

Larry Hogan Governor Boyd K. Rutherford Lt. Governor

Gregory Slater Secretary

Ricky D. Smith, Sr. Executive Director

PLANNING AND ENGINEERING GUIDELINES & STANDARDS (PEGS) SUPPLEMENT NUMBER: PEGS-21-007

SEPTEMBER 21, 2021

FIRE LANE REQUIREMENTS Volume 3 - Life Safety Chapter 3 - Site Development Section 3.1 - Fire Lane Requirements

Effective immediately, the following modification shall be made to the MDOT MAA 2021 PEGS Manual:

Volume 3, Chapter 3, Section 3.1 – Fire Lane Requirements Remove existing Section 3.1, Emergency Vehicle Access/Fire Lanes/Fire Hydrants and Fire Department Connections, in its entirety. Replace with attached revised Section 3.1, Fire Lane Requirements.

Consultants listed herein are required to distribute this PEGS standard supplement to their respective staff and subconsultants.

If you believe this standard supplement conflicts with any other codes or regulations or if you should have any questions regarding this matter, please contact the Division Chief, Office of the Fire Marshal at (410) 859-7482.

Thomas Hayden, Division Chief Airport Rescue & Fire Fighting Office of the Fire Marshal

Tom Varughese, P.E., Director Division of Planning and Engineering Office of Engineering and Construction

Paul L. Shank, P.E., C.M., Chief Engineer Division of Planning and Engineering

PEGS Supplement: PEGS-21-007 Volume 3, Section 3.1 – Fire Lane Requirements Page 2

DISTRIBUTION

Attachment:

1. Volume 3, Chapter 3, Section 3.1 – Fire Lane Requirements

PEGS Supplement: PEGS-21-007 Volume 3, Section 3.1 – Fire Lane Requirements Page 3

Distribution:

Mr. Allan A'Hara (AECOM) Mr. Shawn Ames Mr. Ted Blackerby (Jacobs) Mr. Bob Boblitz Mr. Austin Brown (ADCI) Mr. Mark Butterfield (JMT) Mr. Ned Carey Mr. Peter Charles Mr. Kevin Clarke Mr. Andy Conlon Mr. Woody Cullum Ms. Linda Dangerfield Mr. Tom Defant (Jacobs) Mr. Randy Dickinson Mr. Anthony Dowell (AECOM) Ms. Jaimini Erskine Mr. Victor Ferreira Ms. Donna Flaherty (JMT) Mr. Will Garmer (JMT) Mr. James Gerrald (Jacobs) Ms. Rhea Gundry (HMMH) Mr. Jon Harrison (JMT) Mr. Thomas Hayden Mr. Neal Heaton Mr. Robert Henry (ADCI) Ms. Tracy Hollida (Baker) Mr. Cedric Johnson Mr. Cedrick Johnson (ADCI) Mr. Ken Krach (AECOM) Mr. Ali Logmanni Mr. Dave Lookenbill (JMT)

Mr. Rob Kleinman (AECOM) Mr. Kris Koch (Jacobs) Mr. Edward Maccentelli Ms. Niki Miller (JMT) Mr. Mike Mologne (Hill) Ms. Sarah Munroe (Baker) Mr. Alex Ollerman Mr. Randall Paton (Parsons) Mr. Alan Peljovich (ADCI) Mr. Wayne Pennell Mr. Al Pollard Mr. Brian Reidy Ms. Keiva Rodrigues Mr. Glenn Saffran Ms. Jo Schneider Mr. Paul Shank Mr. Syed Shariq Ms. Eileen Sien (ADCI) Ms. Ann Smith-Reiser (EA Engineering) Ms. LaTeesha Swann Mr. Greg Solek Mr. Charles Steen Mr. George Steinrock (JMT) Ms. Peggy Summers (Mimar) Ms. Darline Terrell-Tyson Ms. Christine Varney (ADCI) Mr. Tom Varughese Mr. Buddy Vinluan Mr. Jim Walsh Mr. Scott Wardle (Baker)

Mr. Mark Williams

3.1 Fire Lane Requirements

3.1.1 What Is the Legal Basis for Requiring Fire Lanes & Access Roads?

The State adopted Fire Code NFPA-1 which provides for emergency vehicle access to any building, structure, or location within the Airport community or off-site properties. This applies to all MDOT Maryland Aviation Administration (MDOT MAA) properties at BWI Marshall and MTN. The Fire Marshal is responsible for ensuring that emergency access is always available, and that all new and existing developments comply with emergency access requirements. For the purposes of this PEGS Section, Fire Department access roads shall consist of roadways, fire lanes, parking lot lanes, or a combination thereof.

3.1.2 Is There a Difference Between a Fire Lane, Fire Department Access, and a Private Street?

Private streets conform to a different design standard than designated fire lanes. However, they must always allow for appropriate emergency access just as a public street would and may, in some cases, be required to have fire lane markings.

Driveways, parking lot lanes, and private roadways shall be permitted to be used as fire lanes if they meet the requirements of this Section.

The fire lane should also be arranged so there is no confusion as to where emergency vehicles are to go in the event of a fire or rescue emergency in a building, on a runway, or in an aircraft.

3.1.3 Under What Circumstances Are Fire Lanes Required?

Fire lanes are generally required when any portion of a structure is located more than 150 feet from a public street. On occasion, emergency access requirements may be modified to be more or less stringent depending on circumstances unique to each site (e.g., occupancy type, building design, parking layouts, or landscape features).

3.1.4 What Are the Dimensional Requirements for a Fire Lane?

Fire lanes must have a minimum 24 feet wide working area between marking stripes and have an overhead clearance of not less than 14 feet. Turns in fire lanes shall be constructed to provide sufficient width to accommodate the largest piece of fire apparatus available to be operated on the fire lane, but in no case shall the radius to the outside curb line be less than 50 feet. The inside turning radius shall not be less than 38 feet. Conformance with this standard must be demonstrated by including a scale illustration on the submitted site plan for the development and/or project involved. One or more of the required access routes meeting this condition shall be located not less than 15 feet, no more than 30 feet from the building, and shall be positioned parallel to one entire side of the building.

If it is determined that a larger access road is required for emergency aerial apparatus, the minimum unobstructed width shall be 26 feet. The requirement for this larger access road shall be determined as required where the vertical distance between the grade plane and the highest roof surface exceeds 30 feet. For the purposes of this requirement, the highest roof surface shall be determined by measurement to the eave of a pitched roof or the intersection of the roof exterior wall or top of parapet walls, whichever is greater.

A reduction in fire lane width may be allowed where it is clearly identified that sole purpose of the fire lane is for emergency vehicle use only.

Overhead utility and power lines shall not be located overhead in any area where fire department aerial operations are anticipated.

3.1.5 How Many Points of Access Are Required?

Structures exceeding three stories or 30 feet in height shall have fire lanes along three sides of the building. One or two-story buildings shall have fire lanes on two sides. Access for the Airport terminal building shall have space between aircraft and must be large enough to allow emergency response equipment access to terminal buildings and the aircraft.

3.1.6 What Types of Structural Material Are Allowed?

Fire lanes must be constructed of an approved all-weather material capable of supporting the imposed loads of emergency apparatus. The design engineer or architect shall certify to the MDOT MAA Office of Engineering & Construction that the proposed paved surface complies with this requirement.

3.1.7 What are the Maximum Grade and Angle of Approach/Departure Allowed?

Grades shall not be more than 10 percent. The angle of approach and the angle of departure shall not exceed 8 degrees at any point on the roadway or intersection with another roadway or fire lane. Grades and angles exceeding these requirements may be permitted where mitigation measures can be agreed upon.

3.1.8 Are Dead-End Fire Lanes Allowed?

Continuous fire lanes which connect to more than one outlet are preferred. However, it is understood that site limitations may not allow this in every case. Therefore, a dead-end fire lane may be allowed in certain cases, provided it does not exceed 150 feet in length. If a distance in excess of 150 feet is necessary, a turnaround feature must be incorporated as part of the designated fire lane. Turnarounds must be of an approved design that meets the dimensional requirements of the other portions of the fire lane. Other designs may be acceptable if approved by the Fire Marshal.

3.1.9 Can "Speed Bumps" or Other Traffic Calming Devices Be Placed in Fire Lanes?

The Fire Marshal understands and supports the desire for safe streets and vehicle/pedestrian interfaces. Islands, roundabouts, bump-outs, and other similar features may be incorporated within a fire lane in limited areas provided they reduce the width of the fire lane to no less than 20 feet and do not present an impediment to emergency operations. These features may be approved on a case-by-case basis.

3.1.10 How Must a Fire Lane Be Marked?

Fire lanes shall be marked with approved signs, approved roadway or curb markings, or other approved notices which shall be provided and maintained to prohibit the obstruction thereof or both.

Where necessary, fire department access roads may be marked in alternative manners as approved by the Fire Marshal. If such an alternative designation is allowed but fails to effectively control parking, the requirements in these guidelines will be required.

3.1.11 Can Fire Lanes Be Gated or Obstructed for Security Purposes?

The gating of fire lanes will be considered on a case-by-case basis. The clear opening through gates in fire lanes shall be 2 feet wider than the fire lane. All gates at the entrance to fire lanes shall be located a minimum of 30 feet from the roadway and shall open away from the fire lane unless other provisions are made. On a case-by-case basis, if the gate cannot be located 30 feet from the roadway, a wider than normal gate opening may be considered by the Fire Marshal, provided vehicle turning radius is addressed. The MDOT MAA Fire Marshal shall have the authority to require a means of unlocking a security feature that is installed by providing a Fire Department KNOX Gate Key Switch or Lock. This includes a required manual release of the gate so it can be opened in the event of power loss for a motor-controlled gate opener. Means shall also be provided to override normal operation and allow any gate to remain fully open until manually closed.

3.1.12 Can a Single Fire Lane Serve Two or More Buildings?

This is not preferred; however, it is possible in some cases, provided the emergency access is suitable, and all stakeholders agree.

3.1.13 Can a Bridge be Part of Fire Department Access?

When a bridge or elevated roadway is required to be used as part of a fire department access road, it shall be constructed using nationally recognized standards. The design shall be reviewed by the MDOT MAA Office of Engineering & Construction.

3.1.14 What are the Requirements for Parking Lots?

The minimum lengths of parking lot stalls shall be measured end to end, and the minimum stall length and aisle width shall be as shown in the supporting illustrations and explanatory text. Parking stalls shall be long enough so that parked vehicles shall not extend into the turning radius of fire lane or reduce the required width of the fire lane. See Section 3.1.17 Minimum Parking Lot Stall Dimensions and Minimum Aisle Lengths for further information.

3.1.15 Are There Any Alternatives or Exceptions to This Standard?

It is the desire of the BWI Marshall Fire Department and Office of the Fire Marshal to be as flexible as possible without compromising safety. If the designer engineer or architect has an alternative proposal, the Office of the Fire Marshal will consider it carefully. Alternatives may be approved if the design allows for adequate emergency access and deviations from these standards are justified by specific site considerations.

The information presented in this Section should address most situations encountered. However, unique circumstances will occur. Alternative proposals will be considered and may be approved with the safety of the public, MDOT MAA employees, contractors, and first responders in mind.

3.1.16 Can Traffic Control Signs be Placed in the Fire Lane?

Yes. Traffic control signs, pedestrian signs, and fire lane signs shall be set back so the sign does not protrude into the travel portion of the fire lane interfering with emergency apparatus turning radii.



*Where parking or pedestrian movements are likely to occur

Figure 3.1.16.1-1 - 2009 MUTCD Edition Part 2 Figure 2A-2. Examples of Heights and Lateral Locations of Sign Installations

3.1.17 Supporting Illustrations

3.1.17.1 Examples of Emergency Apparatus Turn Arounds



CUL-DE-SAC



60-FOOT "Y"



Figure 3.1.17.1-1 - Illustrations from NFPA-1141-2017

3.1.17.2 Fire Lane Signs



Figure 3.1.17.2-1 – Sign Types

Signs shall be metal, weather and UV resistant with white reflective background with red letters. Signs shall be posted on both sides of access roads that are 20 feet to 26 feet wide and posted on one side of access roads that are more than 26 feet wide. Signs shall be attached to metal post and posted 7 feet above grade.

3.1.17.3 Fire Lane Pavement & Curb Marking



Figure 3.1.17.3-1 – Fire Lane Curb Marking

All striping shall be minimum 6 inches thick lines. Outer line shall be 3 feet from curb edge or road edge. Ends of designated area can be curved/rounded or boxed. Angled lines shall be 6 feet apart except where lettered graphics are placed. No Parking Fire Lane graphics shall be minimum 8 inches high, 2 inches cut out, at 50 feet intervals.





Figure 3.1.17.4-1 – Fire Lane Markings at Hydrants

To be used on airfield aprons and locations that do not include fire hydrant or fire sprinkler connection located within the fire lane.

3.1.18 Minimum Parking Lot Stall Dimensions and Minimum Aisle Lengths

Parking Angle	Minimum Stall Length		Minimum Aisle Traffi	Width, One-Way c Flow	Minimum Aisle Width, Two-Way Traffic Flow	
	ft	m	ft	m	ft	m
45 degrees	27.5	8.4	16	4.9	24	7.3
60 degrees	23.7	7.2	16	4.9	24	7.3
75 degrees	20.9	6.4	23	7.0	24	7.3
90 degrees	18.5	5.6	26	7.9	26	7.9



Figure 3.1.18-1 - Illustration from NFPA-1141-2017

3.1.18.1 BWI Emergency Apparatus Fleet Specifications

Vehicle Quick Reference							
		Width Length Height		Turning Radi			
	Unit	Over Road Vehicle Width [inches]	Over Road Vehicle Lenght [inches]	Over Road Vehicle Lenght [inches]	Inside Turning Radii [inches]	Wall-to- Wall Outside Turning Radii [inches]	GVW [pounds]
Basis of	BOD ARFF	139	481	157	456	1,011	93, 000
Design	BOD Engine	100	394	123	180	409	50 , 500
BOD	BOD Special Service	100	562	147	180	536	76 , 800

Table 3.1.18.1-1 – Fleet Information

Note: This is general information provided for informational purposes. This information may not be the latest fleet information. Please consult with Office of the Fire Marshal to confirm accuracy of the information provided on this table.

3.1.19 Fire Lane Quick Reference Chart

Fire Lane Quick Reference					
Height of Building→	Roof up to 30'-0"	Roof higher than 30'-0"			
Building Access, parallel along one entire side	Within 15' but not further 30' from the building	Within 15' but not further 30' from the building			
Required minimum Fire I ane width	24'	26'			
Required minimum Fire Lane Gate width Wider Gates may be required to accommodate turning vehicles, see Gate requirements for details.	26'	28'			
Required minimum Fire Lane overhead clearance	14'	14'			
Minimum Design Load	40 tons	40 tons			
Minimum Outside radius, wall to wall	50'	50'			
Maximum Inside radius	38'	38'			
Maximum Fire Lane Grade	10%	10%			
Maximum Fire Lane Cross Grade	5%	5%			
Maximum Angle of Approach and Departure	$8^{\rm o}$	8°			
Maximum Dead End Fire Lane Length without approved Turnaround	150'	150'			
Speed Restrictions & Speed Bumps Minimum Fire Lane Width	20'	20'			

Figure 3.1.19-1 – Fire Lane Quick Reference