Appendix N

CITY OF OAKLAND

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FIRE DEPARTMENT
Fire Prevention Bureau

DEPARTMENT OF TRANSPORTATION
Office of the Director

January 31, 2024

OakDOT Staff and OFD Staff,

The attached inter-departmental memorandum is an internal agreement between the Department of Transportation (OakDOT) and the Fire Department (OFD) on the use of flexible plastic delineator posts in the street right-of-way. The purpose of the memorandum is to facilitate the implementation of traffic safety improvements that are supportive of Fire operations and aligned with the Oakland Fire Code (Oakland Municipal Code Chapter 15.12).

This memorandum is the outcome of close collaboration between the two departments over multiple months involving staff from numerous functional units. The collaboration benefited from field meetings to test current installations and to develop new approaches for improving traffic safety. Importantly, these meetings created an understanding and appreciation amongst Transportation staff for how Fire staff respond to incidents and deploy their equipment. Staff will utilize the once-every-three-years update to the Fire Code as a future prompt for OFD/OakDOT to check in on the memo, making updates as needed to reflect lessons learned and potentially changes to the California Fire Code.

OakDOT staff and OFD staff are requested to familiarize themselves with the attached memorandum. OakDOT staff will follow this guidance when designing projects that place flexible delineator posts on travel lane lines as described in the memorandum.

Felicia Bryant (Feb 6, 2024 17:52 PST)

Felicia Bryant
Fire Marshal, OFD

Megan Wier
Assistant Director, OakDOT

Attachment

Inter-Departmental Memo: OakDOT/OFD Agreement on Flexible Plastic Delineator Posts in the Street Right of Way (December 2023)

Inter-Departmental Memo:
OakDOT/OFD Agreement on Flexible Plastic Delineator Posts in the Street Right of Way – FINAL DECEMBER 2023

BACKGROUND:

As part of ongoing coordination related to roadway design elements, OakDOT and OFD have identified an opportunity to memorialize roadway design decisions and interpretations of the Oakland Municipal Code's Fire Code sections in inter-departmental memos like this one. The purpose of these agreements is to streamline project review, lessen pressure onstaff capacity, provide a record of continuity in decision-making for future staff, and continue to collaborate between agencies on street design issues that improve safety outcomes for vulnerable users while providing adequate space in the Right-of-Way (ROW) for OFD emergency responses

FLEXIBLE PLASTIC DELINEATOR POSTS

A Flexible Plastic Delineator Post is a standard roadway design element that OakDOT employs to define vehicle, pedestrian, and bicycle paths of travel in the ROW. A common product utilized by the City of Oakland is the Pexco FG300 Plastic Traffic Channelizer Post. The design standards outlined in this memo are meant to be agnostic of product or manufacturer, and to generally refer to the use Flexible Plastic Delineator Posts in the ROW. A defining feature of these posts is that they are designed to be run over by vehicles without causing lasting harm to the vehicle or to the post.

Example image of FG300 Post:

SECTION 503 OF THE OAKLAND FIRE CODE

Section 503 of the Fire Code simply states that Fire Apparatus Access Roads must have an unobstructed width of not less than 20 feet. While OakDOT recognizes the importance of maintaining this 20' unobstructed width for most of the block length of City roadways, this umbrella statement does not address the current and evolving practices in safe street design, for instance the installation of vertical separation elements like plastic delineator posts to slow the speeds of left-turning vehicles at high-injury

intersections, or to prohibit the use of bus-only lanes for illegal and dangerous driving maneuvers by personal vehicles.

Section 503.2(a) states that within the 20' minimum width of a Fire Apparatus Access Road, "such Right-of-Way shall be unobstructed." CFC Section 503.2.1 states "all roads shall have an unobstructed width of not less than 20 feet, exclusive of shoulders." The purpose of this document is to memorialize a recent operational agreement between OFD and OakDOT related to Flexible Plastic Delineator Posts and their placement in the street ROW. *Specifically, that Flexible Plastic Delineator Posts do not pose an "obstruction," and can be placed by OakDOT within a Fire Apparatus Access Road, or any other roadway, to allow OakDOT to meet its strategic goals of improving street safety outcomes.*

APRIL 12, 2023 SITE VISIT AND OPERATIONAL AGREEMENT.

On April 12, 2023, representatives from OakDOT's Traffic Engineering, Bike/Ped, Planning and Project Development, and Executive Management Teams met with representative from the Oakland Fire Department's Fire Prevention Bureau, Bureau of Operations, and Fire Marshall. One goal of this meeting was to conduct a field test of fire truck operations related to the Flexible Plastic Delineator Posts that OakDOT installed on Embarcadero West, from Oak Street to the driveway entrance of the Jack London Aquatic Center.

Image of Flexible Plastic Delineator Posts on Embarcadero West

The outcome of this site visit was a determination by OFD that these Flexible Plastic Delineator Posts do not pose an "obstruction" to emergency operations and thus do not violate Section 503.2(a) or 503.2.1. OFD stated that OFD vehicles can adequately maneuver around posts, and that their vehicles would drive over the Flexible Plastic Delineator Posts in an emergency. OFD agreed that Flexible Plastic Delineator Posts can be placed at will within the ROW if the placement adheres to an agreed-upon set of placement standards. A key aspect of these placement standards would be to allow for a certain amount of clear roadway space between the hard plastic bases of the posts which will allow ladder trucks to effectively deploy outriggers which require a level landing surface. The following section outlines OakDOT's placement standards for Flexible Plastic Delineator Posts in the ROW.

FLEXIBLE PLASTIC DELINEATOR POST PLACEMENT STANDARDS

There are two main use-cases for Flexible Plastic Delineator Posts in the street ROW. *First* is the application of Flexible Plastic Delineator Posts at the approach to an intersection or within the intersection. The purpose of these "hardened centerlines" is to deter people from driving into opposing traffic to run red lights, to force drivers to take wide and slow left-turns and not cut left before appropriate, and to generally create a more constrained intersection to slow vehicle speeds and improve safety outcomes for pedestrians. *Second* is the application of Flexible Plastic Delineator Posts at midblock locations, usually along a yellow roadway centerline or a white lane line stripe. The purpose of midblock applications of Flexible Plastic Delineator Posts is usually to deter motor vehicle from crossing lane lines whether they be bike lanes, bus-only lanes, or roadway center lines.

1. "HARDENED CENTERLINES," OR FLEXIBLE PLASTIC DELINEATOR POSTS ON THE APPROACH TO INTERSECTIONS OR WITHIN INTERSECTIONS

Figures 1 and 2 outline a set of placement standards for Hardened Centerline treatments utilizing Flexible Plastic Delineator Posts on the approach to an intersection or within an intersection (defined as less than 50' from a crosswalk, curb return, or intersection limit line). Since the goal of these treatments is to create an impassable barrier for vehicles that may be traveling at any speed, these barriers are designed to be less permeable than midblock barriers. There would be a continuous raised plastic base connecting the Flexible Plastic Delineator Posts used for Hardened Centerlines. The designs shown are responsive to building heights. With buildings of 30' or greater in height, OFD requires a clear space of at least 16' to park a ladder truck and deploy outriggers, with an additional passing lane for a second vehicle to be able to pass and maneuver. For treatments around buildings of 30' or greater in height, OakDOT will maintain a 16' clear space from curb to the Hardened Centerline. For areas with lower buildings, OakDOT will maintain 10' clear on either side of the Hardened Centerline.

2. MIDBLOCK FLEXIBLE PLASTIC DELINEATOR POST APPLICATIONS

Figures 3, 4, and 5 outline a set of placement standards for Flexible Plastic Delineator Posts at midblock locations (more than 50' from a crosswalk, curb return, or intersection limit line). This design matches the placement on Embarcadero West where OakDOT and OFD conducted the April 2023 site visit and vehicle test. This design standard maintains a 6' minimum gap between raised plastic bases of Flexible Plastic Delineator Posts, with a maximum interval of 3.5' of raised plastic base. Thus, OFD will have a minimum 6' of open roadway space to deploy the foot of an outrigger on a level surface for every 3.5' of raised plastic base area. These are minimums, and in many cases the posts would be much farther apart (10'-20' is the norm).

TURNING TEMPLATE APPLICATION BY OAKDOT

When altering street layout or the geometry/placement of elements in the roadway, OakDOT employs Computer-Aided Design (CAD) Turning Templates to ensure that large vehicles and other roadway users can continue to safely navigate City Streets. Turning templates show a footprint or "swept path" of the movement of vehicle making various turning maneuvers. These templates are employed by OakDOT as an internal design tool and guide decisions about the placement of concrete elements in the right-of-way. The use of turning templates is not governed or required by the Oakland Municipal Code. OakDOT

will provide fire pumper truck and ladder truck-turning templates to OFD as part of project reviews related to Project where concrete curb line changes are proposed. Street re-designs will allow pumper trucks and ladder trucks at intersections to proceed straight, turn left and turn right around any obstructions in the roadway.

CITY OF OAKLAND

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FIRE DEPARTMENT
Fire Prevention Bureau

DEPARTMENT OF TRANSPORTATION
Office of the Director

June 20, 2024

OakDOT Staff and OFD Staff,

The attached inter-departmental memorandum is an internal agreement between the Department of Transportation (OakDOT) and the Fire Department (OFD) on the construction of pedestrian safety islands in the street right-of-way. The purpose of the memorandum is to facilitate the implementation of traffic safety improvements that are supportive of Fire operations and aligned with the Oakland Fire Code (Oakland Municipal Code Chapter 15.12).

This memorandum is the outcome of close collaboration between the two departments over multiple months involving staff from numerous functional units. The collaboration benefited from field meetings to discuss recently installed design features and to develop new approaches for improving traffic safety. Importantly, these meetings created an understanding and appreciation amongst Transportation staff for how Fire staff respond to incidents and deploy their equipment. Staff will utilize the once-every-three-years update to the Fire Code as a future prompt for OFD/OakDOT to check in on this memo, making updates as needed to reflect lessons learned and potentially changes to the California Fire Code.

OakDOT staff and OFD staff are requested to familiarize themselves with the attached memorandum. OakDOT staff will follow this guidance when designing new pedestrian safety islands.

Felicia Bryant Sep 3, 2024
Felicia Bryant (Sep 3, 2024 09:17 PDT)

Felicia Bryant
Fire Marshal, OFD

Megan Wier Jul 8, 2024
Megan Wier (Jul 8, 2024 13:21 PDT)

Megan Wier
Assistant Director, OakDOT

Attachment:
Inter-Departmental Memo: OakDOT/OFD Agreement on Pedestrian Safety Island Design (February 2024)

Inter-Departmental Memo
OakDOT/OFD Agreement on Pedestrian Safety Island Design
FINAL - FEBRUARY, 2024

BACKGROUND:

As part of ongoing coordination related to roadway design elements, OakDOT and OFD have identified an opportunity to memorialize roadway design decisions and interpretations of the Oakland Municipal Code's Fire Code sections in inter-departmental memos like this one. The purpose of these agreements is to streamline project review and lessen pressure on already overloaded staff capacity, provide a record of continuity in decision-making for future staff, and continue to collaborate between agencies on street design issues that improve safety outcomes for vulnerable users while providing adequate space in the Right-of-Way (ROW) for OFD emergency response.

PEDESTRIAN SAFETY ISLANDS

A Pedestrian Safety Island is a raised concrete island constructed in the middle of a roadway at the location of a marked crosswalk that provides a refuge for people to cross one direction of traffic at a time, prohibits illegal use of the center turning lane for passing at crosswalks, narrows travel lanes to reduce vehicle speeds, and ensure that people make slow left-turns across crosswalks. Pedestrian safety islands are one of the most effective tools to protect vulnerable roadway users at crosswalk locations and are a standard toolkit item for Oakland's roadway safety projects. To provide an ADA-accessible pedestrian refuge space, Pedestrian Safety Islands need to be a minimum of 6' wide. Standard curb height for Pedestrian Safety Islands in the City of Oakland is 6". Raised elements are often placed atop the islands such as warning signage, flexible delineator posts, or Rectangular Rapid Flashing Beacons like the 98th Avenue and Cherry Street example shown below.

Image of example Pedestrian Safety Island at 98th Avenue and Cherry Street

OAKLAND FIRE CODE

Section 503.2.1 of the Fire Code states that "Fire apparatus access roads shall have an unobstructed width of not less than 20 feet." Appendix D is an optional Appendix of the State Fire Code that jurisdictions can choose to adopt. Section D105.2 Width states that, adjacent to buildings of 30' or greater in height, "Aerial fire apparatus roads shall have a minimum unobstructed width of 26 feet, exclusive of shoulders, in the immediate vicinity of the building or portion thereof."

OakDOT/OFD OPERATIONAL UNDERSTANDING RELATED TO "UNOBSTRUCTED WIDTH"

These clearances may be achieved with unobstructed and non-contiguous width on both sides of a pedestrian safety island. Through close collaboration between OakDOT and OFD related to Section 503.2.1 and Section D105.2, OakDOT understands that the operational requirement that underpins the unobstructed clear width regulation is related to the space needed for staging and maneuvering vehicles at the scene of an emergency. For sections of roadway with buildings of less than 30 feet in height (buildings that do not require an aerial ladder truck to deploy outriggers), the unobstructed width requirement is 20 feet. These 20 feet allow for a fire truck, ambulance, or other emergency response vehicle to stop in the roadway, taking up approximately 10 feet of cross-sectional width, while still allowing for an additional passing lane of 10 feet in width to allow another emergency vehicle or private vehicle to pass safely around the stopped emergency vehicle. For sections of roadway with buildings of greater than 30 feet in height (buildings that would require an aerial ladder truck to deploy outriggers to respond to high windows or roofs), the unobstructed width requirement is 26 feet. These 26 feet allow for a ladder truck to stop and deploy outriggers, taking up 16 feet of cross-sectional width, while still allowing for an additional passing lane of 10 feet in width to allow for another emergency vehicle or private vehicle to pass safely around the stopped ladder truck with outriggers deployed.

PLACEMENT OF PEDESTRIAN SAFETY ISLANDS

Figure 1 depicts the placement guidelines for Pedestrian Safety Islands at marked crosswalk locations with adjacent buildings of less than 30 feet in height. OFD requires two areas of at least 10 feet in width to allow for an emergency response vehicle to stop on either side of the island while providing a passing lane of at least 10 feet in width on the other side of the island. Thus, at least 10 feet of clear width is maintained on either side of a Pedestrian Safety Island, measured from face of Island curb to the nearest vertical obstruction. Where necessary, OakDOT will employ red curb paint and signage to prohibit parking to maintain this clear width. These Islands do not extend more than 50' from the marked crosswalk. The islands are located and designed to accommodate the swept path of large vehicles making legal turns, including OFD pumper trucks and ladder trucks.

Figure 2 depicts the placement guidelines for Pedestrian Safety Islands at marked crosswalk locations with adjacent buildings of 30 feet in height or greater that do not have sprinkler systems. Due to the building heights, OFD requires two areas of at least 16 feet in width to stage a ladder truck with outriggers on either side of the Island as needed while providing a passing lane of at least 10 feet in width on the other side of the island. Thus, at least 16 feet of clear width is maintained on either side of a Pedestrian Safety Island in this case, measured from face of Island curb to the nearest vertical obstruction. Where necessary, OakDOT employs red curb paint and signage to prohibit parking to maintain this clear width. These Islands do not extend more than 50' from the marked crosswalk. The islands are located and designed to accommodate the swept path of large vehicles making legal turns, including OFD pumper trucks and ladder trucks.

TURNING TEMPLATE APPLICATION BY OAKDOT

When altering street layout or the geometry/placement of elements in the roadway, OakDOT employs Computer-Aided Design (CAD) Turning Templates to ensure that large vehicles and other roadway users can continue to safely navigate City Streets. Turning templates show a footprint or "swept path" of the movement of vehicle making various turning maneuvers. These templates are employed by OakDOT as an internal design tool and guide decisions about the placement of concrete elements in the right-of-way. The use of turning templates is not governed or required by the Oakland Municipal Code. OakDOT provides fire pumper truck and ladder truck-turning templates to OFD as part of project reviews for projects where concrete curb line changes are proposed. Pedestrian safety islands are designed to allow pumper trucks and ladder trucks to proceed straight, turn left and turn right at intersections.

Figure 1

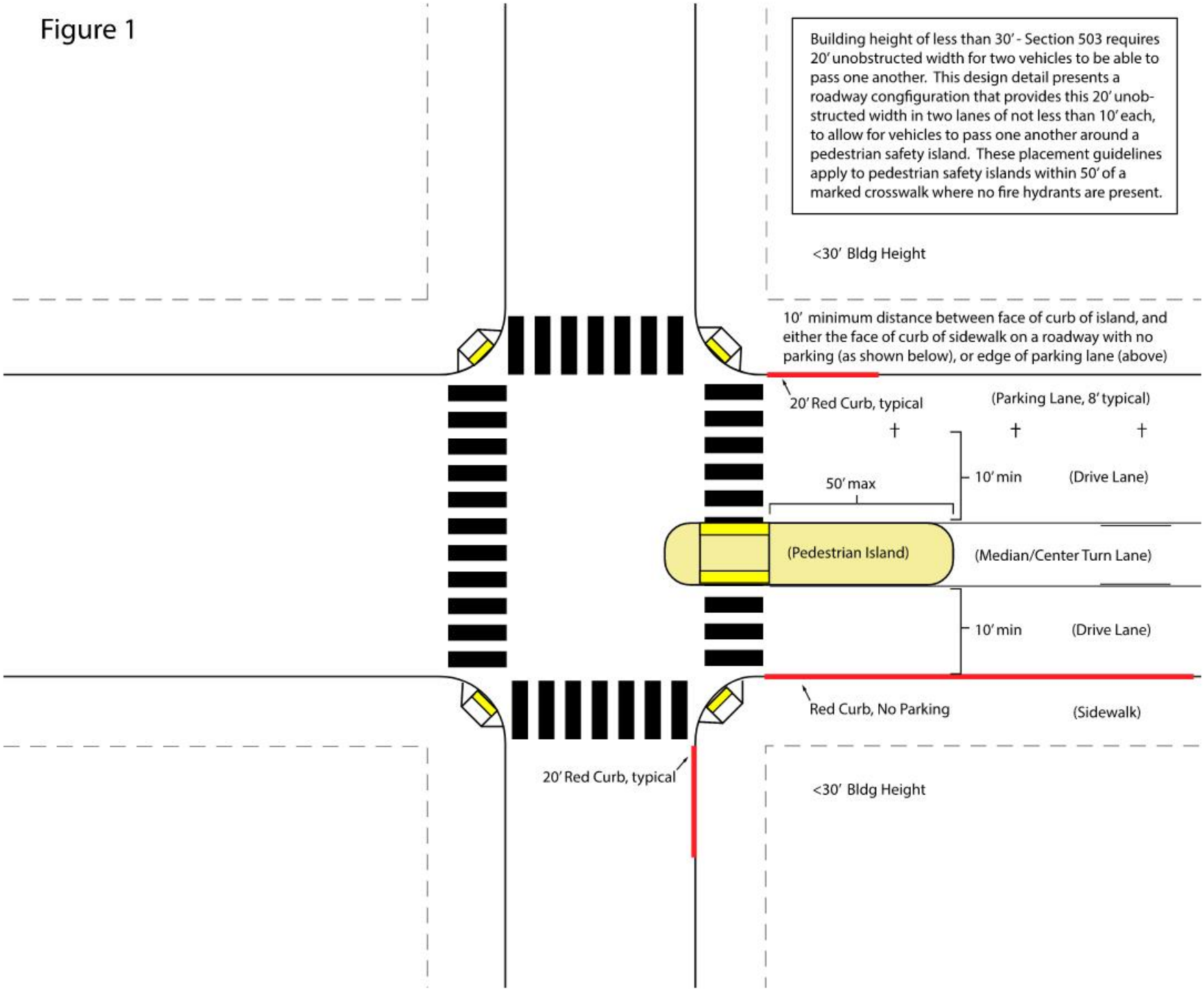
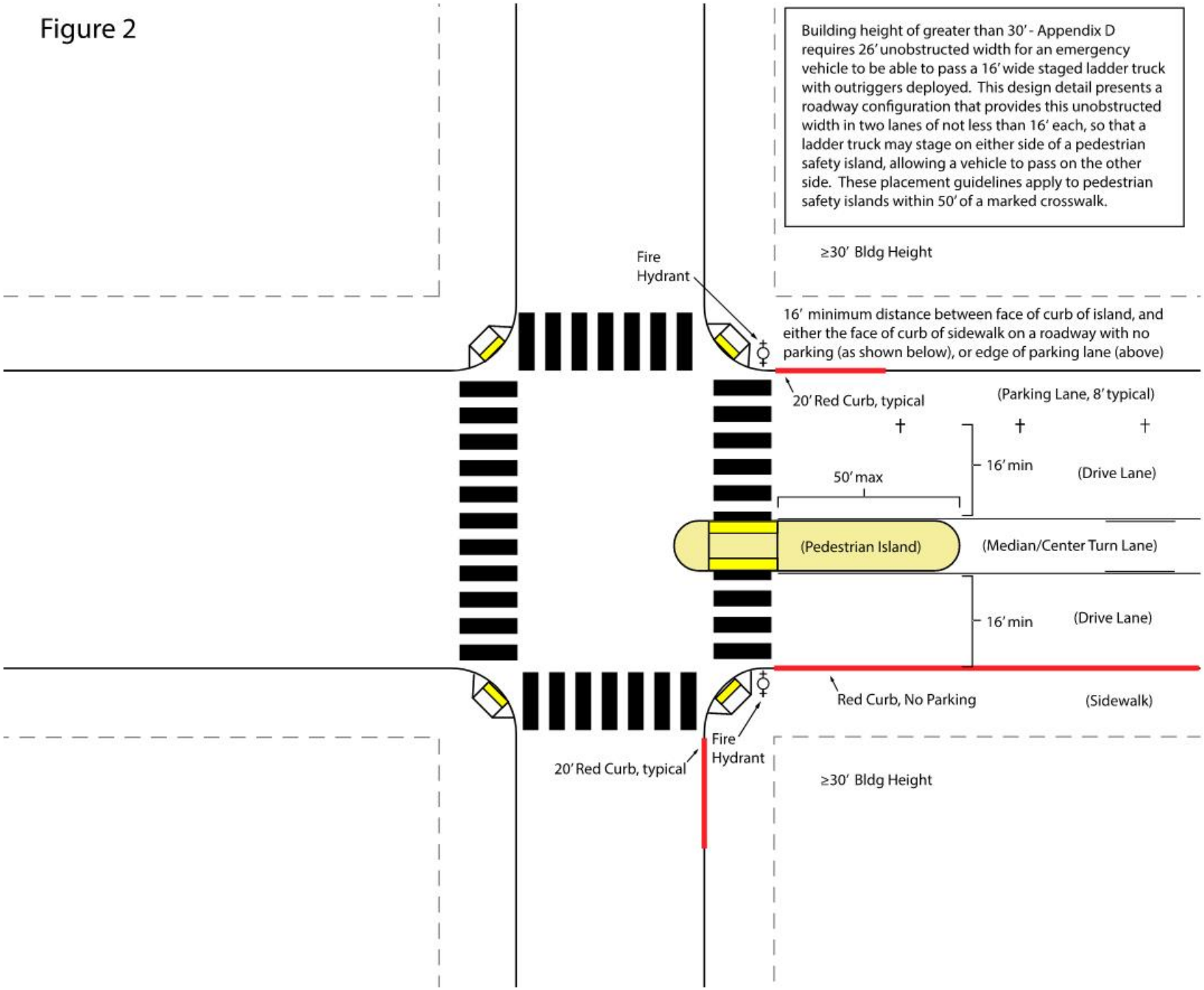

Building height of less than 30' - Section 503 requires 20' unobstructed width for two vehicles to be able to pass one another. This design detail presents a roadway congfiguration that provides this 20' unobstructed width in two lanes of not less than 10' each, to allow for vehicles to pass one another around a pedestrian safety island. These placement guidelines apply to pedestrian safety islands within 50' of a marked crosswalk where no fire hydrants are present.
<30' Bldg Height
10' minimum distance between face of curb of island, and either the face of curb of sidewalk on a roadway with no parking (as shown below), or edge of parking lane (above)
20' Red Curb, typical
(Parking Lane, 8' typical)
10' min
(Drive Lane)
50' max
(Pedestrian Island)
(Median/Center Turn Lane)
10' min
(Drive Lane)
Red Curb, No Parking
(Sidewalk)
20' Red Curb, typical
<30' Bldg Height

Figure 2


Building height of greater than 30' - Appendix D requires 26' unobstructed width for an emergency vehicle to be able to pass a 16' wide staged ladder truck with outriggers deployed. This design detail presents a roadway configuration that provides this unobstructed width in two lanes of not less than 16' each, so that a ladder truck may stage on either side of a pedestrian safety island, allowing a vehicle to pass on the other side. These placement guidelines apply to pedestrian safety islands within 50' of a marked crosswalk.
≥30' Bldg Height
Fire Hydrant
16' minimum distance between face of curb of island, and either the face of curb of sidewalk on a roadway with no parking (as shown below), or edge of parking lane (above)
20' Red Curb, typical
(Parking Lane, 8' typical)
16' min
(Drive Lane)
50' max
(Pedestrian Island)
(Median/Center Turn Lane)
16' min
(Drive Lane)
Red Curb, No Parking
(Sidewalk)
Fire Hydrant
20' Red Curb, typical
≥30' Bldg Height