

# **Oregon Fire Code Metro Code Committee**

## **Fire Code Applications Guide**

**This guide is intended to provide assistance in the application of the fire code in the following jurisdictions:**

**Banks Fire District #13**

**Boring Fire District #59**

**Canby Fire District**

**Clackamas County Fire District #1**

**Colton Fire District**

**Cornelius Fire Department**

**Estacada Fire District #69**

**Forest Grove Fire & Rescue**

**Gaston Fire District**

**Gladstone Fire Department**

**Gresham Fire & Emergency Services**

**Hillsboro Fire Department**

**Lake Oswego Fire Department**

**Molalla Fire District #73**

**Portland Fire & Rescue**

**Sandy Fire District #72**

**Silverton Fire District**

**Tualatin Valley Fire & Rescue**

**Washington Co. Fire District #2**

## **Notes to Users**

### **Local Development Codes**

Check the local city or county development code to determine the applicability of roadway standards as it relates to conflicts with this guide and/or the adopted fire code.

### **ORS 368.039 Road standards adopted by local government supersede standards in fire codes; consultation with fire agencies.**

(1) When the governing body of a county or city adopts specifications and standards, including standards for width, for roads and streets under the jurisdiction of the governing body, such specifications and standards shall supersede and prevail over any specifications and standards for roads and streets that are set forth in a uniform fire code adopted by the State Fire Marshal, a municipal fire department or a county firefighting agency.

(2) This section applies to specifications and standards for roads and streets adopted by the governing body of a county or city in a charter, acknowledged comprehensive plan or ordinance adopted pursuant to ORS chapter 92, 203, 221 or 368.

(3) Before adopting or amending any comprehensive plan, land use regulation or ordinance that establishes specifications and standards for roads and streets, a governing body of a county or city shall consult with the municipal fire department or other local firefighting agency concerning the proposed specifications and standards. The county or city governing body shall consider the needs of the fire department or firefighting agency when adopting the final specifications and standards.

### **Dispute Resolution Process**

The Office of State Fire Marshal's (OSFM), Dispute Resolution Process allows an aggrieved party to dispute inspection findings of the local fire marshal. This process allows the aggrieved party to ask for a "second opinion" but does not supersede the local or State Fire Marshal's appeal process. The local fire marshal, through the OSFM, arranges a conference call with the aggrieved party and on-call code experts from other jurisdictions and industry. The on-call group discusses the case and the local fire marshal takes the group's second opinion into consideration when rendering a decision in writing to the aggrieved party. The goal of the OSFM is to conduct the conference call within 48 hours (two business days) for new construction and no more than seven business days for maintenance issues of the notice of dispute. Aggrieved parties who are not satisfied with the findings can appeal the decision to a local appeals board, if available, otherwise to the OSFM.

### **Preamble/Authority and Scope**

The above jurisdictions have elected to administer and enforce the Oregon Fire Code under the authority granted to them by ORS 476.030 or ORS 476.060. The Oregon Fire Code is the International Fire Code, 2003 Edition, as published and copyrighted by the International Code Council, which has been amended and adopted by the Oregon State Fire Marshal's Office. In order to further the Oregon State Fire Marshal's goal of promoting fire code consistency throughout the state, the above jurisdictions have agreed to reduce local amendments.

Nevertheless, the above jurisdictions have prepared this Applications Guide to provide good faith guidance to building officials, contractors, business owners, the public, and fire marshals on local interpretations and practices that are considered to be in compliance with the Oregon Fire Code. The intent is to clarify aspects of the code that are vague or non-specific by addressing selected issues under normal conditions. This Applications Guide does not create or replace code provisions, and is not an adopted policy of the above jurisdictions. The reader is cautioned that the guidance detailed in this Applications Guide may or may not apply to their specific situation, and that the designated authority for each jurisdiction retains final authority to determine compliance.

## Jurisdiction Contact Information

### **Banks Fire District #13**

300 Main Street  
Banks, OR 97106  
Ph. 503.324.6262  
Fax 503.324.0523  
[www.banksfire.org](http://www.banksfire.org)

### **Boring Fire District #59**

PO Box 85  
Boring, OR 97009  
Ph. 503.663.4638  
Fax 503.663.5792  
[www.boringfire.com](http://www.boringfire.com)

### **Canby Fire District**

P.O. Box 909  
221 S. Pine St.  
Canby, OR 97013  
Ph. 503.266.5851  
Fax 503.266.1320  
[www.canbyfire.org](http://www.canbyfire.org)

### **Clackamas Co. Fire District #1**

2930 S.E. Oak Grove Blvd.  
Milwaukie, Oregon 97267  
Ph. 503.742.2660  
Fax 503.742.2860  
<http://www.ccf1.com>

### **Colton Fire District**

PO Box 71  
20987 S. Hwy 211  
Colton, OR  
Ph. 503.824.2545  
Fax 503.824.2546

### **Cornelius Fire Department**

1355 N. Barlow Street  
Cornelius, OR 97113  
Ph. 503.357.3840  
Fax 503.357.7545  
[www.corneliusfire.org](http://www.corneliusfire.org)

### **Estacada Rural Fire District #69**

PO Box 608  
Estacada, OR 97023  
Ph. 503.630.7712  
Fax 503.630.7757  
[www.estacadafire.com](http://www.estacadafire.com)

### **Forest Grove Fire & Rescue**

1919 Ash St.  
Forest Grove, OR  
Ph. 503.992.3240  
Fax 503.992.3243  
[www.ci.forest-grove.or.us](http://www.ci.forest-grove.or.us)

### **Gaston Fire District**

102 E. Main  
Gaston, OR 97119  
Ph. 503.985.7575  
Fax 503.985.7382

### **Gladstone Fire Department**

555 Portland Ave.  
Gladstone, OR 97027  
Ph. 503.557.2775  
Fax 503.656.4256  
[www.ci.gladstone.or.us](http://www.ci.gladstone.or.us)

### **Gresham Fire & Emergency Services**

1333 NW Eastman Pkwy.  
Gresham, OR 97030  
Ph. 503.618.2355  
Fax 503.666.8330  
[www.ci.gresham.or.us](http://www.ci.gresham.or.us)

### **Hillsboro Fire Department**

240 S. 1<sup>st</sup> Avenue  
Hillsboro, OR 97123  
Ph. 503.681.6166  
Fax 503.681.6208  
[www.ci.hillsboro.or.us](http://www.ci.hillsboro.or.us)

### **Lake Oswego Fire Department**

P.O.Box 369  
Lake Oswego, OR 97034  
Ph. 503.635.0275  
Fax 503.635.0376  
[fire@ci.oswego.or.us](mailto:fire@ci.oswego.or.us)

### **Molalla RFPD #73**

320 N. Molalla Ave  
Molalla, OR 97038  
Ph. 503.829.2200  
Fax 503.829.5794  
[www.molallafire.org](http://www.molallafire.org)

### **Office of State Fire Marshal**

4760 Portland Rd NE  
Salem, Or 97305  
(503) 373-1540  
[www.oregon.gov/OSP/SFM](http://www.oregon.gov/OSP/SFM)

### **Portland Fire & Rescue**

55 SW Ash St.  
Portland, Oregon 97204  
Ph. 503.823.3700  
Fax 503.823.3710  
<http://www.portlandonline.com/fire>

### **Sandy Fire District #72**

17460 Bruns Ave.  
Sandy OR 97055  
Ph. 503.668.8093  
Fax 503.668.7941  
[www.sandyfire.com](http://www.sandyfire.com)

### **Silverton Fire District**

819 Rail Way NE  
Silverton, OR 97381  
Ph. 503.873.5328  
Fax 503.873.2805

### **Tualatin Valley Fire & Rescue**

7401 SW Washo Ct. Ste 101  
Tualatin, OR 97062  
Ph. 503.612.7000  
Fax 503.612.7003  
[www.tvfr.com](http://www.tvfr.com)

### **Washington Co. Fire District #2**

31370 NW Commercial St.  
North Plains, OR 97133  
Ph. 503.647.9900  
Fax 503.647.9351

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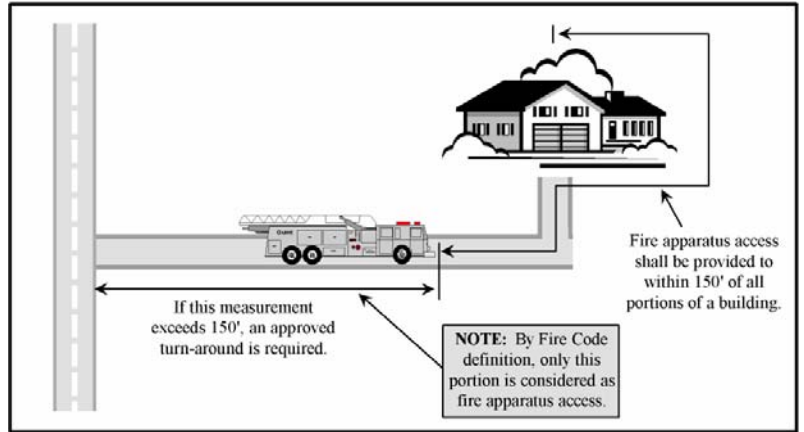
# Fire Apparatus Access

**FIRE APPARATUS ACCESS ROAD EXCEPTIONS:** The requirements for fire apparatus access may be modified as approved by the fire code official where any of the following apply: (OFC 503.1.1 Exception)

- 1) Buildings are equipped throughout with an approved automatic fire sprinkler system (the approval of this alternate method of construction shall be accomplished in accordance with the provisions of ORS 455.610(5)).
- 2) Fire apparatus access roads cannot be installed because of location on property, topography, waterways, nonnegotiable grades or other similar conditions, and an approved alternative means of fire protection is provided.
- 3) There are not more than two Group R-3 or Group U occupancies.

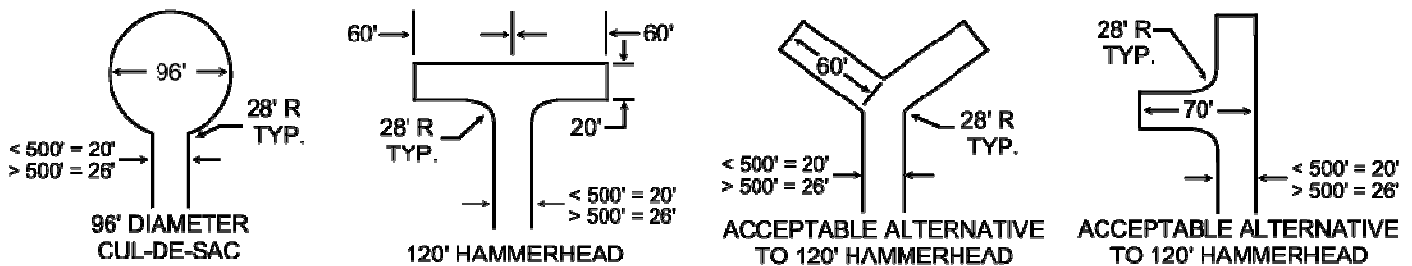
## FIRE APPARATUS ACCESS ROAD DISTANCE FROM BUILDING AND TURNAROUNDS:

Access roads shall be within 150 feet of all portions of the exterior wall of the first story of the building as measured by an approved route around the exterior of the building. An approved turnaround is required if the remaining distance to an approved intersecting roadway, as measured along the fire apparatus access road, is greater than 150 feet. (OFC 503.1.1)

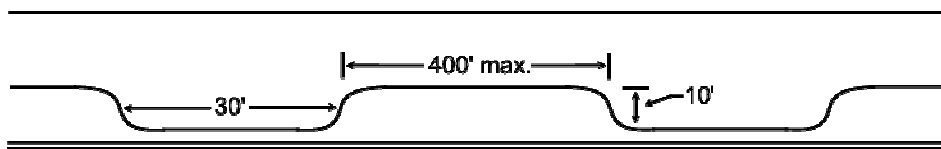


**DEAD END ROADS:** Dead end fire apparatus access roads in excess of 150 feet in length shall be provided with an approved turnaround. Dead end fire apparatus access roads in excess of 500 feet in length shall have a driving surface width of not less than 26 feet. Diagrams of approved turnarounds are shown below: (OFC 503.2.5)

⊕ Within the boundaries of Portland Fire & Rescue, the distance is 300 feet.



**TURNOUTS:** When any fire apparatus access road exceeds 400 feet in length, turnouts 10 feet wide and 30 feet long shall be provided in addition to the required road width and shall be placed no more than 400 feet apart, unless otherwise approved by the fire code official. These distances may be adjusted based on visibility and light distances. (OFC Chapter 5)

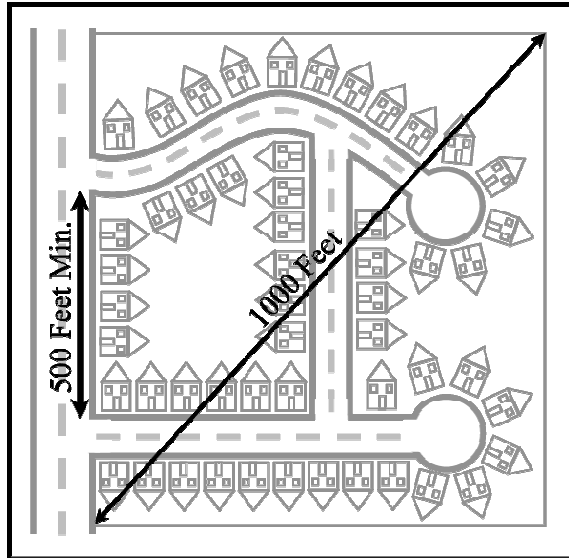


**MULTIPLE ACCESS ROADS:** Developments of one- and two-family dwellings where the number of dwelling units exceeds 30, multiple-family residential projects having more than 100 dwelling units and where vehicle congestion, adverse terrain conditions or other factors that could limit access, as determined by the fire code official, shall be provided with not less than two approved means of access. Exceptions may be allowed for approved automatic sprinkler system. The approval of fire sprinklers as an alternate shall be accomplished in accordance with the provisions of ORS 455.610(5). (OFC D106 & D107)

**GRADE:** Fire apparatus access roadway grades shall not exceed 10 percent. Intersections and turnarounds shall be level (maximum 5%) with the exception of crowning for water run-off. When fire sprinklers are installed, a maximum grade of 15% may be allowed. The approval of fire sprinklers as an alternate shall be accomplished in accordance with the provisions of ORS 455.610(5). (OFC D103.2)

⊕ This standard does not apply within the boundaries of Portland Fire & Rescue.

**MULTIPLE ACCESS ROADS SEPARATION:** Where two access roads are required, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the property or area to be served, measured in a straight line between accesses. (OFC D104.3 & D107.1)



**FIRE APPARATUS ACCESS ROAD WIDTH AND VERTICAL CLEARANCE:** Fire apparatus access roads shall have an unobstructed driving surface width of not less than 20 feet (26 feet adjacent to fire hydrants (OFC D103.1)) and an unobstructed vertical clearance of not less than 13 feet 6 inches. (OFC 503.2.1 & D103.1)

Note: When serving two or less dwelling units and accessory buildings, the driving surface may be reduced to 12 feet, although the unobstructed width shall be 20 feet. Turning radii for curves and turnarounds on reduced width roads shall be not less than 28 feet and 48 feet respectively, measured from the same center point.

**AERIAL FIRE APPARATUS ROAD WIDTH:** Buildings more than 30 feet in height shall have fire apparatus access roads constructed for use by aerial apparatus with an unobstructed driving surface width of not less than 26 feet. (OFC D105.2)

⊕ This standard does not apply within the boundaries of Portland Fire & Rescue.

**SURFACE AND LOAD CAPACITIES:** Fire apparatus access roads shall be of an all-weather surface that is easily distinguishable from the surrounding area and is capable of supporting not less than 12,500 pounds point load (wheel load) and 75,000 pounds live load (gross vehicle weight). Documentation from a registered engineer that the finished construction is in accordance with the approved plans or the requirements of the Fire Code may be requested. (OFC D102.1)

**BRIDGES:** Private bridges shall be designed and constructed in accordance with the State of Oregon Department of Transportation and American Association of State Highway and Transportation Officials Standards *Standard Specification for Highway Bridges*. A building permit shall be obtained for the construction of the bridge if required by the building official of the jurisdiction where the bridge is to be built. The design engineer shall prepare a special inspection and structural observation program for approval by the building official. The design engineer shall give in writing final approval of the bridge to the fire district after construction is completed. Maintenance of the bridge shall be the responsibility of the party(ies) that use(s) the bridge for access to their property(ies). The fire district may at any time, for due cause, ask that a registered engineer inspect the bridge for structural stability and soundness at the expense of the property owner(s) the bridge serves. (OFC 503.2.6)

**TURNING RADIUS:** The inside turning radius and outside turning radius shall be not less than 28 feet and 48 feet respectively, measured from the same center point. (OFC 503.2.4 & Appendix D)

⊕ Within the boundaries of Portland Fire & Rescue, radii dimensions shall be 25 feet and 45 feet.

**GATES:** Gates securing fire apparatus roads shall comply with all of the following: (OFC D103.4)

- ◆ Minimum unobstructed width shall be 16 feet, or two 10 foot sections with a center post or island.
- ◆ Gates serving one- or two-family dwellings shall be a minimum of 12 feet in width.
- ◆ Gates shall be set back at minimum of 30 feet from the intersecting roadway.
- ◆ Gates shall be of the swinging or sliding type
- ◆ Manual operation shall be capable by one person
- ◆ Electric gates shall be equipped with a means for operation by fire department personnel
- ◆ Locking devices shall be approved.

**NO PARKING SIGNS:** Where fire apparatus roadways are not of sufficient width to accommodate parked vehicles and 20 feet of unobstructed driving surface, "No Parking" signs shall be installed on one or both sides of the roadway and in turnarounds as needed. Roads 26 feet wide or less shall be posted on both sides as a fire lane. Roads more than 26 feet wide to 32 feet wide shall be posted on one side as a fire lane.

Signs shall read "NO PARKING - FIRE LANE" and shall be installed with a clear space above grade level of 7 feet. Signs shall be 12 inches wide by 18 inches high and shall have red letters on a white reflective background. (OFC D103.6)



**PAINTED CURBS:** Where required, fire apparatus access roadway curbs shall be painted red and marked "NO PARKING FIRE LANE" at approved intervals. Lettering shall have a stroke of not less than one inch wide by six inches high. Lettering shall be white on red background. (OFC 503.3)

## **Firefighting Water Supplies**

**FIREFIGHTING WATER SUPPLY EXCEPTIONS:** The requirements for firefighting water supplies may be modified as approved by the fire code official where any of the following apply: (OFC 503.1.1 Exception)

- 1) Buildings are equipped throughout with an approved automatic fire sprinkler system (the approval of this alternate method of construction shall be accomplished in accordance with the provisions of ORS 455.610(5)).
- 2) There are not more than two Group R-3 or Group U occupancies.

**COMMERCIAL BUILDINGS - FIRE FLOW:** The minimum fire flow and flow duration for buildings other than one- and two-family dwellings shall be determined according to OFC Appendix B. The required fire flow for a building shall not exceed the available GPM in the water delivery system at 20 psi.

- ⊕ Within the boundaries of Lake Oswego Fire Department and Tualatin Valley Fire & Rescue the maximum allowed fire flow is 3,000 gpm @ 20 psi.
- ⊕ Within the boundaries of Gresham Fire Dept. the maximum allowed fire flow is 3,500 gpm @ 20 psi.

**SINGLE FAMILY DWELLINGS - REQUIRED FIRE FLOW:** The minimum available fire flow for single family dwellings and duplexes served by a municipal water supply shall be 1,000 gallons per minute. If the structure(s) is (are) 3,600 square feet or larger, the required fire flow shall be determined according to OFC Appendix B. (OFC B105.1)

**RURAL BUILDINGS - REQUIRED FIRE FLOW:** Required fire flow for rural and suburban areas in which adequate and reliable water supply systems do not exist may be calculated in accordance with National Fire Protection Association Standard 1142, 2001 Edition, when approved by the fire code official. Please contact the Fire Marshal's Office for special assistance and other requirements that may apply. (OFC B103.3)

**ACCESS AND FIRE FIGHTING WATER SUPPLY DURING CONSTRUCTION:** Approved fire apparatus access roadways and fire fighting water supplies shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. (OFC 501.4)

# Fire Hydrants

**FIRE HYDRANTS – COMMERCIAL BUILDINGS:** Where a portion of the building is more than 400 feet from a hydrant on a fire apparatus access road, as measured in an approved route around the exterior of the building, on-site fire hydrants and mains shall be provided. (OFC 508.5.1)

Note: This distance may be increased to 600 feet for buildings equipped throughout with an approved automatic sprinkler system.

**FIRE HYDRANTS – ONE- AND TWO-FAMILY DWELLINGS & ACCESSORY STRUCTURES:** Where a portion of a structure is more than 600 feet from a hydrant on a fire apparatus access road, as measured in an approved route around the exterior of the structure(s), on-site fire hydrants and mains shall be provided. (OFC 508.5.1)

**FIRE HYDRANT NUMBER AND DISTRIBUTION:** The minimum number and distribution of fire hydrants available to a building shall not be less than that listed in Table C 105.1. See page 9 for hydrant proximity to FDC. (OFC Appendix C)

- ⊕ Within the boundaries of Forest Grove Fire Dept. the average fire hydrant spacing shall be 400 feet.

**TABLE C105.1  
NUMBER AND DISTRIBUTION OF FIRE HYDRANTS**

FIRE-FLOW REQUIREMENT (gpm)	MINIMUM NUMBER OF HYDRANTS	AVERAGE SPACING BETWEEN HYDRANTS <sup>a,b,c</sup> (feet)	MAXIMUM DISTANCE FROM ANY POINT ON STREET OR ROAD FRONTAGE TO A HYDRANT <sup>d</sup>
1,750 or less	1	500	250
2,000-2,250	2	450	225
2,500	3	450	225
3,000	3	400	225
3,500-4,000	4	350	210
4,500-5,000	5	300	180
5,500	6	300	180
6,000	6	250	150
6,500-7,000	7	250	150
7,500 or more	8 or more <sup>e</sup>	200	120

For SI: 1 foot = 304.8 mm, 1 gallon per minute = 3.785 L/m.

- a. Reduce by 100 feet for dead-end streets or roads.
- b. Where streets are provided with median dividers which can be crossed by fire fighters pulling hose lines, or where arterial streets are provided with four or more traffic lanes and have a traffic count of more than 30,000 vehicles per day, hydrant spacing shall average 500 feet on each side of the street and be arranged on an alternating basis up to a fire-flow requirement of 7,000 gallons per minute and 400 feet for higher fire-flow requirements.
- c. Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, fire hydrants shall be provided at spacing not to exceed 1,000 feet to provide for transportation hazards.
- d. Reduce by 50 feet for dead-end streets or roads.
- e. One hydrant for each 1,000 gallons per minute or fraction thereof

**Considerations for placing fire hydrants may be as follows:** (OFC C104)

- ⊕ Existing hydrants in the area may be used to meet the required number of hydrants as approved. Hydrants that are up to 600 feet away from the nearest point of a subject building that is protected with fire sprinklers may contribute to the required number of hydrants. (OFC 508.5.1)
- ⊕ Hydrants that are separated from the subject building by railroad tracks shall not contribute to the required number of hydrants unless approved by the fire code official.
- ⊕ Hydrants that are separated from the subject building by divided highways or freeways shall not contribute to the required number of hydrants. Heavily traveled collector streets only as approved by the fire code official.
- ⊕ Hydrants that are accessible only by a bridge shall be acceptable to contribute to the required number of hydrants only if approved by the fire code official.
- ⊕ When evaluating the placement of hydrants at apartment or industrial complexes the first hydrant(s) to be placed shall be at the primary access and any secondary access to the site. After these hydrants have been placed other hydrants shall be sited to meet the above requirements for spacing and minimum number of hydrants.



**FIRE HYDRANT NON-THREADED QUICK CONNECTORS:** Non-threaded quick connectors shall be installed on all newly installed fire hydrants in the following jurisdictions:

Sandy Fire District; Forest Grove Fire Dept; Lake Oswego Fire Dept.; Canby Fire District

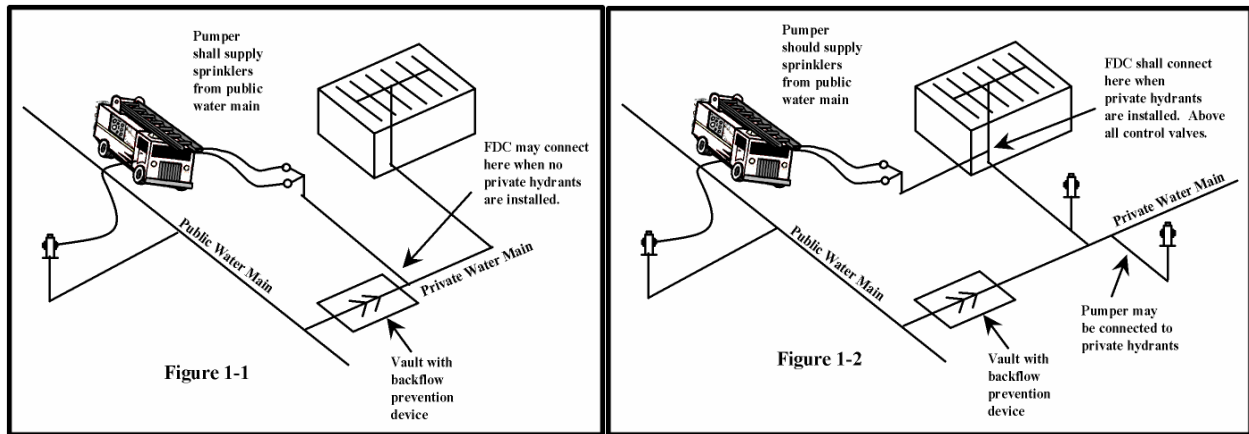
**FIRE HYDRANT DISTANCE FROM AN ACCESS ROAD:** Fire hydrants shall be located not more than 15 feet from an approved fire apparatus access roadway unless approved by the fire code official. (OFC C102.1)

**REFLECTIVE HYDRANT MARKERS:** Fire hydrant locations shall be identified by the installation of reflective markers. The markers shall be blue. They shall be located adjacent and to the side of the centerline of the access road way that the fire hydrant is located on. In case that there is no center line, then assume a centerline, and place the reflectors accordingly. (OFC 508.5.4)

**FIRE HYDRANT/FIRE DEPARTMENT CONNECTION:** A fire hydrant shall be located within 100 feet of a fire department connection (FDC). Fire hydrants and FDC's shall be located on the same side of the fire apparatus access roadway. (OFC C102.1 & NFPA 14)

FDCs shall normally be remote except when approved by the fire code official.

⊕ Within the boundaries of Portland Fire & Rescue, the distance to a hydrant shall be 150 feet.

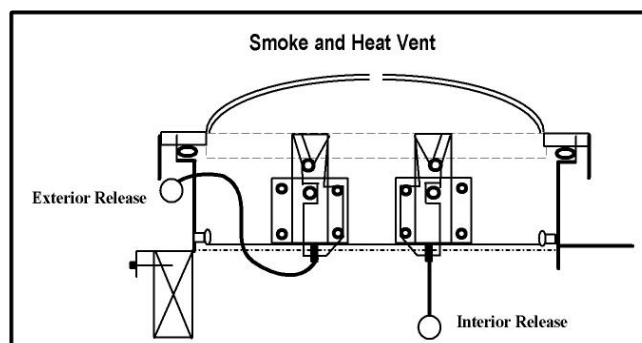


## **Key Boxes**

**KEY BOX:** A key box for building access may be required. Please contact the local Fire Marshal's Office for an order form and instructions regarding installation and placement. (OFC 506)

## **Smoke and Heat Vents**

**MANUAL RELEASE:** Manual releases shall be provided for use during fire suppression operations. Individual exterior release mechanisms shall be provided for each vent.



## **Fire Watch**

**FIRE WATCH:** Whenever a *required* fire alarm, detection or suppression system is out-of-service and a life hazard and or distinct fire hazard is present, the fire code official and/or the property owner or manager shall initiate a fire watch. A fire watch is defined as a temporary measure intended to ensure continuous and systematic surveillance of a building or portion thereof by one or more qualified individuals for the purposes of identifying and controlling fire hazards, detecting early signs of unwanted fire, raising an alarm of fire and notifying the fire department. Each affected area or building must be patrolled hourly and documented on a written log. Individuals assigned to fire watch duty must be provided with a means of communication such as a cell phone or two-way radio and their only duties shall be to perform constant patrols. The watch must remain in effect until repairs are made and the system(s) are back in-service. *When in doubt if a system is required or if a fire watch is needed, contact the local Fire Marshal's Office for consultation and or response.* (OFC, Section 901.7 & Section 202)

### **EXAMPLES:**

The automatic smoke detection system in the Family Birth Center at the local Hospital is taken off-line due to unwanted false alarms and an alarm technician has been dispatched to evaluate the system. This is a required detection system and the patients occupy the floor. A fire watch is required and could be conducted by nursing and or security personnel.

The manual fire alarm system at a local Elementary School is initiating false alarms and is taken off line by school district personnel; the automatic smoke detection and fire sprinkler system are operational. It's Saturday afternoon and the building is not occupied. Although this is a required system, a fire watch is not required as the building is vacant.

The water main that serves a local apartment complex is damaged in a construction accident rendering the fire hydrants and residential fire sprinkler systems out-of-service. It's Sunday night and nearly all of the apartments are occupied. Both systems are required and a continuous fire watch is needed.