



WILDLAND-URBAN INTERFACE

County Fire and Building Code Requirements

The wildfires of 2003 and 2007 have had a huge impact on lives of residents in San Diego County. The fires demonstrated, again, how vulnerable and powerless we are in the face of wildfire. Below are some examples of the problems that we have identified from prior fires:



- **Vulnerable building construction;**
- **Structures ignited by native and landscape vegetation;**
- **Poor access and escape routes;**
- **Inadequate water supplies; and**
- **Limited fire fighting resources.**

For decades, the County has worked with fire agencies, planners, environmental experts and the building industry to craft codes that are responsive to the wildfire challenge. Since the 1980's, the County's fire codes have been strengthened in successive code adoption cycles with the primary goal of protecting the safety of our citizens and enhancing your home's ability to survive wildfire. Lessons learned from the devastating wildfires of 2003 resulted in further refining of the County fire and building codes.

These changes have paid off. In the Witch, Harris, Rice and Poomacha fires (October, 2007) 1,047 homes were destroyed in the County (unincorporated) area. There were approximately 8,300 homes in the burn area; therefore the "loss" rate was about 13%. In comparison, there were 1,218 homes in the fire-damaged area that were built under the 2004 County fire and building codes. Of these more recently built (and more fire-resistive) homes, only 24 were destroyed – a "loss" rate of only 2%. Therefore, **homes built under recent codes have a more than six times better chance of survival!**

The attached is a **SUMMARY** of County Fire and Building Code requirements for construction in wildland-urban interface areas; however, it is only a summary and does not include all issues and all options. When designing a project please refer to the actual code language. The current codes may be found in Title 9 of the [County Code of Regulatory Ordinances](#).

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Summary of County Building and Fire Code Requirements

Fuel Modification Requirements

Consistent with state codes, the required fuel modification area is 100 feet around structures (or to the property line, whichever is nearer to the structure). The area located within 50 feet of the structure must be cleared and planted with fire-resistant plants, and the landscaping must be irrigated. In the area between 50 to 100 feet around structures the native vegetation may remain but must be thinned by 50% and all dead and dying vegetation must be removed. In this area, grass and other vegetation less than 18 inches in height above the ground need not be removed where necessary to stabilize the soil and prevent erosion.

Trees are allowed in the 100 foot fuel modification zone. The crowns of trees shall be a minimum of 10 feet from structures and the crowns of other trees and shall be pruned to remove limbs located less than 6 feet above the ground surface.

For more information on creating defensible space around your home and guidance regarding suggested planting materials, visit http://www.sandiegocounty.gov/pds/fire_resistant.html

Location of Structure on Lot - Setback

Fuel modification (vegetation control) is necessary for the life of the building. Fuel modification on neighboring property is not authorized by this fire code section. The fuel modification zone may not extend beyond the lot being developed. Agreements with neighbors, while desirable, cannot be depended on; ownership and cooperation can change. Therefore, it is critical that the fire code regulate the minimum distance from structure to property line.

Where adequate setback distance is possible, the structure shall be located such that 100 foot fuel modification can be obtained on the property. This setback is particularly important where fuel modification is restricted such as an Open Space Easement or a where fuel modification may not take place (e.g. riparian areas, state or federal land.)

The absolute minimum setback is 30 feet. If the fire authority having jurisdiction [FAHJ], the planning authority having jurisdiction [PAHJ] and the County Fire Marshal identify the hazard in the area as "minimal" or meeting one of the other exceptions below, they may allow less than 30 feet setback. When parcels are adjacent a national forest, state park or open space preserve, buildings and structures must be located a minimum of 100 feet from the property line adjacent the protected area.

In high hazard areas, exceptions are allowed only if the parcel is too small to accommodate the structure with a 30 foot setback, or the structure is in the interior of a grouping of homes with adequate defensible space designed and maintained on the perimeter of the group.

Building Construction Requirements

Ignition-resistant construction requirements in the County's Building and Fire codes include:

Note: Greenhouses enclosed with translucent plastic or glass and located 30 feet or more from other buildings and all property lines **or** free standing, open-sided shade covers, sheds, gazebos, and similar nonhabitable accessory structures with less than 250 square feet of projected roof area, no utility connections, and located 30 feet or more from other buildings and all property lines are exempt from ignition-resistant construction requirements.

- **Roofs:** Roofs shall have a minimum Class 'A' roof covering. For roof coverings where the profile allows a space between the roof covering and roof sheathing, the spaces shall be fire-stopped with approved materials to keep out flames and burning embers.

- **Exterior walls:** Exterior wall surfaces must be non-combustible (stucco, masonry, cement-fiber board, etc.), ignition-resistant, heavy timber or log wall construction. Stucco and cement plaster used as an exterior wall covering shall be minimum 7/8 inch thick. Noncombustible or fire-retardant-treated wood shake used as an exterior wall covering shall have an underlayment of minimum 1/2-inch fire-rated gypsum sheathing that is tightly butted, or taped and mudded, or an underlayment of other ignition-resistant material. As an exception, around door and window openings, maximum 3/4-inch thick combustible trim with an underlayment of ignition-resistant material.
- **Eaves:** Eaves, soffits and fascias must comply with requirements for ignition-resistant construction. See [guidance document PDS #198](#) for possible options.
- **Unenclosed Underfloor Areas:** Homes built on stilts or using open post-and-beam construction are not permitted unless the underfloor area is enclosed to the ground with non-combustible construction.
- **Vents:** All vents (attic, underfloor, combustion air, etc.) must resist the intrusion of flames and burning embers into the structure. Ventilation openings for enclosed attics, eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, underfloor ventilation openings, and vent openings in exterior walls and exterior doors shall be listed to ASTM E 2886 and comply with all of the following:
 - There shall be no flaming ignition of the cotton material during the Ember Intrusion Test.
 - There shall be no flaming ignition during the Integrity Test portion of the Flame Intrusion Test.
 - The maximum temperature of the unexposed side of the vent shall not exceed 662 degrees Fahrenheit (350 degrees Celsius).
- **Windows (glazing):** Windows shall be dual-glazed units with a minimum of one tempered pane **or** shall be glass block units **or** shall have a fire-resistance rating of 20 minutes. Vinyl window frames must have welded corners to prevent glass from falling out with flame impingement and metal reinforcing in the interlock area to prevent the windows from opening or falling unexpectedly. In addition, vinyl windows must have a label showing they are certified to AAMA/WDMA/CSA 101/I.S.2/A440 structural requirements.
- **Skylights:** Skylights shall be tempered glass.
- **Insulation:** Paper faced insulation is not permitted in attics or ventilated spaces due to the potential of embers igniting the paper. Foil-backed or un-faced fiberglass batts and blankets are better suited to conditions of potential fire hazards. Use foil-backed insulation in areas where a vapor barrier is required.
- **Roof Gutters:** Roof gutters shall be provided with the means to prevent the accumulation of leaves and debris.
- **Exterior doors:** Exterior doors shall have an exterior surface or cladding of noncombustible or ignition-resistant material **or** be constructed of solid-core with stiles and rails wood not less than 1-3/8-inch thick **or** have a fire protection rating of not less than 20 minutes per NFPA 252 **or** meet SFM Standard 12-7A-1.

- **Decks, balconies, carports, patio covers, and exterior stairs (exposed structural members):** Exposed structural supports and framing members for decks, balconies, carports, patio covers, exterior stairs, and other projections and attachments must be one, or a combination, of the following:
 - ✓ Non-combustible construction (such as concrete or metal)
 - ✓ Fire-retardant treated wood (pressure-treated, listed for exterior use, installed per listing)
 - ✓ Modified heavy timber construction (minimum 2x exterior grade tongue-and-groove roof sheathing, 4x6 roof rafters/beams, 4x8 floor joists, 4x10 or 6x8 floor beams and stair stringers, 6x6 posts/columns, 3x blocking, 4x stair treads with steel angles)
 - ✓ One-hour fire-resistive construction

Note: All other exposed surfaces must be enclosed with ignition-resistant materials such as stucco or cement-fiber material. There is no fire-resistive requirement for handrails and balusters.
- **Deck, balcony, porch, stair, and landing surfaces:** The surfaces of decks, balconies, and exterior stair treads/risers/landings must be one, or a combination, of the following:
 - ✓ Non-combustible construction (such as concrete or tile)
 - ✓ Fire-retardant treated wood (pressure-treated, listed for exterior use, installed per listing)
 - ✓ One-hour fire-resistive construction
 - ✓ Alternative decking materials passing the performance test requirements of State Fire Marshal standard 12-7A-4 and approved by the building official
- **Fences and other attachments:** Any portion of a fence or other structure less than five feet from any building shall be constructed of non-combustible material, pressure-treated exterior fire-retardant wood or meet the same fire-resistive standards as the exterior walls of the structure. The building official may allow vinyl fences when the construction conforms to guidance documents.

Water Tank Requirements

A water tank is required where a project is not within a water district or not within 1500 feet of a water district line that could be extended for hydrants. The size of the tank required for fire suppression is based on total area of the buildings to be protected:

Up to 1500 sq. ft.	=	5,000 gallons
Over 1500 sq. ft.	=	10,000 gallons

This general rule applies in most circumstances. An increase in required water supply may be necessary depending on the size of the structure.

Residential Fire Sprinkler Requirements

Residential fire sprinklers are required in conjunction with all new structures, regardless of use. Residential fire sprinklers are designed to protect occupants from fires that start inside the structure, giving them time to escape. They do prevent house fires from spreading to vegetation. They are not, however, intended to protect the home from wildfire (though there have been a few cases where radiant heat ignition of interior contents was stopped by a sprinkler). Far more people die in fires that start within dwellings than start anywhere else, including wildfires.

No recognized standard exists for fire sprinklers protecting the exterior of a home in a wildfire. Effective exterior building fire protection comes from non-combustible walls and eaves, restricted attic ventilation, class "A" roofs, fire-resistive decks, tempered dual-paned windows, fire-resistive doors – "**defensible structures**" – and from properly maintained vegetation – "**defensible space**".