

- The wall assembly shall incorporate not fewer than one layer of impact-resistant construction material that meets or exceeds Hard Body Impact Classification Level 3 as measured by the test method described in ASTM C1629/C1629M.
- The wall assembly incorporates multiple layers of any material, tested in tandem, that meets or exceeds Hard Body Impact Classification Level 3 as measured by the test method described in ASTM C1629/C1629M.

**[BS] 403.2.3.3 Concrete and masonry walls.** Concrete or masonry walls shall be deemed to satisfy the requirements of Sections 403.2.3.1 and 403.2.3.2.

**[BS] 403.2.3.4 Other wall assemblies.** Any other wall assembly that provides impact resistance equivalent to that required by Sections 403.2.3.1 and 403.2.3.2 for Hard Body Impact Classification Level 3, as measured by the test method described in ASTM C1629/C1629M, shall be permitted.

**403.2.4 Sprayed fire-resistant materials (SFRM).** The bond strength of the SFRM installed throughout the building shall be in accordance with Table 403.2.4.

**TABLE 403.2.4  
MINIMUM BOND STRENGTH**

HEIGHT OF BUILDING <sup>a</sup>	SFRM MINIMUM BOND STRENGTH
Up to 420 feet	430 psf
Greater than 420 feet	1,000 psf

For SI: 1 foot = 304.8 mm, 1 pound per square foot (psf) = 0.0479 kW/m<sup>2</sup>.

a. Above the lowest level of fire department vehicle access.

**[F] 403.3 Automatic sprinkler system.** Buildings and structures shall be equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 and a secondary water supply where required by Section 403.3.3.

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

- Open parking garages* in accordance with Section 406.5.
- Telecommunications 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 by not less than 1-hour *fire barriers* constructed in accordance with Section 707 or not less than 2-hour *horizontal assemblies* constructed in accordance with Section 711, or both.

**[F] 403.3.1 Number of sprinkler risers and system design.** Each sprinkler system zone in buildings that are more than 420 feet (128 m) in *building height* shall be supplied by not fewer than two risers. Each riser shall supply sprinklers on alternate floors. If more than two risers are provided for a zone, sprinklers on adjacent floors shall not be supplied from the same riser.

**[F] 403.3.1.1 Riser location.** Sprinkler risers shall be placed in *interior exit stairways* and ramps that are remotely located in accordance with Section 1007.1.

**[F] 403.3.2 Water supply to required fire pumps.** In buildings that are more than 420 feet (128 m) in *building height*, required fire pumps shall be supplied by connections to not fewer than two water mains located in different streets. Separate supply piping shall be provided between each connection to the water main and the pumps. Each connection and the supply piping between the connection and the pumps shall be sized to supply the flow and pressure required for the pumps to operate.

**Exception:** Two connections to the same main shall be permitted provided that the main is valved such that an interruption can be isolated so that the water supply will continue without interruption through not fewer than one of the connections.

**[F] 403.3.3 Secondary water supply.** An automatic secondary on-site water supply having a capacity not less than the hydraulically calculated sprinkler demand, including the hose stream requirement, shall be provided for *high-rise buildings* assigned to Seismic Design Category C, D, E or F as determined by Section 1613. An additional fire pump shall not be required for the secondary water supply unless needed to provide the minimum design intake pressure at the suction side of the fire pump supplying the *automatic sprinkler system*. The secondary water supply shall have a duration of not less than 30 minutes.

**[F] 403.3.4 Fire pump room.** Fire pumps shall be located in rooms protected in accordance with Section 913.2.1.

**[F] 403.4 Emergency systems.** The detection, alarm and emergency systems of *high-rise buildings* shall comply with Sections 403.4.1 through 403.4.8.

**[F] 403.4.1 Smoke detection.** Smoke detection shall be provided in accordance with Section 907.2.12.1.

**[F] 403.4.2 Fire alarm system.** A *fire alarm system* shall be provided in accordance with Section 907.2.12.

**[F] 403.4.3 Standpipe system.** A *high-rise building* shall be equipped with a standpipe system as required by Section 905.3.

**[F] 403.4.4 Emergency voice/alarm communication system.** An *emergency voice/alarm communication system* shall be provided in accordance with Section 907.5.2.2.

**[F] 403.4.5 Emergency responder radio coverage.** Emergency responder radio coverage shall be provided in accordance with Section 510 of the *International Fire Code*.

**[F] 403.4.6 Fire command.** A *fire command center* complying with Section 911 shall be provided in a location *approved* by the fire code official.

**[F] 403.4.7 Smoke removal.** To facilitate smoke removal in post-fire salvage and overhaul operations, buildings and structures shall be equipped with natural or mechanical