Item No. 6
Town of Atherton

CITY COUNCIL STAFF REPORT – STUDY SESSION

TO: **HONORABLE MAYOR AND CITY COUNCIL**
GEORGE RODERICKS, CITY MANAGER

FROM: **MIKE GREENLEE, BUILDING OFFICIAL**

DATE: **NOVEMBER 3, 2021**

SUBJECT: **PROVIDE STAFF WITH DIRECTION ON WILDFIRE HOME HARDENING**

RECOMMENDATION

Provide feedback on Wildfire Home Hardening for the Town.

BACKGROUND /ANALYSIS

For multiple reasons, including life, health, and safety, it is important to establish minimum standards that increase the ability of a building to withstand High Fire Hazard Zones. The number of wildfires threatening homes has increased 75% in the past ten years and is expected to continue to increase with climate change and a growing population.

Atherton is not located in a Very High Fire Hazard Severity Zone. Portions of Portola Valley, Woodside, and Redwood City are in High Fire Hazard Zones and fall under the Wildland Urban Interface (WUI) guidelines. Atherton does not.

Portola Valley has adopted specific amendments to the California Building Code to mandate requirements such as approved roofing material to meet Class A roofing requirements, ember-resistant vents, tempered windows and more. These are recommendations from the Town's Wildfire Preparedness Committee that was established in 2019.

While Atherton is not located in this Very High Fire Hazard Severity Zone, the requirements that Portola Valley is implementing could voluntarily be adopted by the Town. However, it is important to consider that adoption of such requirements will not only impact a homeowner's construction costs but could also impact a homeowner's insurance rates.

After discussing these issues with the Menlo Park Fire Protection District, they suggest that the Town explore the following for areas of concern – such as the west side of Atherton being *adjacent to* a WUI. These can be educational recommendations as part of an outreach program to the community.

1. Recommend ..that residents Install, at a minimum, a Class A roof. Currently, the Town does not have any restrictions. There are three (3) classes of roof installations, Class A being the most restrictive, Class B, then a Class C being the least restrictive.

2. Recommend that no combustible material be within 5 feet of structures. Landscaping in these areas should be hardscaped or rock. This would create a perimeter around a home free of flammable grass, trees, and other vegetation. This is an important component of wildfire resiliency.
3. Allow free permits for "Hazardous Tree Removal".

4. Encourage voluntary compliance with the Menlo Park Fire Protection District Standards and Guidelines Manual for vegetation. Put together a Task Force or Committee to discuss the best way to work with compliance.

5. Where feasible, encourage residents to pursue undergrounding of power lines and/or removal of all trees and combustible vegetation within 20 ft of power lines. Encourage the following of PGE guidelines for Enhanced Vegetation Management. https://www.pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/vegetation-management.page)6. Encourage higher standards for year-round vegetation management of properties West of Alameda de las Pulgas. Provide shaded fuel breaks and a maintained egress corridor for the residents on Walsh Rd. This is an item to work closely with the Town arborist. (https://firesafesanmateo.org/resources/shaded-fuel-breaks)

Jon Johnston with Menlo Park Fire Protection District will be attending and can answer questions related to the suggestions listed above and all other related questions.

POLICY FOCUS

The City Council should focus on opportunities for education and outreach to the community about fire safety and wildfire hardening.

FISCAL IMPACT

None

GOAL ALIGNMENT

This report and its contents are in alignment with the following Council Policy Goals:

- Goal G – Emergency Preparedness – Be Prepared
- Goal F – Be Forward-Thinking, Well-Managed, and Well-Planned

PUBLIC NOTICE

Public notification was achieved by posting the agenda, with this agenda item being listed, at least 72 hours prior to the meeting in print and electronically. Information about the project is also disseminated via the Town's electronic News Flash and Atherton Online. There are approximately 1,200 subscribers to the Town's electronic News Flash publications. Subscribers include residents as well as stakeholders – to include, but be not limited to, media outlets, school districts, Menlo Park Fire District, service provides (water, power, and sewer), and regional elected officials. The Town maintains an active and up to date Project Website at http://ca-atherton.civicplus.com/index.aspx?NID=290.

COMMISSION/COMMITTEE FEEDBACK/REFERRAL

This item ____ has or _X_ has not been before a Town Committee or Commission.

____ Audit/Finance Committee (meets every other month)
____ Bicycle/Pedestrian Committee (meets as needed)
____ PMC & Civic Center Advisory Committee (meets as needed)
____ Environmental Programs Committee (meets every other month)
____ Park and Recreation Committee (meets each month)
____ Planning Commission (meets each month)
____ Rail Committee (meets every other month)
____ Transportation Committee (meets every other month)

ATTACHMENTS

Menlo Park Fire Protection District Standards and Guidelines Manual
Wildfire Home Hardening Recommendations (Portola Valley)
San Mateo County Exemption Permit for Hazardous Tree Removal
Wildfire Home Retrofit Guide
Be Wildfire Ready Guide

Menlo Park Fire Protection District
Bureau of Fire Prevention and Life Safety
170 Middlefield Rd.
Menlo Park, CA 94025
650-688-8425

Bureau of Fire Prevention and Life Safety

SECTION 101.6

STANDARDS AND GUIDELINES MANUAL

This manual shall serve as a supplemental instruction and interpretation manual for the Fire Prevention Code.

Table of Contents

MENLO PARK FIRE PROTECTION DISTRICT
GUIDELINE FOR PRIVATE ROADS AND DRIVEWAYS

Includes requirements for Gates, Turnarounds & Turnouts

SCOPE. This guideline provides minimum requirement necessary for driveways with gates exceeding 150 ft. in length and private roads of any distance. Requirements must comply with California Fire Code, Chapter 5 and Appendix D, and MPFD local amendments.

When necessary, these guidelines may be modified to ensure adequate fire apparatus access and public safety. Some factors that may contribute to modifications include walls, cliffs along roads and driveways, angle of approach or departure, grade/slope, and the likelihood of future obstructions.

DEFINITIONS

AASHTO HB-17 - American Association of State Highway and Transportation Officials, the 17th Edition Standard for Highway Bridges.

ALL WEATHERED - A road or driveway constructed of asphalt, concrete, or other approved driving surface capable of supporting the imposed load of a fire apparatus weighing at least 75,000 pounds.

PRIVATE ROAD - An access road that is outside the boundaries of the property and/or servicing 3 or more dwelling units.

DRIVEWAYS –For Single Family Residential Only (1-2 Residences)

Driveway Specifications. Driveways shall extend to within 150 feet of all portions of the facility and all portions of the exterior walls of the first story of the building. Driveways shall provide a minimum unobstructed width of 16 feet and a minimum unobstructed height of 13 feet 6 inches. Driveways in excess of 150 feet in length shall be provided with turnarounds. Driveways in excess of 500 feet in length and less than 20 feet in width shall be provided with turnouts in addition to turnarounds.

Fire Sprinkler Allowance. When the most remote single-family residence is provided with automatic fire sprinkler protection and is less than 3600 square feet, the driveway distance may be measured from the edge of the street to the face of the structure.

Turnarounds. Driveway turnarounds shall have inside turning radii of not less than 30 feet and an outside turning radius of not less than 45 feet. Driveways that connect with a

road or roads at more than one point may be considered as having a turnaround if all changes of direction meet the radii requirements for driveway turnarounds. Driveways exceeding 1 mile in length shall be provided with approved turnaround areas at ½ mile intervals.

Turnouts. Driveway turnouts shall be an all-weather road surface at least 10 feet wide and 30 feet long. Driveway turnouts shall be located every 500 feet or at the midpoint if the road is 1,000 feet or less.

PRIVATE ROADWAYS (3 or more residences)

Roadway Specifications. Private roadways serving 3 or more residential occupancies shall be all-weathered with a minimum width of 20 feet and a clear height of 13 feet 6 inches (4115 mm). Roadways shall be designed to accommodate the weight of fire apparatus and the minimum turning radii of 36 feet for fire apparatus. Dead-end roads in excess of 150 feet (45 720 mm) in length shall be provided with turnarounds as specified by CFC Appendix D, Table D103.4. Access roads exceeding 1 mile in length shall be provided with approved turnaround areas at ½ mile intervals.

Marking of roads. All road identification signs and supports shall be of noncombustible materials. Signs shall have minimum 4-inch-high (102 mm) reflective letters with 1/2-inch (12.7 mm) stroke on a contrasting 6-inch-high (152 mm) sign. Road identification signage shall be mounted at a height of 7 feet (2134 mm) from the road surface to the bottom of the sign.

Marking of Fire Protection Equipment. Fire protection equipment and fire hydrants shall be clearly identified accordance with the Menlo Park Fire District Guideline, "Water Supplies and Fire Hydrants." On-site fire hydrants shall not be obstructed.

Cul-de-sacs, Curves, and 90° Turns. Cul-de-sacs, curves, and 90° turns shall be in accordance with CFC Appendix D. No obstructions are allowed within the cul-de-sac, such as trees, planters, islands etc.

GATES

The design for all gates across driveways and private roads shall be approved by the Fire District. Gates shall comply with all of the following criteria:

1. A minimum clear, unobstructed width of not less than 16 feet shall be provided for single-family residential properties. For Multi-family residential and commercial refer to Appendix D, Table D103.5.
2. Gates shall either be swinging of sliding.
3. Gates that have an electric opening shall have a manual override.
4. Gate components shall be maintained in an operative condition at all times and replaced or repaired when defective.

5. All locking devices shall provide Fire Department access. Electric gates shall have a Knox Box override key switch installed. Refer to the Menlo Park Fire District Guideline on Key Installations for details.
6. Manual opening gates shall not be locked with a padlock or chain and padlock unless they are capable of being opened by means of forcible entry tools, a Knox padlock is used, or when a Knox Key Box containing keys to the lock is installed at the gate location.
7. Locking device specifications shall be submitted to Menlo Park Fire District for approval by the code official.

GENERAL REQUIREMENTS

Surface. All the items in this standard shall meet the requirements for an all-weather road.

Landscape. Landscaping shall not interfere with the required fire apparatus access. Landscaping around road shall provide limited fuel, no ladder fuels, and provide thinning of tree canopy.

Parking. Parking (or any other obstruction) will not be allowed on any of the items in this standard, unless additional space is provided and approved.

Fire Lane Signs. Installation and placement of signs and markings and designating fire lanes shall be in accordance with Menlo Park Fire Protection District Guideline for "Designation and Marking of Fire Lanes."

Easements. Access improvements (roads, turnarounds and turnouts) that cross property lines shall be recorded with the San Mateo County Tax Assessors Office.

Bridges and elevated surfaces. Where a bridge or an elevated surface is part of the private roadway or driveway, the bridge shall be constructed and maintained in accordance with AASHTO HB-17 and CFC Chapter 5, Section 503.2.6.

Address markers. All buildings shall have a permanently posted address, which shall be placed at each driveway entrance and be visible from both directions of travel along the road. Permanent addresses on new construction and substantial remodels shall be internally or externally illuminated from dusk to dawn. Addresses shall be posted at the beginning of construction and shall be maintained thereafter. The address shall be visible and legible from the road on which the address is located. Address signs along one-way roads shall be visible from both the intended direction of travel and the opposite direction.

Where multiple addresses are required at a single driveway, they shall be mounted on a single post, and additional signs shall be posted at locations where driveways divide. Where a roadway provides access solely to a single commercial or industrial business, the address sign shall be placed at the nearest road intersection providing access to that site.

Grades. The gradient for private roadways and driveways shall not exceed 10%. Turnarounds and cul-de-sacs shall not have a grade greater than 5% in any direction. Turnouts, curves, and 90° turns shall not have a grade greater than allowed for the road they are on. Transitions between grade changes shall not exceed 5% and shall not interfere with the angle of approach, angle of departure or high centering of fire apparatus. Any deviation from this shall first obtain approval by the AHJ.

Timing of Installation. Access roadways and water supply, including the items required by this guideline, shall be provided prior to and kept in place during the time of construction.

PLAN CHECK

Two copies of a scaled site plan are required for plan review. Plans shall include fire hydrant location(s) with the submittal. Gate applications also require gate details. When approved, one copy will be kept by the Bureau of Fire Prevention and Life Safety and one will be returned to the applicant. Final approval is subject to an on-site inspection.

MENLO PARK FIRE PROTECTION DISTRICT
GUIDELINE FOR DESIGNATION AND MARKING OF FIRE LANES

Scope. This guideline provides standard requirements for the installation and placement of signs and markings designating "fire lanes" when required by the Menlo Park Fire Protection District to provide adequate fire apparatus access. Sign requirements include fire lanes and access roads on both private residential developments and private commercial and industrial properties. Also included in this guideline are requirements for painting curbs and designated areas without curbing.

PRIVATE RESIDENTIAL DEVELOPMENTS

OPTION #1 – "NO PARKING" Signs
Sign "A" Requirements:

Signs marking fire lanes are to be spaced so they can be easily read from one sign to another, but in no case shall the signs be more than 100 feet apart.

Signs are to face on-coming vehicular traffic.

All curbs and adjoining fire lanes or posted areas must be painted red and labeled in white, "NO PARKING FIRE LANE."

All curbs and signs are to be maintained by the property owner

All areas posted under Option #1 are to use sign "A"

All signs must conform to Menlo Park Fire Protection District Guidelines.

OPTION #2 – "ENTRANCE" Signs
Sign "B" Requirements:

One (1) sign is required at all points of entry to properties with marked parking stalls.

Signs are to face on-coming vehicular traffic

All curbs adjoining fire lanes or posted areas are required to be painted red and labeled in white, "NO PARKING FIRE LANE."

All curbs and signs are to be maintained by the property owner.

All signs must conform to Menlo Park Fire Protection District Guidelines.

COMMERCIAL AND INDUSTRIAL PROPERTY

OPTION #1 – "NO PARKING" Signs
Sign "A" Requirements:

Signs are required within three (3) feet of each end of curbed area and spaced a maximum of fifty (50) feet apart thereafter.

In addition, one (1) sign is required for each island adjacent to a fire lane or access road if the road width is less than 26 feet.

Signs are to face on-coming vehicular traffic.

All curbs and signs are to be maintained by the property owner.

All signs must conform to Menlo Park Fire Protection District Guidelines.

OPTION #2 – "ENTRANCE" Signs
Sign "B" Requirements:

One (1) sign is required at all points of entry to properties with marked parking stalls.

Signs are to face on-coming vehicular traffic

All curbs adjoining fire lanes or posted areas are required to be painted red.

All curbs and signs are to be maintained by the property owner.

All signs must conform to Menlo Park Fire Protection District Guidelines.

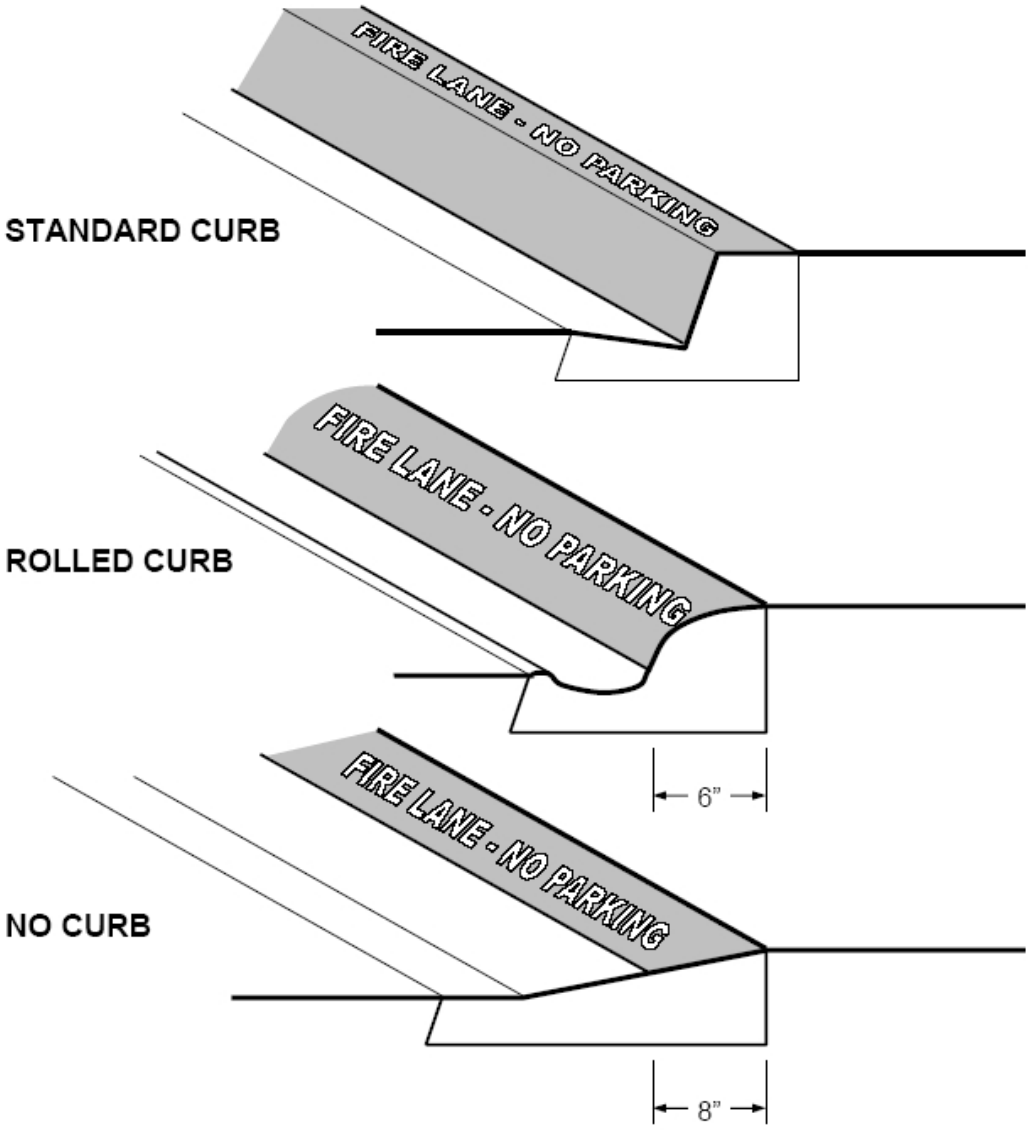
Enforcement

California Vehicle Code Section 22500.1 - Fire lanes; parking violations; and signs:
In addition to Section 22500, no person shall stop, park or leave standing any vehicle, whether attended or unattended, except when necessary to avoid conflict with other traffic or in compliance with the directions of a peace officer or official traffic control device along the edge of any highway, at any curb, or in any location in a publicly or privately owned or operated off-street parking facility, designated as a fire lane by the fire department or fire district with jurisdiction over the area in which the place is located.

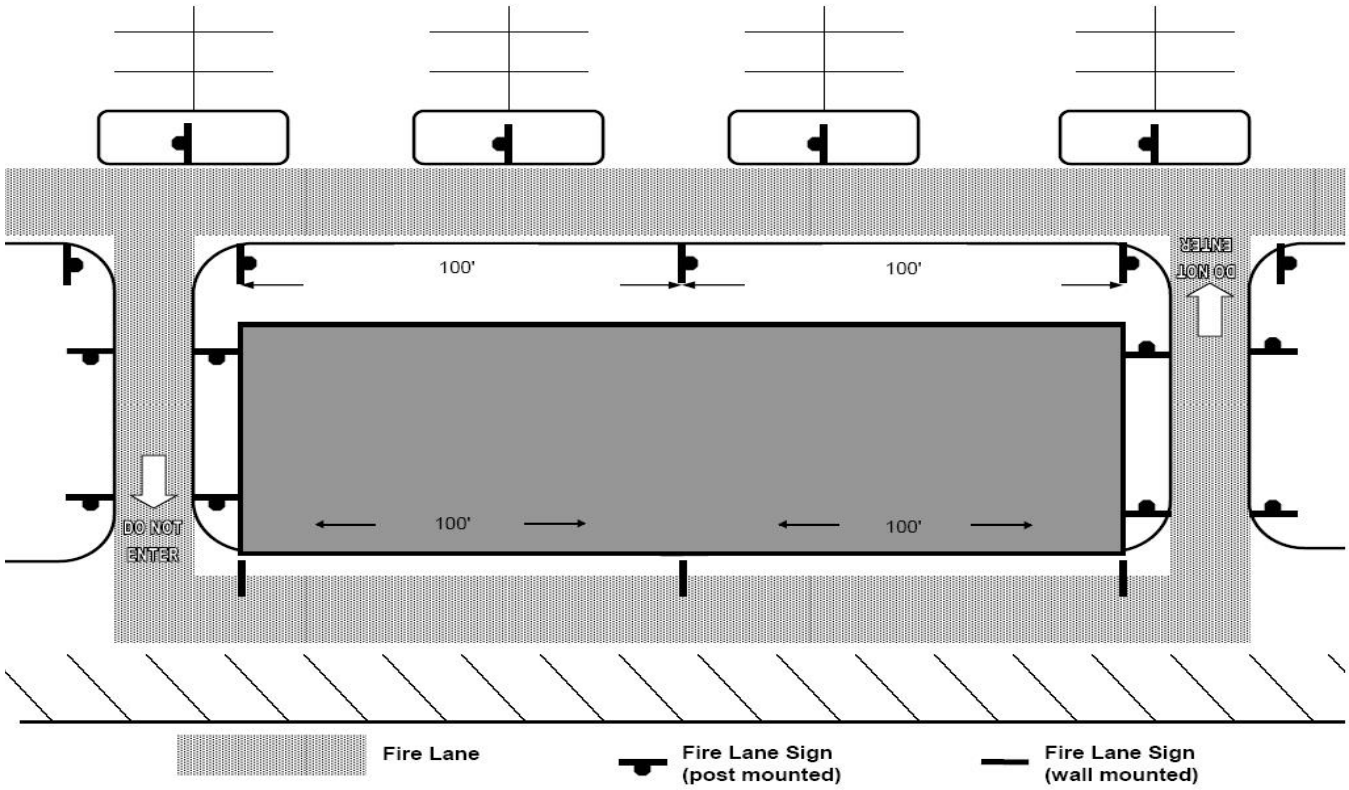
The designation shall be indicated by (1) a sign posted immediately adjacent to, and visible from, the designated place clearly stating in letters not less than one inch in height that the place is a fire lane, (2) by outlining or painting the place in red and, in contrasting color

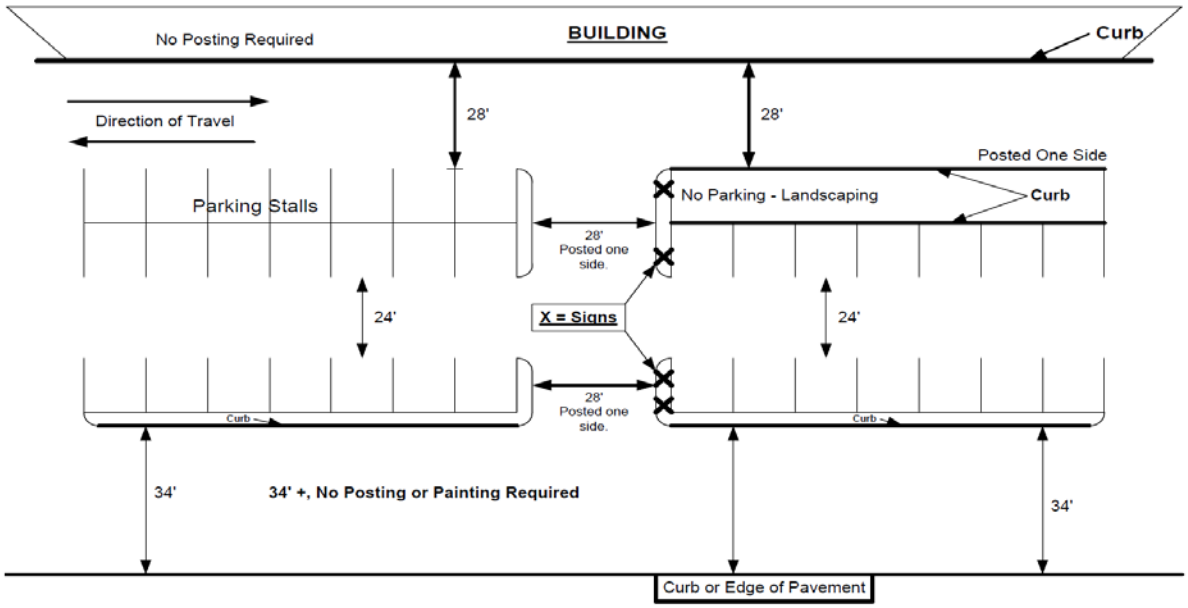
marking the place with the words "FIRE LANE", which are clearly visible from a vehicle or (3) by red curb or red paint on the edge of the roadway upon which is clearly marked the words "FIRE LANE".

Fire Lane Identification – Red Curbs



Fire Lane No Parking Sign Locations



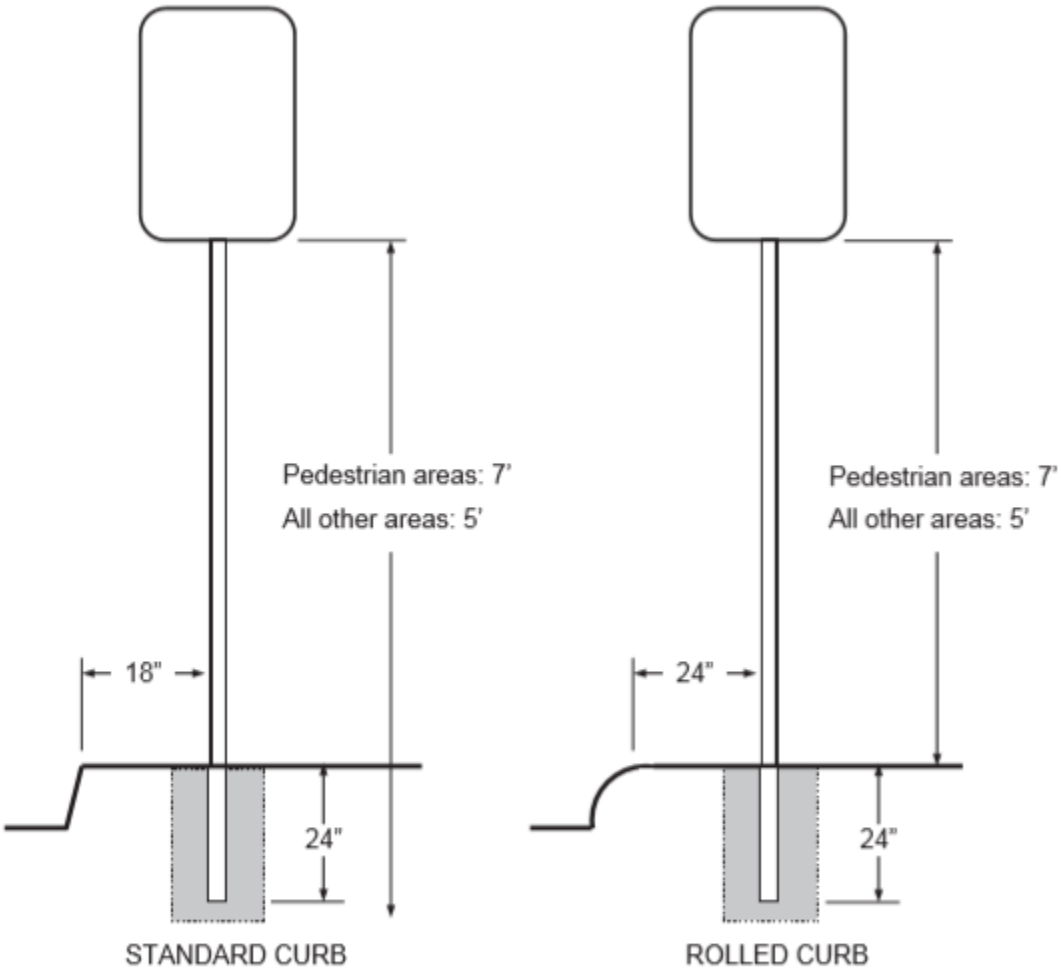


Fire Lane Sign Post Installation

1. Height of the sign: 7' in sidewalk or pedestrian areas, 5' in all other areas.
2. Distance from front of curb: 18" with standard curb, 24" with rolled curb, to center of post.
3. Depth of sign base: 24" minimum embedment.

NOTE: Signs may be mounted to an existing post or on a building that is no more than 24" from curb or edge of road surface.

Mounting Specifications for
Fire Lane Entrance and No Parking Signs



Signs shall be mounted facing the direction of vehicular travel.

Signs may be mounted on existing posts or buildings where the centerline of the sign is no more than 24" from the edge of the roadway.

Depth of bury shall be a *minimum* of 24".


TOW AWAY
FIRE
ACCESS LANE
NO PARKING at ANY TIME
UNAUTHORIZED VEHICLES WILL BE TOWED AWAY AT VEHICLE OWNER'S EXPENSE.
C.V.C. 22500.1 C.V.C. 22658(a)


NO
PARKING
FIRE
LANE
CVC 22500.1

TOWING OF VEHICLES FROM FIRE LANES ON PRIVATE PROPERTY BY THE PROPERTY OWNER

The owner of a private property containing a fire lane may have a vehicle towed from a fire lane on their property. The owner of the property usually contracts with a private towing company in advance. The following are the requirements for a property owner to tow a vehicle from a fire lane on his/her property.

1. Signs must be in place before an owner may tow. The signs must be displayed in plain view at all entrances to the property.
    a) The sign must be not less than 12 x 18 inches in size
    b) Lettering must not be less than one inch in height.
    c) Signs must clearly state that stopping in a fire lane is prohibited.
    d) The sign must indicate that vehicles will be removed at the owner's expense.
    e) The sign must contain the telephone number of the local traffic law enforcement agency.
2. The sign must contain the name and telephone number of each towing company that is party to a written agreement with the property owner.
3. The California Vehicle Code, Section 22658, requires the owner of the property to notify the local traffic law enforcement agency within one hour of towing.
4. Fire lanes shall be marked according to California Vehicle Code Section 22500.1, as indicated above.
5. Owners of private property may post NO PARKING signs for various reasons other than a fire lane and have vehicles removed. Refer to the California Vehicle Code, Section 22658.

MENLO PARK FIRE PROTECTION DISTRICT
GUIDELINE FOR THE INSTALLATION OF TRAFFIC CALMING DEVICES

Scope. When allowed by the fire code official, the installation of any traffic calming device shall be in accordance with Federal, State, and County guidelines and the requirements set forth in this Standard.

Traffic Calming Devices

Plans for traffic calming devices must be submitted for the Department's review and approval. We support the design of safe streets and the need for devices intended to slow traffic, i.e., islands, roundabouts, and bump outs; however, we discourage the use of speed humps. In most cases, traffic calming devices can be designed within our minimum requirements.

Emergency Response Issues with speed humps:

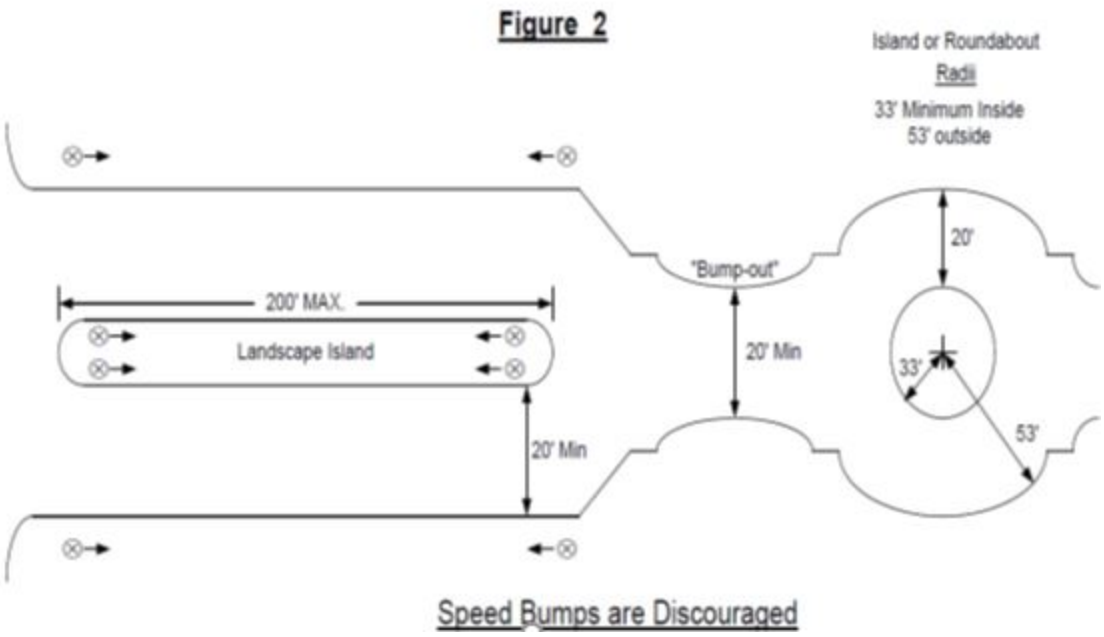
1. Concern over jarring of emergency rescue vehicles
2. Approximate delay of between 3 and 5 seconds per hump for fire trucks and up to 10 seconds for ambulances with patients

Locations. Traffic calming devices shall not be allowed on designated fire apparatus primary response routes, see www.menlofire.org for current Primary Response Route map. When approved by the fire code official, traffic calming devices shall be installed in accordance with the following Federal Highway Administration guidelines:

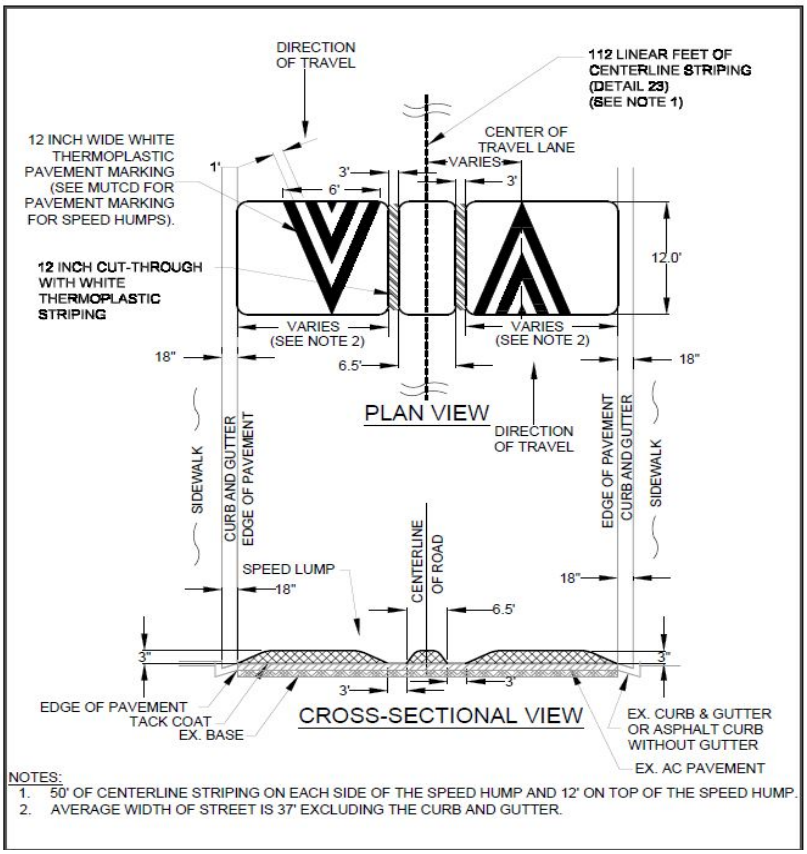
1. Traffic calming devices may only be installed on residential streets. They shall not be used on major roads, bus routes, or primary emergency response routes.
2. Speed humps shall not be placed mid-block or at intersections.
3. Traffic calming devices shall not be located on grades greater than 8 percent.
4. The maximum height of a speed hump shall not exceed 3.5 inches.
5. In accordance with San Mateo County Policy, speed humps shall not be placed on streets where posted speed limits are 30 miles per hour or more.

Installation of traffic calming devices. When allowed by the fire code official, traffic calming devices such as roundabouts or other devices that are meant to disrupt the normal flow of traffic, such devices shall be installed in a manner that does not obstruct the required width of a fire lane as specified by the California Fire Code Section 503.

Installation of speed humps. When approved by the fire code official, speed humps may be installed in accordance with the Federal Highway Administration *Manual on Uniform Traffic Control Devices*, Menlo Park Fire Protection District approved speed hump drawing, or local approved speed hump drawing.



Fire Lane Signs (Directions)



MENLO PARK FIRE PROTECTION DISTRICT
GUIDELINE FOR ROOF ACCESS

SCOPE. This guideline provides the minimum requirements necessary for the Fire Department roof access for firefighting operations or other emergencies as per the prescriptive requirements listed in the California Fire Code (CFC) Sections 504 and 1011.

When necessary, these guidelines may be modified to ensure adequate access for firefighters and public safety. Other prescriptive requirements for roof access include, but are not limited to, mechanical equipment, solar photovoltaic systems, and elevator equipment.

DEFINITIONS

PENTHOUSE: An enclosed, unoccupied rooftop structure for sheltering mechanical equipment and electrical equipment, tanks, elevators and related machinery, and vertical shaft openings.

SHIPS LADDER: Hybrid of stairs and ladder. They shall be equipped with treads, rails and riser. The slope is to be between 50 and 70 degrees from the horizontal. Review and approval by Menlo Fire is required prior to installation.

REQUIREMENTS

Stairways are required when:

- New buildings are 4-stories or more above grade plane, except those with a roof pitch greater than 33.3%
- There is an occupiable roof, roof garden, or other roof occupancy
- Elevator equipment is located on the roof of a building 4-stories or greater, or within a penthouse. Penthouses must comply with CBC Section 1510.2

Ladders are permitted when:

- Buildings are less than 4-stories above grade
- Buildings do not have an occupied roof. Access to the roof is permitted through a roof hatch or trap door not less than 16 sq. ft. in area and having a minimum dimension of 2 ft.

GENERAL

Access to the roof must be marked at the street and on the floor levels with a sign indicating “Roof Access”. Obstructions such as barriers, fencing, cable, aerial, and antennas that impede egress or access to the are ***prohibited unless approved by the Fire Marshal.*** Parapets are acceptable when the height allows access and egress for an aerial ladder.

Roofs with different levels may require permanent attached ladders. Review and approval are required by the Fire Marshal.

PLAN CHECK

Plan review for Fire Department roof access shall be completed as part of the Building permit review.

MENLO PARK FIRE PROTECTION DISTRICT
GUIDELINE FOR THE INSTALLATION OF FIRE ALARM AND DETECTION SYSTEMS

SCOPE: This guideline applies to the design and installation of automatic fire alarm systems in all buildings and structures *except* one and two-family dwellings, manufactured homes, and public schools. This guideline is to be used in conjunction with the latest State Fire Marshal adopted version of NFPA 72, 2019 California Fire Code, Menlo Park Fire Protection District Ordinance, and other applicable national standards including manufacturer recommendations.

GENERAL REQUIREMENTS

1. In accordance with Menlo Park Fire District Ordinance, Section 907.7, fire alarms systems in new commercial structures shall obtain a UL Certificate for the system prior to final inspection.
2. All systems shall be fully addressable to a central station.
3. The remote annunciator shall be located at the main entrance to the building, or other location approved by the fire code official.
4. A durable map shall be provided at the remote annunciator indicating the location of the fire alarm control panel.
5. The instructions to silence and reset the fire alarm shall be located at the fire alarm control panel.
6. Waterflow alarms shall not be silenced until waterflow is ceased.

SYSTEM DESIGN AND INSTALLATION

All individuals and companies who intend to engage in the installation or alteration of fire alarm or monitoring systems are subject to the requirements of this guideline.

Plans for a fire alarm or monitoring system are required to be designed by a registered professional engineer (Electrical, Mechanical, or Fire Protection), licensed by the State of California, Board of Professional Engineers. All copies of the plans shall be stamped and signed by the licensed individuals. A C-10 Licensed Contractor shall only design systems that the firm has a contract to install.

The fire alarm or monitoring system needs to be installed by an individual who holds a State of California C-10 Contractor's License.

PLAN SUBMITTAL DOCUMENTS

1. A completed Plan Check Application
2. Two sets of plans

3. State Fire Marshal equipment lists
4. Battery calculation sheet(s)
5. Fees (paid at submittal)

*Any modifications/changes to approved plans require a resubmittal/revision. Fees will apply.

REQUIRED CONSTRUCTION PLAN INFORMATION

I. Title sheet shall include:

A. Project address of alarm
B. Project location phone number
C. Project locations contact name
D. Occupancy classification of the building or area
E. Whether or not the building is sprinklered
F. Designer's contact information
G. Codes or standards the system is designed to
H. Installing contractor's information

II. Equipment List to include:

A. Manufacturer's name and model number for each device
B. Quantities of each type of device
C. Description of each device (i.e. heat detector, ionization detector, duct detector, control unit, etc.)
D. California State Fire Marshal's listing number and listing sheet with renewal number
E. Mounting requirements (wall, ceiling, flush, etc.)
F. Symbols to be used on drawings, along with legend
G. Manufacturer's cut sheet

III. Drawings:

Drawings are required to be labeled and legible. Stick on dots or similar materials are not acceptable. All drawings must be to scale and indicated on the plan set.

Floor Plans

1. Device location(s)
2. Type of device(s)
3. Control location(s)
4. Conduit connection and size
    a. Surface mounted installation
    a. Semi-flush mounted installation
    b. Flush mounted installation
5. Wire or cable type and size
6. Weatherproof exterior mounted device(s)

Point to Point System Wiring Diagram

1. Interconnection of identified devices and controls
2. Type of power feed to the control panel
3. External connection of modules in control panel

Alarm Circuit load consumption of furthest alarm circuits on drawing showing

1. Quantity of bells on furthest circuit and current consumption
2. Length of furthest circuit and resistance of wire

Fire Alarm System Riser Diagram

IV. Attachment to Drawings:

Battery Calculations

1. Standby power consumption of all current drawing devices, multiply the minutes required by minimum requirements of NFPA
    a. Control panel modules
    b. All devices on standby, including door holder, relays, etc.
2. Alarm power consumption of all current drawing devices, multiply the minutes required by minimum requirements of NFPA
    a. Add power consumption of all operating signals, lights, relays, etc.
    b. Omit power consumption of door holders, etc.
    c. Formula format for battery calculation.

Sequence of Operating Instructions:

1. Step by step instruction for the operation of each type of initiating device in the system including reset.

Sequence of Test Inspection Operating Instructions:

1. Identify monitoring company
2. Identify what auxiliary function switches or devices are to be disconnected before testing is to be started.
3. Selection of operation of at least one type of device in each initiating circuit as outlined in “Sequence of Operation”.
4. What functions are to take place upon operation of selected device.
5. Identification of equipment supplier and installer.

State Fire Marshal’s listing sheets for each device or component

INSPECTION AND TESTING PROCEDURE

A. The fire alarm system and all new fire alarm components shall be tested in accordance with NFPA 72.
B. A sheet shall be provided to the Fire Inspector indicating that a 100% pretest

through the central station has occurred, and that the system functions correctly.

C. A copy of the Record of Completion and Fire Alarm Certificate shall be presented to the Fire Inspector.
D. The building may not be occupied prior to testing of the fire alarm system by the Bureau of Fire Prevention and Life Safety.

MENLO PARK FIRE PROTECTION DISTRICT
GUIDELINE FOR THE INSTALLATION OF COMMERCIAL FIRE SPRINKLER SYSTEMS

SCOPE. This guideline applies to the design and installation of automatic fire sprinkler systems in all buildings and structures except one and two-family dwellings and manufactured homes. This guideline is intended to be used in conjunction with the latest State Fire Marshal adopted version of NFPA 13, 2019 California Fire Code, 2019 California Building Code, Menlo Park Fire Protection District Ordinance, and other applicable national standards including manufacturer recommendations.

SYSTEM DESIGN AND INSTALLATION

Plans for a fire sprinkler system shall be designed by a State of California C-16 licensed contractor or by a registered professional engineer (civil, mechanical, or fire protection), licensed by the State of California, Board of Professional Engineers. All copies of the plans shall be stamped and signed by the licensed individuals. A C-16 licensed contractor shall only design systems that the firm has a contract to install.

The fire sprinkler system shall be installed by an individual who holds a State of California C-16 contractor's license.
Any person who install, alters or repairs water-based fire protection systems is required to possess a certification from Cal Fire – OSFM. Apprentices and trainees shall also possess a registration card.

GENERAL REQUIREMENTS

1. When alterations of the existing light hazard sprinkler system exceed 50% of the compartmented area, the existing fire sprinklers shall use quick response sprinklers if the sprinklers are spaced at light hazard in accordance with NFPA 13.
2. Sprinkler system water flow alarm and valve tamper switches are required to be supervised by an approved central station for systems with more than 20 sprinklers. Shell buildings and tenant areas will not receive a final inspection until the sprinkler alarm supervision is complete and in service.
3. An exterior door is required to provide direct access to an interior fire sprinkler riser assembly.
4. When any building or structure or portion thereof undergoes an alteration, the portion of the fire sprinkler system in the alteration shall be upgraded to current codes and standards. This shall include but not be limited to the upgrading of seismic joints, sway bracing, fasteners and hangers.
5. CPVC Piping shall not be allowed for any NFPA 13 fire sprinkler system.
   Exception: When approved by the Fire Code Official, CPVC piping may be used in a NFPA 13 fire sprinkler system for residential portions of occupancies.

WATER SUPPLIES AND HYDRAULIC CALCULATIONS

1. For single story buildings or structures with an interior height of up to 18 feet as measured from the finished floor to the underside of ceiling, the minimum sprinkler design shall be 0.18 gpm over the most remote 3,000 sq. ft. area plus 500 gpm hose stream allowance included at the base of the riser. For buildings or structures with an interior height of over 18 feet from finished floor to the underside of the ceiling, the minimum sprinkler design shall be 0.33 gpm over the most remote 3,000 sq. ft. area plus 500 gpm for hose stream allowance included at the base of the riser. With written approval from the fire code official, schools, churches and similar occupancies which have few hazards and are unlikely to change may use lesser sprinkler design densities allowed by NFPA 13 and Chapter 9 of the Fire Code.
2. Sprinkler design shall be adequate for all anticipated high hazard situations such as high piled combustible storage, plastic storage 6 ft. or higher, flammable liquids and other special hazards.
3. The original sprinkler design for the building shall be maintained during all tenant improvements and other changes. One sprinkler may be added per plugged outlet included in the original sprinkler calculations. All other additional sprinklers are to be added from cross mains and feed mains unless the system is recalculated to verify that the additional sprinklers are acceptable.
4. NFPA 13 Section 11.2.3.3., Room Design Method, shall be omitted. The design for any existing light hazard sprinklered occupancy shall be not less than 0.1gpm over the most remote 1,500 sq. ft. area.
5. The following information shall be contained in the hydraulic calculations.
    a) Calculations must conform to manufacturer's specifications.
    b) "K" factors for all sprinklers.
    c) "C" values for the type of pipe used.
    d) A pump curve or city supply curve, where the total demand point is clearly plotted.
    e) A 10% reduction in the available water pressure shall be included in all calculations
6. When water storage tanks are required, each tank shall have a connection to a supply source to refill the tank automatically.

SYSTEM COMPONENTS

In addition to system components required by NFPA 13, all systems shall also include the following:

1. An approved rubber faced check valve located on the on the riser.
2. All valves shall have an all-weather sign affixed to them, which indicates their purpose. The Fire Department Connection (FDC) shall be posted with the address of the building it services.

3. In addition to the requirements of California Fire Code Section 903.3.8, floor control valves shall be provided for each floor of any building or structure two or more stories in height.
4. Check valves shall be provided on each floor of any building or structures.

PLAN SUBMITTAL PROCEDURE

1. Completed Plan Check Application
2. Two sets of plans
3. Water purveyor flow test
4. Two copies of hydraulic calculations
5. Two copies of cut sheets
6. Fees (paid at the time of submittal)

* Modifications/changes to approved plans will require an additional plan check. Fees will apply.

PLAN SUBMITTAL INFORMATION

1. Sprinkler plans and calculations shall be submitted with all the information required by the latest approved edition of NFPA 13, INCLUDING ALL DETAILS FOR HANGERS, and EARTHQUAKE SWAY BRACING AND FASTENERS. The sprinkler system will not receive a final inspection unless and until the installation is in accordance with the approved plans, and the placard with the design information has been provided on the riser. NFPA 13-6, CFC 901.2
2. To speed up the plan check process and to avoid the possibility of returning the plans for corrections, please use the following checklist, prior to submittal, to ensure that the appropriate information is included on the working sprinkler drawings:
    a) Name of owner
    b) Project location
    c) Designer information
    d) Sprinkler installer information
    e) Building square footage
    f) North arrow
    g) Scale (no smaller than 1/8 inch=1 foot)
    h) Site plan showing:
        i. tank
        ii. pump
        iii. structures
        iv. underground pipe size and type
        v. point of supply connections
        vi. depth of bury
        vii. type and size of any valves or meters.

i) Piping plan showing:
   i. tank
   ii. pump
   iii. structure elevations as they relate to each other.
j) Full height cross-section showing building construction types, vaulted, and beamed ceiling locations.
k) Water tank details including size and type of construction (Where applicable).
l) Sprinkler head spacing.
m) Label unsprinklered areas.
n) Indicate manufacturer, style, model, orifice size, and "K" factor of each sprinkler used.
o) Indicate the type and size of pipe.
p) Provide hanger details.
q) Indicate type of fitting used.
r) Use of each room.
s) Location of heat sources.

The following notes shall be completed and placed verbatim on the working sprinkler plans:

1. This fire sprinkler system shall be designed and installed in accordance with NFPA 13 and Menlo Park Fire District Standards.
2. Only listed and approved devices shall be installed in this system.
3. Only new, listed sprinklers shall be employed in the installation of this sprinkler system.
4. All piping shall be provided with hangers and shall be supported per code and manufacturer's specifications.
5. All piping shall be hung from structural members.
6. Underground mains and lead-in connections shall be flushed before connection is made to sprinkler piping. The flush shall take place in the presence of Fire District Inspectors.
7. This fire sprinkler system shall be tested and inspected at both rough and final inspections, prior to occupancy being granted. Call two working days in advance to schedule all inspections.

INSPECTION AND TESTING PROCEDURE

1. Welded piping connections shall be inspected before installation.
2. The sprinkler system shall be field tested and inspected at the rough plumbing stage (i.e. exposed pipe and fitting stage) by the Fire Prevention Division. All new systems shall be hydrostatically tested (not pneumatic) for leakage at 200psi. For existing systems, when 20 sprinkler heads or more are added, a hydrostatic test of 50 psi over normal water pressure shall be required.

3. Riser detail showing system split, pressure gauge, check valve, main control valve, relief valve (where applicable), main drain valve.
4. Indicate the manufacturer, model, type, and pump curve of the booster pump (where applicable).
5. All systems shall have an underground flush completed at time of hydrostatic test prior to connecting the underground to the overhead piping.
6. The sprinkler system and all of the related components shall be tested and inspected by the Fire Prevention Division at the final inspection stage, prior to occupancy being granted.
7. At least two spare sprinklers of each type, temperature rating, and orifice size used in the system and a sprinkler wrench shall be provided and located at the system riser.
8. A 5 Year Service Test sticker shall be placed on the riser at the time the sprinkler system is put in service or at the time of final inspection if the system is put in service before final inspection.

MENLO PARK FIRE PROTECTION DISTRICT
GUIDELINE FOR INSTALLATION OF RESIDENTIAL FIRE SPRINKLERS

SCOPE. This guideline applies to the design and installation of automatic fire sprinkler systems in one and two-family dwellings and manufactured homes. This guideline is meant to be used in conjunction with NFPA 13D: Installation of Sprinkler Systems in One and Two-Family Dwellings and Manufactured Homes, the California Fire Code, the California Residential Code, the Menlo Park Fire Protection District Ordinance, and other applicable national standings including manufacturer recommendation.

SYSTEM DESIGN AND INSTALLER REQUIREMENTS

All individuals and companies who intend to engage in the installation or alteration of fire sprinkler systems in one- and two-family dwelling are subject to these requirements.

Plans for a fire sprinkler system shall be designed by a State of California C-16 licensed contractor or by a registered professional engineer (Civil, Mechanical, or Fire Protection). All copies of the plans shall be stamped and signed by the licensed professionals. A C-16 licensed contractor shall only design systems that the firm has a contract to install.

The fire sprinkler system shall be installed by an individual who holds a State of California C-16 contractor's license or, by an owner-builder provided the individual owns the dwelling.

Any person who installs, alters or repairs water-based fire protection systems must possess a certification card from Cal Fire – OSFM. Apprentices & Trainees shall also possess a registration card.

GENERAL REQUIREMENTS

Automatic sprinkler systems installed in one and two-family dwellings shall be installed throughout the dwelling in accordance with NFPA 13D. Additional requirements for NFPA 13D sprinkler systems shall include:

1. Automatic fire sprinkler protection shall extend to attached garages and basements. Fire sprinkler protection may extend to accessory structures within 20 feet of the main structure and may also be required to extend to other structures that are located further than 150 feet from fire apparatus access. See CFC Section 503.1.1.
2. Pilot sprinkler heads shall be installed in attic spaces that are more than 30 inches in depth. Pilot sprinklers shall be placed every 30 feet on center.
3. Automatic fire sprinklers shall be included in all bathrooms or rooms regardless of use and size.
4. Automatic fire sprinklers shall be provided under stairways unless enclosed and filled with insulation.

5. Automatic fire sprinklers shall be included in cover patios or overhangs with a heat source
6. The main drain shall be a minimum ½ inch.
7. The main control valve shall be of indicating type and shall be located above ground prior to domestic split
8. The exterior fire bell shall be placed in the same area as the water supply control valve and placed at 8' AFG or per AHJ approval.
9. Only listed and approved devices shall be installed in this system.
10. All piping shall be provided with hangers and shall be supported per code and manufacturer's specifications. All piping shall be hung from structural members.
11. Underground mains and lead in connections shall be installed in accordance with requirements of the California Plumbing Code.
12. Where system piping or pumps are located in areas subject to freezing, steps shall be taken to protect system integrity; this may include, but is not limited to, heating and/or installation of insulation.
13. All sprinkler systems shall have a single supply main serving both the automatic sprinkler system and the domestic system. See Diagram 1
14. Requirements of the local water purveyor shall be followed and included on plans for submittal.
15. No wires shall be allowed to touch fire sprinkler piping due to pipe degradation.
16. Passive purge, backflow prevention and reduced pressure devices shall be approved by the local water purveyor for your system design.

WATER SUPPLY REQUIREMENTS

Automatic fire sprinkler protection shall be designed as follows:

Square footage of structure Design Calculation

Less than 3600 sq. ft.	2 Head Calculation
3600 sq. ft. or larger	4 Head Calculation

Automatic Booster Pump

When the domestic water supply is deficient or a water tank is being used to supply the automatic sprinkler system, an automatic booster pump may be required to maintain the required pressure at the minimum gallons per minute. Pumps shall meet the following requirements:

1. Automatically activated upon system demand.
2. Be of self-priming type.
3. Installed on the main water line prior to the domestic and fire split.
4. A bypass shall be designed and installed around the pump to ensure street pressure is maintained in event of pump failure.

Water Storage Tanks

When a water storage tank is required, the tank(s) shall have a connection to a supply source to refill the tank automatically.

SYSTEM COMPONENTS

1. An approved rubber faced check valve shall be located on the system side of the main control valve.
2. All valves shall have an all-weather sign affixed to them, which indicate their purpose.
3. For systems with normal operating pressure in excess of 100 psi, a listed pressure relief valve shall be installed on the riser.

Sprinklers

Only new listed residential fire sprinklers shall be used.

Pressure Gauge

A listed pressure gauge shall be installed and maintained on the sprinkler system riser. The pressure gauge shall be installed on the system side of the check valve.

Piping

1. Approved plastic pipe may be used when installed in accordance with the manufacturers listing where installed in attics. Adequate insulation shall be provided on the attic side of the piping to avoid exposure of the piping to temperatures in excess of its rated temperature.
2. Insulation, include spray application insulation mixtures, shall be compatible with piping materials in accordance with manufactures specifications.

3. CPVC Piping:
   CPVC Sprinkler sprig ups in attic space or where CPVC piping is exposed to the temperatures below 40 degrees F, or above 120 degrees F shall require the pipe to be protected against freezing by insulating coverings, frost proof casings, listed heat tracing systems, or other reliable means capable of maintaining minimum temperatures so listed within.
   a) Method of insulating CPVC piping vertical piping to sprig ups or change in elevation in attic space shall be inspected at time of Rough Inspection. MPFD permits insulation wrap properly sized for vertical section of piping in attic or exterior pipe.

b) Installation criteria for installing insulation in unheated attic areas to follow the guidelines of the insulation manufacturer. Per NFPA 13D Section 9.1.1 (note; method of piping anchoring will impact insulation cover).
c) CPVC piping shall be installed by persons who have been certified by the manufacturer for installation of CPVC piping.
d) Primers and glues shall be listed and approved for use with CPVC piping in systems using CPVC pipe.

System Activation

1. Upon activation of the fire sprinkler system, an interior alarm shall be provided capable of being heard in all sleeping rooms. Smoke alarms shall not act as an interior sounder for water flow unless the smoke alarm is listed and approved for such application.
2. The exterior fire bell shall be placed in the same area as the water supply control valve.

MANUFACTURED HOMES AND MULTI-UNIT MANUFACTURED HOUSING WITH TWO DWELLING UNITS

1. The Department of Housing and Community Development is responsible for plan approval, in-plant inspection, testing and installation of fire sprinkler systems installed in new manufactured housing units and multi-unit manufactured housing with two dwelling units for sale in California. Prior to shipment of a home containing a fire sprinkler system, the factory is required to affix a "Fire Sprinkler System Information and Installer Certification" label inside the unit that provides detailed information for the on-site installer and homeowner use. The label is required to be affixed on an inside wall or door of the water heater compartment.

2. The installation of a fire sprinkler system in an existing manufactured home or multi-unit manufactured home with two dwelling units requires prior design approval from the Department of Housing and Community Development and inspection approval of the installation prior to the installer covering the piping material with finished wall or ceiling materials. Only the occupant homeowner or a fire protection contractor holding a valid C-16 license may install a fire sprinkler system in an existing manufactured home or multi-unit manufactured home with two dwelling units. Menlo Park Fire Protection District is responsible for plan check, and the General Requirements noted above in Section 4.

TESTING PROCEDURE

1. The sprinkler system shall be field tested and inspected at the rough plumbing stage (i.e. exposed pipe and fitting stage) by the Bureau of Fire Prevention and Life Safety. All systems shall be hydrostatically tested (not pneumatic) for leakage for not less than a two-hour time period at 200 psi.

2. The riser shall show the system split (domestic and fire sprinkler piping), pressure gage, check valve, main control valve, relief valve (where applicable), main drain, and domestic shut-off valve.

3. The sprinkler system and all of the related components shall be tested and inspected by the Bureau of Fire Prevention and Life Safety at the final inspection stage, prior to occupancy being granted.

PLAN SUBMITTAL

Required Documents:

1. Plan Check Application
2. Water purveyor flow test
3. Two sets of plans
4. Two copies of hydraulic calculations
5. Two copies of the cut sheets
6. Fees (due at submittal) appropriate fees

*Modifications and revisions require re-review and approval. Fees will apply.

Plan Sheet Information

1. Owner Information
2. Project Address (including parcel number)
3. Designer Information
4. Contractor Information
5. Square Feet
6. Construction type
7. North Arrow
8. Scale (no smaller than 1/8 inch)
9. Site plan showing the following:
    a) Location of tank
    b) Location of pump
    c) Structure
    d) Underground pipe size and type
    e) Point of supply connection
    f) Depth of bury
    g) Type and size of valves or meters
10. Piping plan showing the following:
    a) Tank
    b) Pump
    c) Structure elevations
11. Full height cross section (including vaulted and beam ceiling locations)
12. Water tank details
13. Sprinkler spacing

14. Room use
15. Heat sources
16. Unsprinklered areas

Hydraulic Calculations

1. Calculations must conform to manufacturer's specifications.
2. "K" factors for all sprinklers.
3. "C" values for the type of pipe used.
4. A pump curve or city supply curve, where the total demand point is clearly plotted.
5. A 10% reduction in the available water pressure shall be included in all calculations.
6. Provide a 5 gpm domestic demand at the base of the riser in the calculations.

Disclaimer: Simplified Calculation Method as per NFPA 13-D, Section 10.4.3, is *not* accepted by MPFD.

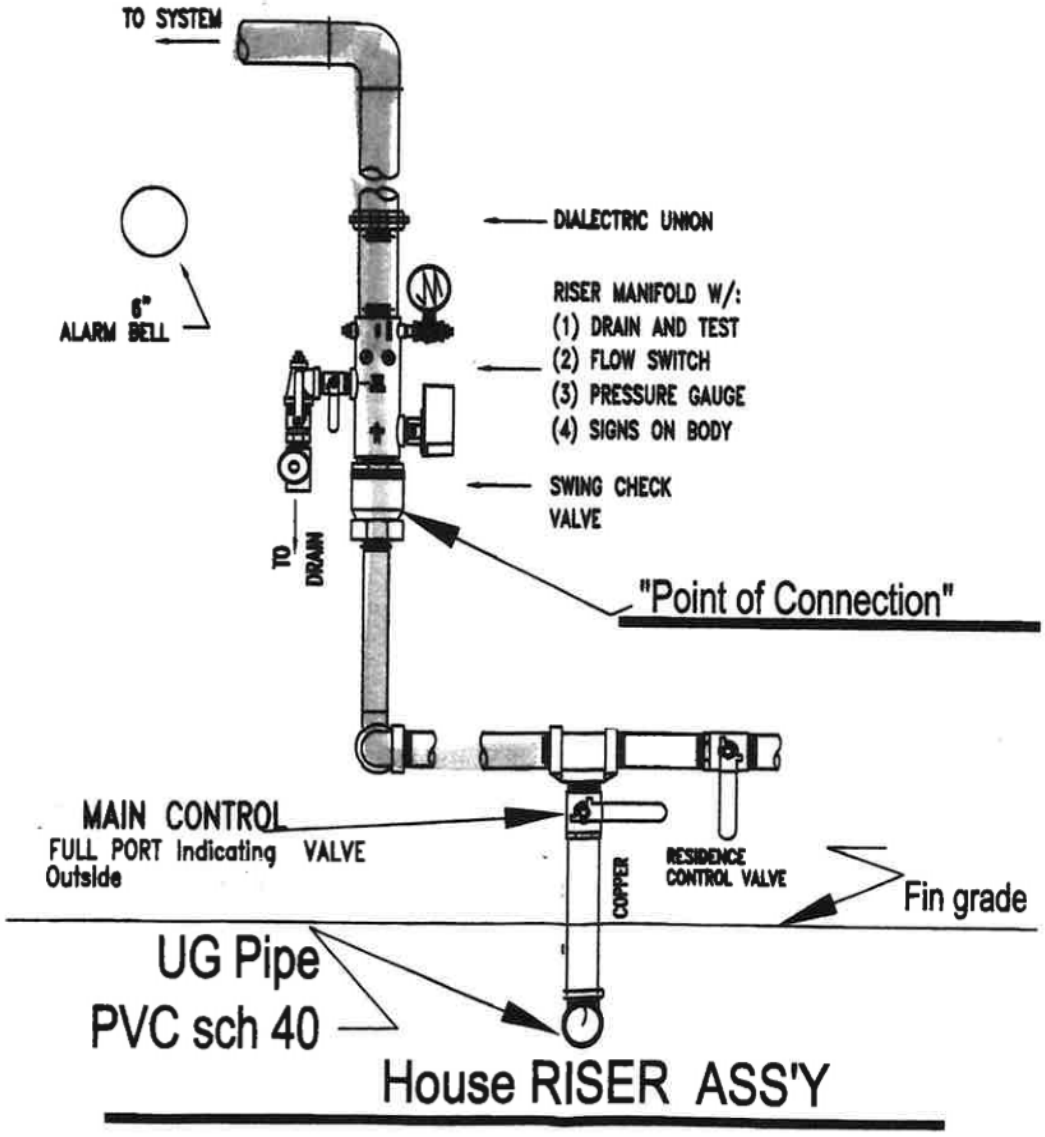


Diagram 1

MENLO PARK FIRE PROTECTION DISTRICT
UNDERGROUND PIPING GUIDELINES

SCOPE. This standard applies to the design and installation of underground fire piping for automatic fire sprinkler systems and fire hydrant connections. Underground fire piping systems shall be in accordance with NFPA 24 and this Menlo Park Fire Protection District Standard. All individuals and companies who intend to engage in the installation or alteration of underground fire piping systems are subject to the requirements of this standard.

RESPONSIBILITY

The underground fire piping system shall be installed by an individual holding a Class A or C-16 State of California Contractor's License. A licensed contractor shall only design systems that the firm has a contract to install.

GENERAL REQUIREMENTS

Pipe & Fitting Protection

Menlo Park Fire District requires additional pipe protection. All metallic pipes and fittings shall be epoxy coated, polyethylene encased. *All bolts, nuts, tie rods, etc. for all portions of the underground mains shall be 316 stainless steel*. The transition from underground main to the sprinkler riser shall have a dielectric flange connection. Complete details shall be shown on the plan drawings.

Tracer Wire

Tracer Wire shall be required on all underground fire lines and to be minimum 10 A.W.G.

Cover – Depth

The depth of covering shall be measured from top of pipe to finished grade.

Under areas of vehicular traffic – 3 feet minimum

Under landscaping and walkways – 2 ½ feet minimum

Under railroad tracks – 4 feet minimum (See railroad specs)

Backfill

Backfill materials shall contain no ashes, cinders, debris, organic matter, or other corrosive materials. Rock shall not be placed in trenches.

Valves

Fire Department Valves shall be of an indicating type.

Fire Department Connection (FDC)

1. The FDC shall be located 2–3 feet back from walkways or curbs and shall indicate the address of the building it supports.
2. The FDC shall be visible from street and properly identified.
3. FDC's shall be located within 50 feet of a fire hydrant.
4. The centerline of FDC shall be between 36–44 inches from finished grade.
5. The FDC shall remain clear of obstructions and remain accessible.
6. The FDC shall have 1-5" Storz Quick connection and 2 –2 ½" connections minimum based upon design criteria. (See sample picture)

Fire Hydrants

1. Fire hydrants shall be installed with a minimum 6" pipe, supplied by a minimum 8" supply line.
2. All fire hydrants shall be wet barrel type with one 4 ½" connection and two 2 ½" connections.
3. Blue Dots shall be installed off center of drive isle to indicate hydrant location.
4. All private fire hydrants shall be painted red.

TESTING PROCEDURE

In accordance with NFPA 24, a 200 psi pressure test is required for a minimum of 2 hours.

All thrust blocks and joints to be exposed at time of inspection.

Menlo Park Fire District Inspectors shall witness the flush of underground piping. 6-inch piping shall require a minimum of (3) 2 ½" hoses for the flush. 8-inch piping shall require a minimum of (4) 2 ½" hoses for the flush, flush per NFPA 24.

A final inspection is required with all corrections completed.

PLANS SUBMITTAL REQUIREMENTS

1. A completed Plan Review Application
2. Two sets of plans,

3. Fees (due at submittal)

*All modifications/changes to existing systems require a resubmittal. Fees will apply

MENLO PARK FIRE PROTECTION DISTRICT GUIDELINE
WATER SUPPLY - FIRE HYDRANTS

SCOPE. This standard applies to the installation of both public and private water supplies and fire hydrants. Installation, placement, and fire flow requirements for fire hydrants shall be in accordance with this Standard, the 2019 California Fire Code, the currently adopted version of NFPA 24 by the California State Fire Marshal, and any nationally recognized standards and manufacturer's recommendations.

DEFINITIONS

ACCESS POINT. An approved access is required for all new buildings and shall reach to a point (Access Point) within 150 feet of all exterior areas of each building. See also the 2019 California Fire Code, Appendix OCCUPANCY TYPE: The purpose for which a building or part thereof is used or intended to be used.

ON-SITE HYDRANT. Fire hydrants that are located within the property line and are usually privately owned and maintained. However, there are instances where on-site hydrants are publicly owned and maintained by a water purveyor.

PUBLIC HYDRANT. Fire hydrant installed and maintained by the local water purveyor.

TYPE OF CONSTRUCTION. The framework and construction of a building or structure as classified in one of five construction types defined by the California Building Code.

WATER PURVEYOR. A public utility, a mutual water company, a governmental body, or other entity, owning and operating a water system and holding a valid permit from the State or County Health Department to purvey water.

GENERAL REQUIREMENTS

Fire hydrants and required access roads shall be provided prior to the time of construction.

Installation
Fire hydrants shall be visible and accessible from a required access road. A fire hydrant shall be substantially supported. Fire hydrant installation details shall be in accordance with NFPA 24 and local water purveyor standards. Roadway turnouts not less than 26 feet wide and 20 feet in length shall be required along the roadway at fire hydrant locations.

Underground Supply Piping
After the hydrant location plans are approved, the engineered underground supply piping

plans, with hydrants shown at the approved locations, are required to be plan checked and approved prior to installation as follows:

Public Hydrants. Underground plans are reviewed and approved by the local water purveyor and Menlo Park Fire District. The installation is inspected by the water purveyor.

On-Site Hydrants. Engineered underground plans are reviewed and approved by the Fire Prevention Division. The installation is inspected by Menlo Park Fire District.

Painting
Public hydrants shall follow local water purveyor standards.

On-Site Fire hydrants shall be painted red.

Reflective Pavement Markers
Prior to occupancy of any structure, blue reflective hydrant location markers shall be placed on the access roads in accordance with Fire District standards. If the final asphalt cap is not in place at the time final occupancy is desired, the hydrant markers shall still be installed and replaced when the final asphalt cap is completed. See drawing marked "TYPICAL HYDRANT MARKER LOCATION."

Hydrant Type and Size
All new hydrants shall be a minimum 6-inch wet barrel fire hydrant. The hydrant outlets shall be National Standard Thread, NST and shall have one 4 ½ inch and two 2 ½ inch.

Minimum Flow per Hydrant/Required Fire Flow
The required fire flow is based on the 2019 California Fire Code Appendix B.

Number of Hydrants
The number of hydrants is based on use/occupancy type, required fire flow, distance and access considerations. See 2019 California Fire Code Appendix C.

Changes/Relocations
Fire hydrants shall be installed at the locations approved by the Fire Prevention Division. Any changes or relocation of fire hydrants from the approved hydrant location on the plan shall be approved by the Fire Prevention Division prior to installation or relocation.

Out of Service Fire Hydrants
When fire hydrants are for any reason, nonoperational, they shall be covered with black plastic bags and the bags shall be secured in place.

SCHOOLS

Public Schools
California Fire Code Appendix BB and CC shall be used to determine

distance/spacing, and number of hydrants. The State Fire Marshal (SFM) requires the Division of State Architect (DSA) to request water and access requirements and approval from the local jurisdiction.

Private Schools

California Fire Code Appendix B and C shall be used to determine distance/spacing, and number of hydrants.

GENERAL GUIDELINES FOR FIRE HYDRANT PLACEMENT

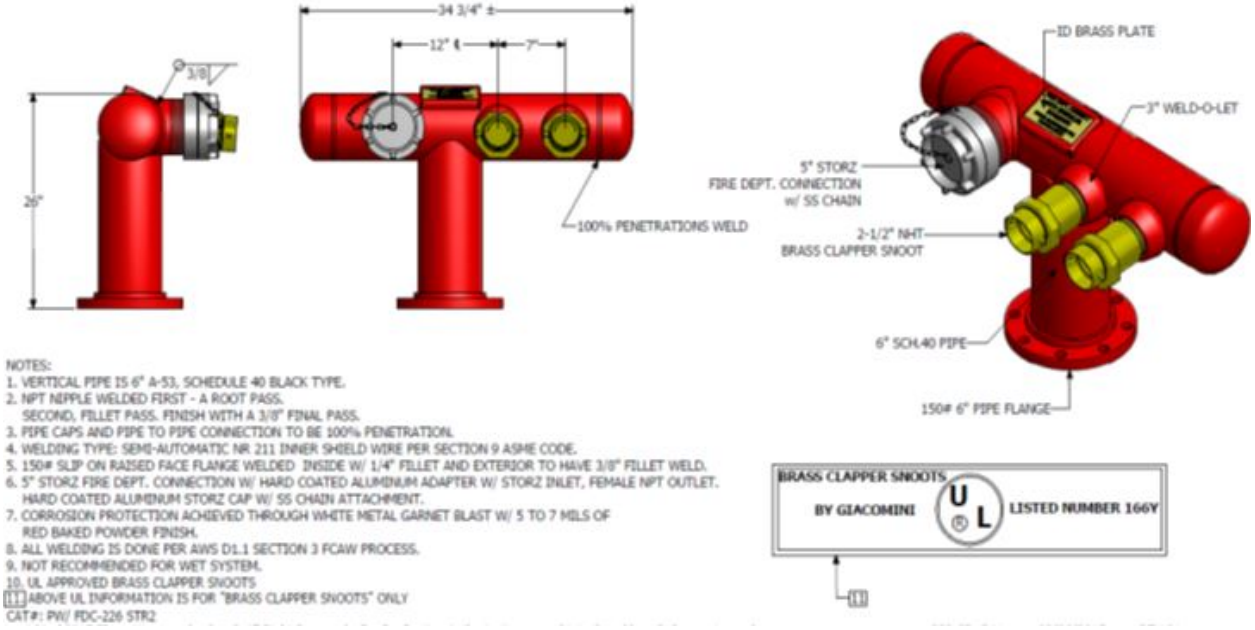
1. Consult local Building & Safety for permit requirements for walls.
2. Hydrants shall have a concrete pad.
3. Bollards may be required.
4. Location of front bollards shall be adjusted to provide clearance for outlets, and shall have approval of the Fire Prevention Division.
5. Start at the entrance (s) to the project under review.
6. Use existing hydrants if within the allowable distance based upon the type of project. (Existing hydrants may need to be upgraded) If not sure about existing hydrants, do a site inspection first.
7. Flag lots may present a problem. Hydrant location is critical and must be verified by the Bureau of Fire Prevention and Life Safety.
8. If there is no on-site access required from the street, measure from the closest point on the street (nearest the structure) to the hydrant in the path of travel.
9. Do not place along sharp bends in access road/driveway.
10. When locating on a corner, place the hydrant 5-10 feet past the BCR (beginning curb return).
11. Do not place in the bulb of a cul-de-sac.
12. Place on the right side of the street if possible, based upon the normal response from the first-in fire station.
13. Place on property lines between lots.
14. If driveways are shown, try to place where there is the least impact to on-street parking.
15. Keep 25-50 feet from any building if possible.
16. Try to place where the road/driveway is level.
17. If there is a slope behind the hydrant, require a retaining wall 3 feet back.
18. Require concrete pads around hydrants.
19. Watch grade level, walls and obstructions, anywhere you are considering placing a hydrant.
20. Any changes in location of fire hydrants shall be approved by the Fire Prevention Bureau prior to installation.
21. Fire hydrants and water lines must be in the water purveyor's easement or within easements to the property owners that will benefit from the hydrant.
22. Make sure you denote the hydrant type, size and number of outlets on the approved hydrant location plans.

PLAN CHECK

A fire hydrant location plan check is conducted during the civil plan review. All projects where new buildings or additions to buildings are proposed. The following information must be provided on the civil plan sheets:

1. Show existing and proposed hydrant locations.
2. Indicate size of hydrant(s)
3. Number and size of outlets (i.e. 6" wet barrel with one 4 ½" and two 2 ½" outlets)
4. Show streets, driveways, access roads (including parking lots), gates and all structures existing and proposed

FIRE DEPARTMENT CONNECTION DIAGRAM AS MINIMUM DESIGN REQUIREMENTS.



NOTES:
1. VERTICAL PIPE IS 6" A-53, SCHEDULE 40 BLACK TYPE.
2. NPT NIPPLE WELDED FIRST - A ROOT PASS.
   SECOND, FILLET PASS. FINISH WITH A 3/8" FINAL PASS.
3. PIPE CAPS AND PIPE TO PIPE CONNECTION TO BE 100% PENETRATION.
4. WELDING TYPE: SEMI-AUTOMATIC NR 211 INNER SHIELD WIRE PER SECTION 9 ASME CODE.
5. 150# SLIP ON RAISED FACE FLANGE WELDED INSIDE W/ 1/4" FILLET AND EXTERIOR TO HAVE 3/8" FILLET WELD.
6. 5" STORZ FIRE DEPT. CONNECTION W/ HARD COATED ALUMINUM ADAPTER W/ STORZ INLET, FEMALE NPT OUTLET. HARD COATED ALUMINUM STORZ CAP W/ SS CHAIN ATTACHMENT.
7. CORROSION PROTECTION ACHIEVED THROUGH WHITE METAL GARNET BLAST W/ 5 TO 7 MILS OF RED BAKED POWDER FINISH.
8. ALL WELDING IS DONE PER AWS D1.1 SECTION 3 FCAW PROCESS.
9. NOT RECOMMENDED FOR WET SYSTEM.
10. UL APPROVED BRASS CLAPPER SNOOTS
11. ABOVE UL INFORMATION IS FOR "BRASS CLAPPER SNOOTS" ONLY

CAT#: PW/ FDC-226 STR2

TYPICAL HYDRANT MARKER LOCATION

Figure 1

TWO LANE STREET

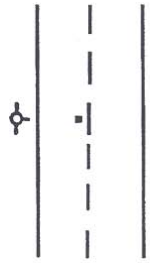


Figure 2

MULTI-LANE STREET

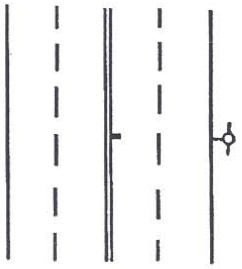


Figure 3

TWO LANE STREET

AT INTERSECTION

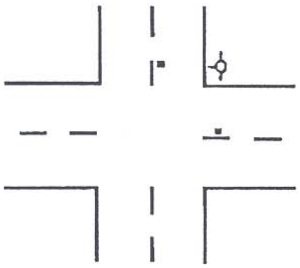
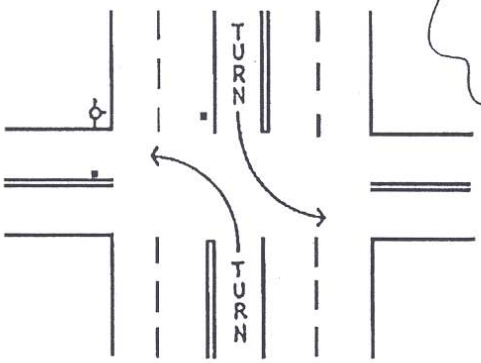


Figure 4

FOUR LANE STREET WITH TURN LANE

AT INTERSECTION



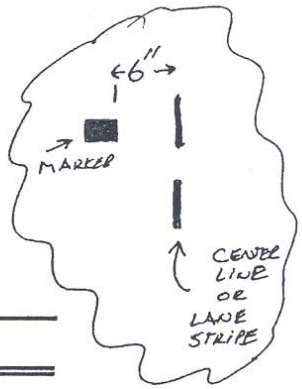


Figure 5

MULTI-LANE STREET WITH

TURN LANE

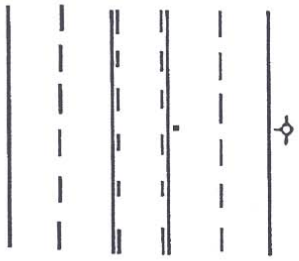
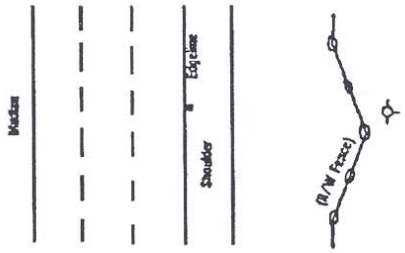


Figure 6

FREEWAYS AND EXPRESSWAYS



MENLO PARK FIRE PROTECTION DISTRICT STANDARD
EMERGENCY RESPONDER RADIO SIGNAL AMPLIFICATION SYSTEMS

SCOPE. To ensure all new buildings to have adequate radio communication coverage for first responders.

Existing buildings shall provide radio coverage for emergency responders as required in Chapter 11 of the California Fire Code.

REFERENCES

California Fire Code, 2019 Edition, Section 510

NFPA 72, National Fire Alarm and Signaling Code

NFPA 1221, Standard for the Installation, Maintenance and Use of Emergency Services

GUIDELINES

Systems, components, and equipment required to provide emergency responder radio coverage system shall comply with the California Fire Code, Sections 510.4.1 through 510.4.2.5.

1. Radio Signal Strength. The building shall be considered to have acceptable emergency responder radio coverage when signal strength measurements in 95 percent of all areas on each floor of the building meet the signal strength requirements in CFC, Sections 510.4.1.1 and 510.4.1.2.
    a) Minimum signal strength into the building. The minimum inbound signal strength shall be sufficient to provide usable voice communications throughout the coverage area as specified by the fire code official. The inbound signal level shall be sufficient to provide not less than a Delivered Audio Quality (DAQ) of 3.0 or an equivalent Signal-to-Interference-Plus-Noise Ratio (SINR) applicable to the technology for either analog or digital signals.
    b) Minimum signal strength out of the building. The minimum outbound signal strength shall be sufficient to provide usable voice communications throughout the coverage area as specified by the fire code official. The outbound signal level shall be sufficient to provide not less than a DAQ of 3.0 or an equivalent SINR applicable to the technology for either analog or digital signals.
    c) System performance. Signal strength shall be sufficient to meet the requirements of the applicable being utilized by public safety for emergency

operations through the coverage area as specified by the fire code official in Section 510.4.2.2.

2. System Design. The emergency responder radio coverage system shall be designed in accordance with Sections 510.4.2.1 through 510.4.2.8 and NFPA 1221.
    a) Amplification systems allowed. Buildings and structures which cannot support the required level of radio coverage shall be equipped with a radiating cable system, a distributed antenna system with Federal Communications Commission (FCC) – certified signal boosters, or other system approved by the fire code official in order to achieve the required adequate radio coverage.
    b) Technical criteria. The fire code official shall maintain a document providing the specific technical information and requirements for the emergency responder radio coverage system. This document shall contain, but not be limited to, the various frequencies required, the location of radio sites, effective radiated power of radio sites, and other supporting technical information.
    c) Standby power. Emergency responder radio coverage systems shall be provided with standby power in accordance with CFC, Section 1203. The standby power supply shall be capable of operating the emergency responder radio coverage system for a duration of not less than 24 hours.
    d) Signal booster requirements. If used, signal boosters shall meet the following requirements:
        i. All signal booster components shall be contained in a National Electrical Manufacturer's Association (NEMA) 4-type waterproof cabinet.
        ii. Battery systems used for the emergency power source shall be contained in a NEMA 3R or higher-rated cabinet.
        iii. Equipment shall have FCC or other radio license authority certification and be suitable for public safety use prior to installation.
        iv. Where a donor antenna exists, isolation shall be maintained between the donor antenna and all inside antennas to not less than 20dB greater than the system gain under all operating conditions.
        v. Bi-Directional Amplifiers (BDAs) used in emergency responder radio coverage systems shall have oscillation prevention circuitry.
        vi. The installation of amplification systems or systems that operate on or provide the means to cause interference on any emergency responder radio coverage networks shall be coordinated and approved by the fire code official.
    e) System monitoring. The system shall be monitored by a listed fire alarm control unit, or where approved by the fire code official, shall sound an audible signal at a constantly attended on-site location. Automatic supervisory signals shall include:
        i. Loss of normal AC power supply.
        ii. System battery charger(s) failure.
        iii. Malfunction of the donor antenna(s).

iv. Failure to active RF-emitting device(s).
v. Low-battery capacity at 70-percent reduction of operating capacity.
vi. Failure of critical system components.
vii. The communications link between the fire alarm system and the emergency radio enhancement system.

f) Additional frequencies and change of frequencies. The emergency ·responder radio coverage system shall be capable of modification or expansion in the event frequency changes are required or additional frequencies are made available by the FCC or other radio licensing authority.

g) Radio communication antenna density. Systems shall be engineered to minimize the near-far effect. The system design shall include sufficient antenna density to address reduced gain conditions.
Exceptions:
i. Class A narrow band signal booster devices with independent AGC/ALC circuits per channel.
ii. Systems where all portable devices within the same band use active power control features.

3. Installation Requirements. The installation of the public safety radio coverage system shall be in accordance with CFC, Sections 510.5.1 through 510.5.4.

a) Approval prior to installation. Amplification systems capable of operating on frequencies licensed to any public safety agency by the FCC or other radio licensing authority shall not be installed without prior coordination and approval of the fire code official.

b) Minimum qualifications of personnel. The minimum qualifications of the system designer and lead installation personnel shall include:
i. A valid FCC-issued general radio operators license; and
ii. Certification of in-building system training issued by a nationally recognized organization, school or a certificate issued by the manufacturer of the equipment being installed. These qualifications shall not be required where demonstration of adequate skills and experience satisfactory to the fire code official is provided.

c) Acceptance Test Procedure. Upon completion of installation, the building owner shall have the radio system tested to ensure the two-way coverage on each floor of the building is a minimum of 95 percent. The test procedure shall be conducted as follows:
i. Each floor of the building shall be divided into a grid of 20 approximately equal test areas.
ii. The test shall be conducted using a calibrated portable radio of the latest brand and model used by the agency talking through the agency's radio communications system.
iii. Failure of more than one test area shall not result in failure of the test.
iv. In the event that two of the test areas fail the test, in order to be more statistically accurate, the floor shall be permitted to be divided into 40 equal test areas. Failure of not more than two nonadjacent test areas shall not result in failure of the test. If the system fails the 40-area test,

the system shall be altered to meet the 95 percent coverage requirement.

v. A test location approximately in the center of each test area shall be selected for the test, with the radio enabled to verify two-way communications to and from the outside of the building through the public agency's radio communications system. Once the test location has been selected, that location shall represent the entire test area. Failure in the selected test location shall be considered failure of that test area. Additional test locations shall not be permitted.

vi. The gain values of all amplifiers shall be measured and the test measurement results shall be kept on file with the building owner so that the measurements can be verified during annual tests. In the event that the measurement results become lost, the building *owner* shall be required to rerun the acceptance test to reestablish the gain values.

vii. As part of the installation, a spectrum analyzer or other suitable test equipment shall be utilized to ensure spurious oscillations are not being generated by the subject signal booster. This test shall be conducted at time of installation and subsequent annual inspections.

viii. Systems incorporating Class B signal-booster devices or Class B broadband fiber remote devices shall be tested using two portable radios simultaneously conducting subjective voice quality checks. One radio shall be positioned not greater than 10 feet from the indoor antenna and the second radio shall be positioned at the distance that represents the farthest distance from any indoor antenna. With both radios simultaneously keyed up on different frequencies within the same band, subjective audio testing shall be conducted and comply with DAQ levels as specified in CFC, Sections 510.4.1.1 and 510.4.1.2.

d) FCC Compliance. The emergency responder radio coverage system installation and components shall comply with all applicable federal regulations including, but not limited to, FCC 47 CFR Part 90.219.

4. Maintenance**.** The emergency responder radio coverage system shall be maintained operational at all times in accordance with CFC, Sections 510.6.1 through 510.6.4.

a) Testing and Proof of Compliance. The emergency responder radio coverage system shall be inspected and tested annually or whenever structural changes occur including additions or remodels that could materially change the original field performance tests. Testing shall consist of the following:

i. In-building coverage test as described in Section 510.5.3.

ii. Signal boosters shall be tested to ensure that the gain is the same as it was upon initial installation and acceptance or set to optimize the performance of the system.

iii. Backup batteries and power supplies shall be tested under load of a period of 1-hour to verify that they will properly operate during an actual power outage. If within the 1-hour test period the battery

exhibits symptoms of failure, the test shall be extended for additional 1-hour periods until the integrity of the battery can be determined.

iv. All other active components shall be checked to verify operation within the manufacturer's specifications.

v. At the conclusion of the testing, a report, which shall verify compliance with CFC, Section 510.5.3, shall be submitted to the fire code official.

b) Additional Frequencies. The building owner shall modify or expand the emergency responder radio coverage system at their expense in the event frequency changes are required or additional frequencies are made available by the FCC or other radio licensing authority. Prior approval of a public safety radio coverage system on previous frequencies does not exempt this section.

c) Nonpublic safety system. If installation of a nonpublic safety amplification system interferes with the performance of the emergency responder communication coverage system, the nonpublic system shall be corrected or removed.

d) Field Testing. Agency personnel shall have the right to enter onto the property at any reasonable time to conduct field testing to verify the required level of radio coverage.

PLAN CHECK

A permit for the installation of or modification to an emergency responder radio coverage system and related equipment is required. Maintenance performed in accordance with the CFC is not considered a modification and does not require a permit.

EMERGENCY RESPONDER RADIO SYSTEM FREQUENCY REQUIREMENTS

Display	RX FREQ	RX CTCSS	TX FREQ	TX CTCSS	NOTES
FIRE					
CONTROL 1A	153.89000	114.8	159.07500	107.2	South Dispatch
COMMAND 11	154.37000	114.8	156.01500	123.0	South Command
TAC 15	154.04000	118.8	154.04000	118.8	South Tactical
TAC 16	154.01000	110.9	154.01000	110.9	South Tactical
TAC 17	155.40000	141.3	155.40000	141.3	South Tactical
COMMAND 51	151.47500	167.9	159.01500	167.9	County Command

VFIRE 26	154.30250	156.7	154.30250	156.7	Stand by TAC
Repeated Channels					
Easter Cross Site	N 37.46328	W - 122.26303			
POLICE					
Atherton PD	489.0875	162.2	492.0875	162.2	Police Dispatch
East Palo Alto PD	488.38.75	114.8	491.3875	114.8	Police Dispatch
Menlo Park PD	488.3375	152.2	491.3375	152.2	Police Dispatch
ALL PD					
TAC 2	488.7125	114.8	491.7125	114.8	Police Secondary
TAC 3	488.5375	114.8	491.5375	114.8	Police Tactical
Green/CWMA	488.8875	114.8	491.8875	114.8	County Wide Mutual Aid
SHERIFF/EMS	**TRUNKED**	**SYSTEM**			
700 MHz system range	770.03125	To	773.48125	Downlink base	To portable
	795.03125	To	798.48125	Uplink Portable	To base
400 County Center	N 37.48825	W - 122.23047			

*The Fire VHF system listed the simplex channels so that they can be set up as uplink only. We require all the repeated frequencies to be in the BDA system.

MENLO PARK FIRE PROTECTION DISTRICT
STANDARD FOR PIPED AIR SCBA REFILLING SYSTEMS

PURPOSE. This standard applies to all new high-rise buildings as defined by the California Building Code and new underground transportation and pedestrian tunnels exceeding 300 feet in length, except as provided below.

SCOPE. To outline the minimum requirements for the design, fabrication, engineering, installation, testing and maintenance of Piped Air SCBA Refilling System.

> Note: Any materials specified by a trade mark or product name within this specification necessary to design, fabricate, test, maintain and use the equipment described and regulated by this standard or code, may be substituted with a like product provided it meets or exceeds those specifications and be in accordance with nationally recognized and accepted standards, principals and tests.

CODES AND STANDARDS

This system shall be installed in accordance with this standard and all applicable codes and nationally recognized standards for high pressure breathing air systems. If/when a requirement within this standard is not specific, then, the requirement/standard which is more specific shall apply. The following codes/standards shall apply but not be limited to:

A. Chapter 53 of the 2019 Edition of the California Fire Code.
B. Compressed Gas Association, Inc., Pamphlet CGA-G-7.1: Commodity Specification for Air.
C. Current Edition of NFPA 1989: Breathing Air Quality for Firefighter and Emergency Services Respiratory Protection.
D. Current Edition of NFPA 1981: Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services
E. ANSI and ASTM standards may be used which are specific to high pressure breathing air systems

DESCRIPTION

The SCBA Piped Air Refilling System is a permanently installed, self-contained high-pressure air system with remote filling stations, supply standpipe and equipment/materials to isolate, interconnect and allow the remote filling of high pressure SCBA (Self Contained Breathing Apparatus) air bottles (6,000 psi) within the building/structure or accessory areas. Provisions shall be made to allow the Air Support Vehicle to interconnect directly to the system, allowing a continuous supply of air from the vehicle to the installed system.

A high-pressure air maintenance tank shall be installed in such a manner as to keep constant air pressure on the entire installed system to prevent any contamination of the air within the system while in a static state.

The air supply from the Air Support Vehicle shall be able to be isolated from the on-site air pressure maintenance tank and be diverted directly to the main air piping riser by means of check valve(s), and a two-way selector valve allowing the air to be supplied directly to the remote fill cabinets.

The building shall be equipped with floor landing filling station(s) installed in each fire department equipment storage room. Each filling station shall have the capability of manually being isolated from the remainder of system by means of valves and check valves should a leak failure occur from the filling station.

An additional valve shall be placed within the main riser allowing the individual isolation of all piping and filling stations above a leak or failure of the main piping riser.

SAFETY

This system shall be designed to provide a reliable, clean air source within the building/structure via the installed piping and associated equipment and materials for fire department personnel to refill SCBA bottles and perform firefighting, rescue or other type of incident requiring self-contained breathing apparatus. Nothing within the content of this specification shall be reduced in quality in any manner including but not limited to materials, equipment, installation, design, testing, maintenance or construction. All portions of the system shall be designed to meet manufactures specifications.

GENERAL REQUIREMENTS

All systems shall have the following:

A. Street level inlet control fill station
B. Building piping and associated components
C. Filling control station cabinet (every 3 floors)
D. High pressure maintenance tank
E. Low pressure air switch
F. All associated valves,
G. Gauges (up to 7,500 psi oil filled)
H. Check valves
I. Isolation valves

PRESSURE RATING

All components of the SCBA air refilling system shall be constructed of materials and equipment tested and certified for a minimum working pressure of 6000 psi

DESIGN ENGINEER

The complete system shall be designed by a current State of California licensed mechanical engineer. The engineers license stamp and signature shall be provided on all submitted plans. (wet stamp)

CONTRACTOR QUALIFICATIONS

Installing contractor shall have an active California C-36 license.

PLAN SUBMITTAL

The Menlo Park Fire Protection District and the associated Building Department shall be provided with plans for review and approval. Installation shall not commence until plans have been approved and a permit is issued.

The plans shall provide the minimum information:

A. Manufactures technical product data and installation data for all equipment and materials used.
B. All piping, fittings, valves, gauges, hangers/supports and fasteners.
C. System calculations to support the minimum required filling specification at the uppermost remote filling station plus a minimum 25% safety factor.
D. All technical data sheets, UL certifications, and nationally recognized listing agency for the products to be used.
E. Codes and standards used for the system design.

CERTIFICATE OF INSTALLATION

A letter shall be submitted by the installer and engineer at the completion of the installation to certify that all portions of the piped air system has been designed, installed, tested and inspected and is proper working order and free of defects.

System shall be accepted with a final inspection and system test by Menlo Park Fire District Inspector.

RECORD DRAWINGS

Any changes to the originally approved plans shall be submitted for approval prior any changes being made to the system.

At the completion of the installation, a set of As-builts shall be provided to the following:

A. The Menlo Park Fire Protection District
B. The building owner
C. Building Department

TRAINING

The installer/contractor shall provide the Menlo Park Fire Protection District no less than 6 (six) hours of on-site training divided into 3 separate and equal sessions for the use and operation of the system. Scheduling of the training shall be coordinated through the Menlo Park Fire Protection District. A final shall not be granted for the installation of the system until the training has been completed.

MAINTENANCE

The building owner and/or authorized agent shall provide regular testing and maintenance of the piping and air quality of the system. This shall be performed by a State of California licensed mechanical engineer and be in accordance with the current editions of NFPA 1989 and NFPA 1500. The system components shall be examined to ensure they are leak and damage free.

SYSTEM COMPONENTS

Materials of Construction

A. All materials used in the construction of the system shall be rated for a minimum working pressure of 6000 psi and shall be built to manufactures specifications. The internal surface of all components shall be free of all contaminants so that the air within the system meets all provisions of breathing air.
B. All materials with openings, such as piping, shall be shipped and remain sealed with the approved caps until installed. All piping, materials or equipment found not to be suitably protected will not be used or installed. Any materials installed which has not been properly protected will require the entire system to be properly cleaned and verified that the system is free of contamination by a certified independent contractor.
C. Should cleaning of the piping or other components be necessary, at no time shall an organic solvent be used.

Piping

A. All piping shall be stainless corrosion resistant steel suitable for breathing air. All piping shall be welded except for the connection to the air filling cabinet. Welding shall not produce contaminants within the piping and be maintained cleaned as necessary.
B. All mechanical fittings when approved to join piping shall be listed for the minimum working pressure and listed for compatibility to the materials being joined. All

piping shall be sized to provide the minimum SCBA filling time at the top most filling cabinet.

C. All piping shall be protected by a minimum listed 2-hour fire resistive construction and protected from physical damage. Piping below 6 feet from the finished floor shall be physically protected in a manner which will not allow any person to access the piping.
D. Any time the piping must pass through a fire rated wall or solid material, it shall be protected by a sleeve at least 3 times the diameter of the piping and properly filled with a listed fire stop material.
E. All piping shall be permanently labeled to identify its content and working pressure. I identification shall be placed at no less than 20-foot intervals or as is necessary to clearly identify whether in plain view or hidden from view, i.e. such as within the cavity of a wall.
F. The SCBA system piping shall not share any penetration, opening or raceway with any other system or equipment.

Fire Department Exterior Fill Riser Inlet

A. A remote fill inlet shall be provided on the exterior of the building to the main riser and maintenance pressure tank. The filling inlet and associated parts shall be located in a locked, weather tight cabinet. Access to this connection shall not be obstructed in any manner and the location shall be approved by the fire department prior to installation.
B. When the location of this fill inlet is not possible to be located on the building, the inlet may be at a remote location as approved by the fire department. All piping shall be installed in a protected raceway or conduit to the building
C. The panel cabinet door shall be of solid construction and be permanently labeled, "Fire Department Air Connection". All lettering shall be a minimum 3 inch in height with ½ inch stroke block letters. The lettering shall be of contrasting color from the enclosure door.
D. Keys to the cabinet shall be provided in a KNOX box installed within 10 feet of the cabinet
E. The following items shall be provided within the inlet fill cabinet:
    1. Male inlet fitting (compatible with fire department equipment)
    2. Inlet pressure gauge
    3. System pressure gauge
    4. Bleed valve
    5. Safety whip attachment device

On-site Pressure Maintenance Tank

A. The on-site maintenance tank shall be listed for breathing air and be protected from back flow by means of a check valve on the supply inlet and discharge side of the system piping. All pressure tanks and related equipment and materials shall be installed within a room of no less than 2-hour fire rated construction and accessible directly from the exterior of the building.

B. No other equipment or storage not associated with this equipment will be stored in the room. The room shall be of sufficient size to permit the installation/removal and maintenance of the pressure maintenance tank and associated equipment.
C. An electronic low-pressure switch shall be installed on the discharge side of the system and interconnected to the main fire alarm panel to indicate a supervisory signal when the pressure has dropped below 1000 psi within the system.

Remote Filling Cabinets

A. All remote filling cabinets shall be list by a recognized testing laboratory for the filling of high-pressure air SCBA air bottles.
B. Each cabinet shall allow 2 (two) SCBA bottle to be simultaneously and the control valves, pressure gauges for each bottle filling compartment
C. Each cabinet shall be able to fill two 5,500 psi, 45 cubic foot SCBA bottles simultaneously.
D. Filling time for two tanks simultaneously shall take no more than two minutes with two filling stations being used simultaneously.

ACCEPTANCE TEST PROCEDURES

A. Pre-inspect all components for proper assembly.
B. Isolate the maintenance storage tank by closing all necessary isolation valves.
C. Verify that the emergency shut-off valves (isolation valves) at each fill station on each floor are closed.
D. Pressurize the entire system with oil free, breathing grade air or nitrogen to a pressure of 7,500 psi for a minimum of two hours. During this time, verification will be made by monitoring gauges placed at every outlet of the system. Any leak detected shall be documented and a copy of the report shall be submitted to the installer/contractor and the fire department.
E. After the system has satisfactorily passed the pneumatic pressure test and determined to be free of leaks/defects, the system shall be retested in the following manner:
    1. Re-pressurize the entire system to 5.500 psi.
    2. Close the main supply valve
    3. Disconnect the test gas source
F. The entire system shall remain leak free for a minimum of 24 hours.

FINAL TESTING

Final testing shall be accomplished in the following manner:

A. Place a sign at the fill station inlet and each filling cabinet to read: **DO NOT USE. AIR PURITY ANALYSIS TESTING IN PROGRESS. DO NOT FILL OR USE ANY AIR FROM THIS STATION.**
B. The signs shall be a minimum of 81/2 X 11 inches in size with lettering in bold font a minimum 2 inch in height and 3/8-inch stroke.

C. Pneumatically fill the entire system to 1000 psi.
D. Calibrate and adjust the air pressure monitoring switch to the low- pressure alarm point of 1000 psi.
E. Fill the entire system to the normal operating pressure of 2,500 psi.
F. A minimum of two air samples shall be taken from two separate filling stations and submitted to an independent certified gas analysis laboratory to verify the system cleanliness, and that the air meets or exceeds the minimum standard for breathing air for self-contained breathing air apparatus. This report shall be returned to the authority having jurisdiction in writing from the testing laboratory.
G. When the testing results are satisfactory, the signs shall be removed from the main filling inlet and all filling cabinets and the system put into full and normal operation.
H. A fire department fire prevention officer shall be present during all testing.

MAINTENACE

A Fire Department SCBA refilling system installed shall be properly inspected, tested and maintained in accordance with this standard to provide at least the same level of performance and protection as designed. The owner shall be responsible for maintaining the system and keeping it in good working order. All test results shall be maintained by owner and sent to MPFD annually and upon request.

A. The SCBA refilling system shall be inspected annually and certified by the installer and/or licensed mechanical engineer specializing in high pressure breathing air that the systems are in proper working condition and free of defects. All components of the system shall be included in the inspection.
B. Should the system need repair and or modification, then a re-certification will be necessary as if the system was newly installed and described in this standard.

MENLO PARK FIRE PROTECTION DISTRICTGUIDELINE FOR REMOTE ELECTRICAL SERVICE DISCONNECT

PURPOSE. This guideline applies to all new commercial buildings providing a means for remote electrical disconnect of service entrance conductors.

SCOPE. To secure building utilities (gas & electrical services) in a timely manner without subjecting firefighters to added hazards or added time to disconnect electrical.

Where the electrical service disconnect is remotely located inside the building or accessible through a locked exterior door, having access to a Knox Key disconnect for electrical service at predetermined location(s) can assist firefighters with either securing a possible ignition source, aide firefighters to get resources to fight the fire and possibly confine the fire damage to either a point of origin or limit its extension.

DEFINITIONS

Electric Power Production and Network. Power production, distribution and utilization equipment and facilities such as electrical power systems that deliver electrical power to the connected loads that are external to and not controlled by an interactive system.

Disconnecting Means. A device, or group of devices, or other means by which the conductors of a circuit can be disconnected from their source of power.

Emergency Power System. A source of automatic electric power of a required capacity and duration to operate required life safety, fire alarm, detection and ventilation systems in the event of a failure to primary power. Emergency power systems are required for electrical loads where interruption of primary power could result in loss of human life or serious injury.

Standby Power System. A source of automatic electric power of a required capacity and duration to operate required building, hazardous materials or ventilation systems in the event of failure of primary power. Standby power systems are required for electrical loads where interruptions of primary power could create hazards or hamper rescue or fire-fighting operations.

Remote Control. Where a remote-control device(s) is used to actuate the service, disconnecting means the service disconnecting means shall be located in accordance to those provisions listed in CEC Article 230.70(A)(1), and as per MPFPD Standard:

- Readily Accessible Location. The service disconnecting means shall be installed at a readily accessible location outside the building at the main entrance, or at an agreed location as per MPFPD discretion.

GENERAL REQUIREMENTS

- Installation of a Knox Key Switch keyed only to Menlo Park Fire Protection District.

- Signage shall be installed for components and systems deriving emergency back-up power from an on-site generator. Signage shall be located in the generator room and at the main service panel. Signs shall list the specific electrical components and systems having emergency power/standby power. Additionally, the specific branch circuit or feeder circuit shall be listed alongside its system serviced.

  In the event firefighting operations require these systems shut down this may be accomplished without shutting off all emergency power, but simply segregating the required system(s).

CODES AND STANDARDS

Systems shall be installed in accordance with this standard, all applicable codes and nationally recognized standards for electrical systems. If/when a requirement within this standard is not specific, then the requirement/standard which is more specific or has special conditions shall apply. Most common applicable codes/standards are:

- California Electrical Code 2019 Edition, Article 230 for Services and Article 700 Emergency Systems.
- California Building Code 2019 Edition Chapter 27, Electrical.
- California Fire Code 2019 Edition Section 604, Electrical Equipment, Wiring and Hazards.

PLAN SUBMITTAL

Reviewed at the time of building submittal.

MENLO PARK FIRE PROTECTION DISTRICT
GUIDELINE FOR PUBLIC ASSEMBLAGES AND EVENTS

SCOPE. This guideline applies to carnivals, fairs, public events and trade shows including, but not limited to, annual or weekend events. The guideline is meant to work together with applicable sections of the 2019 California Fire Code.

DEFINITIONS

Deep Frying - Any cooking operation or process whereby the product floats or is submerged in hot oil during the cooking process.

Flambé Cooking - Any cooking operation whereby the product is prepared by applying a flammable or combustible liquid onto a cooking surface and igniting it.

GENERAL REQUIREMENTS

All vendors and participants of the event shall be provided copies of the following requirements:

Vehicle Protection. At locations where normal city streets are closed off for an event, or at any other location that may be adjacent to normal vehicle traffic, it is highly suggested that K-Rail type vehicle protection be placed between the event and vehicle traffic.

Emergency Vehicle Access. The layout of the event and/or midway shall provide a minimum 20-foot clearance between rows of booths, exhibits, or any other types of displays or structures that are part of the event for emergency vehicle access. A clear space of not less than 15-feet shall be maintained to provide access to fire hydrants both inside and outside the event.

Electrical Equipment. Electrical equipment and installations shall comply with the California Electric Code.

Internal Combustion Power Sources. Fuel tanks shall be of adequate capacity to permit uninterrupted operation during normal operating hours. Refueling shall be conducted only when the ride or appliance is not in use. Internal combustion power sources shall be isolated from the public.

Fire Extinguishers. Fire extinguishers shall be provided and meet the following requirements:

1. Portable fire extinguishers shall be located every 150 feet, with not more than 75 feet travel distance to a fire extinguisher. Depending on the distribution of cooking booths, exhibits, or the carnival midway, fire extinguishers provided in cooking areas may be used to meet this requirement. Internal combustion power sources, cooking booths, and cooking exhibits shall all have their own fire extinguishers.
2. Fire extinguishers shall be mounted adjacent to the exit from booths or exhibits and

secured so that they will not fall over. Fire extinguishers must be visible and accessible.

3. Extinguishers shall be a minimum 2A10BC rated. Each cooking booth or cooking exhibit using deep fat cooking oil shall be provided with at least one "Wet Chemical" Type K fire extinguisher.
4. Fire extinguishers shall have been serviced within the last year and be provided with an attached service tag.

Waste Accumulation. Combustible waste materials shall be removed regularly throughout the event.

Compressed Gases. Compressed gas cylinders shall be secured in an upright position and away from cooking operations, rides, or any other operations that may damage the cylinder or expose cylinders to excessive heat.

Decorative Materials. All decorative materials used for the event shall be inherently fire resistive, or may be treated by the owner with a State Fire Marshal approved fire retardant chemical (empty can and dated sales receipt may serve as proof).

Booths or Exhibits. Booths or exhibits shall be adequately roped, braced and anchored in order to uphold during any weather conditions. The shall be located a minimum of 10 ft. from any permanent structure. Vehicles required for the operation of the event shall be parked a minimum of 20 ft.

Tents, Canopies and Temporary Membrane Structures. Tents and air supported temporary membrane structures in excess of 400 square feet require additional safety measures as specified by the California Fire Code.

Additional Documentation. Applicants proposing to install tents and/or membrane structures that meet any of the following three criteria shall provide a Report of Installation Inspection prepared by a California licensed structural engineer after the installation is complete, but prior to occupancy:

1. The square footage of the structure is 7500 square feet or more.
2. The approved occupant load is 500 or more.
3. The clear span width of the structural support is 60 feet or more.

The report shall minimally state that in the engineer's professional opinion, the tent is designed, installed, and anchored to withstand expected forces and climate conditions including a wind force of 80 mph. The report shall be signed and stamped with the engineer's professional seal.

COOKING REQUIREMENTS

Openings in Booths or Exhibits. Booths or exhibits utilized for cooking shall be provided with openings containing a minimum of 30 sq ft each on 2 opposing sides of the booth/exhibit to prevent the accumulation of carbon monoxide produced by cooking processes.

Separation Distances. Cooking booths, mobile food trucks or exhibits shall be separated from non-cooking booths or exhibits by 10 feet and shall not be located within 10 feet of amusement rides, devices, or buildings.

Floor Materials. It is highly suggested that flooring materials used within festival cooking booths/exhibits, and under all equipment, shall be non-combustible or fire retardant treated.

Cooking Surfaces. All cooking surfaces shall be cleaned regularly to reduce accumulations of grease.

Cooking Equipment. All cooking equipment shall be approved for its intended use. A minimum clearance of 18 inches shall be provided between cooking appliances and any booths, exhibits, structures or combustible materials. **Menlo Park Fire District encourages the use of noncombustible materials in booths or exhibits used for cooking purposes.**

Portable Stoves. Coleman style stoves or equivalent may be used only with approved fuel and the following requirements:

1. The fueling or refueling of stoves or cooking appliances is prohibited inside booths/exhibits.
2. The storage of fuel in booths/exhibits is prohibited.
3. The use of gasoline or kerosene is prohibited.

Butane and Propane Equipment. Butane and propane equipment shall conform to the following requirements:

1. Fuel tanks for butane and propane cooking appliances shall be limited in size to 10-gallon water capacity.
2. Fuel tanks shall be located outside the booth/exhibit. Tanks are prohibited inside booths/exhibits.
3. Fuel tanks shall be protected from damage and secured in an upright position.
4. Storage of tanks shall not exceed two,15-gallon water capacity tanks for each cooking appliance.
5. All tanks shall have an approved shut off valve.
6. All appliances shall have a fuel control and shut off valve.
7. Fuel supply shall be shut off at the tank when not in use.
8. Hoses and connections shall be approved for use with the appliance and type of fuel used.
9. All connections shall be tested. Vendors/exhibitors shall provide a spray bottle of soapy water.

Charcoal or Wood Barbecue Cooking. Charcoal/Wood barbecue cooking shall be in accordance with the following requirements:

1. Charcoal/Wood Barbecue cooking is prohibited inside booths/exhibits.
2. Located away from public access. There shall be a minimum 10 ft distance from any booth/exhibit or permanent structure.
3. Only commercially sold charcoal fuel may be used.

4. Only commercially sold charcoal lighter fluid or electric starters may be used. Gasoline and kerosene are prohibited.

Deep Fat Frying and Flambé Cooking. Deep Fat Fry/Flambé Cooking shall be in accordance with the following requirements:

1. The cooking area shall not be accessible to the public.
2. Deep Fat/Flambé Cooking operations shall be located outside booths, exhibits and tents and shall be no closer than 18 inches from combustible materials.
3. A minimum 18-inch clearance shall be provided between deep fat frying appliances/woks and open flame stoves.

MORE THAN 1,000 ATTENDEES THE FOLLOWING ADDITIONAL ITEMS APPLY

Crowd Manager

Trained crowd managers shall be provided for events where more than 1,000 persons are expected to congregate. The minimum number of crowd managers shall be established at a ratio of one crowd manager to every 250 persons. CFC 403.3

Fire Evacuation Plans

Fire evacuation plans shall be in accordance with the following:

1. Emergency egress or escape routes and whether evacuation of the building is to be complete or, where *approved*, by selected floors or areas only.
2. Procedures for employees who must remain to operate critical equipment before evacuating.
3. Procedures for assisted rescue for *persons* unable to use the general *means of egress* unassisted.
4. Procedures for accounting for employees and occupants after evacuation has been completed.
5. Identification and assignment of personnel responsible for rescue or emergency medical aid.
6. The preferred and any alternative means of notifying occupants of a fire or emergency.
7. The preferred and any alternative means of reporting fires and other emergencies to the fire department or designated emergency response organization.
8. Identification and assignment of personnel who can be contacted for further information or explanation of duties under the plan.
9. A description of the emergency voice/alarm communication system alert tone and preprogrammed voice messages, where provided.

Fire Safety Plans

Fire safety plans shall include the following:

1. The procedure for reporting a fire or other emergency.
2. The life safety strategy and procedures for notifying, relocating or evacuating occupants, including occupants who need assistance.

3. Site plans indicating the following:
    a. The occupancy assembly point.
    b. The locations of fire hydrants.
    c. The normal routes of fire department vehicle access.
4. Floor plans identifying the locations of the following:
    a. Exits
    b. Primary evacuation routes
    c. Secondary evacuation routes
    d. Accessible egress routes
    e. Areas of refuge
    f. Exterior areas for assisted rescue
    g. Manual fire alarm boxes
    h. Portable fire extinguishers
    i. Occupant-use hose stations
    j. Fire alarm annunciators and controls
5. A list of major fire hazards associated with the normal use and occupancy of the premises, including maintenance and housekeeping procedures.
6. Identification and assignment of personnel responsible for maintenance of systems and equipment installed to prevent or control fires.
7. Identification and assignment of personnel responsible for maintenance, housekeeping and controlling fuel hazard sources.

PLAN CHECK SUBMITTAL

1. A completed Event Application
2. Fees (due at submittal)
3. Two sets of documentation and a site plan showing the following:
    a. Location of event access points
    b. Location of on-site event staff
    c. First aid stations (if provided)
    d. Road closure points and K-Rail placement
    e. Fire lane and fire hydrant locations
    f. Layout of midway
    g. Location of vending booths
    h. Locations of food service booths and/or food trucks
    i. Locations of power sources or generation of fuel supply (if needed)
    j. Location of portable fire extinguishers

MENLO PARK FIRE PROTECTION DISTRICT
GUIDELINE FOR VEGETATION MANAGEMENT AND HOME HARDENING

SCOPE. This guideline provides recommended resources necessary for vegetation management and home hardening for wildfire mitigation for "Communities at Risk".

These recommendations may be modified to ensure adequate fire apparatus access and public safety and adhering to local Town or City Ordinances.

GENERAL REQUIREMENTS

Landscaping shall not interfere with the required fire apparatus access. Landscaping around roads shall provide limited fuel, no ladder fuels, and provide thinning of tree canopy.

Recommendations for landscaping and home hardening shall follow current San Mateo County Fire Safe Council "Living with Fire" page and Resources tab.

https://firesafesanmateo.org/resources/living-with-fire

1. Defensible Space
2. Hardening Your Home

WILDFIRE HOME HARDEDING RECOMMENDATIONS

Here are ways you can harden your home and make it more fire resistant.

Ways to Begin Retrofits to Your Home

- Low-cost Retrofit List
- Wildfire Home Retrofit Guide
- Take our Wildfire Survey to get a custom checklist

Roof

The roof is the most vulnerable part of your home. Homes with wood or shingle roofs are at high risk of being destroyed during a wildfire.

- Build your roof or re-roof with materials such as composition, metal, clay or tile. Block any spaces between roof decking and covering to prevent embers from catching.
- Remove accumulated vegetative debris from the roof.

Vents

Vents on homes create openings for flying embers.

- Cover all vent openings with 1/16-inch to 1/8-inch metal mesh. Do not use fiberglass or plastic mesh because they can melt and burn.
- Use Ember and flame resistant vents (WUI vents).

Eaves and Soffits

Eaves should be boxed in (soffited-eave design) and protected with ignition-resistant* or non-combustible materials.

Windows

Heat from a wildfire can cause windows to break even before the home is on fire. This allows burning embers to enter and start fires inside. Single-paned and large windows are particularly vulnerable.

- Install dual-paned windows with one pane of tempered glass to reduce the chance of breakage in a fire.
- Consider limiting the size and number of windows that face large areas of vegetation.
- Install screens in all usable windows to increase ember resistance and decrease radiant heat exposure

Walls

Wood products, such as boards, panels or shingles, are common siding materials. However, they are flammable and not good choices for fire-prone areas.

- Build or remodel your walls with ignition resistant* building materials, such as stucco, fiber cement wall siding, fire retardant, treated wood, or other approved materials. This is especially important when neighboring homes are within 30-feet of the home.
- Be sure to extend materials from the foundation to the roof.

- Smaller spaces, such as the roof-to-wall area, should have their siding relaced with a noncombustible material.

Decks

Surfaces within 10 feet of the building should be built with ignition-resistant*, non-combustible, or other approved materials.

- Create an ember-resistant zone around and under all decks and make sure that all combustible items are removed from underneath your deck.
- If a deck overhangs a slope, create and maintain defensible space downslope from the deck to reduce the chances of flames reaching the underside of the deck.

Rain Gutters

Keep rain gutters clear or enclose rain gutters to prevent accumulation of plant debris.

- Install a corrosion-resistant and noncombustible metal drip edge for additional protection of the combustible components on your roof's edge.
- Use a noncombustible gutter cover to prevent buildup of debris and vegetation in the gutter

Patio Cover

Use the same ignition-resistant* materials for patio coverings as a roof.

Chimney

Cover your chimney and stovepipe outlets with a non-flammable screen. Use metal screen material with openings no smaller than 3/8-inch and no larger than 1/2-inch to prevent embers from escaping and igniting a fire.

- Close the fireplace flue during fire season when the chimney is not being used.

Garage

Have a fire extinguisher and tools such as a shovel, rake, bucket, and hose available for fire emergencies.

- Add a battery back-up to the garage door motor so that the garage can easily be operated if power is out.
- Install weather stripping around and under the garage door to prevent embers from blowing in.
- Store all combustible and flammable liquids away from ignition sources.
- Treat windows and vents in the garage the same way as if it was a part of the house.

Fences

Best practice is to separate your fence from your house or upgrade the last 5-feet of the fence to a noncombustible material to reduce the chance of the fence from bringing fire to your home.

Driveways and Access Roads

Driveways should be built and maintained in accordance with state and local codes to allow fire and emergency vehicles to reach your home. Consider maintaining access roads with a minimum of 10 feet of clearance on either side, allowing for two-way traffic.

- Ensure that all gates open inward and are wide enough to accommodate emergency equipment.
- Trim trees and shrubs overhanging the road to allow emergency vehicles to pass.

Address

Make sure your address is clearly visible from the road.

Water Supply

Consider having multiple garden hoses that are long enough to reach all areas of your home and other structures on your property. If you have a pool or well, consider getting a pump.

Useful Links

Fire Information Engine—Preparing Your Home
University of California—Fire Resources and Information

*Ignition-resistant building materials are those that resist ignition or sustained burning when exposed to embers and small flames from wildfires. Examples of ignition-resistant materials include "non-combustible materials" that don't burn, exterior grade fire-retardant-treated wood lumber, fire-retardant-treated wood shakes and shingles listed by the State Fire Marshal (SFM) and any material that has been tested in accordance with SFM Standard 12-7A-5.

COUNTY OF SAN MATEO
PLANNING AND BUILDING

455 County Center, 2nd Floor
Redwood City, CA 94063
650-599-7310 T
www.planning.smcgov.org

IMPORTANT NOTICE REGARDING PERMIT EXEMPTION FOR TREE REMOVAL

Date of Notice:	June 24, 2021
Purpose:	Inform the Public that No Permit is Required to Remove Certain Trees that Cause a Hazard to Life and Personal Property
Duration of Exemption:	July 1, 2021 to July 1, 2022
Issued By:	Steve Monowitz, Community Development Director

Discussion

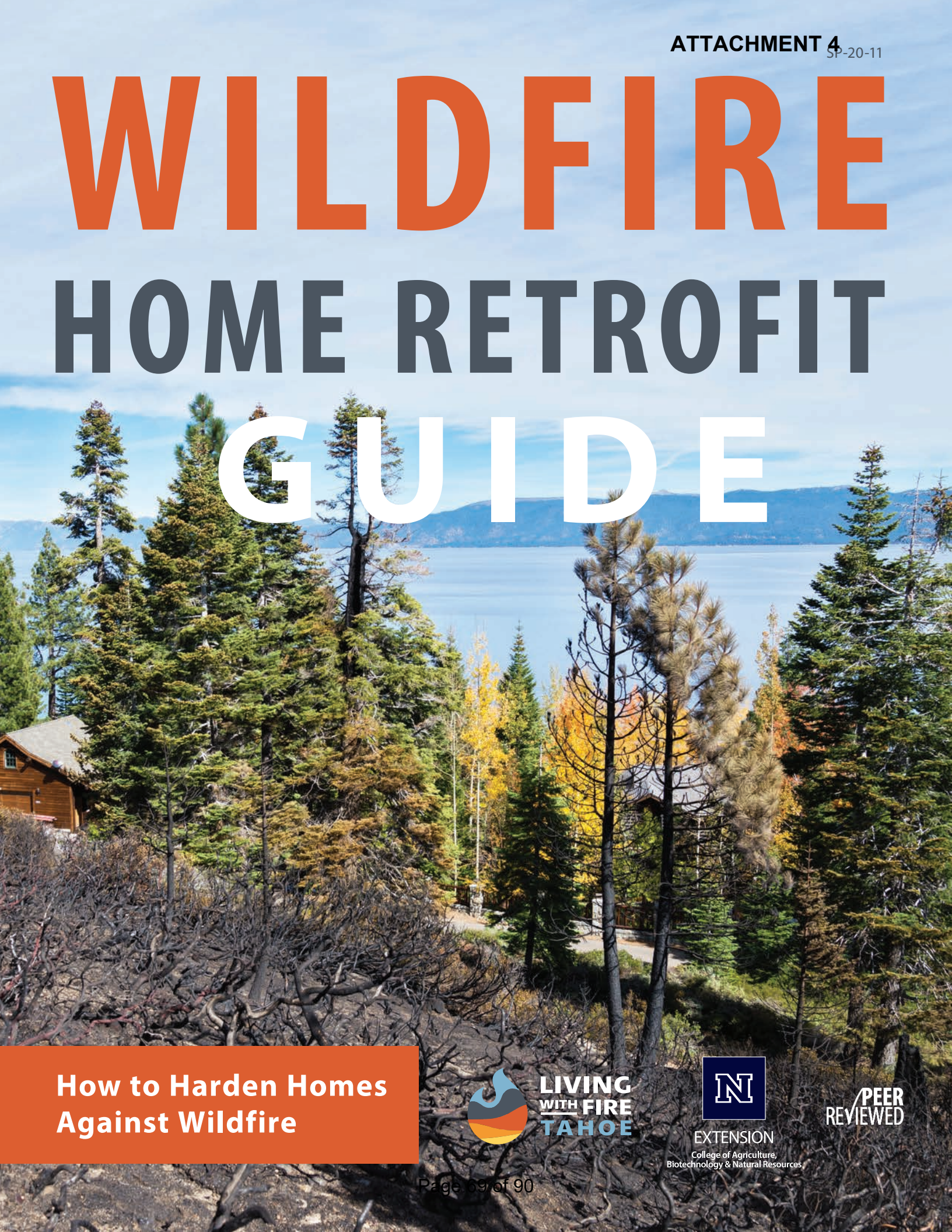
The San Mateo County Significant Tree Regulations ("Regulations") generally require that a property owner secure a permit before removing a "significant tree," which is defined as any tree with a trunk that has a circumference of thirty-eight inches (38") or more when measured at four and one half feet (4 1/2') vertically above the ground. However, Section 12,020.1(c) of these Regulations provides an exemption from the requirement to secure a permit to remove a significant tree when a specified official, including the Community Development Director or an Officer of the California Department of Forestry and Fire Protection, determines removal is necessary to *"remove a hazard to life and personal property…"*.

The attached letter from Chief Ian Larkin of the State of California Department of Forestry and Fire Protection's San Mateo – Santa Cruz Unit identifies that current climatic conditions pose extreme wildfire hazard risks in the unincorporated areas of San Mateo County. Based on this correspondence from Chief Larkin and consultations with staff from San Mateo County and other local agencies, I conclude that certain trees, by virtue of species and location, present a hazard to life and personal property while these conditions persist.

Specifically, all eucalyptus, pines, acacia, tan oak and bay trees within the unincorporated area of San Mateo County and located: (1) within 100 feet of any habitable structure (including structures on properties adjacent to the property with the subject tree) or (2) within 30 feet of a public or private road necessary for emergency evacuations, present a significant fire hazard risk and a hazard to life and personal property. Such trees may therefore be removed without a Significant Tree Removal Permit during the period of July 1, 2021 to July 1, 2022.

Persons who remove such trees must have written permission from the owner of the property on which the tree is located and are responsible for ensuring that all associated debris is chipped and retained on site and/or properly disposed of. If assistance is needed in determining whether a tree is of a species that is included in this exemption, please contact the Resource Conservation District at fire@sanmateoRCD.org.

WILDFIRE HOME RETROFIT GUIDE



How to Harden Homes Against Wildfire

LIVING WITH FIRE TAHOE

EXTENSION
College of Agriculture, Biotechnology & Natural Resources

PEER REVIEWED

How to Use This Guide

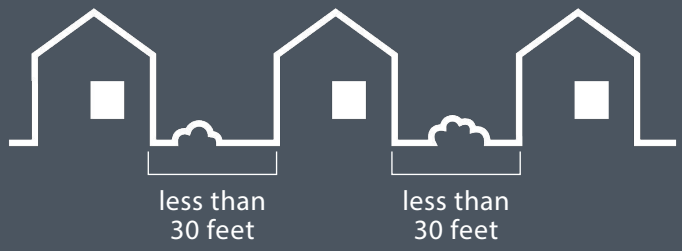
This Guide includes specific recommendations for how to retrofit existing components of a home to withstand wildfire. Each section contains an explanation of how the component is vulnerable to wildfire and what can be done to improve that component. The illustrations throughout the Guide are intended to show best practices for reducing the vulnerability of a home to wildfire.

Inside This Guide

When using this Guide, think about the location and context of the home and how that influences vulnerability to wildfire:

Steep Slopes

When homes are located on steep slopes, decks commonly overhang the slope below, and this downslope area is often heavily vegetated. Prioritize defensible space actions so that flames from burning vegetation cannot reach the underside of the deck and ignite, with subsequent ignition of the home.



Dense Neighborhoods

Dense neighborhoods with homes close together have an increased risk of building to building ignition because of the radiated heat and potential flames that are generated if a neighbor's home burns. Prioritize actions to reduce the possibility of homes igniting each other. Intensify defensible space by thinning trees and shrubs between homes. Engage in neighborhood conversations to encourage all neighbors to take actions to reduce their own vulnerability to wildfire.

Large-Parcel Lots

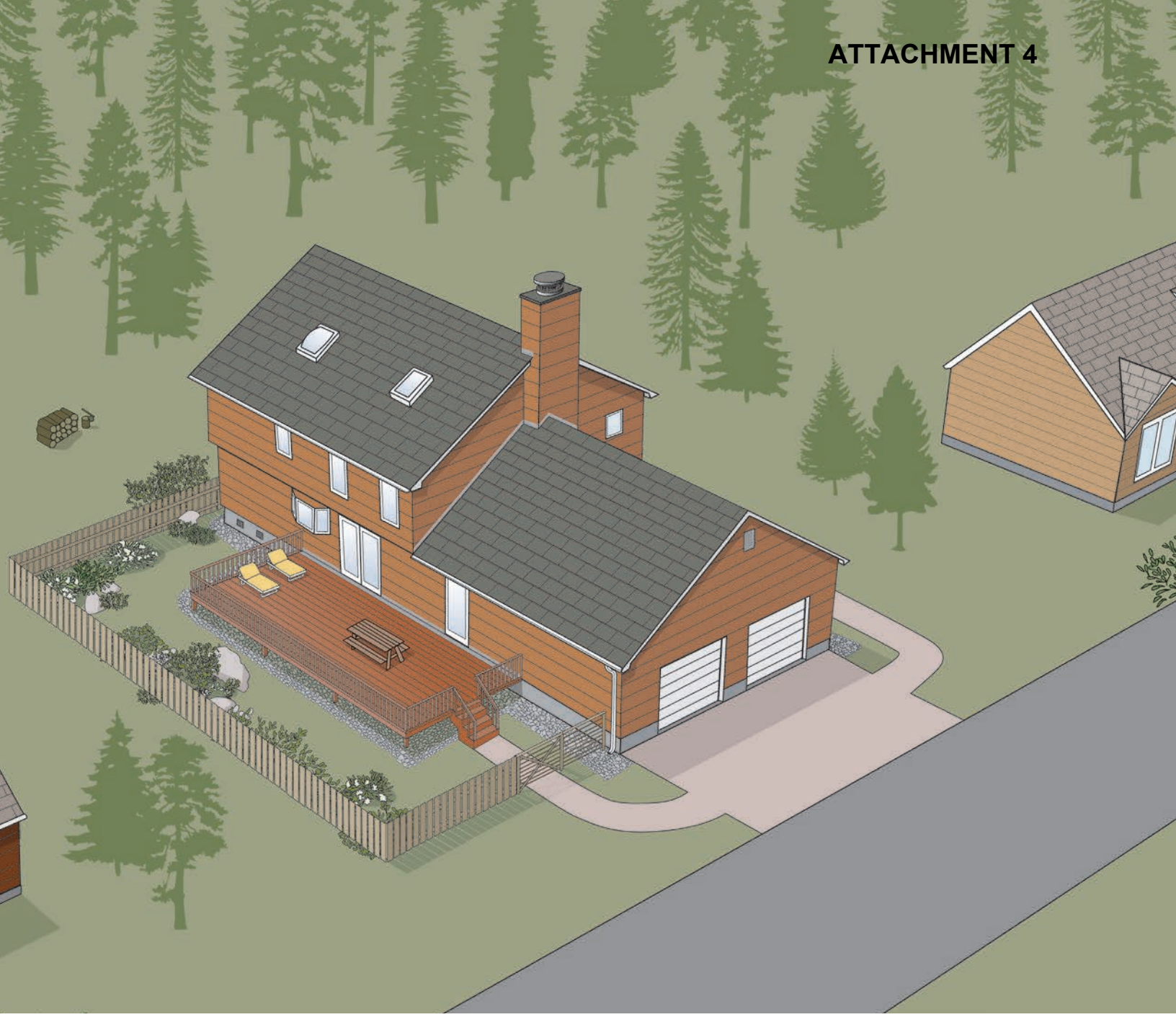
When homes are on large parcel lots and neighboring homes are far apart, vegetation and other combustible materials on the property (e.g., wood pile, tool shed) can be a large factor in home ignition. Prioritize creating and maintaining defensible space, including the near-home noncombustible zone, and home-hardening techniques to reduce vulnerability from embers.

Living within the natural environment brings both serenity and responsibility.

Communities located in wildfire-prone areas need to take extra measures to live safely. There are many ways to prepare communities and properties for wildfire, including creating and maintaining adequate defensible space and hardening homes through altering or replacing the construction components. This guide will help residents and building professionals better understand how to prepare homes and communities for wildfire.

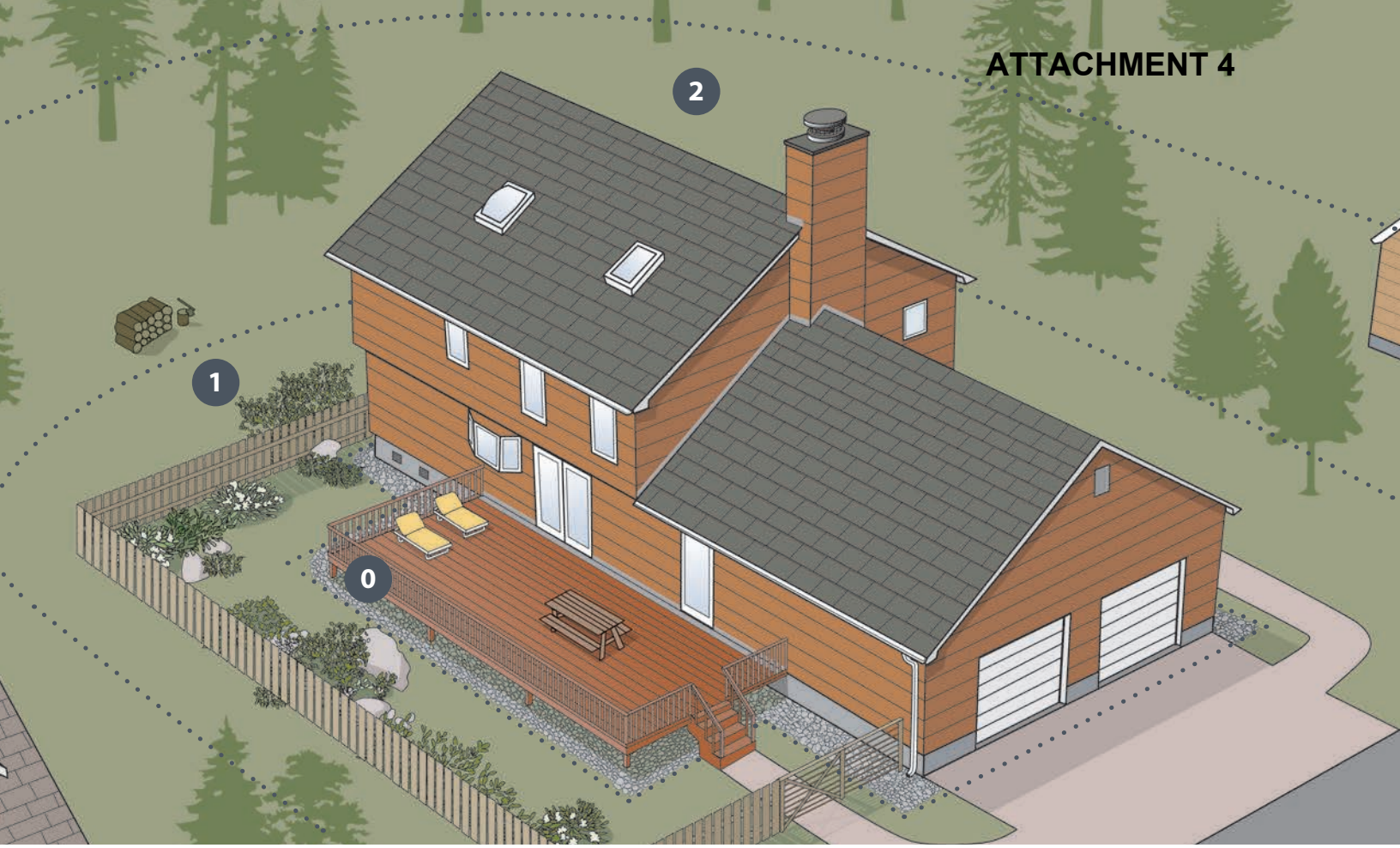
DURING A WILDFIRE, homes can be threatened by **1)** wind-blown embers, **2)** radiant heat, and **3)** direct flame contact.

In wildfire events, 60-90% of home loss is due to embers. Embers can originate from an approaching wildfire or small parts of nearby burning vegetation and construc tion materials (e.g., a home, storage shed, wood pile). Embers are important because of what they can do directly (e.g., ignite materials in an attic after entering through a vent) and what they can do



indirectly (e.g., ignite a wood pile or storage shed located close to the home, resulting in radiant heat or direct flame contact to the side of the home). Reducing the vulnerability of homes to ember ignition will increase the chance of homes and neighborhoods surviving a wildfire.

The most effective way for homes to withstand wildfire is a "coupled approach" that considers the exterior construction materials and how they are put together, as well as the surrounding vegetation and other near-home combustible materials. Selection, location and maintenance of vegetation and other combustible materials on a property can reduce the chance of a wildfire burning the home. This Guide provides information and recommendations for retrofitting an existing or newly constructed home with wildfire in mind.



Protecting a home from wildfire requires continual defensible space actions in three zones around the property.

Defensible Space

0 **THE EMBER-RESISTANT ZONE (Zone 0) | 0–5 feet**: The zone within 5 feet of your home has many different names (e.g., the noncombustible zone, the immediate zone, the zero zone), but the objective is generally the same—to reduce the vulnerability of the home to embers by creating a zone of ember-resistant materials around the home. Gravel, a concrete or brick walkway, or another hardscape feature is commonly used to construct this zone. This ember-resistant zone should include the area under and around any attached deck. Be sure to keep this zone clean of any woodpiles, wood mulch, or flammable vegetation.

1 **THE LEAN, CLEAN AND GREEN ZONE (Zone 1) | 5–30 feet**: The objective of this zone is to reduce the risk of fire spreading from surrounding vegetation to the home. Lean indicates that there is only a small amount of vegetation, if any, present. Vegetation should be grouped in discontinuous islands. Clean indicates that vegetative debris and dead materials are routinely removed. Green indicates that vegetation within this zone is kept green and well irrigated (if appropriate) during the fire season.

Contact local Extension offices for more information about defensible space recommendations specific to different regions.

2 **THE REDUCED FUEL ZONE (Zone 2) | 30–100 feet**: The objective of this zone is to reduce fire spread and restrict fire movement into the crowns of trees or shrubs. Remove dead plant material, lower tree branches and other ladder fuels (e.g., shrubs, lower branches, smaller trees). Locate outbuildings (e.g., for storage) at least 30 feet away from the home and create an ember-resistant zone around all outbuildings and propane tanks.

Roofs

Making a roof "fire-safe" is a big step in reducing the vulnerability of the home to wildfire. There are three fire ratings for roof coverings: Class A, Class B and Class C, with Class A providing the greatest fire protection. The roof rating designation provides information for the roof covering material and does not include where the roof meets other materials at the edge of the roof. A non-fire-retardant treated wood shake or shingle roof covering is unrated and is not desirable—these roof types have less than a Class C rating.

HOW TO REDUCE THE VULNERABILITY OF ROOFS

- Replace a wood shake or shingle roof with a Class A roof.
- Remove accumulated vegetative debris from the roof.
- If there is a space between the roofing materials and roof deck, make sure that the openings between the covering and the roof deck are blocked. Repair areas as needed.
- If the roof consists of Class B or C roofing materials, determine if the underlayment in the assembly provides Class A protection as indicated in manufacturer installation instructions. When viewed from the edge of the roof, these materials would either look like gypsum wallboard or overlapping 4-foot wide sections of an asphalt composition roof covering. Maintain the roof covering and replace with a Class A product when needed.

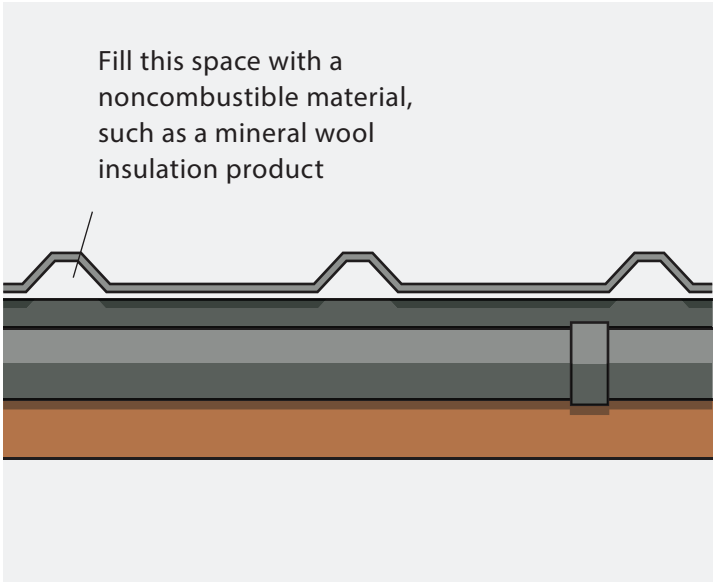
A CLASS A ROOFING materials include asphalt fiberglass composition shingles, clay and cementitious tiles (both flat and barrel shaped), and some metal roofing materials.

B CLASS B ROOFING materials are most commonly exterior-rated, pressure-impregnated fire-retardant treated shake or shingle covering (not allowed for use in many jurisdictions).

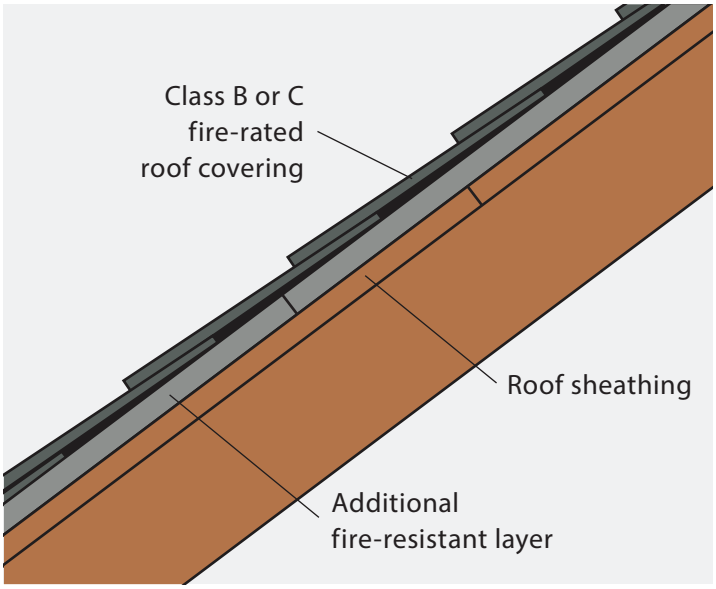
C CLASS C ROOFING materials include recycled plastic, rubber and aluminum.

Class B and Class C roofing materials can have a Class A "by assembly" rating. In these cases, additional materials that enhance the fire resistance of the roof assembly (i.e., the roofing material plus other materials included in the roof assembly) must be installed. In these cases, be sure to follow the manufacturer's instructions.

METAL ROOF



CLASS A "BY ASSEMBLY" FIRE-RATED ROOF COVERING

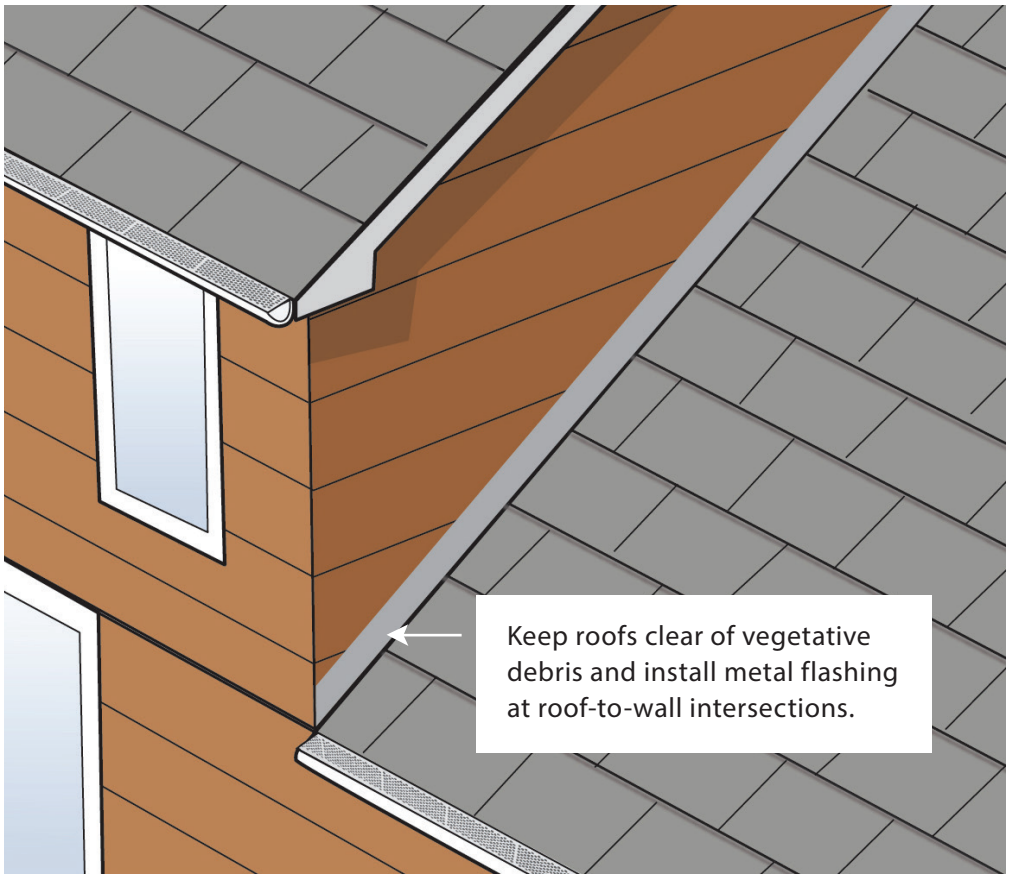


Roof Edges

There can be several areas where the roof meets another material, such as at a roof-to-wall intersection in a split-level home or a dormer on a roof. These intersections are vulnerable areas because wind-blown embers will gather at the same locations where vegetative debris has accumulated, igniting the debris. Building materials usually change at edge-of-roof locations. The adjacent materials should provide comparable protection to the roofing material.

HOW TO REDUCE THE VULNERABILITY OF ROOF EDGES

- Remove accumulated vegetative debris from roofs on a regular basis.
- Replace the combustible siding in roof-to-wall locations with a noncombustible option. Replacement of siding only in these locations will be less expensive than replacing all the home's siding. It may be possible to find a noncombustible siding pattern that is similar to the existing siding pattern.
- At a roof-to-siding location, use of metal flashing that extends up the siding at least 6-inches could also reduce the vulnerability of a combustible siding material. Install flashing so that water cannot get between flashing and siding.

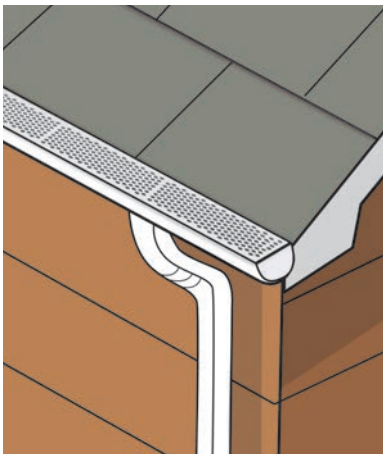


Rain Gutters

Roofs can be vulnerable at the roof edge where a gutter is attached. Debris in the gutter can ignite from embers, and flames can ignite other components at the roof edge (e.g., wood-based sheathing and fascia board).

HOW TO REDUCE THE VULNERABILITY OF RAIN GUTTERS

- Remove vegetative debris from gutters on a regular basis during fire season.
- Install a noncombustible and corrosion-resistant metal drip edge to provide protection for the combustible components (i.e., sheathing and fascia) at the edge of your roof.
- Use a noncombustible gutter cover to minimize accumulation of debris in the gutter. Some gutter covers result in accumulation of debris on the roof behind the gutter, so these will still require routine maintenance.

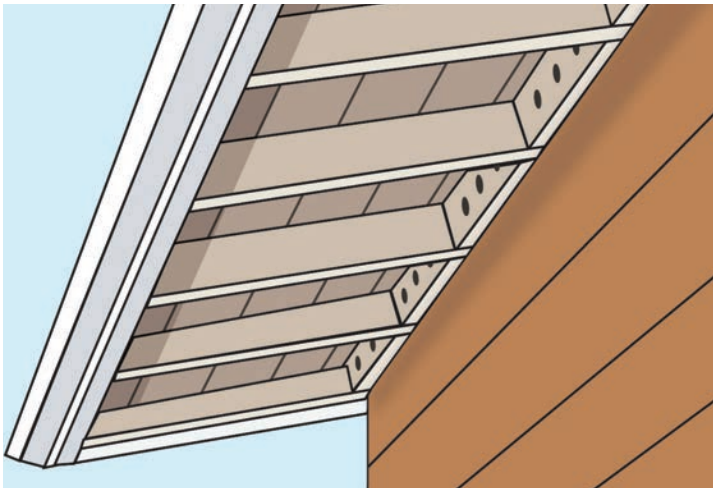


Install and maintain a noncombustible gutter cover (as pictured above) to help minimize debris accumulation in gutters.

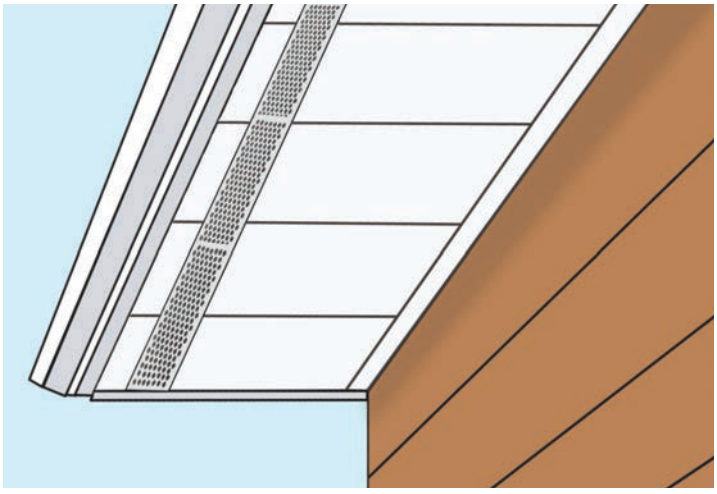
Eaves

The under-eave area provides a point of entry for flames if nearby vegetation or other materials are burning. There are two basic designs for under-eave construction: open-eave and soffited-eave (i.e., one that is boxed in). Open-eave designs are more vulnerable to flames—heat can build up in an area between the roof rafters allowing for more rapid fire spread laterally, which increases the likelihood that fire will find a location to enter the attic. Vents that are in the blocking between rafters in open-eave construction are more vulnerable to the entry of embers than vents in a soffited-eave.

OPEN EAVE



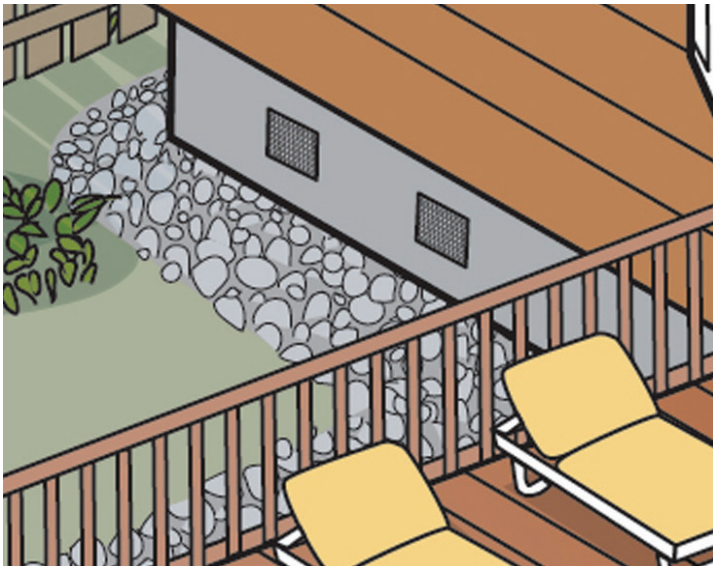
SOFFITED EAVE

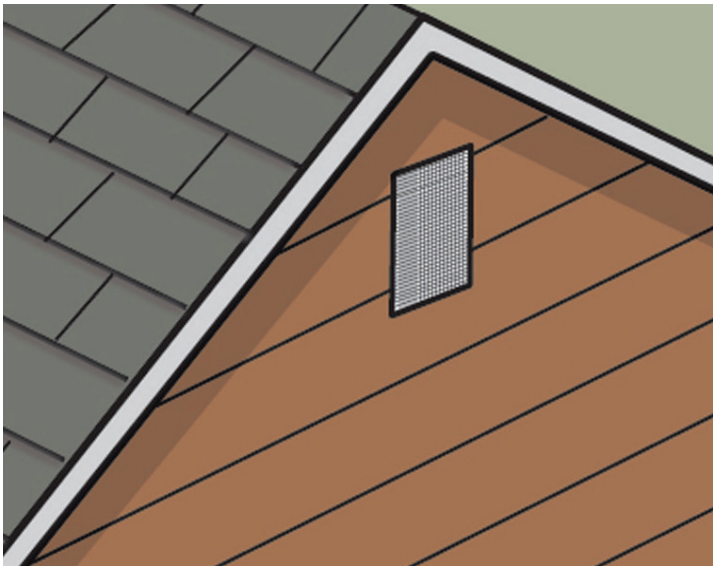


Enclose open eaves to protect attic spaces from ember intrusion.

HOW TO REDUCE THE VULNERABILITY OF EAVES

- Inspect open-eave areas for gaps where embers could lodge or pass through into the attic. All vents should be screened and all other gaps should be filled with durable caulk.
- Enclose under-eave area to create a soffited eave.





Cover all vents with ⅛-inch mesh screening.

WHAT IS THE DIFFERENCE BETWEEN VENT SCREEN SIZES?

Small screens (1/16-inch) can reduce both the size and number of embers that can pass through. Because the embers are smaller, they self-extinguish quickly after entering the attic and crawl space. While this screen size is ideal for resisting ember intrusion, it does require more maintenance because it gets easily clogged. Accumulated debris on vents can become a source of embers if not cleaned regularly. Air flow is also reduced with this size screen.

Mid-size screens (⅛-inch) allow more, larger embers to enter the attic and crawl space, but these are still better than 1/4-inch screens. This size screen is a common choice because the maintentance is lower while still being relatively effective.

Large screens (¼-inch) allow many, larger embers to enter the attic and crawl sapace. It is recommended you replace or cover 1/4-inch screeens with a smaller grain.

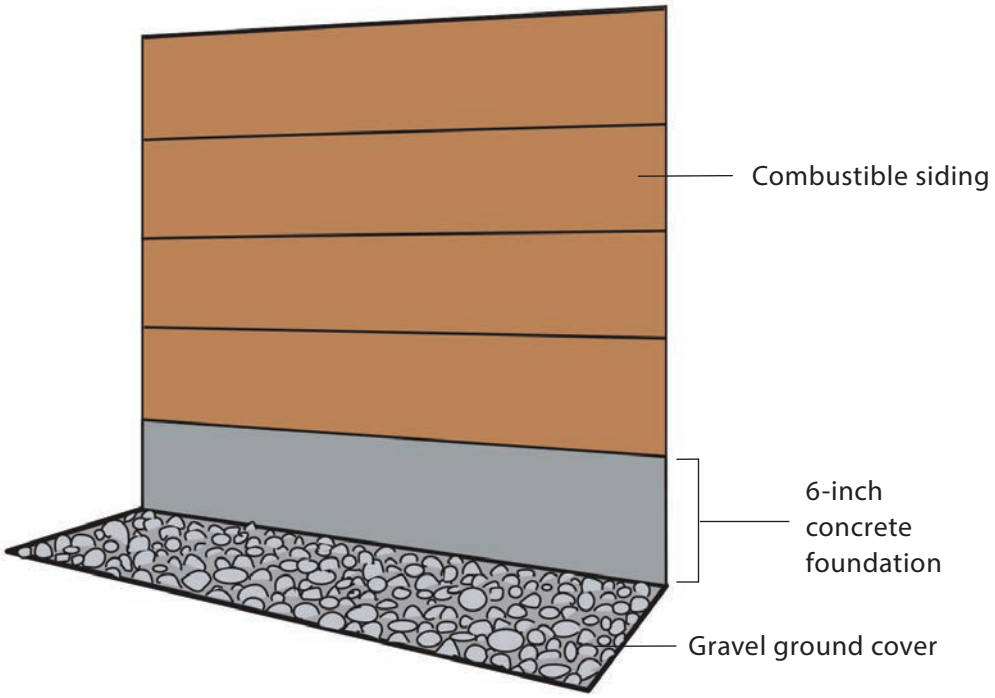
Vents

Attic and crawl space vents provide an entry point for embers. Vents should be covered by, at a minimum, ⅛-inch noncombustible corrosion-resistant metal mesh screening. Screening will not prevent the intrusion of all embers but will minimize their size. Finer mesh screening (e.g., 1/16-inch mesh) is more effective at keeping embers out of the home but requires more maintenance because it can become clogged with debris. Vents that meet the flame- and ember-resistant standard are listed on the California Office of the State Fire Marshal Building Materials Listing Program website. These types of vents are appropriate in areas where maintaining defensible space is difficult, combustible materials are closer to the home, or combustible siding is used.

HOW TO REDUCE THE VULNERABILITY OF ATTIC AND CRAWL SPACES

- Avoid storing combustible items (e.g., cardboard boxes, newspapers and magazines) near attic or crawl space vents.
- Inspect vents to make sure they are in good condition (i.e., screen is in good condition with no tears that would result in larger openings).
- If ¼-inch mesh screening is present, replace or add, at a minimum, a ⅛-inch noncombustible corrosion resistant metal mesh screen.
- Consider replacing vents with a flame- and ember-resistant option.

Vent covers that are made ahead of time (i.e., before a wildfire is threatening) can be installed when wildfire is threatening the area. This strategy can be effective, but it does take time and should only be undertaken if ample time is given for evacuation. Preparation activities can be dangerous if evacuation is delayed.



Siding

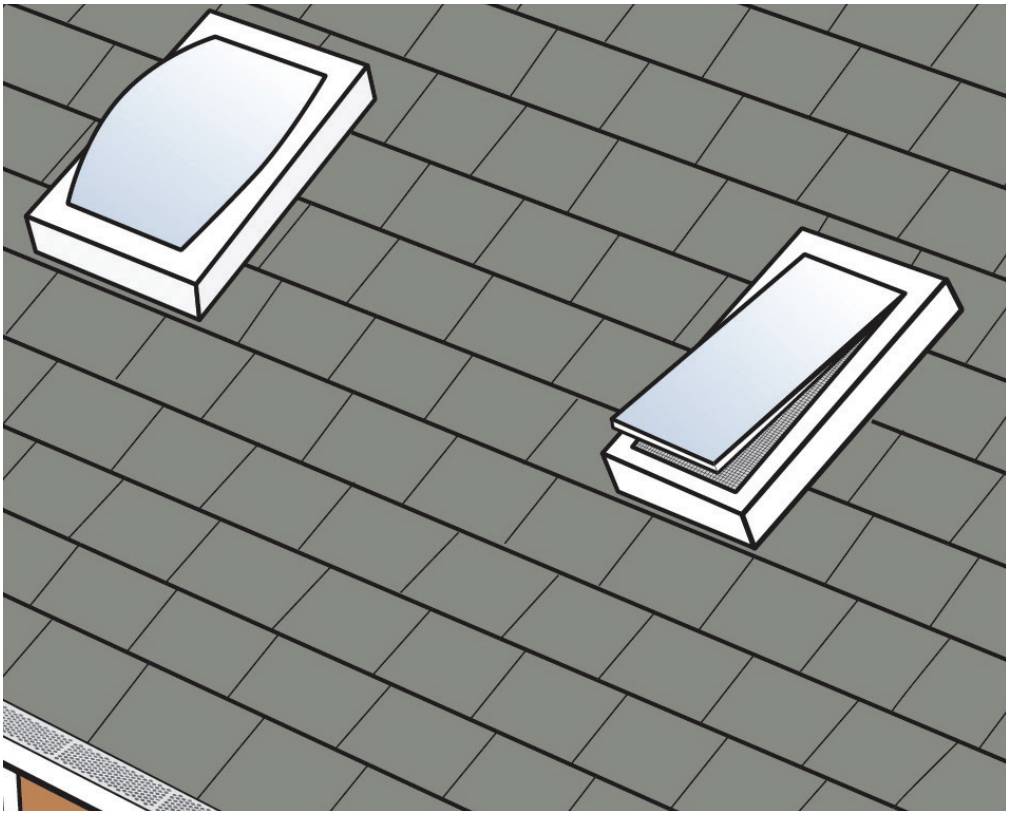
If the siding ignites, a fire can: **1)** penetrate through the stud cavity into the home, **2)** spread up the side of the home and enter windows or other openings such as dryer vents, and **3)** spread into the attic at a gable-end vent or an under-eave area. Combustible siding can be ignited from direct-flame contact or radiant heat exposure. Ignition of siding from embers can occur, especially if embers ignite combustible materials close to the home (e.g., bark mulch or wood pile), and if siding extends all the way to the ground.

Combustible siding products are widely used, including solid wood, wood composite materials and plastic/vinyl products. Vinyl siding can deform and slough off when exposed to flames or radiant heat. Once this happens, underlying material (e.g., sheathing) becomes important for protection. More complicated lap joints in wood-based siding patterns (e.g., shiplap and tongue-and-groove) are more resistant to fire penetration at the lap joint. Plain bevel joints in wood siding are vulnerable to fire penetration. While fiber cement siding often uses a plain bevel lap joint, it is less vulnerable to fire penetration.

HOW TO REDUCE THE VULNERABILITY OF SIDING

- Use noncombustible siding (e.g., stucco, steel and fiber cement), especially when neighboring homes are within 30-feet of the home.
- Make sure to develop and maintain adequate defensible space, particularly within the ember-resistant zone, to minimize the chance that siding will ignite from embers at the ground level or direct-flame contact from nearby combustible materials.
- In smaller areas that are vulnerable, such as at a roof-to-wall area, replace siding with a noncombustible product.
- For new construction, use of a one-hour wall design, where an additional fire resistant layer is used in the wall assembly, can provide additional protection when a more vulnerable siding material is used.

It is not recommended to use fire-retardant coatings, such as fire-retardant paint, to provide fire protection for combustible siding. Some state, county and local building codes do not allow these coatings. Recent research has demonstrated that their performance is degraded by exposure to the elements (e.g., snow, moisture, sun). Their effectiveness degrades more quickly than reported.



Clear debris around skylights and make sure to close before evacuating.

Skylights

Skylights can be a point for ember and flame entry if the cover fails, or if skylights are left open when a wildfire threatens. There are two basic kinds of skylights: domed-style made of plastic and flat-style made of glass. Flat-style, glass skylights have less risk than domed-style, plastic skylights that may melt and burn when exposed to heat from a wildfire. Typically, the glass in skylights consists of two layers, the outer being tempered glass and the inner being a safety glass, such as laminated glass.

Skylights on steeper sloped roofs can be vulnerable to radiant heat and flame contact exposures if nearby combustible materials ignite and burn. Skylights on low-slope (flatter) roofs are more prone to the accumulation of vegetative debris (especially flat-style skylights).

HOW TO REDUCE THE VULNERABILITY OF SKYLIGHTS

- Remove vegetative debris from the roof, including on and adjacent to skylights, on a regular basis.
- On sloped roofs, glass skylights are the best choice because of increased likelihood of exposure to radiant heat.
- If the skylight can open, close it when wildfire is threatening to prevent embers from entering the home. Consider adding a 1/16-inch noncombustible corrosion resistant-metal mesh screening to reduce ember intrusion into the home in case the skylight cannot be closed before evacuation.

Windows

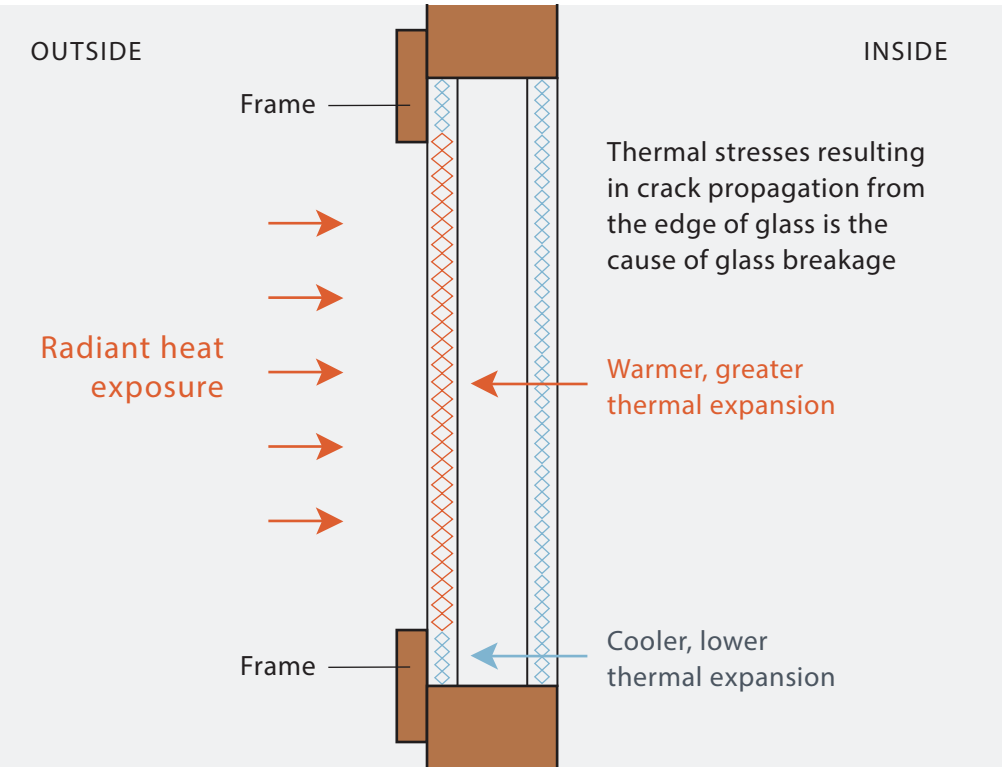
Windows can be a vulnerable component of a home if the framing material ignites or deforms, or if the glass breaks and falls out, both allowing embers or flames to enter the home. The most vulnerable part of a window is the glass. Glass breakage occurs when cracks, propagating from the outer edge inward, occur due to thermal stress that develops when a window is exposed to flames or radiant heat.

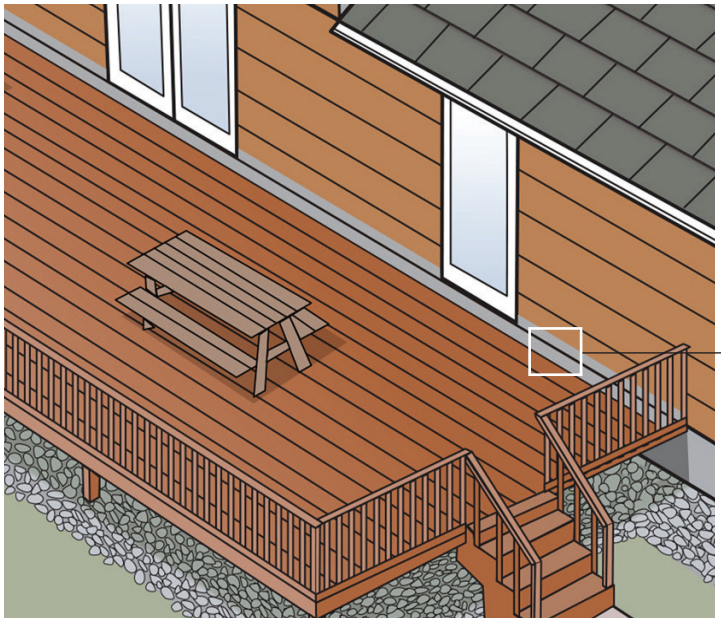
Tempered glass is three to four times more resistant to heat exposures than typical annealed glass and is therefore a better choice when selecting windows. Metal and plastic-clad fiberglass window screening will absorb radiant energy, providing additional protection against radiant heat exposure to the glass in your windows. Plastic-clad fiberglass screening will fail if flames contact it, reinforcing the need for an effective ember-resistant zone.

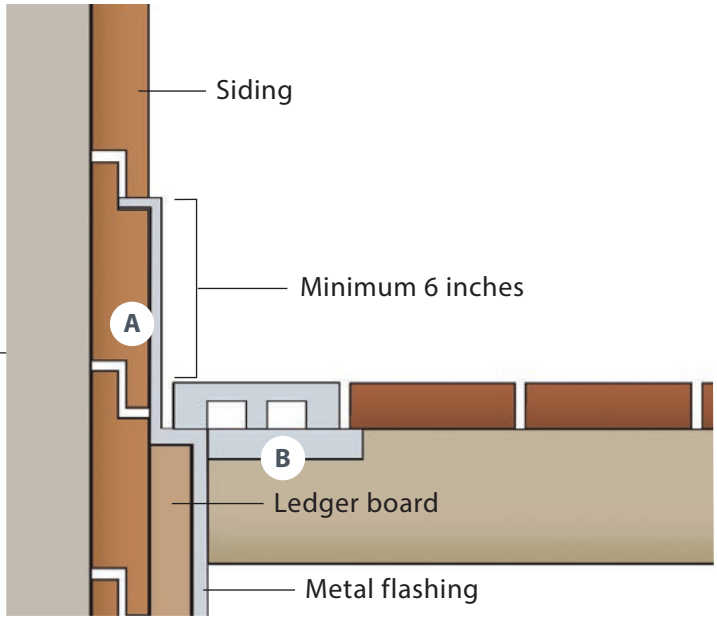
HOW TO REDUCE THE VULNERABILITY OF WINDOWS

- When replacing windows, choose multi-pane options containing tempered glass.
- If neighbors or outbuildings are within 30-feet of the home, consider installing deployable noncombustible shutters to provide additional protection.
- Install screens in all operable windows. Screens increase ember resistance by keeping embers out of the home and also decrease radiant heat exposure.
- Close windows when wildfire is threatening.

DUAL-PANE WINDOW







A *Install metal flashing between the ledger board and joists to protect the combustible siding material. The flashing should extend above and below the ledger board.*

B *Replace the deckboard next to the house with noncombustible material.*

Decks

If a deck attached to a home ignites, the home can be exposed to flames and/or radiant heat. What is stored underneath and on top of decks can also be an ignition source. Depending on the decking material, embers can also directly ignite deck boards. Decks that overhang a slope can be exposed to flames if trees and other vegetation downslope of the deck ignite, resulting in flames contacting the bottom of the deck.

Most commercially available deck boards are combustible. These include redwood, cedar and tropical hardwoods, such as ipe, and all plastic composite lumber decking products. Pressure impregnated fire retardant treated (FRT) wood deck boards are less vulnerable to flames and embers. Higher density hardwood decking and plastic composite decking are less vulnerable to ignition by embers compared to softwood decking (i.e., redwood and cedar). Although some metal deck boards are now available, noncombustible options are typically referred to as solid surface decks because they consist of lightweight concrete, possibly with an additional noncombustible walking surface such as flagstone. Use of noncombustible (i.e., steel) joists in conjunction with combustible deck boards will reduce the overall vulnerability of the deck.

HOW TO REDUCE THE VULNERABILITY OF DECKS

- Create an ember-resistant zone under the footprint of and around all decks. This action will reduce the likelihood of under-deck flame exposure.
- If a deck overhangs a slope, create and maintain an effective defensible space downslope of the deck to reduce the chance of flames reaching the underside of the deck.
- Apply metal flashing or foil-face bitumen tape on top of and a few inches down the side of the support joists. This is an effective strategy to minimize fire growth when a deck is ignited by embers, but would not help if the deck were ignited directly by flames under the deck. Using steel joists also reduces the vulnerability of the deck from both flames and embers.

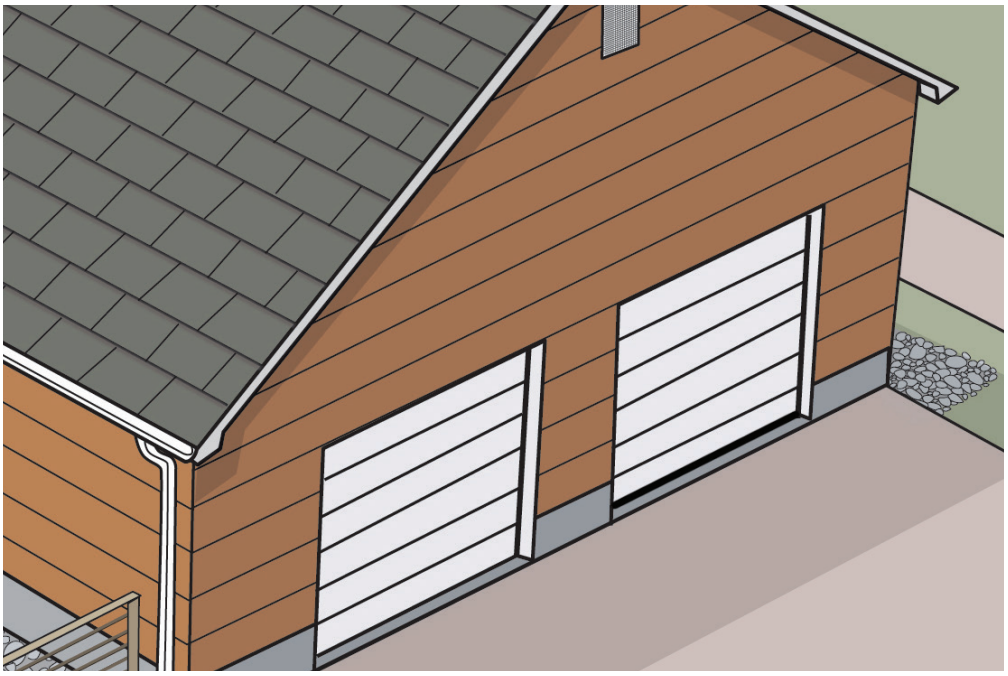
- For cedar and redwood decks, increase the size of the gap between deck boards to ¼ inch so that vegetative debris can fall through rather than accumulate on the deck. Be sure to routinely clear debris from under the deck.
- If a deck is made of combustible decking materials, replace the board closest to the home with a noncombustible material.
- In new deck construction, consider using noncombustible or higher density decking products.
- Move combustible cushions from deck furniture to inside and relocate combustible furniture (especially those with woven components that can trap embers) away from the house.

Garages

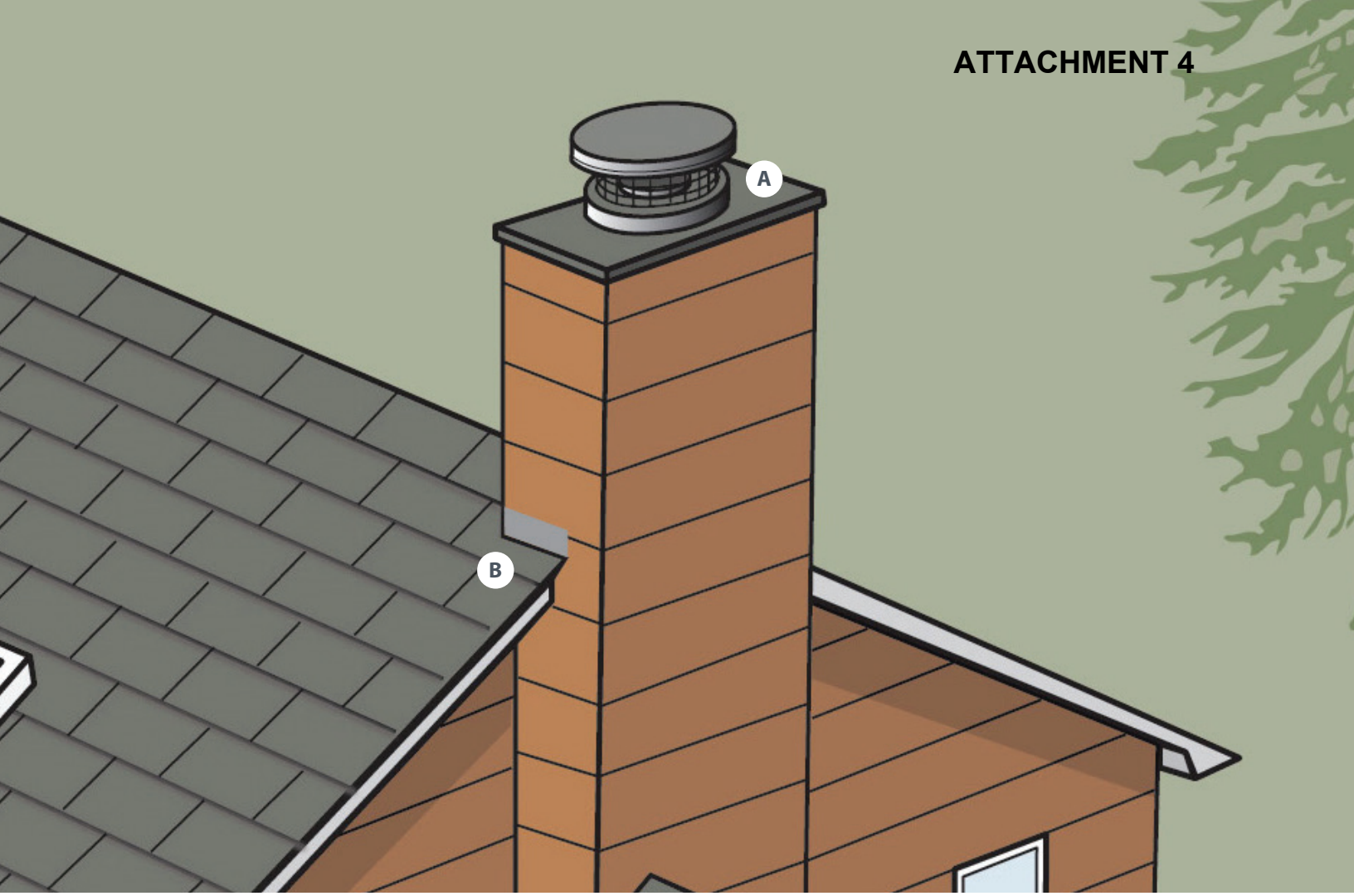
Garages, whether attached to the home or detached as a separate building, can threaten homes if the garage ignites. Since it is normal to store combustible materials in a garage, steps should be taken to reduce the ignitability of the garage because embers can easily enter under or around poorly sealed garage doors.

HOW TO REDUCE THE VULNERABILITY OF GARAGES

- Whether a garage is detached or attached, include it in defensible space planning and maintenance, including the ember-resistant zone.
- Make sure the space between the garage door and framing is well sealed to minimize the entry of embers into the garage.
- Garage windows, vents and other construction components should be treated the same as they would be if part of the home.
- Add a battery back-up to the garage door motor so that the garage can easily be opened or closed if power is out.
- Close garage doors when wildfire is threatening.



← *Make sure garage doors are well sealed and closed before evacuating.*



A *Cover the stovepipe/chimney with a metal screen (no smaller than ⅜-inch and no larger than ½-inch).*

B *Install metal flashing at the chimney-roof intersection.*

Chimneys

Chimneys and stovepipes can be a vulnerable part of the home if not installed correctly and properly cleaned and maintained annually. Vegetative debris can accumulate on the roof adjacent to the chimney chase. This is another roof-to-wall connection that can be vulnerable to ignition by embers.

HOW TO REDUCE THE VULNERABILITY OF CHIMNEYS

- Use of metal step flashing at roof-to-siding intersection (flashing extending up the wall) can reduce the vulnerability to embers.
- Cover chimney and stovepipe outlets with a noncombustible screen. Use metal screen material with openings no smaller than ⅜-inch and no larger than ½-inch to minimize embers leaving the chimney.
- Close the fireplace flue during fire season when the chimney is not in use.

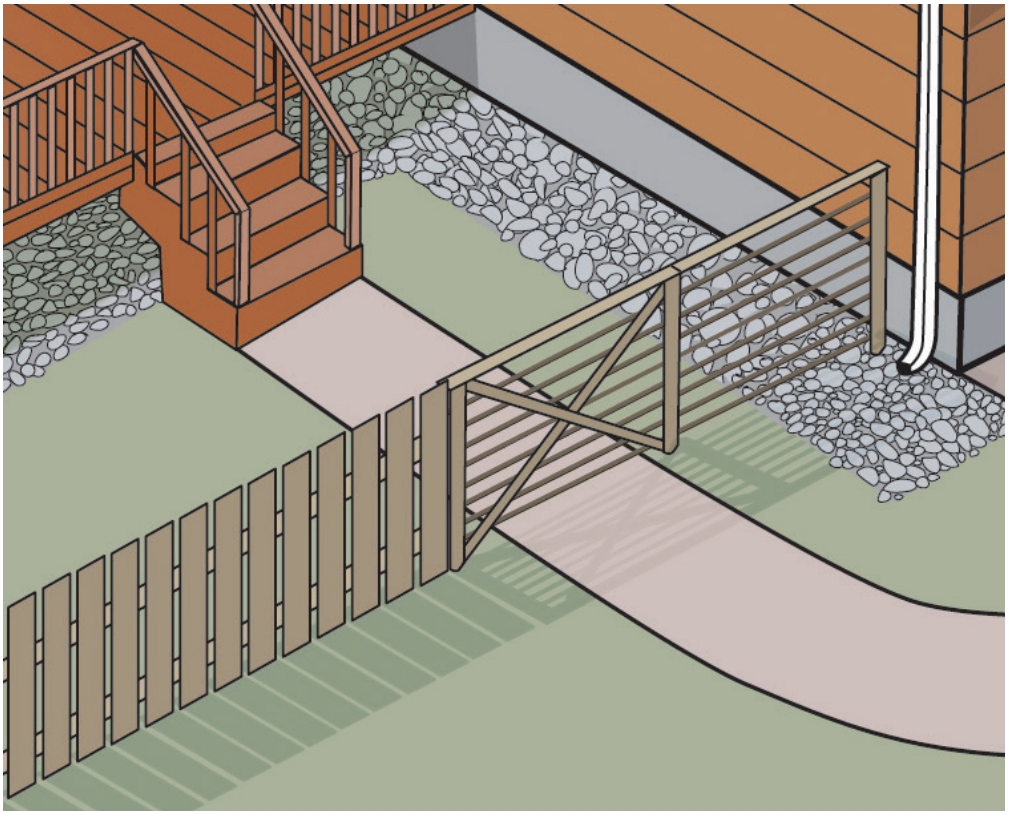
Fences

Combustible fencing can provide a direct path to a home if surrounding vegetation or embers ignite it. Best practice is to separate the fence from the house or upgrade the last 5-feet of the fence to a noncombustible material to reduce the chance of the fence from bringing fire to the home.

Privacy fences (planks all on one side of horizontal supports) are the most vulnerable to ignition because the horizontal to vertical intersection provides a ledge and backstop where embers can accumulate and ignite the fence. Good neighbor (planks alternating) and lattice are more porous, and therefore more difficult to ignite via ember exposure. Vinyl fences are not as vulnerable to embers, but can ignite through direct flame exposure if vegetative debris has accumulated at its base. As is the case with vinyl siding, vinyl fencing will be vulnerable to deformation from radiant heat exposure. All fences are more vulnerable when vegetative debris has accumulated at their base.

HOW TO REDUCE THE VULNERABILITY OF FENCES

- Replace the combustible portion of the fence near the home with a noncombustible section. The noncombustible section should be a minimum of 5-feet long.
- Remove vegetative debris that can accumulate at the base of the fence on a regular basis. Do not use fences as a trellis for plants because plants can create and trap ignitable vegetative debris.



← *Rather than replacing the entire fence, replace the 5-feet closest to the home with a noncombustible option.*

Glossary

BEVEL JOINT A type of lap joint, typically seen in horizontally applied siding. This lap joint, when used with a combustible siding product, is the most vulnerable to fire penetration.

CHIMNEY CHASE The area or structure around metal flue pipes. The chase is usually built with wood, metal or brick.

DORMER A part of a building that extends beyond the vertical plane of the roof. This extension also has a roof covering and typically incorporates a window on the exterior wall.

EMBER Also called firebrand. Burning (or glowing) particles of vegetation from tree branches, parts of shrubs or chaparral, or other combustible materials (e.g., construction materials) that ignite and burn during a wildfire and are carried in wind currents to locations beyond the wildfire front.

FIBER CEMENT A generic term for a siding product that is made using cement, wood fiber and other additives.

FINE-MESH SCREENING In the context of this document, ⅛-inch or finer screening that is used to cover vent openings and operable windows.

FOIL-FACE BITUMEN TAPE A flashing material whereby an aluminum foil material is part of a bitumen tape system.

GOOD-NEIGHBOR FENCE In the context of this document, this type of fence is one where the vertical planks alternate between the sides of the horizontal support members. A "good-neighbor" fence is usually compared to a "privacy" fence, where the vertical planks are all on the same side of the horizontal supports.

GYPSUM WALLBOARD A panelized product made from calcium sulfate dihydrate. These panels are commonly used for paneling on the interior of homes and buildings. A special type of gypsum wallboard can be used as a fire-resistant component in a one-hour wall assembly.

LADDER FUELS Low-lying branches and vegetation that can help carry flames from the surface into the canopy of trees or shrubs.

LAMINATED GLASS A type of safety glass that consists of two (or more) layers of annealed glass that are connected with adhesive interlayers.

LAP JOINT The type of overlap connection between boards or panels on the siding of a building.

METAL DRIP EDGE FLASHING Also called angle flashing, this material is typically used to protect the edge of the roof where the roof covering meets the exterior (vertical) framing.

MULTI-PANE WINDOW A term used to indicate multiple glass panes in a window. One pane of glass would be indicated by "single-pane."

ONE-HOUR WALL CONSTRUCTION An assembly that provides enhanced resistance to the penetration of fire.

OPEN-EAVE A type of construction whereby roof rafters are exposed in the area where they extend beyond the exterior walls of the building. In this type of construction, wood members, typical nominal 2-inch thick lumber, are used to fill the space between roof rafters.

PLASTIC-CLAD FIBERGLASS SCREENING Commonly used window screening material. Typical screen size is 1/16-inch mesh.

PRESSURE-IMPREGNATED FIRE-RETARDANT TREATED A process whereby a fire-retardant chemical is injected into the material (e.g., wood) under a pressurized process. This process results in a deeper penetration of the chemical into the wood.

ROOF COVERING The part of the roof assembly visible from outside the building. Common roof covering materials include asphalt composition shingles, tile and metal.

SHEATHING The first covering of boards or of waterproof material on the outside wall of the house.

SHIPLAP A type of lap joint used for horizontal and vertical siding. Along with tongue-and-groove pattern, this pattern is a better choice when considering improved resistance to fire penetration.

SOFFITED-EAVE A type of construction where the area of the roof rafters that extend beyond the exterior wall of a building are enclosed, typically by attaching a panelized product that connects the edge of the roof to the exterior wall.

STUCCO A siding material usually consisting of a mixture of sand, Portland cement, lime, water and other additives.

TEMPERED GLASS A heat-treated glass that enhances resistance to heat exposures three to four times over that of regular (annealed) glass.

UNDERLAYMENT A panel or sheet material in the roof assembly, underlying the roof covering, that improves the fire rating of the covering.

VENT COVER A solid material used to temporarily cover a vent opening to prevent the entry of embers.

Online Resources

The following websites have resources and information on home-hardening, defensible space, and other tips to prepare for wildfire.

Living With Fire Program - www. livingwithfire.com

University of California Agriculture and Natural Resources - www.ucanr.edu/sites/fire

Insurance Institute for Home and Business Safety–Wildfire - www.ibhs.org

CAL FIRE Ready for Wildfire - www.readyforwildfire.org

Sustainable Defensible Space - www.defensiblespace.org

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Partner Logos

SP-20-11

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LIVING WITH FIRE TAHOE

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EXTENSION
College of Agriculture, Biotechnology & Natural Resources

Photo Courtesy of California Tahoe Conservancy / Nick Spannagel

ATTACHMENT 5

BE WILDFIRE READY

No one thing reduces risk completely—the solution requires a system. Follow this series of steps to reduce your home's risk.

Research has shown there are clear steps you can take to give your home a much better chance of surviving an encounter with wildfire. This guide provides four sets of steps that are grouped to provide the most impact for the time and cost involved. Get started today and be Wildfire Ready.

90% of homes that ignite in a wildfire **ARE DESTROYED**

START HERE

CHECK YOUR ROOF (YES, YOUR ROOF!)

Make sure your roof is fire-rated. The good news—most modern asphalt shingle roofs are. If yours is not (or it's made of a combustible material like wood shake) *there is little else you can do to prevent damage* if a wildfire approaches your home. If your roof is unrated, or if you are considering replacing your roof, re-roof with a Class A-rated roofing material.

Asphalt shingle roof

More good news—most clay and concrete tile roofs are already Class A! If you have a tile roof, be sure to add bird stops to open ends at the roof edge to reduce vulnerability.

CREATE A BUFFER AROUND YOUR HOME (0-5 FOOT HOME IGNITION ZONE)

Pay special attention to the 5 feet immediately around your home. This area should be designed and maintained to keep fire or embers from igniting materials in this area and spreading fire to your home. Don't park vehicles or store firewood, outdoor furniture, or other items such as trash cans in this area, and make sure yard debris doesn't accumulate.

REMOVE ITEMS UNDER YOUR DECK

To prevent your deck from igniting and spreading fire to your home, do not use the area under decks as long-term storage.

ADD OR UPGRADE YOUR VENT SCREENS

Flying embers can enter your home through vents in your attic, roof, gables, and crawlspace. Make sure vents have a metal screen 1/8 inch or finer to block embers from entering and igniting your home. Be sure to check screens periodically and remove accumulated debris, birds' nests, etc.

Cover vents with 1/8 inch screen to keep embers out

KEEP GOING!

Once you've addressed the first set of critical actions, keep going with these low-cost steps that further reduce your risk.

REMOVE BACK-TO-BACK ROWS OF FENCING

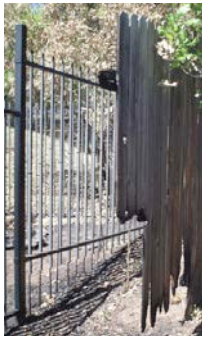
A gap between neighboring fences can allow debris and embers to accumulate and ignite both fences. Additionally, the two fences together create more fuel for a more intense fire, increasing your home's exposure to heat and burning embers.

Talk to your neighbor and work together to take down any sections that overlap

Photo: Jack Cohen

REPLACE COMBUSTIBLE FENCING OR GATES ATTACHED TO THE HOME

Replace at least the first 5 feet of combustible fencing attached to your home with metal or other noncombustible versions (including gates).



Don't connect combustible fences to your home

CLEAR YARD DEBRIS

Embers collect in gutters and around fences and underneath gates. Make sure debris such as leaves and pine needles haven't accumulated in these areas.

TRIM TREES

Remove branches that overhang your roof or gutters. Trim the bottom of trees so all branches are at least 6 feet from the ground and at least 3 times higher than nearby shrubs. Trim upper branches to ensure they are at least 10 feet away from branches of neighboring trees.

ENCLOSE LOW ELEVATION DECKS

If your deck sits less than 4 feet above the ground, enclose it with a noncombustible material or use 1/8 inch or finer mesh. This will help keep debris out and keep embers from collecting underneath.

Next » LEVEL UP!

LEVEL UP!

When time and budget allow, these next steps will address additional vulnerable areas of your home.

MOVE OUTBUILDINGS

Make sure small structures like sheds, dog houses, and other outbuildings are at least 30 feet away from your home.

REPLACE YOUR SIDING

If you have combustible siding like un-treated wood or vinyl, the best practice is to replace it with a noncombustible material like concrete-fiber board, stucco, brick, or stone veneer. If you cannot replace all the siding, replace the lowest one foot of siding.

ENCLOSE EAVES

If your home has open eaves, box them in or install noncombustible soffit material, and install 1/8 inch or finer metal mesh in the vents.

ENCLOSE UNDER BAY WINDOWS

Enclosing the area beneath the bay window with a noncombustible siding keeps embers out and prevents fire from burning underneath.

GO THE LAST MILE!

Consider these final actions for reducing your risk.

BUILD A FIRE-RESISTANT DECK

When building a new deck, use metal joists and a fire-resistant walking surface like fire-rated composite deck materials, aluminum, or lightweight concrete.

UPGRADE WINDOWS

Replace your windows with ones with tempered glass, especially first floor windows on a multi-story home.

EXTEND YOUR 0-5 FOOT HOME IGNITION ZONE

If your home has angled exterior walls (re-entrant corners), extend your home ignition zone outward from these areas and pay special attention to keep out materials that could ignite. During a fire, the flow of air around this corner can create intense fire whirls that spread extreme heat and ignite walls.

IF A FIRE IS APPROACHING

Monitor conditions and follow advice of local authorities. If ordered to evacuate, do so immediately and follow FEMA recommendations.

THERE IS MORE TO THIS GUIDE!

This is an abbreviated version of the Wildfire Ready guide available on DisasterSafety.org or wildfire-ready.com. Please view the guide online for the most recent edition and for additional details on how to protect your home from wildfire.

Share this guide with friends, family, and neighbors.

Together, we can reduce our risk from wildfire!

BE WILDFIRE READY
A guide to help you protect your property from wildfire.

WILDFIRE-READY.COM

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