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CODE CORNER

ABOUT CODE CORNER

CCFS would like to remind you to check with your local "Authority Having Jurisdiction (AHJ)" for questions and opinions concerning your local Fire and Building Codes. The information contained in this article is supplied as a courtesy by the International Code Council (ICC) and is based on the International Fire and Building Codes and their respective commentaries. Your local codes or ordinances may vary.

FIRE APPARATUS ACCESS ROADS

Section D101-D103

SECTION D101 GENERAL

D101.1 Scope. Fire apparatus access roads shall be in accordance with this appendix and all other applicable requirements of *the International Fire Code*.

⚡ *If this appendix has been adopted by a jurisdiction, this particular section simply states that all fire apparatus access roads must meet the requirements of this appendix and other applicable requirements. More specifically, Section 503 would also apply. Be aware that essentially all roads leading to a particular building or facility, whether public or private, are fire apparatus access roads. Generally, the requirements of this appendix and Section 503 would be required only for new buildings and facilities. However, in some cases, improvements to existing roads and access ways may be necessary to meet the needs of the fire department.*

SECTION D102 REQUIRED ACCESS

D102.1 Access and loading. Facilities, buildings or portions of buildings hereafter constructed shall be accessible to fire department apparatus by way of an ap-

proved fire apparatus access road with an asphalt, concrete or other approved driving surface capable of supporting the imposed load of fire apparatus weighing at least 75,000 pounds (34 050 kg).

⚡ *This section contains more detailed specifications for the road surface and applied loads. In Section 503, it simply states that the road must be able to withstand the loads and be of "all-weather driving capability." This section states that the surface be of asphalt, concrete or other approved material and be able to withstand a load of 75,000 pounds (34 050 kg). SECTION D103 MINIMUM SPECIFICATIONS*

D103.1 Access road width with a hydrant. Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet (7925 mm). See Figure D103.1.

⚡ *The access road width of 20 feet (6096 mm) stated in Section 503 does not specifically account for the presence of the hydrant. This section specifically requires a minimum width of 26 feet (7925 mm) when a hydrant is located along that access roadway. This provides more room for the fire department vehicle to maneuver and connect to the hydrant. In many cases, a full 26 foot (7925 mm) width may not be possible for a majority of the access road and a possible so-*



lution is to simply widen the access road for a short distance to accommodate hydrant use. Section 503 is generic because available water supplies are not always accessed using hydrants. In some cases, the water comes from a tanker or from an on-site water supply.

D103.2 Grade. Fire apparatus access roads shall not exceed 10 percent in grade.

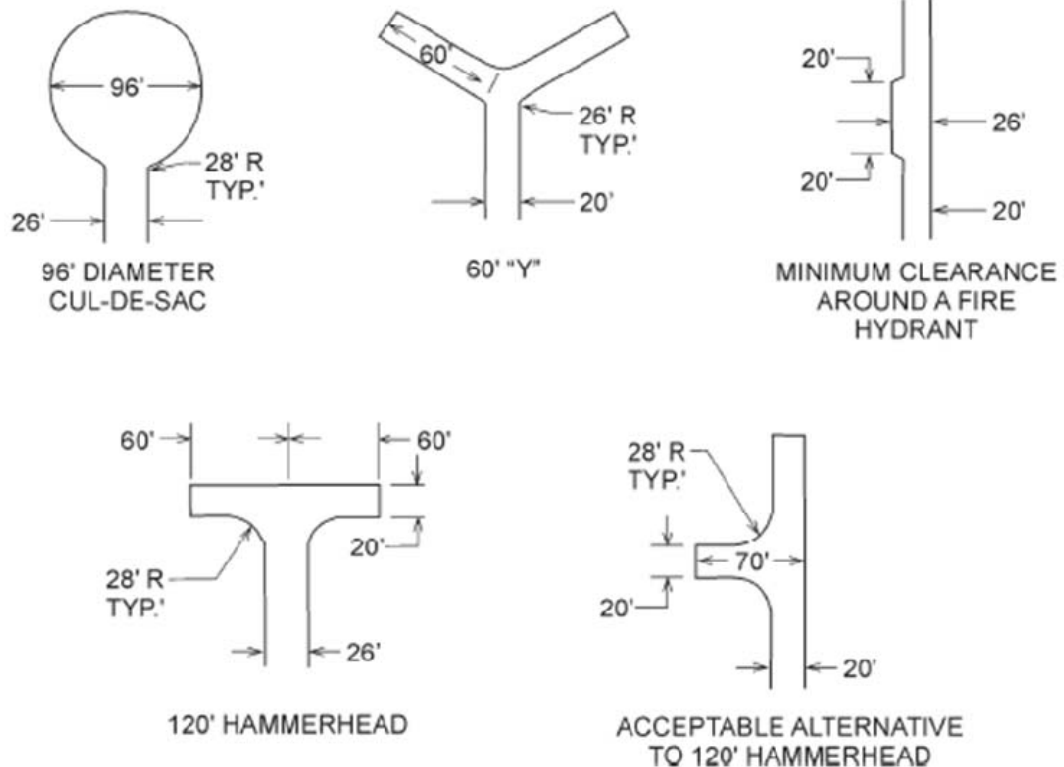
Exception: Grades steeper than 10 percent as approved by the fire chief.

⚡ Section 503 discusses grade in generalities and states that the grade be within the limits established by the fire code official. The criteria are generic because the conditions in different jurisdictions will vary. For example, some fire department apparatus is able to handle steeper grades than others, and the likelihood of inclement weather, such as snow, will affect the ability of the vehicles to handle the terrain. This appendix states a numerical criterion of not more

than 10 percent, which is fairly conservative for most situations. This number gives something specific for a jurisdiction to cite without having to determine the actual grade. There is an exception to this section that would allow the fire chief to approve a grade greater than 10 percent. This gives the jurisdiction flexibility for specific situations where terrain might call for a steeper grade.

D103.3 Turning radius. The minimum turning radius shall be determined by the fire code official.

⚡ The turning radius is left generic within both Section 503 and this section because of the large variation in the equipment used by fire departments. Each fire department must assess the specific abilities of its vehicles to set a minimum turning radius. The diagrams in Figure D103.1 set the turning radius at 28 feet (8534 mm), which may not be satisfactory for all jurisdictions.



For SI: 1 foot = 304.8 mm.

FIGURE D103.1
DEAD-END FIRE APPARATUS ACCESS ROAD TURNAROUND



D103.4 Dead ends. Dead-end fire apparatus access roads in excess of 150 feet (45 720 mm) shall be provided with width and turnaround provisions in accordance with Table D103.4.

**TABLE D103.4
REQUIREMENTS FOR DEAD-END FIRE
APPARATUS ACCESS ROADS**

| LENGTH (feet) | WIDTH (feet) | TURNAROUNDS REQUIRED |
|------------------|-----------------|--|
| 0–150 | 20 | None required |
| 151–500 | 20 | 120-foot Hammerhead, 60-foot “Y” or 96-foot-diameter cul-de-sac in accordance with Figure D103.1 |
| 501–750 | 26 | 120-foot Hammerhead, 60-foot “Y” or 96-foot-diameter cul-de-sac in accordance with Figure D103.1 |
| Over 750 | | Special approval required |

For SI: 1 foot = 304.8 mm.

⚡ *Though the widths of the access roadways may be sufficient to move and operate the necessary equipment at a fire scene, they may not be wide enough for the vehicles to turn around. On through streets this is not an issue, but when the road is a dead end and is sufficiently long, some means are necessary to enable fire department vehicles to turn around rather than having to back up over excessive distances. The three major methods used to provide a turn-around area are a cul-de-sac, hammerhead and “Y.” Figure D103.1 shows examples of all three types. Section 503 does not give any specific guidance. Each jurisdiction can choose from a variety of ways to accomplish this. Dead ends require a fire vehicle turnaround when they exceed 150 feet (45 720 mm). The turnaround is to be located at the end of the roadway or within 150 feet (45 720 mm) of the end of the roadway to limit the backing distance to a maximum of 150 feet (45 720 mm). Backing a large vehicle, such as a tower ladder, over 150 feet (45 720 mm) can be especially challenging, especially in cases where the engineer may have to use a video camera-equipped back-up system due to the vehicle’s length. Refer to the table for more guidance in determining the kind of turning radius required. In any event, the configuration of the roadway and turnaround must be approved by the fire code official. This table, which is based on the length of a dead end, sets minimum widths and recommends which types of turnarounds should be used. The diagrams in Figure D103.1 show the configurations of*

these turnarounds.

D103.5 Fire apparatus access road gates. Gates securing the fire apparatus access roads shall comply with all of the following criteria: 1. The minimum gate width shall be 20 feet (6096 mm). 2. Gates shall be of the swinging or sliding type. 3. Construction of gates shall be of materials that allow manual operation by one person. 4. Gate components shall be maintained in an operative condition at all times and replaced or repaired when defective. 5. Electric gates shall be equipped with a means of opening the gate by fire department personnel for emergency access. Emergency opening devices shall be approved by the fire code official. 6. Manual opening gates shall not be locked with a padlock or chain and padlock unless they are capable of being opened by means of forcible entry tools or when a key box containing the key(s) to the lock is installed at the gate location. 7. Locking device specifications shall be submitted for approval by the fire code official.

⚡ *Gates are sometimes required by the fire code official to limit access to certain hazardous fire areas. They are also often used as a security mechanism for gated communities and complexes. Section 503 discusses the use of gates in general terms. This section gives some specific guidelines for maintaining gates and requirements for emergency access. The seven requirements stated here all must be complied with. They focus on maintaining the required width, ease of use and ability to open in an emergency. The methods for opening the gates, whether by manual lock or by an electrical mechanism, must be approved by the fire code official. This ensures that the operating procedures of the fire department are taken into account.*

D103.6 Signs. Where required by the fire code official, fire apparatus access roads shall be marked with permanent NO PARKING—FIRE LANE signs complying with Figure D103.6. Signs shall have a minimum dimension of 12 inches (305 mm) wide by 18 inches (457 mm) high and have red letters on a white reflective background. Signs shall be posted on one or both sides of the fire apparatus road as required by Section D103.6.1 or D103.6.2.



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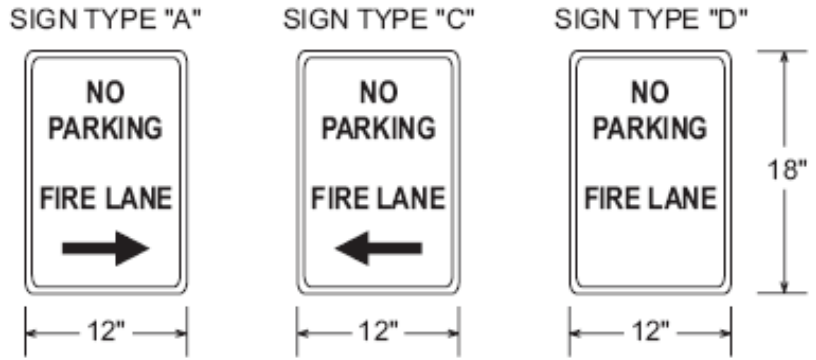
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**FIGURE D103.6
FIRE LANE SIGNS**

⌘ One of the more challenging aspects of access roads is maintaining the necessary width. Parked cars can reduce this width if parking is not prohibited and the prohibition is posted. Section 503.3 addresses this need by giving the fire code official the authority to require marking of fire access roads. This section and Figure D103.6 add wording and dimension specifications for the signs needed to mark areas where parking is prohibited.

D103.6.1 Roads 20 to 26 feet in width. Fire apparatus access roads 20 to 26 feet wide (6096 to 7925 mm) shall be posted on both sides as a fire lane.

⌘ This section requires that parking be prohibited on both sides of narrower fire apparatus access roads. Twenty feet (6096 mm) is the appropriate width needed for two average-size fire trucks to pass one another. If that width is reduced by parking even on one side, it will be potentially difficult for a fire department to undertake emergency operations in that area.

D103.6.2 Roads more than 26 feet in width. Fire apparatus access roads more than 26 feet wide (7925 mm) to 32 feet wide (9754 mm) shall be posted on one side of the road as a fire lane.

⌘ Because this width is more than sufficient for maneuvering at least two fire department vehicles by one another, parking would be allowed on one side.