**Section 225.8030 Mechanical Systems**

a) General Requirements

1) Mechanical systems shall be tested, balanced, and operated to demonstrate that the installation and performance of these systems conform to the requirements of this Part.

2) Upon the completion of the contract, the owner shall be furnished with a complete set of manufacturer's operating and preventative maintenance instructions, parts list with numbers and descriptions for each piece of equipment, and a copy of the air-balance report. A complete set of these documents shall be kept on the premises.

3) The owner shall be provided with instructions in the operational use of the systems and equipment as required.

b) Thermal and Acoustical Insulation

1) Insulation shall be provided for the following:

A) Boilers, smoke breeching, and stacks;

B) Steam supply and condensate return piping;

C) Hot water piping above l80º F and all hot water heaters, generators, and convertors;

D) Hot water piping above l25º F that is exposed to contact by residents;

E) Chilled water, refrigerant, other process piping and equipment operating with fluid temperatures below ambient dew point;

F) Water supply and drainage piping on which condensate may occur;

G) Air ducts and casings with outside surface temperatures below ambient dew point; and

H) Other piping, ducts, and equipment as necessary to maintain the efficiency of the system.

2) Insulation may be omitted from hot water and steam condensate piping not subject to contact by residents when such insulation is not necessary for preventing excessive system heat loss or excessive heat gain.

3) Insulation, including finishes and adhesives on exterior surfaces of ducts, pipes, and equipment, shall have a flame spread rating of 25 or less and a smoke developed rating of l50 or less as determined by an independent testing laboratory. Exception: Duct, pipe and equipment coverings shall not be required to meet these requirements where they are located entirely outside of a building, do not penetrate a wall or roof, or do not create an exposure hazard.

4) Access for filter changing shall be provided within equipment rooms.

c) Steam and Hot Water Systems. Supply and return mains and risers for cooling, heating and process steam systems shall be valved to isolate the various sections of each system. Each piece of equipment shall be valved at the supply and return ends.

d) Thermal Hazards. Any surface exceeding a temperature of 140º F (such as radiators, hot water or steam pipes, baseboard heaters, or therapy equipment) that is accessible to residents shall be provided with partitions, screens, shields, or other means to protect residents from injury. Any protective device shall be designed and installed so that it does not present a fire or safety hazard or adversely affect the safe operation of the equipment.

e) Heating, Cooling, and Ventilating Systems

1) A design temperature of 75º F for both summer and winter design conditions shall be provided for all resident use areas, including hallways.

2) All ventilation supply, return and exhaust systems shall be mechanically operated.

3) Outdoor air intakes shall be located as far as practical but not less than l5 feet from the exhaust outlets of ventilation systems, combustion equipment stacks, plumbing vent stacks, or from areas that may collect vehicular exhaust and other noxious fumes. The bottom of outdoor air intakes serving central systems shall be located as high as practical but not less than six feet above ground level, or if installed above the roof, three feet above roof level.

4) The ventilation systems shall be designed and balanced to provide the pressure relationships and ventilation rates as required by National Fire Protection Association Standard 101.

5) A manometer shall be installed across each filter bed serving central air systems.

6) Air conditioning and ventilation systems shall be designed, installed and maintained as required by National Fire Protection Association Standard 101.

7) The hood and duct system for cooking equipment used in processes producing smoke or grease-laden vapors shall be in conformance with National Fire Protection Association Standard 101. That portion of the fire extinguishment system required for protection of the duct system may be omitted when all cooking equipment is served by a grease extractor listed by Underwriter's Laboratory or other independent testing laboratories.

8) The ventilation of the medical gas storage room shall conform to the requirements of National Fire Protection Association Standard 101.

9) Boiler rooms and other rooms having combustion equipment shall be provided with sufficient outdoor air to maintain combustion rates of equipment and limit temperatures to 97º F. Effective temperature shall be as defined by the American Society of Heating, Refrigerating and Air Conditioning Engineers Handbook of Fundamentals.

10) Rooms containing heat-producing equipment, such as boiler rooms, heater rooms, food preparation centers, laundries, and sterilizer rooms shall be insulated and ventilated to prevent any floor surface above from exceeding a temperature of l0º F above the ambient temperature.