



1 SITE PLAN - MECHANICAL
SCALE: 1/16" = 1'-0"

LEGEND:

	NATURAL GAS LINE ON GRADE
	NATURAL GAS LINE ABOVE/BELOW GRADE
	PRESSURE REDUCING VALVE
	BACK DRAFT DAMPER
	MANUAL BALANCING DAMPER
	TURNING VANES
	ACOUSTIC INSULATION
	THERMAL INSULATION
	FLEXIBLE DUCT CONNECTION
	RETURN/EXHAUST/RELIEF AIR DUCT SHAFT
	SUPPLY/MAKE-UP/OUTSIDE/COMBUSTION AIR DUCT
	RETURN/EXHAUST/RELIEF AIR DUCT
	ROUND SUPPLY DUCT RISER UP/DOWN
	ROUND RETURN/EXHAUST/RELIEF AIR RISER UP/DOWN
	THERMOSTAT
	HUMIDISTAT
	SWITCH
	EQUIPMENT DESIGNATION
	GRILL/DIFFUSER TYPE
	NECK SIZE
	QUANTITY OR NUMBER OF DIFFUSER
	FLOW RATE (CFM)
	FACE SIZE OR THROW
	RADIATION UNIT DESIGNATION
	TAGS/NOTES DESIGNATION FOR HVAC DRAWINGS

DRAWING NOTES: (##)

- EXISTING GAS METER/PRV SERVING EXISTING BUILDING. VERIFY EXACT LOCATION ON SITE AND WITH UTILITY.
 - NEW GAS FIRED AIR HANDLING UNITS AHU-1 (60 MBH INPUT) AND AHU-2 (69 MBH INPUT), TOTAL ADDITION TO NATURAL GAS LOAD = 129 MBH.
 - THE NEW 1" GAS LINE INTO EXISTING EXTERIOR LINE DOWNSTREAM OF METER/PRV. RUN NEW GAS PIPING IN CEILING SPACE OF EXISTING BUILDING AS INDICATED.
 - DROP NEW 1" GAS LINE INTO NEW CEILING SPACE OF NEW BUILDING IN NEW FOUNDATION.
- MECHANICAL SPECIFICATION:**
- 1.0 GENERAL
- VISIT JOBSITE PRIOR TO BIDDING. 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.
 - ALL WORK SHALL CONFORM TO MANITOBA BUILDING CODE AND LOCAL AUTHORITIES. OBTAIN AND PAY FOR ALL NECESSARY PERMITS.
 - COORDINATE INSTALLATION WITH ALL RELATED TRADES, ARCHITECTURAL DRAWINGS, INTERIOR DESIGN PLANS AND REFLECTED CEILING PLANS. VERIFY ALL DIMENSIONS AND LOCATIONS OF EXISTING EQUIPMENT AND SERVICES PRIOR TO PROCEEDING WITH WORK.
 - SUBMIT SHOP DRAWINGS FOR ALL EQUIPMENT TO THE CONTRACTOR ADMINISTRATOR.
 - PROVIDE ONE YEAR GUARANTEE FOR ALL EQUIPMENT.
 - ALL CONNECTIONS TO EXISTING BUILDING MECHANICAL SERVICES SHALL BE COORDINATED WITH THE CONTRACTOR ADMINISTRATOR.
 - ALL NECESSARY CUTTING AND PATCHING SHALL BE PERFORMED BY COMPETENT SUBCONTRACTORS TO SATISFACTION OF THE CONTRACT ADMINISTRATOR.
 - REFER TO SPECIFICATIONS FOR REQUIREMENTS REGARDING PROJECT PHASING, WORKING HOURS, SHUT-DOWN PROCEDURES, ACCESS, ETC.
 - PROVIDE SEPARATE PRICES AS INDICATED ON DRAWINGS.
 - PROVIDE MILCOOR ACCESS DOORS IN DRYWALL CEILINGS AND WALLS FOR ACCESS TO MECHANICAL EQUIPMENT. MINIMUM SIZE 24" X 18".
 - 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 DRIP PANELS LOCATED AT COLUMNS.
 - 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.
 - BIDS SHALL BE BASED ON THE USE OF SPECIFIED EQUIPMENT, UNLESS ACCEPTANCE FOR THE USE OF SUBSTITUTES HAS BEEN OBTAINED IN ACCORDANCE WITH MANITOBA BUILDING CODE.

- OUTSIDE SERVICES
- WATER SERVICE PIPE SHALL BE TYPE "K" SOFT COPPER.
- SEWER PIPE SHALL BE PVC PIPE WITH BELL AND SPOUT WITH RUBBER GASKET JOINT.
- BED PIPING ON SAND ON UNDISTURBED EARTH.
- BACKFILL EXCAVATION WITH WELL COMPACTED GRANULAR SAND AND GRAVEL CONFORMING TO SPEC. WBX-3.
- CONFIRM SIZE, DEPTH AND LOCATION OF ALL SERVICES WITH CITY OR UTILITY CONCERNED.
- WATER MAIN TO BE FLUSHED AND CHLORINATED AFTER INSTALLATION.
- VENTILATION
- DUCTWORK
- GALVANIZED IRON SCHEDULE:
- MAX. SIDE GAUGES (USSG) BRACING
- 25 TO 24 NONE
- 24 TO 30 1" x 1" x 1/8" ANGLE
- 30 TO 40 2" x 1" x 1/8" ANGLE
- 40 TO 22 NONE
- ROUND DUCT UP TO 18" 26 NONE
- OUTDOOR DUCTWORK TO HAVE 2 GAUGES HEAVIER THAN INDICATED IN 1 THYPHNS SCHEDULED ABOVE. CONSTRUCT DUCT SO THAT TOP OF DUCT SLOPES 1:24 MINIMUM TO ENSURE THAT WATER DOES NOT COLLECT ON TOP.
- WHERE DUCT WIDTH EXCEEDS 18" IN LARGEST DIMENSION, STIFFEN BY BREAKING SHEETS DIAGONALLY.
- DUCT SIZES SHOWN ARE INSIDE DIMENSIONS. IF DUCTS ARE ACOUSTICALLY LINED, OUTSIDE DUCT SIZE TO BE INCREASED TO SUIT.
- DUCTWORK SHALL BE CONSTRUCTED AS RECOMMENDED IN ASHRAE GUIDE.
- SEAL ALL JOINTS 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.
- 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 MANUFACTURER'S RECOMMENDATIONS.
- WHERE DUCTWORK CONFLICTS WITH MECHANICAL PIPING AND IT IS NOT POSSIBLE TO DIVERT DUCTWORK OR PIPING TO STAY WITHIN ALLOWABLE SPACE LIMITATIONS, PROVIDE DUCT EASMENTS. EASMENTS 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.
- SIZE ROUND DUCTS, INSTALLED IN PLACE OF RECTANGULAR DUCTS, FROM ASHRAE TABLE OF EQUIVALENT RECTANGULAR AND ROUND DUCTS.
- PRIOR TO FABRICATION OF DUCTWORK, CHECK ALL CEILING SPACES AND HEIGHTS FOR CONFLICT WITH OTHER TRADES.
- DUCT AND EQUIPMENT SUPPORTS, HANGERS AND INSERTS
- SUPPORT HORIZONTAL DUCTS ON MAXIMUM 4'-0" CENTRES BY NON-PERFORATED GALV. STEEL, RIVETED 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" DIA. THREADED RODS SUSPENDING ANGLES FROM STRUCTURE.
- FOR INSERTS IN EXISTING CONCRETE, USE H.L.T. H.K.D. STEEL ANCHORS.
- 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.
- PROVIDE INSULATED ACCESS DOORS AT ALL FIRE DAMPERS, AIR VALVES AND WHERE NOTED.
- DIFFUSERS, GRILLS AND REGISTERS
- CEILING SUPPLY DIFFUSERS - EH PRICE SPO SQUARE PLAQUE TYPE DIFFUSERS TO HAVE BAKED ENAMEL FINISH.
- CEILING EXHAUST REGISTERS - EH PRICE C80 TO BE C/W CHANNEL BORDER, TO FIT T-BAR CEILING REGISTER TO MATCH LAY-IN TILE CEILING.
- CEILING RELIEF AND RETURN AIR GRILLES - SAME AS ABOVE.
- LOW NOISE CEILING EXHAUST FANS TO BE GREENHECK EXHAUST FANS C/W REMOVABLE FAN-MOTOR ASSEMBLY, DIRECT DRIVE, ACOUSTIC LINED PLENUM, INLET GRILLE. FAN SPEED SPECIFIED MAXIMUM ACCEPTABLE.
- NEW BYPASS BOXES SHALL BE SET FOR MAXIMUM CFM QUANTITY OF CONNECTED DIFFUSERS. MINIMUM CFM QUANTITY FOR INTERIOR ZONE BOXES SHALL BE SET AT 10% AND FOR EXTERIOR ZONE BOXES SHALL BE SET AT 30% OF MAXIMUM CFM QUANTITY.
- 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 BETWEEN CONNECTIONS.
- TESTING AND BALANCING
- AIR SYSTEMS SHALL BE BALANCED AND TESTED BY AN INDEPENDENT AIR BALANCE AGENCY (AABO) 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.
- AIR HANDLING UNITS
- SUBMITTALS
- PRODUCT DATA: INCLUDE MANUFACTURER'S TECHNICAL DATA FOR EACH MODEL INDICATED, INCLUDING RATED CAPACITIES OF SELECTED MODEL CLEARLY INDICATED. DIMENSIONS, WEIGHTS, LOADINGS, REQUIRED CLEARANCES, SHIPPING AND OPERATING WEIGHTS, FURNISHED SPECIALTIES, ACCESSORIES; AND INSTALLATION AND STARTUP INSTRUCTIONS.
- SHOP DRAWINGS: 1 THYPHNS: DETAIL EQUIPMENT ASSEMBLIES AND INDICATE DIMENSIONS, WEIGHTS, LOADINGS, REQUIRED CLEARANCES, METHOD OF FIELD ASSEMBLY, COMPONENTS, AND LOCATION AND SIZE OF EACH FIELD CONNECTION. DETAIL MOUNTING, SECURING, AND FLASHING OF ROOF CURB TO ROOF STRUCTURE. INDICATE COORDINATING REQUIREMENTS WITH ROOF MEMBRANE SYSTEM.
- WIRING DIAGRAMS: DETAIL WIRING FOR POWER, SIGNAL, AND CONTROL SYSTEMS AND DIFFERENTIATE BETWEEN MANUFACTURER-INSTALLED AND FIELD-INSTALLED WIRING.
- QUALITY ASSURANCE
- REFRIGERATION SYSTEM TO COMPLY WITH ASHRAE 15, "SAFETY CODE FOR MECHANICAL REFRIGERATION."
- ENERGY EFFICIENCY RATIO EQUAL TO OR GREATER THAN PRESCRIBED BY ASHRAE 90.1, "ENERGY EFFICIENT DESIGN OF NEW BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS."
- WARRANTY
- GENERAL WARRANTY
- SPECIAL WARRANTY: A WRITTEN WARRANTY, EXECUTED BY THE MANUFACTURER AND SIGNED BY THE CONTRACTOR, AGREEING TO REPLACE COMPONENTS THAT FAIL IN MATERIALS OR WORKMANSHIP, WITHIN THE SPECIFIED WARRANTY PERIOD. PROVIDED MANUFACTURER'S WRITTEN INSTRUCTIONS FOR INSTALLATION, OPERATION, AND MAINTENANCE HAVE BEEN FOLLOWED.
- EXTRA MATERIALS
- FURNISH EXTRA MATERIALS DESCRIBED BELOW THAT MATCH PRODUCTS INSTALLED, ARE PACKAGED WITH PROTECTIVE COVERING FOR STORAGE, AND ARE IDENTIFIED WITH LABELS DESCRIBING CONTENTS.
- FILTERS: ONE SET OF FILTERS FOR EACH UNIT.
- ROOFTOP UNITS (AHU-1, AHU-2)
- DESCRIPTION: FACTORY ASSEMBLED AND TESTED; DESIGNED FOR ROOF OR SLAB INSTALLATION; AND CONSISTING OF COMPRESSORS, CONDENSERS, EVAPORATOR COILS, CONDENSER AND EVAPORATOR FANS, REFRIGERATION AND TEMPERATURE CONTROLS, GAS HEATER, FILTERS, AND DAMPERS.
- CONSTRUCTION
- UNIT SHALL BE COMPLETELY FACTORY ASSEMBLED, PIPED AND WIRED AND SHIPPED IN ONE SECTION.
- UNIT SHALL BE SPECIFICALLY DESIGNED FOR OUTDOOR APPLICATION WITH A FULLY WEATHERPROOF CABINET.
- CABINET SHALL BE CONSTRUCTED ENTIRELY OF GALVANIZED STEEL WITH THE EXTERIOR CONSTRUCTED OF 20 GAUGE OR HEAVIER MATERIAL.
- PAINT FINISH SHALL BE CAPABLE OF WITHSTANDING AT LEAST 2000 HOURS, WITH NO VISIBLE CORROSIVE EFFECTS, WHEN TESTED IN A SALT SPRAY AND FOG ATMOSPHERE IN ACCORDANCE WITH ASTM B 117-99 TEST PROCEDURE.
- THE UNIT ROOF SHALL BE SLOPED OR CROSS-BROKEN TO ASSURE DRAINAGE.
- UNIT SPECIFIC COLOR CODED WIRING DIAGRAMS SHALL MATCH THE UNIT COLOR CODED WIRING AND WILL BE PROVIDED IN BOTH POINT-TO-POINT AND LADDER FORM.
- DIAGRAMS SHALL ALSO BE LAMINATED IN PLASTIC AND PERMANENTLY AFFIXED INSIDE THE CONTROL COMPARTMENT.
- ACCESS TO FILTERS, BLOWER, HEATING SECTION, AND OTHER ITEMS NEEDING PERIODIC CHECKING OR MAINTENANCE SHALL BE THROUGH HINGED ACCESS DOORS WITH QUARTER TURN LATCHES. DOOR FASTENING SCREWS ARE NOT ACCEPTABLE.
- ACCESS DOORS SHALL HAVE STAINLESS STEEL HINGES AND FULL PERIMETER CASINGING.
- ALL OPENINGS THROUGH THE BASE PAN OF THE UNIT SHALL HAVE UPURNED FLANGES OF AT LEAST 1/2" IN HEIGHT AROUND THE OPENING THROUGH THE BASE PAN.
- AIR SIDE SERVICE ACCESS DOORS SHALL HAVE RAIN BREAK OVERHANGS.
- DOOR ACCESS DOORS SHALL HAVE AN INTERNAL METAL LINER TO PROTECT THE DOOR 1/2" NICK THICK, 1 1/2" R. DENSITY FIBERGLASS INSULATION.

- INTERIOR AIR SIDE OF THE CABINET SHALL BE ENTIRELY INSULATED ON ALL EXTERIOR PANELS WITH 1 INCH THICK, 1 1/2 LB. DENSITY FIBERGLASS INSULATION.
- UNIT SHALL HAVE DECALS AND TAGS TO INDICATE UNIT LIFTING AND RIGGING, SERVICE AREAS AND CAUTION AREAS. INSTALLATION AND MAINTENANCE MANUALS SHALL BE SUPPLIED WITH EACH UNIT.
- CABINET OPTIONS INCLUDE:
- BASE PAN INSULATION FOR UNITS NOT MOUNTED ON A CURB.
- UNIT SHALL BE FURNISHED WITH 304 STAINLESS STEEL DRAIN PANS. SUPPLY FANS:
- BLOWER(S) SHALL BE ENTIRELY SELF CONTAINED ON A SLIDE DECK FOR SERVICE AND REMOVAL FROM THE CABINET.
- ALL BELT DRIVE BLOWER(S) SHALL HAVE BACKWARD INCLINED AIRFOIL BLADES.
- ADJUSTABLE V-BELT DRIVE SHALL BE PROVIDED WITH A MINIMUM RATING OF 140HP. 1 THYPHNS OF THE MOTOR NAMEPLATE BRAKE HORSEPOWER WHEN THE ADJUSTABLE PULLEY IS AT THE MINIMUM RPM.
- BLOWERS, DRIVES AND MOTORS SHALL BE DYNAMICALLY BALANCED.
- OUTSIDE AIR OPTIONS:
- SHALL BE FULLY MODULATING, ENTHALPY CONTROLLED ECONOMIZER WITH MULTISTAGE INTEGRATED ECONOMIZER AND COMPRESSOR OPERATION FOR MAXIMUM BENEFIT. THE ECONOMIZER SHALL CONSIST OF A MOTOR OPERATED OUTDOOR AIR DAMPER AND RETURN AIR DAMPER ASSEMBLY CONSTRUCTED OF EXTRUDED ALUMINUM HOLLOW CORE, AIR FLOW BLADES WITH RUBBER EDGE SEALS AND ALUMINUM END SEALS. DAMPER BLADES SHALL BE GEAR DRIVEN AND DESIGNED TO HAVE NO MORE THAN 2% CM OF LEAKAGE PER 50 FT. OF DAMPER AREA WHEN SELECTED TO 2 IN. W.G. AIR PRESSURE DIFFERENTIAL ACROSS THE DAMPER.
- CONDENSER OPTIONS:
- AIR COOLED CONDENSER SECTION:
- THE CONDENSING SECTION SHALL BE EQUIPPED WITH VERTICAL DISCHARGE AXIAL FLOW DIRECT DRIVE FANS. DIRECT DRIVE FANS SHALL BE DIRECTLY CONNECTED TO AND SUPPORTED BY THE MOTOR SHAFT.
- THE CONDENSER COILS SHALL BE SLOPED AT LEAST 30 DEGREES TO PROTECT THE COILS FROM DAMAGE.
- CONDENSER COILS SHALL BE COPPER TUBES WITH ALUMINUM FINS MECHANICALLY BONDED TO THE TUBES.
- CONDENSER COILS TO BE SIZED FOR A MINIMUM OF 10% OF REFRIGERANT SUB-COOLING.
- FILTERS: 2-INCH- THICK, FIBERGLASS, THROWAWAY WITH AN ASHRAE EFFICIENCY OF 30%.
- EVAPORATOR COILS:
- EVAPORATOR COILS SHALL BE COPPER TUBE WITH ALUMINUM FINS MECHANICALLY BONDED TO THE TUBES.
- EVAPORATOR COILS SHALL HAVE GALVANIZED STEEL END CASINGS.
- EVAPORATOR COILS SHALL HAVE EQUALIZING TYPICAL TUBE HEADERS.
- EVAPORATOR COILS SHALL BE FURNISHED WITH A THERMOSTATIC EXPANSION VALVE.
- EVAPORATOR COILS SHALL BE FURNISHED WITH A DOUBLE SLOPED DRAIN PAN FOR THE POSITIVE DRAINAGE OF CONDENSATE.
- OPTIONS:
- EVAPORATOR COIL DRAIN PAN(S) SHALL BE FABRICATED OF 304 STAINLESS STEEL.
- REFRIGERATION SYSTEM:
- COMPRESSORS SHALL BE SCROLL TYPE WITH INTERNAL THERMAL OVERLOAD PROTECTION AND MOUNTED ON THE COMPRESSOR MANUFACTURER'S RECOMMENDED RUBBER VIBRATION ISOLATORS. EACH COMPRESSOR SHALL HAVE INDEPENDENT REFRIGERANT CIRCUITS.
- COMPRESSORS SHALL BE MOUNTED IN AN ISOLATED COMPARTMENT TO PERMIT OPERATION OF THE UNIT WITHOUT AFFECTING AIR FLOW WHEN THE DOOR TO THE COMPARTMENT IS OPEN.
- COMPRESSORS SHALL BE ISOLATED FROM THE BASE PAN AND SUPPLY AIR TO AVOID ANY TRANSMISSION OF NOISE FROM THE COMPRESSOR INTO THE BUILDING AREA.
- SYSTEM SHALL BE EQUIPPED WITH THERMOSTATIC EXPANSION VALVE TYPE REFRIGERANT FLOW CONTROL.
- SYSTEM SHALL BE EQUIPPED WITH AUTOMATIC RESET LOW PRESSURE AND MANUAL RESET HIGH PRESSURE REFRIGERANT CONTROL.
- UNIT SHALL BE EQUIPPED WITH SOHRAIDER TYPE SERVICE FITTINGS ON BOTH THE HIGH SIDE AND LOW PRESSURE SIDES OF THE SYSTEM.
- UNIT SHALL BE EQUIPPED WITH RETROFIT LIQUID LINE DRIVERS.
- UNIT SHALL BE FULLY FACTORY CHARGED WITH REFRIGERANT.
- OPTIONS:
- HOT GAS BYPASS SHALL BE PROVIDED ON THE FIRST REFRIGERANT CIRCUIT.
- UNIT SHALL OPERATE ON R-410A REFRIGERANT.
- GAS HEAT SECTION:
- AHU-2: UNIT SHALL HEAT USING NATURAL GAS AND BE EQUIPPED WITH A MODULATING GAS VALVE, ADJUSTABLE SPEED COMBUSTION BLOWER AND STAINLESS STEEL TUBULAR HEAT EXCHANGER. THE HEAT EXCHANGER SHALL HAVE A 25 YEAR NON PRO-RATED WARRANTY. THE COMPLETELY FACTORY MOUNTED GAS HEATING ASSEMBLY SHALL BE CAPABLE OF OPERATING AT ANY FIRING RATE BETWEEN 100% AND 30% OF RATED CAPACITY. THE COMBUSTION AIR AND GAS FIRING RATE SHALL BOTH BE CAPABLE OF MODULATION. A DISCHARGE AIR SENSOR SHALL BE PROVIDED FOR FIELD INSTALLATION IN THE SUPPLY AIR DUCTWORK TO SENSE THE DISCHARGE AIR TEMPERATURE. THE DISCHARGE AIR SENSOR SHALL BE ADJUSTED AT THE ELECTRONIC CONTROLLER WITHIN THE ROOFTOP UNIT CONTROL COMPARTMENT.
- AHU-1: UNIT SHALL HEAT USING NATURAL GAS FUEL AND WITH TWO (2) STAGES OF HEAT CAPACITY. UNIT SHALL BE PROVIDED WITH A GAS HEATING CURVE CONSISTING OF AN ALUMINIZED STEEL HEAT EXCHANGER WITH MULTIPLE CONVEXITIES, AN INDUCED DRAFT BLOWER AND AN ELECTRIC PRESSURE SWITCH TO LOCKOUT THE GAS VALVE UNTIL THE COMBUSTION CHAMBER IS PURGED AND COMBUSTION AIR FLOW IS ESTABLISHED. UNIT SHALL BE PROVIDED WITH A GAS IGNITION SYSTEM CONSISTING OF AN ELECTRONIC IGNITOR TO A PILOT SYSTEM, WHICH IS TO BE CONTINUOUSLY BURNING WHEN THE HEATER IS OPERATING, BUT WILL SHUT OFF THE PILOT WHEN HEATING IS NOT REQUIRED. UNIT SHALL HAVE GAS SUPPLY PIPING ENTRIES IN THE UNIT BASE FOR THROUGH THE CURB GAS PIPING AND IN THE OUTSIDE CABINET WALL FOR ACROSS THE ROOF GAS PIPING. THE GAS HEAT EXCHANGER SHALL CARRY A 15 YEAR NON PRO-RATED WARRANTY.
- CONTROLS
- REFRIGERATION SYSTEM TO COMPLY WITH ASHRAE 15, "SAFETY CODE FOR MECHANICAL REFRIGERATION."
- ENERGY EFFICIENCY RATIO EQUAL TO OR GREATER THAN PRESCRIBED BY ASHRAE 90.1, "ENERGY EFFICIENT DESIGN OF NEW BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS."
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- GENERAL WARRANTY
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- PAINT FINISH SHALL BE CAPABLE OF WITHSTANDING AT LEAST 2000 HOURS, WITH NO VISIBLE CORROSIVE EFFECTS, WHEN TESTED IN A SALT SPRAY AND FOG ATMOSPHERE IN ACCORDANCE WITH ASTM B 117-99 TEST PROCEDURE.
- THE UNIT ROOF SHALL BE SLOPED OR CROSS-BROKEN TO ASSURE DRAINAGE.
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- DIAGRAMS SHALL ALSO BE LAMINATED IN PLASTIC AND PERMANENTLY AFFIXED INSIDE THE CONTROL COMPARTMENT.
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- ACCESS DOORS SHALL HAVE STAINLESS STEEL HINGES AND FULL PERIMETER CASINGING.
- ALL OPENINGS THROUGH THE BASE PAN OF THE UNIT SHALL HAVE UPURNED FLANGES OF AT LEAST 1/2" IN HEIGHT AROUND THE OPENING THROUGH THE BASE PAN.
- AIR SIDE SERVICE ACCESS DOORS SHALL HAVE RAIN BREAK OVERHANGS.
- DOOR ACCESS DOORS SHALL HAVE AN INTERNAL METAL LINER TO PROTECT THE DOOR 1/2" NICK THICK, 1 1/2" R. DENSITY FIBERGLASS INSULATION.

- COOLING MODE - COOL AIR SUPPLIED IN DUCT SYSTEM (BELOW 75F, 24C) NIC C
- CHANGEOVER THERMOSTAT SENSES COOL AIR IN THE BY-PASS BOX AND SIGNALS THE ROOM THERMOSTAT TO CONTROL THE COLD AIR SUPPLY. 1 THYPHNS
- ON A RISE IN ROOM TEMPERATURE, THE THERMOSTAT ENERGIZES THE ACTUATOR. THE ACTUATOR SLOWLY ROTATES THE DAMPER SHAFT COUNTER-CLOCKWISE TO INCREASE THE COLD AIR TO THE ROOM.
- ON A FALL IN ROOM TEMPERATURE, THE THERMOSTAT REVERSES THE ABOVE ACTION. THE ACTUATOR SLOWLY ROTATES THE DAMPER SHAFT CLOCKWISE TO DECREASE COLD AIR TO THE ROOM.
- IF THE ROOM TEMPERATURE CONTINUES TO FALL, THE THERMOSTAT ACTIVATES, AS THE CASE MAY BE, THE CONTROL RELAY OF THE ELECTRIC PERIMETER HEATING.
- HEATING MODE - WARM AIR SUPPLIED IN DUCT SYSTEM (ABOVE 75F, 26C)
- CHANGEOVER THERMOSTAT SENSES ROOM AIR IN THE BY-PASS BOX AND SIGNALS THE ROOM THERMOSTAT TO CONTROL THE HEATING AIR SUPPLY.
- ON A RISE IN ROOM TEMPERATURE, THE THERMOSTAT ENERGIZES THE ACTUATOR. THE ACTUATOR SLOWLY ROTATES THE DAMPER SHAFT CLOCKWISE TO DECREASE THE HEATING AIR IN THE ROOM.
- ON A FALL IN ROOM TEMPERATURE, THE THERMOSTAT REVERSES THE ABOVE ACTION. THE ACTUATOR SLOWLY ROTATES THE DAMPER SHAFT COUNTER- CLOCKWISE TO INCREASE HEATING AIR TO THE ROOM.
- IF THE ROOM TEMPERATURE CONTINUES TO DROP, THE THERMOSTAT ACTIVATES, AS THE CASE MAY BE, THE CONTROL RELAY OF THE ELECTRIC PERIMETER HEATING.

GENERAL NOTES:

- COORDINATE EXACT ROUTING OF NEW NATURAL GAS LINE WITH UTILITY AND CONTRACT ADMINISTRATOR.
- AHU-1 = 6'-2" X 3'-6", 832 LBS, MOUNTED ON PAD C/W VIBRATION ISOLATORS. AHU-2 = 6'-6" X 5'-0", 875 LBS MOUNTED ON STAND ON PAD C/W VIBRATION ISOLATORS.
- EXISTING GAS METER MAY REQUIRE REPLACEMENT DUE TO ADDITIONAL LOADS.

Winnipeg

REV	DESCRIPTION	DATE	BY
2	REVISED FOR TENDER	Jul 26, 2006	LK
1	ISSUED FOR TENDER	May 10, 2006	DAS
0	ISSUED FOR 99% REVIEW	May 03, 2006	DAS

SEAL: **APEGN** Certificate of Authorization SMS Engineering Ltd. No. 166 Expiry: April 30, 2007

ORIGINAL CONTRACT DRAWING SIGNED AND SEALED BY ID. KELLY, P. ENG MAY 10, 2006

THIS DRAWING MUST NOT BE SEALED. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DATUMS AND LEVELS PRIOR TO COMMENCEMENT OF WORK AND IS HELD RESPONSIBLE FOR REPORTING ANY DISCREPANCY OR OMISSION TO THE CONTRACT ADMINISTRATOR IMMEDIATELY. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF NEIL COOPER ARCHITECT INC. AND CAN BE REPRODUCED ONLY WITH THE PERMISSION OF NEIL COOPER ARCHITECT INC. IN WHICH CASE THE REPRODUCTION MUST BEAR THEIR NAME AS THE ARCHITECTURAL FIRM.

DRAWING: **MECHANICAL SITE PLAN & SPECIFICATIONS**

PROJECT: **ADDITION TO 770 ROSS AVENUE**

Winnipeg, Manitoba

Neil Cooper Architect Inc.
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DRAWN BY: DM CHECKED BY: DAS SHEET NO: REV NO:
DATE: APRIL 18, 2006
SCALE: AS NOTED

M10R2

FILE: G:\PROJECTS\2006_SP\06520NCA.COW\cadd\M\6520M1.dwg