



Fire Prevention Division

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SUPPLEMENTAL RULES & REGULATIONS

Number:	08-901.6		
Subject:	Suspended or Removable Ceiling Tiles		
Code:	2003 International Fire Code	Code Section:	901.6,
Code:	2002 NFPA 13	Code Section:	8.5.4.1
Effective Date:	July 31, 2008	Issued by:	Fire Marshal Roger Parker <i>Roger Parker</i>
Revision Date:	NA	Issued by:	NA
Supersedes:	NA	Date:	NA

AUTHORITY:

§104.1 of the 2003 International Fire Code authorizes the fire marshal to render interpretations of the fire code, and to adopt policies, procedures, rules and regulations in order to clarify the application of its provisions.

PURPOSE:

To establish rules and regulations requiring the installation and maintenance of suspended or removable ceiling tiles to prevent the delay of fire sprinkler activation.

SCOPE:

This regulation covers all facilities, buildings, or uses within the City of Avondale after the effective date.

GENERAL:

The 2003 International Fire Code §901.6, as amended by the City of Avondale states:

***Inspection, testing and maintenance.** Fire detection, alarm, and extinguishing systems shall be maintained in an operative condition at all times, and shall be replaced or repaired where defective. Fire protection systems and equipment not required by this code shall be inspected, tested, and maintained, or removed. The building owner shall be responsible for assuring that each fire protection system is maintained in an operable condition at all times per the applicable standard for that specific system. If a backflow prevention assembly is installed as part of a fire sprinkler system it shall be tested in accordance with the requirements of City of Avondale Municipal Code. All work and periodic testing/maintenance shall be performed in accordance with the applicable standard for the specific fire protection system.*

The 2002 NFPA 13 §8.5.4.1 states:

Distance Below Ceilings. *The distances between the sprinkler deflector and the ceiling above shall be selected based on the type of sprinkler and the type of construction.*

SUPPLEMENTAL RULE OR REGULATION:

1. The distances between the fire sprinkler deflector and the ceiling above shall comply with the requirements of NFPA 13, which is based on the type of sprinkler and the type of construction. When suspended or removable ceiling tiles are installed in buildings the fire sprinkler design is based on the suspended or removable ceiling tiles being in place. If the suspended or removable ceiling tiles have been removed the fire sprinkler will not operate as designed and is in violation of the International Fire Code §901.6.
2. In existing buildings protected by automatic fire sprinklers, suspended or removable ceiling tiles shall be installed and maintained in place to prevent a delay in fire sprinkler activation.
Exception: When additional fire sprinklers are installed in the space above the suspended ceiling.
3. In newly constructed or remodeled buildings, above ceiling work must be completed, and the suspended or removable ceiling tiles must be installed in place before occupancy is approved to prevent a delay in fire sprinkler activation.
Exception: When additional fire sprinklers are installed in the space above the suspended ceiling.

EXPLANATION:

Properly installed ceiling systems allow fire sprinklers, smoke detectors, and heat detectors to operate correctly in the event of a fire. They also provide a barrier to the spread of smoke and fire. Breaking, displacing, or removing ceiling tiles enables hot gases and smoke from a fire to rise and accumulate above detectors and sprinklers. Doing so delays their activation, enabling fires to rapidly grow larger before an alarm and response occur.

The smoke and hot gases from a fire decrease in concentration as height and horizontal distance from the center of the fire increase. Once the smoke and hot gases reach the ceiling, they travel horizontally, creating a "ceiling jet." This ceiling jet is what typically triggers smoke alarms, heat detectors, and sprinkler systems.

Removal of ceiling tiles can enable smoke and hot gases to rise above the remaining ceiling system, circumventing the fire protection systems located at or slightly below the level of the ceiling. If a fire starts in a room with a missing ceiling tile, the ceiling jet can travel to the hole created by the missing tile, and will rise into the space above the drop ceiling, which typically lacks monitoring devices. This may delay smoke detectors from receiving the smoke concentration needed to actuate them and to send an alarm signal. Most of the heat may also rise in to the space above the ceiling, bypassing heat detectors and fire sprinklers completely. This renders them ineffective until the smoke and heat fill the space above, greatly lengthening the time it takes for them to actuate. Because fires can double in size each minute, this delay enables a fire to grow much larger and become more difficult to extinguish.

Missing ceiling tiles are not just a risk to those in the area where the tiles were removed. Space above a drop ceiling system often provides a route for air to be drawn back to the air conditioner ductwork and fan that re-circulates the air. Therefore, smoke that enters this space is often spread to other areas in the building, exposing other occupants to smoke and toxic gases.