Alaska Code Forum

Clearance for Suspended Ceiling Penetrations in Earthquake Areas

Question:

I am going nuts trying to find the section in the building code that requires a large clearance around a sprinkler head escutcheons in a category D or higher classification. Can you point me in the right direction?

Answer:

The rule is actually in ASCE 7, which is referenced by the building code. The 2002 edition of ASCE 7 is referenced in the 2003 IBC, and the 2005 edition of ASCE 7 is referenced in the 2006 IBC. In the 2002 edition, Section 9.6.2.6.2.1 requires ¼-inch (6 mm) clearance on all sides of sprinkler and other ceiling penetrations through suspended ceilings in Seismic Design Category C and Section 9.6.2.6.2.2 requires a 2-inch (50 mm) oversize ring, sleeve or adapter through the ceiling tile to allow for free movement of at least 1 inch (25 mm) in all horizontal directions in Seismic Design Categories D, E, and F. In the 2005 edition there is no mention of the 1/4-inch requirement for Seismic Design Category C, but the 2-inch requirement for Seismic Design Categories D through F appears in Section 13.5.6.2.2.

In both editions there are some alternatives to the 2-inch clearance. One exception is where rigid braces to be used to limit lateral deflections, although NFPA 13 requires that only 2-1/2-inch and larger sprinkler branch lines be provided with lateral bracing. Another alternative is to have the suspended ceiling engineered to move with the sprinkler system. A third alternative is to provide each sprinkler drop with a swing joint capable of accommodating the 1-inch free movement in all horizontal directions, which is increasingly being met through the use of flexible sprinkler drops.

ASCE 7 is somewhat confusing in that it references an A through F classification system for site class (soil types) as well as Seismic Design Categories. It is important to note that the ceiling penetration clearance requirements relate to the overall Seismic Design Category classifications D through F, not the site soil classifications D through F.

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