SPECIFICATIONS:

1) SCOPE:

A. HVAC – REPLACE THE ROOFTOP UNITS FOR THE GYMNASIUM AND THE FRONT OFFICE. PROVIDE VENTILATION FOR THE DRESSING ROOMS, DAYCARE AND CHANGE ROOMS; EXISTING HEATING TO REMAIN AS–IS.

2) SHOP DRAWINGS:

A. SUBMIT TWO COPIES OF SHOP DRAWINGS FOR ALL COMPONENTS SUPPLIED. THIS INCLUDES ALL ITEMS SUCH AS GRILLES, REGISTERS AND DIFFUSERS, ROOF TOP UNITS, COOLING UNITS, HEAT RECOVERY VENTILATORS, CONTROLS, ETC.

3) VENTILATION PRODUCTS:

A. GYMNASIUM ROOF TOP UNITS, TWO – EACH UNIT TO HAVE: 10 TONS NOMINAL COOLING CAPACITY; HIGH HEAT OPTION. REQUIRE MINIMUM HEATING INPUT OF 250,000–BTU/HR, OUTPUT OF 200,000 BTU/HR. DESIGN CONDITIONS: AMBIENT 87°F DB AT 68°F MCWB. WINNIPEG 99.6% AMBIENT DESIGN CONDITIONS. AIRFLOW: 3,500 CFM AT 0.6" W.C. EXTERNAL STATIC PRESSURE. SUPPLY UNIT C/W:
   a. CO2 DEMAND CONTROL VENTILATION CONTROL C/W CO2 SENSOR IN SPACE.
   b. REMOTE CONTROL PANEL; 5" COLOR TOUCH–SCREEN
   c. ECONOMIZER CONTROL
   d. HIGH EFFICIENCY COOLING
   e. 2" THICK MERV 8 FILTER
   f. STAINLESS STEEL HEAT EXCHANGER
   g. HIGH EFFICIENCY FAN MOTOR
   h. MOTORIZED OUTDOOR AIR DAMPER C/W BAROMETRIC RELIEF. USE A HIGH PERFORMANCE INSULATED DAMPER TAMCO 9000 ECT. FOR THE OUTDOOR AIR DAMPER.
   i. ROOF CURB
   j. THERMOSTAT
   k. 5–YEAR HEAT EXCHANGER AND 5–YEAR COMPRESSOR WARRANTY
   l. POWER REQUIREMENTS: 208/3/60, FAN MOTOR 3.8 HP, COMPRESSOR MOTOR 11.2 HP.

B. EAST LOBBY/OFFICE ROOF TOP UNIT – 5–TON NOMINAL COOLING CAPACITY; HIGH HEAT OPTION. REQUIRE MINIMUM HEATING INPUT OF 130,000–BTU/HR, OUTPUT OF 104,000–BTU/HR, AIRFLOW: 2,000 CFM AT 0.6" W.C. EXTERNAL STATIC PRESSURE.
   a. ORIENTATION AS SHOWN ON DESIGN DRAWINGS
   b. CO2 DEMAND CONTROL VENTILATION CONTROL C/W CO2 SENSOR IN SPACE.
   c. REMOTE CONTROL PANEL; 5" COLOR TOUCH–SCREEN
   d. ECONOMIZER CONTROL
   e. HIGH EFFICIENCY COOLING
   f. 2" THICK MERV 8 FILTER
   g. STAINLESS STEEL HEAT EXCHANGER
   h. HIGH EFFICIENCY FAN MOTOR
   i. MOTORIZED OUTDOOR AIR DAMPER. USE A HIGH PERFORMANCE INSULATED DAMPER TAMCO 9000 ECT FOR THE OUTDOOR AIR DAMPER.
   j. ROOF CURB
   k. THERMOSTAT
   l. 5–YEAR HEAT EXCHANGER AND 5–YEAR COMPRESSOR WARRANTY.
   m. POWER REQUIREMENTS: 208/3/60, FAN MOTOR 1 HP, COMPRESSOR MOTOR 5.6 HP.

C. COOLING ONLY FAN COIL – COOLING CAPACITY AND AIRFLOW AS SHOWN ON THE DRAWINGS. POWER REQUIREMENTS AS SHOWN ON THE DRAWINGS. SUPPLY UNIT C/W:
   a. LOCAL THERMOSTAT MOUNTED IN THE SPACE SERVED.
   b. MERV 8 FILTERS
   c. REMOTE AIR COOLED CONDENSING UNIT MOUNTED ON THE ROOF. MOUNT UNIT ON TOP OF A 24" SQUARE CONCRETE PATIO BLOCK ON TOP OF A 2" THICK PIECE OF HI 40 RIGID INSULATION.
   d. REFRIGERANT R410

D. REFRIGERATION UNITS – GENERAL
   a. ALL COOLING UNITS AND ROOF–TOP UNITS BY A SINGLE MANUFACTURER. STANDARD OF ACCEPTANCE: TRANE, LENNOX, ENGINEERED AIR, CARRIER.

E. HEAT RECOVERY VENTILATORS
   a. SCOPE – PROVIDE HRV UNITS AS SHOWN ON THE DESIGN DRAWINGS.
   b. ALL COMPONENTS TO BE COMMERCIAL HEAVY DUTY UNITS SUITABLE FOR INSTALLATION IN NORTHERN CLIMATES. RESIDENTIAL UNITS ARE NOT ACCEPTABLE.
   c. CORE – USE ALUMINUM CORE FOR HEAT EXCHANGER.
   d. FANS – CENTRIFUGAL C/W SEALED BEARINGS.
   e. MOTOR – TOTALLY SEALED MOTOR.
   f. DEFROST – INDICATE THE DEFROST METHOD USED IN SUBMISSION.
   g. STANDARD OF ACCEPTANCE – AS MANUFACTURED BY LIFEBREATH.
   h. POWER REQUIREMENTS: AS SHOWN ON THE DRAWINGS.

F. GRILLES, REGISTERS AND DIFFUSERS – AS NOTED ON DRAWINGS.

G. DUCTWORK
   a. TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS. USE G90 GALVANIZED STEEL SHEET METAL.
   b. ELBOWS – AS INDICATED ON DESIGN DRAWINGS. FOR MITRED ELBOWS, USE SINGLE THICKNESS TURNING VANES. RADIUSED ELBOWS – CENTRELINE RADIUS 1.5X DIMENSION.
   c. SEAL ALL DUCT JOINTS AND SEAMS USING A COMBINATION OF SEALANT AND TAPE. SMACNA CLASS B. DUCT DESIGN PRESSURE: 2" W.C.
   d. FLEXIBLE DUCTWORK IS PERMITTED ONLY AT CONNECTION TO DIFFUSER/GRILLE. MAXIMUM LENGTH OF FLEXIBLE DUCT IS 3'
   e. PROVIDE 3" WIDE FLEXIBLE CONNECTION TO ALL AIR HANDLING UNITS AND FANS. USE DURO–DYNE DURO–LON FABRIC AND METAL–FAB CONNECTORS.

H. FANS – AS NOTED ON DESIGN DRAWINGS.

I. INSTALLATION
   a. INSTALL ALL UNITS IN CONFORMANCE WITH BEST PRACTICE INDUSTRY STANDARDS AND MANUFACTURER'S RECOMMENDATIONS.
   b. INSTALL PARALLEL AND PERPENDICULAR TO BUILDING LINES.
   c. INSTALL DUCTWORK IN ACCORDANCE WITH SMACNA STANDARDS.
   d. COMMISSIONING – FULLY COMMISSION ALL AIR–HANDLING UNITS. PROVIDE A FULL COMMISSIONING PLAN FOR THE CONTRACT ADMINISTRATOR TO REVIEW PRIOR TO EXECUTION. INCORPORATE COMMENTS AND EXECUTE THE COMMISSIONING PLAN.

4) CONTROLS:

A. ROOFTOP UNITS – CONTROL STRATEGY
   a. FAN CONTROL – FAN TO RUN CONTINUOUS DURING OCCUPIED HOURS. DURING UN–OCCUPIED HOURS, FAN IS TO START ON DEMAND FOR HEATING OR COOLING.
   b. DAMPER CONTROL – DURING OCCUPIED HOURS SET THE OUTDOOR AIR PROPORTION FOR THE AIR–HANDLING UNITS AT:
      - GYMNASIUM – MAXIMUM 26%, MINIMUM 10% OF TOTAL AIRFLOW.
      - EAST LOBBY – MAXIMUM 14%, MINIMUM 10% OF TOTAL AIRFLOW.
      - DURING UNOCCUPIED HOURS, THE OUTDOOR AIR DAMPER IS TO BE FULLY CLOSED.
   c. THERMOSTAT – PROVIDE PROGRAMMABLE THERMOSTAT AND UNIT CONTROL PAD REMOTE FROM THE ROOF TOP UNIT. REMOTE CONTROL TO PROVIDE:
      - FAN CONTROL – ON/OFF/AUTO
      - FULL OCCUPIED AND UNOCCUPIED FAN AND TEMPERATURE PROGRAMMING, FOR 7–DAYS PER WEEK.
      - SYSTEM: HEAT/COOL/AUTO SWITCHOVER
      - MANUAL OVERRIDE TO ENABLE OR SHUT OFF SPECIFIC FEATURES FOR A SPECIFIED TIME.
      - FULL ECONOMIZER CONTROL
      - DEMAND CONTROL VENTILATION STRATEGY
   d. DURING OCCUPIED TIME ONLY
      - DEMAND CONTROL VENTILATION – MODULATE THE OUTDOOR AIR DAMPER BETWEEN MINIMUM AND MAXIMUM OPEN POSITION BASED ON CO2 LEVELS IN RETURN AIR.
      - CONTROL THE HEATING, COOLING, AND ECONOMIZER CONTROL OF THE AIR HANDLING UNITS BASED ON THE AMBIENT TEMPERATURE AND ROOM TEMPERATURE. CYCLE TO MAINTAIN THE SPACE AT SETPOINT.
   e. DURING UNOCCUPIED HOURS – FAN IS TO SHUT DOWN AND START ONLY ON A CALL FOR HEAT OR COOLING. CYCLE THE UNIT HEAT/COOLING AND ECONOMIZER TO MAINTAIN THE SPACE TEMPERATURE AT SETPOINT.
   f. CONTROLS – TO FAIL SAFE.
   g. BUILDING TEMPERATURE MONITORING – PROVIDE A SEPARATE CONTROL LOOP IN EACH OF THE GYMNASIUM, EAST LOBBY, WEST LOBBY, CHANGE ROOMS TO MEASURE FOR A LOW TEMPERATURE. WIRE THE LOW TEMPERATURE SENSOR INTO THE LOCAL METASYS CONTROL PANEL FOR ENUNCIATION.
   h. GYMNASIUM AHU'S CONTROLLED AND OPERATE IN UNISON. BOTH UNITS (AHU 1 & 3) ARE TIED TO THE SAME THERMOSTAT AND CO_2 SENSOR. ALWAYS RUN SIMULTANEOUSLY UNLESS ONE UNIT SHUTS DOWN DUE TO AN ERROR. RTU TO CONTINUE OPERATION IF OTHER UNIT IS SHUT DOWN DUE TO ERRORS.

5) BALANCING:

A. BALANCE THE HVAC SYSTEM TO THE FLOW RATES AS NOTED. LOCK ALL BALANCING DAMPERS IN THE AS–BALANCED POSITION. SUBMIT TWO COPIES OF THE BALANCING REPORT TO THE CONTRACT ADMINISTRATOR FOR REVIEW. BALANCING DAMPERS ARE INSTALLED AT ALL BRANCHES FOR SUPPLY AIR AND RETURN AIR DUCTWORK AND WHERE INDICATED.

REV	DESCRIPTION	DWN	APP	REV DATE
0	ISSUED FOR TENDER	KAC	BKW	SEP 15 2016

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No. 1660 Date: SEP 15 2016

CLIENT

THE CITY OF WINNIPEG
GREENDELL PARK C.C.

PROJECT

HVAC ELECTRICAL UPGRADES

SHEET TITLE

MECHANICAL SPECIFICATIONS

DRAWN BY	CHECKED BY	SCALE	SHEET NO
KAC	BKW	AS NOTED	M103
DESIGNED BY	JOB NUMBER	DATE	REVISION NO
LCS	18558	SEP 15 2016	0