Appendix J

Fire Protection Plan

VENTANA DUNCAN CANYON PA6
FIRE PROTECTION PLAN
APNS: 226-075-45 and 226-075-46
Fontana, California

April 23, 2021

Owner:
Frontier Enterprises
2151 E, Convention Way, Suite 114
Ontario, CA 91764

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FIRE PROTECTION PLAN

Table of Contents

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1.0 GENERAL DESCRIPTION

The proposed Ventana Duncan Canyon PA6 project hereinafter referred to as PA6 is located northwest of the intersection of Duncan Canyon Road and Citrus Avenue in the city of Fontana which is in western San Bernardino County (see Photo #1). The project is located within a declared Very High Fire Hazard Severity Zone. Wildland and exotic fuels are present in all directions of the project. Development of homes is currently underway to the east along the east side of Citrus Avenue which is beneficial from a fire protection standpoint. The Fontana Fire Protection District (FFPD) is the fire authority for the project.

↑ **Photo #1 – Aerial Photo of the Project Area Showing Nearby Undeveloped Land and Interstate 15. The yellow arrow points to the PA6 Project.**

The proposed project consists of the development of 257 apartments located within six buildings on approximately 11 acres. The buildings will be approximately three stories in height. One will have a mezzanine and 55 ft clock tower. The apartments will range in size from studios (600 sf) to 3-bedroom

(1300+ sf) units. Please refer to the attached Fire Protection Plan Map Exhibit for the illustration of property lines, proposed structure locations, and related Vegetation Management.

PA6 is a medium density urban area and the first phase in the development of a master planned community. Illustration #1 below is the current Master Plan which will include future commercial as well as high density urban uses.

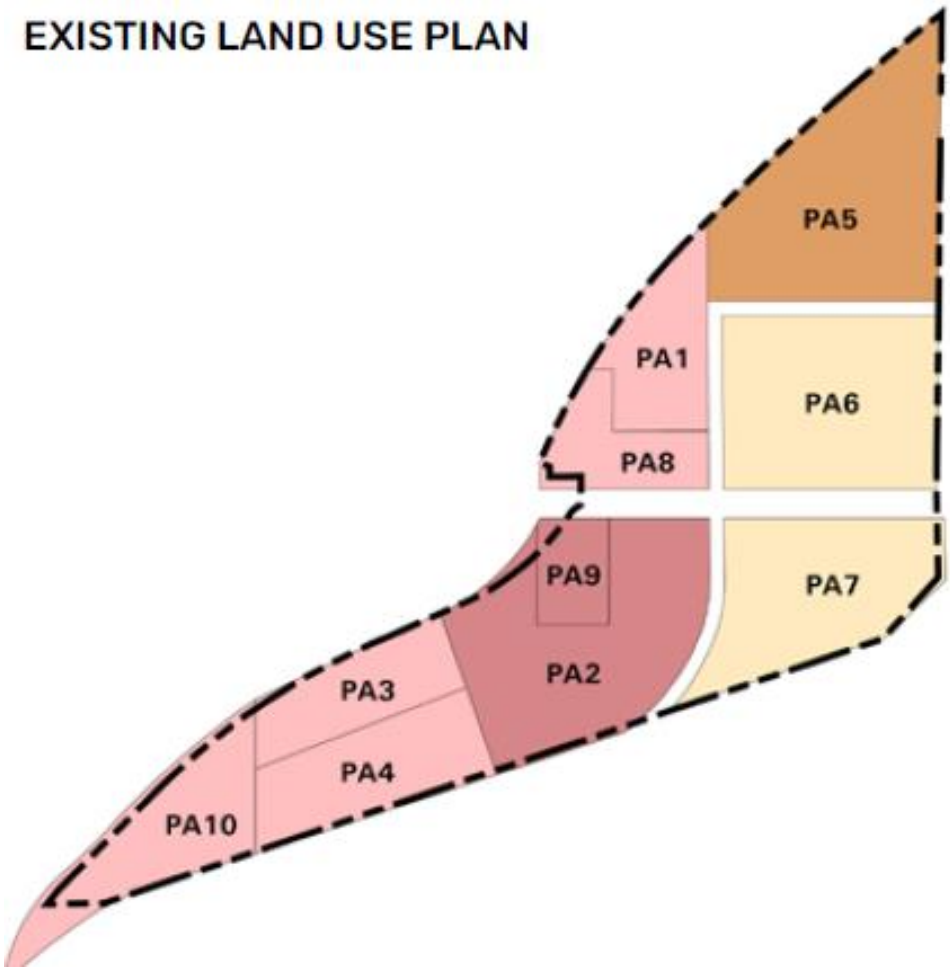


Illustration #1 – Future Land Use. PA6 is the first area being developed. Note the area to the west of the planning areas is Interstate 15, a major 6 lane freeway. The project owner owns all the adjacent Planning Areas which is beneficial.

A Fire Protection Plan (FPP) must be submitted to and approved by the FFPD. The approved FPP shall be recorded with the San Bernardino County recorder's office. The FPP assesses the overall (on-site and off-site) wildland fire hazards and risks that may threaten life and property associated with the proposed Ventana Duncan Canyon PA6 project. In addition, the FPP establishes both short-term and long-term Vegetation Management actions required to minimize any projected wildland fire hazards and assigns annual maintenance responsibilities for each of the required Vegetation Management actions.

1.1 General Information

Owner:	Frontier Enterprises 2151 E. Convention Center Way, Suite 114 Ontario, CA 91765
Approving Departments:	
Fire Authority:	Fontana Fire Protection District
Water & Sewer:	West Valley Water District

The purpose of this FPP is to provide Vegetation Management Zone treatment and construction feature direction for developers, architects, builders, the FFPD, San Bernardino County officials, and the owners to use in making the structures in the proposed project relatively safe from future wildfires. Appendices attached to this FPP that provide additional information shall be considered part of this FPP.

Requirements in this FPP are based upon current requirements listed in the International Wildland-Urban Interface Code, 2018 edition, California Code of Regulations Title 14, section 1280 and Title 24, Part 9; 2019 California Fire Code including Appendices to Chapters 1 & 4 and Appendices B, F & H and Local Amendments; Chapter 7A- 2019 California Building Code; California Government Code, sections 51175 through 51189; California Public Resources Codes sections 4201 through 4204; 2018 2019 California Residential Code, Title 24, Part 2.5; National Fire Protection Association Standards (NFPA) 13-D, 2019 Edition; Bernardino County's Current Fire Protection Ordinance; Standards A-1, A-2, A-3, B-2, F-3 and G-2 and the San Bernardino County Fire Safety Overlay District FS-3 Requirements.

2.0 WILDLAND FIRE HAZARD AND RISK ASSESSMENT

In assessing the wildland fire hazard, it is necessary to consider plant succession and the climax plant communities. The vegetation described below is the most likely climax plant community that will exist without human intervention and the one utilized for planning purposes.

2.1 On and Off-Site Fire Hazard and Risk Assessment

The proposed PA6 Project is located on nearly level terrain that was previously used for farming. Within PA6, all the site will be graded removing all wildland and exotic fuels. The vegetation that is to remain on adjacent land consists of fiddleneck, mustard, Eucalyptus trees and other native and exotic grasses (see Photo #2). For fire behavior planning purposes the mature vegetation is best described as a combined Fuel Model of gr4 (moderate load, dry climate grass with 1-hour fuels of 0.25 tons/acre and Fuel Model 1 (short grass, with 1-hour fuels of 0.74 tons/acre All the native plants are adapted to intense wildfires needed for species regeneration.

Photo #2 – Typical vegetation looking northwest toward Interstate 15. The vegetation is a typically light except for the Eucalyptus Trees.

There is a history of severe wildfire in the area. The most recent large fire was the 2003 Grand Prix Fire which burned over 59,000 acres including much of the project area. The area has re-vegetated and as is typical of herbaceous plant communities, with a high percentage of the plants containing an abundance of dead material. This is because of the local Mediterranean climate where warm wet winters promote abundant new growth, and long, hot, and very dry summer seasons frequently occur. Occasionally, multi-year droughts cause significant parts of these plants to die back.

The major wildland fire threat is from the north and south of the project. This threat comes from the adjacent undeveloped land and its associated fuels, history of significant fires, severe fire weather conditions that is north of the project. Fire history and adjacent vegetation that borders the project along the north and south sides of the project can be seen in Photos #3 - 6.

Photo #3 – Most recent major wildland fire, the 2003 Grand Prix Fire shown in red burned nearly all the project. A burned tree stump was identified during an inspection by Firewise 2000, LLC validating the map.

Photo #4 – Looking north across Duncan Canyon Road onto the property. Most of the fuels are knee high grasses including fiddleneck, a common flowering plant found throughout much of California.

There are currently homes under construction to the east of the project. These homes will have their own firewise irrigated landscaping and maintained vegetation management zones. To the west will be a future area to be developed by the project owner and Interstate 15. To the south across Duncan

Canyon Road is undeveloped land that is also owned by the PA6 project owners. North of the project is additional land owned by the project owners that is currently undeveloped.

Photo #5 - Looking Northeast across Citrus Avenue. Note the adjacent land being developed as single family homes by Lennar Homes.

Photo # 6 – Looking South along Citrus Avenue and the eastern project boundary. Note all the Eucalyptus trees will be removed.

There is an historic pattern of significant wildland fires burning from the south and southwest. Every 5-10 years, a 'rare event' hot dry, southwest to west wind of 30 MPH will occur. This moderately strong, dry wind condition usually occurs in the late afternoon or early evenings on very hot days, especially during the summer (June through September) months.

The most critical weather pattern to the project area is a hot, dry offshore wind, typically called a Santa Ana. Such wind conditions are usually associated with strong (>75 MPH), hot, dry winds with very low (<15%) relative humidity. The region around the project experiences some of the strongest winds found at the valley level in southern California. Santa Ana winds originate over the dry desert land and can occur anytime of the year; however, they generally occur in the late fall (September through November). This is also when non-irrigated vegetation is at its lowest moisture content.

The undeveloped land in proximity to the project can contribute to a damaging wildland fire event. Any wind driven wildfire burning under a northeastern (*Santa Ana*) wind pattern through areas to the north creates a wildland fire hazard to the proposed apartments. Wildland fires starting north of the proposed residences on a typical fire day with a southwest wind will burn away from the proposed structures and will generally not be a significant wildland fire hazard.

All structures in the area are threatened through wind-blown embers. Embers have been known to travel over a mile during high winds and start new fires in vegetation, combustible construction, or in other flammable fuels. For the PA6 project this is critical as north of Interstate 15 is the San Bernardino National Forest. The area contains heavy chaparral which is known to produce heavy showers of embers. The installation of 'ignition resistant construction' will mitigate against the wind-blown ember threat (see Section 5.5 for a discussion of these features). The goal of this FPP is to prevent the loss of lives, buildings, and personal property when wildfires occur with the challenge of allowing the construction of a well-planned project site. This goal is accomplished by requiring each apartment building to be built with ignition resistant materials and properly designed and maintained vegetation management treatments that safely mitigate the fire hazard to insignificant levels.

From a design standpoint, the entire area to the east of the apartment buildings and the rental/leasing office is parking lot creating a significant wildland fire barrier.

2.2 Predicting Wildland Fire Behavior

The BEHAVE 5.0.5 Fire Behavior Prediction and Fuel Modeling System developed by USDA–Forest Service research scientists Patricia L. Andrews and Collin D. Bevins at the Intermountain Forest Fire Laboratory, Missoula, Montana, is one of the best systematic methods for predicting wildland fire behavior. The BEHAVE fire behavior computer modeling system is utilized by wildland fire experts and managers nationwide. It is used for projecting fire behavior, assisting current wildfire incidents and for post incident analysis. The program projects the expected fire intensity, rate-of-spread and flame lengths with a reasonable degree of certainty for use in Fire Protection Planning purposes. ***FIRE*****WISE 2000, LLC** used the BEHAVE 5.0.5 Fire Behavior Prediction Model for the PA6 Project to make the fire behavior assessments discussed below. Note, no calculations are presented for on-site fuels as these will be entire removed during the grading process.

2.3 Wildland Fire Behavior Calculations for the Off-Site Hazardous Vegetative Fuels

Wildland fire behavior calculations have been projected for the hazardous vegetative fuels for the undeveloped areas in proximity to the proposed project. These projections are based on scenarios that are 'worst case' San Bernardino County fire weather assumptions in the vicinty of the project area. Historical weather data was obtained from the RAWS (Remote Automatic Weather Station) network stations located closest to the project area. The closest RAWS to the project is the Devore RAWS located at Latitude 34° 13' 16" and Longitude 117° 24' 16" at an altitude of 2057 feet. The Western Region Climate Center located in Reno, NV houses all historic weather data.

The four tables which follow are the projected fire behavior under worst case fuel and weather conditons and the expected fire behavior following the herein described fuel treatments.

The two worst case scenarios depicted below in Tables 2.3.1 and 2.3.3. display the expected Rate of Fire Spread (expressed in feet per minute), Fireline Intensity (expressed in BTU's/feet/second) and Flame Length (expressed in feet). The tables also include the calculation inputs used in the BEHAVE program which were obtained from project site observations and fuel moisture levels typically observed during the local fire season. The tables also show the change in Rate of Fire Spread, Fireline Intensity, and Flame Length following the completion of the required Vegetation Management work which is characterized by a Combined Fuel Model [Tl6– Moderate Load Broadleaf Litter 50% and Gr1 – Short Sparse Dry Climate Grass 50%].

Table 2.3.1 ***Fire Scenario # 1 - Fire Approaching from the North or Northeast*** ***(Late Fire Season With 80 MPH North, Northeast and East Wind Conditions)***	
Fire Behavior Calculation Input Data • **5 percent slope** • **80 mph 20-foot wind speed** • **45º wind direction from north** • **180º aspect from the north**	**Anticipated Fuel Moistures** *** 1-Hour Fine Fuel Moisture of……...2%** *** 10-Hour Fuel Moisture of……..…3%** *** 100-Hour Fuel Moisture of.....……...…..5%** *** Live Herbaceous Fuel Moisture of……..30%** *** Live Woody Fuel Moisture of…….....50%**
Expected Fire Behavior **Combined Fuel Model [gr4 – Moderate Load, Dry Climate Grass 95% and Fuel Model 1 – short grass 5%]**	
Rate of Spread - 1,938.2 ft/min	
Fireline Intensity - 18,339 Btu/ft/s	
Flame Length - 41.1 feet	
Expected Fire Behavior in Treated Fuels **Combined Fuel Model - [tl6 – Moderate Load Broadleaf Litter 50% and gr1 – Short Sparse Dry Climate Grass 50%]**	
Rate of Spread - 72.4 ft/min	
Fireline Intensity - 906 Btu/ft/s	
Flame Length - 10.3 feet	

Table 2.3.2 ***Fire Scenario # 2 - Fire Approaching from the South or Southwest*** ***(Late Fire Season With 30 MPH South, Southwest and West Wind Conditions)***	
Fire Behavior Calculation Input Data • **5 percent slope** • **30 mph 20-foot wind speed** • **225º wind direction from the north** • **180º aspect from the north**	**Anticipated Fuel Moistures** *** 1-Hour Fine Fuel Moisture of..……...2%** *** 10-Hour Fuel Moisture of……..…3%** *** 100-Hour Fuel Moisture of.....……..…..5%** *** Live Herbaceous Fuel Moisture of…...30%** *** Live Woody Fuel Moisture of…….....60%**
Expected Fire Behavior **Combined Fuel Model [Gr4 – Moderate load, dry climate grass 95% and Sh1 – Low Load Dry Climate Shrub 5%]**	
Rate of Spread - 634.7 ft/min	
Fireline Intensity - 5,891 Btu/ft/s	
Flame Length - 24.4 feet	
Expected Fire Behavior in Treated Fuels **Combined Fuel Model - [tl6 – Moderate Load Broadleaf Litter 50% and gr1 – Short Sparse Dry Climate Grass 50%]**	
Rate of Spread - 34 ft/min	
Fireline Intensity - 215 Btu/ft/s	
Flame Length - 5.3 feet	

Table 2.3.3 ***Fire Scenario # 1 - Fire Approaching from the East or Southeast*** ***(Late Fire Season With 60 MPH East or Southeast Wind Conditions)***	
Fire Behavior Calculation Input Data • **5 percent slope** • **60 mph 20-foot wind speed** • **90º wind direction from north** • **180º aspect from the north**	**Anticipated Fuel Moistures** *** 1-Hour Fine Fuel Moisture of……...2%** *** 10-Hour Fuel Moisture of……..…3%** *** 100-Hour Fuel Moisture of.....……...…..5%** *** Live Herbaceous Fuel Moisture of……..30%** *** Live Woody Fuel Moisture of…….....50%**
Expected Fire Behavior **Combined Fuel Model [gr4 – Moderate Load, Dry Climate Grass 95% and Fuel Model 1 – short grass 5%]**	
Rate of Spread - 1,697.8 ft/min	
Fireline Intensity - 16,056 Btu/ft/s	
Flame Length - 38.7 feet	
Expected Fire Behavior in Treated Fuels **Combined Fuel Model - [tl6 – Moderate Load Broadleaf Litter 50% and gr1 – Short Sparse Dry Climate Grass 50%]**	
Rate of Spread - 54.0 ft/min	
Fireline Intensity - 591 Btu/ft/s	
Flame Length - 8.5 feet	

Table 2.3.4 ***Fire Scenario # 2 - Fire Approaching from the West or Northwest*** ***(Late Fire Season With 30 MPH South, Southwest and West Wind Conditions)***	
Fire Behavior Calculation Input Data • **5 percent slope** • **30 mph 20-foot wind speed** • **270º wind direction from the north** • **180º aspect from the north**	**Anticipated Fuel Moistures** *** 1-Hour Fine Fuel Moisture of..……...2%** *** 10-Hour Fuel Moisture of……..…3%** *** 100-Hour Fuel Moisture of.....……...…..5%** *** Live Herbaceous Fuel Moisture of…...30%** *** Live Woody Fuel Moisture of…….....60%**
Expected Fire Behavior **Combined Fuel Model [Gr4 – Moderate load, dry climate grass 95% and Sh1 – Low Load Dry Climate Shrub 5%]**	
Rate of Spread - 634.3 ft/min	
Fireline Intensity - 5,887 Btu/ft/s	
Flame Length - 24.4 feet	
Expected Fire Behavior in Treated Fuels **Combined Fuel Model - [tl6 – Moderate Load Broadleaf Litter 50% and gr1 – Short Sparse Dry Climate Grass 50%]**	
Rate of Spread - 34 ft/min	
Fireline Intensity - 215 Btu/ft/s	
Flame Length - 5.3 feet	

3.0 ASSESSING STRUCTURE IGINITIONS IN THE WILDLAND/URBAN INTERFACE

Structure ignitions from wildland wildfires basically come from three sources of heat: convective firebrands (flying embers), direct flame impingement, and radiant heat. The Behave Plus Fire Behavior Computer Modeling Program does not address wind blown embers or firebrands. However, even though ignition resistant exterior building materials will be used in the construction of the PA6 homes (see APPENDIX 'E' for the description of 'ignition resistive construction'), wind driven embers and radiant heat issues are a major concern and addressed in this FPP.

3.1 Firebrands

Firebrands are pieces of burning materials that detach from a burning fuel due to the strong convection drafts in the flaming zone. Firebrands may also be referred to as embers. Firebrands can be carried a long distance (one mile or more) by fire drafts and strong winds. Severe wildland/urban interface fires can produce heavy showers of firebrands. The chance of these firebrands igniting a structure will depend on the size and number of the firebrands, how long each ember burns after contact, and the type of building materials, building design, and construction features of the structure. Firebrands landing on combustible roofing and decks are common sources for structure ignition. They can also enter a structure through unscreened vents, decks and chimneys, unprotected skylights, and overhangs.

Even with non-combustible roofing, firebrands landing on leaves, needles, and other combustibles located on a roof (due to lack of maintenance) can cause structure ignition. Any open windows, doors or other types of unscreened openings are sources for embers to enter a structure during a wildland fire. If the herein maintenance issues are addressed on a regular basis, firebrands should not be a concern for the PA6 Project as each home will be constructed with ignition resistant building materials.

3.2 Radiant Heat/Direct Flame Impingement

Radiation and convection involve the transfer of heat directly from the flames. Unlike radiation heat transfer, convection requires that the flames or heat column contact the structure. An ignition from radiation (given an exposed flammable surface) heat transfer depends on two aspects of the flame: 1) the radiant heat flux to a combustible surface and, 2) the duration (length of time) of the radiant flux. The radiant heat flux depends on the flame zone size, flame-structure distance, and how much the combustible material of the structure is exposed to the flame. While the flame from a wildfire may approach 1,800 degrees Fahrenheit, it is the duration of heat that is more critical. For example, a blow torch flame typically approaches 2,100 degrees Fahrenheit, yet a person can easily pass his/her hand through the flame. Heat duration only becomes critical to a building with a wood exterior surface if the heat is allowed to remain for 30-90 seconds.

Research scientist Jack Cohen of the United States Forest Service has found that a home's characteristics--its exterior materials and design in relation to the immediate area around a home within 100 feet-- principally determine the home ignition potential. He calls the home and its immediate surroundings the "home ignition zone". In a study of ignition of wood wallboard, tests by a USDA Forest Service research team described in the Proceedings, 1st International Fire and Materials Conference showed that flame impingement for sufficient length of time (approximately 1 min.) ignites a typical hardboard siding material. Since the requirement in this FPP is for a non-combustible wall or 1-hour fire resistive construction for the exterior portion of a structure, the likelihood of structure's exterior reaching ignition temperature is very unlikely due to either radiant or convective heat.

Fire agencies consider vegetation management a principal approach to wildland fire hazard reduction. Whenever the flame length, 1-2 minutes in duration or more, is equal to or more than the separation of combustible vegetation from a combustible structure, there is a high probability of structure ignition. Contact with a fire's convection heat column also may cause ignition but the temperature of the column's gases generally is not hot enough or long enough in duration to sustain the ignition of the structure.

Comparing the expected wildland fire behavior projections in each of the scenarios in Section 2.3 against the required fuel modification zones outlined in Section 5.0, demonstrates substantial reductions in the expected flame length and fireline intensity.

By requiring the structures exposed to the threat of wildfire to incorporate the following guidelines, those structures will be provided with the most effective treatment for minimizing losses from flame impingement and associated radiant heat intensities.

- Each structure is constructed of ignition resistant building materials.
- The area surrounding each structure contains an irrigated zone (defensible space) and a thinning zone (low fuel volume buffer strip) between the irrigated zone and untreated fuels.

The property owner shall be required to maintain their property to Zone 1 and 2 Vegetation Management standards and shall keep the roofs and rain gutters free of leaves, needles and other combustible debris. All firewood and other combustible materials must be properly stored away from the structures so that burning embers falling on or near the structures have no suitable host. Each resident shall be responsible for maintaining their apartment including plant material on decks and for keeping all doors and windows tightly closed whenever a wildland fire is reported in the vicinity.

3.3 Fire Resistant Plant Palette

Wildland fire research has shown that some types of plants, including many natives, are more fire resistant than others. These low fuel volume, non-oily, non-resinous plants are commonly refered to as 'fire resistant'. This term comes with the proviso that each year these plants are pruned, all dead wood is removed and all grasses or other plant material are removed from beneath the circumference of their canopies. Some native species are not considered 'undesirable' from a wildfire risk management perspective provided they are properly maintained year round (refer to APPENDIX 'B' for a list of prohibited plant species).

4.0 FIRE DEPARTMENT RESPONSE TIMES

The PA6 Project is within the response area of the Fontana Fire Protection District. The closest engine to the proposed PA6 Project is FFPD Fire Station #79 located at 5075 Coyote Canyon Rd., approximately 0.9 miles and approximately 3 minutes travel time from the project. The second closest engine is San Bernardino County Fire Station #78 located at 7110 Citrus Ave, Fontana, CA, approximately 3 miles and 8 minutes travel time from the planned project. Additional agencies such as Rialto Fire, CAL FIRE, U. S. Forest Service and other nearby city fire departments would also respond equipment under mutual aid agreements but most likely arrive after FFPD engines were on-scene.

There is no assurance that the closest fire station, the #79 Engine Company, will be in its station when a wildfire threatens the PA6 Project from an ignition in the adjacent wildland. Engines may respond

from other stations located further away or from other incidents. On high/extreme fire danger days there often may be multiple fire starts and engine companies may be already deployed on other incidents. This is why ***FIRE*****WISE 2000, LLC** planned projects use *'defensible space'*, ignition resistant building features, and key fuel treatment strategies to enable residents to substantially increase their ability to survive a wildfire on their own or until such time as firefighting equipment arrives and/or residents can be safely evacuated.

5.0 VEGETATION MANAGEMENT ZONE DESCRIPTIONS & REQUIRED TREATMENTS

The owners master plan calls for the entire Ventana Development to have a tuscan themed landscape to be managed by a single entity. As a result, from a fire perspective, there is less likelyhood of landscape maintenance neglect issues that are common to single family home developments. With that in mind, **Firewise 2000, LLC** believes that the projects landscaping will be absent the problems that frequent single family home developments where the HOA and the local fire authority have to enforce fuel treatments.

The property owner shall be responsible for maintaining Vegetation Management Zones within the project. In the event the development is repossessed, the unit/agency holding title to the property will be responsible for the maintenance. Below are the descriptions and required treatments for the Vegetation Management Zones. All distances in this report are measured horizontally. These distances are depicted on the attached Fire Protection Plan Exhibit (See Section 8.0). Vegetation management zones provide 100 or more feet of treated area, depending on the structures location, which should be sufficient to mitigate for direct flame impingment and the radiant heat effects of a worst case wildland fire with 41.1 foot flame lengths from the northeast and 24.4 foot flame lengths on the south.

Due to the lack of onsite space behind each building for 100 feet of fuel treatment (only 30 to 50+ feet from a building to the property line) the entire PA6 shall consist of the Irrigated Zone 1 landscaping described below. This will also improve resident and emergency responder access during a wildfire event as irrigated landscaping will be located along all fire access roads. See Fire Protection Plan Exhibit for details.

5.1 Vegetation Management Zone 1 (Owner Maintained) - *(Shown as*  *on the Fire Protection Plan Exhibit)*

Defined, Vegetation Management Zone 1 is the area commonly called the *defensible space zone* and shall be free of all combustible construction materials. It is an irrigated landscaped zone within 50 feet of each building. It is measured from the outer edge of each building or from the most distal point of a combustible projection, an attached accessory structure, or an accessory structure within 10 feet of a habitable structure and extends to the project boundary. It provides the best protection against the high radiant heat produced by a wildfire. It also generally provides an open area in which fire suppression forces can safely operate during wildfire events. This zone is typically located on a level or near level-graded area around each structure.

Required Landscaping

- Plants in this zone need to be fire resistant and shall not include any pyrophytes that are high in oils and resins such as most pines, eucalyptus, cedar, cypress or juniper species. Thick, succulent or leathery leaf species with high moisture content are the most 'fire resistant'. For

proper plant selection refer to APPENDIX 'C' for a list of acceptable and desirable plants and APPENDIX 'B' for the Prohibited Plant list.

- Zone 1 shall be cleared of all fire prone and undesirable plant species (see APPENDIX 'B').
- Xeriscape™ designs, where compatible and hardscape such as concrete, rock, pavers, and similar non-combustible features are encouraged to break up fuel continuity within Zone 1.
- Focus should be on approved ground covers and lawns that shall be maintained at a height that does not exceed 4 inches.
- Combustible ground covers (mulch, bark, wood chips, etc.) of more than 3 inches are not permitted within this zone.
- Shrubs should be low-growing and well-irrigated and should be selected from the plant list in APPENDIX 'C'.
- An automatic irrigation system is required and shall be periodically maintained to insure its effective operation.
- The watering schedule shall be set to maintain plant moisture content, especially during the dry summer and fall months.
- All vines shall be limited to their growing on masonry walls or metal shade structures.

Exception: The project developers want the landscape to reflect a Tuscan theme. Such landscape feature sumptuous gardens often built around stone structures with pergolas and arbors. These landscapes typically include: maples, birch, ash, linden and oaks for broadleaves and cedars, redwoods, pines and cypress. Do do their high oil content and growing habits, cypress, pines and cedars are commonly found on prohibited plant lists in high fire hazard zones throughout California. **Firewise 2000, LLC** believes with the maintenance prescribed below in additional to the practices listed above, that tree species as Italian Stone Pine (Pinus Pinea) can be safely grown by requiring the following:

- Pinus Pinea (Italian Stone Pine) shall be located 30 feet or more from any building.

Photo #7 – An Example of an Italian Stone Pine tree canopy maintained for fire safety. Note in a thinned canopy the ability to see through it in several areas. This open canopy absent of dead needles and debris reduces the chance for embers to become trapped and start a fire.

Required Maintenance

- The project shall be maintained year round by the owner(s) within their property boundary as required by this FPP and FFPD.
- Irrigation systems shall be checked bi-weekly to insure proper working order.
- Any dead or dying plant material shall be remove and replaced monthly. Shrubs and trees are to be bi-annually maintained free of dead material. Do not allow pine needles or leaves to accumulate near any structure as they can produce flame lengths of over 40 inches.
- Trees shall be maintained such that the branches and limbs closest to the ground are pruned to a height from the ground that is equal to 1/3 the overall height of the tree or six feet from the ground, whichever is higher.
- Roofs and gutters shall be cleared of any accumulated leaves, limbs, and other combustible material in late summer prior to the onset of Santa Ana winds.
- All trees must be maintained to the current ANSI A300 standards [*Tree, Shrub, and Other Woody Plant Maintenance —Standard Practices (Pruning)]* see (https://wwv.isa-arbor.com/store/product/124/).
- Maintained height of shrubs located beneath trees shall not exceed 36 inches in height to prevent ladder fuels.
- Trees are to be maintained such that the mature canopies will be at least 5 feet above the roof of any structure.

Additional Maintenace requirement for Italian Stone Pine and Podocarpus:

- Tree crowns shall be laced or thinned as shown in photo #7 above to help reduce the likelyhood of embers collecting within tree canopies and allowing for many to pass through.
- All dead material shall be removed periodically. It is especially important to remove all deadwood including leaves in early summer and again in early September prior to the onset of Santa Ana wind conditions when the typical fire season peaks.

5.2 Temporary Offsite Vegetation Management Zone 2 (Owner Maintained) - *(Shown as on the Fire Protection Plan Exhibit)*

Defined

Zone 2 is a transition area between the strict requirements of Zone 1 and the undisturbed native and exotic vegetation designed to maintain a reasonably open character in this area. The zone is temporary in that the adjoining property is planned to be developed in a future phase and will result in additional Zone 1 in place of this temporary zone. Zone 2 is typically a non-irrigated thinning zone 50 - 100 feet in width depending on location beginning at the outer edge of Zone 1. Thinning zones are utilized to reduce the fuel load of a wildland area adjacent to buildings thereby reducing both radiant and convective heat of wildland fires. The intent is to achieve and maintain an overall 50 percent reduction of the canopy cover spacing and a 50 percent reduction of the original fuel loading by reducing the fuel in each remaining shrub or tree without substantially decreasing the canopy cover or the removal of tree holding root systems. Possibly the simplist method to maintain the grasslands to Zone 2 criteria will be to mow it as prescribed below under maintenance.

Required Landscaping

- Thinning the native vegetation to a point where 50% open space is created.
- Removal of all dead, woody debris and exotic flammable vegetation including designated prohibited plants (Appendix B).
- If native shrub and chaparral are located within a tree's drip line, the lowest branch of the tree shall be a distance from the ground of at least three times the height of the shrub/chaparral or 10 feet, whichever is greater.
- Allowances for the needs of protected species and habitats will be considered in this zone.
- No combustible construction or materials are allowed in Zone 2.

Required Maintenance

- Annually maintain all tree crowns to keep a separation of ten feet between the ground fuels (shrubs and ground covers) and the lower limbs. All trees must be maintained to the current ANSI A300 standards [*Tree, Shrub, and Other Woody Plant Maintenance —Standard Practices (Pruning)]* see https://wwv.isa-arbor.com/store/product/124.
- Annually remove any undesirable exotic vegetation (see APPENDIX 'B') to maintain a 50% thinning from the original vegetation cover.
- Native annual and perennial grasses will be allowed to grow and produce seed during the winter and spring. As grasses begin to cure (dry out), they will be cut to 4 inches or less in height and maintained at that height until the following growing season.
- Bi-annually remove all dead and dying vegetation and highly flammable exotic species per APPENDIX 'B'.

5.3 Construction Standards

All structures within the PA6 Project shall meet all wildland/interface standards to the satisfaction of the FFPD and be designed and constructed with ignition resistant construction requirements. All

construction and ignition resistant requirements shall meet the 2018 International Wildland-Urban Interface Code (IWUIC), amendments, and related ordinances; the 2019 California Fire Code; 2019 California Building Code (CBC) (including Chapter 7A); 2019 California Residential Code and CRC Section 327; NFPA 13-R 2019 Edition; San Bernardino County's Current Ordinance; and San Bernardino County Fire Safety Overlay District FS-3 Requirements. For a summary description of ignition resistant construction requirements under CBC Chapter 7A for wildland urban interface zones as of the date of this report see APPENDIX 'E'.
Any future additional structures (such as additions, etc.) will require evaluation; will need to be designed and constructed with the current Ignition Resistant Construction requirements in place at the time of approval; and comply with the additional construction requirements outlined in APPENDIX 'E'. Fire officials may require additional mitigation on a case by case basis.

All non-habitable accessory structures such as decks, balconies, patios, covers, gazebos and fences shall be built from non-combustible, ignition resistant, or heavy timber materials. The owners are not restricted from having concrete or stone patios and walkways or swimming pools within the Vegetation Management Zones in compliance with other codes. Refer to APPENDIX 'D' for photos and descriptions of non-combustible decks, patio covers, and railings for these non-habitable accessory structures.

Construction or building permits shall not be issued until the fire code official inspects and approves required fire apparatus access and the water supply for the construction site. The issuance of building permits regarding these requirements shall be in accordance with FFPD Standards A-1 for fire apparatus access and W-4 regarding temporary water supply systems for fire protection. Prior to the delivery of any combustible building construction materials to the project site the following conditions shall be completed to the satisifaction of the FFPD:

- All wet and dry utilities shall be installed and approved by the appropriate inspecting department or agency.
- Clearance of Zone 1 vegetation and approved Zone 2 vegetation management shall be provided prior to combustible material arriving on the site and shall be maintained throughout the duration of construction. Fire code officials may require additional vegetation management and/or defensible space when warranted.

5.4 Additional Construction Requirements

1. All operable windows shall be provided with metal mesh bug screens or similar non-combustible screens over the operable opening to replace traditional vinyl bug screens to prevent embers from entering the structure during high wind conditions when windows may be inadvertently left open.

2. In addition to the required interior fire sprinklers, fire sprinklers shall also be installed in the attics and attached garages. Listed domestic demand shutoff valves may be used to try to minimize upgrading meter sizes where possible. Copper piping is required in the attics; CPVC pipe will only be permitted in the attic if listed heads are used in accordance with their listing.

3. All swinging exterior doors shall be self-closing (e.g. pneumatic or spring loaded hinges) and be self-latching.

4. All vents shall be flame and ember resistant type vents such as “Brandguard”, “O’Hagin Fire & Ice® Line – Flame and Ember Resistant” or other equivilent product.

5. Vehicle garage doors shall have automatic door closers (standard on most new automatic garage door openers as a security feature), that can be set to close after a certain period of time with no activity.

6.0 INFRASTRUCTURE

The basic systems needed to develop a property and support its use by its residents.

6.1 Water Supply

The PA6 Project water supply will be provided by the West Valley Water District. Based on the total square footage of the buildings and their useage, the minimum fire flow shall be 2,500 GPM at 20psi residual pressure for 2-hour duration. The water supply shall be designed as a looped system to allow water to be supplied from more than one source.

The closest public hydrants to the proposed project are located in an adjacent tract to the east (currently under development) and another existing tract to the southeast of the intersection of Duncan Canyon Road with Citrus Avenue. Additional fire hydrants are required by the FFPD (see Fire Protection Plan Exhibit for locations). The exact locations shall be determined by the FFPD. Fire hydrants are required to be located within 2 linear feet of the edge of a public street and within 5 linear feet of an on-site fire apparatus access road. Each new fire hydrant shall meet current FFPD standards.

The project has been designed such that all sides of each structure can be reached with a maximum hose pull of 150 feet (See Illustration #2). Fire access roads shall be maintained for clear access for emergency vehicles. No vehicle storage shall be allowed along the roadway.

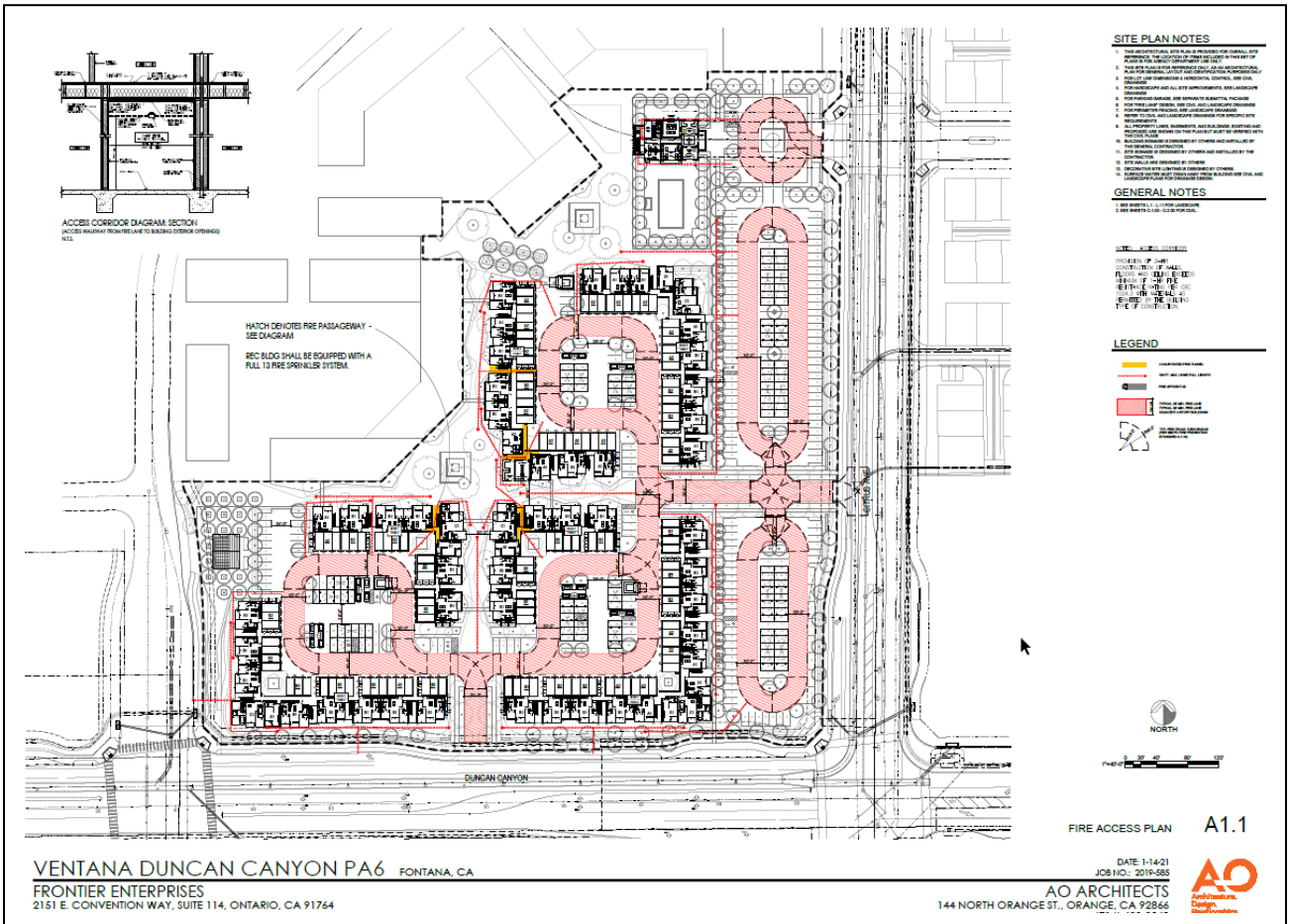


Illustration #2 – Fire Department Access and Hose Pull of 150 feet is shown above. Note that the project design calls for four 2-hour rated access tunnels to enable FD access through buildings. The project also has three means of access onto adjacent roadways.

6.2 Access Roads and Gates

The primary ingress and egress for the PA6 Project will be from two public roadways. The major east/west roadway on the south is Duncan Canyon Road. The major north/south roadway on the east is Citrus Avenue. Both of these roadways are currently two-lane highways but are scheduled to be widened to 3-4 lanes.

The roadways within the project that provide access shall be termed a 'Fire Access Road' within this document. The fire access roads shall meet the requirements of the FFPD Standards A-1 and A-2, shall be a paved surface capable of supporting loads of 80,000 lbs gross vehicle weight and with overhead clearance that is clear to the sky. All interior access roads shown in Illustration #2 above shall be a minimum of 30 feet in width to accommodate fire apparatus. Grades must not exceed 15% however grades between 15% and 20% may be allowed for short distances but must be paved with brushed concrete.

Any gates to be installed shall meet FFPD Standard A-3 and shall be approved by the FFPD prior to fabrication and installation. A 'Knox' override key switch must be installed outside the gate in an

approved, readily visible, and unobstructed location at or near the gate to provide emergency access per FFPD Standard A-4.

As noted in Illustration #2, there are four fire access tunnels built with 2-hour construction through buildings to improve access and establish the required 150-foot hose pull requirement.

7.0 RESIDENT EDUCATION

Each apartment resident, by reviewing this Fire Protection Plan, shall be aware of the herein described fire protection measures; the types of non-combustible construction; and the plant materials that are allowed within the development. Of particular importance are SECTION 5 and APPENDICES 'B', 'D' and 'E' of this plan, which provides guidance in the types of plants that are allowed to be established in landscaped areas within Vegetation Management Zones including decks and patios. Plant selection is critical as embers often travel over a mile during Santa Ana wind events.

A copy of this FPP shall be available in the PA6 office for review by any potential renter/lessor or employee. The Office shall maintain on file a copy of this Fire Protection Plan for review by any new resident or employee.

The PA6 owner shall inform its residences that in the event of a wildland fire, they should always relocate to a safe area well beyond the path of the threatening wildland fire. The ignition resistant buildings will have a 'defensible space' area around each structure for firefighters to make their stand in the protection of each structure. In the event firefighting forces are not readily available, the defensible space will substantially increase the probability of 'structure survivability'.

Should residents not be able to relocate, they should:

1. Ensure that all doors and windows are closed to prevent embers from entering their structure.
2. Doors should be unlocked to allow emergency personnel unimpeded access.
3. Both inside and outside lights should be placed on to allow emergency personnel to know that a structure is present when smoke or darkness may otherwise obscure visibility.
4. Remove any combustible materials located within 10 feet of any apartment building.

Where this FPP requires specific construction features, these features shall not be changed without the approval of the FFPD. These features are required to maintain reasonable fire safety.

8.0 FIRE PROTECTION PLAN MAP EXHIBIT

Attached herein as Appendix 'A' is the FIRE PROTECTION PLAN EXHIBIT, in 8 ½" x 11" format plus a full size electronic sheet. The full sized sheet Exhibit is a part of the approved FPP. Illustrated on the exhibit are the location of all proposed vegetation management treatment locations, fire access road, property lines, proposed hydrant locations and other pertinent information.

APPENDIX ‘A’

Fire Protection Plan Map Exhibit
(8 ½” x 11” Sheet Format)
Large Format Map Available in Separate File.

VENTANA PLANNING AREA 6 - FUEL MODIFICATION PLAN

VICINITY MAP

OWNER DEVELOPER:

ENGINEER:

ARCHITECT:

FUEL MODIFICATION SYMBOL LEGEND

SYMBOL | DESCRIPTION

FIRE PROTECTION PLAN MAP LEGEND
APNS: 226-075-49 and 226-075-46
VENTANA DUNCAN CANYON P46
FONTANA, CALIFORNIA

Symbol | Description

Prepared for:

Prepared By:

Certified By:	
	Date

FUSCOE

DATE: 4-23-21
JOB NO.: 1655-004-02

FUSCOE ENGINEERING
2850 INLAND EMPIRE BLVD., SUITE B
ONTARIO, CA 91764
(909)-581-0676

APPENDIX ‘B’

Prohibited Plants and Trees

APPENDIX 'B'

Prohibited (& Fire Prone) Plant Species List
For Fuel Modification Zones in High & Very High Hazard Areas

	Botanical Name	Common Name	Plant Form
1.	Acacia species •	Acacia	Shrub/Tree
2.	Adenostema fasciculatum	Chamise	Shrub
3.	Adenostema sparsifolium	Red Shank	Shrub/Tree
4.	Artemisia californica	California Sagebrush	Shrub
5.	Anthemis cotula	Mayweed	Weed
6.	Arundo donax	Giant reed	Grass/weed
7.	Brassica nigra	Black Mustard	Weed
8.	Brassica ropa	Yellow Mustard	Weed
9.	Cedrus species	Cedar	Tree
10.	Cirsim vulgare	Wild Artichoke	Weed
11.	Conyza canadensis	Horseweed	Weed
12.	Cortaderia selloana	Pampas Grass	Tall Grass
13.	Cupressus species	Cypress	Tree
14.	Eriogonum fasciculatum	Common Buckwheat	Shrub
15.	Eucalyptus species	Eucalyptus	Shrub/Tree
16.	Heterotheca grandiflora	Telegraph plant	Weed/shrub
17.	Juniperus species	Junipers	Succulent
18.	Lactuca serriola	Prickly lettuce	Weed
19.	Nicotiana bigelevil	Indian tobacco	Shrub
20.	Nicotiana glauca	Tree tobacco	Shrub
21.	Pennisetum species	Fountain Grass	Ground cover
22.	Pinus species •	Pines	Tree
23.	Salvia species •	Sage – Native Only	Shrub
24.	Silybum marianum	Milk thistle	Weed
25.	Urtica urens	Burning nettle	Weed

- **Except:**
  Acacia redolens (Desert Carpet ground cover)
  Pinus pinea (Italian Stone Pine)
  Ornamental Salvia species

APPENDIX ‘C’

Firewise 2000, LLC Certified Plant List

Firewise 2000, LLC Certified Plant List
For the Duncan Canyon PA6 Project

The following plant have been reviewed and certified by **Firewise 2000, LLC** as to comply with the intent of the Fire Protection Plan when maintained to the standards described in Section 5.0 of the Duncan Canyon PA6 Fire Protection Plan and as noted below.

Trees:

1. Euphorbia ingens – Candelabra tree
2. Podocarpus macrophyllus – Fern pine
3. Laurus nobilia - Bay Laurel
4. Prunus caroliniana - Carolina Cherrylaurel
5. Tristania conferta – Brisbane box
6. Olea europea - Olive
7. Pinus pinea – Italian Stone Pine (mature specimens only, mature canopies 10' from any structures) (in owner-maintained areas only)
8. Quercus agrifolia – Coast Live Oak
9. Quercus ilex – Holly Oak
10. Quercus suber – Cork Oak

Groundcover:

1. Baccharis pilularis – Coyote Bush
2. Lantana 'New Gold' – New gold lantana
3. Rosmarinus officinalis 'prostratus' Creeping Rosemary 1-2 foot high
4. Teucrium x lucidrys – Wall germander
5. Trachleospermum jasminoides – Star Jasmine

Shrubs:

1. Eleagnus pungens – Thorney Olive or Silverthorn
2. Heteromeles arbutifolia - Toyon
3. Lauris nobilis – Bay Tree
4. Lavendula spp - Lavender
5. Ligustrum japonicum 'Texanum' – Waxleaf Privit
6. Olea europaea 'Little Ollie' – Little Ollie Dwarf Olive
7. Phlomis fruticose – Jerusalem sage
8. Rhamnus californica - Coffeeberry
9. Rhaphiolepis spp - Raphiolepsis
10. Rhus ovata – Sugar bush
11. Rosmarinus officinalis – Rosemary (located at least 5' from structures and in Owner maintained areas).
12. Salvia spp. – sage (Ornamental varieties only)

Ornamental Grasses:

1. Bouteloa gracilis ‘Blond Ambition’ – Blonde Ambition Blue Grama Grass
2. Muhlenbergia dubia – Pine Muhly
3. Muhlenbergia rigens – Deergrass (Shall be located 5 feet or more from structures.)

Vines (Placed on masonry site walls and metal shade structures only – they shall <u>not</u> placed on buildings)

1. Disticts buccinatoria - Scarlet Trumpet Vine
2. Ficus pumila – Creeping Fig
3. Grewia caffra – Lavender Star Flower
4. Macfadyena ungus-cati – Cat’s Claw Creeper
5. Parthenocissus tricuspidate – Boston Ivy

Additional plants may be added to this list subject to the approval of the Fontana Fire Protection District.

APPENDIX ‘D’

Literature References

Literature References

For any reference below, the most current version of the document should be consulted.

1. California Code of Regulations, Title 14, section 1280; California Public Resources Codes sections 4201 through 4204

2. California Government Code, sections 51175 through 51189

3. 2018 Fire Code portion of the California Building Standards Code, including appendices to Chapters 1 & 4 and appendices B, F & H

4. National Fire Protection Association - NFPA 13-R Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies, 2019 Edition.

5. National Fire Protection Association - NFPA 1142 Standard on Water Supplies for Suburban and Rural Fire Fighting, 2017 Edition.

6. National Fire Protection Association - NFPA 1144 *Standard for Reducing Structure Ignition Hazards from Wildfire*, 2018 Edition..

7. International Wildland-Urban-Interface Code, 2018 edition

8. *The 2019 California Fire Code and Local Amendments*

9. *Chapter 7A- 2019 California Building Code*

10. *The California State and Local Responsibility Area Fire Hazard Severity Zone Map – Fire and Resource Assessment Program of CAL FIRE*

11. FFPD 2019 Standards A-1, A-2, A-3, A-4, B-2, F-3, G-2, W-1 and W-2.

12. San Bernardino County Fire Safety Overlay District FS-3 Requirements

13. San Bernardino County Fire Protection District Code, Ordinance No. FPD 20-1 2020

14. California Residential Code 2019

APPENDIX ‘E’

Non-Combustible & Ignition Resistant Building Materials For Balconies, Carports, Decks, Patio Covers and Floors

Appendix E

Non-Combustible & Fire-Resistant Building Materials For Balconies, Carports, Decks, Patio Covers and Floors

Note: The Office of the State Fire Marshal (SFM) Fire Engineering Division administers licensing programs and performs engineering functions affecting consumer services and product evaluation, approval and listing. The following link is to the State Fire Marshal's office for more information on the Building Material List for non-combustible and fire resistant building materials: https://osfm.fire.ca.gov/divisions/fire-engineering-and-investigations/building-materials-listing/bml-search-building-materials-listing.

Examples of non-combustible & fire-resistant building materials for balconies, carports, decks, patio covers, and floors are listed below. These are only examples, and materials listed here must meet local fire and building codes and are not an endorsement of any brand or manufacturer.

I. NON-COMBUSTIBLE HEAVY GAGE ALUMINUM MATERIALS - *Metals USA Building Products Group - Ultra-Lattice*

Ultra-Lattice Stand Alone Patio Cover

Ultra-Lattice Attached Patio Cover

Ultra-Lattice Solid Patio Cover

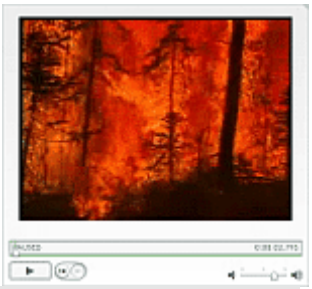
Ultra-Lattice Vs. Wood

II. FRX EXTERIOR FIRE-RETARDANT TREATED WOOD

FRX® fire retardant treated wood may be used in exterior applications permitted by the codes where: publi safety is critical, other materials would transfer heat or allow fires to spread, sprinkler systems canno easily be installed, corrosive atmospheres necessitate excessive maintenance of other materials, or fir protection is inadequate or not readily available. The International Building, Residential and Urban Wildland Interface Codes and regulations, permit the use of fire-retardant treated wood in specifi instances. See below for typical exterior uses and typical residential uses.

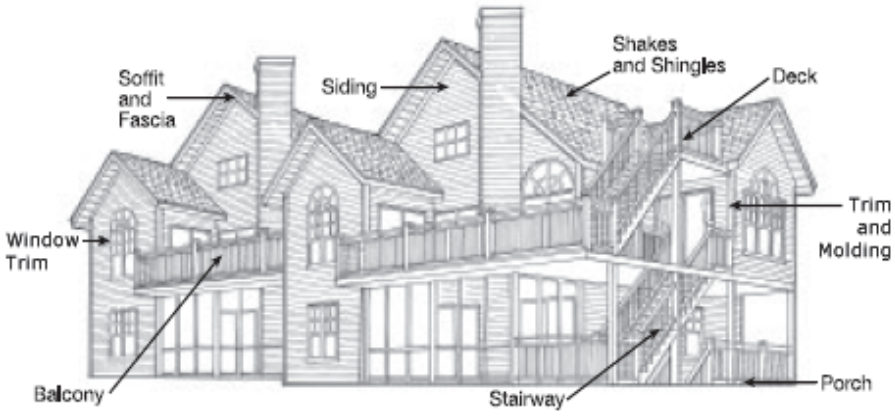
Typical Exterior Uses

- Wall coverings
- Balconies
- Decks
- Stairways
- Fences
- Sheds
- Gazebos
- Roof coverings
- Open-air roof systems
- Canopies and awnings
- Storefronts and facades
- Eaves, soffits and fascia
- Agricultural buildings and horse stalls
- Scaffolding and scaffold planks
- Construction staging
- Various other residential and commercial uses



Property owners and Architects: See this 2-minute video and the illustration below.

Typical Residential Uses



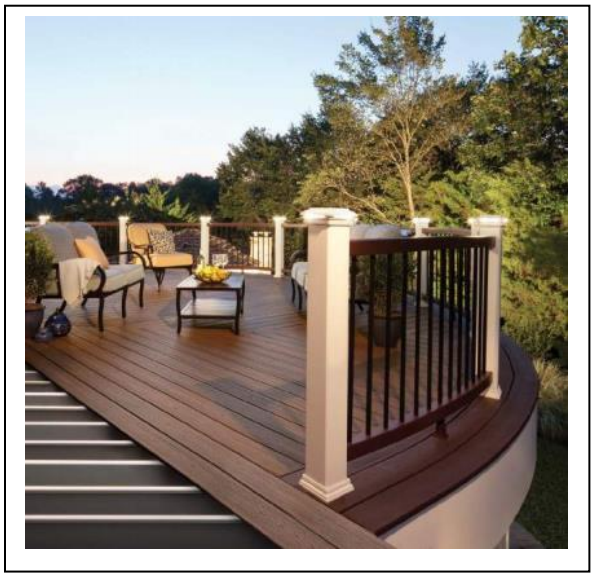
Rising concerns over fire damage and the adoption of urban-wildland interface codes have increased the use of FRT wood in residential structures.

For information on fire retardant treated wood for exterior uses, visit www.frxwood.com.

III. DECKING MATERIALS

Trex Company, Inc. – "Trex Transcend®, Trex Select® and Trex Enhance® wood and polyethylene composite deck board, nominal ranging in size from 1" x 5-1/2" to 1-3/8" x 5-1/2" installed per manufacturer maximum edge-to-edge gap of 3/16". All Trex decking products meet or exceed the SFM 12-7A-4A testing protocol.

Trex combines both beauty and fire defense. A few examples of installations are shown below:



IV.
SOLID "WOOD" DECKING

Company Name: Various Manufacturers
Product Description: Solid "Wood" decking, when installed over minimum 2" x 6" solid "Douglas Fire" or better joists, space 24" or less on center, and decking and joints comply with American Softwood Lumber Standard PS2o as follows:

Minimum nominal 5/4"thick and nominal 6" wide decking boards with a maximum 3/8" radius edges made of solid wood species "Redwood", "Western Red Cedar", "Incense Cedar", "Port Orford Cedar", or "Alaska Yellow Cedar" having a Class B Flame Spread rating when tested in accordance with ASTM E84. Lumber grades; construction common, commercial or better grade for Redwood; 3 common, commercial or better grades for Cedars.

V. Vents

Examples of Ember Resistant Approved Vents

Brandguard

O'Hagin Fire & Ice® Line – Flame and Ember Resistant
An available option for all O'Hagin attic ventilation products, this attic vent not only features all the same design, construction elements and color choices as the O'Hagin Standard Line, but also features an interior stainless-steel matrix that resists the intrusion of flames and embers. This patent-pending attic vent is accepted for use by many local fire officials for installation in Wildland Urban Interface (WUI) zones.

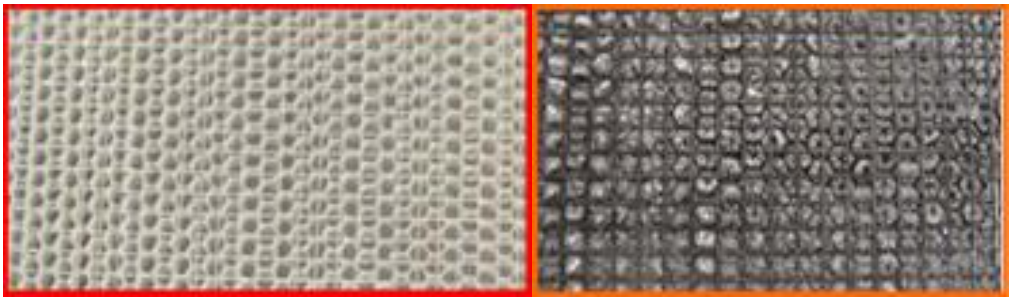
Vulcan Vents

The founders of Gunter Manufacturing have been working closely over the last two years, with the scientists and inventors of Vulcan Technologies to bring to market this incredible product.

Combining our quality vent products with the fire-stopping honeycomb matrix core designed by Vulcan has produced unique and remarkable results.

At Gunter manufacturing has over 50 years of combined sheet metal manufacturing experience. Special orders are not a problem. Their vent frames are industry standard frames so there is little or no learning curve for installers and contractors. Their stated goal is to provide people with the vents they need to secure their homes with additional safety against wildfires and give them piece of mind from knowing that their home or structure is protected by a product that works!

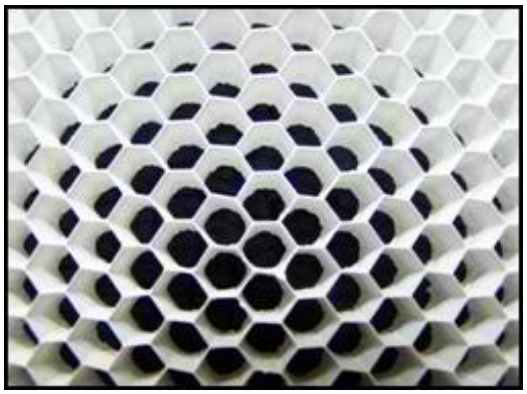
The core of their fire and ember safe vents are manufactured out of hi-grade aluminum honeycomb and coated with an intumescent coating made by FireFree Coatings. The intumescent coating is designed to quickly swell up and close off when exposed to high heat. The expanded material acts as an insulator to heat, fire, and embers



Before **After**

After the cells close off, they are extremely well insulated, and fire or embers cannot penetrate.

Even before the cells close off, the vent is designed to protect against flying embers. In many cases embers will attack a structure before fire ever comes near, so this feature is very important.



Close-up of the coated honeycomb matrix.

Fire easily passes through a standard vent, on the left, but stops cold when it comes up against a Vulcan Vent shown on right.

APPENDIX ‘F’

Ignition Resistant Construction Requirements

Appendix 'F'

Ignition Resistant Construction Requirements

The following is a summary of the current requirements for ignition resistant construction for high fire hazard areas under Chapter 7A of the California Building Code (CBC) 2019 edition. However the requirements listed below are not all inclusive and all exterior building construction including roofs, eaves, exterior walls, doors, windows, decks, and other attachments must meet the current CBC Chapter 7A ignition resistance requirements, the California Fire Code, and any additional County and/or City codes in effect at the time of building permit application. See the currrent applicable codes for a detailed description of these requirements and any exceptions.

1. All structures will be built with a Class A Roof Assembly and shall comply with the requirements of Chapter 7A and Chapter 15 of the California Fire Code. Roofs shall have a roofing assembly installed in accordance with its listing and the manufacturer's installation instructions.

2. Roof valley flashings shall be not less than 0.019-inch (0.48 mm) No. 26 gage galvanized sheet corrosion-resistant metal installed over not less than one layer of minimum 72-pound (32.4 kg) mineral-surfaced nonperforated cap sheet complying with ASTM D3909, at least 36-inch-wide (914 mm) running the full length of the valley.

3. Attic or foundation ventilation louvers or ventilation openings in vertical walls shall be covered with a minimum of 1/16-inch and shall not exceed 1/8-inch mesh corrosion-resistant metal screening or other approved material that offers equivalent protection.

4. Where the roof profile allows a space between the roof covering and roof decking, the spaces shall be constructed to resist the intrusion of flames and embers, be fire stopped with approved materials or have one layer of a minimum 72 pound (32.4 kg) mineral-surfaced nonperforated cap sheet complying with ASTM D3909 installed over the combustible decking.

5. Enclosed roof eaves and roof eave soffits with a horizontal underside, sloping rafter tails with an exterior covering applied to the under-side of the rafter tails, shall be protected by one of the following:
   - noncombustible material
   - Ignition-resistant material
   - One layer of $^{5}/_{8}$-inch Type X gypsum sheathing applied behind an exterior covering on the underside of the rafter tails or soffit
   - The exterior portion of a 1-hour fire resistive exterior wall assembly applied to the underside of the rafter tails or soffit including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual
   - Boxed-in roof eave soffit assemblies with a horizontal underside that meet the performance criteria in Section 707A.10 when tested in accordance with the test procedures set forth in ASTM E2957.

- Boxed-in roof eave soffit assemblies with a horizontal underside that meet the performance criteria in accordance with the test procedures set forth in SFM Standard 12-7A-3.
  Exceptions: The following materials do not require protection:
  1. Gable end overhangs and roof assembly projections beyond an exterior wall other than at the lower end of the rafter tails.
  2. Fascia and other architectural trim boards.

6. The exposed roof deck on the underside of unenclosed roof eaves shall consist of one of the following:
   - Noncombustible material, or
   - Ignition-resistant material, or
   - One layer of 5/8-inch Type X gypsum sheathing applied behind an exterior covering on the underside exterior of the roof deck, or
   - The exterior portion of a 1-hour fire resistive exterior wall assembly applied to the underside of the roof deck designed for exterior fire exposure including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association fire Resistance Design Manual.

     Exceptions: The following materials do not require protection:
     1. Solid wood rafter tails on the exposed underside of open roof eaves having a minimum nominal dimension of 2 inch (50.8 mm).
     2. Solid wood blocking installed between rafter tails on the exposed underside of open roof eaves having a minimum nominal dimension of 2 inch (50.8 mm).
     3. Gable end overhangs and roof assembly projections beyond an exterior wall other than at the lower end of the rafter tails.
     4. Fascia and other architectural trim boards.

7. Vents - ventilation openings for enclosed attics, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, and underfloor ventilation openings shall be fully covered with metal wire mesh, vents, other materials or other devices that meet one of the following requirements:
   A. Vents listed to ASTM E2886 and complying with all the following:
      i. There shall be no flaming ignition of the cotton material during the Ember Intrusion Test.
      ii. There shall be no flaming ignition during the Integrity Test portion of the Flame Intrusion Test.
      iii. The maximum temperature of the unexposed side of the vent shall not exceed 662°F (350°C).
   B. Vents shall comply with all the following:
      i. The dimensions of the openings therein shall be a minimum of $^{1}/_{16}$-inch (1.6 mm) and shall not exceed $^{1}/_{8}$-inch (3.2 mm).
      ii. The materials used shall be noncombustible.
      Exception: Vents located under the roof covering, along the ridge of roofs, with the exposed surface of the vent covered by noncombustible wire mesh, may be of combustible materials.
      iii. The materials used shall be corrosion resistant.

8. Vents shall not be installed on the underside of eaves and cornices.

   Exceptions:
   1. Vents listed to ASTM E2886 and complying with all 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°F (350°C).
   2. The enforcing agency shall be permitted to accept or approve special eave and cornice vents that resist the intrusion of flame and burning embers.
   3. Vents complying with the requirements of Section 706A.2 shall be permitted to be installed on the underside of eaves and cornices in accordance with either one of the following conditions:
      3.1. The attic space being ventilated is fully protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or,
      3.2. The exterior wall covering, and exposed underside of the eave are of noncombustible materials, or ignition-resistant materials, as determined in accordance with SFM Standard 12-7A-5 Ignition-Resistant Material and the requirements

9. All chimney, flue or stovepipe openings that will burn solid wood will have an approved spark arrester. An approved spark arrester is defined as a device constructed of nonflammable materials, having a heat and corrosion resistance equivalent to 12-gauge wire, 19-game galvanized steel or 24-gage stainless steel. or other material found satisfactory by the Fire Protection District, having ½-inch perforations for arresting burning carbon or sparks nor block spheres having a diameter less than 3/8 inch (9.55 mm). It shall be installed to be visible for the purposes of inspection and maintenance and removeable to allow for cleaning of the chimney flue.

10. All multi-family structures will have automatic interior fire sprinklers installed according to the National Fire Protection Association (NFPA) 13R 2019 edition - *Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies*.

11. The exterior wall covering or wall assembly shall comply with one of the following requirements:
    - Noncombustible material, or
    - Ignition resistant material, or
    - Heavy timber exterior wall assembly, or
    - Log wall construction assembly, or
    - Wall assemblies that have been tested in accordance with the test procedures for a 10-minute direct flame contact expose test set forth in ASTM E2707 with the conditions of acceptance shown in Section 707A.3.1 of the California Building Code, or
    - Wall assemblies that meet the performance criteria in accordance with the test procedures for a 10-minute direct flame contact exposure test set forth in SFM Standard 12-7A-1.

Exception: Any of the following shall be deemed to meet the assembly performance criteria and intent of this section including;

- One layer of 5/8-inch Type X gypsum sheathing applied behind the exterior covering or cladding on the exterior side of the framing, or
- The exterior portion of a 1-hour fire resistive exterior wall assembly designed for exterior fire exposure including assemblies using the gypsum panel and sheathing products listed in the Gypsum Associate Fire Resistance Design Manual.

12. Exterior walls shall extend from the top of the foundation to the roof and terminate at 2-inch nominal solid blocking between rafters at all roof overhangs, or in the case of enclosed eaves, terminate at the enclosure.

13. Gutters shall be provided with gutter guards or the means to prevent the accumulation of leaf litter and debris within the gutters that contribute to roof edge ignition.

14. No attic ventilation openings or ventilation louvers shall be permitted in soffits, in eave overhangs, between rafters at eaves, or in other overhanging areas.

15. All projections (exterior balconies, decks, patio covers, unenclosed roofs and floors, and similar architectural appendages and projections) or structures less than five feet from a building shall be of non-combustible material, one-hour fire resistive construction on the underside, heavy timber construction or pressure-treated exterior fire-retardant wood. When such appendages and projections are attached to exterior fire-resistive walls, they shall be constructed to maintain same fire-resistant standards as the exterior walls of the structure.

16. Deck Surfaces shall be constructed with one of the following materials:
    - Material that complies with the performance requirements of Section 709A.4 when tested in accordance with both ASTM E2632 and ASTM E2726, or
    - Ignition-resistant material that complies with the performance requirements of 704A.3 when tested in accordance with ASTM E84 or UL 723, or
    - Material that complies with the performance requirements of both SFM Standard 12-7A-4 and SFM Standard 12-7A-5, or
    - Exterior fire retardant treated wood, or
    - Noncombustible material, or
    - Any material that complies with the performance requirements of SFM Standard 12-7A-4A when the attached exterior wall covering is also composed of noncombustible or ignition-resistant material.

17. Accessory structures attached to buildings with habitable spaces and projections shall be in accordance with the Building Code. When the attached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas and exterior wall construction in accordance with Chapter 7A of the Building Code.

18. Exterior windows, skylights and exterior glazed door assemblies shall comply with one of the following requirements:

- Be constructed of multiplane glazing with a minimum of one tempered pane meeting the requirements of Section 2406 Safety Glazing, or
- Be constructed of glass block units, or
- Have a fire-resistance rating of not less than 20 minutes when tested according to NFPA 257, or
- Be tested to meet the performance requirements of SFM Standard 12-7A-2.

19. All eaves, fascia and soffits will be enclosed (boxed) with non-combustible materials. This shall apply to the entire perimeter of each structure. Eaves of heavy timber construction are not required to be enclosed as long as attic venting is not installed in the eaves. For the purposes of this section, heavy timber construction shall consist of a minimum of 4x6 rafter ties and 2x decking.

20. Detached accessory buildings that are less than 120 square feet in floor area and are located more than 30 feet but less than 50 feet from an applicable building shall be constructed of noncombustible materials or of ignition-resistant materials as described in Section 704A.2 of the California Building Code.
    Exception: Accessory structures less than 120 square feet in floor area located at least 30 feet from a building containing a habitable space.

21. All rain gutters, down spouts and gutter hardware shall be constructed from metal or other noncombustible material to prevent wildfire ignition along eave assemblies.

22. All side yard fence and gate assemblies (fences, gate and gate posts) when attached to the home shall be of non-combustable material. The first five feet of fences and other items attached to a structure shall be of non-combustible material.

23. Exterior garage doors shall resist the intrusion of embers from entering by preventing gaps between doors and door openings, at the bottom, sides and tops of doors, from exceeding 1/8 inch. Gaps between doors and door openings shall be controlled by one of the methods listed in this section.
    - Weather-stripping products made of materials that:
      (a) have been tested for tensile strength in accordance with ASTM D638 (Standard Test Method for Tensile Properties of Plastics) after exposure to ASTM G155 (Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials) for a period of 2,000 hours, where the maximum allowable difference in tensile strength values between exposed and non-exposed samples does not exceed 10%; and (b) exhibit a V-2 or better flammability rating when tested to UL 94, Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
    - Door overlaps onto jambs and headers.
    - Garage door jambs and headers covered with metal flashing.

24. Exterior doors shall comply with one of the following:
    1. The exterior surface or cladding shall be of noncombustible material or,
    2. The exterior surface or cladding shall be of ignition-resistant material or,
    3. The exterior door shall be constructed of solid core wood that complies with the following requirements:

3.1. Stiles and rails shall not be less than 1-3/8 inches thick.
3.2. Panels shall not be less than 1-1/4 inches thick, except for the exterior perimeter of the panel that shall be permitted to taper to a tongue not less than 3/8 inch thick.

4. The exterior door assembly shall have a fire-resistance rating of not less than 20 minutes when tested according to NFPA 252 or,
5. The exterior surface or cladding shall be tested to meet the performance requirements of Section 707A.3.1 when tested in accordance with ASTM E2707 or,
6. The exterior surface or cladding shall be tested to meet the performance requirements of SFM Standard 12-7A-1.

25. Fire access tunnels shall have two hour rated walls consisting of two layers of 5/8" Type 'X' gypsum wallboard panels on each side of the studs. The EZ Taping Systems "Fire Tape" product or equivalent should be used as an alternative to convention joint tape when:
    1. Two or more layers of listed Type 'X' gypsum wallboard are applied vertically with joints staggered and joints of the face board are":
        a. Tightly butted and taped with EZ Taping Systems "Fire Tape" or equivalent product or
        b. Finished with joint compound of EZ Taping Systems "Fire Tape" or equivalent product if the gap between gypsum wallboard panels are visible at the joint.
    2. Two or more layers of USG "Sheetrock" Fire code C gypsum wallboard are applied (horizontally or vertically).
    3. Gypsum panels shall be attached with Type S drywall screws, placed 8" oc to vertical edges and 12" oc to top and bottom runners and intermediate studs.
    4. Fire Tape shall be nominal 2" wide and applied on the vertical joints at studs.

** FAHJ – Fire Authority Having Jurisdiction
SFM – State Fire Marshal
NFPA – National Fire Protection Association