

GENERAL:

This section provides general standards for overall planning and design of Mechanical Rooms to assure that the mechanical rooms are adequately sized and equipment located to facilitate safe maintenance, operations and equipment replacement over a 100 year life of a typical building. Other sections contain specific standards for each system per CSI specification format.

DESIGN GUIDELINES:

A. Design General

1. Access to mechanical equipment is critical to the operations and maintenance of the equipment. Safety of maintenance staff shall be considered in room and equipment layout. Maintenance will be performed for the expected equipment life of 30 to 50 years. It is likely that the equipment will be replaced before the building is replaced. Therefore adequate consideration must be given to getting replacement equipment in and out of the mechanical room.

B. Mechanical Room Planning

1. During program planning, and study phase, an allowance of 10% of the gross square foot area shall be set aside for mechanical space. This may be adjusted during subsequent phases of a project but, in no case shall be less than that required for any piece of equipment, as shown on the sample plan.
2. The room size and equipment layout shall be reviewed by the architect to assure compliance with ICC. Egress paths around the equipment shall be reviewed and changed if necessary to comply with egress requirements.
3. Mechanical rooms shall be serviced by standard stairs or elevators large enough to accommodate routine maintenance parts such as motors and filters. Equipment rooms shall not be accessed by "ships ladders".
4. Doors to mechanical equipment rooms shall be 7'6" x 6'0" with corridors and access that do not limit the use of these doors. Access through another space is not acceptable. Exterior removable panels and louvers shall be provided for access for the replacement of large equipment that cannot be brought in pieces.
5. Mechanical rooms below grade shall be provided with an areaway large enough to replace the largest piece of equipment in the mechanical room.

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6. Air intakes shall not be placed in areaways below grade and, unless approved by the PM, shall be at least 16 feet above grade to the bottom of the intake unless it is on the roof.
7. Roof top penthouses shall be provided with exterior doors, so located that they access a flat part of the roof. The float roof structure outside of the penthouse shall be capable of supporting the heaviest piece of equipment in the penthouse.
8. All penetrations for piping, duct of access shall be provided with the fire rating called or on the architectural plans.
9. Ductwork in mechanical rooms shall be designed to provide maximum headroom and provide straight runs for efficient operation of fans.
- 10. All equipment shall be drawn to scale using the design basis equipment. The drawings shall show all ducts, piping and accessories that would affect maintenance access.**
- 11. Composite drawings of mechanical, electrical, plumbing, fire protection, controls, and other major components that will need maintenance clearances shall be prepared to show the general arrangement of equipment to assure the intent of these guidelines are met.**
- 12. All equipment should be floor mounted within the mechanical room. If it is necessary to elevate equipment ABOVE 72", PERMANENT SERVICE PLATFORMS SHALL BE PROVIDED WITH STAIRS/LADDER ACCESS.**
13. Mechanical rooms shall **not** be used as part of the return air path.
14. Floor drains shall be located next to each major piece of equipment which may need to be drained. Permanent drain lines from air compressors, air handing units, etc. shall not run across open floor space.
15. A condensate trench shall be routed from each piece of equipment that utilizes steam. Condensate shall drain by gravity from all equipment using steam. Trench shall terminate at the main condensate pump. **In no case shall a F&T trap be used to lift condensate.**
16. Piping shall be routed below any ductwork. Piping shall be routed a minimum of 7 ft above the floor.
17. Electrical service.
 - 16.1 Provide GFCI receptacles at regular spacing throughout the mechanical room where additional task lighting or service equipment such as shop vacuums, welders may be required. Maximum spacing shall be 30 ft.
 - 16.2 Provide one welding outlet per mechanical room.
 - 16.3 Lighting shall be controlled by a push button timer with a minimum of 5 hours.

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18. Water Service. Provide a hose bib in the mechanical rooms within 20' of each air handler to facilitate air handling unit cleaning. Provide a freeze-proof hose bib near condensing units at exterior locations.

C. Personnel and Equipment Traffic

1. There shall be adequate access paths in and around the mechanical room to allow for maintenance to bring in repair equipment, temporary equipment, electrical safety and also future equipment replacement.
2. There shall be adequate lighting throughout the mechanical room to facilitate maintenance work.

D. REFERENCES

1. Refer to Section 230000 for Ventilation Requirements in Mechanical Rooms.

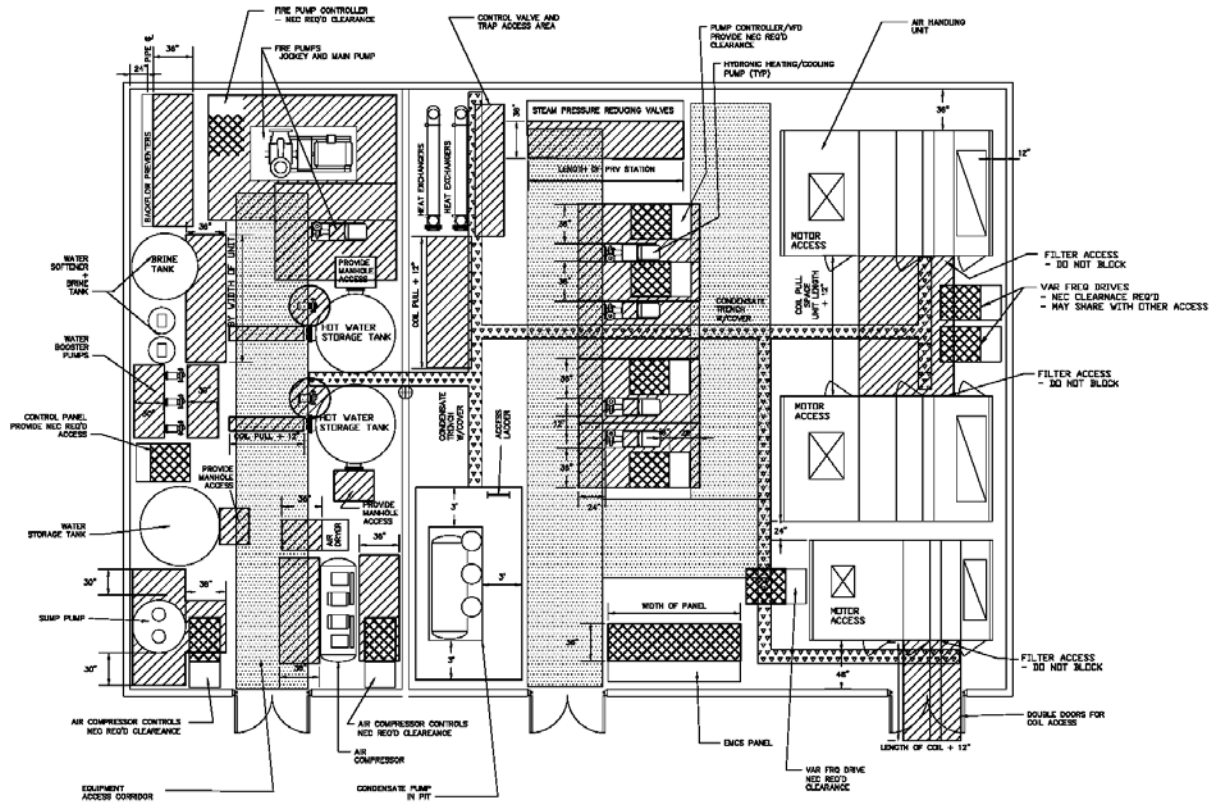


FIGURE 1 - SAMPLE MECHANICAL ROOM LAYOUT
(double click to open this drawing in adobe acrobat)