

City of Perris

DEPARTMENT OF DEVELOPMENT SERVICES
BUILDING & SAFETY DIVISION
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Fire Department Access & Water Requirements for Commercial & Residential Development



Approved and Authorized by

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Building Official/Fire Marshal

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Fire Department Access & Water Requirements

PURPOSE

The effectiveness of emergency response and firefighting operations is directly related to the proper installation and maintenance of fire access roadways, the proper location of hydrants, adequate water supply, and access to structures. This document is a general guideline pertaining to the creation and maintenance of fire department access roadways, access walkways to and around buildings, and hydrant quantity and placement as required by the 2001 California Fire and Building Codes (CFC and CBC) and as amended by local ordinance. This guideline includes requirements for:

- Plan Submittal
- Fire Access Roadways
- Fire Lane Identification
- Fire Lane Violations
- Premises Identification
- Fire Lane Obstructions
- Access for Residential Development
- Alternative Engineered Fire Access Systems
- Hydrant quantity, spacing, and placement
- Water availability and fire flow
- Access to structures
- Access walkways

SCOPE

These guidelines apply to new, remodeled, reconstructed, or relocated residential or commercial structures and developments to which emergency response may be necessary. The information contained in this document is intended to assist the applicant in attaining compliance and to ensure that privately owned roadways necessary for emergency response purposes will be available for use at all times. Some of the issues discussed within this document may be covered in more detail through other City of Perris guidelines. Areas of particular importance and requirements that are commonly overlooked on fire master plan submittals have been identified with a black arrow in the left margin.

The following definitions are provided to facilitate the consistent application of this guideline:

Access Walkways - An approved walking surface leading from fire access roadways to exterior 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.

Fire Access Roadways - The means for emergency apparatus to access a facility or structure for emergency purposes. Roadways 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 access roadways are also referred to as fire lanes.

Fire Lane Identification – Specific requirements that allow fire access roadways to be readily recognized so that they will remain unobstructed and available for emergency use at all times.

Gates and Barriers - Devices that restrict pedestrian and vehicle ingress and egress to and from a facility.

Gate and Barrier Locks - Devices that are installed on gates and barriers to secure a property or facility.

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 identification of separate buildings within a single facility.

Rescue Windows - Openings required in all sleeping rooms located below the fourth story of a building that allow rescue of trapped occupants.

SUBMITTAL REQUIREMENTS

1. Plan Requirements

Plans shall be provided to demonstrate compliance with all codes and other regulations governing water availability for firefighting and emergency access to sites and structures within the City of Perris. In addition, changes to existing structures or sites shall be reviewed by the City of Perris Building Department to ensure that the modifications do not affect water availability or access.

- A. Submittals – Three plan sets will need to be submitted at the City of Perris Building Department. Accompanying sets of documentation for items such as gates, water availability data, paving certification, and conditions of approval shall be supplied, as needed. The City of Perris fees are due upon submittal of plans.
- B. Scope – The scope of work shall be clearly indicated on the plan. If the building or site in question was approved previously, include a copy of the previously approved fire access plan shall be submitted along with new plan sets for any revision.
- C. Building Data – Information related to the building’s location, use, and construction shall be clearly indicated on the plan.

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- 1) Include the project’s street address (when known) and the tract, tentative tract, parcel map number, or County Assessor’s parcel number, and Land – Use Entitlement #, CUP PP.

2) Indicate the types of occupancies that will be housed in the structure as listed in California Building Code (CBC) Table 3-A.

3) Indicate the building height on the plans.

4) Indicate the construction type of each building. If sprinklers are being used for a one-hour construction equivalency, note this clearly on the plan. Also note the type of sprinkler system installed (e.g., NFPA 13, 13-R, or 13-D).

5) Allowable area or mixed occupancy calculations shall be provided for all structures over 2,500 square feet. Indicate all building area increases allowed by CBC Chapter 5 (e.g., multistory, side yards, sprinklers, height increase) that are being applied.

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D. Fire Master Plan Notes – Include the City of Perris Fire Department Access Plan Notes on the plan, verbatim. See Attachment 1.

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E. Water Availability – A completed Water Availability form or equivalent data from a water purveyor or third party shall accompany all fire master plan submittals for projects where a new building is constructed or modification to an existing building increases the floor area of the structure. Water data may be requested by the City of Perris for other conditions as necessary to ensure adequate fire protection for a particular site.

F. Conditions of Approval – To ensure consistency of the fire access plan with project conditions, include any conditions of approval pertaining to City of Perris review of the project on the plans. If you are unsure whether your project requires conditions of approval, please contact City of Perris Planning Department.

2. Fire Access Roadways

Fire access roadways, sometimes referred to as fire lanes, shall be provided for every facility or building when any portion of an exterior wall of the first story is located more than 150 feet from a public roadway, as measured along an approved route. Extenuating circumstances, increased hazards, and additional fire safety features may affect these requirements. CFC 902.2.1

A. Fire Access Roadway Construction - Fire access roadways must be engineered to support emergency response apparatus. Roadways must be designed to facilitate turning radii of apparatus and meet requirements for gradient, height clearance, and width. Specific criteria pertaining to the design of fire access roadways are detailed below.

1) Fire access roadways shall be designed, constructed, and maintained to support the imposed loads of City of Perris fire apparatus with a total weight of 68,000 pounds. Apparatus weight is distributed as 46,000 pounds on tandem rear axles and 22,000 pounds on the front axle. The surface shall be designed, constructed, and maintained to provide all-weather driving capabilities. *A letter or statement, wet-stamped and*

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signed by a registered engineer, shall be provided on the plans certifying that any new roadway meets this 68,000-pound, all-weather requirement. See Attachment 3.

- 2) Number of Fire Department Access Roads Required:
 - a) One is required if any portion of an exterior wall of the first story of a building is located more than 150 feet from a fire access roadway. That access is to be measured by an approved route around the exterior of the building (see Section 10: Access to Structures).
 - b) More than one road is required if it is determined that access by a single road may be insufficient due to terrain, location, travel distance, potential fire or life-safety hazards, or other factors that could limit access or if vehicle congestion, railways, or weather conditions could impair the single entry point. A minimum of two vehicle access points located to facilitate evacuation and emergency operations is required for any development containing 150 or more residential units.
- 4) Location of Fire Access Roads - To protect fire apparatus, personnel, and equipment from damage and injury from falling debris, the edge of fire access roadways serving multi-story buildings should be located no closer than 10 to 30 feet from the building, the actual distance being a function of overall building height with consideration given to building construction, presence of openings, and other potential hazards. As distances greater than 40 feet inhibit the use of vehicle-mounted ladders while distances closer than 20 feet do not allow for a proper laddering angle, the edge of fire lanes serving structures four or more stories in height shall be located between 20 and 40 feet from the building. These distances are measured from the face of the building to the top edge of the curb face or rolled curb flow-line nearest the structure.
- 5) Width of Fire Access Roads - The minimum width of a fire 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 department access roads is measured from top face of the curb to top 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.
- 6) Parking Restrictions - No parking is permitted on streets narrower than 28 feet in width. Parking on one side is permitted on a roadway that is at least 28 feet but less than 36 feet in width. Parking on two sides is permitted on a roadway 36 feet or more in width. See Attachment 4.
- 7) Vertical Clearance - Fire access roads shall have an unobstructed vertical clearance of not less than 13 feet 6 inches. If trees are located adjacent to the fire access roadway, place a note on the plans stating that all vegetation overhanging the fire access roadway shall be maintained to provide a clear of the fire department access road at all times. See Attachments 5 and 6.



- 8) Fire Access Road Grade - The grade for access roads shall not exceed 10% or 5.7 degrees. The grade may be increased to a maximum of 15% or 8.5 degrees for approved lengths of access roadways, when all structures served by the access road are protected by automatic fire sprinkler systems.
- 9) Inside and Outside Turning Radii - The inside turning radius for an access road shall be 17 feet or greater. The outside turning radius for an access road shall be 38 feet with an 8 foot overhang. As fire apparatus are unable to negotiate tight “S” curves, a 56-foot straight leg must be provided between these types of compound turns or the radii and/or road width must be increased accordingly. See Attachment 25.
- 10) Dead-end Access Roadways - Dead-end roadways in excess of 150 feet shall be designed and constructed with approved turnarounds or hammerheads. Turnarounds shall meet the turning radius requirements identified above. The minimum cul-de-sac radius is 38 feet with no parking allowed. The maximum length of a cul-de-sac without mid-way turnarounds or other mitigating features is 600 feet. See Attachment 7.
- 11) Bridges - When a bridge is required as part of an access road, it shall be a minimum of 20’ in width and designed and constructed to accommodate a total weight of 68,000 pounds. Apparatus weight is distributed as 46,000 pounds on tandem rear axles and 22,000 pounds on the front axle.
- 12) Temporary Fire Access Roads - Temporary access roads and hydrants may be permitted for *single family residential model construction* with the following conditions:
 - a) Plans for temporary access shall be submitted to the City of Perris Building Department. Plans shall be drawn to scale and show permanent (existing) roadways, proposed roadway locations, location of models, space dedicated to storage of construction materials, and parking for work crews and construction vehicles. The plans shall clearly state that they have been submitted for temporary access and hydrants.
 - b) Plans shall be stamped and signed by a licensed civil engineer stating that the temporary access road can support 68,000 pounds of vehicle weight in all-weather conditions. The road base material shall be over soil, compacted to at least 90%.
 - c) Provide a parking plan for the construction site detailing how the fire lane no parking regulations will be enforced. Include a clause in the letter stating that “the job-site superintendent is responsible for informing the work crews of parking requirements and that the entire job-site is subject to shutdown by the City of Perris inspector if parking is in violation of fire lane posting.” The letter shall be written on company letterhead and blue-lined onto the plan.
 - d) Aboveground invasion lines are acceptable for water supply for models only.



- i. Provide detail drawings detailing how the line will be secured in place and protected from vehicular damage.
 - ii. An invasion line may be run underground if the depth of bury can support the 68,000-pound weight of a fire apparatus.
 - iii. The temporary water line must provide 1500 GPM; calculations are required.
 - iv. The pipe shall be listed for fire service.
 - v. Fire hydrants shall consist of a minimum 6” barrel with one 2-1/2” outlet and a 4” outlet. Note this on the plan.
- e) The approved plan for temporary access and water supply shall be available at the construction site prior to bringing combustible building materials on-site.
 - f) All other access and water requirements shall apply (e.g., width, approach clearance, premises identification, locks, gates, barriers, etc.).
 - g) An inspection by City of Perris Building Department personnel is required to verify adherence to the approved plan.

3. Fire Access Roadway 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 California Vehicle Code (CVC). CVC 901.4

- A. Sign and Curb Marking Options - Areas designated as a fire lane require an acceptable method of marking that shall be approved prior to installation. Examples of dimensions and acceptable options for signage and markings are found in Attachments 8 through 12. The following methods are acceptable means of identifying designated fire lanes for public and private streets. Choose EITHER option A OR option B below.



A - Specific areas designated by the City of Perris as fire lanes must be marked with red curbs in accordance with the requirements specified in Attachment 8. In addition, where the number of entrances into the area marked with fire lanes is limited, all such vehicle entrances to the designated area shall be posted with approved Fire Lane Entrance Signs. See Attachments 9 and 10. This option is preferred by the City of Perris.

B - “Fire Lane—No Parking” signs shall be posted immediately adjacent to each designated fire lane and at intervals not to exceed 50 feet. In addition, where the

number of entrances into the area marked with fire lanes is limited, all such vehicle entrances to the designated area shall be posted with approved Fire Lane Entrance Signs. See Attachments 9 through 12.

4. Fire Lane Parking Violations

The California Vehicle Code (CVC) specifies rules of the road for stopping, standing, and parking in fire lanes or near fire hydrants.

- A. Section 22500.1 states that no person shall stop, park, or leave standing any vehicle whether attended or unattended, in any location designated as a fire lane by the Fire Authority except when necessary to avoid conflict with other traffic or in compliance with the direction of a peace officer or official traffic control device. Vehicles illegally parked in a fire lane may be towed per CVC 22953(b).
- B. There shall be no parking of any vehicles other than fire department vehicles within 15 feet of either side of a fire hydrant in accordance with CVC 22514(c). Such vehicles may be towed per CVC 22651(e).
- C. CVC 22658(a) permits the owner or person in lawful possession of any private property, subsequent to notifying local law enforcement, to cause the removal of a vehicle parked on such property to the nearest public garage, if:
 - 1) A sign is displayed in plain view at all entrances to the property specifying:
 - a) The ordinance prohibiting public parking, *and*
 - b) A notation indicating that vehicles will be removed at the owner's expense, *and*
 - c) The telephone number of the local traffic law enforcement agency, *or*
 - 2) The lot or parcel upon which the vehicle is parked has a single-family dwelling.

5. Premises Identification

Three possible configurations of buildings or units within a building may exist and are identified as follows: freestanding buildings, multi-unit buildings, or multi-building clusters. Common to all configurations are the following requirements:

- A. Approved numbers or addresses shall be placed on the front elevation of all new or existing buildings in such a position that is plainly visible and legible from the street or road on which the property is addressed. CFC 901.4.4.
- B. The numbers shall contrast with their background.

- C. The numbers shall be clearly visible from the street and a *minimum* of 4 inches or more in height for residential structures and 12 inches or more for commercial structures. Building setbacks, elevation, and landscaping can affect these minimum size requirements.
- D. Numbers for new buildings shall be internally or externally illuminated to be visible at night.

In addition to common requirements specified above, the following additional requirements pertain to each building configuration:

- E. Multi-Unit Buildings - Suite/apartment numbers shall be placed on or adjacent to the primary entrance for each suite/apartment and any other door providing access to fire department personnel during an emergency. Multiple residential and commercial units having entrance doors not visible from the street or road shall, in addition, have approved numbers grouped for all units within each structure and positioned to be plainly visible from the street or road. .
- F. Multi-Building Clusters - Approved numbers or addresses shall be placed on the front elevation(s) of all buildings that form the cluster.

6. Obstructions to Vehicle Access

Existing or proposed gates and barriers crossing fire access roadways must be shown on the plans. Information such as the location, type (swinging, sliding), dimensions, operator (manual, electric), and emergency release during a power failure for electric gates must also be provided. Clearly identify this information on the manufacturer's specification sheets and include the spec sheets with your plan submittal for projects with electric gates. The fire master plan must include the following information:

- A. Electrically Operated Gates and Barriers - The gate control shall be operable by a Knox emergency override key switch. 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. The type of operator (mechanism) and method of emergency release during a power failure shall be shown on the plans; the manufacturer's specification sheet showing this information should be blue-lined directly onto the plan.
- B. 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 "FIRE LANE—NO PARKING". Letters shall be red on white background and a minimum of three inches high with a ½ inch width. See Attachment 13.

- C. Clear Width - Openings for egress and ingress of vehicles shall not be less than 13 feet clear width. The vertical clearance shall not be less than 13 feet 6 inches, including landscaping and/or trees. See Attachment 6.
- D. Turning Radii - The minimum inside turning radius is 17 feet with an outside radius of 38 feet for both the exterior and the interior approach to the gate. To accommodate the OCFA's largest fire apparatus, 20 feet and 42 feet or larger for inside and outside turning radii, respectively, is recommended and requested where possible. See Attachment 14.



- E. Setbacks from the Street - Gates and barriers shall be located a minimum of 46 feet (for existing developments) and 56 feet (for new developments) from any major street. A private driveway serving only one single-family residence is exempt from this requirement. If existing conditions prevent installation of the minimum setback, documentation supporting an acceptable alternative shall be provided. The alternative solution must facilitate emergency ingress without endangering emergency response personnel, emergency apparatus, and the general public. The alternative shall be subject to review and approval. See Attachment 14.
- F. Setbacks from First Interior Turn - A 35-foot minimum unobstructed setback is required from a gate to the first turn to allow emergency apparatus clearance. See Attachment 14.
- G. Gate and Barrier Locks - Gate or barrier locks shall be reviewed and approved prior to their installation on any new and/or existing access gate or barrier. Manually operated gates and barriers shall have City of Perris approved padlocks or Knox key boxes. The information must include the location of the key switch for electrically operated gates. Applicants must indicate the following information on the plans:
 - 1) Approved type of locking/unlocking device ("Knox" key switch with dust cover, "Knox" padlock, or "Knox" weather resistant lock box, for use with a Knox submaster key). Authorization/order forms may be obtained through the City of Perris.
 - 2) Location of the "Knox" key switch for both manual and transmitter-operated gates. The key switch shall be placed 48" above the roadway surface at the right side of the access gate within two feet of the edge of the roadway. The key switch shall be readily visible and unobstructed. The "Knox" box must be placed in a conspicuous location and clearly labeled "FIRE DEPT."
 - 3) Upon activation of the key switch, the gates (egress and ingress) shall open and remain open until returned to normal operation by means of the key switch. Note this and the following requirements on the plan:

The key switch shall be labeled with a permanent red sign with not less than ½" contrasting letters reading "FIRE DEPT" or with a "Knox" decal. Note this requirement on the plan.

- H. Bollards - Permanent or removable bollards are not permitted to be placed across fire access roadways. CFC 902.2.4.1

7. Requirements for Residential Developments

- A. When local traffic or planning restrictions prohibit the designation of fire lanes on public streets and/or cul-de-sacs, they are assumed to be obstructed, creating the need for additional road width and turning radii in the cul-de-sacs. In lieu of the additional turning radii within cul-de-sacs, the City of Perris accepts the installation of fire sprinkler systems within all residential structure for which fire department access is gained from the “bulb” portion for the cul-de-sac (any portion of the cul-de-sac which is wider than the standard street width). The system shall include protection of the attic space. See Attachment 15.
- B. Center islands within cul-de-sacs greater than 150 feet in overall length are not permitted by the City of Perris unless:
 - 1) A minimum 28-foot wide drive lane is provided (parking permitted on one side only), and
 - 2) Island landscaping will not intrude into the aisle, and
 - 3) All homes accessed from the bulb are provided with fire sprinklers. See Attachment 16.
- C. Cul-de-sacs up to 150 feet in length may have center islands; however, access to the homes will be measured from the point where the island begins to impede fire apparatus. If any portion of a home is greater than 150 feet from that point, or if the driveway to the home is accessed from the bulb, the home, including the attic space, shall be equipped with automatic fire sprinklers. The bulb of a cul-de-sac that is less than 150 feet in overall length is not required to comply with City of Perris turning radii requirements. See Attachments 17 and 18.
- D. On private streets, the City of Perris may allow 38-foot radii cul-de-sacs, if no parking is allowed and such areas are designated as fire lanes with red curbs or signs as indicated in this guideline. Approval is contingent upon receipt of written concurrence from the local zoning official indicating that such a designation is consistent with local zoning codes.
- E. Since City of Perris and local law enforcement resources are limited for enforcement purposes in private developments, the City of Perris requires a viable parking enforcement plan from the developer prior to approving the fire master plan. Parking enforcement plans shall include:
 - 1) Detailed information specifically identifying who will be responsible for enforcing the plan, and

- 2) Powers granted to the entity shall include vehicle towing for parking violations (include language similar to that provided in Section 4 of this guideline), and
- 3) The level of enforcement to be carried out within the development.

This information must be integrated into the fire master plan. Evidence that the enforcement plan is permanently incorporated into the Conditions, Covenants, and Restrictions (CCRs) and/or recorded against the deed shall be provided prior to City of Perris approval of the final map or print of linen. Once approved, these provisions cannot be amended without written approval by the City of Perris. In lieu of fire lane designation, the City of Perris accepts all other options specified for public streets above. See Attachment 19.

8. Engineered Alternative Fire Access Systems

The following criteria will be used when evaluating an alternative engineered access surface material for a specific application (e.g., “Turf block,” “Grass-crete”). Prior to installation, the design professional must incorporate these criteria into a plan submittal subject to approval by City of Perris.

- A. Calculations and a statement stamped and signed by a registered civil engineer shall certify that the proposed surface and substrate meets the criteria of an all-weather driving surface and is capable of withstanding the minimum weight of 68,000 pounds imposed by City of Perris apparatus. Apparatus weight is distributed as 46,000 pounds on tandem rear axles and 22,000 pounds on the front axle.
- B. Manufacturer’s specification of the material being installed must indicate that the application is consistent with the manufacturer’s recommendations.
- C. Material shall only be installed on slopes of no more than one degree (1.75% grade), unless otherwise specified by the manufacturer, and drainage shall be provided as required to provide adequate traction for City of Perris apparatus. This information shall be detailed on the plan.
- D. The design shall include a curb cut that delineates entry onto the engineered fire access surface from a street. The curb cut must be shown on the plan.
- E. A minimum four-inch wide concrete strip around the perimeter of the designated area shall be specified on the plan to clearly delineate the fire department access.
- F. The following sentence shall be placed, verbatim, as a note on the plan: “Final approval is subject to actual field acceptance testing utilizing City of Perris fire apparatus.”
- G. A clause requiring the maintenance of alternative access roadways shall be placed in the CCRs, deed, and/or similar documents.



9. Hydrant and Water Availability Requirements

Applicants must provide documentation that hydrants are provided in the quantity and spacing described in California Fire Code (CFC) Appendix III-B and are capable of delivering the amount of water required by CFC Appendix III-A. The quantity and spacing of hydrants is governed by the fire flow required for the structure(s) served. The required fire flow is dependent upon the size of the structure, type of construction, and whether the building is sprinklered. This information should be shown clearly on the plans to assist in the determination of the fire flow requirement.

A. Water Availability – To facilitate the review process and avoid untimely delays in project approval, applicants are strongly encouraged to arrange a hydrant flow test with the local water department *prior to* submitting plans to the City of Perris. Plans may be submitted with water availability information pending, but plans requiring evaluation of the available fire flow will not be approved without a completed City of Perris Water Availability form or equivalent data sheets from a water district. Water availability information must be no older than six months.



NOTE!

- 1) Obtain a Water Availability form from City of Perris Building Department.
- 2) Fill out the project and building information in the first section of the Water Availability form. Care should be taken when determining the applicable fire area for the project. As stated above, fire flow is dependent on several factors, so *the largest building or group of structures is not necessarily the most demanding* in terms of fire flow.
- 3) Determine the required fire flow from CFC Table A-III-A-I. A 50% reduction in fire flow (but not duration) may be taken when the fire area consists only of buildings equipped with an approved automatic fire sprinkler system. See Attachment 20.
- 4) Contact the local water company to request a hydrant flow test or fire flow modeling calculation, and have a representative of the water company complete and sign the last section on the form. In some cases, the water company may allow or require a qualified third party to perform the flow test for you.
 - a) In newly developed areas without water infrastructure, the water department may issue a “will-serve” letter indicating the expected amount of water that will be delivered once the water system is installed and operational.
 - b) If multiple hydrants are located within the maximum distance allowed by CFC Table A-III-B-I, the amount of water available from each hydrant may be combined, provided that the hydrants are flowed simultaneously.
 - c) Blue-line the completed form or data sheets onto your plans or include the original with your plan submittal.

- B. Fire Area – Fire area is used to determine the potential fire load present at a site and the resultant water supply necessary to effectively combat a fire of that size and protect adjacent structures. Typically, multiple buildings of similar construction located within 20 feet of each other are considered to be part of the same fire area, unless otherwise separated in accordance with Table 5-A of the CBC or provided with an unpierced four-hour area separation walls. The floor area of each floor in multi-story buildings must be included in the fire area calculation. *Exception: The fire area of buildings constructed of Type I or II-FR construction shall be the area of the three largest successive floors.* Adjacent, accessory structures of non-combustible construction (e.g., covered walkways, metal shade structures, concrete block trash enclosures) need not be included in fire area calculations.
- C. Hydrant Location – Hydrants shall be provided along the length of the fire access roadway in the quantities and up to the maximum distances prescribed in CFC Table A-III-B-1. See Attachment 21.

1) Hydrants must be located no more than three feet from the edge of a fire access roadway and cannot be located in areas where they will be visually or operationally obstructed (behind fences or walls, in bushes, behind parking spaces, etc.). Clearance shall be provided to a distance no less than three feet from the perimeter of the hydrant.

2) The hydrant outlets must face the fire access roadway.



3) The hydrant shall be located at least 40 feet from the building(s) it serves. Where it is impractical to locate the hydrant 40 feet from adjacent structures, it may be located closer provided that nearby walls do not contain openings and the hydrant is not otherwise located where it can be rendered inoperable due to damage from collapsed walls, debris, or excessive heat.

4) Hydrants and fire department connections (FDCs) immediately adjacent to the fire department access road and shall be located so that a hose line running between the hydrant and the FDC does not cross driveways, obstruct roads or fire lanes, or otherwise interfere with emergency vehicle response and evacuation of a site.

5) Hydrants and fire department connections shall not be located behind parking stalls or in other locations where they are likely to be blocked by vehicles or other objects.

- D. Protection of Hydrants – Where hydrants are located such that they are exposed to potential damage from vehicular collision, they shall be protected by curbs or bollards. See Attachment 22.

1) If vehicles can approach the hydrant from more than one direction, the hydrant shall be protected by four bollards of concrete-filled pipe four inches in diameter and mounted in concrete in a square around the hydrant. The bollards need to be spaced a

minimum of three feet from the perimeter of the hydrant. The bollards must be placed so that their location does not impede access to or use of the hydrant. Two bollards may protect hydrants that can be approached from only one side.

- 2) Hydrants may not require protection by bollards if they are located such that the potential for collision is minimal or if they are sufficiently protected by a standard concrete curb eight inches or greater in height.

E. Hydrant Markers – Blue reflective pavement markers shall be used to identify fire hydrant locations. Blue reflective markers used for any other purpose should be removed. See Attachment 23.

- 1) Two-way streets and roads – Markers shall be placed six inches from the edge of the painted centerline or from the approximate center of streets without a painted centerline on the side nearest the hydrant.
- 2) Streets with left turn lanes at the intersection – Markers shall be placed six inches from the edge of the painted white line on the side nearest the hydrant.
- 3) Streets with continuous two-way left turn lane – Markers shall be placed six inches from the edge of the painted yellow barrier on the side nearest the fire hydrant.

10. Access to Structures

The dimension of 150 feet when used in relation to 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 edge of the curb. See Attachment 24.

11. Access Walkways

CFC 902.3.1 specifies the installation of approved access walkways from fire access roadways to exterior openings required by either the CBC or CFC. The City of Perris may require the construction of such walkways depending upon particular site conditions or project parameters. These conditions include, but are not limited to, building use or

occupancy, topography, vegetation, and surface conditions. Design professionals must carefully consider these issues when developing a project site.



- A. Specifications - Access walkways must be a minimum of five feet in width and consist of a surface that lends itself to safe use during building evacuation, firefighting, and rescue efforts. Solid surface walkways such as concrete or asphalt are preferable, though alternative surfaces such as decomposed granite (DG), gravel, or grass are permissible under certain conditions. *Ground covers and shrubs that prevent or impede laddering of structures are not permitted to be planted on or adjacent to access walkways.* Where the grade itself presents a slip or fall hazard, an access walkway with a slip-resistant surface and/or stairway must be provided. The type of material provided for the access walkway and/or other specifications shall be indicated on the fire master plan and are subject to approval by the City of Perris Building Department.
- B. Location of Access Walkways - Access walkways must be provided to all required egress doors from a building, all firefighter access doorways in buildings with high-piled storage, and the area beneath each rescue window in R-1 occupancies, at a minimum. Access walkways will typically be required around the entire perimeter of a structure to facilitate control of a fire through any other available openings.

12. Path of Travel Obstructions

Firefighter access to and emergency egress from required openings must remain free and unobstructed at all times. Architects, landscape designers, and facility managers must take care to ensure that fences, planters, and vegetation will not interfere with access and egress routes.

- A. Fences - Walls, fences, hedges, and similar obstructions may not be located within the area designated as an access walkway unless a gate through the obstruction equipped with an approved padlock or Knox box has been provided. If the wall or fence blocks travel from required egress openings to the public way or an open area at least 50 feet from the structure (“safe refuge area”), a gate operable by the occupants evacuating the structure must be provided that allows egress to the public way. Where doors in the path of emergency egress travel are required to be equipped with panic hardware, gates shall likewise be similarly equipped. These requirements may not apply to individual single family residences.
- B. Vegetation - As stated previously, certain types of ground cover and low-growing plants present an impediment to firefighting and rescue operations and are prohibited from being planted in the access walkway. In addition, taller vegetation such as shrubs and trees may not be located where they will, either when planted or upon maturation, present an obstruction to accessing rescue windows.
- C. Special Gates - Pedestrian entries, pool gates, and areas where immediate emergency access is difficult shall be provided with a “Knox” box adjacent to the gate and be located 48” above grade. The key to unlock the gate shall be kept in the key box, which can be opened with a Knox submaster key.

ATTACHMENT 1

CITY OF PERRIS Fire Master Plan Notes

Place notes verbatim on the Fire Department Access Plan.

1. City of Perris final inspection required. Please schedule all field inspections at least 48 hours in advance. City of Perris Inspection Scheduling at 714-573-6150.
2. Emergency access roads shall be designed and maintained to support an imposed load of 68,000 pounds and will have a surface that provides all-weather driving capabilities. *A licensed civil engineer must stamp and wet sign the plan indicating concurrence with this statement.* CFC 902.2.2.2
3. All-weather access roads and hydrant locations shall be approved by the City of Perris and shall be in place and operational **before any combustible materials are placed on site.** Access roads and hydrants shall be maintained and remain clear of obstructions at all times.
4. The grade of fire department access roads shall not exceed 10% for unsprinklered structures. A maximum of 15% grade, as approved by the site plan, may be allowed for structures with an approved automatic fire sprinkler system. CFC 902.2.2.6
5. Fire lane widths shall be measured from top face of the curb to top face of the curb for fire lanes with curbs and gutters and from flowline to flowline for fire lanes with modified curb designs (e.g., rolled, ramped, etc)
6. Address numbers shall be a minimum six inches high for R-3 occupancy all others 12”, contrast with their background in color, and be plainly visible from the roadway from which the building is addressed.
7. Access gates shall be approved prior to installation and shall be in compliance with Section 902 of the 2001 CFC and City of Perris Fire Department Access Guideline.
8. All fire hydrants shall have a “Blue Reflective Pavement Marker” indicating the location per the City of Perris standard. On private property markers are to be maintained in good condition by the property owner.
9. Hydrants and fire department connections (FDCs) shall be immediately adjacent to the fire department access road and located so that a hose line running between the hydrant and the FDC does not cross driveways, obstruct roads or fire lanes, or otherwise interfere with emergency vehicle response and evacuation of a site.
10. FDCs shall be located on the street side the building is addressed on.
11. An underground fire protection plan submittal is required for the installation of an automatic fire sprinkler system or for private fire hydrant system.
12. The required fire flow may be verified at the discretion of the inspector.
13. Any future modification to the approved Fire Department Access Plan or approved site plan, including but not limited to road width, grade, speed humps, turning radii, gates or other obstructions, shall require review and approval by the City of Perris Building Department.
14. Approved access walkways shall be provided to all required openings and all rescue windows. Vegetation shall be selected and maintained in such a manner as to allow access to and the laddering of rescue windows and structures. CFC 902.3
15. Rescue windows will be provided for all sleeping rooms and shall comply with all area, size, operation, and sill height requirements of CBC 310.4.
16. A chemical classification and hazardous materials compliance plan shall be approved by the City of Perris prior to any hazardous materials being stored or used on site. A separate plan submittal is required.

ATTACHMENT 2

Fire Master Plan Submittal Checklist

PROJECT INFORMATION

- Scope of project is clearly defined on the plan? Yes
- Conditional Use Permit conditions included with submittal Yes N/A (CUP was not required by city/county)
- Tract/Tentative Tract/Parcel Map Number has been provided? Yes
- Standard City of Perris fire master plan notes are included? Yes (Notes are tailored to this project, where applicable)
- Building area, construction type, occupancy noted on plan? Yes
- Sprinklered buildings are identified? Yes N/A (No sprinklered buildings)
- AM&M request letter bluelined onto plan? Yes N/A (No alternate methods proposed)
- Sheets not relevant to fire master plan removed from plan set? Yes

WATER AND HYDRANTS

- Water availability form completed and provided? Yes No
- All hydrants within 300' of the site are shown on plan? Yes
- Are hydrants provided/spaced per CFC Appendix III? Yes

ACCESS AND ROADWAYS

- Extent of the access roadway is clearly shown on the plan? Yes
- Turning radii and width are shown on the plan? Yes
- Exterior of all structures within 150' hose pull distance? Yes No (Mitigation proposed via AM&M)
- Engineer's certification provided for new paving? Yes N/A (No new paving)
- Walkable surface provided to required openings? Yes
- Road and walkway grades >10% (7% in Irvine) shown on plan? Yes N/A (Grade <10%, <7% in Irvine)

FIRE LANE IDENTIFICATION

- Red curbs are identified with bold or dashed lines? Yes N/A (Signs provided)
- Location of each "Fire Lane—No Parking" sign shown? Yes N/A (Red curbs provided)
- Fire lane entrance sign provided at each vehicle entrance? Yes
- Detail drawings of red curbs/"No Parking"/entrance signs shown? Yes

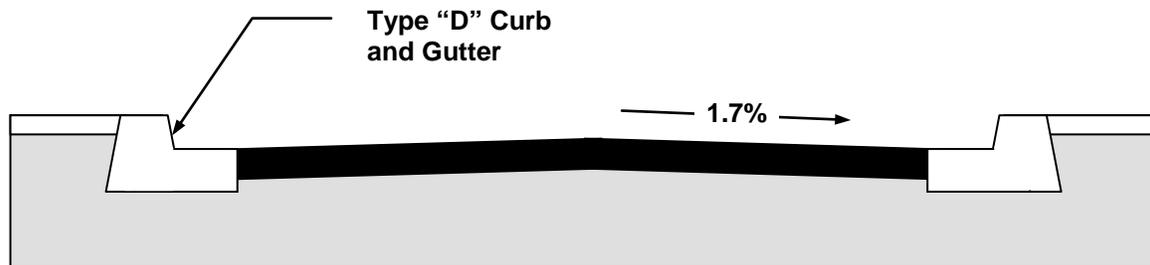
GATES AND OBSTRUCTIONS

- Are all gates, fences, and planters shown? Yes
- Are vehicle gates identified as manual or electric? Yes N/A (No gates)
- Manual vehicle gates have "No Parking" sign noted? Yes N/A (No manual gates)
- Knox boxes/locks/switches are noted on plans? Yes N/A (No gates)
- City of Perris gate notes included on plan? Yes N/A (No gates)
- Knox form completed? Yes N/A (No gates)

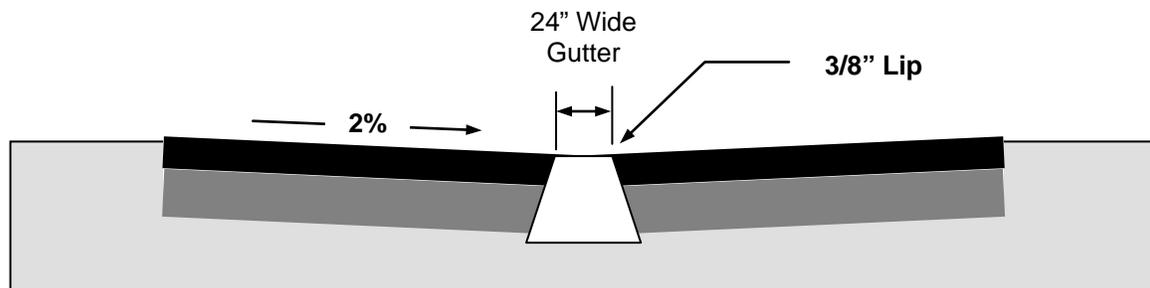
NOTE: This is only a listing of basic fire master plan submittal requirements. Other information or requirements may be necessary depending on conditions specific to each project.

ATTACHMENT 3

Typical All-weather Fire Department Access Roadway Construction



4" Asphaltic Concrete Paving over Native Soil



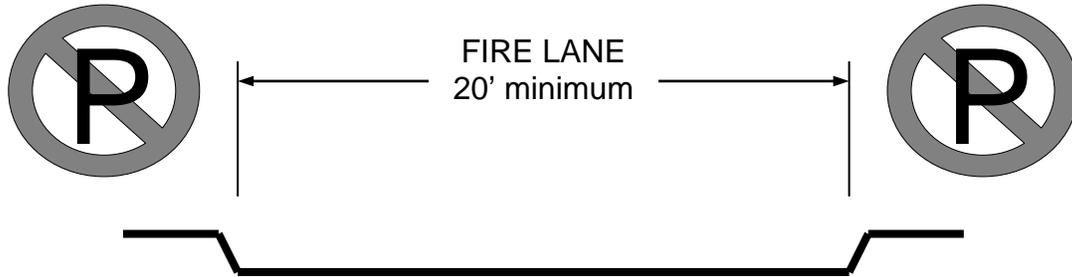
4" Asphaltic Concrete Over 6" Aggregate Base over Native Soil

Specific requirements vary depending on site conditions. A Registered Professional Engineer shall wet stamp and sign plans certifying that fire department access roadways are designed with an all-weather surface and are capable of withstanding a load of 68,000 pounds.

ATTACHMENT 4

Minimum Road Widths

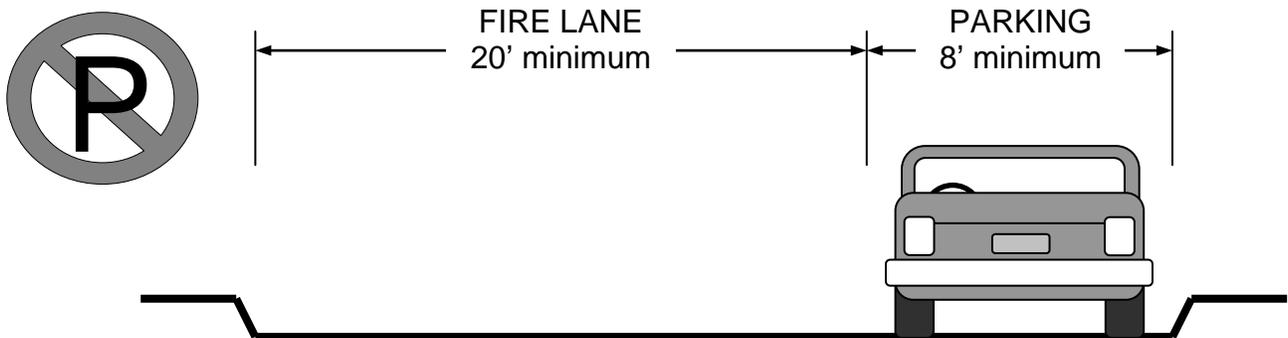
Measured from top face of curb to top face of curb or flowline to flowline.



ROADWAY LESS THAN 28'

Parking prohibited.

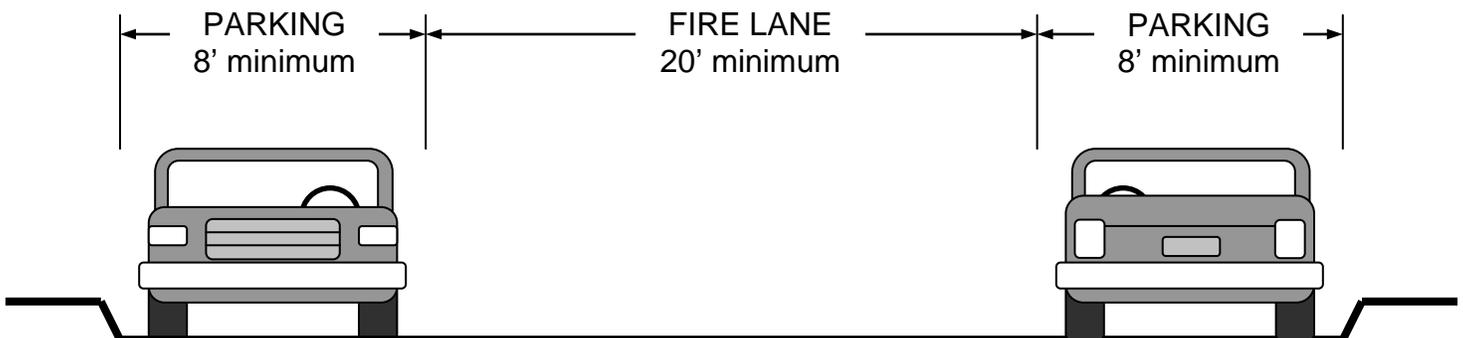
Roadway is required to be posted as a fire lane.



ROADWAY AT LEAST 28' BUT LESS THAN 36'

Parking permitted on one side only.

Roadway is required to be posted as a fire lane.

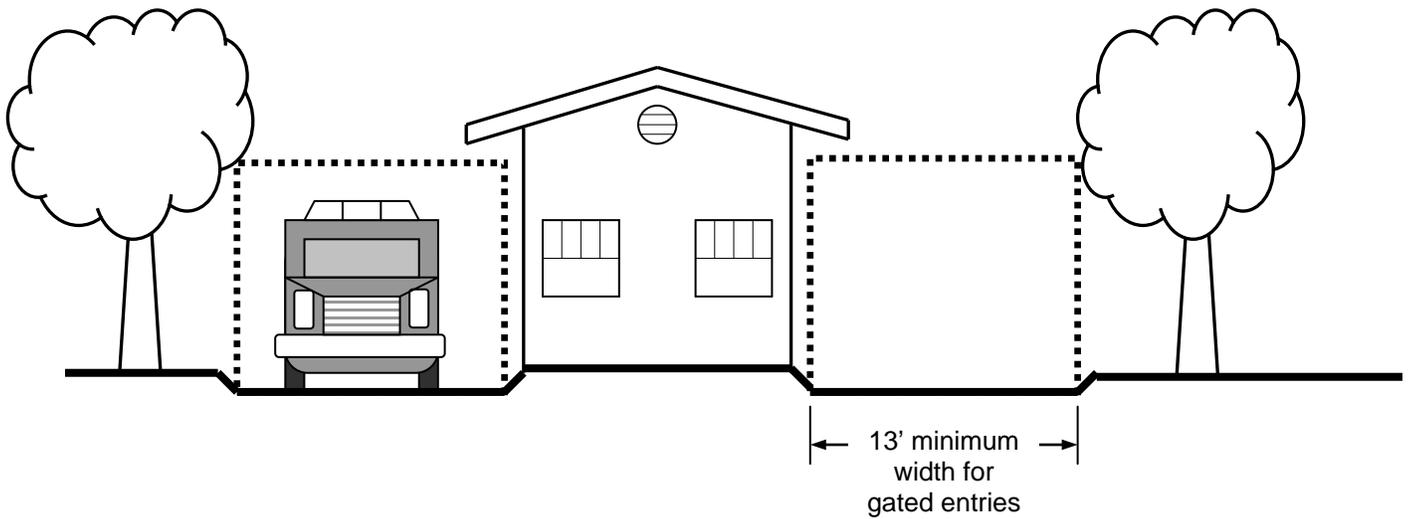


ROADWAY 36' OR WIDER

Parking permitted on both sides

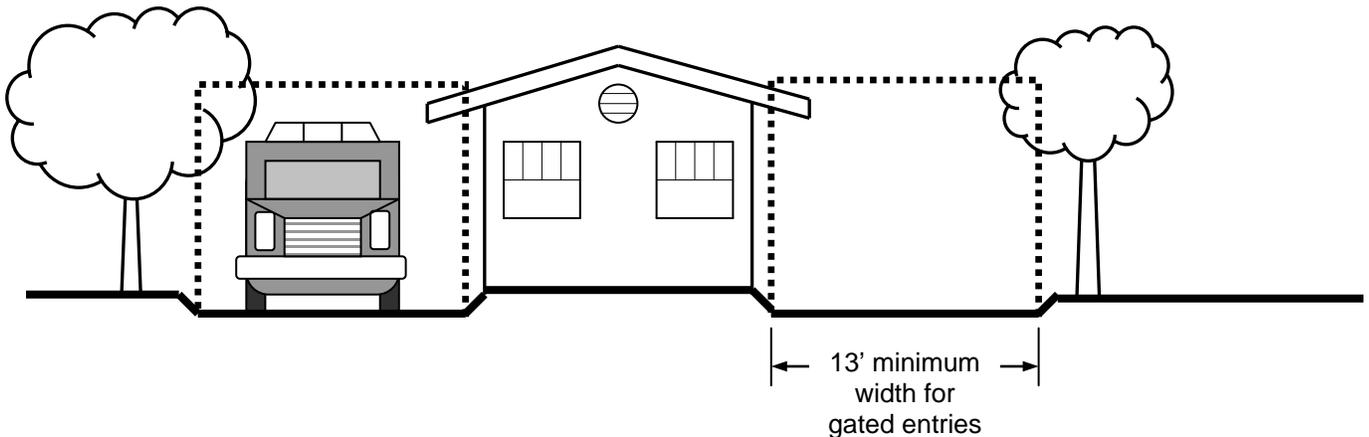
ATTACHMENT 5

Fire Department Access Roadway Clearance for Typical Gated Community Security Post



PROPER CLEARANCE PROVIDED

Eaves and vegetation do not encroach upon the 13'-wide by 13'-6" high fire access roadway envelope required for gated entries.

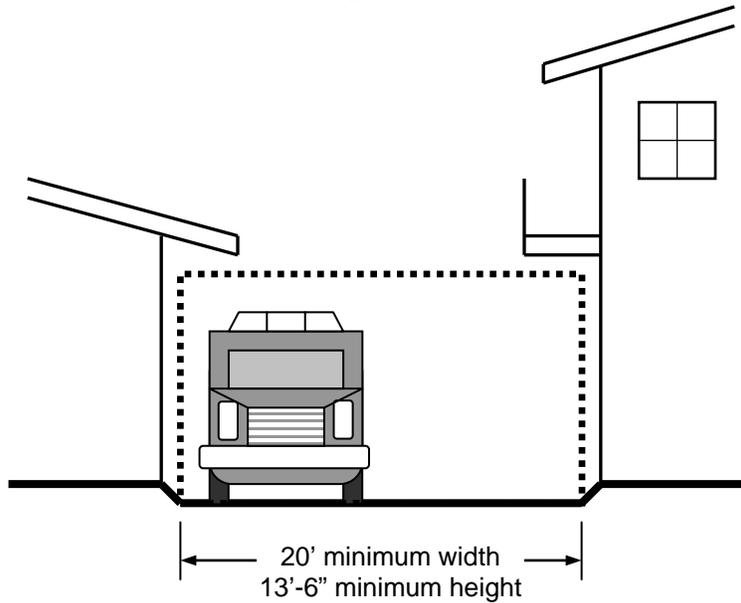


INSUFFICIENT CLEARANCE

While a 13'-wide access roadway is provided at the entry to the gated community, eaves and vegetation encroach upon the minimum dimensions of the envelope.

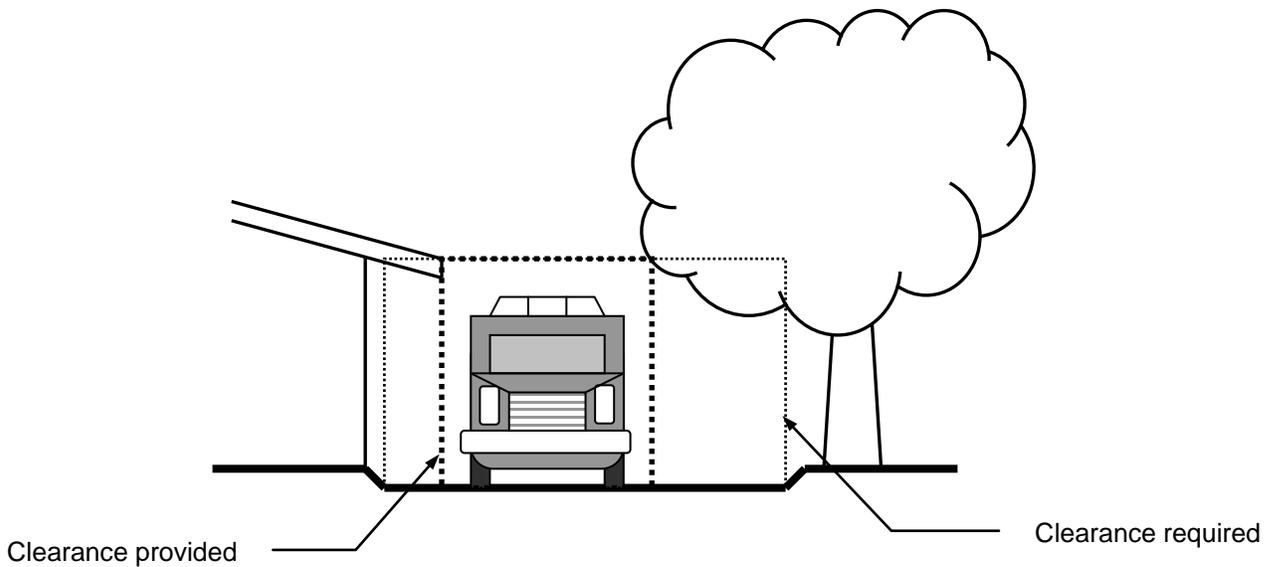
ATTACHMENT 6

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.

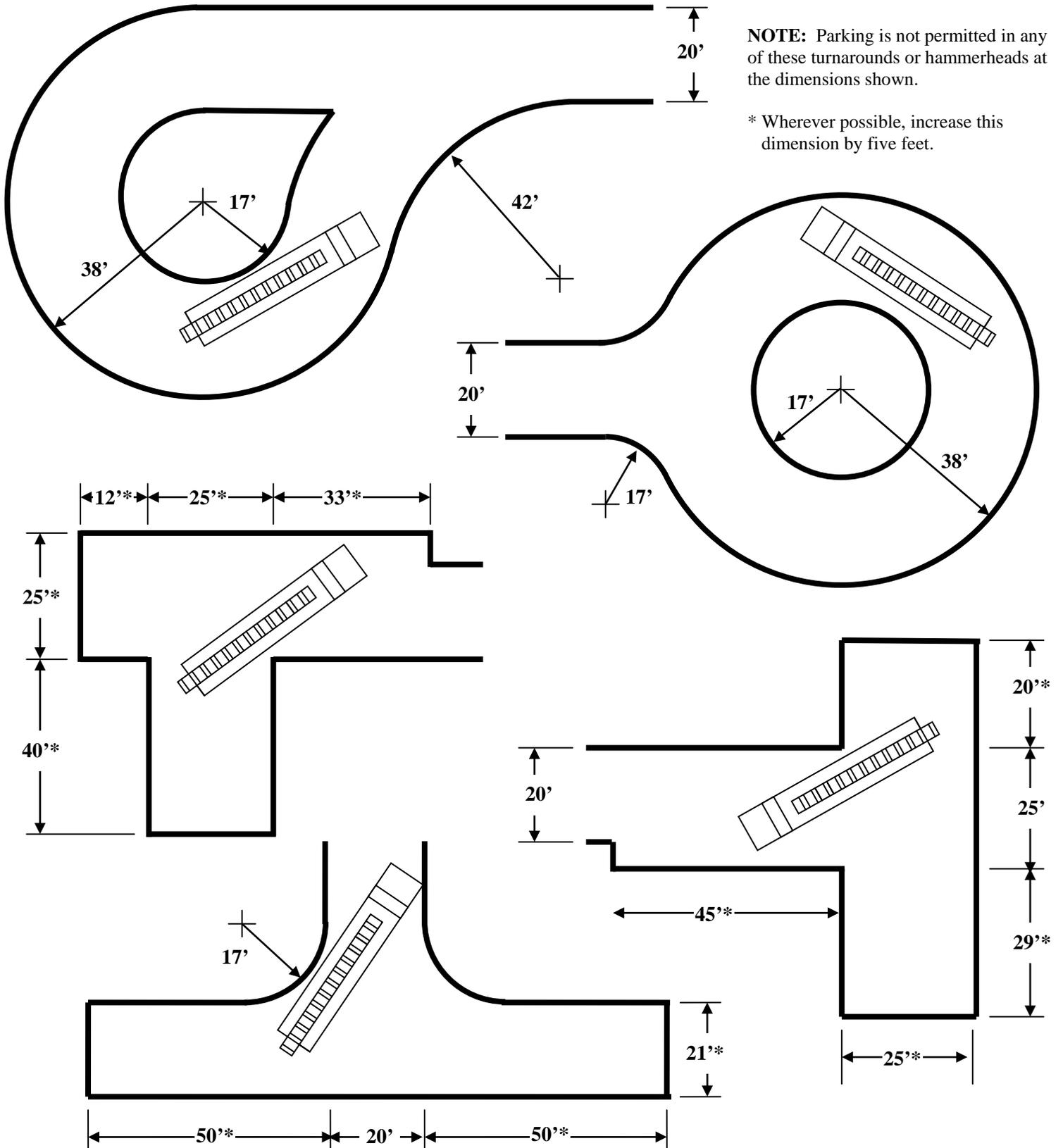


INSUFFICIENT CLEARANCE

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

ATTACHMENT 7

Minimum Turnaround and Hammerhead Dimensions

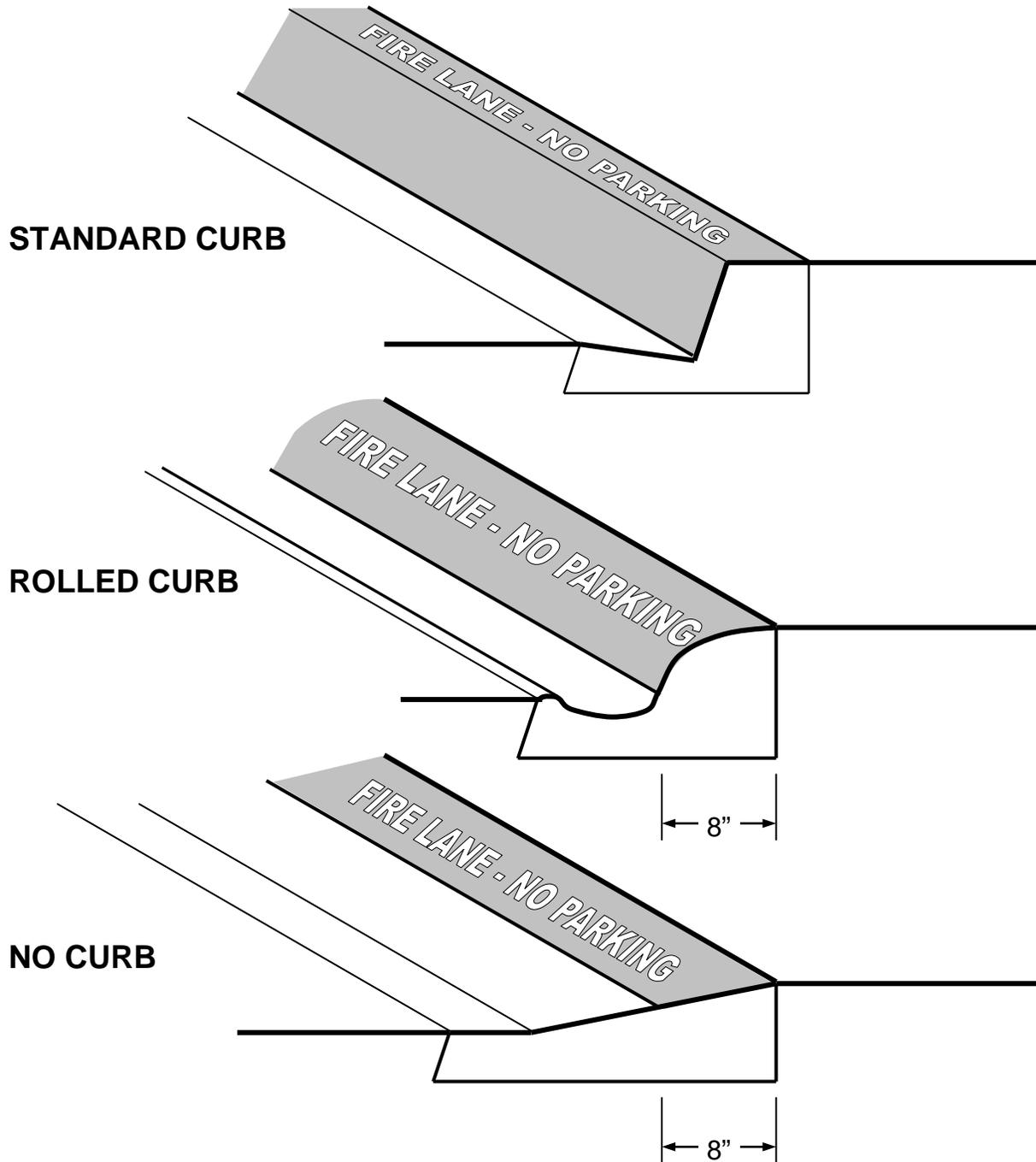


NOTE: Parking is not permitted in any of these turnarounds or hammerheads at the dimensions shown.

* Wherever possible, increase this dimension by five feet.

ATTACHMENT 8

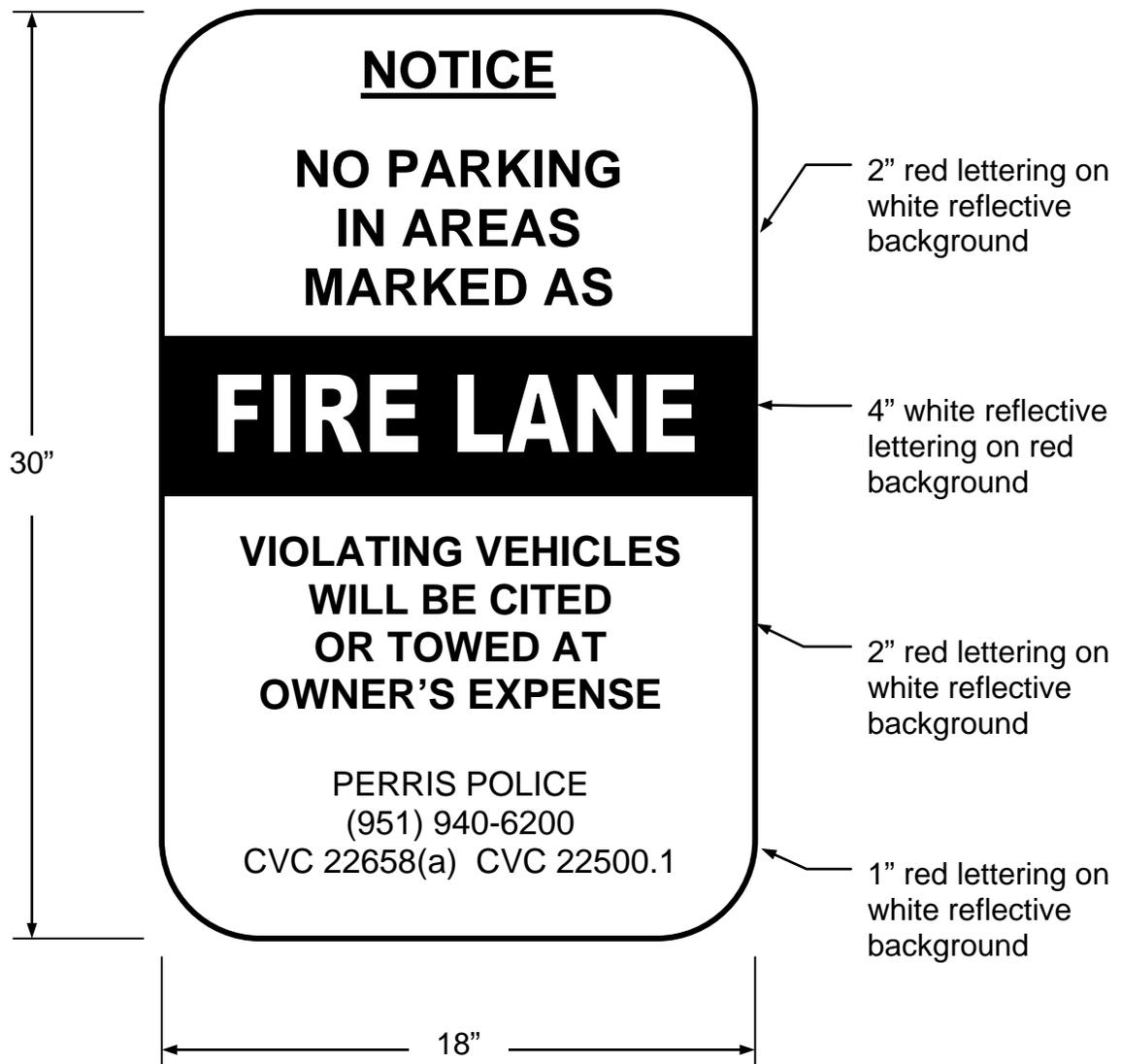
Fire Lane Identification – Red Curbs



1. Fire lane entrance sign(s) shall be provided per Attachment 9.
2. Curbs shall be painted OSHA safety red.
3. "FIRE LANE – NO PARKING" shall be painted on top of curb in 3" white lettering at a spacing of 30' on center or portion thereof.

ATTACHMENT 9

Specifications for Fire Lane Entrance Signs



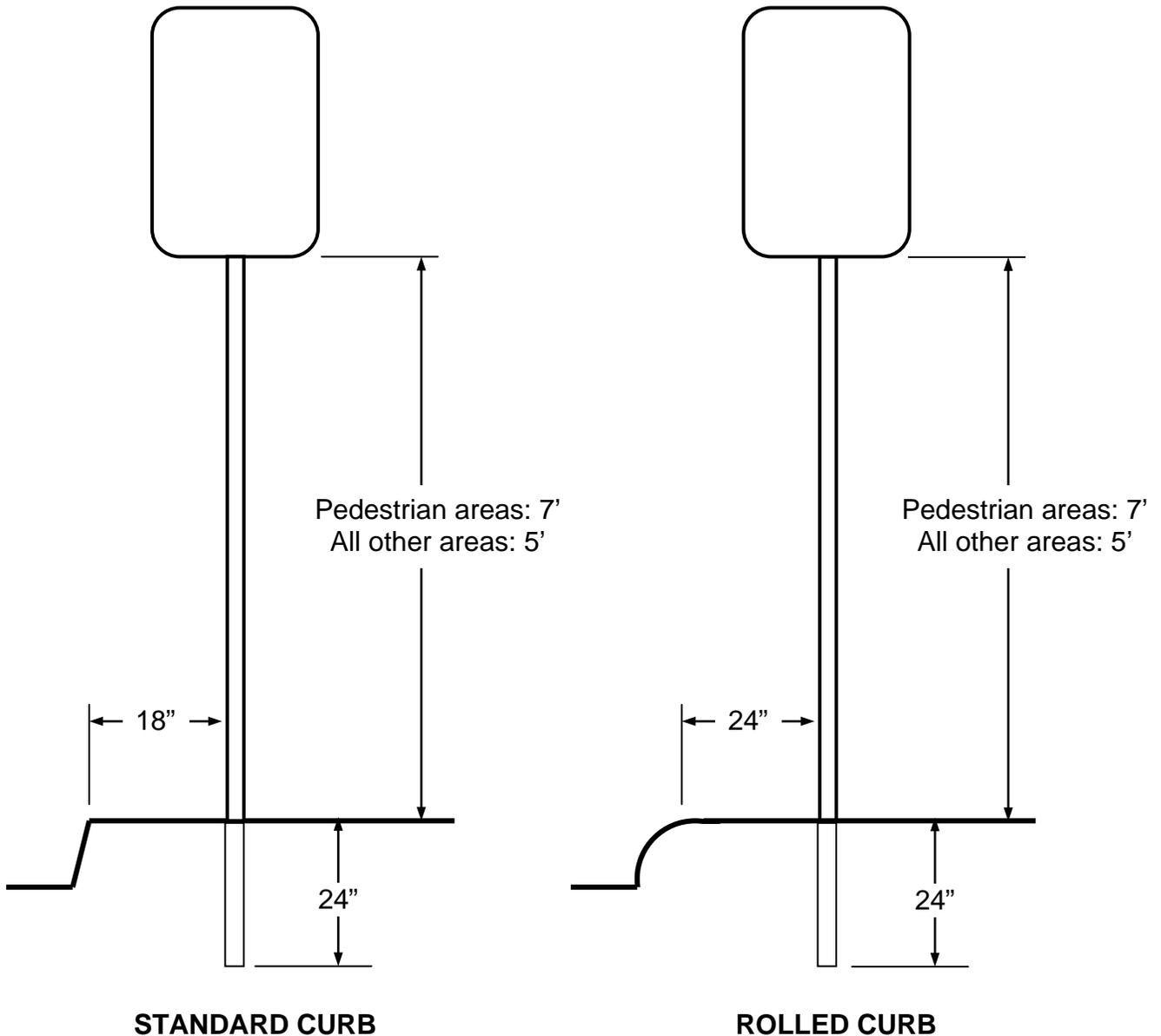
All sign and lettering dimensions shown are minimums.

This sign shall be posted at all vehicle entrances to areas marked with either red curbs or fire lane "No Parking" signs.

Signs shall be securely mounted facing the direction of travel and clearly visible to oncoming traffic entering the designated area. Signs shall be made of durable material and installed per Attachment 4.

ATTACHMENT 10

Mounting Specifications for Fire Lane Entrance and No Parking Signs



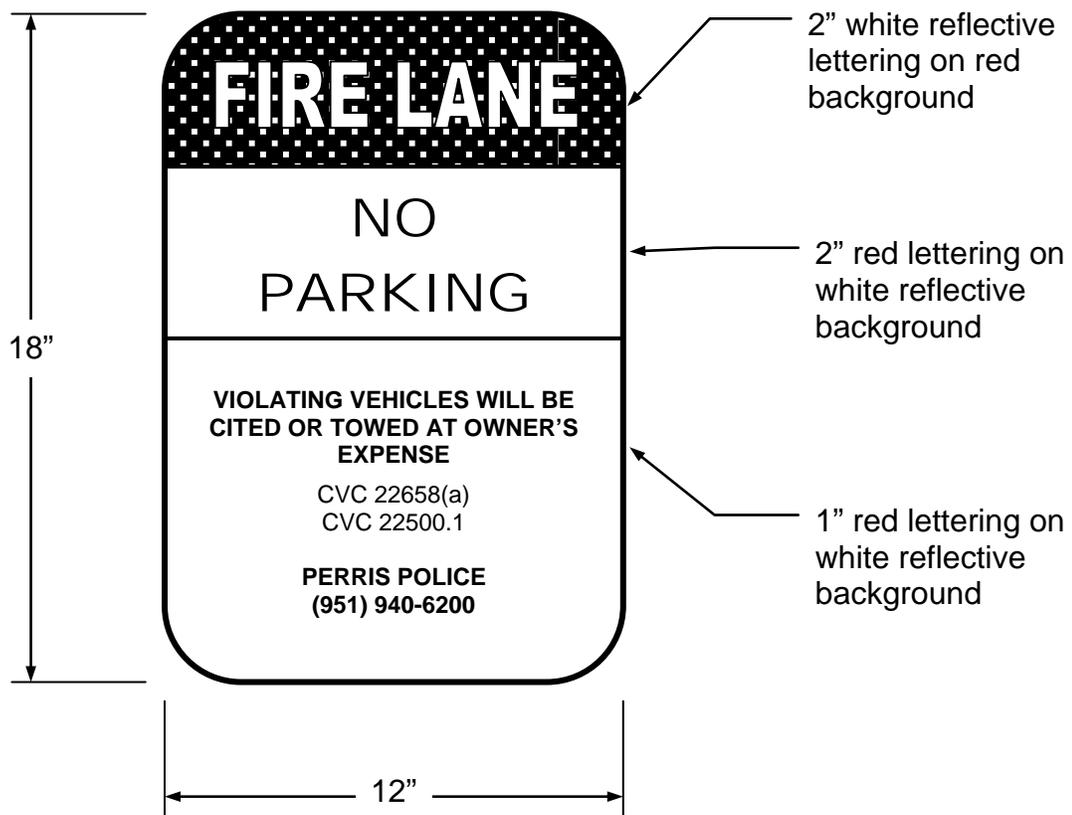
Signs shall be mounted facing the direction of vehicular travel.

Signs may be mounted on existing posts or buildings where the centerline of the sign is no more than 24" from the edge of the roadway.

Depth of bury shall be a minimum of 24".

ATTACHMENT 11

Specifications for Fire Lane No Parking Signs

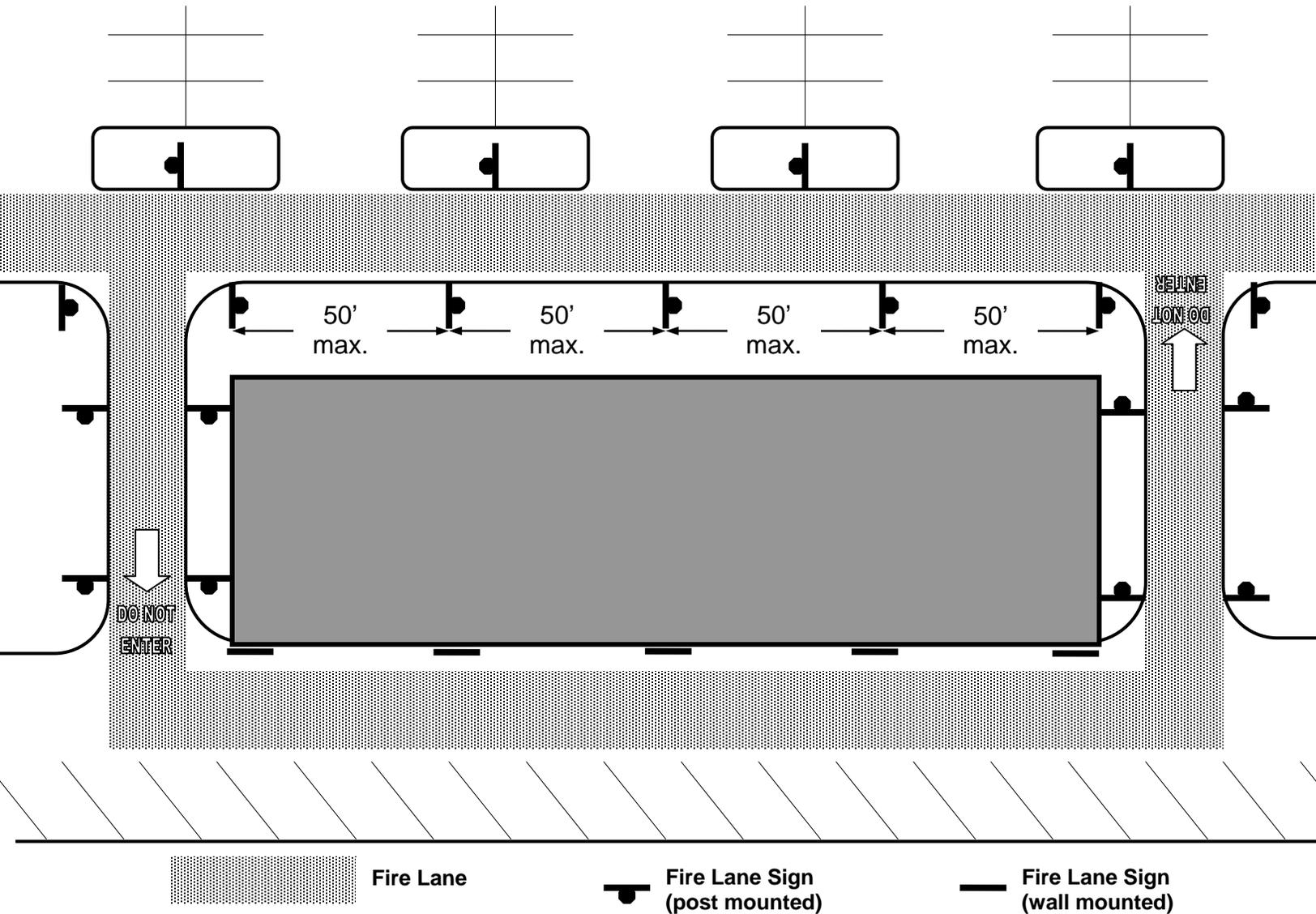


All sign and lettering dimensions shown are minimums.

Signs shall be securely mounted facing the direction of travel and clearly visible to oncoming traffic entering the designated area. Signs shall be made of durable material and installed per Attachment 4.

ATTACHMENT 12

Fire Lane No Parking Sign Locations

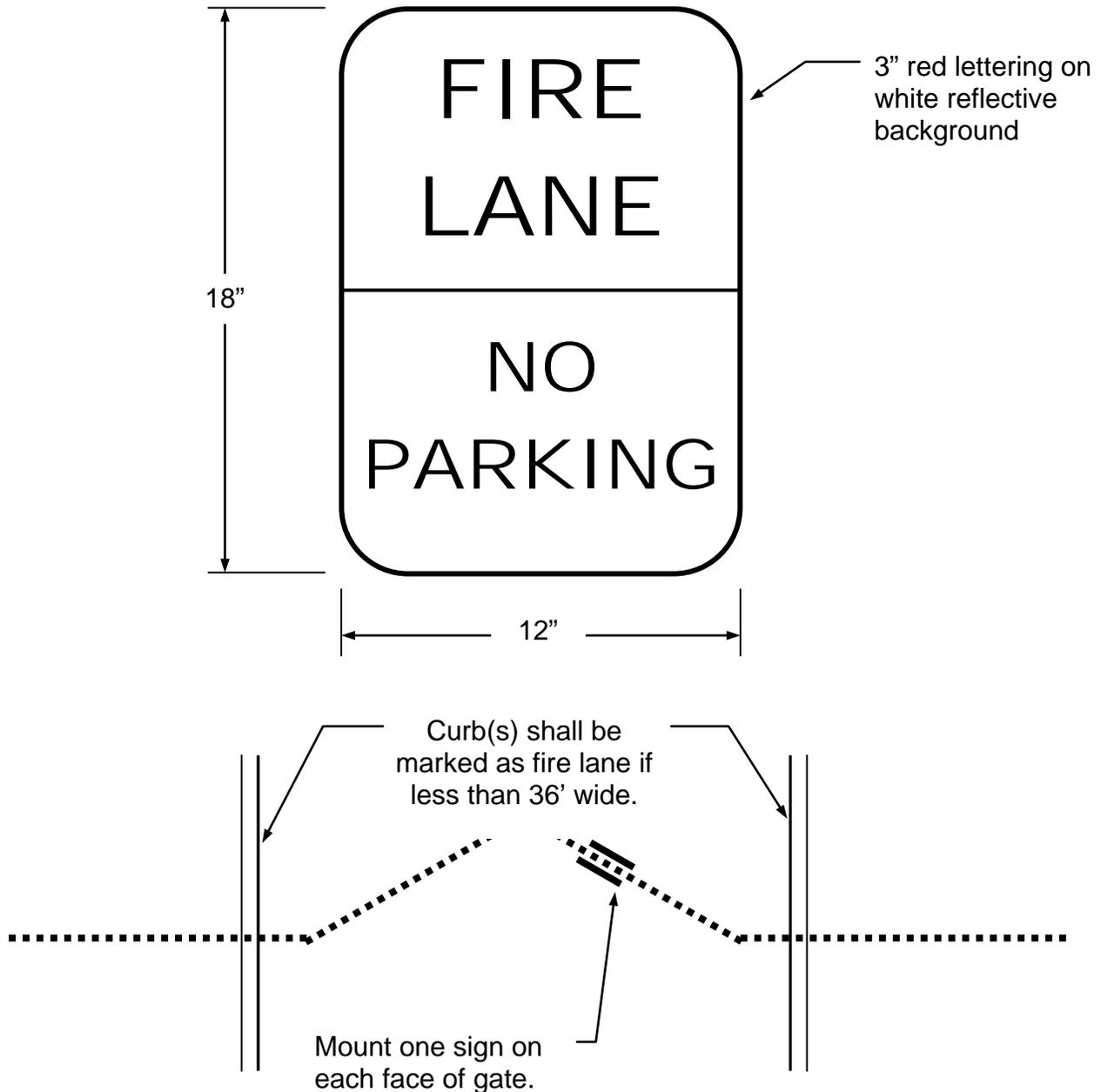


Signs are required within 3' of the end of each designated fire lane and spaced a maximum of 50' along the entire designated lane. One sign is required for each island adjacent to the fire lane.

Signs shall be securely mounted facing the direction of travel and clearly visible to oncoming traffic entering the designated area. Signs shall be made of durable material and installed per Attachment 10. Where sign posts are not practical, signs may be mounted on a wall or fence.

ATTACHMENT 13

Specifications for “Fire Lane - No Parking” Signs for Manually Operated Gates and Barriers

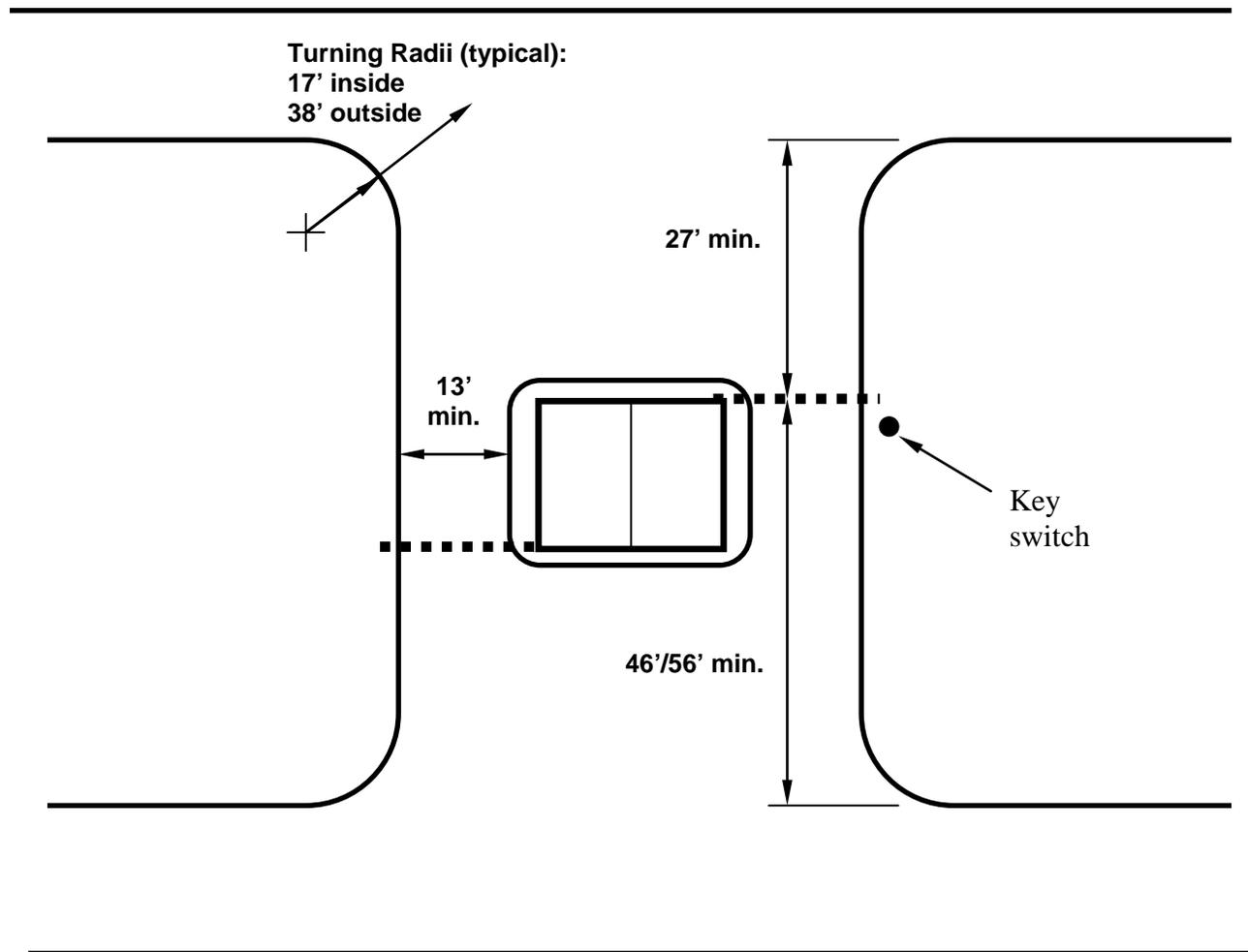


All sign and lettering dimensions shown are minimums.

Signs shall be securely mounted on the front and back face of the gate clearly visible to traffic entering the designated area. Signs shall be made of a durable material.

ATTACHMENT 14

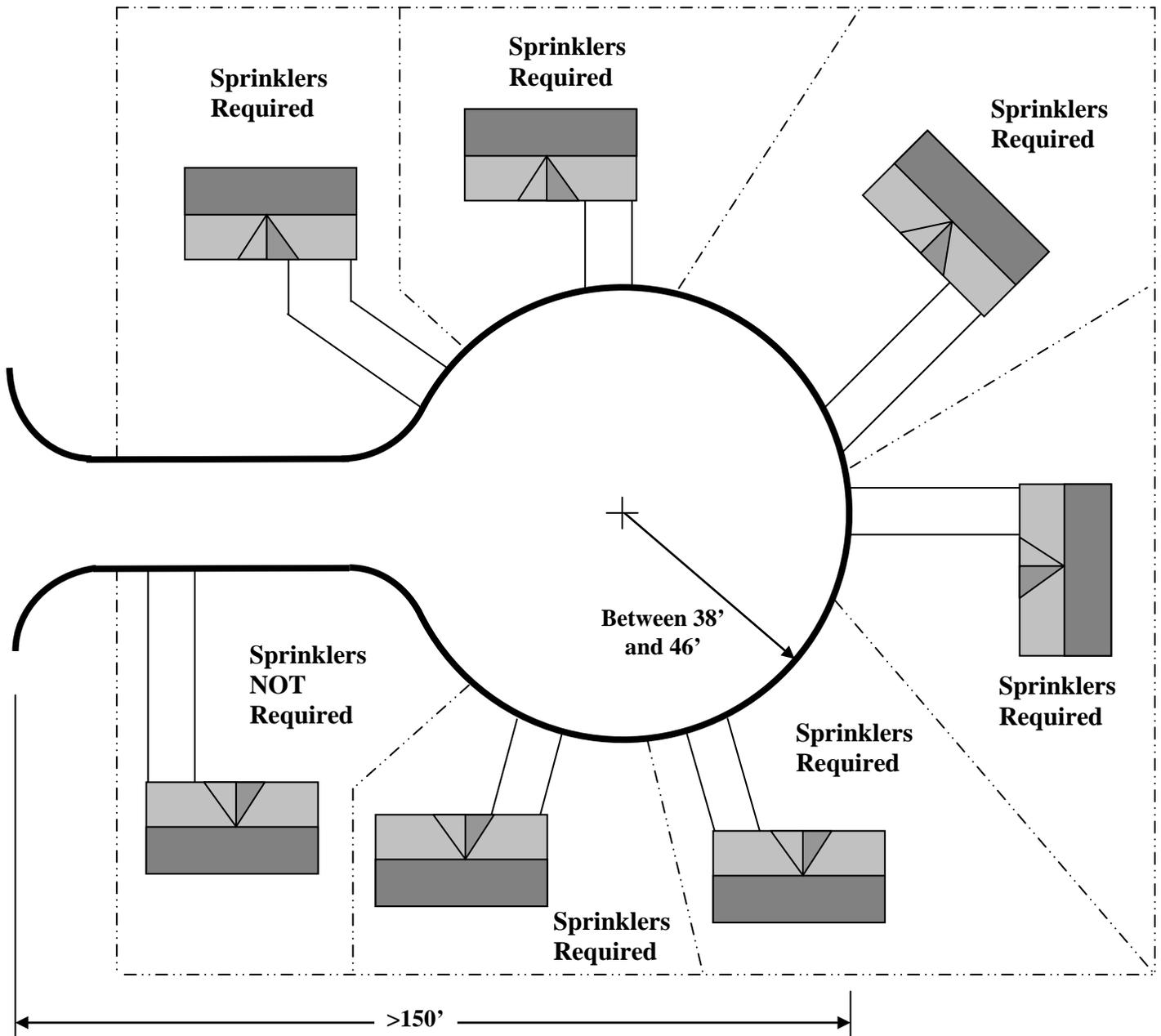
Minimum Gate Setbacks



ATTACHMENT 15

Cul-de-sacs Longer than 150' without Islands

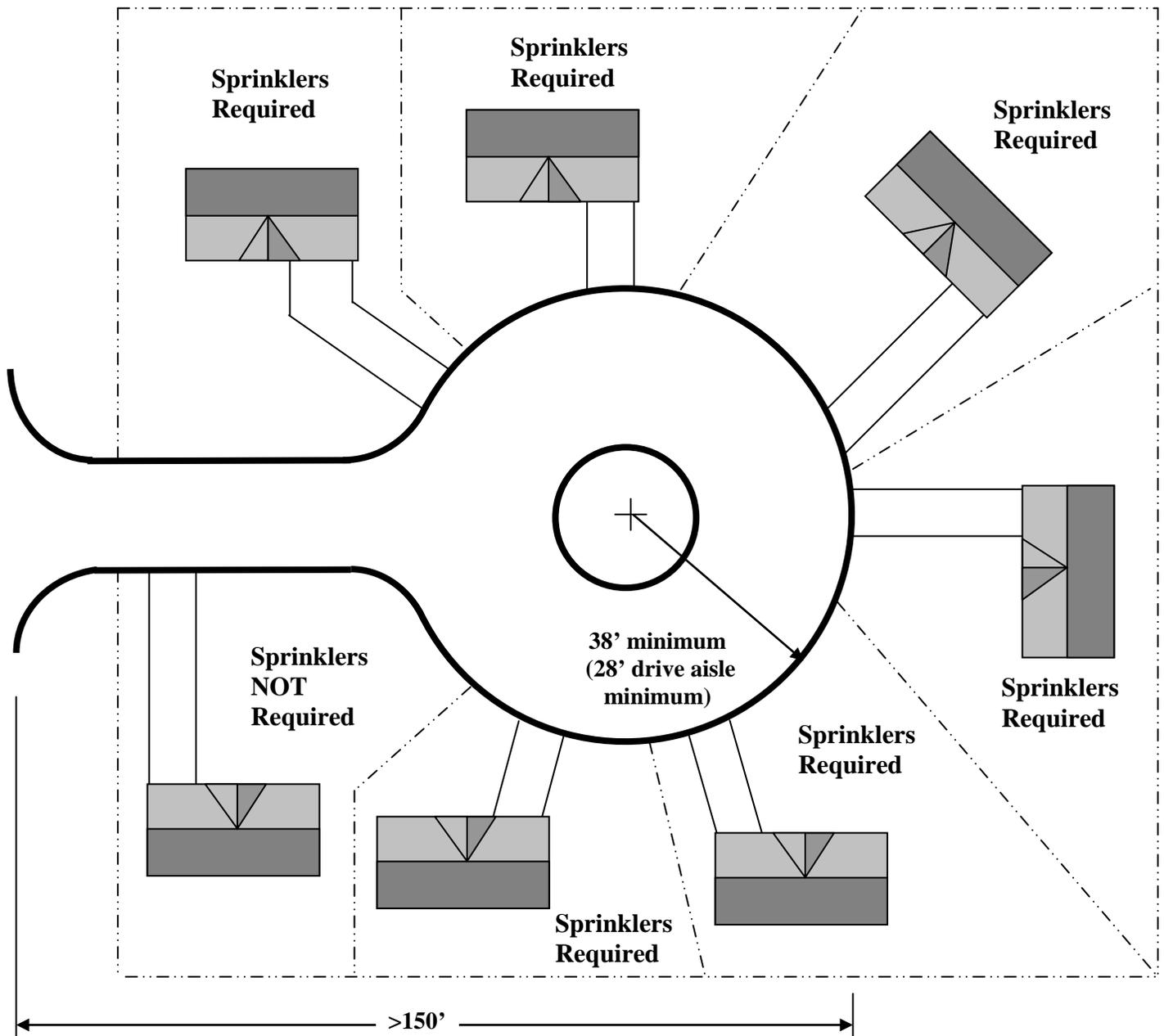
If the cul-de-sac is greater than 150 feet and the cul-de-sac is not marked as a fire lane homes (including attic spaces) are required to have automatic fire sprinklers when the driveway to the home is accessed from the bulb of the cul-de-sac.



ATTACHMENT 16

Cul-de-sacs Longer than 150' with Islands

If the cul-de-sac is longer than 150 feet and contains an island, and the cul-de-sac is not permitted to be marked as a fire lane (see Attachment 13), homes (including attic spaces) are required to have automatic fire sprinklers when the driveway to the home is accessed from the bulb of the cul-de-sac. The bulb of the cul-de-sac must have a minimum radius of 38 feet. A 28-foot minimum clear drive aisle shall be provided (parking permitted on one side only).

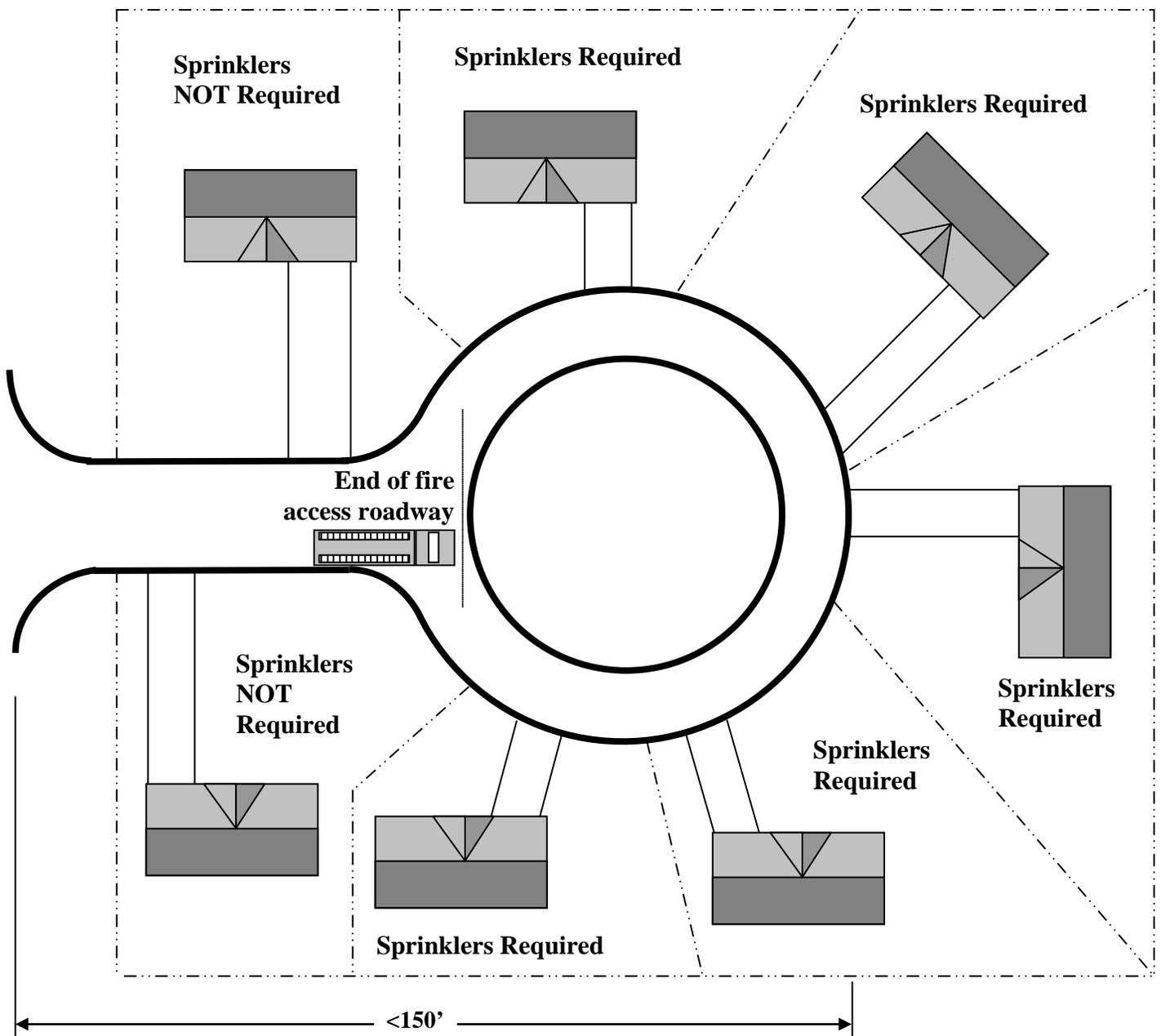


ATTACHMENT 17

Cul-de-sacs shorter than 150'

Without islands: Homes are required to have automatic fire sprinklers when access to any portion of the home exceeds 150 feet from the fire lane. The bulb need not comply with CITY OF PERRIS turning radii requirements since the length of the cul-de-sac is less than 150 feet.

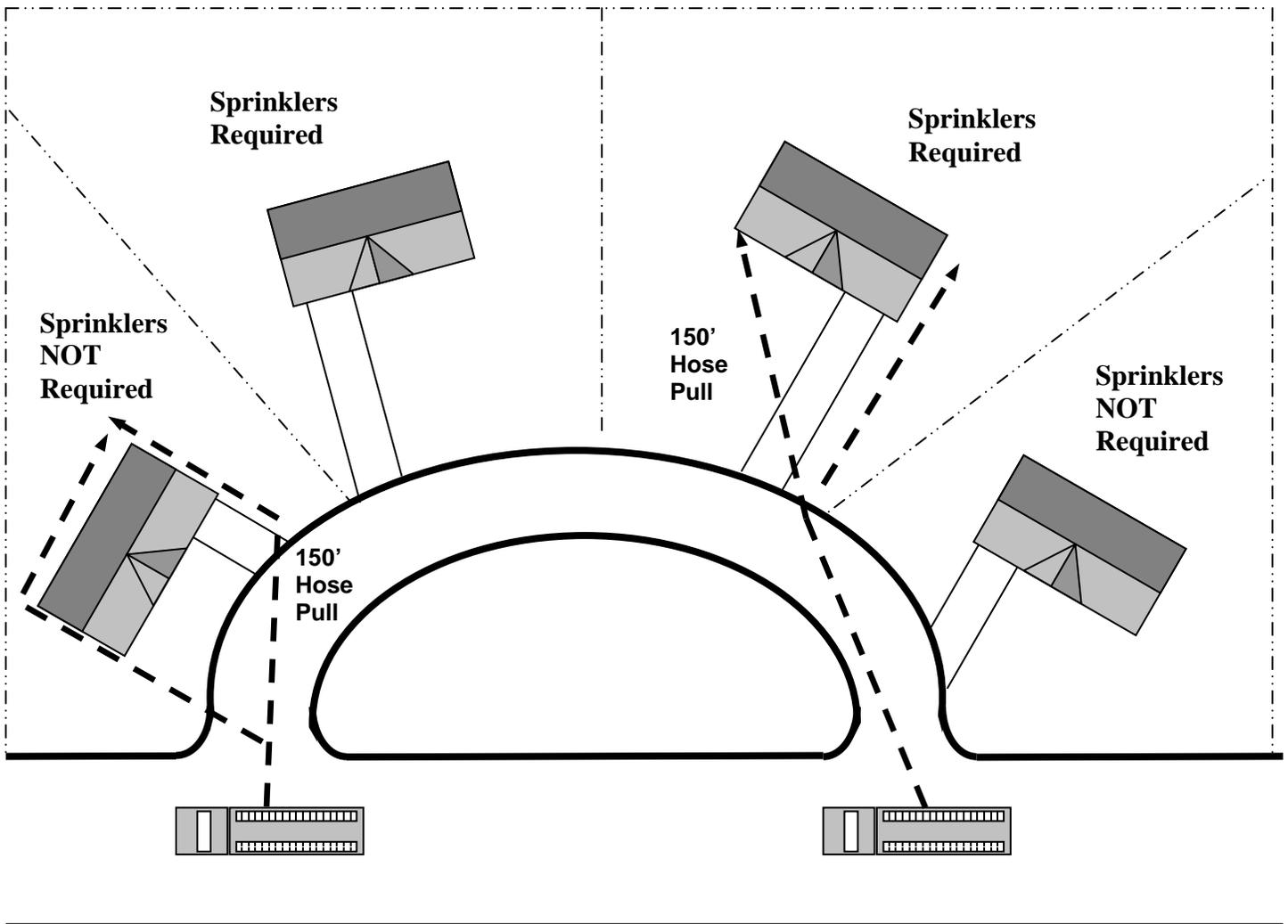
With islands: Access is measured from the point where the island begins to impede fire apparatus. All homes (including attic spaces) with any portion greater than 150' from the access roadway or with driveways accessed from the bulb of the cul-de-sac are required to have sprinklers. See the diagram below.



ATTACHMENT 18

“Eyebrows”

If the “eyebrow” does not meet OCFA’s turning radius and minimum width, the fire department access will be measured from the nearest available fire lane. Because the CITY OF PERRIS has no control over what will be in the island, the fire department access will be measured around the island and any other obstructions. Unless the plans state that there will be no fences enclosing side and back yards, these obstructions will be assumed to exist and access distance will be measured accordingly. If the fire department access to any portion of the home exceeds 150 feet, the home (including attic spaces) shall be protected with fire sprinklers.



ATTACHMENT 19

Sample Parking Enforcement Letter

Date

City of Perris
Building Department
135 North "D" Street
Perris, CA. 92570

Re: *(Project Name, Location, and Service Request Number)*
Parking Enforcement Plan

The fire lane parking enforcement plan for the above referenced project is stated as follows:

All fire lanes within *(list development address or tract information)* shall be maintained and in no event shall parking be permitted along any portion of a street or drive that required fire lanes or any area designated as a fire lane for turn-around purposes.

(Homeowner's Association (HOA) name) shall adopt reasonable rules and regulations regarding the parking of vehicles along the streets, roads and or drives within the project that are not in conflict with applicable law.

In furtherance thereof, *(HOA name)*, through its officers, committees and agents, will establish the "parking" and "no parking" areas within the property in accordance with Section 22658.2 of the California Vehicle Code and City of Perris. The law shall be enforced through such rules and regulations by all lawful means, including, written warnings, citing, levying fines and towing vehicles in violation.

(HOA name) will contract with a certified patrol and towing company to remove vehicles that violate no parking restrictions. First time violators will receive a written warning and with subsequent violations, the vehicle shall be subject to towing. The vehicle owner shall be responsible for all costs incurred in remedying such violation, including without limitation towing cost, citations and legal fees.

Company Name
Authorized Agent Signature

Cc:

ATTACHMENT 20

CFC Table A-III-A-I: Minimum Required Fire Flow and Duration for Buildings for the City of Perris

FIRE AREA (square feet)					FIRE FLOW (gallons/min) ²		Flow Duration
Type I-FR, II-FR ¹	Type II-1hr, III-1hr ¹	Type IV, V-1hr ¹	Type II-N, III-N ¹	Type V-N ¹	unsprinklered	sprinklered	
0-22700	0-12700	0-8200	0-5900	0-3600	1000/1500*	1000/1500 *	2
22701-30200	12701-17000	8201-10900	5901-7900	3601-4800	1750	1500	
30201-38700	17001-21800	10901-12900	7901-9800	4801-6200	2000	1500	
38701-48300	21801-24200	12901-17400	9801-12600	6201-7700	2250	1500	
48301-59000	24201-33200	17401-21300	12601-15400	7701-9400	2500	1500	
59001-70900	33201-39700	21301-25500	15401-18400	9401-11300	2750	1500	
70901-83700	39701-47100	25501-30100	18401-21800	11301-13400	3000	1500	3
83701-97700	47101-54900	30101-35200	21801-25900	13401-15600	3250	1625	
97701-112700	54901-63400	35201-40600	25901-29300	15601-18000	3500	1750	
112701-128700	63401-72400	40601-46400	29301-33500	18001-20600	3750	1875	4
128701-145900	72401-82100	46401-52500	33501-37900	20601-23300	4000	2000	
145901-164200	82101-92400	52501-59100	37901-42700	23301-26300	4250	2125	
164201-183400	92401-103100	59101-66000	42701-47700	26301-29300	4500	2250	
183401-203700	103101-114600	66001-73300	47701-53000	29301-32600	4750	2375	
203701-225200	114601-126700	73301-81100	53001-58600	32601-36000	5000	2500	
225201-247700	126701-139400	81101-89200	58601-65400	36001-39600	5250	2625	
247701-271200	139401-152600	89201-97700	65401-70600	39601-43400	5500	2750	
271201-295900	152601-166500	97701-106500	70601-77000	43401-47400	5750	2875	
295901+	166501+	106501-115800	77001-83700	47401-51500	6000	3000	
		115801-125500	83701-90600	51501-55700	6250	3125	
		125501-135500	90601-97900	55701-60200	6500	3250	
		135501-145800	97901-106800	60201-64800	6750	3375	
		145801-156700	106801-113200	64801-69600	7000	3500	
		156701-167900	113201-121300	69601-74600	7250	3625	
		167901-179400	121301-129600	74601-79800	7500	3750	
		179401-191400	129601-138300	79801-85100	7750	3875	
		191401+	138301+	85101+	8000	4000	

¹ Types of Construction are based upon the CBC (actual base construction type without CBC 508 sprinkler substitution equivalency)

² Measured at 20 psi.

* Minimum flow for a sprinklered or unsprinklered R-3 <3600 sq ft is 1000; minimum for all other structures (including any R-3 >3600 and all R-1s) is 1500

ATTACHMENT 21

CFC Table A-III-B-I: Number and Distribution of Fire Hydrants For the City of Perris

FIRE FLOW REQUIREMENT	Minimum # of Hydrants	Average Hydrant Spacing (feet) ^{1,2,3,7}	Maximum Distance to Hydrant (feet) ^{4,6,7}
up to 1750	1	500	250
1751-2250	2	450	225
2251-2500	3	450	225
2501-3000	3	400	225
3001-4000	4	350	210
4001-5000	5	300	180
5001-5500	6	300	180
5501-6000	6	250	150
6001-7000	7	250	150
7001+	8 or more ⁵	200	120

¹ Reduce by 100 feet for dead-end streets or roads; in Irvine, hydrants shall not be located closer than 25 feet from the end of dead-ends or cul-de-sacs.

² Where streets are provided with median dividers which can be crossed by firefighters pulling hose lines, or arterial streets are provided with four or more traffic lanes and have a traffic count of more than 30,000 vehicles per day, hydrant spacing shall average 500 feet on each side of the street and be arranged on an alternating basis up to a fire-flow requirement of 7,000 gallons per minute and 400 feet for higher fire-flow requirements

³ Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, fire hydrants shall be provided at spacing not to exceed 1,000 feet to provide for transportation hazards.

⁴ Reduce by 50 feet for dead-end streets or roads

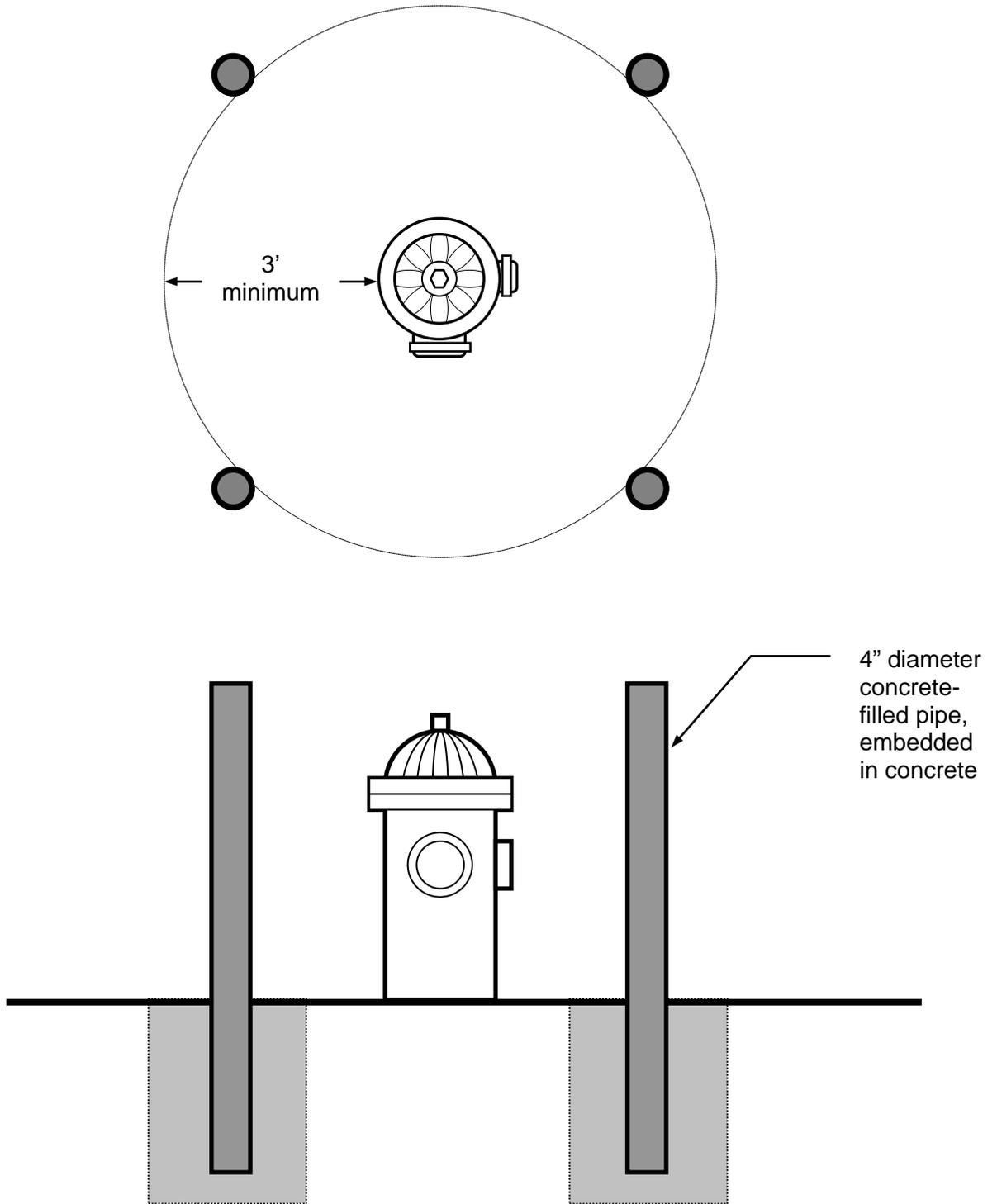
⁵ One hydrant for each 1,000 gallons per minute or fraction thereof

Fire hydrants shall be a minimum of 40 feet from any building with the exception of detached one- and two-family dwellings.

⁷ In residential (R-3 Occupancy) subdivisions, maximum hydrant spacing is 300 feet. This spacing may be increased to 600 feet if all homes and attached garages are protected with automatic fire sprinklers systems and fireflow requirements do not exceed 2000 gpm.

ATTACHMENT 22

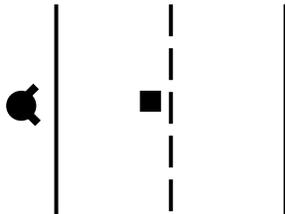
Protection of Hydrants, Detector Checks, Fire Department Connections, and other Appurtenances



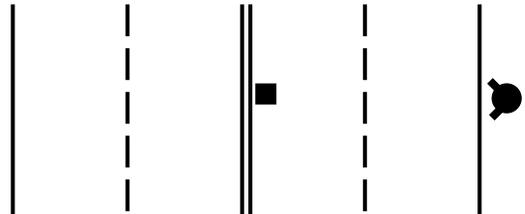
ATTACHMENT 23

Blue Dot Hydrant Marker Location

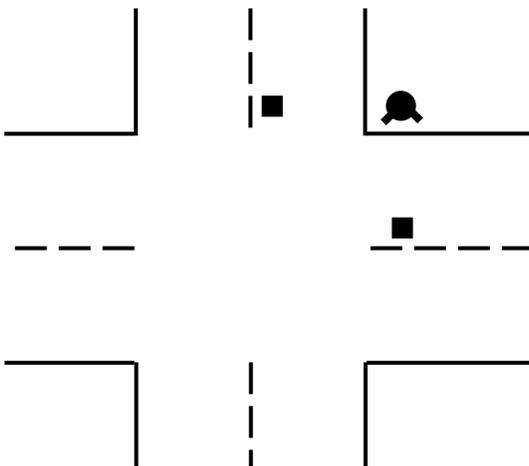
TWO LANE STREET



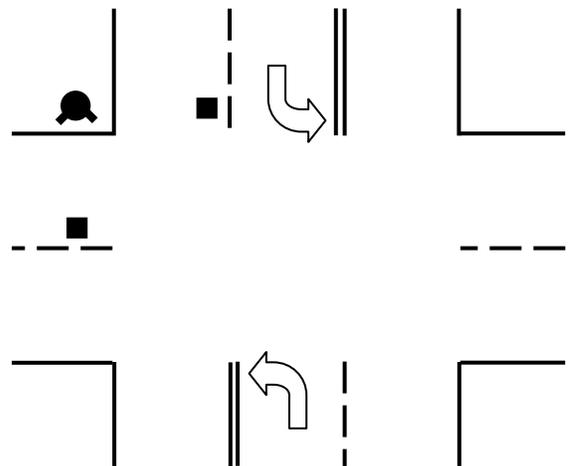
MULTI-LANE STREET



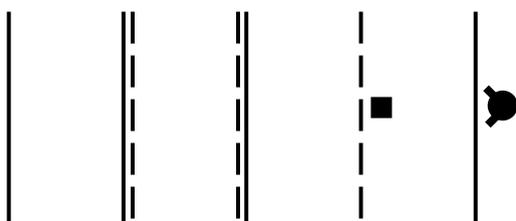
INTERSECTION



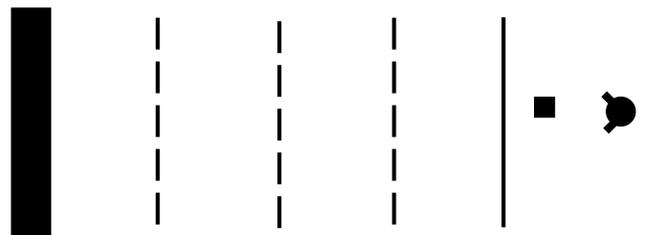
INTERSECTION WITH TURN LANES



MULTILANE STREET WITH TURN LANE



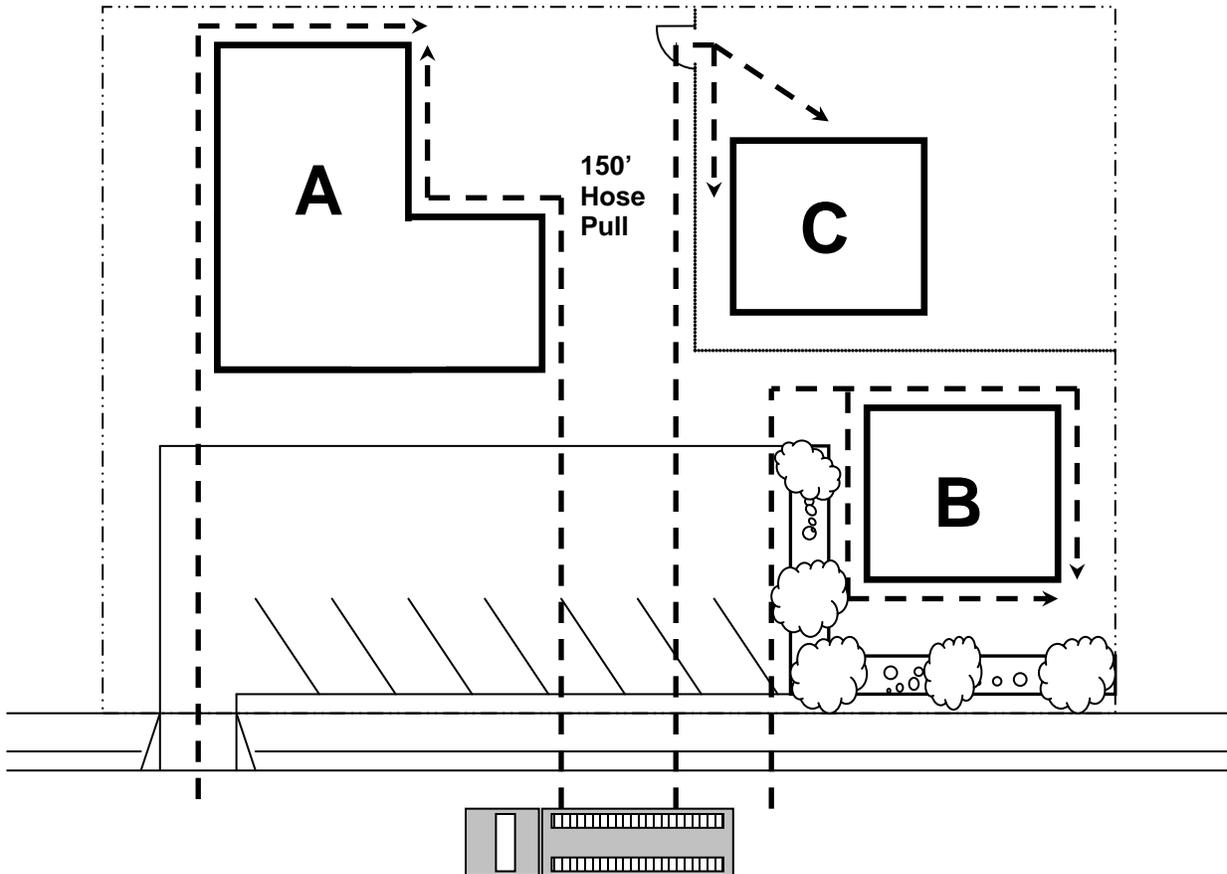
FREEWAYS AND EXPRESSWAYS



The developer may contact the local water company to arrange the installation of the blue dots. If the water agency does not participate in the blue dot program, the developer is still responsible to install the dots in an approved manner.

ATTACHMENT 24

Hose Pull

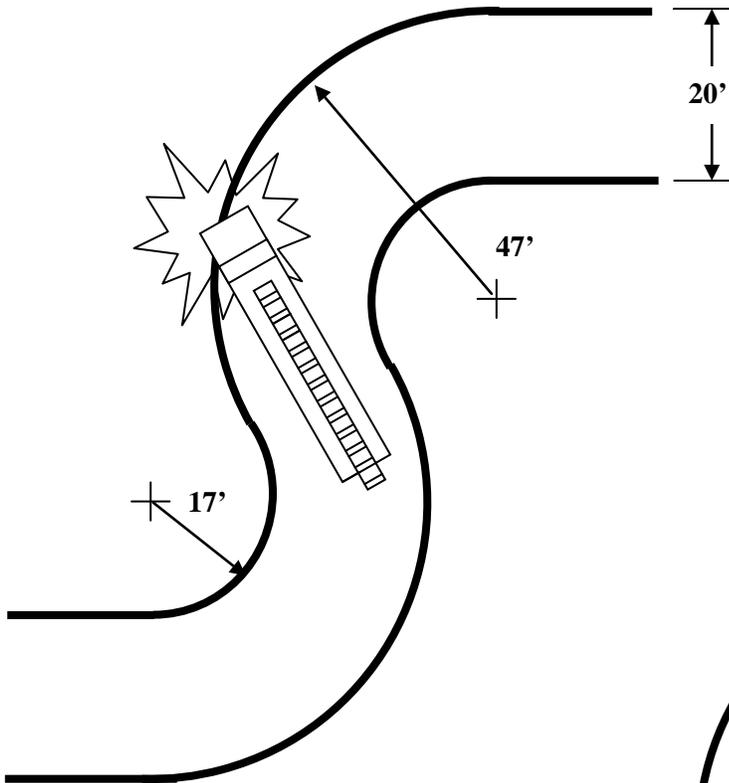


Assume that the parking lot is not accessible to fire apparatus due to turning radii and fire lane widths less than the required minimums.

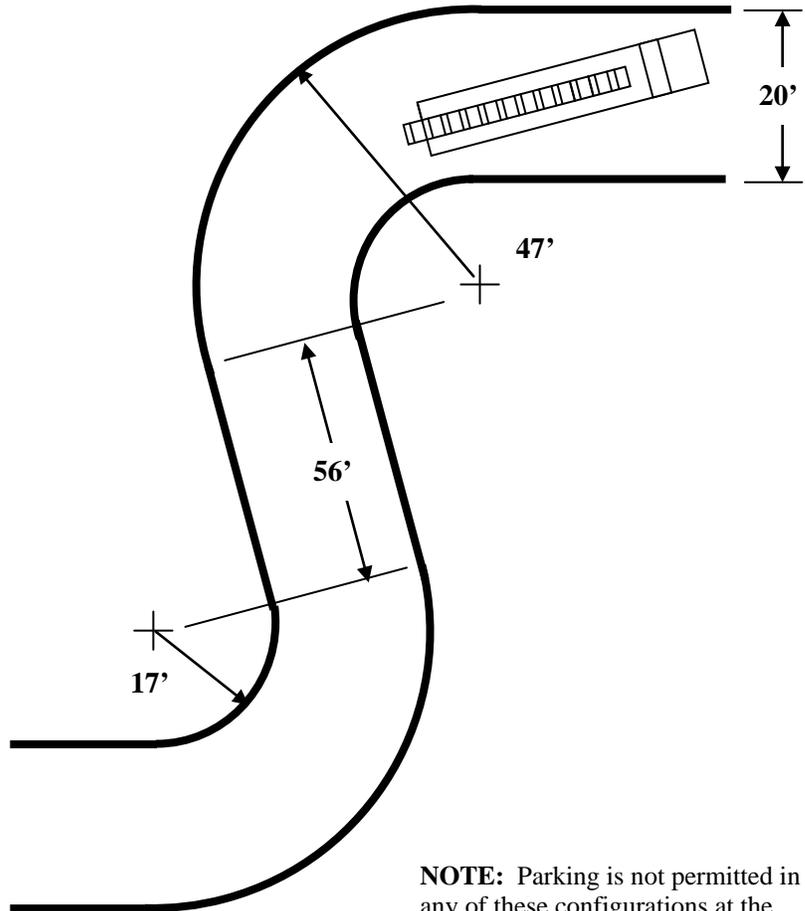
- All portions of building “A” are within 150’ feet of the public road as measured along the path of firefighter travel.
- Building “B” is also in access despite the obstruction presented by the planter and hedges.
- Building “C” is out of access; the presence of a chainlink fence forces firefighters 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”.

ATTACHMENT 25

"S" Curves



NOT PERMITTED
City of Perris apparatus are unable to negotiate tight "S" curves, such as the one shown to the left.



PERMITTED

A 56' straight leg is required between the turns in a compound curve to provide sufficient recovery distance for the apparatus. Alternatively, the length of the straight leg may be reduced if the road width and/or turning radii are increased to allow for a wider turn.

NOTE: Parking is not permitted in any of these configurations at the dimensions shown.