Requirements for Fire Department Access and Water

Nassau County Code of Ordinances Sect. 29.44 – Water lines.

(a)

Connection to public water supply; installation of fire hydrants. Where an approved public water supply is reasonably accessible, as determined by the county department of health and pursuant to Florida State Statutes and Florida Administrative Code, each lot within the subdivision shall be provided with a connection to such water supply. The water service for each lot will be installed at the time of the application for a building permit. All mains, to be under paving, will be constructed prior to the paving installation. Fire hydrants will be installed in all subdivisions where an existing public water supply can be extended within dedicated or proposed right-of-way that is within one-quarter mile of said proposed development. The developer will extend the water supply and provide the fire hydrants at five-hundred-foot intervals. The location of fire hydrants and water main size shall be approved by fire chief or his designee. The public works director shall review development plans to ensure that the public water supply is located in a manner that provides least susceptibility to hurricane impacts. Potable water infrastructure shall be phased into operation as development proceeds on barrier islands.

(b)

Private water supply systems; fire hydrants. Where no existing public water supply is available and the installation of a public water supply system will be required at the time of application for a building permit, the private water supply system shall be constructed in such a manner that an adequate supply of potable water will be available to each lot. The rules and regulations of the Nassau County Health Department shall govern the installation of the system. Stub outs for fire hydrants shall be provided and the fire hydrants shall be installed by the developer at the time the water system is placed in use. The public works director shall review development plans to ensure that the private water supply is located in a manner that provides least susceptibility to hurricane impacts. Potable water infrastructure shall be phased into operation as development proceeds on barrier islands.

(c)

Alternative fire protection measures where public water supply not available. Where no existing public water supply is available and it is anticipated that a public water supply will not be made available, the board may require alternative fire protection measures. The alternative fire protection measures will be based on recommendations of the fire chief or his designee and may include, but not be limited to the installation of wells, pumps, drafting hydrants and other measures to allow adequate fire protection for the area being subdivided.

Requirements of Florida Fire Prevention Code:

NFPA 1 Chapter 18 Fire Department Access and Water Supply

18.1 General. Fire department access and water supplies shall comply with this chapter.

18.1.1 Application.

18.1.1.1 This chapter shall apply to public and privately owned fire apparatus access roads.

18.1.1.2 This chapter shall apply to public and privately owned fire hydrant systems.

18.1.2 Permits. Permits, where required, shall comply with Section 1.12.

18.1.3 Plans.

18.1.3.1 Fire Apparatus Access. Plans for fire apparatus access roads shall be submitted to the AHJ for review and approval prior to construction.

18.1.3.2 Fire Hydrant Systems. Plans and specifications for fire hydrant systems shall be submitted to the AHJ for review and approval prior to construction.

18.2 Fire Department Access.

18.2.1 Fire department access and fire department access roads shall be provided and maintained in accordance with Section 18.2

18.2.2 Access to Structures or Areas.

18.2.2.1 Access Boxes(es). The AHJ shall have the authority to require an access box(es) to be installed in an accessible location where access to or within a structure or area is difficult because of security. The access box(es) shall be of an approved type listed in accordance with UL1037.

18.2.2.2 Access to Gated Subdivisions or Developments. The AHJ shall have the authority to require fire department access be provided to gated subdivisions or developments through the use of an approved device or system.

18.2.2.3 Access Maintenance. The owner or occupant of a structure or area, with required fire department access as specified in 18.2.2.1 or 18.2.2.2 shall notify the AHJ when the access is modified in a manner that could prevent fire department access.

18.2.3 Fire Department Access Roads.

18.2.3.1 Required Access.

18.2.3.1.1 Approved fire department access roads shall be provided for every facility, building or portion of a building hereafter constructed or relocated.

18.2.3.1.2 Fire department access roads shall consist of roadways, fire lanes, parking lot lanes, or a combination thereof.

18.2.3.1.3 The provision of 18.2.3.1 through 18.2.3.2.2.1 shall be permitted to be modified by the AHJ where any of the following conditions exist:

(1) One- and two-family dwellings protected by an approved automatic sprinkler system in accordance with Section 13.1
(2) Existing one- and two-family dwellings
(3) Private garages having an area not exceeding 400 ft^2
(4) Carports having and area not exceeding 400 ft^2
(5) Agricultural buildings having and area not exceeding 400 ft^2
(6) Sheds and other detached buildings having an area not exceeding 400 ft^2

18.2.3.1.4 When the fire department access roads cannot be installed due to location on property, topography, waterways, nonnegotiable grades, or other similar conditions, the AHJ shall be authorized to require additional fire protection features.

18.2.3.2 Access to Building.

18.2.3.2.1 A fire department access road shall extend to within 50 ft of at least one exterior door that can be opened from the outside and that provides access to the interior of the building.

18.2.3.2.1.1 Where a one- or two-family dwelling, or townhouse, is protected with an approved automatic sprinkler system that is installed in accordance with Section 13.3, the distance in 18.2.3.2.1 shall be permitted to be increased to 150 ft.

18.2.3.2.2 Fire department access roads shall be provided such that any portion of the facility or any portion of the exterior wall of the first story of the building is located not more than 150 ft from fire department access roads as measured by an approved route around the exterior of the building or facility.

18.2.3.2.2.1 When buildings are protected throughout with an approved automatic sprinkler system that is installed in accordance with NFPA 13, NFPA 13D, or NFPA 13R, the distance in 18.2.3.2.2 shall be permitted to be increased to 450 ft.

18.2.3.3 Multiple Access Roads. More than one fire department access road shall be provided when it is determined by the AHJ that access by a single road could be impaired by vehicle congestion, condition of terrain, climate conditions, or other factors that could limit access.

18.2.3.5 Specifications.
18.2.3.5.1 Dimensions.

18.2.3.5.1.1 Fire department access roads shall have an unobstructed width of not less than 20 ft.

18.2.3.5.1.1.1 Where approved by the AHJ, the width of the fire department access roads shall be permitted to be less that the minimum specified in 18.2.3.5.1.1.

18.2.3.5.1.1.2 The width of fire department access roads shall be increased when the minimum width specified in 18.2.3.5.1.1 is not adequate to accommodate fire apparatus.

18.2.3.5.1.2 Fire department access roads shall have an unobstructed vertical clearance of not less than 13 ft 6 in.

18.2.3.5.1.2.1 Vertical clearance shall be permitted to be reduced where approved by the AHJ, provided such reduction does not impair access by fire apparatus, and approved signs are installed and maintained indicating the established vertical clearance when approved.

18.2.3.5.1.2.2 Vertical clearances shall be increased when vertical clearances are not adequate to accommodate fire apparatus.

18.2.3.5.2 Surface. Fire department access roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be provided with an all-weather driving surface.

18.2.3.5.3 Turning Radius.
18.2.3.5.3.1 The turning radius of a fire department access road shall be approved by the AHJ.

18.2.3.5.3.2 Turns in fire department access roads shall maintain the minimum road width.

18.2.3.5.3.3 Fire department access roads connecting to roadways shall be provided with curb cuts extending at least 2 ft beyond each edge of the fire department access road.

18.2.3.5.4 Dead Ends. Dead-end fire department access roads in excess of 150 ft in length shall be provided with approved provisions for the fire apparatus to turn around.

18.3 Water Supplies.
18.3.1* An approved water supply capable of supplying the required fire flow for fire protection shall be provided to all premises upon which facilities, buildings, or portions of buildings are hereafter constructed or moved into the jurisdiction. The approved water supply shall be in accordance with Section 18.4

18.3.1.1* Where no adequate or reliable water distribution system exists, approved reservoirs, pressure tanks, elevated tanks, fire department tanker shuttles, or other approved systems capable of providing the required fire flow shall be permitted.

18.4 Fire Flow Requirements for Buildings.
18.4.1* Scope.
18.4.1.1* The procedure determining fire flow requirements for buildings hereafter constructed or moved into the jurisdiction shall be in accordance with Section 18.4.
18.4.1.2 Section 18.4 shall not apply to structures other than buildings.
18.4.2 Definitions. See definitions 3.3.14.4, Fire Flow Area, and 3.3.124, Fire Flow.

18.4.3 Modifications.
18.4.3.1 Decreases in Fire Flow Requirements.
18.4.3.1.1* Fire flow requirements shall be permitted to be decreased by the AHJ for isolated buildings or a group of buildings in rural areas or suburban areas where the development of full fire flow requirements is impractical as determined by the AHJ.

18.4.3.1.2 The AHJ shall be authorized to establish conditions on fire flow reductions approved in accordance with 18.4.3.1.1 including, but not limited to, fire sprinkler protection, type of construction of the building, occupancy, development density, building size, and setbacks.

18.4.3.2 Increases in Fire Flow Requirements. The minimum required fire flow shall be permitted to be increased by the AHJ where conditions indicate an unusual susceptibility to group fires or conflagrations. An upward modification shall not be more than twice that required for the building under consideration.

18.4.4 Fire Flow Area.
18.4.4.1 General. The fire flow area shall be the total floor area of all floor levels of a building except as modified in 18.4.4.2.

18.4.4.2 Type I (443), Type I (332), and Type II (222) Construction. The fire flow area of a building constructed of Type I (443), Type I (332), and Type II (222) construction shall be the area of the three largest successive floors.

18.4.5 Fire Flow Requirements for Buildings.

18.4.5.1 One- and Two-Family Dwellings Not Exceeding 5000 ft2.

18.4.5.1.1 The minimum fire flow and flow duration requirements for one- and two-family dwellings having a fire flow area that does not exceed 5000 ft2 shall be 1000 gpm for 1 hour.

18.4.5.1.2* A reduction in required fire flow of 75 percent shall be permitted where the one- and two-family dwelling is provided with an approved automatic sprinkler system.

18.4.5.1.3* Where one- and two-family dwellings are proposed to be constructed in areas where water distribution systems providing fire flow were designed and installed prior to the effective date of this *Code*, the AHJ shall be authorized to accept the previously designed system fire flow where the one and two family dwellings are provided with approved automatic sprinkler systems.

18.4.5.1.4.1 Where multiple buildings are located on a single lot, the building separation distance shall be the distance between the buildings.

Table 18.4.5.1.4 Permitted Fire Flow Reduction for Building Separation

Separation Distance Between Buildings on a Single Lot		Separation Distance to Lot Line or Easement[a]		Permitted Fire Flow Reduction
ft	m	ft	m	
>30 and ≤50	>9.1 and ≤15.2	>15 and ≤25	>4.6 and ≤7.6	25%
>50	>15.2	>25	>7.6	40%

[a] See 18.4.5.1.4.3.

18.4.5.1.4.2 Where a building abuts a lot line, the building separation distance shall be the distance between the building and the lot line.

18.4.5.1.4.3 Where a building is contiguous to a public right of way or no-build easement, the separation distance shall be the distance between the building to the opposite side of the right of way or no-build easement.

18.4.5.1.4.4 Where multiple buildings are located on a single lot and abut a lot line, the building separation distance for determining fire flow reduction shall be the smallest of the two distances.

18.4.5.1.5* The reductions in 18.4.5.1.2, 18.4.5.1.3, and 18.4.5.1.4 shall not reduce the required fire flow to less than 500 gpm.

18.4.5.2 One- and Two-Family Dwellings Exceeding 5000 ft2.

18.4.5.2.1 Fire flow and flow duration for dwellings having a fire flow area in excess of 5000 ft2 shall not be less than that specified in Table 18.4.5.2.1.

18.4.5.2.2 Required fire flow shall be reduced by 75 percent and the duration reduced to 1 hour where the one- and two-family dwelling is provided with an approved automatic sprinkler system.

18.4.5.2.3 A reduction in the required fire flow shall be permitted where a one- and two-family dwelling is separated from all lot lines in accordance with Table 18.4.5.1.4.

18.4.5.2.4 Required fire flow for one- and two-family dwellings protected by an automatic sprinkler system shall not exceed 2000 gpm for 1 hour.

18.4.5.3 Buildings Other Than One- and Two-Family Dwellings.

18.4.5.3.1 The minimum fire flow and flow duration for buildings other than one- and two-family dwellings shall be as specified in Table 18.4.5.2.1.

18.4.5.3.2 Required fire flow shall be reduced by 75 percent when the building is protected throughout by an approved automatic sprinkler system. The resulting fire flow shall not be less than 1000 gpm.

Table 18.4.5.2.1 Minimum Required Fire Flow and Flow Duration for Buildings

Fire Flow Area ft^2 (× 0.0929 for m^2)					Fire Flow gpm† (× 3.785 for L/min)	Flow Duration (hours)
I(443), I(332), II(222)*	II(111), III(211)*	IV(2HH), V(111)*	II(000), III(200)*	V(000)*		
0–22,700	0–12,700	0–8200	0–5900	0–3600	1500	2
22,701–30,200	12,701–17,000	8201–10,900	5901–7900	3601–4800	1750	
30,201–38,700	17,001–21,800	10,901–12,900	7901–9800	4801–6200	2000	
38,701–48,300	21,801–24,200	12,901–17,400	9801–12,600	6201–7700	2250	
48,301–59,000	24,201–33,200	17,401–21,300	12,601–15,400	7701–9400	2500	
59,001–70,900	33,201–39,700	21,301–25,500	15,401–18,400	9401–11,300	2750	
70,901–83,700	39,701–47,100	25,501–30,100	18,401–21,800	11,301–13,400	3000	3
83,701–97,700	47,101–54,900	30,101–35,200	21,801–25,900	13,401–15,600	3250	
97,701–112,700	54,901–63,400	35,201–40,600	25,901–29,300	15,601–18,000	3500	
112,701–128,700	63,401–72,400	40,601–46,400	29,301–33,500	18,001–20,600	3750	
128,701–145,900	72,401–82,100	46,401–52,500	33,501–37,900	20,601–23,300	4000	4
145,901–164,200	82,101–92,400	52,501–59,100	37,901–42,700	23,301–26,300	4250	
164,201–183,400	92,401–103,100	59,101–66,000	42,701–47,700	26,301–29,300	4500	
183,401–203,700	103,101–114,600	66,001–73,300	47,701–53,000	29,301–32,600	4750	
203,701–225,200	114,601–126,700	73,301–81,100	53,001–58,600	32,601–36,000	5000	
225,201–247,700	126,701–139,400	81,101–89,200	58,601–65,400	36,001–39,600	5250	
247,701–271,200	139,401–152,600	89,201–97,700	65,401–70,600	39,601–43,400	5500	
271,201–295,900	152,601–166,500	97,701–106,500	70,601–77,000	43,401–47,400	5750	
Greater than 295,900	Greater than 166,500	106,501–115,800	77,001–83,700	47,401–51,500	6000	
		115,801–125,500	83,701–90,600	51,501–55,700	6250	
		125,501–135,500	90,601–97,900	55,701–60,200	6500	
		135,501–145,800	97,901–106,800	60,201–64,800	6750	
		145,801–156,700	106,801–113,200	64,801–69,600	7000	
		156,701–167,900	113,201–121,300	69,601–74,600	7250	
		167,901–179,400	121,301–129,600	74,601–79,800	7500	
		179,401–191,400	129,601–138,300	79,801–85,100	7750	
		Greater than 191,400	Greater than 138,300	Greater than 85,100	8000	

*Types of construction are based on NFPA 220.
†Measured at 20 psi (139.9 kPa).

18.4.5.3.3 Required fire flow shall be reduced by 75 percent when the building is protected throughout by an approved automatic sprinkler system, which utilizes quick response sprinklers throughout. The resulting fire flow shall not be less than 600 gpm.

18.4.5.3.4* Required fire flow for buildings protected by an approved automatic sprinkler system shall not exceed 2000 gpm for 2 hours.

18.4.5.4* Required Fire Flow and Automatic Sprinkler System Demand. For a building with an approved fire sprinkler system, the fire flow demand and the fire sprinkler system demand shall not be required to be added together. The water supply shall be capable of delivering the larger of the individual demands.

18.5 Fire Hydrants.
18.5.1 Fire Hydrant Locations and Distribution. Fire hydrants shall be provided in accordance with Section 18.5 for all new buildings, or buildings relocated into the jurisdiction unless otherwise permitted by 18.5.1.1 or 18.5.1.2.

18.5.1.1 Fire hydrants shall not be required where the water distribution system is not capable of providing a fire flow of greater than 500 gpm at a residual pressure of 20 psi.

18.5.1.2* Fire hydrants shall not be required where modification or extension of the water distribution system is deemed to be impractical by the AHJ.

18.5.1.3 The provisions of 18.5.1.1 and 18.5.1.2 shall not eliminate the fire flow requirements of Section 18.4.

18.5.1.4* The distances specified in Section 18.5 shall be measured along fire department access roads in accordance with 18.2.3.

18.5.1.5 Where fire department access roads are provided with median dividers incapable of being crossed by fire apparatus, or where fire department access roads have traffic counts of more than 30,000 vehicles per day, hydrants shall be placed on both sides of the fire department access road on an alternating basis, and the distances specified by Section 18.5 shall be measured independently of the hydrants on the opposite side of the fire department access road.

18.5.1.6 Fire hydrants shall be located no more than 12 ft from the fire department access road.

18.5.2 Detached One- and Two-Family Dwellings. Fire hydrants shall be provided for detached one- and two-family dwellings in accordance with both of the following:
(1) The maximum distance to a fire hydrant from the closest point on the building shall not exceed 600 ft.
(2) The maximum distance between fire hydrants shall not exceed 800 ft.

18.5.3 Buildings Other than Detached One- and Two-Family Dwellings. Fire hydrants shall be provided for buildings other than detached one- and two-family dwellings in accordance with both of the following:
(1) The maximum distance to a fire hydrant from the closest point on the building shall not exceed 400 ft.
(2) The maximum distance between fire hydrants shall not exceed 500 ft.

18.5.4 Minimum Number of Fire Hydrants for Fire Flow.
18.5.4.1 The minimum number of fire hydrants needed to deliver the required fire flow for new buildings in accordance with Section 18.4 shall be determined in accordance with Section 18.5.4.

18.5.4.2 The aggregate fire flow capacity of all fire hydrants within 1000 ft of the building, measured in accordance with 18.5.1.4 and 18.5.1.5, shall be not less than the required fire flow determined in accordance with Section 18.4.

18.5.4.3* The maximum fire flow capacity for which a fire hydrant shall be credited shall be as specified by Table 18.5.4.3. Capacities exceeding the values specified in Table 18.5.4.3 shall be permitted when local fire department operations have the ability to accommodate such values as determined by the fire department.

Table 18.5.4.3 Maximum Fire Hydrant Fire Flow Capacity

Distance to Building[a]		Maximum Capacity[b]	
(ft)	(m)	(gpm)	(L/min)
≤ 250	≤ 76	1500	5678
> 250 and ≤ 500	> 76 and ≤ 152	1000	3785
> 500 and ≤ 1000	> 152 and ≤ 305	750	2839

[a] Measured in accordance with 18.5.1.4 and 18.5.1.5.
[b] Minimum 20 psi (139.9 kPa) residual pressure.

18.5.4.4 Fire hydrants required by 18.5.2 and 18.5.3 shall be included in the minimum number of fire hydrants for fire flow required by 18.5.4.

18.5.5 Testing and Maintenance.
18.5.5.1 Private water supply systems shall be tested and maintained in accordance with NFPA 25.

18.5.5.2 Public water supply systems providing fire flow shall be tested and maintained in accordance with ANSI/AWWA G200, *Standard for Distribution Systems Operation and Management*.

18.5.6 Accessibility. Fire hydrants and connections to other approved water supplies shall be accessible to the fire department.

18.5.7 Clear Space Around Hydrants.

18.5.7.1 A 36 in. clear space shall be maintained around the circumference of fire hydrants except as otherwise required or approved.

18.5.7.2 A clear space of not less than 60 in. shall be provided in front of each hydrant connection having a diameter greater than 21⁄2 in.

18.5.8 Protection. Where required by the AHJ, fire hydrants subject to vehicular damage shall be protected unless located within a public right of way.

18.5.9 Hydrants Out of Service. Where water supplies or fire hydrants are out of service for maintenance or repairs, a visible indicator acceptable to the AHJ shall be used to indicate that the hydrant is out of service.

18.5.10 Marking of Hydrants.
18.5.10.1 Fire hydrants shall be marked with an approved reflector affixed to the roadway surface where required by the AHJ.

18.5.10.2 Fire hydrants shall be marked with an approved flag or other device (blue reflector) affixed to or proximate to the fire hydrant where required by the AHJ.

18.5.10.3* Where required by the AHJ, fire hydrants shall be color coded or otherwise marked with an approved system indicating the available flow capacity.

NFPA 1142

If there is no existing water supply or it is not possible to extend the water supply to a project, there are also options available under NFPA 1142 *Standard on Water Supplies for Suburban and Rural Firefighting*. If a decision to utilize the options of NFPA 1142, the standard must be followed in its entirety. This includes documentation of Calculation of Minimum Water Supplies, Classification of Construction, Water Supply and Dry Hydrants. Complete plans for each dry hydrant as well as Dry Hydrant Design Worksheets for each hydrant will be required.

Water Supply
7.1 Approved Water Supply.
7.1.1 Any water supply source used to meet the requirements of this standard shall be of a quality approved by the AHJ.

7.1.2 Where required by the AHJ, the minimum water supply shall be available prior to combustibles being brought on site.

7.1.3 Water storage tanks shall be inspected, tested, and maintained in accordance with NFPA 25.

7.1.4 The water supply source shall be maintained and accessible on a year-round basis.

7.1.5 In locations where adequate municipal-type water systems are not provided and additional fire protection is needed, minimum water supplies shall be established in, or transportable to, the designated area.

7.1.6 Unless otherwise permitted by the AHJ, all approved non-pressurized water supply sources shall be accessible using dry hydrants that meet the requirements of this standard.

7.1.7* To be acceptable, water supply sources shall maintain the minimum capacity and delivery requirements on a year round basis, based on the 50-year drought for the water source.

7.3 Identifying Water Sources. A water source indicator approved by the AHJ shall be erected at each water point identifying the site for fire department emergency use.

7.4 Fire Hose Connections. Any fitting provided at a water source to permit a fire apparatus to connect to the water source shall be approved by the AHJ and shall conform to NFPA 1963.

7.5* Access to Water Sources. Roads providing a means of access to any required water supply shall be constructed and maintained in accordance with the following:

(1) Roadways shall have a minimum clear width of 12 ft for each lane of travel.
(2) Turns shall be constructed with a minimum radius of 100 ft to the centerline.
(3) The maximum sustained grade shall not exceed 8 percent.
(4) All cut-and-fill slopes shall be stable for the soil involved.
(5) Bridges, culverts, or grade dips shall be provided at all drainageway crossings; roadside ditches shall be deep enough to provide drainage with special drainage facilities (tile, etc.) at all seep areas and high water-table areas.
(6) The surface shall be treated as required for year-round travel.
(7) Erosion control measures shall be used as needed to protect road ditches, cross drains, and cut-and-fill slopes.
(8) Where turnarounds are utilized during fire-fighting operations, they shall be designed with a diameter of 120 ft or larger, as required, to accommodate the equipment of the responding fire department.
(9) Load-carrying capacity shall be adequate to carry the maximum vehicle load expected.
(10) The road shall be suitable for all-weather use.
(11) When a bridge is required to be used as part of a fire department access road, it shall be constructed and maintained in accordance with nationally recognized standards.
(12) The bridge shall be designed for a live load sufficient to carry the imposed loads of fire apparatus.
(13) Vehicle load limits shall be posted at both entrances to bridges where required by the AHJ.

Dry Hydrants
8.1* General. The AHJ shall ensure that generally accepted
design practices are employed during the following:
(1) Dry hydrant location planning
(2) The permit process
(3) Design criteria
(4) Construction

8.2 Planning and Permits. The planning, permitting, and design processes shall be completed before the actual construction begins.

8.2.1 Planning shall be coordinated among public and private entities that could be impacted by the installation of a dry hydrant.

8.2.2* Required permits to install a dry hydrant shall be obtained prior to installation.

8.3* Dry Hydrant Design.
8.3.1* The AHJ shall approve all aspects of the dry hydrant design and construction, including the type of materials, pipe size, and system fittings to be used.

8.3.2* As a minimum, Schedule 40 pipe and component fittings shall be used.

8.3.3* All dry hydrant systems shall be designed and constructed to provide a minimum flow of 1000 gpm at draft.

8.3.4* The water supply source for the dry hydrant shall provide, on a year-round basis, the required quantity of water, as determined in Chapter 4, and the minimum flow as required in 8.3.3.

8.3.5* Dry hydrant systems shall be designed and constructed so that slope and piping configurations do not impede drafting capability.

8.3.6* All exposed surfaces and all underground metal surfaces shall be protected to prevent deterioration.

8.3.7* A minimum number of elbows shall be used in the piping system.

8.3.8 Suction hose connection(s) shall be compatible with the fire department's hard suction hose size and shall conform to NFPA 1963. The connection(s) shall include a protective cap. The cap and adapter shall be of materials that minimize rust and galvanic corrosion.

8.3.9 Dry hydrant system piping shall be supported and/or stabilized using approved engineering design practices.

8.3.10 Stabilization or equivalent protection shall be employed at elbows and other system stress points.

8.3.11 In addition to strength of materials and structural support criteria, design shall specify appropriate aggregates and soil materials to be used to backfill/cover piping during installation.

8.3.12 All connections shall be clean, and the appropriate sealing materials shall be used according to manufacturer's specifications so as to ensure that all joints are airtight.

8.3.13* System strainers shall be constructed to permit required fire flow.

8.4* Dry Hydrant Locations.

8.4.1 A minimum of 3 ft of clear, unobstructed space shall be provided around the dry hydrant.

8.4.2* Dry hydrants shall be located so that they are accessible under all weather conditions.

8.4.3 The dry hydrant system and access to the site shall be developed in a manner that allows the fire department pump to connect to the hydrant using not more than 20 ft of hard suction hose.

8.4.4 Dry hydrants shall be located a minimum of 100 ft from any structure.

8.4.5 No parking or other obstacles shall be allowed within 20 ft of the access side of the hydrant.

8.4.6* Dry hydrants shall be protected from damage by vehicular and other perils, including freezing and damage from ice and other objects.

8.4.7* Dry hydrant locations shall be made visible from the main roadway during emergencies by reflective marking and signage approved by the AHJ.

8.4.8 All identification signs shall be approved by the highway authority prior to installation if they are to be located on the right-of-way or are subject to state laws.

8.5* Depth of Water Sources.

8.5.1 There shall be not less than 2 ft of water above the strainer and not less than 1 ft below the strainer.

8.5.2 Depth of the water shall be based on the 50-year drought level for the water source.

8.6* Installation Procedure for Dry Hydrant System. The AHJ shall ensure that the installation meets all design criteria.

8.7 Inspection and Maintenance of Dry Hydrants.
8.7.1* Dry hydrants shall be inspected at least quarterly and maintained as necessary to keep them in good operating condition.

8.7.2 Thorough surveys shall be conducted, to reveal any deterioration in the water supply situation in ponds, streams, or cisterns.

8.7.3 Vegetation shall be cleared for a minimum 3 ft radius from around hydrants.

8.7.4 The reflective material marking the hydrant and signage shall be inspected at least annually to verify that it is being maintained in accordance with 8.4.7.

8.7.5 Hydrant risers shall be protected from ultraviolet (UV) degradation by painting or other measures.

8.7.6* The hydrants shall be flow tested at least annually with an approved pump to ensure that the minimum design flow is maintained.