

Each spring, the California Department of Forestry and Fire Protection (CDF) and Riverside County Fire Department distribute hazard abatement notices. These notices, which currently go to about 30,000 County citizens, request that property owners reduce the fuels around their property. Requirements for hazard reduction around improved parcels (those with structures) are set forth in Riverside County Ordinance No. 787, and Public Resources Code Section 4291. A minimum 30 foot clearance is required around all structures, which can be extended to 100 feet in areas where severe fire hazard exists. On unimproved parcels as set forth in Riverside County Ordinance No. 695, the property owner is required to disc or mow 100 feet along the perimeter of the property.

4.5.10 Fire Flow

Riverside County uses the Uniform Fire Code, Division III, Appendix III-A for establishing fire flow, duration and pressure requirements for fire flow. The requirements are a function of building size, type, material, purpose, location, proximity to other structures, and the type of fire suppression systems installed. The various water districts in the County are required to test fire protection capability for the various land uses per the flow requirements of the Uniform Fire Code (Table 4-5).

Table 4-5: Uniform Fire Code Minimum Fire Protection Flows

Land Use	Flow (gallons per minute)	Duration (hours)	Fire Suppression Storage (million gallons)	Residual Pressure (psi)
Residential Single-Family	2,000	4	0.48	20
Residential-Estate, Single Family Frontier	2,500	4	0.60	30
Residential Multi-Family	3,000	4	0.72	20
Commercial/Industrial	4,000	4	0.96	20
Schools	3,500	4	0.84	20

Emergency Storage is required in the event of an interruption of the Metropolitan Water District (MWD) primary supply. MWD recommends a seven day emergency storage supply.

4.5.11 Model Fire Hazard Reduction Ordinance

To assist local jurisdictions in adopting ordinances to reduce fire hazard, the State Fire

Marshal, Fire Engineering Division has developed a model ordinance checklist. This development was required by Assembly Bill 3819, on September 27, 1994. The model ordinance checklist addresses the following standards:

- Road Standards for Fire Equipment Access (Table 4-6)
- Structural Standards (Table 4-7)
- Fuel Modification Standards (Table 4-8).

Table 4-6: Road Standards for Fire Equipment Access

Width	Two 9' lanes
Surface	40,000 lb. Load
Grades	Not to exceed 16%
Horizontal Inside Radius	No less than 50'
Vertical Curves	100'
Turnarounds	Required, 40' from center
Hammerhead/"T"	Top of "T" 60' long
Turnouts	10' x 30'
	25' taper each end
Roadway Structures (Bridges)	Load and clearance per Vehicle Code Sections 35550, 35750, 35250
Bridge Signage	Load, clearance, one-way, single lane
One-way Roads	One 10' lane
	Must connect to 2 lanes at each end
	Serve no more than 10 dwellings
	Not to exceed 2640'
	Turnout at midpoint
Dead-end Roads	Not to exceed:
<1 acre parcels	800'
1-4.99 acre parcels	1320'
5-19.99 acre parcels	2640' with turnaround at 1320' interval
20+ acre parcels	5280' with turnaround at 1320' intervals
Driveways	10' wide, 15' vertical clearance
If >150' but <800'	Turnout at midpoint
If >800'	Every 400'
If >300'	Turnaround w/in 50' of all building sites
Gate Entrances	2' wider than lane
	30' from roadway

developed by the Office of the State Fire Marshal, Fire Engineering Division

Table 4-7: Structural Standards

Eaves	1 hour fire rated
	Fascias required, must be backed by 1 hour or 2" lumber
Roofs	Class B or better
Underfloor Areas	Enclosed to ground
Exception	If exposed materials are 1 hour rated
Unenclosed Accessory Structures	Non-combustible or 1 hour rated
Exception (If 100' defensible space)	patio roofs > 2"x4" or open lattice > 2"x2" is OK
Underfloor Areas (Attached Structure)	If over a descending slope, enclose within 6" of ground
Windows	Tempered or multi-layered glass
Doors	Non-combustible or solid core > 1-3/4"
Attic Openings	Not to exceed 144 square inches
	Noncombustible corrosion-resistant mesh < 1/4" holes
	Not to be in soffits, eave overhangs, etc.
	Gable/dormer vents 10' from property line
Walls	Any habitable space must be 1 hour rated
Underfloor Areas (Detached Structure)	If over a descending slope, enclose within 6" of ground

Table 4-8: Model Ordinance Checklist, Fuel Modification Standards

Clearance (Structure)	30' on each side or to property line
Additional Clearance	30'-100' when needed
Trees	10' from chimney
Dead or Dying Wood	Remove if overhangs structure
Accumulated Vegetation	Clear roof
Chimney and Stovepipe	Screen <1/2" holes
Setback If >1 acre	30'
If <1 acre	Same practical effect

Disposal	Prior to acceptance
Greenbelts	Locate strategically-must be approved

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4.6 Earthquake-Induced Fires

Fires following earthquakes can cause severe losses. These losses can sometimes outweigh the total losses from direct damage (such as collapse of buildings). The most dramatic United States example occurred when much of San Francisco was destroyed by fire following the 1906 earthquake.

Many factors affect the severity of fires following an earthquake, including ignition sources, types and density of fuel, weather conditions, functionality of water systems, and the ability of fire-fighters to suppress the fires. Casualties, debris and poor access can all limit fire-fighting effectiveness. Water availability in Riverside County following a major earthquake would likely be curtailed due to breaks in water lines across faults, in liquefiable regions and in areas susceptible to landslides. (See Chapter 1 – Earthquake Hazards.) In addition, above-ground reservoirs are vulnerable and damage to them would also affect fire flow.

Earthquake-induced fires make extraordinary demands on fire suppression resources because of multiple ignitions (as discussed in 4.1). The principal causes of earthquake-related fires are open flames, electrical malfunctions, gas leaks, and chemical spills. Downed power lines may ignite fires in the unlikely event the lines do not automatically de-energize. Unanchored gas heaters and water heaters are common problems, as these readily tip over during strong ground shaking. State law now requires new and replaced gas-fired water heaters to be immobilized.

The California Division of Mines and Geology Newport-Inglewood Earthquake Scenario (Topozada and others, 1988) indicates that fire units should prepare for thousands of damaged and leaking mains, valves, and service connections including broken pipelines. These will occur along, and adjacent to, fault rupture. The Southern California Gas Company has prepared by replacing distribution supply pipelines with resistant (flexible) plastic polyethylene pipe, and has an overall ability to isolate and shut off sections of supply lines when breaks are serious.

4.6.1 Natural Gas Fires -- Northridge Earthquake

The moderately-sized, M_w 6.7 Northridge earthquake of 1994 caused were 15,021 natural gas leaks. In the aftermath of the earthquake, 122,886 meters were closed by customers or emergency personnel. The majority of the leaks were small and could