



501 - FIRE APPARATUS ACCESS STANDARD

The information contained in this standard is provided solely for the convenience of the reader and was being enforced by the Ventura County Fire Protection District at the time of its publication. The District reserves the right to make changes and improvements to this standard as and when required by law, or otherwise, at any time. The District's current standards will be posted and made available for downloading by the public at the following web site: www.vcfd.org

Please note that the District assumes no liability for any damages incurred directly or indirectly as a result of any errors, omissions, or discrepancies between this standard and any applicable law. It is the sole responsibility of the person or persons conducting any work pursuant to this standard to ensure their work complies with any and all applicable codes, ordinances, and regulations.

Supersedes: VCFPD Standards 14.6.4, 14.6.5, 14.6.6, 14.6.7, 14.6.8, 14.6.9 and 14.6.11

CHAPTER 1 – ADMINISTRATION

1.1 Purpose. The purpose of this standard shall be to provide clarification of requirements and establish and assign an acceptable level of quality and minimum level of mandatory controls to provide and maintain required fire department access to premises in compliance with the *Ventura County Fire Code*. The provisions of this standard are general in nature and are not intended to override the specific requirements of the *Ventura County Fire Apparatus Access Code*.

1.2 Scope. This standard provides a method of providing for and maintaining adequate and unobstructed emergency access for fire department apparatus and personnel to buildings, structures, hazardous occupancies or other premises, as may be required by the *fire code official* and the *Ventura County Fire Code*.

The District Access Standards are minimum standards and are normally increased due to cumulative effect of previously submitted, approved or completed development within a given area. Public Road Standards allow for more restrictive limitations and shall apply when necessary.

1.3 Applicability. This standard shall apply to all premises within the jurisdictional boundaries of the Ventura County Fire Protection District. For public school access requirements see 504 – Public Schools Water and Access Standard. For access only Group U occupancies, see 505 – Group U Occupancy Standard.

CHAPTER 2 – DEFINITIONS

Access Point. The point along a *fire apparatus access road* where fire and emergency equipment is located within 150' of all portions of the grade level of a structure as measured along an approved route.

All-Weather Access Road. A road capable of supporting a 20 ton axle vehicle in a 10 year storm as certified by a State of California registered civil engineer.

Aerial Apparatus Access. A *fire apparatus access road* constructed to allow fire apparatus with aerial ladders to ladder a building and provide an additional 10 foot traffic lane.

Building. Any structure used or intended for supporting or sheltering any use or occupancy that is defined in the California Building Code.

Driveway (LRA Only). A private right-of-way serving not more than 2 residential parcels, serving not more than 4 dwelling units, and any number of accessory structures.

Dead-end Road. A road that has only one point of ingress/egress, including cul-de-sacs and looped roads.

Dwelling unit: Any *building* or portion thereof which contains living facilities, including provisions for sleeping, eating, cooking and/or sanitation for not more than one family.

Existing Parcel. Parcels, including those located in a SRA area that were legally created and recorded prior to October 1, 1980.

Existing Road. Existing roads, including those located in a SRA area, shall be *fire apparatus access roads* legally recorded and constructed prior to October 1, 1980.

Fire Apparatus Access Road. A Roadway that provides fire apparatus access from a fire station or other staging area to a facility, building, structure or portion thereof. This is a general term inclusive of all similar terms such as fire lane, public street, private street, parking lot lane, access roadway and driveway. A fire apparatus access road, in addition to providing access for fire apparatus, may provide ingress and egress for the general public during emergency events and normal use.

Fire Lane. A *fire apparatus access road* developed to allow for passage of fire apparatus. A fire lane is not necessarily intended for vehicular traffic other than a fire apparatus.

Most Weather Road. A road capable of supporting a 20 ton vehicle during most weather conditions for firefighting or rescue operations.

Off-Site Access. An access road that is outside the boundaries of the property being served.

On-Site Driveway. An access road serving not more than 4 single family dwellings and is located within the boundaries of the properties being served.

Primary Access. A road used routinely for access into and out of an area.

Roads, streets, private lanes (Roads). Vehicular access, inclusive of roadway structures, that provides access to;

- (a) more than two parcels.
- (b) more than 4 dwelling units.
- (c) any industrial or commercial occupancy.

Roadway. Any surface designed, improved, or ordinarily used for vehicle travel.

Roadway Structures. Bridges, culverts, and other appurtenant structures which supplement the roadway bed or shoulders.

Same Practical Effect. An exception or alternative with the capability of applying accepted fire suppression strategies and tactics, and provisions for fire fighter safety and public safety, including all of the following;

- (a) access for emergency fire equipment,
- (b) safe civilian evacuation,
- (c) signing that avoids delays in emergency equipment response,
- (d) available and accessible water to effectively attack fire or defend a structure from wildfire,
- (e) fuel modification sufficient for civilian and fire fighter safety.

Secondary Access. A secondary road used for access into and out of an area in which the construction standard is the same as the primary access.

State Responsibility Area Existing Parcel, Road, Structure or Use. For the purposes of CCR Title 14, Sections 1270 – 1273.11, SRA Fire Safe Access Regulations, existing parcels, roads, structures or uses shall be those legally divided, constructed, installed or uses in legally in effect prior to September 1, 1981. See CCR Title 14, Section 1270.02.

State Responsibility Area Driveway (SRA Driveway). A vehicular access that serves no more than two buildings, with no more than 3 dwelling units on a single parcel, and any number of accessory buildings (*SRA*).

Structure: That which is built or constructed, an edifice or *building* of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

Traffic lane: The portion of a roadway that provides a single lane of vehicle travel.

Turnaround: A roadway, unobstructed by parking, which allows for a safe opposite change of direction for emergency equipment. Design of such area may be a hammerhead/T or terminus bulb.

Turnouts: A widening in a roadway to allow vehicles to pass or emergency equipment to stage off the roadway traffic lane.

Vertical clearance: The minimum clearance area above the roadway to any overhead projection or obstruction.

CHAPTER 3 – GENERAL REQUIREMENTS

3.1 General. *Fire apparatus access roads* shall be provided and maintained in accordance with the Ventura County Fire Apparatus Access Code of the Ventura County Fire Protection District Ordinance Code.

3.2 Fire Department Access. *Fire apparatus access roads*, whether public or private, primary or secondary, shall provide for safe access for emergency equipment and civilian evacuation concurrently, and shall provide for unobstructed traffic circulation during a fire or other emergency.

3.2.1 Maintenance. Private *fire apparatus access roads* shall be designed and maintained in accordance with public road standards. When the road or driveway serves 2 or more parcels, provisions for maintenance of the road shall be assured by a permanent homeowners association or equivalent organization and a deed restriction requiring this is recorded on each parcel. A covenant shall be placed upon multiple parcels served by the same *fire apparatus access roads* that are under the same ownership.

3.2.2 Location. *Fire apparatus access roads* shall be constructed within the dedicated right-of-way, common area parcels or recorded access easements.

3.2.3 Timing. *Fire apparatus access roads* shall be provided prior to construction and maintained throughout the life of the development.

3.2.4 Obstructions. *Fire apparatus access roads* shall be maintained clear width and unobstructed at all times.

3.2.4.1 Permit Required. Plans shall be submitted for review and approval prior to the construction of any obstruction along *fire apparatus access roads*.

3.2.5 Surfacing. All *fire apparatus access roads* shall meet the requirements for an *all-weather* road.

3.2.5.1 Fair Weather Crossings. Existing crossings that do not exceed 1 foot depth of flow during a 10 year storm may be considered all-weather if the surface of the crossing is concrete and has a history of withstanding normal flow. Existing crossings shall be certified by a Registered Civil Engineer, and a copy of the engineer's report shall be provided to the District. New crossings shall be designed by a Registered Civil Engineer above the 10 year flow level, with documentation submitted to the District for approval. Length of fair weather crossings shall not exceed 50 feet.

3.2.6 Parking. Parking shall not be permitted within the required *fire apparatus access roads* and appurtenances, unless additional space is provided as outlined within this Standard.

3.2.7 Cross Slope. *Fire apparatus access roads* shall be designed with a maximum cross slope of 5% on any section of the access.

3.3 Where Required. *Fire apparatus access roads* shall be provided for every facility, *building* or structure hereafter constructed or relocated.

3.3.1 Modifications. When *fire apparatus access roads* cannot be installed due to practical difficulties, the fire code official shall have the authority to grant modifications for individual cases, provided the *fire code official* shall first find that special individual reasons make the strict letter of this standard impractical and the modification is in compliance with the intent, purpose and same practical effect of this code. The details of action granting such modification should be recorded on the parcel deed.

3.4 Access Point(s) to Buildings or Structures. *Fire apparatus access roads* shall be provided such that any portion of the exterior walls, at grade level, of a *building* or structure is not more than 150 ft. (46 M) from *fire apparatus access road* as measured by an approved route around the exterior of the *building* or structure. The fire code official is authorized to increase the distance, as specified in this standard.

3.4.1 Roadway Extensions. Where roadways extend beyond the access point, the extended roadway shall comply with all requirements of the *fire apparatus access roads*.

3.5 Dead-Ends. Turnarounds shall be provided on all dead-end *fire apparatus access roads* in excess of 150 feet. The fire code official is authorized to increase the length of a dead-end *fire apparatus access road* to a length of 250 feet as specified in this standard.

3.6 Additional Fire Apparatus Access Roads. The fire code official is authorized to require more than one *fire apparatus access road* based on the potential for impairment of a single road by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access.

3.7 Distance Measurements. All specified or referenced distances are measured along the ground along the center-line of the access, unless otherwise stated.

3.8 Bridges and Elevated Surfaces. Where fire apparatus must cross over a bridge or elevated surface the bridge shall be constructed and maintained in accordance with AASHTO HB-17. Surfaces shall be designed for a live load sufficient to carry the imposed loads of not less than that required by HS-20 Loading.

3.8.1 Posting of Load Limits. Load limit signs shall be posted at both entrances to bridges or road accesses over a below-grade structure as required by the Fire Code Official. Load limit signs shall be constructed of weather resistant materials, posted in obvious locations and shall be maintained legible.

3.8 Gates/Traffic Calming Across Fire Apparatus Access Roads. Gate(s) and other traffic calming devices installed across fire apparatus access *roads* shall comply with the requirements specified in Chapter 9 of this standard.

3.9 Secondary Access for Existing Roads and New Subdivisions. Secondary access, in accordance with Chapter 12, shall be provided where a new subdivision of land is served from an existing dead-end access road that exceeds allowable dead-end lengths as specified elsewhere in this standard. Secondary access shall be provided for the proposed subdivision regardless of where the new parcels take access along the existing dead-end access road. The intent is not to further increase the density on a dead-end road that exceeds allowable dead-end lengths.

CHAPTER 4 – RESIDENTIAL FIRE APPARATUS ACCESS ROADS (LRA)

4.1 General Application for Residential Fire Apparatus Access Roads within the Local Responsibility Area (LRA). This section shall apply to parcels containing Group R-3 (one and two-family dwellings) and associated Group U Occupancy's as defined in the current adopted edition of the California Building Code.

4.1.1 Vertical Clearance. *Fire apparatus access roads* shall have a clear and unobstructed height of 13 feet 6 inches along the entire road width.

4.1.2 Vertical Curve. The vertical curve of a driveway shall not allow for transitions between grades that exceed 6% elevation change along any 10 foot section. These transitions shall include; angle of approach, angle of departure and high centering of fire apparatus.

4.2 Local Responsibility Area Driveways. *Driveways* located within the Local Responsibility Area shall comply with the requirements of Chapter 3 and Sections 4.2.1 through Section 4.2.8 of this standard.

4.2.1 Driveway Width. The minimum clear width of a driveway providing fire apparatus access shall be 15 feet.

Exception: When approved by the fire code official, driveway width can be reduced to not less than 12 feet in areas where full width cannot be installed due to topography or other natural obstructions. When driveway widths are approved at less than 15 feet, all of the following shall be required;

1. Fire sprinklers shall be installed throughout all structures, regardless of use, inclusive of bathrooms, closets and combustible concealed spaces not otherwise required by NFPA 13D.
2. A statement shall be recorded with the County Recorder as a public record and a certified copy shall be provided to the Fire District prior to final occupancy. Recorded statement shall be the following; "The minimum required access has been modified due to topography or other natural obstructions. Emergency vehicle response may be delayed."

4.2.2 Driveway Surface, Construction and Grade Limitations. *Driveways* shall have a structural cross section and surface complying with one of the following based upon grade limitations as indicated below:

1. Alternate surfaced driveway constructed in accordance with Chapter 10 shall be permitted to be installed where grades do not exceed 10%. **All alternate surfaced driveways shall be certified by a State of California registered civil engineer.**
2. Grades up to 20% shall be asphalt or concrete. Structural sections shall be in accordance approved public road standards for the jurisdiction the structure will be constructed. When there are no approved road standards, the Ventura County Road Standards shall apply.
3. Grades up to 25% shall be concrete. Structural sections shall be in accordance approved public road standards for the jurisdiction the structure will be constructed. When there is no approved road standards, the Ventura County Road Standards shall apply.

4.2.3 Driveway Length Limitations. *Driveways* shall have length limitations based upon grades as indicated below:

1. *Driveways* with grades not more than 16.0% shall not have distance limitations.
2. *Driveways* or sections of *driveways* with grades between 16.1% and 20.0% shall have a maximum cumulative distance of 1000 feet.
3. *Driveways* or sections of *driveways* with grades between 20.1% and 25.0% shall have a maximum cumulative distance of 200 feet.

4.2.5 Driveway Horizontal Turn Radius. No driveway shall have a centerline horizontal radius curvature of less than 40 feet. When transitioning from one curve to another curve in the opposite direction, a recovery distance of not less than 40 feet shall be provided.

4.2.6 Driveway Turnaround. Turnarounds in accordance with Chapter 8 shall be provided where dead-end *driveways* exceed 150 feet.

Exception: When all of the following exist, a turnaround is not required;

1. the *driveway* does not exceed 250 feet in length,
2. no portion of the *driveway* exceeds 5% grade,
3. the *driveway* width is not less than 15 feet,
4. the inside turn radius of all turns is not less than 80 feet.

4.2.6.1 Driveway Turnaround Location. *Turnarounds* shall be located within 150 feet of the termination of the *driveway*.

4.2.6.2 Additional Driveway Turnarounds. Additional *turnarounds* shall be installed where *dead-end driveways* exceed 1 mile in length, at ½ mile intervals.

4.2.7 Driveway Turnouts. *Turnouts* shall be provided in accordance with Chapter 8 on all *driveways* in excess of 300 feet as specified below:

1. At the midpoint of *driveways* less than 800 feet.
2. Every 400 feet on *driveways* greater than 800 feet.
3. Where drafting hydrants are installed along the *driveway*.

4.2.7.1 Substitution for Driveway Turnouts. Approved *turnarounds* can be substituted for a *turnouts* where approved by the *fire code official*.

4.2.8 Access Point(s) on Driveways. *Driveways* shall be provided such that any portion of the exterior walls, at grade level, is not more than 150 feet from the *driveway(s)* as measured by an approved route around the exterior of the *building*.

Exception: The distance shall be permitted to be extended to 250 feet when the building is protected by an automatic fire sprinkler system in accordance with NFPA 13D and provided with an approved access walkway leading from the *driveway* to the exterior openings around the structure.

4.3 Roads, Streets, Private Lanes (Roads). *Roads, Streets, Private Lanes* shall be identified by the term *Road(s)* within this section. *Roads* serving Group R-3 (one and two-family dwellings) and associated Group U Occupancy's shall comply with the requirements of Chapter 3 and Sections 4.3.1 through 4.3.6 of this standard.

4.3.1 Road Width. Roads shall be installed in accordance with the minimum requirements of the road standards of the jurisdiction in which the road is to be constructed but not less than the dimensions indicated in Table 4.3.1.

Table 4.3.1

| Roads, Streets, Private Lanes | Minimum Improved Width | Parking |
|--------------------------------------|-------------------------------|--------------------------------|
| One-Way Traffic | 20 feet | No Parking Permitted |
| Two-Way Traffic ^a | 24 feet | No Parking Permitted |
| Two-Way Traffic | 32 feet | Parking Permitted on (1) Side |
| Two-Way Traffic | 36 feet | Parking Permitted on (2) Sides |

- a. *Existing parcels* as defined in this standard shall be permitted to be served by a *Road* width of not less than 20 feet. Where existing roads have been constructed, prior to issuance of a building permit, on an *existing parcel*, roads shall be improved to 20 feet for a length equal to the property line frontage as approved by the *fire code official*.

4.3.2 Road Surface, Construction and Grade Limitations. *Roads* shall have a structural cross section and surface complying with the public road standards for the jurisdiction in which the project is located and grades shall not exceed 16%. Where there is no public road standard, Ventura County Public Road Standards shall apply.

4.3.3 Road Length Limitations, Dead-end Roads and Secondary Access. The maximum length of dead-end roads shall not exceed the cumulative lengths established in this section. Where dead-end roads exceed length limitations, developments shall provide *secondary access* in accordance with Chapter 12 of this standard.

1. *Dead-end roads* serving up to 20 parcels and not more than 40 dwelling units shall not exceed 5280 feet.
2. *Dead-end roads* serving up to 30 parcels and not more than 60 dwelling units shall not exceed 2,640 feet.
3. *All other Dead-end roads* shall not exceed 800 feet.

4.3.4 Horizontal Turn Radius. Horizontal turn radius shall be determined by public road standards based upon street width and speed and no road shall have a centerline horizontal radius curvature of less than 40 feet. When transitioning from one curve to another curve in the opposite direction, a recovery distance of not less than 80 feet shall be provided.

4.3.5 Road Turnaround. Turnarounds in accordance with Chapter 8 shall be provided where dead-end *roads* exceed 150 feet.

Exception: When all of the following exist, a turnaround is not required;

1. the *road* does not exceed 250 feet in length,
2. no portion of the *road* exceeds 5% grade,
3. the *road* width is not less than 20 feet,
4. the inside turn radius of all turns is not less than 80 feet.

4.3.6 Existing Road Turnouts. In addition to the required improvements specified in Table 4.3.1, *turnouts* in accordance with Figure 8.3(2) shall be provided, within the right-of-way or easement, on all *existing roads* where road width is less than 20 feet clear and road lengths are in excess of 300 feet as specified below;

1. At the midpoint of *roads* less than 800 feet.
2. every 400 feet on *roads* greater than 800 feet.
3. where hydrants are installed along the *road*.

4.3.6.1 Existing Road Turnout Improvements. It is the intent of Section 4.3.6 to require *road* improvements along an existing, legal, non-conforming *road* when new structures are constructed that will increase the amount of vehicle traffic. Where improvements are partial or incomplete, each new development shall continue the improvement of the access as approved by the *fire code official*. This improvement shall be inclusive but not limited to new primary or second dwellings.

CHAPTER 5 – FIRE APPARATUS ACCESS ROADS (SRA)

5.1 General Application for Fire Apparatus Access Roads within the State Responsibility Area (SRA). This section shall apply to parcels located within the State Responsibility Area (SRA) as required by Title 14 of the California Code of Regulations and VCFPD Access Code as identified below:

1. The perimeters and access to all residential, commercial, and industrial building construction within SRA approved after January 1, 1991 except as set forth below:

Exception: These regulations do not apply where an application for a building permit is filed after January 1, 1991 for building construction on a parcel that was formed from a parcel map or tentative map (if the final map for the tentative map is approved within the time prescribed by the local ordinance) approved prior to January 1, 1991, ***to the extent that conditions relating to the perimeters and access to the buildings were imposed by the parcel map or final tentative map approved prior to January 1, 1991.***

2. All Tentative and parcel maps or other developments approved after January 1, 1991.
3. Applications for building permits on a parcel approved in a pre-1991 parcel or tentative map to the extent that conditions relating to the perimeters and access to the buildings were not imposed as part of the approval of the parcel or tentative map.

5.1.1 Affected Activities. The affected activities include, but are not limited to:

1. Permitting or approval of new parcels, excluding lot line adjustments as specified in Government Code (GC) section 66412(d).
2. Application for a building permit for new construction, not relating to an existing structure.
3. Application for a use permit.
4. The siting of manufactured homes (manufactured homes are as defined by the National Fire Protection Association, National Fire Code, section 501A, Standard for Fire Safety Criteria for Manufactured Home Installations, Sites and Communities, chapter 1, section 1-2, Definitions, page 4, 1987 edition and Health and Safety Code sections 18007, 18008, and 19971).
5. Road construction, including construction of a road that does not currently exist, or extension of an existing road.

5.1.2 Vertical Clearance in SRA. *Fire apparatus access roads* shall have a clear and unobstructed height of 15 feet along the entire road width.

5.1.3 Vertical Curve in SRA. The length of vertical curves in roadways, exclusive of gutters, ditches, and drainage structures designed to hold or divert water, shall be not less than 100 feet.

5.1.4 Horizontal Turn Radius in SRA. *Fire apparatus access roads* shall have a minimum horizontal **inside** radius curvature of 50 feet.

5.1.5 Design Capacity in SRA. *Fire apparatus access roads* shall be designed and maintained to support the imposed load of fire apparatus weighing at least 75,000 pounds and provide an aggregate base.

5.2 SRA Driveway. *SRA Driveways* shall comply with the requirements of Chapter 3 and Sections 5.2.1 through Section 5.2.5.

5.2.1 SRA Driveway Width. The minimum clear width of a *SRA* driveway providing fire apparatus access shall be 15 feet.

Exception: When approved by the fire code official, *SRA driveway* width can be reduced to not less than 12 feet in areas where full width cannot be installed due to topography or other natural obstructions. When driveway widths are approved at less than 15 feet, all of the following shall be required;

1. Fire sprinklers shall be installed throughout all structures, regardless of use, inclusive of bathrooms, closets and combustibles concealed spaces not otherwise required by NFPA 13D.
2. A statement shall be recorded with the County Recorder as a public record and a certified copy shall be provided to the Fire District prior to final occupancy. Recorded statement shall be the following; "The minimum required access has been modified due to topography or other natural obstructions. Emergency vehicle response may be delayed."

5.2.2 SRA Driveway Surface, Construction and Grade Limitations. *SRA Driveways* shall have a structural cross section and surface complying with one of the following based upon grade limitations as indicated below:

1. Alternate surfaced driveways constructed in accordance with Chapter 10 shall be permitted to be installed where grades do not exceed 10%. **All alternate surfaced driveways shall be certified by a State of California registered civil engineer.**
2. Grades up to 16% shall be asphalt or concrete. Structural sections shall be in accordance approved public road standards for the jurisdiction the structure will be constructed. When there are no approved road standards, the Ventura County Road Standards shall apply.

5.2.3 SRA Driveway Length Limitations. *Driveways* shall have length limitations based upon grades as indicated below:

1. *SRA Driveways* with grades not more than 16.0% shall not have distance limitations.
2. *SRA Driveways with grades more than 16.0% are not permitted.*

5.2.4 SRA Driveway Turnaround. *Turnarounds* in accordance with Chapter 8 shall be provided where dead-end *SRA driveways* exceed 150 feet and shall be located within 50 feet of the *building*.

5.2.5 SRA Driveway Turnouts. *Turnouts* in accordance with Chapter 8 shall be provided on all *SRA driveways* in excess of 150 feet as specified below:

1. At the midpoint of *SRA Driveway* less than 800 feet.
2. Every 400 feet on *SRA Driveway* greater than 800 feet.
3. Where hydrants are installed along the *SRA Driveway*.

5.3 Roads, Streets, Private Lanes in SRA (SRA Roads). *Roads, Streets, Private Lanes* in the SRA shall be identified by the term *SRA Road(s)* within this section. *SRA Roads* serving Group R-3 (one and two-family dwellings) and associated Group U Occupancy's shall comply with the requirements of Chapter 3 and Sections 5.3.1 through 5.3.4 of this standard.

5.3.1 SRA Road Width. *SRA Roads* shall be installed in accordance with the minimum requirements of the road standards of the jurisdiction in which the road is to be constructed but not less than the dimensions indicated in Table 5.3.1.

Table 5.3.1

| Roads, Streets, Private Lanes | Minimum Improved Width | Parking |
|--------------------------------------|-------------------------------|--------------------------------|
| One-Way Traffic | 20 feet | No Parking Permitted |
| Two-Way Traffic ^a | 24 feet | No Parking Permitted |
| Two-Way Traffic | 32 feet | Parking Permitted on (1) Side |
| Two-Way Traffic | 36 feet | Parking Permitted on (2) Sides |

- a. *Existing parcels* as defined in this standard shall be permitted to be served by a *Road* width of not less than 20 feet. Where existing roads have been constructed, prior to issuance of a building permit, on an *existing parcel*, roads shall be improved to 20.

5.3.2 Road Surface, Construction and Grade Limitations. *SRA Roads* shall have a structural cross section and surface complying with the public road standards for the jurisdiction in which the project is located and grades shall not exceed 16%.

5.3.3 Road Length Limitations, Dead-end Roads and Secondary Access. The maximum length of dead-end roads shall not exceed the cumulative lengths established in Table 5.3.3. Where dead-end roads exceed length limitations, developments shall provide *secondary access* in accordance with Chapter 12 of this standard.

Table 5.3.3 ^a

| Size of Parcel(s) Served | Length Limitation |
|--|--------------------------|
| parcels zoned for less than one acre | 800 feet |
| parcels zoned for 1 acre to 4.99 acres | 1320 feet |
| parcels zoned for 5 acres to 19.99 acres | 2640 feet |
| parcels zoned for 20 acres or larger | 5280 feet |

- a. All lengths shall be measured from the edge of the roadway surface at the intersection that begins the road to the end of the road surface at its farthest point. Where a dead-end road crosses areas of differing zoned parcel sizes, requiring different length limits, the shortest allowable length shall apply.

5.4 SRA Road Turnaround. *Turnarounds* in accordance with Chapter 8 shall be provided on all dead-end *SRA roads* within 150 feet of the termination of the *road*. Where parcels are zoned 5 acres or larger, *turnarounds* shall be provided at a maximum of 1,320 foot intervals.

CHAPTER 6 – COMMERCIAL ACCESS REQUIREMENTS

6.1 General Application for Commercial/Industrial Fire Apparatus Access Roads. This section shall apply to parcels containing **all occupancies groups** other than Group R-3 and Group U occupancies as defined in the current adopted edition of the California Building Code.

6.2 Vertical Clearance. *Fire apparatus access roads* serving commercial and industrial occupancies shall have a clear and unobstructed height of 13' 6" feet along the entire road width.

6.3 Vertical Curve. The vertical curve of a *fire apparatus access roads* serving commercial and industrial occupancies shall not allow for transitions between grades that exceed 6% elevation change along any 10 foot section. These transitions shall include; angle of approach, angle of departure and high centering of fire apparatus.

6.4 Horizontal Turn Radius. Horizontal turn radius shall be determined by public road standards based upon street width and speed and no road shall have a centerline horizontal radius curvature of less than 40 feet. When transitioning from one curve to another curve in the opposite direction, a recovery distance of not less than 80 feet shall be provided.

6.4 Road Width. Roads shall be installed in accordance with the minimum requirements of the road standards of the jurisdiction in which the road is to be constructed but not less than the dimensions indicated in Table 6.4.

Table 6.4

| Roads, Streets, Private Lanes | Minimum Improved Width | Parking |
|--------------------------------------|-------------------------------|--------------------------------|
| One-Way Traffic | 20 feet | No Parking Permitted |
| Two-Way Traffic | 24 feet | No Parking Permitted |
| Two-Way Traffic | 32 feet | Parking Permitted on (1) Side |
| Two-Way Traffic | 36 feet | Parking Permitted on (2) Sides |

6.5 Road Surface, Construction and Grade Limitations. *Fire apparatus access roads* serving commercial and industrial occupancies shall have a structural cross section and surface complying with the public road standards for the jurisdiction in which the project is located and grades shall not exceed 10%.

6.6 Road Length Limitations, Dead-end Roads and Secondary Access. The maximum length of dead-end roads shall not exceed the cumulative lengths established in this section. Where dead-end roads exceed limitations, developments shall provide *secondary access* in accordance with Chapter 12 of this standard.

1. *Dead-end roads* shall not exceed 800 feet.
2. *Dead-end roads* shall not serve more than 100 dwelling units or 200 guest rooms or combination thereof. Combination calculation shall utilize percentage of units (i.e. 50 dwelling units equals 50% and 100 guest rooms equals 50% for a total of 100%)

6.7 Road Turnaround. *Turnarounds* in accordance with Chapter 8 shall be provided where dead-end roads exceed 150 feet.

Exception: When all of the following exist, a turnaround is not required;

1. the *road* does not exceed 250 feet in length,
2. no portion of the *road* exceeds 5% grade,
3. the *road* width is not less than 20 feet,
4. the inside turn radius of all turns is not less than 80 feet.

6.8 Aerial Apparatus Access General. *Aerial fire apparatus access* shall be required when the vertical distance between any grade plane and the highest roof surface exceeds 30 feet. One *aerial apparatus access roads* shall be provided per 50,000 square feet of building area.

Exceptions: Aerial fire apparatus access shall not be required when any of the following apply:

1. Non accessible roofs with pitched greater than 8:12 when building is protected by an automatic fire sprinkler system in accordance with NFPA 13.
2. Limited architectural features such as canopies and towers without habitable floor space below the roof when building is protected by an automatic fire sprinkler system in accordance with NFPA 13.

6.8.1 Determination of Height. For the purposes of this section, the highest roof surface shall be determined by measurement to the eave of a pitched roof, the intersection of the roof to the exterior wall, or the top of parapet walls, whichever is greater.

6.8.2 Width of Aerial Apparatus Access. *Aerial apparatus access roads* shall have a minimum unobstructed width of 30 feet, exclusive of shoulders.

6.8.3 Proximity to Building. A minimum of one required *aerial apparatus access road* shall be located within a minimum of 15 feet and a maximum of 30 feet from the building.

6.8.4 Position of Aerial Apparatus Access. *Aerial apparatus access roads* shall be positioned such that they are parallel to the entire side of the building. The side of the building on which the *aerial fire apparatus access road* is positioned shall be along the longest side of the building, unless otherwise approved by the *fire code official*.

6.8.5 Obstructions. Obstructions between *aerial apparatus access roads* and the buildings they serve shall be reviewed and approved by the *fire code official*.

6.8.5.1 Overhead Utilities. Overhead utility and power lines shall not be located along or within *aerial fire apparatus access roads* and shall not be permitted between *aerial fire apparatus access roads* and the buildings they serve.

6.8.5.2 Trees. Trees and other similar obstructions planted between the *aerial fire apparatus access* and the building shall comply with the following requirements:

1. Shall be spaced so there will be a minimum 30 foot separation between canopies at maturity.
2. Shall not be placed within 45 feet of the ends of a building along the access.

Exception: Trees with expected maturity height to be less than that which would impact laddering operations from the *aerial fire apparatus access* to the building along an approved angle.

6.8.6 Mitigations to Aerial Apparatus Access Roads. The *fire code official* is authorized to reduce the required width to not less than 24 feet when all of the following are provided;

1. Automatic fire sprinklers are installed throughout the structure in accordance with NFPA 13,
2. fire sprinkler standpipes are provided on all floors and through to the roof.
3. two or more roof access points are provided through 2-hour fire rated stairs separated a distance not less than half of the diagonal of the structure.

6.9 Access Point(s) on Roads. Roads shall be provided such that any portion of the exterior walls, at grade level, of a *building* or structure, is not more than 150 feet from a *road* as measured by an approved route around the exterior of the *building* or structure.

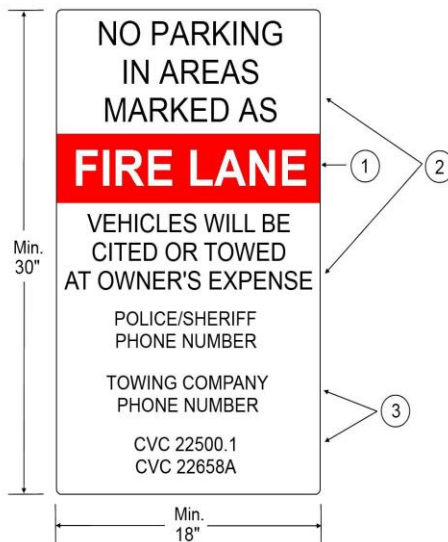
Exception: The distance shall be permitted to be extended to 250 feet when the building is protected by an automatic fire sprinkler system in accordance with NFPA 13 and provided with an approved access walkway leading from the *driveway* to the exterior openings around the structure.

CHAPTER 7 – FIRE LANES

7.1 General Fire Lane. *Fire apparatus access roads* and fire protections equipment shall comply with this section. *Fire apparatus access roads* designated as *fire lanes* shall be posted with fire lane markings/signs in accordance with this Standard, Caltrans Traffic Manual and CVC Sections 22500.1 and 22658(a).

7.1.1 Fire Lane Enforcement Notification. All entrances to properties with designated *fire lanes* shall be posted with signs as indicated in Figure 7.1.1.

Figure 7.1.1

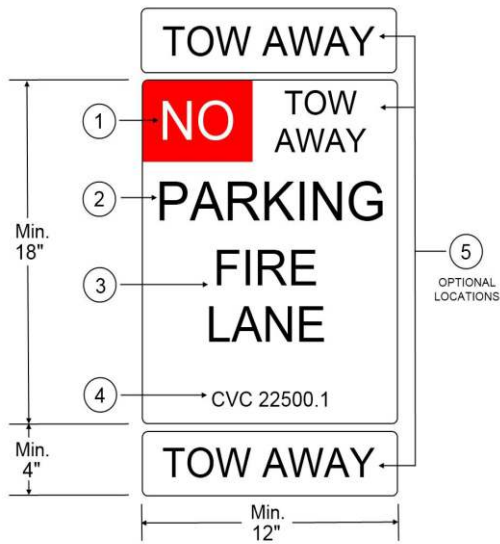


1. The sign shall be of a durable material, securely mounted, facing the direction of travel and clearly visible to oncoming traffic entering the designated area.
2. The words “FIRE LANE” shall be white reflective lettering on a red background and no smaller than 4 inches in height.
3. Lettering shall be red on a white reflective background, no smaller than 2 inches in height.
4. The words “POLICE/SHERIFF” and the name of each towing company under written authorization agreement from the property owner to tow shall be placed on the sign. The respective telephone number for each shall be listed below their name. The applicable California Vehicle Code sections shall be listed. Lettering shall be red on a white reflective background and be no smaller than 1 inch in height.

7.1.2 Fire Lane Identification. *Fire lanes* shall be posted with one of the following methods (Some situations may not allow a choice):

1. Signs as indicated in Figure 7.1.2(1) shall be placed along the length of the fire lane, every 150 feet or portion thereof. Each section and/or direction shall have at least one sign.
2. All curbing which outlines the fire lanes shall be painted red. White lettering reading “NO PARKING – FIRE LANE – TOW AWAY” shall be a minimum of 4 inches tall and placed every 50 feet or portion thereof. The lettering shall be placed on top of the curb and at least once on each section and/or direction as indicated in Figure 7.1.2(2).

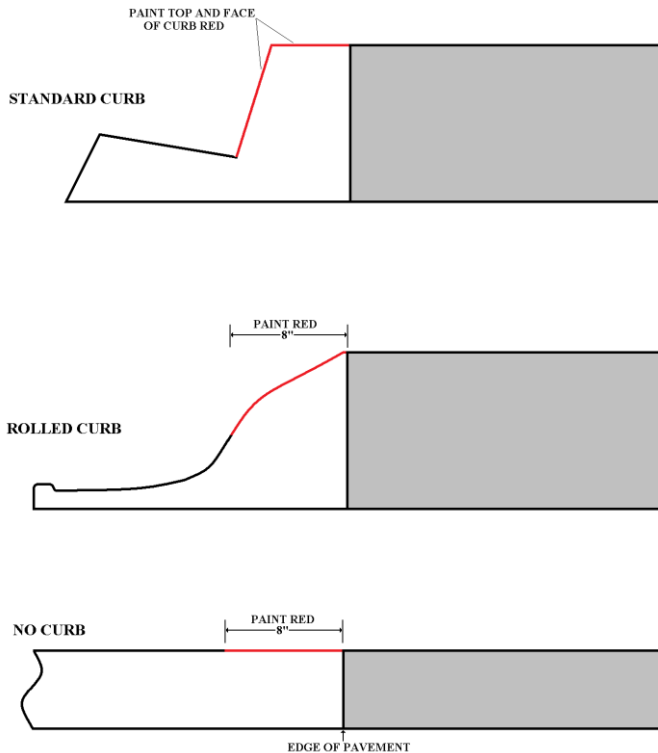
Figure 7.1.2(1)



The sign shall be of durable material, securely mounted, facing the direction of travel and clearly visible to oncoming traffic.

1. The word "NO" shall be white reflective on a red background and no smaller than 3-1/2 inches in height.
2. Lettering shall be red on a white reflective background, no smaller than 3 inches in height.
3. Lettering shall be red on a white reflective background, no smaller than 2-1/2 inches in height.
4. Lettering shall be red on a white reflective background, no smaller than 1 inch in height.
5. The words "TOW AWAY" shall be in one of the three optional locations. The lettering shall be red on a white reflective background, no smaller than 2-1/2 inches in height.

Figure 7.1.2(2)



"NO PARKING – FIRE LANE – TOW AWAY" shall be painted on the top of the curb with white 4 inch high lettering every 50 feet or portion thereof.

7.1.3 Enforcement. When properly posted, violating vehicles may be removed (towed) in accordance with CVC Section 22658, including any required notifications.

7.2 Posting of Roads. *Roads* shall be posted in accordance with Section 7.1.2 as follows;

1. *Roads* less than 32 feet in clear width from curb face to curb face shall be posted on both-sides of the access.
2. *Roads* 32 feet to 36 feet in clear width from curb face to curb face shall be posted on one-side of the access.
3. *Aerial apparatus access roads* less than 38 feet in clear width from curb face to curb face shall be posted on both-sides of the access.
4. *Aerial apparatus access roads* 38 feet to 44 feet in clear width from curb face to curb face shall be posted on one-side of the access.
5. *Turnarounds* as specified in Chapter 8 of this standard.

7.3 Posting for Fire Protection Equipment. Fire protection equipment shall be posted in accordance with Section 7.1.2 as follows;

1. Fire hydrants located along *roads* shall be posted for a distance of 5 feet in each direction from the center of the hydrant.
2. Fire department connections (FDC) along *roads* shall be posted for a distance of 5 feet in each direction from the center of the FDC.

7.4 Plan Review and Approval of Fire Lanes. A *fire lane* location plan check is required for all projects where new buildings or additions to buildings are proposed and the project is not exempt from providing fire department access. Plans shall be submitted to VCFPD, Fire Prevention Bureau as indicated in this standard.

7.5 Fire Lane Plans. Prior to final inspection by VCFPD, submit 2 copies of a scaled site plan with appropriate application and fees to VCFPD. This application can be included with the original "Form-126-A" or a deferred submittal. Plans shall indicate the following:

1. Location of all buildings and structures inclusive of overhangs
2. Location of all *fire apparatus access roads* serving the site
3. Location of any gates or barriers
4. Location of sidewalks and parking rows
5. Location of fire hydrants
6. Location of FDC's
7. Locations of any existing fire lanes and sign locations
8. Clear designation where *private roads* connect with public roads

7.5.1 Plan Marking. Do not mark any *fire lane* or sign locations on the plans (with exception of existing lanes and signs). The *fire code official* will mark all each set of plans with **red** ink to indicate where the lanes and signs are required. The *fire lane* signs and accompanying tow-away zone signs shall be placed on the property, by the owner or owner's agent, as indicated on the plans by the *fire code official*.

CHAPTER 8 – TURNAROUNDS, TURNOUTS AND 90° TURNS

8.1 General. This chapter applies to the design and installation of access turnarounds, turnouts, and 90° turns within the Jurisdiction of the Ventura County Fire Protection District (VCFPD).

8.2.1 Parking Restricted. No parking shall be permitted within the required components of this chapter unless additional spaces is provided, and parking is approved by the *fire code official*.

8.2.1.1 Fire Lane Signage. Fire lane signs shall be required as determined by the *fire code official*.

8.2 Turnarounds. *Turnarounds* required by other chapters of this standard shall be designed in accordance with Section 8.2.1 through 8.2.3.

8.2.1 Turnaround Maximum Grade. *Turnarounds* shall not have a grade greater than 5% in any direction.

8.2.2 Turnaround Location. Unless specified elsewhere in this standard, *turnaround* areas shall be located at the end of the *fire apparatus access road* or within 150 feet of the end of the *fire apparatus access road*.

8.2.3 Turnaround Dimensions. *Turnarounds* shall have dimensions equal to or greater than the examples in Figure 8.2(1) and 8.2(2). Where conditions do not allow an exact duplicate of one of these examples, alternate designs may be considered.

8.3 Turnouts. *Turnouts* required by other chapters of this standard shall be designed in accordance with Section 8.3.1 through 8.3.4.

8.3.1 Turnout Maximum Grade. *Turnouts* shall not have a grade greater than that allowed on the *fire apparatus access roads* they serve. Transitions between grades shall not exceed 6% and shall not interfere with the angle of approach, angle of departure or high centering of fire apparatus.

8.3.2 Turnout Location. *Turnouts* shall be installed in locations determined elsewhere in this standard in the appropriate chapter for the *fire apparatus access road* they serve.

8.3.3 Turnout Dimensions. *Turnouts* shall have dimensions for the *fire apparatus access roads* they serve equal to or greater than the examples in Figure 8.3(1).

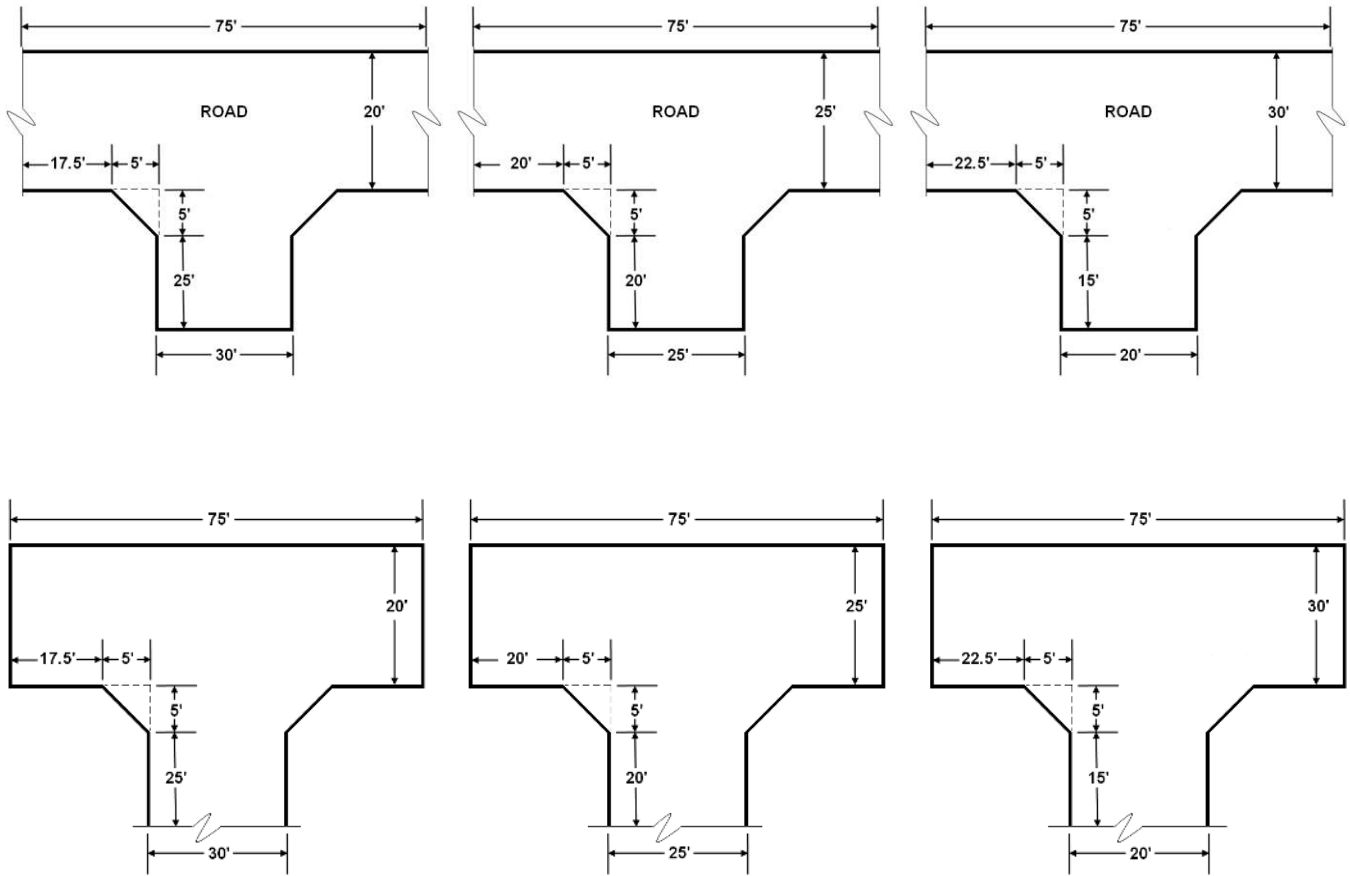
8.3.4 Turnouts at Hydrants. *Turnouts* located at fire hydrants shall not have a grade greater than 5% in any direction.

8.4 90° Turns. 90° degree turns shall be designed in accordance with sections 8.4.1 through 8.4.2.

8.4.1 90° Turn Maximum Grade. 90° shall not have a grade greater than 5% in any direction.

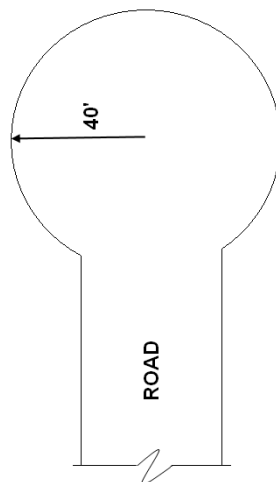
8.4.2 90° Turn Dimensions. 90° shall have dimensions equal to or greater than the examples in Figure 8.4. Where conditions do not allow an exact duplicate of one of these examples, alternate designs may be considered.

Figure 8.2(1)*



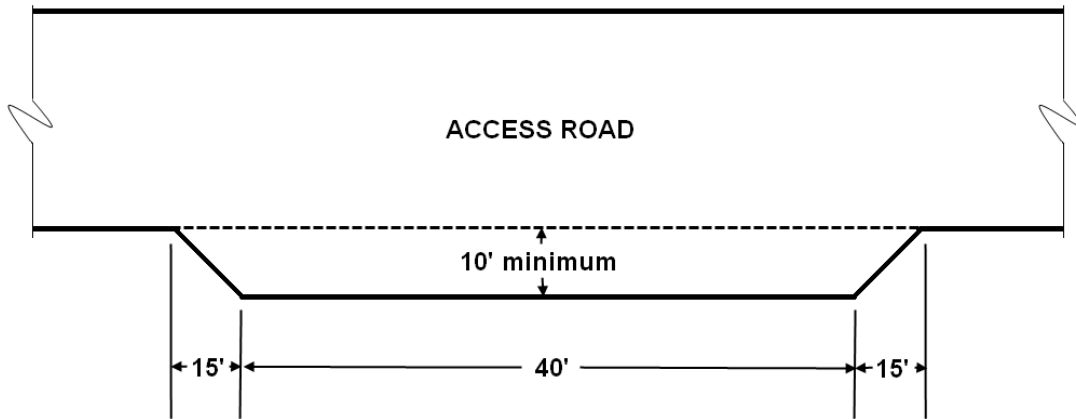
*No Parking shall be permitted. Parking shall require an additional 8 feet to the traffic lane.

Figure 8.2(2)*



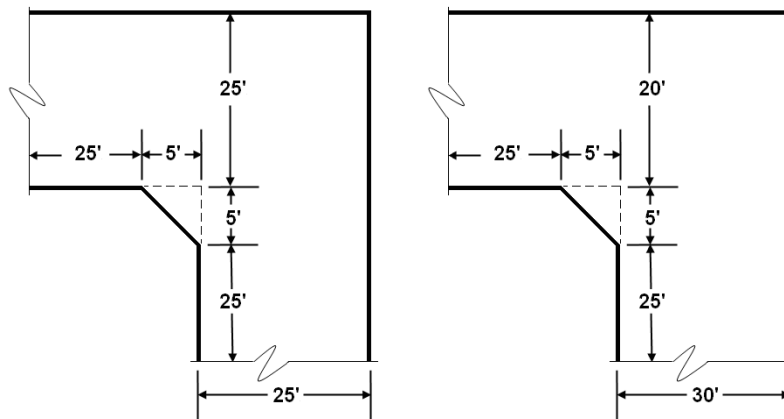
*No Parking shall be permitted. Parking shall require a minimum 48 foot radius. A maximum 12 foot diameter island may be permitted at the center of cul-de-sac bulb when off-street parking is provided.

Figure 8.3(1)*



*Existing roads that are being improved in accordance with Section 4.3.6 of this standard shall be improved to a minimum width of the road easement up to a width of 24 feet.

Figure 8.4



CHAPTER 9 – GATES AND TRAFFIC CALMING DEVICES

9.1 Gates General. Gates shall be installed and maintained in an operative condition at all times in accordance with this chapter.

9.1.1 Gate Permits Required. Scaled access plans shall be submitted to the Fire District for review and approval prior to installation of any gates across *fire apparatus access roads*. In addition to obtaining Fire District approval, a zoning clearance and building permit may also be required. It shall be the responsibility of the owner or owners authorized agent to obtain all required permits and approvals prior to the installation of any gates across *fire apparatus access roads*.

9.1.1.1 Gate Plans. Gate plans shall include the following and be drawn on a minimum 24"x36" sheet and shall be drawn to scale of not less than 1 inch = 10 feet:

1. Identified clear width and height of gates.
2. Location of gates as they relate to required setbacks, and any fire protection equipment.
3. Location of Knox device.
4. Details of operation, inclusive of battery back-up or "fail-safe" operation as required.
5. Location of exiting spikes or similar devices.

9.1.1.2 Gate Inspections. Prior to placing any gate into service, the responsible party shall request an inspection from the *fire code official*.

9.1.2 Knox Device. All gates shall be equipped with a Knox Rapid Entry device installed in an approved location. Electric gates shall be equipped with a Knox electric switch. Manual gates may be locked with a padlock or Knox padlock. Gates locked with a padlock shall be provided with a Knox key box with padlock keys inside. Approved Knox devices can be ordered at www.knoxbox.com. No other locks or latches shall be installed on gates.

9.1.3 Multiple Gates. There shall be no more than one (1) gate across *fire apparatus access roads* providing ingress and egress to an area.

Exception: Additional gates may be installed across *driveways* when they do not unduly impair ingress or egress as approved by the *fire code official*.

9.1.4 Gate Interference. Gates and other appurtenances shall be placed such that they do not interfere with the required turning radius and/or the use of fire protection equipment.

9.2 Driveway Gates. Gates across *driveways* shall comply with section 9.1 and sections 9.2.1 through 9.2.3.

Exception: Gates are not required comply with this section installed across a driveway that is not part of the required fire department access. All gates shall have a Knox device installed to provide foot access to firefighters.

9.2.1 Driveway Gate Operation. Gates across *driveways* shall be permitted to be electrically or manually operated and may be of the swing or sliding type.

9.2.1.1 Fail-Safe. Electrical gates must operate with battery back-up or in "fail-safe" when electrical service is interrupted. "Fail-safe" shall allow for a gate to be opened manually under power loss.

9.2.2 Driveway Gate Easements. All gate components shall be located within recorded easements, including location of any gate in the open position when serving more than one (1) parcel.

9.2.3 Driveway Gate Width. Gates across *driveways* shall have a clear width of not less than 15 feet.

9.3 Road Gate Operation. Gates across *roads* shall comply with section 9.1 and sections 9.3.1 through 9.3.7.

9.3.1 Road Gates. Gates shall be electrically operated and may be of the swing or sliding type.

9.3.2 Road Gate Exit Loop. An automatic exit loop shall be provided for all gates on the egress side of the gate. No gate shall require the use of a key, remote or other device to egress.

9.3.3 Road Gate Battery Back-up. Gates shall be equipped with a battery back-up and in the event of a power failure shall open and remain open until power is restored.

9.3.4 Road Gate Easements. All gate components shall be located within recorded easements, including location of any gate in the open position.

9.3.5 Road Gate Width. Gates across *roads* shall have a clear width of not less than 20 feet when serving two-way traffic and not less than 15 feet when serving one-way traffic. See Figure 9.3.5.

9.3.6 Vehicle Stacking. Gates across *roads* shall be situated in accordance with public road standards but not less than 40 feet for from an intersecting road to allow safe vehicle stacking.

9.3.7 Vehicle Turnarounds. Provisions for turning around vehicles must be provided when entry is denied.

9.4 Gate Maintenance. All gates and components shall be maintained in an operative condition at all times and shall be replaced or repaired when defective.

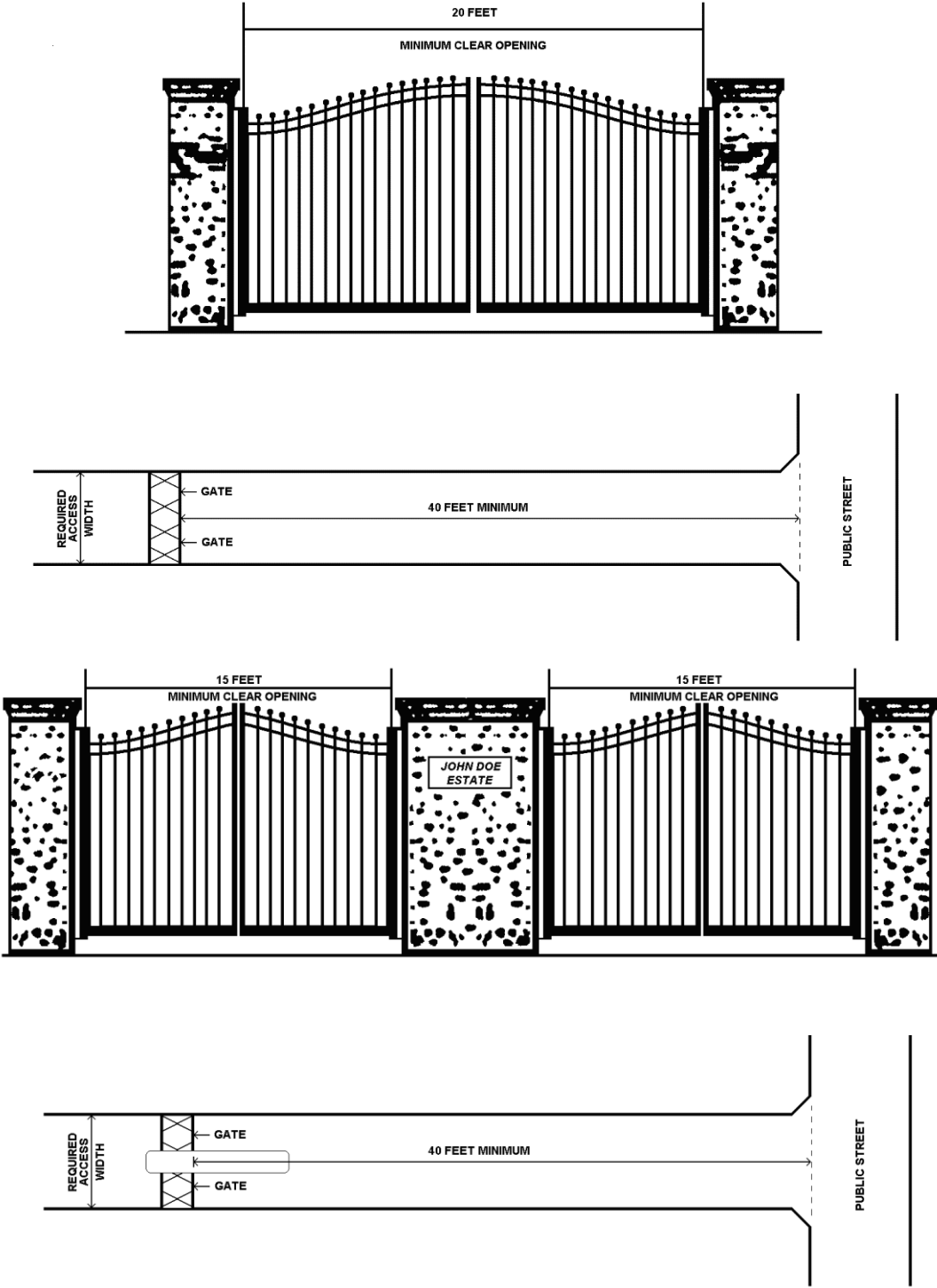
9.4.1 Maintenance Responsibility. Property owner(s) shall be responsible to maintain gates. Gates that are part of a tract development, residential planned development or similar situation shall be maintained by the development's Owner's Association.

9.4.2 Battery Testing. Any gate required to have a battery back-up system shall have a semi-annual test of that system performed and a record kept on file.

9.4.3 Service Records. Records shall be maintained on-site and are subject to review at the request of the Fire District.

9.5 Traffic Calming Devices. Traffic calming devices shall be installed and maintained in accordance with the road standards for the local jurisdiction in which the devices are to be installed. Where no road standards exist for the local jurisdiction, the devices shall be installed in accordance with the Ventura County Road Standards.

Figure 9.3.5



CHAPTER 10 – ALTERNATIVE SURFACES

10.1 Alternative surface Fire Apparatus Access Roads. This chapter applies when a *fire apparatus access road* is not surfaced with traditional road building materials such as asphalt or concrete. This chapter includes surfaces such as but not limited to pavers, stone or grasscrete.

10.2 Certified Report. Alternative surface *fire apparatus access roads* shall be designed by an engineer register by the State of California. The engineer shall certify that all components of the *fire apparatus access road* meet the requirements for all-weather access and capable of supporting required loads. Certification of *fire apparatus access road* on 609 – All-Weather Access Certification Form shall be provided to the Fire District prior to final occupancy.

10.3 Stabilization. Stabilization of *fire apparatus access roads* shall be addressed in the design of the surface and may be accomplished by curbing.

10.4 Compaction. All subgrade soil is required to have minimum 95 percent compaction.

10.5 Markings. Where alternative surfaces are not clearly identifiable, such as grasscrete, a curb shall be provided and painted red or reflectors shall be imbedded into bordering curbing at intervals not exceeding 15 feet.

10.6 Structural Section Driveways. Alternate surfaced driveway shall have a structural section meeting the requirements of *all-weather* access based upon Cal-Trans standard R-value analysis and adequate drainage control.

10.6.1 Acceptable Structural Section for Driveway. When approved by a Civil Engineer and acceptable surface may be Double Chip Seal Surface over minimum 4" PMB compacted to 95% relative compaction: Apply bituminous prime coat to aggregate base at the rate of 0.35 gallons per square yard of SC70 or MC70 bituminous binder, followed by a medium chip seal coat consisting of 0.35 gallons per square yard of CRS emulsion and 25 pounds of 3/8" x #6 screening consisting of broken stone or crushed gravel per square yard in accordance with the current California Division of Highways Standard Specifications.

10.7 Surface Requirements. The surface shall support vehicles and provide reasonable traction (no sliding) during weather conditions as required for all weather access.

CHAPTER 11 – ACCESS DURING CONSTRUCTION

11.1 Fire Apparatus Access Roads During Construction. *Fire apparatus access roads* during construction shall comply with this section.

11.1.1 Utilities. All utilities within the required width of *fire apparatus access roads* shall be installed prior to introducing combustible materials to a site or commencing vertical construction.

11.2 Driveways During Construction. Prior to and throughout vertical construction, *driveways*, inclusive of *turnarounds*, required for fire apparatus access shall have base material capable of supporting a 20-ton vehicle, during most-weather conditions, installed and compacted to 95% relative compaction at a minimum of 12 feet wide.

11.3 Roads During Construction. Prior to introducing combustible materials or starting vertical construction *fire apparatus access roads* shall be installed in accordance with 11.3.1 through 11.3.2.

11.3.1 Width. *Fire apparatus access roads* shall be a minimum un-obstructed width of 20 feet.

11.3.2 Surface. At minimum, the surface of *fire apparatus access roads* shall be as follows:

1. Minimum 6 inches of native soil compacted to 95 percent relative compaction.
2. Minimum 4 inches of aggregate base compacted to 100 percent relative compaction.

OR

3. First lift of AC pavement with required aggregate base in accordance with public road standards or registered engineers design requirements.

11.4 Fire Protection Systems. Fire protection systems shall remain clear and unobstructed. Temporary signage shall be provided to alert employees that no obstructions of fire protection equipment shall be permitted.

CHAPTER 12 – SECONDARY ACCESS

12.1 General Secondary Access. *Secondary access* required in other chapters of this standard shall comply with the requirements of this chapter.

12.1.1 Looped Access. Separate access roads that come back to a single access location (choke point) are not acceptable and will be considered a dead-end access.

12.1.2 No Limitations of Use. *Secondary access roads* shall not be limited for emergency use only and shall permit the free passage for egress without the use of a key, remote or other special knowledge at all times.

12.2 Construction of Secondary Access. When *secondary access* is required, the width, grade, vertical and horizontal curves, and construction standards shall be the same as required for the *primary access road*.

12.3 Separation of Primary and Secondary Access. Primary and secondary access roads shall be separated to ensure that both routes will not be obstructed by a single emergency.

12.3.1 Separation in Non-Hazardous Fire Areas. The minimum separation of primary and secondary access roads in areas determined non-hazardous fire areas shall be 300 feet.

12.3.2 Separation in Hazardous Fire Areas and State Responsibility Areas. The minimum separation of primary and secondary access roads in areas determined to be hazardous fire areas or State Responsibility Areas shall be 1,000 feet.

12.3.3 Separation Determination Point. Separation shall be measured at the point in which each *road* terminates at a location where a vehicle operator can choose two independent directions in which to travel.