

TEMPLATE 1: MINOR REVISIONS

Modify 01 05 05.01 per the following (deletions are shown struck through and additions are double underlined). Remainder of section is unchanged.

B. Mechanical

1. Mechanical rooms shall be sufficiently sized and equipment arranged to accommodate proper, efficient and safe access conditions for routine maintenance and replacement.
 - a. There shall be enough clear space around equipment to do such things as change filters, pull coils, removal of fans, shafts, motors, bearing assemblies, etc. without moving other equipment or building general construction.
 - b. Allow at least three feet between all service sides of AHU's and other large equipment and obstructions.
 - c. Minimize the need to do maintenance from ladders. Provide permanent ship ladders, equipment platforms, safety rails, anchor points and lanyards, etc as required to safely access overhead equipment.
 - d. Provide overhead structural steel with portable chain hoists to lift and rig heavy motors, compressors, fans, etc to means of transporting out of building.
 - e. Consider and plan for general maintenance storage requirements in mechanical rooms.
 - f. Avoid tripping hazards. Arrange equipment and provide sufficient floor drains to avoid running pipes across walking paths on floors.
 - g. Provide card readers on all mechanical room entry doors. Reader for new buildings shall be designed in accordance with the Electronic Security System Requirements outlined in the Access Control Specification of division 28. Readers for existing buildings shall be designed to conform with and tied into the existing system in the building.
 - ~~g-h.~~ Refer to Section 230000 for appropriate environmental conditions in these spaces.
2. To the greatest extent possible, mechanical equipment shall be located indoors to maximize useful service life and for safety and ease of maintenance staff, particularly during adverse weather conditions.

- a. No outdoor/rooftop primary air handling equipment is allowed without written permission from the Office of Physical Plant, Engineering Services.
- b. Exceptions:
 - 1. Unitary DX units with no hydronic or steam coils subject to freezing.
 - 2. Renovations to existing facilities in which it is otherwise not practical or feasible to provide adequate indoor mechanical space.
- c. Where otherwise unavoidable, hydronic systems subject to freezing conditions shall be protected with separate piping loops with antifreeze solution, heat exchangers, pumps, expansion tanks, as required to prevent freezing in the event of extended electrical power outage and to minimize and isolate portions of systems requiring antifreeze from the main hot and chilled water loops.
 - 1. Steam traps and drip legs shall be located below the thermal insulation envelope of the roof assembly.
 - 2. Alternatively, all sections of piping exposed to freezing conditions shall be completely electrically heat traced on circuits on normal/emergency standby power.
 - 3. Outdoor/rooftop equipment shall include stairs/ladders, raised platforms, gratings, and handrails for adequate access to all main components.
 - 4. Provide adequate safety and visual screening.
- 3. Locate primary air handling equipment and all pumps, heat exchangers in dedicated mechanical rooms, never above ceilings.
- 4. Acoustically treat rooms and/or equipment to contain equipment noise.
- 5. Include stairway or ships ladder to any equipment on the roof. Review with OPP and obtain approval if vertical ladders are only practical solution for existing facilities.

C. Electrical

- 1. Service entrance electrical room:
 - a. A dedicated shall be located on the perimeter of the building immediately adjacent to the pad-mount transformer.

- b. The electrical room shall have a physical separation from the other spaces in the building (including mechanical equipment rooms) with a minimum fire resistance rating of one hour (review code for stricter requirements).
- c. Heating and ventilation of the main electrical room shall be dedicated to that room, and ventilation air shall not be transferred from adjacent spaces. Consider how air flow through the space will best cool any heat producing equipment.
- d. Size to allow for future growth of the service entrance equipment of at least 25% of design requirements. There shall be adequate initial space and “future” space to allow the installation of additional sections equal in size to the switchgear required for this project.
- e. If the service requires switchgear, it shall be located in the center of the room and shall allow for working clearance on ALL four sides of the equipment.

f. Provide card readers on all electrical room entry doors. Reader for new buildings shall be designed in accordance with the Electronic Security System Requirements outlined in the Access Control Specification of division 28. Readers for existing buildings shall be designed to conform with and tied into the existing system in the building

- 2. Electrical distribution panel rooms/closets shall be dedicated spaces, with room for additional panelboard sections in the future. Transformers shall be floor mounted.
- 3. Engine generators, when required, shall be placed on grade at the exterior or within the building. At no time will this equipment be installed above grade level or on a roof. Give consideration as to the survivability of this equipment; do not locate adjacent to the service transformer or below grade where it may be flooded.

END of revision

Update Commentary:

Section was updated primarily for the following reasons:

- 1) Incorporate card reader requirements on mechanical and electrical rooms.