



SEQUENCE OF OPERATION

MUA-1 INTERLOCKS WITH EF-1, GAS DETECTION SYSTEM, BUILDING PRESSURE CONTROL PANEL, AND THERMOSTAT:

THE FOLLOWING HVAC CONTROL SYSTEM SHALL BE DESIGNED BY A CONTROLS CONTRACTOR WORKING WITH THE MUA VENDOR AND THE DEPARTMENT OF LABOUR (CONTACT SHAWN PERRY) TO MEET ALL REQUIREMENTS.

VENDOR CONTROLS PROVIDED WITH MUA-1 TO CONTROL HEATING AND MUA MOTORIZED DAMPERS. COORDINATE DETAILS WITH VENDOR. CONTROLS CONTRACTOR SHALL PROVIDE CONTROL WIRING TO INTERLOCK MUA-1 WITH EF-1, THE EXISTING GAS DETECTION SYSTEM, THE BUILDING PRESSURE CONTROL PANEL, AND THE WALL THERMOSTAT. PROVIDE ACTUATORS FOR MOTORIZED DAMPERS ON MUA-1 TO SUIT CONTROL REQUIREMENTS.

MUA-1 AND EF-1 SHALL OPERATE TO HEAT AND VENTILATE THE NORTH SHOP TO 65 DEG F AS FOLLOWS:

- DURING NORMAL OPERATION, MUA-1 WILL BE OFF WITH THE OUTSIDE AIR DAMPERS CLOSED AND EF-1 OFF.
- ON A CALL FOR HEATING FROM THE THERMOSTAT, THE MUA-1 RETURN AIR DAMPER WILL OPEN, OUTSIDE AIR DAMPER WILL CLOSE, EF-1 SHALL BE OFF, AND MUA-1 SHALL START AND RUN TO MAINTAIN SPACE TEMPERATURE.
- ON A CALL FOR VENTILATION FROM THE GAS DETECTION SYSTEM WHEN EITHER THE CO LEVELS EXCEED 25 PPM OR THE NO2 LEVELS EXCEED 1 PPM, THE MUA OUTSIDE AIR DAMPER WILL OPEN, RETURN AIR DAMPER WILL CLOSE, MUA-1 AND EF-1 SHALL START AND RUN UNTIL GAS LEVELS RETURN WITHIN ACCEPTABLE LIMITS. EF-1 SHALL BE INTERLOCKED TO MUA-1 SO THAT IT WILL NOT START UNTIL CONFIRMATION THAT THE OUTSIDE AIR DAMPER IS FULLY OPEN AND THERE IS AIRFLOW FROM THE AIR PROVING SWITCH IN THE SUPPLY AIRSTREAM OF MUA-1. THE MUA CONTROL PANEL WILL MONITOR EF-1 BY MEANS OF A CURRENT SENSING RELAY SO THAT ANY TIME EF-1 IS RUNNING, THE OUTSIDE AIR DAMPER AT MUA-1 MUST BE OPEN AND AIR PROVING SWITCH CONFIRMS AIRFLOW, OTHERWISE EF-1 WILL SHUT OFF.
- ON A CALL FOR FREE COOLING WHEN OUTDOOR ENTHALPY PERMITS, MUA-1 WILL OPERATE IN ECONOMISER MODE WITH THE RETURN AIR AND FRESH AIR DAMPERS MODULATING AS REQUIRED AND EF-1 OFF. AIR SHALL BE RELIEVED OUT THE BACKDRAFT DAMPER AT EF-1.
- A BUILDING PRESSURE SENSOR WILL MONITOR GARAGE PRESSURE RELATIVE TO OUTSIDE. IF PRESSURE IN THE GARAGE DROPS BELOW $-0.05''$ W.C. FOR 120 SECONDS, THE AUDIBLE AND VISIBLE ALARM WILL TURN ON, MUA-1 AND EF-1 WILL SHUT OFF.
- MUA-1 TO COME EQUIPPED WITH A MANUAL OVERRIDE SWITCH WITH COUNTDOWN TIMER. WHEN SWITCH IS OPERATED, EF-1 AND MUA-1 WILL OPERATE IN VENTILATION MODE FOR 15 MINUTES.

LEGEND:

- AIR FLOW DIRECTION
- CONTROL WIRING
- MAKEUP AIR UNIT
- EXHAUST FAN
- BACKDRAFT DAMPER
- SPACE THERMOSTAT
- GAS DETECTION SYSTEM (EXISTING)
- DIFFERENTIAL PRESSURE SENSOR
- AUDIBLE/VISIBLE PRESSURE ALARM
- AIRFLOW PROVING SWITCH
- MOTORIZED DAMPER
- INDIRECT-FIELD GAS BURNER
- LIMIT SWITCH
- CURRENT SENSING RELAY
- OUTDOOR TEMPERATURE SENSOR (PROVIDE SUN SHIELD, INSTALL ON NORTH WALL)
- OUTDOOR HUMIDITY SENSOR (PROVIDE SUN SHIELD)

NOTES:

- THESE DRAWINGS SHALL NOT BE SCALED.
- THE CONTRACTOR SHALL VISIT THE SITE AND SATISFY HIMSELF ALL DIMENSIONS, DATUM, AND DETAILED INFORMATION SHOWN ARE CORRECT.
- THE CONTRACTOR IS TO REVIEW AND COORDINATE ALL MECHANICAL, ELECTRICAL AND STRUCTURAL DRAWINGS FOR ADDITIONAL OPENINGS THROUGH FLOORS, WALLS, AND CEILINGS FOR DUCT, PIPE & ELECTRICAL RISERS AND ALL OPENINGS NOT SHOWN ON DRAWINGS.
- ALL PRODUCTS AND MATERIALS TO BE USED AND INSTALLED SHALL CONFORM WITH MANUFACTURER'S SPECIFICATIONS & APPLICABLE CODES.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO PATCH AND MAKE GOOD ALL EXISTING CONSTRUCTION AFFECTED BY THE REMOVAL OF ALL ITEMS FORMING THE PART OF THE RENOVATION WORK.

DRAWING LIST

SHEET No:	SHEET TITLE
M01	NORTH SHOP - EXISTING HVAC DEMOLITION PLAN
M02	NORTH SHOP - NEW HVAC RENOVATION PLAN
M03	NORTH SHOP - SECTION & DETAILS
M04	MECHANICAL CONTROLS SCHEMATIC
M05	MECHANICAL SPECIFICATIONS

No.	REVISION/DESCRIPTION	BY	DATE
1	ISSUED FOR CONSTRUCTION	RBB	2013 02/08
0	ISSUED FOR TENDER	RBB	2012 07/17

SEAL



DRAWN	CHECKED	DESIGNED	APPROVED
RLR	RLG	RLG	RBB
DATE: 2012.04.16	USER APPROVAL		

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

PROJECT
NORTH SHOP 2170 MAIN STREET
HVAC UPGRADE

SHEET TITLE
MECHANICAL
CONTROLS SCHEMATIC

SCALE	PROJECT No:	SHEET No:
AS SHOWN	12-0107-003	M04

