

# FIRE CODE APPLICATION GUIDELINES FOR COMMERCIAL MULTI-FAMILY SINGLE FAMILY DEVELOPMENTS



Designed for:

**Architects,  
Builders,  
Engineers, and  
Planners**



This guide is intended to provide assistance in the application of the fire code in all areas in Columbia County and specific jurisdictions of Clatskanie Fire, Columbia River Fire & Rescue, Mist-Berkenfield, Scappoose and Vernonia Fire Districts.

## SCOPE

Columbia River Fire & Rescue and Scappoose Fire District have prepared this guide to provide a good faith guidance to building officials, contractors, business owners, the public, and local fire staff 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 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 the Fire Chief or Fire Marshal retains final authority to determine compliance.

The information in this document is intended to assist applicants in attaining compliance and to ensure that privately owned roadways identified for emergency response will be available for use at all times. This document has been adopted by both of the above named jurisdictions.

# Contents

## SCOPE –2

## FIRE DEPARTMENT ACCESS –5

FIRE APPARATUS ACCESS ROAD DISTANCE FROM BUILDINGS AND FACILITIES –5

MINIMUM STANDARD –10

NO PARKING –11

## PREMISES IDENTIFICATION –13

SINGLE FAMILY HOMES –13

MULTI FAMILY COMMUNITIES (APARTMENTS, CONDOS, TOWNHOUSES) –13

LARGE OFFICE AND WAREHOUSE BUILDINGS –15

COMMERCIAL BUILDINGS, SHOPPING CENTERS, HIGH RISE BUILDINGS AND OTHER APPLICATIONS –16

MARQUEE AND MONUMENT –16

MULTIPLE BUILDINGS ON ONE COMMERCIAL PROPERTY SIGN EXAMPLE –17

STAIRWAY IDENTIFICATION OVERVIEW –18

STAIRWAY IDENTIFICATION DETAIL –19

## BUILDING ACCESS AND FIRE SERVICE FEATURES –20

FIRE ALARM SYSTEMS –20

EMERGENCY RESPONDER RADIO COVERAGE –28

## FIREFIGHTING WATER SUPPLIES –29

WATER SUPPLY & FIRE EXTINGUISHERS DURING BUILDING CONSTRUCTION –29

COMMERCIAL BUILDINGS – REQUIRED FIRE FLOW –29

FIRE FLOW WATER AVAILABILITY –29

**RURAL COMMERCIAL BUILDINGS – REQUIRED FIRE FLOW –30**

**EXAMPLE FOR BUILDINGS REQUIRING 100,000 GALLONS PER NFPA 1142 –30**

## **FIRE HYDRANTS –31**

**FIRE HYDRANTS – COMMERCIAL BUILDINGS –31**

**FIRE HYDRANT NUMBER AND DISTRIBUTION –31**

**FIRE HYDRANT DISTANCE FROM AN ACCESS ROAD –31**

**PRIVATE FIRE HYDRANT IDENTIFICATION –32**

**FIRE HYDRANT(S) PLACEMENT: (OFC C104) –32**

**FIRE HYDRANT SPEC AND DETAILS –33**

**REFLECTIVE HYDRANT MARKERS –34**

**PHYSICAL PROTECTION –35**

**CLEAR SPACE AROUND FIRE HYDRANTS –35**

**FIRE DEPARTMENT CONNECTION (FDC) LOCATIONS –36**

**FIRE DEPARTMENT CONNECTION REQUIREMENTS –37**

**FDC & PIV SIGNS –37**

**OTHER SIGNS –42**

**CONTROL VALVE DOOR SIGNS –43**

## **APPENDIX –44**

### **ALTERNATE MATERIALS AND METHODS –45**

**SCOPE –45**

**SUBMITTAL REQUIREMENTS –45**

### **SAMPLE AM&M PROPOSAL LETTER –47**

### **TOWER LADDER DIMENSIONS AND SPECIFICATIONS – 48**

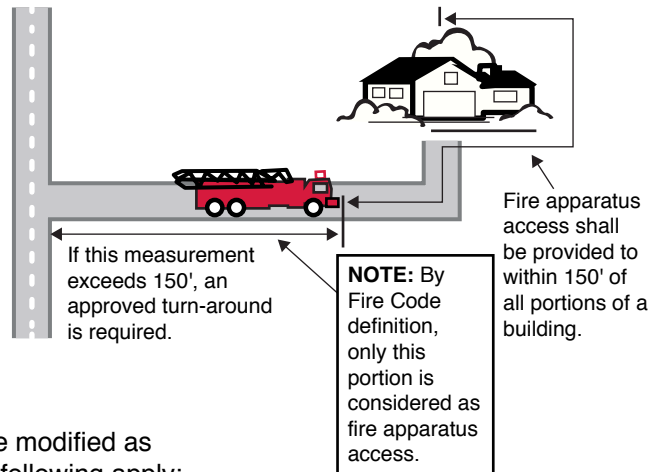
### **EXAMPLE OF NFPA 1142 FORMULA WORKSHEET –49**



# FIRE DEPARTMENT ACCESS

## FIRE APPARATUS ACCESS ROAD DISTANCE FROM BUILDINGS AND FACILITIES:

Access roads shall be within 150 feet of all portions of the exterior wall of the first story 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)



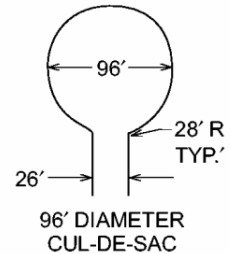
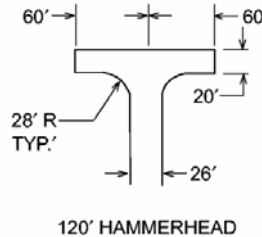
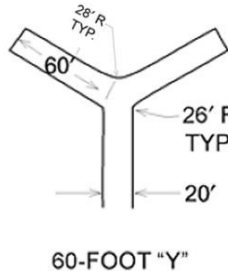
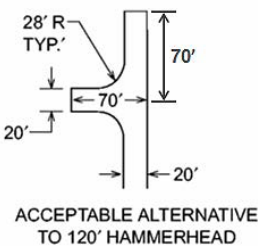
## ACCESS ROAD EXCEPTIONS:

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

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

## DEAD END ROADS AND 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 & Figure D103.1 in the OFC)

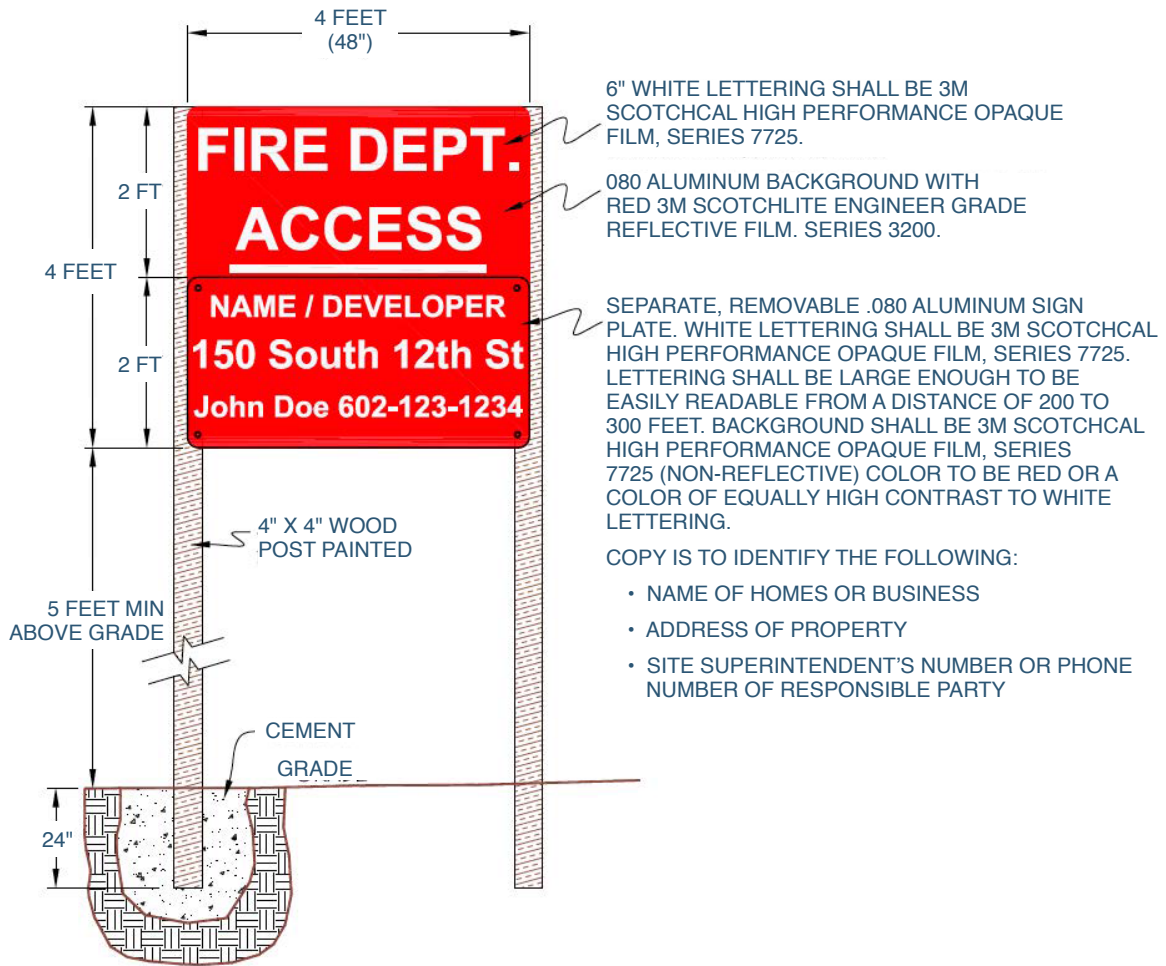


## TURNING RADIUS:

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. The greatest turning radius that needs to be accommodated for our fire apparatus is 240". That is axle to axle. Angle of approach and departure is to be no greater than less than 9 percent. (OFC 503.2.4 & D103.3)

**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 3309 and 3310.1)



**NOTE:**

1. THE SIGN PLATE SHALL BE 48" X 48" WITH A THICKNESS OF .080 ALUMINUM CONSTRUCTION AND 1.5" RADIUS CORNERS. THE LOWER HALF OF SIGN PLATE IS NOT REQUIRED TO BE RED REFLECTIVE SHEETING. THIS SIGN CAN BE REVISED AND TRANSFERRED FROM SITE TO SITE.

**ADDITIONAL ACCESS ROADS – COMMERCIAL/INDUSTRIAL HEIGHT:**

Buildings exceeding 30 feet in height or three stories in height shall have at least two separate

**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)

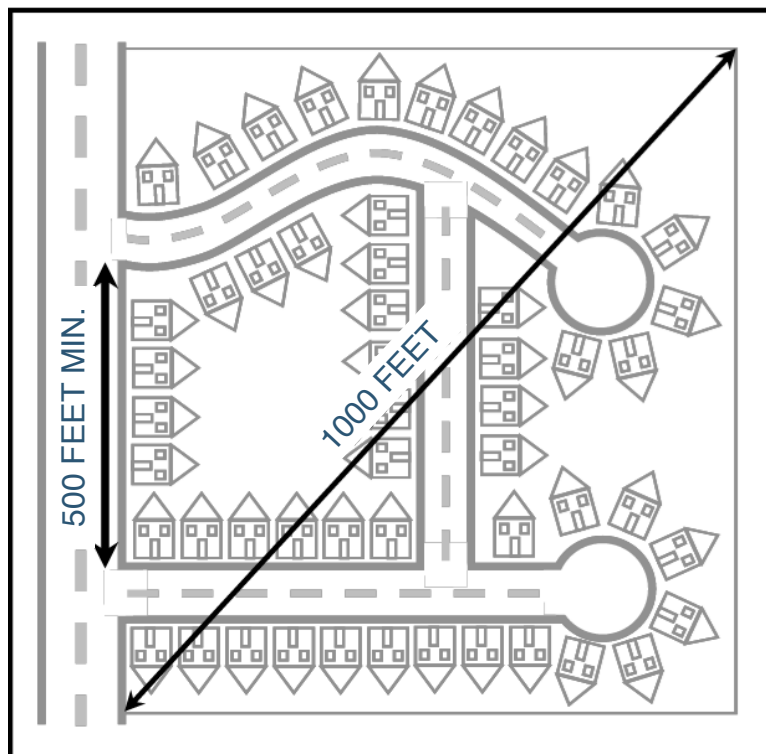
**ADDITIONAL ACCESS ROADS – MULTI-FAMILY RESIDENTIAL DEVELOPMENTS:**

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 OFC 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 Code Official), measured in a straight line between accesses. (OFC D104.3)

Exception: Buildings 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)).



**ACCESS ROAD GRADE (RESIDENTIAL DRIVEWAY):**

Fire apparatus access roadway grades shall not exceed 12% with a maximum of 15 percent on short pitches, defined as no more than 200 feet in length. Where there are existing conditions, which exceed these parameters, the Fire Code Official will require additional road improvements and fire protection. These additional measures include paving of the road surface, wider road widths, and/or special fire protection systems, such as approved, monitored smoke detection systems and fire sprinkler systems. In no instance shall a grade exceed 17 percent. Alternate methods and materials may be available at the discretion of the Fire Marshal (for grade exceeding 12%). Exception: Current driveways greater than 17% that have a residential structure need not change, unless residential structure is replaced or remodeled more than 50%.

**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 503.2.7 & D103.2)

**ANGLE OF APPROACH/GRADE FOR INTERSECTIONS:**

Intersections shall be level (maximum 5%) with the exception of crowning for water run-off. (OFC 503.2.7)

**AERIAL APPARATUS OPERATING GRADES:**

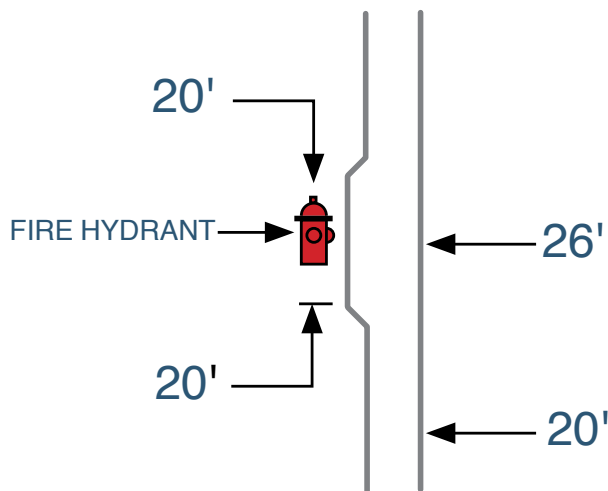
Portions of aerial apparatus roads that will be used for aerial operations shall be as flat as possible. Front to rear and side to side maximum slope shall not exceed 12%.

**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 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 code official. 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 60,000 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. 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 the entrance to the bridge. 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 code official. *(OFC 503.2.6)*

Bridges serving six (6) or fewer residents may be constructed to a minimum width of 12 feet (Inside curbs and rails). Handrails and curbs are required on all bridges. Bridges serving seven (7) or more residents shall meet Columbia County Bridge standards for public roads. C. An Oregon certified engineer shall inspect Bridges every five (5) years. In the event a bridge is in despair an inspection is required annually.

### **ROADS OVER 150 FEET IN LENGTH WITH ONE AND TWO FAMILY DWELLINGS:**

The Oregon Fire Code, Section 501.3 and the Zoning and Development Ordinance of Columbia County, Oregon, require roadway/driveway improvements to a construction or mobile home installation site prior to the issuance of a building permit. This requirement is to assure that road improvements will allow fire protection equipment to reach the site, not only during the construction phase but throughout the existence of the structure. In order to assure that the access road meets the required standards, a form must be signed by a local Fire Service official, and a copy of the signed form must be attached to the application for a dwelling, construction or mobile home placement permit.

## **MINIMUM STANDARD:**

Minimum standard roadway approval requires a twelve-foot (12') wide, uniform all-weather travel lane, with a twenty foot (20') right-of-way maintained clear of debris and obstructions four feet (4') on each side of the travel lane. Driveways shall sustain a minimum wheel load of twelve-thousand five-hundred (12,500) pounds per wheel and a gross vehicle load of sixty thousand (60,000) pounds. Proper drainage must be provided. Bridges and culverts shall be capable of supporting a minimum of sixty thousand (60,000) pounds. Maximum curve centerline shall be not less than forty-five feet (45') radius.

## **TURNOUTS:**

Turnouts twenty feet wide (20') and forty feet (40') long may be required on any driveways exceeding four-hundred feet (400') in length. The unobstructed width must be maintained for not less than twenty feet (20').

## **VERTICAL CLEARANCE:**

Vertical clearance shall be maintained at no less than thirteen feet, six inches (13'6"). All access roads and driveways over one hundred-fifty feet (150') in length shall be provided with a turnaround area at or near the end, improved to the above standards and of a design approved by the local Fire Service.

## **GRADE:**

Average road grade shall not exceed twelve percent (12%) and no grade shall exceed seventeen percent (17%). Any new access connecting to a Columbia County road requires a Columbia County Access Permit. Grades over 17% may require alternate methods and means for fire protection.

## **GATES:**

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

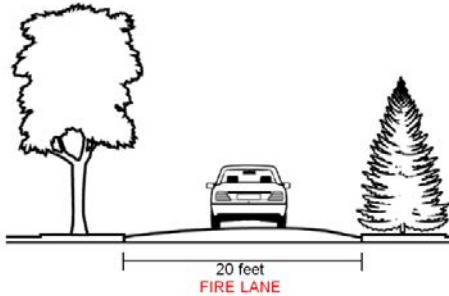
1. Minimum unobstructed width shall be not less than 20 feet (or the required roadway surface width)
2. Gates serving three or less single-family dwellings shall be a minimum of 12 feet in width.
3. Gates shall be set back at minimum of 30 feet from the intersecting roadway or as approved.
4. Electric gates shall be equipped with a means for operation by fire department personnel
5. Electric automatic gates shall comply with *ASTM F 2200 and UL 325*.

## NO PARKING:

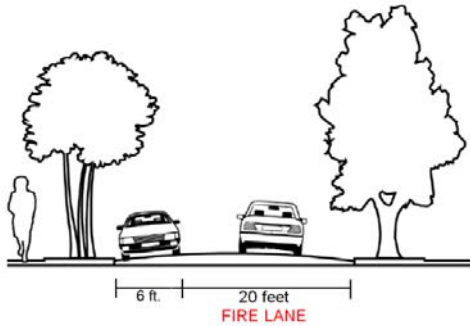
Parking on emergency access roads shall be as follows (*OFC D103.6.1-2*):

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

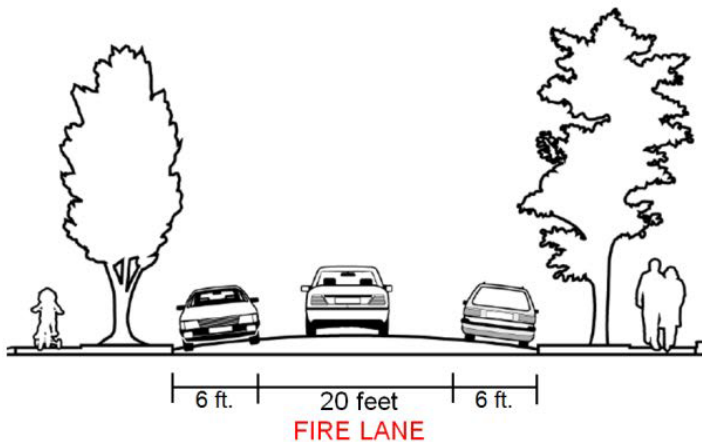
### PARKING PROHIBITED ON EITHER SIDE:



### 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 1 inch wide by 6 inches high. Lettering shall be white on red background (or as approved). Separating the words "NO PARKING" and "FIRE LANE" and spacing them twenty five (25) feet apart is not acceptable. (OFC 503.3)





# PREMISES IDENTIFICATION:

## SINGLE FAMILY HOMES

### MINIMUM 4" HIGH, 1/2" STROKE CONTRASTING NUMBERS.

Single Family Homes with driveways longer than 100 feet shall have an address posted at the road visible from each travel direction. The address numbers need to be reflective with white numbers on a green background. Other materials and designs may be accepted after submitting a design to the Fire Marshal.

## MULTI FAMILY COMMUNITIES (APARTMENTS, CONDOS, TOWNHOUSES)

### STREET ADDRESS:

Minimum 12" high numbers with a 2" stroke with contrasting background.

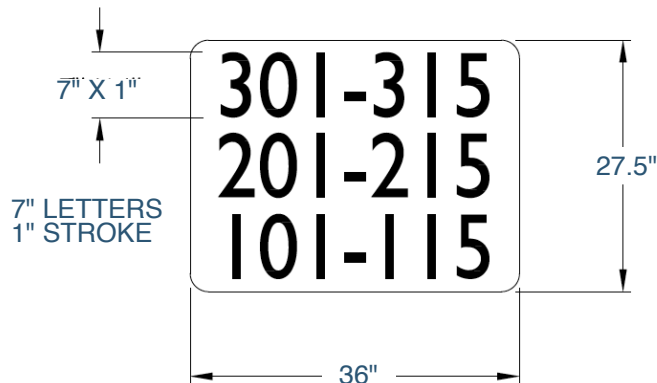
- 12" high numbers with a 2" stroke are only acceptable when placed within approximately 50' of the road in which the property is addressed. Buildings on a corner must be addressed on each street side of the building.

### BUILDING NUMBERS:

Minimum 18" high numbers with a 3" stroke with contrasting background.

- Buildings under 100' long: a minimum of one number per building.
- Buildings over 100' in length require a minimum of two numbers per building.

### Multi-Family Numbering Detail for Communities with Less Than 100 Total Units per Floor



ALL NUMBERING IS GILL SANS FONT

NOTE: THE FONT USED IS GILL SANS. FONTS USED FOR ADDRESSING MUST BE LEGIBLE AND EASY TO READ.

**APARTMENT SPREAD NUMBERS/ CORRIDOR SPREAD NUMBERS:**

- Apartment spread numbers are to be a minimum 7" high numbers with a 1" stroke with contrasting background.
- Corridor spread numbers are to be a minimum 4" high number with a 5/8" brush stroke with contrasting background.

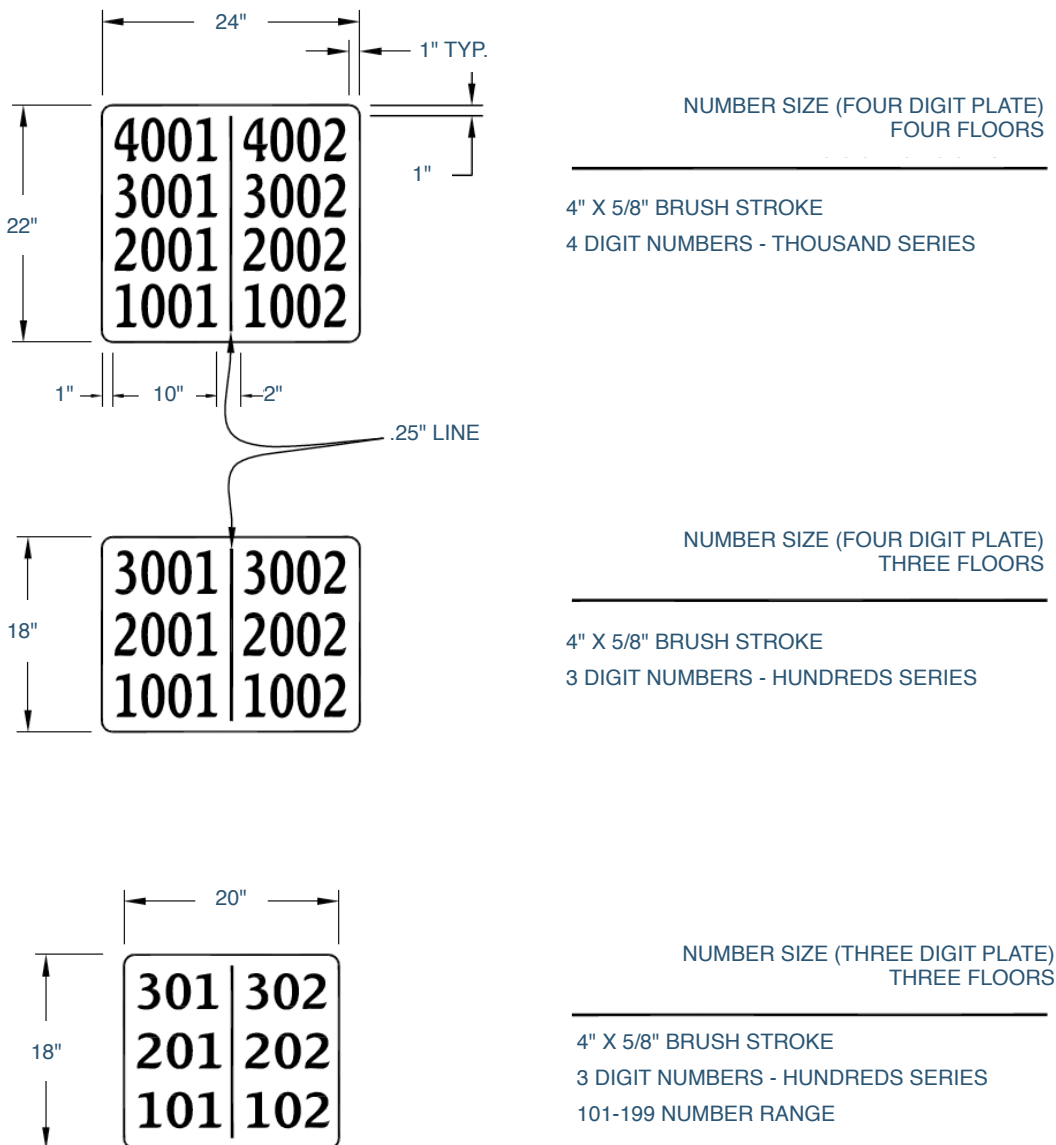
- Number example format:

301-310 3rd Floor

201-210 2nd Floor

101-110 1st Floor

**Corridor Unit Plate Sample**



**INDIVIDUAL APARTMENT NUMBERS:**

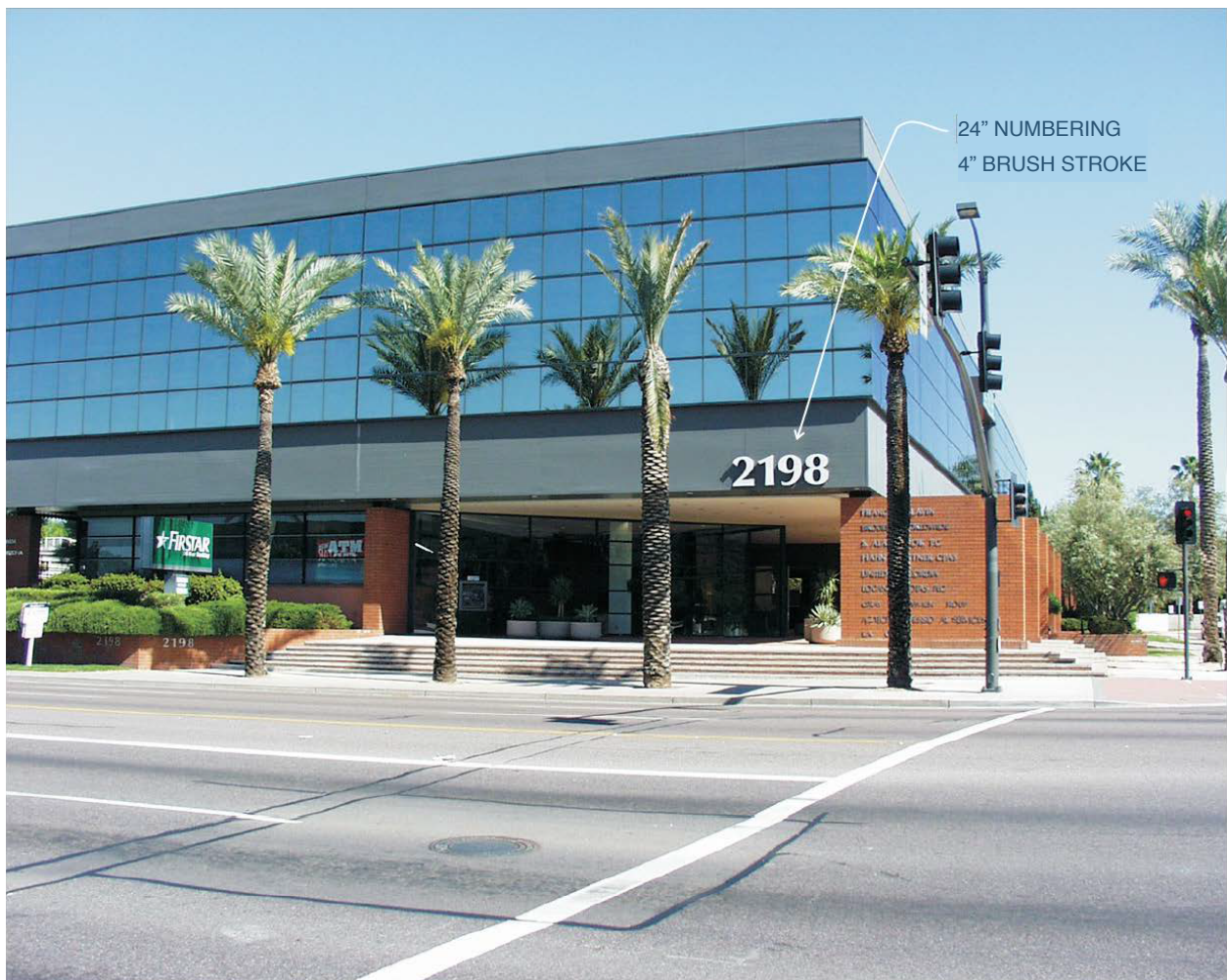
Minimum 4" high numbers with a 5/8" stroke with contrasting background and visible from access road.

**LARGE OFFICE AND WAREHOUSE BUILDINGS**

**MINIMUM 18" HIGH NUMBERS WITH A 3" STROKE WITH CONTRASTING BACKGROUND.**

Address must be visible from all access directions.

- If there is more than one access point to a building, all access points must have an address posted.
- Suite numbers are required for multi tenant complexes and shall be located over the front door and on the rear door with a 8" high x 2" brush stroke.



## COMMERCIAL BUILDINGS, SHOPPING CENTERS, HIGH RISE BUILDINGS AND OTHER APPLICATIONS

Minimum 18" high numbers with a 3" stroke with contrasting background. Be visible from all access directions. Suite numbers are required over the door with a 6" high x 1" brush stroke.

- Buildings beyond 100' from the street and 10,000 square feet or more would need to install 24" x 4" address numbers.



12" NUMBERING  
2" BRUSH STROKE  
MONUMENT ADDRESS

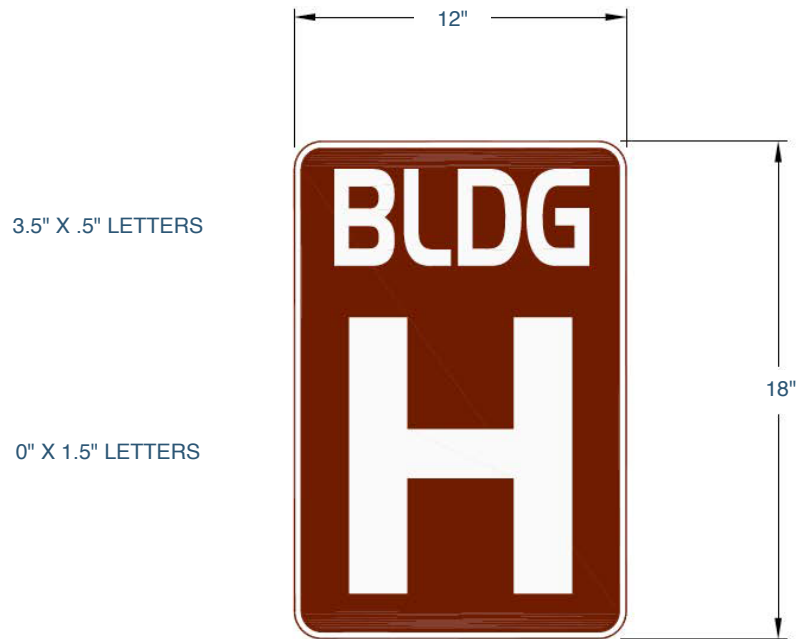
## MARQUEE AND MONUMENT

Addresses installed on a marquee or monument located next to the street will require numbers 12" high x 2" brush stroke to be located a minimum of 3 feet above grade. Numbers shall contrast with the background.



12" NUMBERING  
2" STROKES

## MULTIPLE BUILDINGS ON ONE COMMERCIAL PROPERTY SIGN EXAMPLE:

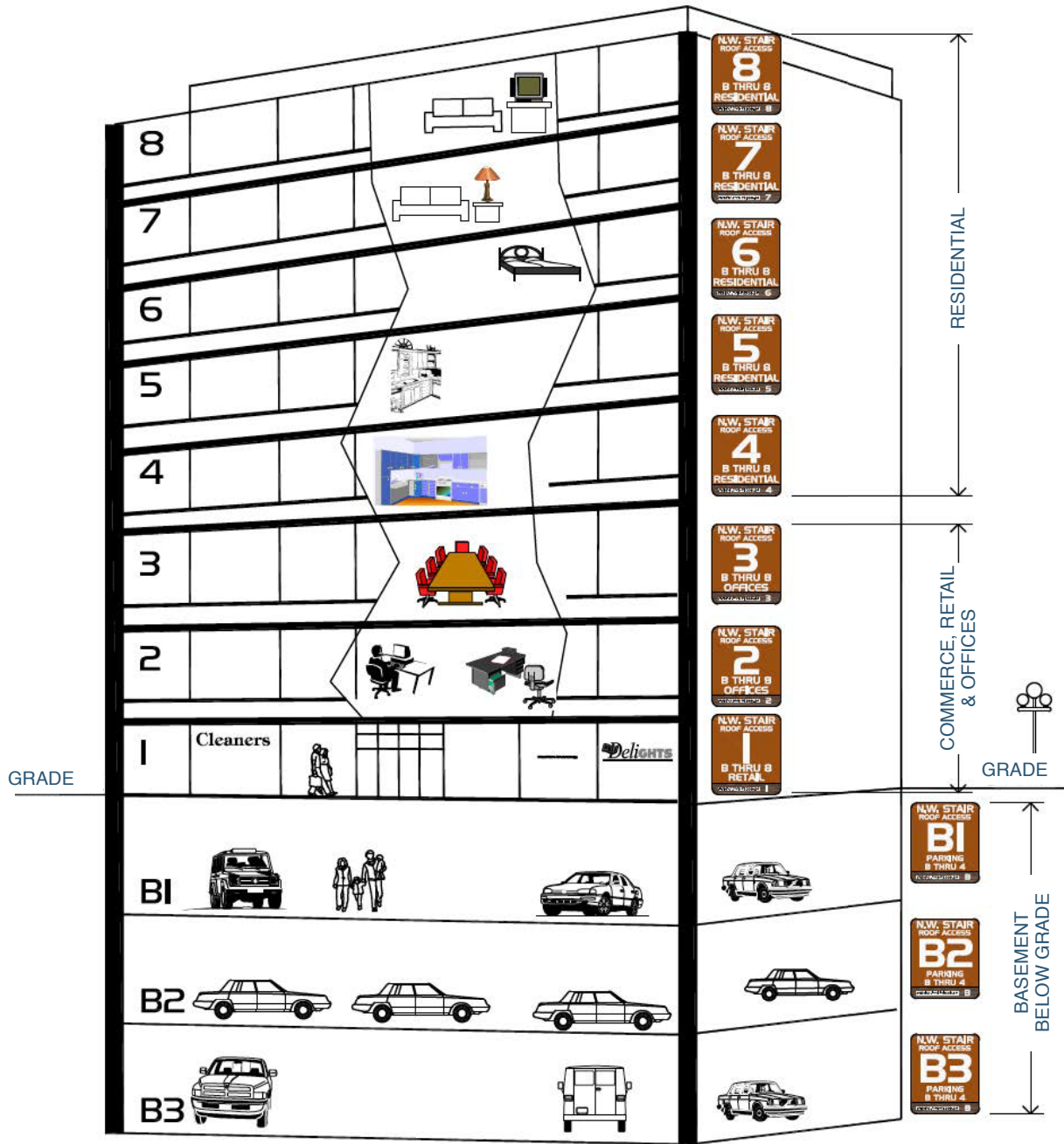


### NOTES:

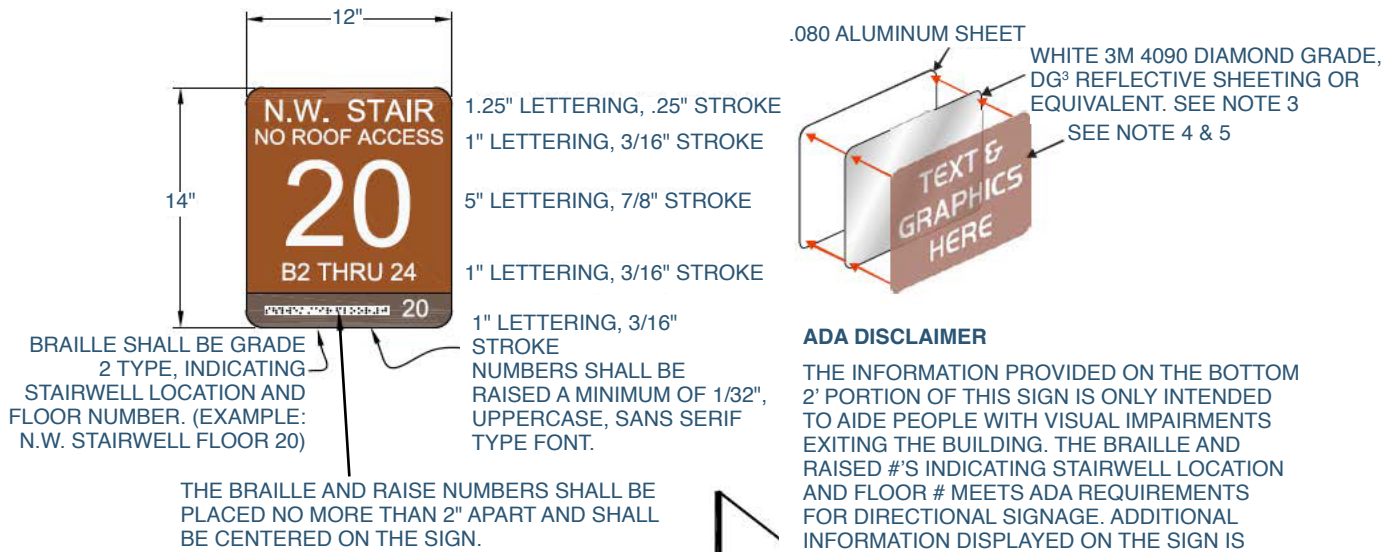
1. THE SIGN PLATE SHALL BE 12" X 18" WITH A THICKNESS OF .080 ALUMINUM CONSTRUCTION.
2. THE SIGN FACE SHALL HAVE A BROWN REFLECTIVE BACKGROUND WITH A WHITE LEGEND, USING THE STANDARD 3M SCOTCHLITE SIGN FLACE NUMBER R7-32 OR EQUIVALENT, WITH WHITE SCREEN PRINTED LETTERING AS SHOWN ABOVE.
3. FONT STYLE USED IS HANDEL GOTHIC BT CAPITAL FONTS.
4. THIS SIGN IS **FOR COMMERCIAL APPLICATION ONLY**. NOT FOR MULTI-FAMILY RESIDENTIAL BUILDINGS.



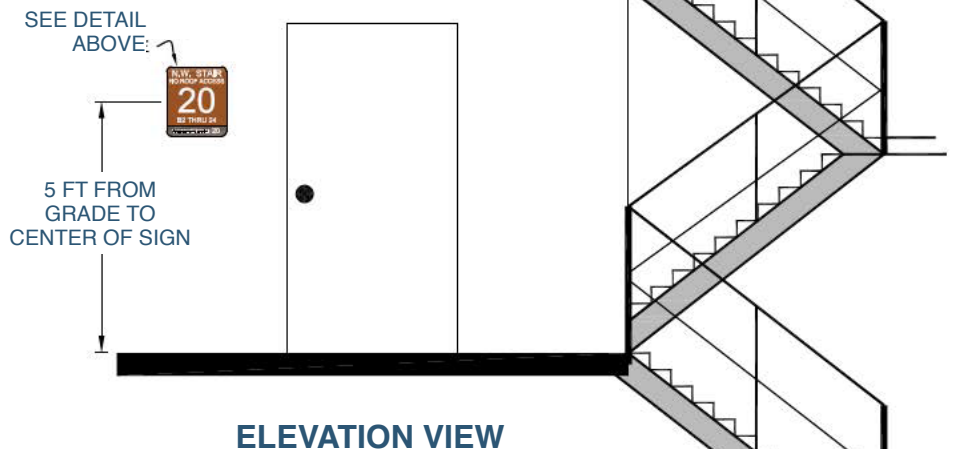
# STAIRWAY IDENTIFICATION OVERVIEW:



## STAIRWAY IDENTIFICATION DETAIL



## SIGN DETAIL



### NOTES:

1. THE SIGN FACE SHALL BE 12" X 14" AND FABRICATED FROM .080 ALUMINUM SHEET WITH 1.5" RADIUS CORNERS.
2. FONT STYLE USED IS HANDEL GOTHIC BT CAPITAL FONTS.
3. THE SIGN FACE SHALL HAVE A WHITE 3M DIAMOND GRADE REFLECTIVE SHEETING (DG<sup>3</sup> 4090 SERIES OR EQUIVALENT) APPLIED AS A BACKGROUND TO THE ALUMINUM PLATES.
4. LETTERING/GRAPHICS SHALL BE HIGH PERFORMANCE, NON-REFLECTIVE, CUTTABLE VINYL (3M 7725 SERIES) INVERSE CUT TO ALLOW WHITE REFLECTIVE BACKGROUND TO SHOW THROUGH.
5. ALL SIGN IMAGING SHALL BE IN COMPLIANCE WITH THE REFLECTIVE SHEETING MANUFACTURE MATCH COMPONENT SYSTEM.

# BUILDING ACCESS AND FIRE SERVICE FEATURES:

## FIRE ALARM SYSTEMS

Where a fire alarm is required, an additional visual notification device shall be installed in an approved location on the outside of the building. On large commercial buildings, more than one may be required. All fire service electrical circuits shall have “Red” breakers installed, not painted.

### **KNOX BOX:**

A Knox Box for building access will be required for structures and gates.

Order via <https://www.knoxbox.com> or contact Scappoose Fire for assistance. (*OFC 506.1*)

#### **Required Installations**

- An Elevator is installed
- An alarm system is installed
- An automatic suppression system is installed
- Access is restricted due to security arrangements

#### **Installation Details**

- Key boxes shall be installed in an approved location; normally on the same side as the lock 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, Fire Marshal or authorized representative.
- 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.
- Large Buildings may require more than one key box.
- A licensed gate contractor shall install Knox switches.

#### **Key box size**

- The size of the key box shall be sufficient to contain all necessary keys and/or equipment.
- KNOX Cabinet Contents (Where required)
- Building or structure keys
- Alarm system keys and instructions
- Elevator recall key
- Gate key
- Elevator door key
- Automatic fire extinguishing system control valve keys
- Multiple sets of keys where required
- Hazardous Materials Safety Data Sheets (SDS) - Knox Cabinet

#### **Required labeling**

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

#### **Plans Required:**

- All required plans, shall be submitted to the Fire Marshal for review and approval of mounting location/position and operating standards, prior to installation.



- New buildings shall note location(s) of Knox products on all buildings and fire alarm plans.

### Knox Box



### Knox Padlocks



APPROVED PADLOCK INSTALLATION



KNOX™ PADLOCK (KEYED FOR FIRE DEPARTMENT ACCESS)

STANDARD PADLOCK (KEYED FOR OWNER'S ACCESS)

### Knox Switches



### Knox Cabinet Boxes



HIGH SECURITY STORAGE



- Knox Cabinets are required for commercial buildings to store SDS and other pertinent building documents.

## UTILITY 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" high with a minimum stroke width of 1/2", and be plainly legible, and contrast with its background. *(OFC 509.1)*

Buildings that contain multiple tenants, occupants or units shall have all electrical and gas shutoffs clearly identified for each unit for the appropriate control device inside or outside the structure.

## SOLAR PANEL INSTALLATION

### Roof Access, Pathways And Smoke Ventilation

Roof access and clearance requirements are required in order to:

- Provide emergency egress from the roof
- Provide areas for smoke ventilation opportunities
- Provide pathways to specific areas of the roof
- Ensure access to the roof

Roof access points should be defined as areas where ladders are not placed over openings (i.e., windows or doors) and are located at strong points of building construction and in locations where they will not conflict with overhead obstructions (i.e., tree limbs, wires, or signs).

### Roof Access/Pathways

1. Residential Buildings with hip roof layouts: Panels should be located in a manner that provides one (1) three-foot (3') wide clear access pathway from the eave to the ridge on each roof slope where panels are located. The access pathway should be located at a structurally strong location on the building (such as a bearing wall).
2. Residential Buildings with a single ridge: Panels should be located in a method that provides two (2) three-foot (3') wide access pathways from the eave to the ridge on each roof slope where panels are located.
3. Hips and Valleys: Panels should be located no closer than one and one half (1.5') feet to a hip or a valley if Panels are to be placed on both sides of a hip or valley. If the panels are to be located on only one side of a hip or valley that is of equal length then the panels may be placed directly adjacent to the hip or valley.

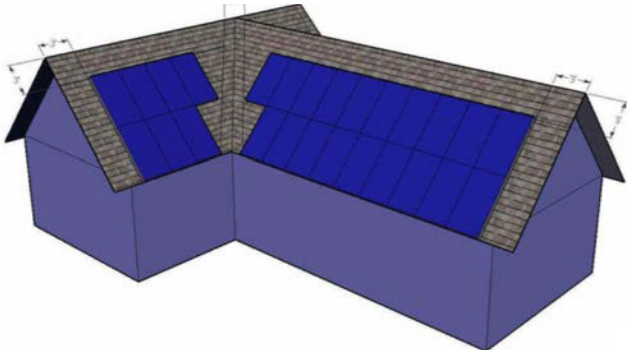
### Smoke Ventilation

All Solar Panels should be located no higher than three feet (3') below the ridge.

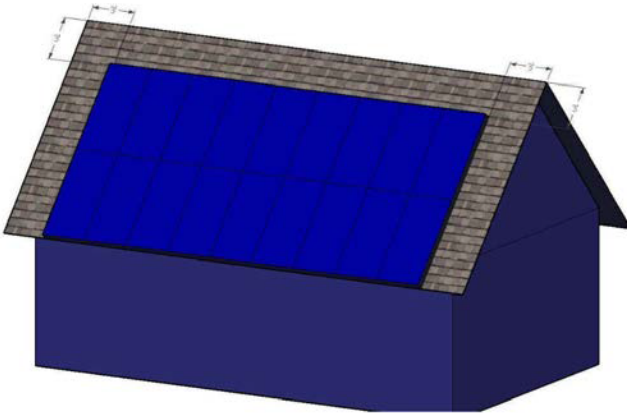
See following examples as a basic guideline; keep in mind that not all proposed roof layouts will necessarily match the attached scenarios. Contact the Fire Marshal at **(503) 543-5026** before submittal and get your questions answered.

**Residential Examples**

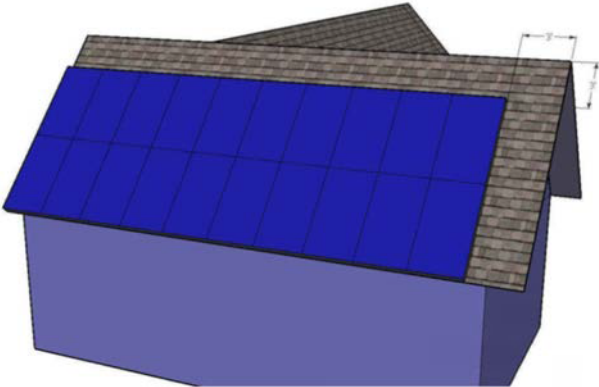
**Cross Gable with Valley**



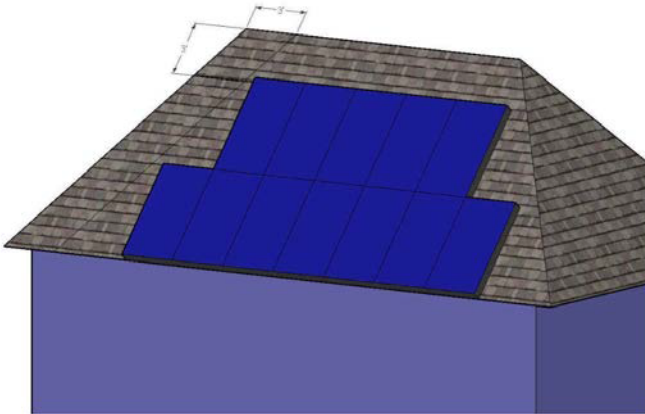
**Full Gable**



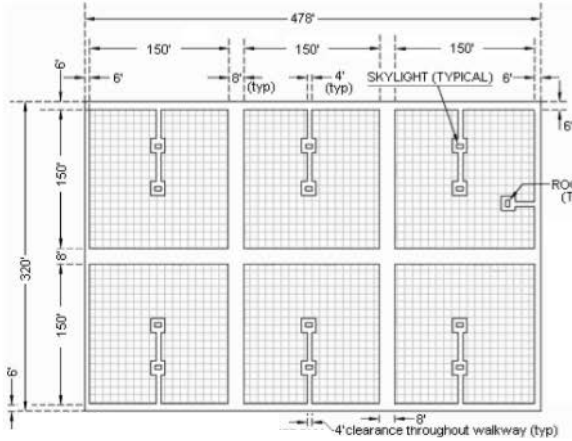
**Cross Gable Roof**



**Full Hip Roof**

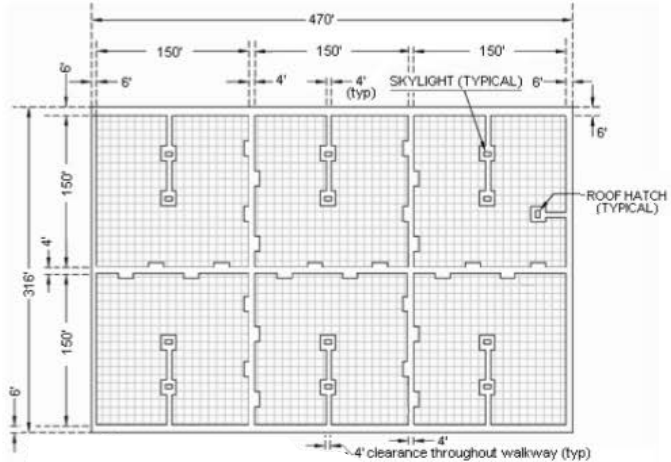


**Commercial Examples**



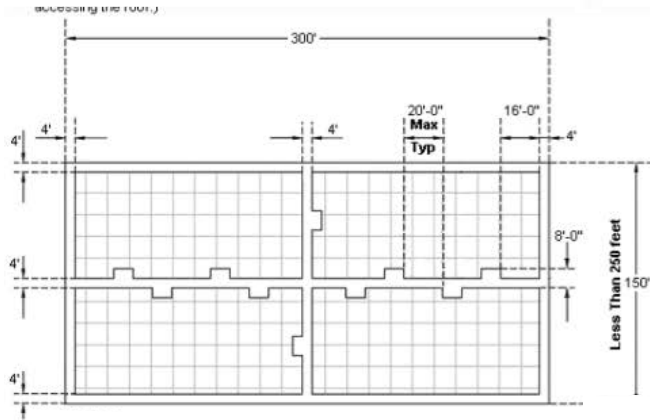
**Diagram 5**

Solar Array Example—Large Commercial 8' Walkways with skylight & hatch access shown. (The walkway shall be over areas capable of supporting the live load of firefighters accessing the roof.)



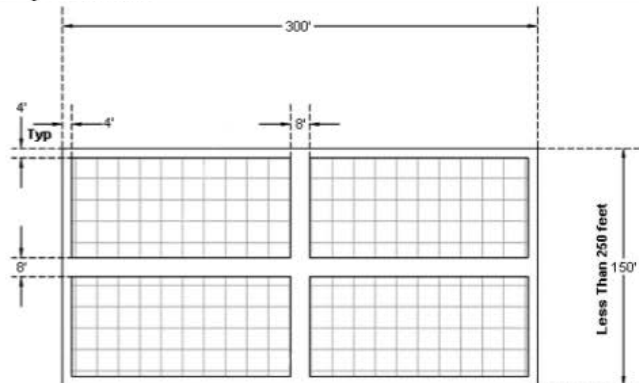
**Diagram 6**

Solar Array Example—Large Commercial 4' Walkways with 8'x4' venting opportunities every 20'. (The walkway shall be over areas capable of supporting the live load of firefighters accessing the roof.)



**Diagram 7**

Solar Array Example—Small Commercial (605.11.3.3.1 Ex) 4' Walkways. (The walkway shall be over areas capable of supporting the live load of firefighters accessing the roof.)



**Diagram 8**

Solar Array Example—Small Commercial (605.11.3.3.1 Ex) 8' Walkways with 8'x4' venting opportunities every 20'. (The walkway shall be over areas capable of supporting the live load of firefighters accessing the roof.)

## BUILDING INFORMATION SIGNS

Building information signs (BIS) are to be provided to give firefighters basic information about a building in a uniform format that is consistent across the jurisdiction. (OFC J101)

New buildings shall have a BIS. Existing buildings shall come into compliance when one of the following occurs:

1. The fire district conducts an annual inspection or any required inspection.
2. When a change in use or occupancy has occurred.

### Sign Location

The building information sign shall be placed in one of the following locations:

1. Upon the entry door or sidelight at a minimum height of 42 inches above the walking surface on the address side of the building.
2. Upon the exterior surface of the building or structure on either side of the entry door, not more than 3 feet from the entrance door, at a minimum height of 42 inches above the address side of the building or structure.
3. Conspicuously placed inside an enclosed entrance lobby, on any vertical surface within 10 feet of the entrance door at a minimum height of 42 inches above the walking surface.
4. Inside the building's command center
5. On the exterior of the fire alarm control unit or on the wall immediately adjacent to the fire alarm control unit door where the alarm panel is located in the enclosed main lobby.

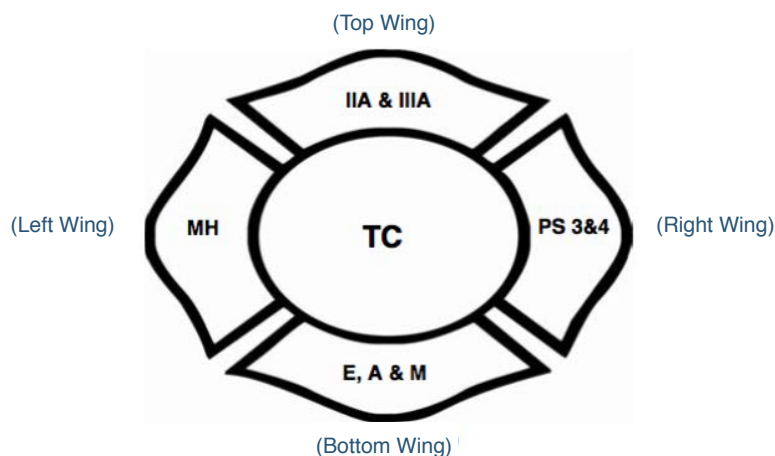
### Sign Features

The Building Information shall consist of the following:

1. White reflective background with red letters.
2. Durable material.
3. Numerals shall be Roman or Latin numerals, as required, or alphabet letters.
4. Permanently affixed to the building or structure in an approved manner.
5. Be visible in the dark.

### Sign Shape

The Building Information Sign shall be a Maltese cross as shown below:



### Sign Size and Lettering

The minimum size of the BIS and lettering shall be in accordance with the following:

1. The width and height shall be 6 inches by 6 inches.
2. The height or width of the Maltese wing area shall be 1 1/8 inches and have a stroke width of 1/2 inch.
3. The center of the Maltese cross, a circle shall be 3 inches in diameter and have a stroke width of 1/2 inch.
4. All Roman numerals and alphabetic designation, shall be 1 1/4 inch high and have a stroke width of 1/4 inch.

### Sign Designations

Designations shall be made based upon the construction type, content, hazard, fire protection systems, life safety and occupancy. Where multiple designations occur within a classification category, the designation used shall be based on the greatest risk potential.

#### Top Wing (Construction Type)

The construction types shall be designated by assigning the appropriate Roman numeral, and letter, placed inside the top wing of the Maltese cross. The hourly rating provided is for the structural framing in accordance with Table 601 of the International Building Code,

CONSTRUCTION TYPE	FIRE-RESISTANCE RATING
IA-Noncombustible	3 Hours
IB-Noncombustible	2 Hours
IIA-Noncombustible	1 Hours
IIB-Noncombustible	0 Hours
IIIA-Noncombustible/combustible	1 Hours
IIIB-Noncombustible/combustible	0 Hours
IV-Heavy timber (HT)	HT
VA-Combustible	1 Hours
VB-Combustible	0 Hours

#### Right wing (Fire Protection Systems)

The fire protection system shall be designated by determining its level of protection and assigning the appropriate designation to the right wing of the Maltese cross. Where multiple systems are provided, all shall be listed:

AS	Automatic sprinkler system installed throughout
DS	Dry sprinkler system and designated areas
FA	Fire alarm system
FP	Fire pump
FW	Fire wall and designated areas
PAS	Pre-action sprinkler system and designated floor
PS	Partial automatic sprinkler system, and designate floor
CES	Chemical extinguishing system and designated area
CS	Combination sprinkler and standpipe system
S	Standpipe system
NS	No system installed

### Bottom Wing (Occupancy Type)

The occupancy of a building or structure shall be designated in accordance with the occupancy classification found in Section 302.1 of the International Building Code and the corresponding designation shall be placed in the bottom wing of the Maltese cross. Where a building or structure contains a mixture of uses and occupancies; all uses and occupancies shall be identified.

A	Assembly
B	Business
E	Educational
F	Factory or Industrial

H	High Hazard
I	Institutional
M	Mercantile
R/S/U	Residential, Storage or Miscellaneous

### Left Wing (Hazards of Content)

The hazards of building contents shall be designated by one of the following classifications as defined in NFPA 13 and the appropriate designation shall be placed inside the left wing of the Maltese cross:

LH	Light hazard
MH	Moderate hazard
HH	High hazard

### Center Circle (Tactical Considerations)

The center circle shall include the name of the local fire service and when required the letters TC for tactical considerations. Where fire fighters conduct preplan operations, a unique situation(s) for tactical considerations shall be identified and the information provided to the fire dispatch communications center to further assist fire fighters in identifying that there is special consideration(s) for this occupancy. Special consideration designations include, but are not limited to:

1. Impact-resistant drywall.
2. Impact-resistant glazing, such as blast or hurricane-type glass.
3. All types of roof and floor structural members including but not limited to post-tension concrete, bar joists, solid wood joists, rafters, trusses, cold-formed galvanized steel, I-joists and I-beams; green roof with vegetation, soil and plants.
4. Hazardous materials (explosives, chemicals, plastics, etc.).
5. Solar panels and DC electrical energy.
6. HVAC system; and smoke management system for pressurization and exhaust methods.
7. Other unique characteristic(s) within the building that are ranked according to a potential risk to occupants and fire fighters.

### Sign Classification Maintenance, Building Information

Sign maintenance shall comply with each of the following:

1. Fire departments in the jurisdiction shall define the designations to be placed within the sign.
2. Fire departments in the jurisdiction shall conduct annual inspections to verify compliance with this section of the code and shall notify the owner, or the owners agent, of any required updates to the sign in accordance with fire department designations and the owner, or the owners agent, shall comply within 30 days.
3. The owner of a building shall be responsible for the maintenance and updates to the sign in accordance with fire department designations.

## **EMERGENCY RESPONDER RADIO COVERAGE:**

The Oregon Fire Code (OFC) requires that certain newly constructed buildings have approved levels of emergency radio signal strength per *OFC 510* (relative to existing levels of public radio coverage available at the exterior). Where the design of the building reduces the level of coverage inside of the building below minimum performance levels, a distributed antenna system, signal booster, or other method approved by Scappoose Fire District and Columbia River Fire & Rescue and Columbia 911 Communications District shall be provided. (*OFC 510*).



## FIREFIGHTING WATER SUPPLIES:

### WATER SUPPLY & FIRE EXTINGUISHERS DURING BUILDING CONSTRUCTION:

Approved firefighting water supplies shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. (*OFC 3312.1*)

Structures under construction, alteration or demolition shall be provided with not less than 1 approved portable fire extinguisher and sized for not less than ordinary hazards as follows (*OFC 3315*):

1. At each stairway on all floor levels where combustible materials have accumulated.
2. In every storage construction shed.
3. Additional portable fire extinguishers shall be provided where special hazards exist including, but not limited to, the storage and use of flammable and combustible liquids.

### COMMERCIAL BUILDINGS – REQUIRED FIRE FLOW:

The minimum fire flow and flow duration for buildings other than one- and two-family dwellings shall be determined in accordance with residual pressure (*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.

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

In areas where the water system is already developed, the maximum needed fire flow shall be either 3,000 GPM or the available flow in the system at 20 psi, whichever is greater.

In new developed areas, the maximum needed fire flow shall be 3,000 GPM at 20 psi.

### 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*)

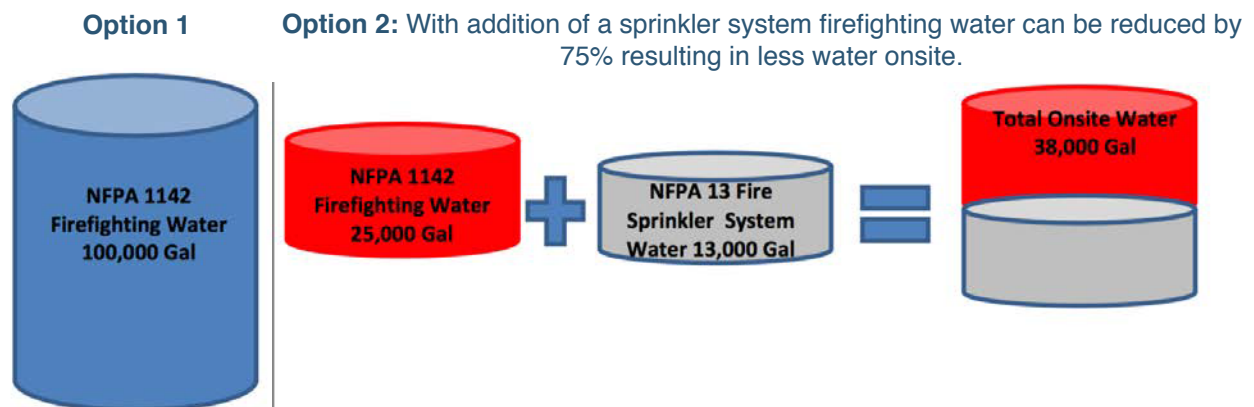
## RURAL COMMERCIAL BUILDINGS – REQUIRED FIRE FLOW:

Commercial structures greater than 3600' 2" in rural and suburban areas where adequate and reliable water supply systems do not exist shall require fire flow to be calculated in accordance with National Fire Protection Association Standard 1142, 2012 Edition. (*OFC B107*)

When a building is required to provide an approved automatic sprinkler system installed in accordance with *Section 903.3.1.1 (NFPA 13)* & *903.3.1.2 (NFPA 13R)*, a credit of 75% shall be allowed on the volume of water supply required for firefighting.

- Firefighting water supply reductions shall not reduce the minimum volume of water required for sprinkler system operation per *NFPA 13*.
- When serving a fire sprinkler system, firefighting water supplies that are required to have, or voluntarily designed with, a standpipe, draft port, or hydrant(s) must include the hose stream demand (volume) for inside/outside allowances per *NFPA 13*.
- The calculated firefighting water supply will be waived when structures are voluntarily protected by an approved automatic fire sprinkler system when otherwise not required by the Oregon Structural Specialty Code.
- Voluntarily installed fire protection sprinkler systems will not require a drafting port. The system's demand will solely delineate the volume of water required per *NFPA 13*.

## EXAMPLE FOR BUILDINGS REQUIRING 100.000 GALLONS PER NFPA 1142



See appendix for an example of the spreadsheet model we use.

# 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 C105.1*, following any fire-flow reductions allowed by *section B105.3.1*. 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 105.1*. (OFC Appendix C)

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

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

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

a. Reduce by 100 feet for dead-end streets or roads.

b. Where streets are provided with median dividers which can be crossed by 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.

## FIRE HYDRANT DISTANCE FROM AN ACCESS ROAD:

Fire hydrants shall be located not more than (15') feet from an approved fire apparatus access roadway unless approved by the fire code official. (OFC C102.1)

## PRIVATE FIRE HYDRANT IDENTIFICATION:

Private fire hydrants shall be painted red in color. (OFC 507)

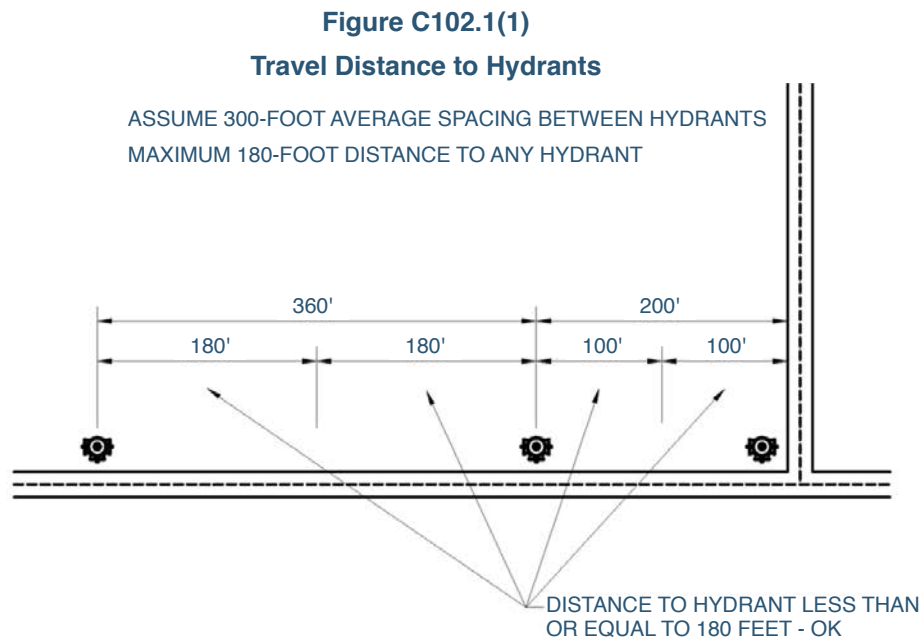
## FIRE HYDRANT(S) PLACEMENT: (OFC C104)

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 code official.

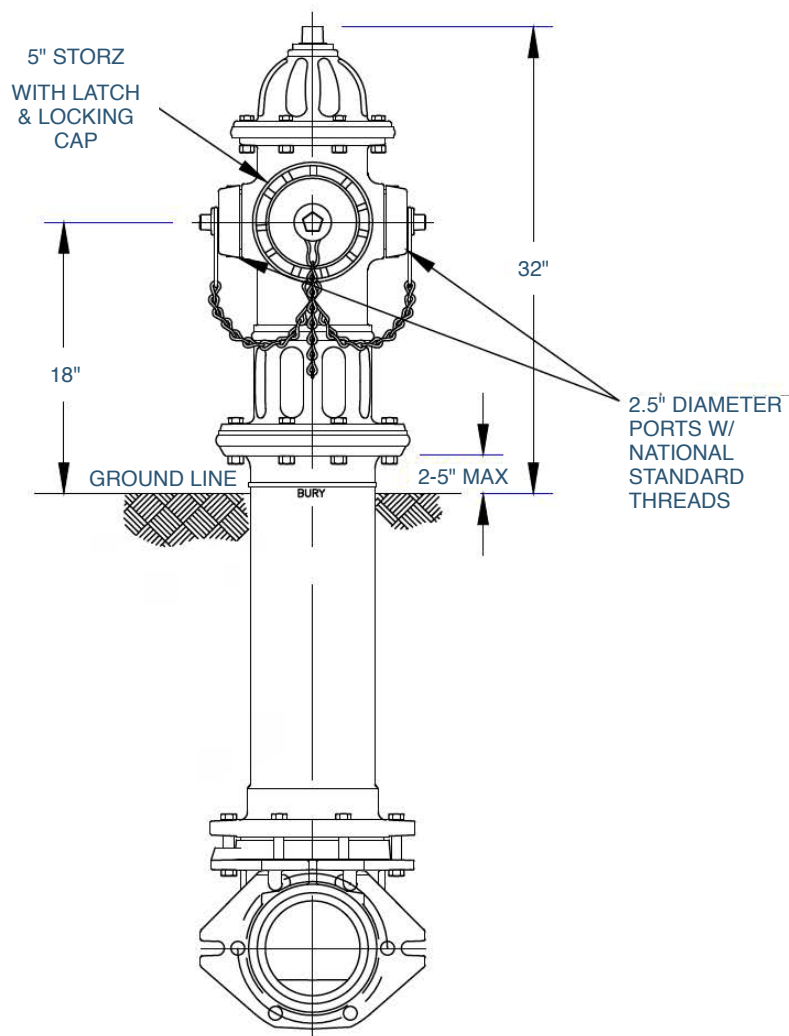
Hydrants that are separated from the subject building by divided highways or freeways shall not contribute to the required number of hydrants. Heavily traveled collector streets may be considered when approved by the fire code official.

Hydrants that are accessible only by a bridge shall be acceptable to contribute to the required number of hydrants only if approved by the fire code official.



FOR SI: 1 FOOT = 304.8MM

## FIRE HYDRANT SPEC AND DETAILS:



### NOTES:

1. PUBLIC HYDRANTS SHALL BE PAINTED SOLID YELLOW (SHOP/FACTORY PRIMARY OK).
2. PRIVATE HYDRANTS SHALL BE PAINTED RED.
3. THE STEAMER PORT ON THE HYDRANT SHALL BE A 5" STORZ COUPLING & CAP.
4. A BLUE REFLECTIVE MARK SHALL BE APPLIED TO THE CENTER OF THE ROAD IN LINE WITH THE HYDRANT.
5. HYDRANT SHALL BE A MUELLER TRADITIONAL CENTURION.
6. STEAMER PORT ON HYDRANT SHALL POINT TO THE STREET OR FIRE ACCESS ROAD.
7. A 5X5 CONCRETE PAD MUST SURROUND THE HYDRANT. THICKNESS OF SLAB TO MATCH LOCAL JURISDICTION SIDEWALK STANDARD.

## 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.

### Typical Hydrant Marker Location

 = Fire Hydrant

 = Blue Pavement Marker

Figure 1  
Two Lane Streets

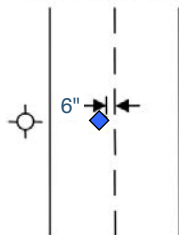


Figure 2  
Multi-Lane Streets

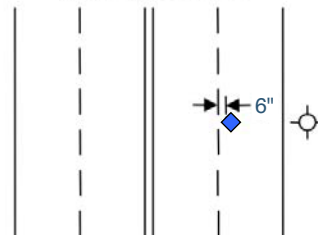


Figure 3  
An Intersection

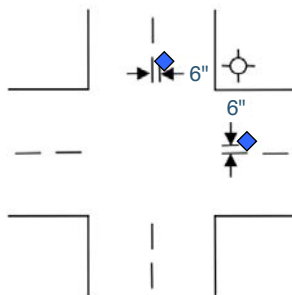


Figure 4  
Four Lane Streets with  
Turn Lane at Intersection

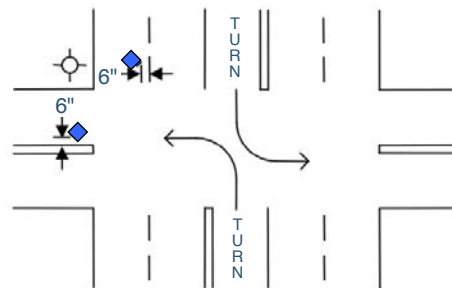


Figure 5  
Multi-Lane Streets  
With Turn Lane

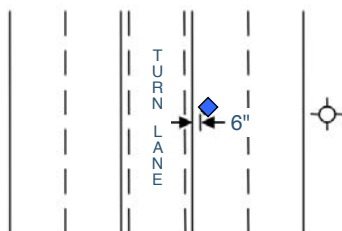
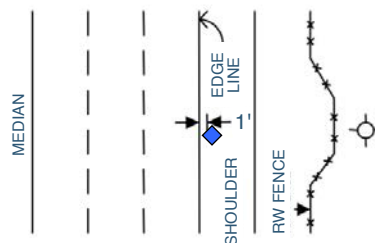
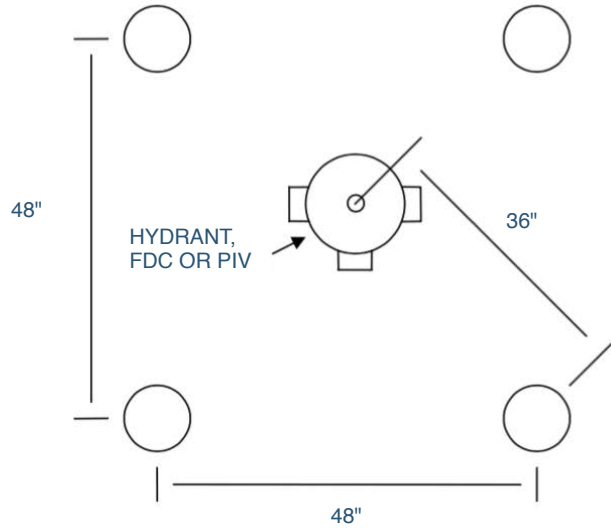


Figure 6  
Freeways and Expressways

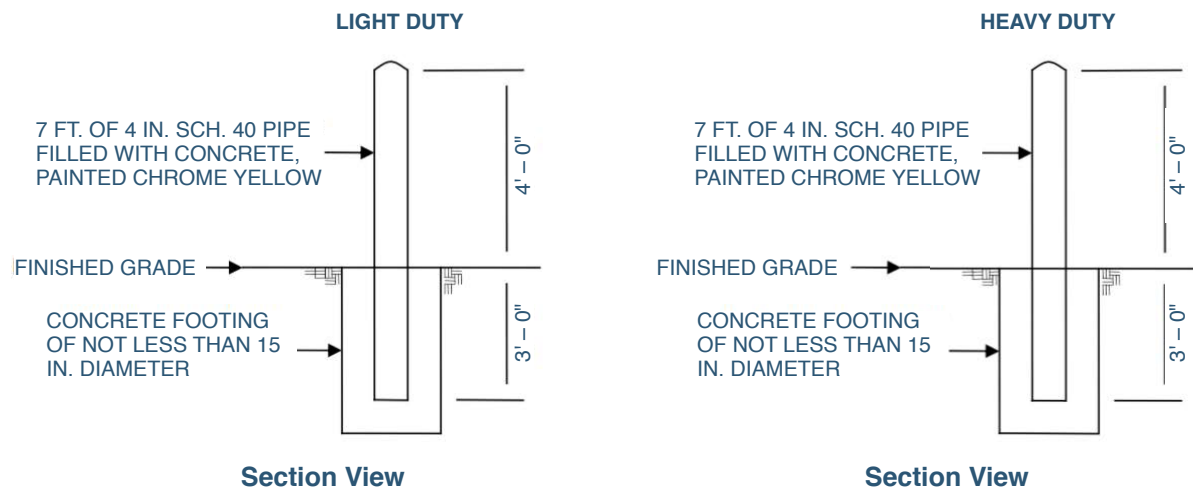


## PHYSICAL PROTECTION:

Where fire hydrants, Post Indicator Valve (PIV's) or Fire Department Connections (FDC's) 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)



Plan View



## CLEAR SPACE AROUND FIRE HYDRANTS:

A (3') foot clear space shall be provided around the circumference of fire hydrants. (OFC 507.5.5)

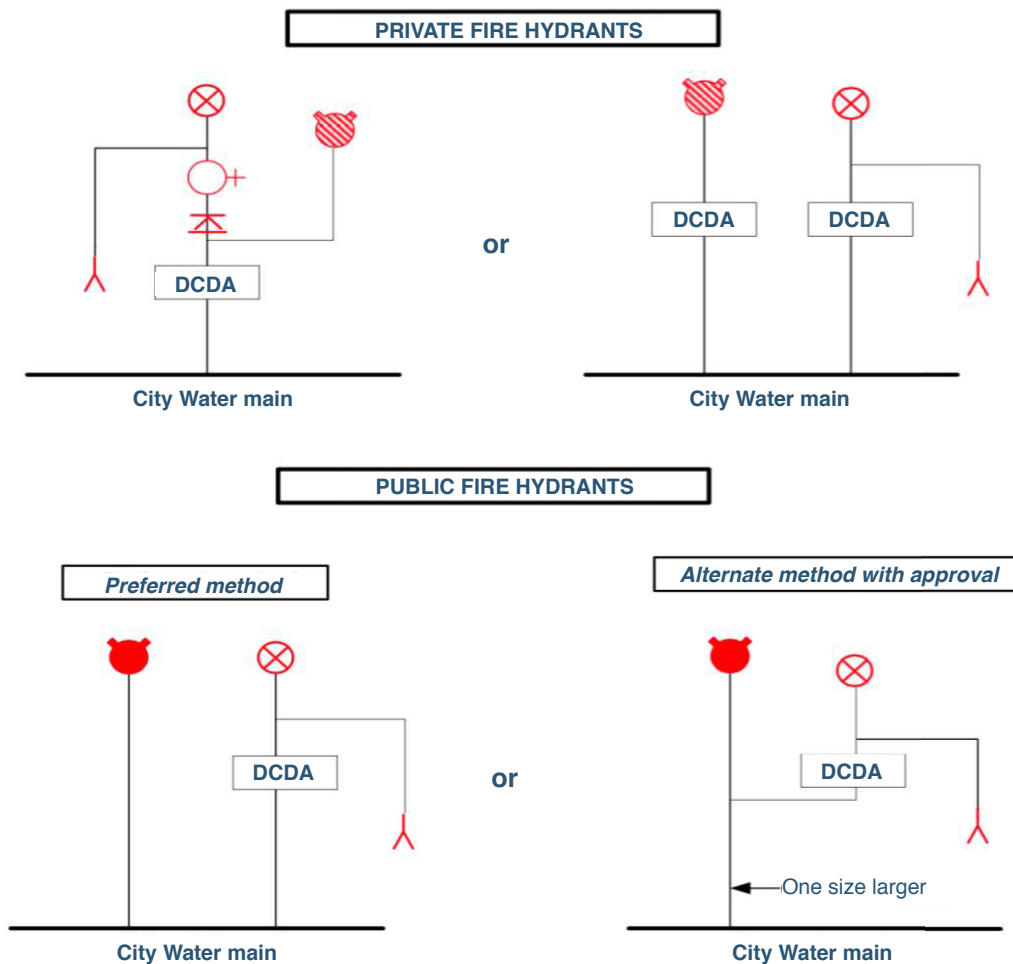
## FIRE DEPARTMENT CONNECTION (FDC) LOCATIONS:

FDCs shall be located within (50') feet of a fire hydrant (or as approved). Hydrants and FDC's shall be located on the same side of the fire apparatus access roadway or drive aisle, fully visible, and recognizable from the street or nearest point of the fire department vehicle access or as otherwise approved. (OFC 912.2.1 & NFPA 13)

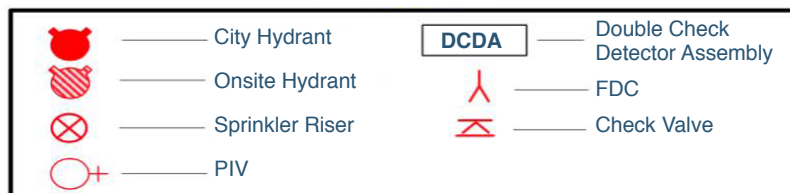
Fire department connections (FDCs) shall normally be located remotely and outside of the fall-line of the building when required. FDCs may be mounted on the building they serve, when approved.

FDCs shall be plumbed on the system side of the check valve when sprinklers are served by underground lines also serving private fire hydrants (as diagrammed below).

### Acceptable Hydrant Configurations



### LEGEND





## **FIRE DEPARTMENT CONNECTION REQUIREMENTS:**

The Fire Department Connection (FDC) shall be remote of the building, out of the collapse zone. The collapse zone is a distance away from the building equal to the height of the exterior wall on the side of the FDC.

The system must have an indicating type main control valve, preferably accessible from the exterior of the building (such as a Wall-Post Indicator). If the valve is located inside the building, it must be directly accessible via an exterior door (The door must be labeled CONTROL VALVE INSIDE). If an upright Post Indicator Valve (PIV) is used for the control valve, it must be located out of the collapse zone of the building.

If the remote FDC is located on the main fire water supply line, then upstream of the FDC there must be a PIV, back flow preventer, and OS&Y valve located in a vault (see below detail).

Fire Department Connections shall be "Siamese" 2 1/2" (inch) NH connections with Knox locking caps. The connections must be located at least 24" (inches) from the ground and no more than 36" (inches) from the ground. The locking caps may be ordered from [www.knoxbox.com](http://www.knoxbox.com).

### **Knox Company Locking Cap #3041**



The hydrant serving the FDC must not require the blocking of main driveways or access into the facility.

All FDCs must be identified by a sign.

### **FDC & PIV SIGNS:**

All FDCs must also have a sign or placard indicating the type of FDC. Such signs shall read: AUTOMATIC SPRINKLERS or STANDPIPES or TEST CONNECTION, or a combination of these words as applicable.

If the location of the FDC is not immediately obvious or visible from the street, a sign indicating the location of the FDC is also required. For example: FDC IN REAR, or FDC with an arrow indicating the location.

## F.D.C. SIGN DETAILS

Each fire department connection shall be identified by a permanent weather-resistant sign. When the building system supplied by the FDC does not supply the entire building, or supplies multiple buildings, the sign shall identify the buildings or areas of the building supplied by the FDC. Fire department connections shall designate service design—for example, AUTOSPKR., STANDPIPE, and DRYSTANDPIPE. A sign shall also indicate the pressure required at the inlets to deliver the greatest systems demand if the system demand pressure is greater than 150 psi.



3" X 0.5" LETTERING  
1 7/16" X 9/32" LETTERING



3" X 0.5" LETTERING  
1 7/16" X 9/32" LETTERING  
1" LETTERING

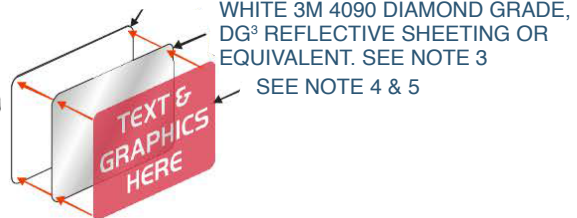
**WHITE REFLECTIVE BACKGROUND  
RED TRANSPARENT FILM**

.080 ALUMINUM SHEET

### CONSTRUCTION AND INSTALLATION NOTES:

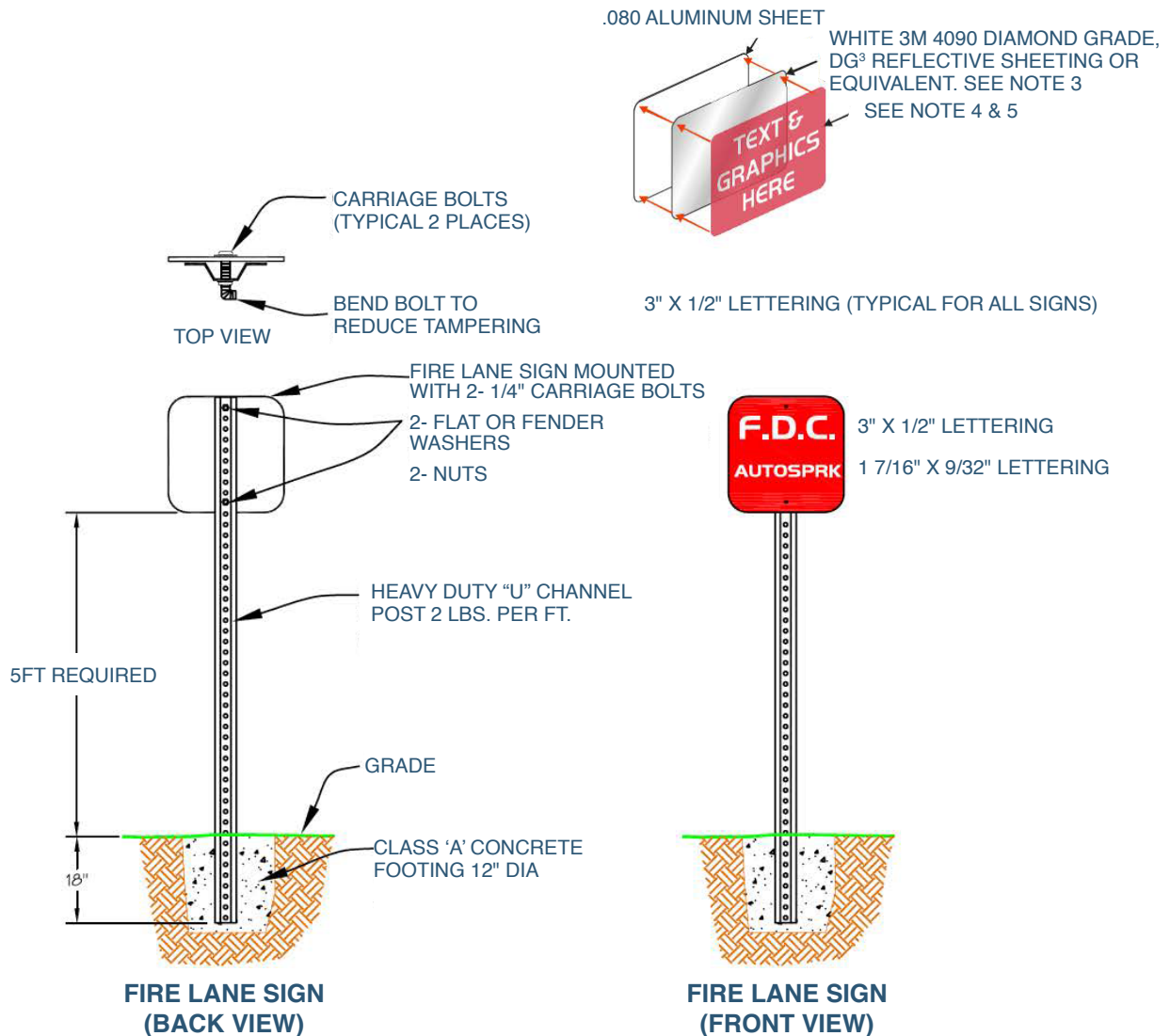
1. THE SIGN FACE SHALL BE 12" X 12" AND FABRICATED FROM .080 ALUMINUM SHEET WITH 1.5" RADIUS CORNERS.
2. FONT STYLE USED IS HANDEL GOTHIC BT CAPITAL FONTS.
3. THE SIGN FACE SHALL HAVE A WHITE 3M DIAMOND GRADE REFLECTIVE SHEETING (DG<sup>3</sup> 4090 SERIES OR EQUIVALENT) APPLIED AS A BACKGROUND TO THE ALUMINUM PLATES.
4. LETTERING/GRAPHICS SHALL BE DONE ONE OF THE FOLLOWING WAYS:
  - A. 3M SCOTCHLITE ACRYLIC, TRANSPARENT, ELECTRONIC CUTTABLE FILM (RED 1172 SERIES) INVERSE CUT TO ALLOW WHITE REFLECTIVE BACKGROUND TO SHOW THROUGH.
  - B. SCREEN PRINTED USING 3M 880I OR 880-00 SERIES TRAFFIC SIGN RED TRANSLUCENT INK.

BOTH PROCESSES (A OR B) WILL ACCOMPLISH A RED FIELD WITH WHITE COPY.
5. ALL SIGN IMAGING SHALL BE IN COMPLIANCE WITH THE REFLECTIVE SHEETING MANUFACTURE MATCH COMPONENT SYSTEM.



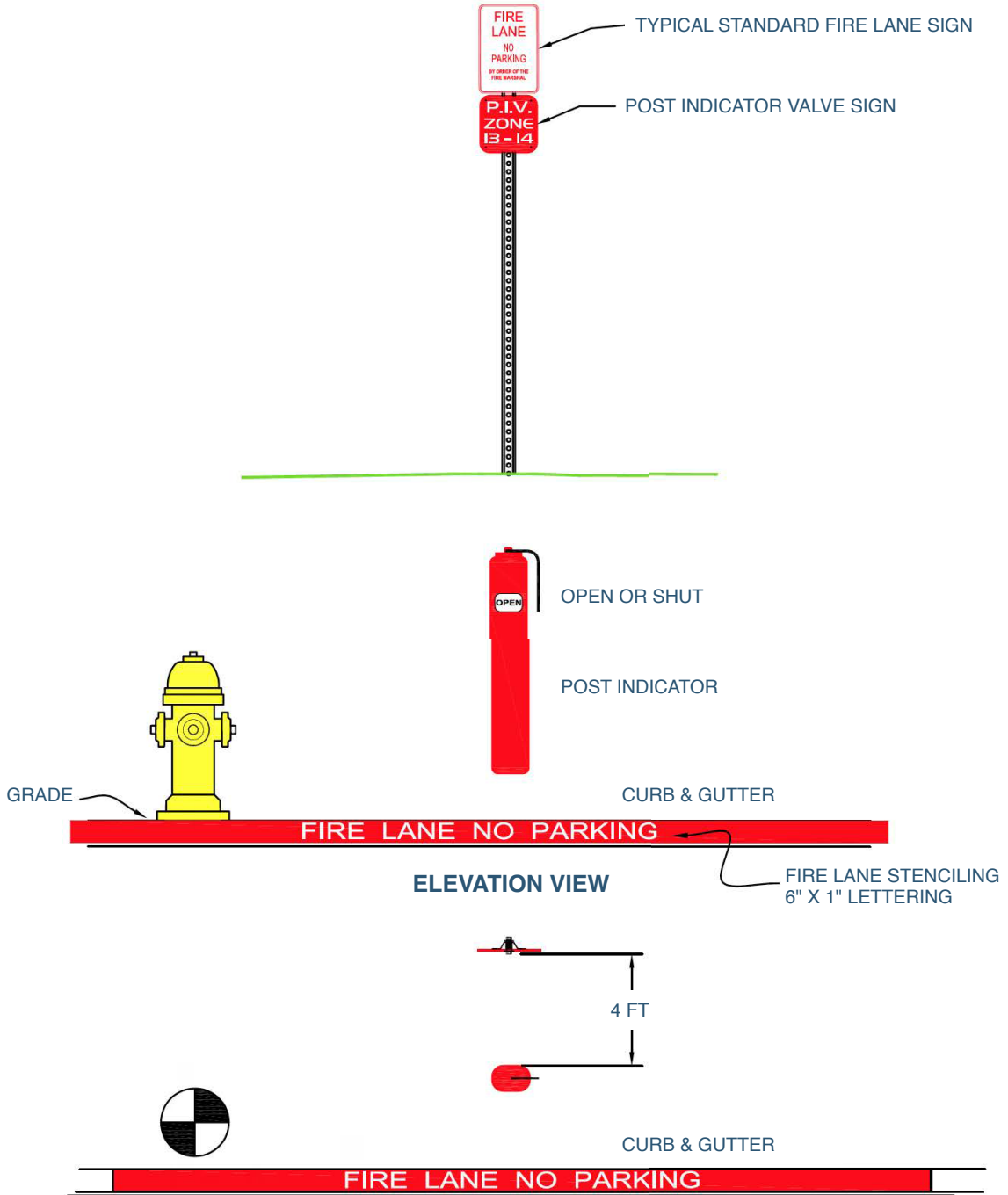
WHITE 3M 4090 DIAMOND GRADE, DG<sup>3</sup> REFLECTIVE SHEETING OR EQUIVALENT. SEE NOTE 3

SEE NOTE 4 & 5

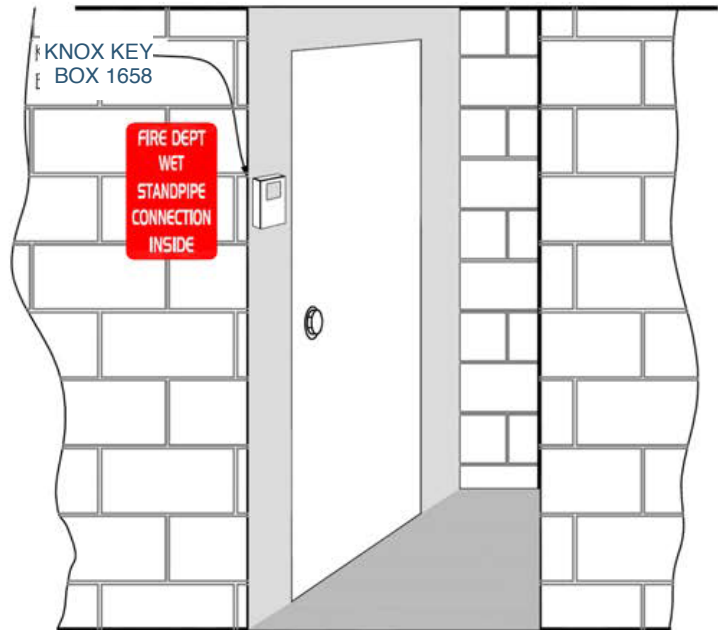


**NOTES:**

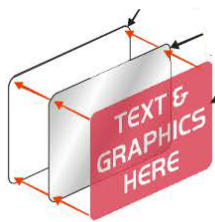
1. THE SIGN FACE SHALL BE 12" X 12" AND FABRICATED FROM .080 ALUMINUM SHEET WITH 1.5" RADIUS CORNERS.
2. FONT STYLE USED IS HANDEL GOTHIC BT CAPITAL FONTS.
3. THE SIGN FACE SHALL HAVE A WHITE 3M DIAMOND GRADE REFLECTIVE SHEETING (DG3 4090 SERIES OR EQUIVALENT) APPLIED AS A BACKGROUND TO THE ALUMINUM PLATES.
4. LETTERING/GRAPHICS SHALL BE DONE ONE OF THE FOLLOWING WAYS:
  - A. 3M SCOTCHLITE ACRYLIC, TRANSPARENT, ELECTRONIC CUTTABLE FILM (RED 1172 SERIES) INVERSE CUT TO ALLOW WHITE REFLECTIVE BACKGROUND TO SHOW THROUGH.
  - B. SCREEN PRINTED USING 3M 880I OR 880-00 SERIES TRAFFIC SIGN RED TRANSLUCENT INK.
 BOTH PROCESSES (A OR B) WILL ACCOMPLISH A RED FIELD WITH WHITE COPY.
5. ALL SIGN IMAGING SHALL BE IN COMPLIANCE WITH THE REFLECTIVE SHEETING MANUFACTURE MATCH COMPONENT SYSTEM.
6. TO BE INSTALLED 5 FEET ABOVE GRADE, POST SHALL BE 12" TO 18" FROM BACK OF CURB OR BACK OF SIDEWALK AND MUST FACE THE ONCOMING TRAFFIC.



## STANDPIPE SIGN DETAIL



.080 ALUMINUM SHEET

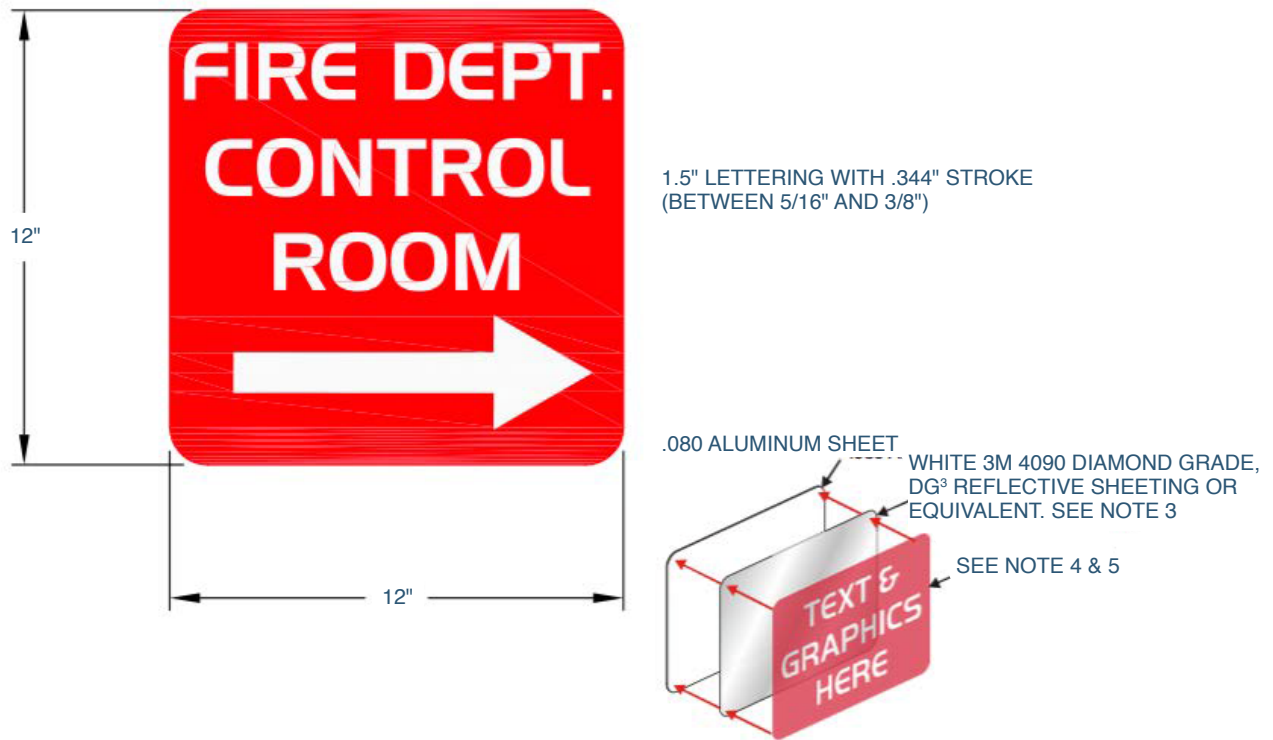


WHITE 3M 4090 DIAMOND GRADE,  
DG<sup>3</sup> REFLECTIVE SHEETING OR  
EQUIVALENT. SEE NOTE 3  
SEE NOTE 4 & 5

### NOTES:

1. THE SIGN FACE SHALL BE 12" X 18" AND FABRICATED FROM .080 ALUMINUM SHEET WITH 1.5" RADIUS CORNERS.
2. FONT STYLE USED IS HANDEL GOTHIC BT CAPITAL FONTS.
3. THE SIGN FACE SHALL HAVE A WHITE 3M DIAMOND GRADE REFLECTIVE SHEETING (DG<sup>3</sup> 4090 SERIES OR EQUIVALENT) APPLIED AS A BACKGROUND TO THE ALUMINUM PLATES.
4. LETTERING/GRAPHICS SHALL BE DONE ONE OF THE FOLLOWING WAYS:
  - A. 3M SCOTCHLITE ACRYLIC, TRANSPARENT, ELECTRONIC CUTTABLE FILM (RED 1172 SERIES) INVERSE CUT TO ALLOW WHITE REFLECTIVE BACKGROUND TO SHOW THROUGH.
  - B. SCREEN PRINTED USING 3M 880I OR 880-00 SERIES TRAFFIC SIGN RED TRANSLUCENT INK.
 BOTH PROCESSES (A OR B) WILL ACCOMPLISH A RED FIELD WITH WHITE COPY.
5. ALL SIGN IMAGING SHALL BE IN COMPLIANCE WITH THE REFLECTIVE SHEETING MANUFACTURE MATCH COMPONENT SYSTEM.

## OTHER SIGNS:



### NOTES:

1. THE SIGN FACE SHALL BE 12" X 12" AND FABRICATED FROM .080 ALUMINUM SHEET WITH 1.5" RADIUS CORNERS.
2. FONT STYLE USED IS HANDEL GOTHIC BT CAPITAL FONTS.
3. THE SIGN FACE SHALL HAVE A WHITE 3M DIAMOND GRADE REFLECTIVE SHEETING (DG<sup>3</sup> 4090 SERIES OR EQUIVALENT) APPLIED AS A BACKGROUND TO THE ALUMINUM PLATES.
4. LETTERING/GRAPHICS SHALL BE DONE ONE OF THE FOLLOWING WAYS:
  - A. 3M SCOTCHLITE ACRYLIC, TRANSPARENT, ELECTRONIC CUTTABLE FILM (RED 1172 SERIES) INVERSE CUT TO ALLOW WHITE REFLECTIVE BACKGROUND TO SHOW THROUGH.
  - B. SCREEN PRINTED USING 3M 880I OR 880-00 SERIES TRAFFIC SIGN RED TRANSLUCENT INK.BTH PROCESSES (A OR B) WILL ACCOMPLISH A RED FIELD WITH WHITE COPY.
5. ALL SIGN IMAGING SHALL BE IN COMPLIANCE WITH THE REFLECTIVE SHEETING MANUFACTURE MATCH COMPONENT SYSTEM.

## CONTROL VALVE DOOR SIGNS

1. If the control valve is located inside a building, it must be directly accessible via an exterior door.
2. The door must be labeled CONTROL VALVE INSIDE.



## APPENDIX



# ALTERNATE MATERIALS AND METHODS

## SCOPE

Requests for alternate materials and methods shall be evaluated by **District / City / County** 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.

## 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 equivalence to those prescribed in the code. The report shall address **District / City / County** 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 **District / City / County**. 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.
- B. AM&M requests will be evaluated by **District / City / County** plan review staff for equivalence 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 equivalence 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, **District / City / County** 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. 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 **District / City / County** 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 **District / City / County** inspection staff.

# SAMPLE AM&M PROPOSAL LETTER

July 26, 2017

CRFR / SFRD Fire Districts  
Attn: John Smith, Fire Marshal  
P.O.BOX 625  
Scappoose, OR 97056

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

Dear Mr. Smith:

In accordance with Section 104.9 of the 2014 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 Columbia County Land Use Case File 12-34 (TLP).

## PROJECT INFORMATION

Project: Big Truck Dealership – Sales and Services  
16000 Columbia River Hwy  
Warren, OR 97056

Contact Info: Jason Borne, FPE

## PROPOSAL

The dealership addition is located in Columbia County in the Warren 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 (12' sprinkler height). The original building sprinkler system was required to meet an NFPA 13 Ordinary Group 1 (8' sprinkler height).
2. Increase the design for head coverage to 100 square feet from the original sprinkler system design which required sprinkler head coverage of 130 square feet (increasing both the vertical and horizontal water sprinkler density by over 30% for this building).

## JUSTIFICATION

The upgrade in sprinkler protection design will enhanced water supply will help to ensure that a room and contents fire will be effectively held in check until emergency personnel arrive.

## 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,

Jason Borne, PE  
Fire Protection Engineer

## TOWER LADDER DIMENSIONS AND SPECIFICATIONS

Length	53.5'
Width	12'
Width with outriggers deployed	18'
Wheelbase	246"
Turning Radius	39'
Height	12'

Width is measured mirror to mirror of 12 feet. We use this number to allow for a safety margin of other apparatus from our fire districts and mutual aid agencies.

# EXAMPLE OF NFPA 1142 FORMULA WORKSHEET

**First Floor:**                      Length =     Width =     Sq. Ft. =

**Second Floor:**                    Length =     Width =     Sq. Ft. =

**Third Floor:**                      Length =     Width =     Sq. Ft. =

**Total Sq. Ft. =**

**Ceiling Height =**                       **Cu. Ft. =**

\*Note: Fill in one.    **Attic Height =**  Standard pitch                      **Cu. Ft. =**

                                 or:    **Attic Height =**  Gambrel attic                      **Cu. Ft. =**

                                 or:    **Attic Height =**  Mansard attic                      **Cu. Ft. =**

Additional space:                                                    **Cu. Ft. =**

(porch, etc.)                      Length                      Width                      Height

**Total Cu. Ft. =**

**Total Cu. Ft. =**     **OHC =**     **Gallons =**

\*Note\* Occupancy Hazard Classification number is 7 for dwellings, small office complexes and similar constructed facilities. Refer to NFPA 1142 for other types of structures.

**Gallons =**     **CCN =**     **Gallons =**

\*Note\* Type II Construction .75. Ex: Cinderblock, approved non-combustible material.  
 Type III Construction 1.0. Ex: Brick veneer, approved non-combustible material, or limited combustible.  
 Type V Construction 1.5. Ex: Wood frame, wood or other approved combustible material.

**Gallons =**     **Exp =**     **Gallons =**

\*Note\* Any structure within 50' of burn structure is considered an exposure and requires total gallons to be multiplied by 1.5. Add .5 to this number for each additional exposure. (Example: 1.0 + .5 + .5 + .5 = 2.5 exposure factor for 3 exposures.)

Total Gallons Required	GPM Flow
Up to 2,499 Gallons	250 GPM
2,500 to 9,999 Gallons	500 GPM
10,000 to 19,999 Gallons	750 GPM
20,000 or more	1000 GPM

**Required GPM's =**

In accordance with NFPA 1403, an additional water supply in the amount of 50% of total required fire flow must be available to handle unforeseen situations.

**Gallons =**     **at**  **GPM**    **for**

**Gallons**    x 1.5 =     **Total Gallons**