

Contractor's **Field Guide**

Fire Department Access and Design Engineering Information



Office of the Fire Marshal
Kellie M. Martin, Fire Marshal
January 2023





OSCEOLA COUNTY
FLORIDA

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PARAMEDICS

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Introduction

In the interest of protecting life and property, Osceola County Fire Rescue and Emergency Services (OSCFR) developed the Contractor's Field Guide to inform the public, designers, architects, and engineers of our specific needs for both new and existing buildings. Areas covered include water supply, access to and around buildings being constructed or remodeled, change of use or other modifications, as well as information specific to the Authority Having Jurisdiction (AHJ).

The Florida Fire Prevention Code authorizes the Fire Chief, Fire Marshal, or designee to make interpretations, render judgment, and grant administrative relief in situations where the code and standards regarding site-specific issues conflict, are not clear, or do not provide for an acceptable level of life safety.

Reference Documents

In the process of developing this book, the following documents were referenced:

- **Current adopted edition of the Florida Fire Prevention Code**
- **Osceola County Land Development Code**
- **Florida Statutes 633**
- **Florida Administrative Code 69A**

Osceola County Fire Rescue and Emergency Services is one of several agencies that work directly with the Community Development Department, County Commission, Public Works, and Traffic Engineering Division with regard to site development within Osceola County. We also consult with those interested in pursuing a development project through the Technical Review Committee of the Development Review Committee.

The following information provides minimum standards and is designed to cover common issues and questions that may develop during the course of a project. These requirements are subject to change; therefore, any plans for construction and or renovations should be submitted for review, and any questions forwarded to Osceola County Fire Rescue and Emergency Services, Office of the Fire Marshal.

Authority

The Fire Marshal is authorized by: Florida Statutes, the Florida Fire Prevention Code, and the Osceola County Land Development Code to enforce fire safety regulations.

It is not the intention of this Standard to contradict or set aside any provision of any other higher level of law or code. If any conflict is discovered, the more restrictive law or code shall prevail.

Compliance with this Standard does not demonstrate compliance or lack of compliance with any other law or code pertaining to other topics.

Administration & Scope

This edition of the Contractor's Field Guide shall apply to both new and existing structures and their associated properties located within Osceola County as indicated.

This standard provides a method of providing for and maintaining adequate and unobstructed emergency access for fire department apparatus and personnel to buildings, structures, hazardous occupancies, or other premises, as may be required for mitigation of emergencies.

Definitions

Access Control Gate or Barrier – Any gate or barrier placed across a fire apparatus access road to restrict other vehicles or use.

Approved – Acceptable to the Authority Having Jurisdiction.

Authority Having Jurisdiction (AHJ) – The individual who is responsible for approving equipment, materials, installation, and procedures relating to fire safety. The AHJ for the unincorporated areas of Osceola County is herein referred to as the “Osceola County Fire Marshal” or “Fire Marshal”.

Building – Any structure used or intended for supporting or sheltering any use or occupancy.

Construction Documents – Documents that consist of scaled design drawings and specifications for the purpose of construction of new facilities or modification to existing facilities.

Concerned Party – Includes owners, developers, architects, engineers, planners, and the public.

Cul-de-sac – Street with only one outlet that terminates in a vehicular turnaround appropriate for the safe and convenient reversal of traffic movement.

Dead End – Street with only one outlet that terminates without a vehicular turnaround provided.

Emergency – A fire, explosion, or hazardous condition that poses an immediate threat to the safety of life or damage to property.

Fire Apparatus Access Road – A road that provides fire apparatus access from a fire station to a facility, building or portion thereof. This is a general term inclusive of all other terms such as fire lane, public street, private street, parking lot lane, and access roadway.

Fire Department Connection (FDC) – A connection to the building’s sprinkler system and/or standpipe system used to supply water under pressure from a fire engine.

Fire Hydrant – A connection to a water main for the purpose of supplying water to fire hose or other fire protection apparatus.

Fire Lane – The road or other means developed to allow access and operational setup for firefighting and rescue apparatus. It is the area designated by the Fire Marshal, or their designee, as a “No Parking-Fire Lane” area to allow for access and use by fire department and other emergency personnel.

Fire Protection System – A system individually designed to protect the interior or exterior of a specific building or buildings, structure or other special hazard from fire. Such systems include, but are not limited to, water sprinkler systems, water spray systems, carbon dioxide systems, foam extinguishing systems, dry chemical systems, and halon and other chemical systems used for fire protection use. Such systems also include any overhead and underground fire mains, fire hydrants and hydrant mains, standpipes and hoses connected to sprinkler systems, sprinkler tank heaters, air lines, thermal systems used in connection with fire sprinkler systems, and tanks and pumps connected to fire sprinkler systems (Chapter 633 FS).

Needed Fire Flow – The flow rate of a water supply, measured at 20 psi residual pressure that is available for firefighting. Needed fire flow is used to determine the number, location and water supply of fire hydrants for a risk (or the required alternate protection where no water lines are provided).

Street – A public thoroughfare that has been dedicated for vehicular use by the public and can be used for access by fire department vehicles.

Structure – That which is built or constructed. Summarily Abate – To immediately judge a condition to be a hazard to life or property and to order immediate correction of such condition.

Travel Distance – The distance that would be traveled by a fire engine laying out hose. It is to be measured along the centerline of the traffic lane that would be traveled, from the hydrant to the nearest point of the building.

Definitions

“Contractor I” means a contractor whose business includes the execution of contracts requiring the ability to lay out, fabricate, install, inspect, alter, repair, and service all types of fire protection systems, excluding pre-engineered systems.

Contractor II” means a contractor whose business is limited to the execution of contracts requiring the ability to lay out, fabricate, install, inspect, alter, repair, and service water sprinkler systems, water spray systems, foam-water sprinkler systems, foam-water spray systems, standpipes, combination standpipes and sprinkler risers, all piping that is an integral part of the system beginning at the point of service as defined in this section, sprinkler tank heaters, air lines, thermal systems used in connection with sprinklers, and tanks and pumps connected thereto, excluding pre-engineered systems.

“Contractor III” means a contractor whose business is limited to the execution of contracts requiring the ability to fabricate, install, inspect, alter, repair, and service carbon dioxide systems, foam extinguishing systems, dry chemical systems, and Halon and other chemical systems, excluding pre-engineered systems.

“Contractor IV” means a contractor whose business is limited to the execution of contracts requiring the ability to lay out, fabricate, install, inspect, alter, repair, and service automatic fire sprinkler systems for detached one-family dwellings, detached two-family dwellings, and mobile homes, excluding pre-engineered systems and excluding single-family homes in cluster units, such as apartments, condominiums, and assisted living facilities or any building that is connected to other dwellings. A Contractor IV is limited to the scope of practice specified in NFPA 13D.

“Contractor V” means a contractor whose business is limited to the execution of contracts requiring the ability to fabricate, install, alter, repair, and service the underground piping for a fire protection system using water as the extinguishing agent beginning at the point of service as defined in this act and ending no more than 1 foot above the finished floor. A Contractor V may inspect underground piping for a water-based fire protection system under the direction of a Contractor I or Contractor II.

“Point-of-service” means the point at which the underground piping for a fire protection system as defined in this section using water as the extinguishing agent becomes used exclusively for the fire protection system.

“Layout” means the layout of risers, cross mains, branch lines, sprinkler heads, sizing of pipe, hanger locations, and hydraulic calculations in accordance with the design concepts established through the Responsibility Rules adopted by the Board of Professional Engineers.

Contractor I or Contractor II may design new fire protection systems of 49 or fewer sprinklers; may design the alteration of an existing fire sprinkler system if the alteration consists of the relocation, addition, or deletion of 49 or fewer sprinklers, notwithstanding the size of the existing fire sprinkler system; or may design the alteration of an existing fire sprinkler system if the alteration consists of the relocation or deletion of 249 or fewer sprinklers, notwithstanding the size of the existing fire sprinkler system, if there is no change of occupancy of the affected areas, as defined in the Florida Building Code and the Florida Fire Prevention Code, and there is no change in the water demand as defined in NFPA 13, “Standard for the Installation of Sprinkler Systems,” and if the occupancy hazard classification as defined in NFPA 13 is reduced or remains the same as a result of the alteration.

A person certified as a Contractor I, Contractor II, or Contractor IV may design a new fire protection system or design the alteration of an existing fire protection system, the scope of which complies with NFPA 13D, “Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes,” as adopted by the State Fire Marshal, notwithstanding the number of fire sprinklers. Contractor-developed plans may not be required by any local permitting authority to be sealed by a registered professional engineer.

Fire Access and Water Supply

When fire or medical emergencies occur, ready access to the structures involved and to components of their fire suppression systems are essential for effective fire department operations. Adequate design for ingress and egress of emergency vehicles and the designation and uniform marking of “Fire Lanes” help to ensure this objective is met.

The Fire Marshal is authorized by Florida Statutes, the Florida Fire Prevention Code, and the Osceola County Land Development Code to designate fire lanes for use by emergency apparatus. The Office of the Fire Marshal (OFM) shall establish required fire access and fire lanes for all new construction projects during the Site Development Plan phase for all new construction and renovation projects.

Needed Fire Flow

Needed fire flow (NFF) is the flow rate of a water supply, measured at 20 psi residual pressure that is available for firefighting. Needed fire flow is used to determine the number, location and water supply of fire hydrants for a risk (or the required alternate protection where no water lines are provided).

Section 18.4.5 (NFPA 1) of the Fire Prevention Code provides the method and calculations to determine NFF.

Fire Apparatus Access Design

1 Fire lanes for fire department access to buildings shall be provided at the start of a project and shall be maintained and unobstructed throughout construction.

- a) Permanent markings are not required until the building is complete or occupied for use.
- b) During construction, a fire lane with a stabilized road surface acceptable to the Fire Marshal, or designee, shall be provided and maintained to all areas of the project.

2 Unusual situations, such as those relating to access to fire hydrants, fire department connections, and buildings may warrant deviation from this standard.

- a) Such situations will be evaluated and approved on an individual basis by the Fire Marshal, or designee.
- b) The Fire Marshal, or designee, may require the posting of additional signage to ensure adequate turning radius for fire apparatus is maintained where needed.

Existing fire access and fire lanes shall be evaluated during routine maintenance fire inspections to determine their need to comply with the current edition of this Standard. Fire lanes shall be established for existing buildings by order of the Fire Marshal, or designee when it is determined that inadequate fire department access is provided.

It shall be the responsibility of the owner/tenant to always maintain fire lanes free of all obstructions, including parked vehicles, dumpsters, construction materials, excessive vegetation, and storage of any type.

Fire Access and Water Supply

Fire Lane Sign Requirements:

- 1 Material:** Anodized aluminum.
- 2 Gauge:** 0.08 inches.
- 3 Dimensions:** 18 inches high x 12 inches wide.
- 4 Signs** shall be a white background and red letters.
- 5 Description:** Freestanding signs shall have the wording “NO PARKING FIRE LANE BY ORDER OF THE FIRE DEPARTMENT” in red letters on a white background.
- 6 Sign Surface Background:** To be covered with white reflective type material such as “scotch-lite”.
- 7 Height:** The sign shall be a maximum of 7 feet in height from the roadway to the bottom of the sign.
- 8 Locations:** Signs shall be within sight of the traffic flow and shall be a maximum of 60 feet apart, beginning no more than 15 feet from the ends of any fire lane.
- 9 Additional signs** shall be provided as determined by the Fire Marshal, or designee, and in accordance with this standard.

In addition to the required signage, final approval of the specific fire lane marking application shall be approved by the AHJ.

Fire Lane Marking:

Option #1: Curb Marking

- 1 Color:** DOT Safety Yellow, White or Red
- 2 Marking:** The top and face of a curb, where provided, shall be completely painted for the entire length of the fire lane.
- 3 Location:** As determined by the Fire Marshal, or designee, and in accordance with this standard.

Option #2: Pavement Stripping

- 1 Color:** DOT Safety Yellow, White or Red
- 2 Striping:** Striping shall extend diagonally out 3 feet (36 inches) from the curb or from the edge of the pavement. Stripes should be 3 inches wide.
- 3 Lettering** shall be 24 inches high in white, yellow or red colors and state “Fire Lane No Parking.”
- 4 Distance between stripes:** 2 feet.
- 5 Location:** As determined by the Fire Marshal, or designee, and in accordance with this standard.

Fire Hydrants

- 1** Fire lanes with appropriate signage, as noted previously, shall be provided at all fire hydrant and fire department connection locations.
- 2** Fire hydrants shall be located a minimum of 4 feet from the edge of curb and not more than 12 feet from the fire department access road.
- 3** A 36-inch clear space shall be maintained around the circumference of fire hydrants, except as otherwise required or approved.
- 4** A clear space of not less than 60 inches shall be provided in front of each hydrant connection having a diameter greater than 2 ½ inches.
- 5** Fire hydrants shall be located not less than 40 feet from buildings to be protected, unless approved by the AHJ (NFPA 24).
- 6** Where subject to vehicular damage fire hydrants shall be protected unless located within a public right of way.
- 7** The number and placement of required fire hydrants shall be in accordance with NFPA 1, Chapter 18, of the FFPC.
- 8** Post Indicator Valves and Backflow Preventers shall be located not less than 40 feet from the building. (6.2.11 NFPA 24)

FIRE DEPARTMENT CONNECTIONS

1

Fire department connections shall be located at the nearest point of fire department apparatus accessibility or at a location approved by the Authority Having Jurisdiction (NFPA 24).

2

Wall-mounted FDCs are not permitted to be installed on residential or commercial properties. All FDCs must be mounted a minimum of 40 feet from the building or structure they serve, and within 40 feet of a fire hydrant, on the same side of the drive aisle (LDC, Chapter 4, Article 4.9).

3

Fire department connections shall be located and arranged so that hose lines can be attached to the inlets without interference (NFPA 24).

4

Where required by the AHJ, approved signs, approved roadway surface markings, or other approved notices shall be provided and maintained to identify fire department access roads or to prohibit the obstruction thereof or both. Fire department connections shall be identified with an approved fire lane sign and installed as follows:

- a) Sign designed in accordance with Florida D.O.T. standards shall identify all FDCs. It shall have the wording "No Parking, Fire Department Connection."
- b) The length of the fire lane shall be 15 feet, extending 7.5 feet on either side of the centerline.

5

Additional signage shall be required whenever an FDC is not readily visible to approaching fire apparatus.

- a) Such signs shall have "FDC" in red letters at least 6 inches high, and additional relevant information in red letters at least six (6) inches high (e.g. "Behind Retaining Wall") or a red arrow to indicate the direction of travel to the FDC.

6

Additional signage is also required when the building supplied by an FDC is not easily discerned.

- a) Such signs shall have the physical address or the occupancy name called out in red letters at least six (6) inches high (e.g. "Business Name" or "Bldg. A").

7

Additional signage is also required when an automatic sprinkler system supplied by an FDC requires pressure in excess of 150 psi to meet the greatest system demand (NFPA 13).

- a) a. The sign requirements required by NFPA 13 shall not be required where the system demand pressure is less than 150 psi. (8.17.2.4.7.3 NFPA 13)

8

Supplemental curb marking or pavement striping is required for every FDC to clearly mark the boundaries of the fire lane. This will help to alert the public of the need to stay out of the area and will assist in the enforcement of the no parking zone.

Access to Structures or Areas

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



1 All occupancies served by Internal Automatic Fire Detection or Suppression System, having a connection to a Central or Remote Station Monitoring Facility, shall be provided with a Knox Access Box. The Knox Access Box must be approved by the Office of the Fire Marshal

a) The Fire Department access box shall be located:

- Within 10 feet of the publicly recognized main entrance, adjacent to the fire annunciator panel, on the exterior of the structure with locations to be approved by the Plan Review Office.
- The Access Box shall be located at a height of not less than five (4) feet and not more than six (6) feet above final grade.



2 Gated subdivisions, developments, or secured properties with automated gates that limit emergency response, shall be provided with a Knox device (electronic switch) and Siren Operated Sensor (SOS). Manually operated gates shall be provided with an approved padlock.

a) Fire department lock boxes, electronic key switches, Siren Operated Systems (SOS), and padlocks must be permitted through the Office of the Fire Marshal



Fire Apparatus Access Design

Osceola County Fire Rescue responds to and mitigates many different types of emergencies; therefore, we have a variety of vehicles. Some are very large and require much more area to maneuver and operate than others.

For example, ladder trucks are in excess of 46 feet in length and, when set up to operate with outriggers deployed, can exceed 20 feet in width. Additional room is needed for fire personnel to utilize the equipment stored on the sides of the trucks. Also, the number of vehicles needed on an incident and the room to quickly accommodate multiple types of vehicles is crucial. Depending on the situation, structure fires can require significant manpower and equipment. A typical structure fire may require as many as five engine companies, two ladder trucks, an Incident Command vehicle, support vehicles, ambulances and police vehicles. Larger incidents would, of course, dictate more resources.

The Fire Marshal or designee is authorized by Florida Statutes, the Florida Fire Prevention Code, and the Osceola County Land Development Code to designate fire lanes for use by emergency apparatus. The Office of the Fire Marshal (OFM) shall establish required fire access and fire lanes for all new construction projects during the Site Development Plan phase for all new construction and renovation projects.

Fire Apparatus Access Design

1. Roadway Design

1.1 Public roadways shall be constructed to D.O.T, and Osceola County standards.

1.2 Public alleys proposed for use for fire apparatus access must meet the following:

- Shall be constructed to D.O.T, and Osceola County standards.
- Minimum 20-foot unobstructed width
- Fire lane signs posted per Osceola County specifications.
- Unobstructed height clearance of 13 feet, 6 inches.

1.3 All roadways proposed for fire department access shall be engineered and constructed of an all-weather driving surface of asphalt or concrete able to support the live weight of fire apparatus (42 tons).

1.4 Alternative methods such as brick pavers, road base, gravel, etc. may be considered on a case-by-case basis. A State of Florida Certified Civil Engineer must approve the design and installation as meeting the requirements in writing.

1.5 Access roadways designed to incorporate materials that allow grass to grow through or upon the surface such as Grass Rings, Geoblock, Grasstone or Grass Crete will not be approved. It has been our experience that these types of alternatives are unacceptable surface areas because they tend to disappear with time and the limits are unknown to the driver of the fire apparatus, causing it to be unreliable.

2. Roadway Widths

2.1 Minimum widths for apparatus access shall be as follows: Widths are measured curb face to curb face or, where there are no curbs, edge of pavement to edge of pavement. These areas must be maintained unobstructed.

2.2 Fire department access roads shall have an unobstructed width of not less than 20 ft (6.1 m). (NFPA 1)

2.3 Where roadway typical sections do not accommodate on-street parking, “no parking” regulatory signs shall be posted.

2.4 An unobstructed vertical clearance of 13 feet - 6 inches shall be maintained above all fire department access ways. Obstructions include, but are not limited to, wires, tree limbs, awnings, etc.

2.5 OSCFR acknowledges the occasional desire to reduce access roadway widths for installation purposes of devices such as gates, keypads, mailboxes and areas of parking lots where the roadway is not needed for access to a structure. The design and construction shall be approved on a case-by-case basis.

Fire Apparatus Access Design

3. Gates and Other Devices

3.1 Gates and other devices designed to limit access are in most cases discouraged but may be allowed and sometimes required. The designs of these devices are approved on a case-by-case basis.

3.2 Gates and other approved devices designed to limit access shall be provided with an electronic key switch and Siren Operated System (SOS). (NFPA 1).

3.3 Removable bollards designed to slide into the ground within the accessways are not permitted unless the design is approved by OSCFR.

4. Fire Department Access

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

4.2 If the building/facility is equipped with an automatic fire sprinkler system, the distance is increased to 450 feet. Fire department access is essential to providing effective manual fire suppression operations. Remote sections of the building need to be limited in order to ensure that hose streams, aerial fire apparatus and fire fighters can access most portions of the building.

4.3 A fire department access road shall extend to within 50 feet of at least one exterior door that can be opened from the outside and that provides access to the interior of the building (NFPA 1).

4.4 Grades shall not exceed 4%. The gradient for fire access road shall not exceed the maximum approved (NFPA 1/FFPC).

4.5 Private driveways for one- and two-family dwellings shall be provided with fire department access to within 50 feet of all first story exterior portions of the structures upon the property (NFPA 1).

5. Turnarounds and Maneuvering

5.1 A truck turning analysis for Osceola County Fire Rescues largest apparatus (Tower Truck), shall be required.

5.2 Dead-end fire department access roadways in excess of 150 feet shall be provided with an approved turnaround. An approved turnaround shall be by the following means:

5.3 A cul-de-sac with an appropriate turning radius approved by AHJ.

5.4 A T-Turn or Y-Turn with an extension of the “T or Y” to be a minimum length of the largest fire department apparatus. (See Exhibit 1.)

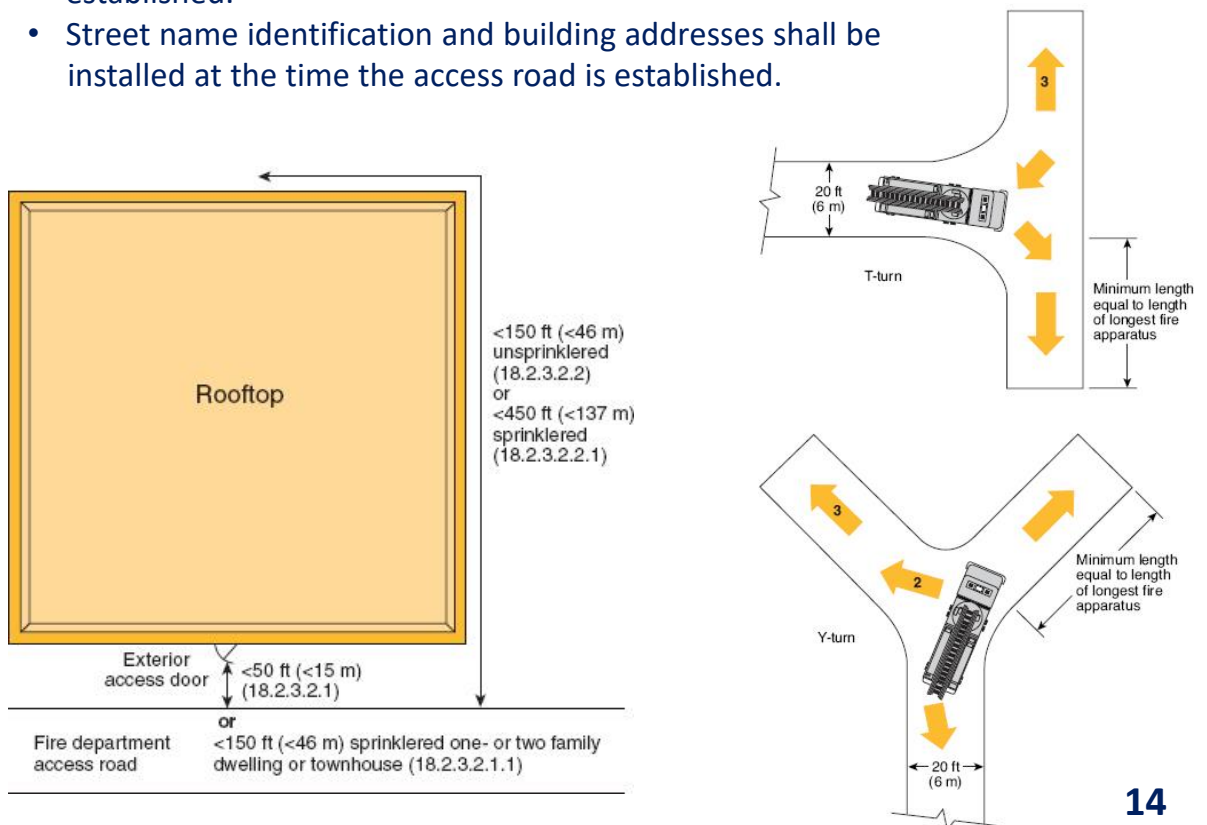
5.5 Turnarounds, cul-de-sacs, and intersections of streets shall not exceed a grade as approved.

Fire Apparatus Access Design

ACCESS TO BUILDINGS UNDER CONSTRUCTION OR MODIFICATIONS

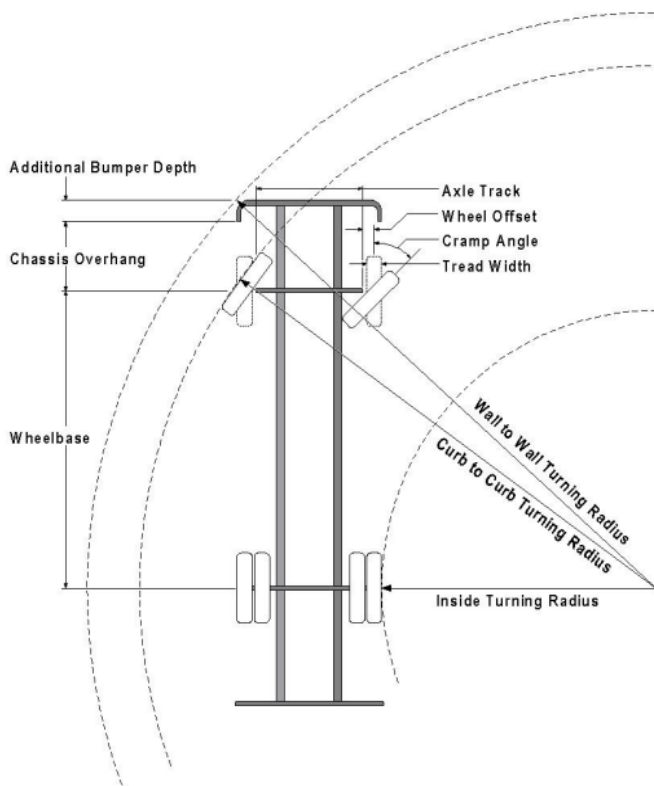
Required fire department access roadways, temporary street signs, and on-site fire hydrants/water mains shall be installed, operable tested, inspected, tagged, receive DEP clearance, and be approved by Osceola County Fire Rescue and Emergency Services, Office of the Fire Marshal, prior to starting construction.

- Fire department access roads shall be established, engineered, and maintained serviceable for fire protection and emergency purposes in accordance with the approved Site Development Plan and the Florida Fire Prevention Fire Code.
- Access roads shall be kept clear of all obstructions such as, but not limited to, low-hanging wires, construction materials, construction equipment, contractor trailers, and contractor vehicles.
- Where required, fire lanes shall be posted when the access road is established.
- Street name identification and building addresses shall be installed at the time the access road is established.



Osceola County Fire Rescue and Emergency Services

FIRE APPARATUS AUTOTURN EXHIBIT



Parameters:

Inside Cramp Angle:	40°
Axle Track:	82.92 in.
Wheel Offset:	5.30 in.
Tread Width:	17.5 in.
Chassis Overhang:	78.00 in.
Additional Bumper Depth:	26 in.
Front Overhang:	104.00 in.
Wheelbase:	229 in.

Calculated Turning Radii:

Inside Turn:	21 ft. 7 in.
Curb to curb:	36 ft. 5 in.
Wall to wall:	41 ft. 6 in.

Comments:

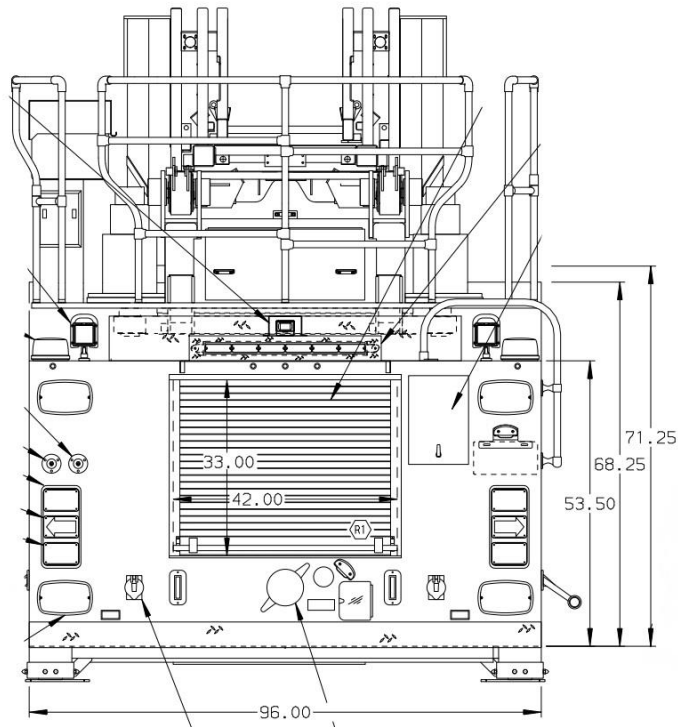
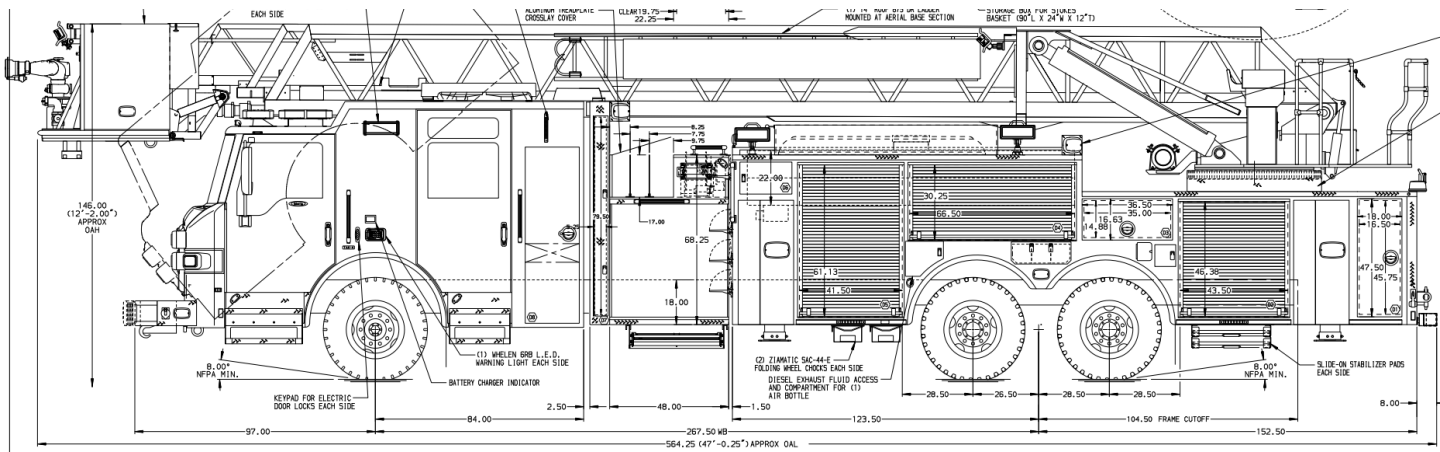
Category	Option	Description
Axle, Front, Custom	0508846	Axle, Front, Oshkosh TAK-4, Non Drive, 24,000 lb, Velocity
Wheels, Front	0019618	Wheels, Front, Alcoa, 22.50" x 13.00", Aluminum, Hub Pilot
Tires, Front	0582746	Tires, Front, Goodyear, G296 MSA, 445/65R22.50, 20 ply
Bumpers	0592801	Bumper, 26" Extended, Steel, Painted, Imp/Vel

Notes:

Actual Inside cramp angle may be less due to highly specialized options.

Curb to Curb turning radius calculated for 9.00 inch curb.

Fire Apparatus Access Design



MANUFACTURING INC.

TITLE | 100 AERIAL PLATFORM & BODY ASSEMBLY (PAP100A)
300 GALLON WATER TANK



OSCEOLA COUNTY
FIRE RESCUE & EMS

If you have any questions or comments regarding the information contained within, or if you need assistance interpreting these requirements, please contact:

Osceola County Fire Rescue and Emergency Services
Office of the Fire Marshal
1 Courthouse Square, Kissimmee, Florida 34741
Phone: 407-742-6700
osceolafiremarshal@osceola.org



Office of the Fire Marshal
Kellie M. Martin, Fire Marshal
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