

Tualatin Valley Fire & Rescue



New Construction Fire Code Applications Guide for Commercial and Multi-Family Development

This guide is intended to assist in the application of the fire code in all areas served by Tualatin Valley Fire & Rescue.

**Command & Business
Operations Center**
11945 SW 70th Avenue
Tigard, OR 97223
Phone: (503) 649-8577

**South Operation Center
Fire & Life Safety Division**
8445 SW Elligsen Road
Wilsonville, OR 97070
Phone: (503) 259-1550

AUTHORITY AND SCOPE

Tualatin Valley Fire & Rescue is a Rural Fire Protection District that has adopted and enforces the Oregon Fire Code under the authority granted in ORS 478.910, et. seq. (See TVF&R Ordinance #2020-01). The current District Fire Code is the 2022 Oregon Fire Code (based on the 2021 International Fire Code published by the International Code Council).

Tualatin Valley Fire & Rescue has prepared this guide to provide information on TVF&R specific policies, interpretations, and determinations related to compliance with the District Fire Code. This guide does not create or replace code provisions. The reader is cautioned that the guidance detailed in this guide may or may not apply to their specific situation, and that Tualatin Valley Fire & Rescue retains final authority to determine compliance.

This guide applies to structures constructed under the Oregon Structural Specialty Code (OSSC).

See the *TVF&R New Construction Fire Code Applications Guide for One- and Two-Family Dwellings and Townhouses* for structures constructed under the Oregon Residential Specialty Code (ORSC).

LOCAL DEVELOPMENT CODES

Check the local city or county development code to determine public roadway standards.

DISPUTE RESOLUTION PROCESS

Any person seeking an adjustment or variance to the Fire Code, or who believes they have been adversely affected by an action of the District or its officers in interpreting or enforcing the Fire Code, may file an appeal.

HELPFUL LINKS:

[2022 Oregon Fire Code](#)

[2022 Oregon Structural Specialty Code](#)

Table of Contents

Fire Apparatus Access	5-8
Fire Apparatus Access Roads	5
Fire Access Roads for Non-Building Facilities.....	5
Fire Access Road Distance from Buildings	5
Fire Access Road Exceptions.....	5
Dead Ends and Roads in Excess of 150 Feet (Turnarounds)	5
Premises Identification	5
Access During Construction	6
Turning Radius	6
Turnouts.....	6
Additional Access Roads – Commercial/Industrial Height	6
Additional Access Roads – Commercial Industrial Square Footage.....	6
Additional Access Roads – Multiple Family Residential Developments.....	6
Multiple Access Roads Separation.....	6
Access Road Grade.....	6
Angle of Approach/Grade for Turnarounds	6
Angle of Approach/Grade for Intersections	6
Aerial Apparatus Operating Grade	6
Access Road Width & Vertical Clearance	7
Access Roads with Fire Hydrants.....	7
Aerial Fire Apparatus Roads	7
Aerial Apparatus Operations	7
Surface and Load Capacities	7
Bridges.....	7
Gates	7
Traffic Calming Devices.....	8
No Parking	8
No Parking Signs	8
Painted Curbs	8
Building Access and Fire Service Features	9
Knox Box	9
Fire Protection Equipment Identification.....	9
Fire Alarm Verification	9
Emergency Responder Radio Coverage.....	9
Firefighting Water Supplies	9-10
Commercial Buildings – Required Fire Flow	9
Fire Flow Water Availability	10
Rural Commercial Buildings – Required Fire Flow.....	10
Water Supply During Construction	10
Fire Hydrants	10-11
Fire Hydrants – Commercial Buildings	10
Fire Hydrant Number and Distribution	10
Fire Hydrant Placement	11

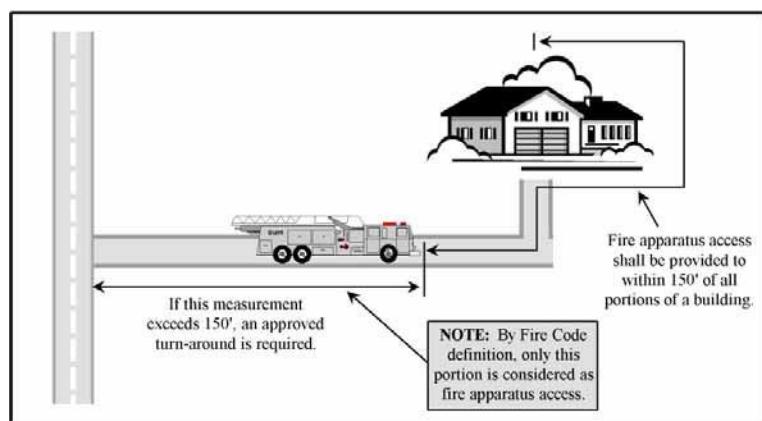
Fire Hydrant Distance from an Access Road	11
Private Fire Hydrant Identification	11
Reflective Hydrant Markers	11
Physical Protection	11
Clear Space around Fire Hydrants	11
Fire Department Connection (FDC) Locations	11
Appendix	12-25
Appendix A Commercial Rural Water Supplies – Policy	12
Appendix B Key Boxes – Policy	13
Appendix C Agricultural Building and Equine Facility Exemption – Policy	14
Appendix D Alternate Materials and Methods Request – Guideline.....	15-17
Appendix E Emergency Responder Radio Coverage.....	18-19
Appendix F No Parking Fire Lane Curb Detail	20
Appendix G Mountable Curb Detail	21-22
Appendix H Fire Department Access Box for Override Switch on Powered Access Gates.....	
23	
Appendix I MERRC Policy Interpretation	24-25

Fire Apparatus Access

FIRE APPARATUS ACCESS ROADS: Access roads shall be provided for every facility, building, or portion of a building hereafter constructed or moved into or within the jurisdiction.

- **Exception:** Approved agricultural and equine structures complying with ORS 455.315 are not required to have fire apparatus access roads.
(See Appendix C)

Access roads for additions to existing commercial structures may be modified by the fire official in accordance with OFC 104.8 and OFC 503.1.1 to account for the pre-existing conditions.



Access roads are not required to be modified for commercial buildings that undergo a change in occupancy, change in use, or conversion from agricultural or equine exempt to non-exempt unless there is a change to the structure's square footage or building footprint. (OFC 503.1.1)

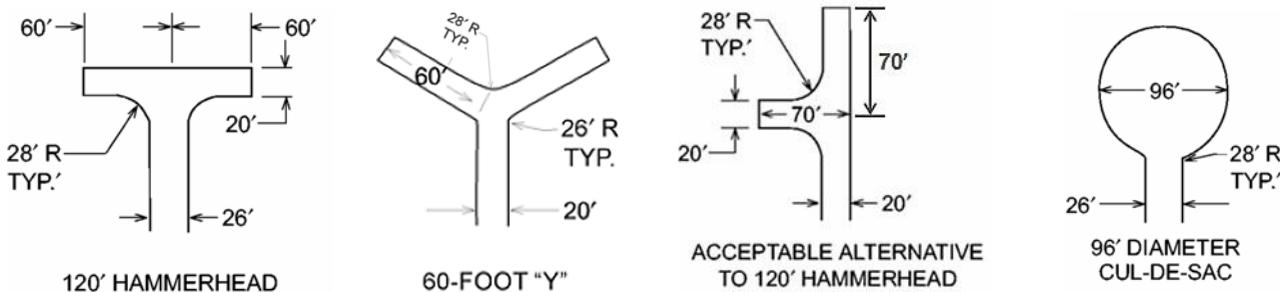
FIRE ACCESS ROADS FOR NON-BUILDING FACILITIES: Fire apparatus access is required for uses at fixed locations that are deemed as being a "facility" by the Fire Marshal. A "facility" includes exterior storage, processing or filling areas for flammable and combustible substances and hazardous materials; piers and wharves; recreational vehicle, mobile home and manufactured housing parks, sales and storage lots; permanent outdoor assembly venues for gatherings exceeding 1,000 persons; and similar uses. Access to facilities may be modified by the Fire Marshal in accordance with OFC 104.8 based on the specific use, frequency, location and other site conditions. (OFC 503.1.1)

FIRE ACCESS ROAD DISTANCE FROM BUILDINGS: The access shall extend to 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 or facility. (OFC 503.1.1)

FIRE ACCESS ROAD EXCEPTIONS: The requirements for fire apparatus access may be modified as approved by the Fire Marshal where any of the following apply: (OFC 503.1.1 Exceptions)

- 1) Buildings are equipped throughout with an approved automatic fire sprinkler system in accordance with sections 903.3.1.1, 903.3.1.2 or 903.3.1.3.
- 2) Fire apparatus access roads cannot be installed because of location on property, topography, waterways, non-negotiable grades, or other similar conditions, and an approved alternative means of fire protection is provided.
- 3) There are not more than (2) two group U occupancies.

DEAD ENDS AND ROADS IN EXCESS OF 150 FEET (TURNAROUNDS): Dead end fire apparatus access roads or roads in excess of 150 feet in length shall be provided with an approved turnaround. Diagrams of approved turnarounds are shown below: (OFC 503.2.5 & Figure D103.1)



PREMISES IDENTIFICATION: New and existing buildings shall have approved address numbers; building numbers or approved building identification placed in a position that is plainly legible and visible from the street or road fronting the property, including monument signs. These numbers shall contrast with their background. Numbers shall be a minimum of 4 inches high with a minimum stroke width of 1/2 inch. (OFC 505.1)

ACCESS DURING CONSTRUCTION: Approved fire apparatus access roadways shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. Temporary address signage shall also be provided during construction. (OFC 3311)

TURNING RADIUS: The inside turning radius and outside turning radius shall not be less than 28 feet and 48 feet respectively, measured from the same center point. (OFC 503.2.4 & D103.3)

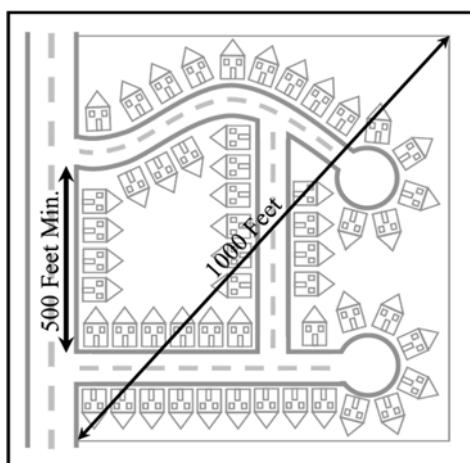
TURNOUTS: Where access roads are less than 20 feet wide and exceed 400 feet in length, turnouts 10 feet wide and 30 feet long may be required and will be determined on a case by case basis. (OFC 503.2.2)

ADDITIONAL ACCESS ROADS – COMMERCIAL/INDUSTRIAL HEIGHT: Buildings exceeding 30 feet in height or three stories in height shall have at least two separate means of fire apparatus access. (D104.1)

ADDITIONAL ACCESS ROADS – COMMERCIAL/INDUSTRIAL SQUARE FOOTAGE: Buildings or facilities having a gross building area of more than 62,000 square feet shall have at least two approved separate means of fire apparatus access. Exception: Projects having a gross building area of up to 124,000 square feet that have a single approved fire apparatus access road when all buildings are equipped throughout with approved automatic sprinkler systems. (OFC D104.2)

ADDITIONAL ACCESS ROADS – MULTI-FAMILY RESIDENTIAL DEVELOPMENTS: Projects having more than 100 dwelling units shall be provided with two separate and approved fire apparatus access roads. Exception: Projects having up to 200 dwelling units may have a single approved fire apparatus access road when all buildings, including nonresidential occupancies, are equipped throughout with an approved automatic sprinkler system in accordance with section 903.3.1.1, 903.3.1.2. Projects having more than 200 dwelling units shall be provided with two separate and approved fire apparatus roads regardless of whether they are equipped with an approved automatic sprinkler system. (OFC D106)

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 area to be served (as identified by the Fire Marshal), measured in a straight line between accesses. (OFC D104.3)



ACCESS ROAD GRADE: Fire apparatus access roadway grades shall not exceed 15%. (OFC 503.2.7 & D103.2)

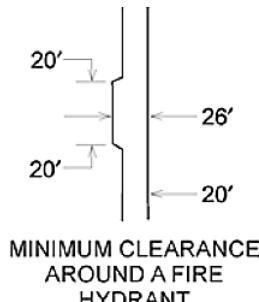
ANGLE OF APPROACH/GRADE FOR TURNAROUNDS: Turnarounds shall be as flat as possible and have a maximum of 5% grade with the exception of crowning for water run-off. (OFC 503.2.8)

ANGLE OF APPROACH/GRADE FOR INTERSECTIONS: Intersections shall be level (maximum 5%) with the exception of crowning for water run-off. (OFC 503.2.8)

AERIAL APPARATUS OPERATING GRADES: Portions of aerial apparatus roads that will be used for aerial operations shall be as flat as possible. Front to rear and side to side maximum slope shall not exceed 10%. (OFC 503.2.7)

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) and an unobstructed vertical clearance of not less than 13 feet 6 inches. (OFC 503.2.1 & D103.1)

FIRE APPARATUS ACCESS ROADS WITH FIRE HYDRANTS: Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet and shall extend 20 feet before and after the point of the hydrant. (OFC Figure D103.1)



AERIAL FIRE APPARATUS ROADS: Buildings with a vertical distance between the grade plane and the highest roof surface that exceeds 30 feet in height shall be provided with a fire apparatus access road constructed for use by aerial apparatus with an unobstructed driving surface width of not less than 26 feet. For the purposes of this section, the highest roof surface shall be determined by measurement to the eave of a pitched roof, the intersection of the roof to the exterior wall, or the top of the parapet walls, whichever is greater. Any portion of the building may be used for this measurement, provided that it is accessible to firefighters and is capable of supporting ground ladder placement. (OFC D105.1, D105.2)

AERIAL APPARATUS OPERATIONS: At least one of the required aerial access routes shall be located within a minimum of 15 feet and a maximum of 30 feet from the building, and shall be positioned parallel to one entire side of the building. The side of the building on which the aerial access road is positioned shall be approved by the Fire Marshal. Overhead utility and power lines shall not be located over the aerial access road or between the aerial access road and the building. (D105.3, D105.4)

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 503.2.3)

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 (HB17)*. 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 or parties that use the bridge for access to their property. 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. Vehicle load limits shall be posted at both entrances to bridges when required by the Fire Marshal. Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces which are not designed for such use, approved barriers, approved signs or both shall be installed and maintained when required by the Fire Marshal. Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces which are not designed for such use, approved barriers, approved signs or both shall be installed and maintained when required by the Fire Marshal. (OFC 503.2.6)

GATES: Gates securing fire apparatus roads shall comply with all of the following (OFC D103.5, OFC 503.6):

1. Minimum unobstructed width shall be not less than 20 feet (or the required roadway surface width)
2. Gates shall be set back at minimum of 30 feet from the intersecting roadway or as approved.
3. Electric gates shall be equipped with a means for operation by fire department personnel
4. Electric automatic gates shall comply with ASTM F 2200 and UL 325.
5. When the access gate needs to be locked an expendable long shank padlock which can be cut off with a bolt cutter shall be installed. A knox padlock is not required.

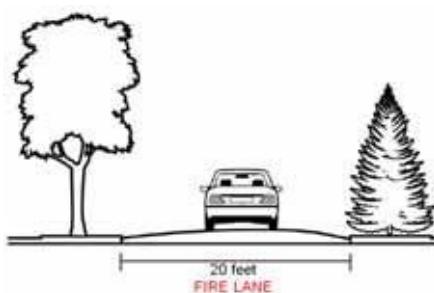
TRAFFIC CALMING DEVICES: Shall be prohibited on fire access routes unless approved by the Fire Marshal. (OFC 503.4.1) Traffic calming measures linked here: <http://www.tyfr.com/DocumentCenter/View/1578>

NO PARKING: Parking on emergency access roads shall be as follows (OFC D103.6.1-2):

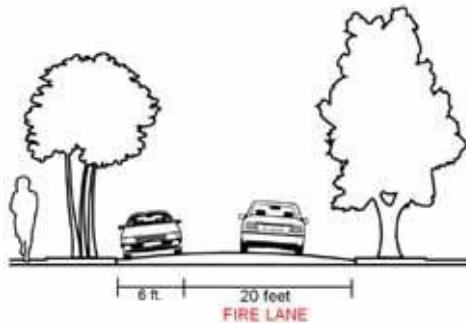
1. 20-26 feet road width – no parking on either side of roadway
2. 26-32 feet road width – parking is allowed on one side
3. Greater than 32 feet road width – parking is not restricted

Note: For specific widths and parking allowances, contact the local municipality.

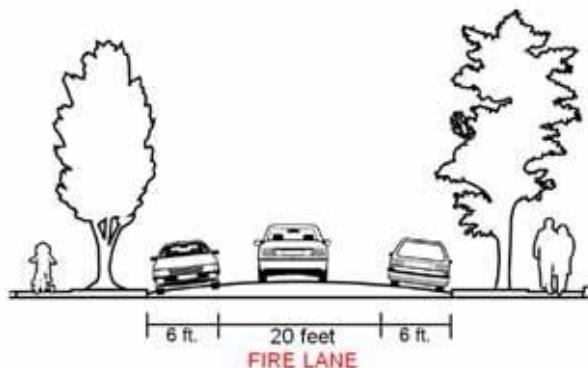
Parking prohibited on either side:



Parking prohibited on one side only:



Parking permitted on both sides:



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.

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 (or as approved) 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 (or as approved). (OFC 503.3)

Building Access and Fire Service Features

KNOX BOX: A Knox Box for building access may be required for structures and gates. See Appendix B for further information and detail on required installations. Contact TVF&R for assistance and instructions regarding installation and placement. (OFC 506.1)

FIRE PROTECTION EQUIPMENT IDENTIFICATION: Rooms containing controls to fire suppression and detection equipment shall be identified as "Fire Control Room." Signage shall have letters with a minimum of 4 inches high with a minimum stroke width of 1/2 inch, and be plainly legible, and contrast with its background. (OFC 509.1)

FIRE ALARM VERIFICATION: Supervisory Stations shall not retransmit alarm signals to Public Fire Service Dispatch and Communication Centers until an attempt is made to verify the accuracy of the alarm signal at the protected premises. The verification attempt shall be made within 90 seconds of the receipt of the alarm signal. If the protected premises is contacted and can confirm that no fire or emergency condition exists, then the alarm signal shall not be retransmitted. In all other situations, the alarm signal shall be retransmitted immediately. (OFC 907.6)

- **Exception:** Water flow and manual pull station alarms shall be immediately retransmitted without verification.

EMERGENCY RESPONDER RADIO COVERAGE: All new buildings, as described in OFC 510.1.1, shall have approved radio coverage for emergency responders within the building based on existing coverage levels of the public safety communication system utilized by the jurisdiction, measured at the exterior of the buildings. This section shall not require improvement of the existing public communication systems.

Firefighting Water Supplies

COMMERCIAL BUILDINGS – REQUIRED FIRE FLOW: The minimum fire flow and flow duration shall be determined in accordance with OFC Table B105.2. The required fire flow for a building shall not exceed the available GPM in the water delivery system at 20 psi. (OFC B105.3)

Note: OFC B106, Limiting Fire-Flow is also enforced, except for the following:

- The maximum needed fire flow shall be 3,000 GPM at 20 psi.
- Tualatin Valley Fire & Rescue does not adopt Occupancy Hazards Modifiers.

TABLE B105.2
MINIMUM REQUIRED FIRE-FLOW AND FLOW DURATION FOR BUILDINGS

Type IA and IB ^a	Type IIA and IIIA ^a	Type IV and V-A ^a	Type IIB and IIIB ^a	Type V-B ^a	FIRE-FLOW (gallons per minute) ^b	FLOW DURATION (hours)
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	3
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	4
—	—	115,801-125,500	83,701-90,600	51,501-55,700	6,250	
—	—	125,501-135,500	90,601-97,900	55,701-60,200	6,500	
—	—	135,501-145,800	97,901-106,800	60,201-64,800	6,750	
—	—	145,801-156,700	106,801-113,200	64,801-69,600	7,000	
—	—	156,701-167,900	113,201-121,300	69,601-74,600	7,250	
—	—	167,901-179,400	121,301-129,600	74,601-79,800	7,500	
—	—	179,401-191,400	129,601-138,300	79,801-85,100	7,750	
—	—	191,401-Greater	138,301-Greater	85,101-Greater	8,000	

For SI: 1 square foot = 0.0929 m², 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. Types of construction are based on the *International Building Code*.

b. Measured at 20 psi residual pressure.

FIRE FLOW WATER AVAILABILITY: Applicants shall provide documentation of a fire hydrant flow test or flow test modeling of water availability from the local water purveyor if the project includes a new structure or increase in the floor area of an existing structure. Tests shall be conducted from a fire hydrant within 400 feet for commercial projects, or 600 feet for residential development. Flow tests will be accepted if they were performed within 5 years as long as no adverse modifications have been made to the supply system. Water availability information may not be required to be submitted for every project. (OFC Appendix B)

RURAL COMMERCIAL BUILDINGS - REQUIRED FIRE FLOW: Commercial structures in rural and suburban areas where adequate and reliable water supply systems DO NOT exist will require a firefighting water supply system sized in accordance with NFPA Standard 1142 (or an approved alternate) capable of delivering a minimum of 500 gpm at 20 psi through an approved fire hydrant in an approved location. (OFC 507, B103.2, and B105)

- **Exception:** Buildings less than 24,000 square feet do not require an onsite firefighting water supply. (OFC B103.1).

WATER SUPPLY DURING CONSTRUCTION: Approved firefighting water supplies shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. (OFC 3313)

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 507.5.1)

- This distance may be increased to 600 feet for buildings equipped throughout with an approved automatic sprinkler system.
- The number and distribution of fire hydrants required for commercial structure(s) is based on Table C102.1, following any fire-flow reductions allowed by section B105.3.2. Additional fire hydrants may be required due to spacing and/or section 507.5.1 of the Oregon Fire Code.

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 102.1. (OFC Appendix C)

TABLE C102.1
NUMBER AND DISTRIBUTION OF FIRE HYDRANTS^b

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
1751-2,250	2	450	225
2,251-2,750	3	450	225
2,751-3,250	3	400	225
3,251-4,000	4	350	210
4,001-5,000	5	300	180
5,001-5,500	6	300	180
5,501-6,000	6	250	150
6,001-7,000	7	250	150
7,001 or more	8 or more ^e	200	120

Table Footnotes:

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 firefighters 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.

f. A 50-percent spacing increase shall be permitted where the building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1 of the International Fire Code.

g. A 25-percent spacing increase shall be permitted where the building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.2 or 903.3.1.3 of the International Fire Code or Section P2904 of the International Residential Code.

h. The fire code official is authorized to modify the location, number and distribution of fire hydrants based on site-specific constraints and hazards.

FIRE HYDRANT(S) PLACEMENT: (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 507.5.1)
- 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 Marshal.
- 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 may be considered when approved by the Fire Marshal.
- 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 Marshal.

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 Marshal. (OFC C102.1 h)

PRIVATE FIRE HYDRANT IDENTIFICATION: Private fire hydrants shall be painted red in color. Exception: Private fire hydrants within the City of Tualatin shall be yellow in color. (OFC 507)

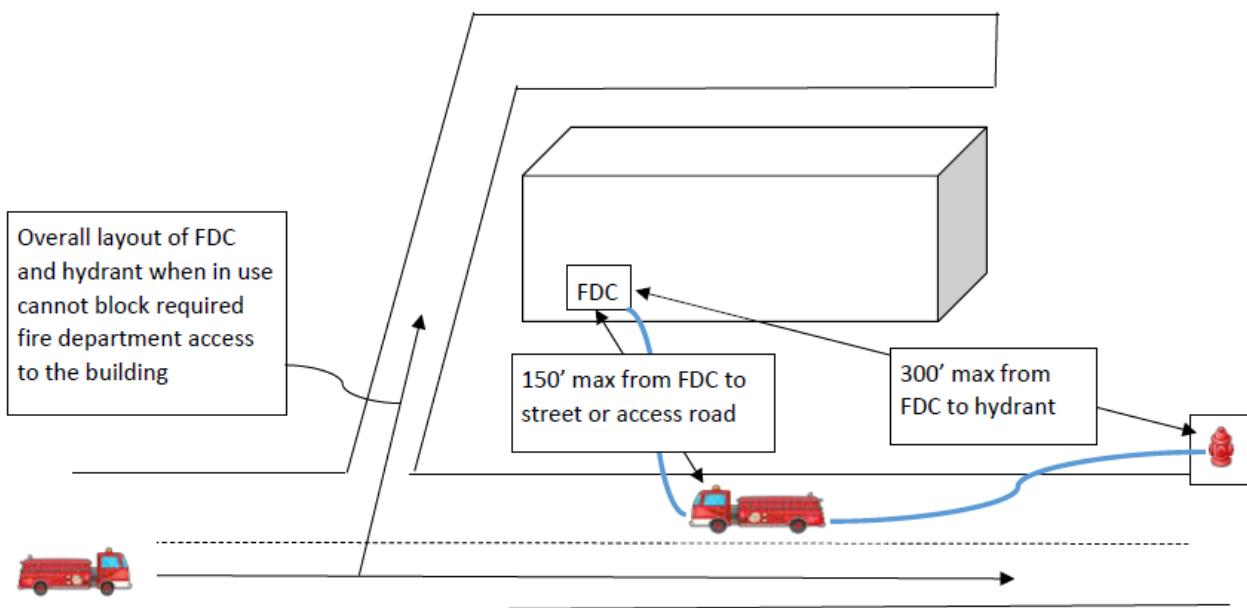
REFLECTIVE HYDRANT MARKERS: Fire hydrant locations shall be identified by the installation of blue reflective markers. They shall be located adjacent and to the side of the center line of the access roadway that the fire hydrant is located on. In the case that there is no center line, then assume a center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

PHYSICAL PROTECTION: Where fire hydrants are subject to impact by a motor vehicle, guard posts, bollards or other approved means of protection shall be provided. (OFC 507.5.6 & OFC 312)

CLEAR SPACE AROUND FIRE HYDRANTS: A 3 foot clear space shall be provided around the circumference of fire hydrants. (OFC 507.5.5)

FIRE DEPARTMENT CONNECTION (FDC) LOCATIONS: FDCs shall be located in accordance with the following:

- The FDC shall be located so that when in-use, the fire apparatus and hose connections to the FDC and to the supply hydrant will not obstruct access to the building for other fire apparatus. (OFC 912.2)
- FDC shall be located on street side of building or facing approved apparatus access roads. (OFC 912.2.1)
- The FDC shall be within 150 feet of street or fire apparatus access road. (OFC 912.2)
- The FDC shall be within 300 feet of a fire hydrant. (OFC 912.2)
- The FDC shall be wall-mounted on the building it serves or be remotely located (OFC 912.2)
- FDC shall be installed at a height between 24 inches and 48 above grade (OFC 912.2.1)
- The FDC shall be fully visible, and recognizable from the street or nearest point of the fire department vehicle access or as otherwise approved (OFC 912.2.1)
- Where FDCs are subject to impact by a motor vehicle, bollards or other vehicle impact protection must be provided in accordance with OFC 312. (OFC 912.4.3)





New Construction Fire Code Application Guide

Appendix A

COMMERCIAL RURAL WATER SUPPLIES

DATE: August, 2010

(Reviewed: 4/17/24)

PURPOSE: To define the requirements for firefighting water supply for commercial occupancies in rural areas outside of adequate and reliable water systems.

SCOPE: This policy shall apply to all areas served by Tualatin Valley Fire & Rescue.

CODE REFERENCES: 2022 OFC Chapter 5, Section 507; Appendix B, Sections B103 and B107

POLICY: Rural firefighting water supply volume will be established using NFPA 1142.

Tanks and supply systems for Private Water Supplies

Tanks to store firefighting water supplies will comply with NFPA Standard 22. Piping systems will comply with NFPA Standard 24. Fire pumps will comply with NFPA Standard 20.

Swimming pools, ponds, streams, lakes, rivers and similar open or seasonal water sources are not approved firefighting water supplies.

Pressurized or gravity fed systems shall be provided that are capable of flowing a minimum 500 gpm at 20 PSI residual, from an approved fire hydrant in an approved location.

Fire hydrants shall be equipped with one large diameter (4 ½ inch) port and two 2 ½ inch ports. The hydrant(s) shall be painted red to denote a private hydrant. Installation shall be installed in accordance with NFPA 24.

All rural water supplies will be fitted with a permanent sign of adequate lettering stating "Firefighting Water Supply" and shall include the number of gallons available. The sign will be mounted so that it is not less than 2 feet above the driving surface. The sign will be not less than 24 inches wide by 10 inches tall. The sign will be white background with black or red lettering. Lettering will be no less than 6 inches tall by ¾ inch wide stroke.

The center of the large diameter port on the fire hydrant shall be approximately 18 inches above the plane of the access roadway finished grade.

The fire hydrant shall be located no further than eight (8) feet from the approved fire department access road. A clear space of no less than 3 feet will be maintained around the hydrant so that it is in clear view and easily accessible for use. The driving surface leading to the hydrant will be kept clear at all times of all materials and vegetation.



New Construction Fire Code Application Guide

Appendix B

KEY BOXES

DATE: June, 2010

(Reviewed: 4/17/24)

PURPOSE: To define the requirements for installation of key boxes.

SCOPE: This policy shall apply to all areas served by Tualatin Valley Fire & Rescue.

CODE REFERENCES: 2022 OFC Section 506

POLICY: Key Boxes

Tualatin Valley Fire & Rescue requires key boxes on buildings that meet certain parameters. When key boxes are required by this policy, Knox brand key boxes shall be used.

Required Installation - Key boxes shall be installed on buildings and structures when:

✓ An elevator is installed.	✓ Equipped with an automatic fire extinguishing system.
✓ Equipped with a fire alarm system.	✓ Access is restricted due to security arrangements.

EXCEPTION: Buildings and structures open and supervised twenty-four hours a day, seven days a week or constantly attended.

Installation Details - Key boxes shall be installed in an approved location; normally adjacent to primary entrance. The bottom of the key box shall not be more than six feet (6') above the walking surface unless approved by the Chief or authorized representative. See exception below.

EXCEPTION: In multi-tenant buildings (each with their own outside entrance) the key box shall be located at the door that will best and most easily gain access to automatic sprinkler system controls alarm system controls, etc.

Contents - Key boxes typically may contain the following keys and critical information necessary to gain access:

✓ Building or structure keys	✓ Gate key
✓ Alarm systems keys and instructions	✓ Elevator door key
✓ Elevator recall key	✓ Automatic fire extinguishing system control valve keys
✓ Emergency personnel contact numbers	✓ Hazardous materials safety data sheets
✓ Multiple sets of keys when required	

Required Labeling - All keys shall be labeled as to their use, i.e., main entrance, alarm control panel, sprinkler room door, etc.

Key Box Size - The size of the key box shall be sufficient to contain all necessary keys and/or equipment.



New Construction Fire Code Application Guide

Appendix C

AGRICULTURAL BUILDING AND EQUINE FACILITY EXEMPTION

DATE: June, 2010

(Reviewed: 4/17/24)

PURPOSE: To define the requirements for access and firefighting water supplies for exempt agricultural buildings and equine facilities.

SCOPE: This policy shall apply to all areas served by Tualatin Valley Fire & Rescue.

CODE REFERENCES: Oregon Revised Statute 455.315

POLICY: Agricultural Building and Equine Facility Exemption

For the purposes of this policy, fire apparatus access and firefighting water supplies for agricultural buildings and equine facilities, as defined in ORS 455.315, shall be as follows:

1. Agricultural buildings and equine facilities, as defined in ORS 455.315, shall be exempt from the fire apparatus access and firefighting water supply requirements contained in Tualatin Valley Fire & Rescue's adopted fire prevention ordinance.
2. It shall be the policy of Tualatin Valley Fire & Rescue to encourage the installation of fire sprinkler systems in agricultural buildings and equine facilities.
3. It shall be the policy of Tualatin Valley Fire & Rescue to encourage the installation of fire apparatus access roadways and firefighting water supplies.

Guideline for Alternate Material and Methods Requests

(Reviewed: 4/17/24)

PURPOSE: This guideline is intended to provide direction for submitting requests for use of alternate materials and methods (AM&Ms) in accordance with the 2022 Oregon Fire Code (OFC), section 104.9.

SCOPE: Requests for alternate materials and methods shall be evaluated by TVF&R staff to ensure the proposed design, use, or operation satisfactorily complies with the intent of the OFC and that the method of work performed or operation is, for the purpose intended, at least equivalent to that prescribed in the OFC in quality, strength, effectiveness, fire resistance, durability, or safety.

CODE REFERENCES: 2022 OFC Chapter 1, Section 104.9

SUBMITTAL REQUIREMENTS

1. General Requirements

The applicant shall provide the following information, in writing, with the plans necessary to evaluate the project:

- A. Identify relevant project information:
 - 1) The project name, address, contact person, and phone number.
 - 2) The owner's name, address, and phone number.
 - 3) Other specific information identifying the project may be required (e.g., development permit type, tract and lot number, etc.).
- B. Identify the code section or reference of the specific requirement for which the modification is requested (e.g., OFC Appendix D, Section D 103.2, Grade).
- C. Detail the alternate fire protection measures that will comprise the AM&M proposal, and how they establish equivalency to those prescribed in the code.

The report shall address TVF&R's concerns and the issues as identified above. Refer to the sample AM&M proposal letter provided at the end of this document for guidance.

2. Engineering Evaluation

If the Fire Chief, or established designee, deems an engineering evaluation necessary, it shall be performed and reported by a firm or individual that has been approved by TVF&R. All costs associated with the preparation of the AM&M shall be borne by the applicant.

3. Submittal Process

- A. Submit three copies of both the AM&M request letter and other supporting information to the City/County building department or directly to TVF&R.
- B. AM&M requests will be evaluated by TVF&R plan review staff for equivalency to adopted codes and standards. All such requests are evaluated on a case-by-case basis. Approval of the request is based upon several factors, including, but not limited to, the level of equivalency achieved (as described under "Scope" in this guideline), the effect of the AM&M on fire and emergency response, and site conditions. All evaluations will be performed in the context of the specific project being reviewed.

- C. If the AM&M proposal provides an equivalent level of protection considering all related conditions pertaining to the project, TVF&R will issue a response letter granting approval. Such approval may be conditional upon implementation of additional requirements listed in the AM&M response letter that were not part of the original AM&M proposal. Approval is granted only for the specific project under review, and the conditions for approval shall not be construed as applicable to any other project.
- D. In the event that the AM&M proposal does not provide an equivalent level of protection, the request will be denied and a response letter will be issued to this effect. Should the applicant submit a different AM&M request for this project or choose to revise and resubmit the previously denied request, additional AM&M fees must be paid. To facilitate the evaluation process, include any previously denied AM&M proposals when submitting a revised AM&M request.
- E. Upon completion of the evaluation, the AM&M response letter and a copy of the applicant's AM&M proposal will be available to be picked up at a Division office or mailed back to the applicant's representative. Should evaluation of the AM&M proposal require time and resources beyond the standard allotted for this activity, additional time and materials fees *may* be applied. These additional fees must be paid when the applicant picks up the AM&M response letter.
- F. The approved AM&M request and response letters must be blue lined on the plans prior to plan approval. Retain a copy of the AM&M proposal and response at the project site at all times. This documentation may be required for review by TVF&R inspection staff.

SAMPLE AM&M PROPOSAL LETTER

March 26, 2011

Tualatin Valley Fire & Rescue
Attn: Deputy Fire Marshal
11945 SW 0th Ave.
Tigard, OR 97223

**SUBJECT: AM&M Proposal for the Big Truck Dealership - Sales and Service Remodel
Site Review, Land Use Case File 12-34 (LLP)**

Dear Ms. Scully:

In accordance with Section 104.9 of the 2010 Oregon Fire Code, we are requesting an alternate method of fire protection for the proposed project detailed below. This is in response to item 3 on the March 14, 2011 correction letter for the commercial site plan submitted under Washington County Land Use Case File 12-34 (TLP).

PROJECT INFORMATION

Project: Big Truck Dealership – Sales and Services
16000 SW Parkway Hwy
Aloha, OR 97078

Contact Info: John Doe, FPE

PROPOSAL

The dealership addition is located in Washington County in the Aloha area. The proposed 10,000 square foot building addition is slated to be placed on the existing vacant portion of our property. Based on the Fire District comments, the addition will require access roads that support aerial fire apparatus and their operation.

I would like to propose the following alternate methods and materials in lieu of the aerial requirements:

1. Increase the design to NFPA 13 Ordinary Group 2. The original building sprinkler system was required to meet an NFPA 13 Ordinary Group 1.

JUSTIFICATION

The upgrade in sprinkler protection design will help to ensure that a room and contents fire will be effectively held in check until emergency personnel arrive, limiting the scenarios in which aerial (Ladder truck) firefighting apparatus would be necessary at the site.

ADDITIONAL COMMENTS

We appreciate your consideration of this proposal. Should you find that the proposed items provide an equivalent level of protection to that prescribed in the OFC, we will submit revised site plans. If you have any questions regarding this AM&M proposal, please do not hesitate to contact me.

Sincerely,

John Doe, PE
Fire Protection Engineer



New Construction: Policy Intent Guide

Appendix E

EMERGENCY RESPONDER RADIO COVERAGE (ERRC)

DATE: January 2015

(Reviewed: 4/17/24)

PURPOSE: To define the requirements for application of OFC 510 Emergency Radio Responder Coverage.

SCOPE: This policy shall apply to all areas served by Tualatin Valley Fire & Rescue.

CODE REFERENCES: 2022 OFC Sections 510 and 907.2.13.2, 2022 OSSC Sections 403.4.5 and 918

POLICY: EMERGENCY RADIO RESPONDER COVERAGE

All new buildings, as described in OFC 510.1.1, shall have approved radio coverage for emergency responders within the building based on existing coverage levels of the public safety communication system, measured at the exterior of the building.

The following building types shall require Emergency Radio Coverage testing prior to Certificate-of-Occupancy (OFC 510.1.1):

1. Any building with one or more basements or below grade building levels
2. Any underground building
3. Any building more than five stories in height
4. Any building 50,000 square feet or larger

Testing: Documentation of testing in accordance with OFC 510.5.2 and 510.5.3 shall be provided to TVF&R prior to issuance of Certificate-of-Occupancy.

Testing shall take place after installation of all roofing systems; exterior walls, glazing and siding/cladding; and all permanent interiors walls, partitions, ceilings, and glazing.

If the building fails the OFC 510.4.1 test, a distributed antenna system with FCC certified signal booster or other approved system shall be installed to achieve the required level of radio coverage. Plans and specifications for ERRC systems must be approved by TVF&R, WCCCA, and the applicable Building Department prior to installation.

Mobile Emergency Radio Responder Coverage (MERRC):

Building applicants may request to participate in the MERRC program in lieu of testing and installing a BDA/DAS system by completing the application (available from TVF&R). Building projects are evaluated, for the MERRC alternative on an individual basis. Participation must be applied for and approved before a building permit is issued. Program information is located at <http://www.tvfr.com/DocumentCenter/View/1511>.

Washington County Consolidated Communications Agency (WCCCA) Approval:

FCC rules require anyone who has installed or will be installing a device that amplifies and rebroadcasts a public safety frequency must have an agreement with the public safety radio system owner. WCCCA is the owner of the emergency radio frequency used by TVF&R and therefore must approve any amplification of these frequencies. WCCCA has specific criteria that the system must be met and a legal agreement that parties must sign. Contact the Technical Services Manager at Washington County Consolidated Communications Agency (WCCCA), 503-690-4911 x266# for forms and information.

Technical Criteria: Please contact the Technical Services Manager at Washington County Consolidated Communications Agency (WCCCA), 503-690-4911 x266# for information per OFC 510.4.2.2 related to frequencies used, radio sites, etc. necessary for modeling or designing radio coverage or amplification.

Survivability:

Pathways serving Emergency Responder Radio System elements such as wiring, cables, boosters, and conduit shall be protected as specified in Oregon Structural Specialty Code Section 918.

Wired Communication Systems: Wired communication systems in accordance with OFC 907.2.13.2 are not allowed in lieu of an approved emergency radio communication system.

Plan Submittal, Inspection and Acceptance Testing (when a system is required): A permit for installation of a radio signal enhancement system shall be obtained from TVF&R and the applicable building department. A final acceptance test report per OFC 510.5.4 shall be provided to TVF&R prior to issuance of Certificate- of-Occupancy. Final approval from WCCCA is required prior to placing any system into service.

Coordination with Building Department / OSSC: TVF&R determines when a ERRC system is required and has final authority for all requirements and testing specified in OFC Section 510. An ERRC system may only be waived if a determination is made by the fire code official.

When a ERRC system is required by TVF&R, then the applicable building department enforces OSSC 915, which primarily sets requirements for the survivability of certain circuits and components. OSSC does not regulate the equipment itself, radio frequencies, performance, testing or any other items in OFC 510.

It is important that applicants installing a ERRC system coordinate with the applicable building department in addition to TVF&R.



New Construction Fire Code Application Guide

Appendix F

NO PARKING FIRE LANE CURB DETAIL

DATE: April 10, 2020
(Reviewed: 3/16/23)

PURPOSE: To define the requirements of marking fire lane curbing.

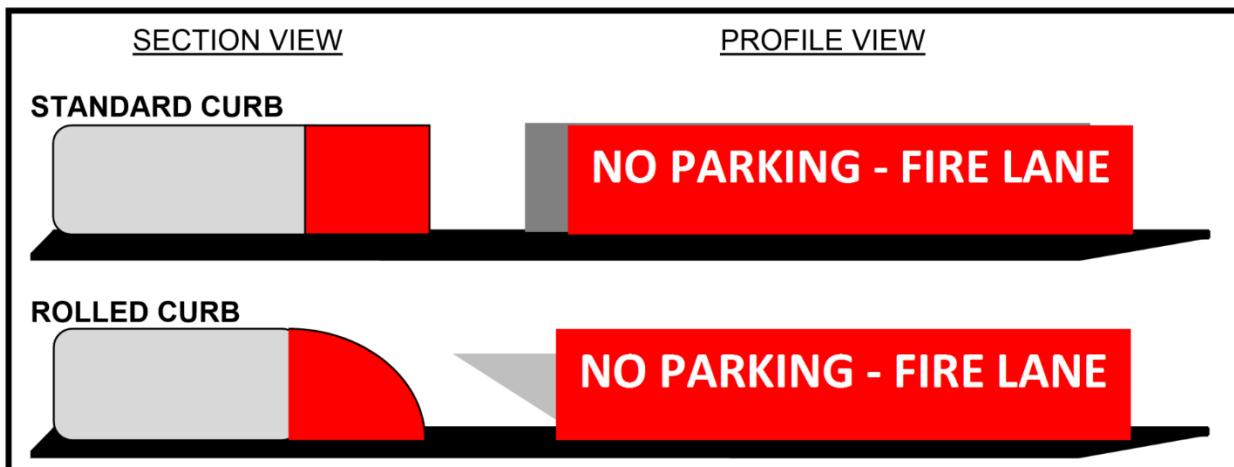
SCOPE: This policy shall apply to all areas served by Tualatin Valley Fire & Rescue.

CODE REFERENCES: 2022 OFC Chapter 5, Section 503.3

POLICY: No Parking Fire Lane Curb Detail

The OFC does not provide guidance with regards to the color or marking style of fire lane curbing. The policy of Tualatin Valley Fire & Rescue is as follows:

- Curb paint shall be red for the entire length of the fire lane.
- “NO PARKING FIRE LANE” shall be stenciled with a 3 ½ inch minimum height block in white lettering with a minimum of ½ inch stroke width.
- The markings shall be spaced at 25 foot intervals.





New Construction Fire Code Application Guide

Appendix G

MOUNTABLE CURB DETAIL

DATE: April 10, 2020
(Reviewed: 3/16/23)

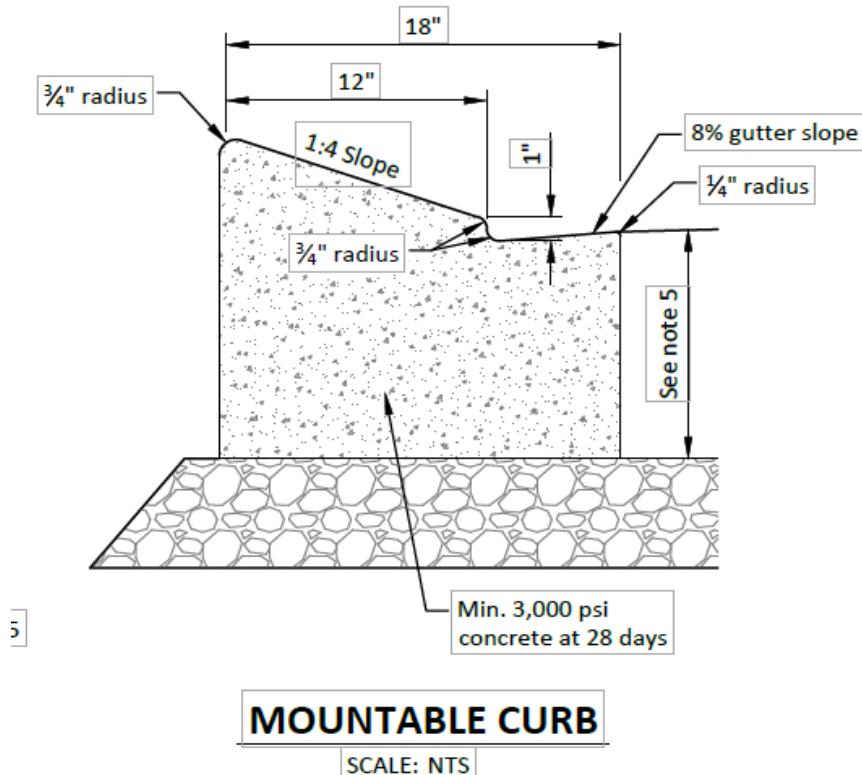
PURPOSE: To define the requirements of a mountable curb for fire access.

SCOPE: This policy shall apply to all areas served by Tualatin Valley Fire & Rescue.

CODE REFERENCES: 2022 OFC Chapter 5, Section 503.2.8

POLICY: Mountable Curb Detail

The OFC does not provide guidance with regards to the use of mountable curbs for fire access roads. Mountable curbs will be approved on a case by case basis. Where a local jurisdiction has a design detail that meets or exceeds this detail the detail of the local jurisdiction shall apply. The policy of Tualatin Valley Fire & Rescue is as follows:



NOTES:

1. Expansion joints shall be provided at each point of tangency of the curb material. Joints shall be pre-molded, non-extruding, with a min. thickness of $\frac{1}{2}$ ".
2. Contraction joints shall be a minimum of 2" deep, spaced a maximum of 15 feet apart, and match PCC street slab joints.
3. Base rock 1 $\frac{1}{2}$ " minus, compacted to 95% AASHTO T-180, shall be to subgrade of street structure or 4" in depth, whichever is greater, extending 1' behind curb.
4. Slope of gutter shall not exceed 5% at sidewalk ramp.
5. Gutter thickness shall match the pavement thickness, where thickness exceeds six inches.
6. The height of the standard curb shall match the pavement thickness plus the curb exposure when greater than 16".



New Construction Fire Code Application Guide

Appendix H

Fire Department Emergency Access on Powered Gates

DATE: Update 4/17/2024

PURPOSE: To identify the requirements for fire department access box for override switch on powered access gates.

SCOPE: This policy shall apply to all areas served by Tualatin Valley Fire & Rescue.

CODE REFERENCES: 503.6 OFC 2022

POLICY: Fire Department Access for powered gates.

Power operated gates that obstruct required firefighting access shall be equipped with an approved means of emergency operation as required per OFC 503.6 and the following language:

SECURITY GATE OVERRIDE DEVICE REQUIREMENTS

The override device shall consist of the following:

1. FIRE DEPARTMENT OPERATION: The fire department shall be able to open the gate during an emergency. A manual switch or Knox-key mechanism for operating the gate shall be protected with a weatherproof enclosure box. The enclosure shall be secured with either a long-shanked padlock that can be cut with bolt cutters, or with Knox Padlock. The design shall be approved by TVF&R prior to installation.

2. PLACEMENT OF FIRE DEPARTMENT ACCESS BOX

The fire department box shall be installed on a support pillar or post adjacent to the gate. The box must be visible from approach and marked "FIRE DEPARTMENT" or similar.

3. GATE OPERATION

When the fire department switch is activated, the gate/gates shall fully open without delay.



New Construction Fire Code Application Guide

Appendix I

MERRC Policy Interpretation

POLICY INTERPRETING OFC 510.1, 104.9 AND 104.10

WHEREAS, the Oregon Fire Code ("OFC") Section 510.1 identifies specific building types in which *approved* in-building, two-way emergency responder communication coverage for emergency responders shall be provided; and

WHEREAS, OFC Section 202 defines "*approved*" as "acceptable to the fire code official;" and

WHEREAS, OFC Section 202 defines "fire code official" as the "fire chief or other designated authority charged with the administration and enforcement of the code, or a duly authorized representative;" and

WHEREAS, TVF&R has designated the District's Fire Marshal ("Fire Marshal") as the fire code official for purposes of administering the OFC, as adopted by TVF&R; and

WHEREAS, the Fire Marshal has evaluated options for providing radio coverage for emergency responders within locations specified in OFC 510.1.1 based on current coverage levels of TVF&R's public safety communication systems; and

WHEREAS, the Fire Marshal previously determined that in-building radio coverage using a channelized digital repeater affixed to a building was an approved means of providing radio coverage for emergency responders within locations specified in OFC 510.1.1; and

WHEREAS, pursuant to OFC 104.9 and 104.10 the Fire Marshal finds that installation of in-building coverage is not practical or necessary in all circumstances in light of technical advances to provide coverage using portable or mobile emergency responder radio coverage (MERRC) equipment and related technology; and

WHEREAS, approval of a MERRC program in conjunction with establishing a fund for radio coverage improvements in compliance with the intent of the OFC, will enhance health, life and fire safety within buildings and throughout the District, provides a more efficient and cost effective process for compliance with the OFC; and

WHEREAS, the assessment of fees for providing a MERRC program and fund for future advancements in other communication technology is in compliance with the requirements of the OFC; and

WHEREAS, nothing in this policy shall limit a party's ability to install and maintain an approved in-building repeater system to comply with OFC 510, and

WHEREAS, the TVF&R Board of Directors adopted Resolution 2015-09 authorizing the creation of a MERRC program and fund program to provide alternative to OFC 510 in-building radio coverage system requirements; and

WHEREAS, Resolution 2015-09 authorized the Fire Marshal to implement the program including further modifications and alternate methods as necessary; and

NOW THEREFORE, the Fire Marshal determines:

Pursuant to OFC 510.1 104.9, and 104.10, the TVF&R mobile emergency responder radio coverage (MERRC) program is an approved means of complying with radio coverage requirements within buildings specified in OFC 510.1.1; and the District adopted Master Fee Schedule and MERRC program is hereby approved. Requests for a MERRC alternative shall be submitted on a form provided by TVF&R and considered for approval by the Fire Marshal or designated staff on a case-by-case basis.

Approved:



Stephen A. Forster, Fire Marshal