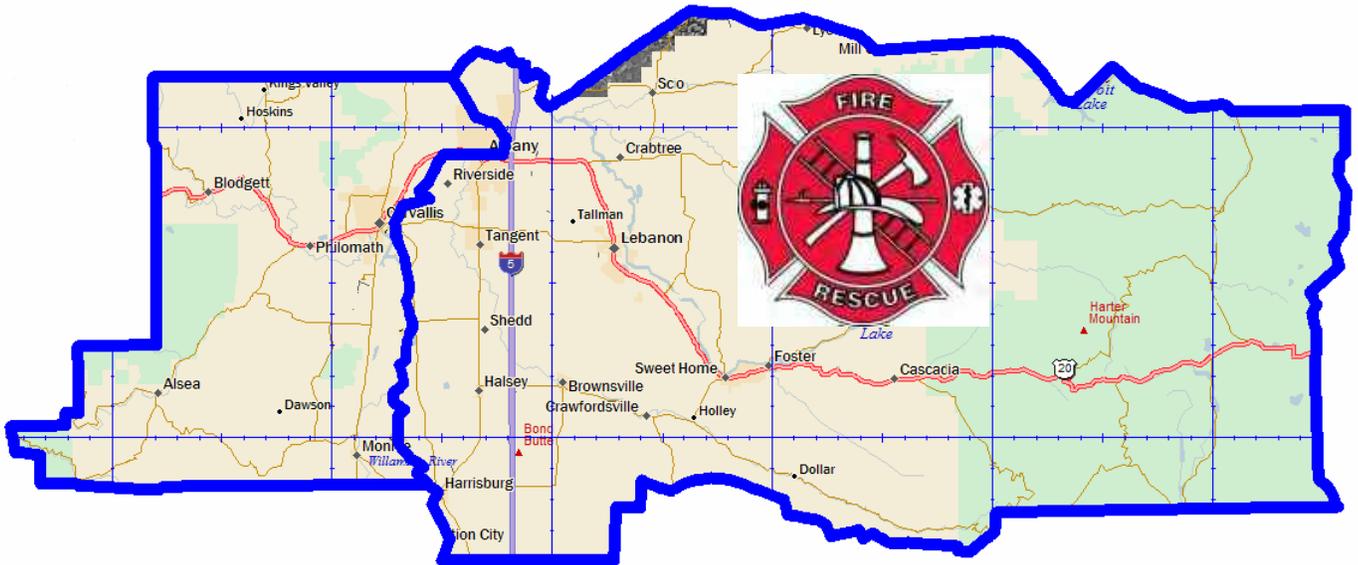


FIRE PROTECTION STANDARDS



Guidelines for the Application of Oregon's Fire & Life Safety Regulations Within Linn & Benton Counties

-Jointly Adopted-
December 11, 2008

PREAMBLE AND SCOPE OF AUTHORITY

The jurisdictions identified in Appendix A.1 of this guide have elected to administer and enforce the Oregon Fire Code under the authority granted to them by ORS 476.030 and ORS 476.060.

In order to further the Oregon State Fire Marshal's goal of promoting fire code consistency throughout the state, the jurisdictions listed herein have agreed to apply these standards uniformly throughout both Linn and Benton Counties.

These standards are provided in good faith to assist building officials, contractors, designers, business owners, and the public with how local fire code officials will apply best practices that are considered to be in compliance with the intent of the Oregon Fire Code. By addressing selected issues that arise under what are considered normal situations or conditions, this guide is intended to address those aspects of the Oregon Fire Code where additional clarification may be necessary

THESE STANDARDS DO NOT CREATE NOR REPLACE PROVISIONS OF THE OREGON FIRE CODE.

The reader is cautioned that the standards detailed herein will only apply to specific situations so long as their application meets the intent of the Oregon Fire Code and have been approved by the designated fire code official for each listed jurisdiction. Local fire code officials, in collaboration with the Office of State Fire Marshal, retain final authority to determine compliance.

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. 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. Local fire code officials may have copies for readers to review. Since the Oregon Fire Code is a copyrighted document, providing copies of the code are at the discretion of fire code officials.

APPLICATION

Application of the standards 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 (**Oregon Fire Code Section 102.2**);

- 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

Section 1: Fire Department Apparatus Access to Structures and Facilities

1.1	Definitions	5
1.2	Fire Apparatus Access Roads; General Standards & Scope	5
1.3	Proximity of Buildings to Fire Apparatus Access Roads	6
1.4	Multiple Fire Apparatus Access Roads & Road Separation	7
1.5	Fire Apparatus Access Road Widths & Vertical Clearances	8
1.6	Aerial Fire Apparatus Access Road Widths	9
1.7	Fire Apparatus Access Road Surfaces & Load Capacities	10
1.8	Fire Apparatus Access Road Dead-Ends & Turnarounds	11
1.9	Turnouts on Private Driveways	12
1.10	Bridges & Elevated Surfaces	13
1.11	Fire Apparatus Access Road Grades & Angles of Approach and Departure	15
1.12	Fire Apparatus Access Road Turning Radius	16
1.13	Gates on Fire Apparatus Access Roads	16
1.14	No Parking Signs & Painted Curbs	17
1.15	Fire Apparatus Access Roads during Construction Operations	17

Section 2: Water Supplies for Suppression of Fires

2.1	Definitions	18
2.2	Fire Flow Requirements for Public Buildings; ORS 479.200	18
2.3	Fire Flow Requirements in Protected Areas <i>without</i> Adequate and Reliable Water Supplies	19
2.4	Fire Flow Requirements in Protected Areas <i>with</i> Adequate and Reliable Water Supplies	19
2.5	Fire Flow Requirements in Unprotected Areas	20
2.6	Water Supply during Construction	20

Section 3: Fire Hydrants & Fire Department Connections

3.1	Fire Hydrant Systems and Fire Department Connections	20
3.2	Fire Hydrant Location and Distribution	21
3.3	Inspection, Testing, and Maintenance of Fire Hydrants and Water Supply Systems	22

Table of Contents (cont.)

Section 4: Other Fire Service Features

4.1	Premises Identification	22
4.2	Key Boxes	23
4.3	Access to Equipment	23

Section 5: Fire Watch and Interim Life Safety Measures

5.1	Fire Watch	23
5.2	Interim Life Safety Measures	23

Section 6: Appendix

A.1	Jurisdiction Contact Information	24
A.2	Fire Sprinklers in Dwellings and Multi-Family Residential Structures	36

SECTION 1: FIRE DEPARTMENT APPARATUS ACCESS ROADS

1.1: Definitions

These definitions are to assist with understanding terminology used regarding fire department apparatus access roads. Terms include both those from the Oregon Fire Code as well as terms that are used specifically within this guide.

1. **Fire Apparatus Access Road.** See the definitions of “private driveway”, “fire lane”, “local access road”, and “private road”. Fire apparatus access roads provide access to a facility, building or portion thereof for use during emergency fire operations.
2. **Private Driveway** A private driveway serves not more than two dwellings or utility structures. Private driveways are not required to be open for access by the general public. Property owners bear the sole responsibility for all driveway construction, improvement, and maintenance.
3. **Fire Lane** A roadway or other passageway developed to allow movement of fire apparatus. A fire lane is not necessarily intended for routine vehicular traffic by the general public other than fire apparatus. Fire lanes are commonly used for the movement of fire apparatus on sites where buildings are located some distance from public streets and roads.
4. **Local Access Road** See the definition of “private roads”.
5. **Private Roads** A road that serves three or more dwellings or other structures. Private roads are not required to be open for routine access by the general public. Construction, improvement, and maintenance, is the sole responsibility of the land owners who are served by the private road. Private roads are typically described using the term “local access roads”.
6. **Key Box.** A secure, tamperproof device with a lock operable only by a fire department master key, and containing building entry keys and other keys that may be required for access in an emergency.

1.2: Fire Department Apparatus Access Roads; General Standards and Scope

Fire apparatus access roads shall be provided and maintained for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction. **Oregon Fire Code Section 503.1**

For the purposes of this guide, the terms “private driveway”, “fire lane”, and “private road” (defined in section 1.1), specify fire apparatus access roads that are within the scope of this guide.

***NOTE:** Specifications and standards for public streets and roads are regulated by county or city governing bodies in accordance with ORS 368.039 and are not within the scope of this guide.*

The fire code official may accept the installation of automatic fire sprinkler systems in lieu of strict compliance with fire apparatus access road specifications as allowed under the provisions of ORS 455.610(5).

Currently within Linn and Benton Counties, the provisions for fire apparatus access roads in those areas where there is no organized structural fire protection agency or service, are specified in the community development rules entitled “*Fire Siting Standards for Dwellings and Structures*” (OAR 660-060-035).

1.2: Fire Department Apparatus Access Roads; General Standards and Scope (cont.)

Specifications:

1. Fire apparatus access roads and specifications are allowed to be modified where any of the following conditions apply;
 - a. A building has an automatic fire sprinkler system installed in accordance with the provisions of NFPA 13, NFPA 13R or NFPA 13D.
 - b. Fire apparatus access roads cannot be installed because of location on property, topography, waterways, non-negotiable grades or similar conditions. Under this condition, an approved alternate means of fire protection shall be provided as approved by the fire code official. Such approvals shall be granted on a case by case basis and shall not be precedent setting.

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.

- c. Where there are no more than two dwellings (Group R-3) or utility (Group U) structures served by a fire apparatus access road, access roads shall comply with specifications for private driveways.
2. Fire apparatus access roads shall be clearly delineated on submitted site plans and/or civil drawings. Plans shall contain sufficient information to allow the fire code official to conduct a thorough review.

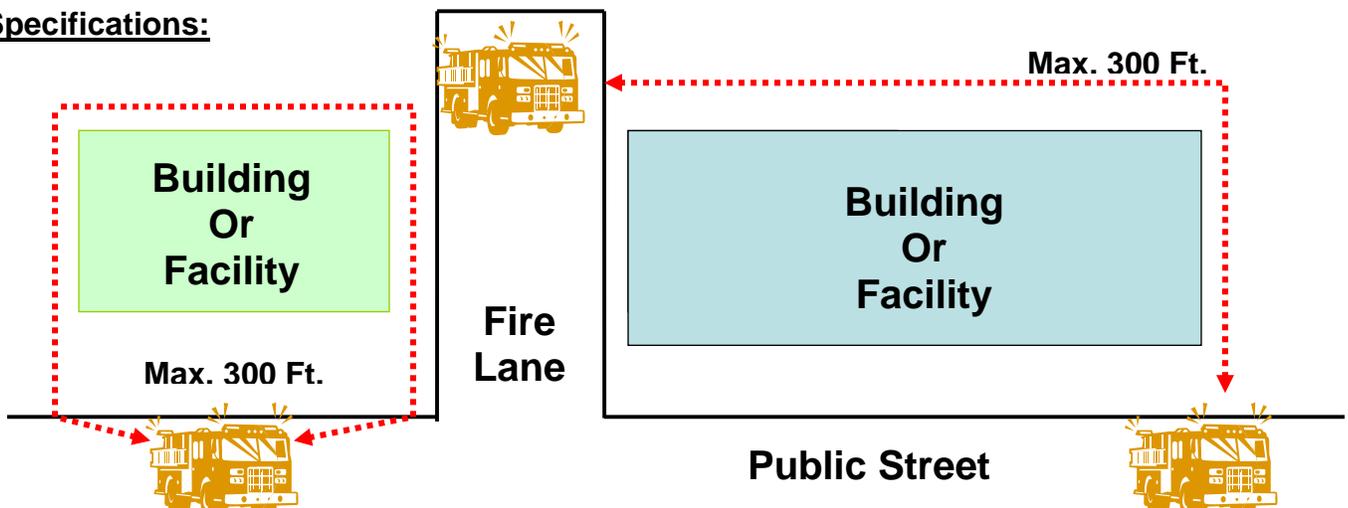
1.3: Proximity of Buildings to Fire Apparatus Access Roads

Standard:

The fire apparatus access road shall extend to within 150 feet of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building or facility. **Oregon Fire Code Section 503.1.1**

An approved route generally follows the outline of a building and is not closer than 10 feet from the nearest edge of the building. This route follows where fire hoses may be deployed during fire operations.

Specifications:



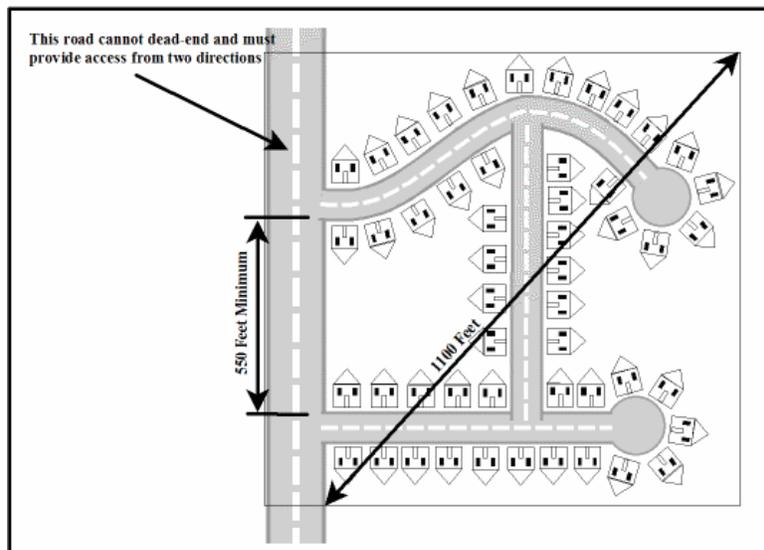
1.4: Multiple Fire Apparatus Access Roads & Road Separation

Standard:

More than one fire apparatus access road may be required, based on the potential for impairment of a single road by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access. Access roads shall be located as required by the fire code official. **Oregon Fire Code Section 503.1.2**

Specifications: Refer to the Oregon Fire Code, Appendix D for specifications.

1. Two access roads are required under the following conditions;
 - a. One- and two-family dwellings (Group R-3) where there are more than 30 dwelling units with an exception for installation of automatic fire sprinkler systems.
 - b. Multiple-family residential developments (Group R-2) having more than 100 dwelling units with an exception for installation of automatic fire sprinkler systems.
 - c. Multiple-family residential developments (Group R-2) having more than 200 dwelling units regardless of whether they have an approved automatic fire sprinkler system installed within each structure.
 - d. At commercial or industrial developments with buildings or facilities having a gross building area of more than 62,000 square feet.
 - e. At commercial or industrial developments with buildings or facilities having a gross building area of more than 124,000 square feet where all buildings have an approved automatic fire sprinkler system installed within each structure.
 - f. At commercial or industrial developments with buildings exceeding three stories or 30 feet in height.
2. Access roads 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.
3. The access roads shall enter onto a road that is has access from two different directions.
4. The number of dwelling units on a single fire apparatus access road shall not be increased unless fire apparatus access roads will connect with future development unless approved by the fire code official.



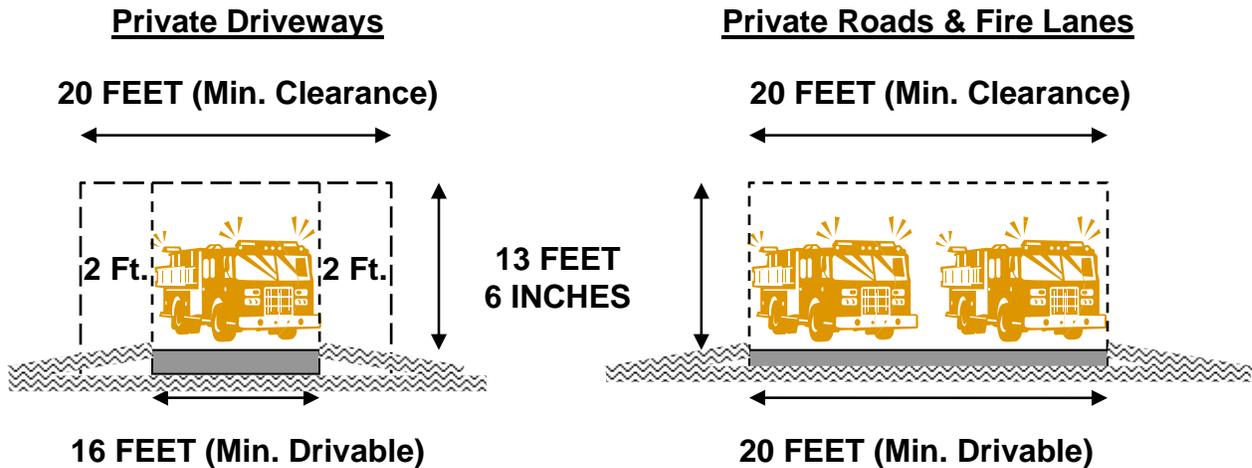
1.5: Fire Apparatus Access Road Widths and Vertical Clearances

Standard:

All fire apparatus access roads must have a drivable surface for fire vehicle travel that is wide enough to allow their full, complete, and instant use during fire and other emergencies. **Oregon Fire Code Section 503.2.1**

Specifications:

1. Fire lanes and private roads shall have an unobstructed width of not less than 20 feet.
2. Private driveways must have an unobstructed drivable width of not less than 16 feet.
 - For the purpose of fire operations, private driveways must have an unobstructed clearance of not less than 20 feet. No encroachments are allowed to be placed in this space unless approved by the fire code official.
3. All fire apparatus access roads must have an unobstructed height of not less than 13 feet 6 inches.



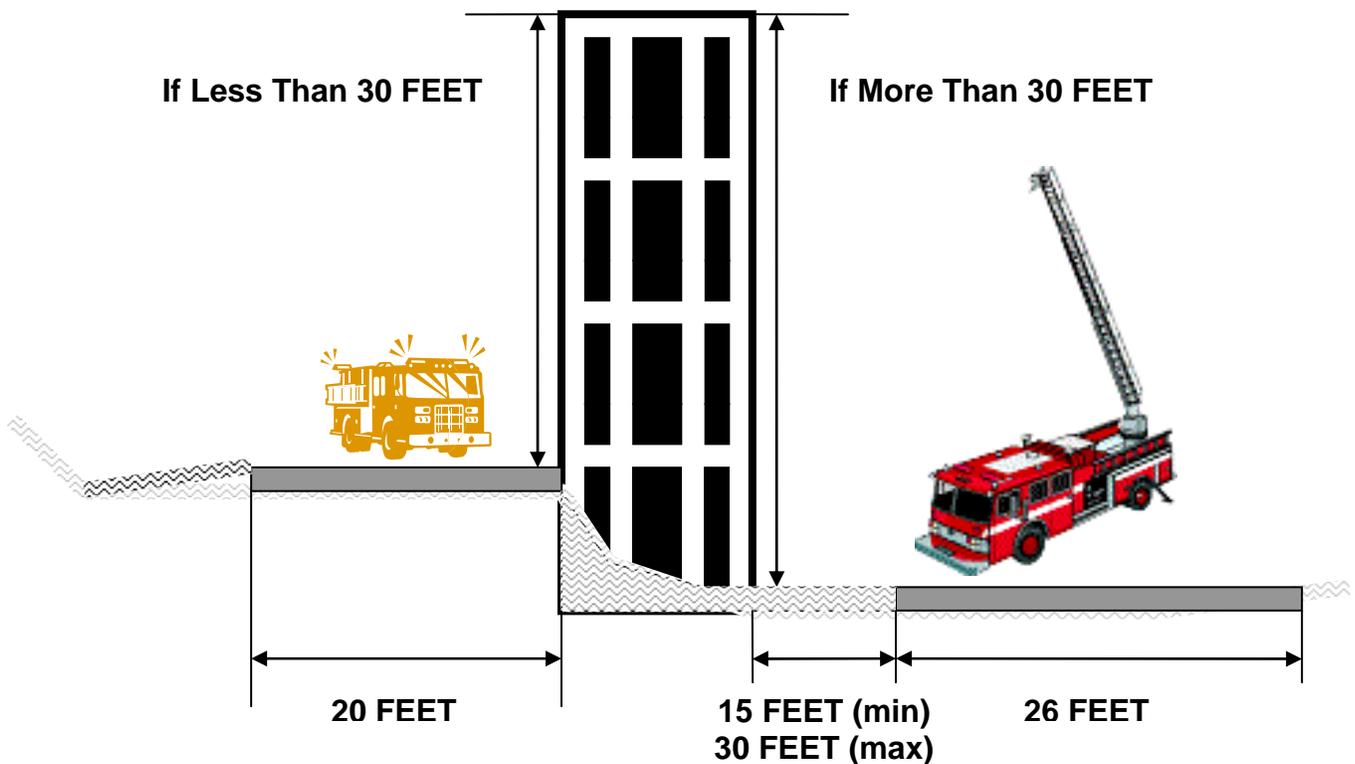
1.6: Aerial Fire Apparatus Access Road Widths

Standard:

Buildings or portions of buildings or facilities exceeding 30 feet in height as measured above the lowest level of fire department vehicle access shall have fire apparatus access roads constructed for use by aerial apparatus. **Oregon Fire Code Section 503.1**

Specifications: Refer to Oregon Fire Code Appendix D for specifications.

1. Fire apparatus access roads shall have an unobstructed driving surface width of not less than 26 feet and shall be in the immediate vicinity of any building or portion of building that is more than 30 feet in height.
2. At least one of the required fire apparatus access roads 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.
3. Overhead utility and power lines shall not be located within the aerial fire apparatus access roadway.



1.7: Fire Apparatus Access Road Surfaces and Load Capacities

Standard:

Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be surfaced so as to provide all-weather driving capabilities. **Oregon Fire Code Section 503.2.3**

Specifications: Refer to Oregon Fire Code section D102.1 for specifications.

1. Fire apparatus access roads shall be constructed of an all-weather surface (asphalt, concrete or other approved driving surface) that meets the following;
 - a. Easily distinguishable from the surrounding area by markings acceptable to the fire code official. Markings may include plantings, signs, or other arrangements acceptable to delineate the limits of fire access driving surfaces.
 - b. Capable of supporting not less than a 60,000 pound live load (gross vehicle weight).
 - c. The weight limit specified in section 1(b) above may be increased based upon the actual weight of fire apparatus vehicles serving the jurisdiction which provides structural fire protection services to the location.

NOTE: Within Linn and Benton Counties, the live load of fire apparatus may be as great as 75,000 pounds when considering automatic and mutual aid agreements. Readers should check with their local fire code official to verify if an increased capacity is required for a given project.

2. Point loads may also need to be considered when designing fire apparatus access roads due to fire operations involving aerial fire apparatus which require the use of specialized jacking pads and outriggers.
3. The designed capacity of private roads and driveways must be documented in writing and shall be included with site plans and/or civil drawings.
4. Private roads and driveways must be constructed and maintained as designed. An on-site inspection may be required by the fire code official and shall be performed by a registered design professional whenever conditions warrant.
5. Private driveways shall be constructed of an approved design meeting the weight limits established above.

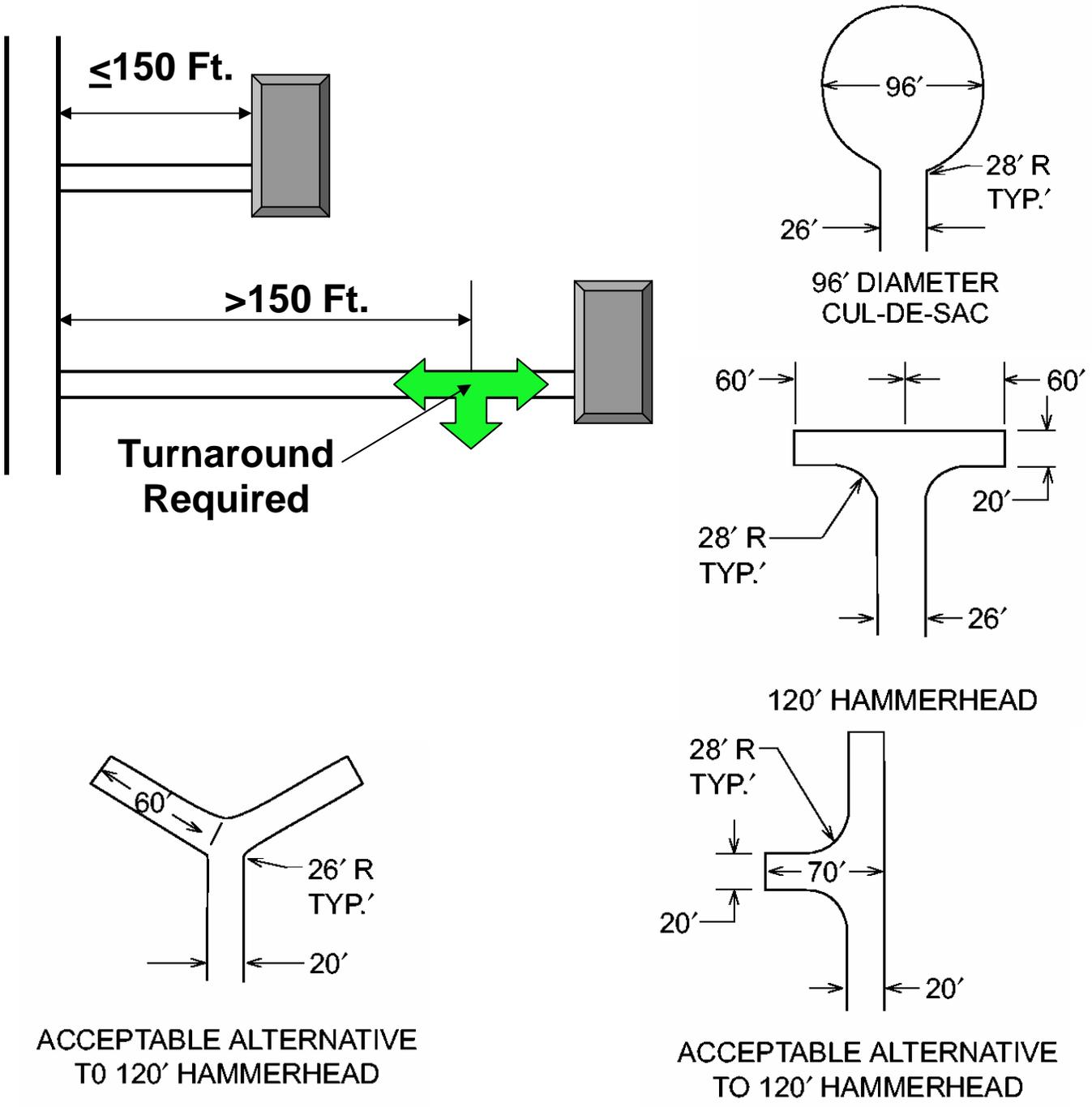
1.8: Fire Apparatus Access Road Dead-Ends and Turnarounds

Standard:

Dead-end fire apparatus access roads in excess of 150 feet in length shall be provided with an approved area for turning around fire apparatus. **Oregon Fire Code Section 503.2.5**

Specifications: Refer to Oregon Fire Code Appendix section D103.4 including Table D103.4 regarding approved turnarounds.

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.



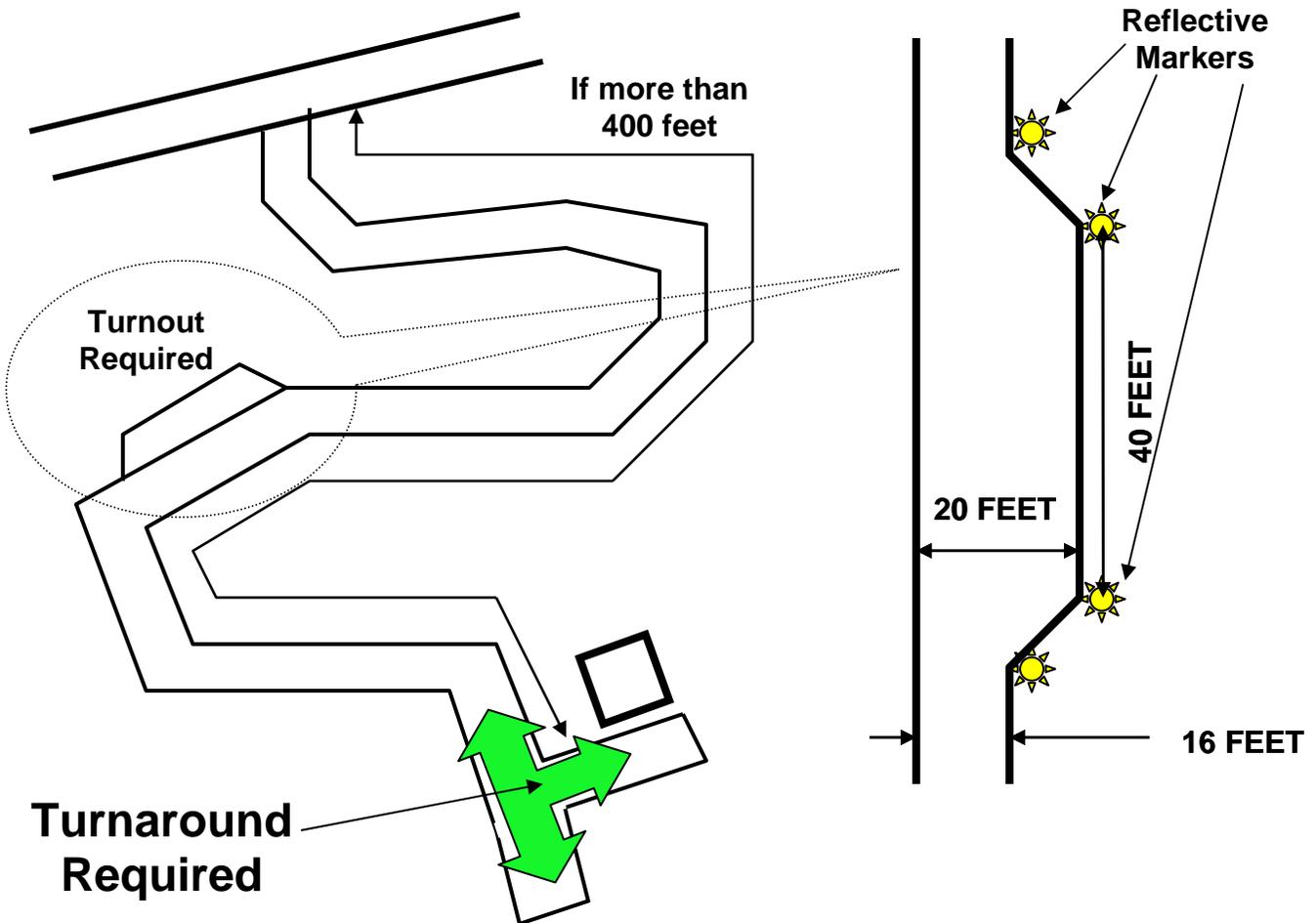
1.9: Turnouts on Private Driveways

Standard:

When a driveway exceeds 400 feet in length, turnouts shall be provided, unless otherwise approved by the fire code official. **Oregon Fire Code Section 503.1.1**

Specifications:

1. Turnouts shall be 20 feet wide and 40 feet long at the widest part.
2. Turnouts shall be located no more than 400 feet apart unless approved by the fire code official.
3. The distances between turnouts, road intersections, and turnarounds may have the length modified based on visibility and line of sight distances.
4. Visual indicators such as reflective markers shall be located to delineate the location and extent of turnouts.



1.10: Bridges & Elevated Surfaces

Standard:

Bridges that are part of fire apparatus access roads shall be constructed and maintained in accordance with AASHTO (American Association of State Highway and Transportation Officials) *Standard Specification for Highway Bridges*. **Oregon Fire Code Section 503.2.6**

Specifications:

1. Fire lane and private road bridges shall be not less than 20 feet in clear width.
2. Private driveway bridges shall be not less than 16 feet in clear width.
3. Vehicle turnouts shall be constructed adjacent to bridges on private driveways in accordance with of this guide. Turnouts shall be located not less than 20 feet from each end of the bridge for cueing of fire vehicles that must cross.
4. All bridges shall be designed for a live load sufficient to carry the imposed loads of fire apparatus in accordance with this guide.
5. Newly constructed bridges shall be designed by a registered design professional.
6. Vehicle load limits shall be posted at both entrances to all bridges, both new and existing, with signs complying with the current *Manual on Uniform Traffic Control Devices* adopted by the State of Oregon. The signs shall meet the specifications for an R12 series.
 - Vehicle load limit signs shall be located not farther than 10 feet from the entrance to a bridge.
 - Signs shall be at each end of bridges where the direction of approach is from either end.
 - Where direction of approach is from a single direction, the sign shall be required at the end where fire apparatus will first encounter the bridge location.
 - Signs shall be constructed of 0.080 thickness aluminum.
 - Reflective sheeting shall be high intensity prismatic or better.
 - Signs shall be of a size not less than 24 inches by 30 inches (maximum 35 miles per hour). If the allowed road speeds exceed 35 MPH, signs may be required to be of a larger size.

NOTE: Bridges which do not have signs posted as outlined in #6 above shall be considered as not meeting the load capacities specified in section 1.7 of this guide. As such, this condition may cause the delivery of fire and life safety emergency services by the local fire department not possible within a timeframe that allowed for efficient emergency scene mitigation.

7. 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 to delineate the drivable surface. Where signs are installed, they shall comply with the current *Manual on Uniform Traffic Control Devices* adopted by the State of Oregon.
8. If required by the building official of the local jurisdiction where the bridge is to be constructed, a building permit shall be obtained for construction of the bridge.
9. Maintenance of existing bridges and elevated surfaces shall be the responsibility of the person or persons that have ownership of the bridge or elevated surface.

1.10: Bridges & Elevated Surfaces (cont.)

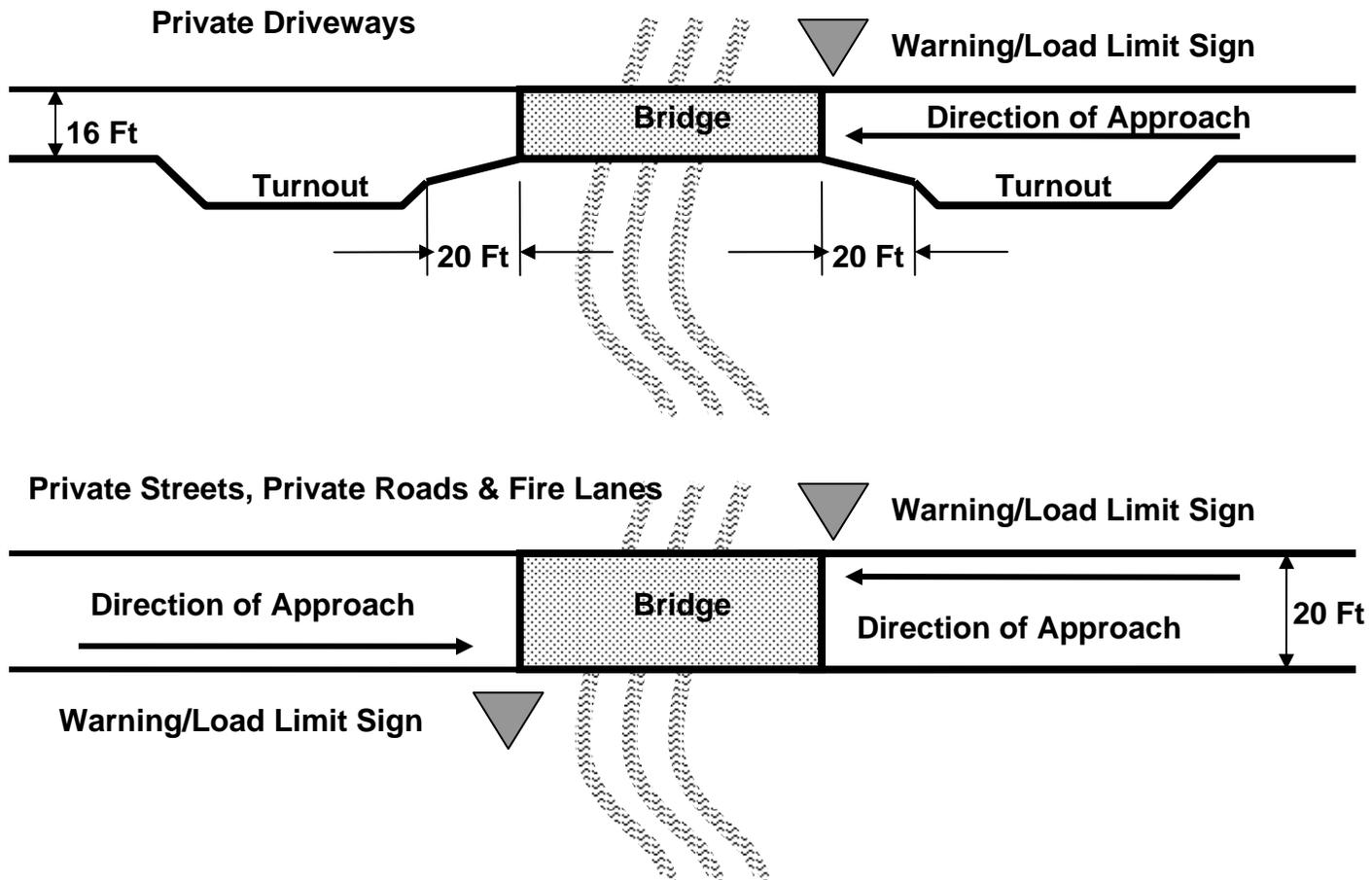
Specifications: (cont.)

10. All bridges and elevated surfaces shall, for due cause, be inspected for structural stability and soundness. Inspections shall be conducted by a registered design professional.

11. Documentation of inspections shall be on an approved format similar to that used by the Oregon Department of Transportation and shall use a uniform condition rating guide that follows industry accepted bridge engineering standards and best practices.

Documentation shall include at a minimum the following;

- A written letter bearing the signature of the registered design professional which includes a general statement of the condition of the bridge along with a statement indicating these documents have been prepared by the registered design professional,
- Specifications of the load capacity ratings for the bridge for both single and dual axle loads,
- All required repairs and maintenance and intervals for such repairs and maintenance,
- The date for the next required inspection of the bridge, and
- The qualifications of the registered design professional conducting the inspection.



1.11: Fire Apparatus Access Road Grades and Angles of Approach & Departure

Standard:

The maximum grade for all fire apparatus access road shall be within the limits established by the fire code official. **Oregon Fire Code Section 503.2.7**

Grades shall be based upon each local fire department's apparatus based upon the following criteria;

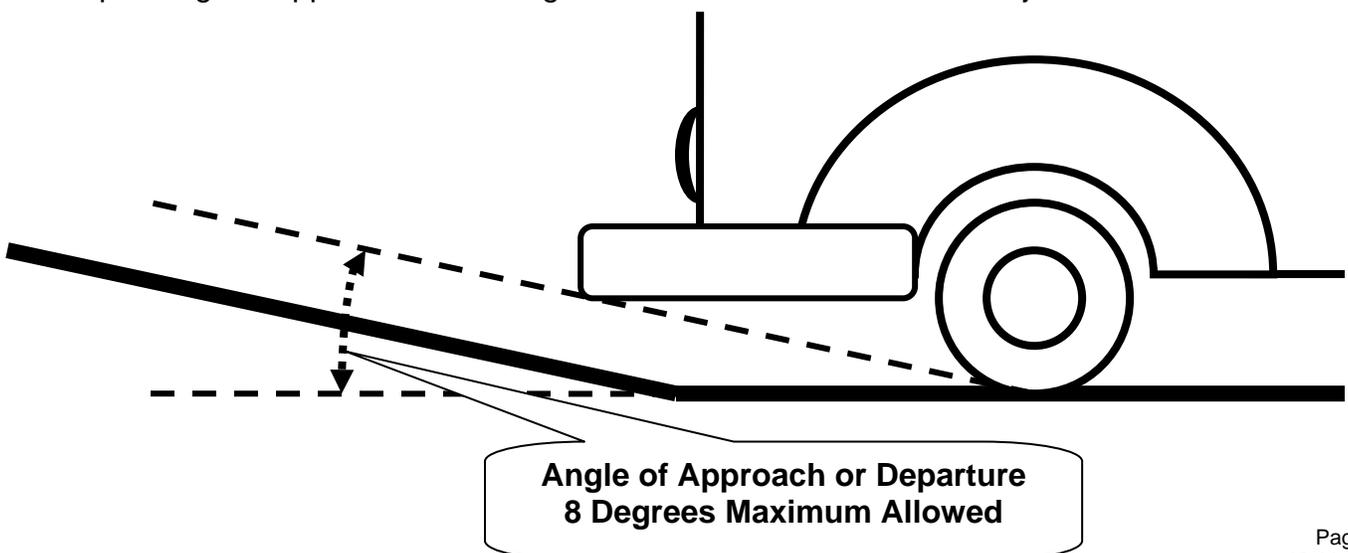
- National Fire Protection Association (NFPA) 1901, Standard for Automotive Fire Apparatus,
- In accordance with the fire apparatus service design as specified by the vehicle manufacturer.

Specifications:

1. Maximum grade on fire lanes and private roads shall not exceed 10 percent.
 - Where grades exceed 10 percent, the fire code official is authorized to accept, under the provisions of ORS 455.610(5), additional fire protection features such as automatic fire sprinkler systems, fire alarm system, etc.
2. Maximum grade on private driveways shall not exceed 12 percent.
 - Where grades exceed 12 percent, the fire code official is authorized to accept, under the provisions of ORS 455.610(5), an automatic fire sprinkler system, meeting the provisions of NFPA 13D, to be installed within all habitable structures as an alternative to meeting these requirements. Fire code officials may accept other alternative fire protection features.
3. Under no circumstances shall the maximum grade exceed 15 percent at any single point along the driving surface of any fire apparatus access roads.

NOTE: If grades exceed 15 percent, 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.

4. Intersections, turnarounds, and water bars shall be essentially level with crowning allowed for water run-off (maximum of 5 percent grade allowed).
5. Angles of approach and departure at the interface to and from fire apparatus access roads and where grades change shall be not more than 8 degrees as required by the design of responding fire apparatus. The angle shall be measured from the adjacent road surface.



1.12: Fire Apparatus Access Road Turning Radius

Standard:

All fire department apparatus access roads shall be constructed with respect for the anticipated fire apparatus vehicles that will provide emergency services to the specific location under consideration. The turning radius for access roads shall be as determined by the fire code official.

Oregon Fire Code Section 503.2.4

Specifications: Refer to Oregon Fire Code Appendix section D103.3.

1. The minimum inside turning radius shall not be less than 28 feet.
2. The minimum outside turning radius shall not be less than 48 feet (min. 96 foot diameter).
3. Both the inside and outside turning radius shall be measured from the same center point.

1.13: Gates on Fire Apparatus Access Roads

Standard:

The fire code official is authorized to require the installation and maintenance of gates or other approved barricades across fire apparatus access roads. **Oregon Fire Code Section 503.5**

Specifications: Refer to Oregon Fire Code Appendix section D103.5 for specifications.

1. Gates shall be a minimum width of 20 feet wide for fire lanes and private roads. Gates shall be a minimum width of 16 feet for private driveways.
2. Gates shall be of either the swinging or sliding type and may be either a single or double section.
3. Gates shall not reduce the minimum required width of the access road width when in a fully open position.
4. Gates that are power operated shall require the installation of a means to open the gate when there is a loss of power to the gate operating device. Gates shall be constructed to allow manual operation by a single person.
5. Gates and barricades shall be secured in an approved manner.
 - Gates secured with padlocks or chains and padlocks shall be capable of being opened by means of forcible entry tools or when a key box containing keys to the padlocks is installed at the gate location.
 - Where powered security gates are installed, they shall have an approved means of emergency operation. The gates and their emergency operation shall be maintained operational at all times.
 - All security devices shall allow opening without undue delay of fire apparatus during emergencies.
6. Gates shall be set back from roadways not less than 30 feet and shall swing into the roadway that it serves.
7. Gates installed on private driveways, fire lanes, and other fire apparatus access roads shall not cause cross traffic to stop or create a hazardous traffic condition on the roadway when the access road is occupied by emergency apparatus or other large vehicles.
8. Gates components shall be maintained in an operative condition at all times and replaced or repaired when defective.

1.14: No Parking Signs & Painted Curbs

Standard:

Approved signs shall be provided for fire apparatus access roads to identify such roads or to prohibit the obstruction thereof. Fire apparatus access roads shall be marked in an approved manner as specified by the fire code official and in accordance with this section. **Oregon Fire Code Section 503.3**

Specifications:

Signs shall comply with the current *Manual on Uniform Traffic Control Devices* adopted by the State of Oregon. Below are examples of acceptable signage. Signs shall meet the specifications for the R7 series and shall have red writing on a white reflective background.

Signs shall be a minimum size of not less than 12 inches by 18 inches.

Signs shall be constructed of 0.080 thickness aluminum.

Reflective sheeting shall be high intensity prismatic or better.

Signs or markings shall be maintained in a clean and legible condition at all times and shall be replaced or repaired when necessary to provide adequate visibility.

In lieu of signs, other marking methods may be applied where approved by the fire code official.

In lieu of signs, fire lanes curbs may be marked as follows;

- Curbs shall be painted red.
- Curbs shall have the words, "Fire Lane, No Parking" stenciled in White paint.
- Lettering shall be legible and contrast with the background color.

Examples of Fire Lane Signs



1.15: Fire Apparatus Access Roads during Construction Operations

Standard:

Fire apparatus access shall be provided by either temporary or permanent roads, capable of supporting vehicle loading under all weather conditions. **Oregon Fire Code Section 1410.1**

Specifications:

1. Approved vehicle access for fire fighting shall be provided to all construction or demolition sites. Vehicle access shall be provided to within 100 feet of temporary or permanent fire department connections.
2. Fire apparatus access roads shall be approved by the fire code official prior to beginning construction or demolition of buildings. Roads shall meet the requirements of this guide.
3. Vehicle access shall be maintained until permanent fire apparatus access roads are available.

SECTION 2: WATER SUPPLIES FOR SUPPRESSION OF FIRES

2.1: Definitions

The definitions included in this section are to assist the reader with understanding terms that are used when fire flow requirements apply to buildings and facilities. Terms include those from the Oregon Fire Code as well as terms that are used in this guide.

Definitions:

1. **Adequate And Reliable.** The fire flow rate as measured when water is flowing at not less than 1,500 gallons per minute and at not less than 20 pounds per square inch (psi) residual pressure.
2. **Fire Flow.** The flow rate of a water supply, measured at not less than 20 pounds per square inch (psi) residual pressure that is available for fighting fires.
3. **Protected Areas.** Geographic areas where a service or an agency has been established for the purposes of providing fire suppression services for buildings and other structures. Examples of agencies typically include public fire departments, rural fire protection districts, and private fire protection services.
4. **Public Buildings.** Buildings in which persons congregate for civic, political, educational, religious, social or recreational purposes. These are buildings as defined in ORS 479.010(1)(i) and were erected after July 1, 1967.
5. **Unprotected Areas.** Geographic areas where no organized service or agency exists to provide fire suppression services for buildings and other structures. Examples of unprotected areas typically includes areas where wildland fire protection is provided by federal (USFS, BLM, BIA, etc.), state (ODF), or other regional (forest protection associations) organizations and other areas that are generally in remote or rural isolated areas where no structural fire service is present.

2.2: Fire Flow Requirements for Public Buildings; ORS 479.200

Standard:

An approved water supply capable of supplying the required fire flow for fire protection shall be provided to premises upon which facilities, buildings or portions of buildings are hereafter constructed or moved into or within the jurisdiction. **Oregon Fire Code Section 508.1**

Specifications: Refer to ORS 479.200 for specifications.

1. Any public building that exceeds 5,000 square feet in usable or occupied floor area or is more than two stories in height and exceeds 2,000 square feet in usable or occupied ground floor area shall have a readily available water supply within 500 feet of such building.
2. The water supply shall have sufficient capacity to allow fire-fighting apparatus to pump 500 gallons per minute for a period of 10 minutes for each 5,000 square feet of usable or occupied floor area or fraction thereof, up to 500 gallons per minute for 30 minutes.
3. Required water supplies may be provided by underground cisterns or surface ponds, lakes or streams when approved.
4. Readily accessible standpipes of not less than four inches inside diameter with not less than two two-and-one-half-inch outlets or equivalent capacity shall be installed to allow fire-fighting apparatus to draw water from the approved water supply sources.

2.3: Fire Flow Requirements for Buildings in Protected Areas *WITHOUT* Adequate and Reliable Water Systems

Standard:

An approved water supply capable of supplying the required fire flow for fire protection shall be provided to premises upon which facilities, buildings or portions of buildings are hereafter constructed or moved into or within the jurisdiction. **Oregon Fire Code Section 508.1**

Specifications: Refer to Oregon Fire Code Appendix B for specifications.

1. The provisions of OFC Appendix section B107 are intended for use by the fire code official in protected areas in which adequate and reliable water supply systems do not exist or where water supply systems are incapable of meeting the provisions specified in this guide.
2. When determining the fire flow for buildings in these areas, the fire code official is authorized to utilize any of the following the following nationally recognized methods;
 - NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire Fighting*, 2001 Edition.
 - The International Wildland Urban Interface Code; 2006 Edition.
 - ISO (Insurance Services Office) Guide for Determining Needed Fire Flow, 2005 Edition.

2.4: Fire Flow Requirements for Buildings in Protected Areas *WITH* Adequate and Reliable Water Systems

Standard:

An approved water supply capable of supplying the required fire flow for fire protection shall be provided to premises upon which facilities, buildings or portions of buildings are hereafter constructed or moved into or within the jurisdiction. **Oregon Fire Code Section 508.1**

Specifications: Refer to Oregon Fire Code Appendix B for specifications.

1. The provisions of the OFC, Appendix section B105.1 shall apply to those areas where fire hydrants and water supply systems are present and that are capable of meeting the minimum specified fire flows specified as follows;
 - a. In areas with one and two family dwellings (Group R-3) only, the minimum fire flow shall be not less than 1,000 gallons per minute at not less than 20 pounds per square inch residual.
 - b. In areas with buildings and/or facilities (other than one and two family dwellings, Group R-3), the minimum fire flow shall be not less than 1,500 gallons per minute at not less than 20 pounds per square inch residual.
2. In all areas, fire flows may be reduced when automatic fire sprinkler systems and/or fire alarm systems are installed where otherwise not required by code or regulation. Reductions shall be in accordance with OFC Appendix sections B105.2 and B105.3.1.
3. Based upon the type of occupancy (use) of buildings, the fire code official may modify fire flows in accordance with OFC Appendix B105.4.
4. The fire code official may require limitations to fire flows for buildings and facilities where the development of fire flows in excess of 3,000 gallons per minute at not less than 20 pounds per square inch residual, are considered impractical. In such cases, the fire code official may be guided by OFC Appendix section B106.

2.5: Fire Flow Requirements for Buildings in Unprotected Areas

Standard:

An approved water supply capable of supplying the required fire flow for fire protection shall be provided to premises upon which facilities, buildings or portions of buildings are hereafter constructed or moved into or within the jurisdiction. **Oregon Fire Code Section 508.1**

Specifications: Refer to Oregon Fire Code Appendix B for specifications.

1. The provisions of the OFC, Appendix section B108 shall apply to those areas where there is no organized structural fire protection agency or service.
2. Currently within Linn and Benton Counties, the provisions for fire flows are specified in the community development rules entitled "*Fire Siting Standards for Dwellings and Structures*" (OAR 660-060-035).
 - Water supply shall consist of a swimming pool, pond, stream or lake with not less than 4,000 gallons of water and shall be within 100 feet of an all-weather driveway or road with a grade of not more than 12%, from which an all-weather approach to within 15 feet of the water's edge is provided. Access to the water supply shall bear a county approved marking or signage.

2.6: Water Supply during Construction or Demolition Operations

Standard:

An approved water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material arrives on construction sites. **Oregon Fire Code Section 1412**

Specifications:

1. Fire protection waters supplies shall be approved by the fire code official prior to the beginning of combustible construction of or demolition to buildings.
2. Fire protection waters supplies shall meet the requirements of this guide.

SECTION 3: FIRE HYDRANTS AND FIRE DEPARTMENT CONNECTIONS

3.1: Fire Hydrants and Fire Department Connections

Standard:

Fire hydrants and fire department connections shall comply with the Oregon Fire Code. **Oregon Fire Code Section 508.5**

Specifications:

1. The installation of non-threaded quick connectors on fire hydrants and fire department connections shall be approved by the fire code official.
2. The fire code official may require the installation of reflective markers on fire apparatus access roads where the physical location of fire hydrants or fire department connections is unduly difficult.
3. Fire hydrants or fire department connections shall be identified in an approved manner. Approved signs shall be constructed of durable materials, permanently installed, and readily visible.
4. A clear space of not less than three feet shall be maintained around the circumference of fire hydrants and fire department connections.

3.1: Fire Hydrants and Fire Department Connections (cont.)

Specifications: (cont.)

5. Where fire hydrants are subject to impact by motor vehicles, guard posts or other approved means of physical protection shall be approved. Guards posts shall comply with the following requirements;
 - Constructed of steel not less than 4 inches in diameter and concrete filled.
 - Spaced not more than 4 feet between posts on center.
 - Set not less than 3 feet deep in a concrete footing of not less than a 15 inch diameter.
 - Set with the top of the posts not less than 3 feet above ground.
 - Located not less than 3 feet from the fire hydrant.
6. Fire hydrants and fire department connections shall be installed in a manner that they are immediately discernable and accessible by firefighters during emergencies.

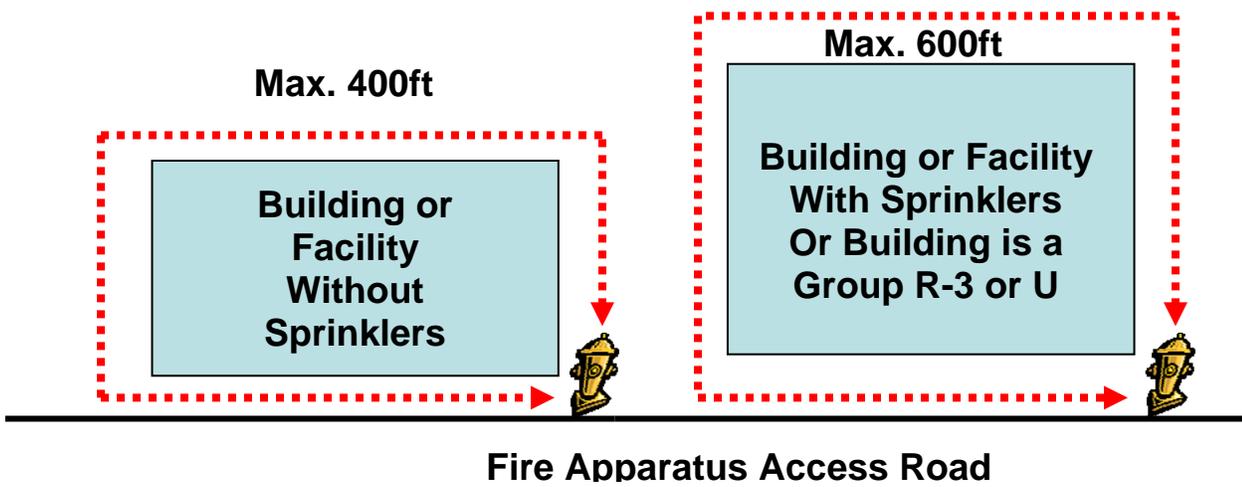
3.2: Fire Hydrant Location and Distribution

Standard:

Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 400 feet from a hydrant on a fire apparatus access road, as measure by an approved route around the exterior of the facility or building, on-site fire hydrants and mains shall be provided. **Oregon Fire Code Section 508.5.1**

Specifications: Refer to OFC Appendix C for specifications.

1. Fire hydrants shall be provided along required fire apparatus access roads and adjacent public streets as required by the fire code official.
2. Where dwellings (Group R-3) or utility (Group U) structures only are located such as in residential subdivisions, the distance from a hydrant shall be not more than 600 feet.
3. Where buildings are equipped throughout with an approved automatic fire sprinkler system installed to either NFPA 13 or NFPA 13R, the distance from a fire hydrant shall be not more than 600 feet.
4. The number of fire hydrants available including consideration of existing fire hydrants, shall be in accordance with OFC Appendix sections C103 and C104.
5. Distribution of fire hydrants shall be in accordance with OFC Appendix section C105.



3.3: Inspection, Testing, and Maintenance of Fire Hydrants and Water Supply Systems

Standard:

Fire hydrant systems shall be subject to periodic inspections and tests. **Oregon Fire Code Section 508.5.2**

Specifications:

1. Private fire service mains and water tanks shall be periodically inspected, tested, and maintained in accordance with NFPA 25.
2. Private fire service main piping shall be inspected if exposed not less than once each year.
3. Private fire service main piping shall be flow tested not less than once every five years.
4. Private fire service main piping strainers shall be inspected and maintained after each use.
5. Private fire hydrants shall be maintained in an operative condition at all times and shall be repaired where defective.
6. Additions, repairs, alterations, and servicing shall comply with NFPA 25.
7. Private fire hydrants shall be inspected not less than once each year and after each use.
8. Private fire hydrants shall be flow tested and maintained not less than once each year.

SECTION 4: OTHER FIRE SERVICE FEATURES

4.1: Premises Identification

Standard:

New and existing buildings shall have approved address numbers, building numbers or other approved building identification. Streets and roads shall be identified with approved signs. **Oregon Fire Code Section 505**

Specifications:

1. Address signs shall be placed in a position that is plainly legible and visible from the street or road fronting the property.
2. Temporary signs shall be installed at each intersection when construction of new roadways allows passage of vehicles.
3. Temporary address signs shall be installed where there is undue difficulty with locating a given structure or facility during emergencies.
4. Temporary signs shall be of an approved size, weather resistant, and maintained until replaced by permanent signs.
5. Numbers and address markings shall contrast with the background of signs.
6. Address markings shall use Arabic numerals or alphabetic letters.
7. Numbers shall be a minimum of 4 inches high with a minimum stroke width of 0.5 inch.

4.2: Key Boxes

Standard:

Where access to or within a structure or and area is restricted because of secured openings or where immediate access is necessary for life-saving or fire-fighting purposes, the fire code official is authorized to require a key box to be installed. **Oregon Fire Code Section 506**

Specifications:

1. Key boxes shall be installed in an approved location as required by the fire code official.
2. Key boxes shall be of an approved type as specified by the fire code official.
3. Key boxes shall contain keys to gain necessary access to the structure, premises or property.
4. An approved lock shall be installed on gates or similar barriers.
5. The fire code official shall be immediately notified when a lock has changed or been re-keyed or when keys have changed or been added.

4.3: Fire Department Access to Equipment

Standard:

Fire protection equipment shall be identified in an approved manner. **Oregon Fire Code Section 510**

SECTION 5: FIRE WATCH AND INTERIM LIFE SAFETY MEASURES

5.1: Fire Watch

Standard:

When, in the opinion of the fire code official, it is essential for the safety of the public and/or occupants, the owner or agent or lessee shall provide one or more fire watch personnel. **Oregon Fire Code Section 403.1**

5.2: Interim Life Safety Measures

Standard:

Where the fire code official determines there is an adverse impact on public safety of any kind, the fire code official shall have authority to order the development or prescribe a plan for the provision of an approved level of public safety. **Oregon Fire Code Section 403.2**

SECTION 6: APPENDIX

APPENDIX A.1: Jurisdiction Contact Information

These are the addresses for the local and state fire code officials in Linn and Benton Counties. The development of this guide is a joint effort among the listed jurisdictions.

Linn County

Albany Fire Department
PO Box 490
Albany, OR 97321
(541) 917-7703

Brownsville Fire District
PO Box 189
Brownsville, OR 97327
(541) 466-5227

Corvallis Fire District
See Benton County Listing for Corvallis
Fire Department

Gates Fire District
PO Box 594
Gates, OR 97346
(503) 897-2929

Halsey-Shedd Fire District
PO Box 409
Halsey, OR 97348
(541) 369-2419

Harrisburg RFPD
PO Box 241
Harrisburg OR 97446
(541) 995-6412

Jefferson Fire District
PO Box 911
Jefferson, OR 97352
(541) 327-2822

Lebanon Fire District
1050 W. Oak St.
Lebanon, OR 97355
(541) 451-1901

Lyons Fire District
PO Box 179
Lyons, OR 97358
(503) 859-2410

Mill City Fire District
PO Box 528
Mill City, OR 97360
(503) 897-2390

Scio Fire District
PO Box 1
Scio, OR 97374
(503) 394-3000

Stayton Fire District
1988 W. Ida St.
Stayton, OR 97383
(503) 769-2601

Sweet Home Fire District
1099 Long St.
Sweet Home, OR 97386
(541) 367-5882

Tangent Fire District
32053 Birdfoot Dr.
Tangent, OR 97389
(541) 928-8722

Oregon Department of Forestry
4690 Hwy. 20
Sweet Home, OR 97386
(541) 367-6108

Oregon State Fire Marshal
3400 Spicer Rd.
Albany OR 97322
(541) 967-2043

APPENDIX A.1: Jurisdiction Contact Information (cont.)

Benton County

Adair Fire District
6021 NE Marcus Harris Ave.
Corvallis, OR 97330
(541) 745-7212

Alsea Fire District
PO Box 81
Alsea, OR 97324
(541) 487-8701

Blodgett-Summit Fire District
36847 Happy Hollow Rd.
Blodgett, OR 97326
(541) 453-4406

Corvallis Fire Department
400 NW Harrison Blvd.
Corvallis, OR 97330
(541) 757-6961

Hoskins-Kings Valley Fire District
PO Box 116
Philomath, OR 97370
(541) 929-2111

Monroe Fire District
PO Box 411
Monroe, OR 97456
(541) 847-5170

North Albany Fire District
See Linn County Listing for Albany Fire
Department

Palestine Fire District
See Linn County Listing for Albany Fire
Department

Philomath Fire & Rescue
PO Box 247
Philomath, OR 97370
(541) 929-3002

ODF West Oregon; Philomath Unit
24533 Alsea Hwy.
Philomath OR 97370
(541) 929-3266

Oregon State Fire Marshal
See Linn County Listing for OSFM

APPENDIX A.2: Sprinklers in Dwellings and Multifamily Residential Structures

Automatic fire sprinklers protect site built and manufactured homes 24 hours a day, 7 days a week. Automatic sprinklers only extinguish fires near the location of a sprinkler head. They cost about \$2 per square foot in new construction and about \$2.50 for retrofitting into existing homes. If interconnected with the house's domestic water system, the costs of maintenance can be very low.

Residential sprinkler systems must be installed in Group R-3 occupancies in accordance with NFPA 13D, 2002 Edition, *Installation of Sprinkler Systems in One and Two Family Dwellings and Manufactured Homes*.

Residential sprinkler systems must be installed in Group R-2 occupancies in accordance with NFPA 13R, 2002 Edition, *Installation of Sprinkler Systems in Residential Occupancies*. This is designed for residential apartments, condominiums, townhouses, etc. which are built up to and including four stories in height.

Residential sprinkler systems must be installed in Group R-2 occupancies in accordance with NFPA 13, 2002 Edition, *Installation of Sprinkler Systems in Residential Occupancies*. This is designed for residential apartments, condominiums, townhouses, etc. which are built more than four stories in height.