

Seismic Lifeline Routes Selection

Ch2M Hill conducted a lifeline route study in 2012 under contract with the ODOT Transportation Development Division. A presentation of the route study was given to the Oregon Transportation Commission in June of 2012, and can be found at this link:

www.oregon.gov/ODOT/TD/TP/Reports/OTC%20Presentation.pdf

The goals for setting the priorities (called Tiers in the report) are listed below:

Tier 1

The routes identified as Tier 1 are considered the most significant and necessary to provide a functioning statewide transportation system. A functioning Tier 1 lifeline system will allow traffic to flow through the study area and to each region. Required characteristics of the Tier 1 system are as follows:

- Contiguous (all segments connected, with no isolated segments or groups of segments) connection to each geographic region of the study area with access to the most populous areas in those regions
- Access to the most-critical utilities required for statewide response and recovery (in particular fuel depots)
- Access from the east to the most-seismically vulnerable regions of the state
- Redundant crossings of the Willamette River in Portland
- Minimization of cost of retrofit and/or repair (fewest number of routes with least vulnerabilities that provide characteristics in the preceding bullets)

Tier 2

The Tier 2 lifeline routes provide additional connectivity and redundancy to the Tier 1 lifeline system. The Tier 2 system would allow for direct access to more locations, fewer miles to travel between some locations, increased traffic volume capacity, and alternate routes in high-population regions in the event of outages on the Tier 1 system. Requirements for this tier include the following:

- Contiguous (all segments connected, with no isolated segments or groups of segments)
- Redundant routes to provide circulation within the Portland Metro Geographic Zone and north-south movement within the Willamette Valley
- Minimization of cost of retrofit and/or repair (fewest number of routes with least vulnerabilities that provide characteristics in the preceding bullets)

Tier 3

The Tier 3 lifeline routes provide additional connectivity and redundancy to the lifeline systems provided by Tiers 1 and 2. Together, the Tiers 1, 2, and 3 lifelines will comprise the Oregon Seismic Lifeline System and will accomplish the following:

- Include all of US 101 to provide access to all of the Oregon coast (the most-seismically vulnerable regions of the state)
- Include routes that have been identified as providing access to the most-critical utilities (the final seismic lifeline system includes all segments identified as providing access to critical utilities, except those providing access to power generation facilities on the Santiam and McKenzie rivers).
- Include all routes that have been identified as providing access to emergency response staging areas
- Include all routes that have been designated as strategic freight corridors or freight facilities
- Provide alternate routes between any two nodes that connect two or more segments (any node that is not a dead end)
- Minimize cost of retrofit and/or repair (fewest number of routes with least vulnerabilities that provide characteristics in the preceding bullets)

In summary the tiers were set from a statewide perspective to maximize rescue and economic recovery of the entire state, and not necessarily to ensure that local communities were connected to essential services or to the overall statewide network. That is an important facet of seismic preparedness, but has not been addressed by ODOT for the statewide backbone network. Instead, many local communities have addressed those needs.

The backbone statewide system did extend in Salem on Highway 22 as shown below:

The Lifelines report offers the following explanation regarding the connection of I-5 to OR 99E in Salem:

"The last route in this zone designated Tier 1 is a piece of OR 22 in Salem that connects the state government offices to I-5."

Regarding the segment of Highway 22 west of OR 99E (across the Willamette River Bridges) to OR 99E, the Report offers the following comments:

"The following routes, which were rated reasonably well and serve to provide additional connectivity between the north-south routes, were designated Tier 3: OR 219 from Newberg to Woodburn, OR 99E in Salem from I-5 to OR 22, OR 22 from OR 99W to Salem, and OR 34 from Corvallis to I-5."

It seems from the information available in the report, the cost of retrofitting the Willamette River Bridges and the relative importance for rescue and economic recovery from a statewide perspective resulted in the selection of the route west of OR99E (including the Willamette River Bridges) to be placed in Tier 3.



Timing

Subsequent to the 2012 report, implementation timing of each Tier has been targeted in a soon to be released *Seismic Plus Report*. This report will be part of a presentation to the Oregon Transportation Commission (OTC), at their Annual Workshop meeting in Corvallis on October 23rd and 24th, 2014.

Tier 1, Phase 1 - 0-10 years

Tier 1, Phase 2 - 10-20 years

Tier 2 (Phase 3) - 20-30 years

Tier 3 (Phase 4) - 30 -40 years

Tier 4 (Phase 5) - 40-50 years