

2021 Virginia Construction Code

CHAPTER 27 ELECTRICAL

SECTION 2701 GENERAL

2701.1 Scope.

This chapter governs the electrical components, *equipment* and systems used in *buildings* and structures covered by this code. Electrical components, *equipment* and systems shall be designed and constructed in accordance with the provisions of this code and [NFPA 70](#).

2701.1.1 Changes to [NFPA 70](#).

The following changes shall be made to [NFPA 70](#):

1. Change Sections 334.10(2) and 334.10(3) of [NFPA 70](#) to read:
 - (2) Multifamily dwellings not exceeding four floors above grade and multifamily dwellings of any height permitted to be of Types III, IV and V construction except in any case as prohibited in 334.12.
 - (3) Other structures not exceeding four floors above grade and other structures of any height permitted to be of Types III, IV and V construction except in any case as prohibited in 334.12. In structures exceeding four floors above grade, cables shall be concealed within walls, floors or ceilings that provide a thermal barrier of material that has at least a 15-minute finish rating as identified in listings of fire-rated assemblies.

For the purpose of Items 2 and 3 above, the first floor of *abuilding* shall be that floor that has 50 percent or more of the exterior wall surface area level with or above finished grade. One additional level that is the first level and not designed for human habitation and used only for vehicle parking, storage or similar use shall be permitted.

2. Change [Section 700.12\(F\)\(2\)\(6\)](#) of [NFPA 70](#) to read:
 - (6) Where the normal power branch circuits that supply luminaires providing illumination immediately on the inside and outside of exit doors are supplied by the same service or feeder, the remote heads providing emergency illumination for the exterior of an exit door shall be permitted to be supplied by the unit *equipment* serving the area immediately inside the exit door.
3. Delete [Section 210.8\(F\)](#) in its entirety.

2701.1.2 Temporary connection to dwelling units.

The building official shall give permission to energize the electrical service *equipment* of a one-family or two-family dwelling unit when all of the following requirements have been approved:

1. The service wiring and *equipment*, including the meter socket enclosure, shall be installed and the service wiring terminated.
2. The grounding electrode system shall be installed and terminated.
3. At least one receptacle outlet on a ground fault protected circuit shall be installed and the circuit wiring terminated.
4. Service *equipment* covers shall be installed.
5. The *building* roof covering shall be installed.
6. Temporary electrical service *equipment* shall be suitable for wet locations unless the interior is dry and protected from the weather.

2701.1.3 Assisted living facility generator requirements.

Generators installed to comply with regulations for assisted living facilities licensed by the Virginia Department of Social Services shall be permitted to be optional standby systems.

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SECTION 2702 EMERGENCY AND STANDBY POWER SYSTEMS

[F] 2702.1 General.

Emergency power systems and standby power systems shall comply with [Sections 2702.1.1 through 2702.1.8](#).

[F] 2702.1.1 Stationary generators.

Stationary emergency and standby power generators required by this code shall be listed in accordance with [UL 2200](#).

[F] 2702.1.2 Fuel-line piping protection.

Fuel lines supplying a generator set inside a *high-rise building* shall be separated from areas of the *building* other than the room the generator is located in by [one of the following methods](#):

1. A fire-resistant pipe-protection system that has been tested in accordance with [UL 1489](#). The system shall be installed as tested and in accordance with the manufacturer's installation instructions, and shall have a rating of not less than 2 hours. Where the *building* is protected throughout with an automatic sprinkler system installed in accordance with [Section 903.3.1.1](#), the required rating shall be reduced to 1 hour.
2. An assembly that has a fire-resistance rating of not less than 2 hours. Where the building is protected throughout with an automatic sprinkler system installed in accordance with [Section 903.3.1.1](#), the required fire-resistance rating shall be reduced to 1 hour.
3. Other approved methods.

[F] 2702.1.3 Installation.

Emergency power systems and standby power systems required by this code or the [International Fire Code](#) shall be installed in accordance with the [International Fire Code](#), [NFPA 70](#), [NFPA 110](#) and [NFPA 111](#).

[F] 2702.1.4 Load transfer.

Emergency power systems shall automatically provide secondary power within 10 seconds after primary power is lost, unless specified otherwise in this code. Standby power systems shall automatically provide secondary power within 60 seconds after primary power is lost, unless specified otherwise in this code.

[F] 2702.1.5 Load duration.

Emergency power systems and standby power systems shall be designed to provide the required power for a minimum duration of 2 hours without being refueled or recharged, unless specified otherwise in this code.

[F] 2702.1.6 Uninterruptable power source.

An uninterrupted source of power shall be provided for equipment where required by the manufacturer's instructions, the listing, this code or applicable referenced standards.

[F] 2702.1.7 Interchangeability.

Emergency power systems shall be an acceptable alternative for installations that require standby power systems.

[F] 2702.1.8 Group I-2 occupancies.

In Group I-2 occupancies located in *flood hazard areas* established in [Section 1612.3](#), where new essential electrical systems are installed, and where new essential electrical system generators are installed, the systems and generators shall be located and installed in accordance with [ASCE 24](#). Where connections for hookup of temporary generators are provided, the connections shall be located at or above the elevation required in [ASCE 24](#).

[F] 2702.2 Where required.

Emergency and standby power systems shall be provided where required by [Sections 2702.2.1 through 2702.2.19](#).

[F] 2702.2.1 Ambulatory care facilities.

Essential electrical systems for *ambulatory care facilities* shall comply with [Section 422.6](#).

[F] 2702.2.2 Elevators and platform lifts.

Standby power shall be provided for elevators and platform lifts as required in [Sections 1009.4.1, 1009.5, 3003.1, 3007.8 and 3008.8](#).

[F] 2702.2.3 Emergency responder communication coverage systems.

(Section deleted.)

[F] 2702.2.4 Emergency voice/alarm communication systems.

Standby power shall be provided for emergency voice/alarm communication systems in [accordance with NFPA 72](#).

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[F] 2702.2.5 Exhaust systems.

Standby power shall be provided for common exhaust systems for domestic kitchens located in multistory structures as required in [Section 505.5](#) of the *International Mechanical Code*. Standby power shall be provided for common exhaust systems for clothes dryers located in multistory structures as required in [Section 504.11](#) of the *International Mechanical Code* and [Section 614.11](#) of the *International Fuel Gas Code*.

[F] 2702.2.6 Exit signs.

Emergency power shall be provided for exit signs as required in [Section 1013.6.3](#). The system shall be capable of powering the required load for a duration of not less than 90 minutes.

[F] 2702.2.7 Gas detection system.

Emergency or standby power shall be provided for gas detection systems in accordance with the *International Fire Code*.

2702.2.8 Group I-2 occupancies.

Emergency power shall be provided in accordance with [Section 407.11](#) for Group I-2 occupancies licensed by the Virginia Department of Health as a hospital, nursing or hospice facility.

2702.2.9 Group I-3 occupancies.

Emergency power shall be provided for doors in Group I-3 occupancies in accordance with [Section 408.4.2](#).

[F] 2702.2.10 Hazardous materials.

Emergency or standby power shall be provided in occupancies with hazardous materials where required by the *International Fire Code*.

[F] 2702.2.11 High-rise buildings.

Emergency and standby power shall be provided in high-rise buildings as required in [Section 403.4.8](#).

[F] 2702.2.12 Hydrogen fuel gas rooms.

Standby power shall be provided for hydrogen fuel gas rooms as required by the *International Fire Code*.

[F] 2702.2.13 Laboratory suites.

Standby or emergency power shall be provided in accordance with [Section 5004.7](#) of the *International Fire Code* where laboratory suites are located above the sixth story above grade plane or located in a story below grade plane.

[F] 2702.2.14 Means of egress illumination.

Emergency power shall be provided for means of egress illumination as required in [Section 1008.3](#). The system shall be capable of powering the required load for a duration of not less than 90 minutes.

[F] 2702.2.15 Membrane structures.

Standby power shall be provided for auxiliary inflation systems in permanent membrane structures as required in [Section 3102.8.2](#). Standby power shall be provided for a duration of not less than 4 hours. Auxiliary inflation systems in temporary air-supported and air-inflated membrane structures shall be provided in accordance with [Section 3103.10.4](#) of the *International Fire Code*.

[F] 2702.2.16 Semiconductor fabrication facilities.

Emergency power shall be provided for semiconductor fabrication facilities as required in [Section 415.11.11](#).

[F] 2702.2.17 Smoke control systems.

Standby power shall be provided for smoke control systems as required in [Sections 404.7](#), [909.11](#), [909.20.7.2](#) and [909.21.5](#).

[F] 2702.2.18 Special purpose horizontal sliding, accordion or folding doors.

Standby power shall be provided for special purpose horizontal sliding, accordion or folding doors as required in [Section 1010.3.3](#). The standby power supply shall have a capacity to operate not fewer than 50 closing cycles of the door.

[F] 2702.2.19 Underground buildings.

Emergency and standby power shall be provided in underground buildings as required in [Section 405](#).

[F] 2702.3 Critical circuits.

Required critical circuits shall be protected using one of the following methods:

1. Cables, used for survivability of required critical circuits, that are listed in accordance with [UL 2196](#) and have a fire-resistance rating of not less than 1 hour.
2. Electrical circuit protective systems having a fire-resistance rating of not less than 1 hour. Electrical circuit protective systems are installed in accordance with their listing requirements.
3. Construction having a fire-resistance rating of not less than 1 hour.

[F] 2702.4 Maintenance.

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Emergency and standby power systems shall be maintained and tested in accordance with the *International Fire Code*.