

# FIRE PREVENTION ON THE PENINSULA

## RESIDENTIAL DESIGN TO MINIMIZE WILDFIRE



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# INTRODUCTION

Based on California's history of wildfires, building codes have evolved to include measures that help mitigate their impact on structures, with the primary goal of providing inhabitants enough time to safely exit in an emergency.

These regulations address factors such as the types of vegetation allowed around structures, the selection of fire-resistant finish materials, and the protection of structural elements. While these measures are essential for new construction and renovations exceeding a certain threshold, other structures, built before these regulations were established, often lack the same level of protection.

However, property owners can take additional steps to enhance the fire resilience of their buildings, even beyond what is required by code. In this presentation, we will explore some of these strategies.



1

**Architectural  
Passive-Design  
Elements to Improve  
Fire Resistance**

2

**Upgrades to  
Consider to Reduce  
Fire Risk in Existing  
Structures**

# 1 ARCHITECTURAL PASSIVE-DESIGN ELEMENTS TO IMPROVE FIRE-RESISTANCE

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- Incorporate eaveless designs, depending on allowed architectural styles.



- Use heavy-timber construction.



# 1 ARCHITECTURAL PASSIVE-DESIGN ELEMENTS TO IMPROVE FIRE-RESISTANCE

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- Use stone, stucco, fiber-cement siding, concrete, reinforced masonry, etc.



- Insulation: Use mineral wools or ceramic fiber blanket instead of fiberglass insulation. The former are less combustible and have higher temperature ratings.

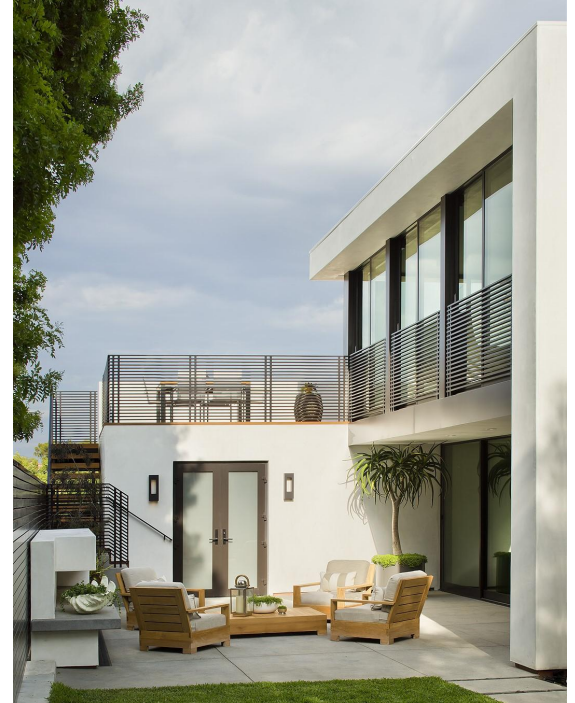


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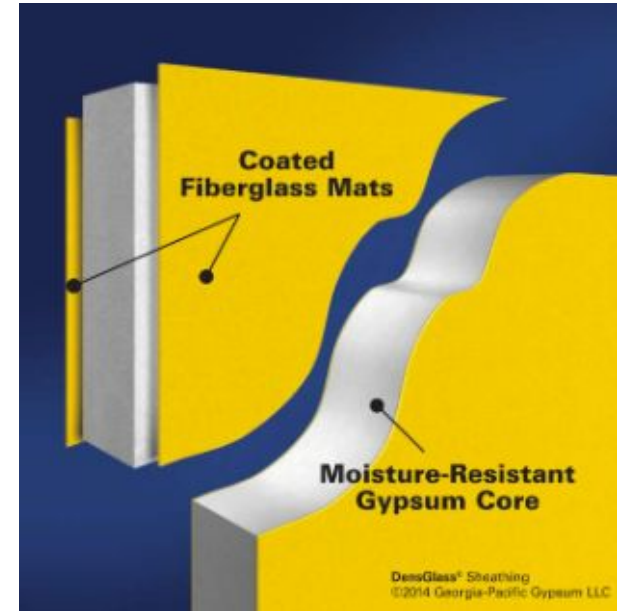
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- Vents: use noncombustible materials and locate away from adjacent buildings or vegetation.
- Use metals such as steel or aluminum for fascias, guardrails, gutters, downspouts, etc.



# 1 ARCHITECTURAL PASSIVE-DESIGN ELEMENTS TO IMPROVE FIRE-RESISTANCE

- Use metal (aluminum, steel, etc.) for exterior doors and windows. They are more fire-resistant than wood, fiberglass or vinyl.
- In addition to required glazing (Dual-glazed units), consider using laminated, tempered, Low E, or fiberglass-reinforced glass.
- Use one-hour-rated layers around main structural elements for additional protection. Type X gypsum board, DensGlass<sup>®</sup>, etc.



# 1 ARCHITECTURAL PASSIVE-DESIGN ELEMENTS TO IMPROVE FIRE-RESISTANCE

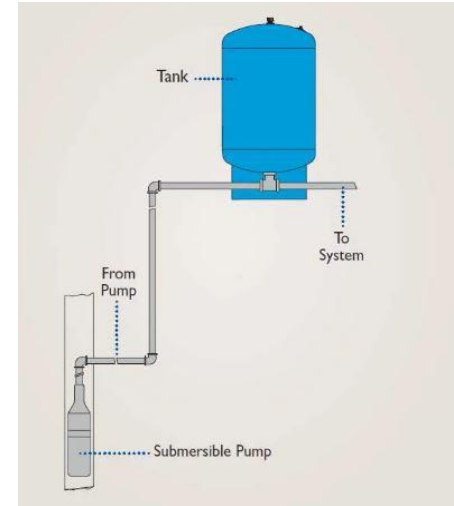
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- Incorporate a pool in the design when feasible.



- Consider pressurized water holding tanks.





## UPGRADES TO CONSIDER FOR REDUCING FIRE RISK IN EXISTING STRUCTURES

- Maintenance is **KEY**. Any combustible materials on the exterior of the building (mainly wood) must be clean and painted at all times. Embers will likely bounce off well maintained and non-porous surfaces. Rotten or damaged woods or other combustible finishes are an issue.
- Must do everything possible to protect the building envelope including all finishes and particularly vents (eave vents, attic vents, crawl space vents, etc). Make sure there is a 1/8" metal mesh on all vents.

## UPGRADES TO CONSIDER FOR REDUCING FIRE RISK IN EXISTING STRUCTURES

- Replace doors and windows. Use metal instead of wood.

- Use roll-down shades instead of drapery or surface mounted shutters or other fabrics.

- If replacing exterior finishes, add a layer of gypsum behind the new finish.

- For decks, use non-combustible materials such as TimberTech<sup>®</sup> or Trex<sup>®</sup> for all exterior decking.

## UPGRADES TO CONSIDER FOR REDUCING FIRE RISK IN EXISTING STRUCTURES

- Install fire-suppression systems (inside and outside).
- Consider pressurized water holding tanks.
- When using storage units use metal, avoid wood and vinyl.
- Avoid storing flammable materials such as paints, oils, tires, etc.
- Clear dense vegetation from around the structure. Use succulents whenever possible.



## UPGRADES TO CONSIDER FOR REDUCING FIRE RISK IN EXISTING STRUCTURES

- **Class A roofing materials** are the most effective against severe fire exposure. Clay tile, stone slate, lightweight concrete tiles, are considered Class A materials.
- **Fire-retardant foams** such as Icynene<sup>®</sup> and others are available in the market with costs ranging between \$1.50 to \$4.50 per square foot. They must be installed by certified professionals as there are concerns about trapping humidity if not properly vented. However, once embers have entered an attic space or crawl space areas, there is very little the foam can do. Any flammable material exposed (wood, plastic, paper) will catch on fire.



**THANK YOU**

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