ISSUE D

ITEM #12: *Performance and redundancy of active fire protection systems.*

Amend existing sections as follows:

903.3.5.2 Secondary water supply. A secondary on-site water supply equal to the hydraulically calculated sprinkler demand, including the hose stream requirements, shall be provided for high-rise buildings in Seismic Design Category C, D, E or F as determined by Section 1616.3 and all buildings that are more than 420 feet (128 m) in height. The secondary water supply shall have duration of not less than 30 minutes.

Exception: Existing buildings

Summary: The current code text contemplates an interruption of the water supply for high-rise buildings as a result of a seismic event. Experience has shown that catastrophic events other than seismic can occur that could interrupt the primary water supply. This level of redundancy is necessary for high-rise buildings greater than 420 feet in height regardless of the existence of a seismic hazard.

403.2 Automatic sprinkler system. An automatic sprinkler system in accordance with Section 903.3.1.1 and a secondary water supply where required by Section 903.3.5.2 shall be provided.

Exception: An automatic sprinkler system shall not be required in spaces or areas of:

1. Open parking garages in accordance with Section 406.3
2. Telecommunication equipment buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided that those spaces or areas are equipped throughout with an automatic fire detection system in accordance with Section 907.2 and are separated from the remainder of the building with fire barriers consisting of 1-hour fire resistance-rated walls and 2-hour fire-resistance rated floor/ceiling assemblies.

403.2.1 Redundancy and Isolation. All buildings that are more than 420 feet (128 m) in height shall have all risers supplying automatic sprinkler systems interconnected to each other at the top and bottom most floor of each vertical riser zone. The interconnections shall be at least as large as the largest riser supplied.

403.2.1.1 Number of Risers and Separation. A minimum of two sprinkler water supply risers must be provided in each vertical riser zone of the building. Sprinkler water supply risers shall be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of

the building or area to be served measured in a straight line between the nearest portion of the sprinkler water supply risers.

403.2.1.1.1 Hydraulic design evaluations. Independent hydraulic design evaluations shall be completed utilizing individual water supply risers for each vertical riser zone. System hydraulic design shall not based upon redundancy of water supply risers per vertical riser zone.

403.2.1.2 Control valves. Manual or remote control valves shall be provided on all riser piping supplying automatic sprinkler systems at every third floor of the building. This requirement is independent of sprinkler floor control valves required by Section 905.2.3.

403.2.1.3 Water supply connections. A minimum of two remotely located water supply connections are required to be provided for each vertical riser zone.

403.2.1.4 Water supply to required fire pumps. Required fire pumps shall draw from a minimum of two independent street level water mains located in different streets.

403.2.1.4.1 Independent street water mains. Where two services are installed, one service from the street level water main shall run directly to the required fire pump. The other service may be used for domestic water supply.

911.1 Features. Where required by other sections of this code, a fire command center for fire department operations shall be provided. The location and accessibility of the fire command center shall be separated from the remainder of the building by not less than a 1-hour fire-resistance-rated fire barrier. The room shall be a minimum of 96 square feet ($9m^2$) with a minimum dimension of 8 feet (2438 mm). A layout of the fire command center and all features required by the section to be contained therein shall be submitted for approval prior to installation. The fire command center shall comply with NFPA 72 and shall contain the following features.

1. The emergency voice/alarm communication system unit.
2. The fire department communications unit.
3. Fire detection and alarm system annunciator unit.
4. Annunciator unit visually indicating the location of the elevators and whether they are operational.
5. Status indicators and controls for air-handling systems.
6. The firefighter's control panel required by Section 909.16 for smoke control systems installed in the building.
7. Controls for unlocking stairway doors simultaneously.
8. Sprinkler valve and water-flow detector display panels.
9. Emergency and standby power status indicators.
10. A telephone for fire department use with controlled access to the public telephone system.

11. Fire pump status indicators.
12. Building emergency resource manual approved by the fire department that includes emergency operation plans and ~~Schematic~~ building plans indicating the typical floor plan and detailing the building core, means of egress, fire protection systems, HVAC systems, elevator controls, communication systems, utilities, fire-fighting equipment and fire department access.
13. Worktable.
14. Generator supervision devices, manual start and transfer features.
15. Public address system, where specifically required by other sections of this code.
16. Controls for remote control valves on vertical sprinkler/standpipe risers.

In buildings that are more than 420 feet (128 m) in height, systems and equipment for features 1, 2, 3, 4, 7, 15, and 16 shall be provided with redundant circuitry during normal and emergency operating modes and shall have the ability to transmit and communicate off-site including mobile access if required by the Fire Department.

Summary: The new code text provides all sprinkler system risers in buildings that are more than 420 feet in height above the lowest level of fire department vehicle access, the assurance of a maintained water supply in the event of a failure of individual sprinkler system risers. The concept requires the installation of manual or remote control valves on every third floor to isolate a break in the looped riser system. Individual looped systems would be created per riser zone in order to allow water to feed sprinkler system risers from two directions. In addition, a minimum of two remotely located water supply pipes from a single water source are required to be connected to each riser zone.