



Edelweiss Maintenance Commission Firewise Architectural Guidelines



Background

Many rural mountain communities are situated in the wildland-urban interface (WUI) is any area where structures and other human development meets or intermingles with wildland vegetative fuels. Within the WUI the threat of wildfires is a serious concern. The Edelweiss community has established itself as a Firewise Community, this designation means that the community and individual home/property owners have embraced strategies to protect properties and homes in the event of a wildfire. This section provides safety recommendations concerning property development and home construction with fire protection as a key goal.

Two factors have emerged as the primary determinants of a home's ability to survive a wildfire:

- 1) quality of the defensible space, and
- 2) structural ignitability.

Together, these two factors create a concept called the Home Ignition Zone (HIZ), which includes the structure and the space immediately surrounding the structure. To protect a home from wildfire, the primary goal is to reduce or eliminate fuels and ignition sources within the HIZ.

Vegetation Management

Home Ignition Zones. There are three zones to consider when assessing an HIZ:

- **Zone 1:** 0 to 30 feet around the house;
- **Zone 2:** 30 to 70 feet; and
- **Zone 3:** 70 to 100 feet.

The goal is to limit the amount of flammable vegetation, choosing fire-resistant building materials and construction techniques, along with periodic exterior maintenance in the three home ignition zones - increases the chances your home will survive a wildfire when exposed to embers and/or a surface fire.

The size of the **Zone 1** is 0 to 30 feet, measured from the edges of the structure. Within this zone, several specific treatments are recommended:

- Plant nothing within 3 to 5 feet of the structure, particularly if the building is sided with wood, logs or other flammable materials. Decorative rock creates an attractive, easily maintained, nonflammable ground cover.
- If the house has noncombustible siding, widely spaced foundation plantings of low growing shrubs or other "fire resistant" plants are acceptable. Do not plant directly beneath windows or next to foundation vents. Be sure there are no areas of continuous grass adjacent to plantings in this area.
- Do not store firewood or other combustible materials in this area. Extend the gravel coverage under the decks. Decks within 5 feet of the ground should be enclosed with metal screening or sheeting. Do not use areas under decks for storage unless completely enclosed with metal screening.



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- Frequently prune and maintain plants in this zone to ensure vigorous growth and a low growth habit. Remove dead branches, stems and leaves. Keep grass mowed short (1–2”).
- Ideally, remove all conifer trees from **Zone 1** to reduce fire hazards. If you do keep a few conifer trees, be sure they are well spaced with at least 10 feet between their crowns and that they are pruned up at least 8 feet. Remove any branches that are within 10 feet of the roof or chimney. Remove all “ladder fuels” from beneath the tree. (Ladder fuels are tall grass, small shrubs, trees, tree limbs and other materials that allow fire to climb into the tree crown.)
- Propane tanks pose a special hazard near homes. Tanks up to 1200 gallons are best located inside the defensible space but **SHOULD BE** at least 10 feet from the structure itself. In addition, grass and bushes **SHOULD BE** cleared around the tank for 10 feet.

The next area, referred to as **Zone 2**, is the next 30 to 70 feet (or more) around your structures. It is an area of fuel reduction designed to reduce the intensity of any fire approaching your home. Follow these recommended management steps.

- Thin trees and large shrubs so there is at least 10 feet between crowns. Crown separation is measured from the outer most branch of one tree to the closest branch on the next tree. On steep slopes, allow more space between tree crowns. Remove all ladder fuels from under these remaining trees. Carefully prune trees to a height of 10 feet, but not more than one-third the live crown.
- Because **Zone 2** forms an aesthetic buffer and provides a transition between zones, it is necessary to blend the requirements from the other two zones. Thin the inner portions of **Zone 2** more heavily than the outer portions. Gradually increase tree density as you approach **Zone 3**.
- Isolated shrubs may remain, provided they are not under tree crowns. Prune and maintain these plants periodically to maintain vigorous growth. Remove dead stems from trees and shrubs annually.
- Limit the number of dead trees, or snags retained in this area. Wildlife need only one or two snags per acre. Be sure any snags left for wildlife cannot fall onto the house or block access roads or driveways.
- Mow grasses as needed through the growing season to keep them low, a maximum of 6 to 8 inches. This is extremely critical in the fall when grasses dry out and cure or in the spring after the snow is gone but before the plants green up.
- Stack firewood and woodpiles uphill or on the same elevation as the structure but at least 25 feet away. Remove flammable vegetation within 10 feet of these woodpiles. Do not stack wood against your house or on or under your deck, even in winter. Many homes have burned from an easily ignited woodpile next to the home!
- Dispose of slash, (limbs, branches, etc.) from your trees and shrubs preferably by chipping or composting vs. burning.

Zone 3 is 70 to 100’ from the home. It extends from the edge of your defensible space to your property lines. In this area, you are encouraged to manage your forests in a more traditional



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manner. Typical management objectives for areas surrounding homesites or subdivisions are: provide for recreational opportunities, aesthetics, tree health, and wind, noise, dust and visual barriers.

Construction Recommendations

Simple vs. complex forms: Simple building forms have less surface area relative to the volume of the structure. Complex building forms have much more surface area relative to volume. Simple building forms are less expensive to build, more energy efficient and easier to protect from wildfires. There is simply less exterior surface to protect. Complex forms not only increase the surface area of the structure, but also create shapes that trap the fire's heat; these areas are called heat traps. Transitions between vertical surfaces and horizontal surfaces, inside corners between two walls or abrupt intersections of different solid planes form pockets where wind velocity drops and eddy currents form. Parapet walls, solar collectors, intersecting roofs and walls, roof valleys and decks are examples of heat traps. These forms cannot be avoided, therefore their locations require much more attention to ignition resistant materials. Burning embers most often fall in these locations when wind velocity decreases. Roofs are very susceptible to embers in a wind-driven fire. A simple roof form such as a hip or straight gable is best. Complicated roofs with intersecting planes and valleys form dead air pockets and areas where currents eddy. The use of complicated forms further highlights the importance of a truly ignition-resistant roof.

"Firewise building materials" are commonly used and readily available. The key elements to consider when building a Firewise home are:

- Roof Elements
- Vents and Openings
- Windows
- Walls
- Attachments – Decks, Porches, Fences
- Other Structures

Roof: The most important consideration is to ensure the building has a nonflammable roof. Ensure that your home is constructed using nonflammable roofing materials and roof assembly. Good choices for roofing material include asphalt, fiber-cement, tile, concrete and metal. Simpler roofs with steep pitches limit the accumulation of needles and dead leaves that can be an "ember trap" in a wildfire.

Walls: The siding used on homes will make a difference in how well the home can resist ignition from a wildfire. Nonflammable choices include stucco, brick and fiber-cement. Large-timber construction is also fire-resistant as it takes a long time for large timbers to ignite and burn. Wood siding is vulnerable to ignition, more so if it does not have an interlocking lap, which means there is space between the shingles and the studs where embers could penetrate.



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Vents and Openings: Openings in the home need special consideration. Chimney flues, attic vents on the roof or under the eaves, crawl space vents, even doggie doors can provide an opening for embers or flames to enter the interior of the home during a wildfire. These areas should be screened with metal mesh of no more than 1/4 –inch (1/8-inch is preferred, but could become clogged if painted). Doggie doors, garage doors, and entry doors should have seals that prevent ember entry when closed properly.

Attachments – Decks, Porches and Fences: When designing or installing decks, porches and fences, remember that if it is attached to the house, it is part of the house – or part of the fuel from a wildfire’s point of view. Decks in particular pose special hazards in a wildfire. If they overhang a slope, they can heat from beneath and eventually ignite from radiant or convective heat. This is exacerbated by any accumulation of flammables – stored items or leaf litter – under or around the deck. The flat deck surface can load up with embers flying from up to a mile away. Consider using nonflammable material or material that will not carry fire to the house. You can add special protection in the area where the deck meets the house to prevent the home igniting from the deck by using metal flashing. Wooden fences are prone to ignition as they extend into vegetated areas and often have accumulated debris or leaf litter against them. If flammable fence material is being used, a simple fence fix is to ensure that the attachment to the house is made of a nonflammable material.

Other Structures: Other structures attached to the house or within the Home Ignition Zone should be designed to minimize ignition. These might include garages, storage-sheds, work-sheds and greenhouses. Ensure that these structures are built from fire-resistant materials and will employ the same care around the property as for the primary structure.

Driveway Standards: During a wildfire, firefighters will not drive their engine into your driveway if they feel it is unsafe for them to do so. Clear and thin vegetation from the roadway both horizontally and vertically.

Width of driveway: An all-weather surface should be at least 12 ft. wide, 20 ft. if longer than 150 feet.

Vertical clearance: Engines and their equipment are tall. Prune tree branches to provide at least 14 ft. of clearance.

Address Signs. During fire and medical emergencies, it is critical that first responders can quickly determine your home/property location to facilitate a rapid response. It is recommended that all home/property owners place a reflective address sign that is easily visible from the main road to their property. Signs can be purchased from Okanogan Fire District 6 (see: http://www.okanogancountyfd6.com/Reflective_address_signs.pdf).

Key Resources:

Homeowners are encouraged to engage Okanogan County Conservation District to provide a free property assessment and key advice on best building practices. Kirsten Cook is the current



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community outreach director and can work with home owners and builders to provide a comprehensive Firewise assessment of your property (<https://www.okanogancd.org/>).

Additional Web-based Resources:

<https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Preparing-homes-for-wildfire>

<https://www.dnr.wa.gov/firewise>

<https://www.fs.fed.us/fs-tags/fire-wise>

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