CHAPTER 4

SPECIAL USE AND OCCUPANCY

780 CMR 401.0 GENERAL

401.1 Scope: In addition to the general requirements of 780 CMR governing the location, construction and equipment of all buildings and structures, and the fireresistance ratings, *height* and *area* limitations of Tables 503 and 602, the provisions of 780 CMR 4 shall control all buildings and structures designed for special occupancies as herein provided.

401.2 Applicable Massachusetts General Law: Applicable Massachusetts General Laws, and applicable rules and regulations, specifically (but not limited to) the referenced portions 310 CMR, 521 CMR, 522 CMR and 527 CMR series as listed in Appendix A shall be adhered to in the design and construction of buildings and and structures subject to the provisions of 780 CMR 4.

780 CMR 402.0 COVERED MALL BUILDINGS

402.1 Scope: The provisions of 780 CMR 402.0 shall apply to buildings or structures defined herein as covered mall buildings not exceeding three floor levels in height at any one point. Except as specifically required by 780 CMR 402.0, covered mall buildings shall meet all applicable provisions of 780 CMR.

Exceptions: Where approved by the code official, the following occupancies are not required to comply with the provisions of 780 CMR 402.0.

1. Foyers and lobbies in occupancies in Use Group B, R-1 or R-2.
2. Buildings which comply totally with all other applicable provisions of 780 CMR.

402.2 Definitions: The following words and terms shall, for the purposes of 780 CMR 402.0 and as used elsewhere in 780 CMR, have the meanings shown herein.

Anchor store: An exterior perimeter department store or major merchandising or magnet center having direct access to a mall and having its required *exits* independent of the mall.

Gross leasable area: The gross leasable area is the total floor area designed exclusively for tenant occupancy. The area of tenant occupancy is measured from the center lines of joint partitions to the outside of the tenant walls.

Mall: A mall is a roofed-over common pedestrian area serving more than one tenant located within a covered mall building.

Mall building, covered: A building enclosing a number of tenants and occupancies such as retail stores, drinking and dining establishments, entertainment and amusement facilities, passenger transportation terminals, offices and other similar occupancies wherein two or more tenants have a main entrance into one or more malls. Anchor stores shall not be considered as part of the covered mall building.

402.3 Lease plan: The ***owner or*** permit holder shall provide both the building and fire departments with a lease plan showing the locations of each occupancy and its *means of egress* after the certificate of occupancy has been issued. Such plans shall be kept current. Modifications or changes in occupancy shall not be made from that shown on the lease plan without prior approval.

402.4 Tenant separations: Each tenant space shall be separated from other tenant spaces by a *fire partition* having a fireresistance rating of not less than one hour. The *fire partition* shall comply with 780 CMR 711.0 except that the *fire partition* is not required to extend beyond the underside of a ceiling that is not part of a fireresistance rated assembly. A wall is not required in *attic* or ceiling spaces above tenant separation walls nor is a tenant separation wall required between any tenant space and a mall, except for occupancy separations required elsewhere in 780 CMR.

402.4.1 Anchor store openings: Openings between an anchor store and the pedestrian area of a mall are not required to be protected.

402.4.2 Party wall exemption: Anchor stores located on separate lots shall not be required to provide party walls between the anchor store and the covered mall building.

402.5 Egress: Each individual occupancy within the covered mall building shall be provided with a *means of egress* in accordance with other provisions of 780 CMR. Measurements shall be made to the entrance to the mall.

402.5.1 Travel distance: The maximum length of *exit access* travel from any point within the mall to an approved *exit* along the natural and

unobstructed path of travel shall not exceed 200 feet (60960 mm).

402.5.2 Anchor store exits: Anchor stores shall provide the required number of *exits* and the minimum width for the required *exit* capacity directly to the exterior. The occupant load of

anchor stores opening into the mall shall not be included in determining *exit* requirements for the mall.

402.5.3 Dead ends: The dead end of a mall shall not exceed twice the width of the mall.

402.5.4 Design occupant load: In determining required *exit* facilities of the mall, the number of occupants for whom *exit* facilities are to be provided shall be based on gross leasable area of the covered mall building (excluding anchor stores) and the occupant load factor as determined by the following formula:

$$OLF = (0.00007)\ (GLA) + 25$$

where:

OLF = The occupant load factor (square feet per person).
GLA = The gross leasable area (square feet).

The occupant load factor (OLF) is not required to be less than 30 and shall not exceed 50.

402.5.5 Exit access width: The minimum width of *exit access* passageways and *corridors* from a mall shall be 66 inches (1676 mm).

402.5.6 Exit distribution: The required *exits* and *exit* widths shall be distributed equally throughout the mall.

402.5.7 Storage prohibited: Storage is prohibited in *exit corridors* that are used for service to tenants. Such *corridors* shall be posted with conspicuous signs so stating.

402.5.8 Passenger transportation terminals: A covered mall building whose primary purpose is a passenger transportation terminal shall comply with the *means of egress* requirements for Use Group A-3.

402.5.9 Service areas fronting on exit passageways and corridors: Mechanical rooms, electrical rooms, building service areas and service elevators are permitted to open directly into *exit* passageways and *exit corridors* provided that the required fireresistance rating of the *exit* enclosure is maintained.

402.6 Mall width: The minimum width of the mall shall be 20 feet (6096 mm). There shall be a minimum of ten feet (3048 mm) clear *exit* width to a height of eight feet (2438 mm) between any projection of a tenant space bordering the mall and the nearest kiosk, vending machine, bench, display opening or other obstruction to *means of egress* travel. The mall width shall be sufficient to accommodate the occupant load emptying into the immediately adjacent mall as determined by 780 CMR 402.5.4 for all occupancies except Use Groups A and E which shall be determined by 780 CMR 1008.0.

402.7 Structural elements: Covered mall buildings shall be of Type 1,2 or 4 construction. Covered mall buildings three stories or less in *height* are exempt from the *area* limitations of Table 503.

402.7.1 Structural elements, anchor stores: An anchor store three stories or less in *height* shall be of Type 1, 2 or 4 construction and is exempt from the *area* limitations of Table 503, provided that a smoke control system conforming to 780 CMR 921.0 is installed in the anchor store. For the purposes of the design and operation of the fire emergency ventilation system, the anchor store shall be considered a tenant space zone.

402.8 Roof coverings: Roof coverings for covered mall buildings shall be of Class A, B or C as required by 780 CMR 1506.0.

402.9 Use Groups A-1 and A-2: Use Group A-1 and A-2 occupancies shall not have more than one-half of their required *means of egress* opening directly to the mall (see 780 CMR 1006.2.2).

402.10 Sprinkler system: The mall and all buildings connected thereto shall be equipped throughout with an *automatic sprinkler system* in accordance with 780 CMR 906.2.1. The system shall be installed in such a manner that when any portion of the system serving tenant spaces is shut down, the portion of the system serving the mall will remain operational.

402.11 Standpipes: There shall be a *standpipe* hose connection located within the mall at each entrance to an *exit* passageway, *exit corridor* or enclosed stairway and at all exterior entrances to the mall. The hose connection shall be supplied from the *automatic sprinkler system* of the mall or from a separate *standpipe* system. The *water supply* shall be capable of delivering 250 gallons per minute (gpm) (0.016 m^3/s).

402.12 Smoke control: The mall and adjacent tenant spaces shall be equipped with a smoke control system conforming to 780 CMR 921.0.

402.13 Fire department access to equipment controls: *Fire protection system* and HVAC system controls shall be identified, and the fire department shall have access thereto.

402.14 Plastic panels and plastic signs: Within every story or level and from side wall to side wall of each tenant space, approved *plastic* panels and

signs shall be limited as specified in 780 CMR 402.14.1 through 402.14.4.

402.14.1 Area: The panels and signs shall not exceed 20% of the wall area facing the mall.

402.14.2 Height and width: The panels and signs shall not exceed a height of 36 inches (914 mm);

except if the panel or sign is vertical, the height shall not exceed 96 inches (2438 mm) and the width shall not exceed 36 inches (914 mm).

402.14.3 Location: The panels and signs shall be located a minimum distance of 18 inches (457 mm) from adjacent tenants.

402.14.4 Encasement: All edges and the backs shall be fully encased in metal.

402.15 Kiosks: Kiosks and similar structures (temporary or permanent) shall meet the requirements of 780 CMR 402.15.1 through 402.15.4.

402.15.1 Construction: Combustible kiosks or other structures shall not be located within the mall unless constructed of fireretardant-treated wood throughout conforming to 780 CMR 2310.0.

402.15.2 Fire suppression: Kiosks and similar structures that are covered and are located within the mall shall be protected by an *automatic sprinkler system* installed in accordance with 780 CMR 9.

402.15.3 Horizontal separation: The minimum horizontal separation between kiosks and other structures within the mall shall be 20 feet (6096 mm).

402.15.4 Maximum area: Kiosks or similar structures shall have a maximum area of 300 square feet (27.90 m^2).

402.16 Parking structures: An attached *garage* for the storage of passenger vehicles that have a capacity of not more than nine persons, or an open parking structure, shall be considered as a separate building where it is separated from the covered mall building by a *fire separation assembly* having a fireresistance rating of not less than two hours or shall be considered as part of the covered mall building.

780 CMR 403.0 HIGH-RISE BUILDINGS

403.1 Applicability: The provisions of 780 CMR 403.0 shall apply to all buildings more than ***70 feet in height above the mean grade. See M.G.L. c. 148, § 26A***.

Exception: The provisions of 780 CMR 403.0 shall not apply to open parking structures (see 780 CMR 406.0 and M.G.L. c. 148, § 26G).

403.2 Sprinkler system: All buildings and structures shall be equipped throughout with an *automatic sprinkler system* in accordance with 780 CMR 906.2.1 and M.G.L. c. 148, § 26A.

Exception: An *automatic sprinkler system* shall not be required in spaces or areas of:
1. Open parking structures complying with 780 CMR 406.0.
2. 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 780 CMR 918.0 and are separated from the remainder of the building with *fire separation assemblies* consisting of one-hour fireresistance rated walls and two-hour fireresistance rated floor/ceiling assemblies.

403.3 Alternative sprinkler system: Alternatively, to qualify for the fireresistance rating reduction for certain building elements listed in 780 CMR 403.3.3, the *automatic sprinkler system* shall comply with 780 CMR 906.2.1 and the optional fire protection features listed in 780 CMR 403.3.1 and 403.3.2.

403.3.1 Control valves and water-flow devices: *Sprinkler* control valves equipped with supervisory initiating devices and water-flow initiating devices shall be provided for each floor.

403.3.2 Secondary water supply: In addition to the main *water supply*, for buildings located where the effective peak velocity-related acceleration (A_v) is equal to or greater than 0.20 in accordance with 780 CMR 1612.1, a secondary on-site *water supply* equal to the hydraulically calculated *sprinkler* design demand plus 100 gallons per minute (0.0063 m^3/s) shall be provided. This *water supply* shall have a duration of 30 minutes.

403.3.3 Automatic sprinkler system alternative: Where a complete *automatic sprinkler system* with additional system features listed in 780 CMR 403.3.3.1 and 403.3.3.2 is installed throughout, modifications to this code are permitted as described in 780 CMR 403.3.3.1 and 403.3.3.2.

403.3.3.1 Type of construction: Other than in buildings with an occupancy in Use Groups F-l, H-3, M and S-l, the minimum type of construction required by 780 CMR shall be modified as indicated in Table 403.3.3.1.

Exception: The Type 1A to 1B modification shall be permitted for buildings with an occupancy in Use Groups F-1, M and S-1.

Table 403.3.3.1
TYPE OF CONSTRUCTION MODIFICATIONS PERMITTED FOR HIGH-RISE BUILDINGS

Type of Construction set forth in Table 602	Modified type of construction permitted hereunder
1A	1B
1B	2A[a]
2A	2B

Note a. The minimum fireresistance rating floor construction shall be two hours.

403.3.3.2 Shaft enclosures: The required fireresistance rating of the *fire separation assemblies* enclosing vertical *shafts*, other than stairway enclosures and elevator hoistway enclosures, shall be reduced to one hour where automatic *sprinklers* are installed within the *shafts* at the top and at alternate floor levels.

403.4 Automatic fire detection: A smoke detector suitable for the intended application shall be installed in each of the following rooms: mechanical equipment; electrical; transformer; telephone equipment; elevator machine; or similar room. The actuation of any detector shall sound an alarm at a constantly attended location.

403.5 Voice/alarm signaling systems: A voice/alarm signaling system shall be provided in accordance with 780 CMR 917.9 and activated in accordance with 780 CMR 917.7.1.

403.6 Fire department communication system: A two-way fire department communication system shall be provided for fire department use. The communication system shall operate between the *fire command station* and every elevator, elevator lobby and enclosed *exit stairway*. Acceptable types of fire department communications shall include:

1. Telephone or fire department radio in lieu of a dedicated system, where approved by the fire department; and
2. Intercom or two-way public address system complying with NFiPA 72 listed in ***Appendix A***.

403.7 Fire command station: A *fire command station* for fire department operations shall be provided in a location approved by the fire department. The *fire command station* shall contain: the voice/alarm signaling system controls; the fire department communication system controls; the automatic fire detection and protective signaling system annunciator panels; an annunciator that visually indicates the floor location of elevators and whether they are operational; status indicators and controls for air-handling systems; controls for unlocking all *stairway* doors simultaneously; *sprinkler* valve and water-flow detector display panels; emergency and standby power; status indicators; and a telephone for fire department use with controlled access to the public telephone system.

403.8 Elevators: Elevator operation and installation shall be in accordance with ***524 CMR***. Elevator service shall be provided for fire department emergency access to all floors. Elevator cab dimensions shall conform to the applicable requirements of 524 CMR.

Except for the main entrance level, all elevators shall open into a lobby separated from the remainder of the building by one hour fireresistance rated construction.

Exit stairways, chutes, janitor closets, tenant spaces in Use Group R and service rooms shall not open into the elevator lobby. In Use Groups other than R, tenant spaces opening into the elevator lobby shall be provided with other means of exit access that do not require passage through the elevator lobby.

Exception: elevator lobbies are not required when a smoke control system is installed in accordance with 780 CMR 921.7.

403.9 Standby power, light and emergency systems: Standby power, light and emergency systems shall comply with the requirements of 780 CMR 403.9.1 through 403.9.3.

403.9.1 Standby power: A standby power system conforming to the requirements of ***527 CMR as listed in Appendix A***. If the standby system is a generator set inside a building, the system shall be located in a separate room enclosed with two-hour fireresistance rated *fire separation assemblies*. System supervision with manual start and transfer features shall be provided at the *fire command station*.

403.9.1.1 Fuel supply: An on-premises fuel supply, sufficient for not less than two-hour full-demand operation of the system, shall be provided.

Exception: Where the system is supplied with pipeline natural gas and is approved.

403.9.1.2 Capacity: The standby system shall have a capacity and rating that supplies all equipment required to be operational at the same time. The generating capacity is not required to be sized to operate all of the connected electrical equipment simultaneously.

403.9.1.3 Connected facilities: All power and lighting facilities for the *fire command station* and elevators specified in 780 CMR 403.7 and 403.8, as applicable, and electrically powered fire pumps required to maintain pressure, shall

be transferable to the standby source. Standby power shall be provided for at least one elevator to serve all floors and be transferable to any elevator.

403.9.2 Separate circuits and fixtures: Separate lighting circuits and fixtures shall be required to provide sufficient light with an intensity of not less than one footcandle (10.76 lux) measured at floor level in all *means of egress corridors, stairways, smokeproof enclosures,* elevator cars and lobbies, and other areas which are clearly a part of the escape route.

403.9.2.1 Other circuits: All circuits supplying lighting for the *fire command station* and mechanical equipment rooms shall be transferable to the standby source.

403.9.3 Emergency systems: *Exit* signs, *exit* illumination as required by 780 CMR 1024.0, and elevator car lighting are classified as emergency systems and shall operate within ten seconds of failure of the normal power supply and shall be capable of being transferred to the standby source.

Exception: *Exit* sign, *exit* and *means of egress* illumination are permitted to be powered by a standby source in buildings of Use Groups F and S.

403.10 Stairway door operation: All *stairway* doors which are to be locked from the *stairway* side shall be capable of being unlocked simultaneously without unlatching upon a signal from the *fire command station.*

403.10.1 Stairway communication system: A telephone or other two-way communication system connected to an approved constantly attended station shall be provided at not less than every fifth floor in each required stairway where the doors to the *stairway* are locked.

403.11 Smokeproof enclosures: A smokeproof enclosure, as set forth in 780 CMR 1015.0 is required for at least one exit. Other required stairways greater than 70 feet in height shall be pressurized to a minimum of 0.15 inches of water column, but not exceeding 0.35 inches of water column. Such required stairway pressurization being relative to building pressure and with all stairway doors closed. Pressurization design shall take into consideration maximum anticipated stack pressure effects in the stairway.

The stairway pressurization system shall be activated by any devices which are required to activate the voice alarm system described in 780 CMR 403.5.

780 CMR 404.0 ATRIUMS

404.1 General: The term "atrium" shall mean an occupied space that includes a floor opening or series of floor openings, which connects two or more stories. An atrium shall comply with 780 CMR 404.0 where a *shaft* enclosure is required by 780 CMR 713.3. Atriums shall be permitted in all occupancies, other than Use Group H, where provided with the protection herein required.

404.2 Automatic sprinkler system: The atrium and all stories and floor areas connected to the atrium shall be equipped throughout with an *automatic sprinkler system* in accordance with 780 CMR 906.2.1. The *automatic sprinkler system* shall be supervised in accordance with 780 CMR 923.1, method 1, 2 or 3.

Exception: An *automatic sprinkler system* shall not be required in areas separated from the atrium by *fire separation assemblies* in accordance with 780 CMR 709.0.

404.3 Atrium occupancy: The floor of the atrium shall not be occupied for other than low fire-hazard occupancies and only approved materials and decorations shall be located in the atrium space.

Exception: The occupancy of the atrium floor area for any approved purpose shall not be restricted where the hazard is protected with an *automatic sprinkler system* installed in accordance with 780 CMR 906.2.1.

404.3.1 Exit discharge: *Exit* discharge in accordance with 780 CMR 1020.0 is permitted within the atrium.

404.4 Smoke control: A smoke control system complying with 780 CMR 921.0 shall be installed in all atriums that connect more than two stories.

404.5 Enclosure of atriums: Atrium spaces shall be separated from adjacent spaces by a one-hour *fire partition* as required for corridors.

Exceptions
1. In residential occupancies, protected openings are not required where the floor area of each guest room or *dwelling unit* does not exceed 1,000 square feet (93 m^2) and each room or unit has an approved *means of egress* not entering the atrium.
2. Adjacent spaces shall be separated from the atrium by *fire windows* or by a tempered, wired, laminated glass or glass-block wall subject to the following criteria:
   2.1. The glass shall be protected by a specially designed *automatic sprinkler system*. The *sprinkler system* shall completely wet the entire surface of the glass wall when actuated. Where there are walking surfaces on both sides of the glass, both sides of the glass shall be so protected;
   2.2. The tempered, wired or laminated glass shall be in a gasketed frame and installed in

such a manner that the framing system will deflect without breaking (*loading*) the glass

2.3. The glass-block wall assembly shall be installed in accordance with the listing for a ¾-hour fireresistance rating and the requirements of 780 CMR 2115.0; and

2.4. Obstructions, such as curtain rods, drapery traverse rods, curtains, drapes or similar materials shall not be installed between the automatic *sprinklers* and the glass.

3. The adjacent spaces of any three floors of the atrium shall not be required to be separated from the atrium; however, these spaces shall be included in the atrium volume for the design of the smoke control system (see 780 CMR 921.0).

404.6 Signaling system: A fire protective signaling system shall be installed in all occupancies with an atrium that connects more than two stories. The system shall be activated in accordance with 780 CMR 917.7.1. Such occupancies in Use Group A, E or M shall be provided with a voice/alarm signaling system complying with the requirements of 780 CMR 917.9.

404.7 Travel distance: In other than the lowest level of the atrium, where the required *means of egress* is through the atrium space, the portion of *exit access* travel distance within the atrium space shall not exceed 150 feet (45720 mm).

780 CMR 405.0 UNDERGROUND STRUCTURES

405.1 Applicability: The provisions of 780 CMR 405.0 apply to all structures having a floor level used for human occupancy more than 30 feet (9144 mm) below, or more than one story below, the lowest *level of exit discharge* serving that floor level.

Exception: The provisions of 780 CMR 405.0 shall not apply to the following structures:

1. Occupancies in Use Group R-3 equipped throughout with an *automatic sprinkler system* in accordance with 780 CMR 906.0.
2. *Public garages* equipped throughout with an *automatic sprinkler system* in accordance with 780 CMR 906.0.
3. Fixed guideway transit systems.
4. Occupancies in Use Group A-5.
5. Structures wherein the lowest story is the only story that qualifies the structure as an underground structure and which have an area not exceeding 1,500 square feet (140 m^2) and an occupant load less than ten.

405.2 Construction: The underground portion of the structure shall be of Type 1 construction.

405.3 Automatic sprinkler system: The highest *level of exit discharge* serving the underground portions of the structure and all levels below shall be equipped throughout with an *automatic sprinkler system* in accordance with 780 CMR 906.0.

405.4 Compartmentation: In structures that have a floor level more than 60 feet (18288 mm) below the lowest *level of exit discharge*, the highest *level of exit discharge* serving the underground portions of the structure and all levels below shall each be divided into a minimum of two compartments of approximately equal size by a smoke barrier in accordance with 780 CMR 7l2.0.

Exception: Two compartments are not required in the lowest story where such story has an area of less than 1,500 square feet (140 m^2) and an occupant load of less than ten.

405.4.1 Smoke barrier penetrations: Penetrations of the smoke barrier shall be limited to plumbing and *automatic sprinkler system* piping and electrical raceways. The air supply, return and exhaust system provided in one compartment shall be independent of such systems provided in other compartments.

405.4.2 Elevators: Where elevators are provided, each compartment shall have direct access to an elevator. Where an elevator serves more than one compartment, an elevator lobby shall be provided and shall be separated from both compartments by a *fire separation assembly* having not less than a one-hour fireresistance rating.

405.4.3 Egress: Each compartment shall contain not less than one *exit* and shall also have an *exit access* doorway into the adjoining compartment.

405.5 Smoke exhaust system: Where compartmentation is required by 780 CMR 405.4, each compartment shall have an independent automatically activated smoke exhaust system capable of manual operation. The system shall have an air supply and smoke exhaust capability which will provide a minimum of six air changes per hour.

405.5.1 Automatic fire detection: A smoke detector complying with 780 CMR 918.8 and suitable for the intended use shall be installed in each of the following rooms: mechanical equipment; electrical; transformer; telephone equipment; elevator machine; or similar room. The actuation of any detector shall sound an alarm at a constantly attended location.

405.5.2 Activation: The smoke exhaust system shall be activated in the compartment of origin by actuation of the following, independently of each other:

1. *Automatic sprinkler system*;
2. Smoke detectors required by 780 CMR 405.5.1; and
3. Manual controls provided for fire department use.

405.6 Fire protective signaling system: Where the lowest level of a structure is more than 60 feet (18288 mm) below the lowest *level of exit*

discharge, the structure shall be equipped throughout with a fire protective signaling system in accordance with 780 CMR 917.0, including a voice/alarm signaling system installed in accordance with 780 CMR 917.9 and activated in accordance with 780 CMR 917.7.1.

405.7 Public address: Where a fire protective signaling system is not required by 780 CMR 405.6 or 917.4, a public address system shall be provided which shall be capable of transmitting voice communications to the highest *level of exit discharge* serving the underground portions of the structure and all levels below.

405.8 Standby power: A standby power system of sufficient capacity and rating and conforming to the requirements of ***527 CMR 12.00 as listed in Appendix A*** shall be provided.

405.8.1 Fuel supply: If the standby system is a generator set inside a structure, the system shall be located in a separate room enclosed with two-hour fireresistance fire rated *fire separation assemblies*. System supervision with manual start and transfer features shall be provided at the central station.

405.8.2 Capacity: The standby system shall supply the following required systems:

1. Smoke exhaust system.
2. *Smokeproof enclosure*.
3. Fire pumps.
4. One elevator to serve all floors with the capability of transferring power to any elevator.
5. Emergency electrical system.

405.9 Emergency power: An emergency electrical system of sufficient capacity and rating and conforming to the requirements of ***527 CMR 12.00 as listed in Appendix A*** shall be provided. The emergency system shall supply the following required systems:

1. Voice communication system.
2. Fire protective signaling system.
3. Fire detection systems.
4. Elevator car lighting.
5. *Means of egress* lighting and *exit* sign illumination.

780 CMR 406.0 OPEN PARKING STRUCTURES

406.1 General: Open parking structures are those structures used for the parking or storage of passenger motor vehicles designed to carry not more than nine persons, wherein provision for the repair of such vehicles is not made and where the exterior walls of the structure have openings on not less than two sides. Open parking structures are not required to conform to 780 CMR 408.0 for *public garages*.

406.1.1 Openings: The exterior walls of the open parking structure shall have uniformly distributed openings on not less than two sides totaling not less than 40% of the building perimeter. The aggregate area of such openings in exterior walls in each level shall not be less than 20% of the total perimeter wall area of each level. Interior wall lines and column lines shall be at least 20% open with openings distributed to provide *ventilation*.

Exception: Openings are not required to be distributed over 40% of the building perimeter where the required openings are uniformly distributed over two opposing sides of the building.

406.1.2 Separation: Exterior walls containing openings shall have a *fire separation distance* of greater than ten feet (3048 mm).

406.2 Construction requirements: Passenger vehicle structures shall be constructed of approved non combustible materials throughout, including structural framing, floors, roofs and walls. Any enclosed room or space on the premises shall comply with the applicable requirements of 780 CMR.

406.3 Fuel dispensing: Areas where fuel is dispensed shall conform to the requirements of 780 CMR 408.4.

406.4 Heights and areas: *Heights* and *areas* of open parking structures shall not exceed the limitations specified in Table 406.4, except as provided for in 780 CMR 406.4.1. The *heights* and *areas* are subject to the increases indicated in 780 CMR 504.0 and 506.0. The above *height* limitations permit parking on the roof.

Table 406.4
HEIGHT AND AREA LIMITATIONS FOR OPEN PARKING STRUCTURES

Type of construction	Height[a]	Area (square feet)[a]
1A and 1B	Unlimited	Unlimited
2A	12 Stories - 120 feet	Unlimited
2B	10 Stories - 100 feet	50,000
2C	8 Stories - 85 feet	50,000

Note a. 1 foot = 304.8 mm; 1 square foot = 0.093 m^2

406.4.1 Unlimited area: Structures with all sides open shall be unlimited in *area* provided that the *height* does not exceed 75 feet (22860 mm). For a

side to be considered open, the total area of openings along the side shall not be less than 50% of the exterior area of the side at each parking level and such openings shall be equally distributed along the length of each level. All portions of each parking level shall be within 200 feet (60960 mm) horizontally from an exterior wall opening on any permanent open space.

406.5 Guards: All open-sided floor areas shall be provided with a guard in accordance with 780 CMR 1021.0, except that in those structures wherein vehicles are hoisted to the desired level and placed in the parking space entirely by approved mechanical means, the guard is not required on the side of the parking levels adjacent to the space occupied by the hoisting and placing equipment.

406.6 Wheel guards: Wheel guards made of approved noncombustible material shall be placed wherever required.

780 CMR 407.0 PRIVATE GARAGES

407.1 General: *Private garages* shall comply with the requirements of 780 CMR 407.0. All *private garages* not falling within the purview of 780 CMR 407.3 through 407.7 and which are attached to or located beneath a building shall comply with the requirements of 780 CMR 313.0 for *public garages*.

407.2 Definitions: The following words and terms shall, for the purposes of 780 CMR 407.0 and as used elsewhere in 780 CMR, have the meanings shown herein.

Garage, private: A garage for four or less passenger motor vehicles, four or less single motor airplanes, or one commercial motor vehicle, without provision for repairing or servicing such vehicles for profit.

407.3 Beneath rooms: *Private garages* located beneath habitable rooms in occupancies in Use Group R-1, R-2, R-3 or I-1 shall be separated from adjacent interior spaces by *fire partitions* and floor/ceiling assemblies which are constructed with not less than a one-hour fireresistance rating. Wood structural members of the minimum dimensions specified in 780 CMR 2304.0 for Type 4 construction shall be acceptable without any further protection where a one-hour fireresistance rating is required.

407.4 Attached to rooms: *Private garages* attached side-by-side to rooms in occupancies in Use Group R-1, R-2, R-3 or I-1 shall be completely separated from the interior spaces and the *attic* area by means of _-inch Type-X gypsum board or the equivalent applied to the garage side.

407.5 Door sills: The sills of all door openings between *private garages* and adjacent interior spaces shall be raised not less than four inches (102 mm) above the garage floor.

407.6 Opening protectives: The door opening protectives shall comply with one of the following.

1. 1¾-inch solid core wood door.
2. 1¾-inch solid or honeycomb core steel door.

407.7 Firestopping of concealed spaces: Where a garage is connected to an occupancy in Use Group R-3 by a concealed space, such as a breezeway, that is of Type 5B construction and ten feet (3048 mm) or greater in length, the junction of the garage and the concealed space shall be *firestopped* to comply with 780 CMR 720.0.

407.8 Means of egress: Where living quarters are located above a *private garage*, the required *means of egress* facilities shall be separated from the garage area with one-hour fireresistance rated construction.

780 CMR 408.0 PUBLIC GARAGES

408.1 General: *Public garages* shall comply with the applicable requirements of 780 CMR 408.0. Those portions of *public garages* where paint spraying is done shall comply with the requirements of 780 CMR 419.0.

408.2 Definitions: The following words and terms shall, for the purposes of 780 CMR 408.0 and as used elsewhere in 780 CMR have the meanings shown herein.

Garage, public: A building or structure for the storage or parking of more than four passenger motor vehicles, motor-powered boats or private or commercial airplanes, or more than one commercial motor vehicle. Public garages shall be classified in one of the following groups according to their specific occupancies:

Group 1: A public garage occupied for the storage, parking, repairing or the painting of, or the dispensing of fuel to, motor vehicles.

Group 2: A public garage occupied exclusively for passenger vehicles that will accommodate not more than nine passengers.

408.3 Construction: All *Group 1 public garages* hereafter erected shall be classified as Use Group S-1 and all *Group 2 public garages* shall be classified as Use Group S-2; both shall conform to the *height* and *area* limitations of Table 503 except as specifically provided for herein.

408.3.1 Sprinkler system: All *public garages* shall be equipped throughout with an *automatic sprinkler system* in accordance with 780 CMR 906.2.1:

1. Where any *fire area* exceeds 12,000 square feet (1116 m^2) ;
2. Where the total area of all *fire areas* on all floors exceeds 24,000 square feet (2232 m^2);
3. Where any *fire area* is more than three *stories above grade*; or
4. Where located beneath other use groups.

For the purposes of 780 CMR 408.0, a roof occupied for the parking or storage of motor vehicles shall not constitute a story.

408.3.2 Roof storage of motor vehicles: Where the roof of a building is occupied for the parking or storage of motor vehicles, such roof shall be provided with a parapet wall or a guard constructed in accordance with 780 CMR 1021.0, and with a wheel guard not less than six inches (152 mm) in height that is located so as to prevent any vehicle from striking the parapet wall or guard.

408.3.3 Floor construction: The *floor finish* of *public garages*, including airplane hangers, shall be of concrete or other approved nonabsorbent, noncombustible material.

408.4 Fuel-dispensing areas: Fuel-dispensing areas shall be located on the level nearest grade. *Public garages* with fuel-dispensing areas shall be completely separated from any other use group by *fire separation assemblies* having a minimum fireresistance rating of two hours. The floors of the fuel-dispensing areas shall be graded to a floor drainage system such that any fuel spill or leak is contained within the area. The drainage system shall conform to the requirements of the plumbing code listed in ***Appendix A***. The fuel-dispensing area shall be equipped with an *automatic sprinkler system* in accordance with 780 CMR 9.

408.4.1 Fuel-dispensing systems: All fuel-dispensing and fuel storage systems shall conform to the requirements of the mechanical code listed in ***Appendix A***.

408.5 Ventilation: All *public garages* shall be *ventilated* in accordance with the mechanical code listed in ***Appendix A***. Fuel-dispensing areas shall be mechanically ventilated.

408.6 Special hazards: Any process conducted in conjunction with *public garages* which involves volatile *flammable* solvents shall be segregated or located in a detached building or structure, except as provided for in 780 CMR 418.0 for the storage and handling of gasoline and other volatile *flammables*. The quantity of *flammable liquids* stored or handled in *public garages* except in underground storage tanks, in special enclosures where permitted in accordance with NFiPA 30A and the fire prevention code listed in ***Appendix A***, and in the tanks of motor vehicles— shall not be more than five gallons (0.019 m^2) in approved safety cans.

780 CMR 409.0 USE GROUP I-2

409.1 General: All occupancies in Use Group I-2 shall comply with the provisions of 780 CMR 409.0 and all other applicable provisions of 780 CMR, except that 780 CMR 409.0 shall not apply to occupancies in Use Group I-2 that are not equipped throughout with an *automatic sprinkler system* in accordance with 780 CMR 906.0.

Note: Hospitals, nursing homes and convalescent homes shall be constructed of Type 1 construction, in accordance with M.G.L. c. 111, §§ 51 and 71.

409.2 Corridors: All *corridors* in occupancies in Use Group I-2 shall be continuous to the *exits* and separated from all other areas except waiting areas, nurses' stations and mental health treatment areas conforming to 780 CMR 409.2.1 through 409.2.4.

409.2.1 Waiting areas: Waiting areas shall not be open to the *corridor*, except where all of the following criteria are met:

1. The aggregate area of waiting areas in each *smoke compartment* does not exceed 600 square feet (56m^2);
2. Each area is located to permit direct visual supervision by facility staff;
3. Each area is equipped with an automatic fire detection system installed in accordance with 780 CMR 918.0; and
4. Each area is arranged so as not to obstruct access to the required *exits*.

409.2.2 Waiting areas of unlimited area: Spaces constructed as required for *corridors* shall not be open to a *corridor*, except where all of the following criteria are met:

1. The spaces are not occupied for patient sleeping rooms, treatment rooms or specific occupancy areas as defined in 780 CMR 302.1.1;
2. Each space is located to permit direct visual supervision by the facility staff;
3. Both the space and *corridors* that the space opens into in the same *smoke compartment* are protected by an automatic fire detection system installed in accordance with 780 CMR 918.0; and
4. The space is arranged so as not to obstruct access to the required *exits*.

409.2.3 Nurses' stations: Spaces for doctors' and nurses' charting, communications and related clerical areas shall not be open to the *corridor*, except where such spaces are constructed as required for *corridors*.

409.2.4 Mental health treatment areas: Areas wherein only mental health patients who are capable of self-preservation are housed, or group meeting or multipurpose therapeutic spaces other than specific occupancy areas as defined in 780 CMR 302.1.1, under continuous supervision

by facility staff, shall not be open to the *corridor*, except where all of the following criteria are met:

1. Each area does not exceed 1,500 square feet (140 m^2);
2. The area is located to permit supervision by the facility staff;
3. The area is arranged so as not to obstruct any access to the required *exits*;
4. The area is equipped with an *automatic fire detection system* installed in accordance with 780 CMR 918.0;
5. Not more than one such space is permitted in any one *smoke compartment*; and
6. The walls and ceilings of the space are constructed as required for *corridors*.

409.3 Corridor walls: *Corridor* walls shall form a barrier to limit the transfer of smoke. The walls shall extend from the floor to the underside of the floor or roof deck above or to the underside of the ceiling above where the ceiling membrane is constructed to limit the transfer of smoke.

409.3.1 Corridor doors: *Corridor* doors, other than those in a wall required to be rated by 780 CMR 302.1.1 or for the enclosure of a vertical opening or an *exit*, shall not have a required fireresistance rating and shall not be required to be equipped with self-closing or automatic-closing devices, but shall provide an effective barrier to limit the transfer of smoke and shall be equipped with positive latching. Roller latches are not permitted. All other doors shall conform to 780 CMR 716.0.

409.3.2 Locking devices: Locking devices which restrict access to the patient room from the *corridor*, and which are operable only by staff from the *corridor* side, shall not restrict the *means of egress* from the patient room except for patient rooms in mental health facilities. Also see 780 CMR 1017.4.1.8(2).

409.4 Smoke barriers: Smoke barriers shall be provided to subdivide every story used by patients for sleeping or treatment into at least two *smoke compartments*. Such stories shall be divided into *smoke compartments* with an area of not more than 22,500 square feet (2092 m^2) and the travel distance from any point in a *smoke compartment* to a smoke barrier door shall not exceed 150 feet (45720 mm). The smoke barrier shall be in accordance with 780 CMR 712.0.

409.4.1 Refuge area: At least 30 net square feet (2.8 m^2) per patient shall be provided within the aggregate area of *corridors*, patient rooms, treatment rooms, lounge or dining areas and other low-hazard areas on each side of each smoke barrier. On floors not housing patients confined to a bed or litter, at least six net square feet (0.56 m^2) per occupant shall be provided on each side of each smoke barrier for the total number of occupants in adjoining *smoke compartments*.

409.4.2 Independent egress: A *means of egress* shall be provided from each *smoke compartment* created by smoke barriers without having to return through the *smoke compartment* from which *means of egress* originated.

409.5 Automatic sprinkler system: *Smoke compartments* containing patient sleeping rooms shall be equipped throughout with an *automatic sprinkler system* in accordance with 780 CMR 906.2.1. Patient sleeping rooms shall be equipped with quick-response *sprinklers*.

409.5.1 Automatic fire detection: Patient sleeping rooms in nursing homes (both intermediate care and skilled nursing facilities) and detoxification facilities shall be provided with a smoke detector that is permanently connected to the normal power supply and that complies with the requirements of UL 217 or UL 268 listed in ***Appendix A***. Such detectors shall provide a visual display on the *corridor* side of each patient room and shall provide an audible and visual alarm at the nursing station attending that room. Where such detectors and related devices are not combined with the nursing call system, the detectors shall be installed in accordance with 780 CMR 918.0.

Exceptions:
1. Smoke detectors are not required in patient rooms equipped with automatic door-closing devices with integral smoke detectors on the room sides installed in accordance with their listing, provided that the integral detectors perform the required alerting function.
2. Patient-room smoke detectors installed in accordance with 780 CMR 918.0 are not required to activate the fire protective signaling system where the visual and audible alarms required in 780 CMR 409.5.1 are provided.
3. Sleeping rooms of a child care facility as specified in 780 CMR 308.3.1.

780 CMR 410.0 USE GROUP I-3

410.1 General: All occupancies in Use Group I-3 shall comply with the provisions of 780 CMR 410.0 and all other applicable provisions of 780 CMR (see 780 CMR 308.4).

410.2 Mixed use groups: Portions of buildings with an occupancy in Use Group I-3 which are classified

as a different use group shall meet the applicable requirements of 780 CMR for such use groups. Where security operations necessitate the locking of required *means of egress*, provisions shall be made for the release of occupants at all times.

410.3.2 Sliding doors: Where doors in a *means of egress* are of the horizontal-sliding type, the force to slide the door to its fully open position shall not exceed 50 pounds (222 N) with a perpendicular force against the door of 50 pounds (222 N).

410.3.3 Horizontal exits: *Horizontal exits* shall be permitted to comprise 100% of the *exits* required provided that access to an *exit*, other than a *horizontal exit*, is available in another fire compartment without requiring return through the compartment of origin. At least six square feet (0.56 m^2) of available space per occupant shall be provided on each side of the *horizontal exit* for the total number of occupants in the compartment served by that *exit*.

410.3.4 Spiral stairs and alternating tread stairways: Spiral stairs that conform to the requirements of 780 CMR 1014.6.4 and *alternating tread stairways* that conform to the requirements of 780 CMR 1014.6.6 are permitted for access to and in between staff locations.

410.3.5 Exit discharge: *Exits* are permitted to discharge into a fenced or walled courtyard. Enclosed yards or *courts* shall be of a size to accommodate all occupants, a minimum of 50 feet (15240 mm) from the building with a net area of 15 square feet (1.4 m^2) per person.

410.3.6 Sallyports: A sallyport shall be permitted in a *means of egress* where there are provisions for continuous and unobstructed passage through the sallyport during an emergency exiting condition. A sallyport is a security vestibule with two or more doors where the intended purpose is to prevent continuous and unobstructed passage by allowing the release of only one door at a time.

410.3.7 Exit stairways: One of the required *exit stairways* in each building shall be permitted to have glazing installed in doors and interior walls at each landing level providing access to the *stairway*, provided that all of the following conditions are met:

1. The *stairway* shall not serve more than four floor levels.
2. Stair doors shall not be less than ¾-hour *fire doors* complying with 780 CMR 716.0.
3. The total area of glazing at each floor level shall not exceed 5,000 square inches (3.23 m^2) and individual panels of glazing shall not exceed 1,296 square inches (0.84 m^2).
4. The glazing shall be protected on both sides by an *automatic sprinkler system*. The *sprinkler* system shall be designed to wet completely the entire surface of any glazing affected by fire when actuated.
5. The glazing shall be in a gasketed frame and installed in such a manner that the framing system will deflect without breaking (loading) the glass before the *sprinkler* system operates.
6. Obstructions, such as curtain rods, drapery traverse rods, curtains, drapes or similar materials shall not be installed between the automatic *sprinklers* and the glazing.

410.3 Means of egress: Except as modified or as provided for in 780 CMR 410.0, the provisions of 780 CMR 10 shall apply.

410.3.1 Door width: Doors to resident sleeping rooms shall have a clear width of not less than 28 inches (711 mm).

410.4 Locks: *Egress* doors are permitted to be locked in accordance with the applicable use condition. Doors from an area of refuge to exterior are permitted to be locked with a key lock the in lieu of locking methods described in 780 CMR 410.4.1. The keys to unlock the exterior doors shall be available at all times and the locks shall be operable from both sides of the door.

410.4.1 Remote release: All remote release of locks on doors in a *means of egress* shall be provided with reliable means of operation, remote from the resident living areas, to release locks on all required doors. In Occupancy Conditions III or IV, the arrangement, accessibility and security of the release mechanism(s) required for *egress* shall be such that with the minimum available staff at any time, the lock mechanisms are capable of being released within two minutes.

Exception: Provisions for remote locking and unlocking of occupied rooms in Occupancy Condition IV are not required provided that not more than ten locks are necessary to be unlocked in order to move all occupants from one *smoke compartment* to an area of refuge within three minutes. The opening of all necessary locks shall be accomplished with not more than two separate keys.

410.4.2 Power-operated doors and locks: All power-operated sliding doors or power-operated locks for swinging doors shall be operable by a manual release mechanism at the door, and either emergency power or a remote mechanical operating release shall be provided.

410.4.3 Redundant operation: Remote release, mechanically operated sliding doors or remote release, mechanically operated locks shall be provided with a mechanically operated release mechanism at each door, or shall be provided with a redundant remote release control.

410.4.4 Relock capability: Doors remotely unlocked under emergency conditions shall not automatically relock when closed unless specific action is taken at the remote location to enable doors to relock.

410.4.5 Emergency power: Emergency power in accordance with ***527 CMR 12.00 as listed in Appendix A*** shall be provided for all electrically power-operated sliding doors and power-operated locks.

Exception: Facilities with ten locks or less complying with the exception to 780 CMR 410.4.1.

410.5 Vertical openings: Vertical openings shall be enclosed in accordance with 780 CMR 713.3.

Exception: A floor opening between floor levels of residential housing areas is permitted without enclosure protection between the levels, provided that all of the following conditions are met:

1. The entire normally occupied areas so interconnected are open and unobstructed so as to enable observation of the areas by supervisory personnel.
2. *Means of egress* capacity is sufficient to provide simultaneous egress for all occupants from all interconnected levels and areas.
3. The height difference between the highest and lowest finished floor levels shall not exceed 23 feet (7010 mm). Each story, considered separately, has at least one-half of its individual required *means of egress* capacity provided by *exits* leading directly out of that story without traversing another story within the inter-connected area.

410.6 Smoke barrier: All occupancies in Use Group I-3 shall have smoke barriers complying with 780 CMR 712.0 to divide every story occupied by residents for sleeping, or any other story having an occupant load of 50 or more persons, into at least two *smoke compartments*.

Exception: Spaces having direct *exit* to one of the following, provided that the locking arrangement of the doors involved complies with the requirements for doors at the compartment barrier for the use condition involved:

1. A *public way*;
2. A building separated from the resident housing area by a two-hour fireresistance rated assembly or 50 feet (15240 mm) of open space; or
3. A secured yard or *court* having a holding space 50 feet (15240 mm) from the housing area that provides six square feet (0.56 m^2) or more of refuge area per occupant including residents, staff and visitors.

410.6.1 Smoke compartments: The maximum number of residents in any *smoke compartment* shall be 200. The travel distance to a door in a smoke barrier from any room door required as *exit access* shall not exceed 150 feet (45720 mm). The travel distance to a door in a smoke barrier from any point in a room shall not exceed 200 feet (60960 mm).

410.6.2 Refuge area: At least six net square feet per occupant shall be provided on each side of each smoke barrier for the total number of occupants in adjoining *smoke compartments*. This space shall be readily available whenever the occupants are moved across the smoke barrier in a fire emergency.

410.6.3 Independent egress: A *means of egress* shall be provided from each *smoke compartment* created by smoke barriers without having to return through the *smoke compartment* from which *means of egress* originates.

410.7 Subdivision of resident housing areas: Sleeping areas including an individual cell or *dormitory* and any contiguous day room, group activity space or other common spaces where residents are housed shall be separated from all other spaces in accordance with 780 CMR 410.7.1 through 410.7.4.

410.7.1 Occupancy Conditions III and IV: Each sleeping area in Occupancy Conditions III and IV shall be separated from the adjacent common spaces by a smoke-tight partition where the travel distance from the *dormitory* room or cell through the common space to the *exit access corridor* exceeds 50 feet (15240 mm).

410.7.2 Occupancy Condition V: Each sleeping area in Occupancy Condition V shall be separated from adjacent sleeping areas, *corridors* and common spaces by a smoke-tight partition. Additionally, common spaces shall be separated from the *exit access corridor* by a smoke-tight partition.

410.7.3 Openings in room face: The aggregate area of all openings in a solid sleeping room face in Occupancy Conditions II, III, IV and V shall not exceed 120 square inches (77419 mm^2). The

aggregate area shall include all openings including door undercuts, food passes and grilles. All openings shall be not more than 36 inches (914 mm) above the floor. In Occupancy Condition V, the openings shall be closable from the room side.

410.7.4 Smoke-tight doors: Doors in openings in partitions required to be smoke tight by 780 CMR 410.7 shall be substantial doors, of construction that will resist the passage of smoke. Latches and door closers are not required on cell doors.

410.8 Windowless buildings: For the purposes of 780 CMR 410.8, a windowless building or portion of a building is one with nonopenable windows, windows not readily breakable or without windows. Windowless buildings shall be provided with vent openings, smoke *shafts* or an engineered smoke control system to provide *ventilation* (mechanical or natural) for each windowless *smoke compartment*.

780 CMR 411.0 MOTION PICTURE PROJECTION ROOMS, SCREENING ROOMS AND SOUND STAGES

(Refer to M.G.L. c. 143, § 89 for additional information regarding cellulose nitrate film and Appendix A for related Code of Massachusetts Regulations [CMR's]).

411.1 General: The provisions of 780 CMR 411.0 shall apply to rooms in which ribbon-type cellulose acetate or other safety film is utilized in conjunction with electric arc, xenon or other light-source projection equipment which develops hazardous gases, dust or radiation. Where cellulose nitrate film is utilized or stored, such rooms shall comply with NFiPA 40 listed in ***Appendix A***.

Every motion picture machine projecting film as mentioned within the scope of 780 CMR 411.0 shall be enclosed in a projection room. Appurtenant electrical equipment, such as rheostats, transformers and generators, shall be within the projection room or in an adjacent room of equivalent construction. There shall be posted on the outside of each projection room door and within the projection room itself, a conspicuous sign with one-inch (25 mm) block letters stating "Safety Film Only Permitted in this Room".

411.2 Construction of projection rooms: Every projection room shall be of permanent construction consistent with the construction requirements for the type of building in which the projection room is located. Openings are not required to be protected.

The room shall have a floor area of not less than 80 square feet (7.44 m^2) for a single machine. Each motion picture projector, floodlight, spotlight or similar piece of equipment shall have a clear working space of not less than 30 inches by 30 inches (762 mm by 762 mm) on each side and at the rear thereof, but only one such space shall be required between two adjacent projectors. The projection room and the rooms appurtenant thereto shall have a ceiling height of not less than seven feet six inches (2286 mm). The aggregate of openings for projection equipment shall not exceed 25% of the area of the wall between the projection room and the auditorium. All openings shall be provided with glass or other approved material, so as to close completely the opening.

411.3 Projection booth and equipment ventilation: Projection booths and equipment shall be *ventilated* in accordance with the mechanical code listed in ***Appendix A***.

411.4 Lighting control: Provision shall be made for control of the auditorium lighting and the *means of egress* lighting systems of theaters from inside of the room and from at least one other convenient point in the building as required in 780 CMR 1024.3.1.

411.5 Miscellaneous equipment: Each projection room shall be provided with rewind and film storage facilities.

411.6 Screening rooms: Screening rooms shall provide a seating capacity of not more than 30 persons, with not less than two approved *means of egress* complying with 780 CMR 10. Such rooms shall be enclosed in one-hour *fire separation assemblies*. All seats shall be permanently fixed in position and the arrangement shall comply with the requirements of 780 CMR 1012.0.

411.7 Sound stage construction: All sound stages for motion picture or television productions shall be equipped throughout with an *automatic sprinkler system* installed in accordance with 780 CMR 9.

780 CMR 412.0 STAGES AND PLATFORMS

412.1 Applicability: The provisions of 780 CMR 412.0 shall apply to all parts of buildings and structures which contain *stages* or *platforms* and similar appurtenances as herein defined.

412.2 Definitions: The following words and terms shall, for the purposes of 780 CMR 412.0 and as used elsewhere in 780 CMR, have the meanings shown herein.

Platform: A platform is a raised area within a building for: the presentation of music, plays or other entertainment; the head table for special guests; the raised area for lectures and speakers; boxing and wrestling rings; theater-in-the-round; and similar purposes wherein there are no overhead hanging curtains, drops, scenery or *stage* effects other than lighting. A temporary platform is one installed for not more than 30 days.

Stage: A stage is a partially enclosed portion of a building which is designed or used for the presentation of plays, demonstrations or other entertainment. A stage shall be further classified as either a legitimate stage, regular stage or thrust stage.

Stage, legitimate: A *stage* wherein curtains, drops, leg drops, scenery, lighting devices or other stage effects are retractable horizontally or suspended overhead.

Stage, regular: A *stage* wherein curtains, fixed leg drops, valances, scenery and other stage effects are hung and are not retractable.

Stage, thrust: A *platform* extending beyond the proscenium arch and into the audience.

412.3 Stages: *Stage* construction shall comply with 780 CMR 412.3.1 through 412.3.9.

412.3.1 Stage floor construction: Openings through all *stage* floors shall be equipped with tight-fitting, solid wood trap doors not less than two inches in nominal thickness with approved safety locks or other materials of equal physical and fire endurance properties.

412.3.1.1 Legitimate stages: Legitimate *stages* shall be constructed of materials as required for floors for the type of construction, but not less than Type 1B construction except that the

portion of the legitimate *stage* extending back from and six feet (1829 mm) beyond the full width of the proscenium opening on each side shall be permitted to be constructed of noncombustible or heavy timber construction covered with a wood floor of not less than two inches nominal in thickness. Except for the finished floor, combustible construction shall not extend beyond the plane of the proscenium opening.

412.3.1.2 Regular and thrust stages: Regular *stages* and thrust *stages* shall be constructed of materials as required for floors for the type of construction of the building in which such *stages* are located.

412.3.2 Stage rigging loft: The rigging loft, also referred to as the loft or fly, is the space over the *stage* where scenery and equipment is out of view. The fly gallery is the narrow raised platform at the side of the legitimate *stage* from which the lines for flying scenery are manipulated. The gridiron is the arrangement of beams over a legitimate *stage* supporting the machinery for flying scenery and hanging battens from which lighting is hung. The pin rail is the beam at one side of a legitimate *stage* through which wooden or metal pins are driven and to which lines from the flies are fastened. The rigging loft, fly galleries, gridiron and pin rails shall be constructed of approved noncombustible materials.

412.3.3 Footlights and stage electrical equipment: Footlights and border lights shall be installed in troughs constructed of approved noncombustible materials. Ready access shall be provided at all times to the switchboard. The storage or placing of *stage* equipment against the switchboard shall be prohibited.

412.3.4 Exterior stage doors: Where protection of openings is required, *exit discharge* door openings to the outer air shall be protected with *fire doors* that comply with 780 CMR 716.0. All exterior openings which are located on the *stage* for *means of egress* or loading and unloading purposes, and which are likely to be open during occupancy of the theater, shall be constructed with vestibules to prevent air drafts into the auditorium.

412.3.5 Proscenium wall: Legitimate *stages* shall be completely separated from the seating area by a proscenium wall with not less than a two-hour fireresistance rating extending continuously from the foundation to the roof. There shall not be other openings in the wall separating a legitimate *stage* from the auditorium except: the main proscenium opening; two doorways at the *stage* level, one on each side thereof; and one doorway to the musician's pit from the space below the *stage* floor. Each such doorway shall not exceed 45 square feet (4.19 m^2) in area and shall be protected with *fire doors* that comply with 780 CMR 716.0.

412.3.5.1 Trim, finish and decorative hangings: All moldings and decorations around the proscenium opening shall be constructed entirely of approved noncombustible material.

412.3.6 Proscenium curtain: The proscenium opening of every legitimate *stage* shall be provided with a curtain of approved material designed and installed to intercept hot gases, flames and smoke, and to prevent a glow from a severe fire on the *stage* from showing on the auditorium side for a period of 30 minutes. The closing of the curtain from the full open position shall be effected in less than 30 seconds, but the last eight feet of travel shall require not less than five seconds.

412.3.6.1 Activation: The curtain shall be activated by rate-of-rise heat detection operating at a rate of temperature rise of 15 to 20°F per minute (8° to 11°C per minute); and by an auxiliary manual control.

412.3.6.2 Fire test: A sample curtain with a minimum of two vertical seams shall be subjected to the standard fire test specified in ASTM El19 listed in ***Appendix A*** for a period of 30 minutes. The curtain shall overlap the furnace edges by an amount that is appropriate to seal the top and sides. The curtain shall have a bottom pocket containing a minimum of four lbs. per linear foot (6 kg/m) of batten. The exposed surface of the curtain shall not glow, and flame or smoke shall not penetrate the curtain during the test period. Unexposed surface temperature and hose stream test requirements are not applicable to the proscenium fire safety curtain test.

412.3.6.3 Smoke test: Curtain fabrics shall have a smoke-developed rating of 25 or less when tested in accordance with ASTM E84 listed in ***Appendix A***.

412.3.6.4 Tests: The completed proscenium curtain shall be subjected to operating tests prior to the issuance of a certificate of occupancy.

412.3.7 Scenery: All combustible materials used in sets and scenery shall be rendered flame-resistant to comply with 780 CMR 8.

412.3.8 Stage ventilation: Emergency *ventilation* shall be provided for *stages* larger than 1,000 square feet (93 m^2) in floor area, or with a *stage* height greater than 50 feet (15240 mm). Such *ventilation* shall comply with 780 CMR 412.3.8.1 or 412.3.8.2

412.3.8.1 Roof vents: Two or more vents constructed to open automatically by approved heat-activated devices and with and aggregate clear opening area of not less than 5% of the

area of the *stage* shall be located near the center and above the highest part of the *stage* area, except as otherwise provided for in 780 CMR 412.3.9. Supplemental means shall be provided for manual operation of the ventilator. Curbs shall be provided as required for skylights in 780 CMR 2608.2.

412.3.8.2 Smoke control: Smoke control in accordance with 780 CMR 921.0 shall be provided to maintain the smoke layer interface not less than six feet (1829 mm) above the highest level of the assembly seating or above the top of the proscenium opening where a proscenium wall is required by 780 CMR 412.3.5.

412.3.9 Superimposed theaters: Additions or extensions shall not be erected over the *stage* section of a theater, nor shall a second theater be erected above another. Where approved, the prohibition against superimposed theaters and construction above the *stage* shall not apply where approved access is provided for fire fighting with direct means of *ventilation* to the outer air from the *stage* portion.

412.4 Platforms: *Platform* construction shall comply with 780 CMR 412.4.1 and 412.4.2.

412.4.1 Materials: In buildings required to be of Type 1 or Type 2 construction where the *platforms* are not more than 30 inches (762 mm) above the main floor level, the minimum type of construction for a permanent *platform* shall be Type 2C. For all types of construction where the *platforms* are not more than 30 inches (762 mm) above the main floor level, not larger in area than 10% of the room floor area and not more than 200 square feet (19 m2) in area, the minimum type of construction for a permanent *platform* shall be Type 5B. For all types of construction where the *platforms* are not more than 30 inches (762 mm) above the main floor level, not larger than _ of the room floor area and not more than 3,000 square feet (279 m^2) in area, the minimum type of construction for a permanent *platform* shall be Type 4 or the *platform* shall be constructed of fireretardant-treated wood. All other permanent *platforms* shall be constructed of approved materials as required for floors for the required type of construction of the building in which it is located. Temporary *platforms* shall be constructed of any approved material.

412.4.2 Space beneath: The space between the floor and a temporary *platform* above shall not be utilized for any purpose other than electrical wiring to *platform* equipment. Where the space between the floor and a permanent *platform* above is utilized for any purpose other than electrical wiring or plumbing, the *platform* shall provide a one-hour fireresistance rating.

412.5 Dressing and appurtenant rooms: Dressing and appurtenant rooms shall comply with 780 CMR 412.5.1 through 412.5.3.

412.5.1 Construction: Dressing rooms, scene docks, property rooms, workshops, storerooms and all compartments appurtenant to the *stage* shall be separated from each other and from the stage and all other parts of the building by *fire separation assemblies* with not less than a one-hour fireresistance rating with approved opening protectives. Such rooms shall not be placed immediately over or under the operating *stage* area.

Exception: Separation from the *stage* is not required for *stages* having a floor area of 500 square feet (46.5 m^2) or less.

412.5.2 Opening protectives: Openings other than to trunk rooms and the necessary doorways at *stage* level shall not connect such rooms with the *stage*, and such openings shall be protected with *fire doors* that comply with 780 CMR 716.0.

412.5.3 Dressing room and stage exits: Each tier of dressing rooms shall be provided with at least two *means of egress*. *Means of egress* stairways from dressing and storage rooms are not required to be enclosed where located in the *stage* area behind the proscenium wall. At least one approved *means of egress* shall be provided from each side of the *stage*; from each side of the space under the *stage*; from each fly gallery; and from the gridiron. A steel ladder shall be provided from the gridiron to a scuttle in the *stage* roof.

412.6 Automatic sprinkler system: *Stages* and enclosed *platforms* shall be equipped with an *automatic sprinkler system* in accordance with 780 CMR 412.0 and 780 CMR 906.0 or 780 CMR 907.0. The system shall be installed: under the roof and gridiron, in the tie and fly galleries and in all places behind the proscenium wall of the *stage*; over and within enclosed platforms in excess of 500 square feet (46.5 m^2) in area; and in dressing rooms, lounges, workshops and storerooms accessory to such *stages* or enclosed *platforms*.

Exceptions:
1. *Stages* or enclosed *platforms* open to the auditorium room on three or more sides.
2. Altars, pulpits or similar *platforms* and accessory rooms.
3. *Stage* gridirons where sidewall *sprinklers* with 135°F (57°C) rated heads with heat-baffle plates are installed around the perimeter of the *stage* except for the proscenium opening at points not

more than 30 inches (762 mm) below the gridiron nor more than six inches (152 mm) below the baffle plate.

for storage, the *stage* and supporting structures shall be of one-hour fireresistance rated construction.

412.7 Standpipes: A wet *standpipe system* in accordance with 780 CMR 914.0 shall be provided and equipped with 1½-inch hose connections on each side of the *stage*.

Exception: Where the building or area is equipped throughout with an *automatic sprinkler system*, the hose connections that are supplied from the *automatic sprinkler system* shall have a *water supply* of not less than that required by NFiPA 13 listed in ***Appendix A***.

412.7.1 Hose and cabinet: The hose connections shall be equipped with sufficient lengths of 1½ - inch hose to provide fire protection for the *stage* area; such connections shall be equipped with an approved adjustable fog nozzle and be mounted in a cabinet or a rack.

780 CMR 413.0 SPECIAL AMUSEMENT BUILDINGS

413.1 General: Special amusement buildings shall comply with the requirements for buildings of the appropriate assembly use group in addition to the requirements of 780 CMR 413.0.

Exception: Buildings or portions thereof that are essentially open to the outside air, such as buildings without walls or without a roof and arranged to prevent the accumulation of smoke in the building or structure are not required to comply with 780 CMR 413.0.

413.2 Special amusement building: A special amusement building is any temporary, permanent or mobile building or portion thereof which is occupied for amusement, entertainment or educational purposes and which contains a device or system which conveys passengers or provides a walkway along, around or over a course in any direction so arranged that the *means of egress* path is not readily apparent due to visual or audio distractions or is intentionally confounded or is not readily available due to the nature of the attraction or mode of conveyance through the building or structure.

413.3 Fire detection: All special amusement buildings shall be equipped with an automatic fire detection system in accordance with 780 CMR 918.0.

Exception: In areas where the ambient conditions will cause a smoke detector to activate, an approved alternative type of automatic detector shall be installed.

4. Under *stage* or enclosed *platform* areas less than four feet (1219 mm) in clear height utilized

413.4 Automatic sprinklers: All special amusement buildings shall be equipped throughout with an *automatic sprinkler system* in accordance with 780 CMR 906.0. Where the special amusement building is temporary or mobile, the *sprinkler water supply* shall be of an approved temporary means.

Exception: An *automatic sprinkler system* is not required where the total floor area of a temporary special amusement building is less than 1,000 square feet (93 m^2) and the travel distance from any point to an *exit* is less than 50 feet (15240 mm).

413.5 System response: The activation of the automatic fire detection system within a single protected area or the *automatic sprinkler system* shall automatically:

1. Cause illumination of the *means of egress* with light of not less than one footcandle (10.76 lux) at the walking surface level;
2. Stop any conflicting or confusing sounds and visual distractions; and
3. Activate an approved directional *exit* marking that will become apparent in an emergency.

413.5.1 Alarm: Activation of any single smoke detector, the *automatic sprinkler system* or any other automatic fire detection device shall immediately sound an alarm at the building at a constantly attended location from which emergency action can be initiated including the capability of manual initiation of requirements in 780 CMR 413.5.

413.5.2 Public address system: A public address system, which is also permitted to serve as an alarm system, shall be provided and shall be audible throughout the entire special amusement building.

413.5.3 Exit marking: "Exit" signs shall be installed at required *exit* doorways. Approved directional exit markings shall also be provided and shall include signs as required by 780 CMR 1023.0. Where mirrors, mazes or other designs are used that confound the *means of egress* paths, approved low-level "exit" signs and directional path markings shall be provided and located not more than eight inches (203 mm) above the walking surface and on or near the *means of egress* path. Such markings shall become visible when activated in accordance with 780 CMR 413.5, item 3.

413.6 Interior finish: The interior finish shall be Class I in accordance with 780 CMR 803.2.

413.7 Required inspections. Buildings or portions thereof, classified as *special amusement buildings* shall be inspected on an annual basis to ensure

414.1 General: The provisions of 780 CMR 414.0 shall apply to airport traffic control towers not exceeding 1,500 square feet per floor occupied only for air traffic control, electrical and mechanical equipment rooms, radar and electronics rooms, office spaces incidental to tower operation and lounges for employees, including restrooms.

414.2 Type of construction: Air traffic control towers shall be constructed to conform to the *height* and *area* limitations of Table 414.2.

Table 414.2
HEIGHT AND AREA LIMITATIONS FOR AIRPORT TRAFFIC CONTROL TOWERS

Type of construction	Height[a,b]	Maximum area (square feet)[b]
1A, 1B	Unlimited	1,500
2A	240 feet	1,500
2B	100 feet	1,500
2C	85 feet	1,500

Note a. Height to be measured from grade to cab floor.

Note b. 1 foot - 304.8 mm; 1 square food = 0.093m^2.

414.3 Egress: A minimum of one exit *stairway* shall be permitted for airport traffic control towers of any *height* provided that the occupant load per floor does not exceed 15. The *stairway* shall conform to the requirements of 780 CMR 1014.0 and 1015.0. The *stairway* shall be separated from elevators by a minimum distance of ½ of the diagonal of the area served.

Exception: *Smokeproof enclosures* as set forth in 780 CMR 1015.0 are not required where required *stairways* are pressurized to a minimum of 0.15 inch of water column (37.33 P) and a maximum of 0.35 inch of water column (87.10 P) in the *shaft* relative to the building with all *stairway* doors closed.

414.4 Automatic fire detection systems: Airport traffic control towers shall be provided with an automatic fire detection system installed in accordance with 780 CMR 918.0.

414.5 Standby power: A standby power system that conforms to 780 CMR 403.9 and ***527 CMR 12.00 as listed in Appendix A*** shall be provided in airport traffic control towers more than 65 feet (19812 mm) in *height*. Power shall be provided to mechanical equipment servicing *smokeproof enclosures* and stairway pressurization systems, *means of egress* lighting, elevator operational equipment and the automatic fire detection system.

780 CMR 414.0 AIRPORT TRAFFIC CONTROL TOWERS

780 CMR 415.0 OUTDOOR PROCESSING FACILITIES

415.1 Industry standards: Outdoor processing facilities such as chemical plants, refineries and grain elevators shall be constructed in accordance with the accepted engineering practice of the specific industry and the fire prevention code listed in ***Appendix A***, subject to the approval of the ***the building code enforcement official and the fire prevention officer***.

780 CMR 416.0 HPM FACILITIES

416.1 Scope: The provisions of 780 CMR 416.0 shall apply to buildings and structures using *hazardous production materials* (*HPM*), such as in semiconductor fabrication facilities and areas of comparable research and development. Except as specifically required by 780 CMR 416.0, such buildings shall comply with the applicable requirements of 780 CMR. The specific code provisions of 780 CMR 307.0, 506.3 and Table 1009.2 applicable to high-hazard use groups shall not apply unless stated herein.

416.2 Definitions: The following words and terms shall, for the purposes of 780 CMR 416.0 and as used elsewhere in 780 CMR, have the meanings shown herein.

Emergency control station: An approved location on the premises where signals from emergency equipment are received and which is staffed by trained personnel.

Fabrication area: A fabrication area is one in which there are processes involving *hazardous production materials* (*HPM*), and includes ancillary rooms or areas, such as dressing rooms and offices, which are supplemental to the area processes.

Hazardous production material (HPM): A solid, liquid or gas that has a degree of hazard rating in health, flammability or reactivity of Class 3 or 4 as ranked by NFiPA 704 listed in ***Appendix A*** and which is used directly in research, laboratory or production processes which have as their end product, materials which are not hazardous.

Service passage, HPM: A passage in which *hazardous production materials* (*HPM*) are transported from a *separate inside HPM storage room* or the exterior of the building to the perimeter wall of the *fabrication area*, for purposes other than required *means of egress*.

Storage room, HPM, separate inside: A room in which *hazardous production materials* (*HPM*) are stored in containers, tanks, drums or other means, and which is separated from other occupancies. Such rooms include:

HPM cutoff room: An *HPM* storage room within a building and having at least one exterior wall.

HPM inside room: An *HPM* storage room totally enclosed within a building and not having exterior walls.

416.3 Allowable heights, stories and area: The allowable *height*, number of stories and basic *areas* permitted for HPM buildings and structures shall not exceed the limitations specified in Table 416.3. The provisions of 780 CMR 507.0 shall not apply. The

area limitations are for one- or two-story buildings facing on a street or public space not less than 30 feet (9144 mm) wide. The increases permitted in 780 CMR 506.2 and 506.3 shall apply.

Table 416.3
HEIGHT, NUMBER OF STORIES AND AREA LIMITATIONS FOR HPM USE FACILITIES

Type of construction	Number of stories	Height (feet)[a]	Area (square feet/floor)[a]
1A and 1B	3	55	Unlimited
2A	3	55	34,200
2B	3	55	22,500
2C	3	40	14,400
3A	3	50	19,800
3B	3	40	14,400
4	3	55	21,600
5A	3	40	15,300
5B	2	30	7,200

Note a. 1 foot = 304.8 mm; 1 square foot = 0.093 m^2

416.4 Fire suppression: *HPM* facilities shall be equipped throughout with an *automatic sprinkler system* in accordance with 780 CMR 9. The design for the *fabrication areas*, *service passages*, *separate inside HPM storage rooms* without dispensing, and *means of egress corridors* shall meet the requirements for Ordinary Hazard Group 2 in NFiPA 13 listed in ***Appendix A***. The design for *separate inside HPM storage rooms* with dispensing shall meet the requirements for Extra Hazard Group 2 in NFiPA 13 listed in ***Appendix A***.

416.5 Amount of HPM in a fabrication area: The total amount of *HPM* permitted in a single *fabrication area* shall be based on the densities in Table 416.5(2), or the quantities in Table 416.5(1), whichever is the larger amount.

Table 416.5(1)
PERMITTED AMOUNTS OF HPM IN A SINGLE FABRICATION AREA-QUANTITY BASIS

Material	Maximum quantity[a]
Flammable liquids	
Class I-A	90 gallons
Class I-B	180 gallons
Class I-C	270 gallons
Combination flammable liquids containing not more than the exempt amounts of Class I-A, I-B or I-C flammable liquids	360 gallons
Combustible liquids	
Class II	360 gallons
Class III-A	750 gallons
Flammable gases	9,000 cubic feet at one atmosphere of pressure at 70°F
Liquefied flammable gases	180 gallons
Flammable solids	1,500 pounds
Corrosive liquids	165 gallons
Oxidizing material - gases	18,000 cubic feet
Oxidizing material - liquids	150 gallons
Oxidizing material - solids	1,500 pounds
Organic peroxides	30 pounds
Highly toxic material and poisonous gas	Included in the aggregate for flammables as noted above

Note a. 1 gallon - 0.00379 m^3; 1 cubic foot = 0.028 m^3; 1 pound = 0.454 kg; degrees C = {(degrees F)-32}/1.8.

Table 416.5(2)
PERMITTED AMOUNTS OF HPM IN A SINGLE FABRICATION AREA—DENSITY BASIS[a, c]

State	Units[d]	Flam-mable	Oxi-dizer	Cor-rosive
Solid	Pounds per aquare foot	0.001	0.003	0.003
Liquid	Gallons per square foot	0.04[b]	0.03	0.08
	Cubic feet per square foot	1.250	1.250	3.000
Gas				

Note a. HPM within piping shall not be included in the calculated quantities.

Note b. The maximum permitted quantities of flammable and combustible liquids shall not exceed the following quantities:

Class (I-A) + (I-B) + (I - C) (combination flammable liquids) = .025
However Class I-A shall not exceed = .0025
Class II = .01
Class III-A = .02

Note c. Highly toxic materials and poisonous gases shall be limited by the maximum quantities specified in Table 416.5(1).

Note d. One pound per square foot = 4.882 kg/m^2; 1 gallon per square foot = 0.0407 m^3/m^2; 1 cubic foot per square foot = 0.301 m^3/m^2.

416.6 Egress: There shall not be less than two *means of egress* provided for any *fabrication area* or any *HPM* facility subdivision thereof larger than 200 square feet (18.62 m^2). The maximum length of *exit access* travel in *HPM* facilities shall be 100 feet (30480 mm).

4l6.7 Separation: *Fabrication areas* shall be separated from each other, from *means of egress corridors*, and from other parts of the building by not less than one-hour *fire separation assemblies* in compliance with 780 CMR 709.0, with *fire doors* complying with 780 CMR 716.0. Floors forming part of the required separation shall be liquid tight.

416.8 Floors: Floors within *fabrication areas* shall be of approved noncombustible construction. Unprotected openings through floors of *fabrication areas* are permitted where the interconnected levels are used solely for mechanical equipment directly related to such *fabrication areas*.

Mechanical, duct and piping penetrations within a *fabrication area* shall not extend through more than two floors. Penetrations shall be effectively *firestopped* in accordance with 780 CMR 720.6.4 at the floor level. The *fabrication area*, including the areas through which ductwork and piping extend, shall be considered a single conditioned space or *fire area*.

416.9 Ventilation, general: *Ventilation* systems shall comply with the mechanical code listed in ***Appendix A*** except as otherwise provided herein. *Ventilation*, including recalculated air, shall be provided throughout the *fabrication area* at the rate of not less than 1cfm per square foot (5074 $cm^3/s/m^2$) of floor area.

416.9.1 Interconnection: The exhaust system of one *fabrication area* shall not connect to another exhaust system outside that *fabrication area* within the building. The return air system from one *fabrication area* shall not connect to any other system.

416.9.2 Smoke detectors: Smoke detectors shall be installed in the recirculating air stream and shall initiate a signal at the *emergency control station*.

416.9.3 Shutoff switches: Automatic shutoffs are not required to be installed on air-moving equipment. A manually operated remote switch to shut off the *fabrication area* supply or the recirculation air system, or both, shall be provided at an approved location outside the *fabrication area*.

416.9.4 Gas detection: Where *HPM* gas is used or dispensed and the physiological warning properties for the gas are at a higher level than the accepted permissible exposure limitation for the gas, a continuous gas-monitoring system shall be provided to detect the presence of a short-term hazard condition. Where dispensing occurs and *flammable* gases or vapors are liberated in quantities exceeding 20% of the lower explosive limitation, a continuous gas-monitoring system shall be provided. The monitoring system shall be connected to the *emergency control station*.

416.10 Transporting HPM: *HPM* shall be transported to *fabrication areas* through enclosed piping or tubing systems which comply with 780 CMR 416.15, through *service passages*, or in *means of egress corridors* as permitted in the exception to 780 CMR 416.12.

416.11 Electrical: Electrical equipment and devices within the *fabrication area* shall comply with 527 CMR listed in ***Appendix A***. The requirements for hazardous locations are not required to be applied where the average rate of air change is at least four cfm per square foot (20300 $cm^3/s/m^2$) of floor area and where the rate of air change at any location is not less than three cfm per square foot (15200 $cm^3/s/m^2$).

416.12 Means of egress corridors: *Means of egress corridors* shall comply with 780 CMR 1011.4 and shall be separated from *fabrication areas* as specified in 780 CMR 416.7. *Means of egress corridors* shall not be used for transporting *HPM* except as provided for in 780 CMR 416.12.1 and 416.15.2.

416.12.1 Existing facilities: In existing *HPM* facilities, when there are alterations or modifications to existing *fabrication areas*, the transportation of *HPM* in *means of egress corridors* shall be permitted provided that all of the requirements of 780 CMR 416.12.1.1 and 416.12.1.2 are met.

416.12.1.1 Corridors: *Corridors* adjacent to the *fabrication area* under *alteration* shall comply with Table 602, item 4, for a length determined as follows:

1. The length of the common wall of the *corridor* and that *fabrication area*; and
2. For the distance along the *corridor* to the point of entry of *HPM* into the *corridor* serving that *fabrication area*.

416.12.1.2 Openings: There shall not be openings between the *corridor* and an *HPM* storage cabinet in a *fabrication area* other than those in compliance with all of the following:

1. one-hour *fire doors* are installed between the *corridor* and the cabinet;

2. The cabinet is separated from the *corridor* with a one-hour fireresistance rated *fire partition*; and

3. Automatic sprinklers shall be provided inside the cabinets

416.13 Service passages: *Service passages* shall be considered as *HPM* facilities. *Service passages* shall be separated from *means of egress corridors* as required by 780 CMR 416.7.

416.13.1 Ventilation: *Service passages* shall be *ventilated* as required by 780 CMR 416.9.

416.13.2 Egress: There shall not be less than two *means of egress* from a *service passage*. Not more than one-half of the required *means of egress* shall be into the *fabrication area*. Doors from *service passages* shall be self-closing and swing in the direction of *means of egress* travel.

416.13.3 Travel distance: The maximum distance of travel from any point in a *service passage* to an *exit* or door into a *fabrication area* shall not exceed 75 feet (22860 mm). Dead ends shall not exceed four feet (1219 mm) in length.

416.13.4 Alarms: Alarms shall be provided for in accordance with 780 CMR 416.14.5.

416.14 Storage of HPM, general: Rooms used for the storage of *HPM* in quantities greater than those set forth in Tables 307.8(1) and 307.8(2), except for those quantities permitted within a *fabrication area*, shall comply with the provisions of NFiPA 30 listed in ***Appendix A***, provided that the area of an HPM *cutoff room* shall not exceed 6,000 square feet (558 m^2). The storage area for any liquid *HPM* shall be provided with drains.

416.14.1 Location within building: Where *HPM cutoff rooms* are provided, such rooms shall not be less than 30 feet (9144 mm) from *lot lines*.

416.14.2 HPM drainage systems: Drainage systems shall be provided to direct liquid leakage and fire protection water to a safe location away from the building, important valves or adjoining property. *HPM flammable liquid* drains shall be separated from other *HPM* liquid drains Other *HPM* liquids in drains that are not compatible shall be separated from each other, provided that the liquids are permitted to be combined when such liquids have been rendered acceptable for discharge by an approved means into the public sewers.

416.14.3 Egress: There shall be two *means of egress* from a *separate inside HPM storage room* where the room exceeds 200 square feet (186 m^2) in area. Where two *means of egress* are required from *HPM cutoff rooms*, one shall be directly to the outside of the building. All storage room *means of egress* doors shall be self-closing and swing in the direction of *means of egress* travel

416.14.4 Ventilation: Exhaust *ventilation* shall be provided for in accordance with 780 CMR 416.9 for all categories of *HPM*.

416.14.5 Emergency alarm: An emergency telephone system or local fire protective signaling system station shall be installed outside of each interior egress door from *HPM cutoff rooms*. The signal shall be relayed to the *emergency control station* and a local signaling device provided.

416.14.6 Electrical: *HPM cutoff rooms* containing *flammable liquids* or gases shall be classified as Class I, Division 1, hazardous locations in accordance with 527 CMR listed in ***Appendix A***.

416.14.7 Gas detection: Gas detection shall be provided for in accordance with 780 CMR 416.9.4.

416.15 Piping and tubing: *HPM* piping and tubing shall comply with 780 CMR 416.15 and shall be installed in accordance with ASME B31.3 listed in ***Appendix A***.

416.15.1 General: Piping and tubing systems shall be metallic unless the material being transported is incompatible with such system. Systems supplying gaseous *HPM*, having a *health hazard* of 3 or 4 as ranked by NFiPA 704 listed in ***Appendix A***, shall be welded throughout, except for connections, valves and fittings which are within an exhausted enclosure. *HPM* supply piping or tubing in *service passages* shall be exposed to view.

416.15.2 Installation in egress corridors or above other use groups: *HPM* shall not be located within *means of egress corridors* or above areas not containing *HPM* facilities except as permitted by 780 CMR 416.15. *HPM* piping and tubing shall be permitted within the space defined by the *walls* of *means of egress corridors* and the floor or roof above, or in concealed spaces above other use groups under the following conditions:

1. Automatic *sprinklers* shall be installed within the space unless the space is less than six inches (152 mm) in least dimension.
2. *Ventilation* at not less than six air changes per hour shall be provided. The space shall not be used to convey air from any other area.
3. All *HPM* supply piping and tubing and HPM non-metallic waste lines shall be separated from the *means of egress corridor*

and from any use group other than an *HPM* use facility by a *fire separation assembly* having a fireresistance rating of not less than one hour. Where gypsum wallboard is used, joints on the piping side of the enclosure are not required to be taped, provided that the joints occur over framing members.

4. Where piping or tubing is used to transport *HPM* liquids, a receptor shall be installed below such piping or tubing. The receptor shall be designed to collect and drain any discharge or leakage to an approved location. The one-hour enclosure required by 780 CMR

416.15.2, item 3 shall not be used as part of the receptor.

5. Manual or automatic remotely activated fail-safe emergency shutoff valves, with ready access thereto, shall be installed on piping and tubing, other than waste lines, at branch connections into the *fabrication area*, and at entries into *means of egress corridors*.

6. Where *HPM* supply gas is carried in pressurized piping, a fail-safe system for excess flow control shall shut off flow due to a rupture in the piping.

7 Electrical wiring and equipment located in the piping space shall be approved for Class I, Division 2, hazardous locations in accordance with 527 CMR listed in ***Appendix A***.

8. Gas detection shall be as provided for in 780 CMR 416.9.4

Exception: Conditions 1 through 8 shall not apply to transverse crossings of the *corridors* by supply piping that is coaxially enclosed within a ferrous pipe or tube for the width of the *corridor*. An enclosing pipe or tube open to an *HPM* use facility is permitted.

416.15.3 Identification: Piping, tubing and *HPM* waste lines shall be identified in accordance with ASME A13.1 listed in ***Appendix A***.

780 CMR 417.0 HAZARDOUS MATERIALS

(See also 780 CMR 426.0 for the design and construction of Bulk Merchandising Retail Buildings.)

417.1 General: The provisions of 780 CMR 417.0 shall apply to all buildings and structures occupied for the manufacturing, processing, dispensing, use or storage of *hazardous materials*. All buildings and structures with an occupancy in Use Group H shall also comply with the applicable provisions of 780 CMR 418.0 and the fire prevention code listed in ***Appendix A***.

Note: The safe design of *hazardous material* occupancies is material dependent. Individual material requirements are also found in 780 CMR 307.0 and 418.0, and in the mechanical and fire prevention codes listed in ***Appendix A***. Since the fire department is responsible for inspection of these occupancies for proper utilization and handling of *hazardous materials*, the administrative authority shall cooperate with the fire department in the discharge of the responsibility to enforce 780 CMR 417.0

417.2 Control areas/exempt amounts: *Control areas* shall be those spaces within a building where quantities of *hazardous materials* not exceeding the allowable exempt amounts are stored, dispensed, utilized or handled. *Control areas* shall be separated from all adjacent interior spaces by *fire separation assemblies* in accordance with 780 CMR 709.0. The number of permitted *control areas* and degree of fire separation shall be in accordance with Table 417.2. The floor construction and supporting structure for all floors within the *control area* shall require a minimum two-hour fireresistance rating.

Table 417.2
PERMITTED CONTROL AREAS[a, b]

Floor level	Percent of allowable exempt quantities per control area	Control areas per floor	Vertical fire separation walls (hours)
1	100	4	1
2	75	3	1
3	50	2	1
4	12.5	2	2
5	12.5	2	2
6	12.5	2	2
7-9	5	2	2
Higher than 9	5	1	2

Note a. The number of floor levels below grade shall not exceed two. The first floor level before grade shall be limited to 75% of the maximum allowable exempt quantity per control area with a maximum of three control areas. The second floor level below grade shall be limited to 50% of the maximum allowable exempt quantity per control area with a maximum of two control areas.

Note b. In mercantile occupancies, a maximum of two control areas per floor shall be permitted in retail sales rooms.

417.2.1 Hazardous material in mercantile display areas: ***Except as modified by 780 CMR 426***, the aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid *hazardous materials* permitted within a single *control area* of a retail sales occupancy is permitted to exceed the exempt amounts specified in Tables 307.8(1) and 307.8(2) without classifying the building as a high-hazard use group, provided that the materials are stored in accordance with the fire prevention code listed in ***Appendix A***.

417.3 Equipment rooms: Heating and ventilating equipment in occupancies involving fire hazards from *flammable* vapors, dusts, *combustible fibers* or other highly combustible substances shall be installed and protected against fire and explosion hazards in accordance with the mechanical code and the fire prevention code listed in ***Appendix A***.

417.4 Hazardous material systems: Systems involving *hazardous materials* shall be suitable for the intended application and shall be designed by persons competent in such design. Controls shall be

designed to prevent materials from entering or leaving process or reaction systems at other than the intended time, rate or path. Automatic controls, where provided, shall be designed to be fail safe.

417.5 Inside storage, dispensing and utilization: The inside storage, dispensing and utilization of *hazardous materials* in excess of the allowable exempt amounts of Tables 307.8(1) and 307.8(2) shall be in accordance with 780 CMR 417.5.1 through 417.5.5 and the fire prevention code listed in ***Appendix A***.

417.5.1 Explosion control: Every structure, room or space occupied for purposes involving explosion hazards shall be provided with explosion venting, explosion suppression systems, *barricades* or equivalent explosion protective devices in accordance with 780 CMR 417.0 and NFiPA 495 listed in ***Appendix A*** where required by 780 CMR 418.0 and the fire prevention code listed in ***Appendix A***.

Exception: Explosion venting shall not be utilized as a means to protect buildings from *detonation* hazards.

417.5.1.1 Explosion venting: Areas which are provided with explosion venting to relieve *deflagration* shall comply with the following:

l. Walls, ceilings and roofs exposing surrounding areas shall be designed to resist a minimum internal pressure of 100 pounds per square foot (psf).

2. Explosion venting shall be permitted only in exterior walls or roofs or through specially designed *shafts* to the exterior of the building.

3. Venting shall be designed to prevent serious structural damage and the production of lethal projectiles.

4. The aggregate clear vent relief area shall be governed by the pressure resistance of the nonrelieving portions of the building.

5. Vents shall be designed to relieve at a maximum internal pressure of 20 pounds per square foot (psf) and shall consist of any one or any combination of the following:

5.1. Walls of lightweight material.

5.2. Lightly fastened hatch covers.

5.3. Lightly fastened, outward-opening swinging doors in exterior walls.

5.4. Lightly fastened walls or roofs.

6. Venting devices shall discharge directly to the open air or to an unoccupied space not less than 50 feet in width on the same *lot*.

7. Relieving devices shall be so located that the discharge shall not be less than ten feet vertically and 20 feet horizontally from window openings or *exits* in the same or adjoining buildings or structures.

8. Discharge shall be in the direction of least exposure and not into the interior of the building.

417.5.1.2 Explosion suppression systems: Explosion suppression systems shall be of an approved type and installed in accordance with the provisions of 780 CMR and NFiPA 69 listed in ***Appendix A***.

417.5.2 Monitor control equipment: Monitor control equipment shall be provided where required by the fire prevention code listed in ***Appendix A***.

417.5.3 Detection systems: All occupancies in Use Group H shall be provided with an automatic fire detection system in accordance with NFiPA 72 listed in ***Appendix A*** where required by the fire prevention code listed in ***Appendix A***. The detection system shall be provided in the areas where the high-hazard materials are utilized and stored.

417.5.4 Standby power: Where mechanical *ventilation*, treatment systems, temperature control, alarm, detection or other electrically operated systems are required, such systems shall be connected to an emergency electrical system in accordance with ***527 CMR 12.00 as listed in Appendix A*** or a standby power system in accordance with ***527 CMR 12.00 as listed in Appendix A***. Such systems shall be independent of the public supply.

417.5.5 Spill control, drainage and containment: Rooms, buildings or areas occupied for the storage of solid and liquid *hazardous materials* shall be provided with a means to control spillage and to contain or drain off spillage and fire protection water discharged in the storage area where required in 780 CMR 418.0 and the fire prevention code listed in ***Appendix A***.

417.6 Outside storage, dispensing and utilization: The outside storage, dispensing and utilization of *hazardous materials* in excess of the exempt amounts shall be in accordance with 780 CMR 417.6.1 through 417.6.6 and the fire prevention code listed in ***Appendix A***.

417.6.1 Location: In addition to the general requirements of 780 CMR 417.6.2 through 417.6.5, the outside storage of *hazardous materials* as listed in 780 CMR 307.0 shall be separated from buildings and *lot lines* and into individual areas as specified in the fire prevention code listed in ***Appendix A***.

417.6.2 Protection from vehicles: Guard posts or other means shall be provided to protect outside storage tanks from vehicular damage.

417.6.3 Fire lanes and water supply: Fire lanes and approved water supplies shall be provided for outside storage areas as required by the code official.

1. Fire lanes. Fire lanes shall be provided to within 150 feet (45720 mm) of all portions of an outside storage area. Such fire lanes shall

comply with the provisions of the fire prevention code listed in ***Appendix A***.

2. *Water supply*. An approved *water supply* shall be provided. Fire hydrants capable of supplying the required fire flow shall be provided to within l50 feet (45720 mm) of an outside storage area. The *water supply* and fire hydrants shall comply with the provisions of NFiPA 24 and the fire prevention code listed in ***Appendix A***.

417.6.4 Weather protection: Where weather protection is provided for sheltering outside *hazardous material* storage areas, such storage shall not be considered inside storage provided that all of the following conditions are met:

1. Structure supports and walls shall not obstruct more than one side of the perimeter of the storage area.
2. The distance from the structure and the structure supports to buildings, *lot lines*, *public ways* or *means of egress* to a *public way* shall not be less than the distance required for an outside *hazardous material* storage area without weather protection.
3. The overhead structure shall be of approved noncombustible construction with a maximum area of l,500 square feet (140 m^2).

417.6.5 Security: Any site occupied for the storage, utilization or handling of *hazardous materials* shall be provided with a fence not less than six feet (1829 mm) in height or otherwise secured from public access.

417.6.6 Fire suppression system: Areas occupied for the dispensing or utilization of *flammable hazardous materials* which are located within 50 feet of either a storage area or building, and vehicle-loading racks where *flammable hazardous materials* are dispensed, shall be equipped with an approved *automatic fire suppression system*.

Exception: Motor vehicle service stations as defined in NFiPA 30A listed in ***Appendix A***.

780 CMR 418.0 USE GROUPS H-1, H-2, H-3 AND H-4

418.1 Scope: The provisions of 780 CMR 418.0 shall apply to the storage and utilization of *hazardous materials* in excess of the exempt amounts listed in 780 CMR 307.8. All buildings and structures with an occupancy in Use Group H shall also comply with the applicable provisions of 780 CMR 417.0 and the fire prevention code listed in ***Appendix A***.

418.2 Use Group H-1: All occupancies in Use Group H-l shall be constructed in accordance with the provisions of 780 CMR 418.2.1 and 418.2.2 and the fire prevention code listed in ***Appendix A***.

418.2.1 Construction: Occupancies in Use Group H-l shall not be located in buildings that are more than one story in *height*, have *basements* or other spaces below grade, or which are attached to other buildings. The minimum *fire separation distance* for all exterior walls of occupancies in Use Group H-1 shall be in accordance with the fire prevention code listed in ***Appendix A***. All floor surfaces shall be spark resistant.

418.2.2 Number of exits: There shall not be less than two *exits* from any area or space wherein Use Group H-l materials are utilized or stored. All required *exits* shall discharge directly to the exterior of the building or structure.

418.3 Use Group H-2: Occupancies in Use Group H-2 shall be constructed in accordance with 780 CMR 418.3.1 through 418.3.4 and the fire prevention code listed in ***Appendix A***.

418.3.1 Combustible dusts, grain processing and storage: The provisions of 780 CMR 418.3.1.1 through 418.3.1.6 shall apply to all buildings in which materials that produce *combustible dusts* are stored or handled. Buildings which store or handle *combustible dusts* shall comply with the applicable provisions of NFiPA 61A, 61B, 61C, 61D, 65, 120, 651, 654, 655, 664 and 8503 and the fire prevention code listed in ***Appendix A***.

418.3.1.1 Type of construction and height exceptions: All buildings shall be of Type l, Type 2 or Type 4 construction, within the height and area limitations of Table 503 for Use Group H-2; except that where erected of Type l or Type 2 construction, the heights and areas of grain elevators and similar structures shall be unlimited, and where of Type 4 construction, the maximum height shall be 65 feet (19812 mm) and except further that, in isolated areas, the maximum height of Type 4 structures shall be increased to 85 feet (25908 mm).

418.3.1.2 Grinding rooms: Every room or space occupied for grinding or other operations that produce *combustible dusts* shall be enclosed with floors and walls that have not less than a two-hour fireresistance rating where the area is not more than 3,000 square feet (279 m^2), and not less than a four hour fireresistance rating where the area is greater than 3.000 square feet (279 m^2).

418.3.1.3 Conveyors: All *conveyors*, chutes, piping and similar equipment passing through

the enclosures of rooms or spaces shall be constructed dirt tight and vapor tight, and be of approved noncombustible materials complying with 780 CMR 3010.0.

418.3.1.4 Explosion relief: Means for explosion relief shall be provided as specified

in 780 CMR 417.5.1, or spaces shall be equipped with the equivalent mechanical *ventilation* complying with the mechanical code listed in ***Appendix A***.

418.3.1.5 Grain elevators: Grain elevators, malt houses and buildings for similar occupancies shall not be located within 30 feet (9144 mm) of *interior lot lines* or structures on the same *lot*, except where erected along a railroad right-of-way.

418.3.1.6 Coal pockets: Coal pockets located less than 30 feet (9144 mm) from *interior lot lines* or from structures on the same *lot* shall be constructed of not less than Type 2A construction. Where more than 30 feet (9144 mm) from *interior lot lines*, or where erected along a railroad right-of-way, the minimum type of construction of such structures not more than 65 feet (19812 mm) in height shall be Type 4.

418.3.2 Flammable and combustible liquids: The storage, handling processing and transporting of *flammable* and *combustible liquids* shall be in accordance with the mechanical code and the fire prevention code listed in ***Appendix A***. Where a Class I, II or IIIA *flammable* or *combustible liquid* is stored in tanks inside the building, the installation shall conform to 780 CMR 418.3.2.1 through 418.3.2.10 and NFiPA 30 listed in ***Appendix A***. The requirements shall only apply where tanks have an individual storage capacity that exceeds the exempt amounts specified in Tables 307.8(1) and 307.8(2). The *fire area* containing the tank(s) shall be classified as Use Group H-2.

418.3.2.1 Mixed use groups: Where the storage tank area is located in a building of two or more use groups, the Use Group H-2 *fire area* shall be completely separated from adjacent *fire areas* in accordance with the requirements of 780 CMR 313.1.2.

418.3.2.1.1 Height exception: Where storage tanks are located within only a single story, the *height* limitation of 780 CMR 503.3 shall not apply for the Use Group H-2 *fire area*.

418.3.2.2 Tank protection: All storage tanks shall be noncombustible and protected from physical damage. A *fire separation assembly* around the storage tank(s) shall be permitted to be classified as the method of protection from physical damage.

418.3.2.3 Tanks for Class I flammable liquid: All storage tanks for Class I *flammable liquids* shall be double-wall tanks. A double-wall tank shall consist of an approved tank conforming to the requirements of the mechanical code listed in ***Appendix A***, installed within a completely enclosed noncombustible containment structure. The containment structure shall prevent the stored liquid from escaping into the room or area in which the tank is located. A leak detection alarm shall be provided to identify a leak of the primary wall of the tank. The alarm shall conform to 780 CMR 418.3.2.6.

418.3.2.4 Suppression: The Use Group H-2 *fire area* shall be equipped throughout with an approved *automatic fire sprinkler system*, installed in accordance with 780 CMR 906.2.1, or with a foam-extinguishing system. The *automatic fire suppression system* shall be supervised by method 1, 2 or 3 of 780 CMR 923.1.

418.3.2.5 Leakage containment: A liquid-tight containment area compatible with the stored liquid shall be provided to retain 110% of the entire capacity of all the storage liquid in the event of a leak in a tank plus the capacity of the *automatic fire suppression system* activated for a period of 30 minutes. The storage tanks and the leakage containment area shall be provided with an approved method to drain manually the *flammable* or *combustible liquid*.

Exception: Rooms where only double-wall storage tanks conforming to 780 CMR 418.3.2.3 are used to store Class I, II and IIIA. A *flammable* and *combustible liquids* shall not be required to have a leakage containment area.

418.3.2.6 Leakage alarm: An approved automatic alarm shall be provided to indicate a leak in a storage tank and room. The alarm shall sound an audible signal, 15 dBa above the ambient sound level, at every point of entry into the room in which the leaking storage tank is located. An approved sign shall be posted on every entry door to the tank storage room indicating the potential hazard of the interior room environment, or the sign shall state, "Warning, when alarm sounds, the environment within the room may be hazardous." The leakage alarm shall also be supervised in accordance with 780 CMR 923.2 to transmit a trouble signal.

418.3.2.7 Tank vent: Storage tank vents shall terminate to the outdoor air. The vent termination shall be in an approved location a minimum of 12 feet (3658 mm) above adjacent

ground level and ten feet (3048 mm) from a *lot line*, *ventilation* intake opening, openable window or door.

418.3.2.8 Room ventilation: Storage tank areas storing Class I liquids, or Class II or IIIA liquids at temperatures above *flash point*, shall be *ventilated* at a rate sufficient to maintain the concentration of vapors within the area at or below 25% of the lower explosive limit.

Ventilation requirements shall be determined by either calculations based on anticipated fugitive emissions or by sampling of the actual vapor concentration levels under normal operating conditions. The sampling shall be conducted at a five-foot radius from each potential vapor source in the storage area. Provision shall be made for make-up air to avoid short-circuiting the *ventilation*.

418.3.2.9 Explosion venting: Where Class I liquids are being stored, explosion venting shall be provided in accordance with 780 CMR 417.5

418.3.2.10 Tank openings other than vents: Tank openings other than vents from tanks inside buildings shall be designed to ensure that liquids or vapor concentrations are not released inside the building and shall conform to 780 CMR 418.3.2.10.1 through 418.3.2.10.5.

418.3.2.10.1 Liquid tight: All tank openings at the maximum liquid level or below shall be liquid tight.

418.3.2.10.2 Closed: All tank openings above the maximum liquid level shall be normally closed.

418.3.2.10.3 External valve: Each connection through which liquid is capable of gravity flow from a tank inside a building shall be provided with an external valve located as close as practical to, but not more than two feet from, the shell of the tank.

418.3.2.10.4 Valves on transfer connections: Tanks storing Class I or Class II liquids shall be provided with either a normally closed, remotely activated valve or an automatic-closing, heat-activated valve or other approved device on each liquid transfer connection below the liquid level, except for connections utilized for emergency disposal.

418.3.2.10.5 Overflow protection: Tanks shall be equipped with a device, or other means provided, to prevent overflow into the building.

418.3.3 Liquefied petroleum gas distribution facilities: The design and construction of propane, butane, propylene, butylene and other liquefied petroleum gas distribution facilities shall conform to the applicable provisions of 780 CMR 418.3.3.1 through 418.3.3.5.2. The storage and handling of liquefied petroleum gas systems shall conform to the fire prevention code listed in ***Appendix A***. The design and installation of piping, equipment and systems which utilize liquefied petroleum gas shall be in accordance with the mechanical code listed in ***Appendix A***. Liquefied petroleum gas distribution facilities shall be *ventilated* in accordance with the mechanical code listed in ***Appendix A*** and 780 CMR 418.3.3.1.

418.3.3.1 Air movement: Liquefied petroleum gas distribution facilities shall be provided with air inlets and outlets arranged so that air movement across the floor of the facility will be uniform. The total area of both inlet and outlet openings shall be at least one square inch (0.00065 m^2) for each one square foot (0.093 m^2) of floor area. The bottom of such openings shall not be more than six inches (152 mm) above the floor.

418.3.3.2 Construction: Liquefied petroleum gas distribution facilities shall be constructed in accordance with 780 CMR 418.3.3.3 for separate buildings, 780 CMR 418.3.3.4 for attached buildings or 780 CMR 418.3.3.5 for rooms within buildings.

418.3.3.3 Separate buildings: Where located in separate buildings, liquefied petroleum gas distribution facilities shall be occupied exclusively for that purpose or for other purposes having similar hazards. Such buildings shall be limited to one story in height and shall conform to 780 CMR 418.3.3.3.1 and 418.3.3.3.2.

418.3.3.3.1 Floors: The floor shall not be located below ground level and any spaces beneath the floor shall be solidly filled or shall be left unenclosed.

418.3.3.3.2 Materials: Walls, floors, ceilings, columns and roofs shall be constructed of noncombustible materials. Exterior walls, ceilings and roofs shall be constructed of material designed for explosion venting or, if of heavy construction such as solid brick masonry, concrete block or reinforced concrete, explosion-venting windows or panels in walls or roofs shall be provided having an explosion-venting area of at least one square foot (0.093 m) for each 50 cubic feet (1.40 m) of enclosed volume.

418.3.3.4 Attached buildings: Where liquefied petroleum gas distribution facilities are located in an attached structure, the attached perimeter shall not exceed 50% of the perimeter of the space enclosed and the facility shall comply with 780 CMR 418.3.3.3 and 418.3.3.4.1.

Where the attached perimeter exceeds 50%, such facilities shall comply with 780 CMR 418.3.3.5.

418.3.3.4.1 Fire separation assemblies: Separation of the attached structures shall be provided by *fire separation assemblies* having a fireresistance rating of not less than one hour and shall not have openings. *Fire separation assemblies* between attached structures occupied only for the

storage of LP-gas are permitted to have *fire doors* that comply with 780 CMR 716.0. Such *fire separation assemblies* shall be designed to withstand a static pressure of at least l00 pounds per square foot (psf) (488.2 kg/m^2), except where the building to which the structure is attached is occupied by operations or processes having a similar hazard.

418.3.3.5 Rooms within buildings: Where liquefied petroleum gas distribution facilities are located in rooms within buildings, such rooms shall be located in the first story and shall have at least one exterior wall with sufficient exposed area to permit explosion venting as provided for in 780 CMR 418.3.3.5.1. The building in which the room is located shall not have a *basement* or unventilated crawl space and the room shall comply with 780 CMR 418.3.3.5.1 and 418.3.3.5.2.

418.3.3.5.1 Materials: Walls, floors, ceilings and roofs of such rooms shall be constructed of approved noncombustible materials. Exterior walls and ceilings shall be either of lightweight materials designed for explosion venting or, if of heavy construction such as solid brick masonry, concrete block or reinforced concrete, explosion-venting windows or panels in walls or roofs shall be provided having an explosion-venting area of at least one square foot (0.093 m^2) for each 50 cubic feet (l.40 m^3) of enclosed volume.

418.3.3.5.2 Common construction: Walls and floor/ceiling assemblies common to the room and to the building within which the room is located shall have a fireresistance rating of not less than one hour and without openings. Common walls for rooms occupied only for storage of LP-gas are permitted to have openings which shall be equipped with ¾-hour approved opening protectives complying with 780 CMR 716.0 or 718.0. Such walls and ceiling shall be designed to withstand a static pressure of at least l00 psf (488.2 kg/m). Where approved, 780 CMR 418.3.3.5.2 shall not apply where the building, within which the room is located, is occupied by operations or processes having a similar hazard.

418.3.4 Dry cleaning plants: The construction and installation of dry cleaning plants shall be in accordance with the requirements of 780 CMR, the mechanical code, the plumbing code and NFiPA 32 listed in ***Appendix A***.

418.4 Use Group H-3: Occupancies in Use Group H-3 shall be constructed in accordance with the applicable provisions of 780 CMR and the fire prevention code listed in ***Appendix A***.

418.5 Use Group H-4: Occupancies in Use Group H-4 shall be constructed in accordance with the applicable provisions of 780 CMR and the fire prevention code listed in ***Appendix A***.

780 CMR 419.0 APPLICATION OF FLAMMABLE FINISHES

419.1 General: The provisions of 780 CMR 419.0 shall apply to the construction, installation and use of buildings and structures, or parts thereof, for the spraying of *flammable* paints, varnishes and lacquers or other *flammable* materials or mixtures or compounds used for painting, varnishing, staining or similar purposes. All such construction and equipment shall comply with NFiPA 33 and 34 listed in ***Appendix A***.

419.2 Spray spaces: All spray spaces shall be *ventilated* with an exhaust system to prevent the accumulation of *flammable* mist or vapors in accordance with the mechanical code listed in ***Appendix A***. Where such spaces are not separately enclosed, noncombustible spray curtains shall be provided to restrict the spread of *flammable* vapors.

419.2.1 Spray booths: All spray booths shall be constructed of approved noncombustible materials and equipped with mechanical ventilating systems in accordance with the mechanical code listed in ***Appendix A***.

419.2.2 Spray rooms: All spray rooms shall be enclosed in *fire separation assemblies* with not less than a one-hour fireresistance rating. Floors shall be waterproofed and drained in an approved manner.

419.2.3 Spray storage rooms: Rooms used for the storage of spraying materials essential to the *flammable* finish operation shall comply with NFiPA 30 and the fire prevention code listed in ***Appendix A***.

419.3 Fire protection: An *automatic fire suppression system* shall be provided in all spray, dip and immersing spaces and storage rooms, and shall be installed in accordance with 780 CMR 9.

780 CMR 420.0 MOBILE UNITS

420.1 For regulations pertaining to Mobile Units, see 780 CMR 35, ***and 780 CMR R3***.

780 CMR 421.0 SWIMMING POOLS

(Refer to M.G.L. c. 140, § 206 for further requirements pertaining to public or semi-public, outdoor, inground swimming pool enclosures, safety equipment, inspection, and penalties for violations.)

421.1 General: Swimming and bathing pools shall conform to the requirements of 780 CMR 421.0 provided that 780 CMR 421.0 shall not be applicable to any such pool less than 24 inches (610 mm) deep or having a surface area less than 250 square feet (23.25 m^2), except where such pools are permanently equipped with a water-recirculating system or involve structural materials. For the purposes of 780 CMR, pools are classified as private swimming pools, public swimming pools ***or semi-public swimming pools***, as defined in 780 CMR 421.2. Materials and constructions used in swimming pools shall comply with the applicable requirements of 780 CMR.

421.2 Definitions: The following words and terms shall, for the purposes of 780 CMR 421.0 and as used elsewhere in 780 CMR, have the meanings shown herein.

Pools, swimming, hot tubs and spas

Above-ground/on-ground pool: See definition of private swimming pool.

Barrier: A fence, a wall, a building wall or a combination thereof which completely surrounds the swimming pool and obstructs access to the swimming pool. ***(Refer to M.G.L. c. 140, § 206 for required enclosure of public or semi-public, outdoor, inground swimming pools.)***

Hot tub (special purpose pool): A unit designed for recreational and therapeutic use which is shallow in depth and not meant for swimming or diving. These pools are not drained, cleaned or refilled for each user. It may include, but not be limited to hydrojet circulation, hot water, cold water mineral baths, air induction bubbles, or any combination thereof. Industry terminology for such a pool includes but is not limited to, therapeutic pool, hydrotherapy pool, whirlpool, hot spa, hot tubs, float tanks, etc. This standard excludes residential units and facilities used or under the direct supervision and control of licensed medical personnel.

In-ground pool: See definition of private swimming pool.

Private swimming pool: Any structure that contains water over 24 inches (610 mm) in depth and which is used, or intended to be used, for swimming or recreational bathing in connection with an occupancy in Use Group R-3 ***or R-4*** and which is available only to the family and guests of the householder. This includes in-ground, above-ground and on-ground swimming pools, hot tubs and spas.

Private swimming pool, indoor: Any private swimming pool that is totally contained within a private structure and surrounded on all four sides by walls of said structure.

Private swimming pool, outdoor: Any private swimming pool that is not an indoor pool.

Public *outdoor, inground* swimming pool: Any swimming pool ***which is used, or intended to be used, for swimming or recreational bathing by the general public. Refer to M.G.L. c. 140, § 206 for requirements pertaining to public or semi-public, outdoor, inground swimming pool enclosures, safety equipment, inspection, and penalties for violations.***

Public swimming pool, outdoor: Any public swimming pool that is not defined as an outdoor, inground swimming pool.

Semi-public outdoor, inground swimming pool: (as defined by M.G.L. c. 140, § 206) any swimming or wading pool on the premises of, or used in connection with, a hotel, motel, trailer court, apartment house, country club, youth club, school, camp, or similar establishment where the primary purpose of the establishment is not the operation of the swimming facilities. Semi-public outdoor, inground swimming pool shall also mean a pool constructed and maintained by groups for the purposes of providing bathing facilities for members and quests only. Refer to M.G.L. c. 140, § 206 for requirements pertaining to public or semi-public, outdoor, inground swimming pool enclosures, safety equipment, inspection, and penalties for violations.

Semi-public swimming pool, outdoor: Any semi-public swimming pool that is not defined as a semi-public outdoor, inground swimming pool.

Spa: See definition of private swimming pool.

Wading Pool: Aa pool of water in a basin having a maximum depth of less than two feet intended chiefly as a wading place for children. It does not include any residential pool as herein defined.

421.3 Permits and construction documents: A swimming pool or appurtenances thereto shall not be constructed, installed, enlarged or *altered* until *construction documents* have been submitted and a permit has been obtained from the code official. The approval of all city, county and state authorities having jurisdiction over swimming pools shall be obtained before applying to the code official for a permit. Certified copies of these approvals shall be filed as part of the supporting data for the permit application.

421.3.1 Construction documents: *Construction documents* shall accurately show dimensions and construction of the pool and appurtenances and properly established distances to *lot lines*, buildings, walks and fences, as well as details of the water supply system, drainage and water disposal systems, and all appurtenances pertaining to the swimming pool. Detailed *construction documents* of structures, vertical elevations and sections through the pool showing depth shall be included.

421.4 Locations: Private swimming pools shall not encroach on any front or side yard required by 780 CMR or by the governing zoning law, unless in accordance with specific rules of the jurisdiction in which the pool is located. A wall of a swimming pool shall not be located less than six feet (1829 mm~~)~~ from any rear or side property line or ten feet (3048 mm) from any street property line, unless in accordance with specific rules of the jurisdiction in which the pool is located.

421.5 Structural design: The pool structure shall be engineered and designed to withstand the expected forces to which the pool will be subjected.

421.5.1 Wall slopes: To a depth up to two feet nine inches (838 mm) from the top, the wall slope shall not be more than one unit horizontal in five units vertical (l:5).

421.5.2 Floor slopes: The slope of the floor on the shallow side of the transition point shall not exceed one unit vertical to seven units horizontal (l:7). For public pools greater than 1,200 square feet (111.6 m^2), the slope of the floor on the shallow side of the transition point shall not exceed one unit vertical to ten units horizontal (l:l0). The transition point between shallow and deep water shall not be more than five feet (1524 mm) deep.

421.5.3 Surface cleaning: All swimming pools shall be provided with a recirculating skimming device or overflow gutters to remove scum and foreign matter from the surface of the water. Where skimmers are used for private pools, there shall be at least one skimming device for each l,000 square feet (93 m^2) of surface area or fraction thereof. For public pools where water skimmers are used, there shall be at least one skimming device for each 500 square feet (55.8 m^2) of surface area or fraction thereof. Overflow gutters shall not be less than three inches (76 mm) deep and shall be pitched to a slope of one unit vertical to 48 units horizontal (l:48) toward drains, and constructed so that such gutters are safe, cleanable and that matter entering the gutters will not be washed out by a sudden surge of entering water.

421.5.4 Walkways: All public ***and semi-public*** swimming pools shall have walkways not less than four feet (1219 mm) in width extending entirely around the pool. Curbs or sidewalks around any swimming pool shall have a slip-resistant surface for a width of not less than four foot (305 mm) at the edge of the pool, and shall be so arranged as to prevent return of surface water to the pool.

421.5.5 Steps and ladders: At least one *means of egress* shall be provided from private pools. ***All*** public ***and semi-public*** pools shall provide ladders to other *means of egress* at both sides of the diving section and at least one *means of egress* at the shallow section; or at least one *means of egress* in the deep section and the shallow section if diving boards are not provided. Treads of steps and ladders shall have slip-resistant surfaces and handrails on both sides, except that handrails are not required where there are not more than four steps or where the steps extend the full width of the side or end of the pool. ***(Refer to 521 CMR 19.00, the Architectural Access Board's rules and regulations, for requirements pertaining to the accessibility of all public and semi-public swimming pools.)***

421.6 Water supply: All swimming pools shall be provided with a potable water supply, free of cross connections with the pool or its equipment.

421.6.1 Water treatment: ***See 105 CMR 935.000 Minimum Standards for Swimming Pools.***

421.6.2 Drainage systems: The swimming pool and equipment shall be equipped to be emptied completely of water and the discharged water shall be disposed of in an approved manner that will not create a nuisance to adjoining property.

421.7 Appurtenant structures: All *appurtenant structures*, installations and equipment, such as showers, dressing rooms, equipment houses or other buildings and structures, including plumbing, heating and air conditioning systems, shall comply with all applicable requirements of 780 CMR***, applicable zoning laws and requirements, 105CMR 435.000: Minimum Standards for Swimming Pools (State Sanitary Code: Chapter V), 248 CMR 2.00 : the State Plumbing Code, and 527 CMR 12.00: the State Electrical Code.***

421.7.1 Accessories: All swimming pool accessories shall be designed, constructed and installed so as not to be a safety hazard. Installations or structures for diving purposes shall be properly anchored to insure stability.

421.8 Equipment installations: Pumps, filters and other mechanical and electrical equipment for public swimming pools shall be enclosed in such a manner as to provide access only to authorized persons and not to bathers. Construction and drainage shall be arranged to avoid the entrance and accumulation of water in the vicinity of electrical equipment.

421.9 Enclosures for *outdoor, inground* public *and semi-public* swimming pools: ***Outdoor, inground*** public and ***semi-public*** swimming pools shall be provided with an enclosure ***in accordance with M.G.L. c. 140, § 206.***

421.9.1 Enclosure *for public and semi-public outdoor, inground swimming pools*: *Every public and semi-public outdoor, inground swimming pool shall be enclosed by a fence six feet in height and firmly secured at ground level provided that any board or stockade fence or structure shall be at least five feet in height, but if over five feet in height, the fence shall be chain link. Such enclosure, including gates therein, shall not be less than six feet above the ground, and any gate shall be self-latching with latches placed four feet above the ground or otherwise made inaccessible from the outside to children up to eight years of age. Such enclosure shall be constructed of such material and maintained so as not to permit any opening in said enclosure, other than a gate, wider than three inches at any point along the enclosure. Any such pool shall be equipped with at least one life ring and rescue hook.*

421.9.1.1 Enclosure for all other public and semi-public swimming pools: The enclosure shall extend not less than four feet (1219 mm) above the ground. All gates shall be self-closing and self-latching with latches placed at least four feet (1219 mm) above the ground.

421.9.2 Construction *of enclosure for all other public and semi-public swimming pools*: Enclosure fences shall be constructed so as to prohibit the passage of a sphere larger than four inches (102 mm) in diameter through any opening or under the fence. Fences shall be designed to withstand a horizontal concentrated load of 200 pounds (91 kg) applied on a one-square-foot (0.093 m2) area at any point of the fence.

421.10 Enclosures for private swimming pools, spas and hot tubs: ***In lieu of any zoning laws or ordinances to the contrary,*** private swimming pools, spas and hot tubs shall be enclosed in accordance with 780 CMR 421.l0.l through 421.10.4 or by other approved barriers.

421.10.1 Outdoor private swimming pool: An outdoor private swimming pool, including an in-ground, above ground or on-ground pool, hot tub or spa shall be provided with a barrier which shall comply with the following.

l. The top of the barrier shall be at least 48 inches (1219 mm) above finished ground level measured on the side of the barrier which faces away from the swimming pool. The maximum vertical clearance between finished ground level and the barrier shall be two inches (51 mm) measured on the side of the barrier which faces away from the swimming pool. Where the top of the pool structure is above finished ground level, such as an above-ground pool, the barrier shall be at finished ground level, such as the pool structure, or shall be mounted on top of the pool structure. Where the barrier is mounted on top of the pool structure, the maximum vertical clearance between the top of the pool structure and the bottom of the barrier shall be four inches (102 mm).

2. Openings in the barrier shall not allow passage of a four-inch (102 mm) diameter sphere.

3. Solid barriers shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints.

4. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is less than 45 inches (1143 mm), the horizontal members shall be located on the swimming pool side of the fence. Spacing between vertical members shall not exceed 1¾ inches (44 mm) in width. Decorative cutouts shall not exceed 1¾ inches (44 mm) in width.

5. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is 45 inches (1143 mm) or more, spacing between vertical members shall not exceed four inches (102 mm). Decorative cutouts shall not exceed 1¾ inches (44 mm) in width.

6. Maximum mesh size for chain link fences shall be a 1¼-inch (32 mm) square unless the fence is provided with slats fastened at the top or the bottom which reduce the openings to not more than 1¾-inches (44 mm).

7. Where the barrier is composed of diagonal members, such as a lattice fence, the maximum opening formed by the diagonal members shall be not more than 1¾ inches (44 mm).

8. Access gates shall comply with the requirements of 780 CMR 421.10.1 items 1 through 7, and shall be equipped to accommodate a locking device. Pedestrian access gates shall open outwards away from the pool and shall be self-closing and have a self-latching device. Gates other than pedestrian access gates shall have a self-latching device. Where the release mechanism of the self-latching device is located less than

54 inches (1372 mm) from the bottom of the gate: (a) the release mechanism shall be located on the pool side of the gate at least three inches (76 mm) below the top of the gate; and (b) the gate and barrier shall not have an opening greater than ½ inch (13 mm) within 18 inches (457 mm) of the release mechanism.

9. Where a wall of a dwelling serves as part of the barrier, one of the following shall apply:

9.1. All doors with direct access to the pool through that wall shall be equipped with an alarm which produces an audible warning when the door and its screen, if present, are opened. The audible warning shall commence not more than seven seconds after the door and screen door, if present, are opened and shall sound continuously for a minimum of 30 seconds. The alarm shall have a minimum sound pressure rating of 85 dBA at ten feet (3048 mm) and the sound of the alarm shall be distinctive from other household sounds such as smoke alarms, telephones and door bells. The alarm shall automatically reset under all conditions. The alarm shall be equipped with manual means, such as touchpads or switches, to deactivate temporarily the alarm for a single opening from either direction. Such deactivation shall last for not more than 15 seconds. The deactivation touchpads or switches shall be located at least 54 inches (1372 mm) above the threshold of the door.

9.2. The pool shall be equipped with an approved power safety cover.

10. Where an above-ground pool structure is used as a barrier or where the barrier is mounted on top of the pool structure, and the means of access is a fixed or removable ladder or steps, the ladder or steps shall be surrounded by a barrier which meets the requirements of 780 CMR 421.10.1 items 1 through 9. A removable ladder shall not constitute an acceptable alternative to enclosure requirements.

421.10.2 Indoor private swimming pool: All walls surrounding an indoor private swimming pool shall comply with 780 CMR 421.10.1, item 9.

421.10.3 Prohibited locations: Barriers shall be located so as to prohibit permanent structures, equipment or similar objects from being used to climb the barriers.

421.10.4 Exemptions: The following shall be exempt from the provisions of 780 CMR 421.0.

1. A spa or hot tub with an approved safety cover.
2. Fixtures which are drained after each use.

421.11 Diving boards: Minimum water depths and distances for diving hoppers for pools, based on board height above water, shall comply with Table 421.11(1) for public pools and Table 421.11 (2) for private pools.

The maximum slope permitted between point D_2 and the transition point shall not exceed one unit vertical to three units horizontal (1:3) in private and public pools. D_1 is the point directly under the end of the diving boards. D_2 is the point at which the floor begins to slope upwards to the transition point. See Figure 421.11.

Figure 421.11
MINIMUM WATER DEPTHS AND DISTANCES BASED ON BOARD HEIGHT FOR *ALL* PUBLIC, *SEMI PUBLIC* AND PRIVATE POOLS

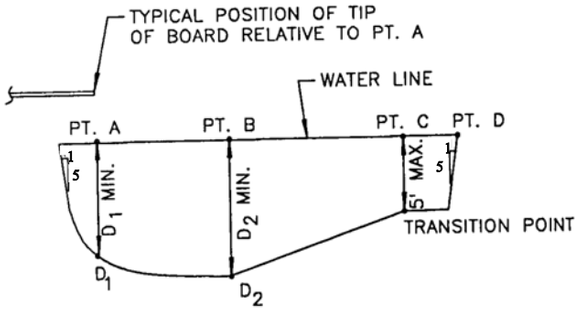

Table 421.1 1(1)
MINIMUM WATER DEPTHS AND DISTANCES BASED ON BOARD HEIGHT FOR *ALL* PUBLIC POOLS

Board height	Minimum depth[a] at D_1 directly under end of board	Distance[a] between D_1 and D_2	Minimum depth[a] at D_2
2'2" (_ meter)	7'0"	8'0"	8'6"
2'6" (¾ meter)	7"6"	9'0''	9'0"
1 meter	8'6"	10'0"	10'0"
3 meter	11'0"	10'0"	12'0"

Note a. 1 foot = 304.8 mm.

Table 421.11(2)
MINIMUM WATER DEPTHS AND DISTANCES BASED ON BOARD HEIGHT FOR PRIVATE POOLS

Board height	Minimum depth[a] at D_1 directly under end of board	Distance[a] between D_1 and D_2	Minimum depth[a] at D_2
1'8" (½ meter)	6'0"	7'0"	7'6"
2'2" (_ meter)	6'10"	7'6"	8'0"
2'6" (¾ meter)	7'5"	8'0"	8'0"
3'4" (1 meter)	8'6"	9'0"	9'0"

Note a. 1 foot = 304.8 mm.

780 CMR 422.0 EXISTING BUILDINGS

***422.1 Existing Buildings**: See 780 CMR 34.*

422.2 Places of assembly

***422.2.1 Change of use**: An existing building or structure or part thereof shall not be altered or*

converted into a place of assembly unless it complies with the provisions of 780 CMR 34 applicable to places of assembly.

780 CMR 423.0 GROUP RESIDENCE

423.1 Scope: Except as may otherwise be specifically provided for in 780 CMR 423.0 , the requirements of 780 CMR, in its entirety, and as applicable, shall apply.

423.1.1 Department of Mental Retardation (DMR) Group Homes: 780 CMR 423.0 shall not apply to premises operated or licensed by the Department of Mental Retardation (DMR) pursuant to 115 CMR 7.00 and 8.00, upon the completion of a DMR safety assessment for each individual and an approved safety plan for each location where services and supports are provided. Such premises shall be treated as conventional R-4, R-3, R-2 and R-1 use as applicable.

***423.2 Definition**: A group residence is a premise licensed by or operated by an agency of the Commonwealth of Massachusetts or subdivision thereof, as a special residence for those who are capable of self-preservation in the following categories:*

1. not more than 12 unrelated persons between the ages of seven and 15 years of age inclusive; or
2. not more than 25 unrelated persons, 16 years of age or over; or
3. a combination of 780 CMR 423.2 category 1 and 2 above consisting of not more than 18 unrelated persons over seven years of age calculated at the rate of two such persons, or portion thereof, from Category 2 being equal to one such person in Category 1 all in accordance with Table 423.2.

***Note**: In determining the classification for proposed use, group residence shall not be construed as being similar in any way to a multi-family dwelling, two-family dwelling, boarding house, lodging house, dormitory, hotel, school or institution of any kind. For building code purposes, it shall be treated as a single-family residential building.*

Table 423.2
Group Residence - Maximum Capacity, Combination of Categories

Category Number	*Number of Residents per Category*												
Category 1	*12*	*11*	*10*	*9*	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*	*0*
Category 2	*0*	*2*	*4*	*6*	*8*	*10*	*12*	*13*	*14*	*15*	*16*	*17*	*25*
Maximum total residents	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*18*	*18*	*18*	*18*	*18*	*25*

***423.2.1 Special definitions:** For the purpose of 780 CMR 423.0, the following terms shall be defined exclusively for use with group residences:*

***Self preservation**: Having the capability, both mentally and physically, to take action to preserve one's own life. Specifically, to egress the building within 2½ minutes. (Reference inspection procedures in 780 CMR 423.8 and 423.9.)*

***Egress**: A continuous unobstructed path of travel from any space in a building to the open air outside at grade.*

***Principal means of egress**: The primary choice of two routes normally used by occupants to enter or leave a building.*

***Escape route**: To reduce the possibility of entrapment in the event that the principal means of egress is blocked by fire or smoke, an escape route shall be available which performs in accordance with 780 CMR 423.6 and 423.9. In an existing building where a second means of egress is physically impractical from above grade floors, any proven, usable path to the open air outside at grade shall be deemed acceptable, including but not limited to connecting doors, porches, windows within six feet of grade, ramps, fire escapes, balcony evacuation systems, etc.*

***Authorized inspectors**: The state or local building official having jurisdiction and a representative of the licensing or operating agency having jurisdiction.*

Room: See definition of "Habitable space" and "Occupiable room" in 780 CMR 201.0.

***423.3 Existing buildings:** The requirements of 780 CMR 423.0, shall also apply to existing dwelling units which are to be converted to a group residence and alternative requirements set forth in 780 CMR 34 that conflict with the requirements of 780 CMR 423.0 shall not apply.*

***423.3.1 Height limitations:** Existing buildings, of Type 5B construction, greater than 2½ stories, or 35 feet in height may be allowed to be used (as an exception to Table 503) as a group residence.*

***423.4 Plans and specifications:** Plans shall be filed with the building official having jurisdiction in accordance with 780 CMR 110.0 for any building to be constructed as, or altered for use as, a group residence under 780 CMR 423.0. The floor plans shall show all rooms, spaces, closets, doors, corridors, windows, stairs and stairways, hazardous vertical openings and the location of all required fire warning equipment and proposed fire suppression equipment.*

423.5 Hazardous contents: *Any contents which represent a fire hazard greater than that which could be expected of ordinary household*

423.5.1 Interior finish: *Only Class I and Class II interior finish materials shall be allowed in the principal means of egress. In refinishing any other area, material having a Class III flame spread rating shall be allowed provided it does not decrease the existing rating. The smoke contribution rating of any material shall not exceed 450 (see 780 CMR 704.0).*

423.5.2 Exception: *In existing buildings, the required flame spread or smoke development classification of interior surfaces may be obtained by applying approved fire retardant paints or solutions to existing interior surfaces having a higher flame spread rating than permitted.*

423.6 Egress: *In existing buildings there shall be one means of egress and one escape route serving each floor, remote as possible from each other and leading to grade. The stairway between the first and second floors, if unenclosed, may remain unenclosed to preserve functional and aesthetic requirements. In new construction, two means of egress are required in accordance with the One- and Two-Family Dwelling Code, and stairways above the grade floor shall be enclosed with one hour fireresistive construction.*

Exception*:*

1. Where the Group Residence is protected with a fire suppression system according to NFiPA 13D or better as listed in Appendix A only one means of egress shall be required from floors above the grade floor in existing buildings and new construction.

2. Where the Group Residence is protected with a fire suppression system according to NFiPA 13D or better as listed in Appendix A the enclosure of stairways is not required.

423.7 Fire protection systems

423.7.1 Hazardous vertical openings: *Openings to such spaces as laundry chutes, dumbwaiters, heating plenums or combustible concealed spaces shall be permanently blocked with one hour construction, as regulated by the provisions of 780 CMR 7.*

423.7.2 Automatic fire warning systems*: An approved automatic fire warning system shall be provided in accordance with 780 CMR 9.*

423.8 Inspections: *There shall be three mandatory types of inspections as described below. The results of such inspections shall be on file in the office of the building official with copies sent to the licensing or operating agency on a prepared checklist and signed by the authorized inspectors.*

furnishings, shall not be allowed. Storage shall not be allowed above the second floor.

423.8.1 Temporary certificate: *The building official shall perform plan review and post-construction inspection to ensure that the building conforms to 780 CMR. He shall issue a temporary certificate of occupancy effective for 90 days only.*

423.8.2 Final certificate: *Before issuance of the final certificate of occupancy, the authorized inspectors shall mutually conduct a test (see 780 CMR 423.9.1) to ensure that the occupants are capable of self-preservation. Upon complete satisfaction of all requirements, the building official shall then issue a permanent certificate of occupancy. This test shall be conducted once a year in accordance with 780 CMR 106.5 for purposes of recertifying both the building and the occupants.*

423.9 Inspection procedure: *The building and the occupants' capability of self-preservation constitute a system of life safety which are unique for each building and for each occupant in a group residence. Therefore, a simple direct test is specified herein to determine the capability of the occupant and/or the suitability of the building as a life safety system.*

423.9.1 Direct test/fire drill: *A fire drill shall be conducted as the direct test required by 780 CMR 423.9. The building official may require that he be present for the fire drill, or may accept an affidavit signed by the residence manager citing the names of the authorized inspectors present, the names of the occupants who participated, the name(s) of any occupants who failed to egress the building within 2½ minutes, the date, time and place where said fire drill was held. During the conduct of the drill, all staff personnel of the group residence shall isolate themselves from the occupants. The authorized inspector(s), when present, shall then cause to be blocked any one point in an egress route where the choice of an alternate route is possible, to simulate a hazardous condition, and the internal alarm system shall be activated for 2½ minutes.*

423.9.2 Evaluation: *Any occupant who fails to escape from the building and achieve egress outside the building at ground level within the 2½ minute period shall not be permitted to remain living in the residence.*

Note*: The occupant or the building may be at fault; therefore, the system has failed to perform adequately to provide life safety and*

is, consequently, unacceptable for that occupant.

423.9.3 Other tests: *Other tests are not necessary and shall not be required by the building official. It shall be the responsibility of the residence manager of the group residence to provide immediate suitable accommodations elsewhere for any occupant deemed unacceptable by the building official. Each occupant must be certified at regular intervals but not less than every quarter at the group residence by the licensing or*

operating agency. The building official may require an inspection at his discretion when he feels that either the building or the occupant may not conform.

423.10 Certificate of occupancy: *Any certificate of occupancy issued for a building intended to be used as a group residence, as defined in 780 CMR 423.2, shall become invalid if the premises have not been licensed or authorized by an agency of the Commonwealth of Massachusetts within 90 days of the date of issuance of the certificate of occupancy.*

780 CMR 424.0 DAY CARE CENTERS

424.1 General*: Day care centers in new or existing buildings shall be subject to the applicable provisions of 780 CMR and the special requirements of 780 CMR 424.0.*

424.2 Definitions*:*

Day Care Center: Special occupancies in which clients receive care, maintenance, and supervision by other than relatives or legal guardians for less than 24 hours per day. Such day care centers include both child day care centers and adult day care centers licensed by the office for children or other state agencies or otherwise functioning as a day care center.

Child Day Care Centers: Falling under the requirements of 780 CMR 424 and being a sub-set of day care centers, shall be those child day care centers so defined in 780 CMR 202.

Smoke Stop Partion: For purposes of 780 CMR 424.0, a smoke stop partion shall satisfy the requirements of 780 CMR 711.0 for a fire partion.

424.3 Use Group Classifications*:*

424.3.1 Less than two years and nine months in age*: Buildings and portions thereof licensed by the Office for Children as child day care centers for children two years and nine months in age or younger shall be classified as I-2 use group.*

424.3.2 More than two years and nine months in age*: Buildings or portions thereof licensed by the Office for Children as child day care centers for children more than two years and nine months in age shall be classified as E-use group.*

424.3.3 Adult Day Care Centers*: Buildings or portions thereof licensed by agencies of the state or otherwise operating as day care centers and otherwise not classified I-2 use or E-use shall be classified as B-use.*

Exception*: In adult day care centers in which clients and staff cannot evacuate the building with or without assistance in three minutes, such adult day care centers shall be classified in the I-2 category and subject to I-2 use provisions of 780 CMR 424.0.*

424.4 General Provisions*:*

424.4.1 Means of Egress*: Day Care Centers in new and existing buildings or portions thereof shall conform to the means of egress requirements as set forth in 780 CMR 10 and 780 CMR 34 as applicable and otherwise noted below in 780 CMR 424.0.*

424.4.1.1 Exit Signs and Means of Egress Lighting*: Exit signs and means of egress lighting shall conform to the requirements of 780 CMR 1023.0 and 1024.0 as applicable.*

424.4.1.2 Roof Egress*: Where the roof of a building is used as part of the day care center, required means of egress from the roof shall consist of two enclosed stairways: complying as exits and providing two separate protected ways of travel to exit discharges; or the required means of egress from the roof shall consist of one enclosed stairway complying as an exit providing a protected way of travel to an exit discharge and a protected stairway from the roof leading to a corridor on the floor directly below the roof and such corridor shall lead to two remote and independent exits. Stairways shall comply with the requirements of 780 CMR 10 except as noted on 780 CMR 424.4.2.*

424.4.1.2.1 Additional Roof Space Requirements*: Where a roof is used by a day care center, there shall be a solid, smooth non-climbable fence or barrier a minimum of seven feet high on all sides and separating the day care center area from any other uses. Fences shall be set back at least three feet from the outside edge of the exterior wall below. A waterproof telephone or equivalent means of communication shall be located on the roof for use in emergencies and shall be openable without keys, coins, or special knowledge.*

424.4.1.3 Doors*: All required means of egress doors shall be at least 36 inches in width. All other doors shall be at least 32 inches in width.*

Exception*: Where the occupant load, as calculated in accordance with 780 CMR 1008, requires door widths in excess of 36 inches; door widths shall conform to the requirements of 780 CMR 1017.3.*

424.4.1.4 Handrails*: Handrails shall conform to the requirements of 780 CMR 1022.0 and*

when the day care center clients include children, in addition to an upper handrail, a lower handrail shall be installed between 20" and 24" above the nosing of the stair tread.

***424.4.1.5 Guards**: Guards shall conform to the requirements of 780 CMR 1021.0.*

***424.4.1.6 Stairways**: Stairways, whether required means of egress interior or exterior stairways or supplemental stairways, shall comply with the requirements of 780 CMR 1014.0 and 780 CMR 34.0 as applicable.*

***Exception**: Existing stairways shall not be required to satisfy the requirements of 780 CMR 1014.6 unless so required by the Building Official in accordance with 780 CMR 3400.4 or 3400.5.*

***424.4.2 Mixed Use- New and Existing Buildings**:*

***424.4.2.1 Mixed Use- New Construction**: In new construction mixed use buildings, day care centers shall conform to the separation requirements of 780 CMR 313.0.*

***424.4.2.2 Mixed Use- Existing Buildings**: In mixed use existing buildings the day care center walls shall conform to the separation requirements of 780 CMR 313.0 except that the floor - ceiling assemblies of the day care center for the 780 CMR 313.1.2 separation option shall, as a minimum, conform as follows:*

(a) For day care centers located above any usable space - the floor of the day care center shall have a minimum of a one hour fireresistance rating in buildings of Type 2C, 3B and 5 construction; and a minimum of a two hour fireresistance rating in buildings of type 1, 2A, 2B, 3A and 4 construction.

(b) For day care centers located below usable space, the ceiling of the day care center shall have at least a one hour fireresistance rating or the floor above shall be equipped with smoke detectors interconnected to the day care center fire warning system such that smoke detector activation on the floor above will initiate alarm in the day care center.

***424.4.2.3 Mixed Day Care Use**: When a day care center contains children or adults of mixed ages such that it would be classified in both I-2 and B or E and B use groups, the provisions for the most restrictive use shall apply unless the building or portion thereof satisfies the requirements set forth in 780 CMR 313.0.*

***424.4.3 Elevator Doors**: In buildings with elevators, the day care center:*

(1) shall not be exposed directly to the elevator doors opening from the elevator shaft,

(2) at least one of the required means of egress shall not be exposed to the elevator openings.

Elevator door openings may be separated by two hour fireresistance rated construction creating elevator lobbies and where such lobbies exist, of 780 CMR 424.4.3(1) and (2) are deemed satisfied.

***424.4.4 Fire Protective Signaling Systems**: Fire protective signaling systems shall be installed in all day care centers and shall conform to the requirements of 780 CMR 917.0.*

***Exception**: Residential occupancies identified in 780 CMR 424.4.5, Exception 1.*

***424.4.5 Automatic Fire Detection Systems**: An automatic fire detection system shall be designed and installed in accordance with the requirements of 780 CMR 918.0; 780 CMR 424.4.2.2(b); 780 CMR 424.4.5 and 780 CMR 424.5 as applicable.*

***Exception 1**: Residential occupancies that incorporate day care center I-2 or E- or B-Use and otherwise comply with all applicable requirements of 780 CMR 424, have a day care occupancy not exceeding 24 clients and otherwise do not have, nor are required to have, fire protection systems complying with 780 CMR 917 and 780 CMR 918 shall be permitted to utilize single and multiple station smoke detectors in accordance with 780 CMR 919. In such instances the requirements of 780 CMR 923.2 shall not apply.*

***Exception 2**: Single story buildings or portions thereof with day care occupancies not exceeding 24 clients and which otherwise comply with all applicable requirements of 780 CMR 424, specifically and 780 CMR generally, shall be required to utilize fire protection systems complying with 780 CMR 917 and 780 CMR 918, but the requirements of 780 CMR 923.2 shall not apply unless the building fire protection systems are otherwise required to conform to the requirements of 780 CMR 923.*

*(**Note to Exception 2:** If the basement or cellar of such a building is used as a portion of the day care center, Exception 2 of 780 CMR 424.4.5 shall not apply).*

***424.4.5.1 Location of Detectors**: Smoke detectors shall be installed to ensure total coverage of the day care center and also located in front of the doors to the stairways and in the corridor providing required means of egress on all floors of the day care center, and comply with the smoke detector manufacturers listed requirements.*

***424.4.5.1.1 Zoning**: Specific smoke detector zoning shall be in accordance with 780 CMR 917.7.3 with smoke detectors spacing no greater than 30' unless otherwise allowed via manufacturer's listing requirements.*

***424.4.5.2 Compatibility**: Fire protection signaling systems and/or automatic fire detection systems that are interfaced shall*

be listed for such mechanical and electrical interfacing.

***424.4.6 Story Height Limitations**: The allowed basement and story locations of day care centers in new and existing buildings shall be limited by the provisions of 780 CMR 424.5, as applicable to the use group classification of the day care center, and Table 780 CMR 424.4.6.*

Table 424.4.6
PERMITTED LOCATIONS AND REQUIRED SPRINKLER PROTECTION FOR DAY CARE CENTERS

I-2 Child Care Occupancy Children Under Two Years Nine Months of Age

Floor Level of Child Day Care Center	Building Construction Type									
	1A	1B	2A	2B	2C	3A	3B	4	5A	5B
Basement / Cellar	P	P	P	P	P	P	P	P	P	P
1st Story	P	P	P	P	P	P	P	P	P	P
2nd Story	PS	PS	PS	S	NP	S	NP	S	NP	NP
3rd Story	PS	PS	PS	S	NP	S	NP	S	NP	NP
4th Story and Higher	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP

E Child Care Occupancy / Children Over Two Years Nine Months of Age

Floor Level of Child Day Care Center	Building Construction Type									
	1A	1B	2A	2B	2C	3A	3B	4	5A	5B
Basement / Cellar	P	P	P	P	P	P	P	P	P	P
1st Story	P	P	P	P	P	P	P	P	P	P
2nd Story	P	P	P	P	P	P	P	P	P	P
3rd Story	PS	PS	PS	S	NP	S	NP	S	NP	NP
4th Story	PS	PS	PS	S	NP	S	NP	S	NP	NP
5th to 7th Story	PS	PS	PS	NP	NP	NP	NP	NP	NP	NP
8th Story and Higher	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP

B - Day Care Occupancy / Adult (Elder) Day Care

B-Use day care Facilities are not limited in where they may be located in a building	*Exception (1):* Adullt day care centers falling under the "Exception" to 780 CMR 424.3.3 *Exception (2):* Adult day care centers of mixed-care use as described in 780 CMR 424.4.2.3

Key to Table

P = Permitted
NP = Not Permitted
S = Sprinklers Required / See 780 CMR 424.5 for Special Provisions
PS = Partial Sprinklers Required / See 780 CMR 424.5 for Special Provisions

***424.4.7 Heating System**: Any portable or permanent heater in spaces occupied by clients shall be separated from the occupied space by partitions, guards, screens, or other means. Space and unit heaters using combustible fuels shall be prohibited. (Also see 424.4.8)*

***424.4.8 Boiler Rooms**: Boilers, furnaces or other fire units shall be enclosed as required in the BOCA National Mechanical Code listed in Appendix A. Boiler room doors shall not open into occupied areas.*

***424.4.9 High Hazard Restrictions**: A day care center shall not occupy the same building with, or be located within 200 feet of a high hazard occupancy.*

***424.4.10 Accessibility for Persons with Disabilities**: Accessibility requirements shall be in accordance with 521 CMR as listed in Appendix A.*

***424.5 Special Provisions**:*

***424.4.5.1 Application**: Special provisions for I-2, E and B use day care centers and relating to allowed location, special egress and special alarm requirements are found in 780 CMR 424.5*

424.5.2 I-2 Use Allowed Basement/Cellar/Story Locations: In new and existing buildings, day care centers which are classified in the I-2 use group shall comply with one of the following compliance options listed below. All required means of egress for day care centers classified in use group I-2 shall lead directly to grade.

1. The location of the day care center shall be limited to the first floor, cellar and/or basement; or

2. In buildings of Type 2B, 3A or 4 construction which are fully sprinklered and comply with the special provisions of 780 CMR 424.5.4.4, the day care center shall be located no higher than the third floor; or

3. In buildings of Types 1A, 1B or 2A construction and are either fully sprinklered, or in which the day care center and all floors below are sprinklered, the day care center shall be located no higher than the third floor.

Notes:

(1) Also see 780 CMR Table 424.4.6.

(2) See special egress requirements of 780 CMR 424.5.4.

424.5.3 E-Use Allowed Basement/Cellar/Story Locations: In new and existing buildings, day care centers which are classified in the E use group shall comply with one of the following compliance options listed below. All required means of egress for day care centers classified in use group E shall lead directly to grade.

1. The location of the day care center shall be limited to the second floor; first floor or cellar and/or basement, or;

2. In buildings of Type 2B, 3A or 4 construction which are fully sprinklered and comply with the special provisions of Section 780

CMR 424.5.4.4, the day care center shall be located no higher than the fourth floor; or;
3. In buildings of Types 1A, 1B or 2A construction which comply with the special provisions of 780 CMR 424.5.4.4 and are either fully sprinklered, or in which the day

care center and all floors below are sprinklered, the day care center shall be located no higher than the seventh floor.

Notes:
(1) Also see 780 CMR Table 424.4.6.
(2) See special egress requirements of 780 CMR 424.5.4.

424.5.4 B-Use Allowed Basement/Cellar/Story Locations: In day care centers classified in the B-Use category and where staff and clients in an emergency can exit the building in no more than three minutes, with or without assistance, there is no restriction on locating of the day care center within any basement/cellar or story.

Exception: In adult day care centers classified as day care I-2 use see 780 CMR 424.3.3.

424.5.4 I-2 and E Use Egress Requirements For Basement and Cellar Use:

424.5.4.1 Basement or Cellar Use: A basement or cellar, as defined in 780 CMR 2, of a building of Type 3B or 5B construction may be used for a day care center in accordance with the following requirements:
1. There shall be two separate and independent means of egress, remote from each other and leading directly to grade, or;
2. there shall be two separate and independent means of egress, remote from each other and leading to two one hour fire-rated enclosed stairways not more than four feet in height vertically which lead directly to grade and are separated from any other use as an egress by one hour fire-rated partitions and self-closing doors, or;
3. A combination of 1 and 2.

424.5.4.2 Fire Protective Systems: Fire protection systems shall comply with the requirements of 780 CMR 424.4.4 and 424.4.5; additionally in basement or cellar use, regardless of building construction type, smoke detectors shall be located in the first story above the basement or cellar location and in any story below grade that may exist below the basement or cellar day care location. Such smoke detectors shall be connected to the day care automatic fire detection system.

424.5.4.3 Common Corridor Exit Access in Buildings of Types 1, 2A and 2B Construction: In buildings equipped with a fire suppression system in conformance with 780 CMR 9, a common exit access corridor shall be acceptable for providing access to two means of egress required in 780 CMR 424.4.1, such common corridors used for exitway access may be subdivided, to provide separate and independent exitway access by using smoke stop partions complying, as applicable, with the provisions of 780 CMR 711.0 for fire partitions. Access through interconnected rooms to either side of the smoke stop partition, as provided in 780 CMR 424.4, shall be allowed as a method of complying with 780 CMR 424.5.4.3. If the doors in the smoke stop partitions are normally open, such doors shall be equipped with an automatic hold open device, actuated by either the building fire protective signaling system and/or the building automatic fire detection system to close automatically.

424.5.4.4 I-2 and E use Day Care Centers Located in Upper Stories of a Building: In new and existing buildings containing I-2 day care occupancies where the day care center is located above the first floor, and in new and existing buildings containing E use day care occupancies and where the day care center is located above the third floor, the day care center shall meet also the requirements of 780 CMR 424.5.4.5 thru 780 CMR 424.5.4.7.

424.5.4.5 Telephone communication: The day care center shall have telephones located in every occupied room of the day care center and directly connected to the building fire command center or to a constantly attended station within the building, if such exists, or otherwise such telephones shall utilize standard phone service with such phones having the capability of retaining, and upon manual selection, automatically dialing the emergency number of the fire department having jurisdiction.

424.5.4.6 Alarm requirements: In addition to the requirements of 780 CMR 424.4.4 and 424.4.5, on the floor of the day care center and/or the floor below, the operation of any water flow device, manual pull station, smoke or heat detector will initiate a special announcement for the day care center to evacuate or proceed to a specific area. The language of the announcement shall be acceptable to the building official and head of the fire department. Smoke detectors shall be installed on the ceiling of the floor below the day care center. Manual pull stations shall be required on the floor located below the care center.

424.5.4.7 Areas of refuge: In new and existing buildings containing E use care occupancies where the day care center is located

on the fourth through seventh floors, the day care center shall have direct access to a separate area which shall have a minimum of two hour fireresistance rated construction separating it from the rest of the building. The area shall adjoin an enclosed stairway with a fire

resistance rating of at least two hours. The area shall be sized at nine square feet per person to accommodate the licensed client capacity and staff of the day care center. This provision shall apply to all centers located on the sixth or seventh floors of a building and to those centers on the fourth or fifth floors whose licensed capacity exceeds 50 clients. (Also see Table 424.4.6.)

780 CMR 425.0 SUMMER CAMPS FOR CHILDREN

425.1 Definition: Summer camps for children include premises, operated solely between April and October of each year for recreational or other purposes, and having residential facilities. The use of such accommodations for purposes of inspection, certification and inspection fees shall be considered as being similar to a dormitory in Use Group R-2 and subject to the following provisions of 780 CMR 425.0

425.2 New and existing occupancies: 780 CMR 425.0 shall apply to existing and new summer camps for children as defined in 780 CMR 425.1.

425.3 Means of egress: All one-story, one-room buildings having 1,000 square feet or less and having 25 occupants or less shall require only one means of egress provided that:

1. the length of travel does not exceed 50 feet from any point in the building to the outside at grade; and,

2. the minimum width for aisles and corridors shall be three feet.

425.3.1 Emergency escape: Every sleeping room shall have at least one exterior door or openable window to permit emergency exit or rescue; the windows shall conform to the following restrictions:

1. must be openable from the inside without the use of separate tools;

2. the sill height shall not be more than 36 inches above the finish floor and with a maximum six foot drop from the window sill to grade below the window; and

3. provide a minimum net clear opening area 5.7 square feet. The minimum net clear opening height dimension shall be 24 inches, The minimum net clear opening width dimension shall be 20 inches.

425.4 Fire protection: Smoke detectors shall be required for existing and new residential units in accordance with 780 CMR 918.0 (919.0) of 780 CMR .

Exception: Tents and other temporary shelters which are designed to sleep less than eight persons and which have an open side consisting of greater than 1/6 of the perimeter of the shelter or which have built-in provisions for emergency escape.

425.5 Mechanical: If camps are heated, then the building must conform to all applicable code sections and specialized codes, notwithstanding any of the provisions in 780 CMR 425.0.

425.6 Enforcement and inspections: Enforcement shall be by the local building official who shall inspect and certify the summer camps yearly, prior to season opening. Fees charged shall be in accordance with 780 CMR.

780 CMR 426.0 BULK MERCHANDISING RETAIL BUILDINGS

426.1 General: Bulk Merchandising Retail Buildings have different fire and life safety risks than traditional retail buildings. This difference requires special attention to fire protection and life safety. The purpose of 780 CMR 426.0 is to provide standards to adequately deal with these differences, and to reduce the risk of life loss, injury, and excessive property damage from fire.

426.2 Scope: The provisions of 780 CMR 426.0 shall apply to buildings or structures defined herein as Bulk Merchandising Retail Buildings or portions thereof containing high piled combustible storage as defined in 780 CMR 426.2.1. Unless otherwise noted in 780 CMR 426.0, the requirements for Bulk Merchandising Retail Buildings shall be in accordance with the requirements set forth for Use Group M, Mercantile as defined in 780 CMR 309.0 or 780 CMR 417.0 (if applicable).

426.2.1 Definitions: Terms used in 780 CMR 426.0 shall have the following meanings:

Aerosol: A product that is dispensed from a metal can, up to a maximum size of 33.8 fl oz (1000 ml) or a glass or plastic bottle, up to a maximum size of four fl oz (118 ml) that is designed and intended to dispense an aerosol by a propellant. Aerosols shall be classified by means of the calculation of their chemical heats of combustion and shall be designated Level 1, Level 2, or Level 3 in accordance with Table 426.2.

Table 426.2
AEROSOL CLASSIFICATION

Chemical Heat of Combustion	*Aerosol Level*
0-8,600 BTU/lb (0-20 kJ/g)	*1*
8,600-13,000 BTU/lb (20-30 kJ/g)	*2*
13,000 or greater BTU/lb (30 or greater kJ/g)	*3*

***Group A Plastics:** Products that utilize plastic, or non plastic products that utilize significant plastic packaging materials, that have a high BTU content; ABS (acrylonitrile-butadiene-styrene copolymer), Acetal (polyformaldehyde), Acrylic (polymethyl methacrylate), Butyl rubber, EPDM (ethylene-propylene rubber), FRP (fiberglass reinforced polyester), Natural rubber (expanded), Nitrile rubber (acrylonitrile-butadiene rubber), PET or PETE (polyethylene terephthalate), Polybutadiene, Polycarbonate, Polyester elastomer, Polyethylene, Polypropylene, Polystyrene (expanded and unexpanded), Polyurethane (expanded and unexpanded), PVC (polyvinyl chloride greater than 15% plasticized, e.g., coated fabric unsupported film), SAN (styrene acrylonitrile), SBR (styrene-butadiene rubber).*

***Bulk Merchandising Retail Buildings:** A building where sales areas contain high piled combustible commodities, or high piled, high hazard commodities as defined by 780 CMR 4 and 780 CMR 3.*

***Combustible Liquids:** Any liquids having a flash-point at or above 100 °F (38 °C) shall be known as Class II or III liquids. Combustible liquids shall be divided into the following classification:*
Class II - Liquids with a flash point at or above 100 °F (37.8 °C) and below 140 °F (60 °C).
Class III-A - Liquids with a flash point at or above 140 °F (60 °C) and below 200 °F (93.3 °C).
Class III-B - Liquids with a flash point at or above 200 °F (93.3 °C).

***Control Area:** Is a building or portion of a building within which the exempted amounts of hazardous materials are allowed to be stored, dispensed, used, or handled.*

***Corrosive:** A chemical that causes visible destruction of, or irreversible alterations in tissue by chemical action at the site of contact. A chemical is considered to be a corrosive if, when tested on the intact skin of albino rabbits by the method described in Appendix A of CFR 49, Part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. This term does not refer to action on inanimate surfaces. [Source: Uniform Fire Code]*

***Flammable Liquids:** Any liquids having a flash point below 100 °F (38 °C), and having a vapor pressure not exceeding 40 psia (276 kPa) at 100 °F (38 °C). Flammable liquids shall be known as Class I liquids and shall be divided into the following classification:*
I-A Liquid - A liquid with a flash point below 73 °F (22.8 °C) and a boiling point below 100 °F (37.8 °C).
I-B Liquid - A liquid with a flash point below 73 °F (22.8 °C) and a boiling point at or above 100 °F (37.8 °C).
I-C Liquid - A liquid with a flash point at or above 73 °F (22.8 °C) and below 100 °F (37.8 °C).

***High Piled Combustible Commodity:** Storage of combustible materials in piles greater than 12 feet (3.658 m) in height or combustible materials on pallets, in racks or on shelves where the top of storage is greater than 12 feet (3.658 m) in height.*

***High Piled, High Hazard Commodity:** Storage of combustible materials such as rubber tires, Group A plastics, flammable liquids, idle pallets and commodities with similar heat release characteristics where the top of storage is greater than six feet (1.829 m) in height.*

***Highly Toxic:** Material which produces a lethal dose or lethal concentration which falls within any of the following categories.*
1. A chemical or substance that has a median lethal dose (LD50) of 50 milligrams or less per kilograms of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
2. A chemical or substance that has a median lethal dosage of more than 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours, or less if death occurs within 24 hours, with bare skin of albino rabbits weighing between two and three kilograms each.
3. A chemical or substance that has a median lethal concentration (LC50) in air of 200 parts per million by volume of gas or vapor, or two milligrams per liter or less of mist, fume or dust, when administered by continuous inhalation for one hour, or less if death occurs within one hour, to albino rats weighing between 200 and 300 grams each.

Mixtures of these materials with ordinary materials, such as water, might not warrant classification as highly toxic. While this system is basically simple in application, any hazard evaluation which is required for the precise categorization of this type of material shall be performed by experienced, technically competent persons.

***Oxidizer:** A chemical other than a blasting agent or explosive that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.*

Class 1: An oxidizer whose primary hazard is a slight increase in the burning rate but which does not cause spontaneous ignition when the

oxidizer comes in contact with combustible materials.
Class 2: An oxidizer that will cause a moderate increase in the burning rate or that is capable of causing spontaneous ignition of combustible materials with which the oxidizer comes in contact.
Class 3: An oxidizer that will cause a severe increase in the burning rate of combustible materials with which the oxidizer comes in contact or that will undergo vigorous self-sustained decomposition due to contamination or exposure to heat.
Class 4: An oxidizer that is capable of an explosive reaction due to contamination or exposure to thermal or physical shock. Additionally, the oxidizer will enhance the burning rate and is capable of causing spontaneous ignition of combustibles. [Source: BOCA]

Rack Storage: Combination of vertical, horizontal and diagonal members that support stored materials in fixed or portable racks.

Shelf Storage: Storage on structures less than 30 in. (76.2 cm) deep with shelves usually two ft (0.6 m) apart vertically and separated by approximately 30 in. (76.2 cm) aisles.

Toxics: A material which produces a lethal dose or lethal concentration within any of the following categories:
1. A chemical or substance that has a median lethal dose (LD50) of more than 50 milligrams per kilograms but not more than 500 milligrams per kilograms of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
2. A chemical or substance that has a median lethal dosage of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours , or less if death occurs within 24 hours, with bare skin of albino rabbits weighing between 2 and 3 kilograms each.
3. A chemical or substance that has a median lethal concentration (LC50) in air more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume or dust, when administered by continuous inhalation for one hour, or less if death occurs within one hour, to albino rats weighing between 200 and 300 grams each.

Unstable (Reactive): A chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense or become self-reactive under conditions of shock, pressure or temperature.

Water Reactive Material: Material which explodes; violently reacts; produces flammable, toxic or other hazardous gases; or evolves enough heat to cause self-ignition or ignition of nearby combus-tibles upon exposure to water or moisture.

426.3 Commodity Classification: Commodities in storage and display shall be classified in accordance with the following NFPA Standards as listed in Appendix A.

13: Installation of Sprinkler Systems
30: Flammable and Combustible Liquids Code
30B: Aerosol Products, Manufacture and Storage
231: General Storage
231C: Rack Storage of Materials
231D: Storage of Rubber Tire
430: Storage of Liquid and Solid Oxidizers

426.4 Fire Protection Requirements: Fire protection requirements shall be in accordance with Table 426.4.

Table 426.4.
FIRE PROTECTION REQUIREMENTS

Commodity Class[1]	*Size of High-Piled Display Area*[2] *(sq ft) x 0.0929 for m*[2]	*Fire Protection Requirements*				
		Fire Suppression System (780 CMR 426.5)	*Fire Alarm/Notification (780 CMR 426.14)*	*Fire Department Access Doors (780 CMR 426.8)*	*Hose Connections (780 CMR 426.7)*	*Manual Smoke and Heat Vents (780 CMR 426.16*
I-IV	*0 - 2,500*	*NR*	*NR*	*NR*	*NR*	*NR*
	2,501 - 12,000	*Yes*	*NR*	*NR*	*NR*	*NR*
	over 12,000	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
High Hazard	*0 - 500*	*NR*	*NR*	*NR*	*NR*	*NR*
	501 - 2,500	*Yes*	*NR*	*NR*	*NR*	*NR*
	2,501 - 12,000	*Yes*	*NR*	*Yes*	*Yes*	*NR*
	over 12,000	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*

NR = Not required.

1. For commodity classifications definitions, see 426.3.

2. Areas that are separated by 60 ft of display area with such areas not used for high piled storage, or that are separated with a one-hour fireresistance-rated separation barrier, can be considered as separated high piled areas.
3. If the building is required to be sprinklered under 780 CMR, then the sprinkler system protecting the high piled storage area and 15 ft beyond shall be designed in accordance with the appropriate NFPA Standard(s).

426.5 Fire Suppression Systems: Fire sprinkler design and installation shall be provided in accordance with the applicable requirements set forth by NFPA 13, 30, 30B, 231, 231C, 231D, 430, as listed in Appendix A, or other nationally recognized codes and standards, or tests conducted in test laboratories as defined in 527 CMR 49.03, Appendix C as listed in Appendix A.

426.6 Storage Arrangement: Storage arrangements for fire protection purposes shall comply with requirements set forth by NFPA 13, 30, 30B, 231, 231C, 231D, 430, as listed in Appendix A, or other nationally recognized codes and standards, or tests conducted in test laboratories as defined in 527 CMR 49.03, Appendix C, as listed in Appendix A.

426.7 Hose Connections: A Class I automatic, wet-standpipe system shall be provided in accordance with NFPA 14. Hose connections shall be located around the interior perimeter of the building within five ft of all required fire department access doors, adjacent to the latch side of the door. Hose connections shall be installed to accommodate 200 ft of travel distance to any point in the building. Where the most remote portion of the building exceeds 200 ft of travel distance from the required access doors, additional hose connections shall be provided in locations approved by the head of the fire department. Hose connections shall be readily accessible and marked for fire department use only. When approved by the head of the fire department, the following exceptions shall be permitted.

Exception 1: Hose connections may be omitted when the following fire department building access and fire hydrant coverage is provided: minimum 18 ft wide, unobstructed access roadways located within 20 ft of the building on at least three sides; minimum ten ft wide, unobstructed access route between the access roadway and the fire department access doors; and, fire hydrants in locations approved by the head of the fire department.

Exception 2: In lieu of a Class I standpipe system, a Class II automatic, wet-standpipe system in accordance with NFPA 14 shall be permitted when the following fire department building access and fire hydrant coverage is provided: minimum 18 ft wide, unobstructed access roadways located within 50 ft of the building on at least three sides; minimum ten ft wide, unobstructed access route between the access roadway and the fire department access doors; and, fire hydrants in locations approved by the head of the fire department. The hose connections shall be located as described above for the Class I standpipe system. Occupant hose shall not be required, and the hose connections shall be marked for fire department use only.

426.8 Fire Department Access Door: Fire department access doors shall be provided for fire department emergency access. Access doors shall be:
1. located adjacent to fire department access roadways,
2. provided with an approved exterior fire department accessible key cylinder operable lock device,
3. provided with approved fire department identification signs, and
4. provided such that all points of the floor area are accessible within 200 feet of travel distance.
Fire department access doors may be used as occupant egress doors.

426.9 Fire Department Access Roadways: Fire department access roadways shall be provided on at least two sides of the building with such access to be approved by the head of the fire department prior to any construction. Fire hydrants shall be provided in locations approved by the head of the fire department.

426.10 Means of Egress: Means of egress shall be in accordance with the requirements set forth in 780 CMR 10 for Use Group M, Mercantile unless otherwise modified herein:

Exception: Exit access travel distance shall be limited to 200 feet.

If the only means of customer entrance is through one exterior wall of the building, two thirds of the required egress width shall be located in this wall. At least one half of the required exits shall be located so as to be reached without passing through checkout stands. In no case shall checkout stands or associated railings or barriers obstruct exits, required aisles, or approaches thereto.

426.11 Flammable/Combustible Liquids: The display, storage, protection, and maximum allowable quantities of flammable and combustible liquids permitted in mercantile display areas shall be in accordance with NFPA 30, as listed in Appendix A.

426.12 Aerosols: The display, storage, protection, and maximum allowable quantities of aerosols

permitted in mercantile occupancies shall be in accordance with of NFPA 30B.

Table 426.13.
DENSITY FACTOR FOR HAZARDOUS MATERIALS EXEMPTION CALCULATIONS.

Material	*Class*	*Solids pounds[1] (cubic feet)*	*Liquid gallons[1] (pounds)*	*Gas cubic feet[1]*
		x 0.4536 for kg (x 28.32 for liters)	*x 3.78 for liters (x 0.4536 for kg)*	*x 28.32 for liters*
	4	*Not permitted*	*Not Permitted*	*Not Permitted*
	3	*0.75*	*(0.75)*	*112.5*
	2	*1.5*	*(1.5)*	*9*
Oxidizers	*1*	*12*	*(12)*	*4.5*
	4	*Not Permitted*	*Not Permitted*	*Not Permitted*
	3	*0.375*	*(0.375)*	*3.75*
	2	*0.3*	*(0.3)*	*1.5*
Unstable (reactive)	*1*	*Unlimited*	*Unlimited*	*2.25*
Toxics	*All*	*0.65*	*(0.65)*	*1.053*
Corrosives	*All*	*6.5*	*0.65*	*1.053*
Highly Toxic	*All*	*0.0013*	*(0.0013)*	*0.026*
	3	*0.375*	*(0.0375)*	
	2	*0.3*	*(0.3)*	
Water Reactive	*1*	*0.375*	*(0.375)*	*Not Applicable*

1. Quantities may be increased by 100% in sprinklered buildings

426.13 Non-flammable and non-combustible hazardous materials: Non-flammable and non-combustible hazardous materials such as: Oxidizers, Unstable Materials, Toxics, Highly Toxics, Corrosives, and Water Reactives shall meet the following requirements:

$$Q = F \times A$$

where:
Q = the maximum quantity in a single control area for mercantile display.
F = the density factor as indicated in Table 426.13.
A = the area occupied for mercantile display. For computation purposes, the area shall not exceed 1,500 square feet (139.39 m^2) per control area.

426.14 Fire Alarm or Notification Systems: Either a fire alarm system or emergency notification system, as described below and approved by the head of the fire department, shall be provided:

1. Fire Alarm System: The fire alarm system shall include the following:

a. A fire alarm system required for life safety shall be installed, tested, and maintained in accordance with applicable requirements of NFPA 70 and 72, as listed in Appendix A.

b. All systems and components shall be approved for the purpose for which installed, and all installation wiring or other transmission paths shall be monitored for integrity in accordance with NFPA 72, as listed in Appendix A.

c. Manual fire alarm stations shall be provided in the natural path of escape near each required exit from an area. Each manual fire alarm station shall be accessible, unobstructed, visible, and of the same general type.

d. Notification signals for occupants to evacuate shall be by audible and visible signals in accordance with NFPA 72 and CABO/ANSI A117.1, as listed in Appendix A. The general evacuation alarm signal shall operate throughout the entire building.

e. The fire alarm system shall be arranged to transmit the alarm automatically via any of the following means acceptable to head of the fire department and in accordance with NFPA 72:

i. Auxiliary Alarm System
ii. Central Station Connection
iii. Proprietary System, or
iv. Remote Station Connection.

f. The fire alarm control panel location shall be located in an area acceptable to the head of the fire department. Where required, a remote annunciator shall be located in an area acceptable to the head of the fire department.

g. Other control systems intended to make the protected premises safer for building occupants including, but not limited to, duct smoke detectors, fire/smoke dampers, smoke management systems, fire door controls, shall be installed and monitored for integrity in accordance with NFPA 72, as listed in Appendix A, and a distinctive supervisory signal shall be provided to indicate a condition that would impair the satisfactory operation of the equipment.

h. Supervisory attachments including, but not limited to, control valves, fire pump running conditions, float valves, shall be

installed and monitored for integrity in accordance with NFPA 72 as lisetd in Appendix A, and a distinctive supervisory signal shall be provided to indicate a

condition that would impair the satisfactory operation of the equipment.

i. All building HVAC fans shall be arranged to automatically shut down on any general alarm condition. Duct smoke detectors shall not be required.

j. Waterflow initiating devices shall be arranged to initiate an alarm condition within one minute of being activated. In addition, provisions shall be made to control and prevent false alarms due to water surges.

2. Emergency Notification System: During a fire emergency, the emergency notification system shall sound an audible alarm in a continuously attended location for the purpose of initiating the evacuation plan required under 780 CMR 426.15.

426.15 Evacuation Planning and Training: An evacuation plan shall be submitted at the time of application for a building permit as part of the required documentation pursuant to 780 CMR 1. The Certificate of Use and Occupancy shall not be issued until the evacuation plan has been reviewed and approved by the head of the fire department. Any changes to the evacuation plan shall not be effected until a revised plan has been submitted to and approved by the head of the fire department. The evacuation plan shall detail procedures, define roles and responsibilities of employees, and shall include an egress plan indicating routes of travel to all exits. The evacuation plan shall be used to ensure the safe evacuation of all customers and employees. All employees shall be instructed and periodically trained with respect to their duties, as required by 527 CMR 10.25, as listed in Appendix A.

426.16 Smoke and Heat Venting: Adequate methods of manual heat and smoke venting shall be provided. The method of operation, vent area, spacing layout, construction of vents and curtain boards or other acceptable means of addressing methods of heat and smoke venting shall be determined by an engineering evaluation and analysis. The analysis shall be reviewed and approved by the head of the fire department and shall contain sufficient detail to evaluate the hazard and effectiveness of the venting system.

780 CMR 427.0 LIMITED GROUP RESIDENCE

427.1 General: A building licensed by or operated by the Department of Mental Health or the Office for Children, Commonwealth of Massachusetts as a limited group residence: this is a special residence to include residents not capable self-preservation.

427.1.1 Scope: A limited group residence shall have a maximum of 12 residents who are at least four years of age. Not more than four of the residents shall be impaired; provided, however, that more than four such residents may be impaired if the structure complies with 780 CMR 427.2. A limited group residence shall be classified in the R-5 use category for code purposes.

427.1.1.1 Department of Mental Retardation (DMR) Group Homes: 780 CMR 427.0 shall not apply to premises operated or licensed by the Department of Mental Retardation (DMR) pursuant to 115 CMR 7.00 and 8.00, upon the completion of a DMR safety assessment for each individual and an approved safety plan for each location where services and supports are provided. Such premises shall be treated as conventional R-4, R-3, R-2 and R-1 use as applicable.

427.1.2 Definitions: The following terms shall have the meaning indicated for the purpose of 780 CMR 427.0:

Existing building or structure: Any completed building or structure which has been legally occupied and/or legally used for a period of at least five years. Structures which fail to qualify with this definition shall comply with 780 CMR 427.2.

Resident: A client in need of care who resides in the limited group residence of the licensing or operation agency. Staff are not considered as residents under the provisions of 780 CMR 427.0. The licensing agency shall classify all residents in one of the following three categories:

Impaired: All residents not capable of self-preservation through physical, mental and/or developmental disability and requiring physical assistance to exit the building. All residents under seven years of age shall be classified as impaired.

Partially impaired: All residents physically, mentally and/or developmentally disabled but capable of exiting the limited group residence with either supervision and/or instruction without any physical assistance.

Unimpaired: All residents capable of exiting the building without physical assistance and/or supervision or instruction by staff personnel and capable of negotiating any exitway of the limited group residence.

427.1.3 Application of building code and reference: Except as may otherwise be specifically provided for in 780 CMR 427.0, the Massachusetts State Building Code shall apply in its entirety.

Exception: Chapter 34 shall not apply.

427.1.4 Mixed use occupancy: A limited group residence shall not be housed in a building used

for any occupancy other than a limited group residence.

Exception: Dwelling unit(s) meeting the requirements of 780 CMR 427.0 may be incorporated within a building in residential use provided unit separation walls and floor-ceiling assemblies shall serve to completely separate the limited group residence and provided that one of the limited group residence exitways is separate from the other uses.

427.1.5 Plans and specifications: Plans shall be filed with the building official having jurisdiction in accordance with 780 CMR 110.0 for any building to be constructed as, or altered for use as, a limited group residence under 780 CMR 427.0.

427.1.6 Temporary certificate of occupancy: Upon satisfactory compliance with the code sections pertaining to building requirements, the building official shall issue a temporary certificate of occupancy in accordance with 780 CMR 120.3 for a period not to exceed 90 days. This temporary certificate of occupancy specifically prohibits residents as defined in 780 CMR 427.1.2 from inhabiting the building overnight until the building official issues the certificate of occupancy under 780 CMR 427.1.8.

427.1.7 Rules and regulations of the licensing or operating agency pertaining to and including, but not limited to, smoking regulations, staffing ratios, and resident classifications shall be provided to the building official by the licensing or operating agency prior to the issuance of a certificate of occupancy.

427.1.8 Certificate of occupancy: Certificates of occupancy shall only be issued when a license, if appropriate, and an affidavit from the Department of Mental Health or the Office for Children, Commonwealth of Massachusetts, have been accepted by the building official attesting to the satisfactory compliance with the applicable rules and regulations referenced in 780 CMR 427.1.7.

427.1.9 Certificate of inspection: Certificates of inspection shall be issued by the building official in accordance with 780 CMR 106.0 and Table 106.

427.1.10 Failure to comply: The building official immediately upon being informed by written report or otherwise that a building or structure or anything attached thereto or connected therewith is being occupied in violation of 780 CMR may revoke or suspend any permit, license, certificate or other permission regulated by 780 CMR and granted by him, and no such building or structure shall be continued to be operated after such revocation or suspension. Such revocation or suspension shall not preclude the building official from instituting appropriate action in accordance with 780 CMR 118.0.

427.2 New structures: All new structures shall be constructed, equipped, and maintained to the requirements of the One- and Two-Family Dwelling Code and 780 CMR 427.0, shall be limited to two stories in height, and shall have dwelling unit(s) limited to one story in height with direct access to grade without steps or changes in elevation other than ramps in accordance with 780 CMR 11. Corridors shall be of one hour fire resistive construction.

427.2.1 Other requirements: New structures shall also satisfy the general requirements contained in 780 CMR 427.1 and 427.3.

427.3 Existing structures: Existing structures of any construction up to three stories or 40 feet in height may be converted and used for limited group residence occupancies. All residents classified as impaired as defined in 780 CMR 427.1.2 are restricted to those stories having direct access to grade without steps or changes in elevation other than ramps in accordance with 780 CMR 11.

427.3.1 Third-story utilization: The third story of buildings permitted by 780 CMR 427.3 may be only occupied by staff. Other use of the third story is restricted to heating, ventilation units and ordinary storage. All doors leading to non-resident areas shall be maintained locked.

427.3.2 Vertical openings: Openings to such spaces as laundry chutes, dumb-waiters, heating plenums or combustible concealed spaces shall be permanently blocked with one hour fireresistance-rated construction, in accordance with the provisions of 780 CMR 7, unless such installation is in compliance with the pertinent provisions of other sections of 780 CMR.

427.3.2.1 Firestopping and draftstopping: Firestopping and draftstopping shall be provided in accordance with 780 CMR 720.0 and the One- and Two-Family Dwelling Code or as approved by the building official.

427.3.3 Exitway Details:

427.3.3.1 Corridor width: The minimum clear width of an exitway access corridor shall be three feet.

Exception: In new structures the minimum clear width shall be four feet.

427.3.3.2 Dead ends: In no case shall dead end corridors exceed 30 feet. Existing dead end corridors, wherever possible, shall be altered so that exitways shall be accessible in at least two different directions from all points in corridors.

427.3.3.3 Corridor walls: Corridor walls that separate use areas from exitway access corridors shall be of construction that will resist the passage of smoke.

Exception: Existing openings to congregate living areas, other than kitchens, shall be allowed to remain open.

427.3.3.4 Sleeping room doors: All sleeping room doors shall be of construction that will resist the passage of smoke. All doors shall be equipped with approved positive latching hardware and approved self-closing devices.

Exceptions:
1. Sleeping room doors may be equipped with approved hold-open smoke activated devices in accordance with 780 CMR 1017.0.
2. Hollow core doors shall not be permitted.

427.3.3.5 Means of Egress: All habitable floors shall be provided with at least two means of egress, located as remote as practicable from one another. Exitways shall be located to provide a safe path of travel to a public way without traversing any corridor or space exposed to an unprotected open stairway.

Exceptions:
1. Open stairs may be used as one of the required means of egress when permitted by 780 CMR 427.3.3.6, Exception 3. However, in no case may both required means of egress traverse the unprotected open space.
2. Access to one of the required exitways on sleeping room floors may be through adjoining rooms.

427.3.3.6 Interior exitway stairs: Every story shall be provide with at least one enclosed interior stairway which discharge directly to grade or through a grade passageway to a public way. The enclosed interior stairway(s) shall be of construction having a minimum fireresistance rating of one hour, properly firestopped. Spaces below the stairway(s) shall be enclosed to maintain the integrity of the one hour fireresistive construction of the stairway enclosure. Stairway(s) openings shall be protected by at least Class "B" label one hour fire door assemblies.

New stair construction shall comply with 780 CMR 1014.0. Existing stairs shall comply with the One- and Two-Family Dwelling Code or as approved by the building official.

Exceptions:
1. Secondary stairs not considered an exitway component may have door openings protected by a minimum 1_ inch solid bonded wood core doors or equivalent; however, such doors shall be equipped with approved automatic positive latching hardware and approved self-closing devices.
2. Basement/cellar: Stairway(s) shall be separated from the first floor by a 20 minute fire rated, self-closing door or equivalent.
3. One stairway may be allowed to remain unenclosed to preserve functional and aesthetic requirements.

427.3.3.7 Door widths: No single egress door in a doorway shall be less than 28 inches wide.

Exceptions:
1. Exitway door leaves shall not be less than 34 inches wide.
2. Door leaves to resident bedrooms occupied by residents who are classified as "Impaired" shall not be less than 34 inches wide.

427.3.3.8 Basement/cellar: Basements/cellars shall be provided with at least two acceptable exitways, one of which shall discharge directly to the outside of the building.

Exception: Basement/Cellar areas with only one existing entrance from the outside only, and used solely as a mechanical space shall be permitted to maintain only one doorway which shall be maintained locked as an entrance/exitway.

427.3.3.9 Emergency escape: All sleeping rooms shall have at least one openable window or exterior door to permit smoke control, emergency escape, or rescue. A required door or window must be openable from the inside without the use of separate tools, and shall comply with 780 CMR 1010.4.

427.3.3.10 Means of egress lighting: Means of egress lighting systems shall be provided in accordance with 780 CMR 1024.0.

427.3.3.11 Locks: Locks installed in resident sleeping room doors shall be so arranged that they can be locked from the corridor side. All such locks shall be arranged to permit exit from the room by a simple operation without the use of a key. Double cylinder dead bolts requiring key operation on both sides are prohibited throughout this occupancy.

427.3.4 Interior finish: The flame spread of interior finish shall be limited to Class II in exitways or exit access corridors. Rooms shall be permitted to have interior finish of a Class III flame spread. Floor coverings shall conform to the requirements of 780 CMR 805.0 except that carpet type floor coverings shall possess a critical radiant flux of 0.22 w/cm^2 or greater.

427.3.5 Fire suppression systems: Automatic fire suppression systems shall be provided and

installed in accordance with NFiPA Standard No. 13D.

Additions:

1. Exceptions listed in NFiPA Standard No. 13D applicable to dwellings shall not apply.

2. A water flow detector, connected to the fire alarm system, shall be provided.

3. NFiPA Standard No. 13D, Sections 4 through 6; Exception 1 shall not apply.

4. The control valve(s) shall be secured in the open position.

427.3.6 Fire alarm system: A manual fire alarm system shall be provided and installed in accordance with 780 CMR 917.0 and specifically NFiPA Standard No. 72 as listed in Appendix A.

427.3.7 Automatic protection alarm system: Approved smoke detectors shall be installed in accordance with 780 CMR 918.0 and specifically NFiPA Standard No. 72 as listed in Appendix A in the following locations:

1. exitway access corridors not more than 30 feet on center;

2. congregate living areas other than kitchens;

3. at least one detector in all basement/cellar areas; and

4. all sleeping rooms.

Exception: Smoke detectors used in combination with automatic closing devices may be substituted in each area aforementioned for the protection herein required.

427.3.8 Supervision: All automatic and manual fire alarm systems shall be supervised in accordance with 780 CMR 923.1 or 923.2

427.3.9 Heating devices: Portable comfort heating devices and solid fuel burning appliances are prohibited. Any heating device, other than a central heating plant, shall be so designed and installed that combustible material will not be ignited by it or its appurtenances. If fuel-fired, such heating devices shall be chimney or vent connected, shall take air for combustion directly from the outside, and shall be so designed and installed to provide for complete separation at the combustion system from the atmosphere of the occupied area. The heating system shall have safety devices to immediately stop the flow of fuel and shut down the equipment in case of either excessive temperature or ignition failure.

Exceptions:

1. Approved suspended unit heaters may be used in locations other than means of egress and sleeping areas, provided such heaters are located high enough to be out of the reach of persons using the area and provided they are equipped with the safety devices specified in 780 CMR 427.3.9.

2. Fireplaces which comply with 780 CMR 2114.0 may be used only in areas other than resident sleeping rooms. The fireplaces shall be equipped with a heat tempered glass fireplace enclosure guaranteed against breakage up to a temperature of 650°F. A lock on the enclosure shall be required.

427.3.10 Fire drills: The licensing or operating agency shall require that fire drills be held with sufficient frequency so as to familiarize all residents and staff personnel with emergency procedures. Drills shall be held at unexpected times under varying conditions to simulate the unpredictable conditions which may occur in case of fire, including blocking of any point of any means or egress.

427.3.10.1 Log: A log shall be kept of all fire drills and shall be available for inspection and duplication by the building official, fire official, and other parties having jurisdiction.

427.3.10.2 The resident manager shall record in said log the names of any authorized inspectors who may have been present and the names or identifying numbers of the residents who participated.

780 CMR 428.0 DETOXIFICATION FACILITIES

428.1 General: A detoxification facility is a facility licensed or operated by the Department of Public Health, Division of Alcoholism in accordance with the Rules and Regulations for Detoxification Facilities issued by the Department of Public Health, Division of Alcoholism, Commonwealth of Massachusetts, and shall be used to treat individuals acceptable to the program in accordance with those Rules and Regulations.

428.2 Scope: Detoxification facilities shall be subject to the requirements of 780 CMR 428.0 for new and existing buildings which are to be used or operated as licensed facilities. 780 CMR 428.0 shall establish the requirements applicable to such facilities. Where specific reference is made to other sections of 780 CMR, to reference standards or other regulations, those requirements cited shall apply. Where no reference is specifically made, 780 CMR, including 780 CMR 34, shall apply.

428.3 Classification of Residents: All residents enrolled in the detoxification program shall be identified according to one of the following

classifications when evaluated by the facility personnel in accordance with the Rules and Regulations for Detoxification Facilities of the Division of Alcoholism of the Department of Public Health:

1. ***Impaired***
2. ***Partially Impaired***
3. ***Unimpaired***

428.4 Definitions: The following terms shall have the meaning indicated for the purpose of 780 CMR 428.0 only:

Impaired: Anyone who will require assistance to egress the building

Partially Impaired: Anyone who may require assistance to egress the building.

Unimpaired: Anyone who appears able to egress the building without assistance.

428.5 Use group classification: Detoxification facilities licensed and approved in accordance with these provisions shall be classified in the R-1 use group.

428.6 Mixed use occupancy: A portion of a building may be used for a detoxification facility provided that it is completely separated from the rest of the building by both horizontal and vertical fire separation assemblies of at least one hour fireresistance rating.

Exception: Detoxification facilities shall not be located in buildings in which any of the following use groups are located: A-2, F, H, or S-1.

428.7 Submission of plans: Plans shall be filed with the building official in accordance with 780 CMR 110.0 for any building to be constructed as, or altered for use as, a detoxification facility under 780 CMR 428.0. The plans shall also identify those rooms which comply with 780 CMR 428.0 for use by the impaired.

428.8 Inspection and certification: The building official shall inspect and certify detoxification facilities once every two years. Fees shall be applied in accordance with Table 106 for the R-1 Use Group.

428.9 Resident location limitations: In buildings used as detoxification facilities in accordance with 780 CMR 428.0, resident locations shall be limited according to the use and type of construction as provided in Table 428.9. All heights are in stories above grade. All buildings used as detoxification facilities in accordance with 780 CMR 428.0 shall be accessible to the Fire Department wherever escape windows are required.

Table 428.9
RESIDENT SLEEPING ROOM LOCATION LIMITATION FOR DIFFERENT TYPES OF CONSTRUCTION

Classification of Resident	*Type of Building Construction*									
	1A	*1B*	*2A*	*2B*	*2C*	*3A*	*3B*	*4*	*5A*	*5B*
Impaired	*No limit*	*8 st.*	*4 st.*	*2 st.*	*1 st.*	*2 st.*	*1 st.*	*2 st.*	*1 st.*	*1 st.*
Partially impaired	*No limit*	*No limit*	*8 st.*	*3 st.*	*1 st.*	*3 st.*	*2 st.*	*3 st.*	*2 st.*	*1 st.*
Unimpaired	*No limit*	*No limit*	*9 st.*	*4 st.*	*3 st.*	*4 st.*	*3 st.*	*4 st.*	*3 st.*	*2 st.*

Note: * Impaired sleeping rooms in 5B construction require either full building sprinklering or one hour fire rated separation for floor and ceiling of sleeping room walls.

428.9.1 Sprinklered buildings: Buildings which are completely sprinklered may have resident locations one story higher than allowed in Table 428.9.

428.9.2 Sleeping room limitations: Sleeping facilities in building licensed for use as detoxification facilities shall not be located below the first story.

428.10 Egress: At least two exitways located as remote as practicable from each other shall be provided from each floor of the building.

428.10.1 Every room used for sleeping for the impaired and partially impaired shall have an exitway access door leading directly to an exitway access corridor:

Exceptions:
1. Rooms having a means of egress doorway leading directly to the exterior of the building at grade.
2. Rooms having a means of egress doorway leading directly to the exterior of the building above grade and connected directly to grade by means of an exterior stairway in accordance with 780 CMR 1014.0.

428.10.2 All other sleeping rooms: All other sleeping rooms shall comply with the requirements of 780 CMR 10 in accordance with the provisions for the R-1 use group.

428.10.3 Corridors shall provide at least 36 inches minimum nominal width.

428.10.4 All means of egress doorways shall be 32 inches minimum nominal width.

Exception: Egress doorways from impaired sleeping rooms shall 36 inches minimum nominal width.

428.10.5 Every required exitway access corridor shall have a one hour fire-resistance rating and shall provide access to at least two approve exitways without passing through any

intervening rooms or spaces other than corridors and lobbies.

Exception: In buildings with a complete sprinkler system, exitway access corridors not required for the impaired or partially impaired may be separated from other use areas by non-fire rated partitions

428.10.6 Stairways: Where not otherwise specified in 780 CMR 428.2, a stairway required as a means of egress shall be subject to these requirements:

428.10.6.1 Stairways required to provide egress for the impaired shall be at least 36 inches minimum nominal width. The total capacity of the stairways shall be adequate for the occupancy load served.

428.10.6.2 Stairway enclosures shall have a fireresistance rating of one hour for buildings not exceeding three stories in height, and two hours for buildings exceeding three stories in height.

428.10.6.3 Doors to the required exitway stairways shall be fire doors complying with 780 CMR 716.0 . Labeled fire doors shall have a maximum transmitted temperature end point of not more than 450°F (232°C) above ambient at the end of 30 minutes of standard fire test exposure.

428.11 Interior finish: Interior finish requirements shall comply with Table 428.11.

Exceptions:
1. In buildings which are completely sprinklered, the interior finish requirements may be reduced one level except in sleeping rooms for the impaired.
2. The interior finish classifications in existing buildings may be improved one level by the use of fire retardant coatings which have been approved when tested in accordance with ASTM E-84.

TABLE 428.11
INTERIOR FINISH REQUIREMENTS

Location	Walls	Floor	Ceiling
Sleeping rooms, Impaired	II	II[2]	II
Corridors, Impaired	I	I[1]	I
Sleeping rooms, Partially impaired	I	I[1]	I
Corridors, Partially impaired	I	I[1]	I
All other exitway access corridors	II	II[2]	II
Stairways	I	I[1]	I

Note 1: Carpet type floor coverings shall withstand a test exposure of 0.45 watts per square centimeter when tested in accordance with 780 CMR 805.0.
Note 2: Carpet type floor coverings shall withstand a test exposure of 0.22 watts per square centimeter when tested in accordance with 780 CMR 805.0.

428.12 Fire alarm systems: Manual and automatic fire alarm systems shall be provided in accordance with 780 CMR 917.0 and 918.0 as they apply to Use Group R-1.

Exceptions:
1. In rooms for the impaired and partially impaired the heat detectors required by 780 CMR 918.0 shall be replaced with approved smoke detectors.
2. All buildings or portions thereof regardless of the number of beds shall incorporate manual pull stations in conformance with 780 CMR 917.0.

428.12.1 Supervision: All automatic and manual fire alarm systems shall be supervised in accordance with 780 CMR 923.1 or 923.2.

428.13 Means of egress lighting: Means of egress lighting including an emergency lighting system shall be provided throughout the facility in accordance with 780 CMR 917.0.

428.14 Smoke enclosure doors: Smoke enclosure doors shall be tight-fitting with approved hardware.

428.15 Heating apparatus: The use of portable heaters, solid fuel burning room heaters and fireplaces shall be prohibited.

428.16 Sprinkler systems: Where a complete building sprinkler system is installed it shall comply with the provisions of NFiPA Standard No. 13, as listed in Appendix A.

428.16.1 All rooms used for sleeping for the impaired shall be sprinklered.

Exception: A partial system required for sleeping rooms housing impaired individuals may be provided with a sprinkler system serving no more than six sprinklers, which may be connected directly to a domestic water supply system having capacity sufficient to provide 0.15 gallons per minute per square foot of floor area throughout the entire area, An indicating shut-off valve shall be installed in an accessible location between the sprinklers and the connection the domestic water supply.

780 CMR429.0 GROUP DWELLING UNITS

429.1 General: A Group Dwelling Unit is a dwelling unit licensed by or operated by the

Department of Mental Retardation or the Department of Mental Health as special residence for up to four persons who may or may not be capable of self preservation from fire or other related hazards. Note, however, 780 CMR 429.1, Exceptions 1 and 2. The provisions of 780 CMR 429.0 shall apply to both new and existing Group Dwelling Units.

Exception 1*: 780 CMR 429.0 shall not apply to a group dwelling unit operated or licensed by the Department of Mental Retardation (DMR) pursuant to 115 CMR 7.00 and 8.00, upon the completion of a DMR safety assessment for each individual and an approved safety plan for each location where services and supports are provided. Such premise shall be treated as conventional R-4, R-3, R-2 and R-1 use as applicable.*

Exception 2: *Apartment programs as defined in 104 CMR 17.13(2)(c) in which residents therein are also capable of self preservation (unimpaired) shall be exempt from all requirements of 780 CMR 429.0. Such apartment programs shall be classified as R-1, R-2, R-3, or R-4, as applicable.*

429.1.1 Classification of Use: Group Dwelling Units shall be classified as follows:

Use Group R-2 - The Group Dwelling Unit(s) is (are) one or more of three or more dwelling units contained in the building.
Use Group R-3 or R-4 - The Group Dwelling Unit(s) is (are) contained in a one or two family dwelling.

429.1.2 Classification of Residents: Persons other than staff of the facility who occupy or intend to occupy Group Dwelling Units shall be classified by the Licensing or Operating Agency in one of the following three categories according to their capabilities for self preservation:

Impaired: Any resident who is incapable of self preservation through physical, mental or developmental disability, so as to require physical assistance from the staff of the Group Dwelling Unit to exit the building or to reach an area of refuge within 2½ minutes.

Partially Impaired: Any resident who is capable with either supervision or instruction from the staff of the Group Dwelling Unit but without physical assistance, of exiting the building or reaching an area of refuge within 2½ minutes.

Unimpaired: Any resident who is capable of exiting the building or reaching an area of refuge within 2½ minutes without physical assistance, supervision or instruction.

429.1.3 Application of building code and reference: Except as may otherwise be specifically provided in 780 CMR 429.0, 780 CMR shall apply in its entirety.

Exception: 780 CMR 34 shall not apply. However, existing buildings may be used to house group dwelling units, provided that they comply with the applicable portions of 780 CMR 429.0, and have no outstanding violations of 780 CMR or the specialized codes.

429.1.4 Plans and specifications: Plans shall be filed with the building official having jurisdiction in accordance with 780 CMR 110.0 for any building to be constructed as, or altered for use as a Group Dwelling Unit under 780 CMR 429.0.

429.1.5 Temporary Certificate of Occupancy: Upon satisfactory compliance with the code sections pertaining to building requirements, the building official shall issue a temporary certificate of occupancy in accordance with 780 CMR 120.3 for a period not to exceed 90 days. This temporary certificate of occupancy specifically prohibits residents as defined in 780 CMR 429.1.2 from inhabiting the building overnight until the building official issues the certificate of occupancy under 780 CMR 429.1.8.

429.1.6 Corresponding Rules and Regulations: 115 CMR (the Department of Mental Retardation) or 104 CMR 17.13 (the Department of Mental Health) as listed in Appendix A, pertaining to and including, but not limited to, smoking regulations, staffing ratios, and resident classifications shall be provided upon request to the building official by the Licensing or Operating Agency prior to the issuance of a certificate of occupancy. Note, however, 780 CMR 429.1, Exceptions 1 and 2.

429.1.7 Certification of Residents: The Licensing Agency shall certify the classification of each resident prior to application for a Certificate of Occupancy and shall regularly re-examine and, where necessary, reclassify residents in accordance with Department of Mental Retardation or Department of Mental Health regulations as listed in Appendix A. Copies of the current certification of each resident shall be kept on file at the Group Dwelling Unit, and shall be made available to the building official upon request. Note, however, 780 CMR 429.1, Exceptions 1 and 2.

429.1.8 Certificate of Occupancy: Certificates of occupancy shall be issued only when a license and/or affidavit from the Department of Mental Retardation or the Department of Mental Health have been provided to the building official attesting to the satisfactory compliance with the applicable rules and regulations referenced in 780 CMR 429.1.6, the capabilities for self preservation of all residents, and, if appropriate, the intent to license the facility. Upon compliance with all building requirements of 780 CMR 429.0 and receipt of the Licensing Agency's affidavit, the building official shall issue a certificate of occupancy within 72 hours. In addition to the contents specified in 780 CMR 120.4, the certificate shall indicate the category of Group Dwelling Unit for which the building has been constructed or altered, as defined in 780 CMR 429.2. Note, however, 780 CMR 429.1, Exceptions 1 and 2.

429.2 Category of Unit/Compliance Options: New and existing building containing Group Dwelling Units shall be required to satisfy at least one compliance option presented for the appropriate category of residency as defined in 780 CMR 429.2:

Category A Group Dwelling Unit - May contain any or all of the resident classifications.

Category B Group Dwelling Unit - May contain only partially impaired or unimpaired residents.

Category C Group Dwelling Unit - Shall contain only unimpaired residents.

429.2.1 Category A Unit Compliance Options: Buildings housing Group Dwelling Units classed as "Category A" shall comply with any one of the following compliance options:

1. The entire building shall be equipped with a fire suppression system; or

2. The building shall be of a protected construction type (Type 1, 2A, 2B, 3A, 4 or 5A). All interior stairways shall be enclosed to comply with the requirements of 780 CMR for interior exitway stairways and shall discharge directly to the exterior of the building or into a code complying grade passageway or lobby. The building shall also be equipped with fire alarms complying with 780 CMR 9 for the appropriate use group classification; or

3. The Building shall comply with the provisions of 780 CMR 427.0; or

4. If of unprotected construction (Types 2C, 3B or 5B), the building shall be equipped with fire alarms complying with 780 CMR 9 for the appropriate use group classification. No Group Dwelling Unit(s) shall utilize portions of the building above the second story. All stories in the building shall be equipped with two approved, independent exitways (even if the building is classified in Use Group R-3). Interior exitway stairways shall be enclosed to comply with the requirements of 780 CMR for interior exitway stairways and shall discharge directly to the exterior of the building or into a code complying grade passageway or lobby; or

5. In those buildings of unprotected constructed (Types 2C, 3B or 5B) where enclosure of interior exitway stairways is impractical due to physical limitations of configuration of the building (e.g. split entry type stairways), the stairway(s) may be permitted to remain unenclosed, provided that all sleeping rooms are segregated from the open stairway by a minimum of one hour fire resistive construction and the exitways are arranged so that a second means of egress is available from each sleeping area which does not pass through the open stairway area. The building shall also be equipped with fire alarms complying with 780 CMR 9 for the appropriate use group classification. No Group Dwelling Unit shall utilize portions of the building above the second story. All stories in the building shall be equipped with two approved, independent exitways (even if the building is classified in Use Group R-3).

429.2.1.1 Limitation on location of impaired residents: All sleeping rooms of impaired residents shall either be located on the first story or on a story containing a horizontal exit complying with 780 CMR 1019.0.

429.2.2 Category B Unit Compliance Options: Buildings housing Group Dwelling Units classified as "Category B" shall comply with any one of the following compliance options:

1. Any Category A compliance option; or

2. All stories in the building shall be provided with two approved, independent exitways (even if the building is classified in Use Group R-3). All interior stairways shall be enclosed to comply with the requirements of 780 CMR for interior exitway stairways and shall discharge directly to the exterior of the building or into a code complying grade passageway or lobby. The building also shall be equipped with fire alarms complying with 780 CMR 9 for the appropriate use group classification.

429.2.3 Category C Unit Compliance Options: Buildings housing Group Dwelling Units classified as "Category C" shall comply with any one of the following compliance options:

1. Any Category A compliance option; or

2. Any Category B compliance option; or

3. The building shall comply with the provisions of 780 CMR 423.0.

429.3 Special Fire Safety Items:

429.3.1 Hazardous Contents: No contents which represent a fire hazard greater than that which 429.3.2 Interior Finish: Interior finish in exitways and exitway access corridors shall be a minimum of Class II, unless the building is equipped with a fire suppression system. Approved fire retardant paints may be used to improve the interior finish classification of existing construction to satisfy this requirement.

429.3.3 Locks: Double cylinder deadbolt locks which require a key operation on the side from which egress is to be made are not permitted in Group Dwelling Units. Locks of any type are prohibited on sleeping room doors of impaired or partially impaired residents or on any door which provides access to an exitway.

429.4 Special inspection/fire drill: Prior to occupancy of the group dwelling unit the Licensing Agency shall conduct a fire drill to test the capability of residents to exit according to their residency classification. At least once every 90 days, the Operating Agency shall also conduct a fire drill to test the capability of residents to exit according to their residency classification. Drills shall be held at unexpected times under varying conditions to simulate the unpredictable nature of fire emergencies. The building official may, at his option, participate in or witness the fire drill, or may accept an affidavit from the Operating Agency attesting to the performance of each resident or prospective resident. The affidavit shall also specify the date, time and conditions of the drill, and shall list all participants and witnesses.

429.4.1 Conduct of the Fire Drill: During the conduct of the drill, one exit shall be blocked to simulate a hazardous condition and the alarm system shall be activated. Successful performance for each resident shall be defined as his/her ability to exit the building, or where horizontal exits are provided to reach an area of refuge within 2½ minutes of the activation of the fire alarm system. Only those staff members who are normally on duty shall be allowed to assist residents, and the only assistance permitted shall be that which is provided by the staff of the Group Dwelling Unit consistent with the classification of each individual resident.

could be expected of ordinary household furnishings shall be permitted within a Group Dwelling Unit.