

**SEMINOLE COUNTY
PUBLIC SAFETY
TECHNICAL MANUAL**



January 2014

DEPARTMENT OF PUBLIC SAFETY

EMS-FIRE-RESCUE DIVISION



SEMINOLE COUNTY PUBLIC SAFETY TECHNICAL MANUAL

Contents

General	4
Technical Manual Purpose.....	4
Water Distribution Systems and Storage Tanks or Cisterns.....	4
Applicability.....	4
Design Standards for Water Distribution Systems Providing Fire Flow.....	5
Water Mains.....	5
Fire Hydrant Locations.....	5
Fire Hydrant Maintenance and Serviceability	6
Fire Flow Tests	6
General.....	6
When Required.....	6
Fire Flow Testing Procedure.....	6
On-Site Water Storage Tanks or Cisterns Design Standards.....	7
Site Design Requirements	7
Specifications.....	7
Warning Sign Specifications	8
Maintenance and Serviceability	8
Identification of Hydrant and Tank or Cistern Locations	8
Blue Reflective Pavement Marker Location	9
Blue Reflective Pavement Marker Specifications.....	9
Fire Lanes and Access Roads	9
Fire Lanes Locations	9
Responsibility.....	10
Fire Lane and Access Road Design Standards	10
Fire Lane Signs and Markings	10
Paved Fire Lane Markings	10
Fire Lane Signs.....	10
Pavement Marking of Paved Fire Lanes	11
Paved Fire Lane Marking.....	11
Unpaved Fire Lane Marking	11
Public Safety Emergency Access Signage and Markings	12
Temporary Access Signage for New Construction Sites.....	12
Other Emergency Access Signage and Markings.....	12

SEMINOLE COUNTY PUBLIC SAFETY TECHNICAL MANUAL

Gated Access..... 13
 Permitting 13
 Specifications..... 13
 Gate Operator Control 13
 Access Controls..... 13
Review Criteria 14

General

Technical Manual Purpose

These standards describe certain regulations within the Florida Fire Prevention Code (FFPC), the Seminole County Comprehensive Plan and the Seminole County Land Development Code. To protect the public safety and welfare of Seminole County's Citizens, it is the Board of County Commissioners' intent that these standards both inform developers of certain public safety minimum regulations and clarify the local government's expectations in meeting those regulations.

The Board of County Commissioners has approved and accepted this as an official standard; however, State regulations contained within these standards cannot be reduced at the local level.

Should any plans be submitted which vary substantially from the standards set forth herein, or which propose to use materials or methods other than those recommended herein, the submittal must be accompanied by appropriate supporting documentation or engineering studies for review and approval by the Fire Marshal or the designee consistent with the requirements of State and Federal law. All plans submitted for review must conform to all Federal, State, County laws, standards, rules, regulations and codes.

All land use design, construction, maintenance, and occupancies in unincorporated Seminole County must comply with these standards. The developer of the property is responsible for installation of and the owner and occupant of the property is responsible for the maintenance of all signage, markings, licenses and structures required by standards and codes.

All references to a particular code, standard, law, rule, or regulation must reflect the most current adopted edition.

Water Distribution Systems and Storage Tanks or Cisterns

This section sets forth general requirements for the design and installation of systems providing water for fire protection.

Applicability

1. In accordance with the FFPC, the developer of any structure or development, other than an individual one- or two-family home, shall install an approved water supply for fire protection prior to combustible materials being placed on-site.
2. Water systems and fire hydrants must be designed and constructed to supply the minimum required fire flow in accordance with the FFPC-NFPA 1, chapter 18 and

SEMINOLE COUNTY PUBLIC SAFETY TECHNICAL MANUAL

Annex I. All required specifications for distribution systems must be shown on submittals made to the Fire Prevention Bureau.

3. When a municipal or private utility company is unable to provide water service, the developer shall provide water supply for fire protection in accordance with the FFPC-NFPA 1142 – Standard on Water Supplies for Suburban and Rural Fire Fighting.

Exception: If the structure is protected with a fire sprinkler system installed in accordance with NFPA 13, 13R or 13D, the minimum required water supply for fire protection may be reduced as approved by the Fire Marshal.

4. In instances where a municipal or private utility company is unable to provide water service to supply fire hydrants for fire protection, an approved on-site water storage tank or cistern is required. A Hold Harmless Agreement is required prior to the approval of a site plan or construction plans.
5. Open bodies of water including Stormwater Management Facilities are not considered acceptable sources of water for fire department use.
6. Alternate water sources may not be considered as an alternative when a municipal or private supply is available.

Design Standards for Water Distribution Systems Providing Fire Flow

Water Mains

1. At a minimum in one- and two-family developments, water mains must be a minimum of six inches in diameter and a minimum of eight inches in diameter in other than one- or two-family residences; looped when possible and otherwise designed to provide the minimum required fire flow in accordance with the FFPC NFPA 1, chapter 18 – Fire Flow Requirements for Buildings.

Exception: If the structure is protected with a fire sprinkler system installed in accordance with NFPA 13, 13D or 13 R, the minimum required water supply for fire protection may be reduced as approved by the Fire Marshal.

2. Connection to dead end stubs is acceptable if minimum fire flow can be provided.

Fire Hydrant Locations

1. Fire hydrants must be provided at approved locations in accordance with the FFPC- NFPA 1, Annex I-Fire Hydrant Locations and Distribution.
2. Fire hydrants must be located within 100 feet of all fire department connections.

Fire Hydrant Maintenance and Serviceability

1. It is the responsibility of the occupant or owner of the property to ensure that private fire hydrants are maintained per the requirements of the current adopted edition of NFPA 25 – Standard for the Inspection, Testing, and Maintenance of Water-based Fire Protection Systems.

Fire Flow Tests

To assure that sufficient fire flow can be and has been provided, fire flow tests must be conducted before and after installation of water mains and hydrants.

General

1. Fire flow tests of public water systems are conducted to determine whether the available fire flow in a specific area meets Seminole County's requirements. A fire flow in accordance with NFPA 1, chapter 18 Fire Flow for Buildings is required for multi-family, commercial systems, and residential systems.
2. Flow testing of public water systems should not be conducted without the consent, cooperation, and attendance of the serving utility company.

When Required

1. Upon receipt of a complete application and site plan, all existing fire hydrants serving the site must be fire flow tested by the developer.
2. New fire hydrants must also be tested after installation. The developer shall demonstrate satisfactory test results prior to final inspection of the utility system or the Certificate of Occupancy, whichever comes first.

Fire Flow Testing Procedure

1. Fire flow testing must be performed in accordance with NFPA 291, Recommended Practice for Fire Flow Testing and Marking of Hydrants.
2. Documentation for fire flow testing must include a fire flow test report and a hydraulic graph must be provided to the Fire Prevention Bureau.

On-Site Water Storage Tanks or Cisterns Design Standards

Where on-site water storage tanks or cisterns are utilized to meet the fire flow requirement of the FFPC and NFPA 1142, these tanks or cisterns must be designed and installed in accordance with NFPA 22, this section or designed by a fire protection engineer. A site plan with supporting engineering details showing water storage tank or cistern design must be submitted to the Fire Marshal for approval prior to issuance of a building permit for the structure to be protected. Use and development of the site must comply with the approved site plan and specifications.

Site Design Requirements

1. On-site water tanks or cisterns must be designed and located so that the fire department can access and draft with current fire department apparatus.
2. The tank or cistern location must be at least 75 feet away from the protected buildings and within 6 feet of a fire department access road.

Exception: If the structure is protected with a fire sprinkler system installed in accordance with NFPA 13, 13R or 13D, the minimum distance from the building to the tank or cistern may be reduced as approved by the Fire Marshal.

3. The area in front of the tank or cistern must be marked as a fire lane centered on 15 feet in each direction.
4. Warning signs must be posted near the tank or cistern.

Specifications

1. Used Tanks
 - a. Tanks previously used for gasoline or other flammable liquids may not be used unless these tanks have been purged and certified free of flammable liquids, vapors or both.
2. Size and Design
 - a. Tanks or cisterns must be sized and designed in accordance with the FFPC NFPA 1142, Standard for Water Supplies for Suburban and Rural Fire Fighting and NFPA 22, Standard for Water Tanks for Private Fire Protection.

Exception: If the structure is protected with a fire sprinkler system installed in accordance with NFPA 13, 13R or 13D, the minimum required water supply for fire protection may be reduced as approved by the Fire Marshal.

SEMINOLE COUNTY PUBLIC SAFETY TECHNICAL MANUAL

- b. The tank or cistern must be connected to the domestic water supply and the connection must have a float switch to ensure the domestic water supply keeps the supply level full at all times. Alternative sources such as wells or “green” rain water collection systems may be used to support the system if appropriately engineered.
- c. The drafting fitting and pipe must be painted bright yellow; the fill fitting and pipe must be painted bright red. Piping must be labeled appropriately.

Warning Sign Specifications

1. The sign must display the following words:

“WARNING
WATER NOT FIT FOR HUMAN CONSUMPTION
WATER FOR FIREFIGHTING USE ONLY”

2. The sign must be white background with red lettering.
3. The sign must be at least 18 inches wide and 12 inches high.

Maintenance and Serviceability

It is the responsibility of the occupant landowner of the property to ensure the tank or cistern is maintained per the requirements of the current adopted edition of NFPA 25 – Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.

Identification of Hydrant and Tank or Cistern Locations

1. The location of fire hydrants and on-site water storage tanks or cisterns must be identified by a Blue Reflective Pavement Marker.
2. The developer is responsible for installing a Raised Blue Reflective Pavement Marker in good condition in front of every hydrant or water storage tank on or directly serving the site when the site is developed, redeveloped or substantially improved.
3. The Markers must be installed prior to the Certificate of Occupancy.
4. The Owner is responsible for maintaining the markers.

Blue Reflective Pavement Marker Location

The marker must be installed in the center of the driving lane in front of the fire hydrant or tank on the same side of the street as the fire hydrant or tank.

Blue Reflective Pavement Marker Specifications

1. Markers must meet at a minimum the requirements of ASTM D-4280 and FDOT's Standard Specifications for Road and Bridge Construction.
 - a. The markers must be blue in color with a two-way lens.
 - b. Marker Size must be 4 inches by 4 inches by $\frac{3}{4}$ inches.
 - c. Reflective Area size must be 3.4 square inches per reflective face.
2. When installed, each marker must bond firmly and permanently to concrete or asphaltic pavements by use of a two part epoxy adhesive.

Fire Lanes and Access Roads

A fire lane is a marked and signed fire apparatus access road in accordance with the FFPC and this standard. Fire lanes and access roads are required both on public property and on private property open to public use.

1. Fire apparatus access roads and fire lanes provide:
 - a. Access for emergency vehicles including aerial apparatus;
 - b. Access for connecting fire hoses to fire protection systems and water supplies;
 - c. Access for getting fire hoses, ladders, tools, stretchers and other emergency equipment to doorways; and
 - d. Pathways for injured or sick persons moved by stretcher.

Fire Lanes Locations

1. Fire lanes must be provided the following locations:
 - a. Fire Hydrants
 - b. Fire Department Connections
 - c. Main Entrance(s) to Buildings
 - d. Service Entrance(s) to Buildings
 - e. At least one corner of buildings, to provide access for fire department aerial apparatus. The Fire Marshal may require additional access based on the size or design of the structure.

Responsibility

1. The owner is responsible for maintaining the fire lane striping and signage to County Standards.
2. The developer shall establish and maintain required fire lanes and access roads during construction and before combustible materials are brought on-site in such quantities as deemed hazardous by the Fire Marshal or his designee.

Fire Lane and Access Road Design Standards

Fire lanes and fire apparatus access roads must be provided and designed in accordance with the FFPC-NFPA 1, Chapter 18.

Fire Lane Signs and Markings

The requirements for paved fire lanes differ from the requirements for unpaved fire lanes. Approved barriers inhibiting parking within either kind of fire lane may be required by the Fire Marshal. Dual marking is required, i.e., fire lane signs and pavement markings, to be installed prior to issuance of the Certificate of Occupancy or Certificate of Completion and must be maintained by the owner.

Paved Fire Lane Markings

Fire Lane Signs

Fire Lane Signs must be installed on or along a boundary of all fire lanes. The number, placement and design of signs must be determined by the FFPC or the Fire Marshal.

1. Sign Size
 - a. 12 inches wide by 18 inches high
2. Lettering Size
 - a. 2 inches high
3. Colors
 - a. White background with red letters
4. Message
 - a. Fire Lane
 - i. "No Parking Fire Lane By Order of the Fire Department."
 - b. Fire Lane with FDC
 - i. "NO PARKING FIRE DEPARTMENT CONNECTION"
 - ii. "NO PARKING – FDC"
5. Space between Signs
 - a. 60 feet

SEMINOLE COUNTY PUBLIC SAFETY TECHNICAL MANUAL

6. Sign Height
 - a. 7 feet above grade at bottom of sign
7. Number of Sign Faces
 - a. Signs mounted on a post shall be double-faced

Note: In locations where FDC's are not adjacent to parking, a sign with white background the letters "FDC" at least 6 inches high and red lettering at least 2 inches high will be placed above the fire department connection. Variations with an arrow to indicate the FDC location may be required.

Pavement Marking of Paved Fire Lanes

The Fire Marshal has the final approval on the location and design of the required fire lane(s).

Paved Fire Lane Marking

The location of paved Fire Lanes must be marked on the pavement with stripes and words which shall meet the following design criteria.

1. Markings Color
 - a. Traffic/Safety Yellow
2. Material
 - a. Adhesive thermoplastic or paint per FDOT Qualified Products List
3. Stripes
 - a. Four inches wide, centered 5 feet apart, extending 3 feet from curb or building and slanted at 45 degrees (against the flow of traffic).
4. Letters
 - a. The lines of each letter shall be 4 inches wide; each letter shall be 18 to 24 inches high.
5. Message
 - a. "No Parking or Standing - Fire Lane"
6. Number of Messages
 - a. 1 per 60 feet (or part thereof)

Note: Alternative fire lanes designs maybe considered by the Fire Marshal provided they meet or exceed current code requirements.

Unpaved Fire Lane Marking

1. Unpaved fire lane signs must be similar to paved fire lane signs but must have arrows showing the extent of the fire lane. Signs must be located at each end of the fire lane with an arrow showing the location of the fire lane. When necessary approved marking of road edge shall be provided.

2. Unpaved fire lane boundaries must be indicated with permanently installed yellow painted concrete or colored poly curb stop.

Public Safety Emergency Access Signage and Markings

Temporary Access Signage for New Construction Sites

1. To make certain that Public Safety personnel have quick access to emergency incidents markings are required as per NFPA 1, 10.12.1, Premises Identification.
 - a. Signage sign must read 'FIRE DEPARTMENT ACCESS' and must include site address, or range of addresses, for all commercial sites and residential model homes.
 - b. Size. The two-sided sign must be a minimum of 4 by 4 feet.
 - c. Color. The sign must have a red background with a white legend.
 - d. Legend. Lettering for the sign must be four inch.
 - e. Address on sign must be two and one half inch.
 - f. Location. Sign must be installed at each point of entry.
 - g. Top of sign must be six feet above grade on posts.

Other Emergency Access Signage and Markings

To make certain that Public Safety personnel have quick access to emergency incidents and fire protection systems emergency access signage and markings are required as per NFPA 1, 4.1.3.2.2 Safety During Building Use.

The following are instances where additional signage will assist Public Safety personnel during emergency incidents and when accessing fire protection systems.

1. Removable Fire Lane Signs
2. Alternative Surface Fire Lane Marking
3. Fire Department Emergency Access Road Signs
4. Remote Fire Hydrant Signs
5. Wall Hydrant Signs
6. Fire Department Command Center
7. Fire Protection System Signs
8. FDC
9. FACP
10. Sprinkler Test Headers
11. FDC Dry Standpipe
12. Fire Dept. Sprinkler Riser Room (storage prohibited)
13. FACP Room (storage prohibited)
14. Fire Dept. Standpipe Connection Inside

Gated Access

Gates are used in Seminole County to provide security to both residential and commercial structures. Because of the many control methods used to operate them, these gates can become barriers to emergency responders trying to gain access to the properties.

Seminole County and its First response System is committed to reduce the response times to all areas of the County, including the areas protected by electronic security gates. NFPA 1, Chapter 18, Fire Department Access Water Supply Access to Gated Subdivisions or Developments provides the authority for fire department's to require access be provided to gated subdivisions or developments through the use of an approved device or system.

Permitting

Permits are required for the installation and repair of gated accesses.

Specifications

Vehicle access gates must have a unobstructed clear width of not less than 14 feet for a single gate and 20 feet for a double gate, as well as a clear height of 13 feet 6 inches. The gate must be at least 45 feet back from the edge of the cross street from which the approach is accessed. Swinging gates must swing away from the direction of vehicle travel.

Gate Operator Control

Access gates must be AC powered with a battery backup system to provide a continuous operation and an approved manual override mechanism. The gate must release in the event of a power failure, allowing it to be opened manually. Any gates without an automatic release must have approved signage that clearly describes the manual gate operation.

Access Controls

All electrically operated gates must have a siren activated pre-emptive sensing device and a dual access Knox Key switch. The Knox Key switch must be set at a height of 5 feet 6 inches above grade. If a key pad control is used, a code must be provided to Seminole County for emergency access.

Review Criteria

The following development review criteria are used by Fire Prevention Bureau staff to review development bases on the Florida Fire Prevention Code.

1. Access.
2. Water Supply, including Fire Flow.
3. Fire Lanes.
4. Fire Mains and Fire Hydrants, including size, material, location, spacing and clear space.
5. Fire Department Connections and PIV Location, including clear space.
6. Signage and Marking of Fire Lanes, Hydrants, Fire Department Connections.
7. Fire Protection System needs based on access, height, lack of a water supply or other accessed factors.
8. Hazardous Materials Use or Storage, including hazard class and the maximum quantities per hazard class of hazardous materials, spatial relation to each other, property lines, and building openings, as well as containment and spill control.
9. Change of Occupancy or Use.
10. Fire Code provisions specific to the project.
11. Other requirements as necessary to ensure the safety of the public, such as wildland or flood assessments, etc.