

Tunnel management a complex issue

Did you know there are nine tunnels on the state highway system? It may not seem like a big deal to "manage" them until you realize five were built in the 1930s and the newest tunnels, at Vista Ridge on U.S. 26, were built nearly 40 years ago, in 1970.

The Vista Ridge Tunnels are the only ones built to modern standards, including ventilation and fire suppression systems. Three of the older tunnels originally had timber posts holding up the rock and soil, and they have had major updates in the last 10 years to repair or replace those old timber tunnel liners.



The Tooth Rock Tunnel is one of nine on the state highway system.

A project addressing the needs in the Dennis Edwards Tunnel on U.S. 26 is in the current Statewide Transportation Improvement Program, and the Salt Creek Tunnel on Oregon 58 has work proposed for 2012. Also, repairs to the Knowles Creek Tunnel on Oregon 126 are scheduled next year using Bridge Maintenance funding.

Tunnels can affect traffic, safety

The older tunnels have reduced clearances that affect traffic and the safety of ODOT maintenance and inspection activities. When tall loads need to pass through a tunnel, we must stop traffic so that the load can be moved down the center of the road. Likewise, when there are inspection or maintenance activities, we must close one lane for that effort and control traffic for the other.

Like other transportation assets, tunnels require continuous maintenance. Bridge crews clean the drainage systems to ensure they are operational, and electrical crews maintain the lighting systems at least twice each year.

Managing tunnels requires an interdisciplinary approach because they are unique structures. Some tunnels are bored into very strong rock; others are surrounded by weaker materials such as sandstone, siltstone and shale. The differing geological conditions are important since the rock and soil that surround the tunnel put heavy loads on the liner. In 2006, we established a Tunnel Management Committee made up of specialists in foundation design, geotechnical issues and bridge inspection. This group is charged with maintaining the inspection records of each tunnel, identifying maintenance needs, and developing a long-term strategy for each tunnel.

Tunnels inspected routinely

Region bridge inspectors and geotech engineers routinely inspect tunnels in a cross discipline, cooperative effort to thoroughly assess these complex structures. A consultant with a national reputation for excellence in tunnel issues typically performs a structural evaluation. We also plan to use a nationally recognized consultant for detailed inspections about every 10 years who will, among other things, provide an independent review of our tunnel program.

Tunnel issues hit the national news after a portion of the liner failed on Boston's "Big Dig" project. This failure prompted the Federal Highway Administration to prepare inspection and maintenance manuals to help states manage a tunnel inventory of about 180 nationwide. Later this year, we expect to see national requirements for tunnel inspections, similar to those mandated currently for bridge inspections.

In our response to these new requirements, we plan to use the OneDOT Tunnel Management System which will allow multiple users to store and access tunnel-related data efficiently and effectively. We are currently testing the Tunnel Management System in Bridge and Geo/Environmental sections. After we make needed adjustments and Information Systems put the program into an SQL server, we will roll it out to the regions and districts and begin a new, improved era of tunnel management in Oregon.