

Elevator Hoistway and Machine Room Fire Rating
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The Elevator Safety Code defers the rating of the machine room to the building code. However, the building code does not directly stipulate the rating of the elevator machine room in all cases. It does, however, directly stipulate the rating of the elevator hoistway. (The term, "shaft", is used to describe an elevator hoistway in the building code).

The Oregon Elevator Specialty Code (OESC) will defer the construction of the elevator hoistway, machine room and pit to the building code requirements where the building code specifically regulates these spaces. The Oregon Structural Specialty Code (OSSC) clearly regulates the fire rating of elevator hoistways. Section 707 in the OSSC (IBC 2003) sets the hoistway enclosure fire rating for the elevator hoistway. Typically, a one or two hour rating is required. The proper rating for the type of construction should be verified by the local jurisdiction at time of plan review.

Unlike the hoistway, no such fire rating is specifically indicated for elevator machine rooms by the OSSC. Therefore, how does the rating of the hoistway remain in tact when elevator equipment must penetrate a common wall, floor or ceiling between a hoistway and the related elevator machine room? Resolving this issue requires a review the OESC. The OESC ASME A17.1 2004, Req.2.7.1 establishes the fire-rating of the machine room.

2.7.1 Enclosure of Machine Rooms and Machinery Spaces

Machines, control equipment, sheaves, and other machinery shall not be exposed to the weather. Machine room and machinery-space enclosures shall conform to 2.7.1.1 or 2.7.1.2.

2.7.1.1 Fire-Resistive Construction. *Where fire-resistive construction is required by the building code, the requirements of 2.7.1.1.1 and 2.7.1.1.2 shall be conformed to.*

2.7.1.1.1 *Spaces containing machines, control equipment, sheaves, and other machinery shall be separated from the remainder of the building by a fire-resistive enclosure conforming to the requirements of the building code.*

2.7.1.1.2 *Openings in the machine room enclosure shall be protected with access doors having a fire protection rating conforming to the requirements of the building code.*

NOTES (2.7.1.1):

(1) See 2.1.3 for floors of machine rooms and machinery spaces over the hoistways.

(2) See 2.7.2.1 for separating elevator machinery from building machinery.

(3) See 2.1.1.1.2 for partitions between machine rooms and hoistways.

2.7.1.2 Non-Fire-Resistive Construction.

Where fire-resistive construction is not required by the building code, the requirements of 2.7.1.2.1 and 2.7.1.2.2 shall be conformed to.

2.7.1.2.1 *Machine rooms and machinery spaces shall be enclosed with noncombustible material extending to a height of not less than 2 000 mm (79 in.).*

2.7.1.2.2 *The enclosure, if of openwork material, shall reject a ball 50 mm (2 in.) in diameter.*

The trigger for complying with Req. 2.7.1 is the rating of the hoistway and the fact that the hoistway and machine room share a common wall, floor or ceiling. (Note: The elevator code does not regulate the type of materials used for construction of the machine room as long as the proper rating is maintained). Normally there are penetrations through the common barrier

between the hoistway and elevator machine room to accommodate conduits, hoist ropes, pipes, etc. Thus, the fire rating of the hoistway is compromised in such cases. Therefore, the machine room must have an identical fire rating to that of the hoistway in order to maintain the rated integrity of the hoistway enclosure.

The following summary is intended to further assist in clarification:

I) There are three instances where the rating of the machine room could comply with ASME A17.1, 2004, Req. 2.7.1.2 and would **not** need to be rated comparable to the hoistway:

- A) where a penetration in the common wall, floor or ceiling caused by pipes and conduits can be properly fire-stopped;
- B) the machine room is remote from the hoistway (typically in hydraulic elevator installations); or
- C) the machine room extends above the roof line.

II) There are four conditions in which the machine room **door** does not need to carry the same rating as the elevator hoistway:

- A) the door is located on an exterior wall of the building even if the room shares a common wall with the hoistway;
- B) the machine room does not share a common wall, floor or ceiling with the hoistway;
- C) the machine room and access door is located above the roof line; or
- D) the common wall, floor or ceiling between the machine room and the hoistway is properly fire-stopped.

III) In all other cases the machine room and access door must have the same rating as the machine room/hoistway enclosure. When doors need to be rated, a 1 ½ hour door is sufficient for a 2-hour rated room.

Condition	Triggers	1 or 1½ Hour Rated Door	1 or 2 Hour Rated Machine Room
M/R shares a common wall, floor or ceiling with hoistway.	Penetrations not fire-stopped; <i>and</i> Door opens to exterior of building.	N/R	Rated Enclosure Required
	Penetrations are properly fire-stopped.	N/R	N/R
	Penetrations not fire-stopped; <i>and</i> Door opens to interior of building.	Rated Door Required	Rated Enclosure Required
Machine room located about roof line.	Machine room location.	N/R	N/R

N/R – Rated enclosure or door not required.