



TOPIC: Fire Resistive Floor Systems - OSSC/34/#1

CODE: Oregon Structural Specialty Code – 2014 Edition

REVISED: April 1, 2015 *[Paul L. Scarlett]. Director*

REFERENCE: Oregon Structural Specialty Code – Chapter 34

**SUBJECT: Existing Plaster Ceilings in Type I Buildings
Constructed Prior to 1955**

QUESTION:

1. Before 1946 the City of Portland Building Code allowed concrete joist “ribbed construction” as a 2-hour rated fire-resistive floor system when the slab between the joists had a thickness of at least 2 ½” with 1” of concrete cover over the structural reinforcing steel for buildings up to 16 stories high. In 1946, the City of Portland Building Code began requiring a ¾” thick plaster ceiling for such floor slabs to achieve the 2-hour rating, and the fire rating of floor systems without the plaster coating was reduced from 2 hours to 1 hour. Over the years, for various reasons, holes have been created in the plaster ceiling and have not been repaired, thereby diminishing the 2-hour rating. Chapter 34 of the current Oregon Structural Specialty Code permits additions and alterations to existing buildings without requiring the buildings to be brought up to current requirements for newly constructed buildings if the additions and alterations do not reduce required fire resistance or will otherwise create conditions dangerous to human life. The holes in such existing plaster ceilings potentially may reduce fire resistance below the required level and create a life safety issue.

Based on the above information, can existing holes remain in plaster ceilings installed below concrete floor assemblies in Type I Buildings constructed prior to 1955?

RESPONSE: 1. Yes, existing plaster ceilings that have been compromised either by holes being cut or otherwise made in them, or the plaster ceiling being totally removed, will not be required to be restored to original condition if the following conditions of this code guide are met.

- a. The building shall have concrete floor systems and be classified as Type I construction and constructed prior to 1955.
- b. Slabs shall have a minimum thickness of 2 ½" with spans not exceeding 36" center to center of concrete joist.
- c. All structural reinforcing steel shall have a minimum concrete cover of 1" or equivalent fire protection. This requirement does not apply to wire fabric/mesh installed in slabs to control cosmetic cracking.
- d. In reinforced concrete structures, where the reinforcing steel has a minimum of 1" of concrete cover as required by item (b) above, all primary and secondary structural members shall be accepted as having the fire resistance required for Type I construction. This provision does not apply to floor slabs, and is only valid for the purposes of this code guide.
- e. The building shall be fully sprinklered to NFPA 13 standards.
- f. All holes or other penetrations in concrete floor slabs shall be fire stopped with approved materials or filled with concrete.
- g. A suspended acoustical or gypsum board ceiling may be installed below the existing concrete floor system without the need to provide fire sprinklers in the interstitial space if allowed by NFPA 13.
- h. If an existing plaster ceiling is removed and the concrete floor system is left exposed as the finished ceiling, any fire sprinkler protection, either existing or newly required, shall be modified or installed so as to be not more than 22" below the concrete floor system and at least 1" below the bottom of the floor rib in accordance with NFPA 13.
- i. All wiring in the plenum between the ceiling and the concrete floor shall be in noncombustible conduit or raceway or shall be a plenum rated wire whether or not connected to a power source.

QUESTION: 2. Can the provisions of this code guide be used in a building that is under the provisions of an FM 41 agreement?

RESPONSE: 2. Yes. Buildings for which an FM-41 Agreement is in effect, or buildings that have had an FM-41 Agreement that is now expired, may use this code guide if all of the conditions in Response #1, above, are met.

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Other alternatives may be reviewed on a case by case basis through the BDS administrative appeals process.

Updates February 1, 2002 edition of UBC/34/#1
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