

ORDINANCE NO. 2022-4

AN ORDINANCE OF THE CITY OF LAGUNA HILLS, CALIFORNIA, AMENDING CHAPTER 5-16 (FIRE CODE) OF TITLE 5 (HEALTH AND SANITATION) OF THE LAGUNA HILLS MUNICIPAL CODE AND ADOPTING BY REFERENCE THE 2022 EDITION OF THE CALIFORNIA FIRE CODE INCLUDING APPENDICES B, BB, C, AND CC, TOGETHER WITH CERTAIN AMENDMENTS, ADDITIONS, AND DELETIONS THERETO

THE CITY COUNCIL OF THE CITY OF LAGUNA HILLS, CALIFORNIA, HEREBY FINDS AND DETERMINES AS FOLLOWS:

WHEREAS, pursuant to California Government Code Section 50022.1 *et seq.* the City of Laguna Hills ("City") may adopt by reference the 2022 California Fire Code, based on the International Fire Code, 2021 Edition (including appendices), published by the International Code Council (ICC), as adopted by the State of California as Title 24, Part 9, of the California Code of Regulations; and¹

WHEREAS, California Health & Safety Code Section 17958.5 authorizes cities to adopt the codes contained in Title 24 of the California Code of Regulations with changes and modifications determined to be reasonably necessary because of local climatic, topographic or geologic conditions; and

WHEREAS, the City desires to adopt the 2022 California Fire Code including Appendices B, BB, C, and CC, based on the International Fire Code, 2021 Edition, published by International Code Council (ICC), as set forth in Title 24, Part 9 of the California Code of Regulations ("Fire Code") with necessary amendments to assure the Code is tailored to the particular fire protection needs of the City as required by local climatic, topographic and geologic conditions and assure that a maximum level of fire protection is provided to residents, businesses and other occupants; and

WHEREAS, on October 25, 2022, the City Council introduced this Ordinance for first reading at a regular meeting of the City Council, and set a public hearing and second reading of the Ordinance for November 15, 2022; and

WHEREAS, the City Council held a public hearing on November 15, 2022, at which time all interested persons had the opportunity to appear and be heard on the matter of adopting the 2022 California Building Standards Code as amended herein; and

WHEREAS, pursuant to California Government Code Section 6066, the City published notice of the aforementioned public hearing; and

WHEREAS, any and all other legal prerequisites relating to the adoption of this Ordinance have occurred.

THE CITY COUNCIL OF THE CITY OF LAGUNA HILLS, CALIFORNIA,
DOES ORDAIN AS FOLLOWS:

SECTION 1. Findings. The City Council hereby finds that the proposed amendments to the 2022 California Fire Code are reasonably necessary because of local climatic, geologic or topographic conditions, and adopts the findings provided below to support the modifications to the 2022 California Fire Code.

I. Climatic Conditions

- A. Orange County is located in a semi-arid Mediterranean type climate. It annually experiences extended periods of high temperatures with little or no precipitation. Hot, dry (Santa Ana) winds, which may reach speeds of 70 M.P.H. or greater, are also common to the area. These climatic conditions cause extreme drying of vegetation and common building materials. Frequent periods of drought and low humidity add to the fire danger. This predisposes the area to large destructive fires (conflagration). In addition to directly damaging or destroying buildings, these fires are also prone to disrupt utility services throughout the County. Obstacles generated by a strong wind, such as fallen trees, street lights and utility poles will greatly impact the response time to reach an incident scene.
- B. The climate alternates between extended periods of drought and brief flooding conditions. Flood conditions may affect the Orange County Fire Authority's ability to respond to a fire or emergency condition. Floods also disrupt utility services to buildings and facilities within the County.
- C. Water demand in this densely populated area far exceeds the quantity supplied by natural precipitation; and although the population continues to grow, the already-taxed water supply does not. California is projected to increase in population by nearly 10 million over the next quarter of a century with 50 percent of that growth centered in Southern California. Due to storage capacities and consumption, and a limited amount of rainfall future water allocation is not fully dependable. This necessitates the need for additional and on-site fire protection features.
- D. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in high-density housing or vegetation. These fires spread very quickly and create a need for increased levels of fire protection. The added protection of fire sprinkler systems and other fire protection features will supplement normal fire department response by providing immediate protection for the building occupants and by containing and controlling the fire spread to the area of origin. Fire sprinkler systems will also reduce the use of water for firefighting by as much as 50 to 75 percent.

II. Topographical Conditions

- A. Natural; slopes of 15 percent or greater generally occur throughout the foothills of Orange County. The elevation change caused by the hills creates the geological foundation on which communities with Orange County is built and will

continue to build. With much of the populated flatlands already built upon, future growth will occur on steeper slopes and with greater constraints in terrain.

- B. Traffic and circulation congestion is an artificially created, obstructive topographical condition, which is common throughout Orange County.
- C. These topographical conditions combine to create a situation that places fire department response time to fire occurrences at risk and makes it necessary to provide automatic on-site fire-extinguishing systems and other protection measures to protect occupants and property.

III. Geological Conditions

The Orange County region is a densely populated area that has buildings constructed over and near a vast and complex network of faults that are believed to be capable of producing future earthquakes similar or greater in size than the 1994 Northridge and the 1971 Sylmar earthquakes. Earthquake faults run along the northeast and southwest boundaries of Orange County. The Newport-Inglewood Fault, located within Orange County was the source of the destructive 1933 Long Beach earthquake (6.3 magnitude) which took 120 lives and damaged buildings in an area from Laguna Beach to Marina Del Rey to Whittier. In December 1989, another earthquake occurred in the jurisdiction of Irvine at an unknown fault line. Regional planning for reoccurrence of earthquakes is recommended by the state of California, Department of Conservation.

- A. Previous earthquakes have been accompanied by disruption of traffic flow and fires. A severe seismic event has the potential to negatively impact any rescue or fire suppression activities because it is likely to create obstacles similar to those indicated under the high wind section above. The October 17, 1989, Santa Cruz earthquake resulted in one major fire in the Marina District (San Francisco). When combined with the 34 other fires locally and over 500 responses, the department was taxed to its fullest capabilities. The Marina fire was difficult to contain because mains supplying water to the district burst during the earthquake. This situation creates the need for both additional fire protection and automatic on-site fire protection for building occupants. State Department of Conservation noted in their 1988 report (Planning Scenario on a Major Earthquake on the Newport-Inglewood Fault Zone, page 59), "unfortunately, barely meeting the minimum earthquake standards of building codes places a building on the verge of being legally unsafe."
- B. Road circulation features located throughout the County also make amendments reasonably necessary. Located through the County are major roadways, highways and flood control channels that create barriers and slow response times. Hills, slopes, street and storm drain design, accompanied by occasional heavy rainfall, causes roadway flooding and landslides and at times may make an emergency access route impassable. There are areas in Orange County that naturally have extended emergency response times that exceed the 5-minute goal.

- C. Soils throughout the County possess corrosive properties that reduce the expected usable life of water services when metallic pipes are in contact with soils.
- D. Due to the topographical conditions of sprawling development separated by waterways and narrow and congested streets and the expected infrastructure damage inherent in seismic zones described above, it is prudent to rely on automatic fire sprinkler systems to mitigate extended fire department response time and keep fires manageable with reduced fire flow (water) resources available for a given structure. Additional fire protection is also justified to match the current resources of firefighting equipment and personnel within the Orange County Fire Authority.

**2022 California Fire Code
Amendment Findings Legend**

CODE SECTION	TITLE (Clarification)	FINDINGS
112.4	Violation penalties	Administrative
110.4.2	Infraction & Misdemeanor	Administrative
202	General definitions	Administrative
304.1.2	OCFA Vegetation Management	I
305.6	Hazardous conditions	I & II
305.7	Disposal of rubbish	I & II
307	Open burning, recreational fires, fire pits, fire rings, and outdoor fireplaces	Administrative
307.6	Fire Pits, Fire Rings, & Outdoor Fireplaces	Administrative
307.6.1	Gas-fueled devices	I & II
307.6.2	Devices using wood or fuels other than natural gas or LPG	I & II
307.6.2.1	Where prohibited	I & II
324	Fuel modification requirements for new construction	I
325	Clearance of brush or vegetation growth from roadways	I

326	Unusual circumstances	Administrative
327	Use of equipment	I
327.1	Use of equipment and devices generating heat, sparks or open flames	I
324.2	Spark arresters	I
407.5	Hazardous material inventory statement	I & II
501.1	Scope	Administrative, I, II & III
510.1	Emergency responder radio coverage	Administrative
903.2	Where required (Sprinklers)	I, II & III
903.2.8	Group R (Sprinklers)	I, II & III
903.3.5.3	Hydraulically calculated systems	I & II
2801.2	Permit	Administrative
2808.2	Storage site	Administrative
2808.3	Size of piles	I
2808.4	Pile separation	I
2808.7	Pile fire protection	I
2808.9	Material-handling equipment	I
2808.11	Temperature control	I
2808.11.1	Pile temperature control	I
2808.11.2	New material temperature control	I
2808.12	Water availability for piles	I
2808.13	Tipping area	I
2808.14	Emergency contact	Administrative
2808.15	Maximum Grid of Piles and Rows	I
2808.16	Push-out/Clear area	I

4903.3	Fuel modification requirements for new construction	I
5001.5.2	Hazardous materials inventory statement	Administrative
5003.1.1.1	Extremely hazardous substances	I & III
5608.2	Retail fireworks	Administrative
5608.3	Application for permit	Administrative
Chapter 80	Reference Standards	N/A
	2016 NFPA 13 (Sprinkler Systems)	Administrative, II & III
	2016 NFPA 13-D (Single Family Sprinkler Systems)	I & II
	2013 NFPA 14 (Standpipe Systems)	Administrative
	2016 NFPA 24 (Underground Water Supply Systems)	Administrative & III

SECTION 2 Chapter 5-16 of the Laguna Hills Municipal Code is hereby amended and restated in its entirety to read as follows:

**Chapter 5-16
FIRE CODE**

5-16.010 Adoption of the California Fire Code

The 2022 California Fire Code, including Appendices B, BB, C, and CC, based on the International Fire Code, 2019 Edition, published by the International Code Council, together with the amendments provided in this chapter, is hereby adopted and incorporated by reference, as if set forth at length herein, as the Fire Code of the City of Laguna Hills for the purpose of prescribing regulations governing conditions hazardous to life and property from fire, explosions. Not less than one copy of said code has been filed in the office of the City Clerk and shall be made available for public inspection.

5-16.020 Enforcement and inspections.

The Fire Code of the City of Laguna Hills shall be enforced by the Orange County Fire Authority, which shall be operated under the Director of Fire Services of the Orange County Fire Authority. The Director of Fire Services of the Fire Authority may detail such members of the Fire Authority as inspectors as shall be necessary from time to time.

5-16.030 Amendments to the California Fire Code.

Chapter 1, Division II – Scope and Administration is adopted in its entirety, with the following amendments:

Section 112.4, Violation penalties, is hereby revised to read as follows:

112.4 Violation penalties. Persons who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or shall fail to comply with any issued orders or notices or who shall erect, install, alter, repair or do work in violation of the approved construction documents or directive of the fire code official, or of a permit or certificate used under provisions of this code, shall be subject to penalties assessed as prescribed in the OCFA Prevention Field Services adopted fee schedule. Each day that a violation continues after due notice has been served shall be deemed a separate offense.

Section 112.4.2, Infraction and misdemeanor, is hereby added to read as follows:

112.4.2 Infraction and misdemeanor. Persons operating or maintaining any occupancy, premises or vehicle subject to this code that shall permit any fire or life safety hazard to exist on premises under their control shall be guilty of an infraction.

Chapter 2 – Definitions is adopted in its entirety as amended by SFM with the following amendments:

Sections 202, General Definitions, is hereby revised by adding “OCFA” and “Spark Arrester” as follows:

OCFA. Orange County Fire Authority, authority having jurisdiction.

SPARK ARRESTER. A listed device constructed of noncombustible material specifically for the purpose of meeting one of the following conditions:

1. Removing and retaining carbon and other flammable particles/debris from the exhaust flow of an internal combustion engine in accordance with California Vehicle Code Section 38366.
2. Fireplaces that burn solid fuel in accordance with California Building Code Chapter 28.

Chapter 3 – General Requirements is adopted in its entirety with the exception of Sections 308.1.4, 311.5 through 311.5.5, 318, and 319, and with the following amendments:

Section 304.1.2, Vegetation, is hereby revised to read as follows:

304.1.2 Vegetation. Weeds, grass, vines or other growth that is capable of being ignited and endangering property, shall be cut down and removed by the owner or occupant of the premises. Vegetation clearance requirement in urban-wildland interface areas shall be in accordance with Chapter 49. Type, amount, arrangement, and maintenance of vegetation in a fuel modification area, interior slope, or similarly hazardous area shall be in accordance with OCFA Guideline C-05 “Vegetation Management Guideline—Technical Design for New Construction,

Fuel Modification Plans, and Maintenance Program.”

Section 305.6, Hazardous Conditions, is hereby added to read as follows:

305.6 Hazardous conditions. Outdoor fires burning wood or other solid fuel are not allowed when any of the following conditions applies:

1. when predicted sustained winds exceed 8 MPH and relative humidity is less than 25%, or a red flag condition has been declared
2. when an official sign was caused to be posted by the fire code official, or a public announcement is made

No outdoor fires using any fuel type are permitted when predicted sustained winds exceed 20 MPH or when such fires present a hazard as determined by the fire code official.

Section 305.7, Disposal of rubbish, is hereby added to read as follows:

305.7 Disposal of rubbish. Rubbish, trash or combustible waste material shall be burned only within an approved incinerator and in accordance with Section 307.2.1.

Section 307, Open Burning, Recreational Fires and Portable Outdoor Fireplaces, is hereby revised to read as follows:

SECTION 307 OPEN BURNING, RECREATIONAL FIRES, FIRE PITS, FIRE RINGS, AND PORTABLE OUTDOOR FIREPLACES

Section 307.6, Outdoor Fireplaces, Fire Pits, Fire Rings, or similar devices used at Group R Occupancies, is hereby added to read as follows:

307.6 Outdoor Fireplaces, Fire Pits, Fire Rings, or similar devices used at Group R Occupancies. Outdoor fireplaces, fire pits, fire rings, or similar exterior devices used at Group R occupancies shall comply with this section.

Exception: Barbeques, grills, and other portable devices intended solely for cooking.

Section 307.6.1, Gas-fueled devices, is hereby added to read as follows:

307.6.1 Gas-fueled devices. Outdoor fireplaces, fire pits and similar devices fueled by natural gas or liquefied-petroleum gas are allowed when approved by the Building Department and the device is designed to only burn a gas flame and not wood or other solid fuel. At R-3 occupancies, combustible construction and vegetation shall not be located within three feet of an atmospheric column that extends vertically from the perimeter of the device. At other R occupancies, the minimum distance shall be ten feet. Where a permanent Building Department approved hood and vent is installed, combustible construction may encroach upon this column between the bottom of the hood and the vent opening. Where chimneys or vents are installed, they shall have a spark arrester as defined in Section 202.

Section 307.6.2, Devices using wood or fuels other than natural gas or liquefied-petroleum gas, is hereby added to read as follows:

307.6.2 Devices using wood or fuels other than natural gas or liquefied-petroleum gas. Permanent outdoor fireplaces burning wood or other solid fuel shall be constructed in accordance with the California Building Code with clearance from combustible construction and building openings as required therein. Fires in a fireplace shall be contained within a firebox with an attached chimney. The opening in the face of the firebox shall have an installed and maintained method of arresting sparks.

The burning of wood or other solid fuel in a device is not allowed within 25 feet of combustible structures unless within an approved permanent fireplace, Conditions which could cause a fire to spread within 25 feet of a structure or to vegetation shall be eliminated prior to ignition. Fires in devices burning wood or solid fuel shall be in accordance with Sections 305, 307, and 308.

Exceptions:

1. Portable fireplaces and fire rings/pits equipped with a device to arrest sparks shall be located at least 3' from combustible construction at R-3 occupancies,
2. Portable fireplaces, and fire pits/rings equipped with a device to arrest sparks, shall be located at least 15 feet from combustible structures at other R occupancies.

Section 307.6.2.1, Where prohibited, is hereby added to read as follows:

307.6.2.1 Where prohibited. The burning of wood and other solid fuels shall not be conducted within a fuel modification zone, Wildfire Risk Area (WRA), Wildland-Urban Interface Area (WUI), or in locations where conditions could cause the spread of fire to the WRA or WUI.

Exceptions:

1. Permanent fireplaces that are not located in a fuel modification zone
2. Where determined by the Fire Code Official that the location or design of the device should reasonably prevent the start of a wildfire.

Section 324, Fuel Modification Requirements for New Construction, is hereby added to read as follows:

324 Fuel Modification Requirements for New Construction. All new structures and facilities adjoining land containing hazardous combustible vegetation shall be approved and in accordance with the requirements of OCFA Guideline C-05 "Vegetation Management Guideline Technical Design for New Construction Fuel Modification Plans and Maintenance Program."

Section 325, Clearance of brush or vegetation growth from roadways, is hereby added to read as follows:

325 Clearance of brush or vegetation growth from roadways. The fire code official is authorized to cause areas within 10 feet (3048 mm) on each side of portions of highways and private streets which are improved, designed or ordinarily used for vehicular traffic, to be cleared of flammable vegetation and other combustible growth. Measurement shall be from the flow-line or the end of the improved edge of the roadway surfaces.

Exception: Single specimens of trees, ornamental shrubbery or cultivated ground cover such as green grass, ivy, succulents or similar plants used as ground covers, provided that they do not form a means of readily transmitting fire.

Section 326, Unusual circumstances, is hereby added to read as follows:

326 Unusual circumstances. The fire code official may suspend enforcement of the vegetation management requirements and require reasonable alternative measures designed to advance the purpose of this code if determined that in any specific case that any of the following conditions exist:

1. Difficult terrain.
2. Danger of erosion.
3. Presence of plants included in any state and federal resources agencies, California Native Plant Society and county-approved list of wildlife, plants, rare, endangered and/or threatened species.
4. Stands or groves of trees or heritage trees.
5. Other unusual circumstances that make strict compliance with the clearance of vegetation provisions undesirable or impractical.

Section 327, Use of equipment, is hereby added to read as follows:

327 Use of equipment. Except as otherwise provided in this section, no person shall use, operate, or cause to be operated in, upon or adjoining any hazardous fire area any internal combustion engine which uses hydrocarbon fuels, unless the engine is equipped with a spark arrester as defined in Section 202 maintained in effective working order, or the engine is constructed, equipped and maintained for the prevention of fire.

Exceptions:

1. Engines used to provide motor power for trucks, truck tractors, buses, and passenger vehicles, except motorcycles, are not subject to this section if the exhaust system is equipped with a muffler as defined in the Vehicle Code of the State of California.
2. Turbocharged engines are not subject to this section if all exhausted gases pass through the rotating turbine wheel, there is no exhaust bypass to the atmosphere, and the turbocharger is in good mechanical condition

Section 327.1, Use of equipment and devices generating heat, sparks or open flames is hereby added to read as follows:

327.1 Use of equipment and devices generating heat, sparks or open flames.

During any time of the year within Wildfire Risk Areas, within or immediately adjacent to any forest- or brush-covered land or non-irrigated grass-covered land, no person shall use or operate any welding equipment, cutting torches, tar pots, grinding devices, or other tools or equipment that may produce a spark, fire, or flame that could result in a wildfire without doing the following:

1. First clearing away all flammable material, including snags, from the area around such operation for a distance of 30 feet or other approved method to reduce fire spread into the wildlands. If 30-foot clearing cannot be achieved, then an alternate method shall be approved by the AHJ prior to work starting.
2. Maintain one serviceable round point shovel with an overall length of not less than forty-six (46) inches and one backpack pump water-type fire extinguisher fully equipped and ready for use at the immediate area during the operation.
3. Stop work when winds are 8 MPH or greater during periods when relative humidity is less than 25%, or a red flag condition has been declared or public announcement is made, when an official sign was caused to be posted by the fire code official, or when such fires present a hazard as determined by the fire code official.
4. Keep a cell phone nearby and call 911 immediate in case of fire.

Section 327.2, Spark arresters, is hereby added to read as follows:

327.2 Spark arresters. Spark arresters shall comply with Section 202, and when affixed to the exhaust system of engines or vehicles subject to Section 327 shall not be placed or mounted in such a manner as to allow flames or heat from the exhaust system to ignite any flammable material.

Chapter 4 – Emergency Planning and Preparedness is adopted with only those sections and subsections adopted by SFM with the following amendment.

Section 407.5, Hazardous Materials Inventory Statement, is revised to read as follows:

407.5 Hazardous Materials Inventory Statement. Where required by the fire code official, each application for a permit shall OCFA's Chemical Classification Guideline in accordance with Section 5001.5.2.

Chapter 5 – Fire Service Features is adopted in its entirety as amended by SFM with the following amendments:

Section 501.1, Scope, is revised to read as follows:

501.1 Scope. Fire service features for buildings, structures and premises shall comply with this chapter and, where required by the fire code official, with OCFA Guideline B-01, "Fire Master Plan for Commercial & Residential Development."

Section 510.1, Emergency responder radio coverage in new buildings, is revised to read as follows:

510.1 Emergency responder radio coverage in new buildings. All new buildings shall have approved radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building. This section shall not require improvement of the existing public safety communication systems. The Emergency Responder Radio Coverage System shall comply with the requirements of the Orange County Sheriff's Department, Communications and Technology Division, and where the functionality of performance requirements in the California Fire Code are more stringent, this code.

Exceptions:

1. In buildings or structures where it is determined by the fire code official that the radio coverage system is not needed, including but not limited to the following:
 - a. Existing buildings or structures, unless required by the Building Official and OCFA for buildings and structures undergoing extensive remodel and/or expansion.
 - b. Elevators.
 - c. Structures that meet all of the following:
 - i. Three stories or less, and
 - ii. Do not have subterranean storage or parking, and
 - iii. Do not exceed 50,000 square feet on any single story.
 - d. Structures that meet all of the following:
 - i. Residential structures four stories or less, and
 - ii. Constructed of wood, and
 - iii. Do not have subterranean storage or parking, and
 - iv. Are not built integral to an above ground multi-story parking structure.

Should a structure that is three stories or less and 50,000 square feet or smaller on any single story include subterranean storage or parking, then this ordinance shall apply only to the subterranean areas.
2. In facilities where emergency responder radio coverage is required and such systems, components or equipment required could have a negative impact on the normal operations of the facility, the fire code official shall have the authority to accept an automatically activated emergency radio coverage system.

Chapter 6– Building Services and Systems is adopted in its entirety as amended by SFM.

Chapter 7 – Fire and Smoke Protection Features is adopted in its entirety as amended by SFM.

Chapter 8 – Interior Finish, Decorative Materials and Furnishings is adopted in its entirety as amended by SFM.

Chapter 9 – Fire Protection and Life Safety Systems is adopted in its entirety as amended by SFM with the following amendments:

Section 903.2, Where required, is hereby revised to read as follows:

903.2 Where required. Approved automatic fire sprinkler systems in buildings and structures shall be provided when one of the following conditions exists:

New buildings: Notwithstanding any applicable provisions of Sections 903.2.1 through 903.2., an automatic fire sprinkler system shall also be installed in all occupancies when the total building area exceeds 5,000 square feet as defined in Section 202, regardless of fire areas or allowable area, or is more than two stories in height.

Exception: Subject to approval by the Fire Code Official, open parking garages in accordance with Section 406.5 of the California Building Code that are smaller than the area specified in section 903.2.10 (3) or 903.2.10.1 of the California Fire Code.

- 1. Existing Buildings:** Notwithstanding any applicable provisions of this code, an automatic fire sprinkler system shall be provided in an existing building when an addition occurs and one of the following conditions exists:
 - a. When an addition is 33% or more of the existing building area, and the resulting building area exceeds 5000 square feet
 - b. When an addition exceeds 2000 square feet, and the resulting building area exceeds 5000 square feet.
 - c. An additional story is added above the second floor regardless of fire areas or allowable area.

Exception: Additions to Group R-3 occupancies shall comply with Section 903.2.8 (2).

Section 903.2.8, Group R, is hereby revised to read as follows:

903.2.8 Group R. An automatic fire sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R fire area as follows:

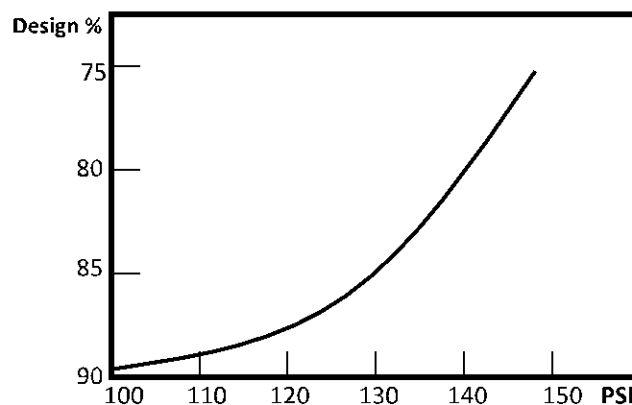
- 1. New Buildings:** An automatic fire sprinkler system shall be installed throughout all new buildings.
- 2. Existing R-3 Buildings:** An automatic fire sprinkler system shall be installed throughout when one of the following conditions exists:
 - a. When the floor area of alterations within any two-year period exceeds 50 percent of gross floor area of the existing structure and the building gross floor area exceeds 5,500 square feet; or
 - b. When an existing Group R Occupancy is being substantially renovated, and where the scope of the renovation is such that the Building Code Official determines that the complexity of installing a sprinkler system would be similar as in a new building.

Section 903.3.5.3, Hydraulically calculated systems, is hereby added to read as follows:

903.3.5.3 Hydraulically calculated systems. The design of hydraulically calculated fire sprinkler systems shall not exceed 90% of the water supply capacity.

Exception: When static pressure exceeds 100 psi, and when required by the fire code official, the fire sprinkler system shall not exceed the water supply capacity specified by Table 903.3.5.3.

**TABLE 903.3.5.3
Hydraulically Calculated Systems**



Chapter 10 – Means of Egress is adopted in its entirety as amended by SFM.

Chapter 11 – Construction Requirements for Existing Buildings. Adopt only those sections and subsections adopted by SFM.

Chapter 12 – Energy Systems is adopted in its entirety as amended by SFM.

Chapter 20 – Aviation Facilities is adopted in its entirety.

Chapter 21 – Dry Cleaning is adopted in its entirety as amended by SFM.

Chapter 22 – Combustible Dust-Producing Operations is adopted in its entirety as amended by SFM.

Chapter 23 – Motor Fuel-Dispensing Facilities and Repair Garages is adopted in its entirety as amended by SFM.

Chapter 24 – Flammable Finishes is adopted in its entirety as amended by SFM.

Chapter 25 – Fruit and Crop Ripening is not adopted.

Chapter 26 – Fumigation and Insecticidal Fogging is not adopted.

Chapter 27 – Semiconductor Fabrication Facilities is adopted in its entirety.

Chapter 28 – Lumber Yards and Agro-Industrial, Solid Biomass and Woodworking Facilities is adopted in its entirety with the following amendments:

Section 2801.2, Permit, is hereby revised to read as follows:

2801.2 Permit. Permits shall be required as set forth in Section 105.6 and 105.6.29.

Section 2808.2, Storage site, is hereby revised to read as follows:

2808.2 Storage site. Storage sites shall be level and on solid ground, elevated soil lifts or other all-weather surface. Sites shall be thoroughly cleaned, and approval obtained from the fire code official before transferring products to the site.

Section 2808.3, Size of piles, is hereby revised to read as follows:

2808.3 Size of piles. Piles shall not exceed 15 feet in height, 50 feet in width and 100 feet in length.

Exception: The fire code official is authorized to allow the pile size to be increased where a fire protection plan is provided for approval that includes, but is not limited to, the following:

1. Storage yard areas and materials-handling equipment selection, design and arrangement shall be based upon sound fire prevention and protection principles.
2. Factor that lead to spontaneous heating shall be identified in the plan, and control of the various factors shall be identified and implemented, including provisions for monitoring the internal condition of the pile.
3. The plan shall include means for early fire detection and reporting to the public fire department; and facilities needed by the fire department for fire extinguishment including a water supply and fire hydrants.
4. Fire apparatus access roads around the piles and access roads to the top of the piles shall be established, identified, and maintained.
5. Regular yard inspections by trained personnel shall be included as part of an effective fire prevention maintenance program.

Additional fire protection called for in the plan shall be provided and shall be installed in accordance with this code. The increase of the pile size shall be based upon the capabilities of the installed fire protection system and features.

Section 2808.4, Pile Separation, is hereby revised to read as follows:

2808.4. Pile separation. Piles shall be separated from adjacent piles by a minimum distance of 20 feet. Additionally, piles shall have a minimum separation of 100 feet from combustible vegetation.

Section 2808.7, Pile fire protection, is hereby revised to read as follows:

2808.7 Pile fire protection. Automatic sprinkler protection shall be provided in conveyor tunnels and combustible enclosures that pass under a pile. Combustible

conveyor systems and enclosed conveyor systems shall be equipped with an approved automatic sprinkler system. Oscillating sprinklers with a sufficient projectile reach are required to maintain a 40% to 60% moisture content and wet down burning/smoldering areas.

Section 2808.9, Material-handling equipment, is hereby revised to read as follows:

2808.9 Material-handling equipment. All material-handling equipment operated by an internal combustion engine shall be provided and maintained with an approved spark arrester. Approved material-handling equipment shall be available for moving wood chips, hogged material, wood fines and raw product during fire-fighting operations.

Section 2808.11, Temperature control, is hereby added to read as follows:

2808.11 Temperature control. The temperature shall be monitored and maintained as specified in Sections 2808.11.1 and 2808.11.2.

Section 2808.11.1, Pile temperature control, is hereby added to read as follows:

2808.11.1 Pile temperature control. Piles shall be rotated when internal temperature readings are in excess of 165 degrees Fahrenheit.

Section 2808.11.2, New material temperature control, is hereby added to read as follows:

2808.11.2 New material temperature control. New loads delivered to the facility shall be inspected and tested at the facility entry prior to taking delivery. Material with temperature exceeding 165 degrees Fahrenheit shall not be accepted on the site. New loads shall comply with the requirements of this chapter and be monitored to verify that the temperature remains stable.

Section 2808.12, Water availability, is hereby added to read as follows:

2808.12 Water Availability. Facilities with over 2500 cubic feet shall provide a water supply. The minimum fire flow shall be no less than 500 GPM @ 20 psi for a minimum of 1 hour duration for pile heights up to 6 feet and 2-hour duration for pile heights over 6 feet. If there is no water purveyor, an alternate water supply with storage tank(s) shall be provided for fire suppression. The water supply tank(s) shall provide a minimum capacity of 2500 gallons per pile (maximum 30,000 gallons) for piles not exceeding 6 feet in height and 5000 gallons per pile (maximum 60,000) for piles exceeding 6 feet in height. Water tank(s) shall not be used for any other purpose unless the required fire flow is left in reserve within the tank at all times. An approved method shall be provided to maintain the required amount of water within the tank(s).

Section 2808.13, Tipping area, is hereby added to read as follows:

2808.13 Tipping areas shall comply with the following:

1. Tipping areas shall not exceed a maximum area of 50 feet by 50 feet.
2. Material within a tipping area shall not exceed 5 feet in height at any time.

3. Tipping areas shall be separated from all piles by a 20-foot-wide fire access lane.
4. A fire hydrant or approved fire water supply outlet shall be located within 150 feet of all points along the perimeter of the tipping area.
5. All material within a tipping area shall be processed within 5 days of receipt.

Section 2808.14, Emergency Contact, is hereby added to read as follows:

2808.14 Emergency Contact. The contact information of a responsible person or persons shall be provided to the Fire Department and shall be posted at the entrance to the facility for responding units. The responsible party should be available to respond to the business in emergency situation.

Section 2808.15, Maximum Grid of Piles and Rows, is hereby added to read as follows:

2808.15 Maximum Grid of Piles and Rows, Rows of Piles shall not exceed 500 feet by 500 feet. Grids shall be separated by a minimum 50 foot clear space used for no other purpose.

2808.16, Push-out / Clear area, is hereby added as follows:

2808.16 Push-out / Clear Area, Piles exceeding 20 cubic yards shall be provided with push-out areas. Push-out areas shall be maintained clear at all times to allow for the largest pile to be spread out to a depth of 2 feet in height. Push-out areas shall be located within 250 feet of all edges of any pile and shall be located a minimum of 20 feet from any building.

Chapter 29 – Manufacture of Organic Coatings is adopted in its entirety.

Chapter 30 – Industrial Ovens is adopted in its entirety.

Chapter 31 – Temporary Special Event Structures and Other Membrane Structures is adopted in its entirety as amended by SFM.

Chapter 32 – High-Piled Combustible Storage is adopted in its entirety as amended by SFM.

Chapter 33 – Fire Safety During

Chapter 34 – Tire Rebuilding and Tire Storage is adopted in its entirety as amended by SFM.

Chapter 35 – Welding and Other Hot Work is adopted in its entirety.

Chapter 36 – Marinas is adopted in its entirety.

Chapter 37 – Combustible Fibers is adopted in its entirety.

Chapter 39 – Processing and Extraction Facilities is adopted in its entirety.

Chapter 40 – Storage of Distilled Spirits and Wines is adopted in its entirety.

Chapter 48 – Motion Picture and Television Production Studio Sound Stages, Approved

Production Facilities and Production Locations is adopted in its entirety.

Chapter 49 – Requirements for Wildland-Urban Interface Fire Areas is adopted in its entirety with the following amendment:

Section 4903.3, Fuel Modification Plans, is hereby added to read as follows:

4903.3 Fuel Modification Plans. Fuel modification plans shall be reviewed and approved by OCFA for all new buildings to be built or installed in a wildfire risk area. Plans shall meet the criteria set forth in OCFA Guideline C-05 “Vegetation Management Guideline – Technical Design for New Construction Fuel Modification Plans and Maintenance Program.”

Chapter 50 – Hazardous Materials – General Provisions is adopted in its entirety as amended by SFM with the following amendments.

Section 5001.5.2, Hazardous Materials Inventory Statement (HMIS), is hereby revised to read as follows:

5001.5.2 Hazardous Materials Inventory Statement (HMIS). Where required by the fire code official, an application for a permit shall include. Orange County Fire Authority’s—Chemical Classification Guideline, which shall be completed and approved prior to approval of plans, and/or the storage, use or handling of chemicals on the premises.

Section 5003.1.1.1, Extremely Hazardous Substances, is hereby added to read as follows:

5003.1.1.1 Extremely Hazardous Substances. No person shall use or store any amount of extremely hazardous substances (EHS) in excess of the disclosable amounts (see Health and Safety Code Section 25500 et al) in a residential zoned or any residentially developed property.

Chapter 51 – Aerosols is adopted in its entirety.

Chapter 53 – Compressed Gases is adopted in its entirety.

Chapter 54 – Corrosive materials is adopted in its entirety as amended by SFM.

Chapter 55 – Cryogenic Fluids is adopted in its entirety.

Chapter 56 – Explosives and Fireworks is adopted in its entirety as amended by SFM with the following amendments:

Section 5608.2, Firing, is hereby added to read as follows:

5608.2 Firing. All fireworks display, regardless of mortar, device, or shell size, shall be electrically fired.

Section 5608.3, Application for Permit, is hereby added to read as follows:

Section 5608.3 Application for Permit. A diagram of the grounds on which the display is to be held showing the point at which the fireworks are to be discharged, the fallout area based on 100 feet per inch of shell size, the location of all buildings, roads, and other means of transportation, the lines behind which the audience will be restrained, the location of all nearby trees, telegraph or telephone line, or other overhead obstructions shall be provided to OCFA.

Chapter 57 – Flammable and Combustible Liquids. is adopted as amended by SFM.

Chapter 58 – Flammable Gases and Flammable Cryogenic Fluids is adopted as amended by SFM.

Chapter 59 – Flammable Solids is adopted in its entirety.

Chapter 60 – Highly Toxic and Toxic Materials is adopted in its entirety.

Chapter 61 – Liquefied Petroleum Gases is adopted in its entirety.

Chapter 62 – Organic Peroxides is adopted in its entirety.

Chapter 63 – Oxidizers, Oxidizing Gases, and Oxidizing Cryogenic Fluids is adopted in its entirety.

Chapter 64 – Pyrophoric Materials is adopted in its entirety.

Chapter 65 – Pyroxylin (Cellulose Nitrate) Plastics is adopted in its entirety.

Chapter 66 – Unstable (Reactive) Materials is adopted in its entirety.

Chapter 67 – Water-Reactive Solids and Liquids is adopted in its entirety.

Chapter 80 – Referenced Standards is adopted in its entirety with the following amendments:

NFPA 13, 2022 Edition, Standard for the Installation of Sprinkler Systems is hereby amended as follows:

Section 16.12.3.3 is hereby revised to read as follows:

16.12.3.3 Fire department connections (FDC) shall be of an approved type. The location shall be approved and be no more than 150 feet from a public hydrant. The FDC may be located within 150 feet of a private fire hydrant when approved by the fire code official. The size of piping and the number of 2½” inlets shall be approved by the fire code official. If acceptable to the water authority, it may be installed on the backflow assembly. Fire department inlet connections shall be painted OSHA safety red or as approved. When the fire sprinkler density design requires more than 500 gpm (including inside hose stream demand), or a standpipe system is included, four 2½” inlets shall be provided.

Section 9.4.3.1 is hereby revised to read as follows:

9.4.3.1 When fire sprinkler systems are installed in shell buildings of undetermined use (Spec Buildings) other than warehouses (S occupancies), fire sprinklers of the

quick-response type shall be used. Use is considered undetermined if a specific tenant/occupant is not identified at the time the fire sprinkler plan is submitted. Sprinklers in light hazard occupancies shall be one of the following:

1. Quick-response type as defined in 3.6.4.8
2. Residential sprinklers in accordance with the requirements of 8.4.5
3. Quick response CMSA sprinklers
4. ESFR sprinklers
5. Standard-response sprinklers used for modifications or additions to existing light hazard systems equipped with standard-response sprinklers
6. Standard-response sprinklers used where individual standard-response sprinklers are replaced in existing light hazard systems

Section 9.2.1.7 is hereby revised to read as follows:

9.2.1.7 Concealed spaces filled with noncombustible insulation shall not require sprinkler protection when approved by fire code official.

NFPA 13D 2022 Edition, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes is hereby amended as follows:

Section 7.1.2 is hereby revised to read as follows:

7.1.2 The sprinkler system piping shall not have separate control valves installed unless supervised by a central station, proprietary, or remote station alarm service.

NFPA 14, 2019 Edition, Installation of Standpipe and Hose Systems is hereby amended to read as follows:

Section 7.3.1.1 is hereby deleted in its entirety.

NFPA 24, 2019 Edition, Standard for the Installation of Private Fire Service Mains and Their Appurtenances is hereby amended to read as follows:

Section 6.2.8.1 is hereby added to read as follows:

6.2.8.1 All indicating valves controlling fire suppression water supplies shall be painted OSHA red.

Exceptions:

1. Brass or bronze valves on sprinkler risers mounted to the exterior of the building may be left unpainted.
2. Where OS&Y valves on the detector check assembly are the only control valves, at least one OS&Y valve shall be painted red.

Section 6.2.9 is hereby amended to read as follows:

All connections to private fire service mains for fire protection systems shall be arranged in accordance with one of the following so that they can be isolated:

1. A post indicator valve installed not less than 40 ft (12 m) from the building

(a) For buildings less than 40 ft (12 m) in height, a post indicator valve shall be permitted to be installed closer than 40 ft (12 m) but at least as far from the building as the height of the wall facing the post indicator valve.

(2) A wall post indicator valve

(3) An indicating valve in a pit, installed in accordance with Section 6.4

(4) A backflow preventer with at least one indicating valve not less than 40 ft (12 m) from the building

(a) For buildings less than 40 ft (12 m) in height, a backflow preventer with at least one indicating valve shall be permitted to be installed closer than 40 ft (12 m) but at least as far from the building as the height of the wall facing the backflow preventer.

(5) Control valves installed in a fire-rated room accessible from the exterior

(6) Control valves in a fire-rated stair enclosure accessible from the exterior

Section 10.1.5 is hereby added to read as follows:

10.1.5 All ferrous pipe and joints shall be polyethylene encased per AWWA C150, Method A, B, or C. All fittings shall be protected with a loose 8-mil polyethylene tube or sheet. The ends of the tube or sheet shall extend past the joint by a minimum of 12 inches and be sealed with 2-inch-wide tape approved for underground use. Galvanizing does not meet the requirements of this section.

Exception: 304 or 316 Stainless Steel pipe and fittings

Section 10.4.1.1 is hereby revised to read as follows:

10.4.1.1 All bolted joint accessories shall be cleaned and thoroughly coated with asphalt or other corrosion-retarding material after installation.

Exception: Bolted joint accessories made from 304 or 316 stainless steel.

Section 10.4.1.1.1 is hereby added to read as follows:

10.4.1.1.1 All bolts used in pipe-joint assembly shall be 316 stainless steel.

Section 10.4.3.2 is hereby added to read as follows:

10.4.3.2. Where fire service mains enter the building adjacent to the foundation, the pipe may run under a building to a maximum of 24 inches, as measured from the interior face of the exterior wall to the center of the vertical pipe. The pipe under the building or building foundation shall be 304 or 316 stainless steel and shall not contain mechanical joints or it shall comply with 10.4.3.2.1 through 10.4.3.2.4.

Appendices

Appendix A is deleted in its entirety.

Appendix B is adopted in its entirety.

Appendix BB is adopted in its entirety.

Appendix C is adopted in its entirety.

Appendix CC is adopted in its entirety.

Appendix D is deleted in its entirety.

Appendix E is deleted in its entirety.

Appendix F is deleted in its entirety.

Appendix G is deleted in its entirety.

Appendix H is deleted in its entirety.

Appendix I is deleted in its entirety.

Appendix J is deleted in its entirety.

Appendix K is deleted in its entirety.

Appendix L is deleted in its entirety.

Appendix M is deleted in its entirety.

Appendix N is deleted in its entirety.

Appendix O is deleted in its entirety.

SECTION 3. The City Council finds that this Ordinance is not subject to the California Environmental Quality Act (CEQA) pursuant to California Code of Regulations Title 14, Chapter 3, Sections 15060(c)(2) (the activity will not result in a direct or reasonably foreseeable indirect physical change in the environment) and 15060(c)(3) (the activity is not a project as defined in Section 15371), because it has no potential for resulting in physical change to the environment, directly or indirectly.

SECTION 4. If any section, subsection, subdivision, sentence, clause, phrase, or portion of this Ordinance is, for any reason, held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have adopted this Ordinance and each section, subsection, subdivision, sentence, clause, phrase, or portion thereof, irrespective of the fact that any one or more section, subsection, subdivision, sentence, clause, phrase, or portion thereof be declared invalid or unconstitutional.

SECTION 5. The City Clerk shall certify as to the adoption of this Ordinance and cause a summary thereof to be published within (15) days of the adoption and shall post a Certified copy of this Ordinance, including the vote for and against the same, in the Office of the City Clerk, in accordance with Government Code Section 36933.

PASSED, APPROVED, AND ADOPTED this 15th day of November 2022.



DAVE WHEELER, MAYOR

ATTEST:



JENNIFER LEE, CITY CLERK

STATE OF CALIFORNIA)
COUNTY OF ORANGE) ss
CITY OF LAGUNA HILLS)

I, Jennifer Lee, City Clerk of the City of Laguna Hills, California, DO HEREBY CERTIFY that the foregoing Ordinance No. 2022-4 was duly introduced and placed upon its first reading at a Regular Meeting of the City Council on the 25th day of October 2022, and that thereafter, said Ordinance was duly adopted and passed at an Adjourned Regular Meeting of the City Council held on the 15th day of November 2022, by the following vote, to wit:

AYES: Council Members Caskey, Pezold, Sedgwick, Mayor Pro Tempore Heft, and Mayor Wheeler

NOES: None

ABSENT: None

ABSTAIN: None

(SEAL)



JENNIFER LEE, CITY CLERK

STATE OF CALIFORNIA)
COUNTY OF ORANGE) ss
CITY OF LAGUNA HILLS)

AFFIDAVIT OF POSTING
AND PUBLICATION

JENNIFER LEE, being first duly sworn, deposes and says:

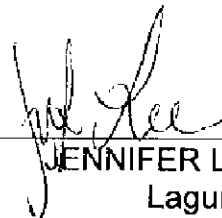
That she is the duly appointed and qualified City Clerk of the City of Laguna Hills;

That in compliance with State Laws of the State of California, ORDINANCE NO. 2022-4, being:

AN ORDINANCE OF THE CITY OF LAGUNA HILLS, CALIFORNIA, AMENDING CHAPTER 5-16 (FIRE CODE) OF TITLE 5 (HEALTH AND SANITATION) OF THE LAGUNA HILLS MUNICIPAL CODE AND ADOPTING BY REFERENCE THE 2022 EDITION OF THE CALIFORNIA FIRE CODE INCLUDING APPENDICES B, BB, C, AND CC, TOGETHER WITH CERTAIN AMENDMENTS, ADDITIONS, AND DELETIONS THERETO

on the 3rd day of November 2022, and on the 24th day of November 2022, was published in the Saddleback Valley News; and was, in compliance with City Resolution No. 2004-05-25-2, on the 26th day of October 2022, and the 16th day of November 2022 caused to be posted in three places in the City of Laguna Hills, to wit:

Laguna Hills City Hall
Laguna Hills Community Center
La Paz Center



JENNIFER LEE, CITY CLERK
Laguna Hills, California

EXHIBIT "A"

Guideline B-01

Fire Master Plans for Commercial & Residential Development

Orange County Fire Authority
Community Risk Reduction

1 Fire Authority Road, Building A, Irvine, CA 92602 www.ocfa.org 714-573-6100

Fire Master Plans for Commercial & Residential Development



Guideline B-01

Serving the Cities of Aliso Viejo • Buena Park • Cypress • Dana Point • Garden Grove • Irvine • Laguna Hills • Laguna Niguel • Laguna Woods
Lake Forest • La Palma • Los Alamitos • Mission Viejo • Rancho Santa Margarita • San Clemente • San Juan Capistrano
Seal Beach • Santa Ana • Stanton • Tustin • Villa Park • Westminster • Yorba Linda • and Unincorporated Areas of Orange County

Fire Master Plans for Commercial & Residential Development

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Fire Master Plans for Commercial & Residential Development

PURPOSE

The effectiveness of emergency response and firefighting operations is directly related to the proper installation and maintenance of fire access roadways, proper location of hydrants, adequate water supply, and access to buildings and facilities. 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 2022 California Fire and Building Codes (also known as CFC and CBC, respectively) and as amended by local ordinance.

SCOPE

This guideline applies to fire apparatus access roads which provide access to new, reconstructed, relocated residential or commercial structures, developments, and facilities.

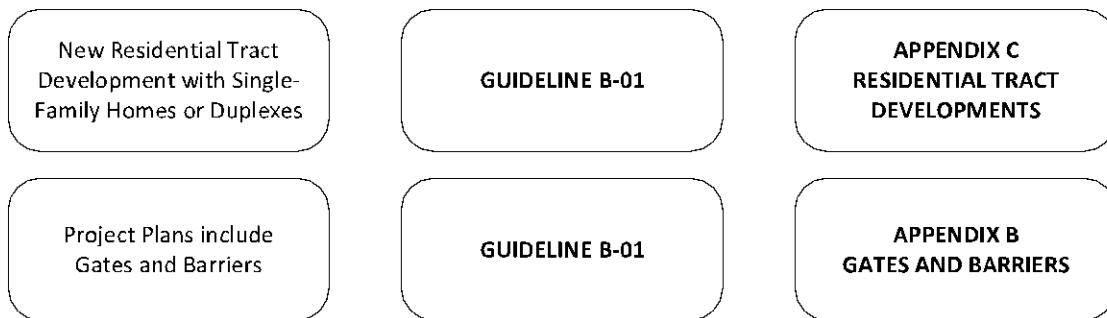
Note: *In addition to the requirements of OCFA Guideline B-01, for buildings and facilities located within State Responsibility Area (SRA) or the Very High Fire Hazard Severity Zones (VHFHSZ) in the Local Responsibility Area (LRA), refer to California Code of Regulations (CCR) Title 14 from CA Board of Forestry & Fire Protection site: <https://bof.fire.ca.gov/>.*

HOW TO USE THIS GUIDELINE

The guideline consists of two main parts: Guideline B-01 and a series of lettered appendices: Appendix A, B, and C. The first part, Guideline B-01, provides instructions on how to prepare and submit a generic Fire Master Plan. The second part, the appendices to Guideline B-01, contain additional information that may be applicable based on the type of project submission.

To prepare a Fire Master Plan, provide the information and comply with the requirements in both B-01 and all pertinent appendices.

Example:



SECTION 1: SUBMITTAL REQUIREMENTS

- 1. Universal Submittal Requirements** - Refer to Guideline A-02 from OCFA Planning and Development website (www.ocfa.org). Complete the Fire Master Plan Submittal Checklist (Attachment 1) and verify that basic project information has been provided and that general access and water requirements have been addressed on the plan.

SECTION 2: FIRE LANES

2. **Fire Lanes** - On-site private 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.
- 2.1. **Loading** – Fire lanes shall be designed, constructed, and maintained to provide all-weather driving capabilities and support the imposed load of 94,000-pound fire apparatus with weight distributed as follows:
- No more than 32,000-pounds per axle.
 - Bridges and underground vaults, culverts, and other features beneath fire access roadways shall be designed, at a minimum, to the AASHTO H-17 standard.
 - A letter or statement, signed by a registered engineer, shall be provided on the plans certifying that any new roadway meets these loading and all-weather criteria. Natural or artificial turf products, and road base without an approved topping material does not satisfy the all-weather requirement and may not be approved.
- 2.2. **Number Required** - One fire lane 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 lane. The hose pull distance is to be measured by an approved route around the exterior of the building.
- EXCEPTION: Hose-pull distance to the most remote exterior portion of a detached single-family home or duplex or related accessory structure (e.g., pool house, casita, garage, workshop, barn, etc.) may be up to 300 feet when protected throughout by a fire sprinkler system or as approved by the fire code official.
- EXCEPTION: When approved by the fire code official, this distance may be increased up to 300 feet for open parking garages that comply with the following:
- The structure is protected throughout with an NFPA 13 sprinkler system, or the structure meets the below requirements:
- Two stairways, both directly accessible from the exterior.
 - Both stairways provide direct access to all tiers of the parking structure.
 - Both stairways are equipped with Class I Wet Standpipe Outlets at each floor or intermediate landing.
 - Access to both stairways is within 40-foot walking distance from a fire lane.
 - The stairways are sufficiently separated from each other and located in a manner that facilitates firefighting operations within the structure, as determined by the fire code official.
- 2.2.1. More than one fire lane is required when access to a single road may be insufficient due to the following: terrain, location, travel distance, potential fire, life-safety hazards, vehicle congestion, railways, weather condition that may impair single-entry point, or other factors that could limit access. Supplementary access points shall be located to facilitate evacuation and emergency operations and minimize congestion or obstruction during an emergency incident. At least two of

the access points shall be separated by a distance of at least one-half of the longest dimension, as measured between the two points of the development that are furthest from one another, when any of the following conditions exist.

- A minimum of two vehicle access points is required for any area containing 150 or more residential dwelling units, including new and existing dwelling units.
- A minimum of two vehicle access points is required for any multi-family residential structure containing 200 or more dwelling units. Each entry point shall provide access to at least one of two (or more) required vehicle laddering areas. Laddering areas shall be remotely located on at least two sides of the structure in locations that facilitate fire department access to the roof as well as interior firefighting.
- A secondary access point is required for commercial projects with a cumulative building area of more than 124,000 square feet.

2.3. Location - For purposes of determining the suitability of public roads and private roads for staging fire apparatus and facilitating fire suppression operations for a particular structure, the following criteria shall apply:

2.3.1. The edge of fire access roadways serving two and three-story buildings should be located no closer than 10 to 30 feet from the building. The edge of fire lanes serving structures four or more stories in height shall be located between 20 to 40 feet from the building. The setback is measured from the face of the building to the top edge of the curb face or rolled curb flow line nearest the building. The distance and the amount of fire lane serving the structure that is required to meet these criteria are a function of overall building height, construction, presence of openings, and other potential hazards and considerations.

2.3.1.1. Fire lanes serving buildings that are over 30' high as measured from grade to the roof parapet or eave shall be provided, at a minimum, along the longest façade of the building, or along at least two remote sides of the building, or in another manner approved by the fire code official that optimizes firefighter access to the roof.

2.3.1.2. For location of access roads serving high-rise structures, see Guideline H-01.

2.3.2. To ensure that vehicular traffic from dead-end fire lanes serving buildings greater than 30-feet in height, is always maintained, staging areas at least 25-feet wide, and 60-feet long with a 25-ft taper on each end (for 110-foot total length) shall be provided along the roadway to permit fire apparatus to pass ladder trucks that have the outriggers extended. Consideration should be given to the length of the roadway, roof and building design, obstructions to laddering, and other operational factors in determining the number, location, and configuration of such staging areas.

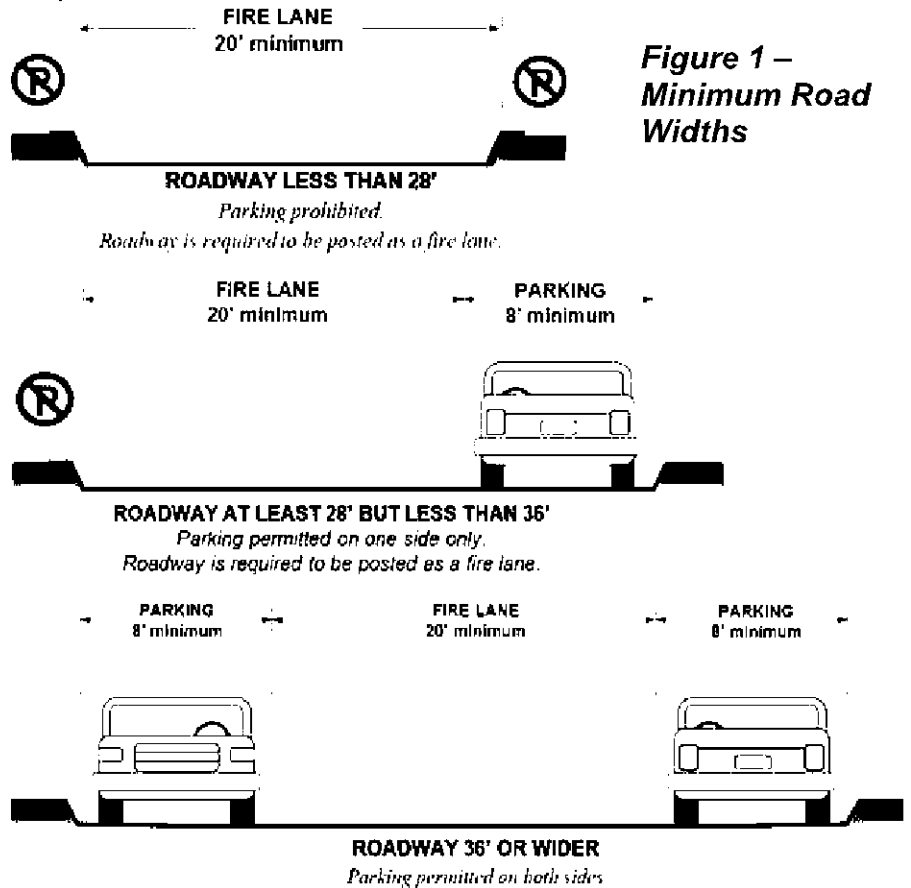
2.3.3. A fire lane may be an on-site private fire lane or a public road with a projected average daily trip (ADT) count below 30,000, or as approved by the Fire Code Official. Contact the city or County Traffic Engineer's office or Public Works Department for ADT information.

2.3.4. A fire lane on an adjacent property may only be considered as a fire lane for the project property if an emergency access easement has been granted by the adjacent property owner (“GRANTOR”) to the benefit of the city or county (“GRANTEE”) for the purpose of emergency access to the project property and recorded by the Orange County Clerk-Recorder Department. Evidence of the recorded easement may need to be provided to OCFA.

2.4. **Width** – The minimum width of a fire lane is 20 feet. If a center median is included, the required width shall be provided on both sides of the median.

2.5. **Parking Restrictions**

- No parking is permitted along fire lanes that are narrower than 28 feet in width (Figure 1). Width is 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. Parking on one side is permitted on a fire lane that is at least 28-feet in width. Parking on two sides is permitted on a roadway 36-feet or more in width.

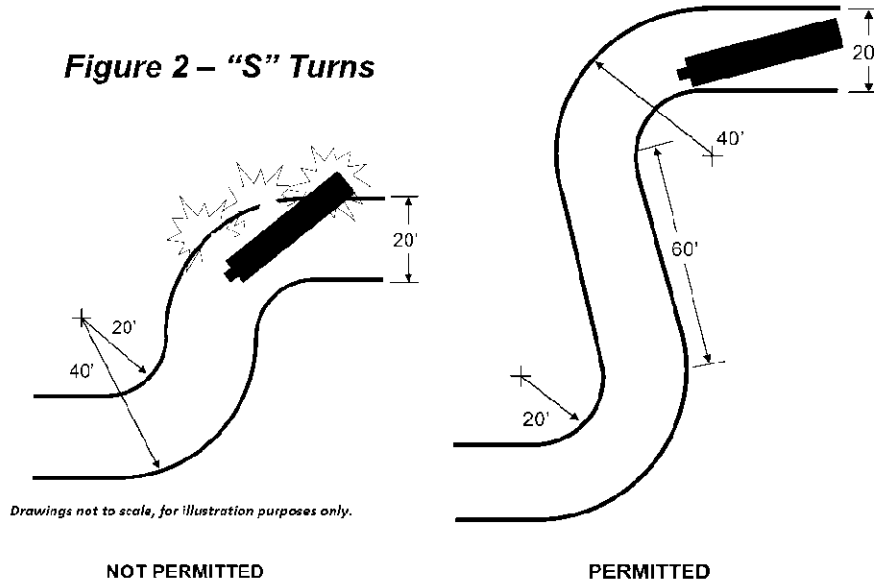


2.6. **Vertical Clearance** -

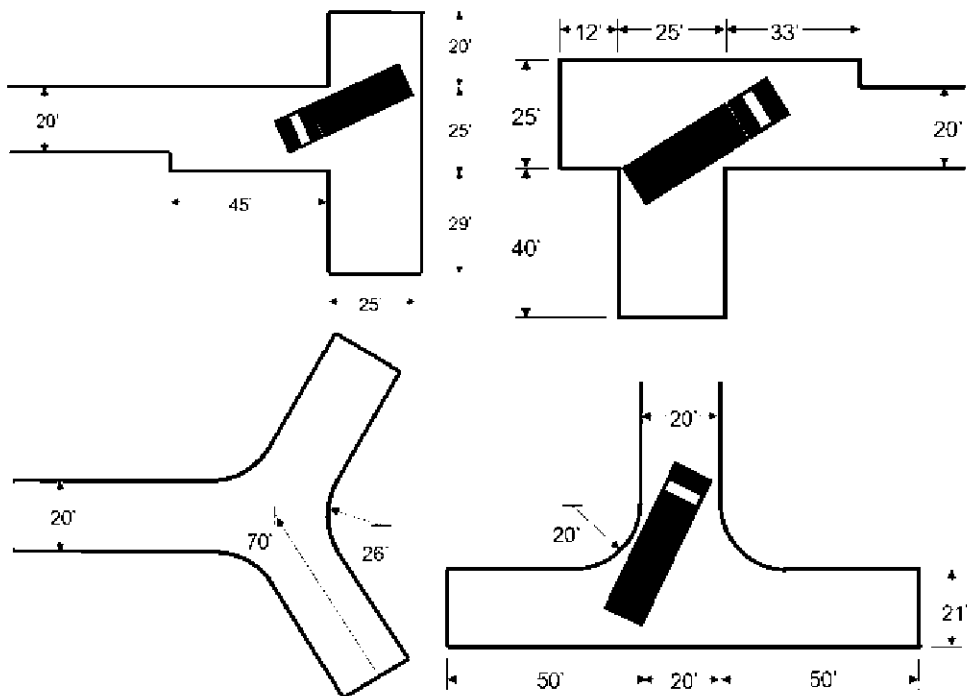
Fire lanes shall have an unobstructed vertical clearance of not less than 13-feet 6-inches. If trees are located adjacent to the fire lanes, place a note on the plans stating that all vegetation overhanging the fire lane shall be maintained to provide a clear height of 13-feet, 6-inches at all times (Appendix B, Figure B1).

2.7. **Grade** - The grade for fire lanes shall not exceed 10%. When all structures served by the fire lane are protected by automatic fire sprinkler systems, the grade may be increased to a maximum of 15% for approved sections of roadway where fire apparatus may drive but will not likely stopped during an emergency. The cross-slope of fire lanes shall not be greater than 2%.

2.8. **Turning Radii** - The inside turning radius for a fire lane shall be 20 feet. The outside turning radius for an fire lane shall be 40 feet or greater. A 60-foot straight section of roadway must be provided between a turn in one direction and another turn in the opposite direction (Figure 2). For additional requirements related to minimum turning radii, please refer to CCR Title 14.



2.9. **Dead-ends** - Dead-end roadways more than 150 feet shall be designed and constructed with approved hammerheads or turnarounds (Figure 3, Figure C1 in Appendix C). Turnarounds shall meet the turning radius requirements identified above. The minimum cul-de-sac radius is 40 feet with no parking allowed. The maximum length of a cul-de-sac or other dead-end road without mid-way turnarounds or other mitigating features is 800 feet.



- 2.10. **Bridges** - When a bridge is required as part of a fire lane, the driveable surface shall be a minimum of 20' in width and the bridge shall be designed and constructed at a minimum to AASHTO H-17 standards to accommodate a total weight of 94,000 pounds.
- 2.11. **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. The location and design specifications for the pass-throughs shall be coordinated with the city/county public works or engineering department.
- 2.12. **Continuity of Fire Lanes** – Where roadways serving structures are not required fire lanes but may still appear to be usable by fire apparatus, they shall be designed to the applicable fire lane criteria. This shall include, but not be limited to, adequate turning radii and turnarounds necessary to prevent fire apparatus entrapment or undue delays.

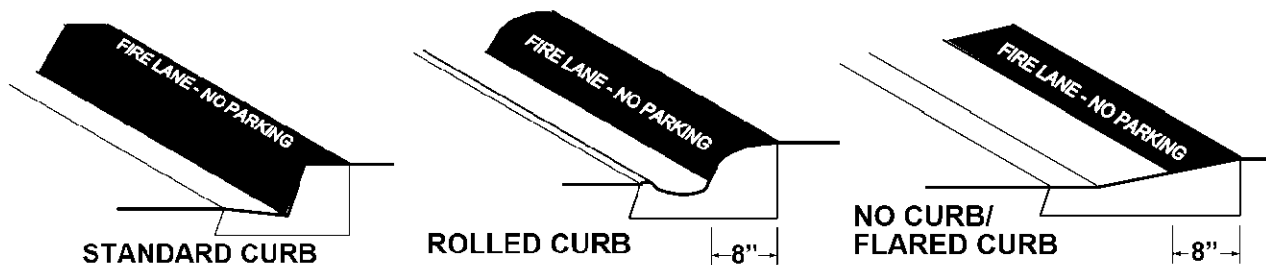
SECTION 3: FIRE LANE IDENTIFICATION

3. **Fire Lane Identification** - Fire Lane identification is required to maintain the required width of fire lanes 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) on public roadways. Enforcement of fire lane no-parking restrictions on private roadways is the responsibility of the property owner, HOA, or their designated agent (Attachment 2).

3.1. **Sign and Curb Marking options** – Areas designated as a fire lane require an acceptable method of marking that shall be approved prior to installation. Select either option 3.1.1. OR option 3.1.2. below.

3.1.1. Specific areas designated by the OCFA as fire lanes must be marked with red curbs meeting the specifications below (Figure 4). 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.

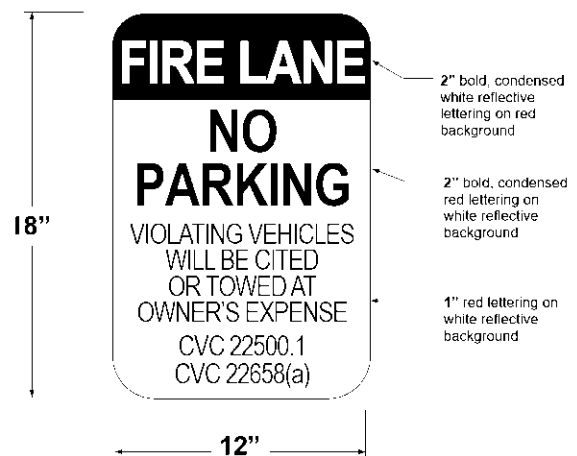
Figure 4 – Fire Lane Identification, Red Curbs



- Curbs shall be painted OSHA safety red.
- "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.

3.1.2. "Fire Lane – No Parking" signs (Figure 5) meeting the appropriate specifications shall be posted immediately adjacent to each designated fire lane and at intervals not to exceed 50 feet, unless otherwise approved by the fire code official. In areas where fire lane parking restrictions are enforced by the California Highway Patrol, "NO STOPPING - FIRE LANE" signs meeting Caltrans standards shall be used. 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 (Figure 6).

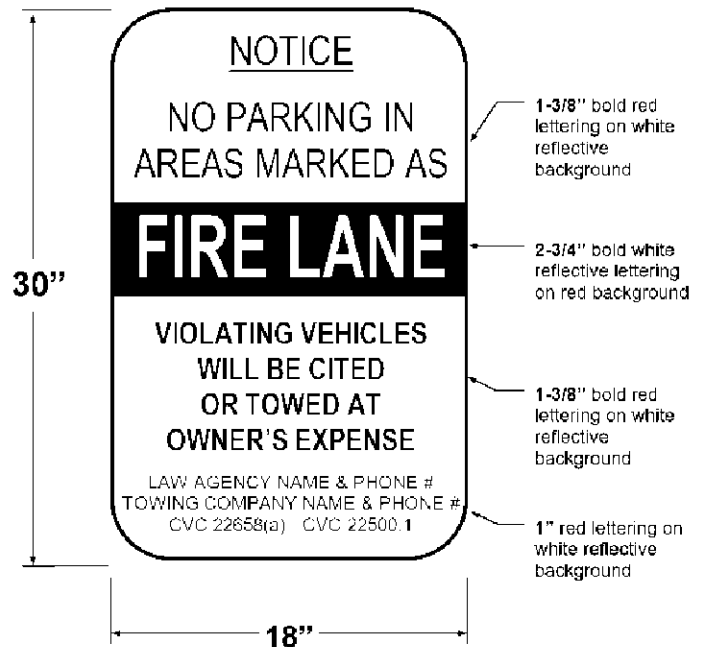
Figure 5 – Fire Lane No Parking Signs



3.2. Fire Lane Entrance Signs - Fire lane entrance signs must meet the following specifications:

- Fire lane entrance signs are to be used only at vehicle entry points to areas that contain "Fire Lane – No Parking" signs or red curbs.
- The 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 installed per OCFA mounting specifications for fire lane signs.

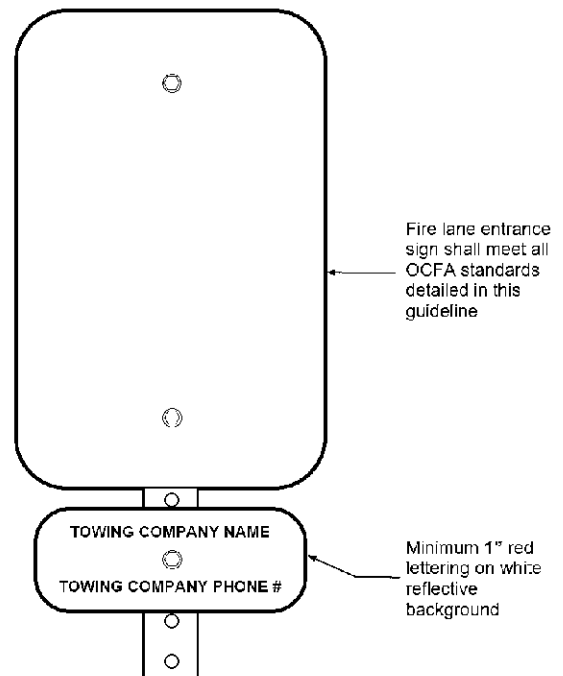
Figure 6 – Fire Lane Entrance Signs



3.3. Towing Company Information -

Towing company contact information is required for all properties with a standing written agreement for services with a towing company per the California Vehicle Code. To facilitate periodic changes in towing company contracts, the towing company contact information may be posted on a separate sign mounted directly below the fire lane entrance sign instead of on the entrance sign itself (Figure 7). The method of attachment to the post shall not obscure the wording on either sign.

Figure 7 – Alternate Location of Towing Company Information



3.4. Alternative "Fire Lane – No Parking" -

Alternative "Fire Lane – No Parking" signs may be allowed with approval from the fire code official. 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 OCFA mounting specifications for fire lane signs.

Note: All alternative signs must be approved through the OCFA and by the city/County engineer and/or policy agency, as applicable. In areas where fire lane parking restrictions are enforced by the California Highway Patrol, "NO STOPPING – FIRE LANE" signs meeting Caltrans standards shall be used.

- 3.4.1. “Fire Lane – No Parking Beyond This Point Except in Designated Stalls” sign may be approved for use in limited areas up to 100-feet in length, such as motor courts or dead-end roads, when permitted by the Fire Code Official. Where parking stalls are not present, sign may omit “except in designated stalls” and sign height may be reduced to 18”. The specifications for the rest of the sign shall match the standard fire lane no parking signs (Figure 8).

Figure 8 – Specifications for Alternative Fire Lane No Parking Signs

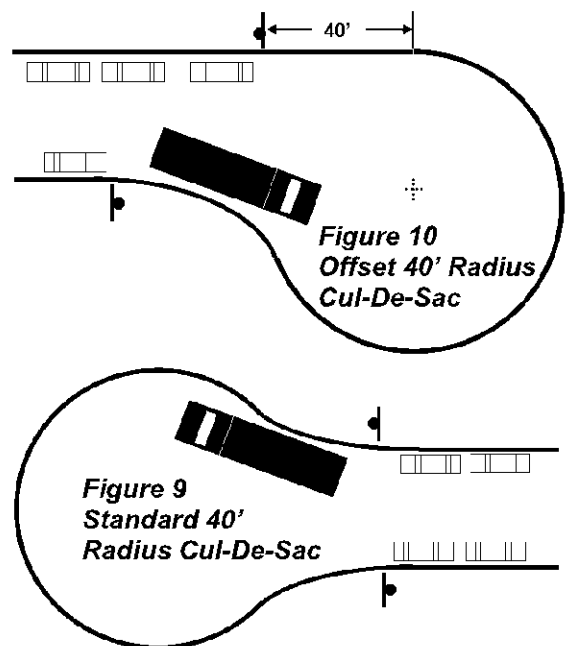


- 3.4.2. “Fire Lane – No Parking in Cul-De-Sac” signs may be approved for use on the right side of a roadway. Signs shall be securely mounted facing the direction of travel and clearly visible to oncoming traffic entering the designated area.

For a standard cul-de-sac, the “begin” and “end” signs shall be located at the point where the street begins to widen into the bulb (Figure 9).

A cul-de-sac with an offset radius shall have signs located at the point where the street begins to widen into the bulbs and at a point 40' from where the cul-de-sac and street are tangent (Figure 10).

Additionally, a minimum 2" red lettering on white reflective background must be provided for the “BEGIN” sign at entry into cul-de-sac and “END” sign when leaving cul-de-sac.



“BEGIN” or “END” sign may be omitted where cul-de-sac is the continuation of a no parking zone on streets less than 36’ wide (Figure 11).

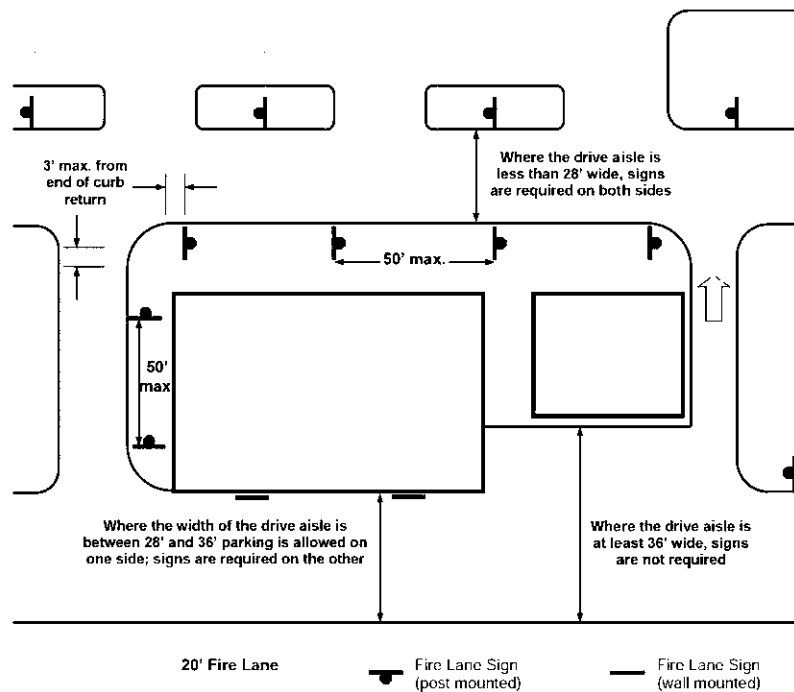
3.5. Fire Lane No Parking Sign Locations - Signs are required within 3’ at the end of the curb return at the beginning of each “block” along the fire lane and spaced a maximum of 50’ along the entire designated lane (Figure 12).

A sign shall be located within a reasonable distance of the end of each block as necessary to clearly identify the extend of the no parking zone. 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 OCFA mounting specifications. Where signposts are not practical, signs may be mounted on a wall or fence and are allowed to be oriented parallel to the length of the fire lane. OCFA inspectors will determine if additional signs or sign locations are required.

Figure 11 – Specifications for Cul-de-Sac Fire Lane No Parking Signs

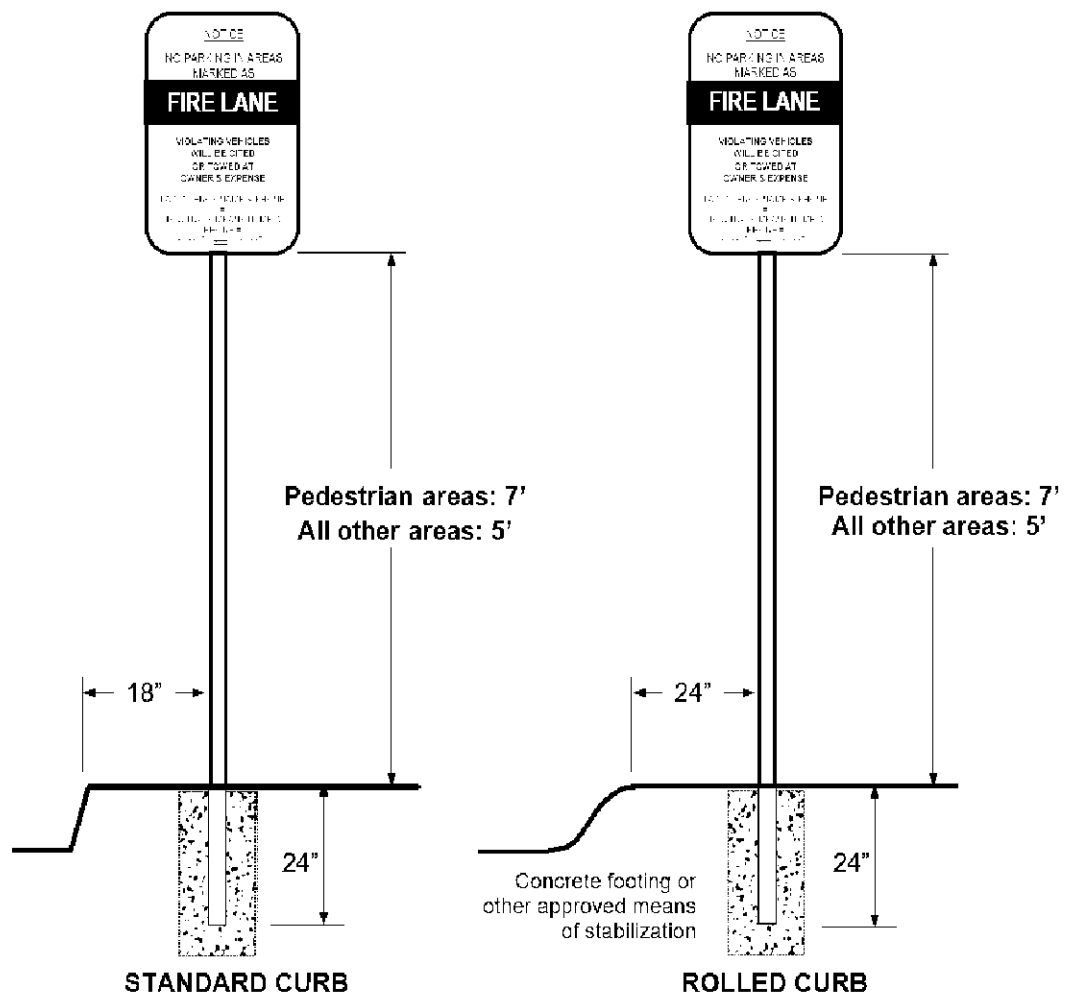


Figure 12 – Fire Lane No Parking Sign Locations



- 3.6. **Mounting Specifications for Fire Lane Entrance and No Parking Signs** - Signs shall be mounted facing the direction of vehicular travel. They 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. The sign post depth of bury shall be a minimum of 24" and rebar, a concrete footing, or another method to prevent removal is recommended (Figure 13). Footings for signs located in the public right-of-way shall be per the local jurisdiction's requirements.

Figure 13 – Mounting Specifications for Fire Lane Entrance and No Parking Signs



SECTION 4: PREMISES IDENTIFICATION

4. **Premises Identification** - Approved numbers or letters shall be placed on the front elevation of all new and existing buildings in such a position that is plainly visible and legible from the street or the road to which the property is addressed. Addresses shall not be located where there is potential of being obstructed by signs, awnings, vegetation, or other building/site elements. Where only a single building with a single street address is present (and no other structures are accessible from the fire lane serving that structure), an address monument at the vehicle entrance or other location clearly visible and legible from the public road may be provided in lieu of an address on the building.
 - 4.1. The numbers shall contrast with their background. In SRA and in LRA VHFHSZ, addresses for residential buildings shall be reflectorized per CCR Title 14.
 - 4.2. The address characters shall be a minimum of 4 inches in height for single-family residential structures/duplexes, or individual unit numbers in multi-family residential structures. The 4-inch numbers shall have a ½-inch stroke, or as required by local ordinance, whichever is more restrictive. Building setbacks, elevation, and landscaping can affect these minimum size requirements.
 - 4.3. The address characters shall be a minimum of 6 inches in height for commercial structures, or the primary building address or address range posted on multi-family residential structures. The 6-inch numbers shall have a one-inch stroke, or as required by local ordinance, whichever is more restrictive. Building setbacks, elevation, and landscaping can affect these minimum size requirements.
 - 4.4. Address numbers may be required to be internally or externally illuminated by the local jurisdiction's security code. While not required by the OCFA, illumination of addresses is recommended to facilitate rapid location of a site or building.
 - 4.5. Where it is unclear as to which street a building is addressed to (e.g., a building is accessed only from a street other than the one it is addressed to; multiple main entrances to the site, or building itself, front different streets), the name of the street shall also be identified as part of the posted address.
 - 4.6. 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.
 - 4.7. Multi-Building Clusters - Approved numbers or addresses shall be placed on the front elevation(s) of all buildings that form the cluster. If all building addresses are not clearly visible or legible from the public road serving the structures, an address monument shall also be provided at the entry point(s) to the site indicating the range of addresses accessible from that entrance.

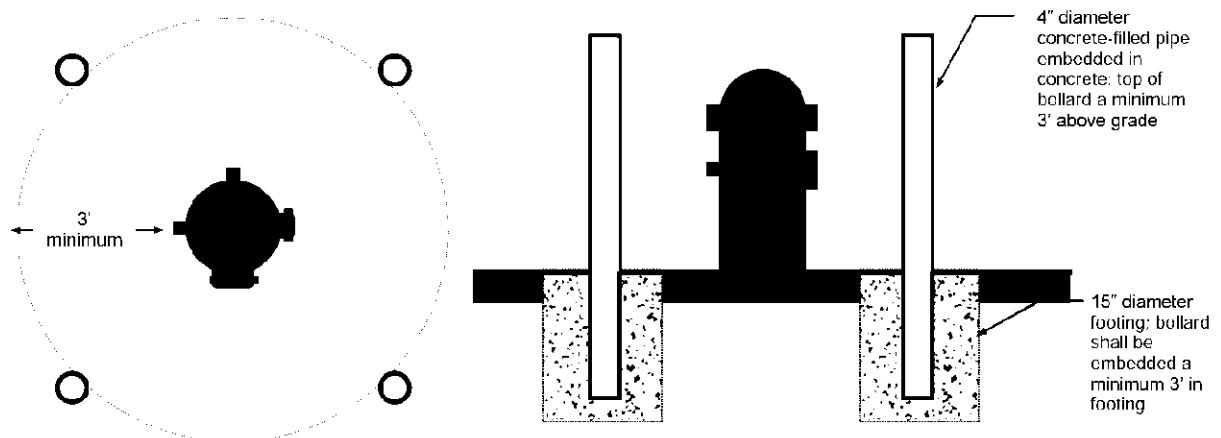
SECTION 5: HYDRANT AND WATER AVAILABILITY REQUIREMENTS

5. **Hydrant and Water Availability Requirements** - Applicants must provide documentation that hydrants are provided in the quantity and spacing described in the Hydrant Quantity and Spacing in OCFA Jurisdiction table (Attachment 3). They must also show that the hydrant is capable of delivering the amount of water required in the Minimum Required Fire Flow and Flow Duration for Buildings in OCFA Jurisdiction table (Attachment 4). The quantity and spacing of hydrants are 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 equipped with fire sprinklers. This information must be shown clearly on the plans to assist in the determination of the fire flow requirement.
- 5.1. **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 OCFA if the project includes a new structure or increase in the floor area of an existing structure. Water availability information may not be required to be submitted for every project, and plans may be submitted with a hydrant flow test pending, but the applicant should understand that project approval may be delayed if it is determined during review that this information is required. If the project requires evaluation of the available fire flow, it will not be approved without a completed OCFA Water Availability form or equivalent data sheets from a water district. Water availability information must not be older than six months.
- 5.1.1. Obtain a Water Availability form from OCFA Planning & Development Services Section.
- 5.1.2. 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.
- 5.1.3. Determine the required fire flow from Minimum Required Fire Flow and Flow Duration for Buildings in OCFA Jurisdiction (Attachment 4), as applicable. A 50% reduction in fire flow (but not duration) may be taken when the fire-flow calculation area consists only of buildings equipped with an approved automatic fire sprinkler system. If you are unsure of how to calculate the fire flow requirement for your project, you may email or fax the form to the OCFA, and we will determine the fire flow for you.
- 5.1.4. 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.
- In newly developed areas without water infrastructure, the water department may issue a “will-serve” letter indicating the expected fire flow and duration of water that will be delivered once the water system is installed and operational.

- If multiple hydrants are located within the maximum distance allowed in Hydrant Quantity and Spacing in OCFA Jurisdiction (Attachment 4). The amount of water available from each hydrant may be combined, provided that the hydrants are flowed simultaneously.
- 5.1.5. It is the applicant's responsibility to ensure that the following information is provided at a minimum on either the water company's test data sheet and/or the OCFA Water Availability form:
- Static pressure and residual pressure in PSI and observed flow in GPM; or
 - Calculated flow in GPM at 20 PSI
- 5.1.6. Scan or photocopy the completed form or data sheets onto your plans or include the original with your plan submittal.
- 5.1.7. Please ensure that the fire area, building size, construction type, and flow data are complete and accurate. Errors or omissions in this information may result in plans having to be resubmitted or fire flow testing to be redone.
- 5.2. **Fire-Flow Calculation Area** - The fire-flow calculation area shall be the total floor area of all floor levels within the exterior walls, and under the horizontal projections of the roof of a building, except as modified in the following two conditions:
- Portions of buildings which are separated by fire walls without openings, constructed in accordance with the California Building Code are allowed to be considered as separate fire-flow calculation areas.
 - The fire-flow calculation area of buildings constructed of Type IA and Type IB construction shall be the area of the three largest successive floors. *CFC Appendix B Section B104*
- 5.3. **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 Hydrant Quantity and Spacing in OCFA Jurisdiction table (Attachment 3).
- 5.3.1. Hydrants must be located within three feet of the edge of a fire lane and cannot be located in areas where it may be visually or operationally obstructed (behind fences, 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. Hydrants located in landscapes areas may require a 4'x4' concrete pad and the OCFA inspector will ensure that vegetation does not encroach on this clear space.
- 5.3.2. The hydrant outlets must face the fire lane. In areas where the outlets cannot face the fire lane (e.g., the hydrant is located on a landscape peninsula or island in a parking lot; the hydrant has three outlets, etc.), the 4" outlet(s) shall take precedence.
- 5.3.3. The hydrant shall be located at least 40-feet from the building it serves. Where it is impractical to locate the hydrant 40-feet from adjacent structures, additional hydrants may be provided, or the hydrant may be located closer if nearby walls do not contain openings and the hydrant is not in a location where it may be rendered inoperable due to damage from collapsed walls, debris, or excessive heat.

- 5.3.4. Hydrants shall be located so that a hose line running between the hydrant and the fire department connection(s) (FDCs) served by that hydrant does not cross driveways, obstruct roads or fire lanes, or otherwise interfere with emergency vehicle response and evacuation of a site.
- 5.3.5. 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. Whenever possible, hydrants shall be placed at street and drive aisle intersections in preference to mid-block locations. Where on-street parking is allowed, hydrants should be placed in the shortest parkways between adjacent driveways, at corners and chokers where parking is not normally allowed, and in similar areas where impact to space available for parking and the potential for hydrants to be obstructed is minimized.
- 5.3.6. Hydrants and fire department connections should not be located where apparatus staged at these locations would then encroach on minimum fire apparatus turning radii unless alternative routes are available. Hydrants shall not be placed in the "bulb" end of a cul-de-sac where apparatus staged at the hydrant would prevent the cul-de-sac from being used as a turnaround.
- 5.4. **Protection of Hydrants** - Hydrants in locations that are exposed or susceptible to potential damage from vehicular collision need to be protected by curbs and/or bollards (Figure 14).

Figure 14 - Protection of Hydrants



Protection of Hydrants, Detector Checks, Fire Department Connections, Post Indicator Valves, and other Similar Devices.

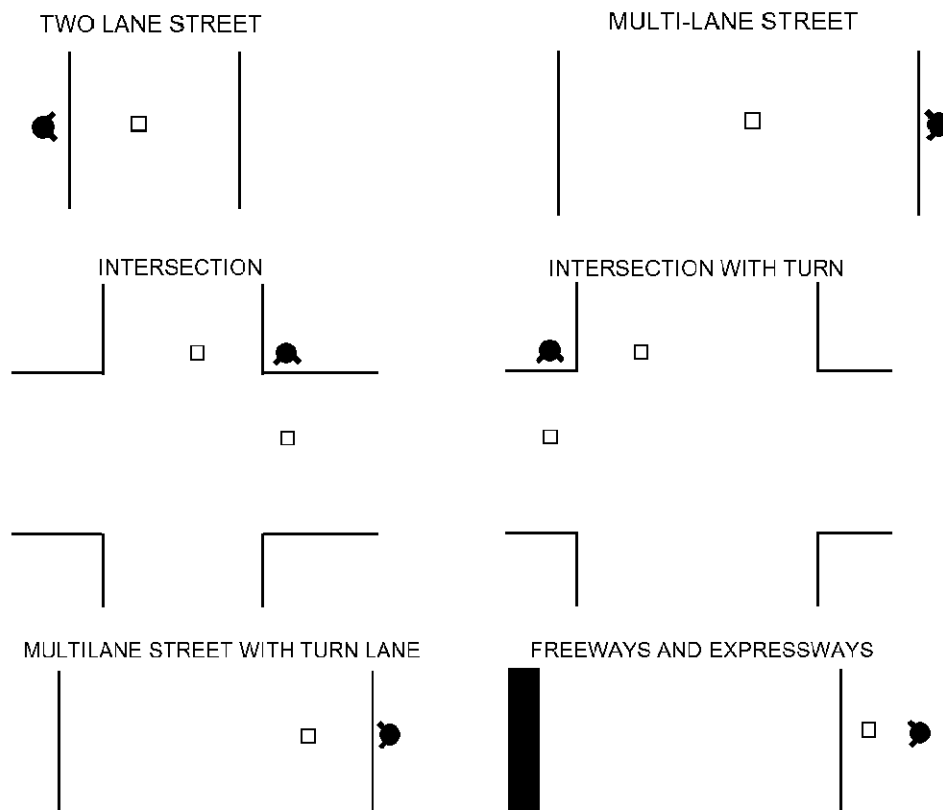
- 5.4.1. If vehicles can approach the hydrant from more than one direction, the hydrant shall be protected by four bollards of concrete-filled pipe four inches in diameter and mounted in concrete in a square around the hydrant. The bollards need to be spaced a minimum of three feet from the perimeter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

- 5.4.2. 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 of at least six inches in height.

5.5. Hydrant Markers and Color

- 5.5.1. Blue reflective pavement markers (“blue dots”) shall be used to identify fire hydrant locations (Figure 15). Blue reflective markers used for any other purpose should be removed. The developer may contact the local water company to arrange the installation of the blue dot/hydrant marker. 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.

Figure 15 - “Blue Dot” Reflective Hydrant Marker Location



- 5.5.2. 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.
- 5.5.3. 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.
- 5.5.4. Streets with continuous two-way left turn lanes – Markers shall be placed six inches from the edge of the painted yellow line on the side nearest the fire hydrant.
- 5.5.5. Hydrant Color – Private hydrants (hydrants separated from the city main by and located downstream from a backflow prevention device) shall be painted OSHA safety red.

SECTION 6: ACCESS TO STRUCTURES

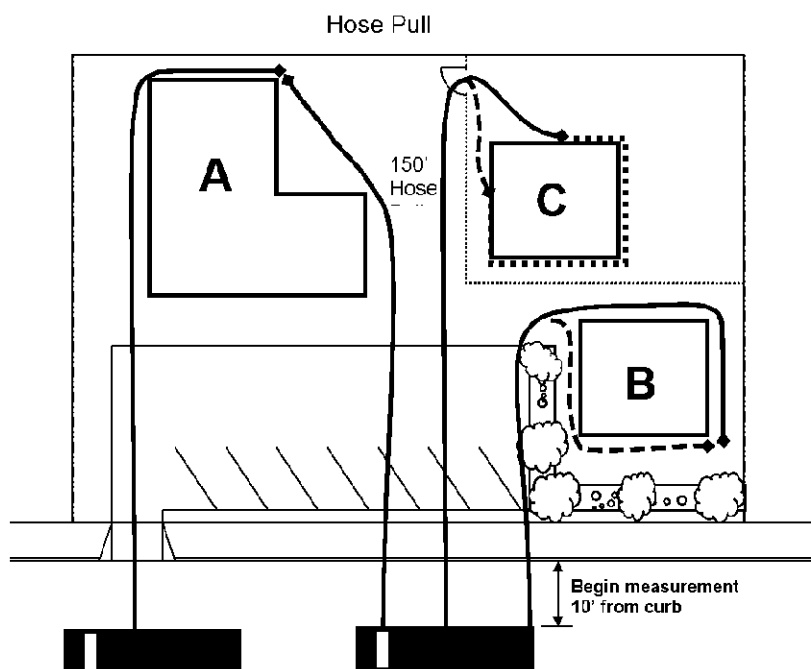
6. Access to Structures

- 6.1. Hose pull – The dimension of 150-feet 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 factor, including standard hose lengths, weight of equipment, hydraulic properties, and accepted operational procedures (Figure 16).

Figure 16 – Hose Pull

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

- *Building A – All portions of the buildings are within 150 feet of the public road as measured along the path of firefighter travel. This building is in access.*
- *Building B – The building is in access despite the obstruction presented by the planter and hedges due to its proximity to the road.*
- *Building C – The building is out of access; the presence of a chain-link fence forces firefighters to backtrack once they pass through the gate, increasing their travel distance to the dashed part of the perimeter beyond 150'. On-site fire access roadways and/or a change in the location of the gate would be necessary to provide access to Building “C”.*



- 6.1.1. 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”.
- 6.1.2. 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 lane. Topography may also affect the potential access route and any significant changes in elevation must be accounted for when measuring hose pull distances.

- 6.2. **Access walkways** – CFC 504.1 provides for the installation of approved access walkways from fire access roadways to exterior openings required by either the CBC or CFC. The OCFA 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. When required:
- 6.2.1. 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, 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.
 - 6.2.2. Access walkways must be a minimum of five feet in width.
 - 6.2.3. Access walkways shall consist of a surface that lends itself to safe use during building evacuation, firefighting, and rescue efforts.
 - 6.2.4. Where elevation change is present, indicate the grade as a percentage on the plans.
 - 6.2.5. 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 OCFA.
- 6.3. **Access to Interior Courtyards** - Firefighter access and water supply as described below shall be provided for interior courtyards of R-occupancy buildings and buildings of other occupancies where the main entry to a suite is accessed via the courtyard.
- 6.3.1. Number of Access Routes
 - A minimum of two means of access via “firefighter tunnels” shall be provided between each courtyard and the fire lane. A single tunnel may be allowed for smaller courtyards, as determined by the fire code official.
 - A tunnel interconnecting courtyards may suffice as a second means of access, provided that each courtyard so connected has at least one other tunnel leading directly to a fire lane.
 - 6.3.2. Design of Firefighter Tunnels
 - The outer entrance to the tunnel shall front on a fire lane.
 - Tunnels shall be a minimum 10 feet wide, and when possible, at least 10 feet tall (but no less than 8 feet).
 - Doorways and gate openings in the path of firefighter travel to, through, and from the tunnel shall provide a minimum 44-inch clear width.
 - Where the tunnel intersects with corridors or other interior spaces, doors shall be provided to separate the tunnel from those spaces in a manner that provides an uninterrupted path of travel through the tunnel, from one end to the other.
 - At least 1 tunnel shall provide a straight path of travel between the fire lane and the courtyard to ensure access by a firefighter’s 35’ ladder.

- Landscape and hardscape features such as trees, shrubs, light poles, raised planters, walls, fences, and gates near the openings to the tunnel shall not hinder or delay movement of firefighters carrying a ladder.
- Where there is an elevation change between the fire lane and courtyard, code-compliant ramps or stairs with a minimum clear width of 44" between handrails shall be provided. Only straight-run stairs shall be provided, no stair returns are allowed along the path of firefighter travel.

6.3.3. Tunnel Construction

- Tunnels shall be separated from adjacent construction by minimum 2 hour fire barriers and 2 hour ceiling/floor assemblies.
- Interior door openings into the tunnel may be equipped with mag-holds, but other doorstops are not allowed.
- Wall and ceiling finishes within the tunnel shall be non-combustible. Where allowed by CBC/CFC Chapter 8, floors may be carpeted.

6.3.4. Use of Firefighter tunnels – Tunnels are permitted to be used for other purposes provided that the use does not obstruct the clear path required or otherwise interfere with use of the tunnel for emergency purposes. Combustible furnishings and fixtures within the tunnel shall be kept to a minimum, and such items shall be fixed in place. Where the tunnel is also an exit component of the egress system (e.g., exit enclosure, passageway, exit stair, horizontal exit) or functions as an egress court per CBC 1029.1, no other non-emergency use shall be allowed within the tunnel.

6.3.5. Courtyard Standpipes

- At least one standpipe outlet shall be provided in the courtyard when hose-pull from fire apparatus in the fire lane to any portion of the inner façade within the courtyard exceeds 200'.
- If standpipes are required, outlet(s) shall be provided within the firefighter tunnel at the opening of the firefighter tunnel(s) into the courtyard and at other approved locations as required by the fire code official. The hose-pull to all portions of the courtyard shall be less than 150-feet as measured from the standpipe outlet.
- The system shall be designed to not send a waterflow signal.
- The standpipe may be wall mounted or standalone. If standalone, it shall be located no more than 18" from the edge of a primary walkway in the courtyard in a position where it is immediately visible and accessible to firefighters. Access to and use of standpipes shall not be hindered by planter walls, vegetation, or other features; 18" clearance shall be provided on all sides.

6.4. **Rescue Openings** - Group-R occupancies that are required by CBC 1031.1 to have rescue openings shall have a walkable path free of obstructions between the fire lane and each rescue opening.

- 6.4.1. An approved access walkway must be provided to enable firefighters to easily and safely reach a clear, flat space beneath each rescue opening. Obstructions including but not limited to shrubs, trees, trellises, carports, raised planters, walls, fences, pools, steeply sloped roofs, overhangs, vegetation, and similar building and site elements shall not impede the use of or access to the walkway or rescue opening.
- 6.4.2. Walkways may consist of hardscape, decomposed granite, grass, or other similar walkable material that does not inhibit access to or use of the area.
- 6.4.3. Trees that encroach on walkways shall provide a minimum 7-foot clearance underneath to allow unhindered passage by firefighters, however, trees and shrubs shall not encroach on areas outside the rescue opening.
- 6.5. **Laddering Pad and Setback at Rescue Openings of Group R-1, R-2, and R-2.1 Occupancies** - A clear, flat space for laddering rescue openings shall be provided beneath each rescue opening. The distance between the nearest edge of this laddering pad and the structure is based on standardized operational procedures and safe practice to achieve a proper laddering angle (next page, Figure 17). The plan provided must demonstrate that the vegetation (at fully-grown sizes), buildings, and site features will not obstruct the access walkways or laddering operations. It is incumbent upon the developer, architect, landscape architect, and facility maintenance personnel to collaborate on a design and plant palette that complies with these requirements through the *life of the building*.

6.5.1. Proper laddering angle calculation: $d = (h/5) + 2$

Where **h** = The height of the window sill or balcony railing

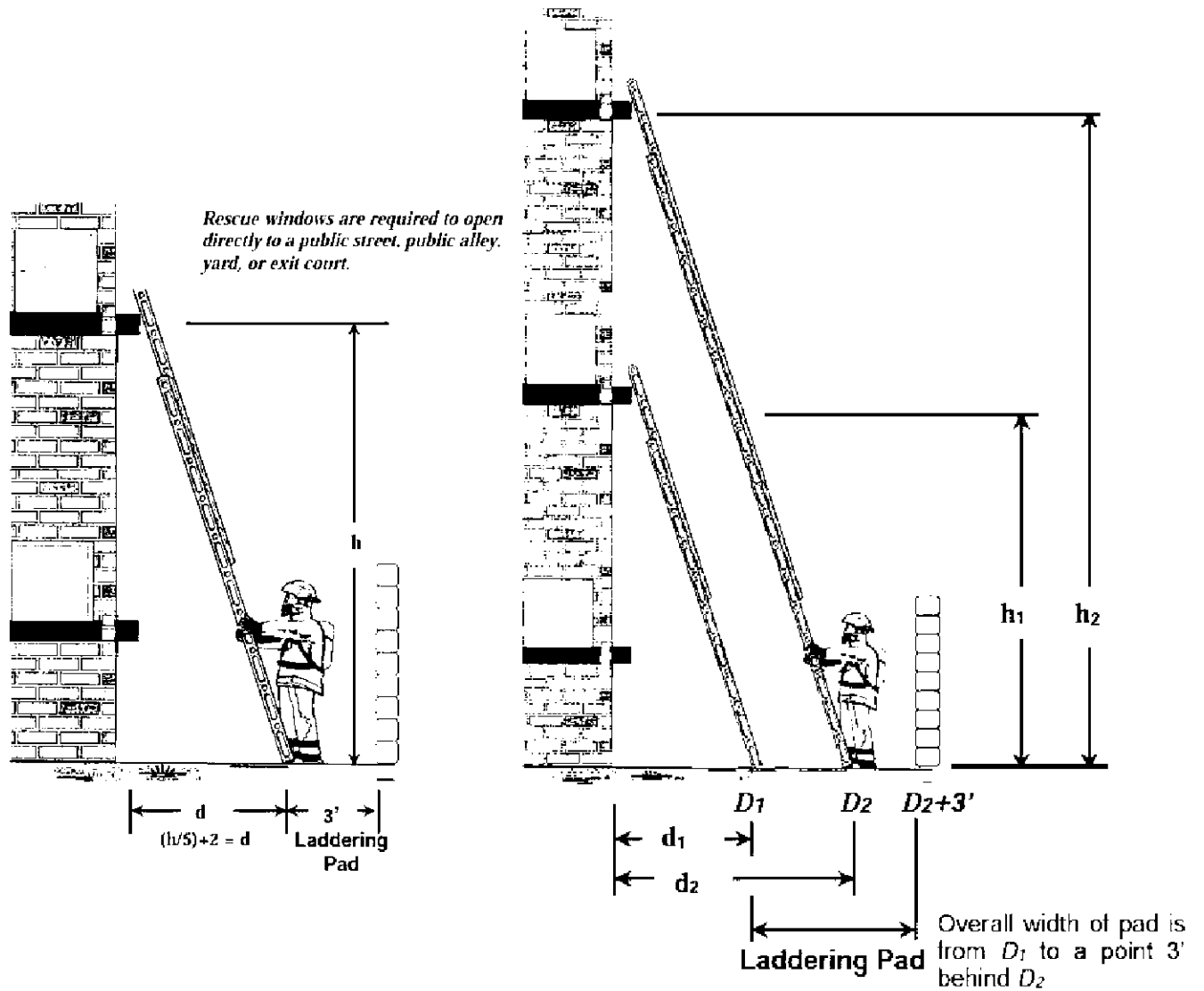
d = The distance in feet from the edge of the pad nearest the building to a point on the ground directly beneath the rescue window sill or balcony edge.

6.5.2. Dimensions for placement of ladders:

Placement of Ladders

Sill Height (h)	Distance (d)	Sill Height (h)	Distance (d)	Sill Height (h)	Distance (d)
35'	9'-0"	25'	7'-0"	15'	5'-0"
34'	8'-10"	24'	6'-10"	14'	4' to 5'
33'	8'-7"	23'	6'-7"	13'	4' to 5'
32'	8'-5"	22'	6'-5"	12'	3' to 5'
31'	8'-2"	21'	6'-2"	11'	3' to 4'
30'	8'-0"	20'	6'-0"	10'	2' to 4'
29'	7'-10"	19'	5'-10"	9'	2' to 4'
28'	7'-7"	18'	5'-7"	8'	2' to 3'
27'	7'-5"	17'	5'-5"	7'	1' to 3'
26'	7'-2"	16'	5'-2"	<7'	1' to 2'

Figure 17 - Ladder Pad Setback at Rescue Openings



ATTACHMENTS

Attachment 1 - 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 OCFA fire master plan notes are included? Yes (Notes are tailored to this project, where applicable)
- Building area, construction, occupancy, sprinkler type noted on plan? Yes
- Allowable area calculation provided on plan? Yes No (<6,000 sf unsprinklered; <18,000 w/ sprink.)
- Sheets not relevant to fire master plan removed from plan set? Yes
- Access/hydrant phasing plan provided? Yes N/A (No phasing of access/hydrant installation)

WATER AND HYDRANTS

- Water availability form completed and provided? Yes No (in progress) No (no change in demand)
- All hydrants within 350' of the site are shown on plan? Yes
- Are hydrants provided/spaced per Guideline B-01, Attachment 3? Yes

ACCESS AND ROADWAYS

- Extent of the access roadway is clearly shown on the plan? Yes
- Turning radii and width (incl. road sections) shown on the plan? Yes
- Exterior of all structures within 150' hose pull distance? Yes No (AM&M proposed) No (sprinklered R-3)
- 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% shown on plan? Yes N/A (Grade <10%)

FIRE LANE IDENTIFICATION

- Red curbs are identified on plan with bold, dashed, or red lines? Yes N/A ("Fire Lane—No Parking" 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 N/A (All roads at least 36 feet wide)
- Drawings of red curbs/"No Parking"/entrance signs provided? Yes N/A (All roads at least 36 feet wide)

GATES AND OBSTRUCTIONS

- Are all gates, fences, and planters shown? Yes
- Are vehicle gates identified as manual or electric? Yes N/A (No gates proposed)
- Gate operator specs showing emergency operation provided? Yes N/A (No electric gates proposed)
- Manual vehicle gates have "No Parking" sign noted? Yes N/A (No manual gates proposed)
- Knox boxes/locks/switches are noted on plans? Yes N/A (No gates proposed)
- OCFA gate notes/specifications included on plan? Yes N/A (No gates proposed)

OTHER REQUIREMENTS

- AM&M request letter scanned onto plan? Yes N/A (No alternate methods proposed)
- Premises ID/address monument location shown on plan? Yes N/A (Single family homes)
- Trash enclosures are located at least 5' from buildings? Yes No (Enclosures are existing or sprinklered)
- Two entry points provided for 150 or more residences? Yes N/A (Non-residential project)
- Buildings >75' to highest occupiable floor called out? Yes N/A (No high-rise structures)
- Parking enforcement letter provided? Yes N/A (Public streets only)
- Project located in methane zone(s) (portions of Yorba Linda, Buena Park, Seal Beach, San Clemente, and Unincorporated Orange County)? Yes No

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 2 – CVC, Fire Lane Parking Violations

The California Fire Code (CFC) and California Vehicle Code (CVC) specify 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 a sign is displayed in plain view at all entrances to the property specifying:
 - 1. The ordinance prohibiting public parking, a notation indicating that vehicles will be removed at the owner's expense, and 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.
- D. CFC 503.4 states that the required width of a fire apparatus access road shall not be obstructed in any manner, including parking of vehicles. Minimum required widths and clearances shall be maintained at all times.
- E. CFC 507.5.4 states that vehicles and other obstructions shall not be placed or kept near fire hydrants, fire department inlet connections or fire-protection system control valves in a manner that would prevent such equipment or fire hydrants from being immediately discernible. The fire department shall not be deterred or hindered from gaining immediate access to fire-protection equipment or hydrants.

Attachment 3 – Hydrant Quantity and Spacing in OCFA Jurisdiction

SINGLE FAMILY RESIDENCES/DUPLEXES/TOWNHOUSES with SPRINKLERS

Flow Requirement	Minimum Number of Hydrants	Maximum Distance to a Hydrant		Maximum Distance between Hydrants ¹		Average Distance between Hydrants ¹	
		Thru road	Dead-end	Thru road	Dead-end	Thru road	Dead-end
500 - 1750	1	300	250	600	500	600	500
1751+	Use the table below						

ALL OTHER STRUCTURES

Flow Requirement	Minimum Number of Hydrants	Maximum Distance to a Hydrant		Maximum Distance between Hydrants ^{1,2}		Average Distance between Hydrants ^{1,2}	
		Thru road	Dead-end	Thru road	Dead-end	Thru road	Dead-end
1000 - 1750	1	250	200	500	400	500	400
1751 - 2250	2	225	175	450	350	450	350
2251 - 2500	3	225	175	450	350	450	350
2501 - 3000	3	225	175	450	350	400	300
3001 - 4000	4	210	160	420	320	350	250
4001 - 5000	5	180	130	360	260	300	200
5001 - 5500	6	180	130	360	260	300	200
5501 - 6000	6	150	100	300	200	250	150
6001 - 7000	7	150	100	300	200	250	150
7001+	1 per 1000 gpm or fraction thereof	120	70	240	140	200	100

All distances are in feet.

¹ Where streets are provided with median dividers which cannot be crossed by fire fighters pulling hose lines, or where 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.

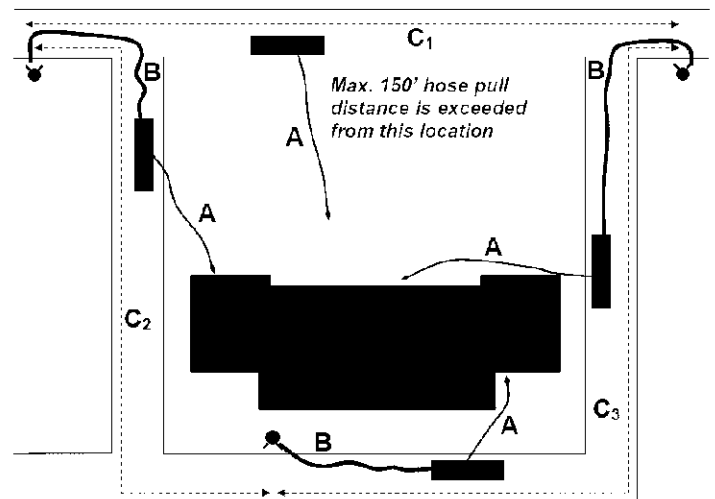
² Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, fire hydrants shall be provided at spacing not to exceed 1,000 feet to provide for transportation hazards.

A: HOSE PULL – In the diagram, 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 unshaded roadway has a hose pull distance greater than 150’ and would be considered “out of access” relative to this building.

B: HOSE LAY – 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 in the table above. 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.

C: HYDRANT SPACING – Hydrants located on portions of the fire lane that do not serve the building (unshaded road) do not need to be evaluated for spacing relative to each other, only with respect to hydrants that do serve the structure. Example: C1 may exceed hydrant spacing requires. However, C2 and C3 cannot. “Average spacing” from the table above shall be maintained to prevent multiple hydrants from being concentrated in only one portion of the fire lane.



Attachment 4 – Minimum Required Fire Flow and Flow Duration

FIRE FLOW CALCULATION AREA (square feet)					DETACHED SINGLE-FAMILY RESIDENCE/DUPLEX		OTHER BUILDINGS			
					FIRE FLOW (gallons per minute at 20 psi residual)		DURATION (hours)	FIRE FLOW (gallons per minute at 20 psi residual)		DURATION (hours)
Type IA/IB	Type IIA/IIIA	Type IV/VA	Type IIB/IIIB	Type VB	NS	S		NS	S	
0-22700	0-12700	0-8200	0-5900	0-3600	1000	500	1	1500	1500	2
22701-30200	12701-17000	8201-10900	5901-7900	3601-4800	1750	875	NS: 2 S: 1	1750	1500	
30201-38700	17001-21800	10901-12900	7901-9800	4801-6200	2000	1000		2000	1500	
38701-48300	21801-24200	12901-17400	9801-12600	6201-7700	2250	1125		2250	1500	
48301-59000	24201-33200	17401-21300	12601-15400	7701-9400	2500	1250		2500	1500	
59001-70900	33201-39700	21301-25500	15401-18400	9401-11300	2750	1375	NS: 3 S: 1	2750	1500	3
70901-83700	39701-47100	25501-30100	18401-21800	11301-13400	3000	1500		3000	1500	
83701-97700	47101-54900	30101-35200	21801-25900	13401-15600	3250	1625		3250	1625	
97701-112700	54901-63400	35201-40600	25901-29300	15601-18000	3500	1750	NS: 4 S: 1	3500	1750	4
112701-128700	63401-72400	40601-46400	29301-33500	18001-20600	3750	1875		3750	1875	
128701-145900	72401-82100	46401-52500	33501-37900	20601-23300	4000	2000		4000	2000	
145901-164200	82101-92400	52501-59100	37901-42700	23301-26300	4250	2125		4250	2125	
164201-183400	92401-103100	59101-66000	42701-47700	26301-29300	4500	2250		4500	2250	
183401-203700	103101-114600	66001-73300	47701-53000	29301-32600	4750	2375		4750	2375	
203701-225200	114601-126700	73301-81100	53001-58600	32601-36000	5000	2500		5000	2500	
225201-247700	126701-139400	81101-89200	58601-65400	36001-39600	5250	2625		5250	2625	
247701-271200	139401-152600	89201-97700	65401-70600	39601-43400	5500	2750		5500	2750	
271201-295900	152601-166500	97701-106500	70601-77000	43401-47400	5750	2875		5750	2875	
295901+	166501+	106501-115800	77001-83700	47401-51500	6000	3000		6000	3000	
		115801-125500	83701-90600	51501-55700	6250	3125		6250	3125	
		125501-135500	90601-97900	55701-60200	6500	3250		6500	3250	
		135501-145800	97901-106800	60201-64800	6750	3375	6750	3375		
		145801-156700	106801-113200	64801-69600	7000	3500	7000	3500		
		156701-167900	113201-121300	69601-74600	7250	3625	7250	3625		
		167901-179400	121301-129600	74601-79800	7500	3750	7500	3750		
		179401-191400	129601-138300	79801-85100	7750	3875	7750	3875		
		191401+	138301+	85101+	8000	4000	8000	4000		

NS: The building is not protected throughout with an approved fire sprinkler system

S: The building is protected throughout with an approved fire sprinkler system.

Construction Types: Types of construction are based on the California Building Code

Attachment 5 – Definitions

Access Walkways - An approved walking surface leading from fire access roadways to exterior doors, the area beneath rescue windows, and other required openings in structures.

Bollards - Permanent or removable poles that are placed across a roadway for the purpose of restricting vehicular access or to protect a piece of equipment from potential vehicular damage.

Breakaway Lock - A lock that features a scored shackle that will break when struck by a hammer or other substantial object.

Fire Lane – A road or other passageway developed to allow the passage of fire apparatus which may or may not be intended for vehicular traffic other than fire apparatus.

Fire Lane Identification - Signs or curb markings that allow fire apparatus access roads to be readily recognized so that they will always remain unobstructed and available for emergency use.

Gate – A movable barrier, usually on hinges or wheels, located at an opening in a fence, wall, or other enclosure, that can be opened to allow the passage of pedestrians or vehicles, and closed to restrict passage.

Hose Pull - The distance between the fire engine and a building, represented by the amount of fire hose that firefighters must pull from the engine to reach the structure and conduct fire suppression operations. Hose pull is measured along the firefighter's path of travel from the fire lane to the building, accounting for any obstructions along that path.

Hose Lay - The distance between the fire engine and a hydrant, represented by the amount of hose laid out from the engine to supply water from the hydrant to the engine. Hose lay is measured along the engine's path of travel on a fire lane.

Hydrant Spacing – The distance between two hydrants that could supply water to fire apparatus engaged in firefighting operations. Hydrant spacing is measured along the fire lane.

Local Responsibility Area (LRA) - Land where a city/county has primary financial responsibility for the prevention and suppression of wildland fires. LRA land is generally located within city boundaries. *(Refer to CCR Title 14)*

Premises Identification – A method of recognizing and visual means (e.g., address numbers) used to readily identify a property or facility street address. It may also be used to distinguish separate buildings within a single facility or property.

Rescue Openings – An operable window, door, or other similar device that provides for a means of escape and access for rescue in the event of an emergency.

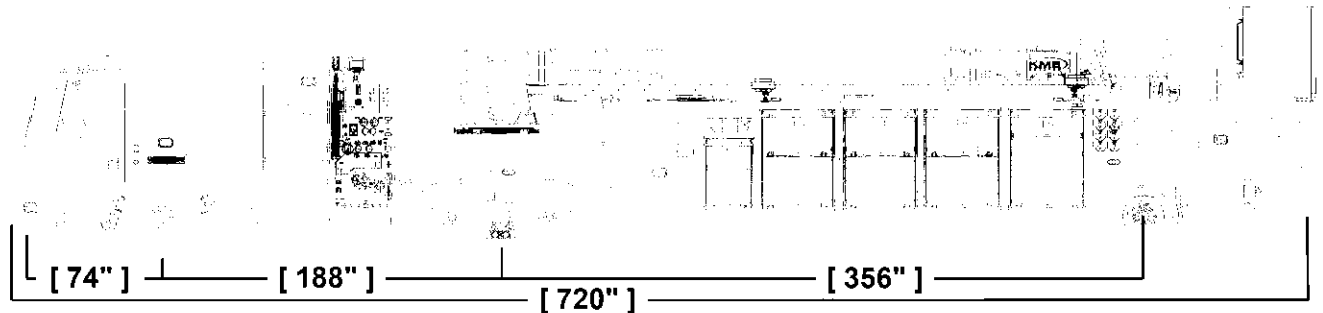
State Responsibility Area (SRA) - Land where the State of California has primary financial responsibility for the prevention and suppression of wildland fires. All SRA land is located within County unincorporated areas; SRA does not include lands within city boundaries or in federal ownership. *(Refer to CCR Title 14)*

Very High Fire Hazard Severity Zone (VHFHSZ) - A designated area in which the type and condition of vegetation, topography, fire history, and other relevant factors increase the possibility of uncontrollable wildland fire. Structures within a VHFHSZ require special construction features to protect against wildfire hazards; please consult with the local building department. *(Refer to CCR Title 14)*

Wildfire Risk Area - Land that is covered with vegetation, which is so situated or is of such an inaccessible location that a fire originating upon it would present an abnormally difficult job of suppression or would result in great or unusual damage through fire, or such areas designated by the fire code official.

Attachment 6 - Apparatus Data for Swept Path Analysis

Use the following inputs for analyzing the swept path of a "typical" OCFA fire truck. To improve maneuverability for *all* OCFA apparatus, increase the speed of apparatus navigation through tight turns, and reduce the potential for property damage and resulting delays to emergency response, projections such as light poles, sign posts, mailboxes, planter walls, and vegetation shall not be placed near the edge of the fire lane where they can obstruct or be struck by portions of the vehicle that may overhang the curb.



Weight	94,000 lbs
Width (Cab)	8.50 feet
Width (Outrigger)	15.00 feet
Height Clearance	13.50 feet

APPENDIX A - ACCESS DURING CONSTRUCTION

HOW TO USE THIS APPENDIX

This appendix contains information related to access during construction. In addition to the generic information listed in Guideline B-01, the information in this appendix must be provided with your plan for projects where access or water supply may impact emergency response during construction. **Note: This information may not stand alone and must be used in conjunction Guideline B-01.**

A1. Access During Construction - Access and water supply during construction shall comply with CFC Chapter 33 and the provisions listed in this section. Construction activities at job sites that do not comply with these requirements may be suspended at the discretion of the fire code official until a reasonable level of compliance is achieved.

At no time shall construction projects impair/obstruct existing fire lanes or access to the operation of an existing fire hydrant(s) serving other structures.

The developer shall provide alternative access routes, fire lanes, and other mitigation features when existing roadways or hydrants may need to be moved or altered during construction to ensure adequate fire and life-safety protection. Such alternatives and features shall be submitted to the OCFA for review and approval prior to alteration of existing conditions.

A1.1. Lumber Drop Inspection - An inspection shall be scheduled with an OCFA inspector to verify that access roadways, fire lanes, and operable hydrants have been provided for buildings under construction and prior to bringing combustible building materials on site.

A1.1.1. The street address of the site shall be posted at each entrance. Projects on streets without names or street signs posted at the time of construction shall include the project name, tract number, or lot number for identification.

A1.1.2. Gates through construction fencing shall be equipped with a Knox padlock or breakaway lock/chain.

A1.1.3. When required by the OCFA inspector, fire lanes shall be posted with "Fire Lane – No Parking" signs or 'No Parking Areas' will be identified to maintain obstruction free areas during construction.

A1.1.4. Provisions shall be made to ensure that hydrants are not blocked by vehicles or obstructed by construction material or debris. A three-foot clear space shall be provided around the perimeter of the hydrant and no parking or similar obstructions shall be allowed along the adjacent road within 15 feet of the hydrant. Inoperable hydrants shall be bagged.

A1.2. Temporary Fire Access Roads - Temporary access roads (construction roads that do not match the final location and configuration of permanent roads as approved on a Fire Master Plan) and temporary hydrants may be permitted for single family residential model construction or a single detached custom home less than 5500 square feet in area with the conditions listed below. They may be allowed on a case-

by-case basis for other structures with additional requirements, as determined by the fire code official.

- A1.2.1. Plans for temporary access shall be submitted to the OCFA Planning and Development Services Section. Plans will show proposed temporary 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.
- A1.2.2. Plans shall be stamped and signed by a licensed civil engineer stating that the temporary access road can support 94,000 pounds of vehicle weight in all-weather conditions. Plans will also provide manufacturer's documentation that demonstrates suitability of the material, specifically as a road stabilizer.
- A1.2.3. Parking plans will include details on how the construction site will enforce fire lanes and no parking zones.
- A1.2.4. Aboveground invasion lines are acceptable for water supply.
- Drawings show detail how the line will be secured in place (e.g., size, depth, and interval of rebar tie-downs) and protected from vehicular damage (e.g., K-rails or bollards).
 - An invasion line may be run underground if the depth of bury can support the 94,000-pound weight of a fire apparatus.
 - The temporary water line must provide the required fire flow; calculations may be required.
 - The pipe shall be listed for fire service.
 - Fire hydrants shall consist of a minimum 6" barrel with one 2-1/2" outlet and a 4" outlet. Note this on the plan.
- A1.2.5. All other access and water requirements shall apply (e.g., width, approach clearance, premises identification, locks, gates, barriers, etc.).
- A1.2.6. The approved plan for temporary access and water supply shall be available at the construction site prior to bringing combustible building materials on-site.
- A1.2.7. An inspection by OCFA personnel is required to verify adherence to the approved plan prior to bringing combustible materials on-site.
- A1.3. **Phased Access** - Incremental installation of permanent access roadways as shown on a fire master plan may be permissible for commercial and residential developments. If phased installation is anticipated, the site superintendent or designee shall review the installation process with an OCFA inspector during the lumber drop inspection or pre-construction meeting. Depending on the complexity of the installation, size of the project, and other project-specific factors, the inspector may allow phased installation to proceed immediately or may first require that all or some of the following items are satisfied:
- The extent of building construction.
 - Location of operable hydrants serving all buildings under construction.

- The location of construction fencing, barriers, and vehicle access gates.
 - The location of all temporary or permanent “fire lane—no parking” signs.
 - Equipment/materiel staging locations.
 - Worker parking areas.
- A1.3.1. Phasing plans shall be stamped and signed by a licensed civil engineer stating that the access road can support 94,000 pounds of vehicle weight in all-weather conditions. The final road section less the final lift of asphalt topping may be acceptable if certified by the engineer.
- A1.3.2. The phasing plan shall identify any anticipated areas where fire department access roadways may be temporarily inaccessible due to trenching, slurry coating, striping, or other construction activities after they have been installed and inspected. The plan shall indicate the anticipated period of impairment and include provisions for providing plating over trenches and alternative access routes, notification to the fire department, and/or other forms of mitigation when such roadways are impaired.
- A1.3.3. Provide a parking plan for the construction site detailing how the fire lane no parking regulations will be enforced. Include a clause 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 shut down by the OCFA inspector if parking is in violation of fire lane posting.”
- A1.3.4. The approved phasing plan shall be available at the construction site prior to bringing combustible building materials on-site. A lumber drop inspection by an OCFA inspector will be required prior to the commencement of each phase; additional inspection fees will be due for each phase.
- A1.3.5. All other access and water requirements shall apply (e.g., width, approach clearance, premises identification, locks, gates, barriers, etc.).

APPENDIX B – GATES AND BARRIERS

HOW TO USE THIS APPENDIX

This appendix contains information related to gates and barriers shown on the Fire Master Plan. In addition to the generic information listed in Guideline B-01, the information in this appendix must be provided with your plan if your plan incorporates gates and barriers. **Note: This information may not stand alone and must be used in conjunction Guideline B-01.**

B1. Obstructions to Emergency Vehicle Access - Existing or proposed gates and barriers crossing fire lanes must be shown on the plans. Information such as the location, type of gate (e.g., swinging, sliding), dimensions, and method of operation (manual, electric) must also be provided. Note or identify the following on the fire master plan:

B1.1. Clear Width – Gated openings for vehicle egress and ingress of vehicles shall have at least 13-feet of clear width when serving a single 13-foot-wide fire lane designed for traffic travelling in one direction and 20-feet clear for a 20-foot-wide fire lane serving traffic travelling in two directions. The vertical clearance shall not be less than 13-feet 6-inches, including landscaping and/or foliage (Figure B1 and next page, Figure B2). In SRA and LRA VHFHSZ, gate openings shall be at least two feet wider than the roadway and a minimum of 14' wide in accordance with CCR Title 14.

FIGURE B1- 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 in Section 2.5 of this guideline.

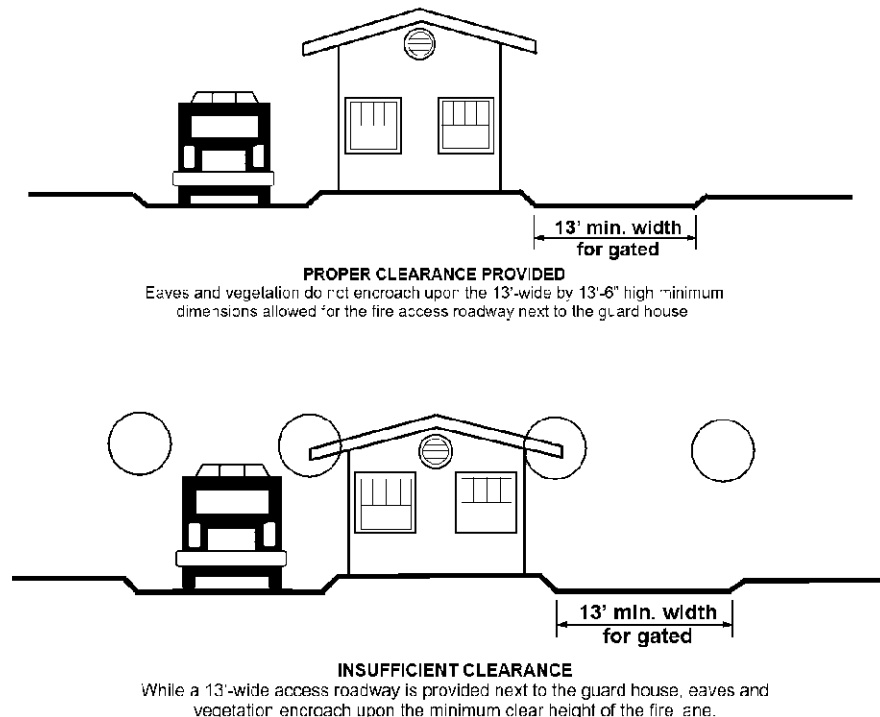
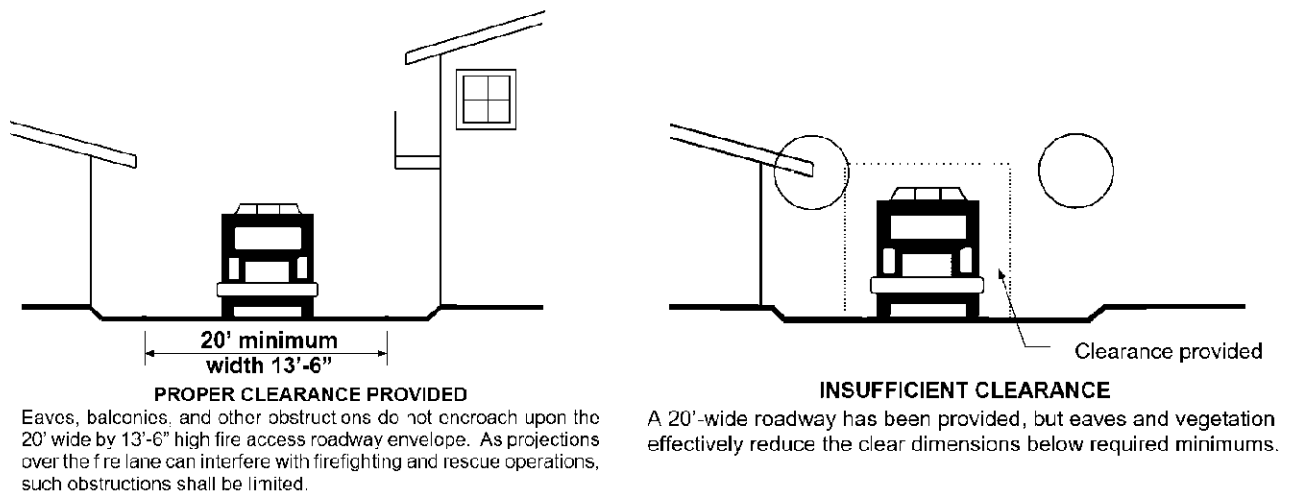


Figure B2– Fire Apparatus Access Roadway Clearance

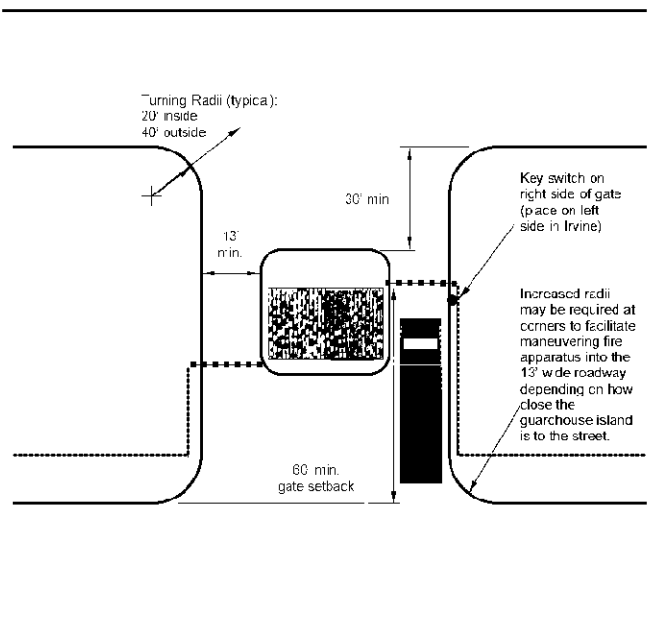


B1.2. Turning Radii – The inside turning radius shall be at least 20-feet with an outside radius of 40-feet or greater for both the exterior and the interior approach to the gate.

B1.3. Setbacks from the Street – Gates and barriers shall be located a minimum of 60-feet from any street with average daily trip (ADT) greater than 30,000 (Figure B3). A private driveway serving only one single-family residence is exempt from this requirement. In SRA and in LRA VHFHSZ, all setbacks shall be a minimum of 30 feet per CCR Title 14.

Figure B3 – Minimum Gate Setbacks

B1.4. Setbacks from First Interior Turn – A 30-foot minimum setback is required from a gate to the first turn.

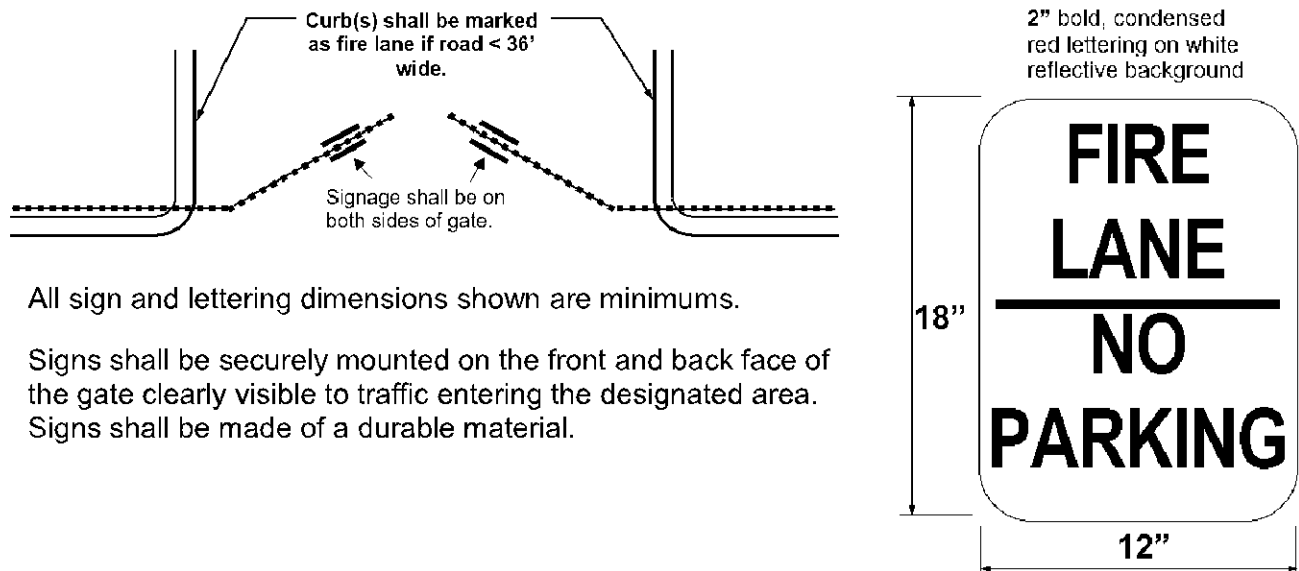


Drawing not to scale

B1.5. Manually Operated Gate Design – Typical gate designs may include sliding gates, swinging gates, or a chain traversing the opening.

B1.5.1. Permanent or removable bollards are not permitted to be placed across fire lanes.

B1.5.2. Permanent signage constructed of 18-gauge steel or equivalent shall be attached on each face of the gate that reads “NO PARKING – FIRE LANE” or similar (next page, Figure B4).

Figure B4– 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.

B1.5.4. Where the gate will be used for purposes other than emergency vehicle access, installation of a Knox box containing a key to operate an owner-supplied padlock is recommended. If the gate can be reached by emergency personnel from both sides (such as for a secondary emergency access roadway serving a residential tract), the lock shall also be capable of being accessed from both sides. Knox boxes shall be provided as necessary to ensure that the lock can be accessed and opened from any direction of approach available to emergency personnel.

B1.6. Electrically Operated Gates and Barriers CFC 503.6

B1.6.1. In the event of loss of normal power to the gate operating mechanism, it shall be automatically transferred to a fail-safe mode allowing the gate to be pushed open by a single Firefighter *without any other actions, knowledge, or manipulation of the operating mechanism being necessary and without the use of battery back-up power, except as noted below.* The manufacturer's specification sheet demonstrating compliance with this method of operation during power loss shall be provided or scanned directly onto the plan. Should the gate be too large or heavy for a single firefighter to open manually, a secondary source of reliable power by means of emergency generator or a capacitor with enough reserve to automatically, immediately, and completely open the gate upon loss of primary power shall be provided for fail-open operation. A capacitor, *but not a battery*, may also be used for fail-open operation where the gate operating mechanism does not have a fail-safe mode.

B1.6.1.1. A battery may only be used in place of fail-safe manual operation when the gate operator has a fail-open mode that will automatically, immediately, and completely open the gate and keep it open upon reaching a low power threshold, regardless of the presence of normal power.

B1.6.2. For electrically operated gates, the type of remote gate opening device that will be installed shall be noted on the plan. The remote opening device is required in

addition to the Knox key switch. A gate serving an individual single-family residence or duplex is exempt from this requirement. Please see below for the currently approved gate opening systems:

- 3M Opticom
- Click2Enter (system shall be configured in single-pulse mode with 1.5 second transmission window)
- Fire Strobe Access Products, Inc.
- Tomar

B1.6.3. Upon activation of the key switch, the gate shall open and remain open until returned to normal operation by means of the key switch. Where a gate consists of two leaves, the key switch shall open both simultaneously if operation of a single leaf of the ingress side does not provide for the width, turning radii, or setbacks necessary for fire apparatus to navigate the vehicle entry point.

B1.6.4. 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.

B1.6.5. Place the OCFA notes for electric gates on the plan verbatim (Appendix B, Attachment 1).

B1.7. **Gate Locks** – Gate locks shall be reviewed and approved prior to their installation on any new and/or existing gate. Authorization for Knox products is processed through the Knox Box company website at www.knoxbox.com . Knox key switches and key boxes serving only vehicle gates and not buildings shall be sub-mastered for use by both the fire and sheriff/police department. Call the OCFA Planning and Development Services Section at 714-573-6100 for any questions regarding the need for key boxes or switches.

B2. **Path of travel obstructions** – Fences, planters, and vegetation may not interfere with access and egress routes.

B2.1. **Key boxes and key switches** – Knox devices shall be provided where necessary to ensure that immediate access for firefighting, rescue, and other emergency purposes is possible. The location, at a minimum, for the Knox device(s) shall be provided for the following locations:

- Gates along the paths of firefighter travel from the fire lane to all points along the perimeter of the structure.
- Gates to pool enclosures.
- Building gates or doors leading to interior courtyards containing rescue windows.
- Building gates or doors leading to exterior hallways or balconies providing access to residential units or tenant suites.
- Gates in exterior enclosures containing hazardous or combustible material storage.
- Buildings using hazardous materials or processes where such warrants immediate access.

- Exterior doors to rooms containing main alarm panels or annunciators.
- Doors and gates providing access to parking structures.
- Within the fire command center in high-rises and other large buildings.
- Main entry to buildings equipped throughout with an alarm system and not staffed 24/7.
- Facilities where a high-volume of after-hours calls is expected or experienced.
- Doors and gates to other areas identified by the fire department.

Breakaway Lock – When approved by the OCFA, a breakaway lock or a Knox padlock may be used in lieu of a key box for exterior hazardous or combustible material storage areas. Manually operated vehicle or pedestrian access gates that are not commonly used or not required to be openable from the egress side may also be provided with a breakaway padlock.

- B2.2. **Knox Device Location** - Knox boxes or switches shall be located adjacent to and clearly visible from the gate or door served. Gates in walls and fences up to six feet in height shall be securely mounted at a height of four to five feet above grade; on buildings they shall be mounted six feet above grade and in a location that is easily accessible to firefighters. Where the potential for vandalism or tampering is significant, key boxes that are not submastered may be mounted higher with OCFA approval. Boxes and switches are not required to be electronically monitored; if they are, they shall not initiate an alarm signal that requires a response by the fire department.
- B2.3. **Key box Contents** - The key used to unlock the gate or door shall be kept in the key box. When the key unlocks more than the individual adjacent gate or door, a label or tag shall be attached to the key identifying the gates or doors it operates. Where multiple gates or doors are served by a single box, two or more copies of the key(s) are recommended so that a copy will be available to each engine company responding to the site.
- B2.4. **Electric Locks** – Electromagnetically or electromechanically locked pedestrian gates and doors shall be equipped either with a Knox box containing a key to open the lock or, if the door lock cannot be operated with a key from the exterior, a Knox key switch shall be provided adjacent to the door. Where key switches are provided, the door or gate lock shall remain disengaged until the key switch is returned to the “normal” closed or locked position.
- B2.5. **Manual Vehicle Gates** – Manually operated gates shall have breakaway padlocks, Knox padlocks, or weather-resistant Knox key boxes. The key box shall be placed four to five feet above the roadway surface at the right side of the access gate in a conspicuous location that is readily visible and accessible. In Irvine, the key boxes shall be located on the left side. The key box must be clearly labelled “FIRE DEPT”.
- B2.6. **Electric Vehicle Gates** – The gate control for electronic gates shall be operable by a Knox emergency override key switch (with dust cover), readily visible and unobstructed from the fire lane leading to the gate, and clearly labelled “FIRE DEPT”. The key switch shall be placed between 42” and 48” above the roadway surface at the right side of the access gate within two feet of the roadway edge. In Irvine, the key switches shall be located on the left side of the access gate.

- B2.7. Master and Submaster Keying** – Knox devices that provide access only to the perimeter of buildings and exterior common areas shall be submastered for dual use by the fire and police departments. Where access to interior common areas of buildings is mandated by the local security or municipal code, Knox devices shall also be submastered. Knox boxes containing keys to access any interior private spaces, such as the interior of single tenant buildings or individual suites in a multi-tenant building, shall be mastered for use by the fire department only.

Where additional devices beyond those required by the fire department are called for in the local municipal or security code, they shall also be accessible for use by the fire department to facilitate emergency response.

- B2.8. Ordering Knox Devices** – Knox products are ordered through the Knox Box company website at www.knoxbox.com . If you have questions, please contact OCFA Community Risk Reduction by email at knoxboxprogram@ocfa.org or by phone at 714-573-6100.

APPENDIX B, ATTACHMENT 1 - OCFA Notes for Electric Vehicle Gates

All of the notes listed below shall be placed on the plan verbatim, under the heading “OCFA Notes for Electric Vehicle Gates.” Indicate the type of remote gate operator under Note #1.

- 1) A remote opening device is required. The remote gate opening device that will be installed is (check one):
 - 3M Opticom
 - Click2Enter* (single-pulse mode with 1.5 second transmission window)
 - Fire Strobe Access Products, Inc.
 - Tomar
- 2) In the event of loss of normal power to the gate operating mechanism, it shall be automatically transferred to a fail-safe mode allowing the gate to be pushed open by a single firefighter *without any other actions, knowledge, or manipulation of the operating mechanism being necessary.*
 - a) A battery may only be used in place of fail-safe manual operation when the gate operator has a fail-open mode that will automatically, immediately, and completely open the gate and keep it open upon reaching a low power threshold, regardless of the presence of normal power.
 - b) Should the gate be too large or heavy for a single firefighter to open manually, a secondary source of reliable power by means of an emergency generator or a capacitor with enough reserve to automatically, immediately, and completely open the gate upon loss of primary power shall be provided for fail-open operation.
- 3) In addition to the remote operator, the gate control shall be operable by a Knox emergency override key switch equipped with a dust cover. Upon activation of the key switch, the gate shall open and remain open until returned to normal operation by means of the key switch. Where a gate consists of two leaves, the key switch shall open both simultaneously if operation of a single leaf on the ingress side does not provide for the width, turning radii, or setbacks necessary for fire apparatus to navigate the vehicle entry point.
- 4) The key switch shall be placed between 42” and 48” above the roadway surface at the right side of the access gate within two feet of the edge of the roadway. In Irvine, the switch shall be on the left side in accordance with Irvine’s Uniform Security Ordinance.
- 5) The key switch shall be readily visible and unobstructed from the fire lane leading to the gate.
- 6) 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.

APPENDIX C - RESIDENTIAL AND TRACT DEVELOPMENTS

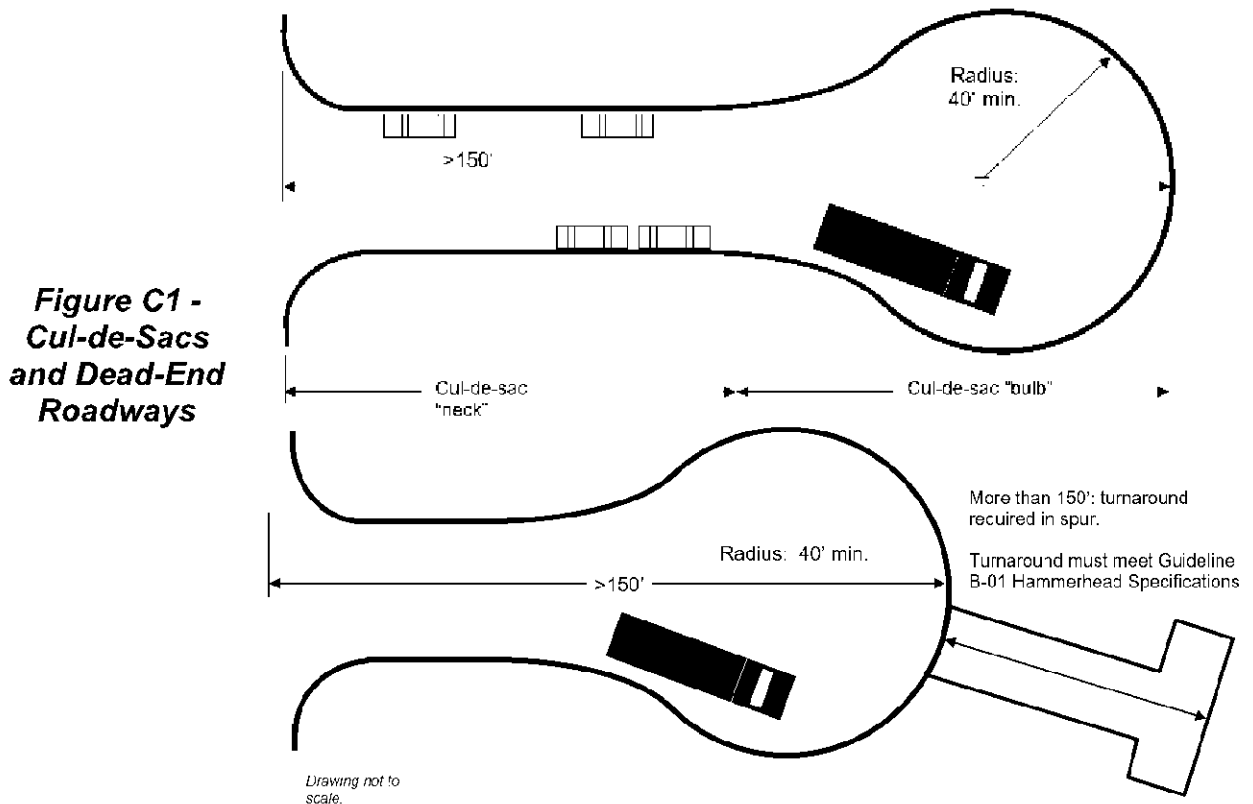
HOW TO USE THIS APPENDIX

This appendix contains information related to fire master plans for residential tract developments. These requirements may also be applied to individual single-family homes or duplexes (Appendix C, Attachment 1) or to multi-family housing projects as approved by the fire code official. In addition to the generic information listed in Guideline B-01, the information in this section of the appendix must be provided with your plan if your plan incorporates residential developments. **Note: This information may not stand alone and must be used in conjunction Guideline B-01.**

C3. Residential Tract Developments - The following requirements apply to all new residential tract developments with single-family homes or duplexes.

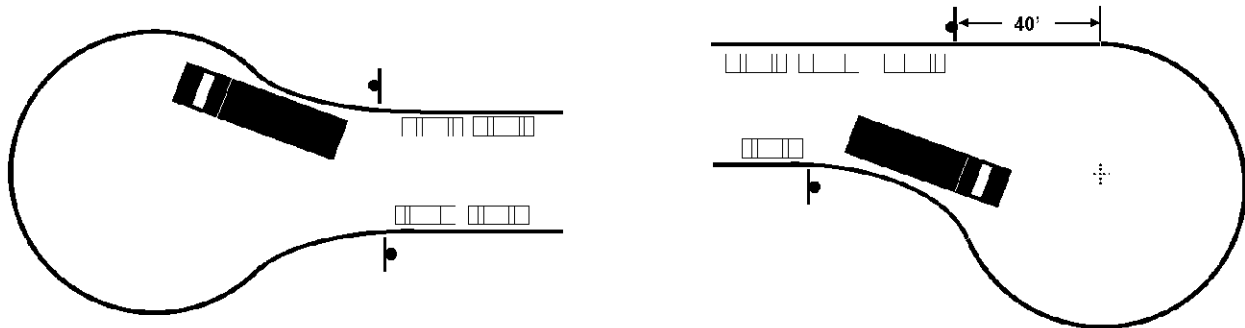
C3.1. Cul-de-sacs – Cul-de-sacs shall comply with the following requirements:

C3.1.1. Any street that is a required fire lane and greater than 150 feet in length shall be provided with a 40-foot minimum outside turning radius or other approved turnaround within 150' of the end of the fire lane (Figure C1). 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-feet in length unless an approved turnaround has been provided within the 150-feet at the end of the spur or driveway.



- C3.1.2. The cul-de-sac shall be identified as a fire lane with red curbs or include “Fire Lane – No Parking” signs (Figure C2) unless the radius, with parking, is a minimum of 48 feet.

Figure C2 – Fire Lane No Parking Sign Locations for Cul-de-sacs/Bulbs



Standard 40' radius cul-de-sac:
“no-parking in cul-de-sac begin” and “end” signs shall be located at the point where the street begins to widen into the bulb.

Offset 40' radius cul-de-sac:
“no-parking in cul-de-sac begin” and “end” signs shall be located at the point where the street begins to widen into the bulb and at a point 40' from where the cul-de-sac and street are tangent.

- C3.1.3. Cul-de-sacs longer than 150-feet that are required to be designated as fire lanes may contain a center island provided the following requirements are met:

- A minimum 20-foot-wide drive lane with a minimum 40-foot outside turning radius is provided around the island.
- Island landscaping will not intrude into the drive lane.
- The island is designated a no parking area with red curbs or fire lane signs.

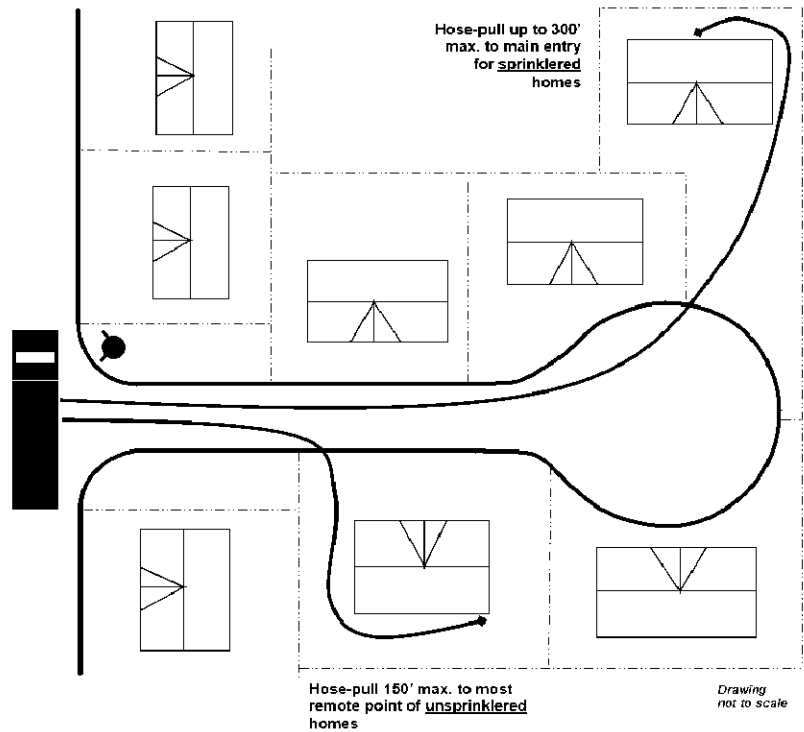
- C3.2. When there are not more than two Group R3 and two Group U occupancies on a single-family residential lot, the fire lane serving a detached single-family home or duplex, or related accessory structure (pool house, casita, garage, workshop, barn, etc.) is protected through by an approved NFPA 13-D, 13-R, or 13 fire sprinkler system, shall extend to within 300-feet of all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building.

- C3.3. In residential tracts with private roads, parking enforcement plans shall include:

- Detailed information specifically identifying who will be responsible for enforcing the plan.
- Powers granted to the entity including vehicle towing information for parking violations (needs to include similar language provided in CVC).
- The aforementioned information needs to 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 OCFA approval of the final map or print of linen. Once approved, these provisions cannot be amended without written approval by the OCFA. See Appendix C, Attachment 2 for a sample enforcement letter.

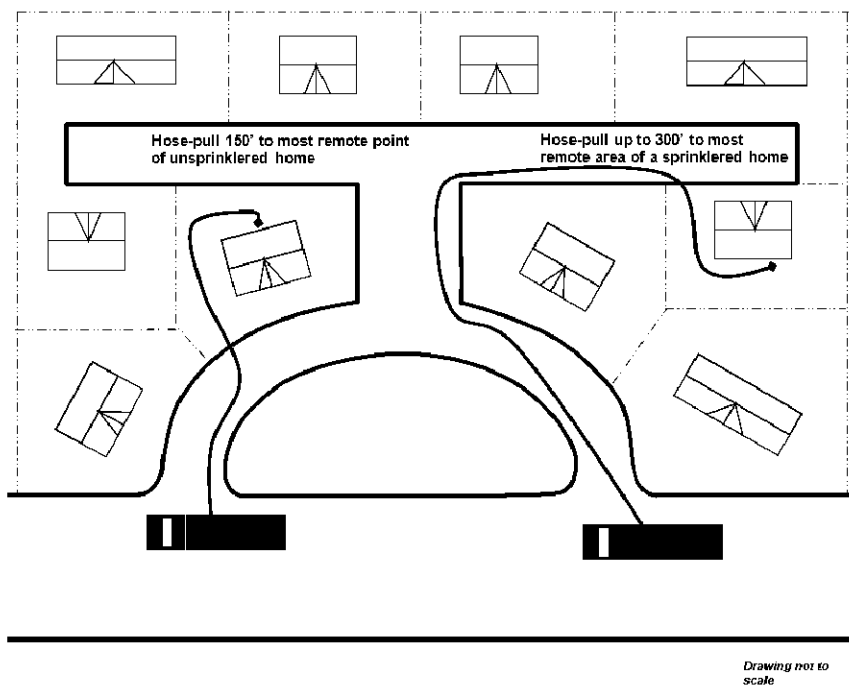
C3.4. **Short Cul-de-sacs and Dead-End Roads** - If hose-pull distance can be satisfied without fire apparatus entering the cul-de-sac or dead-end road, and the road is not otherwise required to be a fire lane as determined by the fire code official, the street is not required to have a bulb or hammerhead with minimum OCFA turning radii or meet other standard fire lane requirements. (Figure C3)

Figure C3 – Short Cul-de-sacs and Dead-End Roads



C3.5. **Eyebrows** - If the eyebrow does not meet OCFA'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 most remote area 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. (Figure C4)

Figure C4 – Eyebrows

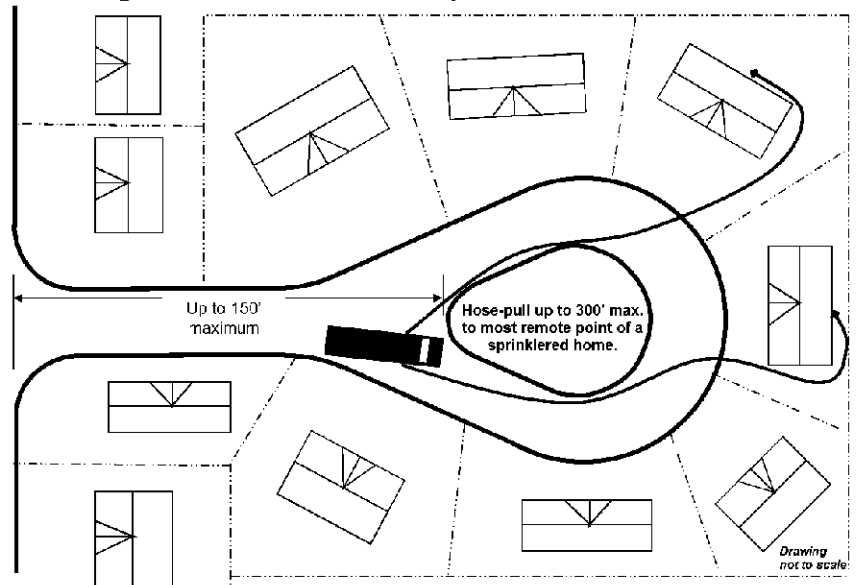


C3.6. Cul-de-Sacs up to 150' with Islands - Cul-de-sacs up to 150-feet in length containing an island (Figure C5) will have access to the homes measured along an approved route around the island and any other obstructions in the path of travel from the point of where the island begins to impede fire apparatus.

C3.6.1. 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 OCFA fire lane requirements.

C3.6.2. If the hose-pull to the most remote point 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.

Figure C5 – Cul-de-sacs up to 150' with Islands



APPENDIX C, ATTACHMENT 1 – Residential Site Plan Checklist



ORANGE COUNTY FIRE AUTHORITY

Plan Checklist for SINGLE FAMILY RESIDENCE (Fee Code PR 160)

For ADU or SB9 Projects, refer to OCFA information bulletin 01-21

INSTRUCTIONS: Return this completed form with the plans to be submitted. This worksheet is provided for your convenience and is a listing of the required information and content needed for residential site plan review. Providing the items listed is not a guarantee of plan approval. *Please note that additional information or requirements may apply depending on the project and that some of the items listed will not be applicable to every project.* If you need help completing this form or have questions regarding requirements for review, please contact the OCFA Techline@ocfa.org or visit us at 1 Fire Authority Road, Irvine, CA for assistance. You can verify where to submit plans based upon the submittal routing form or by calling the plans counter (714) 573-6100.

Address (Street Number/Name, City): _____

Project Service Request #: _____

1. Complete OCFA Residential Cover sheet with Submittal scaled plan sheets showing the vicinity map, site plan, building footprint, stories, property lines and elevations of the project. Show any fences, walls, or gates.
2. Provide the project scope on the plans. Include the building summary, building occupancy, construction type and square footage (existing & proposed) of the residence, garage and any other accessory structures. Note if fire sprinklers are existing or not. *Complete fillable area on OCFA Residential coversheet*
3. If an automatic fire sprinkler system is required, note on the plan that "a fire sprinkler plan shall be installed per NFPA 13D 2022". Separate plan review and approval of a **fire sprinkler plan** by the OCFA is required prior to installation. *Complete fillable area on OCFA Residential coversheet*
4. Provide a project directory with the property owner information, project address and city. Include the tract map number or parcel map number for the property. *Complete fillable area on OCFA Residential coversheet*
5. Show the location and distance of any proposed or existing fire hydrant(s) within 300 feet of property lines.
6. Indicate all surrounding property uses. If the project adjoins an open space, fuel modification area or a wild-land interface, a **fuel modification plan** may be required separately for a *new* structure. See *Guideline C-05*
7. Indicate if the project is located near an oil well, oilfield or landfill. A **methane plan** for soil gas mitigation may be required separately. <https://www.conservation.ca.gov/calgem/Pages/WellFinder.aspx>
8. If applicable complete, signed "**Water Availability**" form and place onto plan. To obtain the form, see www.ocfa.org under the Planning and Development homepage. *Complete fillable area on OCFA Residential coversheet.* For additional information, see OCFA Plan Submittal Criteria Form – Residential Projects Question #5 and Guideline B-01, Appendix D, Table 2.
9. Specify the width of street or road to which the property is addressed.
10. Please state on the plans if the project resides within a **Very High Fire Severity Zone (VHFSZ) or State Responsibility Area (SRA)**. If unsure, see ocfa.org to obtain information. Indicate with a note if the design requires CBC Chapter 7A/Residential Code R337. *Complete fillable area on OCFA Residential coversheet*

Print name: _____

Signature: _____

Phone Number: _____

Date: _____

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RESIDENTIAL SPRINKLERS AND SMOKE DETECTORS SAVE LIVES

APPENDIX C, ATTACHMENT 2 - Sample Parking Enforcement Letter

Date

Planning and Development Services Section
Orange County Fire Authority
1 Fire Authority Road
Irvine, CA. 92602

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 either during construction or after occupancy.

***(Association 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, *(Association name)*, through its officers, committees and agents, will establish the "parking" and "no parking" areas within the property in accordance with Section 22658 of the California Vehicle Code and OCFA Guideline B-01. 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.

(Association 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:

EXHIBIT "B"

Guideline C-05

Vegetation Management Guideline: Technical Design for New Construction

Fuel Modification Plans and Maintenance Program

Orange County Fire Authority

Community Risk Reduction

1 Fire Authority Road, Building A, Irvine, CA 92602 • www.ocfa.org • 714-573-6100

Vegetation Management Guideline: Technical Design for New Construction Fuel Modification Plans and Maintenance Program



Guideline C-05

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Vegetation Management Guideline: Technical Design for New Construction Fuel Modification Plans and Maintenance Program

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Technical Design for New Construction Fuel Modification Plans and Maintenance Program

INTRODUCTION

Vegetation management has proven to be a major factor in reducing the probability of buildings igniting from wildfires. When combined with special building construction features, the potential for ignition is further reduced.

PURPOSE

Managing the design and placement of vegetation in and around new structures will reduce the effects of a wildfire. For this reason, codes are adopted that require vegetation management and special construction features. The Fuel Modification Plan is a vegetation management code that requires landscaped areas adjacent to new structures be dedicated for permanent vegetation management activities.

The Fuel Modification Program brings fire-safe landscaping and construction features together to improve community safety and reduce property loss during wildfire emergencies. This guideline provides you with the information and steps needed to prepare a Fuel Modification Plan and maintain vegetation in Fuel Modification areas for a successful long-term outcome. Furthermore, it covers the timing of plans for construction, plan criteria needed for approval, plant lists for the zones, new construction inspection requirements, and introductory maintenance information.

SCOPE

All new single-family homes, multi-family residential, Accessory Dwelling Unit (ADU), utility, and commercial structures built in, or adjacent to, a wildfire-risk area or such areas designated by the fire code official, require a Fuel Modification Plan in conjunction with the 2022 California Fire Code (CFC), Chapter 49. However, a Fuel Modification Plan may or may not be required based on lot size, configuration, or your property's connection and proximity to grass, brush, and ornamental vegetation. For questions regarding the Fuel Modification requirements and your project, contact the OCFA RSG line at (714) 573-6774.

The plan requires permanent vegetation management in dedicated land areas and is used indefinitely to facilitate on-going maintenance requirements. For existing structures that were not developed with a fuel modification plan or condition, maintenance shall be completed as required in the Vegetation Management Maintenance Guideline for Property Owners.

For new structures proposed within the State Responsibility Area (SRA), as defined in the Public Resource Code Sections 4126-4127 or within the Local Responsibility Area (LRA) - Very High Fire Hazard Severity Zone (VHFHSZ), as defined in the Government Code Section 51175 – 51189, and the California Code of Regulations, Title 14, Division 1.5, Chapter 7, Subchapter 2, Articles 1-5, a 30-foot setback from the structures to the property line shall be required.

FUEL MODIFICATION PLAN OVERVIEW & SEQUENCING

There are two types of Fuel Modification Plans, conceptual and precise. Each type is submitted at a different time during the development and construction process.

1. Conceptual (see Section 1: Conceptual Fuel Modification Plans for requirements)
 - a. Infrastructure of the zone widths and program
 - b. Land use restrictions
 - c. Tract and property line information
 - d. When to submit
 - 1) Concurrent with Environmental Impact Report (EIR) processing
 - 2) Prior to tentative tract map, parcel map, or final tract map approval
 - 3) Prior to fire master plan submittal
2. Precise (see Section 2: Precise Fuel Modification Plans for requirements)
 - a. Approval of planting plans
 - b. Final details
 - c. Inspection information
 - d. When to submit
 - 1) Prior to approval of planting plans from other permitting agencies
 - 2) Prior to precise grading or building permit issuance, whichever comes first
 - 3) Prior to Fire Master Plan approval

FUEL MODIFICATION ZONES

The Fuel Modification area is comprised of three zones with specific design criteria. The standard Fuel Modification area is 170 feet in width, measured out horizontally from the structure in all directions on the site (see Attachment 3: Incline Measurement for Selected Slopes). Many developments have interior slopes with Special Maintenance Areas (SMA). See below for specific unique requirements for each zone. The fuel modification plan may be altered if conditions change. Any alterations to the fuel modification areas shall have prior approval from the fire code official.

Note: Additional planting restrictions may be required for certain plant species (see Approved Plant Palette Qualification Statements for Select Plant Species on page 31).

1. Zone "A" (20-foot minimum width, with the first 5 feet as the Immediate Zone)
 - a. Flat level ground requirement
 - b. Building foundation setback (no design alternatives allowed)
 - c. Zone "A" (20 feet wide – measured from the structure out)
 - 1) Setback from the slope nearest the foundation
 - 2) No combustible construction is allowed within Zone "A"
 - 3) Automatic irrigation systems to maintain healthy vegetation with high moisture content and to be regularly irrigated
 - 4) Plants in this zone shall be highly fire resistant and selected from Attachment 8: Fuel Modification Zone Plant List (also refer to Section 3: Plant Palette Information)
 - 5) If all Zones "A-D" are to be maintained by the structure owner, then Zone "A" shall begin at the wall of the structure

- d. Immediate Zone (First 5 feet measured from the structure out, in all directions)
 - 1) No combustible bark or mulch
 - 2) Plants in this area to be irrigated, naturally low growing (below 2 feet in height), and non-woody
 - 3) No combustible construction is allowed, fencing, gates, patio covers, etc.
- 2. Zone "B" (50 -150 feet in width): Slope design requires a minimum 50-foot irrigated zone

Note: A dry Zone "B" may be used if plants and design are appropriate

- a. Required at the nearest slope adjoining Zone "A"
- b. Irrigated and planted per Attachment 6: Requirements for Planting Installation in Fuel Modification Zones
- c. May replace Zones "C/D" when grading plans require larger replanted areas
- d. All plant species designed for Zone "B" shall be selected from Attachment 8: Fuel Modification Zone Plant List. Existing fuel modification maintenance programs are limited to the plants listed on the approved plans unless a revision is requested. Planting and maintenance shall be in accordance with planting restrictions from Attachment 6: Requirements for Planting Installation in Fuel Modification Zones, Attachment 7: Undesirable and Invasive Plant Species, and Attachment 8: Fuel Modification Zone Plant List.
- e. No combustible construction is allowed within Zone "B"
- 3. Zone "C/D" (0-100 feet in width)
 - a. One natural vegetation thinning (Zone "C") or two thinning zones (Zone "C/D")
 - 1) Zone "C" shall be 50% thinning of vegetation
 - 2) Zone "D" shall be 30% thinning of vegetation
 - b. Planting installation per Attachment 6, if installing plants
 - 1) Existing plants that will remain shall be in accordance with Attachment 6: Requirements for Planting Installation in Fuel Modification Zones and Attachment 7: Undesirable and Invasive Plant Species (see Section 3: Plant Palette Information)
 - c. See Section 4: Alternative Material & Methods
 - d. Plant species introduced into Zone "C" and "D" shall be selected from Attachment 8: Fuel Modification Zone Plant List. Maintenance shall be in accordance with Attachment 6: Requirements for Planting Installation in Fuel Modification Zones and Attachment 7: Undesirable and Invasive Plant Species (see Section 3: Plant Palette Information)
 - e. No combustible construction is allowed within Zone "C" and "D"

Note: A clear, brush-free area of 10 ft shall be required around the perimeter of the ground-mounted photovoltaic arrays. A noncombustible base, approved by the fire code official, shall be installed and maintained under the photovoltaic arrays and associated electrical equipment installations, per the 2022 CFC Chapter 1205.5.1.

TYPES OF INTERIOR SLOPES: RESIDENTIAL TRACT

1. SMA Interior Slopes
 - a. 100 feet maximum width
 - b. Slopes and common areas interior from the community perimeter (see Section 5: Special Maintenance Areas and Roadside Protection Zones)
 - c. Located in commonly owned land areas, beginning at the property lines of the privately owned lot
 - d. Areas shall be irrigated
2. Roadside Protection Zones (RPZ)
 - a. 50 feet maximum width measured from the edge of the roadway
 - b. Can be designed as RPZ or SMA, depending if the road is at the perimeter or interior of the community
 - c. Streetscape designs that are not community perimeter edges may not be regulated unless a distinct hazard is created
 - d. Areas shall be irrigated

When an SMA or RPZ is within 100 feet of a structure, the SMA or RPZ will be considered a defensible space area. The defensible space area shall comply with Attachment 2: Introductory Maintenance Information, Attachment 6: Requirements for Planting Installation in Fuel Modification Zones, and Attachment 7: Undesirable and Invasive Plant Species. Alternative design methods may be approved through the Alternate Materials & Methods process.

FUEL MODIFICATION PLANS: REQUIRED INFORMATION

Section 1: Conceptual Fuel Modification Plans

Plans shall be prepared by a licensed landscape architect or other design professional with equivalent credentials. First submittal requires only two sets of plans. Each subsequent submittal shall include an electronic PDF copy of the plan and three sets of paper plans.

Note: If the designer is prepared to submit Precise Fuel Modification Plans with the planting plans, conceptual plans are not required to be submitted. If the designer forgoes the conceptual submittal and submits the precise plan, the required conceptual plan information shall be provided on the precise plan.

The following information shall be included on Conceptual Fuel Modification Plans:

- Check each box, after providing the information on your design plans:
- A. Identify the total size of the development by showing all tract boundary lines, property lines, slope contour lines, and structure foundation footprints.
- B. Place descriptive notes of the land uses adjoining the development property on all sides (e.g., future construction, existing structures, natural vegetation, restoration plans, roads, parks, etc.).
- C. Add a note on the plan stating the project is or is not located in a LRA - VHFHSZ or in an SRA.
- D. Add a note stating the structure(s) shall be built to the California Building Code (CBC) Chapter 7A standard if the project is located in a LRA - VHFHSZ or in an SRA area.
- E. Add a note stating combustible fencing is not allowed within any Fuel Modification Zone.
- F. Contour lines shall be provided on the plan to show valleys and hills, and the steepness or gentleness of slopes for all Fuel Modification Zones.
- G. Ensure all foundations have a minimum 20-foot setback from edge of slope.
- H. Select an on-slope option from the choices of Fuel Modification Zones from pages 4 and 5. Delineate the width as described.
- I. All plants in fuel modification zones shall be selected from Attachment 8: Fuel Modification Zone Plant List.
- J. Label all interior slopes and all common areas as "Special Maintenance Areas" and/or "Roadside Protection Zones", if applicable. If SMA planting plans are

designed, they shall be submitted with the conceptual FMZ plans. If not designed yet, place a note that all planting plans require plan review and approval (see Section 5: Special Maintenance Areas and Roadside Protection Zones for more information). When a SMA or RPZ is within 100 feet of a structure, the SMA or RPZ will be considered a defensible space area. The defensible space area shall comply with Attachment 2: Introductory Maintenance Information, Attachment 6: Requirements for Planting Installation in Fuel Modification Zones, and Attachment 7: Undesirable and Invasive Plant Species. Alternative design methods may be approved through the Alternate Materials & Methods process (see Section 4: Alternate Materials & Methods).

- K. SMA and RPZ shall not have plants from Attachment 7: Undesirable and Invasive Plant Species.
- L. Delineate RPZ with either a maximum irrigated 50-foot wide FMZ "B" when located on community perimeter areas or SMA when roads are interior to perimeter.
- M. Each FMZ, SMA, and RPZ shall be symbolized and referenced on the plan clearly and on a distinct legend.
- N. Notate all FMZ, SMA, and RPZ as irrigated or non-irrigated landscaping.
- O. Provide the name of the entity/entities responsible for the maintenance of all FMZ, SMA, and RPZ.
- P. Show the name and location of any existing plant species you are proposing to retain on the plan (If no existing plant species are shown, existing vegetation shall be removed from the plan entirely).
- Q. Design dedicated emergency and maintenance access paths on **commonly owned** property, from the street frontage to lettered lots, to facilitate access behind the homes. This requires:
 - 1. Paths every 500 lineal feet of FMZ or SMA length to have access, with a minimum 7-foot clear **width** and a dedicated **flat** path.
 - 2. Covenants for FMZ and SMA access and maintenance to be recorded concurrently with all planning maps and referenced in Covenants, Conditions & Restrictions (CC&Rs).
- R. Covenants will be required to be recorded for FMZ, SMA, and RPZ located on private homeowner lots prior to Precise Fuel Modification Plan approval (place as a note on plan if applicable).
- S. Copy Attachment 1: New Construction Inspection Requirements, Attachment 2: Introductory Maintenance Information, Attachment 3: Incline Measurement for Selected Slopes, Attachment 6: Requirements for Planting Installation in Fuel Modification Zones, and Attachment 7: Undesirable and Invasive Plant Species on the plans for on-going maintenance requirements.

- T. If there are limited areas in which you cannot meet Fuel Modification distance requirements, follow the plan submittal requirement directions in Section 4: Alternate Materials & Methods.
- U. If the project has an area within the project boundary or adjacent areas affecting the project which would fall under the restriction of an agency (e.g., Army Corps of Engineers, California Coastal Commission, a Specific Plan, a Habitat Management & Monitoring Plan, etc.), the agency name; along with the maintenance, scope of work and management plan for those restricted areas shall be provided on the plan and documentation to support the management plan and maintenance allowed in the restricted areas provided at the time of submittal. If an area is discovered at any point in the submittal process, which would limit the design and/or maintenance requirements of the plan, the project will need to be re-evaluated to determine whether the limitations will impact the Fuel Modification design. If there are no restricted areas, make a note stating to the fact on the plans.
- V. The following notes (1-6) shall be copied on the plans:
1. The owner/developer will obtain planting plan approval from OCFA prior to receiving final approval from all other landscape permitting agencies within FMZ, interior slopes/common area landscaping SMA, and RPZ.
 2. FMZ, SMA, and RPZ land areas were purchased and dedicated for the purposes of wildfire maintenance activities, beautification, and erosion control. Protected plants and habitat identified after Fuel Modification Plan approval through surveys or other biological programs cannot be retrofitted back within the limits of these areas.
 3. The developer is responsible for ensuring that the calculated revenue from homeowner dues is sufficient to cover the cost of future maintenance, based on the originally approved design. After the final landowner has accepted the long-term maintenance responsibility, changes to the fuel modification areas or interrupted maintenance activities by the final landowner become the responsibility of the final landowner.
 4. When a required maintenance area is located on commonly owned land, while the required Zone "A" is located on homeowner's land, a written disclosure regarding the Zone "A" and vegetation requirement is required to be signed by the homeowner and the lot number referenced in the CC&Rs.
 5. The FMZ, SMA, and RPZ shall be maintained in perpetuity for fire safety purposes, in accordance with recorded covenants, CC&Rs, and property title restrictions.
 6. Prior to dropping of lumber, call for a Vegetation Clearance Inspection. The developer/builder shall provide a separation of combustible vegetation for a minimum distance of 100 feet from the location of the structures and lumber stock-pile.
- W. A copy of the CC&Rs shall be provided to ensure the language regarding maintenance and responsibility is clearly defined, prior to approval of a conceptual plan.
- X. For certain projects, photographs of existing vegetation may be required.
- Y. Provide the degree or percentage of slope on the plan at the location of the zone markers to indicate the actual distance. The marker shall be placed when using Attachment 3: Incline Measurement for Selected Slopes.

Section 2: Precise Fuel Modification Plans

Plans shall be prepared by a licensed landscape architect or other design professional with equivalent credentials. First submittal requires only two sets of plans. Subsequent plan submittals shall include an electronic PDF copy of the plans and minimum of three sets of paper plans.

The following information shall be included on the Precise Fuel Modification Plan:

- Check each box, after providing the information on your design plans:
- A. If there was not a Conceptual Fuel Modification Plan approved, the Precise Fuel Modification Plans shall include all criteria required for the Conceptual Fuel Modification Plans (refer to Section 1: Conceptual Fuel Modification Plans).
- B. Show the location of permanent zone markers. (The goal is to install the lowest number of markers possible to ensure maintenance workers stay within the correct property lines when performing vegetation management. Generally, markers are only required to indicate side property lines and where zones end).
- C. Copy Attachment 4: Zone Marker Details and Attachment 5: Sample CC&R Maintenance Language on the plans, if applicable.
- D. Submit written proof that the CC&R's reference the fuel modification areas and associated maintenance and restrictions (see Attachment 5: Sample CC&R Maintenance Language), if applicable.
- E. Provide supporting documentation that demonstrates the Fuel Modification Zones, SMA, RPZ, access and maintenance points have been legally recorded on the Tentative Tract Maps.
- F. Irrigation plan sheets shall be submitted to demonstrate the wet zones are irrigated.
- G. The planting plans for FMZ, SMA, and RPZ are required to be reviewed and approved (see Section 5: Special Maintenance Areas and Roadside Protection Zones for more information).
- H. **Plant Palette Legend for FMZ, SMA, RPZ:**
Provide a separate plant palette legend for each bulleted point below:
1. Trees
 2. Shrubs
 3. Ground Cover (maximum natural growth height shall be no taller than 2 feet)
 4. Grasses
 5. If proposing plant species not on the Attachment 8: Fuel Modification Zone Plant List, follow the submittal directions from Section 3.B.

I. Each legend shall include:

1. Plant Symbol (separate symbol for each plant)
2. Plant Form
3. Botanical Name
4. Common Name
5. Plant # from Attachment 8: Fuel Modification Zone Plant List
6. Symbol Code from Attachment 8: Fuel Modification Zone Plant List
7. Expected Max Growth Height
8. Expected Max Growth Width
 - a. *See Sample #1: Plant Legend

J. Planting Plans:

1. On the installation Planting Plans, all plants shall be horizontally and vertically spaced to meet the formula from Attachment 6: Requirements for Planting Installation in Fuel Modification Zones of this guideline, using the heights and widths in your legend.
2. Refer to the Attachment 8: Fuel Modification Zone Plant List code symbols and qualification statements for design installation before you place plants on the plan.
3. See Section 3: Plant Palette Information for plant species not on the OCFA list and follow directions.

K. For alternative proposals that do not meet minimum requirements, see Section 4: Alternate Materials & Methods and follow the plan submittal requirements.

L. Create a heading titled "Required Inspections," then copy Attachment 1: New Construction Inspection Requirements on the plans underneath the heading.

Sample #1: Plant Legend

Example Required Plant Legends

Plant Form	Plan Symbol	Botanical Name	Common Name	Plant # from Attach 8	Symbol Code from Attach 8	Expected Max Growth Height	Expected Max Growth Width
TREES							
Plant Form	Plan Symbol	Botanical Name	Common Name	Plant # from Attach 8	Symbol Code from Attach 8	Expected Max Growth Height	Expected Max Growth Width
SHRUBS							
Plant Form	Plan Symbol	Botanical Name	Common Name	Plant # from Attach 8	Symbol Code from Attach 8	Expected Max Growth Height	Expected Max Growth Width
GROUND COVER							
Plant Form	Plan Symbol	Botanical Name	Common Name	Plant # from Attach 8	Symbol Code from Attach 8	Expected Max Growth Height	Expected Max Growth Width
GRASSES							
SPECIES NOT ON ATTACH 8	Plan Symbol	Botanical Name	Common Name			Expected Max Growth Height	Expected Max Growth Width

Section 3: Plant Palette Information

A. The plant list from Attachment 8: Fuel Modification Zone Plant List was approved by various resource agencies responsible for environmental protection. All plants installed shall be selected from Attachment 8: Fuel Modification Zone Plant List and be grouped and spaced for initial installation in accordance with Attachment 6: Requirements for Planting Installation in Fuel Modification Zones of this guideline. Specific installation requirements are included for various plant species (see plant code, legend, and qualification statements in Attachment 8: Fuel Modification Zone Plant List). Retained plants shall be proposed for approval on the conceptual FMZ plans or on the precise plan (see above for plant palette legends demonstrated for plan design).

B. Proposing Alternate Species:

If alternate plant species are proposed, the landscape architect shall provide photographs and data on the size, fire resistive characteristics, and invasiveness for installation criteria. A maximum of 10 alternate species may be proposed per project.

Alternative species need to have similar/equal properties to the plants from Attachment 8: Fuel Modification Zone Plant List). OCFA will make a case-by-case determination as to the acceptability of the proposed species. Some species that are equal in combustibility to pre-approved species on the list may not be allowed due to the invasiveness of the species. The proposed species must be spaced based on size and characteristics.

If the plant materials are proposed to be planted within 300 feet of reserve lands (except plants on the interior of the tract), concurrence from the permitting resource agencies shall be required. If the proposed plants have received previous resource-agency approval, no concurrence letter will be required, but supporting documentation shall be provided. Contact OCFA prior to your submittal if needed.

Section 4: Alternative Materials & Methods Construction Features, and Fire Protection Plans

If there are limits to areas in which you cannot meet fuel modification width distance requirements or if you are proposing a non-irrigated FMZ, follow the performance based design direction below for conceptual FMZ plans:

1. Performance Based Design:
 - a. A detailed technical fire behavior analysis report by a qualified wildland fire behavior professional is required (qualifications of the professional must be approved by OCFA prior to their design). The report shall include BehavePlus fuel modeling outputs at a minimum.
 - b. A one to two-page Alternative Materials & Methods (AM&M) request letter to OCFA must be submitted with the detailed technical report. The report and letter shall be drafted by the fire behavior professional and submitted with the plans.
 - c. The applicant shall propose compensating factors to demonstrate equivalency to the distance required (see building construction features and fire protection plans below).
 - d. Locate OCFA Guideline A-01 at www.ocfa.org. Use the information within A-01 as a model for drafting your letter. If an alternative means of protection is approved by the OCFA, copy the OCFA signed AM&M request letter onto the plans. You will be required to resubmit the plans again for review and final approval with the letters incorporated into the plans.
2. Building Construction Features and Fire Protection Plans:
 - a. Building Construction Features designed in accordance with Chapter 7A of the California Building Code (CBC)/Residential Code Section 337 are required for all structures.
 - b. Additional compensating factors will also be required. These include but are not limited to: additional building construction features, solid block wall or block wall with tempered glass measuring a minimum of 6 feet on both sides of the wall, increased structure setbacks, special planting designs, rockscapes and plant restrictions, and reduced planting and increased hardscape areas. If a maintenance/ fire access gate is being shown along a solid block wall or block wall with tempered glass, a gate detail shall be provided on the plan that demonstrates the same applied effect as the solid wall.
3. A Fire Protection Plan (OCFA Fee Code PR 146) shall be submitted with or prior to the conceptual FMZ plan and does not take the place of the Fire Master Plan (OCFA Fee Code PR 145). Special 7A code section screening forms are available by request from the OCFA Community Wildfire Mitigation section and shall be placed on the plan to indicate which buildings and lots will meet specific Chapter 7A code sections. OCFA does not review the architectural plans for one- and two-family dwellings. Approved Fire Protection Plans are provided to the applicant and to the Building Department by OCFA, for design and plan review approval of the construction features.
4. Offsite Landowner Recorded Easements (for extreme cases):
 - a. All fuel modification should be located within the property or tract of the protected structure(s).

- b. Proper on-site Fuel Modification design should be set back from the tract or property boundary lines for a distance of 170 feet.
- c. When the required distance is not within the property, as a last option, a legally recorded easements shall be signed by the adjoining property owner and integrated into fuel modification plans, giving rights to the beneficiary to maintain the recorded area in perpetuity. The easement shall show the distance designed on the plans.
- d. The conceptual FMZ plans will not be approved until the legally recorded agreements are copied on the plans.

Section 5: Special Maintenance Areas and Roadside Protection Zones

The interior landscaped portions of a community and roadsides may not be standard FMZs but are subject to planting restrictions, irrigation, and maintenance requirements. This is to ensure structures are reasonably protected from fire continuing into interior areas of the community and from flying embers that may land and start spot fires.

The Planting Plans submitted with the Fuel Modification Plans shall indicate the plant palette and planting design for these areas. The plans will be evaluated to determine if the areas have the potential to increase the hazard to structures or if they will lessen the hazard.

1. The SMA determination will occur during the Conceptual Fuel Modification review. The review will use the following OCFA initial hazard assessment criteria:
 - a. Roadside planting does not sufficiently protect vital main evacuation routes
 - b. There are no proposed planting restrictions on lots
 - c. Proximity between structures and slopes is such that fire travel is probable
 - d. The area/slope is not proposed to be irrigated
 - e. Plant palette contains plant species from the OCFA undesirable plant list
 - f. Plant spacing arrangement creates "Ladder Fuels"
 - g. Slope/area is contiguous with community perimeter FMZs
 - h. Use of special construction features on all structures throughout the community as required in CBC Chapter 7A and California Residential Code 337
2. When it is determined by the OCFA that the design of an SMA may contribute to an increased wildfire risk, the first 100 feet of the SMA, measured from the structure out, is considered defensible space. The defensible space area shall comply with Attachment 2: Introductory Maintenance Information, Attachment 6: Requirements for Planting Installation in Fuel Modification Zones, Attachment 7: Undesirable and Invasive Plant Species and Attachment 8: Fuel Modification Zone Plant List).

ATTACHMENT 1

New Construction Inspection Requirements

The Builder or Developer shall call OCFA Inspection Scheduling at (714) 573-6150 for the three new construction inspections listed below:

1. Prior to dropping of lumber: Schedule a Vegetation Clearance Inspection – the developer/builder shall provide a separation of combustible vegetation for a minimum distance of 100 feet from the location of the structures and lumber stock-pile, generators, and fuel tanks/dispensers. An inspection sign-off and/or release letter to the building department is required.
2. Prior to occupancy of the building: Schedule a Final Fuel Modification Inspection – the FMZ, SMA, and RPZ adjacent to structures must be installed, irrigated, and inspected. This includes physical installation of features identified in the approved precise fuel modification plans including, but not limited to, plant establishment, thinning, irrigation, zone markers, special mitigation measures, and access easements. An OCFA Inspector will provide written approval of completion at the time of this final inspection on the building card. A written disclosure will be requested by the OCFA Inspector indicating that the landowner is aware of the FMZ on their land.
3. Prior to Homeowners Association (HOA) or Landowner Maintenance Acceptance from Developer/Builder: Schedule an Owner Turnover Inspection – This inspection/meeting must happen with OCFA staff prior to accepting the maintenance responsibility from the developer or builder.
 - a. The inspection/meeting must include the following representatives:
 - 1) Landscape architect
 - 2) Community manager or homeowner
 - 3) HOA board member
 - 4) Installing landscape company
 - 5) HOA landscape company
 - b. At the time of turnover, the Fuel Modification areas shall be maintained by the developer or builder as originally installed and approved.
 - c. The accepting landowner is responsible for ensuring the developer or builder sufficiently calculated the amount of revenue needed to perform the on-going maintenance of the FMZs and any SMAs per the approved plans.
 - d. A copy of the approved plans must be provided to the HOA representatives or homeowner at this time.
 - e. The Landscape Architect must convey ongoing maintenance requirements to HOA representatives or homeowner and provide OCFA a document stating the fuel modification has been installed per plan.
 - f. An OCFA written disclosure will be required to be signed by the HOA representatives or homeowner indicating that the HOA or homeowner is aware of the FMZ on their land and that they are aware of the importance of retaining the plans and the ongoing maintenance.
 - g. The responsibility and necessary language for maintenance must also be stated within the CC&Rs (Refer to Attachment 5: Sample CC&R Maintenance Language).

ATTACHMENT 2

Introductory Maintenance Information

The FMZ, SMA, RPZ shall be maintained in perpetuity for fire safety purposes and shall cause a covenant to be recorded and referenced in the CC&Rs or on the property title when there is no HOA involvement.

Emergency access covenants shall be identified on the tract map indicating the reservation and restriction for permanent entry by the HOA or Fire Authority.

Select either Option #1 or #2 below

1. Option #1 Maintenance Method:

- a. On-going maintenance shall occur to preserve the originally approved design found on the approved plans. Attachment 6: Requirements for Planting Installation in Fuel Modification Zones spacing is required and only approved planting species and arrangements on the plans are perpetually preserved.
- b. The property owner is responsible for all maintenance of FMZ, SMA, and RPZ.
- c. **Two maintenance activities** shall be performed each year.
 - 1) The first during middle- to late-Spring and the second in early- to middle-Fall.
- d. Other activities include:
 - 1) Grasses cut to 4 inches after annual seeding
 - 2) Dead and dying, all vegetation litter, and Attachment 7: Undesirable and Invasive Plant Species removed from all zones
 - 3) Maintenance of irrigation systems
 - 4) Replacement of dead or dying vegetation with approved species (proposed changes shall be approved by OCFA)
 - 5) Removal of trees and shrubs not on the approved plans
- e. If maintained by an HOA, the landscape maintenance company and/or property manager shall inspect the FMZs throughout the year to identify where specific maintenance activities need to take place.
- f. The OCFA may conduct inspections of established fuel modification areas. Ongoing maintenance shall be conducted a minimum of twice each year regardless of the dates of these inspections.
- g. The property owner shall retain all approved Fuel Modification Plans. The design and information on the plans shall be used as the basis for maintenance.

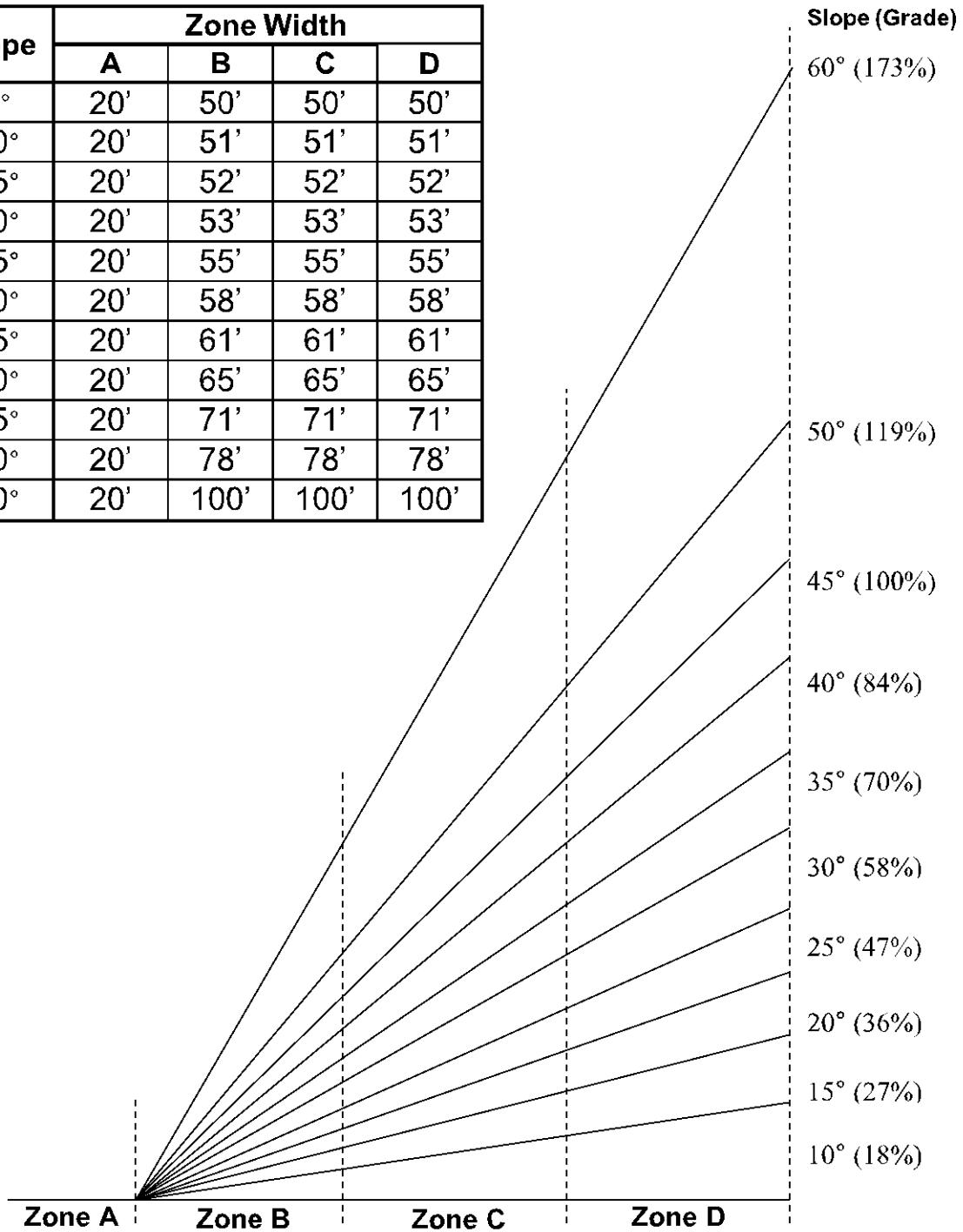
2. Option #2 Maintenance Method (when approved by OCFA):

Ongoing maintenance shall occur per the current posted OCFA Vegetation Management Maintenance Guidelines at www.ocfa.org. Distances of FMZ, SMA, and RPZ will always remain required and will be specific to the approved Fuel Modification Plan.

ATTACHMENT 3

Incline Measurement for Selected Slopes (See Attachment 4: Zone Marker Details)

Slope	Zone Width			
	A	B	C	D
0°	20'	50'	50'	50'
10°	20'	51'	51'	51'
15°	20'	52'	52'	52'
20°	20'	53'	53'	53'
25°	20'	55'	55'	55'
30°	20'	58'	58'	58'
35°	20'	61'	61'	61'
40°	20'	65'	65'	65'
45°	20'	71'	71'	71'
50°	20'	78'	78'	78'
60°	20'	100'	100'	100'

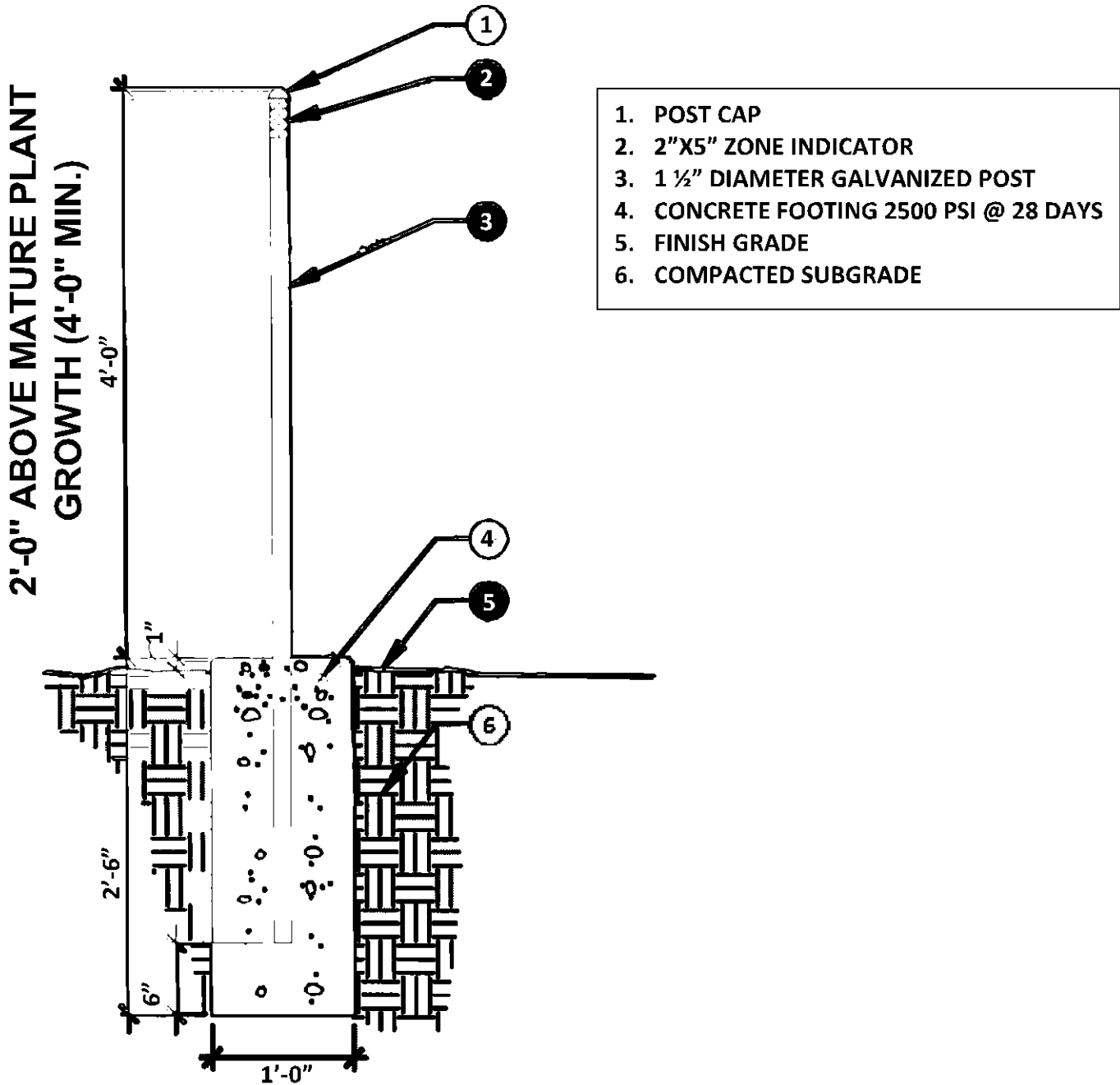


ATTACHMENT 4

Zone Marker Details

(Marker Distances Shall Be Increased on Slopes to Accommodate Incline Measurements in Accordance with Attachment 3: Incline Measurement for Selected Slopes)

Note: An alternate design may be proposed and approved on a case-by-case basis (e.g., using a large boulder, existing fencing, permanent fixtures, etc.).



ATTACHMENT 5

Sample CC&R Maintenance Language

It is recommended that the following language be included in the CC&Rs recorded for a common interest development:

“The duty of the homeowners’ association to perform ‘Fire Prevention Maintenance’ (as defined below) for all Fuel Modification Zones, Special Maintenance Areas, Roadway Protection Zone, and manufactured interior slopes within the development shall be included as an express obligation in the recorded CC&Rs for the development. Similarly, each Owner whose Lot (or Condominium) is subject to FMZ restrictions (e.g., non-combustible structure setback, etc.) shall be obligated to comply with such restrictions.”

1. The OCFA will be designated as a third-party beneficiary of an HOA’s duty to perform “Fire Prevention Maintenance” (as defined below) for all portions of the Association Property or Common Area that constitute FMZs and designated interior/manufactured slopes to be maintained by the H O A , and of any Owner’s duty to comply with any FMZ restrictions applicable to their lot or condominium. Additionally, OCFA shall have the right, but not the obligation, to enforce the HOA’s duty to perform such Fire Prevention Maintenance, and to enforce compliance by any owner with any FMZ restrictions applicable to their lot or condominium. In furtherance of such right, the OCFA shall be entitled to recover its costs of suit, including its actual attorneys’ fees, if it prevails in an enforcement action against an HOA and/or an individual owner (a sample third-party beneficiary provision to be incorporated into the CC&Rs is attached hereto as Addendum "1").
2. As used herein, "Fire Prevention Maintenance" shall mean the following:
 - a. All portions of the Association Property or Common Area that constitute FMZs or designated interior/manufactured slopes shall be regularly maintained by the HOA on a year-round basis in accordance with the fuel modification plan on file with the property manager for the development.
 - b. The irrigation system for FMZs or designated interior/manufactured slopes shall be kept in good condition and proper working order at all times. The irrigation system shall not be turned off except for necessary repairs and maintenance.

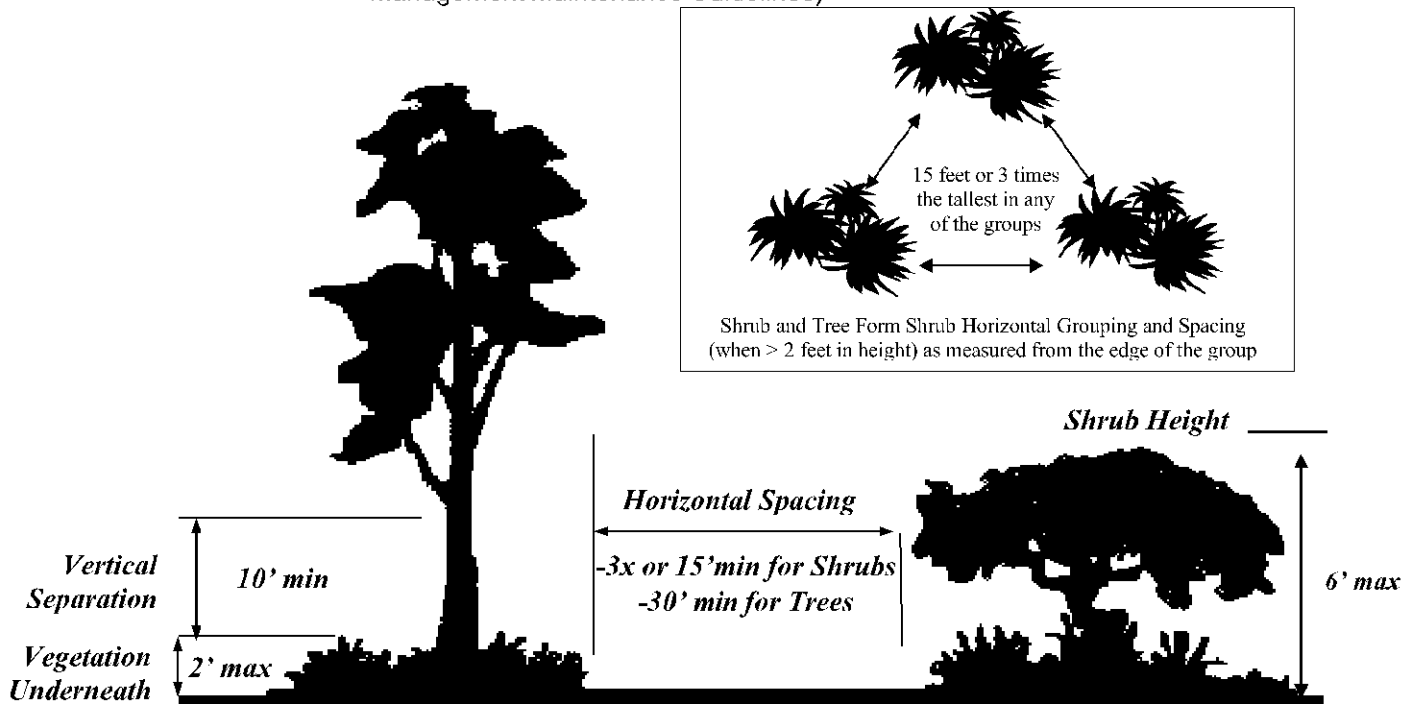
ADDENDUM "1"

Enforcement by the Orange County Fire Authority (OCFA): The OCFA is hereby designated as an intended third-party beneficiary of the Association's duties to perform "Fire Prevention Maintenance" for all portions of the Association Property or Common Areas consisting of FMZs or designated interior/manufactured slopes in accordance with the fuel modification plan, and of each owner's duty to comply with any FMZ or designated interior/manufactured slopes restrictions applicable to their lot or condominium as set forth in the fuel modification plan. In furtherance thereof, the OCFA shall have the right, but not the obligation, to enforce the performance by the association of its duties and any other fire prevention requirements which were imposed by the OCFA or other public agency as a condition of approval for the development (e.g., prohibition of parking in fire lanes, maintenance of the blue reflective markers indicating the location of fire hydrants, etc.). The OCFA shall also have the right, but not the obligation, to enforce compliance by any owner with any FMZ or designated interior/manufactured slopes restrictions applicable to their lot or condominium as set forth in the fuel modification plan. If in its sole discretion, the OCFA shall deem it necessary to take legal action against the association or any owner to enforce such duties or other requirements, and prevails in such action, the OCFA shall be entitled to recover the full costs of said action including its actual attorneys' fees, and to impose a lien against the association property, or an owner's lot or condominium, as the case may be, until said costs are paid in full.

ATTACHMENT 6

Requirements for Planting Installation in Fuel Modification Zones

(For ongoing requirements, see Attachment 2: Introductory Maintenance Information and the OCFA Vegetation Management Maintenance Guidelines)



Horizontal Spacing

Vegetation Less than 2 Feet in Height:

- No horizontal spacing or vertical separation is required. Ground cover shall not exceed 2 feet in height. In Zone "B" ground cover shall cover the entire ground between groups of shrubs, trees, or grasses and grasses are not considered ground cover. Limited compartments of grasses are acceptable as approved on the planting plans. In Zone "C/D" grasses can cover the entire area.

Vegetation 2 Feet in Height or Greater:

- Shrub Group Size & Spacing:
 - Shrubs shall not exceed 6ft in height.
 - Groupings of shrubs are limited to a maximum aggregate diameter of 10 feet.
 - Groups of shrubs shall be spaced by the greater of the following two measurements: A distance of 15 feet minimum (or) 3 times the height of the tallest specimen in any of the groups.
 - Groupings of shrubs are not allowed within 30 feet of structures. Only single specimen shrubs are allowed, with a minimum 15 feet of separation between each shrub specimen.
 - No shrubs over 2 feet in height are allowed within 5 feet of combustible structures.
 - No vegetation over 2 feet in height is allowed within 15 feet from the edge of tree canopy(s).
- Tree Group Size & Spacing:
 - Groupings of trees are limited to a maximum number of 3 specimens or less.
 - Groups of trees shall be spaced by a minimum distance of 30 feet regardless of height. In Zone "A," full growth tree branches are not allowed within 10 feet of combustible structures.
 - Horizontal spacing is required inside the group with a minimum 10 feet separation between each tree canopy.

Vertical Separation

Trees Less than 15 Feet in Height:

- When the fuel modification zone is within 30 feet of the structure, a vertical separation of 2 feet minimum is required from the vegetation below.

Trees 15 Feet in Height or Greater:

- A vertical separation of 10 feet minimum is required to be maintained from the vegetation below.
- All vegetation located underneath trees, shall be a maximum of 2 feet in height.

ATTACHMENT 7

Undesirable and Invasive Plant Species

Certain plants are considered to be undesirable and invasive due to their physical or chemical characteristics. Physical properties that would contribute to high flammability include large amounts of dead material retained within the plant, rough or peeling bark, and the production of copious amounts of litter. Chemical properties include the presence of volatile substances such as oils, resins, wax, and pitch. Certain native plants are notorious for containing these volatile substances.

Plants with these characteristics shall not be planted in any fuel modification zones or anywhere within the area covered by Alternate Methods & Materials agreements (see Section 4: Alternate Materials & Methods). Should these species already exist within these areas, they shall be removed because of their invasiveness or potential threat they pose to structures.

PLANT SPECIES (MANDATORY REMOVAL)

Botanical Name	Common Name
Adenostoma Fasciculatum	Chamise
Adenostoma Sparsifolium	Red Shanks
Anthemix Cotula	Mayweed
Artemisia Californica	California Sagebrush
Brassica Nigra	Black Mustard
Brassica Rapa	Wild Turnip, Yellow Mustard, Field Mustard
Cardaria Draba	Hoary Cress, Perennial Peppergrass
Cirsium Vulgare	Wild Artichoke
Conyza Canadensis	Horseweed
Cynara Cardunculus	Artichoke Thistle
Eriogonum Fasciculatum	Common Buckwheat
Heterothaca Grandiflora	Telegraph Plant
Lactuca Serriola	Prickly Lettuce
Nassella/Stipa tenuissima	Mexican Feathergrass
Nicotiana Bigelevil	Indian Tobacco
Nicotiana Glauca	Tree Tobacco
Pennisetum alopecuroides	Fountain Grass
Ricinus Communis	Castor Bean Plant
Sacsola Austails	Russian Thistle/Tumbleweed
Salvia Mellifera	Black Sage
Silybum Marianum	Milk Thistle
Tamarix Ramosissima	Salt Cedar
Urtica Urens	Burning Nettle
Ornamental:	
Arecaceae (all palm species)	Palms
Cycas Revoluta	Sago Palms
Cortaderia	Pampas Grass
Cupressus sp	Cypress
Eucalyptus sp	Eucalyptus
Juniperus sp	Juniper
Pinus sp	Pine

ATTACHMENT 8

Fuel Modification Zone Plant List

Symbol Legend

- X = Plant species prohibited in wet and dry FMZs adjacent to reserve lands. Acceptable on all other fuel modification locations and zones.
- W = Plant species appropriate for use in wet FMZs adjacent to reserve lands. Acceptable in all other wet and irrigated dry (manufactured slopes) fuel modification locations and zones.
- o = Plant species native to Orange County. Acceptable in all fuel modification wet and dry zones in all locations.
- N = Plant species acceptable on a limited basis (maximum 30% of the area) in wet FMZs adjacent to reserve lands. Acceptable on all other FMZs.
- * = If locally collected.
- ** = Not native but can be used in all zones.
- n = Plant species acceptable on a limited use basis. Refer to qualification requirements following plant palette.

Yellow row = Plant species susceptible to Invasive Shot Hole Borers (ISHB) infestation.

	Code	Botanical Name	Common Name	Plant Form
1.	W	<i>Abelia x grandiflora</i>	Glossy Abelia	Shrub
2.	n	<i>Acacia redolens</i> desert carpet	Desert Carpet	Ground Cover
3.	o	<i>Acer macrophyllum</i>	Big Leaf Maple	Tree
4.	X	<i>Achillea millefolium</i>	Common Yarrow	Low Shrub
5.	W	<i>Achillea tomentosa</i>	Woolly Yarrow	Low Shrub
6.	X	<i>Aeonium decorum</i>	Aeonium	Ground cover
7.	X	<i>Aeonium simsii</i>	no common name	Ground cover
8.	W	<i>Agave attenuata</i>	Century Plant	Succulent
9.	W	<i>Agave shawii</i>	Shaw's Century Plant	Succulent
10.	N	<i>Agave victoriae-reginae</i>	no common name	Ground Cover
11.	X	<i>Ajuga reptans</i>	Carpet Bugle	Ground Cover
12.	W	<i>Alnus cordata</i>	Italian Alder	Tree
13.	o	<i>Alnus rhombifolia</i>	White Alder	Tree
14.	N	<i>Aloe arborescens</i>	Tree Aloe	Shrub
15.	N	<i>Aloe aristata</i>	no common name	Ground Cover
16.	N	<i>Aloe brevifoli</i>	no common name	Ground Cover
17.	W	<i>Aloe Vera</i>	Medicinal Aloe	Succulent
18.	W	<i>Alogyne huegeii</i>	Blue Hibiscus	Shrub
19.	o	<i>Ambrosia chammissonis</i>	Beach Bur-Sage	Perennial

	Code	Botanical Name	Common Name	Plant Form
20.	o	<i>Amorpha fruticosa</i>	Western False Indigobush	Shrub
21.	W	<i>Anigozanthus flavidus</i>	Kangaroo Paw	Perennial/accent
22.	o	<i>Antirrhinum nuttalianum</i> ssp.	no common name	Subshrub
23.	X	<i>Aptenia cordifolia</i> x 'Red Apple'	Red Apple Aptenia	Ground cover
24.	W	<i>Arbutus unedo</i>	Strawberry Tree	Tree
25.	W	<i>Arctostaphylos</i> 'Pacific Mist'	Pacific Mist Manzanita	Ground Cover
26.	W	<i>Arctostaphylos edmundsii</i>	Little Sur Manzanita	Ground Cover
27.	o	<i>Arctostaphylos glandulosa</i> ssp.	Eastwood Manzanita	Shrub
28.	W	<i>Arctostaphylos hookeri</i> 'Monterey Carpet'	Monterey Carpet Manzanita	Low Shrub
29.	N	<i>Arctostaphylos pungens</i>	no common name	Shrub
30.	N	<i>Arctostaphylos refugioensis</i>	Refugio Manzanita	Shrub
31.	W	<i>Arctostaphylos uva-ursi</i>	Bearberry	Ground Cover
32.	W	<i>Arctostaphylos</i> x 'Greensphere'	Greensphere Manzanita	Shrub
33.	N	<i>Artemisia caucasica</i>	Caucasian Artemisia	Ground Cover
34.	X	<i>Artemisia pycnocephala</i>	Beach Sagewort	Perennial
35.	X	<i>Atriplex canescens</i>	Four-Wing Saltbush	Shrub
36.	X	<i>Atriplex lentiformis</i> ssp. <i>breweri</i>	Brewer Saltbush	Shrub
37.	o	<i>Baccharis emoyi</i>	Emory Baccharis	Shrub
38.	W o	<i>Baccharis pilularis</i> ssp. <i>Consanguinea</i>	Chaparral Bloom	Shrub
39.	X	<i>Baccharis pilularis</i> var. <i>pilularis</i>	Twin Peaks #2	Ground Cover
40.	o	<i>Baccharis salicifolia</i>	Mulefat	Shrub
41.	N	<i>Baileya Multiradiata</i>	Desert Marigold	Ground Cover
42.	N n	<i>Bougainvillea spectabilis</i>	Bougainvillea	Shrub
43.	o	<i>Brickellia californica</i>	no common name	Subshrub
44.	W o	<i>Bromus carinatus</i>	California Brome	Grass
45.	o	<i>Camissonia cheiranthifloa</i>	Beach Evening Primrose	Perennial Shrub
46.	N	<i>Carissa macrocarpa</i>	Green Carpet Natal Plum	Ground Cover/Shrub
47.	X	<i>Carpobrotus chilensis</i>	Sea Fig Ice Plant	Ground Cover
48.	W	<i>Ceanothus gloriosus</i> 'Point Reyes'	Point Reyes Ceanothus	Shrub
49.	W	<i>Ceanothus griseus</i> 'Louis Edmunds'	Louis Edmunds Ceanothus	Shrub
50.	W	<i>Ceanothus griseus horizontalis</i>	Yankee Point	Ground Cover
51.	W	<i>Ceanothus griseus</i> var. <i>horizontalis</i>	Carmel Creeper Ceanothus	Shrub
52.	W	<i>Ceanothus griseus</i> var. <i>horizontalis</i>	Yankee Point Ceanothus	Shrub
53.	o	<i>Ceanothus megacarpus</i>	Big Pod Ceanothus	Shrub
54.	W	<i>Ceanothus prostratus</i>	Squaw Carpet Ceanothus	Shrub
55.	o	<i>Ceanothus spinosus</i>	Green Bark Ceanothus	Shrub
56.	W	<i>Ceanothus verrucosus</i>	Wart-Stem Ceanothus	Shrub
57.	W	<i>Cerastium tomentosum</i>	Snow-in-Summer	Ground cover/Shrub
58.	W	<i>Ceratonia siliqua</i>	Carob	Tree
59.	W	<i>Cercis occidentalis</i>	Western Redbud	Shrub/Tree

	Code	Botanical Name	Common Name	Plant Form
60.	X	<i>Chrysanthemum leucanthemum</i>	Oxeye Daisy	Ground Cover
61.	W	<i>Cistus Crispus</i>	no common name	Ground Cover
62.	W	<i>Cistus hybridus</i>	White Rockrose	Shrub
63.	W	<i>Cistus incanus</i>	no common name	Shrub
64.	W	<i>Cistus incanus ssp. Corsicus</i>	no common name	Shrub
65.	W	<i>Cistus salviifolius</i>	Sageleaf Rockrose	Shrub
66.	W	<i>Cistus x purpureus</i>	Orchid Rockrose	Shrub
67.	W	<i>Citrus species</i>	Citrus	Tree
68.	o	<i>Clarkia bottae</i>	Showy Fairwell to Spring	Annual
69.	o	<i>Cneidium dumosum</i>	Bushrue	Shrub
70.	o	<i>Collinsia heterophyllia</i>	Chinese Houses	Annual
71.	W o	<i>Comarostaphylis diversifolia</i>	Summer Holly	Shrub
72.	N	<i>Convolvulus cneorum</i>	Bush Morning Glory	Shrub
73.	W	<i>Coprosma kirkii</i>	Creeping Coprosma	Ground Cover/Shrub
74.	W	<i>Coprosma pumila</i>	Prostrate Coprosma	Low shrub
75.	o	<i>Coreopsis californica</i>	California Coreopsis	Annual
76.	W	<i>Coreopsis lanceolata</i>	Coreopsis	Ground Cover
77.	N	<i>Corea pulchella</i>	Australian Fuschia	Ground Cover
78.	W	<i>Cotoneaster buxifolius</i>	no common name	Shrub
79.	W	<i>Cotoneaster congestus 'Likiang'</i>	Likiang Cotoneaster	Ground Cover/Vine
80.	W	<i>Cotoneaster apmeyii</i>	no common name	Shrub
81.	X	<i>Crassula lactea</i>	no common name	Ground Cover
82.	X	<i>Crassula multicava</i>	no common name	Ground Cover
83.	X	<i>Crassula ovata</i>	Jade Tree	Shrub
84.	X	<i>Crassula tetragona</i>	no common name	Ground Cover
85.	W o	<i>Croton californicus</i>	California Croton	Ground Cover
86.	X	<i>Delosperma 'alba'</i>	White trailing Ice Plant	Ground Cover
87.	o	<i>Dendromecon rigida</i>	Bush Poppy	Shrub
88.	o	<i>Dichelostemma capitatum</i>	Blue Dicks	Herb
89.	N	<i>Distinctis buccinatoria</i>	Blood-Red Trumpet Vine	Vine/Climbing vine
90.	N	<i>Dodonaea viscosa</i>	Hopseed Bush	Shrub
91.	X	<i>Drosanthemum floribundum</i>	Rosea Ice Plant	Ground Cover
92.	X	<i>Drosanthemum hispidum</i>	no common name	Ground Cover
93.	X	<i>Drosanthemum speciosus</i>	Dewflower	Ground Cover
94.	o	<i>Dudleya lanceolata</i>	Lance-leaved Dudleya	Succulent
95.	o	<i>Dudleya pulverulenta</i>	Chalk Dudleya	Succulent
96.	W	<i>Elaeagnus pungens</i>	Silverberry	Shrub
97.	o	<i>Encelia californica</i>	California Encelia	Small Shrub
98.	o *	<i>Epilobium canum [Zauschneria californica]</i>	Hoary California Fuschia	Shrub
99.	o	<i>Eriastrum Sapphirinum</i>	Mojave Woolly Star	Annual
100.	N	<i>Eriobotrya japonica</i>	Loquat	Tree

	Code	Botanical Name	Common Name	Plant Form
101.	o	<i>Eriodictyon trichocalyx</i>	Yerba Santa	Shrub
102.	W o	<i>Eriophyllum confertiflorum</i>	no common name	Shrub
103.	W	<i>Erythrina species</i>	Coral Tree	Tree
104.	N	<i>Escallonia species</i>	Several varieties	Shrub
105.	W o	<i>Eschscholzia californica</i>	California Poppy	Flower
106.	X	<i>Eschscholzia mexicana</i>	Mexican Poppy	Herb
107.	N	<i>Euonymus fortunei</i>	Winter Creeper Euonymus	Ground Cover
108.	N	<i>Feijoa sellowiana</i>	Pineapple Guava	Shrub/Tree
109.	N	<i>Fragaria chiloensis</i>	Wild Strawberry/Sand Strawberry	Ground Cover
110.	o	<i>Frankenia salina</i>	Alkali Heath	Ground Cover
111.	W	<i>Fremontodendron californicum</i>	California Flannelbush	Shrub
112.	X	<i>Gaillardia x grandiflora</i>	Blanketflower	Ground Cover
113.	W	<i>Galvezia speciosa</i>	Bush Snapdragon	Shrub
114.	W	<i>Garrya ellipta</i>	Silktassel	Shrub
115.	X	<i>Gazania hybrids</i>	South African Daisy	Ground Cover
116.	X	<i>Gazania rigens leucolaena</i>	Training Gazania	Ground Cover
117.	o	<i>Gilia capitata</i>	Globe Gilia	Perennial
118.	W	<i>Gilia leptantha</i>	Showy Gilia	Perennial
119.	W	<i>Gilia tricolor</i>	Bird's Eyes	Perennial
120.	W	<i>Ginkgo biloba</i>	Maidenhair Tree	Tree
121.	o	<i>Gnaphalium californicum</i>	California Everlasting	Annual
122.	W	<i>Grewia occidentalis</i>	Starflower	Shrub
123.	o	<i>Grindelia stricta</i>	Gum Plant	Ground Cover
124.	N n	<i>Hakea suaveolens</i>	Sweet Hakea	Shrub
125.	W	<i>Hardenbergia comptoniana</i>	Lilac Vine	Shrub
126.	N	<i>Heliathemum mutabile</i>	Sunrose	Ground Cover/Shrub
127.	o	<i>Helianthemum scoparium</i>	Rush Rose	Shrub
128.	o	<i>Heliotropium curassavicum</i>	Salt Heliotrope	Ground Cover
129.	X	<i>Helix Canariensis</i>	English Ivy	Ground Cover
130.	W	<i>Hesperaloe parviflora</i>	Red Yucca	Perennial
131.	o n	<i>Heteromeles arbutifolia</i>	Toyon	Shrub
132.	X	<i>Hypericum calycimum</i>	Aaron's Beard	Shrub
133.	N	<i>Iberis sempervirens</i>	Edging Candytuft	Ground Cover
134.	N	<i>Iberis umbellatum</i>	Globe Candytuft	Ground Cover
135.	o	<i>Isocoma menziesii</i>	Coastal Goldenbush	Small Shrub
136.	o	<i>Isomeris arborea</i>	Bladderpod	Shrub
137.	W	<i>Iva hayesiana</i>	Poverty Weed	Ground Cover
138.	N	<i>Juglans californica</i>	California Black Walnut	Tree
139.	o	<i>Juncus acutus</i>	Spiny Rush	Perennial
140.	o	<i>Keckiella antirrhinoides</i>	Yellow Bush Penstemon	Subshrub
141.	o	<i>Keckiella cordifolia</i>	Heart Leaved Penstemon	Subshrub

	Code	Botanical Name	Common Name	Plant Form
142.	o	<i>Keckiella ternata</i>	Blue Stemmed Bush Penstemon	Subshrub
143.	W	<i>Kniphofia uvaria</i>	Red Hot Poker	Perennial
144.	W	<i>Lagerstroemia indica</i>	Crape Myrtle	Tree
145.	W	<i>Lagunaria patersonii</i>	Primrose Tree	Tree
146.	X	<i>Lampranthus aurantiacus</i>	Bush Ice Plant	Ground Cover
147.	X	<i>Lampranthus filicaulis</i>	Redondo Creeper	Ground Cover
148.	X	<i>Lampranthus spectabilis</i>	Trailing Ice Plant	Ground Cover
149.	W	<i>Lantana camara</i> cultivars	Yellow Sage	Shrub
150.	W	<i>Lantana montevidensis</i>	Trailing Lantana	Shrub
151.	o	<i>Lasthenia californica</i>	Dwarf Goldfields	Annual
152.	W	<i>Lavandula dentata</i>	French Lavender	Shrub
152.	W	<i>Leptospermum laevigatum</i>	Australian Tea Tree	Shrub
154.	W	<i>Leucophyllum frutescens</i>	Texas Ranger	Shrub
155.	o	<i>Leymus condensatus</i>	Giant Wild Rye	Large Grass
156.	N	<i>Ligustrum japonicum</i>	Texas privet	Shrub
157.	X	<i>Limonium pectinatum</i>	no common name	Ground Cover
158.	X	<i>Limonium perezii</i>	Sea Lavender	Shrub
159.	W n	<i>Liquidambar styraciflua</i>	American Sweet Gum	Tree
160.	W	<i>Liriodendron tulipifera</i>	Tulip Tree	Tree
161.	X	<i>Lonicera japonica</i> 'Halliana'	Hall's Japanese Honeysuckle	Vining Shrub
162.	o	<i>Lonicera subspicata</i>	Wild Honeysuckle	Vining Shrub
163.	X	<i>Lotus comiculatus</i>	Bird's Foot Trefoil	Ground Cover
164.	o	<i>Lotus hermannii</i>	Northern Woolly Lotus	Perennial
165.	o	<i>Lotus scoparius</i>	Deerweed	Shrub
166.	W	<i>Lupinus arizonicus</i>	Desert Lupine	Annual
167.	W	<i>Lupinus benthamii</i>	Spider Lupine	Annual
168.	o	<i>Lupinus bicolor</i>	Sky Lupine	Flowering annual
169.	o	<i>Lupinus sparsiflorus</i>	Loosely Flowered Annual Lupine or Coulter's Lupine	Annual
170.	W	<i>Lyonothamnus floribundus</i> ssp. <i>Asplenifolius</i>	Fernleaf Ironwood	Tree
171.	W	<i>Macadamia integrifolia</i>	Macadamia Nut	Tree
172.	W	<i>Mahonia aquifolium</i> 'Golden Abundance'	Golden Abundance Oregon Grape	Shrub
173.	W	<i>Mahonia nevenii</i>	Nevin Mahonia	Shrub
174.	o	<i>Malacothamnus fasciculatus</i>	Chapparal Mallow	Shrub
175.	X	<i>Malephora luteola</i>	Training Ice Plant	Ground Cover
176.	W	<i>Maytenus boaria</i>	Mayten Tree	Tree
177.	W	<i>Melaleuca nesophila</i>	Pink Melaleuca	Shrub
178.	N	<i>Metrosideros excelsus</i>	New Zealand Christmas Tree	Tree
179.	o *	<i>Mimulus</i> species	Monkeyflower	Flower
180.	o	<i>Mirabilis californica</i>	Wishbone Bush	Perennial
181.	N	<i>Myoporum debile</i>	no common name	Shrub

	Code	Botanical Name	Common Name	Plant Form
182.	W	<i>Myoporum insulare</i>	Boobyalla	Shrub
183.	W	<i>Myoporum parvifolium</i>	no common name	Ground Cover
184.	W	<i>Myoporum 'Pacificum'</i>	no common name	Ground Cover
185.	o	<i>Nassella (stipa) lepidra</i>	Foothill Needlegrass	Ground Cover
186.	o	<i>Nassella (stipa) pulchra</i>	Purple Needlegrass	Ground Cover
187.	o	<i>Nemophila menziesii</i>	Baby Blue Eyes	Annual
188.	X	<i>Nerium Oleander</i>	Oleander	Shrub
189.	o	<i>Nolina cismontana</i>	Chapparal Nolina	Shrub
190.	N	<i>Nolina species</i>	Mexican Grasstree	Shrub
191.	W	<i>Oenothera belandieri</i>	Mexican Evening Primrose	Ground Cover
192.	N	<i>Oenothera hookeri</i>	California Evening Primrose	Flower
193.	W	<i>Oenothera speciosa</i>	Show Evening Primrose	Perennial
194.	X	<i>Ophiopogon japonicus</i>	Mondo Grass	Ground Cover
195.	o *	<i>Opuntia littoralis</i>	Prickly Pear	Cactus
196.	o *	<i>Opuntia oricola</i>	Oracle Cactus	Cactus
197.	o *	<i>Opuntia prolifera</i>	Coast Cholla	Cactus
198.	W	<i>Osmanthus fragrans</i>	Sweet Olive	Shrub
199.	X	<i>Osteospermum fruticosum</i>	Training African Daisy	Ground Cover
200.	X	<i>Parkinsonia aculeata</i>	Mexican Palo Verde	Tree
201.	W	<i>Pelargonium peltatum</i>	Ivy Geranium	Ground Cover
202.	X	<i>Penstemon species</i>	Beard Tongue	Shrub
203.	W	<i>Photinia fraseria</i>	no common name	Shrub
204.	W	<i>Pistacia chinesis</i>	Chinese Pistache	Tree
205.	X	<i>Pittosporum undulatum</i>	Victorian Box	Tree
206.	o	<i>Plantago erecta</i>	California Plantain	Annual
207.	**	<i>Plantago insularis</i>	Woolly Plantain	Annual
208.	X	<i>Plantago sempervirens</i>	Evergreen Plantain	Ground Cover
209.	W	<i>Plantanus racemosa</i>	California Sycamore	Tree
210.	W	<i>Plumbago auriculata</i>	Plumbago Cape	Shrub
211.	o	<i>Populus fremontii</i>	Western Cottonwood	Tree
212.	X	<i>Portulacaria afra</i>	Elephant's Food	Shrub
213.	o	<i>Potentilla glandulosa</i>	Sticky Cinquefoil	Subshrub
214.	X	<i>Potentilla tabernaemontanii</i>	Spring Cinquefoil	Ground Cover
215.	X	<i>Prunus caroliniana</i>	Carolina Cherry Laurel	Shrub/Tree
216.	o	<i>Prunus ilicifolia ssp. ilicifolia</i>	Holly Leafed Cherry	Shrub
217.	X	<i>Prunus lyonii</i>	Catalina Cherry	Shrub/Tree
218.	N	<i>Punica granatum</i>	Pomegranate	Shrub/Tree
219.	W	<i>Puya species</i>	Puya	Succulent/Shrub
220.	W	<i>Pyracantha species</i>	Firethorn	Shrub
221.	o	<i>Quercus agrifolia</i>	Coast Live Oak	Tree
222.	o n *	<i>Quercus berberdifolia</i>	California Scrub Oak	Shrub
223.	o n *	<i>Quercus dumosa</i>	Coastal Scrub Oak	Shrub

	Code	Botanical Name	Common Name	Plant Form
224.	X	<i>Quercus engelmannii</i>	Engelmann Oak	Tree
225.	X	<i>Quercus suber</i>	Cork Oak	Tree
226.	X	<i>Rhamnus alaternus</i>	Italian Buckthorn	Shrub
227.	o	<i>Rhamnus californica</i>	California Coffee Berry	Shrub
228.	o	<i>Rhamnus crocea</i>	Redberry	Shrub
229.	o	<i>Rhamnus crocea</i> ssp. <i>ilicifolia</i>	Hollyleaf Redberry	Shrub
230.	N	<i>Raphiolepis species</i>	Indian Hawthorne	Shrub
231.	o	<i>Rhus integrifolia</i>	Lemonade Berry	Shrub
232.	N	<i>Searsia Lancea</i>	African Sumac	Tree
233.	o n	<i>Rhus ovata</i>	Sugar bush	Shrub
234.	o	<i>Ribes aureum</i>	Golden Currant	Shrub
235.	o	<i>Ribes indecorum</i>	White Flowering Currant	Shrub
236.	o	<i>Ribes speciosum</i>	Fuschia Flowering Gooseberry	Shrub
237.	W	<i>Ribes viburnifolium</i>	Evergreen currant	Shrub
238.	o *	<i>Romneya coulteri</i>	Matilija Poppy	Shrub
239.	X	<i>Romneya coulteri</i> 'White Cloud'	White Cloud Matilija Poppy	Shrub
240.	W n	<i>Rosmarinus officinalis</i>	Rosemary	Shrub
241.	W n	<i>Salvia greggii</i>	Autums Sage	Shrub
242.	W n	<i>Salvia sonomensis</i>	Creeping Sage	Ground Cover
243.	o	<i>Sambucus mexicana</i>	Mexican Elderberry	Tree
244.	W	<i>Santolina chamaecyparissus</i>	Lavender Cotton	Ground Cover
245.	W	<i>Santolina virens</i>	Green Lavender Cotton	Shrub
246.	o	<i>Satureja chandleri</i>	San Miguel Savory	Perennial
247.	o	<i>Scirpis scutus</i>	Hard Stem Bulrush	Perennial
248.	o	<i>Scirpus californicus</i>	California Bulrush	Perennial
249.	X	<i>Sedum acre</i>	Goldmoss Sedum	Ground Cover
250.	X	<i>Sedum album</i>	Green Stonecrop	Ground Cover
251.	X	<i>Sedum confusum</i>	no common name	Ground Cover
252.	X	<i>Sedum lineare</i>	no common name	Ground Cover
253.	X	<i>Sedum x rubrotinctum</i>	Pork and Beans	Ground Cover
254.	X	<i>Senecio serpens</i>	no common name	Ground Cover
255.	o	<i>Sisyrinchium bellum</i>	Blue Eyed Grass	Ground Cover
256.	o	<i>Solanum douglasii</i>	Douglas Nightshade	Shrub
257.	o	<i>Solanum xantii</i>	Purple Nightshade	Perennial
258.	W	<i>Stenocarpus sinuatus</i>	Firewheel Tree	Tree
259.	W	<i>Strelitzia nicolai</i>	Giant Bird of Paradise	Perennial
260.	W	<i>Strelitzia reginae</i>	Bird of Paradise	Perennial
261.	o	<i>Symphoricarpos mollis</i>	Creeping Snowberry	Shrub
262.	W	<i>Tecoma stans</i> (<i>Stenolobium stans</i>)	Yellow Bells	Shrub/Small Tree
263.	X	<i>Tecomaria capensis</i>	Cape Honeysuckle	Ground Cover
264.	N	<i>Teucrium chamedrys</i>	Germander	Ground Cover
265.	N	<i>Thymus serpyllum</i>	Lemon Thyme	Ground Cover

	Code	Botanical Name	Common Name	Plant Form
266.	N	<i>Trachelospermum jasminoides</i>	Star Jasmine	Shrub
267.	o	<i>Trichostema lanatum</i>	Woolly Blue Curls	Shrub
268.	X	<i>Trifolium hirtum</i> 'Hyron'	Hyron Rose Clover	Ground Cover
269.	X	<i>Trifolium fragerum</i> 'O'Connor's'	O'Connor's Legume	Ground Cover
270.	o	<i>Umbellularia californica</i>	California Laurel	Tree
271.	o	<i>Verbena lasiostachys</i>	Western Vervain	Perennial
272.	N	<i>Verbena peruviana</i>	no common name	Ground Cover
273.	X	<i>Verbena</i> species	Verbena	Ground Cover
274.	X	<i>Vinca minor</i>	Dwarf Periwinkle	Ground Cover
275.	o	<i>Vitis girdiana</i>	Desert Wild Grape	Vine
276.	X	<i>Vulpia myuros</i> 'Zorro'	Zorro Annual Fescue	Grass
277.	W	<i>Westringia fruticosa</i>	no common name	Shrub
278.	W	<i>Xanthorrhoea</i> species	Grass Tree	Perennial, Accent shrub
279.	W	<i>Xylosma congestum</i>	Shiny Xylosma	Shrub
280.	X	<i>Yucca</i> Species	Yucca	Shrub
281.	o	<i>Yucca whipplei</i>	Yucca	Shrub

Approved Plant Palette Qualification Statements for Select Plant Species

2. **Acacia redolens desert carpet:** May be used in the furthest ½ of the “B” FMZ from the structure, and no closer than 25 feet from the edge of the zone nearest the structure. The plants may be planted with a minimum spacing at 10 feet on center, maximum spacing in meandering zones not to exceed a mature width of 24 feet and mature height of 24 inches. If acacia redolens desert carpet is used in the roadway protection zone, it shall be maintained at a minimum of 25 feet from the curb face. At the time of precise plan review, the mature spacing shall be accounted for.
42. **Bougainvillea spectabilis (procumbent varieties):** Procumbent to mounding varieties may be used in the mid “B” FMZ. The plants may be planted in groups at 6 feet on center spacing not to exceed eight plants per group. Mature spacing between individual plants or groups shall be at a 30 foot minimum.
125. **Hakea suaveolens:** May be used in the mid “B” FMZ. The plants shall be used as single specimens with mature spacing between plants of 30 feet minimum.
132. **Heteromeles arbutifolia:** May be used in the mid to lower “B” FMZ. The plants may be planted in groups of up to 3 plants per group. Mature spacing between individual plants or groups shall be at a 30 foot minimum.
160. **Liquidambar styraciflua:** May be used in the mid “B” FMZ. The plant shall be used as single specimens with mature spacing between trees and a 30 foot minimum.
223. **Quercus berberdifolia:** Additional information may be required as directed by the OCFA unless approved on the plan as shown.
224. **Quercus dumosa:** May be used in the mid to lower “B” FMZ. The plants may be planted in groups of up to 3 plants per group. Mature spacing between individual plants or groups shall be at a 30 foot minimum.
234. **Rhus ovata & Rhus integrifolia:** May be used in the mid to lower “B” FMZ of inland areas only. The plants may be planted in groups of up to 3 plants per group. Mature spacing between individual plants or groups shall be at a 30 foot minimum.
241. **Rosmarinus officinalis:** When used as a ground cover, it shall be maintained at 2 feet in height. Additional information may be required as directed by the OCFA.
242. **Salvia greggii:** Additional information may be required as directed by the OCFA unless approved on the plan as shown.
243. **Salvia sonomensis:** May be used in the mid to upper “B” FMZ. The plants may be planted in groups of up to 3 plants per group. Mature spacing between individual plants or groups shall be at a 15 foot minimum.