Costa Mesa Fire Department
Fire Prevention Division
77 Fair Drive
Costa Mesa, CA 92628
714-754-5104

Fire Plan Submittal Checklist and Guidelines

Fire Prevention Guideline P-01

Fire Plan Submittal Checklist and Plan Guidelines

September 2015

The effectiveness of emergency response, firefighting and rescue operations is directly related to the proper installation and maintenance of fire access, the appropriate sitting of fire hydrants, adequate water supply, and proper access to structures. This checklist is not all inclusive, but is intended to serve as a general guideline when preparing to submit plans for fire department review of a project. Specifically, as it pertains to the creation and/or maintenance of fire department access roadways, access walkways (to and around buildings), fire protection features, hydrant quantity/placement, and other relevant fire and life safety features as required by the most currently adopted California Fire and Building Codes (CFC and CBC), current NFPA design standards, and as amended by the City of Costa Mesa Municipal Ordinance.

As such, the following requirements include, but are not limited to certain items that must be clearly identified, addressed, and articulated on a "Fire Department – Site Access Plan" (FD-SAP) page when submitting plans for fire department review.

Also included herein, following this summary checklist, are a number of attachments related to roadway, emergency access, hose pull and hose lay requirements.

☐ ***Scope of project is clearly identified on a separate "Fire Department – Site and Access Plan" (FD-SAP) page.***

☐ ***Clearly detailed notes are included on plans, including building area, construction type, occupancy, fire sprinklers, and other proposed fire protection features.***

1) The drawings must be provided in two hard copies and one E-copy - file format: pdf

2) The following information shall be provided in the drawing:

   a) Vicinity map indicating cross streets

   b) Complete building address, apartment designators, suite numbers (when defined), etc.

   c) Scaled site plan inclusive of the following information:
      - Detailed building footprint with all entrances identified
      - All on-site access roadways
      - Parking configuration
      - All on-site walking paths around buildings
      - Any barriers that affect movement on the property (walls, fences, gates, etc.)
      - Fire hydrant locations
      - Knox box locations

3) The following information should be provided in the drawing, if available:
   - Fire sprinkler/standpipe control valve locations
   - Fire sprinkler/standpipe fire department connection (FDC) location
   - Fire alarm control panel (FACP) and remote annunciator locations
   - All utility locations/connections

4) All information should be structured into layers and be visually distinct within the .pdf file.

☐ ***Fire Department/Emergency access roadway design is clearly addressed and identified on FD-SAP:***

- *Apparatus clearance - Fire and Rescue apparatus access roadway shall have an unobstructed width of 20 feet and an unobstructed vertical clearance of 13 feet 6 inches; shown on plan clearly. 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. (CFC 503.2.1, 503.4, 503.2.2)*

- *Dead end Fire and Rescue apparatus access roadways – Dead-end roadways in excess of 150' shall be provided with an approved turn around. (CFC 503.2.5)*

- *Apparatus load - Fire and Rescue apparatus access roadways shall be designed to support the imposed loads of fire apparatus with a total of 68,000 pounds and shall be surfaced to provide all weather access. (CFC 503.2.3)*

- *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 or greater. 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. (CFC 503.2.4)*

- *Median breaks - Where medians or raised islands are proposed that prevent emergency apparatus from crossing over into opposing traffic lanes, breaks or pass-throughs may be required to be provided. The location and design specifications for the pass-throughs shall be coordinated with the city public works or engineering department. (CFC 503.1.2)*

- *Fire Apparatus Access Road Grade - The grade for access roads shall not exceed 10%. (CFC 503.4)*

☐ ***Firefighter/Emergency Rescue access is clearly addressed and identified on FD-SAP:***

- *The farthest point of building shall not be greater than 150 feet from fire apparatus access. NOTE: For residential structures (e.g., single family or duplex), if the structure is protected with complete fire sprinkler coverage (e.g., 13D), the farthest point of the structure shall not be greater than 300 feet to the front door serving the interior of the structure.*

☐ ***Other Items/Comments are clearly addressed and identified on FD-SAP:***

- *Fire lane identification, premise address identification, and Knox box location(s).*
- *Water availability, fire flow, hydrant quantity, spacing, placement, and identification.*
- *Special circumstances specific to the identified project.*

September 1, 2015

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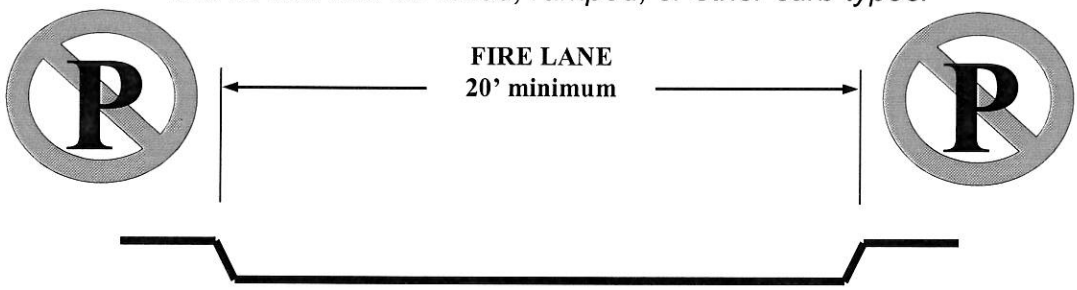
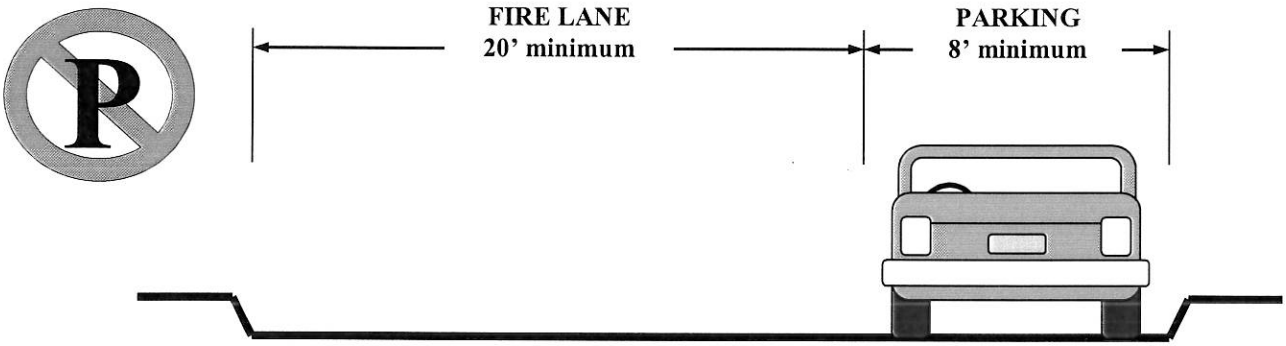
ATTACHMENT 1

Minimum Road Widths

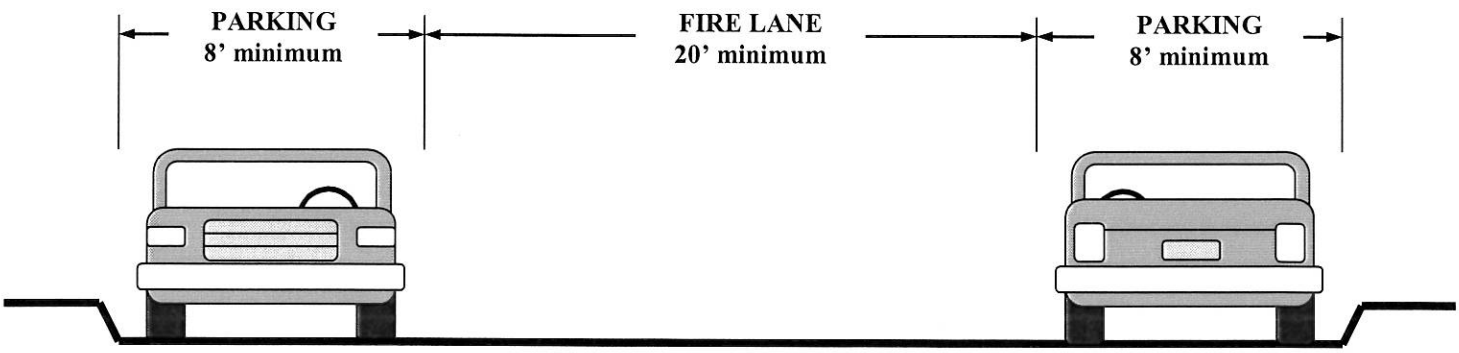
Measured from top face of curb to top face of curb for standard vertical curbs or flow line to flow line for rolled, ramped, or other curb types.



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.

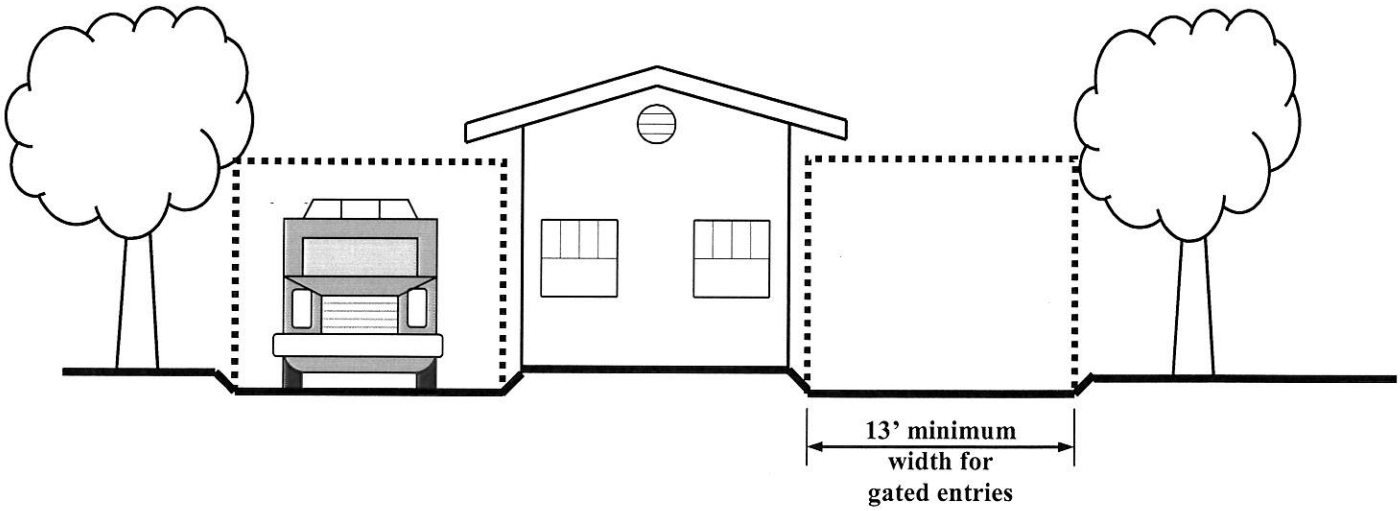


ROADWAY 36' OR WIDER
Parking permitted on both sides

ATTACHMENT 2

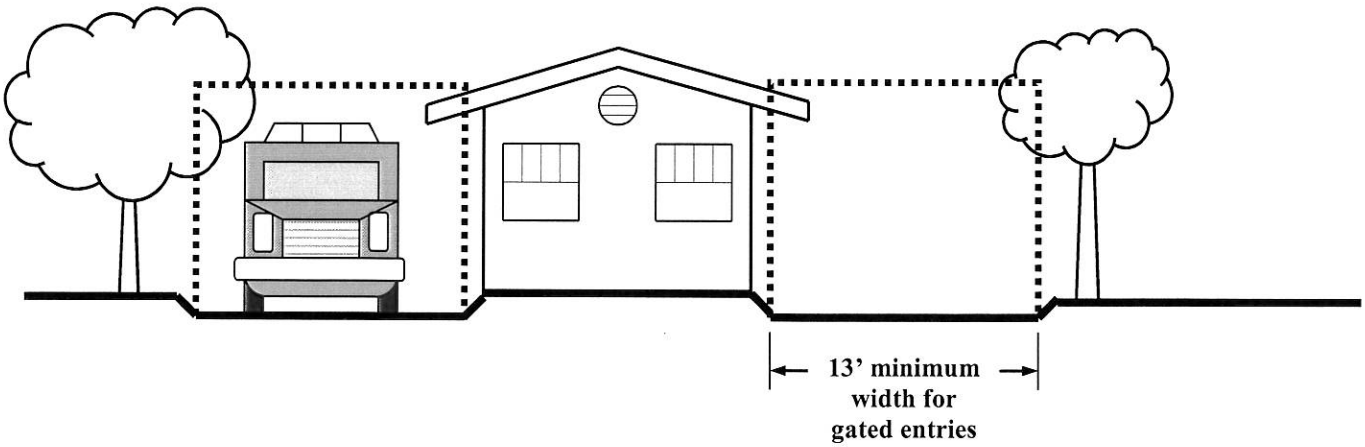
Fire Apparatus Access Roadway Clearance For Typical Gated Community Guard House

Fire lane width reductions detailed below are applicable only to the area immediately adjacent to the guard house or gate. Roads leading up to and beyond the guard house or gate shall meet standard fire lane width requirements prescribed this guideline.



PROPER CLEARANCE PROVIDED

Eaves and vegetation do not encroach upon the 13'-wide by 13'-6" high minimum dimensions allowed for the fire access roadway next to the guard house.

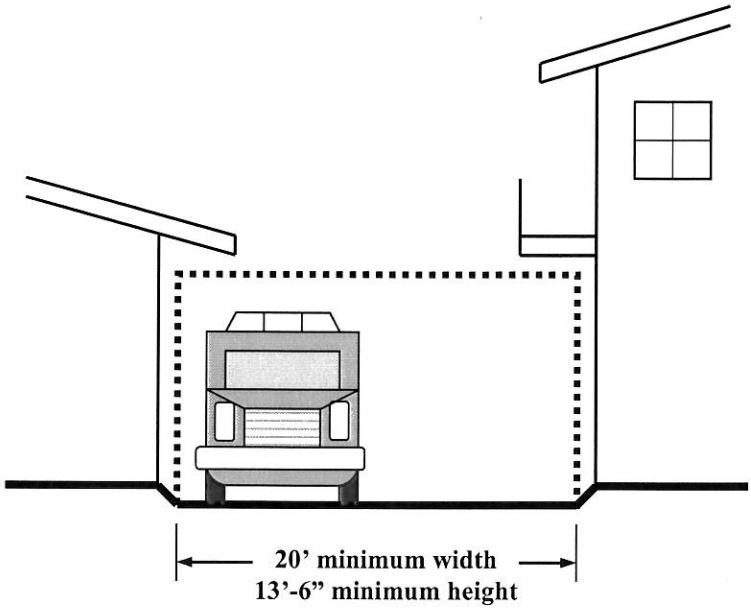


INSUFFICIENT CLEARANCE

While a 13'-wide access roadway is provided next to the guard house, eaves and vegetation encroach upon the minimum clear height of the fire lane.

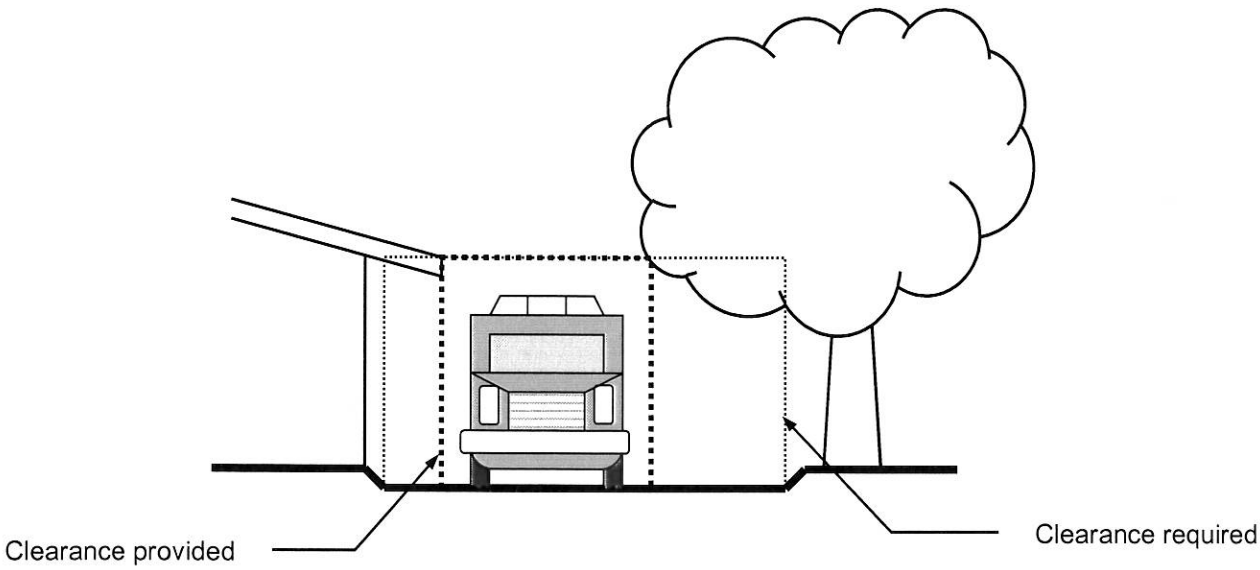
ATTACHMENT 3

Fire Apparatus 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.

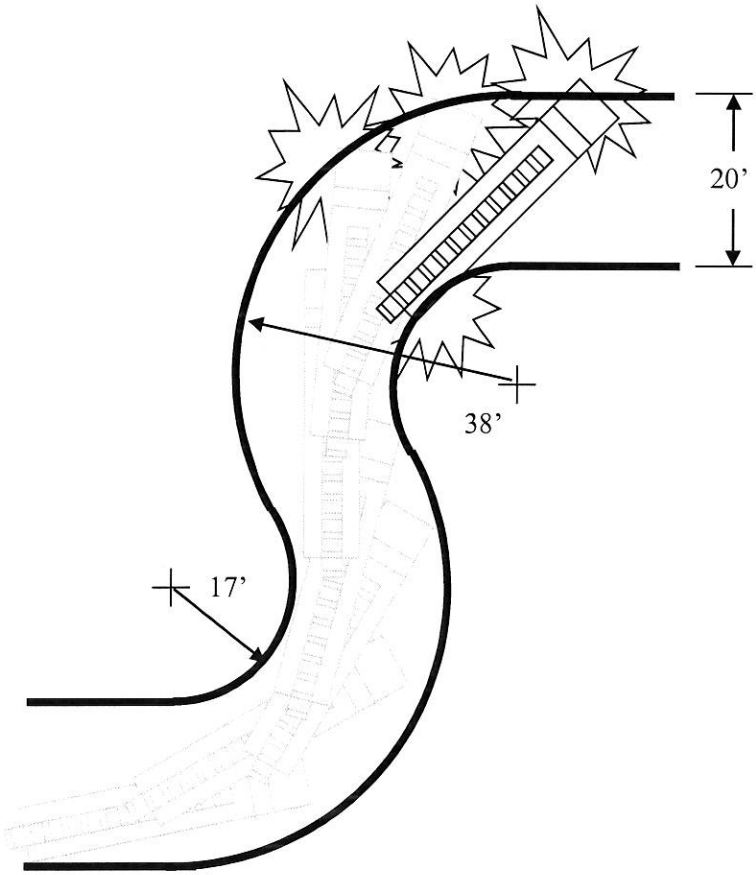


INSUFFICIENT CLEARANCE

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

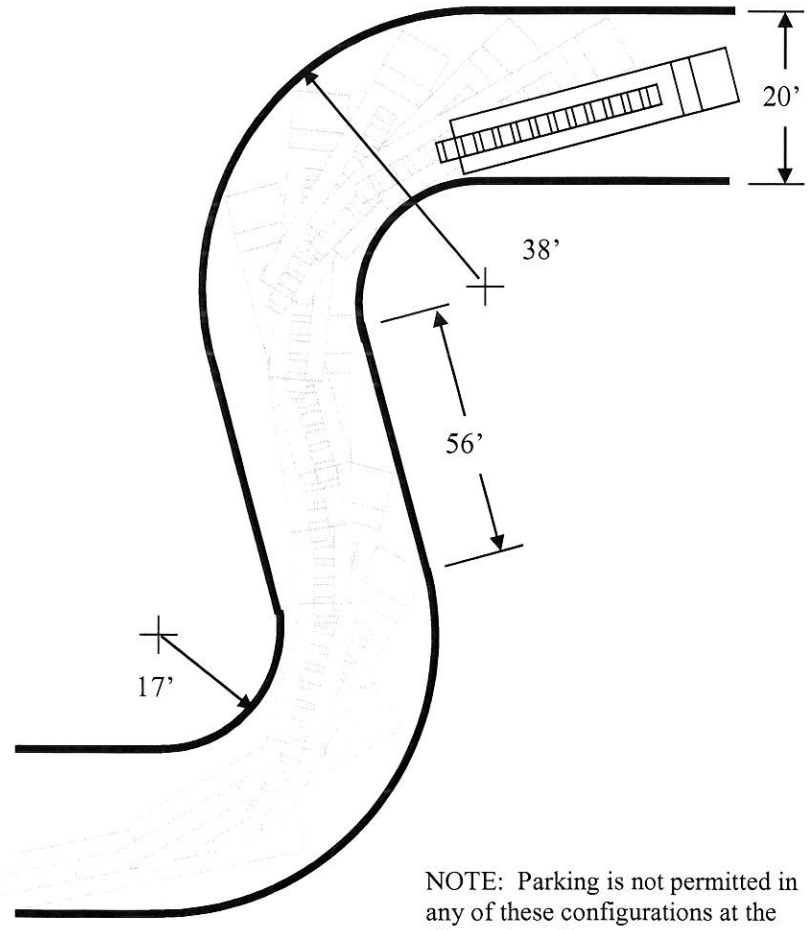
ATTACHMENT 4

"S" Curves



NOT PERMITTED

CMFD apparatus are unable to negotiate tight "S" curves, such as the one shown to the left.



PERMITTED

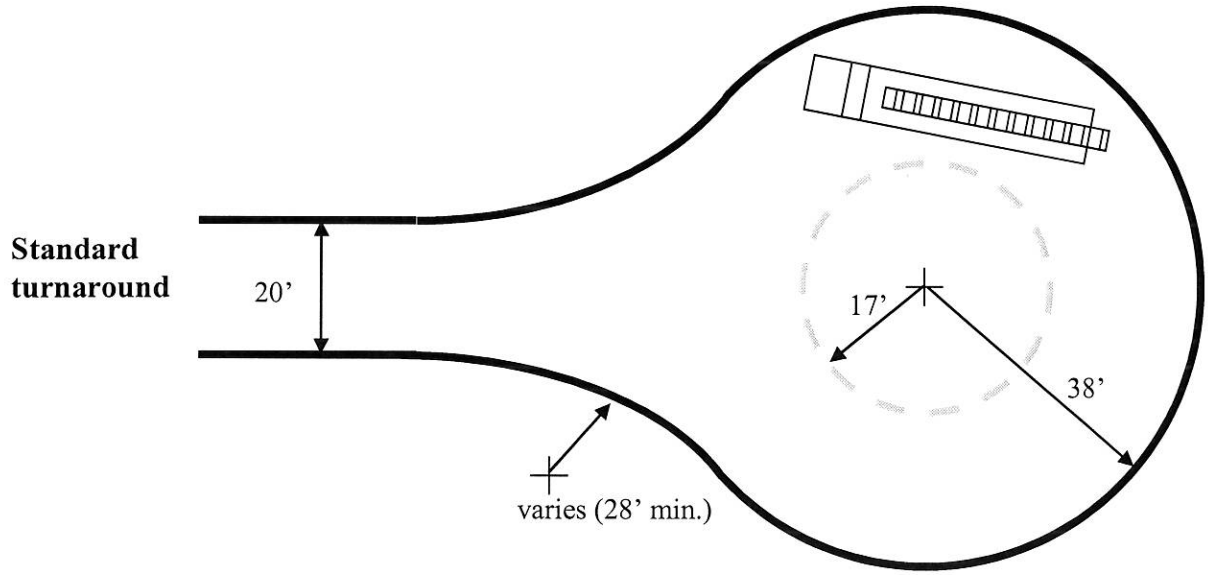
A 56' straight leg is required between the turns in a compound curve to provide sufficient recovery distance for the apparatus. Alternatively, the length of the straight leg may be reduced if the road width and/or turning radii are increased to allow for a wider turn.

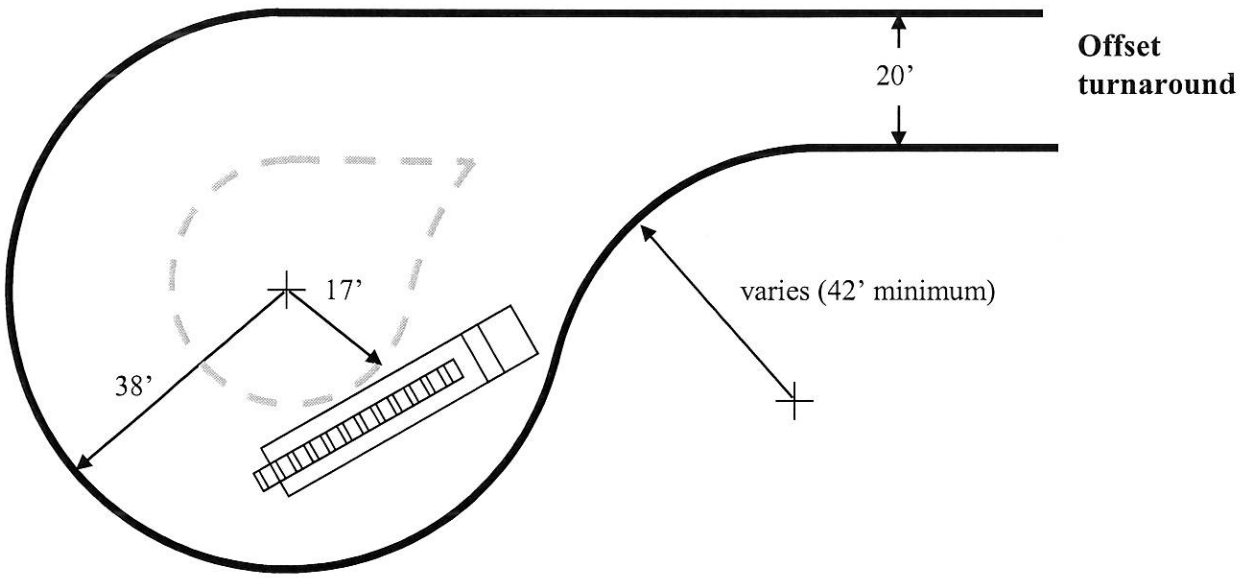
NOTE: Parking is not permitted in any of these configurations at the dimensions shown.

Drawing not to scale; for illustration purposes only.

ATTACHMENT 5

Minimum Turnaround and Hammerhead Dimensions

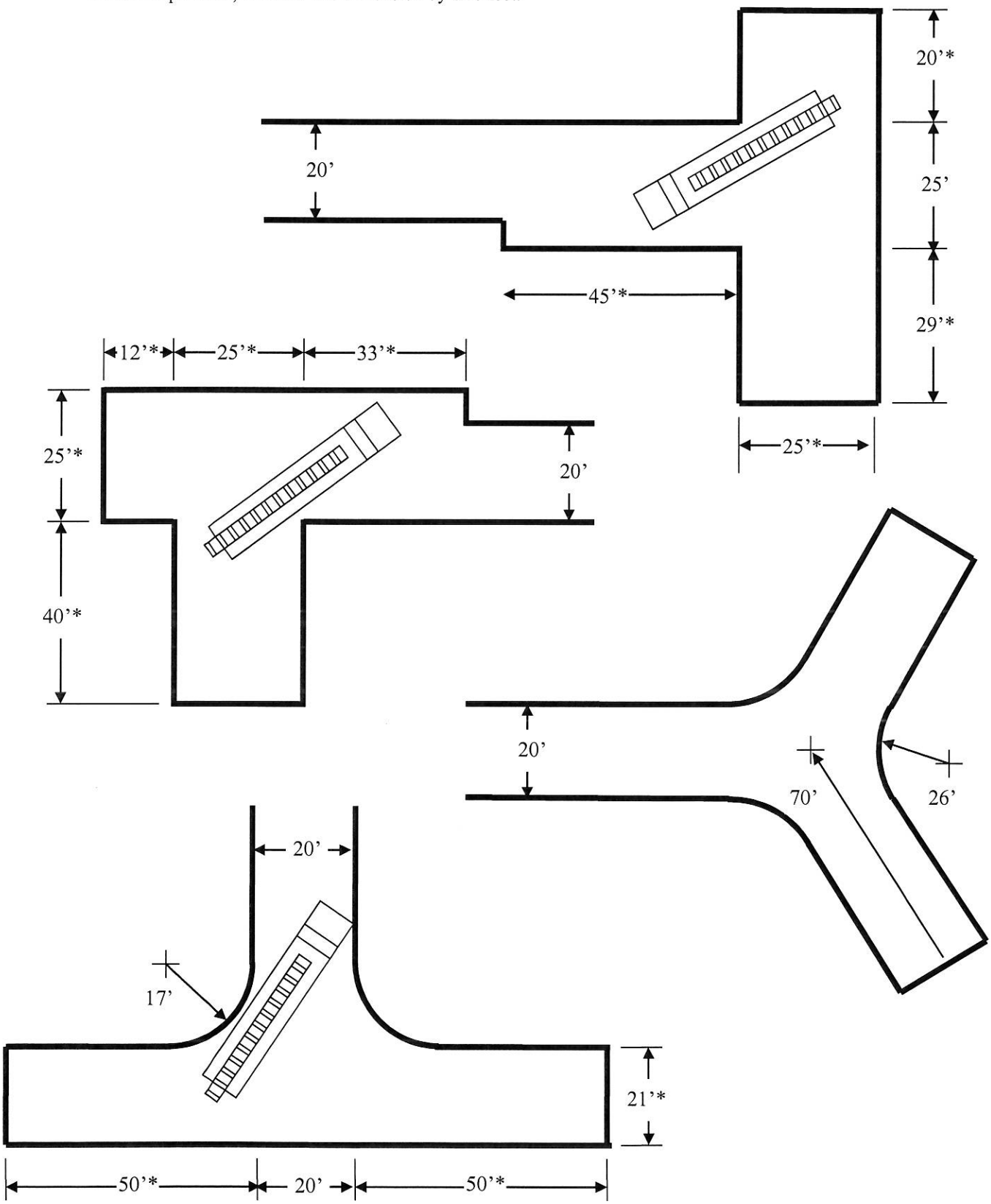




NOTE: Parking is not permitted in these turnarounds at the dimensions shown. Islands or other obstructions may be allowed to be located within the area bounded by the dashed line representing the inner turning radius.

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

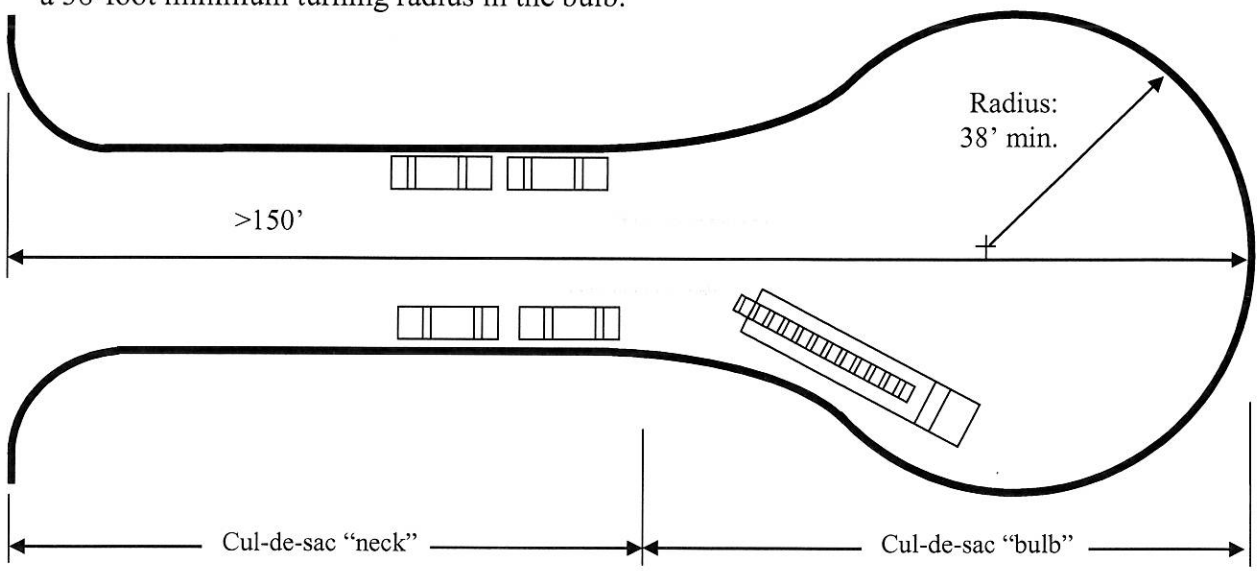
* Wherever possible, increase this dimension by five feet.



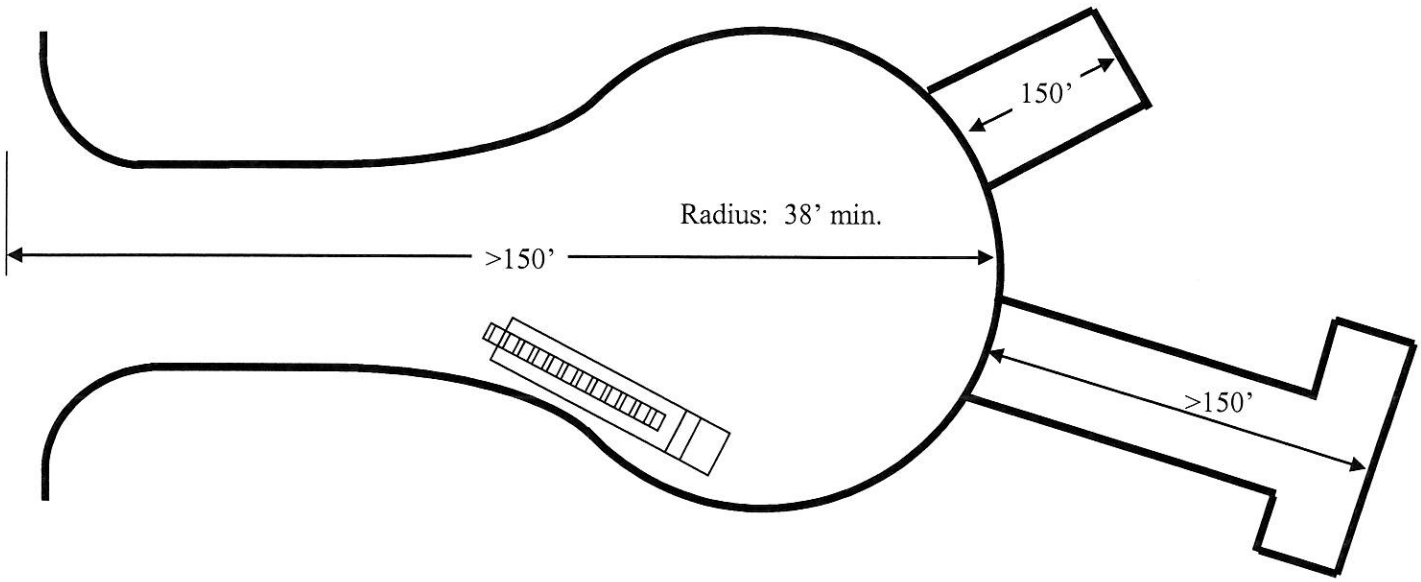
ATTACHMENT 6

Cul-de-sacs and Dead-end Roadways

1) Cul-de-sac streets greater than 150 feet in length that are required fire lanes shall be provided with a 38-foot minimum turning radius in the bulb.



2) Where a spur road or private driveway that is a required fire lane is accessed via the cul-de-sac road, the driveway or spur shall be no more than 150' in length unless an approved turnaround has been provided within 150' of the end of the spur or driveway.

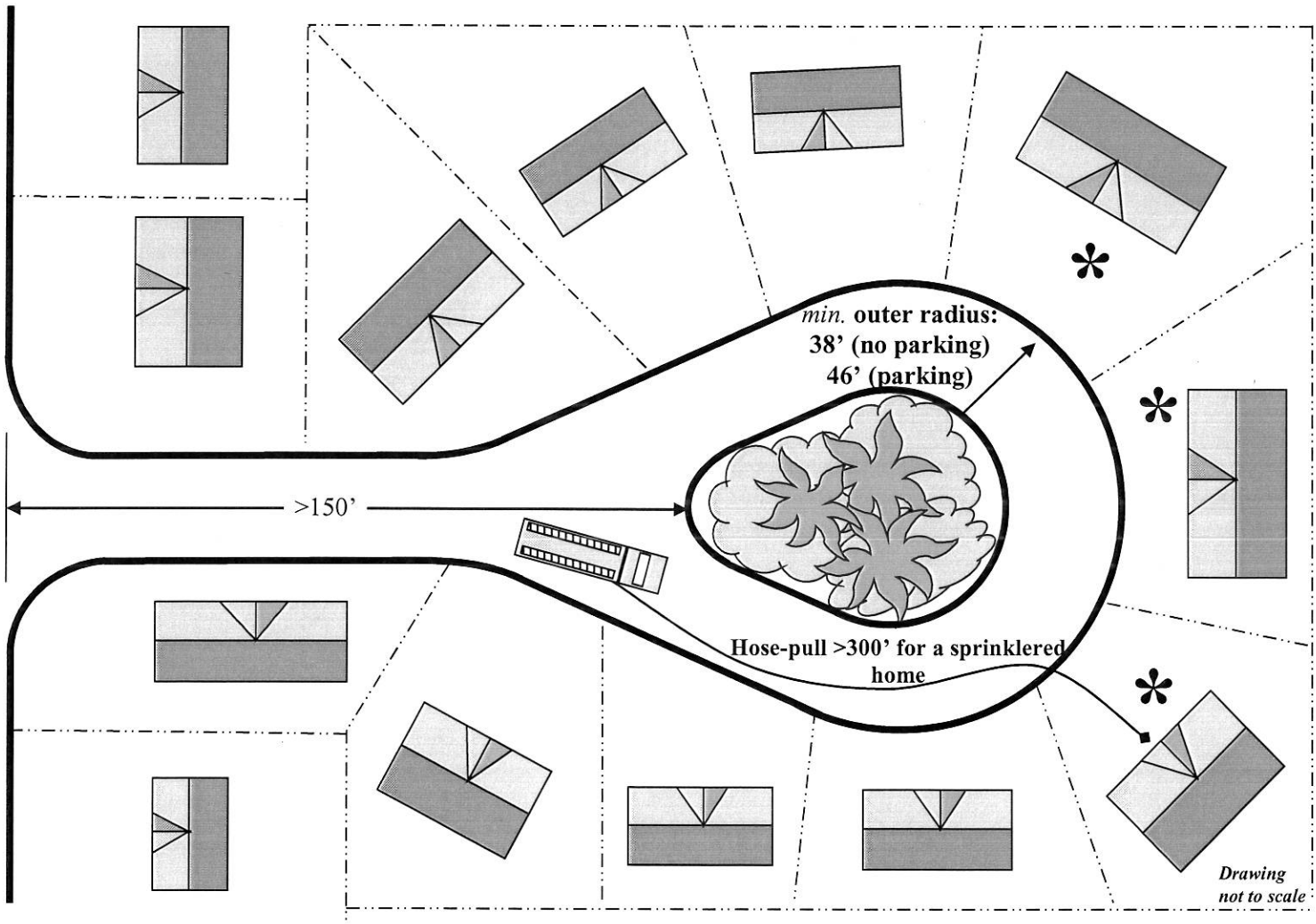


Drawing not to scale

ATTACHMENT 7

Cul-de-sacs Longer than 150' with Islands

Cul-de-sac streets greater than 150 feet in length may contain a center island provided that:
1) A *minimum* 28-foot-wide drive lane with an adequate inside turning radius is provided, and
2) The island is designated a no parking area with red curbs or signs, and
3) Island landscaping will not intrude into the drive lane, and
4) An NFPA 13-D sprinkler system with full protection of the attic space(s) is installed in the homes where hose-pull requirements can only be satisfied by taking access from the drive lane beyond the beginning of the island.

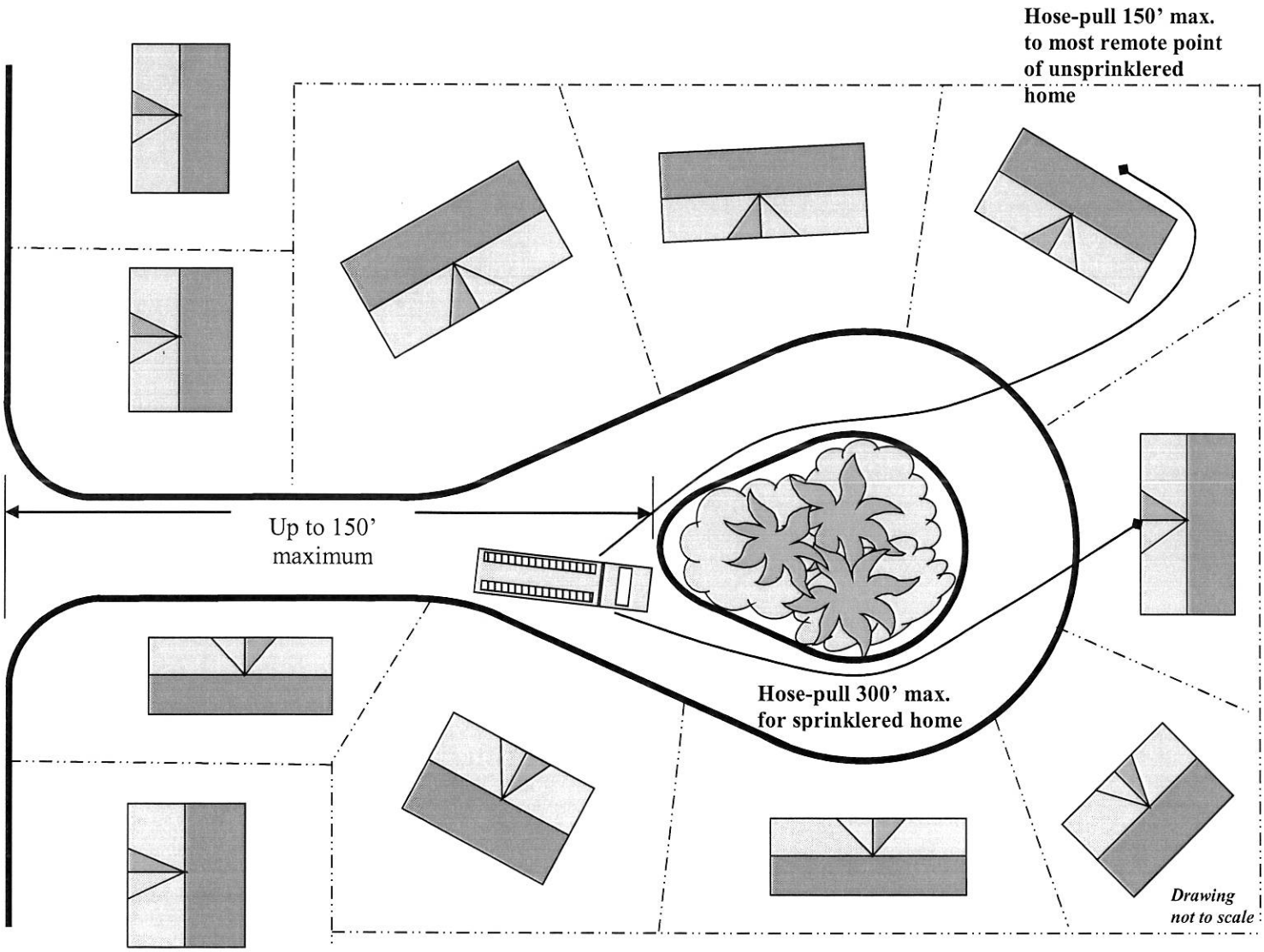


* Attic protection required where hose-pull distance from the portion of the cul-de-sac preceding the island to the front entry of a sprinklered home exceeds 300'. For existing unsprinklered homes, hose pull may not exceed 150' to the most remote point around the perimeter of the home or sprinklers with attic protection will be required.

ATTACHMENT 8

Cul-de-sacs up to 150' with Islands

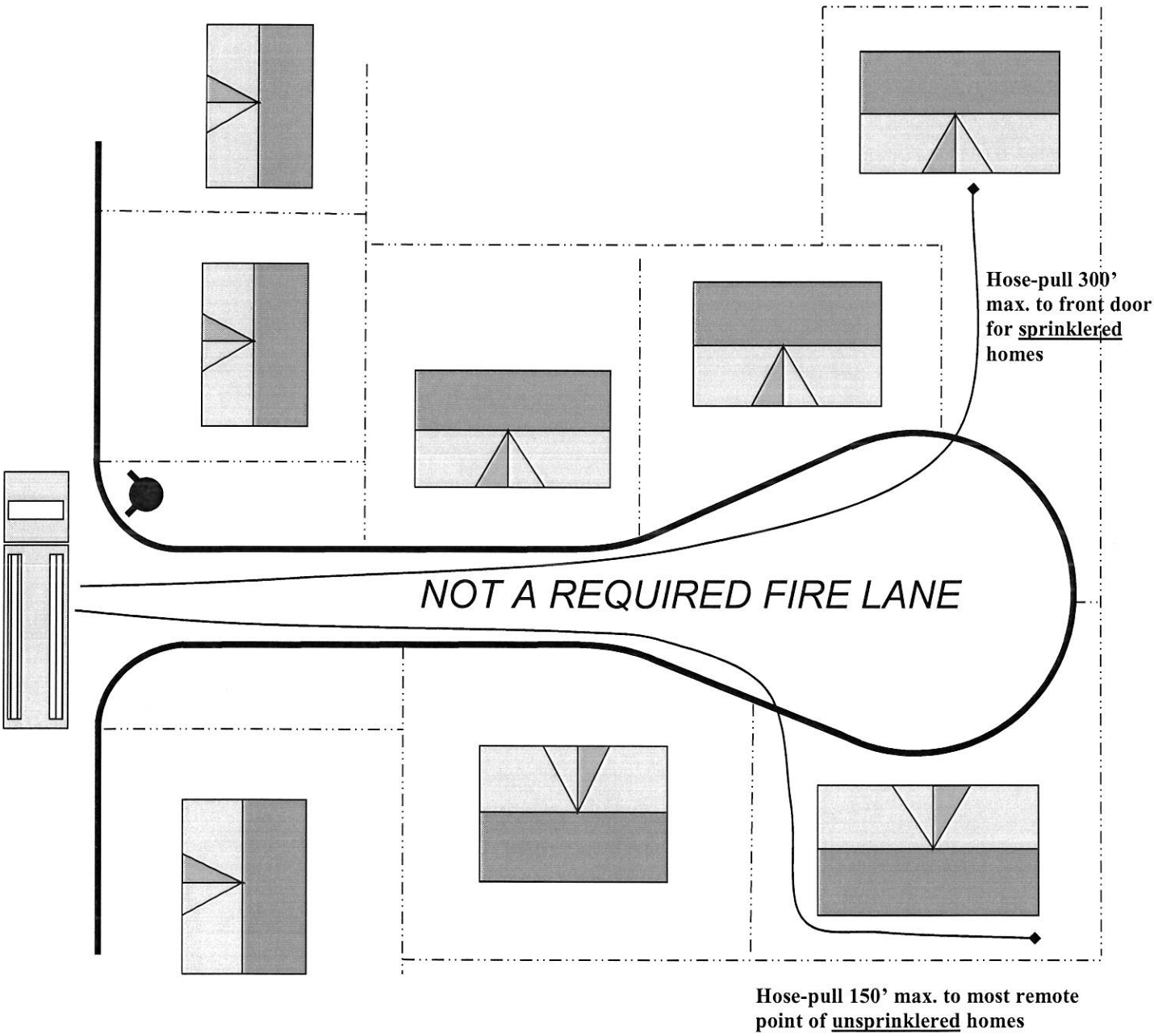
Access to the homes will be measured along an approved route around the island and any other obstructions in the path of travel from the point where the island begins to impede fire apparatus. If hose-pull to the main entry of a sprinklered home exceeds 300' (or 150' to the most remote point around the perimeter for unsprinklered homes), the portion of the bulb beyond the island shall be designed as a fire lane or other mitigating features shall be provided. If all homes are in access from the area preceding the island, the portion of the bulb beyond the island is not required to comply with CMFD fire access roadway requirements. The neck and portion of the bulb preceding the island shall meet all other fire lane requirements prescribed in this guideline if it is a required fire lane.



ATTACHMENT 9

Short Cul-de-sacs and Dead-end Roads

If hose-pull distance can be satisfied without fire apparatus entering the cul-de-sac or dead-end road, and the road is not otherwise required to be a fire lane as determined by the fire code official, the street is not required to have a bulb or hammerhead with minimum CMFD turning radii or meet other standard fire lane requirements.

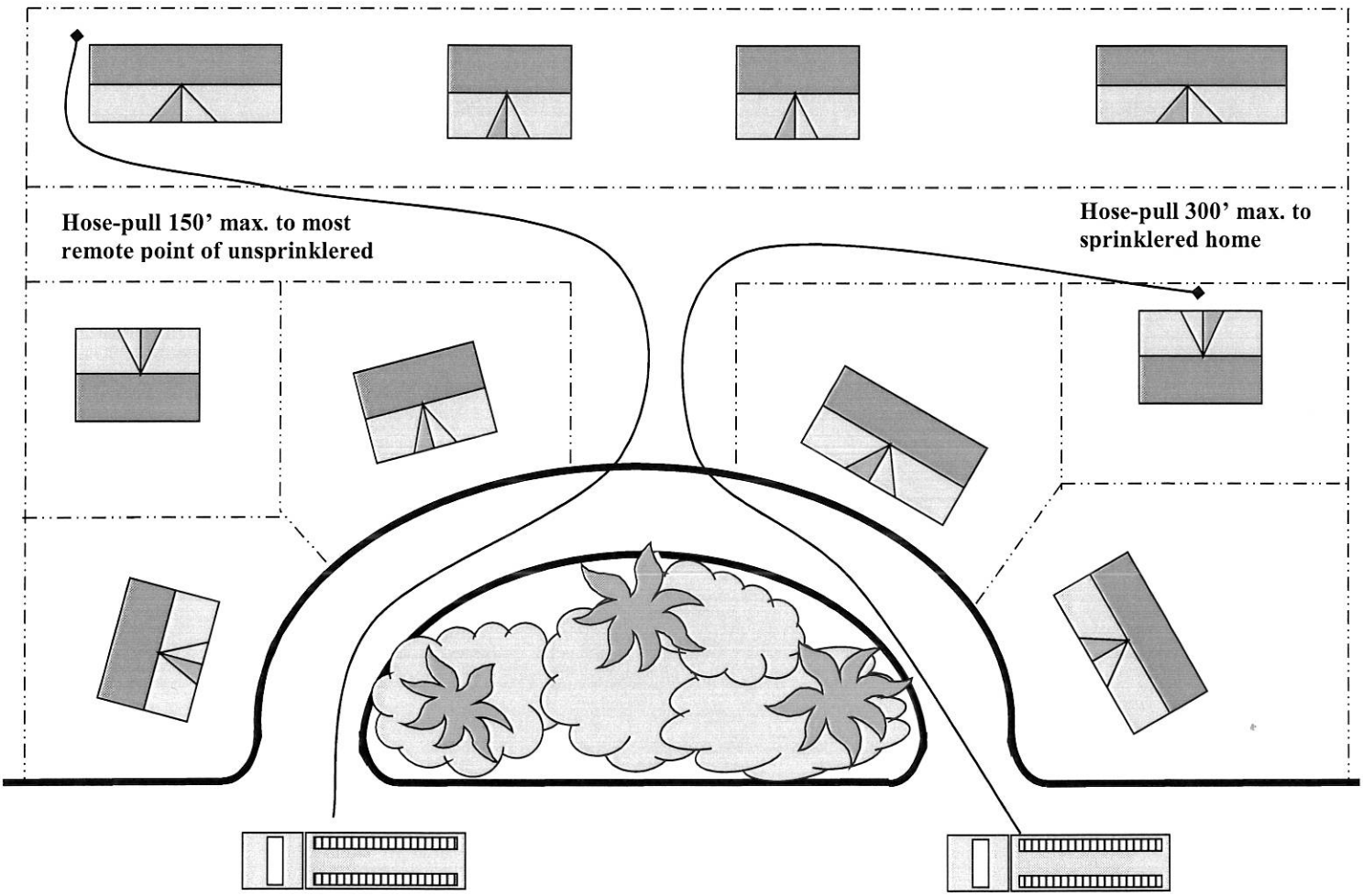


Drawing not to scale

ATTACHMENT 10

Eyebrows

If the eyebrow does not meet CMFD's minimum turning radius and width requirements, fire department access will be measured from the nearest available fire lane around the island and any other obstructions. If hose-pull to the main entry of a sprinklered home exceeds 300' (or 150' to the most remote point around the perimeter for unsprinklered homes), the eyebrow shall be designed as a fire lane or other mitigating features shall be provided.



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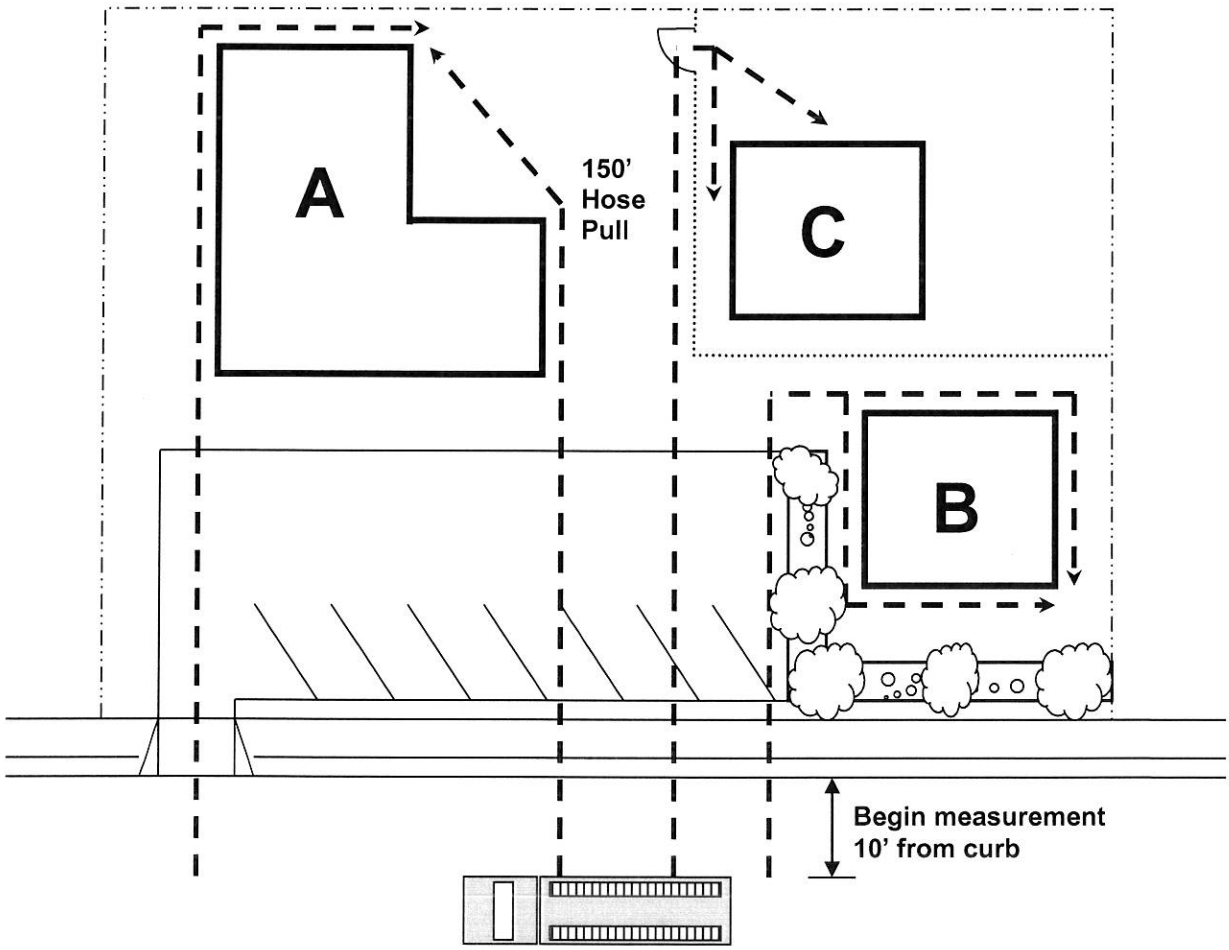
ATTACHMENT 11

Hose Pull



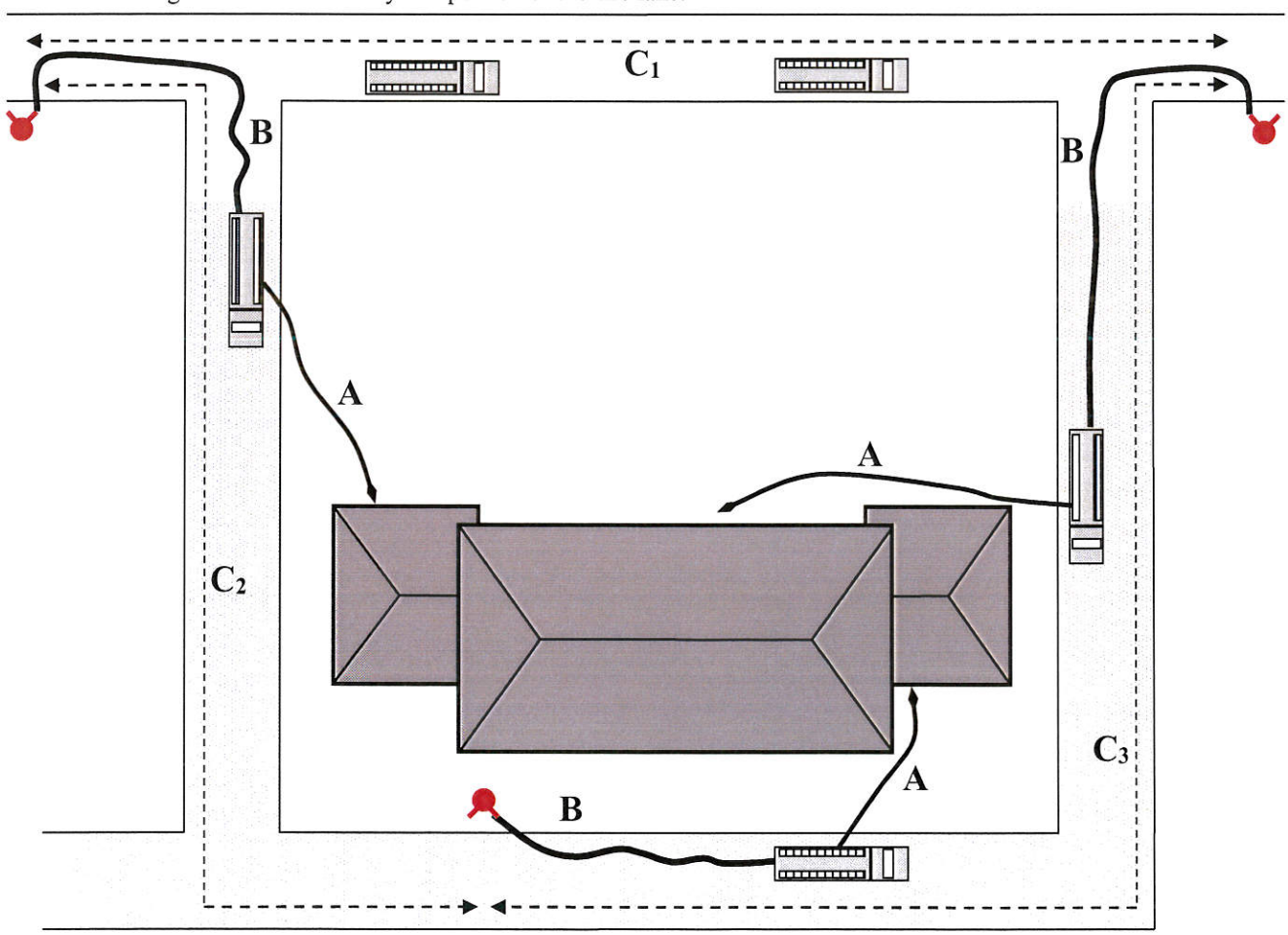
In the example above, assume that the parking lot is not accessible to fire apparatus due to turning radii and fire lane widths less than the required minimums.

- All portions of building "A" are within 150' feet of the public road as measured along the path of firefighter travel. This building is in access.
- 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 12

Hose Pull vs. Hose Lay

A: Hose Pull (Distance from Engine to Building): Represents the amount of fire hose that firefighters must pull from the engine to reach the structure. Hose pull may not exceed 150' from the apparatus to the most remote point of the perimeter of the structure, or for sprinklered detached single family homes and duplexes 300' to the front door. *Hose pull is measured along the firefighter path of travel, avoiding any obstacles, not "as the crow flies."* In the diagram below, firefighters would be able to reach the entire perimeter of the building by pulling no more than 150' of hose from one or more fire engines staged in the shaded portion of the fire lane; the engine in the unshaded roadway has a hose pull distance greater than 150' and the building would be considered "out of access" from that point. For hydrant evaluation purposes, the shaded part of the fire lane is considered to serve the building and must meet hose lay requirements. See Attachment 27 for further information on hose pull measurement and access to structures.

B: Hose Lay (Distance from Engine to a Hydrant): Represents the amount of hose that must be laid out of the engine to supply water to the engine from the hydrant. No point along the portion of the fire lane serving the structure (the shaded road) may be farther from a hydrant than the distance specified under "Maximum Distance" in CFC Table C105.1 (see Attachment 24). The hydrant may be located along portions of the fire lane that exceed the hose pull distance (unshaded roadway) provided that it is 1) on the same property, 2) on an adjacent property where an emergency access easement has been obtained, or 3) on a public road leading to the fire lane serving the property. *Hose lay is measured along the vehicle path of travel in the fire lane, not "as the crow flies."*

C: Hydrant Spacing (Distance between Hydrants)—the distance between hydrants serving the building shall not exceed twice the "Maximum Distance" listed in CFC Table C105.1, as measured along the fire lane. Hydrants located on portions of the fire lane that do not serve the building do not need to be evaluated for spacing relative to each other, only with respect to hydrants that do serve the structure. For example, when evaluating hydrant placement for the building shown in the diagram below, C_1 may exceed the hydrant spacing requirements, while C_2 and C_3 cannot. The "Average Spacing" from Table C105.1 shall be maintained to prevent multiple hydrants from being concentrated in only one portion of the fire lane.