OREGON FIRE CODE APPLICATIONS GUIDE

This guide is intended to provide assistance in the application of the fire code in the following jurisdictions serviced by Gresham Fire & Emergency Services: Fairview, Troutdale, Wood Village and unincorporated areas of Multnomah County.

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.

Preamble/Authority and Scope

Gresham Fire and Emergency Services (GFES) have elected to administer and enforce the Oregon Fire Code under the authority granted to them by ORS 476.030 or ORS 476.060 and the Gresham Revised Code. The Oregon Fire Code is the International Fire Code, 2019+ 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.

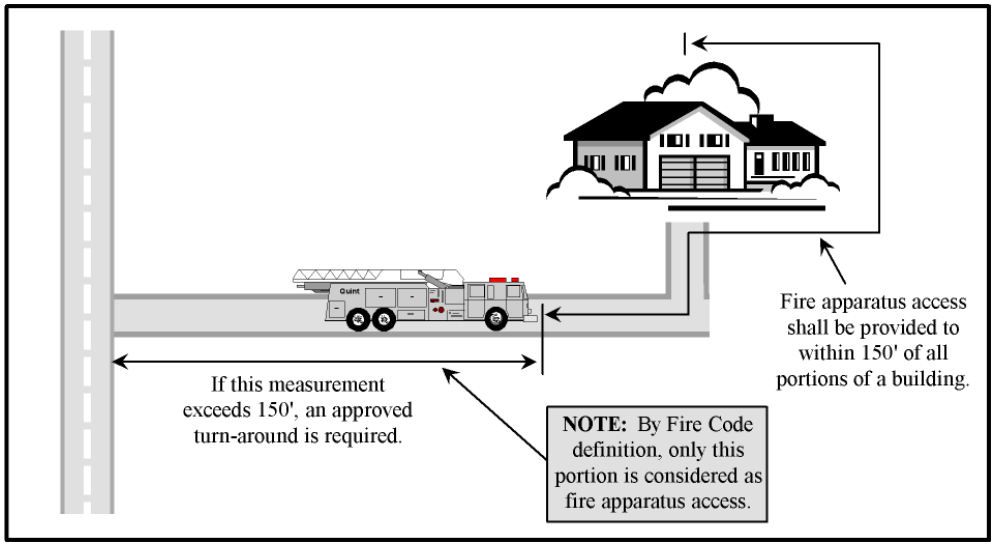
This Applications Guide was created to provide good faith guidance to building officials, contractors, business owners, the public, and fire marshals on local interpretations and practices that are considered to be in compliance with the Oregon Fire Code. The intent is to clarify aspects of the code 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 GFES. 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.

To retrieve copies of GFES handouts and guides that may assist you with project planning, go to: http://www.greshamoregon.gov/fire. Then click on Documents and Forms on the left sidebar.

FIRE APPARATUS ACCESS

All proposed dwellings, facilities, buildings or portions of buildings hereafter constructed shall be accessible to GFES apparatus by way of an approved fire apparatus access road. The fire apparatus access road shall meet the following standards or as authorized by the fire official.

FIRE APPARATUS ACCESS ROAD DISTANCE FROM BUILDING & 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)



WIDTH AND VERTICAL CLEARANCE: The width of the fire apparatus access road serving your development is dependent on the number of existing and proposed structures and buildings served by the access road. All access roads shall have an unobstructed vertical clearance of not less than 13 feet, 6 inches.

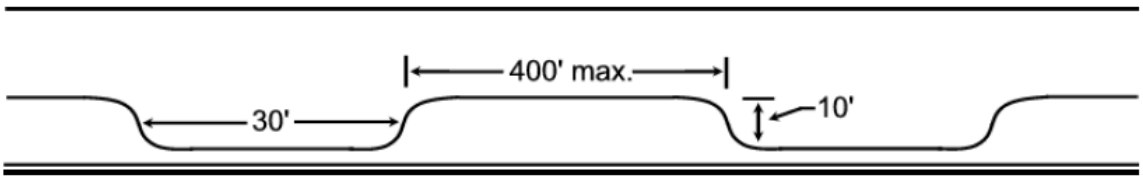
RESIDENTIAL:

- *Two or Less Dwelling Units and Accessory Buildings* – The fire apparatus access road shall have an unobstructed width of 20 feet with a 12-foot-wide driving surface.
- *Three or More Dwelling Units and Accessory Buildings* - Fire apparatus access roads shall have an unobstructed driving surface width of not less than 20 feet. (OFC 503.2.1 & D103.1)

COMMERCIAL – AERIAL FIRE APPARATUS ACCESS ROADS:

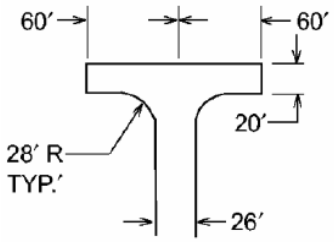
- Where the vertical distance between grade plane and the highest roof exceeds 30 feet, an approved aerial fire apparatus access road shall be provided. The "highest roof" is determined by measuring to the eave of a pitched roof, the intersection of the roof to the exterior wall, or the top of parapet walls, whichever is greater. (D105)
    - Width shall be a minimum of 26' wide.
    - Access road shall be not less than 15' and not greater than 30' from the building.
    - Overhead utility and power lines shall not be located over the aerial access road or between the access road and the building.

TURNOUTS: When a fire apparatus access road exceeds 400 feet in length, turnouts 10 feet wide by 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 sight distances. (OFC 503.2.2)

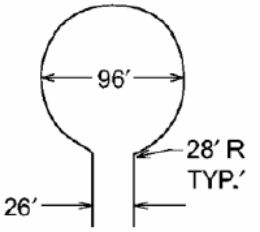


TURNING RADIUS: The inside turning radius and outside turning radius of curves in the access road shall be not less than 28 feet and 48 feet respectively, measured from the same center point. (OFC 503.2.4 & 103.3)

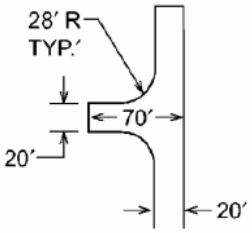
DEAD END ROADS & TURNAROUNDS: Dead end fire apparatus access roads in excess of 150 feet in length shall be provided with an approved turnaround. Diagrams of approved turnarounds are shown below. (OFC 503.2.5)



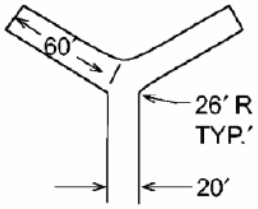
120′ HAMMERHEAD



96′ DIAMETER
CUL-DE-SAC



ACCEPTABLE ALTERNATIVE
TO 120′ HAMMERHEAD



ACCEPTABLE ALTERNATIVE
T0 120′ HAMMERHEAD

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 – 17*." A building permit shall be obtained for the construction of the bridge and the bridge shall be designed by a registered Oregon engineer. Maintenance of the bridge shall be the responsibility of the party or parties that use the bridge for access to their property. GFES 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. Culverts may be treated the same as bridges. The bridge shall support not less than 12,500 pounds point load (wheel load) and 75,000 pounds live load (gross vehicle weight). Vehicle load limits shall be posted at both sides on a metal white sign with a minimum 2" black letters. (OFC 503.2.6 & D.102.1)

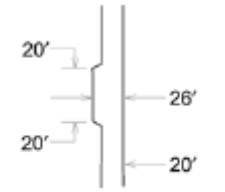
GRADE: Fire apparatus access roadway grades shall not exceed 12%. Intersections and turnarounds shall be level (maximum 5%) with the exception of crowning for water run-off. When fire sprinklers are installed, a maximum grade of 15% may be allowed. Grades over 15% will not be approved. The approval of fire sprinklers as an alternate shall be accomplished in accordance with the provisions of OFC 503.1.1 Exception (2). (OFC 503.2.7, D103.D, Gresham Revised Code)

SURFACE AND LOAD CAPACITIES: Fire apparatus access roads shall be on 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)

GATES: Gates securing fire apparatus roads shall comply with all of the following:

- Minimum unobstructed width shall be not less than the required roadway surface width, or two 10-foot sections with a center post or island.
- Gates serving three or less single-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 and manual operation shall be capable by one person.
- Locking devices shall be approved. KNOX lock box may be required. Electric gates may require a toggle switch to open. Call our office for a copy of the GFES Gate Policy. (OFC 503.5 and GFES Gate Policy)

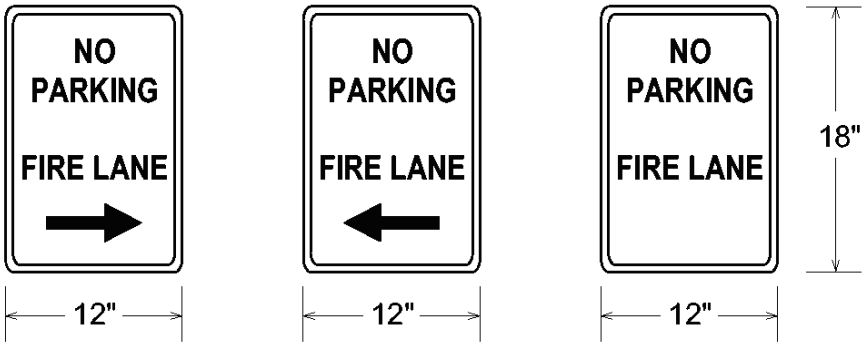
FIRE APPARATUS ACCESS ROADS WITH FIRE HYDRANTS: Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet. (OFC D103.1)



MINIMUM CLEARANCE AROUND A FIRE HYDRANT

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 stenciled white with "NO PARKING FIRE LANE". Lettering shall have a stroke of not less than one inch wide by three and a half inches high. The lettering shall be spaced at an interval approved by the Gresham Fire Department of a minimum 25 feet and a maximum of 75 feet. If a curb does not exist, a 6-inch red line with white lettering as listed above may be approved as an alternate means of marking. (OFC 503.3)

PREMISE 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. These numbers shall contrast with their background. Address numbers shall be Arabic numerals or alphabet letters. Residential single-family numbers shall be a minimum of 4 inches high with a minimum stroke width of .5 inch. Commercial warehouses shall be a minimum 10 inches high with a minimum stroke width of .5 inch and standard commercial buildings shall be a minimum 6 inches high with a minimum stroke width of .5 inch. Refer to the Gresham Fire addressing policy for apartments, condominium requirements, and other specifics. (OFC 505.1)

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

(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)).

FIREFIGHTING WATER SUPPLIES

FIRE FIGHTING WATER SUPPLY EXCEPTIONS: The requirements for firefighting water supplies may be modified *as approved by the fire official* where any of the following apply:

(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.
(3) GFES is authorized to increase, decrease, or limit fire flow based on occupancy type, construction type, number of stories, fire walls, or as he/she sees fit.

SINGLE FAMILY DWELLINGS – REQUIRED FIRE FLOW: The minimum available fire flow for one-and-two-family dwellings (R-3, R-4, Townhouses) served by a municipal water supply shall be as noted below in Appendix B, Table B105.1(1).

TABLE B105.1(1)
REQUIRED *FIRE FLOW* FOR ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3 AND R-4 BUILDINGS AND TOWNHOUSES

FIRE-FLOW CALCULATION AREA (square feet)	AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE FLOW (gallons per minute)	FLOW DURATION (hours)
0–3,600	No automatic sprinkler system	1,000	1
3,601 and greater	No automatic sprinkler system	Value in Table B105.1(2)	Duration in Table B105.1(2) at the required *fire-flow* rate
0–3,600	Section 903.3.1.3 of the *International Fire Code* or Appendix T of the *Oregon Residential Specialty Code*	500	1/2
3,601 and greater	Section 903.3.1.3 of the *International Fire Code* or Appendix T of the *Oregon Residential Specialty Code*	1/2 value in Table B105.1(2)	1

COMMERCIAL BUILDINGS – REQUIRED 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 be less than 1500 gpm at 20 psi. (OFC 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 the National Fire Protection Association Standard 1142, 2012 Edition. (OFC B107)

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 3310.1 & 3312.1)

FIRE SAFETY FOR 4 OR 5 STORY WOOD FRAME CONSTRUCTION DURING CONSTRUCTION: Refer to our guide on our webpage for the specific requirements. Call and schedule a consultation with our division. (OFC 3301)

FIRE HYDRANTS

Fire Hydrants: All fire hydrants located on private property shall be painted Industrial Safety Red. (OFC 507 & NFPA 24 – A.7.1.4)

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)
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). (OFC 507.5.1) Exception (1)

Fire Hydrant Non-Threaded Quick Connectors: Harrington brand (HPHA50-45NHWCAP) Storz non-threaded quick connectors shall be installed on all new fire hydrants. At the request of the fire code official during development, re-development or site-specific tenant improvements, existing fire hydrants may also be required to have Storz adapters installed. (OFC 104.1 & 507.1)

Fire Hydrants / Fire Department Connection: The location of Fire Department Connections (FDC) shall be approved by the fire code official. A fire hydrant shall be located within 50 feet of the FDC. Fire hydrants and FDC's shall be located on the same side of the fire apparatus access roadway in a location approved by the fire code official. FDC's shall normally be remote from the building except when approved by the fire code official. If the supply line is over 4" in size, a 5" STORZ adapter will be required to be installed as the FDC connection. (OFC 912.2 & NFPA 13, 14, 24)

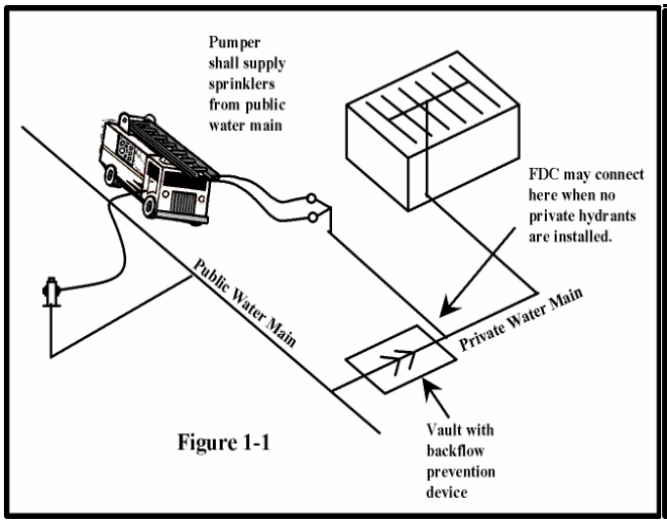


Figure 1-1

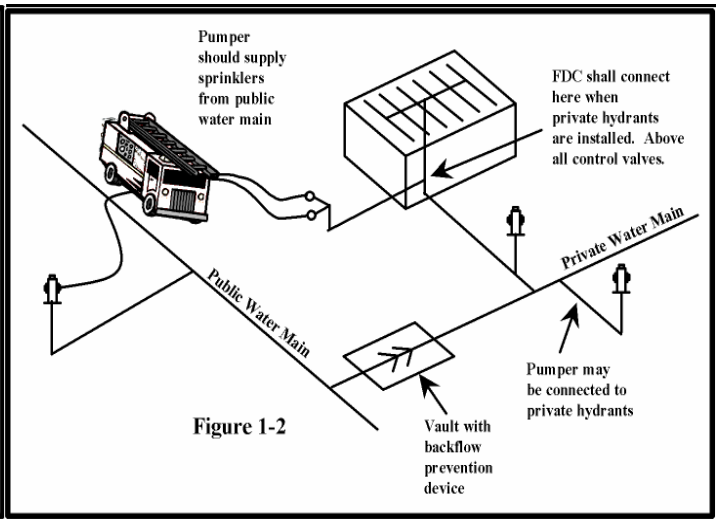


Figure 1-2

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 7 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[abc] (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	200	120

- GFES may not approve the use of a fire hydrant that is located across a major thoroughfare.
- GFES can modify the location, number, and distribution of fire hydrants.

Key Boxes

Key Box: A key box for building access may be required. GFES uses KNOX brand boxes. To get a copy of the order form, go to "Lockbox Order Form" at: http://www.greshamoregon.gov/fire.

Fire Watch

Fire Watch: Whenever a fire alarm, detection or fire 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 and documented on a written log at a time interval as determined by GFES. 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 fire 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 GFES for consultation and or response.* (OFC 901.7 and Appendix T)

Emergency Responder Radio Coverage

Emergency Responder Radio Booster Systems: Booster systems allow GFES to communicate both inside and to the outside of specific buildings as set forth by the Oregon Fire Code.

Affected buildings: Gresham Fire will apply section 510 to the bullets in the scoping section, 510.1.1

- Any building with one or more basements, or below-grade building levels.
- Any underground building.
- Any building more than five stories in height.
- Any building 50,000 sq ft in size or larger.
- Any building that, through performance testing does not meet the requirements of section 510. *This includes existing buildings.*

Permit Process:

- A fire alarm permit is required through the City Permit Center.
- An electrical permit through the City Permit Center is required for the wiring.