

780 CMR 4.00

SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY

780 CMR 401.0 SCOPE

401.1 Detailed Use and Occupancy Requirements. *In addition to the occupancy and construction requirements in 780 CMR, the provisions of 780 CMR 4.00 apply to the special uses and occupancies described in 780 CMR and where requirements of 780 CMR 4.00 and general requirements of 780 CMR exist, the specific requirements of 780 CMR 4.00, as applicable, shall apply.*

Applicable Massachusetts General Law and Requirements of the Specialized Codes. Applicable Massachusetts General Laws, and applicable rules and regulations of the Specialized Codes (see 780 CMR 101.2) shall be adhered to in the design and construction of building and structures subject to the provisions of 780 CMR 4.00 – note that rules and regulations of the Specialized Codes are not enforced by Building officials (Building Officials do, however, enforce requirements of 521 CMR).

The ICC International Fire Code (IFC), the ICC International Mechanical Code (IMC) and the Specific Specialized Code - The Board of Fire Prevention Regulations (527 CMR). 780 CMR contains design and construction requirements for all USE Group buildings and their building permissible systems and also references additional applicable design and construction requirements of the IFC and the IMC for the various USE Groups and industrial processes within such USE Groups, including H-USES. It is the intention in referencing the IFC and the IMC that only the IFC and IMC requirements narrow to Building Code matters; i.e., USE Group classification, general building limitations of height and area, fire resistant materials and construction, interior finishes, required fire protection systems (otherwise not specifically regulated by 527 CMR), means of egress, interior environment, energy conservation, exterior wall coverings, roof and roof coverings, structural loads, structural tests and inspections, foundations and retaining walls, construction materials, glass and glazing, plastics, mechanical systems, special construction, site work, demolition and construction in the public right-of-way, building permissible work in existing buildings and control of manufactured buildings and manufactured components, etc., as historically addressed in the Massachusetts State Building Code are intended regulated by 780 CMR.

Exception: The design and construction requirements of bunkers and magazines for the storage of explosive materials, flammable/combustible liquids and chemical process safety, shall default to the specific requirements of

527 CMR and are not enforceable by Building Officials but rather by the Head of the Fire Department or his/her designee.

Note that the IFC and the IMC are not only building and building permissible systems design and construction documents but also include fire prevention requirements and the fire prevention requirements of the IFC and IMC are not requirements regulated by 780 CMR nor enforceable by Building Officials. For fire prevention requirements do not refer to the IFC or IMC but rather to The Massachusetts Board of Fire Prevention Regulations (527 CMR). If there is conflict between 780 CMR and 527 CMR, the more stringent standard shall apply.

401.3 The ICC International Fire Code (IFC), the ICC International Mechanical Code (IMC) and the Family of Massachusetts Specialized Codes (refer to 780 CMR 101.5). *780 CMR contains design and construction requirements for all USE Group buildings and their building permissible systems and also references additional applicable design and construction requirements of the IFC and the IMC for the various USE Groups and industrial processes within such USE Groups, including H-USES. It is the intention in referencing the IFC and the IMC that only the IFC and IMC requirements narrow to Building Code matters (see 780 CMR 301.1.1 are regulated by 780 CMR. Where the IFC and IMC reference requirements related to: architectural access; environmental protection; electrical; elevator; fire prevention (otherwise not specifically regulated by 527 CMR); gas; or sanitary code requirements, such requirements are not regulated by 780 CMR nor enforceable by Building Officials (Building Officials do enforce architectural access requirements set forth in 521 CMR). For Specialized Code requirements do not refer to the IFC or IMC but rather to the appropriate Specialized Code requirements of Massachusetts (refer to 780 CMR 101.5).*

780 CMR 402.0 COVERED MALL BUILDINGS

402.1 Scope. *The provisions of 780 CMR 402.0 shall apply to buildings or structures defined in 780 CMR 402.2 as covered mall buildings not exceeding three floor levels at any point nor more than three stories above grade. Except as specifically required by 780 CMR 402.0, covered mall buildings shall meet applicable provisions of 780 CMR.*

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Exceptions:

1. Foyers and lobbies of Groups B, R-1 and R-2 are not required to comply with 780 CMR 402.0.
2. Buildings need not comply with the provisions of 780 CMR 402.0 where they totally comply with other applicable provisions of 780 CMR.

402.2 Definitions. The following words and terms shall, for the purposes of 780 CMR 4.00 and as used elsewhere in 780 CMR, have the meanings shown 780 CMR 402.2.

ANCHOR BUILDING. An exterior perimeter building of a group other than H having direct access to a covered mall building but having required means of egress independent of the mall.

COVERED MALL BUILDING. A single building enclosing a number of tenants and occupants such as retail stores, drinking and dining establishments, entertainment and amusement facilities, passenger transportation terminals, offices, and other similar uses wherein two or more tenants have a main entrance into one or more malls. For the purpose of 780 CMR 4.00, anchor buildings shall not be considered as a part of the covered mall building.

FOOD COURT. A public seating area located in the mall that serves adjacent food preparation tenant spaces.

GROSS LEASABLE AREA. The total floor area designed for tenant occupancy and exclusive use. The area of tenant occupancy is measured from the centerlines of joint partitions to the outside of the tenant walls. All tenant areas, including areas used for storage, shall be included in calculating gross leasable area.

MALL. A roofed or covered common pedestrian area within a covered mall building that serves as access for two or more tenants and not to exceed three levels that are open to each other.

402.3 Lease Plan. Each covered mall building owner shall provide both the building and fire departments with a lease plan showing the location of each occupancy and its exits after the certificate of occupancy has been issued. No modifications or changes in occupancy or use shall be made from that shown on the lease plan without prior approval of the building official.

402.4 Means of Egress. Each tenant space and the covered mall building shall be provided with means of egress as required by 780 CMR 402.0 and 780 CMR. Where there is a conflict between the requirements of 780 CMR and the requirements of 780 CMR 402.0, the requirements of 780 CMR 402.0 shall apply.

402.4.1 Determination of Occupant Load. The occupant load permitted in any individual tenant space in a covered mall building shall be determined as required by 780 CMR. Means of

egress requirements for individual tenant spaces shall be based on the occupant load thus determined.

402.4.1.1 Occupant Formula. In determining required means of egress of the mall, the number of occupants for whom means of egress are to be provided shall be based on gross leasable area of the covered mall building (excluding anchor buildings) and the occupant load factor as determined by the following equation.

Equation 4-1

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

where:

OLF = The occupant load factor (square feet per person).

GLA = The gross leasable area (square feet).

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

402.4.1.3 Anchor Buildings. The occupant load of anchor buildings opening into the mall shall not be included in computing the total number of occupants for the mall.

402.4.1.4 Food Courts. The occupant load of a food court shall be determined in accordance with 780 CMR 1004.0. For the purposes of determining the means of egress requirements for the mall, the food court occupant load shall be added to the occupant load of the covered mall building as calculated above.

402.4.2 Number of Means of Egress. Wherever the distance of travel to the mall from any location within a tenant space used by persons other than employees exceeds 75 feet (22 860 mm) or the tenant space exceeds an occupant load of 50, not less than two means of egress shall be provided.

402.4.3 Arrangements of Means of Egress. Assembly occupancies with an occupant load of 500 or more shall be so located in the covered mall building that their entrance will be immediately adjacent to a principal entrance to the mall and shall have not less than one-half of their required means of egress opening directly to the exterior of the covered mall building.

402.4.3.1 Anchor Building Means of Egress. Required means of egress for anchor buildings shall be provided independently from the mall means of egress system. The occupant load of anchor buildings opening into the mall shall not be included in determining means of egress requirements for the mall. The path of egress travel of malls shall not exit through anchor buildings. Malls terminating at an anchor building where no other means of egress has been provided shall be considered as a dead-end mall.

402.4.4 Distance to Exits. Within each individual tenant space in a covered mall building, the maximum distance of travel from any point to an exit or entrance to the mall shall not exceed 200 feet (60 960 mm).

The maximum distance of travel from any point within a mall to an exit shall not exceed 200 feet (60 960 mm).

402.4.5 Access to Exits. Where more than one exit is required, they shall be so arranged that it is possible to travel in either direction from any point in a mall to separate exits. The minimum width of an exit passageway or corridor from a mall shall be 66 inches (1676 mm).

Exception: Dead ends not exceeding a length equal to twice the width of the mall measured at the narrowest location within the dead-end portion of the mall.

402.4.5.1 Exit Passageway Enclosures. Where exit passageway enclosures provide a secondary means of egress from a tenant space, doors to the exit passageway enclosures shall be one-hour fire doors. Such doors shall be self-closing and be so maintained or shall be automatic-closing by smoke detection.

402.4.6 Service Areas Fronting on Exit Passageways. Mechanical rooms, electrical rooms, building service areas and service elevators are permitted to open directly into exit passageways provided that the exit passageway is separated from such rooms with one-hour fire-resistance-rated walls and one-hour opening protectives.

402.5 Mall Width. For the purpose of providing required egress, malls are permitted to be considered as corridors but need not comply with the requirements of 780 CMR 1005.1 where the width of the mall is as specified in 780 CMR 402.0.

402.5.1 Minimum Width. The minimum width of the mall shall be 20 feet (6096 mm). The mall width shall be sufficient to accommodate the occupant load served. 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, food court or other obstruction to means of egress travel.

402.6 Types of Construction. The area of any covered mall building, including anchor buildings, of Type I, II, III and IV construction, shall not be limited provided the covered mall building and attached anchor buildings and parking garages are surrounded on all sides by a permanent open space of not less than 60 feet (18 288 mm) and the anchor buildings do not exceed three stories in height. The allowable height and area of anchor buildings greater than three stories in height shall comply with

780 CMR 503.0, as modified by 780 CMR 504.0 and 506.0. The construction type of open parking garages and enclosed parking garages shall comply with 780 CMR 406.3 and 406.4, respectively.

402.7 Fire-resistance-rated Separation. Fire-resistance-rated separation is not required between tenant spaces and the mall. Fire-resistance-rated separation is not required between a food court and adjacent tenant spaces or the mall.

402.7.1 Attached Garage. An attached garage for the storage of passenger vehicles having a capacity of not more than nine persons and open parking garages shall be considered as a separate building where it is separated from the covered mall building by a fire barrier having a fire-resistance rating of at least two hours.

Exception: Where an open parking garage or enclosed parking garage is separated from the covered mall building or anchor building a distance greater than ten feet (3048 mm), the provisions of Table 602 shall apply. Pedestrian walkways and tunnels which attach the open parking garage or enclosed parking garage to the covered mall building or anchor building shall be constructed in accordance with 780 CMR 3104.0.

402.7.2 Tenant Separations. Each tenant space shall be separated from other tenant spaces by a fire partition complying with 780 CMR 708.0. A tenant separation wall is not required between any tenant space and the mall.

402.7.3 Anchor Building Separation. An anchor building shall be separated from the covered mall building by fire walls complying with 780 CMR 706.0.

Exception: Anchor buildings of not more than three stories above grade which have an occupancy classification of the same uses permitted as tenants of the covered mall building shall be separated by two-hour fire resistive fire-barriers complying with 780 CMR 705.0.

402.7.3.1 Openings Between Anchor Building and Mall. Except for the separation between Group R-1 sleeping units and the mall, openings between anchor buildings of Type IA, IB, IIA and IIB construction and the mall need not be protected.

[F] 402.8 Automatic Sprinkler System. The covered mall building and buildings connected shall be provided throughout with an automatic sprinkler system in accordance with 780 CMR 903.3.1.1, which shall comply with the following:

1. The automatic sprinkler system shall be complete and operative throughout occupied space in the covered mall building prior to occupancy of any of the tenant spaces. Unoccupied tenant

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spaces shall be similarly protected unless provided with approved alternate protection.

2. Sprinkler protection for the mall shall be independent from that provided for tenant spaces or anchors. Where tenant spaces are supplied by the same system, they shall be independently controlled.

Exception: An automatic sprinkler system shall not be required in spaces or areas of open parking garages constructed in accordance with 780 CMR 406.2.

402.8.1 Standpipe System. The covered mall building shall be equipped throughout with a standpipe system as required by 780 CMR 905.3.3.

402.9 Smoke Control. A smoke control system shall be provided where required for atriums in 780 CMR 404.

402.10 Kiosks. Kiosks and similar structures (temporary or permanent) shall meet the following requirements:

1. Combustible kiosks or other structures shall not be located within the mall unless constructed of any of the following materials:
 - 1.1. Fire-retardant-treated wood complying with 780 CMR 2303.10.
 - 1.2. Foam plastics having a maximum heat release rate not greater than 100kW (105 Btu/h) when tested in accordance with the exhibit booth protocol in UL 1975.
 - 1.3. Aluminum composite material (ACM) having a flame spread index of not more than 25 and a smoke-developed index of not more than 450 when tested as an assembly in the maximum thickness intended for use in accordance with ASTM E 84.
2. Kiosks or similar structures located within the mall shall be provided with approved fire suppression and detection devices.
3. The minimum horizontal separation between kiosks or groupings thereof and other structures within the mall shall be 20 feet (6096 mm).
4. Each kiosk or similar structure or groupings thereof shall have a maximum area of 300 square feet (28 m²).
5. A permit is required from the Head of the Fire Department

402.11 Security Grilles and Doors. Horizontal sliding or vertical security grilles or doors that are a part of a required means of egress shall conform to the following:

1. They shall remain in the full open position during the period of occupancy by the general public.
2. Doors or grilles shall not be brought to the closed position when there are more than 10 persons occupying spaces served by a single exit or 50 persons occupying spaces served by more

than one exit.

3. The doors or grilles shall be openable from within without the use of any special knowledge or effort where the space is occupied.

4. Where two or more exits are required, not more than one-half of the exits shall be permitted to include either a horizontal sliding or vertical rolling grille or doors.

402.12 Standby Power. Covered mall buildings exceeding 50,000 square feet (4645 m²) shall be provided with standby power systems that are capable of operating the emergency voice/alarm communication system. See 527 CMR 12.00 for additional requirements.

[F] 402.13 Emergency Voice/Alarm Communication System. Covered mall buildings exceeding 50,000 square feet (4645 m²) in total floor area shall be provided with an emergency voice/alarm communication system. Emergency voice/alarm communication systems serving a mall, required or otherwise, shall be accessible to the fire department. The system shall be provided in accordance with 780 CMR 907.2.12.2.

402.14 Plastic Signs. Within every store or level and from sidewall to sidewall of each tenant space facing the mall, plastic signs shall be limited as specified in 780 CMR 402.14.1 through 402.14.5.

402.14.1 Area. Plastic signs shall not exceed 20% of the wall area facing the mall.

402.14.2 Height and Width. Plastic signs shall not exceed a height of 36 inches (914 mm), except if the 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. Plastic signs shall be located a minimum distance of 18 inches (457 mm) from adjacent tenants.

402.14.4 Plastics Other than Foam Plastics. Plastics other than foam plastics used in signs shall be light-transmitting plastics complying with 780 CMR 2606.4 or shall have a self-ignition temperature of 650°F (343°C) or greater when tested in accordance with ASTM D 1929, and a flame spread index not greater than 75 and smoke-developed index not greater than 450 when tested in the manner intended for use in accordance with ASTM E 84 or meet the acceptance criteria of 780 CMR 803.2.1 when tested in accordance with NFPA 286.

402.14.4.1 Encasement. Edges and backs of plastic signs in the mall shall be fully encased in metal.

402.14.5 Foam Plastics. Foam plastics used in signs shall have flame-retardant characteristics such that the sign has a maximum heat-release rate of 150 kilowatts when tested in accordance with UL 1975 and the foam plastics shall have the

physical characteristics specified in 780 CMR 402.0. Foam plastics used in signs installed in accordance with 780 CMR 402.14 shall not be required to comply with the flame spread and smoke-developed indexes specified in 780 CMR 2603.3.

402.14.5.1 Density. The minimum density of foam plastics used in signs shall not be less than 20 pounds per cubic foot (pcf) (320 kg/M³).

402.14.5.2 Thickness. The thickness of foam plastic signs shall not be greater than ½-inch (12.7 mm).

402.15 Fire Department Access to Equipment.

Rooms or areas containing controls for air-conditioning systems, automatic fire-extinguishing systems or other detection, suppression or control elements shall be identified for use by the fire department.

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 (note that the requirement for automatic sprinklers, in accordance with the requirements of the 780 CMR, in high rise buildings – buildings and structures of more than 70 feet in height - is dictated by M.G.L. c. 148, § 26A).*

Exception: The provisions of 780 CMR 403.0 shall not apply to the following buildings and structures:

1. Airport traffic control towers in accordance with 780 CMR 412.0.
2. Open parking garages in accordance with 780 CMR 406.3.
3. Buildings with an occupancy in Group A-5 in accordance with 780 CMR 303.1.
4. Low-hazard special industrial occupancies in accordance with 780 CMR 503.1.2.
5. Buildings with an occupancy in Group H-1, H-2 or H-3 in accordance with 780 CMR 415.

[F] 403.2 Automatic Sprinkler System. Buildings and structures shall be equipped throughout with an automatic sprinkler system in accordance with 780 CMR 903.3.1.1 and a secondary water supply where required by 780 CMR 903.3.5.2.

403.3 Reduction in Fire-resistance Rating. The fire-resistance-rating reductions listed in 780 CMR 403.3.1 and 403.3.2 shall be allowed in buildings that have sprinkler control valves equipped with supervisory initiating devices and water-flow initiating devices for each floor.

403.3.1 Type of Construction. The following reductions in the minimum construction type allowed in Table 601 shall be allowed as provided in 780 CMR 403.3:

1. Type IA construction shall be allowed to be

reduced to Type IB.

2. In other than Groups F-1, M and S-1, Type IB construction shall be allowed to be reduced to Type IIA.

3. The height and area limitations of the reduced construction type shall be allowed to be the same as for the original construction type.

403.3.2 Shaft Enclosures. The required fire-resistance rating of the fire barrier walls enclosing vertical shafts, other than exit 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 Emergency Escape and Rescue. Emergency escape and rescue openings required by 780 CMR 1025.0 are not required.

[F] 403.5 Automatic Fire Detection. Smoke detection shall be provided in accordance with 780 CMR 907.2.12.1.

[F] 403.6 Emergency Voice/Alarm Communication Systems. An emergency voice/alarm communication system shall be provided in accordance with 780 CMR 907.2.12.2.

[F] 403.7 Fire Department Communications System. A two-way fire department communications system shall be provided for fire department use in accordance with 780 CMR 907.2.12.3.

[F] 403.8 Fire Command. A fire command center complying with 780 CMR 911.0 shall be provided in a location approved by the fire department.

403.9 Elevators. *Elevator operation and installation shall be in accordance with 524 CMR. Elevator service shall be provided 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 fire resistance rated construction in accordance with 780 CMR 707.14.*

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

403.10 Standby Power. *A standby power system complying with 527 CMR 12.00: The Massachusetts Electrical Code, NFPA 110 and NFPA 111, as applicable, shall be provided for standby power loads specified in 780 CMR 403.10.2.*

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403.10.1 Special Requirements for Standby Power Systems. If the standby system is a generator set inside a building, the system shall be located in a separate room enclosed with two-hour fire-resistance-rated fire barrier assemblies. System supervision with manual start and transfer features shall be provided at the fire command center. *See* 527 CMR 12.00 for additional requirements.

403.10.2 Standby Power Loads. The following are classified as standby power loads:

1. Power and lighting for the fire command center required by 780 CMR 403.8;
2. Electrically powered fire pumps;
3. Ventilation and automatic fire detection equipment for smokeproof enclosures.

Standby power shall be provided for elevators when required by the State Elevator Code (524 CMR).

403.11 Emergency Power Systems. *An emergency power system complying with 527 CMR 12.00: The Massachusetts Electrical Code, NFPA 110 and NFPA 111, as applicable, shall be provided for emergency power loads specified in 780 CMR 403.11.1.*

403.11.1 Emergency Power Loads. *The following are classified as emergency power loads:*

1. *Exit signs and means of egress illumination required by 780 CMR 10.00;*
2. *Elevator car lighting (see 524 CMR);*
3. Emergency voice/alarm communications systems;
4. Automatic fire detection systems; and
5. Fire alarm systems.

403.12 Stairway Door Operation. Stairway doors other than the exit discharge doors shall be permitted to be locked from stairway side. Stairway doors that are locked from the stairway side shall be capable of being unlocked simultaneously without unlatching upon a signal from the fire command center.

403.12.1 Stairway Communications System. A telephone or other two-way communications 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.

403.13 Smokeproof Exit Enclosures. Every required stairway serving floors more than 70 feet (22 860 mm) in height shall comply as follows: A smokeproof enclosure, as set forth in 780 CMR 909.20 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.

403.14 Seismic Considerations. For seismic considerations, *see* 780 CMR 16.00.

780 CMR 404.0 ATRIUMS

404.1 General. Vertical openings meeting the requirements of 780 CMR 404.0 are not required to be enclosed in other than Group H occupancies.

404.1.1 Definition. The following word and term shall, for the purposes of 780 CMR 4.00 and as used elsewhere in 780 CMR, have the meaning shown in 780 CMR 404.1.1.

ATRIUM. An opening connecting two or more stories other than enclosed stairways, elevators, hoistways, escalators, plumbing, electrical, air-conditioning or other equipment, which is closed at the top and not defined as a mall. Stories, as used in this definition, do not include balconies within assembly groups or mezzanines that comply with 780 CMR 505.0.

404.2 Use. *The floor of the atrium shall not be used for other than low fire hazard uses and only approved materials and decorations in accordance with the Board of Fire Prevention Regulations Fire Prevention Regulations (527 CMR) are allowed.*

Exception: The atrium floor area is permitted to be used for any approved use where the individual space is provided with an automatic sprinkler system in accordance with 780 CMR 903.3.1.1.

[F] 404.3 Automatic Sprinkler Protection. An approved automatic sprinkler system shall be installed throughout the entire building.

Exceptions:

1. That area of a building adjacent to or above the atrium need not be sprinklered provided that portion of the building is separated from the atrium portion by a two-hour fire-resistance-rated fire barrier wall or horizontal assembly or both.
2. Where the ceiling of the atrium is more than 55 feet (16 764 mm) above the floor, sprinkler protection at the ceiling of the atrium is not required.

404.4 Smoke Control. A smoke control system shall be installed in accordance with 780 CMR 909.0.

Exceptions:

1. Smoke control is not required for floor openings meeting the requirements of 780 CMR 707.2, Exception 2., 7., 8. or 9.
2. Smoke control is not required for floor openings meeting the requirements of 780 CMR 1019.1, Exception 8. or 9.

404.5 Enclosure of Atriums. Atrium spaces shall be separated from adjacent spaces by a one-hour fire barrier wall.

Exceptions:

1. A glass wall forming a smoke partition where automatic sprinklers are spaced six feet (1829 mm) or less along both sides of the separation wall, or on the room side only if there is not a walkway on the atrium side, and between four inches and 12 inches (102 mm and 305 mm) away from the glass and so designed that the entire surface of the glass is wet upon activation of the sprinkler system. The glass shall be installed in a gasketed frame so that the framing system deflects without breaking (loading) the glass before the sprinkler system operates.
2. A glass-block wall assembly in accordance with 780 CMR 21.00 (ACI 530) and having a ¾-hour fire protection rating.
3. The adjacent spaces of any three floors of the atrium shall not be required to be separated from the atrium where such spaces are included in computing the atrium volume for the design of the smoke control system.

404.6 Standby Power. *Equipment required to provide smoke control shall be connected to a standby power system in accordance with 780 CMR 909.11, NFPA 110 and/or NFPA 111 and installed in accordance with 527 CMR 12.00: The Massachusetts Electrical Code.*

404.7 Interior Finish. The interior finish of walls and ceilings of the atrium shall not be less than Class B with no reduction in class for sprinkler protection.

404.8 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 200 feet (60 960 mm).

780 CMR 405.0 UNDERGROUND BUILDINGS

405.1 General. The provisions of 782 CMR 405.0 apply to building spaces having a floor level used for human occupancy more than 30 feet (9144 mm) below the lowest level of exit discharge.

Exceptions:

1. One- and two-family dwellings, sprinklered in accordance with 780 CMR 903.3.1.3.
2. Parking garages with automatic fire suppression systems in compliance with 780 CMR 405.3.
3. Fixed guideway transit systems.
4. Grandstands, bleachers, stadiums, arenas and similar facilities.
5. Where the lowest story is the only story that would qualify the building as an underground building and has an area not exceeding 1,500 square feet (139 m²) and has an occupant load less than ten.

405.2 Construction Requirements. The underground portion of the building shall be of Type I construction.

[F] 405.3 Automatic Sprinkler System. The highest level of exit discharge serving the underground portions of the building and all levels below shall be equipped with an automatic sprinkler system installed in accordance with 780 CMR 903.3.1.1. Water-flow switches and control valves shall be supervised in accordance with 780 CMR 903.4.

405.4 Compartmentation. Compartmentation shall be in accordance with 780 CMR 405.4.1 through 405.4.3.

405.4.1 Number of Compartments. A building having a floor level more than 60 feet (18 288 mm) below the lowest level of exit discharge shall be divided into a minimum of two compartments of approximately equal size. Such compartmentation shall extend through the highest level of exit discharge serving the underground portions of the building and all levels below.

Exception: The lowest story need not be compartmented where the area does not exceed 1,500 square feet (139 m²) and has an occupant load of less than ten.

405.4.2 Smoke Barrier Penetration. The separation between the two compartments shall be of minimum one-hour fire barrier wall construction that shall extend from floor slab to floor deck above. Openings between the two compartments shall be limited to plumbing and electrical piping and conduit penetrations firestopped in accordance with 780 CMR 712.0. Doorways shall be protected by fire door assemblies that are automatic-closing by smoke detection in accordance with 780 CMR 715.0 as applicable and shall be provided with gasketing and a drop sill to minimize smoke leakage. Where provided, each compartment shall have an air supply and an exhaust system independent of the other compartments.

405.4.3 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 each compartment by a one-hour fire barrier wall. Doors shall be gasketed, have a drop sill, and be automatic-closing by smoke detection installed in accordance with 780 CMR 907.10.

405.5 Smoke Control System. A smoke control system shall be provided in accordance with 780 CMR 405.5.1 and 405.5.2.

405.5.1 Control System. A smoke control system is required to control the migration of products of combustion in accordance with 780 CMR 909.0 and the provisions of 780 CMR 405.0. Smoke control shall restrict movement of

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smoke to the general area of fire origin and maintain means of egress in a usable condition.

405.5.2 Smoke Exhaust System. Where compartmentation is required, each compartment shall have an independent smoke control system. The system shall be automatically activated and capable of manual operation in accordance with 780 CMR 907.2.18.

[F] 405.6 Fire Alarm Systems. A fire alarm system shall be provided where required by 780 CMR 907.2.19.

[F] 405.7 Public Address. A public address system shall be provided where required by 780 CMR 907.2.19.1.

405.8 Means of Egress. Means of egress shall be in accordance with 780 CMR 405.8.1 and 405.8.2.

405.8.1 Number of Exits. Each floor level shall be provided with a minimum of two exits. Where compartmentation is required by 780 CMR 405.4, each compartment shall have a minimum of one exit and shall also have an exit access doorway into the adjoining compartment.

405.8.2 Smokeproof Enclosure. Every required stairway serving floor levels more than 30 feet (9144 mm) below its level of exit discharge shall comply with the requirements for a smokeproof enclosure as provided in 780 CMR 1019.1.8.

[F] 405.9 Standby Power. *A standby power system complying with NFPA-110 and/or NFPA 111 and installed in accordance with 527 CMR 12.00: The Massachusetts Electrical Code, shall provide standby power loads for that equipment specified in 780 CMR 405.9.1.*

405.9.1 Standby Power Loads. *The following loads are classified as standby power loads.*

1. *Smoke control system.*
2. *Ventilation and automatic fire detection equipment for smokeproof enclosures.*
3. *Fire pumps.*

Standby power shall be provided for elevators when required by the Massachusetts Elevator Code (524 CMR).

405.9.2 Pick-up Time. *The standby power system shall pick up its connected loads within 60 seconds of failure of the normal power supply and electrical connection shall be in accordance with NFPA-110, NFPA-111 and 527 CMR 12.00.*

[F] 405.10 Emergency Power. *An emergency power system complying with NFPA-110 or NFPA-111, as applicable and electrically connected in accordance with 527 CMR 12.00 shall be provided for emergency power loads specified in 780 CMR 405.10.1.*

405.10.1 Emergency Power Loads. The following loads are classified as emergency power loads:

1. Emergency voice/alarm communications systems.
2. Fire alarm systems.
3. Automatic fire detection systems.
4. ***Elevator car lighting (see 524 CMR).***
5. Means of egress and exit sign illumination as required by 780 CMR 10.00.

405.11 Standpipe System. The underground building shall be provided throughout with a standpipe system in accordance with 780 CMR 905.0.

780 CMR 406.0 MOTOR-VEHICLE-RELATED OCCUPANCIES

406.1 Private Garages and Carports.

406.1.1 Classification. Buildings or parts of buildings classified as Group U occupancies because of the use or character of the occupancy shall not exceed 1,000 square feet (93 m²) in area or one story in height except as provided in 780 CMR 406.1.2. Any building or portion thereof that exceeds the limitations specified in 780 CMR 406.0 shall be classified in the occupancy group other than Group U that it most nearly resembles.

406.1.2 Area Increase. Group U occupancies used for the storage of private or pleasure-type motor vehicles where no repair work is done or fuel dispensed are permitted to be 3,000 square feet (279 m²), when the following provisions are met:

1. For a mixed occupancy building, the exterior wall and opening protection for the Group U portion of the building shall be as required for the major occupancy of the building. For such mixed occupancy building, the allowable floor area of the building shall be as permitted for the major occupancy contained therein.
2. For a building containing only a Group U occupancy, the exterior wall and opening protection shall be as required for a Group R-1 or R-2 occupancy.

More than one 3,000-square-foot (279 m²) Group U occupancy shall be permitted to be in the same building, provided each 3,000-square-foot (279 m²) area is separated by fire walls complying with 780 CMR 705.0.

406.1.3 Garages and Carports. Carports shall be open on at least two sides. Carport floor surfaces shall be of approved noncombustible material. Carports not open on at least two sides shall be considered a garage and shall comply with the provisions of 780 CMR 406.0 for garages.

Exception. Asphalt surfaces shall be permitted at ground level in carports.

The area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway.

406.1.4 Separation. Separations shall comply with the following:

1. The private garage shall be separated from the dwelling unit and its attic area by means of a minimum ½-inch (12.7 mm) gypsum board applied to the garage side. Garages beneath habitable rooms shall be separated from all habitable rooms above by not less than ⅝-inch Type X gypsum board or equivalent. Door openings between a private garage and the dwelling unit shall be equipped with either solid wood doors, or solid or honeycomb core steel doors not less than 1⅜ inches (34.9 mm) thick, or doors in compliance with 780 CMR 715.3.3. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted.
2. Ducts in a private garage and ducts penetrating the walls or ceilings separating the dwelling unit from the garage shall be constructed of a minimum 0.019-inch (0.48 mm) sheet steel and shall have no openings into the garage.
3. A separation is not required between a Group R-3 and U carport provided the carport is entirely open on two or more sides and there are not enclosed areas above.

406.2 Parking Garages.

406.2.1 Classification. Parking garages shall be classified as either open, as defined in 780 CMR 406.3, or enclosed and shall meet the appropriate criteria in 780 CMR 406.4. Also see 780 CMR 508.0 for special provisions for parking garages.

406.2.2 Clear Height. *The clear height of each floor level in vehicle and pedestrian traffic areas shall not be less than seven feet (2134 mm). Vehicle and pedestrian areas accommodating van-accessible parking required by 780 CMR 11.00 shall conform to 521 CMR, as applicable.*

406.2.3 Guards. Guards shall be provided in accordance with 780 CMR 1012 at exterior and interior vertical openings on floor and roof areas where vehicles are parked or moved and where the vertical distance to the ground or surface directly below exceeds 30 inches (762 mm).

406.2.4 Vehicle Barriers. Parking areas shall be provided with exterior or interior walls or vehicle barriers, except at pedestrian or vehicular accesses, designed in accordance with 780 CMR 1607.7. Vehicle barriers not less than two feet (607 mm) high shall be placed at the ends of drive lanes, at the end of parking spaces where the difference in adjacent floor elevation is greater than one foot (305 mm).

406.2.5 Ramps. Vehicle ramps shall not serve as an exit element.

406.2.6 Floor Surface. Parking surfaces shall be of concrete or similar noncombustible and nonabsorbent materials.

Exception. Asphalt parking surfaces are permitted at ground level.

The area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway.

406.2.7 Mixed Separation. Parking garages shall be separated from other occupancies in accordance with 780 CMR 302.3.2.

406.2.8 Special Hazards. Connection of a parking garage with any room in which there is a fuel-fired appliance shall be by means of a vestibule providing a two-doorway separation.

Exception: A single door shall be allowed provided the sources of ignition in the appliance are at least 18 inches (457 mm) above the floor.

406.2.9 Attached to Rooms. Openings from a parking garage directly into a room used for sleeping purposes shall not be permitted.

406.3 Open Parking Garages.

406.3.1 Scope. Except where specific provisions are made in 780 CMR 406.3.2 through 406.3.13, other requirements of 780 CMR shall apply.

406.3.2 Definitions. The following words and terms shall, for the purposes of 780 CMR 4.00 and as used elsewhere in 780 CMR, have the meanings shown 780 CMR 406.3.2.

MECHANICAL-ACCESS OPEN PARKING GARAGES. Open parking garages employing parking machines, lifts, elevators or other mechanical devices for vehicles moving from and to street level and in which public occupancy is prohibited above the street level.

OPEN PARKING GARAGE. A structure or portion of a structure with the openings as described in 780 CMR 406.3.3.1 on two or more sides that is used for the parking or storage of private motor vehicles as described in 780 CMR 406.3.4.

RAMP-ACCESS OPEN PARKING GARAGES. Open parking garages employing a series of continuously rising floors or a series of interconnecting ramps between floors permitting the movement of vehicles under their own power from and to the street level.

406.3.3 Construction. Open parking garages shall be of Type I, II or IV construction. Open parking garages shall meet the design requirements of 780 CMR 16.00. For vehicle barriers, *see* 780 CMR 406.2.4.

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406.3.3.1 Openings. For natural ventilation purposes, the exterior side of the structure shall have uniformly distributed openings on two or more sides. The area of such openings in exterior walls on a tier must be at least 20% of the total perimeter wall area of each tier. The aggregate length of the openings considered to be providing natural ventilation shall constitute a minimum of 40% of the perimeter of the tier. Interior walls shall be at least 20% open with uniformly distributed openings.

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.

406.3.4 Uses. Mixed uses shall be allowed in the same building as an open parking garage subject to the provisions of 780 CMR 302.3, 402.7.1, 406.3.13, 508.3.2, 508.3, 508.4 and 508.7.

406.3.5 Area and Height. Area and height of open parking garages shall be limited as set forth in 780 CMR 5.00 for Group S-2 occupancies and as further provided for in 780 CMR 302.3.

406.3.5.1 Single Use. When the open parking garage is used exclusively for the parking or storage of private motor vehicles, with no other uses in the building, the area and height shall be permitted to comply with Table 406.3.5, along with increases allowed by 780 CMR 406.3.6.

Exception. The grade-level tier is permitted to contain an office, waiting and toilet rooms having a total combined area of not more than 1,000 square feet (93 m²). Such area need not be separated from the open parking garage.

In open parking garages having a spiral or sloping floor, the horizontal projection of the structure at any cross section shall not exceed the allowable area per parking tier. In the case of an open parking garage having a continuous spiral floor, each nine feet six inches (2896 mm) of height, or portion thereof, shall be considered a tier.

The clear height of a parking tier shall not be less than seven feet (2134 mm), except that a lower clear height is permitted in mechanical-access open parking garages where approved by the building official.

TABLE 406.3.5 OPEN PARKING GARAGES AREA AND HEIGHT

TYPE OF CONSTRUCTION	AREA PER TIER (square feet)	HEIGHT (in tiers)		
		Ramp access	Mechanical access	
			Automatic sprinkler system	
			No	Yes
IA	Unlimited	Unlimited	Unlimited	Unlimited
IB	Unlimited	12 tiers	12 tiers	18 tiers
IIA	50,000	10 tiers	10 tiers	15 tiers
IIB	50,000	8 tiers	8 tiers	12 tiers
IV	50,000	4 tiers	4 tiers	4 tiers

For SI: 1 square foot = 0.0929 m²

406.3.6 Area and Height Increases. The allowable area and height of open parking garages shall be increased in accordance with the provisions of 780 CMR 406.0. Garages with sides open on three-fourths of the building perimeter are permitted to be increased by 25% in area and one tier in height. Garages with sides open around the entire building perimeter are permitted to be increased 50% in area and one tier in height. For a side to be considered open under the above provisions, the total area of openings along the side shall not be less than 50% of the interior area of the side at each tier, and such openings shall be equally distributed along the length of the tier.

Allowable tier areas in Table 406.3.5 shall be increased for open parking garages constructed to heights less than the table maximum. The gross tier area of the garage shall not exceed that permitted for the higher structure. At least three sides of each such larger tier shall have continuous horizontal openings not less than 30 inches (762 mm) in clear height extending for at least 80% of the length of the sides, and no part of such larger tier shall be more than 200 feet (60 960 mm) horizontally from such an opening. In addition, each such opening shall face a street or yard accessible to a street with a width of at least 30 feet (9144 mm) for the full length of the opening, and standpipes shall be provided in each such tier.

Open parking garages of Type IB and II construction, with all sides open, shall be unlimited in allowable area where the height does not exceed 75 feet (22 860 mm). For a side to be considered open, the total area of openings along the side shall not be less than 50% of the interior area of the side at each tier, and such openings shall be equally distributed along the length of the tier. All portions of tiers shall be within 200 feet (60 960 mm) horizontally from such openings.

406.3.7 Location on Property. Exterior walls and openings in exterior walls shall comply with Tables 601 and 602. The distance from an adjacent lot line shall be determined in accordance with Table 602 and 780 CMR 704.

406.3.8 Means of Egress. Where persons other than parking attendants are permitted, open parking garages shall meet the means of egress requirements of 780 CMR 10.00. Where no persons other than parking attendants are permitted, there shall not be less than two 36-inch-wide (914 mm) exit stairways. Lifts shall be permitted to be installed for use of employees only, provided they are completely enclosed by noncombustible materials.

406.3.9 Standpipes. Standpipes shall be installed where required by the provisions of 780 CMR 9.00.

406.3.10 Sprinkler Systems. Where required by

other provisions or 780 CMR, automatic sprinkler systems and standpipes shall be installed in accordance with the provisions of 780 CMR 9.00.

406.3.11 Enclosure of Vertical Openings. Enclosure shall not be required for vertical openings except as specified in 780 CMR 406.3.8.

406.3.12 Ventilation. Ventilation, other than the percentage of openings specified in 780 CMR 406.3.3.1, shall not be required.

406.3.13 Prohibitions. The following uses and alterations are not permitted:

1. Vehicle repair work.
2. Parking of buses, trucks and similar vehicles.
3. Partial or complete closing of required openings in exterior walls by tarpaulins or any other means.
4. Dispensing of fuel.

406.4 Enclosed Parking Garages.

406.4.1 Heights and Areas. Enclosed vehicle parking garages and portions thereof that do not meet the definition of open parking garages shall be limited to the allowable heights and areas specified in Table 503. Roof parking is permitted.

406.4.2 Ventilation. A mechanical ventilation system shall be provided in accordance with the *International Mechanical Code*.

406.5 Motor Fuel-dispensing Facilities. See 527 CMR for additional requirements.

406.5.1 Construction. Motor fuel-dispensing facilities shall be constructed in accordance with the *International Fire Code* and 780 CMR 406.0.

406.5.2 Canopies. Canopies under which fuels are dispensed shall have a clear, unobstructed height of not less than 13 feet six inches (4115 mm) to the lowest projecting element in the vehicle drive-through area. Canopies and their supports over pumps shall be of noncombustible materials, fire-retardant-treated wood complying with 780 CMR 23.00, wood of Type IV sizes or of construction providing one-hour fire resistance. Combustible materials used in or on a canopy shall comply with one of the following:

1. Shielded from the pumps by a noncombustible element of the canopy, or wood of Type IV sizes;
2. Plastics covered by aluminum facing having a minimum thickness of 0.010 inch (0.30 mm) or corrosion-resistant steel having a minimum base metal thickness of 0.016 inch (0.41 mm). The plastic shall have a flame spread index of 25 or less and a smoke-developed index of 450 or less when tested in the form intended for use in accordance with ASTM E 84 and a self-ignition temperature of 650°F (343°C) or greater when tested in accordance with ASTM D 1929; or

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3. Panels constructed of light-transmitting plastic materials shall be permitted to be installed in canopies erected over motor vehicle fuel-dispensing station fuel dispensers, provided the panels are located at least 10 feet (3048 mm) from any building on the same property and face yards or streets not less than 40 feet (12 192 mm) in width on the other sides. The aggregate areas of plastics shall not exceed 1,000 square feet (93 m²). The maximum area of any individual panel shall not exceed 100 square feet (9.3 m²).

406.6 Repair Garages.

406.6.1 General. Repair garages shall be constructed in accordance with the *International Fire Code* and 780 CMR 406.0 (Note that the Fire Prevention Regulations of Massachusetts at 527 CMR apply). This occupancy shall not include motor fuel-dispensing facilities, as regulated in 780 CMR 406.5.

406.6.2 Mixed Uses. Mixed uses shall be allowed in the same building as a repair garage subject to the provisions of 780 CMR 302.3.

406.6.3 Ventilation. Repair garages shall be mechanically ventilated in accordance with the *International Mechanical Code*. The ventilation system shall be controlled at the entrance to the garage.

406.6.4 Floor Surface. Repair garage floors shall be of concrete or similar noncombustible and nonabsorbent materials.

Exception. Slip-resistant, nonabsorbent, interior floor finishes having a critical radiant flux not more than 0.45 W/cm², as determined by NFPA 253, shall be permitted.

406.6.5 Heating Equipment. Heating equipment shall be installed in accordance with the *International Mechanical Code*.

[F] 406.6.6 Gas Detection System. Repair garages used for repair of vehicles fueled by nonodorized gases, such as hydrogen and nonodorized LNG, shall be provided with an approved flammable gas-detection system.

[F] 406.6.6.1 System Design. The flammable gas-detection system shall be calibrated to the types of fuels or gases used by vehicles to be repaired. The gas detection system shall be designed to activate when the level of flammable gas exceeds 25% of the lower explosive limit. Gas detection shall also be provided in lubrication or chassis repair pits of garages used for repairing nonodorized LNG-fueled vehicles.

[F] 406.6.6.2 Operation. Activation of the gas detection system shall result in all of the following:

1. Initiation of distinct audible and visual alarm signals in the repair garage.

2. Deactivation of all heating systems located in the repair garage.

3. Activation of the mechanical ventilation system, where the system is interlocked with gas detection.

[F] 406.6.6.3 Failure of the Gas Detection System. Failure of the gas detection system shall result in the deactivation of the heating system, activation of the mechanical ventilation system when the system is interlocked with the gas detection system and cause a trouble signal to sound in an approved location.

780 CMR 407.0 GROUP I-2

407.1 General. Occupancies in Group I-2 shall comply with the provisions of 780 CMR 407.0 and other applicable provisions of 780 CMR.

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.*

407.2 Corridors. Corridors in occupancies in Group I-2 shall be continuous to the exits and separated from other areas in accordance with 780 CMR 407.3 except spaces conforming to 780 CMR 407.2.1 through 407.2.4.

407.2.1 Spaces of Unlimited Area. Waiting areas and similar spaces constructed as required for corridors shall be permitted to be open to a corridor, only where all of the following criteria are met:

1. The spaces are not occupied for patient sleeping units, treatment rooms, hazardous or incidental use areas as defined in 780 CMR 302.1.1.
2. The open space is protected by an automatic fire detection system installed in accordance with 780 CMR 907.
3. The corridors onto which the spaces open, in the same smoke compartment, are protected by an automatic fire detection system installed in accordance with 780 CMR 907, or the smoke compartment in which the spaces are located is equipped throughout with quick-response sprinklers in accordance with 780 CMR 903.3.2.
4. The space is arranged so as not to obstruct access to the required exits.

407.2.2 Nurses' Stations. Spaces for doctors' and nurses' charting, communications and related clerical areas shall be permitted to be open to the corridor, when such spaces are constructed as required for corridors.

407.2.3 Mental Health Treatment Areas. Areas wherein mental health patients who are not capable of self-preservation are housed, or group meeting or multipurpose therapeutic spaces other than incidental use areas as

defined in 780 CMR 302.1.1, under continuous supervision by facility staff, shall be permitted to be open to the corridor, where the following criteria are met:

1. Each area does not exceed 1,500 square feet (140 m²).
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 907.2.
5. Not more than one such space is permitted in any one smoke compartment.
6. The walls and ceilings of the space are constructed as required for corridors.

407.2.4 Gift Shops. Gift shops less than 500 square feet (46.5 m²) in area shall be permitted to be open to the corridor provided the gift shop and storage areas are fully sprinklered and storage areas are protected in accordance with 780 CMR 302.1.1.

407.3 Corridor Walls. Corridor walls shall be constructed as smoke partitions.

407.3.1 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 fire protection 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. Other doors shall conform to 780 CMR 715.3.

407.3.2 Locking Devices. Locking devices that restrict access to the patient room from the corridor, and that 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.

407.4 Smoke Barriers. Smoke barriers shall be provided to subdivide every story used by patients for sleeping or treatment and to divide other stories with an occupant load of 50 or more persons, 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 m²) and the travel distance from any point in a smoke compartment to a smoke barrier door shall not exceed 200 feet (60 960 mm). The smoke barrier shall be in accordance with 780 CMR 709.

407.4.1 Refuge Area. At least 30 net square feet (2.8 m²) 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 m²) per occupant shall be provided on each side of each smoke barrier for the total number of occupants in adjoining smoke compartments.

407.4.2 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.

[F] 407.5 Automatic Sprinkler System. Smoke compartments containing patient sleeping units shall be equipped throughout with an automatic fire sprinkler system in accordance with 780 CMR 903.3.1.1. The smoke compartments shall be equipped with approved quick-response or residential sprinklers in accordance with 780 CMR 903.3.2.

407.6 Automatic Fire Detection. Corridors in nursing homes (both intermediate-care and skilled nursing facilities), detoxification facilities and spaces permitted to be open to corridors by 780 CMR 407.2 shall be protected by an automatic fire detection system installed in accordance with 780 CMR 907.0.

Exceptions:

1. Corridor smoke detection is not required where patient sleeping units are provided with smoke detectors that comply with UL 268. Such detectors shall provide a visual display on the corridor side of each patient sleeping unit and an audible and visual alarm at the nursing station attending each unit.
2. Corridor smoke detection is not required where patient sleeping unit doors are equipped with automatic door-closing devices with integral smoke detectors on the unit sides installed in accordance with their listing, provided that the integral detectors perform the required alerting function.

407.7 Secured Yards. Grounds are permitted to be fenced and gates therein are permitted to be equipped with locks, provided that safe dispersal areas having 30 net square feet (2.8 m²) for bed and litter patients and six net square feet (0.56 m²) for ambulatory patients and other occupants are located between the building and the fence. Such provided safe dispersal areas shall not be located less than 50 feet (15 240 mm) from the building they serve.

780 CMR 408.0 GROUP I-3

408.1 General. Occupancies in Group I-3 shall comply with the provisions of 780 CMR 408.0 and other applicable provisions of 780 CMR (*see* 780 CMR 308.4).

Note: Refer to 527 CMR for additional requirements.

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408.1.1 Sallyports. 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.

408.2 Mixed Occupancies. Portions of buildings with an occupancy in Group I-3 that are classified as a different occupancy shall meet the applicable requirements of 780 CMR for such occupancies. Where security operations necessitate the locking of required means of egress, provisions shall be made for the release of occupants at all times.

Means of egress from detention and correctional occupancies that traverse other use areas shall, as a minimum, conform to requirements for detention and correctional occupancies.

Exception. It is permissible to exit through a horizontal exit into other contiguous occupancies that do not conform to detention and correctional occupancy egress provisions but that do comply with requirements set forth in the appropriate occupancy, as long as the occupancy is not a high-hazard use.

408.3 Means of Egress. Except as modified or as provided for in 780 CMR 408.0, the provisions of 780 CMR 10.00 shall apply.

408.3.1 Door Width. Doors to resident sleeping units shall have a clear width of not less than 28 inches (711 mm).

408.3.2 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 (220 N) with a perpendicular force against the door of 50 pounds (220 N).

408.3.3 Spiral Stairs. Spiral stairs that conform to the requirements of 780 CMR 1009.9 are permitted for access to and between staff locations.

408.3.4 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 (15 240 mm) from the building with a net area of 15 square feet (1.4 m²) per person.

408.3.5 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 egress condition.

408.3.6 Vertical Exit Enclosures. One of the required vertical exit enclosures in each building shall be permitted to have glazing installed in doors and interior walls at each landing level providing access to the enclosure, provided that the following conditions are met:

1. The vertical exit enclosure shall not serve more than four floor levels.
2. Vertical exit enclosure doors shall not be less than ¾-hour fire doors complying with 780 CMR 715.3.
3. The total area of glazing at each floor level shall not exceed 5,000 square inches (3.23 m²) and individual panels of glazing shall not exceed 1,296 square inches (0.84 m²).
4. The glazing shall be protected on both sides by an automatic fire 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.

408.4 Locks. Egress doors are permitted to be locked in accordance with the applicable use condition. Doors from an area of refuge to the exterior are permitted to be locked with a key in lieu of locking methods described in 780 CMR 408.4.1. 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.

408.4.1 Remote Release. 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 3 or 4, 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 4 are not required provided that not more than ten locks are necessary to be unlocked in order to move occupants from one smoke compartment to a refuge area within three minutes. The opening of necessary locks shall be accomplished with not more than two separate keys.

[F] 408.4.2 Power-operated Doors and Locks. 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.

Exception. Emergency power is not required in facilities with ten locks or less complying with the exception to 780 CMR 408.4.1.

408.4.3 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.

408.4.4 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.

408.5 Vertical Openings. Vertical openings shall be enclosed in accordance with 780 CMR 707.0.

Exception. A floor opening between floor levels of residential housing areas is permitted without enclosure protection between the levels, provided that both 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.

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 interconnected area.

408.6 Smoke Barrier. Occupancies in Group I-3 shall have smoke barriers complying with 780 CMR 709.0 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 2-hour fire-resistance-rated assembly or 50 feet (15 240 mm) of open space.
3. A secured yard or court having a holding space 50 feet (15 240 mm) from the housing area that provides 6 square feet (0.56 m²) or more of refuge area per occupant, including residents, staff and visitors.

408.6.1 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 (45 720 mm). The travel distance to a door in a smoke barrier from any point in a room shall not exceed 200 feet

(60 960 mm).

408.6.2 Refuge Area. At least six net square feet (0.56 m²) 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 wherever the occupants are moved across the smoke barrier in a fire emergency.

408.6.3 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.

408.7 Subdivision of Resident Housing Areas. Sleeping areas and any contiguous day room, group activity space or other common spaces where residents are housed shall be separated from other spaces in accordance with 780 CMR 408.7.1 through 408.7.4.

408.7.1 Occupancy Conditions 3 and 4. Each sleeping area in Occupancy Conditions 3 and 4 shall be separated from the adjacent common spaces by a smoke-tight partition where the travel distance from the sleeping area through the common space to the exit access corridor exceeds 50 feet (15 240 mm).

408.7.2 Occupancy Condition 5. Each sleeping area in Occupancy Condition 5 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.

408.7.3 Openings in Room Face. The aggregate area of openings in a solid sleeping room face in Occupancy Conditions 2, 3, 4 and 5 shall not exceed 120 square inches (77 419 mm²). The aggregate area shall include all openings including door undercuts, food passes and grilles. Openings shall be not more than 36 inches (914 mm) above the floor. In Occupancy Condition 5, the openings shall be closeable from the room side.

408.7.4 Smoke-tight Doors. Doors in openings in partitions required to be smoke tight by 780 CMR 408.7 shall be substantial doors, of construction that will resist the passage of smoke. Latches and door closures are not required on cell doors.

408.8 Windowless Buildings. For the purposes of 780 CMR 408.0, 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 an engineered smoke control system to provide ventilation (mechanical or natural) in accordance with 780 CMR 909.0 for each windowless smoke compartment.

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**780 CMR 409.0 MOTION PICTURE
PROJECTION ROOMS**

(Refer to M.G.L. c. 143, § 89 for additional information regarding cellulose nitrate film and 780 CMR 100.00 for related Code of Massachusetts Regulations); also see 527 CMR.

409.1 General. The provisions of 780 CMR 409.0 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 that develops hazardous gases, dust or radiation. Where cellulose nitrate film is utilized or stored, such rooms shall comply with NFPA 40.

409.1.1 Projection Room Required. Every motion picture machine projecting film as mentioned within the scope of 780 CMR 409.0 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.

409.2 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 m²) for a single machine and at least 40 square feet (3.7 m²) for each additional 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. Openings shall be provided with glass or other approved material, so as to close completely the opening.

409.3 Projection Room and Equipment Ventilation. Ventilation shall be provided in accordance with the *International Mechanical Code*.

409.3.1 Projection Room.

409.3.1.1 Supply Air. Each projection room shall be provided with adequate air supply inlets so arranged as to provide well-distributed air throughout the room. Air inlet ducts shall provide an amount of air equivalent to the amount of air being exhausted by projection equipment. Air is permitted to be taken from the outside; from adjacent spaces within the building, provided the volume and infiltration rate is sufficient; or from the building air-

conditioning system, provided it is so arranged as to provide sufficient air when other systems are not in operation.

409.3.1.2 Exhaust Air. Projection rooms are permitted to be exhausted through the lamp exhaust system. The lamp exhaust system shall be positively interconnected with the lamp so that the lamp will not operate unless there is the required airflow. Exhaust air ducts shall terminate at the exterior of the building in such a location that the exhaust air cannot be readily recirculated into any air supply system. The projection room ventilation system is permitted to also serve appurtenant rooms, such as the generator and rewind rooms.

Each projection machine shall be provided with an exhaust duct that will draw air from each lamp and exhaust it directly to the outside of the building. The lamp exhaust is permitted to serve to exhaust air from the projection room to provide room air circulation. Such ducts shall be of rigid materials, except for a flexible connector approved for the purpose. The projection lamp or projection room exhaust system, or both, is permitted to be combined but shall not be interconnected with any other exhaust or return system, or both, within the building.

409.4 Lighting Control. Provisions shall be made for control of the auditorium lighting and the means of egress lighting systems of theaters from inside the projection room and from at least one other convenient point in the building.

409.5 Miscellaneous Equipment. Each projection room shall be provided with rewind and film storage facilities.

780 CMR 410.0 STAGES AND PLATFORMS

410.1 Applicability. The provisions of 780 CMR 410.0 shall apply to all parts of buildings and structures that contain stages or platforms and similar appurtenances as defined in 780 CMR 410.2.

410.2 Definitions. The following words and terms shall, for the purposes of 780 CMR 410.0 and as used elsewhere in 780 CMR, have the meanings shown 780 CMR 410.2.

FLY GALLERY. A raised floor area above a stage from which the movement of scenery and operation of other stage effects are controlled.

GRIDIRON. The structural framing over a stage supporting equipment for hanging or flying scenery and other stage effects.

PINRAIL. A rail on or above a stage through which belaying pins are inserted and to which lines are fastened.

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

PROSCENIUM WALL. The wall that separates the stage from the auditorium or assembly seating area.

STAGE. A space within a building utilized for entertainment or presentations, which includes overhead hanging curtains, drops, scenery or stage effects other than lighting and sound. Stage area shall be measured to include the entire performance area and adjacent backstage and support areas not separated from the performance area by fire-resistance-rated construction. Stage height shall be measured from the lowest point on the stage floor to the highest point of the roof or floor deck above the stage.

410.3 Stages. Stage construction shall comply with 780 CMR 410.3.1 through 410.3.7.

410.3.1 Stage Construction. Stages shall be constructed of materials as required for floors for the type of construction of the building in which such stages are located.

Exceptions:

1. Stages of Type IIB or IV construction with a nominal two-inch (51 mm) wood deck, provided that the stage is separated from other areas in accordance with 780 CMR 410.3.5.
2. In buildings of Type IIA, IIIA and VA construction, a fire-resistance-rated floor is not required, provided the space below the stage is equipped with an automatic fire-extinguishing system in accordance with 780 CMR 903.0 or 904.0.
3. In all types of construction, the finished floor shall be constructed of wood or approved noncombustible materials. Openings through stage floors shall be equipped with tight-fitting, solid wood trap doors with approved safety locks.

410.3.1.1 Stage Height and Area. Stage areas shall be measured to include the entire performance area and adjacent backstage and support areas not separated from the performance area by fire-resistance-rated construction. Stage height shall be measured from the lowest point on the stage floor to the highest point of the roof or floor deck above the stage.

410.3.2 Galleries, Gridirons, Catwalks and Pinrails. Beams designed only for the attachment of portable or fixed theater equipment, gridirons,

galleries and catwalks shall be constructed of approved materials consistent with the requirements for the type of construction of the building; and a fire-resistance rating shall not be required. These areas shall not be considered to be floors, stories, mezzanines or levels in applying 780 CMR.

Exception: Floors of fly galleries and catwalks shall be constructed of any approved material.

410.3.3 Exterior Stage Doors. Where protection of openings is required, exterior exit doors shall be protected with fire doors that comply with 780 CMR 715.0. Exterior openings that are located on the stage for means of egress or loading and unloading purposes, and that are likely to be open during occupancy of the theater, shall be constructed with vestibules to prevent air drafts into the auditorium.

410.3.4 Proscenium Wall. Where the stage height is greater than 50 feet (15 240 mm), all portions of the stage shall be completely separated from the seating area by a proscenium wall with not less than a two-hour fire-resistance rating extending continuously from the foundation to the roof.

410.3.5 Proscenium Curtain. The proscenium opening of every stage with a height greater than 50 feet (15 240 mm) shall be provided with a curtain of approved material or an approved water curtain complying with 780 CMR 903.3.1.1. The curtain shall be 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 20 minutes. The closing of the curtain from the full open position shall be effected in less than 30 seconds, but the last eight feet (2438 mm) of travel shall require not less than five seconds.

410.3.5.1 Activation. The curtain shall be activated by rate-of-rise heat detection installed in accordance with 780 CMR 907.10 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.

410.3.5.2 Fire Test. A sample curtain with a minimum of two vertical seams shall be subjected to the standard fire test specified in ASTM E 119 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 4 pounds per linear foot (58 N/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.

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410.3.5.3 Smoke Test. Curtain fabrics shall have a smoke-developed rating of 25 or less when tested in accordance with ASTM E 84.

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

410.3.6 Scenery. See 527 CMR.

410.3.7 Stage Ventilation. Emergency ventilation shall be provided for stages larger than 1,000 square feet (93 m²) in floor area, or with a stage height greater than 50 feet (15 240 mm). Such ventilation shall comply with 780 CMR 410.3.7.1 or 410.3.7.2.

410.3.7.1 Roof Vents. Two or more vents constructed to open automatically by approved heat-activated devices and with an 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. Supplemental means shall be provided for manual operation of the ventilator. Curbs shall be provided as required for skylights in 780 CMR 2610.2. Vents shall be labeled.

410.3.7.2 Smoke Control. Smoke control in accordance with 780 CMR 909 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 provided in compliance with 780 CMR 410.3.4.

410.4 Platform Construction. Permanent platforms shall be constructed of materials as required for the type of construction of the building in which the permanent platform is located. Permanent platforms are permitted to be constructed of fire-retardant-treated wood for Type I, II, and IV construction where the platforms are not more than 30 inches (762 mm) above the main floor, and not more than one-third of the room floor area and not more than 3,000 square feet (279 m²) in area. Where the space beneath the permanent platform is used for storage or any other purpose other than equipment, wiring or plumbing, the floor construction shall not be less than 1-hour fire-resistance-rated construction. Where the space beneath the permanent platform is used only for equipment, wiring or plumbing, the underside of the permanent platform need not be protected.

410.4.1 Temporary Platforms. Platforms installed for a period of not more than 30 days are permitted to be constructed of any materials permitted by the code. The space between the floor and the platform above shall only be used for plumbing and electrical wiring to platform equipment.

410.5 Dressing and Appurtenant Rooms. Dressing and appurtenant rooms shall comply with 780 CMR 410.5.1 through 410.5.4.

410.5.1 Separation from Stage. Where the stage height is greater than 50 feet (15 240 mm), the stage shall be separated from dressing rooms, scene docks, property rooms, workshops, storerooms and compartments appurtenant to the stage and other parts of the building by a fire barrier wall and horizontal assemblies, or both, with not less than a two-hour fire-resistance rating with approved opening protectives. For stage heights of 50 feet (15 240 mm) or less, the required stage separation shall be a fire barrier wall and horizontal assemblies, or both, with not less a one-hour fire-resistance rating with approved opening protectives.

410.5.2 Separation from Each Other. Dressing rooms, scene docks, property rooms, workshops, storerooms and compartments appurtenant to the stage shall be separated from each other by fire barrier wall and horizontal assemblies, or both, with not less than a one-hour fire-resistance rating with approved opening protectives.

410.5.3 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 door assemblies that comply with 780 CMR 715.0.

410.5.4 Stage Exits. At least one approved means of egress shall be provided from each side of the stage; and from each side of the space under the stage. At least one means of escape shall be provided from each fly gallery and from the gridiron. A steel ladder, alternating tread stairway or spiral stairway is permitted to be provided from the gridiron to a scuttle in the stage roof.

[F] 410.6 Automatic Sprinkler System. Stages shall be equipped with an automatic fire-extinguishing system in accordance with 780 CMR 9.00. The system shall be installed under the roof and gridiron, in the tie and fly galleries, in places behind the proscenium wall of the stage, and in dressing rooms, lounges, workshops and storerooms accessory to such stages.

Exceptions:

1. Sprinklers are not required under stage areas less than 4 feet (1219 mm) in clear height utilized exclusively for storage of tables and chairs, provided the concealed space is separated from the adjacent spaces by not less than 5/8-inch (15.9 mm) Type X gypsum board.
2. Sprinklers are not required for stages 1,000 square feet (93 m²) or less in area and 50 feet (15240 mm) or less in height where curtains, scenery or other combustible hangings are not retractable vertically. Combustible hangings

shall be limited to a single main curtain, borders, legs and a single backdrop.

[F] 410.7 Standpipes. Standpipe systems shall be provided in accordance with 780 CMR 905.0.

780 CMR 411.0 SPECIAL AMUSEMENT BUILDINGS

411.1 General. Special amusement buildings having an occupant load of 50 or more shall comply with the requirements for the appropriate Group A occupancy and 780 CMR 411.0. Amusement buildings having an occupant load of less than 50 shall comply with the requirements for a Group B occupancy and 780 CMR 411.0.

Exception. Amusement buildings or portions thereof that are without walls or a roof and constructed to prevent the accumulation of smoke.

For requirements relating to flammable decorative materials, see 527 CMR.

411.2 Special Amusement Building. A special amusement building is any temporary or permanent building or portion thereof that is occupied for amusement, entertainment or educational purposes and that contains a device or system that 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 because of the nature of the attraction or mode of conveyance through the building or structure.

[F] 411.3 Automatic Fire Detection. Special amusement buildings shall be equipped with an automatic fire detection system in accordance with 780 CMR 907.0.

[F] 411.4 Automatic Sprinkler System. Special amusement buildings shall be equipped throughout with an automatic sprinkler system in accordance with 780 CMR 903.3.1.1. Where the special amusement building is temporary, the sprinkler water supply shall be of an approved temporary means.

Exception. Automatic fire sprinklers are not required where the total floor area of a temporary special amusement building is less than 1,000 square feet (93 m²) and the travel distance from any point to an exit is less than 50 feet (15240 mm).

[F] 411.5 Alarm. *Actuation of a single smoke detector, the automatic sprinkler system or 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 907.2.11.2. Refer also to 780 CMR 907.2.11.*

[F] 411.6 Emergency Voice/Alarm Communications System. An emergency voice/alarm communications system shall be provided in accordance with 780 CMR 907.2.11 and 907.2.12.2 (if applicable), which is also permitted to serve as a public address system and shall be audible throughout the entire special amusement building.

411.7 Exit Marking. Exit signs shall be installed at the required exit or exit access doorways of amusement buildings. Approved directional exit markings shall also be provided. Where mirrors, mazes or other designs are utilized that disguise the path of egress travel such that they are not apparent, 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 path of egress travel. Such markings shall become visible in an emergency. The directional exit marking shall be activated by the automatic fire detection system and the automatic sprinkler system in accordance with 780 CMR 907.2.11.2.

411.8 Interior Finish. The interior finish shall be Class A in accordance with 780 CMR 803.1.

780 CMR 412.0 AIRCRAFT-RELATED OCCUPANCIES

412.1 Airport Traffic Control Towers.

412.1.1 General. The provisions of 780 CMR 412.0 shall apply to airport traffic control towers not exceeding 1,500 square feet (140 m²) per floor occupied only for the following uses:

1. Airport traffic control cab.
2. Electrical and mechanical equipment rooms.
3. Airport terminal radar and electronics rooms.
4. Office spaces incidental to the tower operation.
5. Lounges for employees, including sanitary facilities.

412.1.2 Type of Construction. Airport traffic control towers shall be constructed to conform to the height and area limitations of Table 412.1.2.

TABLE 412.1.2 HEIGHT AND AREA LIMITATIONS FOR AIRPORT TRAFFIC CONTROL TOWERS

TYPE OF CONSTRUCTION	HEIGHT ^a (feet)	MAXIMUM AREA (square feet)
IA	Unlimited	1500
IB	240	1,500
IIA	100	1,500
IIB	85	1,500
IIIA	65	1,500

For SI: 1 foot = 304.8 mm, 1 square foot = 0.093 m².

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

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412.1.3 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 1009. The stairway shall be separated from elevators by a minimum distance of one-half of the diagonal of the area served measured in a straight line. The exit stairway and elevator hoistway are permitted to be located in the same shaft enclosure, provided they are separated from each other by a 4-hour separation having no openings. Such stairway shall be pressurized to a minimum of 0.15 inch of water column (43 Pa) and a maximum of 0.35 inch of water column (101 Pa) in the shaft relative to the building with stairway doors closed. Stairways need not extend to the roof as specified in 780 CMR 1009.12. The provisions of 780 CMR 403 do not apply.

Exception. Smokeproof enclosures as set forth in 780 CMR 1019.1.8 are not required where required stairways are pressurized.

[F] 412.1.4 Automatic Fire Detection Systems. Airport traffic control towers shall be provided with an automatic fire detection system installed in accordance with 780 CMR 907.2.

[F] 412.1.5 Standby Power. *A standby power system that conforms to NFPA-110 or NFPA-111, as applicable and electrically installed in accordance with the requirements of 527 CMR 12.00* shall be provided in airport traffic control towers more than 65 feet (19 812 mm) in height. Power shall be provided to the following equipment:

1. Pressurization equipment, mechanical equipment and lighting.
2. Elevator operating equipment.
3. Fire alarm and smoke detection systems.

412.1.6 Accessibility. *Refer to the Architectural Access Code, 521 CMR.*

412.2 Aircraft Hangar.

412.2.1 Exterior Walls. Exterior walls located less than 30 feet (9 144 mm) from property lines, lot lines or a public way shall have a fire-resistance rating not less than two hours.

412.2.2 Basements. Where hangars have basements, the floor over the basement shall be of Type IA construction and shall be made tight against seepage of water, oil or vapors. There shall be no opening or communication between the basement and the hangar. Access to the basement shall be from outside only.

412.2.3 Floor Surface. Floors shall be graded and drained to prevent water or fuel from remaining on the floor. Floor drains shall discharge through an oil separator to the sewer or to an outside vented sump.

412.2.4 Heating Equipment. Heating equipment shall be placed in another room separated by two-hour fire-resistance-rated construction. Entrance shall be from the outside or by means of a vestibule providing a two-doorway separation.

Exceptions:

1. Unit heaters suspended at least ten feet (3048 mm) above the upper surface of wings or engine enclosures of the highest aircraft that are permitted to be housed in the hangar and at least eight feet (2438 mm) above the floor in shops, offices and other sections of the hangar communicating with storage or service areas.
2. A single interior door shall be allowed, provided the sources of ignition in the appliances are at least 18 inches (457 mm) above the floor.

412.2.5 Finishing. *The process of "doping," involving use of a volatile flammable solvent, or of painting, shall be carried on in a separate detached building equipped with automatic fire-extinguishing equipment in accordance with 780 CMR 903. See 527 CMR as such relates to finishing.*

412.2.6 Fire Suppression. Aircraft hangars shall be provided with fire suppression as required in NFPA 409.

Exception. Group II hangars as defined in NFPA 409 storing private aircraft without major maintenance or overhaul are exempt from foam suppression requirements.

412.3 Residential Aircraft Hangars. Residential aircraft hangars as defined in 780 CMR 412.3.1 shall comply with 780 CMR 412.3.2 through 412.3.6.

412.3.1 Definition. The following word and term shall, for the purposes of 780 CMR 4.00 and as used elsewhere in 780 CMR, have the meaning shown in 780 CMR 412.3.1.

RESIDENTIAL AIRCRAFT HANGAR. An accessory building less than 2,000 square feet (186 m²) and 20 feet (6096 mm) in height, constructed on a one- or two-family residential property where aircraft are stored. Such use will be considered as a residential accessory use incidental to the dwelling.

412.3.2 Fire Separation. A hangar shall not be attached to a dwelling unless separated by walls having a fire-resistance rating of not less than 1 hour. Such separation shall be continuous from the foundation to the underside of the roof and unpierced except for doors leading to the dwelling unit. Doors into the dwelling unit must be equipped with self-closing devices and conform to the requirements of 780 CMR 715.0 with at least a four-inch (102 mm) noncombustible raised sill. Openings from a hanger directly into a room used for sleeping purposes shall not be permitted.

412.3.3 Egress. A hangar shall provide two means of egress. One of the doors into the dwelling shall be considered as meeting only one of the two means of egress.

[F] 412.3.4 Smoke Detection. Smoke alarms shall be provided within the hangar in accordance with 780 CMR 907.2.21.

412.3.5 Independent Systems. *Mechanical and plumbing drain, waste and vent (DWV) systems installed within the hangar and the systems installed within the dwelling shall conform to the requirements of the applicable Specialized Code, including 248 CMR.*

Exception:. For Smoke detector wiring and feed for electrical subpanels in the hangar, refer to 780 CMR and 527 CMR 12.00.

412.3.6 Height and Area Limits. Residential aircraft hangars shall not exceed 2,000 square feet (186 m²) in area and 20 feet (6096 mm) in height.

412.4 Aircraft Paint Hangars. Aircraft painting operations where flammable liquids are used in excess of the maximum allowable quantities per control area listed in Table 307.7(1) shall be conducted in an aircraft paint hangar that complies with the provisions of 780 CMR 412.4.

412.4.1 Occupancy Group. Aircraft paint hangars shall be classified as Group H-2. Aircraft paint hangars shall comply with the applicable requirements of 780 CMR and the *International Fire Code* for such occupancy.

412.4.2 Construction. The aircraft paint hangar shall be of Type I or II construction.

412.4.3 Operations. Only those flammable liquids necessary for painting operations shall be permitted in quantities less than the maximum allowable quantities per control area in Table 307.7(1). Spray equipment cleaning operations shall be conducted in a liquid use, dispensing and mixing room.

412.4.4 Storage. *See applicable portions of 780 CMR and 527 CMR.*

412.4.5 Fire Suppression. Aircraft paint hangars shall be provided with fire suppression as required in NFPA 409.

412.4.6 Ventilation. Aircraft paint hangars shall be provided with ventilation as required in the *International Mechanical Code*.

412.5 Heliports and Helistops.

412.5.1 General. Heliports and helistops may be erected on buildings or other locations where they are constructed in accordance with 780 CMR 412.0.

412.5.2 Definitions. The following words and terms shall, for the purposes of 780 CMR 4.00 and as used elsewhere in 780 CMR, have the meanings shown in 780 CMR 412.5.2.

HELIPORT. An area of land or water or a structural surface that is used, or intended for use, for the landing and taking off of helicopters, and any appurtenant areas that are used, or intended for use, for heliport buildings and other heliport facilities.

HELISTOP. The same as a "Heliport," except that no fueling, defueling, maintenance, repairs or storage of helicopters is permitted.

412.5.3 Size. The touchdown or landing area for helicopters of less than 3,500 pounds (1588 kg) shall be a minimum of 20 feet (6096 mm) in length and width. The touchdown area shall be surrounded on all sides by a clear area having a minimum average width at roof level of 15 feet (4572 mm) but with no width less than five feet (1524 mm).

412.5.4 Design. Helicopter landing areas and the supports thereof on the roof of a building shall be noncombustible construction. Landing areas shall be designed to confine any flammable liquid spillage to the landing area itself and provisions shall be made to drain such spillage away from any exit or stairway serving the helicopter landing area or from a structure housing such exit or stairway. For structural design requirements, see 780 CMR 16.00.

412.5.5 Means of Egress. The means of egress from heliports and helistops shall comply with the provisions of 780 CMR 10.00. Landing areas located on buildings or structures shall have two or more means of egress. For landing platforms or roof areas less than 60 feet (18288 mm) in length, or less than 2,000 square feet (187 m²) in area, the second means of egress may be a fire escape or ladder leading to the floor below.

412.5.6 Rooftop Heliports and Helistops. Rooftop heliports and helistops shall comply with NFPA 418.

780 CMR 413.0 COMBUSTIBLE STORAGE

413.1 General. *High-piled stock or rack storage in any occupancy group shall comply with requirements of the International Fire Code and 527 CMR.*

413.2 Attic, Under-floor and Concealed Spaces. Attic, under-floor and concealed spaces used for storage of combustible materials shall be protected on the storage side as required for one-hour fire-resistance-rated construction. Openings shall be protected by assemblies that are self-closing and are of noncombustible construction or solid wood core not less than 1¾ inch (45 mm) in thickness.

Exceptions:

1. Areas protected by approved automatic sprinkler systems.
2. Group R-3 and U occupancies.

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[F] 780 CMR 414.0 HAZARDOUS MATERIALS

414.1 General. *The provisions of 780 CMR 414.0 shall apply to buildings and structures occupied for the manufacturing, processing, dispensing, use or storage of hazardous materials.*

Exception: Also see 780 CMR 424.0, Bulk Merchandizing Retail Buildings.

414.1.1 Other Provisions. Buildings and structures with an occupancy in Group H shall also comply with the applicable provisions of 780 CMR 415.0, the *International Fire Code* and 527 CMR, as applicable.

414.1.2 Materials. *The safe design of hazardous material occupancies is material dependent. Individual material requirements are also found in 780 CMR 307.0 and 415.0, and in the International Mechanical Code and the International Fire Code; additionally, 527 CMR likewise defines material quantities for which compliance with 527 CMR is required.*

414.1.2.1 Aerosols. *Level 2 and 3 aerosol products shall be stored and displayed in accordance with the International Fire Code; additionally, 527 CMR likewise defines material quantities for which compliance with 527 CMR is required. See 780 CMR 311.2 and the International Fire Code for occupancy group requirements.*

414.1.3 Information Required. Separate floor plans shall be submitted for buildings and structures with an occupancy in Group H,

identifying the locations of anticipated contents and processes so as to reflect the nature of each occupied portion of every building and structure. A report identifying hazardous materials including, but not limited to, materials representing hazards that are classified in Group H to be stored or used, shall be submitted and the methods of protection from such hazards shall be indicated on the construction documents. The opinion and report shall be prepared by a qualified person, firm or corporation approved by the building official and shall be provided without charge to the enforcing agency.

414.2 Control Areas. Control areas shall be those spaces within a building where quantities of hazardous materials not exceeding the maximum quantities allowed by 780 CMR are stored, dispensed, used or handled.

414.2.1 Construction Requirements. Control areas shall be separated from each other by not less than a one-hour fire barrier constructed in accordance with 780 CMR 7.00.

414.2.2 Number. The maximum number of control areas within a building shall be in accordance with Table 414.2.2.

414.2.3 Separation. The required fire-resistance rating for fire barrier assemblies shall be in accordance with Table 414.2.2. The floor construction of the control area, and the construction supporting the floor of the control area, shall have a minimum two-hour fire-resistance rating.

TABLE 414.2.2 DESIGN AND NUMBER OF CONTROL AREAS

FLOOR LEVEL		PERCENTAGE OF THE MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA ^a	NUMBER OF CONTROL AREAS PER FLOOR ^b	FIRE-RESISTANCE RATING FOR FIRE BARRIERS IN HOURS ^c
Above grade	Higher than 9	5	1	2
	39637	5	2	2
	6	12.5	2	2
	5	12.5	2	2
	4	12.5	2	2
	3	50	2	1
	2	75	3	1
	1	100	4	1
Below grade	1	75	3	1
	2	50	2	1
	Lower than 2	Not Allowed	Not Allowed	Not Allowed

- a. Percentages shall be of the maximum allowable quantity per control area shown in Tables 307.7(1) and 307.7(2), with all increases allowed in the notes to those tables.
- b. There shall be a maximum of two control areas per floor in Group M occupancies and in buildings or portions of buildings having Group S occupancies with storage conditions and quantities in accordance with 780 CMR 414.2.4.
- c. Fire barriers shall include walls and floors as necessary to provide separation from other portions of the building.

414.2.4 Hazardous Material in Group M Display and Storage Areas and in Group S Storage Areas. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials permitted within a single control area of a Group M or S occupancy or an outdoor control area is permitted to exceed the maximum allowable quantities per control area specified in Tables 307.7(1) and 307.7(2) without classifying the building or use as a Group H occupancy, provided that the materials are displayed and stored in accordance with the *International Fire Code* and 527 CMR and quantities do not exceed the maximum allowable specified in Table 414.2.4.

414.3 Ventilation. Rooms, areas or spaces of Group H in which explosive, corrosive, combustible, flammable or highly toxic dusts, mists, fumes, vapors or gases are or may be emitted due to the processing, use, handling or storage of materials shall be mechanically ventilated as required by the *International Fire Code* and the *International Mechanical Code*.

Ducts conveying explosives or flammable vapors, fumes or dusts shall extend directly to the exterior of the building without entering other spaces. Exhaust ducts shall not extend into or through ducts and plenums.

TABLE 414.2.4 MAXIMUM ALLOWABLE QUANTITY PER INDOOR AND OUTDOOR CONTROL AREA IN GROUP M AND S OCCUPANCIES NONFLAMMABLE SOLIDS AND NONFLAMMABLE AND NONCOMBUSTIBLE LIQUIDS^{d, e, f}

CONDITION		MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	
Material ^a	Class	Solids pounds	Liquids gallons
A. Health-hazard materials—nonflammable and noncombustible solids and liquids			
Corrosives ^{b, c}	Not Applicable	9,750	975
Highly toxics	Not Applicable	20 ^{b, c}	2 ^{b, c}
3. Toxics ^{b, c}	Not Applicable	1,000	100
B. Physical-hazard materials—nonflammable and noncombustible solids and liquids			
1. Oxidizers ^{b, c}	4	Not Allowed	Not Allowed
	3	1,150 ^g	115
	2	2,250 ^h	225
	1	18,000 ^{i, j}	1,800 ^{i, j}
2. Unstable (reactives) ^{b, c}	4	Not Allowed	Not Allowed
	3	550	55
	2	1,150	115
	1	Not Limited	Not Limited
3. Water (reactives)	3 ^{b, c}	550	55
	2 ^{b, c}	1,150	115
	1	Not Limited	Not Limited

- For SI: 1 pound = 0.454 kg, 1 gallon = 3.785 L.
- a. Hazard categories are as specified in the *International Fire Code*.
 - b. Maximum allowable quantities shall be increased 100% in buildings that are sprinkled in accordance with 780 CMR 903 .3.1.1. When Note c also applies, the increase for both notes shall be applied accumulatively.
 - c. Unless otherwise restricted by requirements of 527 CMR, maximum allowable quantities shall be increased 100% when stored in approved storage cabinets, in accordance with the *International Fire Code*. When Note b also applies, the increase for both notes shall be applied accumulatively.
 - d. See Table 414.2.2 for design and number of control areas.
 - e. Allowable quantities for other hazardous material categories shall be in accordance with 780 CMR 307.0.
 - f. Maximum quantities shall be increased 100% in outdoor control areas.
 - g. Maximum amounts are permitted to be increased to 2,250 pounds when individual packages are in the original sealed containers from the manufacturer or packager and do not exceed ten pounds each.
 - h. Maximum amounts are permitted to be increased to 4,500 pounds when individual packages are in the original sealed containers from the manufacturer or packager and do not exceed ten pounds each.
 - i. The permitted quantities shall not be limited in a building equipped throughout with an automatic sprinkler system in accordance with 780 CMR 903.3.1.1
 - j. Quantities are unlimited in an outdoor control area.

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Exception. Ducts conveying vapor or fumes having flammable constituents less than 25% of their lower flammable limit (LFL) are permitted to pass through other spaces.

Emissions generated at workstations shall be confined to the area in which they are generated as specified in the *International Fire Code* and the *International Mechanical Code*.

The location of supply and exhaust openings shall be in accordance with the *International Mechanical Code*. Exhaust air contaminated by highly toxic material shall be treated in accordance with the *International Fire Code*.

A manual shutoff control for ventilation equipment required by 780 CMR 414.0 shall be provided outside the room adjacent to the principal access door to the room. The switch shall be of the break-glass type and shall be labeled: VENTILATION SYSTEM EMERGENCY SHUTOFF.

414.4 Hazardous Material Systems. Systems involving hazardous materials shall be suitable for the intended application. 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.

414.5 Inside Storage, Dispensing and Use. *The inside storage, dispensing and use of hazardous materials in excess of the maximum allowable quantities per control area of Tables 307.7(1) and 307.7(2) shall be in accordance with 780 CMR 414.5.1 through 414.5.5, the requirements of the International Fire Code; additionally the storage, dispensing and use of hazardous materials is likewise regulated by 527 CMR.*

414.5.1 Explosion control. *Explosion control shall be provided in accordance with the International Fire Code as required by Table 414.5.1 where quantities of hazardous materials specified in that table exceed the maximum allowable quantities in Table 307.7(1) or where a structure, room or space is occupied for purposes involving explosion hazards as required by 780 CMR 415 or the International Fire Code; additionally, explosion controls for certain hazardous materials is likewise regulated by 527 CMR.*

TABLE 414.5.1 EXPLOSION CONTROL REQUIREMENTS^a

MATERIAL	CLASS	EXPLOSION CONTROL METHODS	
		Barricade construction	Explosion (deflagration) venting or explosion (deflagration) prevention systems ^b
HAZARD CATEGORY			
Combustible dusts ^c	—	Not Required	Required
Cryogenic flammables	—	Not Required	Required
Explosives	Division 1.1	Required Required Not Required Not Required Required Required	Not Required
	Division 1.2		Not Required
	Division 1.3		Required
	Division 1.4		Required
	Division 1.5		Not Required
	Division 1.6		Not Required
Flammable gas	Gaseous	Not Required	Required
	Liquefied	Not Required	Required
Flammable liquid	IA ^d	Not Required	Required
	IB ^e	Not Required	Required
Organic peroxides	U	Required	Not Permitted
	I	Required	Not Permitted
Oxidizer liquids and solids	4	Required	Not Permitted
Pyrophoric gas	—	Not Required	Required
Unstable (reactive)	4	Required	Not Permitted
	3 Detonable	Required	Not Permitted
	3 Nondetonable	Not Required	Required
Water-reactive liquids and solids	3	Not Required	Required
	2 ^g	Not Required	Required
SPECIAL USES			
Acetylene generator rooms	—	Not Required	Required
Grain processing	—	Not Required	Required
Liquefied petroleum gas-distribution facilities	—	Not Required	Required
Where explosion hazards exist ^f	Detonation Deflagration	Required	Not Permitted
		Not Required	Required

SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY

- a. See 780 CMR 414.1.3.
- b. See the *International Fire Code*.
- c. As generated during manufacturing or processing. See definition of “Combustible dust” in 780 CMR 3.00.
- d. Storage or use.
- e. In open use or dispensing.
- f. Rooms containing dispensing and use of hazardous materials when an explosive environment can occur because of the characteristics or nature of the hazardous materials or as a result of the dispensing or use process.
- g. A method of explosion control shall be provided when Class 2 water-reactive materials can form potentially explosive mixtures.

414.5.2 Monitor Control Equipment. Monitor control equipment shall be provided where required by the *International Fire Code*.

414.5.3 Automatic Fire Detection Systems. Group H occupancies shall be provided with an automatic fire detection system in accordance with 780 CMR 907.2.

414.5.4 Standby or Emergency Power. Where mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems are required, such systems shall be provided with an emergency or standby power system in accordance with NFPA 110 or NFPA 111 as applicable and electrical installation of such emergency or standby power systems shall be in accordance with 527 CMR 12.00.

Exceptions:

1. Storage areas for Class I and II oxidizers.
2. Storage areas for Class III, IV and V organic peroxides.
3. Storage, use and handling areas for highly toxic or toxic materials as provided for in the *International Fire Code*.
4. Standby power for mechanical ventilation, treatment systems and temperature control systems shall not be required where an approved fail-safe engineered system is installed.

414.5.5 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 the *International Fire Code*. The methods of spill control shall be in accordance with the *International Fire Code*.

414.6 Outdoor Storage, Dispensing and Use. The outdoor storage, dispensing and use of hazardous materials shall be in accordance with the *International Fire Code*.

414.6.1 Weather Protection. Where weather protection is provided for sheltering outdoor hazardous material storage or use areas, such storage or use shall be considered outdoor storage or use, provided that all of the following conditions are met:

1. Structure supports and walls shall not obstruct more than one side nor more than 25% of the perimeter of the storage or use 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 or use area without weather protection.
3. The overhead structure shall be of approved noncombustible construction with a maximum area of 1,500 square feet (140 m²).

Exception. The increases permitted by 780 CMR 506.0 apply.

414.7 Emergency Alarms. Emergency alarms for the detection and notification of an emergency condition in Group H occupancies shall be provided as set forth in 780 CMR 414.7.

414.7.1 Storage. An approved manual emergency alarm system shall be provided in buildings, rooms or areas used for storage of hazardous materials. Emergency alarm-initiating devices shall be installed outside of each interior exit or exit access door of storage buildings, rooms or areas. Activation of an emergency alarm-initiating device shall sound a local alarm to alert occupants of an emergency situation involving hazardous materials.

414.7.2 Dispensing, Use and Handling. Where hazardous materials having a hazard ranking of 3 or 4 in accordance with NFPA 704 are transported through corridors or exit enclosures, there shall be an emergency telephone system, a local manual alarm station or an approved alarm-initiating device at not more than 150-foot (45 720 mm) intervals and at each exit and exit access doorway throughout the transport route. The signal shall be relayed to an approved central, proprietary or remote station service or constantly attended on-site location and shall also initiate a local audible alarm.

414.7.3 Supervision. Emergency alarm systems shall be supervised by an approved central, proprietary or remote station service or shall initiate an audible and visual signal at a constantly attended on-site location.

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[F] 780 CMR 415.0 GROUPS H-1, H-2, H-3, H-4 AND H-5

415.1 Scope. The provisions of 780 CMR 415.0 shall apply to the storage and use of hazardous materials in excess of the maximum allowable quantities per control area listed in 780 CMR 307.9. Buildings and structures with an occupancy in Group H shall also comply with the applicable provisions of 780 CMR 414.0, the *International Fire Code*, and 527 CMR as applicable.

Exceptions:

1. *Also see 780 CMR 424.0, Bulk Merchandizing Retail Buildings.*
2. *See 780 CMR 401.1, Exception.*

415.2 Definitions. The following words and terms shall, for the purposes of 780 CMR 4.00 and as used elsewhere in the code, have the meanings shown in 780 CMR 415.2.

CONTINUOUS GAS-DETECTION SYSTEM.

A gas detection system where the analytical instrument is maintained in continuous operation and sampling is performed without interruption. Analysis is allowed to be performed on a cyclical basis at intervals not to exceed 30 minutes.

EMERGENCY CONTROL STATION. An approved location on the premises where signals from emergency equipment are received and which is staffed by trained personnel.

EXHAUSTED ENCLOSURE. An appliance or piece of equipment that consists of a top, a back and two sides providing a means of local exhaust for capturing gases, fumes, vapors and mists. Such enclosures include laboratory hoods, exhaust fume hoods and similar appliances and equipment used to locally retain and exhaust the gases, fumes, vapors and mists that could be released. Rooms or areas provided with general ventilation, in themselves, are not exhausted enclosures.

FABRICATION AREA. An area within a semiconductor fabrication facility and related research and development areas in which there are processes using hazardous production materials. Such areas are allowed to include ancillary rooms or areas such as dressing rooms and offices that are directly related to the fabrication area processes.

FLAMMABLE VAPORS OR FUMES. The concentration of flammable constituents in air that exceed 10% of their lower flammable limit (LFL).

GAS CABINET. A fully enclosed, noncombustible enclosure used to provide an isolated environment for compressed gas cylinders in storage or use. Doors and access ports for exchanging cylinders and accessing pressure-regulating controls are allowed to be included.

GAS ROOM. A separately ventilated, fully enclosed room in which only compressed gases and

associated equipment and supplies are stored or used.

HAZARDOUS PRODUCTION MATERIAL (HPM). A solid, liquid or gas associated with semiconductor manufacturing that has a degree-of-hazard rating in health, flammability or reactivity of Class 3 or 4 as ranked by NFPA 704 and which is used directly in research, laboratory or production processes that have as their end product materials that are not hazardous.

HPM FLAMMABLE LIQUID. An HPM liquid that is defined as either a Class I flammable liquid or a Class II or Class IIIA combustible liquid.

HPM ROOM. A room used in conjunction with or serving a Group H-5 occupancy, where HPM is stored or used and which is classified as a Group H-2, H-3 or H-4 occupancy.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH).

The concentration of air-borne contaminants which poses a threat of death, immediate or delayed permanent adverse health effects, or effects that could prevent escape from such an environment. This contaminant concentration level is established by the National Institute of Occupational Safety and Health (NIOSH) based on both toxicity and flammability. It generally is expressed in parts per million by volume (ppm v/v) or milligrams per cubic meter (mg/m³). If adequate data do not exist for precise establishment of IDLH concentrations, an independent certified industrial hygienist, industrial toxicologist, appropriate regulatory agency or other source approved by the code official shall make such determination.

LIQUID. A material that has a melting point that is equal to or less than 68°F (20°C) and a boiling point that is greater than 68°F (20°C) at 14.7 pounds per square inch absolute (psia) (101 kPa). When not otherwise identified, the term “liquid” includes both flammable and combustible liquids.

LIQUID STORAGE ROOM. A room classified as a Group H-3 occupancy used for the storage of flammable or combustible liquids in an unopened condition.

LIQUID USE, DISPENSING AND MIXING ROOMS. Rooms in which Class I, II and IIIA flammable or combustible liquids are used, dispensed or mixed in open containers.

LOWER FLAMMABLE LIMIT (LFL). The minimum concentration of vapor in air at which propagation of flame will occur in the presence of an ignition source. The LFL is sometimes referred to as “LEL” or “lower explosive limit.”

NORMAL TEMPERATURE AND PRESSURE (NTP). A temperature of 70°F (21°C) and a pressure of one atmosphere [14.7 psia (101 kPa)].

SERVICE CORRIDOR. A fully enclosed passage used for transporting HPM and purposes other than required means of egress.

SOLID. A material that has a melting point, decomposes or sublimates at a temperature greater than 68°F (20°C).

STORAGE, HAZARDOUS MATERIALS.

1. The keeping, retention or leaving of hazardous materials in closed containers, tanks, cylinders or similar vessels, or
2. Vessels supplying operations through closed connections to the vessel.

USE (MATERIAL). Placing a material into action, including solids, liquids and gases.

WORK STATION. A defined space or an independent principal piece of equipment using HPM within a fabrication area where a specific function, laboratory procedure or research activity occurs. Approved or listed hazardous materials storage cabinets, flammable liquid storage cabinets or gas cabinets serving a workstation are included as part of the workstation. A workstation is allowed to contain ventilation equipment, fire protection devices, detection devices, electrical devices and other processing and scientific equipment.

415.3 Location on Property. *Group H shall be located on property in accordance with the other provisions of 780 CMR 4.00. In Group H-2 or H-3, not less than 25% of the perimeter wall of the occupancy shall be an exterior wall; additionally, location on property requirements are likewise regulated by 527 CMR*

415.3.1 Group H Minimum Distance to Lot Lines. Regardless of any other provisions, buildings containing Group H occupancies shall be set back a minimum distance from lot lines as set forth in 780 CMR 415.3.1 Items 1 through 4. Distances shall be measured from the walls enclosing the occupancy to lot lines, including those on a public way. Distances to assumed property lines drawn for the purposes of determination of exterior wall and opening protection are not to be used to establish the minimum distance for separation of buildings on sites where explosives are manufactured or used when separation is provided in accordance with the quantity distance tables specified for explosive materials in the *International Fire Code* (Note that additionally, 527 CMR likewise regulates certain H-Use locations to lot lines and/o other buildings) .

1. Group H-1. Not less than 75 feet (22 860 mm) and not less than required by the *International Fire Code*.

Exceptions:

1. Fireworks manufacturing buildings separated in accordance with NFPA 1124.
2. Buildings containing the following materials when separated in accordance with Table 415.3.1:
 - 2.1. Organic peroxides, unclassified detonable.
 - 2.2. Unstable reactive materials Class 4.
 - 2.3. Unstable reactive materials, Class 3 detonable.
 - 2.4. Detonable pyrophoric materials.
2. Group H-2. Not less than 30 feet (9144 mm) where the area of the occupancy exceeds 1,000 square feet (93 m²) and it is not required to be located in a detached building.
3. Groups H-2 and H-3. Not less than 50 feet (15 240 mm) where a detached building is required (see Table 415.3.2).
4. Groups H-2 and H-3. Occupancies containing materials with explosive characteristics shall be separated as required by the *International Fire Code* and 527 CMR. Where separations are not specified, the distances required shall not be less than the distances required by Table 415.3.1.

415.3.2 Group H-1 and H-2 or H-3 Detached Buildings. Where a detached building is required by Table 415.3.2, there are no requirements for wall and opening protection based on location on property.

415.4 Special Provisions for Group H-1 Occupancies. Group H-1 occupancies shall be in buildings used for no other purpose, shall not exceed one story in height and be without abasement, crawl spaces or other under-floor spaces. Roofs shall be of lightweight construction with suitable thermal insulation to prevent sensitive material from reaching its decomposition temperature.

Group H-1 occupancies containing materials which are in themselves both physical and health hazards in quantities exceeding the maximum allowable quantities per control area in Table 307.7.(2) shall comply with requirements for both Group H-1 and H-4 occupancies

415.4.1 Floors in Storage Rooms. Floors in storage areas for organic peroxides, pyrophoric materials and unstable (reactive) materials shall be of liquid-tight, noncombustible construction.

TABLE 415.3.1 MINIMUM SEPARATION DISTANCES FOR BUILDINGS CONTAINING EXPLOSIVE MATERIALS (See also 527 CMR)

QUANTITY OF EXPLOSIVE MATERIAL ^a		MINIMUM DISTANCE (feet)		
		Lot lines ^b and inhabited buildings ^c		Separation of Magazines ^{d, e, f}
Pounds over	Pounds not over	Barricaded ^d	Unbarricaded	
2	5	70	140	12
5	10	90	180	16
10	20	110	220	20
20	30	125	250	22
30	40	140	280	24
40	50	150	300	28
50	75	170	340	30
75	100	190	380	32
100	125	200	400	36
125	150	215	430	38
150	200	235	470	42
200	250	255	510	46
250	300	270	540	48
300	400	295	590	54
400	500	320	640	58
500	600	340	680	62
600	700	355	710	64
700	800	375	750	66
800	900	390	780	70
900	1,000	400	800	72
1,000	1,200	425	850	78
1,200	1,400	450	900	82
1,400	1,600	470	940	86
1,600	1,800	490	980	88
1,800	2,000	505	1,010	90
2,000	2,500	545	1,090	98
2,500	3,000	580	1,160	104
3,000	4,000	635	1,270	116
4,000	5,000	685	1,370	122
5,000	6,000	730	1,460	130
6,000	7,000	770	1,540	136
7,000	8,000	800	1,600	144
8,000	9,000	835	1,670	150
9,000	10,000	865	1,730	156
10,000	12,000	875	1,750	164
12,000	14,000	885	1,770	174
14,000	16,000	900	1,800	180
16,000	18,000	940	1,880	188
18,000	20,000	975	1,950	196
20,000	25,000	1,055	2,000	210
25,000	30,000	1,130	2,000	224
30,000	35,000	1,205	2,000	238
35,000	40,000	1,275	2,000	248
40,000	45,000	1,340	2,000	258
45,000	50,000	1,400	2,000	270
50,000	55,000	1,460	2,000	280
55,000	60,000	1,515	2,000	290
60,000	65,000	1,565	2,000	300
65,000	70,000	1,610	2,000	310
70,000	75,000	1,655	2,000	320
75,000	80,000	1,695	2,000	330
80,000	85,000	1,730	2,000	340
85,000	90,000	1,760	2,000	350
90,000	95,000	1,790	2,000	360
95,000	100,000	1,815	2,000	370
100,000	110,000	1,835	2,000	390
110,000	120,000	1,855	2,000	410
120,000	130,000	1,875	2,000	430
130,000	140,000	1,890	2,000	450
140,000	150,000	1,900	2,000	470
150,000	160,000	1,935	2,000	490
160,000	170,000	1,965	2,000	510
170,000	180,000	1,990	2,000	530
180,000	190,000	2,010	2,010	550
190,000	200,000	2,030	2,030	570

TABLE 415.3.1 MINIMUM SEPARATION DISTANCES FOR BUILDINGS CONTAINING EXPLOSIVE MATERIALS (See also 527 CMR) - continued

QUANTITY OF EXPLOSIVE MATERIAL ^a		MINIMUM DISTANCE (feet)		
		Lot lines ^b and inhabited buildings ^c		Separation of Magazines ^{d, e, f}
Pounds over	Pounds not over	Barricaded ^d	Unbarricaded	
200,000	210,000	2,055	2,055	590
210,000	230,000	2,100	2,100	630
230,000	250,000	2,155	2,155	670
250,000	275,000	2,215	2,215	720
275,000	300,000	2,275	2,275	770

- For SI: 1 pound = 0.454 kg, 1 foot = 304.8 mm.
- a. The number of pounds of explosives listed is the number of pounds of trinitrotoluene (TNT) or the equivalent pounds of other explosive.
 - b. The distance listed is the distance to lot line, including lot lines at public ways.
 - c. For the purpose of TABLE 415.3.1, an inhabited building is any building on the same property that is regularly occupied by people. Where two or more buildings contain ing explosives or magazines are located on the same property, each building or magazine shall comply with the minimum distances specified from inhabited build ings and, in addition, they shall be separated from each other by not less than the distance shown for “Separation of magazines,” except that the quantity of explosive materials contained in detonator buildings or magazines shall govern in regard to the spacing of said detonator buildings or magazines from buildings or magazines containing other explosive materials. If any two or more buildings or magazines are separated from each other by less than the specified "Separation of Magazines"distances, then such two or more buildings or magazines, as a group, shall be considered as one building or magazine, and the total quantity of explo sive materials stored in such group shall be treated as if the explosive were in a single building or magazine located on the site of any building or magazine of the group, and shall comply with the minimum distance specified from other magazines or inhabited buildings.
 - d. Barricades shall effectively screen the building containing explosives from other buildings, public ways or magazines. Where mounds or revetted walls of earth are used for barricades, they shall not be less than three feet in thickness. A straight line from the top of any side wall of the building containing explosive materials to the eave line of any other building, magazine or a point 12 feet above the centerline of a public way shall pass through the barricades.
 - e. Unless otherwise restricted by requirements of 527 CMR , a magazine is a building or structure, other than an operating building, approved for storage of explosive materials. Portable or mobile magazines not exceeding 120 square feet (11 m²) in area need not comply with the requirements of 780 CMR, however, all magazines shall comply with the *International Fire Code*.
 - f. The distance listed is permitted be reduced by 50% where approved natural or artificial barriers are provided in accordance with the requirements in Note d.

TABLE 415.3.2 REQUIRED DETACHED STORAGE

DETACHED STORAGE IS REQUIRED WHEN THE QUANTITY OF MATERIAL EXCEEDS THAT LISTED IN TABLE 1415.3.2 (See also 527 CMR)			
Material	Class	Solids and Liquids (tons) ^{a,b}	Gases (cubic feet) ^{a,b}
Explosives	Division 1.1	Maximum Allowable Quantity	Not Applicable
	Division 1.2	Maximum Allowable Quantity	
	Division 1.3	Maximum Allowable Quantity	
	Division 1.4	Maximum Allowable Quantity	
	Division 1.4 ^c	1	
	Division 1.5	Maximum Allowable Quantity	
Oxidizers	Class 4	Maximum Allowable Quantity	Maximum Allowable Quantity
Unstable (reactives) detonable	Class 3 or 4	Maximum Allowable Quantity	Maximum Allowable Quantity
Oxidizer, liquids and solids	Class 3	1,200	Not Applicable
	Class 2	2,000	Not Applicable
Organic peroxides	Detonable	Maximum Allowable Quantity	Not Applicable
	Class I	Maximum Allowable Quantity	Not Applicable
	Class II	25	Not Applicable
	Class III	50	Not Applicable
Unstable (reactives) nondetonable	Class 3	1	2,000
	Class 2	25	10,000
Water reactives	Class 3	1	Not Applicable
	Class 2	25	Not Applicable
Pyrrhoric gases	Not Applicable	Not Applicable	2,000

- For SI: 1 ton = 906 kg, 1 cubic foot = 0.02832 M³.
- a. Unless otherwise restricted by requirements of 527 CMR, for materials that are detonable, the distance to other buildings or lot lines shall be as specified in Table 415.3.1 based on trinitrotoluene (TNT) equivalence of the material. For materials classified as explosives, see the *International Fire Code*, Chapter 33. For all other materials, the distance shall be as indicated in 780 CMR 415.3.1.

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- b. "Maximum Allowable Quantity" means the maximum allowable quantity per control area set forth in Table 3 07.7(1).
- c. Limited to Division 1.4 materials and articles, including articles packaged for shipment, that are not regulated as an explosive under Bureau of Alcohol, Tobacco and Firearms (BATF) regulations or unpackaged articles used in process operations that do not propagate a detonation or deflagration between articles, providing the net explosive weight of individual articles does not exceed one pound.

415.5 Special Provisions for Group H-2 and H-3 Occupancies. Group H-2 and H-3 occupancies containing quantities of hazardous materials in excess of those set forth in Table 415.3.2 shall be in buildings used for no other purpose, shall not exceed one story in height and shall be without basements, crawl spaces or other under-floor spaces.

Group H-2 and H-3 occupancies containing water-reactive materials shall be resistant to water penetration. Piping for conveying liquids shall not be over or through areas containing water reactives, unless isolated by approved liquid-tight construction.

Exception. Fire protection piping.

415.5.1 Floors in Storage Rooms. Floors in storage areas for organic peroxides, oxidizers, pyrophoric materials, unstable (reactive) materials and water-reactive solids and liquids shall be of liquid-tight, noncombustible construction.

415.5.2 Waterproof Room. Rooms or areas used for the storage of water-reactive solids and liquids shall be constructed in a manner that resists the penetration of water through the use of waterproof materials. Piping carrying water for other than approved automatic fire sprinkler systems shall not be within such rooms or areas.

415.6 Smoke and Heat Venting. Smoke and heat vents complying with 780 CMR 910.0 shall be installed in the following locations:

1. In occupancies classified as Group H-2 or H-3, any of which are over 15,000 square feet (1394 m²) in single floor area.

Exception. Buildings of noncombustible construction containing only noncombustible materials.

2. In areas of buildings in Group H used for storing Class 2, 3 and 4 liquid and solid oxidizers, Class 1 and unclassified detonable organic peroxides, Class 3 and 4 unstable (reactive) materials, or Class 2 or 3 water-reactive materials as required for a Class V hazard classification.

Exception: Buildings of noncombustible construction containing only noncombustible materials.

415.7 Group H-2. Occupancies in Group H-2 shall be constructed in accordance with 780 CMR 415.7.1 through 415.7.4 and the International Fire Code. Note that 527 CMR likewise regulates in this field.

415.7.1 Combustible Dusts, Grain Processing and Storage. The provisions of 780 CMR 415.7.1.1 through 415.7.1.5 shall apply to

buildings in which materials that produce combustible dusts are stored or handled. Buildings that store or handle combustible dusts shall comply with the applicable provisions of NFPA 61, NFPA 120, NFPA 651, NFPA 654, NFPA 655, NFPA 664 and NFPA 85, and the *International Fire Code*.

415.7.1.1 Type of Construction and Height Exceptions. Buildings shall be constructed in compliance with the height and area limitations of Table 503 for Group H-2; except that where erected of Type I or II construction, the heights and areas of grain elevators and similar structures shall be unlimited, and where of Type IV construction, the maximum height shall be 65 feet (19 812 mm) and except further that, in isolated areas, the maximum height of Type IV structures shall be increased to 85 feet (25 908 mm).

415.7.1.2 Grinding Rooms. Every room or space occupied for grinding or other operations that produce combustible dusts shall be enclosed with fire barriers and horizontal assemblies or both that have not less than a two-hour fire-resistance rating where the area is not more than 3,000 square feet (279 m²), and not less than a four-hour fire-resistance rating where the area is greater than 3,000 square feet (279 m²).

415.7.1.3 Conveyors. 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 30.00.

415.7.1.4 Explosion Control. Explosion control shall be provided as specified in the *International Fire Code*, or spaces shall be equipped with the equivalent mechanical ventilation complying with the *International Mechanical Code*.

415.7.1.5 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.

415.7.1.6 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 IB 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 (19 812 mm) in height shall be Type IV.

415.7.2 Flammable and Combustible Liquids. *The storage, handling, processing and transporting of flammable and combustible liquids shall be in accordance with the International Mechanical Code and the International Fire Code, additionally 527 CMR regulates in this field.*

415.7.2.1 Mixed Occupancies. Where the storage tank area is located in a building of two or more occupancies, and the quantity of liquid exceeds the maximum allowable quantity for one control area, the use shall be completely separated from adjacent fire areas in accordance with the requirements of 780 CMR 302.3.2.

415.7.2.1.1 Height Exception. Where storage tanks are located within only a single-story building, the height limitation of 780 CMR 503.0 shall not apply for Group H.

415.7.2.2 Tank Protection. *See 527 CMR.*

415.7.2.3 Tanks. *See 527 CMR.*

415.7.2.4 Suppression. Group H shall be equipped throughout with an approved automatic sprinkler system, installed in accordance with 780 CMR 903.0.

415.7.2.5 Leakage Containment. *See 527 CMR.*

415.7.2.6 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 9.00 to transmit a trouble signal.

415.7.2.7 Tank Vent. *See 527 CMR.*

415.7.2.8 Room Ventilation. Storage tank areas storing Class I, II or IIIA liquids shall be provided with mechanical ventilation. The mechanical ventilation system shall be in accordance with the *International Mechanical Code* and the *International Fire Code*.

415.7.2.9 Explosion Venting. Where Class I liquids are being stored, explosion venting shall be provided in accordance with the *International Fire Code*.

415.7.2.10 Tank Openings Other than Vents. *See 527 CMR.*

415.7.3 Liquefied Petroleum Gas-distribution Facilities. *See 527 CMR.*

415.7.3.1 Air movement. *See 527 CMR.*

415.7.3.2 Construction. Liquefied petroleum gas-distribution facilities shall be constructed in accordance with 780 CMR 415.7.3.3 for separate buildings, 780 CMR 415.7.3.4 for attached buildings or 780 CMR 415.7.3.5 for rooms within buildings.

415.7.3.3 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 415.7.3.3.1 through 415.7.3.3.3.

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

415.7.3.3.2 Materials. Walls, floors, ceilings, <->columns and roofs shall be constructed of noncombustible materials.

415.7.3.3.3 Explosion Venting. Explosion venting shall be provided in accordance with the *International Fire Code*.

415.7.3.4 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 415.7.3.3 and 415.7.3.4.1. Where the attached perimeter exceeds 50%, such facilities shall comply with 780 CMR 415.7.3.5.

415.7.3.4.1 Fire Separation Assemblies. Separation of the attached structures shall be provided by fire barrier walls and horizontal assemblies, or both, having a fire-resistance rating of not less than one hour and shall not have openings. Fire barrier walls and horizontal assemblies, or both, between attached structures occupied only for the storage of LP-gas are permitted to have fire doors that comply with 780 CMR 715.0. Such fire barrier walls and horizontal assemblies, or both, shall be designed to withstand a static pressure of at least 100 pounds per square foot (psf) (4788 Pa), except where the building to which the structure is attached is occupied by operations or processes having a similar hazard.

415.7.3.5 Rooms within Buildings. Where liquefied petroleum gas-distribution facilities are located in rooms within buildings, such

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rooms shall be located in the first story above grade plane and shall have at least one exterior wall with sufficient exposed area to provide explosion venting as required in the *International Fire Code*. 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 415.7.3.5.1 and 415.7.3.5.2.

415.7.3.5.1 Materials. Walls, floors, ceilings and roofs of such rooms shall be constructed of approved noncombustible materials.

415.7.3.5.2 Common Construction. Walls and floor/ceiling assemblies common to the room and to the building within which the room is located shall have a fire barrier wall and horizontal assembly or both of not less than a one-hour fire-resistance rating and without openings. Common walls for rooms occupied only for storage of LP-gas are permitted to have opening protectives complying with 780 CMR 715. Such walls and ceiling shall be designed to withstand a static pressure of at least 100 psf (4788 Pa).

Exception: Where the building, within which the room is located, is occupied by operations or processes having a similar hazard.

415.7.4 Dry Cleaning Plants. See 527 CMR.

415.8 Groups H-3 and H-4. Groups H-3 and H-4 shall be constructed in accordance with the applicable provisions of 780 CMR and the *International Fire Code*.

415.8.1 Gas Rooms. When gas rooms are provided, such rooms shall be separated from other areas by not less than a 1-hour fire barrier.

415.8.2 Floors in Storage Rooms. Floors in storage areas for corrosive liquids and highly toxic or toxic materials shall be of liquid-tight, noncombustible construction.

415.8.3 Separation—Highly Toxic Solids and Liquids. Highly toxic solids and liquids not stored in approved hazardous materials storage cabinets shall be isolated from other hazardous materials storage by construction having a 1-hour fire-resistance rating.

415.9 Group H-5.

415.9.1 General. In addition to the requirements set forth elsewhere in 780 CMR, Group H-5 shall comply with the provisions of 780 CMR 415.9 and the *International Fire Code*.

415.9.2 Fabrication Areas.

415.9.2.1 Hazardous Materials in Fabrication Areas.

415.9.2.1.1 Aggregate Quantities. The aggregate quantities of hazardous materials stored and used in a single fabrication area shall not exceed the quantities set forth in Table 415.9.2.1.1.

Exception. The quantity limitations for any hazard category in Table 415.9.2.1.1 shall not apply where the fabrication area contains quantities of hazardous materials not exceeding the maximum allowable quantities per control area established by Tables 307.7(1) and 307.7(2).

TABLE 415.9.2.1.1 QUANTITY LIMITS FOR HAZARDOUS MATERIALS
IN A SINGLE FABRICATION AREA IN GROUP H-5

HAZARD CATEGORY		SOLIDS (pounds per square feet)	LIQUIDS (gallons per square feet)	GAS (feet ³ @ NTP/square feet)
PHYSICAL-HAZARD MATERIALS				
Combustible dust		Note b	Not Applicable	Not Applicable
Combustible fiber	Loose	Note b	Not Applicable	Not Applicable
	Baled	Note b		
Combustible liquid	II	Not Applicable	0.01	Not Applicable
	IIIA		0.02	
	IIIB		Not Limited	
	Combination Class I, II and IIIA		0.04	
Cryogenic gas	Flammable	Not Applicable	Not Applicable	Note c
	Oxidizing			1.25
Explosives		Note b	Note b	Note b
Flammable gas	Gaseous	Not Applicable	Not Applicable	Note c Note c
	Liquefied			
Flammable liquid	IA	Not Applicable	0.0025	Not Applicable
	IB		0.025	
	IC		0.025	
	Combination Class IA, IB and IC		0.025	
Combination Class I, II and IIIA			0.04	
Flammable solid		0.001	Not Applicable	Not Applicable
Organic peroxide		Note b	Not Applicable	Not Applicable
Unclassified detonable		Note b		
	Class I	0.025		
	Class II	0.1		
	Class III	Not Limited		
	Class IV			
	Class V			
Oxidizing gas	Gaseous	Not Applicable	Not Applicable	1.25
	Liquefied			1.25
Combination of gaseous and liquefied				
Oxidizer	Class 4	Note b	Note b	Not Applicable
	Class 3	0.003	0.003	
	Class 2	0.003	0.003	
	Class 1	0.003	0.003	
	Combination	Class 1, 2, 3	0.003	
Pyrophoric material		Note b	0.00125	Notes c and d
Unstable reactive	Class 4	Note b	Note b	Note b
	Class 3	0.025	0.0025	Note b
	Class 2	0.1	0.01	Note b
	Class 1	Not Limited	Not Limited	Not Limited
Water reactive	Class 3	Note b	0.00125	Not Applicable
	Class 2	0.25	0.025	
	Class 1	Not Limited	Not Limited	

HEALTH-HAZARD MATERIALS

Corrosives	Not Limited	Not Limited	Not Limited
Highly toxic	Not Limited	Not Limited	Note c
Toxics	Not Limited	Not Limited	Note c

For SI: 1 pound per square foot = 4.882 kg/m², 1 gallon per square foot = 0.025 L/m², 1 cubic foot @ NTP/square foot = 0.305 M³ @ NTP/m², 1 cubic foot = 0.02832 M³.

- a. Hazardous materials within piping shall not be included in the calculated quantities.
- b. Quantity of hazardous materials in a single fabrication shall not exceed the maximum allowable quantities per control area in Tables 307.7(1) and 307.7(2).
- c. The aggregate quantity of flammable, pyrophoric, toxic and highly toxic gases shall not exceed 9,000 cubic feet at NTP.
- d. The aggregate quantity of pyrophoric gases in the building shall not exceed the amounts set forth in Table 415.3.2.

415.9.2.1.2 Hazardous Production Materials. The maximum quantities of hazardous production materials stored in a single fabrication area shall not exceed the maximum allowable quantities per control area established by Tables 307.7(1) and 307.7(2).

415.9.2.2 Separation. Fabrication areas, whose sizes are limited by the quantity of hazardous materials allowed by Table

415.9.2.1.1, shall be separated from each other, from exit access corridors, and from other parts of the building by not less than 1-hour fire barriers.

Exceptions:.

1. Doors within such fire barrier walls, including doors to corridors, shall be only self-closing fire assemblies having a fire-protection rating of not less than ¾ hour.
2. Windows between fabrication areas and

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exit access corridors are permitted to be fixed glazing listed and labeled for a fire protection rating of at least $\frac{3}{4}$ hour in accordance with 780 CMR 715.0.

415.9.2.3 Location of Occupied Levels.

Occupied levels of fabrication areas shall be located at or above the first story above grade plane.

415.9.2.4 Floors. Except for surfacing, floors within fabrication areas shall be of noncombustible construction.

Openings through floors of fabrication areas are permitted to be unprotected where the interconnected levels are used solely for mechanical equipment directly related to such fabrication areas (see also 780 CMR 415.9.2.5).

Floors forming a part of an occupancy separation shall be liquid tight.

415.9.2.5 Shafts and Openings Through Floors.

Elevator shafts, vent shafts and other openings through floors shall be enclosed when required by 780 CMR 707.0. Mechanical, duct and piping penetrations within a fabrication area shall not extend through more than two floors. The annular space around penetrations for cables, cable trays, tubing, piping, conduit or ducts shall be sealed at the floor level to restrict the movement of air. The fabrication area, including the areas through which the ductwork and piping extend, shall be considered a single conditioned environment.

415.9.2.6 Ventilation. Mechanical exhaust ventilation shall be provided throughout the fabrication area at the rate of not less than 1 cubic foot per minute per square foot (0.044 L/S/m^2) of floor area. The exhaust air duct system of one fabrication area shall not connect to another duct system outside that fabrication area within the building.

A ventilation system shall be provided to capture and exhaust fumes and vapors at workstations.

Two or more operations at a workstation shall not be connected to the same exhaust system where either one or the combination of the substances removed could constitute a fire, explosion or hazardous chemical reaction within the exhaust duct system.

Exhaust ducts penetrating occupancy separations shall be contained in a shaft of equivalent fire-resistance construction. Exhaust ducts shall not penetrate fire walls.

Fire dampers shall not be installed in exhaust ducts.

415.9.2.7 Transporting Hazardous Production Materials to Fabrication Areas. *Hazardous production materials shall be transported to fabrication areas through enclosed piping or*

tubing systems that comply with 780 CMR 415.9.6.1, through service corridors complying with 780 CMR 415.9.4, or in exit access corridors as permitted in the exception to 780 CMR 415.9.3. The handling or transporting of hazardous production materials within service corridors shall comply with the Massachusetts Fire Prevention Regulations (527 CMR).

415.9.2.8 Electrical.

415.9.2.8.1 General. Electrical equipment and devices within the fabrication area shall comply with 527 CMR. The requirements for hazardous locations need not be applied where the average air change is at least four times that set forth in 780 CMR 415.9.2.6 and where the number of air changes at any location is not less than three times that required by 780 CMR 415.9.2.6. The use of recirculated air shall be permitted.

415.9.2.8.2 Workstations. Workstations shall not be energized without adequate exhaust ventilation. See 780 CMR 415.9.2.6 for workstation exhaust ventilation requirements.

415.9.3 Exit access Corridors. Exit access corridors shall comply with Chapter 10 and shall be separated from fabrication areas as specified in 780 CMR 415.9.2.2. Exit access corridors shall not contain HPM and shall not be used for transporting such materials, except through closed piping systems as provided in 780 CMR 415.9.6.3.

Exception. Where existing fabrication areas are altered or modified, HPM is allowed to be transported in existing exit access corridors, subject to the following conditions:

1. **Corridors.** Exit access corridors adjacent to the fabrication area where the alteration work is to be done shall comply with 780 CMR 1016 for a length determined as follows:

1.1. The length of the common wall of the corridor and the fabrication area; and

1.2. For the distance along the exit access corridor to the point of entry of HPM into the exit access corridor serving that fabrication area.

2. **Emergency Alarm System.** There shall be an emergency telephone system, a local manual alarm station or other approved alarm-initiating device within exit access corridors at not more than 150-foot (45 720 mm) intervals and at each exit and exit access doorway. The signal shall be relayed to an approved central, proprietary or remote station service or the emergency control station and shall also initiate a local audible alarm.

3. **Pass-throughs.** Self-closing doors having a fire-protection rating of not less than one hour shall separate pass-throughs from existing exit access corridors. Pass-throughs shall be constructed as required for the exit access corridors, and protected by an approved automatic fire-extinguishing system.

415.9.4 Service Corridors.

415.9.4.1 Occupancy. Service corridors shall be classified as Group H-5.

415.9.4.2 Use Conditions. Service corridors shall be separated from exit access corridors as required by 780 CMR 415.9.2.2. Service corridors shall not be used as a required exit access corridor.

415.9.4.3 Mechanical Ventilation. Service corridors shall be mechanically ventilated as required by 780 CMR 415.9.2.6 or at not less than six air changes per hour, whichever is greater.

415.9.4.4 Means of Egress. The maximum distance of travel from any point in a service corridor to an exit, exit access corridor or door into a fabrication area shall not exceed 75 feet (22 860 mm). Dead ends shall not exceed four feet (1219 mm) in length. There shall be not less than two exits, and not more than ½ of the required means of egress shall require travel into a fabrication area. Doors from service corridors shall swing in the direction of egress travel and shall be self-closing.

415.9.4.5 Minimum Width. The minimum clear width of a service corridor shall be five feet (1524 mm), or 33 inches (838 mm) wider than the widest cart or truck used in the corridor, whichever is greater.

415.9.4.6 Emergency Alarm System. Emergency alarm systems shall be provided in accordance with 780 CMR 415.0 and 780 CMR 414.7.1 and 414.7.2. The maximum allowable quantity per control area provisions shall not apply to emergency alarm systems required for HPM.

415.9.4.6.1 Service Corridors. An emergency alarm system shall be provided in service corridors, with at least one alarm device in each service corridor.

415.9.4.6.2 Exit Access Corridors and Exit Enclosures. Emergency alarms for exit access corridors and exit enclosures shall comply with 780 CMR 414.7.

415.9.4.6.3 Liquid Storage Rooms, HPM Rooms and Gas Rooms. Emergency alarms for liquid storage rooms, HPM rooms and gas rooms shall comply with 780 CMR 414.7.1.

415.9.4.6.4 Alarm-initiating Devices. An approved emergency telephone system, local

alarm manual pull stations, or other approved alarm-initiating devices are allowed to be used as emergency alarm-initiating devices.

415.9.4.6.5 Alarm Signals. Activation of the emergency alarm system shall sound a local alarm and transmit a signal to the emergency control station.

415.9.5 Storage of Hazardous Production Materials.

415.9.5.1 General. *Storage of HPM in fabrication areas shall be within approved or listed storage cabinets or gas cabinets, or within a workstation. The storage of hazardous production materials in quantities greater than those listed in Tables 307.7(1) or 307.7(2) shall be in liquid storage rooms, HPM rooms or gas rooms as appropriate for the materials stored. The storage of other hazardous materials shall be in accordance with other applicable provisions of 780 CMR, the International Fire Code and 527 CMR.*

415.9.5.2 Construction.

415.9.5.2.1 HPM Rooms and Gas Rooms. HPM rooms and gas rooms shall be separated from other areas by not less than a two-hour fire barrier where the area is 300 square feet (27.9 m²) or more and not less than a one-hour fire barrier where the area is less than 300 square feet (27.9 m²).

415.9.5.2.2 Liquid Storage Rooms. Liquid storage rooms shall be constructed in accordance with the following requirements:

1. Rooms in excess of 500 square feet (46.5 m²) shall have at least one exterior door approved for fire department access.
2. Rooms shall be separated from other areas by fire barriers having a fire-resistance rating of not less than one-hour for rooms up to 150 square feet (13.9 m²) in area and not less than two hours where the room is more than 150 square feet (13.9 m²) in area.
3. Shelving, racks and wainscoting in such areas shall be of noncombustible construction or wood of not less than one inch (25 mm) nominal thickness.
4. Rooms used for the storage of Class I flammable liquids shall not be located in a basement.

415.9.5.2.3 Floors. Except for surfacing, floors of HPM rooms and liquid storage rooms shall be of noncombustible liquid-tight construction. Raised grating over floors shall be of noncombustible materials.

415.9.5.3 Location. Where HPM rooms, liquid storage rooms and gas rooms are provided, they shall have at least one exterior wall and such wall shall be not less than 30 feet (9144 mm) from property lines, including

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property lines adjacent to public ways.

415.9.5.4 Explosion Control. Explosion control shall be provided where required by 780 CMR 414.5.1.

415.9.5.5 Exits. Where two exits are required from HPM rooms, liquid storage rooms and gas rooms, one shall be directly to the outside of the building.

415.9.5.6 Doors. Doors in a fire barrier wall, including doors to corridors, shall be self-closing fire assemblies having a fire-protection rating of not less than $\frac{3}{4}$ hour.

415.9.5.7 Ventilation. Mechanical exhaust ventilation shall be provided in liquid storage rooms, HPM rooms and gas rooms at the rate of not less than one cubic foot per minute per square foot (0.044 L/S/m²) of floor area or six air changes per hour, whichever is greater, for categories of material.

Exhaust ventilation for gas rooms shall be designed to operate at a negative pressure in relation to the surrounding areas and direct the exhaust ventilation to an exhaust system.

415.9.5.8 Emergency Alarm System. An approved emergency alarm system shall be provided for HPM rooms, liquid storage rooms and gas rooms.

Emergency alarm-initiating devices shall be installed outside of each interior exit door of such rooms.

Activation of an emergency alarm-initiating device shall sound a local alarm and transmit a signal to the emergency control station.

An approved emergency telephone system, local alarm manual pull stations or other approved alarm-initiating devices are allowed to be used as emergency alarm-initiating devices.

415.9.6 Piping and Tubing.

415.9.6.1 General. Hazardous production materials piping and tubing shall comply with 780 CMR 415.0 and ANSI B31.3.

415.9.6.2 Supply Piping and Tubing.

415.9.6.2.1 HPM Having a Health-hazard Ranking of 3 or 4. Systems supplying HPM liquids or gases having a health-hazard ranking of 3 or 4 shall be welded throughout, except for connections, to the systems that are within a ventilated enclosure if the material is a gas, or an approved method of drainage or containment is provided for the connections if the material is a liquid.

415.9.6.2.2 Location in Service Corridors. Hazardous production materials supply piping or tubing in service corridors shall be exposed to view.

415.9.6.2.3 Excess Flow Control. Where

HPM gases or liquids are carried in pressurized piping above 15 pounds per square inch gauge (psig) (103.4 kPa), excess flow control shall be provided. Where the piping originates from within a liquid storage room, HPM room or gas room, the excess flow control shall be located within the liquid storage room, HPM room or gas room. Where the piping originates from a bulk source, the excess flow control shall be located as close to the bulk source as practical.

415.9.6.3 Installations in Exit Access Corridors and above Other Occupancies.

The installation of hazardous production material piping and tubing within the space defined by the walls of exit access corridors and the floor or roof above or in concealed spaces above other occupancies shall be in accordance with 780 CMR 415.9.6.2 and the following conditions:

1. Automatic sprinklers shall be installed within the space unless the space is less than six inches (152 mm) in the least dimension.
2. Ventilation 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. Where the 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 any discharge or leakage and drain it to an approved location. The one-hour enclosure shall not be used as part of the receptor.
4. HPM supply piping and tubing and HPM nonmetallic waste lines shall be separated from the exit access corridor and from occupancies other than Group H-5 by construction as required for walls or partitions that have a fire protection 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 the joints occur over framing members. Access openings into the enclosure shall be protected by approved fire-resistance-rated assemblies.
5. Readily accessible manual or automatic remotely activated fail-safe emergency shutoff valves shall be installed on piping and tubing other than waste lines at the following locations:

- 5.1. At branch connections into the fabrication area.
- 5.2. At entries into exit access corridors.

Exception: Transverse crossings of the corridors by supply piping that is enclosed within a ferrous pipe or tube for the width of corridor need not comply with 780 CMR 415.9.6.3 Items 1. through 5.

415.9.6.4 Identification. Piping, tubing and HPM waste lines shall be identified in accordance with ANSI A13.1 to indicate the material being transported.

415.9.7 Continuous Gas-detection Systems. A continuous gas-detection system shall be provided for HPM gases when the physiological warning properties of the gas are at a higher level than the accepted permissible exposure limit (PEL) for the gas and for flammable gases in accordance with 780 CMR 415.0.

415.9.7.1 Where Required. A continuous gas-detection system shall be provided in the areas identified in 780 CMR 415.9.7.1.1 through 415.9.7.1.4.

415.9.7.1.1 Fabrication Areas. A continuous gas-detection system shall be provided in fabrication areas when gas is used in the fabrication area.

415.9.7.1.2 HPM Rooms. A continuous gas-detection system shall be provided in HPM rooms when gas is used in the room.

415.9.7.1.3 Gas Cabinets, Exhausted Enclosures and Gas Rooms. A continuous gas-detection system shall be provided in gas cabinets and exhausted enclosures. A continuous gas-detection system shall be provided in gas rooms when gases are not located in gas cabinets or exhausted enclosures.

415.9.7.1.4 Exit Access Corridors. When gases are transported in piping placed within the space defined by the walls of an exit access corridor, and the floor or roof above the exit access corridor, a continuous gas-detection system shall be provided where piping is located and in the exit access corridor.

Exception. A continuous gas-detection system is not required for occasional transverse crossings of the corridors by supply piping that is enclosed in a ferrous pipe or tube for the width of the corridor.

415.9.7.2 Gas-detection System Operation. The continuous gas-detection system shall be capable of monitoring the room, area or equipment in which the gas is located at or below the PEL or ceiling limit of the gas for which detection is provided. For flammable gases, the monitoring detection threshold level shall be vapor concentrations in excess of 20% of the lower explosive limit (LFL). Monitoring for highly toxic and toxic gases shall also comply with the requirements for such material in the *International Fire Code*.

415.9.7.2.1 Alarms. The gas detection system shall initiate a local alarm and transmit a signal to the emergency control

station when a short-term hazard condition is detected. The alarm shall be both visual and audible and shall provide warning both inside and outside the area where the gas is detected. The audible alarm shall be distinct from all other alarms.

415.9.7.2.2 Shutoff of Gas Supply. The gas detection system shall automatically close the shutoff valve at the source on gas supply piping and tubing related to the system being monitored for which gas is detected when a short-term hazard condition is detected. Automatic closure of shutoff valves shall comply with the following:

1. Where the gas-detection sampling point initiating the gas detection system alarm is within a gas cabinet or exhausted enclosure, the shutoff valve in the gas cabinet or exhausted enclosure for the specific gas detected shall automatically close.
2. Where the gas-detection sampling point initiating the gas detection system alarm is within a room and compressed gas containers are not in gas cabinets or an exhausted enclosure, the shutoff valves on all gas lines for the specific gas detected shall automatically close.
3. Where the gas-detection sampling point initiating the gas detection system alarm is within a piping distribution manifold enclosure, the shutoff valve supplying the manifold for the compressed gas container of the specific gas detected shall automatically close.

Exception. Where the gas-detection sampling point initiating the gas detection system alarm is at the use location or within a gas valve enclosure of a branch line downstream of a piping distribution manifold, the shutoff valve for the branch line located in the piping distribution manifold enclosure shall automatically close.

415.9.8 Manual Fire Alarm System. An approved manual fire alarm system shall be provided throughout buildings containing Group H-5. Activation of the alarm system shall initiate a local alarm and transmit a signal to the emergency control station. The fire alarm system shall be designed and installed in accordance with 780 CMR 907.0.

415.9.9 Emergency Control Station. An emergency control station shall be provided on the premises at an approved location, outside of the fabrication area and shall be continuously staffed by trained personnel. The emergency control station shall receive signals from emergency equipment and alarm and detection systems. Such emergency equipment and alarm and detection

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systems shall include, but not necessarily be limited to, the following where such equipment or systems are required to be provided either in 780 CMR 415.9 or elsewhere in 780 CMR:

1. Automatic fire sprinkler system alarm and monitoring systems.
2. Manual fire alarm systems.
3. Emergency alarm systems.
4. Continuous gas-detection systems.
5. Smoke detection systems.
6. Emergency power system.

415.9.10 Emergency Power System. An emergency power system shall be provided in Group H-5 occupancies where required in 780 CMR 415.9.10.1. The emergency power system shall be designed to supply power automatically to required electrical systems when the normal electrical supply system is interrupted.

415.9.10.1 Where Required. Emergency power shall be provided for electrically operated equipment and connected control circuits for the following systems:

1. HPM exhaust ventilation systems.
2. HPM gas cabinet ventilation systems.
3. HPM exhausted enclosure ventilation systems.
4. HPM gas room ventilation systems.
5. HPM gas detection systems.
6. Emergency alarm systems.
7. Manual fire alarm systems.
8. Automatic sprinkler system monitoring and alarm systems.
9. Electrically operated systems required elsewhere in 780 CMR applicable to the use, storage or handling of HPM.

415.9.10.2 Exhaust Ventilation Systems. Exhaust ventilation systems are allowed to be designed to operate at not less than one-half the normal fan speed on the emergency power system where it is demonstrated that the level of exhaust will maintain a safe atmosphere.

415.9.11 Fire Sprinkler System Protection in Exhaust Ducts for HPM.

415.9.11.1 General. Automatic fire sprinkler system protection shall be provided in exhaust ducts conveying vapors, fumes, mists or dusts generated from HPM in accordance with 780 CMR 415.0 and the *International Mechanical Code*.

415.9.11.2 Metallic and Noncombustible, Nonmetallic Exhaust Ducts. Automatic fire sprinkler system protection shall be provided in metallic and noncombustible, nonmetallic exhaust ducts where all of the following conditions apply:

1. Where the largest cross-sectional diameter is equal to or greater than 10 inches (254 mm).
2. The ducts are within the building.

3. The ducts are conveying flammable vapors or fumes.

415.9.11.3 Combustible Nonmetallic Exhaust Ducts. Automatic fire sprinkler system protection shall be provided in combustible nonmetallic exhaust ducts where the largest cross-sectional diameter of the duct is equal to or greater than ten inches (254 mm).

Exceptions:

1. Ducts listed or approved for applications without automatic fire sprinkler system protection.
2. Ducts not more than 12 feet (3658 mm) in length installed below ceiling level.

415.9.11.4 Automatic Sprinkler Locations. Sprinkler systems shall be installed at 12-foot (3658 mm) intervals in horizontal ducts and at changes in direction. In vertical ducts, sprinklers shall be installed at the top and at alternate floor levels.

[F] 780 CMR 416.0 APPLICATION OF FLAMMABLE FINISHES

416.1 General. The provisions of 780 CMR 416.0 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. Such construction and equipment shall comply with the *International Fire Code*.

416.2 Spray Rooms. Spray rooms shall be enclosed with fire barrier walls and horizontal assemblies or both with not less than a one-hour fire-resistance rating. Floors shall be waterproofed and drained in an approved manner.

416.2.1 Surfaces. The interior surfaces of spray rooms shall be smooth and shall be so constructed to permit the free passage of exhaust air from all parts of the interior and to facilitate washing and cleaning, and shall be so designed to confine residues within the room. Aluminum shall not be used.

416.3 Spraying Spaces. Spraying spaces shall be ventilated with an exhaust system to prevent the accumulation of flammable mist or vapors in accordance with the *International Mechanical Code*. Where such spaces are not separately enclosed, noncombustible spray curtains shall be provided to restrict the spread of flammable vapors.

416.3.1 Surfaces. The interior surfaces of spraying spaces shall be smooth and continuous without edges, and shall be so constructed to permit the free passage of exhaust air from all parts of the interior and to facilitate washing and cleaning, and shall be so designed to confine residues within the spraying space. Aluminum shall not be used.

416.4 Fire Protection. An automatic fire-extinguishing system shall be provided in all spray, dip and immersing spaces and storage rooms, and shall be installed in accordance with 780 CMR 9.00.

[F] 780 CMR 417.0 DRYING ROOMS

417.1 General. A drying room or dry kiln installed within a building shall be constructed entirely of approved noncombustible materials or assemblies of such materials regulated by the approved rules or as required in the general and specific sections of 780 CMR 4.00 for special occupancies and where applicable to the general requirements of 780 CMR 28.00.

417.2 Piping Clearance. Overhead heating pipes shall have a clearance of not less than two inches (51 mm) from combustible contents in the dryer.

417.3 Insulation. Where the operating temperature of the dryer is 175°F (79°C) or more, metal enclosures shall be insulated from adjacent combustible materials by not less than 12 inches (305 mm) of airspace, or the metal walls shall be lined with ¼-inch (6.35 mm) insulating mill board or other approved equivalent insulation.

417.4 Fire Protection. Drying rooms designed for high-hazard materials and processes, including special occupancies as provided for in 780 CMR 4.00, shall be protected by an approved automatic fire-extinguishing system conforming to the provisions of 780 CMR 9.00.

[F] 780 CMR 418. ORGANIC COATINGS

418.1 Building Features. Manufacturing of organic coatings shall be done only in buildings that do not have pits or basements.

418.2 Location. Organic coating manufacturing operations and operations incidental to or connected therewith shall not be located in buildings having other occupancies.

418.3 Process Mills. Mills operating with close clearances and that process flammable and heat-sensitive materials, such as nitrocellulose, shall be located in a detached building or noncombustible structure.

418.4 Tank Storage. Storage areas for flammable and combustible liquid tanks inside of structures shall be located at or above grade and shall be separated from the processing area by not less than two-hour fire-resistance-rated fire barriers.

418.5 Nitrocellulose Storage. Nitrocellulose storage shall be located on a detached pad or in a separate structure or a room enclosed with no less than two-hour fire-resistance-rated fire barriers.

418.6 Finished Products. Storage rooms for finished products that are flammable or combustible liquids shall be separated from the processing area by fire barriers having a fire-resistance rating of at least two hours, and openings in the walls shall be protected with approved opening protectives.

780 CMR 419.0 MOBILE UNITS

419.1 For regulations pertaining to Mobile Units, see 780 CMR 35, and 780 CMR 110.R3.

780 CMR 420.0 SWIMMING POOLS

420.1 General. See Appendix 120.M.

780 CMR 421.0 GROUP RESIDENCE

421.1 Scope. *Except as may otherwise be specifically provided for in 780 CMR 421.0, the requirements of 780 CMR, in its entirety, and as applicable, shall apply.*

421.1.1 Department of Mental Retardation (DMR) Group Homes. *780 CMR 421.0 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.*

421.2 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 categories listed in 780 CMR 421.2 Items 1. through 3.:*

- 1. not more than 12 unrelated persons between the ages of seven through 15 years of age; or*
- 2. not more than 25 unrelated persons, 16 years of age or older; or*
- 3. a combination of 780 CMR 423.2 Items 1. and 2. 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 Item 2. being equal to one such person in Item 1. all in accordance with Table 421.2.*

Note: In determining the classification for proposed use, group residence shall not be construed as being similar in any way to a multifamily dwelling, two-family dwelling, boarding house, lodging house, dormitory, hotel, school or institution of any kind. For the purposes of 780 CMR, it shall be treated as a single-family residential building.

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TABLE 421.2 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

421.2.1 Special Definitions. For the purpose of 780 CMR 421.0, the following terms shall be defined exclusively for use with group residences:

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

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

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 421.6 and 421.9. 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.

Principal Means of Egress. The primary choice of two routes normally used by occupants to enter or leave a building.

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

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 421.8 and 421.9.)

421.3 Existing Buildings. The requirements of 780 CMR 421.0, shall also apply to existing dwelling units which are to be converted to a group residence and alternative requirements set forth in 780 CMR 34.00 that conflict with the requirements of 780 CMR 421.0 shall not apply.

421.3.1 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.

421.4 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 421.0. 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.

421.5 Hazardous Contents. Any contents which represent a fire hazard greater than that which could be expected of ordinary household furnishings, shall not be allowed. Storage shall not be allowed above the second floor.

421.5.1 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).

421.5.2 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.

421.6 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 780 CMR 51.00 through 99.00 (One- and Two-Family Dwelling Code), and stairways above the grade floor shall be enclosed with one hour fire resistive construction.

- Exceptions:**
- Where the Group Residence is protected with a fire suppression system according to NFPA 13D or better as listed in 780 CMR 35.00, only one means of egress shall be required from floors above the grade floor in existing buildings and new construction.
 - Where the Group Residence is protected with a fire suppression system according to NFPA 13D or better as listed in 780 CMR 35.00 the enclosure of stairways is not required.

421.7 Fire Protection Systems.

421.7.1 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 7.00.

421.7.2 Automatic Fire Warning Systems. An approved automatic fire warning system shall be provided in accordance with 780 CMR 9.00.

421.8 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.*

421.8.1 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.*

421.8.2 Final Certificate. *Before issuance of the final certificate of occupancy, the authorized inspectors shall mutually conduct a test (see 780 CMR 421.9.1) 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.*

421.9 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.*

421.9.1 Direct Test/Fire Drill. *A fire drill shall be conducted as the direct test required by 780 CMR 421.9. 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.*

421.9.2 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.*

421.9.3 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.*

421.10 Certificate of Occupancy. *Any certificate of occupancy issued for a building intended to be used as a group residence, as defined in 780 CMR 421.2, 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 422.0 DAY CARE CENTERS

(Note: The specific provisions of 780 CMR 422.0 shall govern when specific provisions and general Code provisions are in conflict)

422.1 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 422.0.*

422.2 Definitions.

Child Day Care Centers. *See 780 CMR 422.0: Day Care Center in conjunction with 780 CMR 422.3.1 and 780 CMR 422.3.2.*

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.*

Smoke Stop Partition. *For purposes of 780 CMR 422.0, a smoke stop partition shall satisfy the requirements of 780 CMR 710.0 for a Smoke Partition.*

422.3 Use Group Classifications.

422.3.1 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-4 use group.*

422.3.2 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*

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in age shall be classified as E-use group.

422.3.3 Adult Day Care Centers. Buildings or portions thereof licensed by agencies of the state or otherwise operating as day care centers shall be classified as I-4-use. See also 780 CMR 308.5.1.

422.4 General Provisions.

422.4.1 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 10.00 and 780 CMR 34.00 as applicable and otherwise noted in 780 CMR 422.0.

422.4.1.1 Exit Signs and Means of Egress Lighting. Exit signs and means of egress lighting shall conform to the requirements of 780 CMR 1006.0 and 1011.0, as applicable.

422.4.1.2 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 in 780 CMR 422.0.

422.4.1.2.1 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 for 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.

422.4.1.3 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 1004.0, requires door widths in excess of 36 inches; door widths shall conform to the requirements of 780 CMR 1008.0.

422.4.1.4 Handrails. Handrails shall conform to the requirements of 780 CMR 1009.0 and when the day care center clients include

children, in addition to an upper handrail, a lower hand rail shall be installed between 20 inches and 24 inches above the nosing of the stair tread.

422.4.1.5 Guards. Guards shall conform to the requirements of 780 CMR 1012.0.

422.4.1.6 Stairways. Stairways, whether required means of egress interior or exterior stairways or supplemental stairways, shall comply with the requirements of 780 CMR 1009.0 and 780 CMR 34.00 as applicable.

Exception. Existing stairways shall not be required to satisfy the requirements of 780 CMR 1009 unless so required by the Building Official in accordance with 780 CMR 3400.4 or 3400.5.

422.4.2 Mixed Use-New and Existing Buildings.

422.4.2.1 Mixed Use- New Construction. In new construction mixed use buildings, day care centers shall conform to the separation requirements of 780 CMR 302.3.

422.4.2.2 Mixed Use- Existing Buildings. In mixed use existing buildings the day care center walls shall conform to the separation requirements of 780 CMR 302.3 except that the floor - ceiling assemblies of the day care center for the 780 CMR 302.3.2 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 fire-resistance rating in buildings of Type V construction; and a minimum of a two hour fireresistance rating in buildings of Type I, II, III and IV construction.

(b) For day care centers located below usable space, the ceiling of the day care center shall have at least a one hour fire-resistance 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.

422.4.2.3 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-4 and E 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 302.3.

422.4.3 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 fire rated construction creating elevator lobbies and where such lobbies exist, the requirements of 780 CMR 422.4.3, (1) and (2) are deemed satisfied.

422.4.4 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 907.0.

Exception. Residential occupancies identified in 780 CMR 422.4.5, Exception 1.

422.4.5 Automatic Fire Detection Systems. An automatic fire detection system shall be designed and installed in accordance with the requirements of 780 CMR 907.0; 780 CMR 422.4.2.2(b); 780 CMR 422.4.5 and 780 CMR 422.5 as applicable.

Exception 1. Residential occupancies that incorporate day care center I-4 or E Use and otherwise comply with all applicable requirements of 780 CMR 422.0, 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 903.0 and 780 CMR 907.0 shall be permitted to utilize single and multiple station smoke detectors in accordance with 780 CMR 907.0. In such instances the supervision requirements of 780 CMR 907.0 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 422.0, specifically and 780 CMR generally, shall be required to utilize fire protection systems complying with 780 CMR 9.00, as applicable, but the supervision requirements of 780 CMR 9.00 shall not apply unless the building fire protection systems are otherwise required to conform to such supervision requirements.

(Note that if the basement or cellar of such a building is used as a portion of the day care center, this exception to 780 CMR 422.4.5

shall not apply).

422.4.5.1 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.

422.4.5.1.1 Zoning. Specific smoke detector zoning shall be in accordance with 780 CMR 907.0 with smoke detectors spacing no greater than 30 feet unless otherwise allowed via manufacturer's listing requirements.

422.4.5.2 Compatibility. Fire protection signaling systems and/or automatic fire detection systems that are interfaced shall be listed for such mechanical and electrical interfacing.

CO Detectors. When applicable, carbon monoxide detectors shall be required in all group residences governed by 780 CMR 422.0. In new construction day care centers, and where applicable, CO detectors shall be hard wired and interconnected or otherwise be of an acceptable wireless type and conform to location requirements and listing requirements as set forth in 527 CMR 31.00 or 248 CMR, as applicable.

For existing group residences, CO detectors shall conform to the requirements of 527 CMR 31.00 or 248 CMR, as applicable.

For existing group residences undergoing alteration/renovation, etc., refer to 780 CMR 3404.0 and 3405.0.

422.4.6 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 422.5, as applicable to the use group classification of the day care center, and Table 780 CMR 422.4.6.

422.4.6.1 Allowed Height and Area. For new construction day care centers, 780 CMR Table 503 applies.

For existing day care centers, refer to the applicable requirements of 780 CMR 34.00.

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**Table 422.4.6 PERMITTED LOCATIONS
AND REQUIRED SPRINKLER PROTECTION
FOR DAY CARE CENTERS**

I-4 Child Care Occupancy Children Under Two Years Nine Months of Age									
Floor Level of Child Day Care Center	Building Construction Type								
	IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB
Basement / Cellar	P	P	P	P	P	P	P	P	P
1st Story	P	P	P	P	P	P	P	P	P
2nd Story	PS	PS	PS	NP	S	NP	S	NP	NP
3rd Story	PS	PS	PS	NP	S	NP	S	NP	NP
4th Story and Higher	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								
	IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB
Basement / Cellar	P	P	P	P	P	P	P	P	P
1st Story	P	P	P	P	P	P	P	P	P
2nd Story	P	P	P	P	P	P	P	P	P
3rd Story	PS	PS	PS	NP	S	NP	S	NP	NP
4th Story	PS	PS	PS	NP	S	NP	S	NP	NP
5th to 7th Story	PS	PS	PS	NP	NP	NP	NP	NP	NP
8th Story and Higher	NP	NP	NP	NP	NP	NP	NP	NP	NP
I-4 - Day Care Occupancy / Adult (Elder) Day Care									
I-4-Use day care Facilities are not limited in where they may be located in a building	Exception (1):								
	Adult 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 422.5 for Special Provisions
PS = Partial Sprinklers Required / See 780 CMR 422.5 for Special Provisions

422.4.7 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 780 CMR 422.4.8)

422.4.8 Boiler Rooms. Boilers, furnaces or other fire units shall be enclosed as required in the International Mechanical Code listed in 780 CMR 35.00. Boiler room doors shall not open into occupied areas.

422.4.9 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.

422.4.10 Accessibility for Persons with Disabilities. Accessibility requirements shall be in accordance with 521 CMR as listed in 780 CMR 35.00.

422.5 Special Provisions.

422.4.5.1 Application. Special provisions for I-4, E and B use day care centers and relating to allowed location, special egress and special alarm requirements are found in 780 CMR 422.5

422.5.2 I-4 Use Allowed Basement/Cellar/Story Locations. In new and existing buildings, day care centers which are classified in the I-4 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.

- The location of the day care center shall be limited to the first floor, cellar and/or basement; or
- In buildings of Type IIB, IIIA or IV construction which are fully sprinklered and comply with the special provisions of 780 CMR 422.5.4.4, the day care center shall be located no higher than the third floor; or
- In buildings of Types IA, IB or IIA 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:

- Also see 780 CMR Table 422.4.6.
- See special egress requirements of 780 CMR 422.5.4.

422.5.3 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.

- The location of the day care center shall be limited to the second floor; first floor or cellar and/or basement, or;
- In buildings of Type IIB, IIIA or IV construction which are fully sprinklered and comply with the special provisions of 780 CMR 780 CMR 422.5.4.4, the day care center shall be located no higher than the fourth floor; or;
- In buildings of Types IA, IB or IIA construction which comply with the special provisions of 780 CMR 422.5.4.4 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:

- Also see 780 CMR Table 422.4.6.
- See special egress requirements of 780 CMR 422.5.4.

422.5.4 A-3 Adult Day Care per 780 CMR 308.5.1 Exception Allowed Basement/Cellar/

Story Locations. *In day care centers classified in the A-3 adult day care 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.*

Exceptions:

1. *In adult day care centers classified as day care I-4 use see 780 CMR 422.3.3.*
2. *Adult day care responding to 780 CMR 308.5.1 Exception.*

422.5.4 I-2 and E Use Egress Requirements For Basement and Cellar Use.

422.5.4.1 Basement or Cellar Use. *A basement or cellar, as defined in 780 CMR 2.00, of a building of Type IIIB or VB construction may be used for a day care center in accordance with the requirements in 780 CMR 422.5.4.1 Items 1. through 3.:*

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 780 CMR 422.5.4.1 Items 1. and 2.*

422.5.4.2 Fire Protective Systems. *Fire protection systems shall comply with the requirements of 780 CMR 422.4.4 and 422.4.5; 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.*

422.5.4.3 Common Corridor Exit Access in Buildings of Types I, IIA and IIB Construction. *In buildings equipped with a fire suppression system in conformance with 780 CMR 9.0, a common exit access corridor shall be acceptable for providing access to two means of egress required in 780 CMR 422.4.1, such common corridors used for exitway access may be subdivided, to provide separate and independent exitway access by using smoke stop partitions complying, as applicable, with the provisions of 780 CMR 710.0 for smoke partitions. Access through interconnected rooms to either side of the smoke stop partition, as provided in 780 CMR 422.4, shall be allowed as a method of*

complying with 780 CMR 422.5.4.3. 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.

422.5.4.4 I-4 and E use Day Care Centers Located in Upper Stories of a Building. *In new and existing buildings containing I-4 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 422.5.4.5 through 780 CMR 422.5.4.7.*

422.5.4.5 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.*

422.5.4.6 Alarm Requirements. *In addition to the requirements of 780 CMR 422.4.4 and 422.4.5, 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.*

422.5.4.7 Areas of Refuge. *In new and existing buildings containing E 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 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*

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*whose licensed capacity exceeds 50 clients.
(Also see Table 422.4.6.)*

780 CMR 423.0 SUMMER CAMPS FOR CHILDREN

423.1 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 423.0*

423.2 New and Existing Occupancies. *780 CMR 423.0 shall apply to existing and new summer camps for children as defined in 780 CMR 423.1.*

423.3 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.*

423.3.1 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.*

423.4 Fire Protection. *Smoke detectors shall be required for existing and new residential units in accordance with 780 CMR 907.*

CO Detectors. *When applicable, carbon monoxide detectors shall be required in all summer camps facilities governed by 780 CMR 423.0. In new construction summer camps, and where applicable, CO detector shall be hard wired and interconnected or otherwise be of an acceptable wireless type and conform to location requirements and listing requirements as set forth in 527 CMR 31.00 or 248 CMR, as applicable.*

For existing day care centers, CO detectors shall conform to the requirements of 527 CMR 31.00 or 248 CMR, as applicable.

For existing summer camps undergoing alteration/renovation, etc., refer to 780 CMR 34.00.

General Exception for smoke detection and CO detection. *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.

423.5 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 423.0.*

423.6 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 424.0 BULK MERCHANDISING RETAIL BUILDINGS

424.1 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 424.0 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.*

424.2 Scope. *The provisions of 780 CMR 424.0 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 424.2.1. Unless otherwise noted in 780 CMR 424.0, 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 414.0 (if applicable).*

424.2.1 Definitions. *Terms used in 780 CMR 424.0 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 424.2.*

TABLE 424.2 AEROSOL CLASSIFICATION

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

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 4.00*

and 780 CMR 3.00.

Combustible Liquids. Any liquids having a flashpoint 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).

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).

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.

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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 two and three 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 combustibles upon exposure to water or moisture.

424.3 Commodity Classification. *Commodities in storage and display shall be classified in accordance with the following NFPA Standards as listed in 780 CMR 35.00.*

- 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*

424.4 Fire Protection Requirements. *Fire protection requirements shall be in accordance with Table 424.4.*

TABLE 424.4 FIRE PROTECTION REQUIREMENTS

Commodity Class1	Size of High-Piled Display Area ² (sq ft) x 0.0929 for m2	Fire Protection Requirements				Manual Smoke and Heat Vents (780 CMR 426.16)
		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)	
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 780 CMR 424.3.*
- 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 fire-resistance-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).*

424.5 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 780 CMR 35.00, 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 780 CMR 35.00.*

424.6 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 780 CMR 35.00.*

424.7 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 stand pipesystem, 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.

424.8 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.

424.9 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.*

424.10 Means of Egress. *Means of egress shall be in accordance with the requirements set forth in 780 CMR 10.00 for Use Group M, Mercantile unless otherwise modified in 780 CMR 424.10.*

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.

424.11 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 780 CMR 35.00.*

424.12 Aerosols. *The display, storage, protection, and maximum allowable quantities of aerosols permitted in mercantile occupancies shall be in accordance with of NFPA 30B.*

TABLE 424.13 DENSITY FACTOR FOR HAZARDOUS MATERIALS
EXEMPTION CALCULATIONS.

Material	Class	Solids pounds1 (cubic feet)	Liquid gallons1 (pounds)	Gas cubic feet1
		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
Oxidizers	4	Not permitted	Not Permitted	Not Permitted
	3	0.75	(0.75)	112.5
	2	1.5	(1.5)	9
	1	12	(12)	4.5
Unstable (reactive)	4	Not Permitted	Not Permitted	Not Permitted
	3	0.375	(0.375)	3.75
	2	0.3	(0.3)	1.5
	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
Water Reactive	3	0.375	(0.0375)	Not Applicable
	2	0.3	(0.3)	
	1	0.375	(0.375)	

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

424.13 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 424.13.

A = the area occupied for mercantile display. For computation purposes, the area shall not exceed 1,500 square feet (139.39 m²) per control area.

424.14 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 527 CMR 12.00 and NFPA 72, as listed in 780 CMR 35.00.
 - 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 780 CMR 35.00.
 - 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 527 CMR, as listed in 780 CMR 35.00. 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 780 CMR 35.00, 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 listed in 780 CMR 35.00, 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 424.15.

424.15 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 1.00. 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 780 CMR 35.00.

424.16 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 425.0 LIMITED GROUP RESIDENCE

425.1 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.

425.1.1 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 425.2. A limited group residence shall be

classified in the R-5 use category for code purposes.

425.1.1.1 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.

425.1.2 Definitions. The following terms shall have the meaning indicated for the purpose of 780 CMR 425.0:

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 425.2

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 425.0. 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.

425.1.3 Application of Building Code and Reference. Except as may otherwise be specifically provided for in 780 CMR 425.0, the Massachusetts State Building Code shall apply in its entirety.

Exception. 780 CMR 34.00 shall not apply.

425.1.4 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 425.0 may be incorporated within a building in residential use provided unit separation walls and floor-

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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.

425.1.5 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 425.0.*

425.1.6 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 425.1.2 from inhabiting the building overnight until the building official issues the certificate of occupancy under 780 CMR 425.1.8.*

425.1.7 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.

425.1.8 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 425.1.7.*

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

425.1.10 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.*

425.2 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 425.0, 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 521 CMR or otherwise per applicable requirements of 780 CMR 10.00 for ramps. Corridors shall be of one hour fireresistive construction.

425.2.1 Other requirements. *New structures shall also satisfy the general requirements contained in 780 CMR 425.1 and 425.3.*

425.3 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 425.1.2 are restricted to those stories having direct access to grade without steps or changes in elevation other than ramps in accordance with 521 CMR or otherwise per applicable requirements of 780 CMR 10.00 for ramps.*

425.3.1 Third-story Utilization. *The third story of buildings permitted by 780 CMR 425.3 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 nonresident areas shall be maintained locked.*

425.3.2 Vertical Openings. *Openings to such spaces as laundry chutes, dumb-waiters, heating plenums or combustible concealed spaces shall be permanently blocked with one hour construction, in accordance with the provisions of 780 CMR 7.00, unless such installation is in compliance with the pertinent provisions of other sections of 780 CMR.*

425.3.2.1 Firestopping and Draftstopping. *Firestopping and draftstopping shall be provided in accordance with 780 CMR 717.0 and the One- and Two-Family Dwelling Code or as approved by the building official.*

425.3.3 Exitway Details.

425.3.3.1 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.

425.3.3.2 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.*

425.3.3.3 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.

425.3.3.4 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.*
2. *Hollow core doors shall not be permitted.*

425.3.3.5 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 425.3.3.6, 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.*

425.3.3.6 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 1009.0. Existing stairs shall comply with 780 CMR 51.00 through 99.00 (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^{3/8} 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 it equivalent.*
3. *One stairway may be allowed to remain unenclosed to preserve functional and aesthetic requirements.*

425.3.3.7 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.*

425.3.3.8 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.*

425.3.3.9 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 applicable requirements of 780 CMR 1025.*

425.3.3.10 Means of Egress Lighting. *Means of egress lighting systems shall be provided in accordance with 780 CMR 1006.*

425.3.3.11 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.*

425.3.4 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 804.0 except that carpet type floor coverings shall possess a critical radiant flux of 0.22 w/cm or greater.*

425.3.5 Fire Suppression Systems. *Automatic fire suppression systems shall be provided and installed in accordance with NFPA Standard No. 13D for one- and two-family-style buildings and otherwise see 780 CMR 9.00 for suppression requirements.*

Additions:

1. *Exceptions listed in NFPA Standard No.13D applicable to dwellings shall not apply.*
2. *A water flow detector, connected to the fire alarm system, shall be provided.*

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

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

425.3.6 Fire Alarm System. *A manual fire alarm system shall be provided and installed in accordance with 780 CMR 907.0 and specifically NFPA Standard No. 72 as listed in 780 CMR 35.00.*

425.3.7 Automatic Protection Alarm System. *Approved smoke detectors shall be installed in accordance with 780 CMR 907.0 and specifically NFPA Standard No. 72 as listed in 780 CMR 35.00 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 mentioned in 780 MR 425.3.7 for the protection required.

425.3.8 Fire Department Connection. *All automatic and manual fire alarm systems shall be electrically interconnected; this combined system shall automatically transmit an alarm to the municipal fire department or to such other outside assistance as may be available. Such connection shall be made in accordance with NFPA Standard No. 72 as listed in 780 CMR 35.00.*

425.3.9 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 425.3.9.*
2. *Fireplaces which comply with 780 CMR 21.00 (ACI 530) may be used only in areas other than resident sleeping rooms. The fire-*

places 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.

425.3.10 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.*

425.3.10.1 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.*

425.3.10.2 *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 426.0 DETOXIFICATION FACILITIES

426.1 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.*

426.2 Scope. *Detoxification facilities shall be subject to the requirements of 780 CMR 426.0 for new and existing buildings which are to be used or operated as licensed facilities. 780 CMR 426.0 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 34.00, as applicable, shall apply.*

426.3 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*

426.4 Definitions. *The following terms shall have the meaning indicated for the purpose of 780 CMR 426.0 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.

426.5 Use Group Classification. Detoxification facilities licensed and approved in accordance with these provisions shall be classified in the R-1 use group.

426.6 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 division 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.

426.7 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 426.0. The plans shall also identify those rooms which comply with 780 CMR 426.0 for use by the impaired.

426.8 Inspection and Certification. The building official shall inspect and certify detoxification facilities once every two years.

426.9 Resident Location Limitations. In buildings used as detoxification facilities in accordance with 780 CMR 426.0, resident locations shall be limited according to the use and type of construction as provided in Table 426.9. All heights are in stories above grade. All buildings used as detoxification facilities in accordance with 780 CMR 426.0 shall be accessible to the Fire Department wherever escape windows are required.

TABLE 426.9 RESIDENT SLEEPING ROOM LOCATION LIMITATION FOR DIFFERENT TYPES OF CONSTRUCTION

Classification of Resident	Type of Building Construction								
	IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB
Impaired	No limit	8 st.	4 st.	1 st.	2 st.	1 st.	2 st.	1 st.	1 st.
Partially impaired	No limit	No limit	8 st.	1 st.	3 st.	2 st.	3 st.	2 st.	1 st.
Unimpaired	No limit	No limit	9 st.	3 st.	4 st.	3 st.	4 st.	3 st.	2 st.

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

426.9.1 Sprinklered Buildings. Buildings which are completely sprinklered may have resident locations one story higher than allowed in Table 426.9.

426.9.2 Sleeping Room Limitations. Sleeping facilities in building licensed for use as detoxification facilities shall not be located below the first story.

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

426.10.1 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 1009.0.

426.10.2 All Other Sleeping Rooms. All other sleeping rooms shall comply with the requirements of 780 CMR 10.00 in accordance with the provisions for the R-1 use group.

426.10.3 Corridors shall provide at least 36 inches minimum nominal width.

426.10.4 All means of egress doorways shall be 32 inches minimum nominal width.

Exception. Egress doorways from impaired sleeping rooms shall be 36 inches minimum nominal width.

426.10.5 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.

426.10.6 Stairways. Where not otherwise specified in 780 CMR 426.0, stairway required as a means of egress shall be subject to these requirements.

426.10.6.1 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.

426.10.6.2 Stairway enclosures shall have a fireresistance rating of one hour for buildings not exceeding three stories in height, and two

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hours for buildings exceeding three stories in height.

426.10.6.3 Doors to the required exitway stairways shall be fire doors complying with 780 CMR 715.0 . 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.

426.11 Interior Finish. Interior finish requirements shall comply with Table 426.11.

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 426.11 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 804.0.

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 804.0.

426.12 Fire Alarm Systems. Manual and automatic fire alarm systems shall be provided in accordance with 780 CMR 907.0 as they apply to Use Group R-1.

Exceptions:

1. In rooms for the impaired and partially impaired approved smoke detectors shall be utilized and where required, visible alarm notification appliances shall also be incorporated.

2. Buildings or portions thereof with 25 beds or less shall have as a minimum a Type II system as described in 780 CMR 918.0; buildings with 26 beds or more shall have as a minimum a Type I system as described in 780 CMR 918.0.

3. All buildings or portions thereof regardless of the number of beds shall incorporate manual pull stations in conformance with 780 CMR

907.0

426.12.1 All automatic and manual fire alarm systems shall be electrically interconnected; this combined system shall automatically transmit an alarm to the municipal fire department or to another approved source of assistance. Such communication shall be made in accordance with NFPA Standards No. 72 as listed in 780 CMR 35.00.

426.13 Means of Egress Lighting. Means of egress lighting including an emergency lighting system shall be provided throughout the facility in accordance with 780 CMR 10.

426.14 Smoke Enclosure Doors. Smoke enclosure doors shall be tight-fitting with approved hardware.

426.15 Heating Apparatus. The use of portable heaters, solid fuel burning room heaters and fireplaces shall be prohibited.

426.16 Sprinkler Systems. Where a complete building sprinkler system is installed it shall comply with the provisions of NFPA Standard No. 13, as listed in 780 CMR 35.00.

426.16.1 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 CMR 427.0 GROUP DWELLING UNITS

427.1 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 427.1, Exceptions 1. and 2. The provisions of 780 CMR 427.0 shall apply to both new and existing Group Dwelling Units.

Exceptions:

1. 780 CMR 427.0 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.

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 427.0. Such apartment programs shall be classified as R-1, R-2, R-3, or R-4, as applicable.*

427.1.1 Classification of Use. *Group Dwelling Units shall be classified as follows:*

Use Group R-1 - The Group Dwelling Unit has three or more dwelling or sleeping units and where the occupants (not including staff) are transient in nature and occupancy is for no more than 30 days.

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.

427.1.2 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.

427.1.3 Application of 780CMR and Reference. *Except as may otherwise be specifically provided in 780 CMR 427.0, 780 CMR shall apply in its entirety.*

Exception. 780 CMR 34.00 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 427.0, and have no outstanding violations of 780 CMR or the specialized codes.

427.1.4 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 427.0.

427.1.5 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 427.1.2 from inhabiting the building overnight until the building official issues the certificate of occupancy under 780 CMR 427.1.8.*

427.1.6 Corresponding Rules and Regulations. *115 CMR (the Department of Mental Retardation) or 104 CMR 17.13 (the Department of Mental Health) as listed in 780 CMR 35.00 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 427.1, Exceptions 1. and 2.*

427.1.7 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 780 CMR 35.00 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 427.1, Exceptions 1. and 2.*

427.1.8 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 427.1.6, 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 427.0 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 427.2. Note, however, 780 CMR 427.1, Exceptions 1. and 2.*

427.2 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*

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category of residency as defined in 780 CMR 427.2:

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.

427.2.1 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 I, IIA, IIIA, IV or VA). 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 9.00 for the appropriate use group classification; or*
- 3. The Building shall comply with the provisions of 780 CMR 425.0; or*
- 4. If of unprotected construction (Types IIB, IIIB or VB), the building shall be equipped with fire alarms complying with 780 CMR 9.00 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. 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 IIB, IIIB or VB) 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 9.00 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).

427.2.1.1 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 1021.0.*

427.2.2 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. 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 9.00 for the appropriate use group classification.*

427.2.3 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 421.0.*

427.3 Special Fire Safety Items.

427.3.1 Hazardous Contents. *No contents which represent a fire hazard greater than that which could be expected of ordinary household furnishings shall be permitted within a Group Dwelling Unit.*

427.3.2 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.*

427.3.3 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.*

427.4 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.

427.4.1 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.

