

MECHANICAL/ELECTRICAL ADDENDUM

ME-02

Architect: ROA

Date: October 25, 2024

Project: Brantford Animal Shelter

Project No.: VR-23-013

This addendum forms part of the contract documents and amends the original bidding requirements, drawings and specifications noted below.

1.0 MECHANICAL

1.1 SPECIFICATIONS

.1 Refer to Specification Section 23 37 00 – Air Outlets and Inlets

- .1 Add “Tuttle and Bailey” to acceptable manufacturers listed under 2.1.

.2 Refer to Specification Section 23 33 00 – Air Duct Accessories

- .1 **Add “C&S”** to acceptable manufacturers listed under 2.7 COMBINATION FIRE/SMOKE DAMPERS on condition that all documentation proving compliance with cUL, CAN4 S112M, ULC S505 is provided with shop drawings. Failure to provide documentation will result in disqualification of this product.

.3 Refer to Specification Section 23 34 00 – HVAC Fans

- .1 **Add “JenCo / S&P”** to acceptable manufacturers listed under 2.1.1.
- .2 **Add “JenCo / S&P”** to acceptable manufacturers listed under 2.2.1.
- .3 **Add “Ortech”** to acceptable manufacturers listed under 2.4.1.
- .4 **Add “Ortech”** to acceptable manufacturers listed under 2.5.1.
- .5 **Add** the following specification for hazardous gas detection system:

2.6 CARBON MONOXIDE/NOX VEHICLE ENGINE GAS DETECTION SYSTEM

- .1 *Manufacturers: Quatrosense Environmental Ltd.,*

- .1 *Alternate manufacturers:*

- .1 *Honeywell/Vulcain Gas Detection System*
- .2 *Critical Environment Technologies Canada Inc.*
- .3 *Armstrong Monitoring*

- .2 *Provide a complete installation of a toxic gas detection system including a main control panel, sensors and audible/visual alarm devices that can be linked to a central controller.*

- .3 *The system shall include, but not be limited to, the following: future expandability, display of toxic gas concentration, ability to modify alarm set points, automatic and manual fan start/stop, & display of alarm status*
- .4 *Detectors model: Q5 series toxic or combustible gas transmitter/sensor (surface mount)*
- .5 *Transmitter will be powered by the control panel power supply rated at 24 vac. Fully addressable gas transmitter must be capable of communicating digitally with controller through a communication port. The gas transmitter will incorporate an electrochemical cell for toxic gas monitoring and catalytic bead sensor for combustible gases. Unit sensing cell must compensate for variations in relative humidity and temperature to maintain high levels of accuracy.*
- .6 *When placed in a network configuration the transmitter will be capable of transmitting gas concentrations through the controller. For local activation of fans (or other equipment) an on-board dpdt relay 5 a, 30 vdc or 250 vac (resistive load) will be activated at programmable set points (and programmable time delays) through the control panel. An lcd display will provide gas concentration readings.*
- .7 *Transmitter will be capable of operating within relative humidity ranges of 5-95% and temperature ranges of -4° f to 104° f (-20° C to 40° C).*
- .8 *Unit will be certified to ANSI/UL 61010-1 label and CAN/CSA-C22.2 NO. 61010-1.*
- .9 *The transmitter shall have a plug-in capability for a field replaceable gas cartridge with a smart sensor capable of self-testing. The replaceable gas cartridge shall be factory calibrated and certified to the target gas ready for operation without the requirement for site calibration.*
- .10 *For local activation of audible alarms, the transmitter shall have an on-board device able to generate an audible output of 85 dba @ 10 ft (3m).*
- .11 *Detector alarm levels are to be activated and the unit is to be installed in accordance with the following parameters:*
- .12 *Carbon monoxide (CO) 1st alarm set point (TLV-TWA): 25 ppm 2nd alarm set point (TLV-STEL): 100 ppm. Mounting height: 1200 mm -1225 mm (4 ft. - 5 ft.) Above finished floor coverage radius: 15 m (50 ft.)*
- .13 *Nitrogen dioxide (no2) 1st alarm set point (TLV-TWA): 0.72-1 ppm 2nd alarm set point (TLV-STEL): 2.0-3 ppm. Mounting height: manufacturer's recommendation or 300 mm (1 ft) below ceiling if no recommendation is made. Coverage radius: 15 m (50 ft.)*
- .14 *Controller Q4C-X-R-T-4*
 - .1 *The control panel must be capable of communicating digitally with the networked transmitters and relay modules. The controller shall include a step-down transformer 120/24vac.*
 - .2 *The controller must include a self-test function that allows for the activation/deactivation of all the programmed outputs by simulating a continuous 5% increase/decrease value until the maximum/minimum value is reached.*
 - .3 *The controller will indicate the exact concentration of gas, the gas detected, and the location of the sensor by sweeping through the network and displaying the detected levels at each point on a graphic lcd display.*

.4 Refer to Specification Section 23 52 19 – Boilers, Electric

- .1 **Add** "Fulton" to acceptable manufacturers listed under 2.1.2.

.5 Refer to Specification Section 25 90 00 – Sequences of Operation

- .1 **Clarification:** BAS does not control Mechanical room ventilation/heating/cooling. Revise item 2.8 as follows:

2.8 MECHANICAL & ELECTRICAL ROOM

- .1 *The unit heater, outside air damper, exhaust air damper and fan (as shown on drawings) shall be wired to a line voltage thermostat and controlled to maintain the room temperature set point of 85°F (adj.). On a heating call, unit heater fan shall run; On cooling call, dampers shall open and exhaust fan shall run.*
- .2 *Motorized damper and actuator to be supplied and installed by Division 23.*
- .3 *Status points of motorized dampers, fan and thermostat are to be wired to BAS.*
- .4 *Alarms shall be generated under the following conditions:*
 - .1 *Fan Failure*

- .2 **Add** the following sequence of operation:

2.11 ANIMAL ROOM EXHAUST FANS EF-1, EF-2, EF-5

- .1 *Exhaust fan shall be interlocked with rooftop unit serving associated room(s). Exhaust shall operate when associated rooftop unit is also in operation.*
- .2 *Alarms shall be generated under the following conditions:*
 - .1 *Fan Failure*

- .3 **Add** the following sequence of operation:

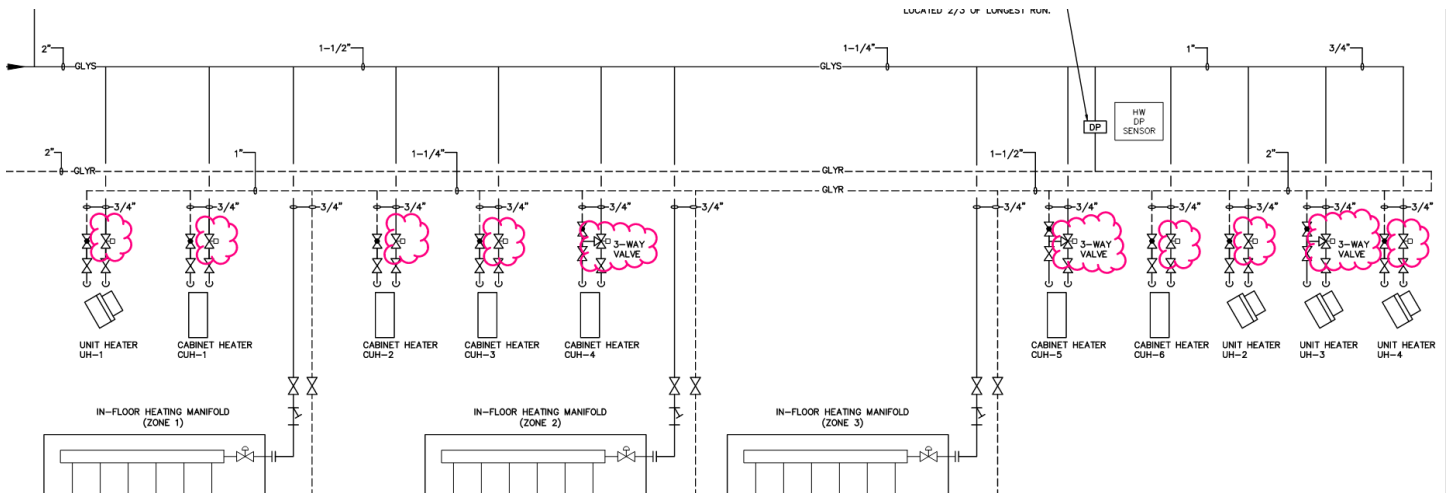
2.12 RECEIVING BAY

- .1 *The unit heater shall be wired to a line voltage thermostat and controlled to maintain the room temperature set point of 85°F (adj.). On a heating call, unit heater fan shall run.*
- .2 *Exhaust fan shall be interlocked with fresh air intake. System shall be wired to hazardous gas detection system and operates as emergency purge upon high levels of gas detection.*
- .3 *Nitrous dioxide: if any NO2 sensor or group of sensors detects 0.72 ppm NO2 gas, exhaust fan operates and fresh air damper opens. Alarm indicator light is on until hazardous gas concentration levels are reduced to below set point alarm levels. High level alarm: if hazardous NO2 gas concentrations are not cleared after 30 minutes or NO2 gas concentrations continue to increase to 2 ppm, high alarm indicator lights on the main gas detection control panel and audible alarms are activated. Audible alarm to sound and alarm contacts continue to operate the exhaust fan until hazardous gas concentration levels are reduced to below set point alarm levels.*
- .4 *Carbon monoxide: if any CO sensor or group of sensors detects 25 ppm CO gas, exhaust fan operates and fresh air intake damper opens. Alarm indicator light is on until hazardous gas concentration levels are reduced to below set point alarm levels. High level alarm: if hazardous CO gas concentrations are not cleared after 30 minutes or if any sensor detects a carbon monoxide concentration of 100 ppm gas, high alarm indicator lights on the main gas detection control panel and audible alarms are activated. Audible alarm to sound and alarm contacts continue to operate the exhaust fan until hazardous gas concentration levels are reduced to below set point alarm levels.*
- .5 *Motorized damper and actuator to be supplied and installed by Division 23.*
- .6 *Status points of motorized dampers, fan and hazardous gas detection system are to be wired to BAS.*
- .7 *Alarms shall be generated under the following conditions:*
 - .1 *Fan Failure*
 - .2 *Hazardous gas detection alarm*

2.2 DRAWINGS

- .1 Refer to Drawing M501

- .1 **Delete** requirement for control valves at cabinet heaters and unit heaters.



.2 Refer to Drawing M502

- .1 Refer to detail 2/M502. **Clarification:** Division 23 and 25 shall refer to sequence of operation revised in section 2.1 of this document for delineation of controls work. BAS shall monitor status point. Division 23 controls shall operate system.
- .2 Refer to detail 4/M502. **Revise** title of detail to: *Typical Animal Room Exhaust Fan Controls Schematics EF-1, EF-2, EF-5*

2.0 ELECTRICAL

2.1 SPECIFICATIONS

.1 Refer Specifications Section 26 06 35

- .1 Add the following occupancy sensor specification:

Sensor switches shall be Combination passive infrared and ultrasonic sensor/switch assemblies with a rating to suit the connected load, wall (180° coverage) and/or ceiling mounted (360° coverage) as indicated on the drawings, white, almond or ivory colour as directed, each complete with time, range and light adjustments, adjustable blinders to block peripheral signals, a photocell to detect light to enable ambient light override, Fresnel lens, LED indicator which flashes when the sensor detects motion, and a manual on-off push button.

2.2 DRAWINGS

.1 Refer Drawing E100

- .1 Add the following note to Hydro Service Notes:

Pad mounted transformer, vault and primary conductors will be supplied and installed by Grandbridge Energy. All civil work and primary duct bank and 4 x 4" primary ducts shall be provided by Contractor from transformer to existing pole south of the proposed transformer location at the end of the primary duct bank shown on drawing E100. Refer to Civil plans for hydro pole location.

- .2 Revise duct bank detail 5/E100 to include 4 x 4" ducts instead of 2.

.2 Refer Drawing E101

.1 Add the following drawing note #2:

Lights on the inverter circuit shall be controlled by switches or occupancy sensors controlling other lights in the same areas. Upon loss of normal power, they shall automatically turn on to 100% bypassing the switches or occupancy sensor. Any module compatible with the lights and inverter is acceptable.

.3 Refer Drawing E201

.1 Revise "Digital Info Panel" at Corridor 105 to owner supplied TV. Revise receptacle mounting height to 52" AFF. Add data outlet next to receptacle at same height.

END OF ADDENDUM ME-02