN PIPING, DUCTWORK, AND EQUIPMENT OF DIRT, CUTTINGS AND OTHER FOREIGN SUBSTANCES.

16. ALL CUTTING AND PATCHING AND RELATED CONSTRUCTION WORK ARE TO BE PERFORMED BY THE CONTRACTOR UPON INSTRUCTION FROM THE MECHANICAL SUBCONTRACTOR.

17. ALL GALVANIZED DUCTWORK IS TO BE MANUFACTURED IN ACCORDANCE WITH CURRENT S.M.A.C.N.A. SPECIFICATIONS. ALL DUCTWORK IS TO BE SEALED WITH HIGH VELOCITY BRUSHED ON DUCT SEALANT.

18. PERMITS: CONTRACTOR IS RESPONSIBLE FOR GIVING ALL NECESSARY NOTICES, OBTAINING ALL NECESSARY PERMITS AND PAYING ALL APPLICABLE FEES.

19. ASSUME FULL RESPONSIBILITY FOR LAYING OUT ALL WORK AND ENSURE THAT NO DAMAGE IS CAUSED TO THE CITY OF WINNIPEG'S EQUIPMENT AND PREMISES. PROTECT AND MAINTAIN ALL WORK UNTIL WORK HAS BEEN COMPLETED AND ACCEPTED BY THE CITY OF WINNIPEG CONTRACT ADMINISTRATOR.

20. ALL WIRING AND THE SUPPLY AND INSTALLATION OF STARTERS AND/OR DISCONNECT SWITCHES FOR EQUIPMENT SHALL BE BY THE ELECTRICAL SUB CONTRACTOR (DIV 16)

21. SUPPLY AND INSTALL ULC FIRE DAMPERS/FIRE STOPS AT ALL FIRE RATED PENETRATIONS .

22. ACCESS DOORS REQUIRED TO GAIN ACCESS TO BALANCING DAMPERS AT FIRE-RATED CEILING - SUPPLIED AND INSTALLED BY CONTRACTOR.

23. BALANCING - CONTRACTOR WILL ENGAGE AN INDEPENDENT AIR BALANCING AGENCY.
   a. SYSTEM TO BE ADJUSTED TO DATA PROVIDED.
   b. BALANCING CONTRACTOR TO CONFIRM OPERATION OF COMPLETE MECHANICAL SYSTEM.
   c. PROVIDE REPORT TO CITY OF WINNIPEG CONTRACT ADMINISTRATOR AND CONTRACT ADMINISTRATOR. (4 COPIES)

INSPECTION AND TESTING

1. THE WORK SHALL BE AT ALL TIMES AVAILABLE FOR INSPECTION BY A CITY OF WINNIPEG REPRESENTATIVE. ALL WORK SHALL BE IN ACCORDANCE WITH AND SHALL BE INSPECTED TO MEET THE REQUIREMENTS OF THIS SPECIFICATION.

2. ALL START-UP AND TESTING SHALL BE PERFORMED IN THE PRESENCE OF THE CITY OF WINNIPEG CONTRACT ADMINISTRATOR. NOTICE OF DATE WHEN TESTS SHALL BE PERFORMED MUST BE RECEIVED BY CITY OF WINNIPEG MIN 4 WORKING DAYS IN ADVANCE.

3. WORK SHALL NOT BE INSULATED OR CONCEALED PRIOR TO BEING TESTED AND APPROVED.

4. OPERATE SYSTEM FOR A SUFFICIENT PERIOD OF TIME TO ENSURE COMPLETE ACCEPTANCE; DEFECTS SHALL BE REMEDIED AT CONTRACTOR'S EXPENSE .

5. AIR BALANCING SHALL BE PERFORMED BY AN INDEPENDENT CERTIFIED AIR BALANCING CONTRACTOR AND THE BALANCING REPORT SUBMITTED TO THE CONTRACT ADMINISTRATOR COST FOR THIS WORK IS TO BE CARRIED BY THE MECHANICAL SUBCONTRACTOR.

INSULATION:

1. PROVIDE 1/2"(12mm) THICK,FOIL-FACED RIGID PRE-FORMED FIBREGLASS EXTERNAL THERMAL PIPE INSULATION ON ALL NEW NATURAL GAS PIPING FOR 10'(3000mm)ON THE WARM SIDE OF A PENETRATION THROUGH A WALL OR CEILING/ROOF TO A COLD SPACE.

2. PROVIDE 2"(50mm) THICK, FOIL-FACED RIGID(FIBREGLASS OR FIBREBOARD) OR FLEXIBLE FIBREGLASS EXTERNAL THERMAL INSULATION ON ALL NEW EXHAUST OR RELIEF DUCTWORK FOR 10'-0"(3.0M) ON THE WARM SIDE OF A PENETRATION THROUGH A WALL/FLOOR/CEILING/ROOF TO A COLD SPACE, WHERE A BACKDRAFT DAMPER IS PROVIDED AT THE PENETRATION TO THE COLD SPACE WHERE THE BACKDRAFT DAMPER IS PROVIDED IN THE DUCTWORK, INSULATION SHALL EXTEND FROM THE PENETRATION TO 10'-0"(3.0M) UPSTREAM OF THE BACK DRAFT DAMPER.

3. PROVIDE 1"(25mm) THICK, FOIL-FACED EXTERNAL THERMAL INSULATION ON ALL NEW SUPPLY AIR DUCT MAINS, EXCLUDING INDIVIDUAL RUN-OUTS TO DIFFUSERS. INSULATION SHALL BE FLEXIBLE FIBREGLASS, OR RIGID FIBREBOARD.

4. PROVED 2"(50mm) THICK, FOIL-FACED RIGID FIBREGLASS OR FIBREBOARD EXTERNAL THERMAL INSULATION ON ALL NEW OUTSIDE AIR INTAKE, MIXED AIR AND COMBUSTION AIR DUCTWORK, ROUND COMBUSTION AIR DUCTWORK MAY BE FLEXIBLE FIBREGLASS.

5. PROVIDE 3"(75mm) THICK,FOIL-FACED RIGID FIBREGLASS OR FIBREBOARD EXTERNAL THERMAL INSULATION ON ALL NEW DUCTWORK LOCATED OUTDOORS. PROVIDE WEATHERPROOFING EQUAL TO:
   .1 PROVIDE DIMPLE FINISH .016 ALUMINUM JACKET OR GALVANIZED SHEET.

6. PROVIDE 1"(25mm) THICK, BLACK CELLULAR FOAM RUBBER INSULATION ON ALL REFRIGERATION PIPING, INSTALL USING PLASTIC WIRE TIES.

7. ALL JOINTS AND ELBOWS SHALL BE COMPLETELY INSULATED EXCEPT JOINTS AND ELBOWS MAY BE LEFT UNCOVERED ON HOT PIPING IN CONCEALED SPACES.

8. ALL VALVES AND UNIONS SHALL BE COMPLETELY INSULATED, EXCEPT VALVES AND UNIONS MAY BE LEFT UNCOVERED ON HOT PIPING IN CONCEALED SPACES.

9. SEAMS OF FOIL-FACED THERMAL INSULATION SHALL BE SEALED WITH ALUMINUM DUCT TAPE.

10. COVER BUTT JOINTS WITH A STRIP OF THE SAME MATERIAL AS THE JACKET.

11. FLEXIBLE INSULATION SHALL BE INSTALLED IN A MANNER THAT DOES NOT REDUCE ITS THICKNESS.

DUCTWORK

1. ALL DUCT DIMENSIONS DENOTE INTERNAL "FREE" AREA OF THE DUCT.

2. SHEET METAL DUCTWORK, HANGERS, FITTINGS, AND COMPONENTS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH "SMACNA" HVAC DUCT CONSTRUCTION STANDARDS LATEST EDITION AND "ASHRAE" EQUIPMENT GUIDE.

3. ALL DUCTWORK SHALL BE INSTALLED ACCORDING TO SMACNA STATIC PRESSURE CLASS + 500 PA STANDARDS.

4. ALL 90 DEGREE SQUARE TURN ELBOWS (WHICH HAVE NO CHANGE IN DIMENSIONS THROUGH TURN) SHALL HAVE DOUBLE THICKNESS TURNING VANES.

5. ROUND DUCT ELBOWS SHALL HAVE A RADIUS DIMENSION 1.5 TIMES THE WIDTH OF THE DUCT (IN THE PLANE OF THE TURN) TO THE CENTERLINE OF THE DUCT.

6. ALL EXHAUST AIR DUCTWORK SHALL BE INSULATED WITH 2" THICK FOIL FACED FIBERGLASS DUCT INSULATION FROM THE EXTERIOR WALL OR ROOF SURFACE TO A DISTANCE OF 6'-0" (MIN.) INTO THE BUILDING SPACE, EXCEPT AS INDICATED.

7. MECHANICAL SUB CONTRACTOR SHALL INSTALL 4" (MIN.) FLEXIBLE CONNECTORS ON INLET AND DISCHARGE DUCTWORK OF EQUIPMENT.

8. ALL SUPPLY AIR DUCTWORK SHALL BE INTERIOR INSULATED WITH 1" ACOUSTIC INSULATION FOR THE FIRST 10' FROM THE FAN DISCHARGE, UNLESS INDICATED OTHERWISE. PROVIDE INTERIOR ACOUSTIC INSULATION FOR RETURN AIR DUCT FROM RETURN AIR GRILLE TO MIXING BOX.

9. PROVIDE BALANCING DAMPERS AS SHOWN AND AS REQUIRED TO ALLOW PROPER BALANCING OF THE SYSTEM. BALANCING DAMPERS SHALL BE PROVIDED FOR EACH SUPPLY AIR OUTLET AND RETURN/EXHAUST AIR INLET. DAMPERS MOUNTED AT GRILLES SHALL BE MULTI-BLADE TYPE. BUTTERFLY DAMPERS IN DUCTWORK SHALL BE CONSTRUCTED OF SHEET METAL TWO GAUGES HEAVIER THAHN THE DUCTWORK. DUCT DAMPERS SHALL HAVE LOCKING QUADRANTS AND POSITION INDICATORS.

10. JOINT SEALS
SEAL JOINTS BETWEEN DUCTS, FITTINGS, ETC., WITH DURO-DYNE S-2 DUCT SEALER AND DURO-DYNE FIBERGLASS DUCT TAPE. APPLY IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

11. FITTINGS
MANUFACTURED BY UNITED, 90 DEGREE ELBOWS TO BE 5 PIECE MITRED, 8" DIA. OR LESS, 90 DEGREE ELBOWS CAN BE 1 PIECE MOLDED TYPE. USE CONICAL CONNECTIONS THROUGHOUT INSTALLATION.

12. FIRE DAMPERS
ULC LISTED BLADE POCKETS OUT OF AIR STREAM, "FIRE BARRIER" OR EQUAL. CEILING FIRE DAMPERS SHALL BE 'CONTROLLED AIR' MODEL CFSR-1 c/w CK2000 THERMAL BLANKET, ULC LISTED. ALL FIRE DAMPERS TO BE RATED AS DYNAMIC - FOR OPERATION AGAINST AIRFLOW.

13. ACCESS DOORS
PROVIDE ACCESS DOORS AS REQUIRED TO ACCESS AND MAINTAIN ALL VENTILATION EQUIPMENT, INCLUDING COILS, MOTORIZED DAMPERS, AND FIRE DAMPERS.

14. PIPING
REFRIGERANT PIPING TO BE INSULATED WITH 1/4" FLEXIBLE PIPE INSULATION AND WEATHER COATING WHERE REQUIRED.

15. ALL PENETRATIONS IN FIRE RATED SURFACES ARE TO BE SEALED WITH ELECTROVERT CLK CAULKING MATERIAL OR APPROVED EQUAL IN ACCORDANCE WITH B7.

16. SUPPLY 4 SPARE FUSES AND LAMPS FOR ALL CONTROL PANELS.

17. SUPPLY LAMACOID NAME TAGS FOR ALL AIR HANDLING EQUIPMENT, THERMOSTATS, MOTORIZED DAMPERS AND PUMPS.

18. SUBMIT FOR CONTRACT ADMINISTRATORS APPROVAL SHOP DRAWINGS OF ALL EQUIPMENT.

19. SUPPLY O&M MANUALS FOR EQUIPMENT SUPPLIED AND INSTALLED.

20. COMPLETE TRAINING TO BE SUPPLIED ON ALL THE EQUIPMENT SUPPLIED AND INSTALLED.

EQUIPMENT LIST:

EXHAUST FAN, EF-1,2,3 (WASHROOMS AND LOCKER ROOM)

FANTECH 6CEV010A 97CFM @0.25"WC. 115V/60HZ/1PHASE.

EXHAUST FAN, EF-4 (MENS WASHROOM)

FANTECH 6CEV020A 196CFM @0.25"WC. 115V/60HZ/1PHASE.

EXHAUST FAN, EF-5 (STORAGE ROOM)

GREENHECK SQ-70-VG DIRECT DRIVE CENTRIFUGAL SIDE DISCHARGE FAN. 200CFM@0.2"WC. 115V/60HZ/1 PHASE.

MOTORIZED DAMPERS, D-1

TAMCO 9000 DAMPER, FLANGED TO DUCT STYLE.. 12"X12" OR EQUIVALENT WITH FREE AREA OF 64SQ.IN. WITH BELIMO ACTUATOR SIZED TO MATCH.

UNIT HEATERS, UH-1,2 (STORAGE ROOM)

TWO (2) MODINE GAS UNIT HEATER, MODEL HDS-75, 75,000 BTU/H INPUT. 60,000 BTU/H OUTPUT. 1160CFM, 1/12HP MOTOR.

HEAT RECOVERY VENTILATOR, HRV-1 (FEMALE LOCKER ROOM)

NU-AIR ES150. 100CFM AT 0.4"WC. WITH 2KW PREHEAT DUCT HEATER AND 1.5KW TEMPERING DUCT HEATER, WITH SCR.

RADIANT HEAT PANELS, HP-1,2 (FEMALE LOCKER ROOM)

QMARK CP751 CEILING PANELS, 750W/115V/60HZ/1 PHASE.

CONTROLS

HRV-1 OPERATION WITH HUMIDISTAT AND CONTINUOUSLY WHEN LIGHTS ARE ON.

EF-5 TO OPERATE WHEN STORAGE ROOM LIGHTS ARE ON.

UNIT HEATERS AND RADIANT PANELS TO OPERATE ON LOCAL THERMOSTAT.

THE REPAIR GARAGE AREA IS HEATED BY UNIT HEATERS. EF-1 AND MUA-1 OPERATE CONTINUOUSLY DURING OCCUPANCY. CO/NO2 SENSORS WILL BE USED TO MONITOR AIR QUALITY AND WILL PROVIDE ALARMS IN CASE OF HIGH CO OR NO2 LEVELS. UPON A LOW LEVEL ALARM, A SIGNAL WILL BE SENT TO ACTIVATE THE EXISTING MUA AND EXHAUST FAN, IF THEY AREN'T ALREADY OPERATING.

EXISTING RTU (SERVES MAIN FLOOR OFFICES, TO BE REMOVED)

TRANE SFCB-503-HA. 5TON, 150MBH NATURAL GAS HEAT INPUT, 2000CFM. **REMOVE THIS RTU. RE-USE THE ROOF OPENING FOR RTU-2, THE EXISTING YORK 7.5 TON RTU.**

EXISTING RTU, RTU-2 (TO BE MOVED)

YORK 2F090N15P2AAA5A. 7.5TON, 150 MBH OUTPUT NATURAL GAS HEAT, HI STATIC BLOWER MOTOR, ECONOMISER, BAROMETRIC RELIEF. TO BE CONTROLLED BY PROGRAMMABLE THERMOSTAT. CARRIER EDGE PRO PROGRAMMABLE COMMERCIAL THERMOSTAT. **MOVE THIS UNIT TO THE APPROXIMATE (FINAL LOCATION TO BE SITE DETERMINED) LOCATION OF THE TRANE RTU. MAKE ALL CHANGES REQUIRED IN ROOF OPENING, STRUCTURAL REINFORCEMENT, ETC. SET MINIMUM OUTSIDE AIR INTAKE TO 437CFM.**

NEW RTU, RTU-1 (TO SERVE SECOND FLOOR OFFICES)

CARRIER ROOF TOP UNIT, MODEL 48TC, 208/3 PH/60 HZ (CONFIRM VOLTAGE WITH CITY OF WINNIPEG), 5 NOMINAL TON CAPACITY , 150000BTUH TWO-STAGE HEAT OUTPUT. 2000CFM AT 0.5" SP. WITH STAINLESS STEEL HEAT EXCHANGER, ECONOMIZER, ROOF CURB, AND VERTICAL DISCHARGE. TO BE CONTROLLED BY PROGRAMMABLE THERMOSTAT. CARRIER EDGE PRO PROGRAMMABLE COMMERCIAL THERMOSTAT. **LOCATION: APPROXIMATE LOCATION AS SHOWN ON DRAWINGS (FINAL LOCATION TO BE SITE DETERMINED) . MAKE ALL CHANGES REQUIRED IN ROOF OPENING, STRUCTURAL REINFORCEMENT, ETC. SET MINIMUM OUTSIDE AIR INTAKE TO 250CFM.**

EXISTING RTU, RTU-3 (SERVES FRONT OFFICES)

YORK D7CG060N09925A. 5TON ELECTRIC HEAT, 2000CFM. **DUCTWORK AND UNIT TO REMAIN AS IS. SET MINIMUM OUTSIDE AIR INTAKE TO 200CFM.**

CEILING-MOUNTED A/C UNIT AND CONDENSER, AC-1 AND CU-1:

INDOOR UNIT: MITSUBISHI PLA-A24BA CEILING MOUNT A/C UNIT. 2 TON COOLING, 320-425CFM. ULTRA-LOW AMBIENT COOLING (-40C). 14.4 SEER, 208-230V/1 PHASE/60HZ.

OUTDOOR UNIT: MITSUBISHI PUY-A24NHA3. VARIABLE COMPRESSOR SPEED, R-410A REFRIGERANT.

CO AND NO2 SENSORS

HONEYWELL E3POINT DUAL GAS MONITOR FOR NO2 AND CO.

EACH DETECTION CIRCUIT SHALL INCLUDE:
- INDEPENDENTLY ADJUSTABLE LOW AND HIGH ALARM LEVELS
- SPDT RELAYS (HIGH, LOW), C/W PROGRAMMABLE TIME DELAY CIRCUITRY
- PROGRAMMABLE SPAN ADJUSTMENT.
- AUDIBLE ALARM (ON/OFF PROGRAMMABLE)

INSTALLED AS PER MANUFACTURER'S INSTRUCTIONS.

UPON SENSING OF 25 PPM OF CARBON MONOXIDE. INTERNAL SPDT RELAY SHALL ACTIVATE EXISTING EXHAUST FAN AND MAKE-UP AIR UNIT. UPON SENSING OF 75 PPM OF CARBON MONOXIDE CORRESPONDING ALARM LEVEL INDICATING LIGHT SHALL ENERGIZE AND INTERNAL SPDT RELAY SHALL ACTIVATE. INTERNAL SONALERT SHALL SOUND WHERE SPECIFIED.

UPON SENSING OF 1 PPM OF NITROGEN DIOXIDE INTERNAL SPDT RELAY SHALL ACTIVATE EXISTING EXHAUST FAN AND MAKE-UP AIR UNIT. UPON SENSING OF 3 PPM OF NITROGEN DIOXIDE CORRESPONDING ALARM LEVEL INDICATING LIGHT SHALL ENERGIZE AND INTERNAL SPDT RELAY SHALL ACTIVATE. INTERNAL SONALERT SHALL SOUND WHERE SPECIFIED.

CARBON MONOXIDE (CO) AND NITROGEN DIOXIDE (NO2) SENSORS SHALL BE LONG LIFE ELECTROCHEMICAL TYPE WITH 2-3 YEAR MINIMUM LIFE EXPECTANCY. RANGE OF CO SENSOR 0-250PPM, NO2 SENSOR SHALL BE 0-10PPM. SIGNAL OUTPUT TO CONTROL SYSTEM OF 4-20MA, LINEAR, OR RS 485 DIGITAL.

CO/NO2 EQUIPMENT TO BE INSTALLED, ADJUSTED AND TESTED BY QUALIFIED PERSONNEL.

VENTILATION REQUIREMENTS (ASHRAE 62.1-2010)

MAIN FLOOR

ROOMS	AREA SQ.FT	OCC #	OA CFM	EXH CFM		
OFFICE	2203	20	232		.06*SQFT+5*OCC	OFFICE SPACE
MEETING ROOM	274	12	76		.06*SQFT+5*OCC	OFFICE SPACE
LUNCH ROOM	652	10	128		.12*SQFT+5*OCC	BREAK ROOM
LOCKER ROOMS	325			82	0.25CFM/SQFT	T
FEMALE LOCKER	140			35	0.25CFM/SQFT	
MENS WASHROOM	230			300	50CFM/WC (PLUS 100CFM PER SHOWER)	
UNIVERSAL W/RM	70			100	50CFM/WC	
STAIRS	260					
	4014	42	437			
SHOP/GARAGE	3680			2760	0.75CFM/SQFT EXHAUST PARKING GARAGE	

SECOND FLOOR

ROOMS	AREA SQ.FT	OCC #	OA CFM	EXH CFM		
OFFICES	3603	22	326		.06*SQFT+5*OCC	OFFICE SPACE
MEETING ROOM	170	10	60		.06*SQFT+5*OCC	OFFICE SPACE
WASHROOMS	185			200	50CFM/WC (PLUS 100CFM PER SHOWER)	
STAIRS	260					
	4218	32	386	200		

HEATING REQUIREMENTS

WINTER INDOOR HEATING TEMPERATURE: 20 C
WINTER OUTDOOR DESIGN TEMPERATURE: -33 C

HEAT LOSS (GARAGE)		130 KBTU/H
VENTILATION	2750CFM =	275KBTU/H
		405 BTUH
HEAT LOSS (MAIN FLOOR OFFICES)		40 KBTU/H
VENTILATION	437CFM =	44 KBTU/H
		84KBTUH
HEAT LOSS (2ND FLOOR OFFICES)		86 KBTU/H
VENTILATION	386CFM =	39 KBTU/H
		125 KBTUH

can tec
ENGINEERING AND DRAFTING
1948 MAIN STREET, WINNIPEG, MANITOBA Tel: (204) 943-7222 Fax: (204) 947-7717 http://www.cantecservices.ca/

REV. #	REVISION	DATE	BY
A	ISSUED FOR REVIEW	15 04 14	JLS
B	ISSUED FOR REVIEW	15 04 17	JLS
C	ISSUED FOR CONSTRUCTION REVIEW	15 05 01	JLS
00	ISSUED FOR CONSTRUCTION/PERMIT	15 05 12	JLS
01	ISSUED FOR BID OPPORTUNITY	15 05 18	JLS
02	ISSUED FOR BID OPPORTUNITY	15 05 19	JLS
03	ISSUED FOR MECHANICAL ADDNDA 1	15 07 10	JLS

PROVINCE OF MANITOBA
July 10, 2015
J. V. LOESEL SITAR
REGISTERED PROFESSIONAL ENGINEER

APEGM
Certificate of Authorization
Can-Tec Services Ltd.
No. 4189 Date: July 10, 2015

SEALED BY:

PROJECT TITLE
TRAFFIC MANAGEMENT CENTER - RENOVATIONS

SHEET TITLE
SPECIFICATION - HVAC

DRAWN BY RS | CHECKED BY JLS
SCALE AS NOTED
DATE 14 11 20
LOCATION 821 ELGIN AVENUE, WINNIPEG, MB

CONSTRUCTION

M2.3

REVISION #: 03
JOB NO. 14-112-14-30

Last Save:2015-07-10 3:39 PM