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
STANDARD AND GUIDELINE FOR PLAN CHECK AND SUBMITTAL PROCESS

PLAN CHECK AND SUBMITTAL DOCUMENTS

1) In Person Submittal (please provide 2 copies of all documents)
   - ✓ A completed Plan Check Application
   - ✓ Scaled site plan
     a. Plans shall include fire hydrant location(s)
   - ✓ Provide supporting documentation for submittal (i.e. battery calculations, cut sheets, water flow chart)
   - ✓ Pay Fees

2) Digital Submittal via Online Public Portal:
   https://aca-prod.accela.com/mpfd/Default.aspx

   - ✓ Register to create an account or Log in
   - ✓ Select appropriate permit application
   - ✓ All documents are uploaded. Provide all required supporting documents pertinent to the submittal, including:
     a. Scaled site plan
        i. Plans shall include fire hydrant location(s)
   - ✓ Pay fees

- ❖ Note: Gate applications are a separate submittal and submittal requires gate details.
- ❖ Any modifications/changes to approved plans require a resubmittal/revision. Fees will apply.

Fire Department Access

Information Packet

Menlo Park Fire Protection District

The Bureau of Fire Prevention and Life Safety

MENLO PARK FIRE PROTECTION DISTRICT
STANDARD AND GUIDELINE FOR PRIVATE ROADS AND DRIVEWAYS

Includes requirements for Gates, Turnarounds & Turnouts

SCOPE. This standard and 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 WEATHER ROAD - 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 all-weather, provided with turnarounds. Driveways in excess of 500 feet in length shall be all-weather and provided with turnouts in addition to turnarounds. No grasscrete or similar product allowed.

> 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, and may be increased to 200 feet.

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. No grasscrete or similar product allowed.

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. Signs shall have a minimum dimension of 12 inches wide by 18 inches high and have red letters on a white reflective background.

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 D103.4.
2. Gates shall be of the swinging or sliding type.
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. Location shall be visible and approved by AHJ.
6. If such gates are to be equipped with locks, the locking devices shall be designed to permit ready entrance by the use of forcible entry tools such as chain or bolt-cutting devices, 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.

Fire Department Access Roads. All required Fire Department Access Roads shall be publicly recorded as a Emergency Vehicle Access Easement (EVAE), minimum of 20 feet in width along with the following statement.

All rights and remedies conveyed to Grantee under this Emergency Vehicle Access Agreement extend to and are enforceable by the Menlo Park Fire District as a Third Party Beneficiary. These rights are in addition to, and do not limit, the Grantee's rights of enforcement.

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 on which the address is located. Refer to Menlo Park Fire Protection District Ordinance Section 505 Permanent addresses on new construction and substantial remodels shall be internally or externally illuminated from dusk to dawn, not on a switch, and no solar. Addresses shall be posted at the beginning of construction and shall be maintained thereafter.

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 AND SUBMITTAL DOCUMENTS

Please refer to the Plan Check and Submittal Process Section in the Standards and Guidelines Manual.

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

Scope. This standard and 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.

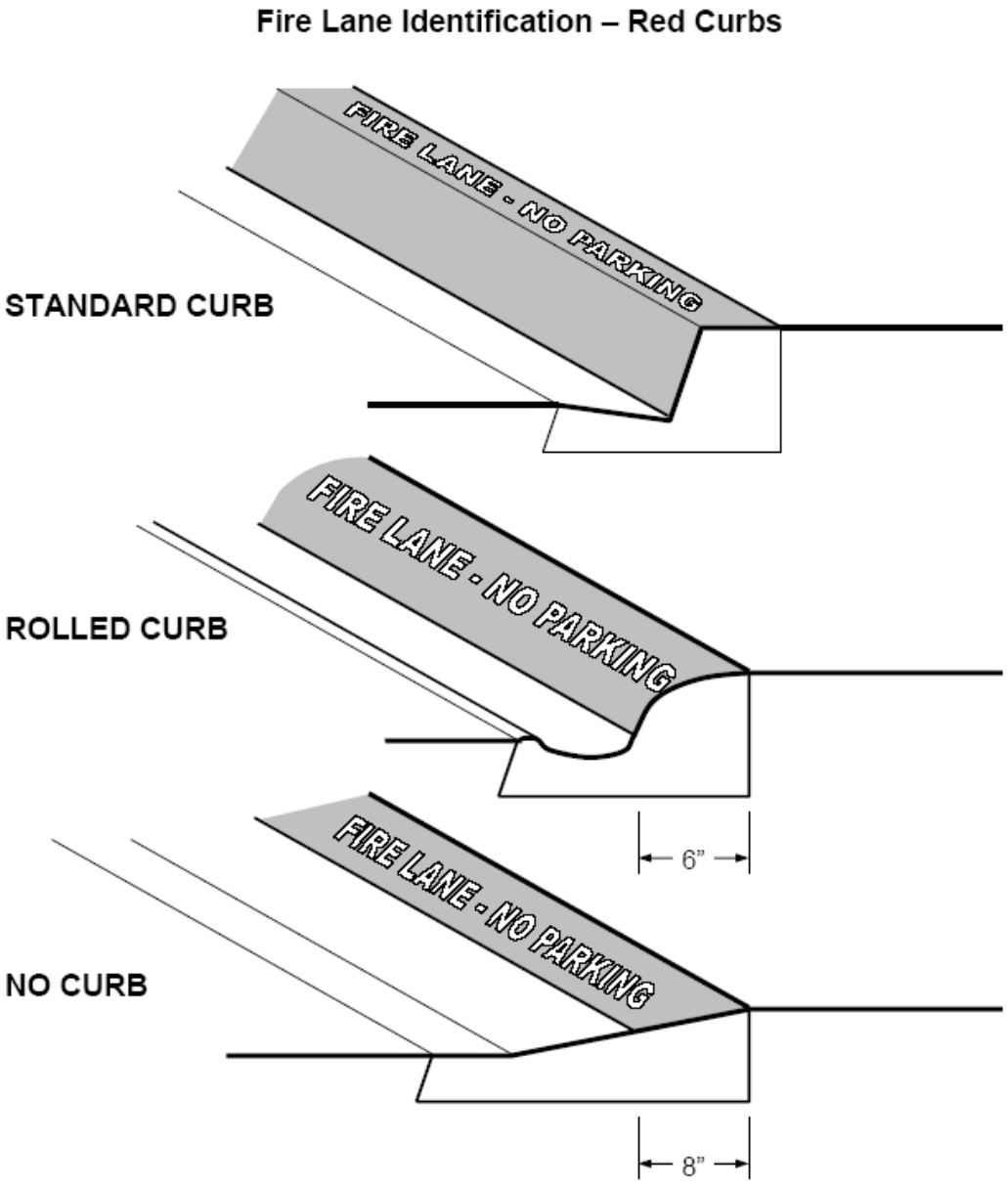
Enforcement

California Vehicle Code Section 22500.1 - Fire lanes; parking violations; and signs:

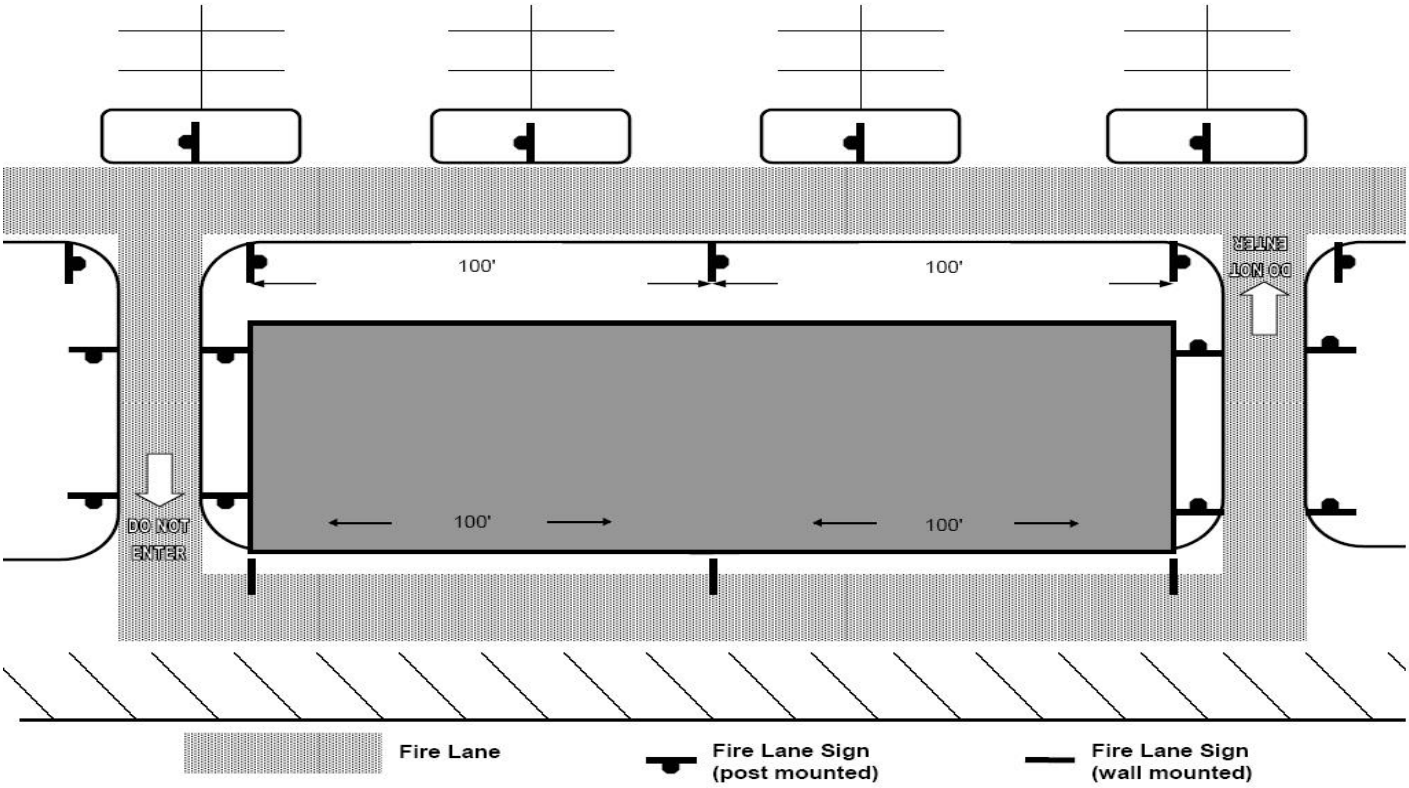
In addition to Section 22500, no person shall stop, park or leave standing any vehicle, whether attended or unattended, except when necessary to avoid conflict with other traffic or in compliance with the directions of a peace officer or official traffic control device along the edge of any highway, 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.

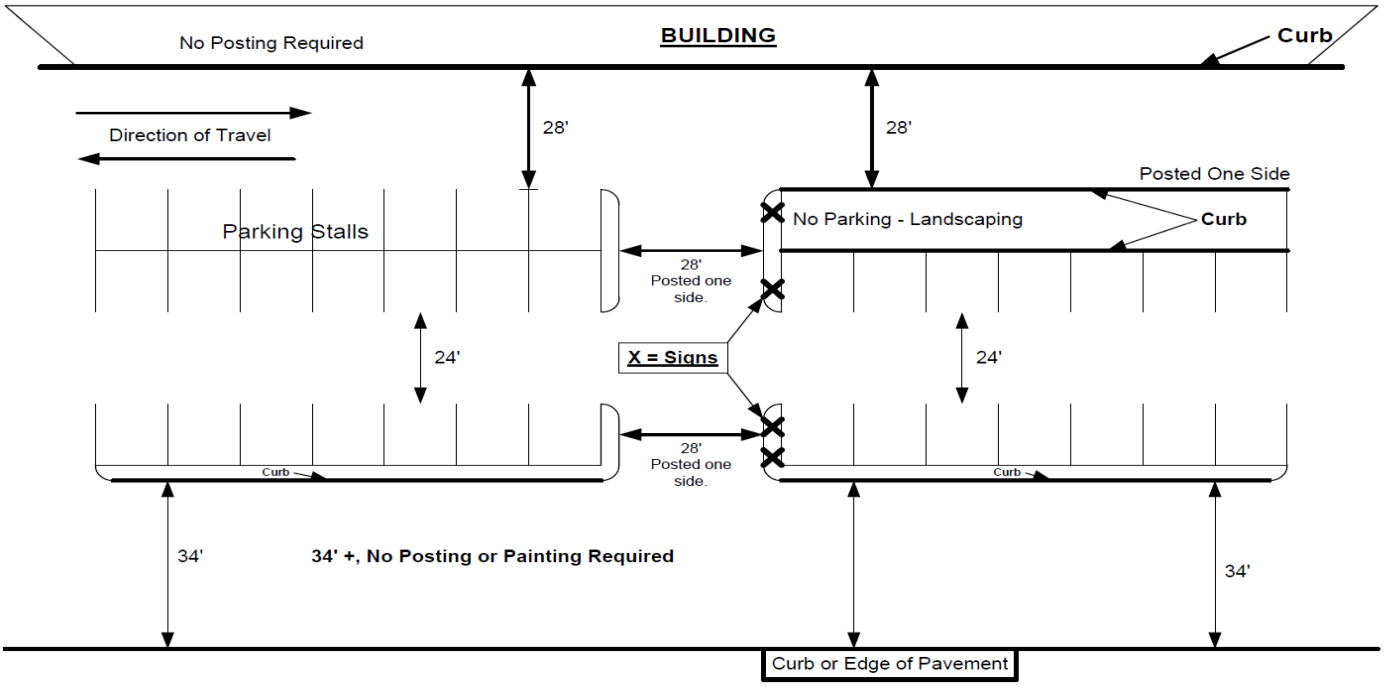
The designation shall be indicated by (1) a sign posted immediately adjacent to, and visible from, the designated place clearly stating in letters not less than one inch in height

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 No Parking Sign Locations





Fire Lane Sign Post Installation

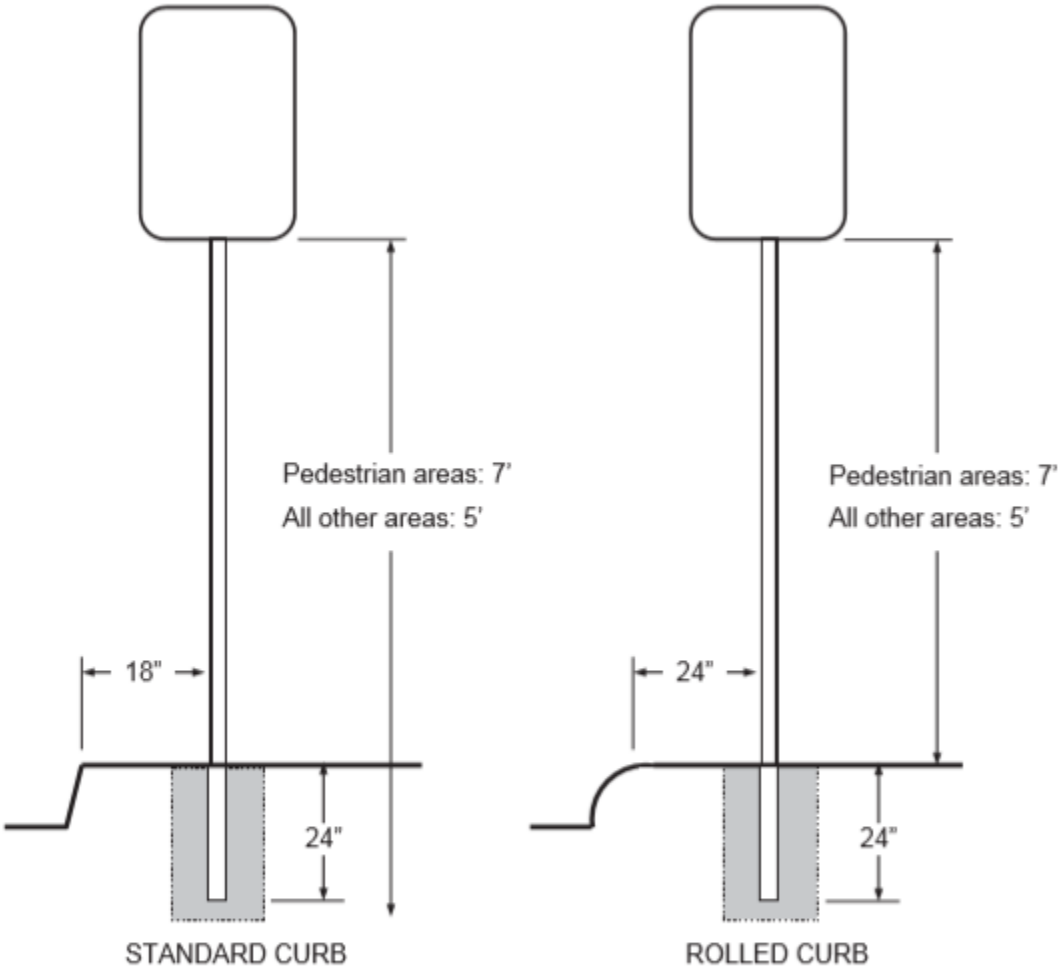
A. Height of the sign: 7' in sidewalk or pedestrian areas, 5' in all other areas.

B. Distance from front of curb: 18" with standard curb, 24" with rolled curb, to center of post.

C. 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
STANDARD AND 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 and guideline.

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:

- Concern over jarring of emergency rescue vehicles
- 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:

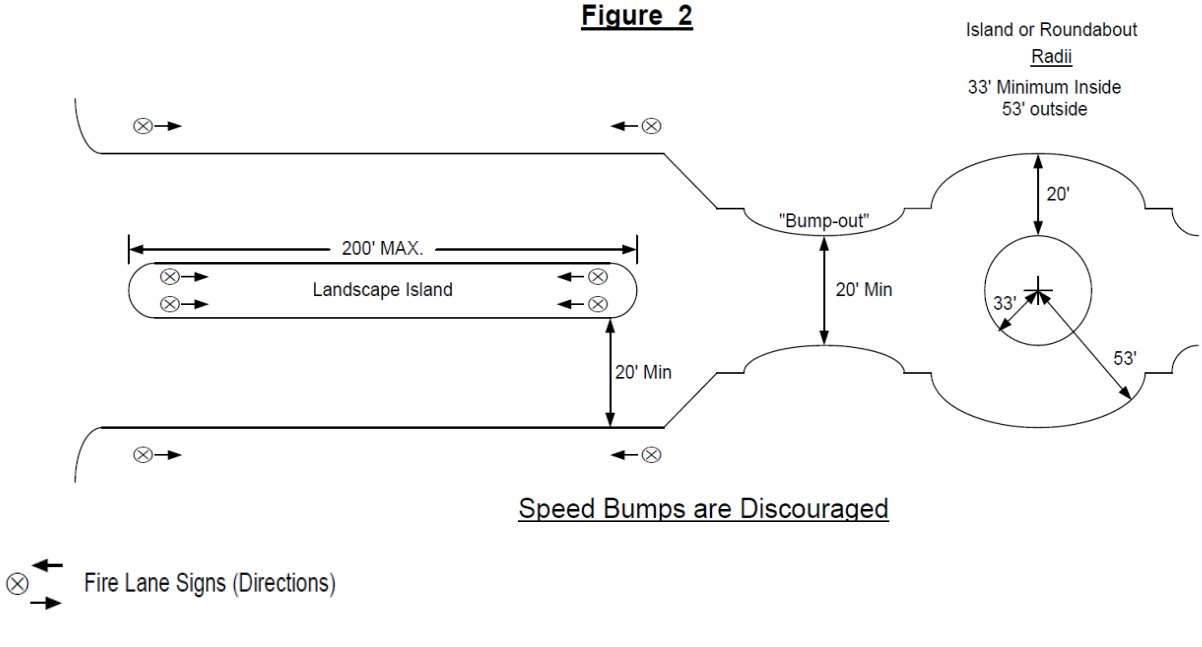
1. Traffic calming devices may only be installed on residential streets. They shall not be used on major roads, bus routes, or primary emergency response routes.
2. Speed humps shall not be placed mid-block or at intersections.
3. Traffic calming devices shall not be located on grades greater than 8 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 503.2 the California Fire Code Section 503.4

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* or the San Mateo County Department of Public Works traffic humps drawing.

Traffic Calming Devices
Exagerated

Figure 2



Speed Bumps are Discouraged

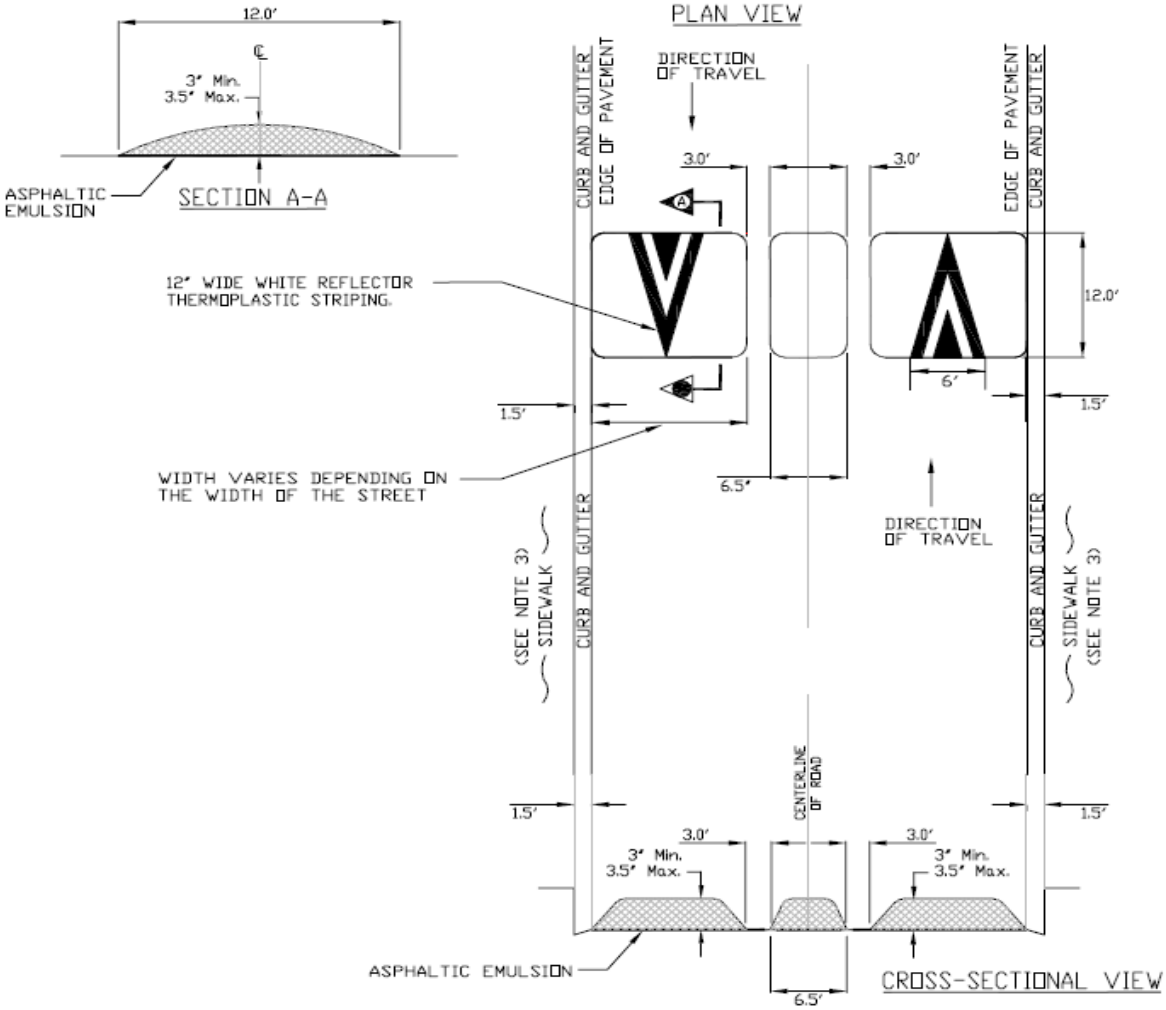
Fire Lane Signs (Directions)

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

REDWOOD CITY
CALIFORNIA

DRAWN BY: EPC
CHECK BY: LE
APPROVED BY: LE

SCALE: NONE
DATE: 11/04
REVISED:



TYPICAL CONSTRUCTION DETAIL: SPEED LUMP

NOT TO SCALE

NOTES:

1. SPEED HUMP STRIPING MAY BE ELIMINATED, AT THE DIRECTION OF THE ENGINEER.

Fire Department Access to Roofs

Information Packet

Menlo Park Fire Protection District

The Bureau of Fire Prevention and Life Safety

MENLO PARK FIRE PROTECTION DISTRICT

STANDARD AND GUIDELINE FOR ACCESS TO BUILDING ROOF

SCOPE: This standard and guideline provides the minimum requirements for Fire Department to access building roof necessary for firefighting operations or other emergencies requiring emergency personnel immediate access. As per prescriptive requirements listed in CFC Sections 504 & 1011 and the CBC Section 1011.

When necessary, these guidelines may be modified to ensure adequate access for firefighters and public safety. Other prescriptive requirements for roof access to include but are not limited to mechanical equipment, solar photovoltaic system, and elevator equipment as per Title 24.

PENTHOUSE: Where a stairway is provided to access a roof, access shall be provided through a penthouse, and considered as a portion of the story below. Penthouse design criteria as per CBC Section 1510.2

SHIPS LADDER: A Ships Ladder may be used for roof access, when approved by AHJ. For those buildings without an occupied floor, may be used in those instances for maintenance to mechanical equipment, access to solar photovoltaic system or elevator equipment. (As per CBC Sections 1011.1, 1011.12, & 1015). Installation of a Ships Ladder shall be reviewed and approved by MPFD.

GENERAL:

ROOF ACCESS:

- There are two means of access to a roof which include:
    - Stairwells. These to include prescriptive requirements for stairways, or roof hatch located at designated stairwell. CFC Sections 504 & 1011.12.
    - Ladder. Allow for placement of straight ladder or extension ladder for accessing roof or window ledge (for building up to 30' in height), and access roads for placement of aerial ladder truck (for building 30' in height and greater) to access roof top, or window ledge. As per CFC Sections 503 (Fire Apparatus Access Roads), 504 (Access to Building & Roofs), & Appendix D.
- Stairway to roof shall be designed with penthouse for designated stairwell for building four stories or more, with roof designed at less than 4 units vertical in 12 units horizontal (33.3% slope). CBC Section 1011.12.2 and penthouse shall be constructed in accordance to CBC Section 1510.2
- Any stairwell or where a ships ladder is providing direct vertical access to roof, designated stairwell shall have direct access to the exterior. Signage shall be required to be installed on all stairwells exterior doors stating "Roof Access".

- Alternating tread device listed in CBC Section 1011.12 exception (designed per CBC Section1011.14) shall not be used for access to roof from a stairwell. MPFD will only allow a permanently attached ships ladder for accessing the roof where a roof hatch is installed.
- Signage required

SPECIAL CIRCUMSTANCES:

Security measures shall not include barbed wire fencing, razor wire fencing, chain link fencing, or any other fencing material, cable, aerial, antenna or other obstructions on the roof that restrict access or egress hazardous to firefighter safety in the event of an emergency.

Parapets height along building perimeter shall allow access and egress to aerial ladder.

Roof and parapets greater than 30" with differing levels require permanent attached ladders positioned and placed as per CBC and MPFD approval. These ladders shall be constructed in accordance to CMC Section 306.5.

PLAN CHECKS:

Plan review for Fire Department Access to building and building roof shall be completed as part of the Building permit plan check.

Fire Alarm and Detection Systems
Information Packet

Menlo Park Fire Protection District
The Bureau of Fire Prevention and Life Safety

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

SCOPE: This standard and 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 NFPA 72, 2022 edition, 2022 California Fire Code, The 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.

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 standard.

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 CHECK AND SUBMITTAL DOCUMENTS

Please refer to the Plan Check and Submittal Process Section in the Standards and Guidelines Manual.

Required Documents for Submittal:

Plan Set: State Fire Marshal equipment lists and Battery calculation sheet(s)

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 times the required 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 UL 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.

Commercial Fire Sprinkler

Information Packet

Menlo Park Fire Protection District

The Bureau of Fire Prevention and Life Safety

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

SCOPE. This standard and 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, 2022 California Fire Code, 2022 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 11.2.3.3.3, 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 and NFPA 14, 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 and type of system (i.e. combination system) and labeled with starting pressure if over 125 psi.
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.

STANDPIPES

1. LOCATION. Within parking garages, standpipes shall be front facing on columns with a reflective blue bott dot in drive aisle.2. Painted red to a minimum of 6.5 feet above finished floor.

PLAN SUBMITTAL PROCEDURE

A permit for the installation or modification to a Commercial Fire Sprinkler System and related equipment is required. Maintenance performed in accordance with the CFC is not considered a modification and does not require a permit. Refer to the Plan Check and Submittal Process Section in the Standards and Guidelines Manual to apply for a permit.

Include the following required documents for submittal:
Water purveyor flow test
Hydraulic calculations
Cut sheets

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 13-6.1, 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 un-sprinklered areas.
    n) Indicate manufacturer, style, model, orifice size, and "K" factor of each sprinkler used. Riser detail showing system split, pressure gauge, check valve, main control valve, relief valve (where applicable), main drain valve.
    o) Indicate the manufacturer, model, type, and pump curve of the booster pump (where applicable).
    p) Indicate the type and size of pipe.
    q) Provide hanger details.
    r) Indicate type of fitting used.
    s) Use of each room.
    t) 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 The Bureau of Fire Prevention and Life Safety Standards and Guidelines Manual.
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. All piping shall be provided with hangers and shall be supported per code and manufacturer's specifications.
4. All piping shall be hung from structural members, if the members are wood, they shall be at least 3-inch width in thickness. For piping 2 ½ inches or greater, they shall be hung from 4-inch width in thickness.
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 at both rough and final inspections, 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.

Residential Fire Sprinkler
Information Packet

Menlo Park Fire Protection District
The Bureau of Fire Prevention and Life Safety

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

SCOPE. This standard and 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 the latest edition adopted by the State Fire Marshal's Office of NFPA 13D: Installation of Sprinkler Systems in One and Two-Family Dwellings and Manufactured Homes, the 2022 California Fire Code, the 2022 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 at 30 feet on center.
3. Automatic fire sprinklers shall be included in all bathrooms.
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 and connecting breezeways.
6. The main drain shall be a minimum ½ inch.
7. The main control valve shall be of indicating type.
8. The exterior fire bell shall be placed in the same area as the water supply control valve.
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. No wires shall be allowed to touch fire sprinkler piping due to pipe degradation.
15. Passive purge, backflow prevention and reduced pressure devices shall be approved by the local water purveyor for your system design.
16. CPVC piping used for longer drops or sprig ups longer than 1 foot 6 inches require restraint.

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. Insulation shall be checked at time of rough inspection.

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

A permit for the installation or modification to a Residential Fire Sprinkler System and related equipment is required. Maintenance performed in accordance with the CFC is not considered a modification and does not require a permit. Refer to the Plan Check and Submittal Process Section in the Standards and Guidelines Manual to apply for a permit.

Include the following required documents for submittal:
Plan Set
Water purveyor flow test
Hydraulic calculations
Cut sheets

*<u>Plan Set shall include:</u>

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

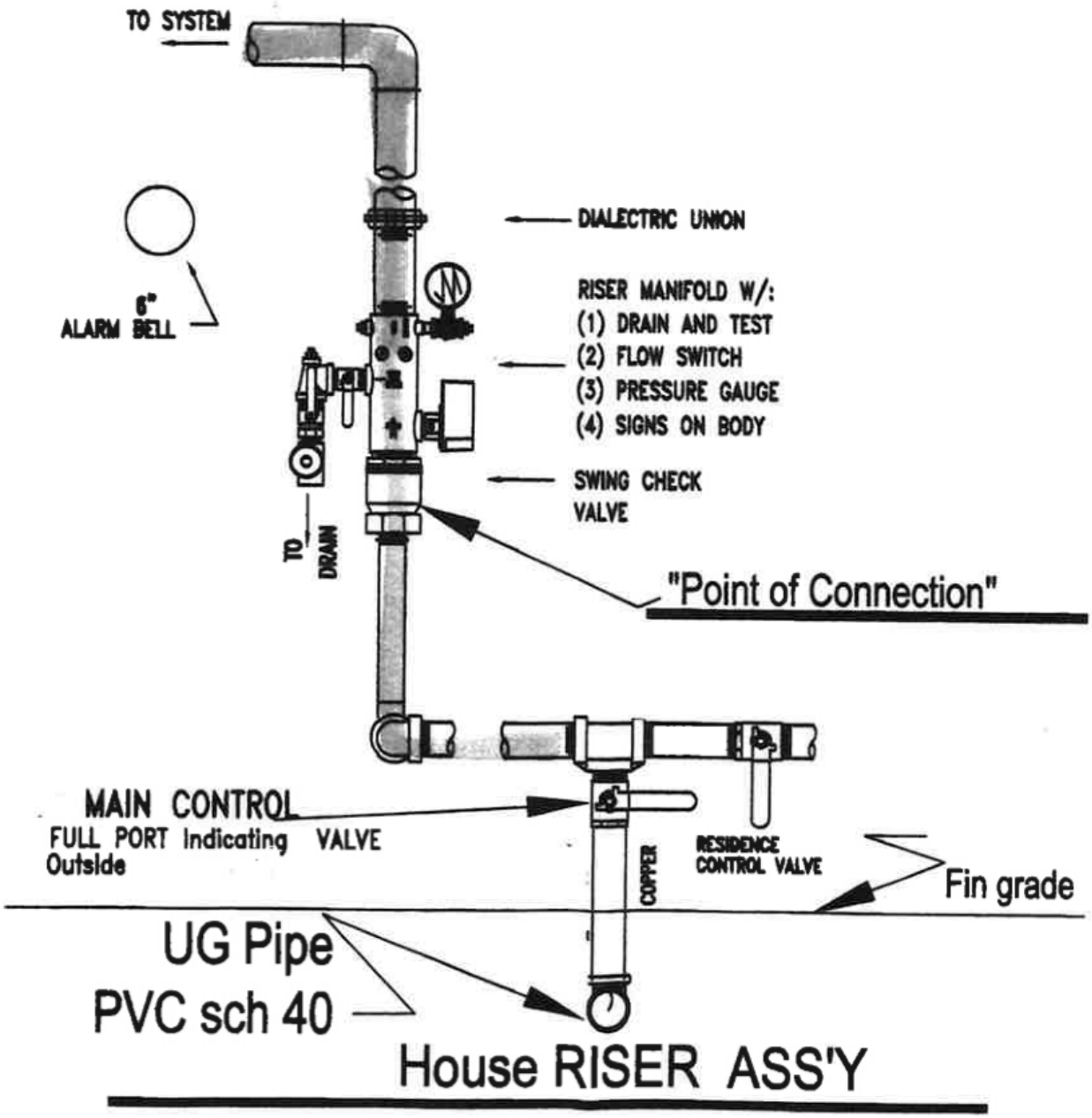
10. Piping plan showing the following:
    a) Tank
    b) Pump
    c) Structure elevations
11. Full height cross section (including vaulted and beam ceiling locations)
12. Water tank details
13. Sprinkler spacing
14. Room use
15. Heat sources
16. Un-sprinklered areas

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


TO SYSTEM
DIALECTRIC UNION
6"
ALARM BELL
RISER MANIFOLD W/:
(1) DRAIN AND TEST
(2) FLOW SWITCH
(3) PRESSURE GAUGE
(4) SIGNS ON BODY
SWING CHECK
VALVE
TO
DRAIN
"Point of Connection"
MAIN CONTROL
FULL PORT Indicating VALVE
Outside
COPPER
RESIDENCE
CONTROL VALVE
Fin grade
UG Pipe
PVC sch 40
House RISER ASS'Y

Underground and Water Supply Guidelines
Information Packet

Menlo Park Fire Protection District
The Bureau of Fire Prevention and Life Safety

MENLO PARK FIRE PROTECTION DISTRICT
STANDARD AND GUIDELINE FOR UNDERGROUND PIPING

SCOPE. This standard and guideline 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 Bureau of Fire Prevention and Life Safety Standards and Guidelines Manual 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.
2. The FDC shall be visible from street. It shall have a sign that indicates the address of the building it supports, the type of system (i.e. combination system), and the starting pressure if over 125 psi.
3.
4. FDC's shall be located within 50 feet of a fire hydrant.
5. The centerline of FDC shall be between 36–44 inches from finished grade.
6. The FDC shall remain clear of obstructions and remain accessible.
7. The FDC shall have 1-5" Storz Quick connection and 2 –2 ½" connections minimum based upon design criteria, of vertical or horizontal type (See sample picture)
8. The Storz Quick connection shall be installed downward at a 30 degree angle.

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.

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

Refer to the Plan Check and Submittal Process Section in the Standards and Guidelines Manual, on how to apply for a permit.

Maintenance performed in accordance with the CFC is not considered a modification and does not require a permit.

- Note: Any modifications/changes to approved plans require a resubmittal/revision. Fees will apply.

MENLO PARK FIRE PROTECTION DISTRICT GUIDELINE
WATER SUPPLIES, 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 2022 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 2022 California Fire Code, Appendix C 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 2022 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 2229 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.

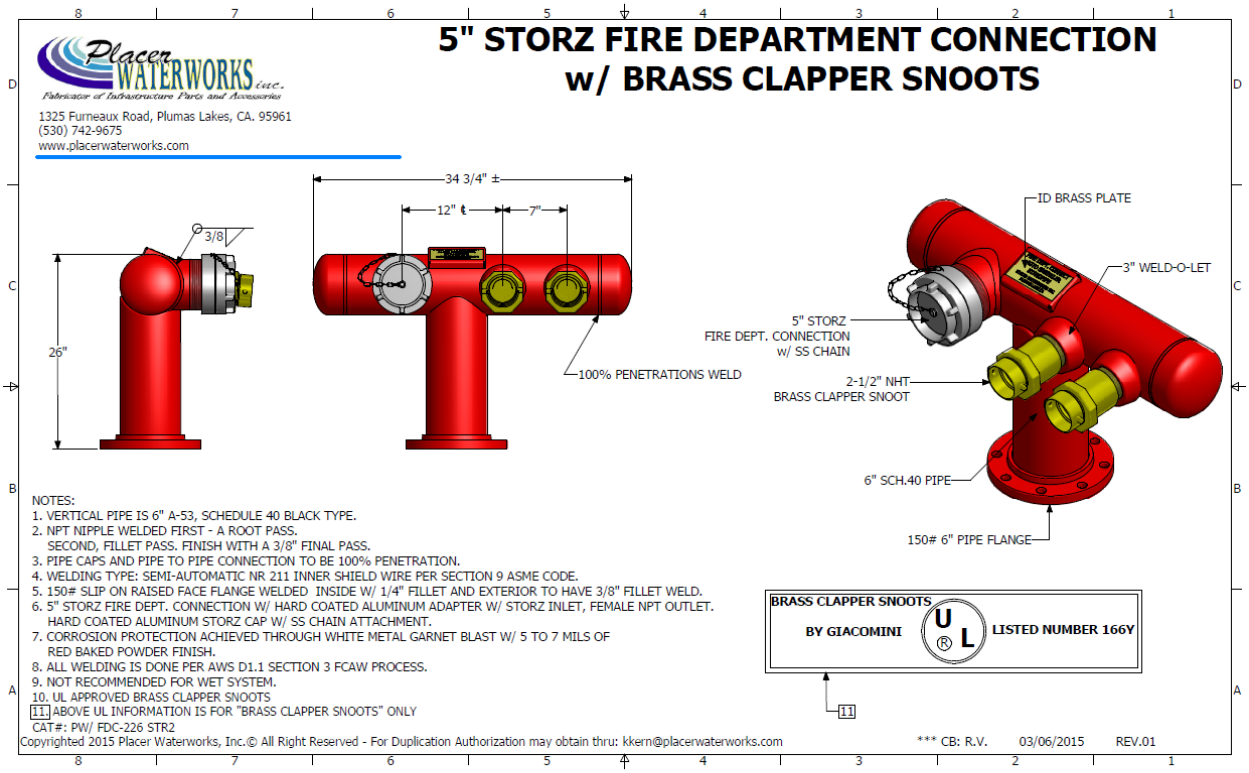
20. Any changes in location of fire hydrants shall be approved by the Fire Prevention Bureau prior to installation.
21. Fire hydrants and water lines must be in the water purveyor's easement or within easements to the property owners that will benefit from the hydrant.
22. Make sure you denote the hydrant 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.



TYPICAL HYDRANT MARKER LOCATION

Figure 1

TWO LANE STREET

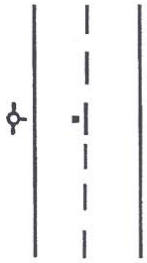


Figure 2

MULTI-LANE STREET

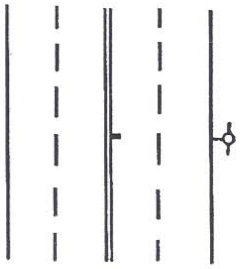


Figure 3

TWO LANE STREET

AT INTERSECTION

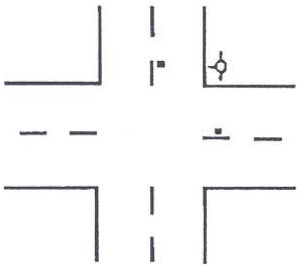
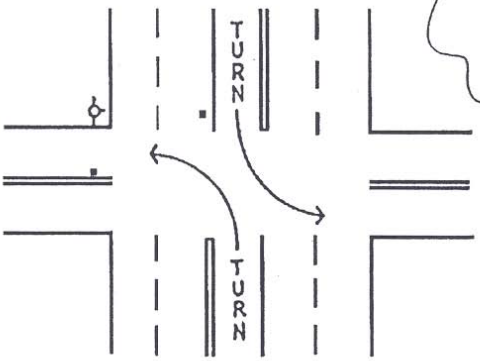


Figure 4

FOUR LANE STREET WITH TURN LANE

AT INTERSECTION



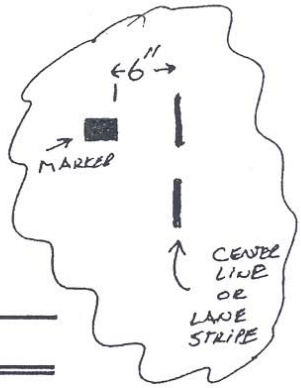


Figure 5

MULTI-LANE STREET WITH

TURN LANE

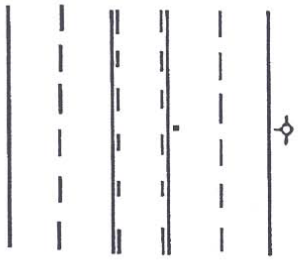
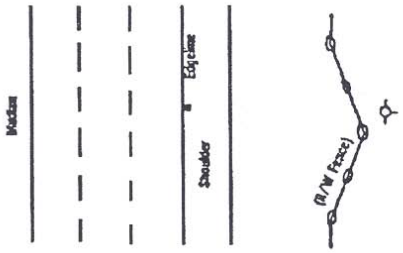


Figure 6

FREEWAYS AND EXPRESSWAYS



Emergency Responder Communication Coverage System
Informational Packet

Menlo Park Fire Protection District

The Bureau of Fire Prevention and Life Safety

Revised September 2022

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			

All of the yellow highlighted shall be repeated frequencies and are to be included in the BDA system.

MENLO PARK FIRE PROTECTION DISTRICT
Emergency Responder Communication Coverage Systems

SCOPE. The purpose of this standard and guideline is to provide direction for the design and field acceptance testing to ensure that the radio coverage is adequate for first responders emergency operations. *Existing buildings shall provide radio coverage for emergency responders as required in Chapter 11 of the California Fire Code.*

REFERENCES
California Fire Code, 2022 Edition
NFPA 72, 2022 Edition,
NFPA 1221, 2019 Edition
NFPA 1225 2022 Edition

GUIDELINES
Systems, components, and equipment required to provide in building, two-way emergency responder communication coverage system shall comply with the California Fire Code, Sections 510.4.1 through 510.6.4.

1. 510.4.1 Emergency responder communication enhancement system signal strength. The building shall be considered to have acceptable in building, two-way emergency responder communication 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 through 510.4.1.3.
    a) 510.4.1.1 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) 510.4.1.2 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 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.
    c) 510.4.1.3 System performance. Signal strength shall be sufficient to meet the requirements of the applications 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. 510.4.2 System design. The in-building, two-way emergency responder communication coverage system shall be designed in accordance with Sections 510.4.2.1 through 510.4.2.8 and NFPA 1221.
    a) 510.4.2.1 Amplification systems and components. Buildings and structures that cannot support the required level of radio coverage shall be equipped with systems and components to enhance the public safety radio signals and achieve the required level of radio coverage specified in Sections 510.4.1 through 510.4.1.3. Public safety communications enhancement systems utilizing radio-frequency-emitting devices and cabling shall be approved by the fire code official. Prior to installation, all RF-emitting devices shall have the certification of the radio licensing authority and be suitable for public safety use.
    b) 510.4.2.2 Technical criteria. The fire code official shall maintain a document providing the specific technical information and requirements for the emergency responder communication coverage system. This document shall contain, but not be limited to, the various frequencies required, the location of radio sites, the effective radiated power of radio sites, the maximum propagation delay in microseconds, the applications being used and other supporting technical information necessary for system design.
    c) 510.4.2.3 Standby power. In building, two-way emergency responder communication coverage systems shall be provided with dedicated standby batteries or provided with 2-hour standby batteries and connected to the facility generator power system in accordance with Section 1203. The standby power supply shall be capable of operating the in building, two-way emergency responder communication coverage system at 100-percent system capacity for a duration of not less than 12 hours.
    d) 510.4.2.4 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. Active RF-emitting devices used for in-building, two-way emergency responder communication coverage systems shall have built-in oscillation detection and control circuitry.
        vi. The installation of amplification systems or systems that operate on or provide the means to cause interference on in building, two-way emergency responder communication coverage network shall be

coordinated and approved by the fire code official.

e) 510.4.2.5 System monitoring. The in building, two-way emergency responder communication enhancement 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) 510.4.2.6 Additional frequencies and change of frequencies. The emergency responder communication 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, or additional frequencies are made available by the FCC or other radio licensing authority.

g) 510.4.2.7 Design documents. The fire code official shall have the authority to require "as-built" design documents and specifications for emergency responder communications coverage systems. The documents shall be in a format acceptable to the fire code official.

h) 510.4.2.8 Radio communication antenna density. Systems shall be engineered to minimize the near-far effect. In building, two-way emergency responder communication coverage system designs shall include sufficient antenna density to address reduced gain conditions.
   Exceptions:
   i. Systems where all portable devices within the same band use active power control features.

3. 510.5 Installation requirements. The installation of the in building, two-way emergency responder communication coverage system shall be in accordance with NFPA 1221 and Sections 510.5.2 through 510.5.5
   a) 510.5.1 Mounting of the donor antenna(s). To maintain proper alignment with the system designed donor site, donor antennas shall be permanently affixed on the building or where approved, mounted on a movable sled with clearly visible sign stating "MOVEMENT OR REPOSITIONING OF THIS ANTENNA IS PROHIBITED WITHOUT APPROVAL FROM THE FIRE CODE OFFICIAL." The antenna installation shall be in accordance with the applicable requirements in the *California Building*

Code for weather protection of the building envelope.

b) 510.5.2 Approval prior to installation. Amplification systems capable of operation on frequencies licensed to aby 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.

c) 510.5.3 Minimum qualifications of personnel. The minimum qualifications of the system designer and lead installation personnel shall include both of the following:
   i. A valid FCC-issued general radio operators license.
   ii. Certification of in-building system training issued by an approved organization or approved 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.

d) 510.5.4 Acceptance test procedure. Where an in building, two-way emergency responder communication coverage system is required, and upon completion of installation, the building owner shall have the radio system tested to verify that the two-way coverage on each floor of the building is not less than 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 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 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 portable 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 Sections 510.4.1.1 and 510.4.1.2.

e) 510.5.5 FCC compliance. The in building, two-way emergency responder communication coverage system installation and components shall comply with all applicable federal regulations including, but not limited to, FCC 47 CFR Part 90.219.

4. 510.6 Maintenance. The in building, two-way emergency responder communication coverage system shall be maintained operational at all times in accordance with CFC, Sections 510.6.1 through 510.6.4.

a) 510.6.1 Testing and proof of compliance. The owner of the building or owner's authorized agent shall have the in building, two-way emergency responder communication 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 active components shall be checked to verify operation within the manufacturer's specifications.

At the conclusion of the testing, a report, which shall verify compliance with Section 510.5.4, shall be submitted to the fire code official.

510.6.2 Additional frequencies. The building owner shall modify or expand the in building, two-way emergency responder communication coverage system at his or her expense in the event frequency changes are required by the FCC or other radio licensing authority, or additional frequencies are made available by the FCC or other radio licensing authority. Prior approval of an in building, two-way emergency responder communication coverage system on previous frequencies does not exempt this section.510.6.3 Nonpublic safety system. Where other nonpublic safety amplification systems installed in buildings reduce the performance of cause

interference with the emergency responder communications coverage system, the nonpublic safety amplification system shall be corrected or removed

d) 510.6.4 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 or modification to an Emergency Responder Communication 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. Refer to the Plan Check and Submittal Process Section in the Standards and Guidelines Manual, on how to apply for a permit.

Piped Air SCBA Refilling System

Information Packet

Menlo Park Fire Protection District

The Bureau of Fire Prevention and Life Safety

MENLO PARK FIRE PROTECTION DISTRICT

STANDARD AND GUIDELINE FOR PIPED AIR SCBA REFILLING SYSTEM

PURPOSE. This standard and guideline 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

The 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. Appendix L of the 2022 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. Plans shall be stamped and signed by the licensed engineer.

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. A permit for the installation or modification for a piped air SCBA refilling system and related equipment is required. Maintenance performed in accordance with the CFC is not considered a modification and does not require a permit. Refer to the Plan Check and Submittal Process Section in the Standards and Guidelines Manual to apply for a permit.
The plans shall provide the minimum information:

A. Address location of the system
B. Scope of work
C. Codes and standards used for the system design
D. Installing contractor information
E. Stamp and signature of licensed engineer
F. Manufacture's technical product data and installation data for all equipment and materials used.
G. All piping, fittings, valves, gauges, hangers/supports and fasteners.
H. System calculations to support the minimum required filling specification at the uppermost remote filling station plus a minimum 25% safety factor.
I. All technical data sheets, UL certifications, and nationally recognized listing agency for the products to be used.

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 complete set of revisions shall be provided to the following:

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

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, installed, or properly cleaned in an approved manner prior to installation. 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. It is the intent that the requirement for certification, as mentioned above, is not to certify the SCBA breathing air system every year as if it were a newly installed system.
C. 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.

Remote Electrical Disconnect

Information Packet

Menlo Park Fire Protection District
The Bureau of Fire Prevention and Life Safety

MENLO PARK FIRE PROTECTION DISTRICT
STANDARD AND GUIDELINE FOR REMOTE ELECTRICAL SERVICE DISCONNECT

PURPOSE. This standard and 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.
- It is possible that added (up to 6) remote control for service disconnect will be required based on the building configuration or points of access for the Fire Apparatus.

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 2022 Edition, Article 230 for Services and Article 700 Emergency Systems.
- California Building Code 2022 Edition Chapter 27, Electrical.
- California Fire Code 2022 Edition Section 603, Electrical Equipment, Wiring and Hazards.

PLAN SUBMITTAL

Electrical disconnect will be reviewed during the emergency power system review. The system shall be designed and wet stamped by a current State of California licensed electrical engineer.

Public Assemblages and Events
Information Packet

Menlo Park Fire Protection District
The Bureau of Fire Prevention and Life Safety

MENLO PARK FIRE PROTECTION DISTRICT
STANDARD AND GUIDELINE FOR PUBLIC ASSEMBLAGES AND EVENTS

SCOPE. This standard and 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 2022 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 then 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 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. This includes the aggregate area of multiple tents placed side by side without a fire break clearance of 12 feet, and exceed 700 square feet total.

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 tents with sidewalls or drops where cooking is performed shall be separated from other tents or membrane structures by not less than 20 feet. Mobile food trucks or exhibits shall be separated from non-cooking booths or exhibits by 20 feet and shall not be located within 20 feet of amusement rides, devices, or buildings.

Note: Any outdoor cooking that produces sparks or grease-laden vapors shall not be performed within 20 feet of a tent or membrane structure.

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.

Heating and cooking equipment. Heating and cooking equipment shall not be located within 10 feet of exits or combustible materials. Operations such as warming of foods, cooking demonstrations and similar operations that use solid flammables, butane or other similar devices that do not pose an ignition hazard, shall be approved. Menlo Park Fire District encourages the use of noncombustible materials in booths or exhibits used for cooking purposes.

Cooking Appliances or Devices. All cooking appliances or devices that produce sparks or grease-laden vapors or flying embers shall not be used within 20 feet of a tent or temporary structure unless designated as a cooking tent and is not occupied by the public when approved by the fire code official.

Protection. Cooking equipment using combustible oils or solids shall meet the following:

1. A noncombustible lid shall be immediately available. The lid shall be of a sufficient size to cover the cooking well completely.
2. The equipment shall be placed on a noncombustible surface.
3. An approved portable fire extinguisher for protection from cooking grease fires shall be provided at a location approved by the fire code official.

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 20 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.

GENERATORS

Location. Generators shall be installed not less than 10 feet from combustible materials, 20 feet from tents or membrane structures, and shall be isolated from the public by physical guard, fence or enclosure installed not less than 3 feet away from the internal combustion power source.

Portable Fire Extinguishers. Each generator shall be provided with an approved portable fire extinguisher, minimum 2A20BC.

MORE THAN 1,000 ATTENDEES THE FOLLOWING ADDITIONAL ITEMS APPLY

CROWD MANAGERS

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 AND SUBMITTAL PROCESS

Permits are required for Public Events and for the installation of a tent or membrane over 400 sq. ft. Refer to the Plan Check and Submittal Process Section in the Standards and Guidelines Manual to apply for a permit.

1. Please be sure to include the following in your submittal for Public Events
    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
k. Location of tents or membrane structure is any.

2. Please be sure to include the following for your submittal for Tent Installations:
   a. Site plan which includes the location of all tents or membrane structures
   b. Certificate of flame resistance for all fabrics used
   c. Certificate of Liability
   d. Anchoring schematic

Home Hardening and Vegetation Management Information Packet

Menlo Park Fire Protection District
The Bureau of Fire Prevention and Life Safety

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

SCOPE. This standard and 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

The Menlo Park Fire Protection District highly recommends following the County of San Mateo with removal of identified hazardous trees. Hazardous trees are identified as all eucalyptus, pines, acacia, tan oak and bay trees within 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. The tree(s) are of the following species: Eucalyptus, pines, acacia, tan oak and bay trees. 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 and send them a photo of the tree(s).

Follow the requirements of your local Town or City to obtain permits if applicable to remove.

Class of Roofing – Roofs shall have a roofing assembly installed in accordance with its listing and the manufacturer's instructions. Roof assemblies shall be a Class A or tested in accordance with ASTME108 or UL790.

Roofing Vents – Ventilation openings shall be fully covered with ember resistant vents approved and listed by the California State Fire Marshal tested to ASTM E2886.

Exterior wall coverings – Exterior wall covering shall be:

1. Non-combustible material,

2. Ignition resistant material (labeled for exterior use)

3. Fire retardant wood (labeled for exterior use)

All structures shall install and maintain a 5 (five) foot non-combustible zone to any structure.

Smoke Control System
Information Packet

Menlo Park Fire Protection District
The Bureau of Fire Prevention and Life Safety

MENLO PARK FIRE PROTECTION DISTRICT
STANDARD AND GUIDELINE FOR SMOKE CONTROL SYSTEMS

Scope and Purpose. This standard and guideline is intended to summarize the requirements for the design and installation of smoke control systems in the Menlo Park Fire Protection District. This guideline does not cover all aspects of the design and installation as required by Title 24 or the 2022 California Building and Fire Codes. This guideline is intended to be used in conjunction with the 2022 California Fire Code, 2022 California Building Code.

The California Fire and Building Codes (CFC & CBC) detail the design criteria for smoke control systems, but are limited to only providing a tenable environment for the evacuation or relocation of the occupants. If the owner's fire safety objectives include property protection and continuity of operations, the design engineer should keep the code limitations in mind.

Menlo Park Fire Protection District requires a Basis of Design report (BoD) detailing the system's purpose and objectives. The system shall meet minimum code requirements for an acceptable level of safety unless modified for cause such as AMMR or Variance. An AMMR or Variance request shall be submitted to MPFPD Fire Marshal for approval prior to Building Permit submittal.

PLAN CHECK:

A permit for the installation or modification of a Smoke Control System, and related equipment is required. Maintenance performed in accordance with the CFC is not considered a modification and does not require a permit. Refer to the Plan Check and Submittal Process Section in the Standards and Guidelines Manual to apply for a permit.

SUBMITTAL REQUIREMENTS:

A. RATIONAL ANALYSIS REPORT (First Submittal)

A report must be submitted to the MPFPD that addresses the requirements of Section 909 of CFC/CBC. The report shall be based on well-established principles of engineering practice and be prepared by a qualified engineer who is licensed in California. The report shall be signed and stamped by the licensed engineer and shall, at a minimum, include and explain all of the items noted below. A third-party review of the rational analysis at the owner's cost may be required.

- Occupancy of building
- Building floor plans

- Smoke control methodology
- Design calculations
- Smoke control zones
- Active and passive zones
- Smoke barrier separations
- Stack, temperature, and wind effects
- HVAC system details
- Fire life/safety analysis

B. PLAN REVIEW (Second Submittal)

Comprehensive Plan Submittal: A coordinated set of smoke control system drawings shall be created and submitted for review and approval. The submittal shall include the latest architectural, mechanical, electrical, and fire/life safety system drawings. Depending on the complexity of the project a third-party review of the smoke control plans may be required. The third-party reviewer may be the same entity as the Special Inspector. The third-party reviewer and Special Inspector must both be acceptable to MPFPD. The entity/company who prepared the rational analysis cannot be the Special Inspector.

Design professional in responsible charge. As part of this submittal the design team shall designate a registered design professional who shall act as the design professional in responsible charge. The designated individual shall be responsible for reviewing and coordinating submittal documents prepared by others, including revisions, phased and deferred submittal items, for compatibility with the design of the building. This individual may be the Engineer of Record, Architect, or other approved design professional. This individual shall be designated prior to building permit issuance.

C. SPECIAL INSPECTION REQUIREMENTS

The owner shall retain a qualified Special Inspector as approved by the MPFPD. The Special Inspector and the registered design professional that prepared the rational analysis report shall be separate entities, unless specifically approved by MPFPD at the start of the project. The Special Inspector responsibilities are summarized below:

1. Coordinate the review of the contractor's documents to verify conformance with the approved rational analysis report, and coordinate work between the construction team and the MPFPD.

2. Prepare a guideline for testing of the smoke control system, coordinate the interface between the trades, and include the testing procedure.

3. Prepare weekly inspection reports to document inspection activities and submit electronic copies to MPFPD.

D. FINAL INSPECTION REPORT

The final inspection report shall be submitted at least seven (7) working days prior to the testing of the system by MPFPD. A complete report of system testing shall be prepared by the Special Inspector, and submitted to the MPFPD for review. The report shall be in accordance with the requirements of Section 909.18.8.3 of the CFC/CBC. The report shall be signed by both the special inspector and the engineer of the record.

E. FINAL ACCEPTANCE TESTING

A functional inspection and test of the system is required to be coordinated with the MPFPD. Final approval is based on the successful completion of this test.

INSTALLING CONTRACTOR

The contract installer must hold a State of California C-16 license

Duties

1. Provide access to ductwork, piping, wiring, etc., prior to concealment for special inspection.
2. Identify and mark all smoke control components.
3. Pre-test all equipment and systems prior to testing by the Special Inspection Agency.

SPECIAL INSPECTION

A contract special inspection shall perform the inspections for the smoke control system. The agency must be an approved inspector by the Menlo Park Fire Protection District Fire Marshal.

Duties

1. Prepare the Special Inspection and Testing Final Report.
2. Inspect and document all architectural features affecting smoke control design.
3. Witness testing and document all elements of the smoke control system.
4. Submit Letter of Completion to the Designers-of-Record.

Inspection and Testing Requirements:

The Special Inspector shall inspect and test to the following approved documents:

1. Smoke Control Report.
2. Architectural plans, with emphasis on smoke barrier plans.
3. Mechanical plans.
4. Electrical plans.
5. Fire sprinkler shop drawings, with focus on zoning and special design criteria required for smoke control design.
6. Fire alarm shop drawings, with the detailed smoke control sequence of operations matrix and the approved Firefighter's Smoke Control Panel configuration.
7. Witness duct and shaft leakage testing, where applicable. The test method shall be in accordance with current editions of SMACNA, HVAC Systems Testing, Adjusting and Balancing. Leakage testing shall be performed prior to the installation of dampers, but with all laterals installed. The test pressure and allowable leakage shall be in accordance with CBC, 909.10.2. Testing shall be performed during erection of ductwork and prior to concealment.
8. Witness leakage testing of dwelling units, where applicable. Leakage testing shall be accomplished using a calibrated door-fan test rig. Test pressure shall be approximately 0.05 in. WG or greater as determined by design. Measured leakage shall be compared to compartment leakage determined by calculation using allowable barrier leakage area ratios in CBC, 909.5 or architectural specification as applicable.
9. Witness airflow testing, where applicable.
10. Visually inspect representative portions of the installed perimeter fire-stop to verify installation per its Listing and/or engineering judgment.
11. Visually inspect the Firefighter's Smoke Control Panel (FSCP) and verify:
    a) The configuration is consistent with approved fire alarm drawings.
    b) The panel graphic is representative of the building smoke control system.
12. Verify that loss-of-power to each smoke control fan causes an immediate illumination of the associated FAULT light on the FSCP.
13. Verify that fire alarm control/monitor modules are within 3 feet of HVAC equipment used for smoke control or that the wiring between is supervised

<u>Pressure testing shall be performed with the building in the following conditions:</u>

1. The building and all smoke control equipment are connected to permanent power.
2. Windows and exterior doors are CLOSED.
3. Sub-ducted exhaust systems (toilet, kitchen and dryer) are ON at fire-event speeds.
4. Dampers and fans that shut down during a fire event are CLOSED/OFF
5. Verify proper operation of the smoke control system under standby power by (as a minimum) confirming that current and voltage under normal and standby power are equivalent

Weekly fire alarm self-test shall be observed and the following verified:

1. A written report is produced. The report must clearly indicate a "start" of the test and an "end." The report must clearly indicate any failures, but need not specify the component that fails.
2. The test shall cycle those components required for proper operation of the smoke control system as identified in the smoke control report.
3. Any failure during the self-test shall place a "TROUBLE" on the fire alarm control panel and notify Central Station.
4. Any alarm shall interrupt the self-test.

Verification of equipment labels and documentation:

1. Fans and dampers used for smoke control are field labeled consistent with the control drawings (approved fire alarm drawings) and the Firefighter's Smoke Control Panel (FSCP). Fan labels shall be red phenolic with 1-inch white lettering. Where the fan and the local disconnect/control panel are not immediately adjacent, both shall be labeled.
2. Required documentation shall be available in an approved location (Fire Control Room for high-rise buildings). This includes:
    a) As-built fire alarm (control) shop drawings
    b) Smoke control event matrix (typically in the approved fire alarm shop drawings)
    c) Approved Smoke Control Report
    d) Approved Special Inspection Program
    e) Approved Special Inspection and Testing Final Report
    f) Weekly fire alarm self-test reports
    g) Final commissioning report
3. All fire alarm system devices to have UL & CA State Fire Marshal listing.
4. Verify FACP batteries with their installation date.
5. A final inspection is required with all corrections completed.
6. Approved plans, approval letter and permit must be on site at the time of inspection.

Car Stackers and Car Puzzlers
Information Packet

Menlo Park Fire Protection District
The Bureau of Fire Prevention and Life Safety

MENLO PARK FIRE PROTECTION DISTRICT
STANDARD AND GUIDELINE FOR CAR PUZZLERS AND CAR STACKERS

Scope. This standard and guideline provides standard design requirements for the installation of car stackers and car puzzlers not specifically addressed in NFPA 13, NFPA 88A or the CBC and CFC.

Definitions:
Car Stacker and Car Puzzler Systems: Car stackers and car puzzler systems are defined as manual, or automatic, rack vehicle storage systems designed to park cards vertically and / or horizontally inside structures or under canopies such that the vehicles are in close proximity to one another with limited access for fire fighters. The configurations of the vehicles stored in these systems presents an exposure hazard from one vehicle into another in the event of a fire.

Automated Parking: A parking structure that uses computer-controlled machines to store and retrieve vehicles, without drivers, in multi-level storage racks with or without floors.

REQUIREMENTS:

Design shall follow at minimum the latest edition of NFPA 88A with following amendments.

9.2. Automated-Type Parking Structures

9.2.1. Means of Egress. Means of egress shall be provided and agreed upon with the AHJ.

9.2.2. Access for Fire Service and maintenance Personnel
9.2.2.1 Access shall be provided per CBC and CFC requirements
9.2.2.2. Horizontal walkways for access shall be provided at intervals of 20 feet vertically and 100 feet horizontally.
9.2.2.3. Travel distance to the exterior or to an enclosed stair shall not exceed 400 feet.
9.2.2.4 One exterior door shall be provided at grade for every stair.
9.2.3. Ventilation. An enclosed automated-type parking structure shall be provided with a ventilation system that continuously provides a minimum of two air exchanges per hour.
9.2.3.1. Ventilation and smoke and heat removal systems shall be of manual and automated controls at the fire command center.
9.2.3.2. Mechanical smoke and heat removal system as per Section 910.4 of the CA Fire Code shall be installed. The smoke and heat removal system shall be automatically activated upon detection of fire by the fire alarm system.

9.2.4. Fire Protection Systems
9.2.4.1. An automated sprinkler system shall be installed in an automated mechanical-type parking structure in accordance with NFPA 13 and NFPA 88A.

9.2.4.2. Automatic fire sprinkler system design shall be a minimum of Ordinary Hazard Group 2, .4/3000 sq. Ft. Extending 15 feet in to adjacent areas that do not contain car stackers/life systems if applicable.
9.2.4.2.1. Hydraulic calculations shall include all ceiling sprinklers in the design area.
9.2.4.3. Automatic wet standpipe connections shall be installed at all points of access and at each parking level within the structure so that every part of the parking area is within 150 feet by hose pull of a standpipe connection.