

SECTION 15788

REFRIGERATION SYSTEM SAFETY EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

A. Related Sections:

1. Section 15047.
2. Division 15 - (all applicable sections).
3. Division 16 - (all applicable sections).

1.02 REFERENCES

- A. American Society of Heating, Air-conditioning and Refrigeration Engineers (ASHRAE) 15 - 1992.
- B. ANSI/NFPA 1981-1987 Edition, and MSHA certification TC-13F-140.
- C. ANSI A13.1 Scheme for Identification of Piping Systems.

1.03 SUBMITTALS

- A. Submit manufacturer's data and shop drawings for approval before ordering or starting work.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Protect equipment during storage and installation. Cover equipment with corresponding shipping container or other appropriate material after unit is set in place to protect unit from damage from construction debris or paint and plaster splatter.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Refrigerant Monitor:

1. McQuay.
2. Trane RMWD.
3. Yokogawa USA.

2.02 REFRIGERANT MONITOR

Project Name
Project No.

**M-DCPS MASTER
SPECIFICATION GUIDELINES**

July 99
15788-1

A. Employ infrared photo acoustic sensor technology to provide sensing capability up to one part per million (ppm). Provide the ability to differentiate between compounds of all commonly used refrigerants. Equip the monitor with the following features:

1. Power Supply: 120 VAC, single phase.
2. NEMA-4 Construction.
3. Calibration for CFC-11, HCFC-22, or HFC 134a.
4. Provide analog output to connect to analog input of building management system to provide trending information for refrigerant levels in equipment room. Output shall be 0-10 VDC and 4-20 mA. Output shall be adjustable and may be set at 0-100 or 1-100 ppm.
5. Provide auxiliary contacts available for use in initiating the fire alarm system, the security system, and visual alarms at mechanical room entrances.
6. Provide a front panel display showing concentration information, alarms, and service diagnostics.
7. Provide 3 levels of concentration alarms and a trouble alarm. The system may be reset at the monitor or may be reset remotely. Alarms shall be field adjustable and may be configured to be latching or non-latching.
8. Provide field-installed remote-mounted audible alarm with 3-level flashing lights (red, yellow, and blue).
9. Provide field-installed visual alarms at each mechanical room entrance. Visual alarm shall be rotating beacon with magnifying red lens, 120 VAC, Edwards 49R-N5.
10. Provide sample filters.
11. The monitor pickup points shall be 18 inches above the floor, as close to the refrigerant source as possible, between the refrigerant source and the room exhaust fan, but not over 50 feet from the refrigerant source. Provide multiple sensors and a multi-channel scanner if necessary to keep the distance from the sensor to the refrigerant source less than 50 feet.

2.03 OXYGEN MONITOR

A. The monitor shall use a non-depleting coulometric or electrochemical sensor cell.

1. The unit shall have a measurement range of 0-25 percent and an accuracy of plus or minus 1 percent of full scale.
2. Response time shall be a minimum of 90 percent if full reading within 30 seconds.
3. The unit must have at least 2 adjustable alarm set points each with a binary contact closure for remote

indication.

4. An analog corresponding to the display value must be available for remote indication.
5. An analog corresponding to the display value shall be available for remote monitoring with the building management system or other recording equipment.

2.04 SELF CONTAINED BREATHING APPARATUS

- A. Provide 2 Self-Contained Breathing Apparatuses (SCBA).
 1. Install 1 inside the equipment room, the second outside beside the main equipment room entry door.
 2. Each SCBA unit shall be rated for 30 minutes.
 3. Each shall be provided with a brightly-colored durable case that will maintain visibility while protecting against dirt or damage.
- B. Provide SCAB equal to MA Ultralite II, with pressure-demand quick disconnect regulator, 30 minute-rated fully-wired composite cylinder complying with ANSI/NFPA Standard 1981-1987 Edition, and MSHA certification TC-13F-140. Wall mounted shall be equal to MA Model 695308.

2.05 SIGNAGE

- A. Each refrigerating system sign erected on the premises shall be easily legible, permanent, securely attached, and easily accessible, indicating:
 1. The name and address of the installer.
 2. The kind and initial charge if refrigerant.
 3. The field test pressure applied.
- B. Systems containing more than 100 lbs. of refrigerant shall be provided with durable signs having not less than 0.5" in height, designating:
 1. Valves or switches for controlling the refrigerant flow, the ventilation, and the refrigerant compressors.
 2. The type of refrigerant or secondary coolant contained in the exposed piping outside the machinery room, if applicable. Piping identification shall be according to ANSI A13.1, Scheme for Identification of Piping Systems. Legends indicating flow direction, function, temperature, or pressure may also be used according to accepted practice.
- C. Post emergency shutdown procedure, including precautions to be observed in case of a breakdown or leak, outside of the

machinery room, immediately next to each door. These precautions shall address:

1. Instructions for shutting down the system in case of emergency.
 2. The name, address, and day and night telephone numbers for obtaining service.
 3. The name, address, and day and night telephone numbers of the municipal inspection department having jurisdiction, and instructions to notify said department immediately in case of emergency.
- D. Signage shall comply with Section 15047 of these specifications.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install equipment according to Drawings and applicable manufacturer's instructions.

END OF SECTION

Project Name
Project No.

**M-DCPS MASTER
SPECIFICATION GUIDELINES**

July 99
15788-4