

2021 Virginia Construction Code

CHAPTER 4 SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY

SECTION 402 COVERED MALL AND OPEN MALL BUILDINGS

402.1 Applicability.

The provisions of this section shall apply to buildings or structures defined herein as *covered or open mall buildings* not exceeding three floor levels at any point nor more than three *stories above grade plane*. Except as specifically required by this section, *covered and open mall buildings* shall meet applicable provisions of this code.

Exceptions:

1. Foyers and lobbies of Group B, R-1 and R-2 [occupancies](#) are not required to comply with this section.
2. Buildings need not comply with the provisions of this section where they totally comply with other applicable provisions of this code.

402.1.1 Open mall building perimeter line.

For the purpose of this code, a perimeter line shall be established. The perimeter line shall encircle all buildings and structures that comprise the *open mall building* and shall encompass any open-air interior walkways, open-air courtyards or similar open-air spaces. The perimeter line shall define the extent of the *open mall building*. *Anchor buildings* and parking structures shall be outside of the perimeter line and are not considered as part of the *open mall building*.

402.2 Open space.

A *covered mall building* and attached *anchor buildings* and parking garages shall be surrounded on all sides by a permanent open space or not less than 60 feet (18 288 mm). An *open mall building* and *anchor buildings* and parking garages adjoining the perimeter line shall be surrounded on all sides by a permanent open space of not less than 60 feet (18 288 mm).

Exception: The permanent open space of 60 feet (18 288 mm) shall be permitted to be reduced to not less than 40 feet (12 192 mm), provided that the following requirements are met:

1. The reduced open space shall not be allowed for more than 75 percent of the perimeter of the *covered or open mall building* and *anchor buildings*.
2. The *exterior wall* facing the reduced open space shall have a *fire-resistance rating* of not less than 3 hours.
3. Openings in the *exterior wall* facing the reduced open space shall have opening protectives with a *fire protection rating* of not less than 3 hours.
4. Group E, H, I or R occupancies are not located within the *covered or open mall building* or *anchor buildings*.

402.3 Lease plan.

Each *owner* of a *covered mall building* or of an *open mall building* 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. Modifications or changes in occupancy or use from that shown on the lease plan shall not be made without prior approval of the *building official*.

402.4 Construction.

The construction of *covered and open mall buildings*, *anchor buildings* and parking garages associated with a mall building shall comply with [Sections 402.4.1](#) through [402.4.3](#).

402.4.1 Area and types of construction.

The *building area* and type of construction of *covered mall* or *open mall buildings*, *anchor buildings* and parking garages shall comply with this section.

402.4.1.1 Covered and open mall buildings.

The *building area* of any *covered mall* or *open mall building* shall not be limited provided that the *covered mall* or *open mall building* does not exceed three floor levels at any point nor three *stories above grade plane*, and is of Type I, II, III or IV construction.

402.4.1.2 Anchor buildings.

The *building area* and *building height* of any *anchor building* shall be based on the type of construction as required by [Section 503](#) as modified by [Sections 504](#) and [506](#).

Exception: The *building area* of any *anchor building* shall not be limited provided that the *anchor building* is not more than three *stories above grade plane*, and is of Type I, II, III or IV construction.

402.4.1.3 Parking garage.

The *building area* and *building height* of any parking garage shall be based on the type of construction as required by

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Sections 406.5 and 406.6, respectively.

402.4.2 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*.

402.4.2.1 Tenant separations.

Each tenant space shall be separated from other tenant spaces by a *fire partition* complying with Section 708. A tenant separation wall is not required between any tenant space and the *mall*.

402.4.2.2 Anchor building separation.

An *anchor building* shall be separated from the *covered or open mall building* by *fire walls* complying with Section 706.

Exceptions:

1. *Anchor buildings* of not more than three stories above *grade plane* that have an occupancy classification the same as that permitted for tenants of the *mall building* shall be separated by 2-hour fire-resistance-rated *fire barriers* complying with Section 707.
2. The exterior walls of *anchor buildings* separated from an *open mall building* by an *open mall* shall comply with Table 705.5.

402.4.2.2.1 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 or IIB construction and the *mall* need not be protected.

402.4.2.3 Parking garages.

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 or open mall building* or *anchor building* by not less than 2-hour *fire barriers* constructed in accordance with Section 707 or *horizontal assemblies* constructed in accordance with Section 711, or both.

Parking garages, which are separated from *covered mall buildings*, *open mall buildings* or *anchor buildings*, shall comply with the provisions of Table 705.5.

Pedestrian walkways and tunnels that connect garages to *mall buildings* or *anchor buildings* shall be constructed in accordance with Section 3104.

402.4.3 Open mall construction.

Floor assemblies in, and roof assemblies over, the *open mall* of an *open mall building* shall be open to the atmosphere for not less than 20 feet (6096 mm), measured perpendicular from the face of the tenant spaces on the lowest level, from edge of balcony to edge of balcony on upper floors and from edge of roof line to edge of roof line. The openings within, or the unroofed area of, an *open mall* shall extend from the lowest/grade level of the open mall through the entire roof assembly. Balconies on upper levels of the *mall* shall not project into the required width of the opening.

402.4.3.1 Pedestrian walkways.

Pedestrian walkways connecting balconies in an *open mall* shall be located not less than 20 feet (6096 mm) from any other *pedestrian walkway*.

[F] 402.5 Automatic sprinkler system.

Covered and *open mall buildings* and buildings connected shall be equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1, which shall comply with all of the following:

1. The *automatic sprinkler system* shall be complete and operative throughout occupied space in the *mall building* prior to occupancy of any of the tenant spaces. Unoccupied tenant spaces shall be similarly protected unless provided with *approved* alternative protection.
2. Sprinkler protection for the *mall* of a *covered mall building* shall be independent from that provided for tenant spaces or *anchor buildings*.
3. Sprinkler protection for the tenant spaces of an *open mall building* shall be independent from that provided for *anchor buildings*.
4. Sprinkler protection shall be provided beneath exterior circulation balconies located adjacent to an *open mall*.
5. 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* separated from the *covered or open mall building* in accordance with Section 402.4.2.3 and constructed in accordance with Section 406.5.

402.6 Interior finishes and features.

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Interior finishes within the *mall* and installations within the *mall* shall comply with [Sections 402.6.1](#) through [402.6.4](#).

402.6.1 Interior finish

Interior wall and ceiling finishes within the *mall* of a covered *mall building* and within the exits of covered or open *mall buildings* shall have a minimum *flame spread index* and *smoke-developed index* of Class B in accordance with [Chapter 8](#). Interior floor finishes shall meet the requirements of [Section 804](#).

402.6.2 Kiosks.

Kiosks and similar structures (temporary or permanent) located within the *mall* of a covered *mall building* or within the perimeter line of an open *mall building* shall meet the following requirements:

1. Combustible kiosks or other structures shall not be located within a covered or open *mall* unless constructed of any of the following materials:
 - 1.1. Fire-retardant-treated wood complying with [Section 2303.2](#).
 - 1.2. Foam plastics having a maximum heat release rate not greater than 100 kW (105 Btu/h) when tested in accordance with the exhibit booth protocol in [UL 1975](#) or when tested in accordance with [NFPA 289](#) using the 20 kW ignition source.
 - 1.3. Aluminum composite material (ACM) meeting the requirements of Class A interior finish in accordance with [Chapter 8](#) when tested as an assembly in the maximum thickness intended.
2. Kiosks or similar structures located within the *mall* shall be provided with approved automatic sprinkler system and detection devices.
3. The horizontal separation between kiosks or groupings thereof and other structures within the *mall* shall be not less than 20 feet (6096 mm).
4. Each kiosk or similar structure or groupings thereof shall have an area not greater than 300 square feet (28 m²).

402.6.3 Play structures.

Play structures located within a *mall building* or within the perimeter line of an open *mall building* shall comply with [Section 424](#). The horizontal separation between play structures, kiosks and similar structures within the *mall* shall be not less than 20 feet (6096 mm).

402.6.4 Plastic signs.

Plastic signs affixed to the storefront of any tenant space facing a *mall* or open *mall* shall be limited as specified in [Sections 402.6.4.1](#) through [402.6.4.5](#).

402.6.4.1 Area.

Plastic signs shall be not more than 20 percent of the wall area facing the *mall*.

402.6.4.2 Height and width.

Plastic signs shall be not greater than 36 inches (914 mm) in height, except that where the sign is vertical, the height shall be not greater than 96 inches (2438 mm) and the width shall be not greater than 36 inches (914 mm).

402.6.4.3 Location.

Plastic signs shall be located not less than 18 inches (457 mm) from adjacent tenants.

402.6.4.4 Plastics other than foam plastics.

Plastics other than foam plastics used in signs shall be light-transmitting plastics complying with [Section 2606.4](#) or shall have a self-ignition temperature of 650°F (343°C) or greater when tested in accordance with [ASTM D1929](#), 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 E84](#) or [UL 723](#) or meet the acceptance criteria of [Section 803.1.1.1](#) when tested in accordance with [NFPA 286](#).

402.6.4.4.1 Encasement.

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

402.6.4.5 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](#) or when tested in accordance with [NFPA 289](#) using the 20 kW ignition source, and the foam plastics shall have the physical characteristics specified in this section. Foam plastics used in signs installed in accordance with [Section 402.6.4](#) shall not be required to comply with the *flame spread* and *smoke-developed indices* specified in [Section 2603.3](#).

402.6.4.5.1 Density.

The density of foam plastics used in signs shall be not less than 20 pounds per cubic foot (pcf) (320 kg/ m³).

402.6.4.5.2 Thickness.

The thickness of foam plastic signs shall not be greater than 1/2 inch (12.7 mm).

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[F] 402.7 Emergency systems.

Covered and open mall buildings, anchor buildings and associated parking garages shall be provided with emergency systems complying with [Sections 402.7.1 through 402.7.5](#).

[F] 402.7.1 Standpipe system.

Covered and open mall buildings shall be equipped throughout with a standpipe system as required by [Section 905.3.3](#).

[F] 402.7.2 Smoke control.

Atriums connecting three or more stories in a covered mall building shall be provided with a smoke control system in accordance with [Section 909](#).

[F] 402.7.3 Emergency power.

Covered mall buildings greater than 50,000 square feet (4645 m²) in area and open mall buildings greater than 50,000 square feet (4645 m²) within the established perimeter line shall be provided with emergency power that is capable of operating the emergency voice/alarm communication system in accordance with [Section 2702](#).

[F] 402.7.4 Emergency voice/alarm communication system.

Where the total floor area is greater than 50,000 square feet (4645 m²) within either a covered mall building or within the perimeter line of an open mall building, an emergency voice/alarm communication system shall be provided.

The fire department shall have access to any emergency voice/alarm communication systems serving a mall, required or otherwise. The systems shall be provided in accordance with [Section 907.5.2.2](#).

[F] 402.7.5 Fire department access to equipment.

Rooms or areas containing controls for air-conditioning systems or fire protection systems shall be identified for use by the fire department.

402.8 Means of egress.

Covered mall buildings, open mall buildings and each tenant space within a mall building shall be provided with means of egress as required by this section and this code. Where there is a conflict between the requirements of this code and the requirements of [Sections 402.8.1 through 402.8.8](#), the requirements of [Sections 402.8.1 through 402.8.8](#) shall apply.

402.8.1 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 [Section 1005.1](#) of this code where the width of the mall is as specified in this section.

402.8.1.1 Minimum width.

The aggregate clear egress width of the mall in either a covered or open mall building shall be not less than 20 feet (6096 mm). The mall width shall be sufficient to accommodate the occupant load served. Any portion of the minimum required aggregate egress width shall be not less than 10 feet (3048 mm) measured to a height of 8 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.

402.8.2 Determination of occupant load.

The occupant load permitted in any individual tenant space in a covered or open mall building shall be determined as required by this code. Means of egress requirements for individual tenant spaces shall be based on the occupant load thus determined.

402.8.2.1 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 or open mall building (excluding anchor buildings) and the occupant load factor as determined by [Equation 4-1](#).

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

(Equation 4-1)

where:

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

GLA = The gross leasable area (square feet).

Exception: Tenant spaces attached to a covered or open mall building but with a means of egress system that is totally independent of the open mall of an open mall building or of a covered mall building shall not be considered as gross leasable area for determining the required means of egress for the mall building.

402.8.2.2 OLF range.

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

402.8.2.3 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*.

402.8.2.4 Food courts.

The *occupant load* of a *food court* shall be determined in accordance with [Section 1004](#). 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 or *open mall building* as calculated in [Section 402.8.2.1](#).

402.8.3 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 is greater than 75 feet (22 860 mm) or the tenant space has an *occupant load* of 50 or more, not fewer than two *means of egress* shall be provided.

402.8.4 Arrangements of means of egress.

Assembly occupancies with an *occupant load* of 500 or more located within a *covered mall building* shall be so located such 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*. Assembly occupancies located within the perimeter line of an *open mall building* shall be permitted to have their main exit open to the *open mall*.

402.8.4.1 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 other *means of egress* has not been provided shall be considered as a dead-end *mall*.

402.8.5 Distance to exits.

Within each individual tenant space in a *covered* or *open mall building*, the distance of travel from any point to an exit or entrance to the *mall* shall be not greater than 200 feet (60 960 mm).

The distance of travel from any point within a *mall* of a *covered mall building* to an exit shall be not greater than 200 feet (60 960 mm). The maximum distance of travel from any point within an *open mall* to the perimeter line of the *open mall building* shall be not greater than 200 feet (60 960 mm).

402.8.6 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* of a *covered mall building* to separate exits or from any point in an *open mall* of an *open mall building* to two separate locations on the perimeter line, provided that neither location is an exterior wall of an *anchor building* or parking garage. The width of an *exit passageway* or *corridor* from a *mall* shall be not less than 66 inches (1676 mm).

Exception: Access to exits is permitted by way of a dead-end *mall* that does not exceed a length equal to twice the width of the *mall* measured at the narrowest location within the dead-end portion of the *mall*.

402.8.6.1 Exit passageways.

Where *exit passageways* provide a secondary *means of egress* from a tenant space, the *exit passageways* shall be constructed in accordance with [Section 1024](#).

402.8.7 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 not less than 1-hour *fire barriers* constructed in accordance with [Section 707](#) or *horizontal assemblies* constructed in accordance with [Section 711](#), or both. The *fire protection rating* of openings in the *fire barriers* shall be not less than 1 hour.

402.8.8 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. Doors and grilles 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 10 or more persons occupying spaces served by a single exit or 50 or more 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

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horizontal sliding or vertical rolling grille or door.