Roseville Fire Department

Fire & Life Safety Division

316 Vernon Street Suite 480 · Roseville, CA 95678 · (916) 774-5800 · FLSDivision@roseville.ca.us

Fire & Life Safety Standard
Title: Emergency Vehicle Access
Note: *This standard is a summary of Roseville Fire Department clarifications of City and State Codes. Information contained herein applies to typical circumstances and may not address all situations.*

PURPOSE

This standard was developed with safety as the principle objective, pursuant to the California Fire Code (CFC) the fire code official is authorized to render interpretations of the CFC, and to adopt policies, procedures, rules and regulations in order to clarify the application of its provisions. Such interpretations, policies, procedures, rules and regulations shall be in compliance with the intent and purpose of the CFC and shall not have the effect of waiving requirements specifically provided for in the CFC.

SCOPE

This standard applies to any facility where emergency response may be necessary. Emergency vehicle access shall be designed and installed in accordance with the CFC, the Roseville Municipal Code and applicable National Fire Protection Association (NFPA) standards.

ACCESS PLAN SUBMITTAL REQUIREMENTS

Access plans shall be submitted as part of the civil improvement package. The following is a list of items that, if applicable, shall be shown on the Access Plan.

- Access Walkways
- Bollards
- Fire Apparatus Access Roads
- Fire Lane Identification
- Gates and Barriers
- Double Detector Check Valve
- Fire Protection Equipment
- Hydrant Locations
- Fire Department Connections
- Turning Radius
- Knox and Opticom Units
- Aerial Fire Apparatus Access Roads

Once approved, access plans will be available along with the civil improvement plans. Site work is prohibited until the access and civil improvement plans have been reviewed and approved.

FIRE ACCESS ROADWAYS

Fire apparatus access roads shall be provided in accordance with the CFC, for every facility, building, or portion of a building hereafter constructed or moved when any portion of an exterior wall of the first story of the building is located more than 150 feet from fire apparatus access as measured by an approved route around the exterior of the building. Said access roads may be modified by the fire code official when buildings are completely protected with an approved automatic fire sprinkler system, or other approved measure.

Fire apparatus access roads shall be designed and maintained to support the imposed load of fire apparatus (72,000 Gross Vehicle Weight (GVW)), and shall be provided with an asphalt concrete pavement surface so as to provide all-weather driving capabilities, in accordance with the CFC.

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1. **Width of Fire Apparatus Access Roads**
   The minimum width of a fire apparatus access roadway is 20 feet. If a center median is included, the required width shall be provided on both sides of the median. The width of fire apparatus access roads is measured from bottom face of the curb to bottom face of the curb on streets with curbs and gutters, and from flow line to flow line on streets with rolled curbs. Flow line is the lowest continuous elevation on a rolled street curb.

2. **Parking Restrictions**
   No parking is permitted on streets narrower than 27 feet in width. Parking on one side is permitted on a roadway that is at least 27 feet, but less than 33feet in width. Parking on two sides is permitted on a roadway 34 feet or more in width. See Figure 5.

3. **Vertical Clearance**
   Fire apparatus access roads shall have an unobstructed vertical clearance of not less than 13 feet 6 inches. See Figure 6.

4. **Fire Access Road Grade**
   The grade for access roads shall not exceed 10 percent to provide for placement of the ladder truck during fire ground operations in accordance with Section 503 of the California Fire Code. The grade may be increased to a maximum of 15 percent for approved lengths of access roadways, when all of the structures served by the access road are protected by automatic fire sprinkler systems.

5. **Turning Radii**
   The inside turning radius for an access road shall be 30 feet or greater. The outside turning radius for an access road shall be 50 feet or greater. See Figure 7.

6. **Dead-End Access Roadways**
   Dead-end fire apparatus access roads in excess of 150 feet in length (measured from the curb perpendicular to the roadway) shall be provided with approved provisions for the turning around of fire apparatus in accordance with Section 503 of the California Fire Code.

7. **Buildings Exceeding Three Stories or 30 Feet in Height**
   Buildings or facilities exceeding three stories or 30 feet in height shall have at least two means of fire apparatus access for each structure.

8. **Aerial Fire Apparatus Access Roads**
   When the vertical distance between the grade plane and the highest roof surface exceeds 30 feet, approved aerial access roads shall be provided. Aerial fire apparatus access roads shall have a minimum unobstructed width of 26 feet, exclusive of shoulders, in the immediate vicinity of the building or portion thereof. One or more of the required access routes meeting this condition shall be located not less than 15 feet and not greater than 30 feet from the building, and shall be positioned parallel to one entire side of the building.

9. **Bridges**
   Bridge and culvert crossings that serve as part of fire apparatus access roads shall be constructed in accordance with the CFC. The bridge or culvert crossing shall be designed for a minimum live load of 72,000 pounds GVW. The ladder truck weight load is established at 18,000 pounds on the front axle and 54,000 pounds on the rear axles. Vehicle load limits shall be posted at both entrances to bridges and culvert crossings, as required by the CFC.

10. **Building Under Construction or Demolition**
    Approved vehicle access for firefighting shall be provided to all construction or demolition sites. Vehicle access shall be provided to within 100 feet of temporary or permanent fire department connections. Vehicle access shall be provided with an AC pavement or equivalent surface capable of supporting vehicle loading so as to provide all weather driving capabilities. Said fire access road shall be constructed prior to the presence of on site combustible products and shall be maintained throughout the construction process in accordance with the CFC and the Roseville Municipal Code.

FIRE LANE IDENTIFICATION

This standard shall apply to any roadway leading from a public way to, adjacent to, and surrounding a building of which the roadway could be used for emergency operations by local emergency authorities. Said fire lanes shall be in accordance with the CFC and. Detailed plans shall be submitted to the City of Roseville and/or site inspections shall be performed by the Fire & Life Safety Division prior to identifying fire lanes.

1. **Fire Lane Determination**
   Private property owners shall not designate and/or identify any roadway on their property as a fire lane without prior approval from the Roseville Fire Department.

2. **Specifications**
   Fire apparatus access road width shall be determined by measuring from "face of curb" to "face of curb". When roadways do not have curbs, the distance measured shall be from the edge of the roadway surface (all weather paved surface) excluding the header or edge boards.

   Fire apparatus access roads shall have an unobstructed width of not less than 20 feet and an unobstructed vertical clearance of not less than 13 feet 6 inches. See Figure 6. Vertical clearances or widths shall be increased when; in the opinion of the fire code official, vertical clearances or widths are not adequate to provide fire apparatus access.

ACCESS ROAD WIDTH	PARKING RESTRICTIONS
Less than 27 feet	No parking on either side
27 through 33 feet	Parking on one side only
34 feet and greater	Parking on both sides

3. **Identification**
   When it is determined by the Roseville Fire Department that a fire lane designation is required on the access roadway, proper methods within this standard shall be used for such identification. The following methods of fire lane identification are taken from the California Vehicle Code (CVC). One of the three methods presented below shall be utilized when designating a fire lane:

   - By posting of a sign immediately adjacent to, and visible from the designated place clearly stating in letters not less than 1 inch in height "NO PARKING FIRE LANE", or
   - By outlining or painting the place red and, in contrasting color, marking the place with the words "NO PARKING FIRE LANE", which are clearly visible from the vehicle, or
   - By a red curb or red paint on the edge of the roadway upon which is clearly marked the words "NO PARKING FIRE LANE"

Additionally, in order for private property owners to legally cause vehicles to be removed (towed) from the property, they are in lawful possession of, such as an apartment complex or business parking lot, a sign not less than 17 x 22 inches in size with the lettering not less than 1 inch in height, containing specific information as indicated in Figure 3 of this standard, must be installed at each entrance of the property. These signs are not required to be present when issuing a citation. However, if installed, these signs would be in addition to the fire lane identification requirements. All signs and curb markings are to be installed and maintained by the property owner.

4. **Signage**
Curbs marking fire lanes – See Figure 1.

All raised curbs in "NO PARKING FIRE LANE" areas shall be painted red with acceptable red curb paint and lettered to the above standards. Lettering shall be in white, 3 inches in height and have a minimum 0.5 inch stroke. Lettering shall be painted every 25 feet.

Signs marking fire lanes shall be installed per Figures 2 and 4. Spacing of such signs to be within 3 feet of each end of curbed areas and spaced a maximum of 50 feet apart thereafter. See Figure 4.

When islands are present, one sign is required for each island adjacent to a fire lane or access road, if the road is 20 feet or less. Signs must face oncoming vehicular traffic. See Figure 4.

"NO PARKING FIRE LANE" signs shall be designed per Figure 3.

OBSTRUCTIONS TO FIRE LANES

1. **General**
To overcome obstructions such as gates or barriers, the Roseville Fire Department utilizes the products offered by the Knox Company. These products include, but are not limited to, the Knox box, the Knox padlock, and the Knox key switch. Knox boxes are used to hold keys to the fire control room allowing firefighters rapid access into this area in the event of an emergency. Knox padlocks are used to secure manually operated gates or barriers and can be used in conjunction with an existing padlock to allow access for both the Roseville Fire Department as well as a business owner. Lastly, Knox key switches are used to gain access into a property equipped with electric gates allowing the Roseville Fire Department to override the "system" and open a gate without a card or special code. These systems require an acceptance test witnessed by the Fire & Life Safety Division prior to final approval of the project.

Knox items can be ordered online at http://www.knoxbox.com. For more information contact the Fire & Life Safety Division at (916) 774–5800.

2. **Gates and Barriers**
The City of Roseville shall review plans for all new access gates and/or barriers that may impede emergency vehicle or personnel access to a structure.

3. **Electrically Operated Gates and Barriers**
Electronically opened access gates located across fire apparatus access roads shall be provided with a Model #3501 electronic override switch manufactured by the Knox Company. Said switch shall interface with the key pad at the entry gate to provide fire apparatus access to the site in accordance with Section 503 of the California Fire Code. In the event of a power failure, the gate shall be automatically transferred to a fail-safe mode allowing

the gate to be pushed open without the use of special knowledge or equipment, including battery back-up. Upon activation of the key switch, the gates (egress and ingress) shall open and remain open until they are returned to normal operation by means of the key switch. An acceptance test of the Knox access system shall be witnessed by the Fire & Life Safety Division prior to final approval of the project.

The Roseville Fire Department requires a strobe switch access system at all electrically powered gates. Such a system allows emergency vehicles to flash a vehicle mounted strobe light towards the sensor, which in turn overrides the system and opens the gate. This system shall have the ability to interface with the Tomar Model 780-1228-PRE or 3M Opticom traffic preemption optical signal emitter provided on all City emergency vehicles in accordance with Section 902 of the Roseville Fire Code. Provide a Tomar 1790-14 strobe switch or other approved system at all electrically powered gated entries. Said device shall activate via a frequency of 14.035 HZ +/- .25HZ (High-Priority). Said device shall be mounted at a height of 7 feet above the adjacent road surface and is subject to an acceptance test witnessed by the Fire & Life Safety Division prior to final approval of the project.

All electronically opened perimeter access gates located across fire apparatus access roads shall be provided with a vehicle detection loop on the out-bound drive aisle from the site in accordance with Section 503 of the California Fire Code. The vehicle detection loop shall be placed a minimum of 10 feet from the gate to permit fire apparatus to activate the detection loop without interference from the gate. The vehicle detection loop shall be provided with a 30 second delay prior to closing the gate.

4. **Manually Operated Gate and Barriers**
   Manual gates shall have Knox padlocks or Knox key boxes.

5. **Manually Operated Gate and Barrier Design**
   Typical gate designs may include sliding gates, swinging gates or arms, or guard posts with a chain traversing the opening. Permanent signage (constructed of 18 gauge steel or equivalent) shall be attached on each face of the gate or barrier that reads “NO PARKING FIRE LANE”. Letters shall be red on white background and a minimum of three inches high with a 0.5 inch stroke.

6. **Clear Width**
   Openings for access gates located across fire apparatus access roads shall be a minimum of 14 feet of clear width, and shall provide a minimum unobstructed vertical clearance of 13 feet 6 inches, in accordance with Section 503 of the California Fire Code. See Figures 6 and 8.

7. **Setbacks from the Street**
   Gates and barriers shall be constructed per the current Department of Public Works standard for private gated entrances. See Figure 8.

8. **Bollards**
   For a bollard detail see Figure 10.

9. **Vertical Traffic Calming Devices**
   Vertical traffic calming devices are not permitted on any fire apparatus access roads.

TYPES OF ACCESS

1. **Access to Structures**

   The dimension of 150 feet when used in relation to Roseville Fire Department access is commonly referred to as "hose pull distance." As the name implies, this is the maximum distance that firefighters can effectively pull a fire hose or carry other equipment to combat a fire. The hose pull distance is set at 150 feet due to a variety of factors, including standard hose lengths, weight of equipment, hydraulic properties, and accepted operational procedures.

   Hose pull is measured along a path that simulates the route a firefighter may take to access all portions of the exterior of a structure from the nearest public road or fire lane. Under most circumstances, hose pull will not be a straight-line distance and should not be measured "as the crow flies." All obstructions such as fences, planters, vegetation, and other structures must be considered when determining whether a building is accessible from a particular location on the fire access roadway.

   Topography may also affect the potential access route and any significant changes in elevation must be accounted for when measuring hose pull distances. Hose pull measurements begin at a point in the street located 10 feet from the face of the curb. See Figure 9.

2. **Wildland Access**

   The following section is included to clarify requirements regarding the minimum specifications for bike lanes that serve as fire access lanes to a wildland environment. These requirements do not pertain to fire apparatus access roads for access/egress for buildings. These requirements pertain to both City funded and privately funded roadways.

   a) The width of the roadway shall be a minimum of 14 feet, which includes 10 feet of asphalt paving with a 2-foot shoulder of decomposed granite on each side.

   b) The minimum turning radius for the roadways shall be 22 feet inside diameter and 32 feet outside diameter.

   c) The roadway shall be capable of supporting a minimum GVW of 30,000 pounds and shall be provided with adequate drainage to prevent major pooling of water on the surface.

   d) Access to the roadway may be protected from private vehicle traffic through the use of gates, which swing open to allow for the 14 feet of clear width, or through the use of drop down bollards.

   e) Bridges shall be constructed to allow 12 feet of clear width, capable of supporting a minimum GVW of 30,000 pounds, and shall allow a straight-line approach of at least 35 feet.

   f) Fire access points through the post and cable assembly shall be provided on both sides of the roadway at maximum intervals of 750 feet, or as close to this figure as topography allows. The cable crossing at the fire access point shall be a yellow plastic coated cable. The ends of the cable shall be secured to the posts in a similar fashion as the terminal post anchor, with the exception of adding a Roseville Parks and Recreation Department padlock connecting each end of the cable to the eyebolt.

These requirements are the minimum specifications that will allow fire apparatus to operate in a safe and effective manner. The Roseville Fire Department requirements shall not restrict any requirements in excess of minimum specifications that may be required by any other City department.

3. **Multiple Points of Access**
A site that contains one of the following shall be equipped with a minimum of two approved points of access:

- A single building 20,000 square feet or larger.
- A combination of buildings that total 20,000 square feet or larger.
- A residential subdivision with 50 or more units.

A minimum distance of 500 feet shall separate the two entrance points. If desired, one of the required access points may be closed to general traffic providing the gate or barrier used conforms to the gate requirements in this document. Approved permanent durable signage shall be attached on each face of the gate or barrier that reads "NO PARKING FIRE LANE". Letters shall be red on white background and a minimum of three inches high with a 0.5 inch stroke.

PREMISE IDENTIFICATION

Addressing of all buildings shall be consistent with the City of Roseville's Addressing Guidelines Standard, the CFC and the Roseville Municipal Code.

An approved address sign shall be provided at each fire apparatus access road entry into the project while under construction.

Should the placement of buildings be such that the parking lot is located in the center of the property; lighted address numbers shall be installed facing the parking lot area in addition to the City's required addressing facing the street or front" of the property.

Multiple Tenant Buildings. Multiple tenant buildings shall contain the following features:

a) Multiple tenant spaces serviced by vehicular access to the rear through any driveway, alleyway, or parking lot shall have numbers or addresses placed prior to occupancy on all new and existing buildings as to be plainly visible and legible from the rear access way when deemed necessary by the fire code official.

b) Multiple tenant spaces serviced by rear access through a corridor, exit passageway, exit court, or exit yard shall have approved numbers or addresses displayed on the rear of the tenant space, when deemed necessary by the fire code official.

c) Multiple tenant spaces that front on interior walkways or pedestrian malls shall have approved numbers or addresses placed near the entrance door in all new and existing buildings.

d) Illuminated directory boards shall be provided at vehicular access entrances to multiple building complexes as deemed necessary by the fire code official.

Illumination. Addressing shall be illuminated at night in all new buildings. Address signs shall be internally or externally illuminated. When the luminance provided for the face of an address sign is from an external source, it shall have an intensity sufficient so as to be visible at night from the adjoining access roadway. Internally illuminated address signs shall be provided with equivalent luminance.

DEFINITIONS

Access Walkways - An approved walking surface leading from fire apparatus access roads to doors and other required openings in structures.

Bollards - Permanent or removable poles that are placed across a roadway for the purpose of restricting vehicular access to a portion of a site or to protect a piece of equipment from potential vehicular damage. Bollards are permitted across roadways, as long as they are the type that fold down and lay flat on the access roadway as identified in the current City of Roseville Public Works standard. See Figure 10.

Fire Apparatus Access Roads - The means for emergency equipment and personnel to access a facility or structure for emergency purposes. Roads must extend to within 150 feet of all portions of the exterior of the first floor of any structure and must meet specified criteria for width, pavement characteristics, roadway gradient, turning radius, etc. Fire apparatus access roads are also referred to as fire lanes. Extenuating circumstances, increased hazards, and additional fire safety features may affect these requirements.

Fire Lane Identification - Fire lane identification will be required when it is necessary to restrict parking of vehicles in order to maintain the required width of fire access roadways for emergency vehicle use. Unlawful use of fire lanes will be enforced by the local law enforcement agency in accordance with the CVC and the CFC.

Knox and Opticom Systems - Knox systems include: Knox boxes used for secure placement of keys to the fire control room, Knox key switches that provide access to electric gates and Knox padlocks which can be used to secure manual gates and barriers. All Knox items are accessible to Roseville Fire Department personnel with a master key. Opticom systems include high-speed strobe light systems mounted on emergency vehicles which activate motorized gates allowing for emergency access.

Premises Identification - The visual means used to readily identify a property or facility. It is also the numbering system that is placed on structures for the purpose of identifying separate buildings within a single facility.

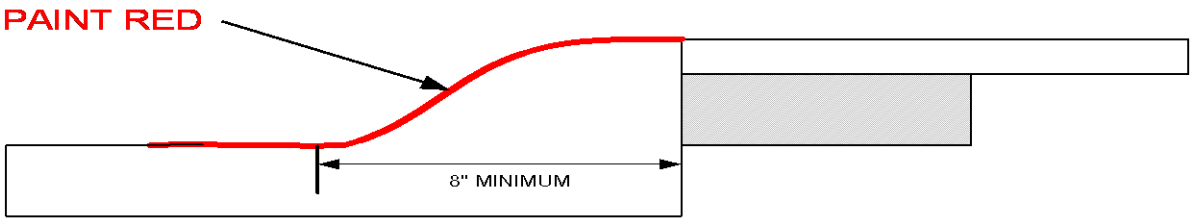
Multiple Points of Access - Additional access points onto a site other than the “main entrance”.

Vertical Traffic Calming Devices – A change in the height of a roadway that forces a motorist to slow down to maintain an acceptable level of comfort. Vertical traffic calming devices are not permitted on any fire access lane.

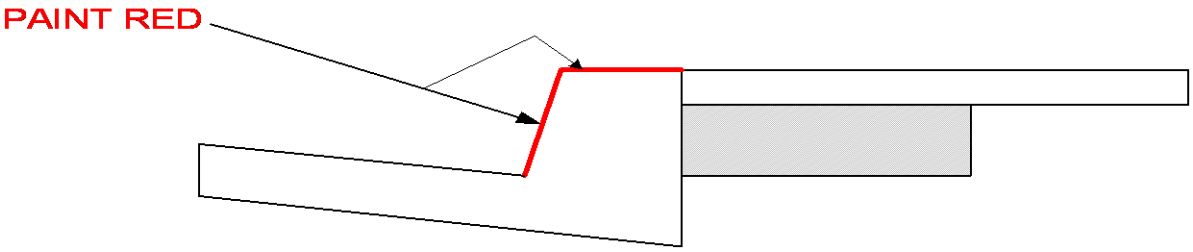
Wildland Access/Bike Paths - Requirements for access into an area that is yet to be developed, will remain undeveloped, or will be used for recreational activities such a biking or walking.

FIGURE – 1
Fire lane identification for curbs

ROLLED CURB

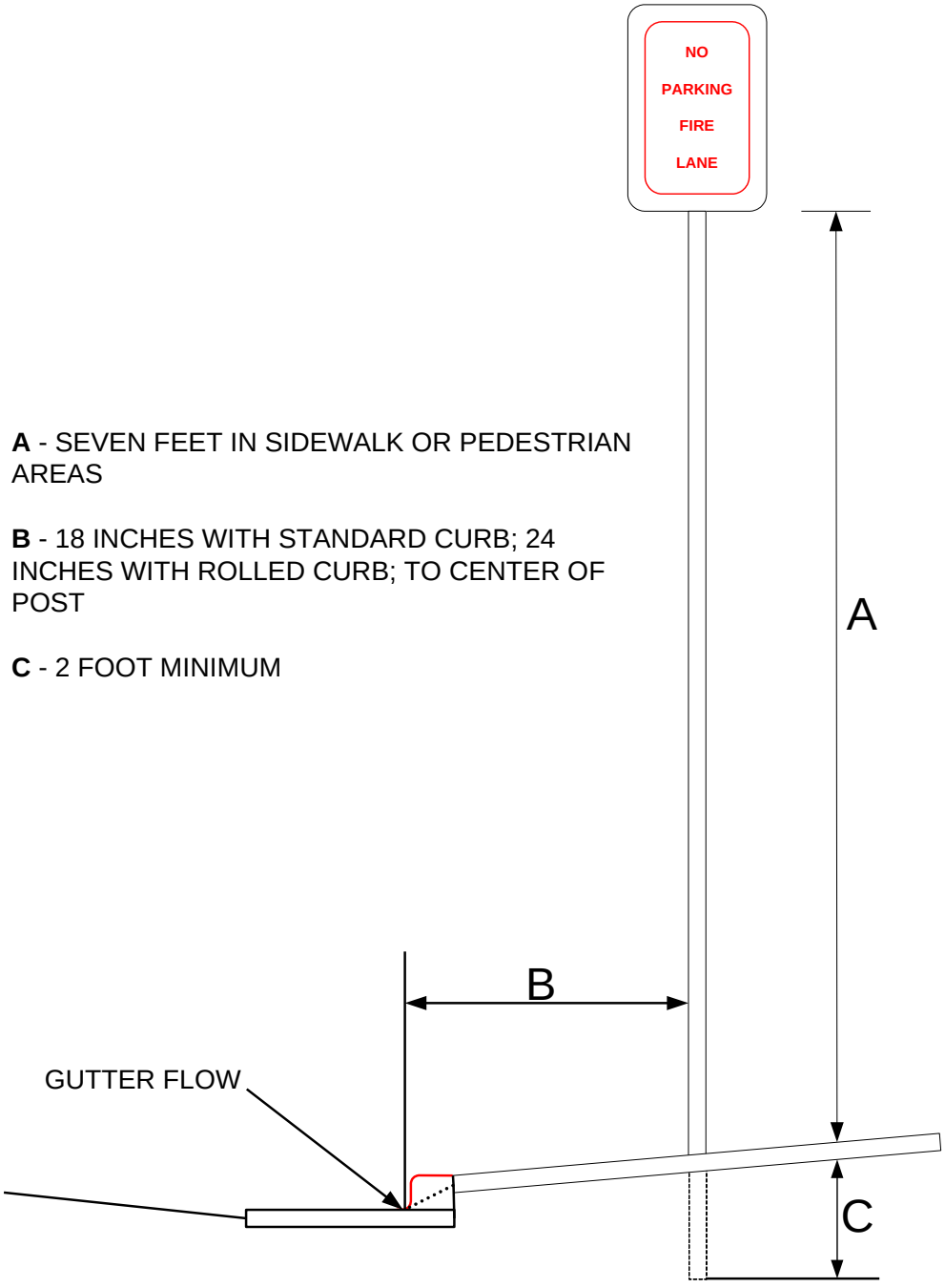


STANDARD CURB



All raised curbs in "NO PARKING FIRE LANE" areas shall be painted RED with acceptable red curb paint and lettered to the above standards. Lettering shall be in WHITE, three (3) inches in height and have a minimum ½" stroke. Lettering shall be painted every 25 feet.

FIGURE – 2
Sign construction



Note: Signs may be mounted on existing posts, fences or buildings, if post, fence or building is no more than 24 inches from the curb or edge of road surface.

FIGURE - 3
Fire lane sign dimensions and lettering

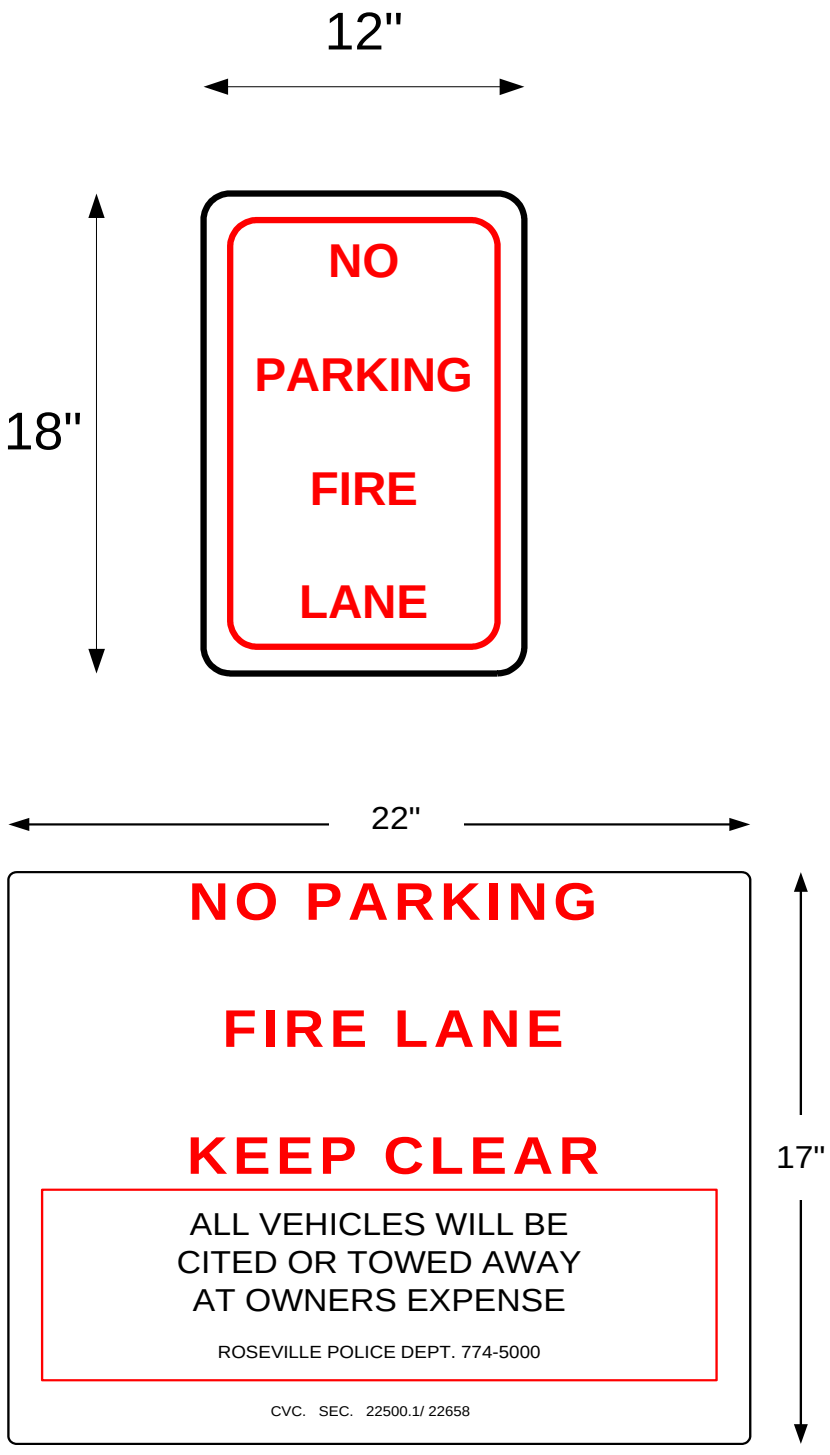


FIGURE – 4
Sign placement for islands adjacent to fire lanes

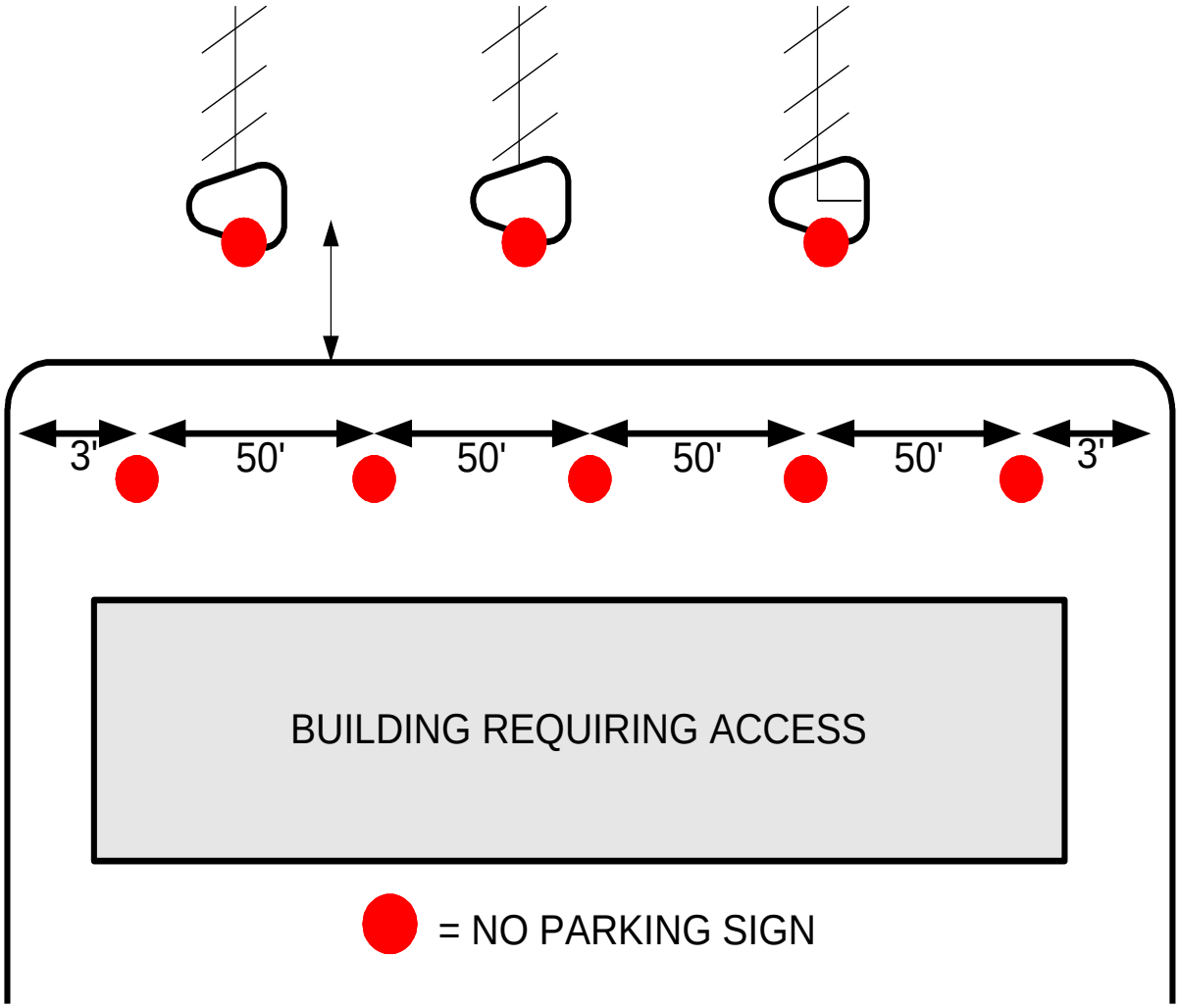
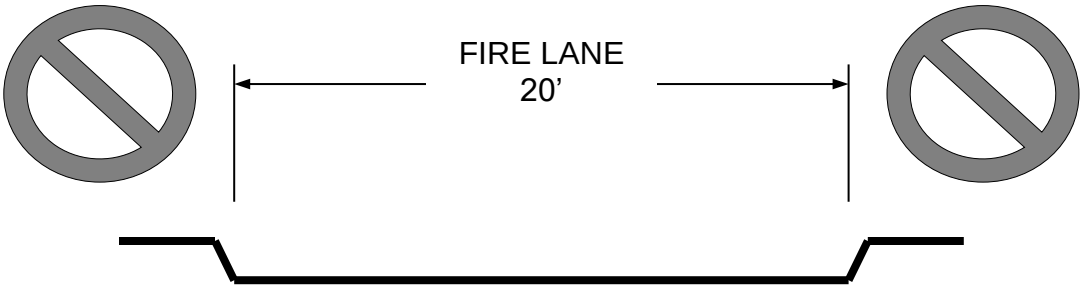
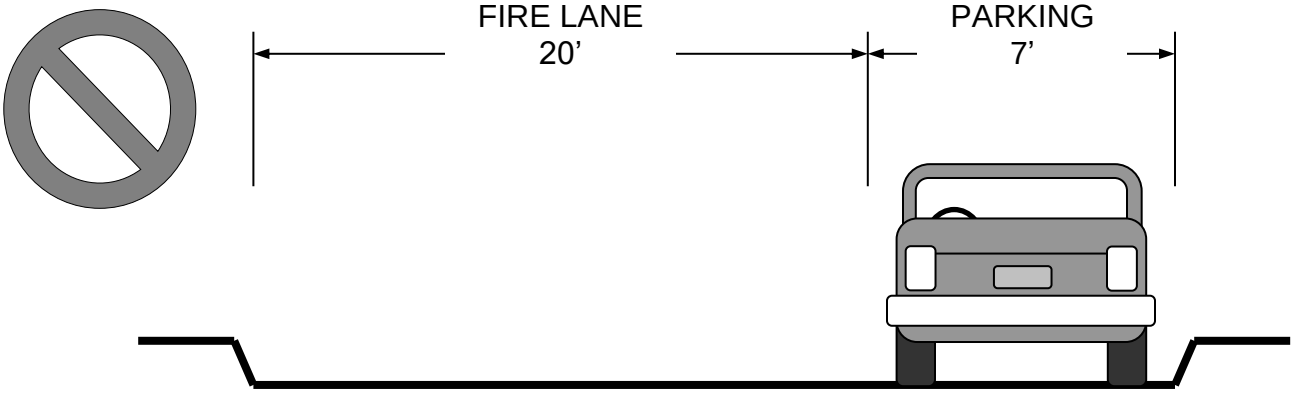


FIGURE - 5
Minimum road widths

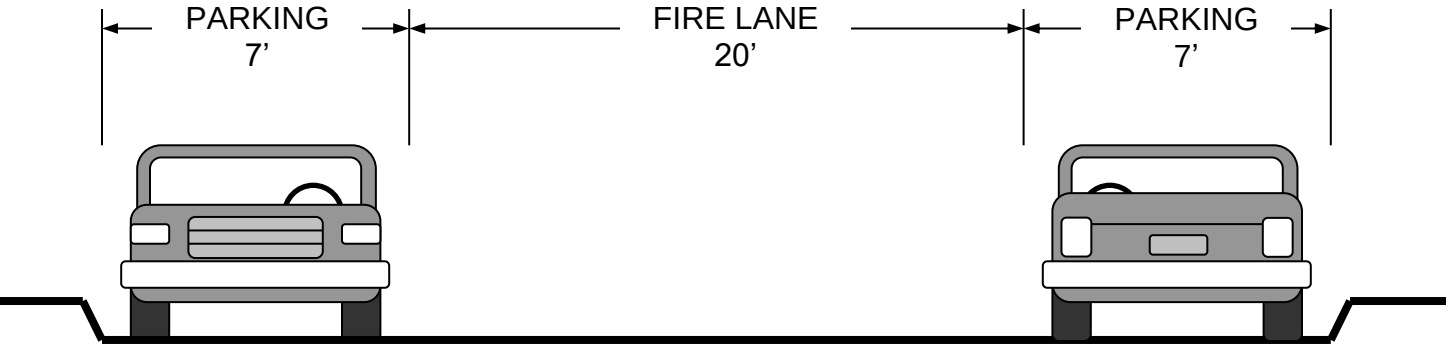
Measured from top face of curb to top face of curb or flow line to flow line.



ROADWAY LESS THAN 27’
Parking prohibited.
Roadway is required to be posted as a fire lane.



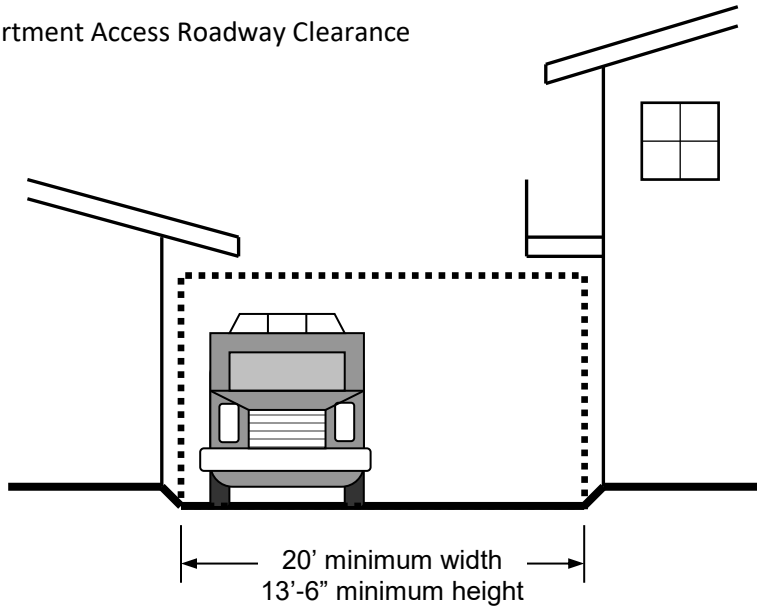
ROADWAY AT LEAST 27’ BUT LESS THAN 33’
Parking permitted on one side only.
Roadway is required to be posted as a fire lane.



ROADWAY 34’ OR WIDER
Parking permitted on both sides

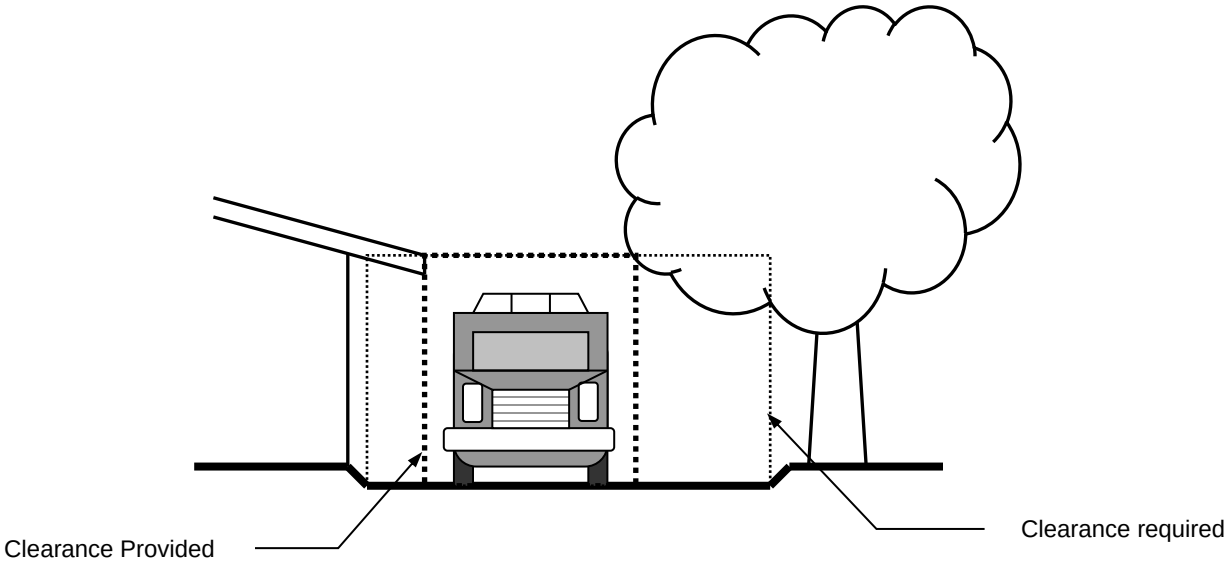
FIGURE – 6

Roseville Fire Department Access Roadway Clearance



PROPER CLEARANCE PROVIDED

Eaves, balconies, and other obstructions do not encroach upon the 20’ wide by 13’-6” high fire access roadway envelope.

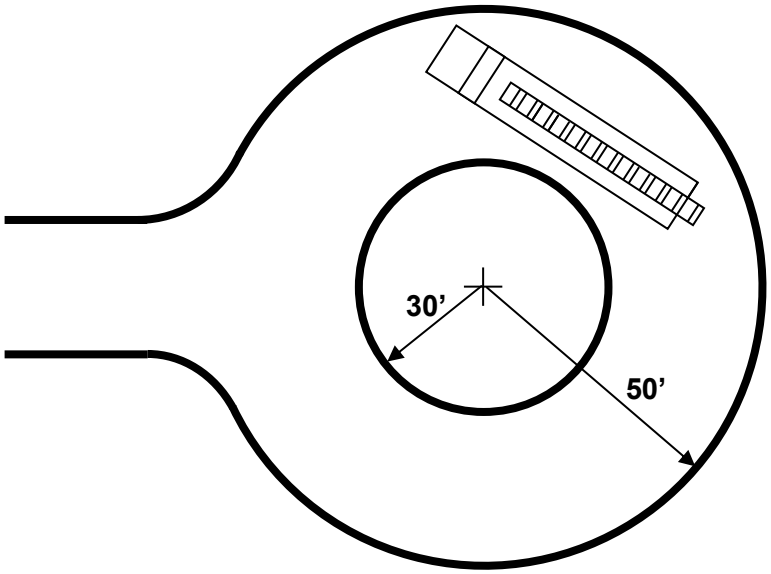


INSUFFICIENT CLEARANCE

A 20’-wide roadway has been provided, but eaves and vegetation effectively reduce the clear dimensions below required minimums.

FIGURE - 7
Minimum hammer head and turn around dimensions

TURNAROUND



HAMMERHEAD

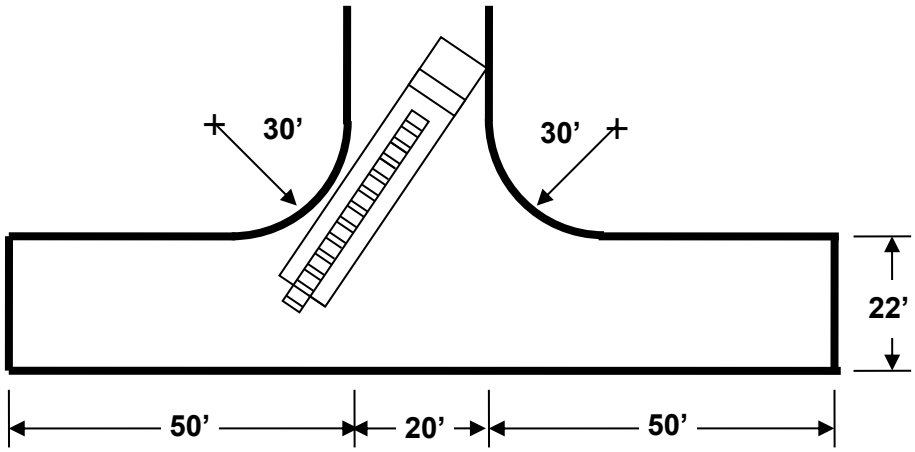


FIGURE - 8

Minimum gate setbacks

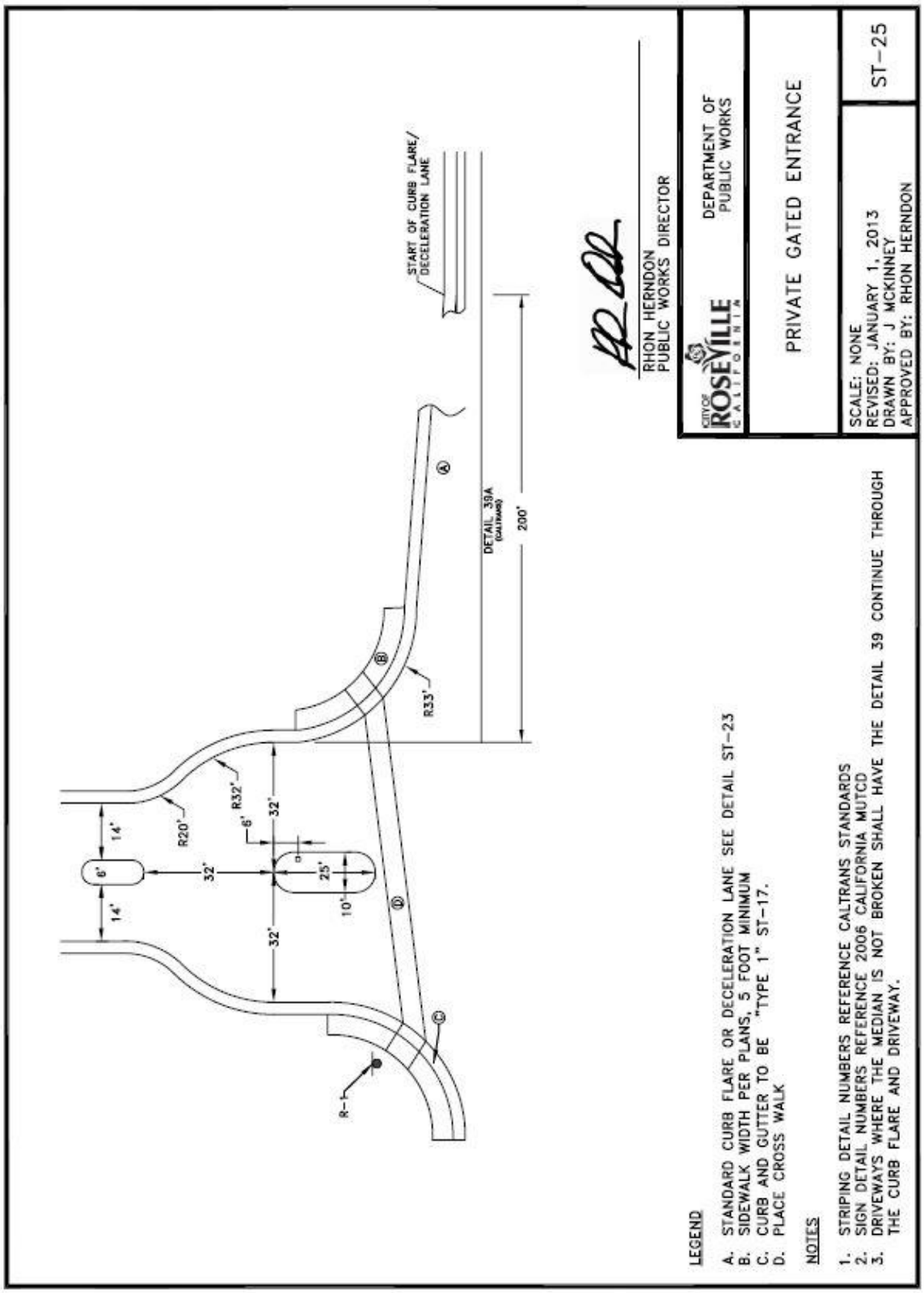
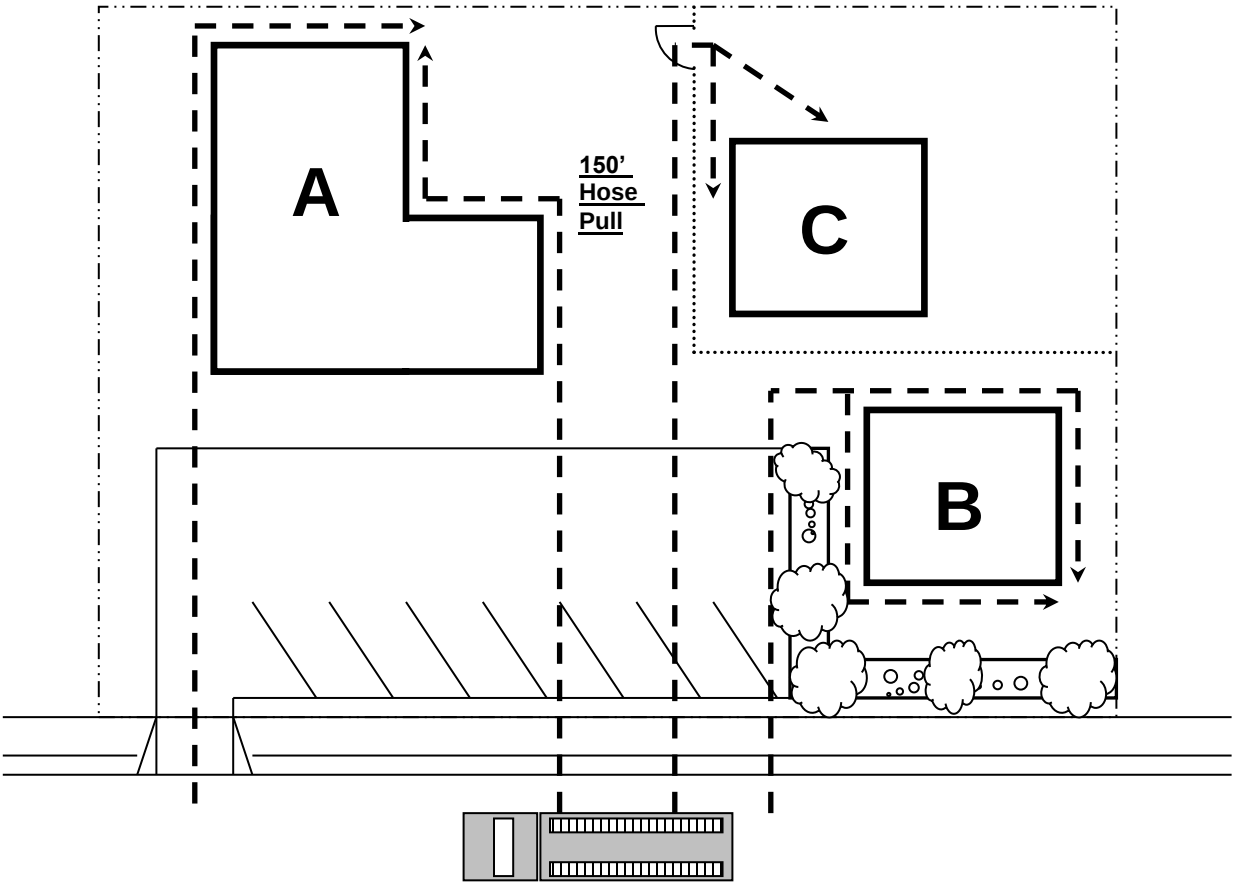


Figure - 9
Hose pull



Assume that the parking lot is not accessible to fire apparatus due to turning radii and fire lane widths less than the required minimums.

All portions of building "A" are within 150' feet of the public road as measured along the path of firefighter travel.

Building "B" is also in accessible despite the obstruction presented by the planter

Building "C" is not accessible; the presence of a chain link fence forces firefighters to backtrack once they pass through the gate, increasing their travel distance beyond 150'.

On-site fire access roadways or a change in the location of the gate and would be necessary to provide access to Building "C".

FIGURE – 10
Bollard detail