



Automatic Fire Sprinkler Systems New Construction Matrix

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Group A (Assembly) Occupancies

Assembly Group A occupancy includes, among others, the use of a building or structure, or a portion thereof, for the gathering of persons for purposes such as civic, social or religious functions; recreation, food or drink consumption or awaiting transportation.

A-1 Assembly, usually with fixed seating, intended for the production and viewing of the performing arts or motion pictures. This group includes:

Motion picture theaters
Symphony and concert halls
Theaters

Automatic Fire Sprinkler System Required where the fire area:

1. Exceeds 12,000 square feet; or
2. Has an occupant load of 300 or more; or
3. Is located on a floor other than a level of exit discharge serving such occupancies.
4. Contains a multitheater complex.

A-2 Assembly, occupancies intended for food and/or drink consumption. This group includes:

Banquet Halls
Night clubs/bars
Restaurants

1. Exceeds 5,000 square feet; or
2. Has an occupant load of 100 or more; or
3. Is located on a floor other than a level of exit discharge serving such occupancies.

A-3 Assembly, occupancies intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A. This group includes:

Gymnasiums
Libraries
Places of religious worship
Art Galleries

1. Exceeds 12,000 square feet; or
2. Has an occupant load of 300 or more; or
3. Is located on a floor other than a level of exit discharge serving such occupancies.

A-4 Assembly, occupancies intended for viewing of indoor sporting events and activities with spectator seating. This group includes:

Arenas
Swimming pools

1. Exceeds 12,000 square feet; or
2. Has an occupant load of 300 or more; or
3. Is located on a floor other than a level of exit discharge serving such occupancies.

A-5 Assembly, occupancies intended for participation in or viewing outdoor activities. This group includes:

Bleachers/grandstands
Stadiums

An automatic sprinkler system shall be provided for Group A-5 occupancies in the following areas: concession stands, retail areas, press boxes and other accessory use areas in excess of 1,000 square feet.

Group B (Business) Occupancies:

B Business Occupancy includes, among others, the use of a building or structure, or portion thereof, for office, professional or service-type transactions, including storage of records and accounts, such as:

Automatic Fire Sprinkler System Required where:

1. Four or more care recipients are incapable of self-preservation.
2. One or more care recipients who are incapable of self-preservation are located at other than the level of exit discharge serving such an occupancy.

Ambulatory health care facilities

Animal hospitals, kennels and pounds

Banks

Barber and beauty shops

Car wash

Civic administration

Clinic - outpatient

Dry cleaning and laundries: pick-up and delivery stations and self-service

Educational occupancies for students above the 12th grade

Electronic data processing

Laboratories: testing and research

Motor vehicle showrooms

Post offices

Print shops

Professional services (architects, attorneys, dentists, physicians, engineers, etc.)

Radio and television stations

Group E (Educational) Occupancies:

E Educational Occupancy includes, among others, the use of a building or structure, or portion thereof, by six or more persons at any one time for educational purposes throughout the 12th grade. Religious educational rooms and religious auditoriums, which are accessory to places of religious worship and have occupant loads of less than 100, shall be classified as A-3 occupancies. **Day care.** The use of a building or structure, or portion thereof, for educational, supervision or personal care services for more than five children older than 2 1/2 years of age shall be classified as an E occupancy.

Elementary schools

Middle schools

High schools
Day Care

Automatic Fire Sprinkler System Required:

1. Throughout all Group E fire areas greater than 12,000 square feet in area.
2. Throughout every portion of educational buildings below the lowest level of exit discharge.

Exception: An automatic sprinkler system is not required in any area below the lowest level of exit discharge serving that area where every classroom throughout the building has at least one exterior exit door at ground level.

Group F (Factory Industrial) Occupancies:

Factory Industrial Group F occupancy includes, among others, the use of a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair or processing operations that are not classified as a Group H hazardous or Group S storage occupancy. Factory industrial occupancies are classified in Groups F-1 and F-2.

F-1 Factory Industrial Moderate-hazard, includes occupancies which are not classified as Factory Industrial F-2 Low-hazard.

This group includes:

Appliances

Bakeries

Beverages: over 16-percent alcohol content

Business machines

Carpets and rugs (includes cleaning)

Clothing

Construction and agricultural machinery

Disinfectants

Dry cleaning and dyeing

Electric generation plants

Electronics

Engines (including rebuilding)

Automatic Fire Sprinkler System Required where:

1. A Group F-1 fire area exceeds 12,000 square feet; or
2. A group F-1 fire area is located more than three stories above grade plane; or
3. The combined area of all Group F-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet.
4. An automatic sprinkler system shall be provided throughout all Group F-1 occupancy fire areas that contain woodworking operations in excess of 2,500 square feet in area which generate finely divided combustible waste or use finely divided combustible materials.

Food processing

Furniture

Laundries

Machinery

Millwork (sash and door)

Plastic products

Printing or publishing

Textiles

Upholstering

Woodworking (cabinet)

**Group F (Factory Industrial) Occupancies,
Continued:**

F-2 Factory Industrial Low-hazard, includes occupancies that involve the fabrication or manufacturing of noncombustible materials which during finishing, packing or processing do not involve a significant fire hazard. This group includes:

No requirement for automatic sprinkler systems for this occupancy group.

Beverages: up to and including 16-percent alcohol content

Brick and masonry

Ceramic products

Foundries

Glass products

Gypsum

Metal products (fabrication and assembly)

Group H (High-Hazard) Occupancies:

High-hazard Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or health hazard in quantities in excess of those allowed in control areas (established in the building and fire codes), based on the maximum allowable quantity limits for control areas.

Hazardous occupancies are classified in Groups H-1, H-2, H-3, H-4, and H-5.

Automatic Fire Sprinkler System Required:

An automatic sprinkler system shall be installed in Group H occupancies.

Group I (Institutional) Occupancies:

Institutional Group I occupancy includes, among others, the use of a building or structure, or a portion thereof, in which people are cared for or live in a supervised environment, having physical limitations because of health or age are harbored for medical treatment or other care of treatment, or in which people are detained for penal or correctional purposes or in which the liberty of the occupants is restricted. Institutional occupancies shall be classified as Group I-1, I-2, I-3 or I-4.

- Adult care facility**
- Alcohol and drug centers**
- Assisted living facilities**
- Child care facility**
- Congregate care facilities**
- Convalescent facilities**
- Correctional centers**
- Detention centers**
- Detoxification facilities**
- Group homes**
- Halfway houses**
- Hospitals**
- Jails**
- Mental hospitals**
- Nursing homes**
- Prerelease centers**
- Prisons**
- Reformatories**
- Residential board and care facilities**
- Social rehabilitation facilities**

Automatic Fire Sprinkler System Required:

An automatic sprinkler system shall be provided throughout buildings with a Group I fire area.

Group M (Mercantile) Occupancies:

Group M Mercantile, includes the use of a building or structure or a portion thereof, for the display and sale of merchandise and involves stocks of goods, wares or merchandise incidental to such purposes and accessible to the public. This group includes:

Department stores

Drug stores

Markets

Motor fuel-dispensing facilities

Retail or wholesale stores

Sales rooms

Automatic Fire Sprinkler System Required where:

1. A Group M fire area exceeds 12,000 square feet; or
2. A Group M fire area is located more than three stories above grade plane; or
3. The combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 24,000 square feet; or
4. A Group M occupancy is used for the display and sale of upholstered furniture.
5. An automatic sprinkler system shall be provided in accordance with the International Fire Code in all buildings of Group M where storage of merchandise is in high-piled or rack storage arrays.

Group R (Residential) Occupancies:

Group R Residential Occupancy includes the use of a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I or when not regulated by the International Residential Code. Residential occupancies shall be classified R-1, R-2, R-3, or R-4.

R-1 Residential, includes occupancies containing sleeping units where the occupants are primarily transient in nature.

This group includes:

Boarding houses (transient)

Hotels (transient)

Motels (transient)

Congregate living facilities (transient) with more than 10 occupants

R-2 Residential occupancies containing more than two dwelling units or four or more unrelated persons where the occupants are primarily permanent in nature, including:

Apartment houses

Boarding houses (nontransient)

Dormitories

Fraternities and sororities

Hotels (nontransient)

Live/work units

Motels (nontransient)

Congregate living facilities (nontransient) with more than 16 occupants

Automatic Fire Sprinkler System Required:

An automatic sprinkler system shall be provided throughout all buildings with a Group R fire area.

An automatic sprinkler system shall be provided throughout all buildings with a Group R fire area.

**Group R (Residential) Occupancies,
Continued:**

Automatic Fire Sprinkler System Required:

R-3 Residential, includes occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I. This group includes:

1. An automatic sprinkler system shall be provided throughout all buildings with a Group R fire area.
2. Adult care and child care facilities that are within a single-family home are permitted to comply with the International Residential Code, and are not required to be provided with automatic sprinkler systems.

Adult care facilities that provide accommodations for five or fewer persons of any age for less than 24 hours

Child care facilities that provide accommodations for five or fewer persons of any age for less than 24 hours

Exception: One- and Two-Family Dwellings

Congregate living facilities with 16 or fewer persons

R-4 Residential, includes buildings arranged for occupancy as residential care/assisted living facilities including five but not more than 16 occupants, excluding staff.

An automatic sprinkler system shall be provided throughout all buildings with a Group R fire area.

**Residential care facilities with between 5 and 16 occupants
Assisted living facilities with between 5 and 16 occupants**

Group S (Storage) Occupancies:

Storage Group S occupancy includes, among others, the use of a building or structure, or a portion thereof, for storage that is not classified as a hazardous occupancy. Storage occupancies are classified as S-1 or S-2.

S-1 Storage, moderate-hazard, includes buildings occupied for storage uses that are not classified as S-2. This group includes:

Aircraft hangar (storage and repair)

Baskets

Books and paper in rolls or packs

Boots and shoes

Cardboard and cardboard boxes

Clothing, woolen wearing apparel

Dry boat storage (indoor)

Furniture

Grains

Leather

Lumber

Motor vehicle repair garages

Tires, bulk storage of

Upholstery and mattresses

Automatic Fire Sprinkler System Required where:

1. A Group S-1 fire area exceeds 12,000 square feet; or

2. A Group S-1 fire area is located more than three stories above grade plane; or

3. the combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet; or

4. A Group S-1 fire area used for the storage of commercial trucks or buses where the fire area exceeds 5,000 square feet.

5. In motor vehicle repair garages, where:

a. Buildings having two or more stories above grade plane, including basements, with a fire area containing a repair garage exceeding 10,000 square feet; or

b. Buildings no more than one story above grade plane, with a fire area containing a repair garage exceeding 12,000 square feet; or

c. Buildings with repair garages services vehicles parked in basements; or

d. A Group S-1 fire area used for the repair of commercial trucks or buses where the fire area exceeds 1,000 square feet.

6. Buildings and structures where the area for the storage of tires exceeds 20,000 cubic feet.

**Group S (Storage) Occupancies,
Continued:**

S-2 Storage, low-hazard, includes buildings used for the storage of noncombustible materials such as products on wood pallets or in paper cartons with or without single thickness divisions; or in paper wrappings. Such products are permitted to have a negligible amount of plastic trim, such as knobs, handles or film wrapping. This group includes:

Beverages up to and including 16-percent alcohol in metal, glass or ceramic containers

Cement in bags

**Dairy products in nonwaxed coated paper containers
Empty cans**

Food products

Foods in noncombustible containers

Fresh fruits and vegetables in nonplastic trays or containers

Frozen foods

glass

Meats

Metals

Parking garages, open or enclosed

Porcelain and pottery

Stoves

Washers and dryers

Automatic Fire Sprinkler System Required where:

1. In parking garages (enclosed only):

a. Where the fire area of the enclosed parking garage exceeds 12,000 square feet; or

b. Where the enclosed parking garage is located beneath other groups (except beneath Group R-3 occupancies).

2. Commercial parking garages, throughout buildings used for storage of commercial trucks or buses where the fire area exceeds 5,000 square feet.

Specific building areas and hazards

Stories without openings:

Automatic Fire Sprinkler System Required where:

1. Throughout all stories, including basements, of all buildings where the floor area exceeds 1,500 square feet and where there is not provided at least one of the following types of exterior wall openings:

a. Openings below grade that lead directly to ground level by an exterior building code compliant stairway or ramp. Openings shall be located in each 50 linear feet, or fraction thereof, of exterior wall in the story on at least one side. The required openings shall be distributed such that the lineal distance between adjacent openings does not exceed 50 feet.

b. Openings entirely above the adjoining ground level totaling at least 20 square feet in each linear foot, or fraction thereof, of exterior wall in the story on at least one side. The required openings shall be distributed such that the lineal distance between adjacent openings does not exceed 50 feet.

2. Openings shall have a minimum dimension of not less than 30 inches. Such openings shall be accessible to the fire department from the exterior and shall not be obstructed in a manner that fire fighting or rescue cannot be accomplished from the exterior.

3. Where openings in a story are provided on only one side and the opposite wall of such story is more than 75 feet from such openings, the story shall be equipped throughout with an approved automatic sprinkler system, or openings as specified above shall be provided on at least two sides of the story.

4. Where any portion of a basement is located more than 75 feet from openings as required above, the basement shall be equipped throughout with an approved automatic sprinkler system.

Rubbish and linen chutes

An automatic sprinkler system shall be installed at the top of rubbish and linen chutes and in their terminal rooms. Chutes extending through three or more floors shall have additional sprinkler heads installed within such chutes at alternate floors. Chute sprinklers shall be accessible for servicing.

Buildings 55 feet or more in height

An automatic sprinkler system shall be installed throughout buildings with a floor level having an occupant load of 30 or more that is located 55 feet or more above the lowest level of fire department vehicle access.

Exception 1: Airport control towers.

Exception 2: Open parking structures.

Exception 3: Occupancies in Group F-2.

**Specific building areas and hazards,
Continued**

Ducts conveying hazardous exhausts

Automatic Fire Sprinkler System Required where:

Where required by the International Mechanical Code, automatic sprinklers shall be provided in ducts conveying hazardous exhaust, or flammable or combustible materials.

Exception: Ducts in which the largest cross-sectional diameter of the duct is less than 10 inches.

Commercial cooking operations

An automatic sprinkler system shall be installed in commercial kitchen exhaust hood and duct systems where an automatic sprinkler system is used to comply with requirements for automatic fire-extinguishing systems.

Other required suppression systems

In addition to the all of the above provisions additional required suppression systems must be installed in accordance with relevant standards in the following buildings and areas:

Covered malls; High-rise buildings; Atriums; Underground structures; Group I-2; Stages; Special amusement buildings; Aircraft hangars; Group H-2; Flammable finishes; Drying rooms; Unlimited area buildings; Incidental accessory occupancies; Smoke-protected assembly seating; Dry cleaning plants; Dry cleaning machines; Spray finishing in Group A, E, I or R; Spray booths and spray rooms; Dip-tank rooms in Group A, I or R; Dip tanks; Hardening and tempering tanks; HPM facilities; HPM work station exhaust; HPM gas cabinets and exhausted enclosures; HPM exit access corridor; HPM exhaust ducts; Lumber production conveyor enclosures; Class A and B ovens; Class C and D ovens; Hydrogen motor fuel-dispensing area canopies; Storage fire protection (high piled); Storage (high-piled); Gas rooms; Exhausted enclosures; Indoor storage of hazardous materials; Indoor dispensing of hazardous materials; Aerosol warehouses; Aerosol display and merchandising areas; Storage of more than 1,000 cubic feet of loose combustible fibers; Storage of smokeless propellant; Storage of small arms primers; Flammable and combustible liquid storage rooms; Flammable and combustible liquid storage warehouses; Flammable and combustible liquid Group H-2 or H-3 areas; Gas cabinets for highly toxic and toxic gas; Exhausted enclosures for highly toxic and toxic gas; Gas rooms for highly toxic and toxic gas; Outdoor storage for highly toxic and toxic gas; Pyroxylin plastic storage cabinets; Pyroxylin plastic storage vaults; Pyroxylin plastic storage and manufacturing; Pyroxylin plastic storage in existing buildings; Existing I-2 occupancies.