

DELAWARE STATE FIRE PREVENTION COMMISSION
Statutory Authority: 16 Delaware Code, Section 6604(1) (16 Del.C. §6604(1))
1 DE Admin. Code 702

FINAL

ORDER

702 Fire Protection in Building Construction

The Delaware State Fire Prevention Commission, pursuant to 16 Del.C. §6604(1), proposed to revise:

Regulation 701 by removing the limitation that the regulations apply only to buildings modified by 50% or more following the enactment of the regulations. The revision also removes Annexes A and B and reorganizes the content into a newly created Chapter 7. Finally, the revision removes references to Appendixes that are no longer part of the regulations.

Regulation 702 by making changes to the occupancy conversion regulation, clarifying the building rehabilitation requirements, clarifying the automatic sprinkler system, and standpipe regulations to prevent a submission for review and approval of a project in such stages that would have the effect of being less than 50% of the square footage of any building. These proposed changes also make substantive additions to the regulations regarding floor level identification and fire pumps.

Regulation 703 by adding a definition for "major deficiency," clarifying that at the time of renewal, a certificate holder must maintain current NICET certification at the minimum level that was required at the time of original licensure. The proposed changes also remove reference to the Annexes and Appendixes, which are no longer part of the regulations.

Regulation 704 by deleting Regulation 4.3 in its entirety, eliminating the requirement that a member of a local fire department be present on the scene of any fireworks display from the time the fireworks are delivered until the termination of the display, and reverting to Regulation 4.2, leaving the level of fire protection to the discretion of the local fire department.

Regulation 705 to clarify that one elevator car in any building must be of sufficient size to accommodate an ambulance cot in its horizontal position, and further clarifying that elevator cars existing as of September 1, 2015 are exempt from this requirement. These changes further clarify that all gates at gated communities must be either automatic or manual, and establishes guidelines for demarcating both primary and secondary entrance doors.

Regulation 706 by removing bond requirement for electricians added to the list of installers for the hard-wired smoke detector program.

Following publication in the Delaware *Register of Regulations* on August 1, 2015 a public hearing was held on September 22, 2015. Written comment periods were held open for thirty days, and an additional fifteen days following the public hearing. At the hearing, the Board accepted as evidence and marked as the Board's Exhibit 1 documentation of publication of the notice of the public hearing in the *News Journal* and as Board Exhibit 2, documentation of publication of the notice of the public hearing in the *Delaware State News*. During the written public comment period, written public comments were received from the following, and marked as indicated:

Board Exhibit 3: An August 6, 2015 letter from Bryan J. Soukup, Esquire of the International Code Council, urging the Commission to adopt the 2015 International Fire Code in its entirety and an August 28, 2015 letter from Kevin Brinkman, PE of the National Elevator Industry, Inc, requesting the Commission (1) look again at the proposed language of Regulation 15.2 as it appears to require two elevator cars that accommodate a stretcher where elevators are located on both sides of an elevator lobby, even if they served the same floors; (2) clarify what is meant by "key for access" as used in Regulation 15.3; (3) define one and two family elevators in Exception 1; (4) clarify Exception 2; (5) look again at Exception 3 and consider making a language change for consistency.

Board Exhibit 4: Technical, non-substantive changes suggested by the Office of the Fire Marshall upon further review of the proposed regulations.

Board Exhibit 5: A September 8, 2015 letter from Robert J. Duke, of the Surety and Fidelity Association of America, urging the Commission not to remove the bond requirement from the regulations.

Board Exhibit 6: An email from John Caufield, NFPA Mid-Atlantic Regional Director, indicating that the proposed regulations state that the Commission is adopting the 2002 edition of the NFPA 42: *Storage of Pyroxylin Plastic*, but the Commission had previously adopted the 2009 edition.

At the time of the public hearing, the Commission received public comment from Jeffrey Sargent of the Regional Electrical Code. Mr. Sargent indicated he was speaking in support of the regulation changes with a friendly suggestion regarding proposed Regulation 210.12 regarding circuit interrupters. Mr. Sargent indicated that residential smoke alarms are required to have dedicated branch circuits without arc pull circuit interrupters. These have been around since 1999 and they have proven to be a good fire prevention tool. Mr. Sargent asked that the Commission please do away with the ban on AFCI for smoke alarms.

The Commission also received public comment from Maria Evans with the Delaware Association of Realtors. Ms.

Evans asked what the timing of these regulation changes would be.

Summary of the Findings of Fact

Pursuant to discussions held during open public Commission meetings, it was determined that Regulation 701 needed to be revised to remove the limitation that the regulations apply only to buildings modified by 50% or more following the enactment of the regulations. The revision also removes Annexes A and B and reorganizes the content into a newly created Chapter 7. Finally, the revision removes references to Appendixes that are no longer part of the regulations. These changes are necessary to begin to revise the entire administrative code to a more clear, user-friendly regulatory structure that reflects best practices and removes out of date material.

Pursuant to discussions held during open public meetings of the Commission, it has been determined that Regulation 702 need to be changed *vis a vis* the occupancy conversion regulation, clarifying the building rehabilitation requirements, clarifying the automatic sprinkler system, and standpipe regulations to prevent a submission for review and approval of a project in such stages that would have the effect of being less than 50% of the square footage of any building. These changes also make substantive additions to the regulations regarding floor level identification and fire pumps. These changes are necessary to begin to revise the entire administrative code to a more clear, user-friendly regulatory structure that reflects best practices and removes out of date material.

Pursuant to discussions held during open public meetings of the Commission, it has been determined that Regulation 703 required the addition of a definition for "major deficiency," clarifying that at the time of renewal, a certificate holder must maintain current NICET certification at the minimum level that was required at the time of original licensure. These changes also removed reference to the Annexes and Appendixes which are no longer part of the regulations. These changes are necessary to begin to revise the entire administrative code to a more clear, user-friendly regulatory structure that reflects best practices and removes out of date material.

Pursuant to discussions held during open public hearings of the Commission, it was determined that Regulation 704 required the deletion of Regulation 4.3 in its entirety, eliminating the requirement that a member of a local fire department be present on the scene of any fireworks display from the time the fireworks are delivered until the termination of the display, and reverting to Regulation 4.2, leaving the level of fire protection to the discretion of the local fire department. These changes are necessary to begin to revise the entire administrative code to a more clear, user-friendly regulatory structure that reflects best practices and removes out of date material.

Pursuant to discussions held during open public hearings of the Commission, it was determined that Regulation 705 needed to be clarified to indicate that one elevator car in any building must be of sufficient size to accommodate an ambulance cot in its horizontal position, and further clarifying that elevator cars existing as of September 1, 2015 are exempt from this requirement. These changes were further needed to clarify that all gates at gated communities must be either automatic or manual, and establish guidelines for demarcating both primary and secondary entrance doors. These changes are necessary to begin to revise the entire administrative code to a more clear, user-friendly regulatory structure that reflects best practices and removes out of date material.

Pursuant to discussions held during open public hearings of the Commission, it was determined that Regulation 706 required removal of the bond requirement for electricians added to the list of installers for the hard-wired smoke detector program. These changes are necessary to begin to revise the entire administrative code to a more clear, user-friendly regulatory structure that reflects best practices and removes out of date material.

Decision of the Board

With regard to the letter from Bryan J. Soukup, Esquire of the International Code Council, urging the Commission to adopt the 2015 International Fire Code in its entirety, the Commission finds that Delaware is a NFPA state, we have always have followed the NFPA and not the International Codes for the Fire Codes. Although municipalities may adopt the IFC, that is generally more stringent than the NFPA, which municipalities are free to therefore adopt. However, the NFPA is the state fire standard that has always been used and changing to the International code.

With regard to the letter from Kevin Brinkman, PE of the National Elevator Industry, Inc, regarding Regulation 15.2, when the committee met to discuss this change, the committee felt that if one elevator in a hoistway is placed out of service for maintenance, there would still be an stretcher accommodating elevator available in another hoistway. Currently, every elevator must be stretcher accommodating, so this is a less onerous requirement than the current regulation. "Keys to access" refers to the fire fighter recall key. The Commission will change "Keys for access" to "fire fighter recall key" as suggested. Further, one and two family dwellings are defined elsewhere in the regulations and, moreover, are outside of the jurisdiction of this Commission. The term "dwelling" will be added after the term "one and two family" as suggested. Exception 2 eliminates the requirement for an elevator that accommodate a stretcher if the outside grade permits stretchers to access upper levels from the outside. This is clear. Exception 3, however, will be rewritten as suggested.

The technical, non-substantive changes suggested by the Office of the Fire Marshall will be made.

With regard to the letter from Robert J. Duke, of the Surety and Fidelity Association of America, urging the Commission not to remove the bond requirement from the regulations, the Commission finds that the bond requirement was originally

added due to the bid requirements. Ultimately, the amount of the bond that was being required was in excess of the projects under bid. Changes in state law and procurement procedures have rendered the bond requirement superfluous.

With regard to the email from John Caufield, NFPA Mid-Atlantic Regional Director, indicating that the proposed regulations state that the Commission is adopting the 2002 edition of the NFPA 42, this is a typographical error and will be corrected.

With regard to the public comment from Jeffrey Sargent of the Regional Electrical Code regarding circuit interrupters, the Commission finds the ban is necessary because a circuit may trip and a homeowner would not even know it. When originally put in, there was a great deal of contention as to whether the AFCI would work as contemplated. Now, the ban has been in place for so long and it's working so the Commission is not inclined to remove the ban.

Therefore, the Commission adopts the regulations as proposed, with the minor non-substantive changes reflected in Exhibit A.

IT IS SO ORDERED this 17th day of November, 2015 by the Delaware State Fire Commission.

David J. Roberts, Chairman
Anthony Guzzo
Marvin C. Sharp (absent)
Tom DiCristofaro

Alan Robinson, Jr., Vice Chairman
Ron Marvel
Lynn Truitt

702 Fire Protection in Building Construction

Chapter 1 Fire Protection In Buildings

1.0 New Buildings, Occupancy Conversions, Mixed Occupancies, Additions, and Repairs.

1.1 New Building Construction.

1.1.1 All buildings hereinafter constructed shall meet all applicable sections of these Regulations including the codes and standards contained within Regulation 701, ~~Annex A~~ as well as all applicable sections of any building code which is in effect within Delaware or any of its political subdivisions.

1.2 Occupancy Conversion.

1.2.1 Any existing occupancy hereinafter converted to another occupancy shall meet the provisions of ~~§1.1 of this Chapter.~~ this Regulation. All changes in occupancies shell comply with Regulation 702, Chapter 4 and Chapter 5.

1.3 Mixed Occupancies.

1.3.1 Where two or more occupancies occur in the same building or structure, and are so intermingled that separate safeguards are impracticable, means of egress facilities, construction, protection, and other safeguards shall comply with the most restrictive code requirements of the occupancies involved.

1.4 Additions.

1.4.1 All additions connected to existing buildings or structures shall meet the provisions of this Regulation and ~~the Existing Occupancy Chapters of the Life Safety Code, NFPA 101, and National Fire Protection Association Codes and Standards as adopted and/or modified by these Regulations.~~

Exception No. 1: When the addition(s) to the existing building create an aggregate, gross floor area exceeding 10,000 sq. ft., the requirements of Regulation 702, Chapter 4 shall apply.

~~Exception No. 2: When the subclassification(s) of a Mercantile or Assembly occupancy changes due to the addition(s), the New Occupancy Chapter of the Life Safety Code, NFPA 101, shall apply.~~

Note: This revision eliminates the need for a Two Hour Rated Fire Barrier Wall (Class "C" Fire Barrier) to separate additions from existing buildings. ~~The addition and existing building are both required to meet the Existing Occupancy Chapter of the Life Safety Code.~~ Exception No. 1 restricts the aggregate total of the addition and existing building to 10,000 sq.ft. unless the provisions for providing a sprinkler system are met. ~~Exception No. 2 requires the New Occupancy Chapters when, for example, an addition changes a Class C Assembly to a Class B Assembly.~~

1.5 Building Rehabilitation.

1.5.1 All building rehabilitation shall meet the provisions of this Regulations and National Fire Protection Association Codes and Standards as adopted and/or modified by these Regulations.

1.56 Repair of Fire, Explosion or Other Damage.

1.56.1 Whenever a building has been damaged by fire, explosion or other cause and the damaged area is less than 50% of the total area only that section damaged shall meet the provisions of §1.1 of this Chapter.

1.56.2 Whenever a building has been damaged by fire, explosion or other cause and the damaged area is 50% or greater the entire building shall meet the provisions of §1.1 of this Chapter.

2.0 Existing Buildings.

2.1 Determination of Hazard; Correction.

2.1.1 Whenever the State Fire Prevention Commission finds a building to be a hazard so inimicable to the safety of the public so as to require correction, in accordance with 16 Del.C. §6603, the applicable existing occupancy sections of the Life Safety Code, NFPA 101, shall be used to provide a reasonable level of safety. In addition the State Fire Marshal may use other Regulations, codes and standards as a guide in achieving a reasonable level of safety.

Chapter 2 Fire Barriers

1.0 Definition.

4.4 A fire barrier is a continuous membrane, either vertical or horizontal, such as a wall or floor assembly, that is designed and constructed with a specified fire resistance rating to limit the spread of fire and which will also restrict the movement of smoke. Fire barriers shall be required to meet all applicable sections of these Regulations.

2.0 Reserved - (Class "A" Fire Barriers).

3.0 Two Hour Rated Fire Wall (Class "B" Fire Barriers)

Note: Two Hour Rated Fire Walls (Class "B" Fire Barriers) are utilized to sub-divide buildings that exceed 10,000 aggregate gross square feet, only where no public or private water distribution is available. See Regulation 702, Chapter 4 of this Regulation.

3.1 A Two Hour Rated Fire Wall may be used to reduce a fire compartment within a building to the area limitations required by Chapter 4 of this Regulation, or any other part of these Regulations.

3.2 Two Hour Rated Fire Walls shall meet the following criteria:

3.2.1 The Fire Wall is to be constructed in accordance with the provisions of the Standard for High Challenge Fire Walls, Fire Walls, and Fire Barrier Walls, NFPA 221;

3.2.2 The Fire Wall, is to be of masonry construction and is to have a two hour fire resistance rating;

3.2.3 The Fire Wall is to be a cantilevered/free standing fire wall; or, a tied fire wall; or, a double fire wall;

3.2.4 Continuous through the roof and parapetted a minimum of thirty (30) inches. The parapet height shall measured from the top surface of the roof being protected. Roofs sloped greater than ¼ in. per ft. downward toward the wall shall be provided with a minimum thirty-six inch (36") parapet;

Exception No. 1 to 3.2.4: This wall may terminate at the underside of a noncombustible roof deck.

Exception No. 2 to 3.2.4: Exception #1 may be utilized only one time per building exceeding 10,000 square feet. Any Barrier utilized thereafter shall be parapetted per these Regulations.

3.2.5 Openings, if any, protected with a 1 ½ hour fire rated protective assembly on both sides of the opening.

Note: Exceptions No. 1 and 2 to 3.2.4. These exceptions allow the use of a Class B Barrier without a parapet in buildings up to 20,000 square feet. This type of Class B Barrier can be utilized only one time, and any additional fire barriers shall be parapetted per these Regulations.

4.0 Two Hour Rated Fire Barrier Wall (Class "C" Fire Barrier).

- 4.1 A Two Hour Rated Fire Barrier Wall (for use in providing "approved" fire barriers in order to segment buildings into individual fire divisions) shall be a two hour fire rated assembly, and shall meet the following criteria:
- 4.1.1 The Fire Barrier Wall is to be constructed in accordance with the provisions of the Standard for High Challenge Fire Walls, Fire Walls, and Fire Barrier Walls, NFPA 221;
 - 4.1.2 The Fire Barrier Wall is to have a two hour fire resistance rating;
 - 4.1.3 The Fire Barrier Wall shall extend from the foundation or floor below to the underside of the roof or floor deck above;
 - 4.1.4 Openings, if any shall be protected with a 1 ½ hour fire rated protective assembly on one side of the opening.

Note: Two Hour Rated Fire Barriers (Class "C" Fire Barriers) are utilized to meet the criteria set forth in Regulation 701, Chapter 2, Definitions, One- and Two-Family Dwellings, Townhouse/Rowhouse, or the occupancy is classified as a Multi-Family Residential or Apartment and is required to meet the specifications for that occupancy.

- 4.2 The Two-Hour Rated Fire Barrier Wall for use in Duplex, Townhouse, Rowhouse, etc. shall consist of a listed assembly extending from the foundation tight to the underside of the smooth surface of the roof deck. The roof decking, extending four (4) feet to each side of the Two Hour Wall assembly, shall be fire retardant or fire treated lumber or a non combustible material.

5.0 Required Plans.

- 5.1 Sectional plan views of all required Fire Walls and Fire Barrier Walls, shall be submitted as part of the building plans required by Regulation 701, Chapter 4. The Fire Wall and Fire Barrier Wall design shall be listed by a testing laboratory meeting the requirements of Regulation 701, Chapter 5, and the design number and laboratory name shall be provided with the plan submittal.

Chapter 3 Special Fire Safety Provisions For Physically Handicapped People

1.0 Areas of Refuge.

- 1.1 Definition. An area of refuge for a floor area is that space which is sufficiently protected from the heat and toxic gases produced by a developing fire in the floor area and which provides a direct access to an exit. An area of refuge is intended to facilitate a safe delay in egress from the story containing the floor area, thus constituting a safe space for the handicapped or otherwise disabled persons to await assistance for their safe evacuation.
- 1.2 Every mid rise building and high rise building shall incorporate areas of refuge which shall be established and maintained in accordance with this Chapter.
- 1.3 Every floor area of a mid rise building and high rise building where barrier free access is provided above the first story shall have not less than one area of refuge.
- 1.4 An area of refuge shall consist of one of the following:
- 1.4.1 A protected space within the floor area acceptable to the State Fire Marshal that:
 - 1.4.1.1 Is separated from the remainder of the floor area by a fire separation having a fire resistance rating of not less than one hour and a level of smoke control at least equal to that required of an accredited exit;
 - 1.4.1.2 Is served by a fire fighters elevator;
 - 1.4.1.3 Provides an aggregate clear floor space of not less than 30" X 48" per non ambulatory occupant, with a minimum of two such spaces provided; (See ANSI A117.1 1986)
 - 1.4.2 A horizontal exit providing an accessible route from one floor area to another floor area;
 - 1.4.3 A protected space that is either part of an accredited exit or connected by a door to an accredited exit and that:

- 1.4.3.1 Is separated from the remainder of the floor area by a fire separation having a fire resistance rating and level of smoke control at least equal to that required of the accredited exit;
 - 1.4.3.2 Provides an aggregate floor space of not less than 30" X 48" per non ambulatory occupant, with a minimum of two such spaces provided; (See ANSI A117.1 1986)
- 1.5 Areas of refuge shall be designated as such on all building plans and identified as such within the building. Identification within the building shall incorporate the "International Symbol of Accessibility" and be tactile in texture in accordance with ANSI Standard A117.1-1986. Except for doors, glazed openings shall not be permitted in walls separating areas of refuge from the remainder of the floor area.

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2.0 Emergency Communication and Fire Alarm Signaling Systems.

- 2.1 Maximum Height.
 - 2.1.1 The maximum mounting height for emergency communication and alarm system devices shall not be greater than 54 inches from the highest operation control to the floor.
- 2.2 Visual Alarms Indicating Appliances.
 - 2.2.1 Where fire alarm signaling systems are required by other sections of these Regulations, both audible and visible alarm indicating appliances shall be installed.
 - 2.2.2 Visible alarm indicating devices shall be of the direct viewing strobe type unless in the opinion of the State Fire Marshal the indirect viewing type are necessary due to the nature of the occupancy.
 - 2.2.3 All visual indicating appliances installed shall be strobe lights listed for the protective signaling purpose for which they are used.
 - 2.2.4 Visual indicating appliances shall be installed in all areas where required by the State Fire Marshal.

3.0 Inclined Wheel Chair Lifts Permitted.

- 3.1 Location.
 - 3.1.1 A single inclined wheelchair lift may be installed in buildings meeting all of the following criteria:
 - 3.1.1.1 Where permitted, the inclined wheelchair lift may serve only the first two (2) floors above the level of exit discharge and only one (1) floor below the level of exit discharge of any building, and;
 - 3.1.1.2 There are at least two mean of egress from each floor of the building, that are in compliance with the applicable provisions of the State Fire Prevention Regulations, and;
 - 3.1.1.3 The total occupant load may not exceed thirty (30) persons per floor, and;
 - 3.1.1.4 The building to be equipped with the inclined wheelchair lift shall be protected with an automatic smoke detection and fire alarm signaling system in accordance with the National Fire Alarm Code, NFPA 72, and;
 - 3.1.1.5 There shall be an interface of the controls for the inclined wheelchair lift and the fire alarm signaling system to have the wheelchair lift return to the level of exit discharge, and remain there, if the lift happens to be in use when the fire alarm signaling system is activated, and;
 - 3.1.1.6 The inclined wheelchair lift shall be provided with an auxiliary power source to ensure operation of the lift in the event of a loss of building power, and;
 - 3.1.1.7 The inclined wheelchair lift shall be provided with controls that will permit the fire department to control the movement of the lift, and;
 - 3.1.1.8 When not in use the inclined wheelchair lift shall be stored in an upright position or shall be otherwise designed to be stored in a manner that will not obstruct egress in any way.
 - 3.1.2 For each floor of a building to be served with an inclined wheelchair lift, only one of the two required means of egress as specified in §3.1.1.2 of this Chapter, may have an inclined wheelchair lift installed.

4.0 Vertical Platform Lifts Permitted.

- 4.1 Location.
 - 4.1.1 A single vertical platform lift may be installed in ~~Educational occupancies~~ buildings meeting all of the following criteria:
 - 4.1.1.1 Where permitted, the vertical platform lift shall serve only two (2) floors; the level of exit discharge and either a level above or a level below the level of exit discharge of any building, and;
 - 4.1.1.2 There are at least two mean of egress from each floor of the building, that are in compliance with the applicable provisions of the State Fire Prevention Regulations, and;

- 4.1.1.3 The building equipped with the vertical platform lift shall be protected with an automatic sprinkler system or an automatic smoke detection and fire alarm signaling system in accordance with the National Fire Alarm Code, NFPA 72, and;
- 4.1.1.4 Where an automatic smoke detection and fire alarm signaling system is provided, there shall be an interface of the controls for the vertical platform lift and the fire alarm signaling system to have the vertical platform lift return to the level of exit discharge, and remain there, if the lift happens to be in use when the fire alarm signaling system is activated, and;
- 4.1.1.5 The vertical platform lift shall be provided with an auxiliary power source to ensure operation of the lift in the event of a loss of building power, and;
- 4.1.1.6 The vertical platform lift shall be provided with controls that will permit the fire department to control the movement of the lift, and;
- 4.1.1.7 Only one installation shall be permitted in a building.
- 4.1.2 The installation of the vertical platform shall not interfere, obstruct or otherwise impede egress capacity of any of the required means of egress.

Chapter 4 Automatic Sprinkler Systems and Standpipe Systems

1.0 Automatic Sprinkler Systems.

- 1.1 This chapter shall apply to all new buildings and this chapter shall apply to all existing buildings that undergo a change in occupancy.
 - 1.1.1 This chapter shall apply to all buildings, structures, marine vessels, premises, and conditions which are modified by more than 50% after the effective date of these Regulations. The 50% figure shall be calculated utilizing the gross square footage of the building, structure, marine vessel, premises and conditions as to arrive at the correct application.
 - 1.1.2 Any proposal that is presented to the Office of the State Fire Marshal for review and approval for a building rehabilitation as defined in the 101 Life Safety Code, for less than 50% of the gross square footage of a non-sprinklered building, may not have another such project for the same building submitted for review and approval any sooner than three (3) years after the date of the final inspection unless sprinkler projection is provided throughout the entire building.

Note: It is the intent of this subsection to prevent a submission for review and approval of a project in such stages that would have the effect of being less than the 50% of the square footage, in order to avoid having to have the building, etc., meet current standards.

- 1.42 Installation Required. Automatic sprinkler systems shall be installed in accordance with the Standard for the Installation of Sprinkler Systems (NFPA 13) in all areas and occupancies as required in the applicable codes and standards as listed in Regulation 701, ~~Annex A~~ of these Regulations as well as the following:
 - 1.42.1 In all buildings exceeding 10,000 square feet of aggregate, gross floor area.

Exception No. 1: One- and Two-Family dwellings.

Exception No. 2: Where no public or private water distribution system is available, a Class "B" Fire Barrier may be utilized to subdivide a one story building into fire areas of less than 10,000 square feet.

Exception No. 3: Buildings or structures of one story in height where:

1. *This Exception does not apply to places of assembly, educational or institutional occupancies.*
2. *The exterior and interior bearing walls, columns, beams, girders, trusses or arches are constructed of noncombustible material, per the Standard on Types of Building Construction, NFPA 220, as adopted and/or modified by these Regulations; and*
3. *The construction is noncombustible; and*
4. *The occupant load is low; and*
5. *The means of egress components comply with these Regulations and the Life Safety Code, NFPA 101, as adopted and/or modified by these Regulations; and*

6. *The fuel load is identifiable, permanent, and noncombustible.*

Note: Exception No. 3: It is the intent of this exception not to require the installation of automatic sprinklers in buildings or structures in excess of 10,000 square feet when used for the storage of an identifiable, noncombustible fuel load where the number of occupants is low. For example a building used for the storage of concrete block, concrete pipe, steel, etc.

Exception No. 4: Open parking structures, per the Standard for Parking Structures, NFPA 88A, as adopted and/or modified by these Regulations, constructed of noncombustible materials, per the Standard on Types of Building Construction, NFPA 220, as adopted and/or modified by these Regulations. Under this exception, open parking structures without automatic fire suppression systems shall not be located beneath any other occupancy. Also under this exception, open parking structures without automatic fire suppression systems that are located adjacent to any other occupancy shall be properly separated by a Two Hour Rated Fire Wall in accordance with Chapter 2, §3.0 of this Regulation.

1.42.2 In all buildings in excess of 40 feet in height or more than four (4) stories in height.

1.42.3 In all buildings or areas thereof used for the storage, fabricating, assembling, manufacturing, processing, display or sale of combustible goods, wares, merchandise, products, or materials when more than two (2) stories or 25 feet in height.

1.42.4 In all basement areas exceeding 2,500 square feet floor area.

1.42.5 In residential occupancies when of:

1.42.5.1 Type V (0,0,0) or Type III (2,0,0) construction and exceeding two (2) stories or 25 feet in height.

1.42.5.2 Type V (1,1,1) and Type III (2,1,1) or Type IV (2,H,H) construction exceeding three (3) stories or 35 feet in height.

Note: Above referenced construction classifications are defined under the Standard on Types of Building Construction, NFPA 220.

Exception No. 1: Single family detached dwellings are exempted from this requirement.

Exception No. 2: Attached One- and Two-Family dwellings are exempted from this requirement when dwelling units are separated by two hour rated construction, in accordance with Regulation 701, Chapter 2.

1.42.6 In all residential apartment buildings storage areas except individual unit closets that are located within individual residential living units.

1.42.7 In all buildings used as health care occupancies as defined in the Life Safety Code, NFPA 101, as adopted and/or modified by these Regulations.

1.42.8 In all buildings or areas classified as "high hazard" under the Life Safety Code, NFPA 101, or "extra hazard" under the Standard for the Installation of Sprinkler Systems, NFPA 13, as adopted and/or modified by these Regulations.

1.42.9 All buildings used as dormitories, in whole or in part, to house students at a public or private school or public or private institution of higher education. (16 **Del.C.** Ch. 88) This applies to all such dormitories regardless if new or existing.

1.23 Installation and Plan Review.

1.23.1 All automatic fire suppression systems shall be installed in accordance with the applicable codes and standards as listed in Regulation 701, ~~Annex A.~~

Exception No. 1: The State Fire Marshal may accept a fire suppression system which does not meet the strict provisions of the applicable codes and standards when in his opinion the proposed system will provide an equivalent level of life safety.

Exception No. 2: Whenever an NFPA 13R system is proposed, the Fire Marshal shall evaluate the effect of NFPA 13R exceptions on the fire safety of the building. When in the opinion of the Fire Marshal an adequate level of fire safety cannot be achieved with the application of the exception, he may disapprove the use of the exception.

1.3.1.1 The fire department connection(s) shall use hose connections compatible with the local fire company.

1.3.1.1.1 Fire Department Connections shall be located or arranged as required by the Chief Officer of the fire department having jurisdiction according to the following:

1.3.1.1.1.1 The Office of the State Fire Marshal will give notice to the Chief Officer of a building that is proposed for construction that is to be protected with an automatic sprinkler system, and the Chief Officer must respond, in writing, within 5 working days, as to their requirement for the location of the fire department connection.

1.3.1.1.1.2 In the event that the Chief Officer does not respond according to 1.3.1.1.1.1 of this Section, the Office of the State Fire Marshal will determine the location for the fire department connection. This provision will permit the Office of the State Fire Marshal to locate the fire department connection so that hose can be readily and conveniently attached; and the fire department connections will be located in a manner consistent with nationally recognized practices.

1.3.1.1.1.3 Each fire department connection to sprinkler systems shall be designated by a sign having raised letters at least 1 in. (25.4 mm) in height cast on plate or fitting, reading service design, e.g., "AUTOSPRK", "OPEN SPRK AND STANDPIPE." A sign shall also indicate the pressure required at the inlets to deliver the greatest system demand.

Exception to 1.3.1.1.1.3: The sign is not required where the system demand pressure is less than 150 psi (10.3 bars).

1.3.1.2 Preaction systems shall be a single interlock system, which admits water to sprinkler piping upon operation of detection devices, a non-interlock system, which admits water to sprinkler piping upon operation of detection devices or automatic sprinklers, or a double interlock system, which admits water to sprinkler piping upon operation of both detection devices and automatic sprinklers. A double interlock preaction system shall not be used except where specifically acceptable to the State Fire Marshal Office.

1.3.1.3 Sprinklers shall be required to be installed on porches, balconies, and decks, in corridors and stairs, and under exterior roofs, canopies, porte-cocheres, balconies, decks, or similar projections regardless of whether or not they are open to outside air.

1.3.1.4 Sprinklers shall be required to be installed in closets on exterior balconies regardless of whether or not it opens directly into the dwelling unit.

1.3.1.5 A hydraulically designed sprinkler system shall be designed to provide a 10 PSI safety factor over and above the system demand.

1.23.2 Plans of all proposed automatic fire suppression systems shall be submitted to the State Fire Marshal for review and approval in accordance with the provisions of Regulation 701, Chapter 4.

2.0 Standpipes.

2.1 This chapter shall apply to all new buildings and this chapter shall apply to all existing buildings that undergo a change in occupancy.

2.1.1 This chapter shall apply to all buildings, structures, marine vessels, premises, and conditions which are modified by more than 50% after the effective date of these Regulations. The 50% figure shall be calculated utilizing the gross square footage of the building, structure, marine vessel, premises and conditions as to arrive at the correct application.

2.1.2 Any proposal that is presented to the Office of the State Fire Marshall for review and approval for a building rehabilitation as defined in the 101 Life Safety Code, for less than 50% of the gross square footage of a non-sprinklered building, may not have another such project for the same building submitted for review

and approval any sooner than three (3) years after the date of the final inspection unless sprinkler projection is provided throughout the entire building.

Note: It is the intent of this subsection to prevent a submission for review and approval of a project in such stages that would have the effect of being less than the 50% of the square footage, in order to avoid having to have the building, etc., meet current standards.

2.42 Where Required.

- 2.42.1 Standpipes shall be provided in all areas and buildings as required in the codes and standards listed in Regulation 701, ~~Annex A~~ as well as the following areas or buildings:
- 2.42.2 In all Class A and Class B places of assembly and institutional occupancies two (2) stories or 25 feet in height or over.
- 2.42.3 In any building over three (3) stories.
- 2.42.4 In any building over 35 feet in height.
- 2.42.5 In any building that has a floor above the first floor over 10,000 square feet gross floor area.
- 2.42.6 In all buildings where the 1st floor exceeds 60,000 gross square feet, a Class I horizontal standpipe system installed in accordance with the applicable codes and standards listed in Regulation 701, ~~Annex A~~ of these Regulations shall be provided.

2.23 Installation.

- 2.23.1 All standpipe systems shall be installed in accordance with the applicable codes and standards listed in Regulation 701, ~~Annex A~~.
- 2.23.2 The standpipe system shall be carried up with each floor and shall be installed and ready for use as each floor progresses. Standpipes shall not be more than one floor below the highest forms of staging.
- 2.3.3 The 2½-inch of hose connections on Class I systems shall be provided in the following locations:
 - 2.3.3.1 At the highest intermediate landing between floor levels in every required exit stairway.
 - 2.3.3.2 Where intermediate landing are not provided, hose connections shall be permitted to be located at the main floor landings in exit stairways when approved by the authority having jurisdiction.
- 2.3.4 Where the local fire department has the capability of providing the required pressure, hydraulically designed standpipe systems in fully sprinklered, non-highrise buildings shall be designed to provide the required waterflow rate.

Note: It is not necessary to install a fire pump merely to provide minimum pressure to standpipe systems when the building is fully sprinklered, the sprinkler system is adequately designed to control a fire, and the responding fire department has the ability to sufficiently charge the standpipe system in a non highrise building. That is, an adequately designed sprinkler system is expected to control a fire and as the fire department arrives to finish extinguishment, they can provide the pressure in the standpipe system as needed.

2.34 Floor Level Identification.

- 2.34.1 A sign shall be provided at each landing, in all interior stairways, designating the floor level.

2.5 Fire Department Connection

- 2.5.1 Fire Department Connections shall be located or arranged as required by the Chief Officer of the fire department having jurisdiction according to the following:
 - 2.5.1.1 The Office of the State Fire Marshal will give notice to the Chief Officer of a building that is proposed for construction that is to be protected with a standpipe system, and the Chief Officer must respond, in writing, within 5 working days, as to their requirement for the location of the fire department connection.
 - 2.5.1.2 In the event that the Chief Officer does not respond according to 2.5.1.1 of this Section, the Office of the State Fire Marshal will determine the location for the fire department connection. This provision will permit the Office of the State Fire Marshal to locate the fire department connection so that hose can be readily and conveniently attached; and the fire department connections will be located in a manner consistent with nationally recognized practices.

- 2.5.1.3 Each fire department connection to standpipe systems shall be designated by a sign having raised letters at least 1 in. (25.4 mm) in size cast on the plate or fitting, reading, "STANDPIPE." If automatic sprinklers are also supplied by the fire department connection, the sign or combination of signs shall indicate both designated services, e.g., "STANDPIPE AND AUTOSPRK." or "AUTOSPRK AND STANDPIPE." A sign shall also indicate the pressure required at the inlets to deliver the system demand.

3.0 Fire Pump

3.1 Review of Electrical Plans

- 3.1.1 At least two complete sets of electrical plans for motors driving fire pumps, stamped and signed by a Delaware Registered Professional Engineer shall be submitted to, reviewed, and approved by an electrical inspection agency that is approved by the State Board of Electrical Examiners and recognized by the Office of the State Fire Marshal. The approval of these electrical plans is required prior to the submittal of fire pump plans to the Office of the State Fire Marshal.
- 3.1.2 The plans shall be reviewed by the approved Electrical Inspection Agency for compliance to the National Electrical Code® (NFPA 70) and National Fire Protection Association's Standard for Installation of Fire Pumps (NFPA 20).
- 3.1.3 The electrical inspection agency that approves the plans shall provide documentation authenticating the approval to the Office of the State Fire Marshal. This documentation will need to accompany the building plans where an electric motor driven fire pump will be installed. In the case of an existing building, the documentation will need to accompany the fire protection plans where an electric motor driven fire pump will be installed.
- 3.1.4 At least one set of the plans approved by the electrical inspection agency shall be kept on the job site until the final inspection of the fire pump installation by the Office of the State Fire Marshal.
- 3.1.5 The acceptance test for a new, electric motor-driven fire pump installation shall not be conducted by the Office of the State Fire Marshal until a field inspection of the electrical portion of the installation by an electrical inspection agency leads to their "FINAL INSPECTION PASSED" sticker being adhered to the fire pump controller.

Note: The electric layout for diesel and steam driven fire pumps, jockey pumps and pumps for automatic sprinkler systems designed to serve only one & two family dwellings shall be approved and inspected by the electrical inspection agency in the course of their inspections for the building's other ordinary electrical systems.

3.2 Installations

3.2.1 Starting and Stopping Arrangement

- 3.2.1.1 Regardless if the controller is arranged to start automatically, start automatically for testing, start manually, or start in any other manner, it shall be arranged to require manual stopping.

Note: The Fire Pump Standard (NFPA 20) requires personnel to respond to the fire pump location when the fire pump operates to determine that it is operating in a satisfactory manner. Requiring manual stopping, prevents overlooking this verification. Additionally, on a weekly basis, the Testing, Inspection, and Maintenance Standard (NFPA 25) requires over 15 minor visual checks in the fire pump room that can be performed prior to manually stopping an automatically started fire pump.

3.2.2 Devices in Suction Piping

- 3.2.2.1 No device or assembly such as check valves and backflow prevention devices shall be installed in the suction piping of a fire pump installation.
- 3.2.2.2 Where required by the water provider having jurisdiction, check valves and backflow prevention devices and assemblies may be installed in suction piping and shall be in accordance with NFPA 20 including the following:
- 3.2.2.2.1 All check valves and backflow prevention devices and assemblies:
- 3.2.2.2.1.1 shall be listed for fire protection service, and

- 3.2.2.2.1.2 device location(s) shall be noted on sprinkler plan submissions, and
- 3.2.2.2.1.3 manufacturers' specifications for such devices shall be included in the sprinkler plan submittal for review and approval.

Note: This is not automatic permission for all installations to install backflow assemblies in the suction piping. In Delaware, most water providers are not requiring a backflow device of any sort in the suction piping, in addition to any hardware at the tap to the public main.
Where the water providers are requiring a backflow device in the suction piping, they are only requiring a double check valve assembly, not the more "pressure insensitive" and elaborate reduced pressure backflow assemblies. Most water suppliers in the State either do not require any device, or do not dictate that it be on the suction side of the pump

3.2.3 Electric Motor Driver Reliability

3.2.3.1 Auxiliary or supplemental power requirements for electrically driven fire pump shall be required by the State Fire Marshal's Office:

3.2.3.1.1 ONLY when specifically required by SFPR or an adopted NFPA code or standard.

3.2.3.1.2 When the height of the structure is beyond the pumping capability of the fire departments apparatus

Note: Some Authorities view a single feed from the public utility as sufficient. Others require either a second feed or some form of on-site emergency power. Others don't require but recommend such a secondary source of power. Often these requirements are blurred between those entities with statutory authority versus those with business interests.
The State Fire Marshal's Office believes that the public electric utility services within the State of Delaware provide a "reliable" source of power that meets the dependability intent of NFPA 20.

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Chapter 5 Mid Rise, High Rise and Large Area Buildings

1.0 Application

- 1.1 This chapter shall apply to all new buildings and this chapter shall apply to all existing buildings that undergo a change in occupancy.
- 1.2 This chapter shall apply to all buildings, structures, marine vessels, premises, and conditions which are modified by more than 50% after the effective date of these Regulations. The 50% figure shall be calculated utilizing the gross square footage of the building, structure, marine vessel, premises and conditions as to arrive at the correct application.
- 1.3 Any proposal that is presented to the Office of the State Fire Marshall for review and approval for a building rehabilitation as defined in the 101 Life Safety Code, for less than 50% of the gross square footage of a non-sprinklered building, may not have another such project for the same building submitted for review and approval any sooner than three (3) years after the date of the final inspection unless sprinkler projection is provided throughout the entire building.

Note: It is the intent of this subsection to prevent a submission for review and approval of a project in such stages that would have the effect of being less than the 50% of the square footage, in order to avoid having to have the building, etc., meet current standards.

42.0 Mid Rise Building Fire Protection Features Required.

42.1 Fire Command Center

- 42.1.1 Every Mid Rise building shall contain a fire command center for fire department operations in a location reviewed by the responsible Fire Chief and approved by the Office of the State Fire Marshal.
- 42.1.2 The fire command center shall contain the following:
 - 42.1.2.1 Fire detection and alarm system annunciator panels and smoke management panels
 - 42.1.2.2 Status indicator for elevator and annunciator indicating which elevators are operational
 - 42.1.2.3 Status indicators and controls for air handling
 - 42.1.2.4 Emergency power, light and system controls; and status indicators
 - 42.1.2.5 Telephone and internet access for fire department use
 - 42.1.2.6 Emergency and standby power status indicators
 - 42.1.2.7 Generator supervision devices and manual start and transfer features
 - 42.1.2.8 Controls for unlocking fire exit stairway doors simultaneously
 - 42.1.2.9 Controls required for smoke control
 - 42.1.2.10 Important Keys to include
 - 42.1.2.10.1 Elevator machine room
 - 42.1.2.10.2 Elevator hoistway door access key
 - 42.1.2.10.3 Side access door elevator car key
 - 42.1.2.10.4 Electric room keys
 - 42.1.2.10.5 Fire pump room keys
 - 42.1.2.10.6 Mechanical room keys
 - 42.1.2.10.7 Any master key
 - 42.1.2.11 As built drawings. Specific types and format of drawings to be determined by the Office of the State Fire Marshal at time of plan review.
- 42.1.3 The Office of the State Fire Marshal may reduce the requirements of §1.1.2 of this Chapter if the Office of the State Fire Marshal determines that a specific item is not necessary for a specific building.
- 42.1.4 It is not the intent of this section to require a room solely for the purpose of a fire command center. The fire command center can be constructed as part of a lobby, security office, or other accessible gathering area. However, this area must meet the minimum criteria specified in this section for equipment, location, and personnel use.
- 42.2 Fire Alarm and Detection
 - 42.2.1 Every Mid Rise building shall be provided with a fire alarm and detection system in accordance with the Life Safety Code, (NFPA 101) and other provisions of the Delaware State Fire Prevention Regulations.
 - 42.2.2 Every Mid Rise building shall be provided with a standard manual fire alarm system with audio and visual devices in accordance with the National Fire Alarm Code (NFPA 72).
- 42.3 Smoke Management
 - 42.3.1 Every Mid Rise building shall have fire exit stair tower pressurization in accordance with NFPA **[92A 92]** and include Areas of Refuge if located in an enclosed area other than an exit stair tower.
 - 42.3.2 Except for the lobby at main entrance level, all elevator lobbies shall be separated from the remainder of the floor by a smoke barrier. The elevator lobby is permitted to serve additional elevators.
 - 42.3.3 The elevator lobbies shall be permitted to be open to the remainder of the floor in buildings equipped with a mechanical smoke control system that will restrict smoke and hot gases from entering the elevator shaft on the fire floor.
- 42.4 Standby Power, Light, and Emergency Systems
 - 42.4.1 Every Mid Rise building shall be provided with an emergency power supply.
 - 42.4.2 Standby power, light and emergency systems shall comply with the provisions of NFPA 110, or NFPA 111 as adopted and modified by these Regulations.
 - 42.4.3 The fuel supply located on premises shall be sufficient for not less than two hours of the full demand operation of the system.
 - 42.4.4 The standby system shall have a rated capability needed to simultaneously supply all equipment required to be operational during an emergency.
 - 42.4.5 All required lighting, smoke management pressurization, electrically powered fire pumps and at least one elevator shall be connected to the standby power source. Elevators shall be provided with a selective load switch to allow transfer of power to each elevator. This will permit each elevator to be returned to the lobby and placed out of service except for fire department service.

42.4.6 Emergency Systems. Exit signs, exit illumination, and elevator car lighting shall be considered emergency systems, shall be connected to the standby source and shall operate within ten seconds of failure of the normal power supply.

42.4.7 Areas of Refuge. Areas of Refuge shall be provided in accordance with the requirements of this Regulation, Chapter 3.

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23.0 High Rise Building Fire Protection Features Required.

23.1 Fire Command Center

23.1.1 Every High Rise building shall contain a fire command center for fire department operations in a location reviewed by the responsible Fire Chief and approved by the Office of the State Fire Marshal.

23.1.2 The fire command center shall contain the following:

23.1.2.1 Voice alarm and public address panels

23.1.2.2 Fire department communications panel

23.1.2.3 Fire detection and alarm system annunciator panels and smoke management panels

23.1.2.4 Status indicator for elevator and annunciator indicating which elevators are operational

23.1.2.5 Status indicators and controls for air handling systems

23.1.2.6 Controls for unlocking all fire exit stairway doors simultaneously

23.1.2.7 Emergency power, light and system controls; and status indicators

23.1.2.8 Telephone and internet access for fire department use

23.1.2.9 Emergency and standby power status indicators

23.1.2.10 Generator supervision devices and manual start and transfer features

23.1.2.11 Public address system, where specifically required by other sections of this Code

23.1.2.12 Controls required for smoke control

23.1.2.13 Important Keys to include

23.1.2.13.1 Elevator machine room

23.1.2.13.2 Elevator hoistway door access key

23.1.2.13.3 Side access door elevator car key

23.1.2.13.4 Electric room keys

23.1.2.13.5 Fire pump room keys

23.1.2.13.6 Mechanical room keys

23.1.2.13.7 Any master key

23.1.2.14 As built drawings. Specific types and format of drawings to be determined by the Office of the State Fire Marshal at time of plan review.

23.1.3 The fire command center shall be separated from the remainder of the building by one-hour construction and equipped with a heating, ventilating and air conditioning system that will prevent smoke laden air from entering the space.

23.1.4 It is not the intent of this section to require a room dedicated for this purpose, but the area provided must be available for immediate use in case of emergency.

23.1.5 The room shall be a minimum of 96 square feet with a minimum dimension of 8 feet.

23.1.6 The fire command room door shall be clearly identified for use by the fire department.

23.2 Emergency Voice/Alarm Communications and Detection System

23.2.1 Every High Rise building shall be equipped with a voice alarm, communication and detection system which shall be installed in accordance with the applicable codes and standards listed in Regulation 701, Annex A of these Regulations; and approved by the Office of the State Fire Marshal.

23.3 Public Address System

23.3.1 A public address communication system shall be part of the Emergency Voice/Alarm Communications System as required in §2-2 §3.2 of this Chapter. The system shall be designed to be clearly heard by all occupants of the building and shall operate from the fire command center. It shall be established on a selective or general basis to the following terminal areas:

23.3.1.1 Elevators

23.3.1.2 Elevator lobbies

23.3.1.3 Corridors

- 23.3.1.4 Exit stairways
- 23.3.1.5 Rooms and tenant spaces exceeding 1,000 square feet in area
- 23.3.1.6 Dwelling units and guest rooms or suites.

23.4 Fire Department Communication System

- 23.4.1 A two way fire department communication system in accordance with the *National Fire Alarm Code* (NFPA 72) shall be provided for fire department use.
- 23.4.2 An alternative fire department radio enhancement system installed within the building shall be permitted in lieu of a two way fire department communications system, when approved by the Office of the State Fire Marshal.

23.5 Door Operation

- 23.5.1 All fire exit stairway doors which are to be locked from the stairway side shall have the capability of being unlocked simultaneously without unlatching upon a signal from the Fire Command Center.

23.6 Elevators

- 23.6.1 In every High Rise building at least one elevator service shall be provided for fire department emergency access to all floors.
- 23.6.2 Except for the main entrance level, all elevators shall open into a lobby (which may serve additional elevators) separated from the remainder of the building by a smoke barrier. Janitor closets, chutes, guest or tenant rooms, and service rooms shall not open into the elevator lobby. In addition, the provisions of ANSI Standard A 17.1 shall apply.
- 23.6.3 The elevator lobbies shall be permitted to be open to the remainder of the floor in buildings equipped with a mechanical smoke control system that will restrict smoke and hot gases from entering the elevator shaft on the fire floor.

23.7 Smoke Management Systems

- 23.7.1 In every High Rise building a Smoke Management system shall be installed in accordance with NFPA 92A, ~~92B~~ and approved by the Office of the State Fire Marshal. Such system shall provide the following:
 - 23.7.1.1 Egress Stair Tower Pressurization
 - 23.7.1.2 Area of Refuge Pressurization
 - 23.7.1.3 Horizontal Exit Passageway Pressurization
 - 23.7.1.4 Fire Floor Smoke Exhaust
 - 23.7.1.5 Floor Above and Below Fire Floor Pressurization
 - 23.7.1.6 Other criteria as deemed necessary by the Office of the State Fire Marshal for Unusual Spaces.
- 23.7.2 Smoke management system operation/actuation shall be approved by the Office of the State Fire Marshal.

Note: As per NFPA 92A and ~~92B~~, the smoke management system shall be provided with a graphic annunciator and manual override panel to be located in the Fire Command Center. The design and operation of the graphic annunciator shall be proposed by the designer and approved by the Office of the State Fire Marshal.

23.8 Standby Power, Light, And Emergency Systems

- 23.8.1 In every High Rise building an emergency power supply shall be installed.
- 23.8.2 Standby power, light and emergency systems shall comply with the provisions of the Standard for Emergency and Standby Power Systems, NFPA 110, as adopted and/or modified by these Regulations.
- 23.8.3 Fuel Supply. An on premises fuel supply sufficient for not less than two hours full demand operation of the system shall be provided.
- 23.8.4 Generating Capacity. The standby system shall have a capacity and rating that will supply all equipment required to be operational at the same time. The generating capacity need not be sized to operate all the connected electrical equipment simultaneously.
- 23.8.5 All power, lighting, signal, and communication systems required by this Regulation shall automatically transfer to a standby source. The standby power system shall be connected to all systems listed in the *NFPA 101 Life Safety Code*.

23.9 Emergency Systems

- 23.9.1 Exit signs, exit illumination, and elevator car lighting are classified as emergency systems and shall operate within ten seconds of failure of the normal power supply and must also be connected to the standby source.

23.9.2 All required lighting, smoke management pressurization, electrically powered fire pumps and at least one elevator shall be connected to the standby power source. Elevators shall be provided with a selective load switch to allow transfer of power to each elevator. This will permit each elevator to be returned to the lobby and placed out of service except for fire department service.

23.10 Areas of Refuge. Areas of Refuge shall be provided in accordance with the requirements of Regulation 702, Chapter 3.

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34.0 Large Area Buildings.

34.1 Application. The application of this Chapter pertains to any building exceeding one-hundred thousand (100,000) square feet gross floor area on any one floor. This Chapter does not apply to Strip Shopping/Office Center with no individual tenant exceeding 100,000 sq. ft.

34.1.1 If any one individual tenant in a Strip Shopping/Office Center exceeds 100,000 sq. ft. per floor, these requirements shall apply only to those tenants.

34.2 Horizontal Standpipes.

34.2.1 Horizontal Standpipes shall be required in accordance with Regulation 702, Chapter 4 of these Regulations

34.3 Emergency Voice/Alarm Communications and Detection System.

34.3.1 Large area buildings shall be equipped with a voice alarm, communication and detection system which shall be installed in accordance with the applicable codes and standards listed in Regulation 701, Annex A of these Regulations; and approved by the Office of the State Fire Marshal

34.4 Fire Command Station.

34.4.1 Large area buildings containing Health Care Occupancies, Ambulatory Health Care and Detention and Correction Occupancies shall contain a fire command center for fire department operations in a location reviewed by the responsible Fire Chief and approved by the Office of the State Fire Marshal. The Office of the State Fire Marshal may require a Fire Command Center for other Large Area Buildings.

34.4.2 The fire command center shall contain the following:

34.4.2.1 Voice alarm and public address panels

34.4.2.2 Fire department communications panel

34.4.2.3 Fire detection and alarm system annunciator panels and smoke management panels

34.4.2.4 Status indicator for elevator and annunciator indicating which elevators are operational

34.4.2.5 Status indicators and controls for air handling systems

34.4.2.6 Controls for unlocking all fire exit stairway doors simultaneously

34.4.2.7 Emergency power, light and system controls; and status indicators

34.4.2.8 Telephone and internet access for fire department use

34.4.2.9 Emergency and standby power status indicators

34.4.2.10 Generator supervision devices and manual start and transfer features

34.4.2.11 Public address system, where specifically required by other sections of this Code

34.4.2.12 Controls required for smoke control

34.4.2.13 Important keys to include

34.4.2.13.1 Elevator machine room

34.4.2.13.2 Elevator hoistway door access key

34.4.2.13.3 Side access door elevator car key

34.4.2.13.4 Electric room keys

34.4.2.13.5 Fire pump room keys

34.4.2.13.6 Mechanical room keys

34.4.2.13.7 Any master key

34.4.2.14 As built drawings. Specific types and format of drawings to be determined by the Office of the State Fire Marshal at time of plan review.

34.4.3 The fire command center shall be separated from the remainder of the building by one-hour construction and equipped with a heating, ventilating and air conditioning system that will prevent smoke laden air from entering the space.

34.4.4 It is not the intent of this section to require a room dedicated for this purpose, but the area provided must be available for immediate use in case of emergency.

34.4.5 The room shall be a minimum of 96 square feet with a minimum dimension of 8 feet.

34.4.6 The fire command room door shall be clearly identified for use by the fire department.

34.5 Smoke Management Systems

34.5.1 Large area buildings shall be equipped with a smoke management system approved by the Office of the State Fire Marshal, designed in accordance with ~~§3.5.2 or §3.5.3~~ §4.5.2 or §4.5.3, and shall be capable of being operated by the fire department.

34.5.2 This smoke control system shall, at a minimum, consist of manually operated smoke vents installed in accordance with the Standard for Smoke and Heat Venting, NFPA 204 with the following criteria:

34.5.2.1 One, 100 sq. ft. vent per 25,000 sq. ft. of floor area.

34.5.2.2 Each vent shall be centrally located within the 25,000 sq. ft. protected area.

34.5.3 Large Area buildings using mechanical means of smoke management shall be installed in accordance with NFPA 92A, NFPA 92B and approved by the Office of the State Fire Marshal. Such system shall provide the following:

34.5.3.1 Egress Stair Tower Pressurization if stairs are more than three (3) communicating floor levels

34.5.3.2 Area of Refuge Pressurization

34.5.3.3 Horizontal Exit Passageway Pressurization

34.5.3.4 Fire Floor or Fire Area Smoke Exhaust

34.5.3.5 Other Criteria as deemed necessary by the Office of the State Fire Marshal for Unusual Spaces

34.5.4 Smoke management system operation/actuation shall be approved by the Office of the State Fire Marshal.

Note: As per NFPA 92A and NFPA 92B, the smoke management system shall be provided with a graphic annunciator and manual override panel to be located in the fire command center. The design and operation of the graphic annunciator shall be approved by the Office of the State Fire Marshal.

34.6 Standby Power, Light, and Emergency Systems.

34.6.1 Large area buildings shall be equipped with standby power, light, smoke management system and emergency systems which shall comply with the provisions of the Standard for Emergency and Standby Power Systems, NFPA 110, as adopted and/or modified by these Regulations.

Exception: If the occupancy is such that "standard" battery operated emergency systems (emergency lighting, exit signs, fire alarm signaling system backup power, etc.), are deemed to be adequate by the State Fire Marshal.

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Chapter 6 Standard for Fire Flow for Fire Protection

1.0 General.

1.1 Purpose. The purpose of this Chapter is to specify minimum requirements for water supplies for fire protection and fire fighting services (fire flow) that will provide a reasonable degree of protection to life and property from fire.

1.2 Intent. It is the intent of this Chapter that the State Fire Marshal, the fire department having jurisdiction, the land developers in the jurisdiction, and any other responsible agencies shall work together to provide and maintain the minimum fire flow requirements contained herein.

1.3 Scope. This Chapter establishes minimum requirements for water supplies for fire protection and fire fighting purposes. This Chapter also sets the requirements in rural areas where there is no public, private or central water system available from water companies. The requirements are performance oriented and allow the owner or developer the option of choosing the method of attaining the water supply required with consideration given to local conditions.

1.4 This Regulation does not apply to:

1.4.1 Residential sub-divisions, located within the jurisdiction of New Castle County, containing more than twenty-five (25) lots, or minimum aggregate side yard widths of less than thirty (30) feet. These requirements are contained in New Castle County Code Chapter 40, Article 12.

Note: New Castle County Code Chapter 40, Article 12, Sewer and Water Impact:

SECTION 40.12.210 WATER SERVICE

Each water supply company shall develop a method to determine water volumes and pressure in their systems. On-site testing shall be used as the basis for determining the capacities in lines, pumps, storage and distribution facilities. The certification of adequate capacity of the water service shall be obtained by the developer from the water supplier.

SECTION 40.12.115 WATER SUPPLY

A. All proposed residential subdivisions containing more than twenty-five (25) lots or minimum aggregate side yard widths of less than thirty (30) feet shall provide a public or community water distribution system. The design and installation of such public or community system shall be subject to the approval of the appropriate State agencies, and the main sizes shall meet the requirements of the Office of the State Fire Marshal.

B. Where the subdivider proposes that individual on-site water supply systems be utilized within the subdivision, the subdivider shall either install such facilities or shall require, by deed restriction or otherwise, as a condition of the sale of each lot or parcel within the subdivision, that the facilities shall be installed by the purchaser of such lot or parcel at the time that a principal building is constructed thereon, in accordance with appropriate State requirements. Where individual on-site water supply systems are to be utilized, each lot shall be of a size and shape to allow safe location of such a system. An on-site water supply shall further require a permit from appropriate State agencies.

- 1.4.2 Fire hydrants, located within the jurisdiction of New Castle County. These requirements are contained in New Castle County Code, Chapter 40, Article 22.

Note: New Castle County Code Chapter 40 Article 22, Drainage, Utilities, Septic Systems, Parking, Loading, and Lighting:

SECTION 40.22.430 FIRE HYDRANTS AND FIRE LANES.

A. Fire hydrants in subdivisions shall be installed within five hundred (500) feet of all houses, measured by way of accessible public thoroughfare, wherever a public or community water supply system is provided, as required by the National Association of Fire Underwriters, and within four hundred (400) feet of all commercial and industrial establishments, as approved by the State Fire Marshal.

B. All fire hydrants shall be shown on record plans, with an indication of water main sizing connecting thereto.

C. The need for and location of fire lanes for multi-family and row or group residential, commercial, industrial and institutional development will be determined by the State Fire Marshal in accordance with the guidelines contained in the publication Standard for Compliance with New Castle County published by the State Fire Marshal. In applying such guidelines, a fire lane shall be deemed necessary only where reasonable and direct accessibility by fire apparatus cannot be made to at least one (1) side of a structure from an all-weather hard surface, capable of bearing the weight of commonly used fire apparatus. Such fire lanes to be provided need not be paved with concrete, amesite or similar material, but may be surfaced in any suitable manner such as to provide an all-weather surface capable of performing the function and shall be signed in such a fashion as to indicate the purpose and intent thereof and to prohibit parking thereon.

D. Where equivalent fire protection is provided by appropriately sized standpipes or similar arrangements, the requirements of subsection C of this Section shall not be applicable.

2.0 Application.

- 2.1 Notwithstanding, any other provisions of the Delaware State Fire Prevention Regulations, for all buildings or structures of less than 10,000 square feet of aggregate gross floor area, and where there is not a public water system or a central water system; the State Fire Marshal may utilize the provisions of the Standard on Water Supplies for Suburban and Rural Fire Fighting, NFPA 1142, as adopted and/or modified by these Regulations,

as meeting the requirement for fire flow. (See §7.0, Dry Hydrants, at the end of this Chapter).

- 2.2 A building, structure or the use of a parcel of land shall not be constructed, extended, renovated, or altered in violation of this Chapter. All provisions of this Chapter shall be met prior to the existence of the exposure or hazard unless arrangements can be made to phase the installation of the fire protection, which is acceptable to the State Fire Marshal, and would not impair the intent of this Chapter.
- 2.3 This Chapter applies wherein the construction, renovation, or alteration constitutes a hazard or condition which could create a self-propagating fire exposing an existing structure, fuel load, or property line that could be built upon. In the event there is no existing adjacent structure, the location of the property line shall govern.
- 2.4 This Chapter applies to all occupancies including one- and two-family dwellings, any hazardous processes, and the handling, storing, or use of flammable and combustible liquids and flammable gases.

Note: Any flammable and combustible liquid and gas site that falls within the scope of a specific NFPA code, as adopted and/or modified by these Regulations, shall be subject to additional requirements, for water supplies, including, but not limited to, the following:

NFPA 30, Flammable and Combustible Liquids Code
NFPA 30A, Automotive and Marine Service Station Code
NFPA 31, Standard for the Installation of Oil Burning Equipment
NFPA 54, National Fuel Gas Code
NFPA 58, Storage and Handling of Liquefied Petroleum Gases

Any occupancy that falls within the scope of a specific NFPA code, as adopted and/or modified by these Regulations, shall be subject to additional requirements for water supplies, including, but not limited to, the following:

NFPA 45, Standard on Fire Protection for Laboratories using Chemicals
NFPA 88A, Standard for Parking Structures
NFPA 88B, Standard for Repair Garages

Exception: This Chapter does not apply to four (4) or less one- and two-family dwellings when the four (4) one- and two-family dwellings, considered as a group or one fuel station, do not create an exposure to any other structure, fuel station or property line that could be built upon.

Note: Exception: It is the intent of this exception not to require water distribution systems when four or less single family detached dwellings are constructed in close proximity to each other (less than 100 feet). It is not the intent of this exception to allow or condone the construction of multiple groups of four (4) or less single family detached dwelling units wherein the arrangement of those groups constitutes a configuration that, in the opinion of the State Fire Marshal, would support a self propagating fire from one fuel station to the next.

- 2.5 The owner or his representative shall submit adequate plans of any construction, renovation, alteration or the use of a parcel of land prior to any work being performed and obtain written approval from the State Fire Marshal. The plans shall display all necessary information and calculations in accordance with this Regulation. At the completion of construction and prior to occupancy or functional use, the owner or his representative shall supply to the State Fire Marshal a report verifying the following:
 - 2.5.1 That the actual exposure distances on the site as constructed are within the allowable limits of this Regulation and the approved plans;
 - 2.5.2 That the required fire flow was obtained and verified by on site flow testing, at the required minimum residual pressure;
 - 2.5.3 That the hydrant spacing, location and arrangement is in accordance with this Regulation and the plan approval, and;
 - 2.5.4 That the required minimum duration of flow, as required by this Regulation and the plan approval, is obtainable as verified by field calculations of the storage facilities.

Exception to §2.5.4: When an unproven well (new well or a well that has been out of service for more than six months) is used as a water supply source, the owner may meet the requirements by one of the following methods:

1. Obtain certification from a recognized authority that the well is capable of providing the minimum required fire flow for the minimum required duration.

OR

2. Provide flow test results verifying that the unproven well was tested and provided the required minimum fire flow for the required minimum duration.

3.0 Required Fire Flows.

3.1 Fire Flow Tables.

3.1.1 Required fire flows are to be determined from the Fire Flow Tables 1 and 2 based on exposure hazard, building areas, and the occupancy use of the structure(s) being considered. The Fire Flow Tables specify required minimum hydrant spacing and required fire flow and duration.

3.1.2 Where existing public, private, or central water systems including municipalities, cannot meet the fire flow requirements specified in Fire Flow Table 2, the provisions of Fire Flow Table 1 shall apply.

Exception: The requirements of Fire Flow Table 3 may be applied to areas where there is a public, private, or central water system, but the requirements of Fire Flow Table 2 cannot be met. The setbacks may be reduced proportionally based on the amount of water available. This exception does not apply to new public, private, or central water systems, including municipalities, nor does it apply to expansions to existing public, private, or central water systems, including municipalities.

3.1.3 All areas are aggregate gross square footage as shown in the Fire Flow Tables. In all unusual structures and mixed occupancies not shown in the Fire Flow Tables, the State Fire Marshal shall determine required flows, hydrant spacing, duration, and available capacity.

3.1.4 Where a fire alarm signaling system is required by Fire Flow Table 1, this system shall be automatic, supervised off-site, and shall consist of full coverage by smoke detection and alarm notification. Where smoke detection devices will not function by reason of device limitation, heat detection shall be provided in those specific locations. Fire alarm signaling system plans and specifications shall be submitted for review, in accordance with Regulation 701, Chapter 4.

Exception: Where the building is protected throughout by an automatic sprinkler system.

3.2 Modification for Sprinkler System Installations.

3.2.1 Where the structure being considered is protected throughout by an automatic sprinkler system, the required fire flow shall be modified to meet the designed sprinkler demand where hydraulically calculated plus outside hose streams as specified in the applicable NFPA Codes and Standards as adopted and/or modified by these Regulations.

Exception: Hose stream allowance may be eliminated by the State Fire Marshal where there is no public nor private water system supplying the automatic sprinklers.

3.2.2 Where a pipe schedule system is installed, the fire flow shall be modified to meet the minimum acceptable flow at the base of the riser and residual pressures as specified in the applicable NFPA Regulations as adopted and/or modified by these Regulations, plus outside hose stream requirements.

Exception: Hose stream allowance may be eliminated by the State Fire Marshal where there is no public or private water system supplying the automatic sprinklers.

3.2.3 Where the structure being considered is protected throughout by a residential sprinkler system, the required fire flow shall be modified to meet the designed sprinkler demand as hydraulically calculated, plus estimated domestic demands during peak use times as determined by the water supplier.

3.3 Modification for Flammable and Combustible Liquids and Gases and Special Hazard Sites.

3.3.1 Where the site being considered contains flammable and combustible liquids and gas installations, the required fire flows are to be determined by the Office of the State Fire Marshal based on exposure hazards, aggregate capacity of the installation, the specific hazard of the installation, and as specified in

the applicable NFPA Codes and Standards as adopted and/or modified by these Regulations.

- 3.3.2 Where the site being considered contains a bulk plant for liquefied petroleum gases and falls under the scope of Annex B of these Regulations, Modify NFPA 58, §3-10.4, Fire Protection at Bulk Plants, then the provisions of Annex B of these Regulations shall apply.
- 3.3.3 Where the site being considered contains outdoor tire storage or disposal operations and falls under the scope of Regulation 706, Chapter 5, then the provisions of Regulation 706, Chapter 5 shall apply.
- 3.3.4 Where, in the opinion of the State Fire Marshal, the site being considered constitutes or is in need of such a level of advanced designed or engineering criteria, the State Fire Marshal may require a Fire Protection Engineering Analysis in accordance with Regulation 701, Chapter 4, §9.0.

4.0 Water Distribution Systems.

- 4.1 Where water is available and a water distribution system is required for stand alone/detached one- and two family dwelling sites, the infrastructure for fire protection water shall be provided. The infrastructure for fire flow shall consist of properly listed and sized underground mains, stub ups for hydrants, and associated valves. The fire hydrants shall be installed prior to the fire flow requirements taking effect.
 - 4.1.1 For purposes of this Regulation, water for fire protection shall be considered “available” whenever any portion of a proposed project’s property or any portion of a proposed subdivision is situated within one thousand (1000) feet of any portion of a water supplier’s new or existing infrastructure that includes water supply piping of 4 inches or more in nominal internal diameter. This measurement shall be calculated by way of accessible public thoroughfare(s) from the proposed property or subdivision and may not necessarily be a radius.
 - 4.1.2 In the event the project or subdivision is situated in a geographical area that has been authorized to be provided with water service by a supplier other than the water supplier whose infrastructure is within the specified distance, the State Fire Marshal, on a case by case basis, may re-evaluate the requirements of §4.1.1.
- 4.2 The requirements of Fire Flow Table 1, with respect to the Standard on Water Supplies for Suburban and Rural Fire Fighting, NFPA 1142, as adopted and/or modified by these Regulations, may be applied to subdivisions of 25 or less lots of one and two family detached homes, where central water is provided. However, the requirement for water flow for fire protection shall be required when:
 - 4.2.1 Additional development creates a subdivision in excess of 25 lots of detached one or two family dwellings or
 - 4.2.2 In the opinion of the State Fire Marshal the probability of additional development will occur in excess of 25 lots of detached one or two family dwellings then the infrastructure for fire flow capability must be installed to accommodate the fire flow requirements.
- 4.3 The requirements of Fire Flow Table 2 shall take effect where water is available and be provided under the following circumstances:
 - 4.3.1 For subdivisions of 50 or more lots of detached one and two family dwellings the water flow for fire protection shall be provided upon completion of the 50th lot, and prior to the development of the 51st lot.
 - 4.3.2 For subdivisions of 26 through 49 lots of detached one and two family dwellings the water flow for fire protection shall be provided at the completion of the last lot to be built.

5.0 Fire Hydrants.

- 5.1 Spacing and Location.
 - 5.1.1 Hydrant spacing as shown in the Fire Flow Tables shall be used as a general rule. Hydrants shall be located at the direction of the State Fire Marshal so as to minimize friction in fire hose. All hydrant spacing shall be located along available roads or at the direction of the State Fire Marshal. This measurement shall be calculated by way of accessible thoroughfare(s) from the building to be protected to the hydrant and may not necessarily be a radius.
 - 5.1.2 Hydrants shall be provided in such a manner that all fire department connections and/or standpipe connections shall be within 300' of a hydrant and shall meet the provisions of the applicable NFPA Regulations as adopted and/or modified by these Regulations. This measurement shall be calculated by way of accessible thoroughfare(s) from the proposed fire department connection to the hydrant and may not necessarily be a radius.
 - 5.1.3 Additional hydrants shall be provided when the State Fire Marshal deems it necessary based on the configuration of the site, building(s), exposures, construction, occupancy, and/or specific hazard(s).
- 5.2 Number.

- 5.2.1 The number of hydrants required shall be based on spacing and location requirements or number of required fire hydrants, whichever is greater.
- 5.2.2 Required fire hydrants shall be the number of fire hydrants required to extract the required flow from the distribution system in a form and arrangement usable by the fire department.
- 5.3 Installation.
 - 5.3.1 Fire hydrants and water mains shall be installed in accordance with American Water Works Association Standard and all applicable NFPA codes and standards as adopted and/or modified by these Regulations.
 - 5.3.2 Fire hydrants shall be supplied by not less than a six inch diameter main installed on a looped system or not less than an eight inch diameter main if the system is not looped or the fire hydrant is installed on a dead end main exceeding 300 feet in length.
 - 5.3.3 Dead end mains shall not exceed 600 feet in length for main sizes under 10 inches in diameter.

Exception: Dead end mains exceeding 600 feet may be a minimum of 8 inches in diameter if an engineering analysis, acceptable to the Office of the State Fire Marshal, is submitted by a registered Professional Engineer demonstrating that the minimum flows and duration specified elsewhere in this Regulation are met or exceeded.

- 5.4 Other.
 - 5.4.1 Fire hydrants installed in accordance with this requirement shall not be removed or shut down, except when repairs are necessary, without the permission of the State Fire Marshal.
 - 5.4.2 The water supplier shall call the local fire dispatch center to report when a fire hydrant is taken out of service for repairs or maintenance. The supplier is to state the location and the approximate length of time the hydrant will be out of service. The supplier is to notify the local fire dispatch center when the hydrant is put back in service.

6.0 Storage Capacities.

- 6.1 Calculations for storage capacity shall be based on the following formula:

$$\text{Required Flow} \times \text{Duration} \times 102\%$$

- 6.2 Storage capacity shall be calculated above system capacity. All required flows and storage capacities shall be designed above domestic demand.

7.0 Dry Hydrants.

- 7.1 Where there is not a public water system or a central water system, the State Fire Marshal may require the installation of a dry hydrant at the nearest public body of water to provide access to a water source for fire protection for all buildings of less than 10,000 square feet of aggregate gross floor area.
- 7.2 The provision in §7.1 of this Chapter for the providing of a dry hydrant shall also be meant that access to the dry hydrant and provisions for positioning fire apparatus to make use of the dry hydrant shall be provided.
- 7.3 The requirements of §7.1 and §7.2 of this Chapter shall meet the standards and specifications pursuant to the Construction Specifications for Dry Hydrant and Water Delivery Systems, Delaware 1991, prepared by the U. S. Department of Agriculture Soil Conservation Service and any updates thereto.
- 7.4 It is the responsibility of the developer, builder and/or owner to apply for and obtain any required permits for the installation of the dry hydrant.
- 7.5 It is the responsibility of the project developer, builder, and/or owner to provide the dry hydrants and any needed construction operations to place the dry hydrants in service.
- 7.6 All dry hydrants installed and accepted under this section shall be inspected, tested, and maintained in accordance with Regulation 703, Chapter 1, §4.9.

Fire Flow Table 1*

The requirements of Fire Flow Table 1 apply to rural areas where public, private, or central water is not available and where specified elsewhere in these Regulations.

Occupancy	Maximum Aggregate Gross Square Footage	Provide a fire alarm system per Ch. 6, §3.1.4	Minimum Set Back from all property lines	Maximum Height	Exposure Hazard on the Same Property	Internal Fire Separation	Apply
One & Two – Family Detached Dwellings	10,000	no	15'	3 Stories 35'	10'+	n/a	NFPA 1142
Multi-Family & Other Residential	10,000	no	15'	3 Stories 35'	10'+	n/a	NFPA 1142
Rowhouses & Townhouses	10,000	no	15'	3 Stories 35'	10'+	2-Hr rated wall Reg. 701 Chapter 2	NFPA 1142
Assembly	5,000	no	15'	1 Story 15'	10'+	n/a	NFPA 1142
Assembly ¹	5,001 to 10,000	YES	15'	2 Stories 30'	10'+	n/a	NFPA 1142
Health Care Business Education	10,000	no no no	15'	2 Stories 30'	10'+	n/a	NFPA 1142
Storage Industrial Mercantile	5,000	no no no	15'	To be reviewed on an individual basis	15'+	n/a	NFPA 1142
Storage ¹ Industrial ¹ Mercantile ¹	5,001 to 10,000	YES YES YES	25'	To be reviewed on an individual basis	15'+	n/a	NFPA 1142
Mini-Storage	5,000	no	15'	2 Stories 30'	15'+	n/a	NFPA 1142
Mini-Storage	5,001 to 10,000	no	25'	2 Stories 30'	15'+	n/a	NFPA 1142

¹ A fire alarm signaling system shall be provided. See §3.1.4.

***A-Fire Flow Table 1.**

The requirements of Fire Flow Table 1 apply to rural areas where public, private or central water is not available. Where Exposure Hazard, Same Property (EHSP) or Minimum Set Back from all property lines (MSB) cannot be met, the following table may be utilized.

	Maximum Aggregate Gross Square Footage	Fire Separation Distance (or Exposure Hazard, Same Property)	Exterior Wall Fire Resistance Rating
One- and Two-Family Detached Dwellings	10,000	Less than 10 feet	1-Hour

Multi-Family & Other Residential	10,000	Less than 10 feet	2-Hour
Rowhouses & Townhouses	10,000	Less than 10 feet	2-Hour
Assembly	10,000	Less than 5 feet	2-Hour
		5 to 10 feet	1-Hour
Health Care Business Education	10,000	Less than 5 feet	2-Hour
		5 to 10 feet	1-Hour
Storage Industrial Mercantile	10,000	Less than 5 feet	2-Hour
		5 to 15 feet	1-Hour
Mini Storage	10,000	Less than 5 feet	2-Hour
		5 to 15 feet	1-Hour

Fire Flow Table 2

The requirements of Fire Flow Table 2 apply to areas where there is a public, private, or central water system.

Occupancy	Maximum Aggregate Gross Square Footage	Internal Fire Separation	Flow Required	Hydrant Spacing
One- and Two-Family Detached Dwellings ¹	10,000	n/a	500 GPM 20 PSI Residual Pressure 1 Hour Duration	1,000 feet on center
Other Residential ¹	10,000	n/a	1,000 GPM 20 PSI Residual Pressure 1 Hour Duration	800 feet on center
Rowhouses ¹ & Townhouses ¹	10,000	2-Hr rated wall	1,000 GPM 20 PSI Residual Pressure 1 Hour Duration	800 feet on center
		Reg. 701 Chapter 2		
Assembly Health Care Business Education	10,000	n/a	1,000 GPM 20 PSI Residual Pressure 1 Hour Duration	800 feet on center
Storage Industrial Mercantile	10,000	n/a	1,500 GPM 20 PSI Residual Pressure 2 Hour Duration	800 feet on center
Mini-Storage	10,000	n/a	750 GPM 20 PSI Residual Pressure 1 Hour Duration	800 feet on center

¹Sites in New Castle County are subject to the provisions of New Castle County Code Chapter 40 Article 5. See Note on §1.4.1 and §1.4.2.

Note: Fire Flow Table 2, Hydrant Spacing. The phrase, “on center” is intended to represent the maximum distance fire hydrants are spaced from each other. Proper application of this intention would generally provide a fire department with a maximum “hose lay” to a hydrant that would not exceed 500 feet for One & Two Family Dwellings, and 400 feet for all other structures.

Fire Flow Table 3

It is the intent of Fire Flow Table 3 to allow a credit for water flow that is available on site, but does not meet the full water flow requirements of Fire Flow Table 2. However, the available water flow on site shall be a minimum of 500 GPM, otherwise the requirements of Fire Flow Table 1 shall be applied to the site. This Table does not apply to new public, private, nor central water systems, including municipalities.

Occupancy	Maximum Aggregate Gross Square Footage	Minimum Set Back from all property lines	Exposure Hazard on the Same Property	Internal Fire Separation
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One- and Two-Family Dwellings, Multi-family, and Other residential	10,000	*15'	*10'+	n/a
Rowhouses Townhouses	10,000	*15'	10'+	Two Hour Rated Design Wall Reg. 701, Chapter 2
Assembly	10,000	*15'	*10'+	n/a
Health Care Business Education	10,000	*15'	*10'+	n/a
Storage Industrial Mercantile	10,000	*25'	*15'+	n/a
Mini Storage	5,000	*15'	*15'+	n/a
Mini Storage	5,001 to 10,000	*25'	*15'+	n/a

Note: Fire Flow Table 3: For example, if 1,000 GPM is required for a 9,000 sq. ft. Business Occupancy, but only 500 GPM is available, or 50%, then the required setbacks shall be reduced by 50% so that the Minimum Setback (MSB) from property lines would be 7.5 feet, instead of 15 feet, and the Exposure Hazard on the Same Property (EHSP) would be five feet, instead of ten feet.

Chapter 7 Minimum Requirements for Water Suppliers

1.0 General.

1.1 Scope.

- 1.1.1 This Chapter establishes the minimum requirements for all water suppliers when extending or improving their franchise district, their coverage areas, their distribution, transmission or supply infrastructure and any modifications to their water supply systems.
- 1.1.2 Where this Chapter provides minimum standards and specifications for water suppliers to be in conformance with, such standard and specifications found in this Chapter are not to be construed as lessening any requirements of Chapter 6 of this regulation, which may require additional flows, durations, and/or fire hydrants at the time of construction or site development.

1.2 Purpose.

- 1.2.1 The purpose of the Chapters is to provide minimum requirements for water flow for fire protection in duration and amounts required and the installation of fire hydrants by water suppliers.

1.3 Application.

- 1.3.1 This Chapter is applicable to all water suppliers, be they public, private, corporations, companies, or individual(s) when providing water for any occupancy, development or sub-division; and shall apply when extending or improving their franchise districts, their coverage areas, their distribution, transmission or supply infrastructure, and any modifications to their water systems.
- 1.3.2 This Chapter does not apply to sources of water from individual wells when supplying an individual one- and two-family dwelling.
- 1.3.3 This Chapter does not apply to a water supplier that connects its water transmission system to the private distribution system of an existing development, subdivision, manufactured housing community or condominium in order to supply bulk water where the existing distribution at the time of interconnection is unable to provide the minimum requirements for fire protection that would be required by these Regulations provided the following conditions are met:

- 1.3.3.1 A plan review submission is required in accordance with these Regulations prior to the installation of any infrastructure. The submittal shall also include an executed water service agreement between the water provider and the proposed customer defining ownership of the existing and proposed infrastructure.
- 1.3.3.2 A public fire hydrant shall be installed, as determined by the water supplier and approved by The Office of the State Fire Marshal, at or near the entrance to the community. The public fire hydrant shall be owned and maintained by the water supplier in accordance with these Regulations. Water supplier shall provide the minimum flow and duration as required by §2.1 and §3.1 of this Chapter of these Regulations.
- 1.3.3.3 Any infrastructure, water mains, valves, pumps, distribution systems, appliances or other equipment included as part of the distribution systems shall be replaced as needed with like in kind materials. In the event that 50% or more of the infrastructure, water mains, valves, pumps, distributions systems, appliances or other equipment included as part of the distribution systems are required to be replaced the responsible party identified in the water service agreement shall be responsible for providing full fire protection in accordance with these Regulations. The requirement for full fire protection shall become effective once the existing water distribution system has reached repair or replacement of 50% of the system at any time.

Note: This section would not apply to new construction, but only to existing developments with the current infrastructure unable to provide adequate fire protection in accordance with these Regulations. Any agreements, alternatives, variances or exceptions granted prior to the adoption of this change shall remain in effect.

1.4 Definitions.

- 1.4.1 The definitions as found in the section shall be in addition to the definitions found in other sections of these Regulations and shall be applicable to Chapter 6 of this regulation.

“Central or Public Water System” shall mean all suppliers of or providers of water with the exception as noted in §1.3.1 of this Chapter.

“Distribution, Transmission or Supply Infrastructure” shall mean all mains, water lines, distribution, transmission or supply mains or lines, fire hydrants, fittings, connections, tanks, and all equipment intended for water distribution.

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2.0 Minimum Flows.

- ~~2.1~~ All water suppliers covered under the provisions of this Chapter shall provide a minimum flow of water to all areas of their system of at least 500 GPM above calculated domestic demand at a residual pressure of at least 20 PSI.

3.0 Minimum Duration.

- ~~3.1~~ All water suppliers covered under the provisions of this Chapter shall provide a water supply capable of the minimum flow of 500 GPM at a residual pressure of at least 20 PSI for at least two (2) hours. Where the water supply serves only one and two family dwellings, it shall be capable of the minimum flow of 500 GPM at a residual pressure of at least 20 PSI for at least one (1) hour.

4.0 Hydrants.

- 4.1 Fire hydrants shall be located as specified in Chapter 6 of this regulation for all occupancies and structures and buildings found within the State Fire Prevention Regulations.
- 4.2 Notwithstanding the provisions of §4.1 of this Chapter of this Regulation, fire hydrants shall be located as prescribed for the hazard by the State Fire Marshal.
- 4.3 When a water supplier is extending any transmission, distribution or supply water main or piping, fire hydrants shall be installed so as not to exceed a maximum distance of 2,000 feet between hydrants.

5.0 Installation.

- 5.1 Fire hydrants and water mains shall be installed in accordance with American Water Works Standards; the Standard for the Installation of Private Fire Service Mains and Their Appurtenances, NFPA 24, as adopted and/or modified by these Regulations; and in conformance with accepted engineering principles and practices.
- 5.2 The Water Supplier shall coordinate with the local Fire Department, to assure that the operation of the fire hydrant, including the direction of force needed to open the hydrant, is consistent with all other hydrants within

the fire department's district as approved by the State Fire Marshal.

- 5.3 The Water Supplier shall coordinate with the local Fire Department, to assure that all the characteristics of the hose connections and pumper connections on all new hydrants are consistent with all other hydrants within the fire department's district as approved by the State Fire Marshal. The characteristics of these connections shall include, but not be limited to, the internal diameter of the openings, the outside (thread) diameter of the connections, the number of threads per inch, the configuration of the thread, and the depth of the thread.
- 5.4 As fire hydrants are replaced for whatever reason, including replacement of damaged hydrants, the water supplier shall install only hydrants that meet the operational criteria and thread specifications stated above.

6.0 Auxiliary Power Supply.

- 6.1 All water suppliers that depend on electrically driven pumps to sustain the water distribution systems must provide auxiliary power systems to drive the pumps in the event of an electrical failure that will render the electric pumps out-of-service.

7.0 Submission of Plans.

- 7.1 All water suppliers must submit engineering grade plans, hydraulic calculations, pump data, and other required specifications to the Office of the State Fire Marshal for review and approval, pursuant to the State Fire Prevention Regulations with respect to submission of plans and fees, for all work when extending or improving their franchise districts, their coverage areas, their distribution transmission or supply infrastructure, and any modifications to their water systems.

1 DE Reg. 197 (08/01/97)

6 DE Reg. 1638 (06/01/09)

8 DE Reg. 416 (09/01/04)

10 DE Reg. 342 (08/01/06)

13 DE Reg. 629 (11/01/09)

19 DE Reg. 843 (03/01/16) (Final)