Chapter 4  

Warning Signs

**Design of Warning Signs**  
(MUTCD 2C.03)

Use Engineering Judgment in the selection and installation of different sizes of standard or special warning signs. Normally, all new installations of warning signs on the State Highway System will be 36" or larger.

**Placement of Warning Signs**  
(MUTCD 2C.05)

Table 2C-4 in the MUTCD lists suggested sign placement distances for two conditions. This table is provided as an aid for determining warning sign locations.

The critical factor in warning sign placement is visibility, adequate warning to the driver so they can react to the situation and use of the proper warning sign. Different situations will require warning sign placement that does not comply with the suggested placement distances set forth in Table 2C-4. The table was designed using 30" warning signs; if the road agency uses larger signs, the distance listed can be reduced. The use of high performance sheeting on signs also allows different sign placement distances.

Table 2C-4 was designed for a single warning placement. When the road authority uses two or more warning signs for the same condition in sequence, the table is no longer valid. Use of other warning devices plays an important role in relaying the warning to the driver; such as adding Chevrons to a curve.

**Horizontal Alignment Warning Signs**  
(MUTCD 2C.06)

The approach speed, in the parallel deceleration lane as it approaches the exit ramp curve, should be used rather than the speed of the mainline freeway lanes, when applying Table 2C-5 in the MUTCD to exit ramps.

**Horizontal Alignment Signs (W1-1 through W1-5, W1-11, W1-15)**  
(MUTCD 2C.07)

All Turn, Curve, Reverse Turn, and Reverse Curve signs shall have an Advisory Speed Plate when the comfortable safe speed on the curve is 10 mph or more below the posted speed.

**Advisory Speed Plaque (W13-1P)**  
(MUTCD 2C.08)

Ball-bank indication is our adopted standard practice for determining appropriate posting of advisory speeds in the state of Oregon. Criteria and appropriate values for ball-bank indication are as spelled out in the MUTCD. Use of ball-bank indication for determining safe speed on curves is the responsibility of each Region’s Traffic Engineering staff.

Follow Traffic-Roadway Section Technical Bulletin TR15-01(B). ODOT currently uses Rieker Software to complete ball banking. As a backup to Rieker, ODOT has developed a
“Digital Ballbanker” spreadsheet for use with the RDS7-BB Digital Inclinometer, based on MUTCD criteria. This is a tool that can be used for engineering studies in determining recommended advisory speed for horizontal curves. The spreadsheet can be accessed at: http://www.oregon.gov/ODOT/HWY/TS/signing.shtml

Divided Highway Sign (W6-1) (MUTCD 2C.22)

The Divided Highway Symbol sign (W6-1) should be used where there is a physical barrier or painted median separating opposing traffic. A DO NOT PASS (R4-1) should be placed approximately 250 feet downstream (depending on prevailing speed) from the Divided Highway symbol sign.

Minimum Size (W6-1) 36” x 36”

Divided Highway Ends Sign (W6-2) (MUTCD 2C.23)

On two lane highways at the end of a painted island or traffic separation, a Two Way Traffic sign (W6-3) should be used.

Speed Hump Sign (W17-1) (MUTCD 2C.29)

Speed hump signs or markings shall be placed on a public roadway to identify its location. When several speed humps are placed in a series along a roadway between intersections, a single SPEED HUMP sign with a rider indicating the series of humps ahead may be posted for the series.

Reduced Speed Limit Ahead Signs (W3-5, W3-5a) (MUTCD 2C.38)

Where advance notice is needed for an approaching speed zone which is posted with a SPEED XX (OR2-1) sign, the Speed Reduction sign (OW3-5) shall be used in lieu of W3-5. The speed displayed on the sign shall be identical to that displayed on the subsequent SPEED XX sign.

Lane Ends Signs (W4-2, W9-1, W9-2) (MUTCD 2C.42)

The Pavement Width Transition sign (W4-2) shall be used in advance of a lane drop and the RIGHT (LEFT) LANE ENDS sign (W9-1) may be used in advance of the Pavement Width Transition sign. The LANE ENDS MERGE LEFT (RIGHT) sign (W9-2) should not normally be used.

Intersection Warning Signs (W2-1 through W2-8) (MUTCD 2C.46)

The educational TRAFFIC CIRCLE plaque (W16-12p) shall not be used with the Circular Intersection symbol sign (W2-6).

The Circular Intersection symbol sign (W2-6) shall be used in advance of a roundabout intersection to inform motorists that they are approaching the roundabout. The sign is usually accompanied by an appropriate speed rider.
The Snowmobile Crossing sign (W11-6) may be installed on state highways under the following conditions:

1. The operator or owner of the snowmobile trail shall install STOP signs on the trail, outside the highway right-of-way.
2. The crossing shall be located, as nearly as possible, at 90 degrees to the highway.
3. The region traffic office will conduct a traffic investigation of the proposed crossing to insure the safety of the crossing.
4. The Oregon Department of Transportation shall make initial installation of snowmobile crossing signs.

ODOT policy is to reserve the use of fluorescent yellow-green sign sheeting for school zone signing on state highways including the “SCHOOL” portion of the School Speed Limit (S5-1) sign and any supplemental plaques used in association with these warning signs. Pedestrian and/or Bicycle warning signs should use the standard yellow color. Fluorescent yellow sign sheeting may be used for pedestrian and/or bicycle crossing signs if there is a need to call extra attention to a particular crossing.

The Region Traffic Engineer may allow the use of fluorescent yellow-green for pedestrian/bicycle warning signs on a state highway if the requesting jurisdiction can demonstrate an existing systematic approach to pedestrian signing which includes the fluorescent yellow-green sign background. However, other treatments must be considered before choosing fluorescent yellow-green sign sheeting (e.g. curb extensions, pedestrian refuge islands, Rapid Flash Beacons, etc.). The mixing of standard yellow and fluorescent yellow-green backgrounds for pedestrian/bicycle signs within a selected site area should be avoided.

Use of Supplemental Warning Plaques (MUTCD 2C.53)

The Distance Ahead Plaques (W16-2 and W16-3 Series) or the AHEAD Plaque (W16-9p) may accompany any of the Vehicular Traffic Signs or Non-vehicular Signs (W11 Series) as secondary riders for installations used in advance of an actual crossing area, marked or unmarked. On the State Highway System, the AHEAD Plaque (W16-9p) is the preferred rider.
Policy for the use of Sign Flag Boards (Yellow or Orange Diamonds)

Overuse or misuse of warning signs and devices erodes the effectiveness of their future use as safety devices. Table 2A-5 of the Manual on Uniform Traffic Control Devices reserves the use of orange. Therefore it is the policy of ODOT that orange flag boards are to be reserved for construction and maintenance only. For all other uses, as described below, sign flag boards shall have fluorescent yellow wide-angle prismatic sheeting.

Standards for the actual design and placement of the Sign Flag Boards are found on Oregon Standard Drawing TM 204.

Criteria for the application and use of fluorescent yellow wide-angle prismatic flag boards are as follows:

1. For changes in regulatory conditions. Examples include intersection control, lane use, and speed zone changes. Sign flag boards may be used either in conjunction with sign W23-2 (“NEW TRAFFIC PATTERN AHEAD”) or to draw attention to permanent warning signs or regulatory signs. Sign flag boards (as well as Sign W23-2) generally should be in place approximately one month.

2. On Interstate or other freeways at reductions in speed zones where the change is 10 mph or greater. This does not apply to school speed zone signing. Sign Flag Boards shall not be used in conjunction with school speed zone signing unless part of #1 above.

3. Safety Corridors. ODOT Sign Design Manual includes a layout drawing that illustrates the usage of sign flag boards in a Safety Corridor. The usage is optional, but if chosen, all appropriate signs in the Safety Corridor should include the sign flag boards. In addition to the signs identified in the layout drawing, sign flag boards may be added to warning or regulatory signs within the Safety Corridor. Use of sign flag boards shall be approved by the Region Traffic Manager.

4. As required by a result of an engineering investigation. The use of Sign Flag Boards shall be approved by the Region Traffic Engineer upon completion of the investigation. Sign Flag Boards installed by an engineering investigation should be evaluated for effectiveness within a time period of at least six months and no greater than 12 months after installation. If the post application engineering evaluation determines that these signs should remain in place, they may remain in place upon approval by the Region Traffic Engineer. After a site has been approved for extended use, it should be evaluated for further extensions on an annual basis. See below for engineering investigation and site evaluation requirements.

Many Sign Flag Boards are presently in places that do not meet these criteria. Sign Flag Boards not meeting the above criteria should be removed or reviewed as part of an engineering investigation to justify their continued use.

Evaluation of Yellow Sign Flag Boards:

Purpose of the Yellow Sign Flag Boards – a) to increase attention to traffic control devices, b) gain compliance with traffic control devices or c) reduce crashes?
Other devices or traffic control measures currently being implemented.

Is the effectiveness of the sign flag board reduced by other devices or traffic control or will it supplement their effectiveness?

Crash Reduction:
Document which crash types are believed to be reduced as a result of Yellow Sign Flag Boards.

Attach collision diagram and accident report.

How will you measure crash reductions?

Traffic Control Device Compliance:
Which traffic control device is not being complied with?

What is the compliance rate before implementation and how was it determined?

How will you determine the compliance rate after implementation?
A Reduced Speed Limit Ahead sign (W3-5) should be used to inform road users of a reduced speed zone when engineering judgment indicates the need for advance notice to comply with the posted speed limit ahead. (MUTCD Section 2C.30) An OW3-5 sign shall be used if the reduced speed zone is signed with a SPEED XX sign (OR2-1).

The speed displayed on the Speed Reduction sign shall be identical to the speed displayed on the subsequent SPEED XX sign. (MUTCD Section 2C.30)
The SLOW TRUCKS sign should be located at the bottom of extended grades and repeated at convenient intervals on extremely long grades. It should be used with the W7-3aP NEXT XX MILES plaque.
The TRUCK WEIGHING AHEAD sign with the ON SHOULDER plaque is intended for temporary use during portable truck weighing operations where motorists may encounter stopped or slow-moving trucks on the highway shoulder. The signs are to be removed when the weighing operation no longer exists.

Minimum Size - 36"x36"

**Sign Background:** Yellow, Standard Retroreflective Sheeting

**Sign Legend:** Black, Non-reflective Sheeting

Dimensions in parenthesis are for 36"x36" sign

- Reduce spacing 50%
As a preferred alternative to SHARE THE ROAD (W16-1P), the ON ROADWAY plaque may be used with the Bicycle warning symbol sign (W11-1) to remind motorists that bicycles may be present in the roadway. The ON ROADWAY plaque may also be used with other applicable vehicular or non-vehicular warning symbol use of the roadway signs (W11 Series, MUTCD), where there may be unexpected entry onto or shared use of the roadway. In lower speed urban areas, other signs or markings such as "BIKES MAY USE FULL LANE" (R4-11) or shared lane markings may be more appropriate.
The OPEN RANGE sign may be used to warn motorists of those areas where livestock are permitted to roam without the benefit of fences.

**SIGN ** | **DIMENSIONS (INCHES)**
--- | ---
**MINIMUM** | A 30 | B 1/2 | C 3/4 | D 6C | E 1 7/8 | F 2 | G 2
**STANDARD** | A 36 | B 5/8 | C 7/8 | D 7D | E 2 1/4 | F 3 | G 0
**SPECIAL** | A 48 | B 3/4 | C 1 1/4 | D 8D | E 3 | F 3 | G 3
The Low Clearance Sign (OW12-2P) is intended to warn motorists of clearances less than 15 feet between the roadway or the shoulder and the structure. The sign shall be mounted on the structure and shall consist of the low clearance dimension and an arrow directed at the low clearance point.

This sign shall always be used in conjunction with the "LOW CLEARANCE" Sign (W12-2).
Sign Background: Yellow, Standard Retroreflective Sheeting
Sign Legend: Black, Non-reflective Sheeting

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<td>SPECIAL</td>
<td>54</td>
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To be placed below private street/road name sign.
**Sign Background:** Yellow, Standard Retroreflective Sheeting  
Orange, Retroreflective Sheeting (Work Zone)  
Fluorescent Pink, Retroreflective Sheeting (Incident Management)  

**Sign Legend:** Black, Non-reflective Sheeting  

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The use of the SLOW sign shall be restricted to locations which require utmost caution and generally an appreciable reduction in speed by motorists. It shall always be followed by a second warning sign which indicates the reason for reducing speed.

When used in conjunction with a Turn or Curve sign, its use shall be restricted to those curves on which the comfortable safe speed is at least 25 MPH lower than the prevailing speeds on the approach. The sign is for emphasis only and therefore should be used sparingly to prevent ineffectiveness.

The SLOW sign should be erected at least 200 feet in advance of the warning signs.

**OREGON DEPARTMENT OF TRANSPORTATION**  
Approved By: O.T.C.  
Date: 01/1990  
Updated: 09/2006
The CONGESTION sign may be used in advance of isolated sections of roadside development through which a reduction of speed is necessary, but which are too short to warrant the establishment of a speed zone. It may also be used within speed zones to call the motorist's attention to sections which are too short to justify a lower speed, but which experience congested conditions requiring a lower speed than that indicated.

The need for this sign should be determined upon the basis of an engineering and traffic investigation. This sign shall not be used on the interstate highway system. The message is not intended for interstate use.
The TUNNEL sign shall be used in advance of all tunnels to warn motorists of their existence.
The HIGH WATER sign should be used to warn motorists of high water covering a roadway surface which is passable. The sign is only intended for temporary use and shall be removed or covered when the hazard no longer exists.

The sign should be erected on the right-hand side of the roadway. An additional sign may be mounted on a portable support in the median on multi-lane roadways.
The PREPARE TO STOP WHEN LIGHTS FLASH sign shall be a horizontal rectangle with two yellow flashing beacons above the sign. It may be used in advance of a traffic control signal, or a special application thereof, when sight distance or other conditions require an early warning.

For use on the State Highway system State Traffic-Roadway Engineer approval is needed. The need for such a sign shall be documented by an engineering study that addresses the second standard (paragraph 7) of Section 4D.12 in the MUTCD. Dilemma Zone protection must be considered in the design. (ODOT Traffic Signal Design Manual, Chapter 12)
The SNOW ZONE sign with interchangeable riders may be used during the snow season in mountain areas.

During the snow season, the CARRY CHAINS OR TRACTION TIRES (OR15-15A) rider should be displayed when the messages CHAINS REQUIRED ON VEHICLES TOWING OR OVER 10,000 GVW (OR15-15B); CHAINS REQUIRED, TRACTION TIRES ALLOWED ON VEHICLES UNDER 10,000 GVW (OR15-15C); and CHAINS REQUIRED ON VEHICLES TOWING OR SINGLE DRIVE AXLE OVER 10,000 GVW (OR15-15D) are not applicable. A blank rider should be displayed during the season when snow is not normally expected.
The OVERSIZE LOAD sign shall be used to warn motorists of a vehicle, including load, which is wider or longer than the legal limit and is operating over state or county highways or city streets, by written permit of the authority having jurisdiction over the highway or street.

To enhance visibility of signs the following are allowed: borders, larger legends, and/or reflective backgrounds.

Signs used on hauling vehicles between sunset and sunrise shall be made of reflectorized material.

The LONG LOAD warning sign is for vehicle combinations exceeding 75' in overall length, excluding combinations of vehicles authorized by the Surface Transportation Assistance Act of 1982.

The warning sign is to be displayed on the back of the rearmost trailer or semitrailer.

The sign shall be positioned at such height as to be readily visible to following drivers and it shall be kept in good repair, free from dirt, grease and "road film" in order that it may be clearly readable to following drivers.

Signs made of mesh or other materials that do not provide a continuous background are not permitted.

Signs used on hauling vehicles between sunset and sunrise shall be made of reflectorized material.

Reference OAR 734-074-0060
The LONG LOAD warning sign is for vehicles transporting loads which are not over 8'-6" wide and the vehicle and overhang are not over 80 feet in total length. May be used on county highways or city streets, by written permit of the authority having jurisdiction over the highway or street.

To enhance visibility of signs the following are allowed: borders, larger legends, and/or reflective background. Signs made of mesh or other materials that do not provide a continuous background are not permitted.

Signs used on hauling vehicles between sunset and sunrise shall be made of reflectorized material.

Warning sign for vehicles transporting loads which are wide only and under 80 feet long.

To enhance visibility of signs the following are allowed: borders, larger legend, and/or reflective background.

Signs made of mesh or other materials that do not provide a continuous background are not permitted.

Signs used on hauling vehicles between sunset and sunrise shall be made of reflectorized material.

Reference OAR 734-076-0135, 734-082-0037
Sign Background: Yellow, Standard Retroreflective Sheeting
Sign Legend: Black, Non-reflective Sheeting

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<td>STANDARD</td>
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<td>48</td>
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The SLIDES sign should be used to warn motorists of a section of highway where earth or rock slides may be encountered on the roadway.
The BYPASS PHOTO ENFORCED sign may be used under the OR22-4 ALL TRUCKS OVER 20,000 GVW NEXT RIGHT sign to warn drivers that the weigh station may use a video camera to identify trucks that don't stop at the weigh station as required.
This STOP AHEAD sign shall be used on the advance pilot car when traffic is stopped to allow a wide or oversize load to be towed through a tunnel or other restricted width section of highway. This sign shall only be used when required by permit.
The BRAKE CHECK AREA signs are used to identify those areas adjacent to the highway that are maintained for the purpose of providing truckers with an area for checking their air brakes and ensuring adequate pressure for navigating long, downhill grades.

The BRAKE CHECK AREA 1/2 MILE sign should be installed approx. 1/2 mile in advance of the Brake Check Area. The BRAKE CHECK AREA sign (OW21-5 or OW21-6) should be installed at the beginning of the Brake Check Area.
OW21-5 & OW21-6

Sign Background: Yellow, Standard Retroreflective Sheeting
Sign Legend: Black, Non-reflective Sheeting

### SIGN OW21-5

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### SIGN OW21-6

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BRAKE CHECK AREA SIGNS - OW21-4 to OW21-6 (See page 5-4 and MUTCD section 2I.06 for related information)

OREGON DEPARTMENT OF TRANSPORTATION
Approved By: S.T.E.  Date: 03/2015  Updated: N/A
The CHAIN-UP AREA signs are used to identify those areas adjacent to the highway that are maintained for the purpose of installing tire chains or traction devices.

The signs should be installed as follows:
The CHAIN-UP AREA 1/2 MILE sign should be installed approximately 1/2 mile in advance of the chain-up area; the SNOW ZONE sign (OW15-15) should be installed approximately 800 feet in advance of the chain-up area; the CHAIN-UP AREA sign (OW22-2 or OW22-3) should be installed at the beginning of the chain-up area. The signs are rectangular in shape and may be hinged near the middle. They should either be folded down or covered up when they are not needed.
**Sign Background:** Yellow, Standard Retroreflective Sheeting  
**Sign Legend:** Black, Non-reflective Sheeting

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**CHAIN-UP AREA SIGNS** - OW22-1a to OW22-3 (See page 5-4 and MUTCD section 2I.07 for related information)
CHAIN REMOVAL AREA
1/2 MILE

C = Border Width
D = Corner Radius

* Plywood version of sign may be fabricated in 2 pieces and hinged to allow for "folding down" of sign.

Sign Background: Yellow, Standard Retroreflective Sheeting
Sign Legend: Black, Non-reflective Sheeting

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CHAIN REMOVAL AREA signs - OW22-4a to OW22-6 (See page 5-4 and MUTCD section 2I.07 for related information)

The CHAIN REMOVAL AREA signs are used to identify those areas adjacent to the highway that are maintained for the purpose of removing tire chains or traction devices.

The signs should be installed as follows:
The CHAIN REMOVAL AREA 1/2 MILE sign should be installed approximately 1/2 mile in advance of the chain removal area; and the CHAIN REMOVAL AREA sign (OW22-5 or OW22-6) should be installed at the beginning of the chain removal area. The signs are rectangular in shape and may be hinged near the middle. They should either be folded down or covered up when they are not needed.
**SIGN**

**OW22-5 & OW22-6**

**SIGN**

**OW22-5**

*Plywood version of sign may be fabricated in 2 pieces and hinged to allow for "folding down" of sign.*

**SIGN**

**OW22-6**

**Sign Background:** Yellow, Standard Retroreflective Sheeting

**Sign Legend:** Black, Non-reflective Sheeting

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<th>SIGN</th>
<th>DIMENSIONS (INCHES)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OW22-6</strong></td>
<td>A</td>
</tr>
<tr>
<td>STD.</td>
<td>96</td>
</tr>
<tr>
<td>FWY/EXPWY.</td>
<td>126</td>
</tr>
</tbody>
</table>

CHAIN REMOVAL AREA SIGNS - OW22-4a to OW22-6 (See page 5-4 and MUTCD section 2I.07 for related information)

OREGON DEPARTMENT OF TRANSPORTATION

Approved By: S.T.E.  Date: 03/1994  Updated: 01/2014
The Highway Advisory Radio sign may be used at locations where a Travelers Information Station has been authorized. Use of the Travelers Information Station is governed by the ODOT document Guidelines for the Operation of Highway Advisory Radio and other Travelers Information Stations on State Highways.
Use the NO LANE CHANGES AHEAD sign to direct motorists that a no lane change area is approaching.

Size shown is for freeway use, use 6"C letters on a 36" x 36" sign for non-freeway applications.