

CHAPTER 6. MECHANICAL SYSTEMS

PERFORMANCE OBJECTIVES

- 6-1. GENERAL. Mechanical systems shall be consistent with the MPS and provide project sites and buildings with the following services:
- a. Proper temperatures within buildings and spaces to maintain health, comfort and system safety without excessive energy usage as defined herein;
 - b. Ventilation of dwelling and public spaces to maintain health and sanitary spaces;
 - c. Required ventilation of mechanical and structural areas to insure safe system functioning; and
 - d. Plumbing systems for the storage, supply, distribution and drainage of water, and sewage systems required to maintain safe and sanitary sites and buildings.

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SECTION 1: MANDATORY STANDARDS

6-2. MECHANICAL EQUIPMENT

- a. Operation. Mechanical equipment shall be safe and efficient to operate and durable, dependable and economical to maintain. Equipment shall operate within appropriate noise levels so as not to interfere with tenant use of buildings and spaces. Mechanical equipment shall be provided with ventilation for combustion and maintenance of safe ambient temperatures.
 - b. Location. Equipment, panels and mechanical rooms shall not be accessible to unauthorized personnel. Equipment not located within mechanical rooms shall be protected by vandal-resistant cages or other equivalent means. Mechanical rooms shall be provided with self-closing locks with free knobs on the inside, with access by key only. For technical requirement for doors, see paragraph 10-7. Mechanical and electrical rooms shall be separate, sole use spaces. These rooms shall not be used as passageways, storage areas or for any other purpose. Mechanical rooms and equipment shall be illuminated for safe and convenient use, inspection and maintenance.
- 6-3. HEATING. Heating facilities shall be provided for interior residential, community, public and utility spaces where mechanical heating is considered necessary to provide comfort and system safety.
- a. Space Temperatures. Set-back thermostat controls shall be provided when cost-effective. New or replacement thermostats installed in habitable spaces shall be

factory set for a maximum temperature of no more than 75F for elderly dwelling units and 72F for non-elderly dwelling units. Thermostat controls that are to be moved should not be located in public areas (i.e., hallways, etc). Where conditions necessitate placement of thermostats in public spaces, these units shall be tamper resistant.

- (1) Habitable Spaces. In family projects, the heating system for habitable spaces shall be capable of attaining 65F based upon outside design temperature. In elderly projects, the heating system for habitable spaces shall be capable of attaining 75F based upon outside design temperature.

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NOTE: Dwelling unit thermostats should be inspected for proper placement. Inaccurate space temperature reading may be caused by location of thermostats on outside walls, adjacent to exterior doors, windows, or cooking areas.

- (2) Non-Habitable Spaces. Maintenance, mechanical and other non-habitable spaces shall be maintained at a temperature that provides adequate working conditions and safe system functioning.
- b. Space Heating Equipment. Space heating equipment shall be retrofitted with energy conservation devices that are cost-effective, such as:

- o Electric and electronic pilots;
- o Flue damper;
- o Duct heat recovery device;
- o Reduced oil nozzle size;
- o Tenant fuel metering;
- o Replacement of obsolete equipment;
- o Setback thermostat; or
- o Other.

- (1) Individual Gas or Oil Heaters. Individual gas and oil heaters shall be connected to an approved vent, flue or chimney, and shall have adequate air supply for complete fuel combustion. Heaters shall be protected to prevent unsafe human contact or fires and have clearances around them. Floors beneath equipment shall be protected against fire and deterioration. Screening shall not minimize required ventilation to the space heater. When provided new or replaced, individual controls or units shall not be positioned near the floor, especially in elderly projects or in units for the handicapped.
- (2) Open Flame Heaters. Open flame radiant space heaters shall not be used.

- c. Central Heating Equipment. Central heating equipment shall be retrofitted with energy conservation opportunities and devices that are cost-effective, such as:

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- o Flue heat recovery;
- o Insulation;
- o Turbulators;
- o Replacement of obsolete plant; or
- o Other.

- d. Central Distribution Systems. All heating elements shall be protected to prevent unsafe human contact or fires. Heating distribution systems shall be retrofitted with energy conservation devices that are cost-effective, such as:

- o Individual hydronic controls;
- o Zone control;
- o Insulation of hot water and steam piping;
- o Boiler control from outdoor temperature;
or
- o Other.

6-4. DOMESTIC HOT WATER.

- a. Systems. Domestic hot water heater systems shall have the capacity to maintain a minimum water temperature of 100F. The maximum water temperature shall not exceed 120F at the tap for typical dwelling unit use. Heaters shall be connected to an approved vent, flue or chimney and shall have adequate air supply for fuel combustion. Domestic hot water heating systems shall be with retrofitted energy conservation devices that are cost-effective, such as:

- o Jacket insulation for electric heaters;
- o Off peak control of electric water heaters;
- o Solar collector systems;
- o New high-efficiency water heater replacement;
or
- o Other.

- b. Equipment location. Fossil fuel fired hot water heaters shall not be located in any room used or designed to be used for sleeping purposes such as bedrooms or combined bedroom/living rooms. Gas and oil fired water heaters shall not be located in bathroom, clothes closets, under stairways, or in a confined space with access only to that

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location. Heaters located in closets designed for that purpose shall be vented. Heaters shall have clearances

around them and shall be protected to prevent unsafe human contact or fires. Floors beneath equipment shall be protected against fire and deterioration.

6-5. VENTILATION. Habitable rooms, except kitchens and bathrooms, shall have natural ventilation through operable glazed openings that open directly to streets, courts or project site and not to window wells. Required opening shall be a minimum of 3 ft. from an exterior obstruction. Habitable rooms located below grade shall have required light and ventilation areas located above the level of the adjoining ground. Bathrooms, toilet compartments, kitchenettes and cooking areas may be provided with mechanical ventilation in lieu of natural ventilation. Ventilation systems shall be retrofitted with energy conservation devices that are cost-effective, such as:

- o Reducing supply/outdoor air quantities;
- o Automatic timer control; and
- o Other.

Exhaust fans in kitchens and bathrooms may be provided when required by local codes. New range hoods shall be ductless and shall use replacement filters. For technical requirements for stoves/ovens, see paragraph 5-3b.

- a. Air Quantities. All spaces that require mechanical outdoor air ventilation shall have a minimum of 5 cfm/person filtered and tempered outdoor air. Outdoor air requirements shall not exceed this level unless specified.
- b. Equipment and Appliances. Clothes dryers shall be vented to the building exterior or to a mechanical ventilation system. Vents, air-conditioner sleeves or other ventilation openings shall be sealed or closed-fitted to prevent excess air or water infiltration.

6-6. PLUMBING. Project site and building plumbing systems shall provide adequate water supply and distribution, drainage, sewage venting, and all required materials and fixtures to provide: maintenance of tenant health and safety and of cleanliness; disposal of human and other waste; and safe, efficient and environmentally sound site and building storm drainage.

- a. Water Supply. Hot and cold water shall be supplied to all plumbing fixtures except water closets, urinals, and drinking fountains, which shall be supplied with cold water only. Water supply to plumbing fixtures shall be free of contamination. There shall not be cross connections or water inlets for fixtures below the overflow rim that could lead to back-siphonage and contamination. Temperatures above 120F shall only be provided for washing machines.

b. Plumbing Fixtures. All plumbing fixtures shall perform the function for which they were designed, as follows:

- (1) Be connected to an approved water system and with sufficient supply and pressure to enable satisfactory functioning;
- (2) Be vented, as required;
- (3) Be fabricated of non-absorbent materials; and
- (4) Be installed in locations accessible for cleaning the fixture and surrounding area to maintain sanitary conditions that will not breed infestations.

NOTE: For other requirements, see Chapter 5.

Fixtures shall be retrofitted with energy conservation devices that are cost-effective, such as:

- o Shower flow restrictors;
- o Faucet flow restrictors;
- o New "energy efficient" faucets;
- o Water savers in the water closets;
- o Hydro-pneumatic pumping; and
- o Other.

c. Sewage System. Plumbing fixtures shall be connected to an approved sewage disposal system. All parts of the sewage system shall be in proper working condition.

d. Storm Drainage. Where installed, storm drainage systems shall effectively drain water from project sites and buildings to prevent hazards to public safety and property maintenance.

6-7. RESERVED

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SECTION 2: PROJECT SPECIFIC STANDARDS

6-2B. RESERVED.

6-3B. RESERVED.

6-4B. RESERVED.

6-5B. RESERVED.

6-6B. PLUMBING.

a. Water Supply. Water softening or other water treatment equipment may be provided only in areas where hard water

has produced problem scaling or clogging of supply pipes.

b. Reserved.

c. Reserved.

d. Reserved.

6-7B. COOLING.

a. Cooling with Mechanical Means. Where dwelling units or public spaces are currently cooled, the following requirements shall not be exceeded.

- (1) Interior spaces shall not be cooled to less than 78F;
- (2) Interior spaces shall not be dehumidified to less than 60% relative humidity;
- (3) Cooling systems should be retrofitted with any of the following energy conservation devices that are cost-effective, such as:
 - o Ambient control;
 - o Insulation;
 - o Replace obsolete equipment; or
 - o Other.

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- (4) Spaces shall not have simultaneous cooling and heating; and
- (5) Storage, mechanical and other uninhabited spaces shall not be cooled.

b. Provision of Electrical Service Outlets. Outlets as well as sleeves for tenant-owned, through-the-wall units may be installed when the project does not provide the equipment. This provision may be considered only when it is customary in the area to allow tenants in low- and moderate-income housing to install air-conditioning.

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