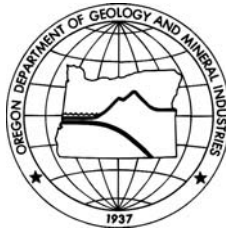

State of Oregon
Department of Geology and Mineral Industries
Vicki S. McConnell, Acting State Geologist

Open-File Report

OFR-03-06

Tsunami Sign Placement Guidelines

by
Mark Darienzo
Oregon Emergency Management



2003

The Oregon Department of Geology and Mineral Industries is publishing this paper because the information furthers the mission of the Department. To facilitate timely distribution, this report has not been edited to our usual standards.

For copies of this publication or other information about Oregon's geology and natural resources, contact:

Nature of the Northwest Information Center

800 NE Oregon Street #5

Portland, Oregon 97232

(503) 872-2750

<http://www.naturenw.org>

CONTENTS

1.0 Tsunami sign placement guidelines	1
2.0 Tsunami hazard zone	2
3.0 Tsunami evacuation route	3
4.0 Tsunami evacuation site	4
5.0 Entering and leaving tsunami hazard zone	5
6.0 Examples of proper placement of hazard zone sign and evacuation route signs.	6

1.0 TSUNAMI SIGN PLACEMENT GUIDELINES

Tsunamis are usually generated by great subduction zone earthquakes when the ocean floor is rapidly uplifted during the earthquake. The tsunami wave from a local subduction zone earthquake will arrive at the coast in approximately 15-30 minutes, and tsunami waves will continue to arrive periodically for several hours. When the shaking stops, people must immediately move inland and to high ground. It is critical that residents and tourists know where the tsunami hazard zones, evacuation routes and safe zones are located along the coast.

The most visible way to educate the public about them is to post signs. There are several tsunami signs available: tsunami hazard zone, tsunami evacuation route, tsunami evacuation site, and entering/leaving tsunami hazard zone. All these signs were created in Oregon. The tsunami hazard zone and evacuation route signs have been adopted for use by the Pacific states of the

National Tsunami Hazard Mitigation Program steering group (Alaska, California, Hawaii, Oregon, and Washington). Other Pacific Rim countries have also either adopted or adapted the signs for their use.

To insure consistency of sign placement, the following guidelines were developed for each of the signs.

Installation of tsunami signs on state highways must be approved and coordinated with the Oregon Department of Transportation (ODOT). Government entities can order all signs from the ODOT Sign Shop (503-986-2805). Also contact ODOT for guidelines on sign installation (post size, attachment methods, etc.).

Contact Oregon Emergency Management (503-378-2911) for further information on sign placement.

2.0 TSUNAMI HAZARD ZONE

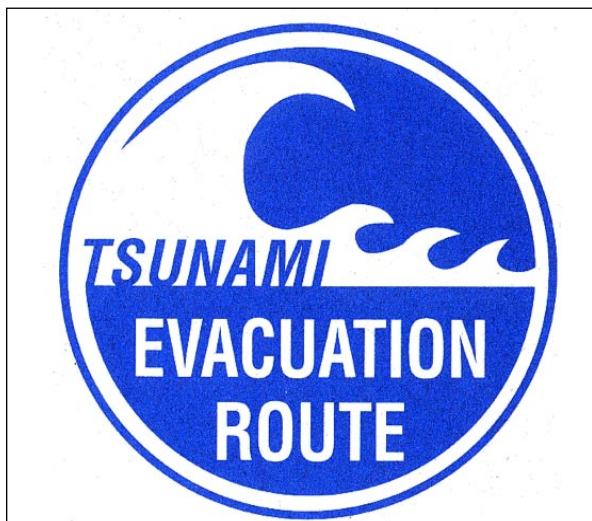
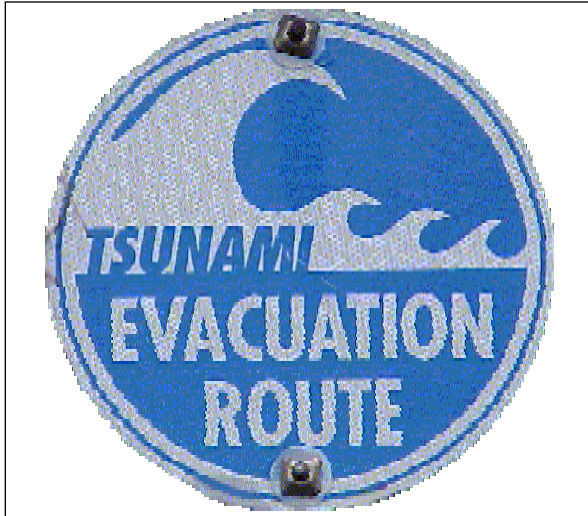


This sign should be placed at locations within the tsunami hazard zone as defined by local evacuation maps, detailed tsunami inundation maps or, if these are not available, tsunami hazard maps used to implement Oregon Revised Statutes 455.446 and 445.447. The statutes limit construction of critical and essential structures in the mapped tsunami inundation zone.

The sign comes in two sizes: 22" x 18" and 30" x 24". The size needed depends on where you plan to install the sign. It is important that the sign be visible, especially when located in areas where many people congregate (beaches, parks, and developed waterfronts).

3.0 TSUNAMI EVACUATION ROUTE

This sign should be placed along roads designated as tsunami evacuation routes that take people out of the tsunami hazard zone. Evacuation routes are identified by local governments.



At present the sign comes in two sizes: 18" and 24" in diameter. Due to Federal Standards, ODOT will no longer make the round signs.

Instead, the sign will be square with the round evacuation route design inside it. It is important that the sign be visible; thus the larger sign may

be warranted in some situations.

The sign is available with the wave curling to the right or left. This allows the breaking wave to always point to high ground regardless of the side of the road the sign is located on.

It is recommended that an arrow sign be used in conjunction with the evacuation route sign to insure that people go in the right direction. The orientation of the arrow sign with respect to the evacuation route sign may vary. The following orientations are acceptable: 1) the arrow sign is pointing skyward with the evacuation route sign above it and both signs are perpendicular to the evacuation route, 2) both the evacuation route sign and arrow sign below it are parallel to the route, and 3) the evacuation route sign is perpendicular to the route and the arrow sign below it is parallel. In orientations 1 and 2, the arrow sign is the determiner of the direction of evacuation and not the curl of the wave. The arrow sign may also be placed above the evacuation route sign.

NOTE: Theft is a major problem with tsunami signs. The evacuation route sign on the uppermost left above contains two tamper proof screws. Tamper proof screws are recommended for all tsunami signs to prevent theft. Although these screws do not guarantee that signs will not be stolen (sometimes the whole post is pulled up), they have proven to be an effective deterrent.

4.0 TSUNAMI EVACUATION SITE



This sign can be placed in the tsunami safe zone indicating that people do not need to go further inland or uphill. It could also be placed at a pre-designated destination or assembly area where there are emergency supplies and/or shelter.

This sign also comes in two sizes: 18" x 22" and 24" x 30". Once again the sign should be visible so choose the right sized sign for the location.

5.0 ENTERING AND LEAVING TSUNAMI HAZARD ZONE



These signs should be placed on major state or county roads where the road enters and leaves the tsunami hazard zone. They should be placed on both sides of the road and at both ends of the specific stretch of road within the tsunami hazard zone. However, if the road dead ends, then signs need only be placed at one end where people are entering and leaving, such as a State Park.

The signs come in one size: 42" x 48" so it can be visible by motorists traveling at highways speeds.



6.0 EXAMPLES OF PROPER PLACEMENT OF HAZARD ZONE SIGN AND EVACUATION ROUTE SIGNS



Rockaway Beach: Hazard zone and evacuation route signs at the corner of Hwy 101 and 3rd Avenue.

The location of the sign is in the tsunami inundation zone and the evacuation route sign wave is curled in the uphill direction. The hazard zone sign curl is in the opposite direction but mirror image signs are not available for hazard zone signs.



Cannon Beach: Evacuation route signs at the corner of S. Hemlock and Sunset Boulevard. Note that the curl of the wave is in the uphill direction.



Cannon Beach: Evacuation route sign at the corner of Sunset Boulevard and S. Spruce. Note that in this sign orientation the arrow sign is the determiner of the direction of evacuation, not the curl of the wave on the evacuation route sign.