SECTION 23 8500 – REFRIGERANT GAS DETECTION SYSTEM PART 1 - GENERAL

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| 1.1 |  | RELATED DOCUMENTS |
|  | A. | Drawings and general provisions of the Contract, including General and Supplementary General Conditions and other Division 01 Specification Sections, apply to this Section. |
| 1.2 |  | SUMMARY |
|  | A. | Provide a complete installation of a refrigerant gas detection system to provide a monitoring system for refrigeration leaks and an automatic means of ventilating the space during a leak condition. System to include stand-alone sensors, audible/visual alarm devices to communicate the state of the alarm condition locally, a manual reset, and fan activation controls. |
|  | B. | The system shall include, but not be limited to, the following:   1. Future expandability 2. Display of Live Gas Levels, System and Alarm Status 3. Remote Refrigerant Detectors 4. Remote Audible and Visual Alarm Beacons 5. Outputs for Fan Activation 6. Re-Set and Mute Functions |

PART 2 - PRODUCTS

* 1. Control Panel type CGS GDP2X
     1. The control panel will be 120 Vac powered, individually powering and accepting the inputs of multiple remote detectors model #CGSRTFT. The unit will clearly display the condition of an alarm on a touch screen display and provide a re-set and mute function. The unit shall provide a fascia mounted emergency button to manually activate alarm condition. Mount the panel at AFF. 48”
     2. The control panel will be capable of transmitting alarm conditions to a BMS system.
     3. For local activation of fans or louvers (or other equipment), the contactor outputs will send 120VAC signals for ran relay control.
     4. The control panel will be capable of operating within relative humidity ranges of 5-95% non- condensing and temperature ranges of -4° F to 140° F (-20° C to 60° C).
     5. The unit will accept up to eight (8) remote detectors although less may be required for designated detection area.
     6. Local activation of audible and visual alarms, the transmitter shall have an on-board device able to generate an audible output of 85 dBA @ 10 ft.
     7. The unit shall provide 24v output signals to activate remote audible and alarm beacons model #CGSAAB with in-built adaptable tones and strobes.
     8. The detectors shall come factory set and calibrated to alarm at the OEL value as defined by ASHRAE.

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| GASES | ALARM LEVELS  PRE-ALARM ALARM | | MOUNTING HEIGHT | COVERAGE RADIUS |
| R134a | 500-800PPM | 1000PPM | 1FT A.F.F. | 1 PER CHILLER |
| R407c | 500-800PPM | 1000PPM | 1FT A.F.F. | 1 PER CHILLER |
| R410a | 500-800PPM | 1000PPM | 1FT A.F.F. | 1 PER CHILLER |
| R417a | 500-800PPM | 1000PPM | 1FT A.F.F. | 1 PER CHILLER |
| R32 | 500-800PPM | 1000PPM | 1FT A.F.F. | 1 PER CHILLER |

Local Building Codes recommendations take precedence over these parameters. Coverage can differ

PART 3 – EXECUTION

* 1. INSTALLATION
     1. Install hazardous gas monitoring equipment including sensors, audible alarms, as shown on Contract Drawings, and as recommended by manufacturer of equipment, and as required by authorities having jurisdiction.
     2. Install conduit and wiring from sensors to control panel and to the fan starters/ HVAC control panel as recommended by manufacturer of equipment.
  2. SEQUENCE OF OPERATION
     1. Alarm level shall be factory determined based on the ASHREA OEL limit for the specific refrigerant used.
     2. Upon alarm level detection of 1000PPM.
        1. Remote audible and visual alarms will activate.
        2. Purge fans connected to the GDP control panel will energize and start.
        3. The GDP control panel will display an alarm condition with visual and audible indication and display the zone location & gas levels of the detector in alarm on a touch screen display.
        4. The system will remain in alarm until reset manually at the control panel.
     3. Upon activation of the “emergency” button located on the panel, the same alarm sequence will ensue.
  3. COMMISSIONING
     1. After installation, test equipment to demonstrate operation of functions described above under sequence of operation by manufactures certified service technician.
     2. Provide testing kits (including gas bottles) for testing and calibration by Commission technician.
  4. WARRANTY.
     1. Limited Warranty
        1. Canadian Gas Safety, Inc. warrants to the original purchaser and/or ultimate customer ("Purchaser") of CGS products ("Product") that if any part thereof proves to be defective in material or workmanship within thirty six (36) months, such defective part will be repaired or replaced, free of charge.

END OF SECTION 28 3500