

Ignition Resistant Construction Features

This section of the design manual specifically addresses the construction materials and finishes used to reduce the likelihood of ignition of a home from an exposure fire.

Class A Roofing

Ordinance Section K105.1 (1)

A Class A roof covering (excluding solid wood materials) shall be installed on all Residential Occupancies and a minimum Class B roof coverings shall be installed on remaining occupancies, unless otherwise permitted.

In 2002, the fire department convened a working committee to study a ban on wood shake roofs and require Class A roofing installations for all residential properties. There was representation on this committee from the Council of Neighbors and Organizations (CONO), local builders, roofing contractors, Housing and Building Association (HBA), and various regulatory agencies. City Council passed the Class A roofing ordinance prohibiting wood shake roofs from being installed on residential occupancies in this community. Since then, more than 69,000 roofs have been replaced and/or upgraded to Class A materials throughout the city.

A Class A roof is not just the roof covering itself, but is an overall assembly required to achieve a Class A rating. Roofing products are tested by submitting a roofing mock up to a testing lab where they subject the roofing assembly to a fire brand test. This test involves placing a burning fire brand upon the roof. Figure 5 shows the three sizes of fire test brands – the largest is Class A (12"x12"), Class B (6"x6"), Class C (1"x1"). During the test, the fire cannot penetrate the roof or cause the roof structure/underlayment to ignite before the brand is consumed and burns out.



Figure 5

Combustible roofing materials, to include wood, fiberglass, etc. are subject to ignition from fire embers and brands. Many homes that ignite in wildland/urban interface fires burn from the top down, this is a result of ignition of the roofing materials or the combustible roof decking.

There are many types and architectural styles of Class A roofing materials available on the market today. The variety of styles allow for flexibility in achieving the desired look of the home and complying with HOA architectural design standards while providing for fire resistive properties that are so important in the wildland/urban interface.

Typical Class A roofing products include, but are not limited to the following types:

- Asphalt Shingles
- Metal / Stone-coated Metal
- Concrete (standard weight and lightweight)
- Clay Tile
- Synthetic
- Slate
- Hybrid Composite

Exterior Cladding & Siding, Eaves and soffits

Ordinance Section K105.1 (2)

Exterior cladding, eaves and soffits shall be constructed of ignition-resistant materials approved by CSFD. Approved materials include, but are not limited to: fiber-cement board, stucco, masonry/brick, manufactured stone, and similar materials. Natural wood/cedar siding, hardboard, vinyl, and similar combustible materials are not allowed.

Exception: *Natural wood or plastic products used for fascia, trim board materials and trim accents, such as corbels, false rafter tails, faux trusses, shutters and decorative vents material are allowed when painted or as approved.*

The home's siding is the largest overall surface of the home. The materials, in which the exterior of the home are wrapped, play a significant role of preventing home to home, or vegetation to home ignition. In exposure fires, the siding of a home is subject to extremely high radiant heat, which can ultimately ignite the home. This is the same problem experienced throughout history in terms of conflagrations such as the Great London Fire and Great Chicago Fire that consumed entire cities.

Ignition resistant siding helps prevent house to house ignition, thereby slowing the fire's progress and giving the fire department an opportunity to contain a fire to the original structure of origin.

There are many different exterior cladding and siding products available to satisfy a variety of architectural styles. The most common, as shown in Figure 6 below, are natural or fabricated stone/rock, stucco, and cement board.



Figure 6

As indicated in the ordinance exception, decorative construction features such as fascia, trim board materials and trim accents, corbels, false rafter tails (Figure 7), faux trusses, and shutters are not required to be ignition resistant. These features can be constructed of wood, vinyl, composite materials, or non-combustible products. CSFD strongly encourages the use of non-combustible products when they are available. Vinyl decorative features can be used when installed on ignition resistant surface. When wood products are used they must be