

Lebanon Fire District

Fire Code Applications Guide



"Dedicated to Serving and Protecting You"

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 Lebanon Fire District has elected to administer and enforce the Oregon Fire Code under the authority granted to them by ORS 476.030 or ORS 476.060.

The currently adopted version of the Oregon Fire Code is based upon the 2006 Edition of the International Fire Code, as published and copyrighted by the International Code Council (ICC). The Oregon Fire Code as amended has been adopted by the State of Oregon with an effective date of April 1, 2007. Readers have direct access to a "read only" version of the Oregon Fire Code via the Internet at the following website; <http://www2.iccsafe.org/states/oregon/>.

Copies of the Oregon Fire Code may be purchased from the ICC through several sources located in Oregon. In order to further the Oregon State Fire Marshal's goal of promoting fire code consistency throughout the state, the Lebanon Fire District has agreed to reduce local amendments.

Nevertheless, the Lebanon Fire District has 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 Lebanon Fire District. The reader is cautioned that the guidance detailed in this Applications Guide may or may not apply to their specific situation, and that the Fire Marshal for the Lebanon Fire District retains final authority to determine compliance.

Application

The application of the policies contained herein, are based upon the following facts;

- Water supplies for fire protection of public buildings as specified in ORS 479.200, has been a requirement throughout the State of Oregon since July 1, 1967.
- Standards for fire department access and fire protection water supplies for all buildings and facilities throughout the State of Oregon, has been a requirement of the Oregon Fire Code since July 15, 1992.

As such, these policies shall apply to all structures, facilities, and conditions arising on or after April 1, 2007, and to all existing structures, facilities, and conditions; under any of the following situations;

- 1) Conditions not legally in existence as of April 1, 2007 or
- 2) Conditions when identified by specific sections of the Oregon Fire Code or
- 3) Conditions which, in the opinion of the Fire Code Official, constitute a distinct hazard to life or property.

Table of Contents

<i>Fire Apparatus Access</i>	5
FIRE APPARATUS ACCESS ROAD EXCEPTIONS	5
FIRE APPARATUS ACCESS ROAD DISTANCE	5
DEAD END ROADS	5
TURNOUTS	5
MULTIPLE ACCESS ROADS	6
MULTIPLE ACCESS ROADS SEPARATION	6
GRADE	6
DRAINAGE	6
FIRE APPARATUS ACCESS ROAD WIDTH AND VERTICAL CLEARANCE	6
AERIAL FIRE APPARATUS ROAD WIDTH	6
SURFACE AND LOAD CAPACITIES	6
BRIDGES	6
TURNING RADIUS	7
GATES	7
NO PARKING SIGNS	7
PAINTED CURBS	7
<i>Firefighting Water Supplies</i>	7
FIREFIGHTING WATER SUPPLY EXCEPTIONS	7
COMMERCIAL BUILDINGS - FIRE FLOW	7
SINGLE FAMILY DWELLINGS - REQUIRED FIRE FLOW	7
RURAL BUILDINGS - REQUIRED FIRE FLOW	8
ACCESS AND FIRE FIGHTING WATER SUPPLY DURING CONSTRUCTION	8
<i>Premise Identification</i>	8
PREMISE IDENTIFICATION	8
PREMISE IDENTIFICATION FOR MULTI-FAMILY COMPLEXES	8
<i>Fire Hydrants</i>	8
FIRE HYDRANTS – COMMERCIAL BUILDINGS	8
FIRE HYDRANTS – ONE- AND TWO-FAMILY DWELLINGS & ACCESSORY STRUCTURES	8
FIRE HYDRANT NUMBER AND DISTRIBUTION	9
CONSIDERATIONS FOR PLACING FIRE HYDRANTS	9
FIRE HYDRANT NON-THREADED QUICK CONNECTORS	9
FIRE HYDRANT DISTANCE FROM AN ACCESS ROAD	9
FIRE HYDRANT/FIRE DEPARTMENT CONNECTION	10
FIRE HYDRANT/FIRE DEPARTMENT CONNECTION CLEARANCE	10
<i>Key Boxes</i>	10
KEY BOX	10
<i>Smoke and Heat Vents</i>	10
MANUAL RELEASE	10
<i>Fire Watch</i>	11
FIRE WATCH	11

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.

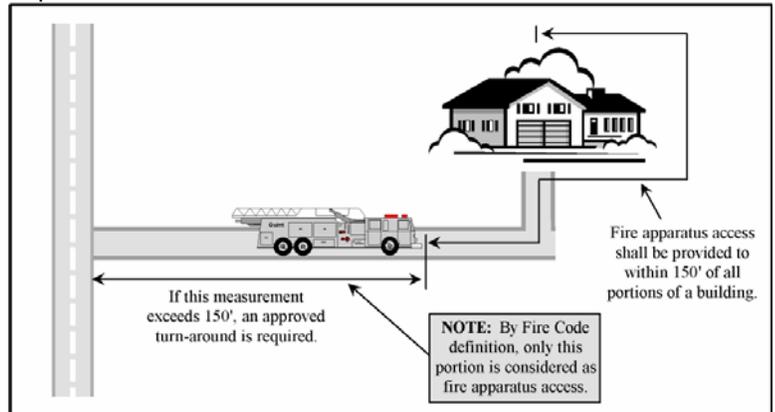
NOTE: Under this condition, a deed restriction will be recorded for the parcel in question to indicate that emergency vehicle access does not conform to the requirements of the Oregon Fire Code and as such, this condition makes the delivery of fire and life safety emergency services by the local fire department not possible within a timeframe that allows for efficient emergency scene mitigation.

- 3) There are not more than two Group R-3 or Group U occupancies.

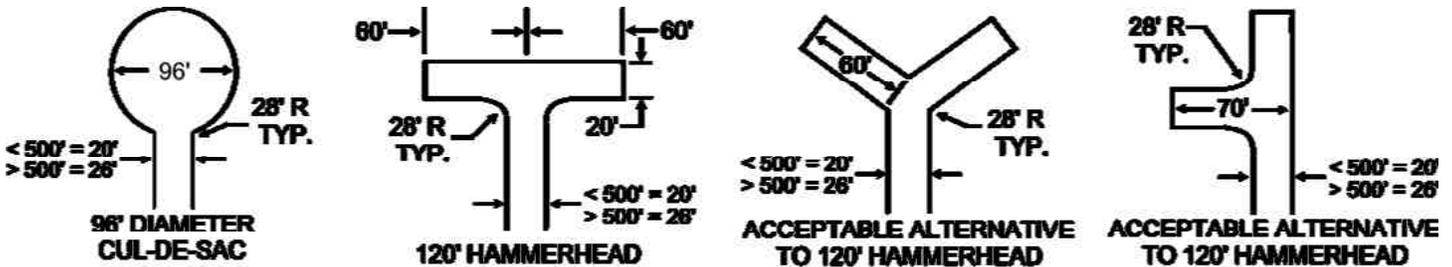
FIRE APPARATUS ACCESS ROAD DISTANCE FROM BUILDING AND TURNAROUNDS:

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. (OFC 503.1.1)

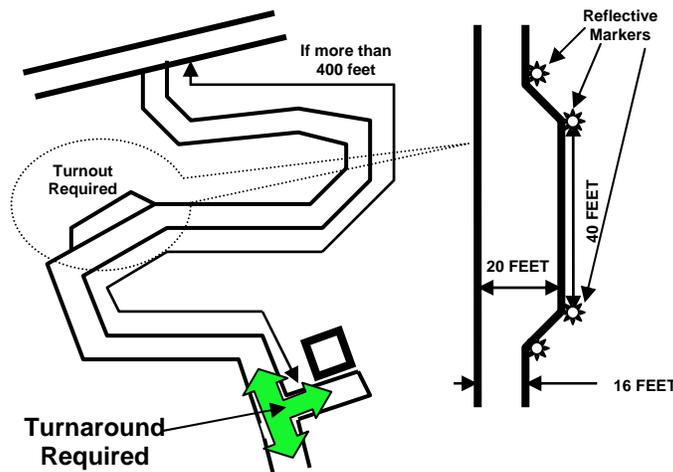
An approved turnaround is required if the remaining distance to an approved intersecting roadway, as measured along the fire apparatus access road, is greater than 150 feet. (OFC 503.2.5)



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) (Appendix D)

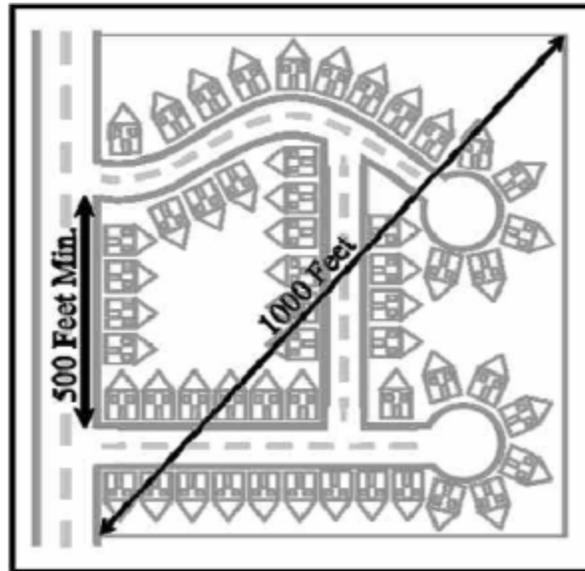


TURNOUTS: When a fire apparatus access road exceeds 400 feet in length, turnouts 20 feet wide and 40 feet long shall be provided in addition to the required road width and shall be placed no more than 400 feet apart, unless otherwise approved by the fire code official. These distances may be adjusted based on visibility and sight distances. Visual indicators such as reflective markers shall be located to delineate the location and extent of turnouts. (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)

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)



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)

DRAINAGE: When subject to run-off damage, access roads shall be provided with approved drainage. (OFC Sec D103.3.2)

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)

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 final construction is in accordance with 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)

GATES: Gates securing fire apparatus roads shall comply with all of the following: (OFC D103.5)

- Minimum unobstructed width shall be 20 feet.
- 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 for emergency access.
- Locking devices shall be approved and shall incorporate the Knox Box Rapid Entry System.

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 25-foot 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 required fire flow for the building shall not exceed 3,000 gallons per minute (GPM) or the available GPM in the water delivery system at 20 psi, whichever is less. A worksheet for calculating the required fire flow is available from the Fire Marshal's Office. (OFC Sec. 508.3)

Note: In a municipal system, available GPM in the water delivery system at 20 psi shall be determined by the City Engineer of the municipality.

SINGLE FAMILY DWELLINGS - REQUIRED FIRE FLOW: The minimum available fire flow for one and two-family dwellings 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 & B105.2)

RURAL BUILDINGS - REQUIRED FIRE FLOW: Required fire flow for rural and suburban areas in which adequate and reliable water supply systems do not exist shall be calculated in accordance with National Fire Protection Association Standard 1142. Please contact the Fire Marshal's Office for special assistance and other requirements that may apply. (OFC B107.1)

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)

Premise Identification

PREMISE IDENTIFICATION: Buildings shall have address numbers or approved identification placed in a position that is plainly legible and visible from the access road fronting the property. Numbers shall contrast with their background and shall be a minimum of 4 inches high with a minimum stroke width of ½ inch. (OFC 505.1)

PREMISE IDENTIFICATION FOR MULTI-FAMILY COMPLEXES: Sites containing multi-family complexes shall have one street address. Due to the nature and layout of multi-family complexes, each building within the complex shall be identified with a letter. The order around the complex shall be approved by the fire marshal and shall be in an alphabetical order starting from the main access point into the site. Buildings shall be lettered so that they are identifiable from any point within the complex.

The following table shall be utilized to address each dwelling unit within a multi-family complex.

	Building A	Building B	Building C	Building D	Building E
Ground / 1st Floor	100 – 109	110 – 119	120 – 129	130 – 139	140 - 149
2nd Floor	200 – 209	210 – 219	220 – 229	230 – 239	240 – 249
3rd Floor	300 – 309	310 – 319	320 – 329	330 – 339	340 – 349
4th Floor	400 – 409	410 – 419	420 – 429	430 – 439	440 - 449

Each successive floor and building will follow the above pattern. If a building will have more than 10 dwelling units per floor, then the sequence of unit numbers can combine two ranges, such as 100 – 119 in Building A, 120 – 139 in Building B, et-cetera.

For complexes that exceed 100 dwelling units on a single floor level, the dwelling unit numbers shall increase from three digits to four digits and expand on the above pattern for identification. The first digit represents the floor level of the unit.

Each entrance to the complex shall be provided with a graphical map representing the layout of the buildings within the complex. Any graphical map shall represent the orientation of the complex as viewed from its vantage point. Each building on the map shall contain its letter designation and the range of dwelling units on each floor in each building.

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)

Exception – Infill and replacement dwellings: If the lot in question was an existing lot of record inside the city limits of Lebanon prior to April 1, 1996, then one SFD or Duplex is allowed as infill or replacement dwelling without waterline improvement, providing no future MLP, accessory dwellings or other approved developments take place without approved fire flow, fire hydrants and waterline improvements as required by the fire or building codes.

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)

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

FIRE-FLOW REQUIREMENT (gpm)	MINIMUM NUMBER OF HYDRANTS	AVERAGE SPACING BETWEEN HYDRANTS ^{a, b, c} (feet)	MAXIMUM DISTANCE FROM ANY POINT ON STREET OR ROAD FRONTAGE TO A HYDRANT ^d
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 ^e	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: (OFC C104)

- Fire hydrant placement shall be approved by the fire district. All measurements are as the hose is laid by fire fighting personnel and apparatus.
- 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.
- Private hydrants or public hydrants that are on adjacent private property shall not contribute to the required number of hydrants for the subject building.

Note: The use of hydrants located on other private property may be considered if their locations and access are encumbered in a legal document (such as an easement) by the owners of the involved parcels of property. The encumbrance may be lifted only after approvals by the Chief on behalf of the fire department and any other governmental agencies that may require approval. (OFC Sec. C104)

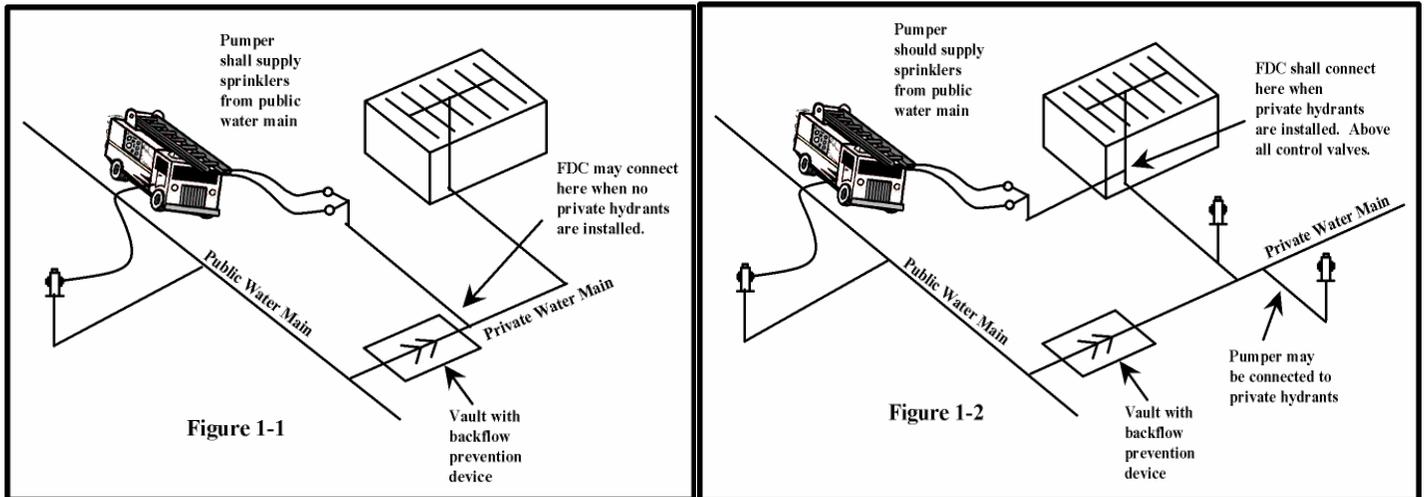
- Where fire hydrants are subject to impact by a motor vehicle, guard posts or other approved means of protection shall be provided. (OFC Sec. 508.5.6)
- When evaluating the placement of hydrants at apartment or industrial complexes the first hydrant(s) to be placed shall be at the primary access and 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: Fire hydrants shall have a 5-inch HYDRA-STORZ® connection on the steamer port.

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)

FIRE HYDRANT/FIRE DEPARTMENT CONNECTION: A fire hydrant shall be located within 50 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.



FIRE HYDRANT/FIRE DEPARTMENT CONNECTION CLEARANCE: A 3-foot clear space shall be maintained around the circumference except as otherwise required or approved. No parking within 10 feet and no closer than 4 feet from any supporting structure for electrical equipment such as transformers and poles. (OFC Sec. 508.5.5 and 912.3)

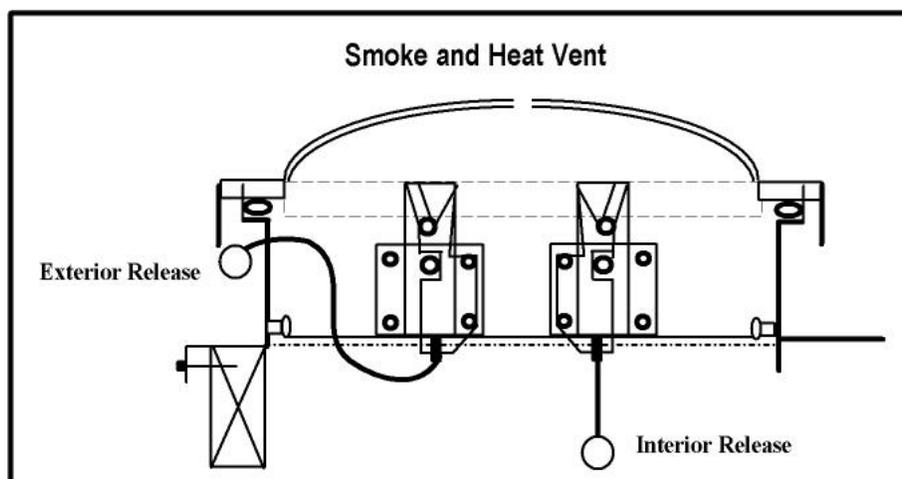
- Fire hydrants and FDC's on a public street shall be clearly identified with a yellow curb, red curb for private streets, to prevent obstruction by parking and other obstructions.

Key Boxes

KEY BOX: A Knox Box for building access is required for buildings with fire sprinkler systems, fire alarm systems, elevators or restricted access such as locked gates. Please contact the Fire Marshal's Office for an order form and instructions regarding installation and placement. Orders can be made directly from Knox Box at their website, www.knoxbox.com. Please reference Lebanon zip code, 97355 for all orders. (OFC Sec. 506.1)

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 jurisdiction 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.