



Department of Transportation

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To: Region Tech Center Managers and Roadway Managers

From: Timothy Earnest, P.E. – Pavement Design Specialist
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Subject: Pavement Considerations and Scoping Guidance for the Installation of Centerline Rumble Strips

Centerline rumble strips (CLRS) have proven to be an effective safety measure in reducing lane departure crashes, and have performed well on dense-graded pavement that was not significantly cracked or deteriorated. The level of risk for pavement deterioration or failure due to CLRS installation is typically associated with the type of pavement, its age, whether or not it has been sealed (typically chip sealed), and its existing condition rating. Pavement ratings are available on the Oregon State Highway System Pavement Condition maps (http://www.oregon.gov/ODOT/HWY/CONSTRUCTION/pages/pavement_maps.aspx). The purpose of this memo is to provide scoping guidance and considerations for Regions as they evaluate opportunities to install CLRS. The following guidance should be used:

Dense-Graded Pavements

- CLRS installed in a dense-graded pavement which is rated in good to very good condition (76 out of 100, or better) has a low risk of expected failures.
- Dense-graded pavements in fair or lower condition (0 to 75 out of 100) have a higher risk of failure, and the ODOT Pavement Services Unit should be contacted early in the design phase to evaluate the potential impacts to these pavements. [Note that fair pavements may have a deteriorated longitudinal joint, which could require some additional work.]
- At elevations above 2500' in the Cascade Mountains, CLRS should only be placed in dense pavement which is 5 years old or less and in good or better (76 – 100) condition. If CLRS is installed in pavement that does not meet these criterion, then a chip seal should be applied over the rumble strips for a minimum width of 2'.
- If CLRS are placed in a dense pavement that has been chip sealed, then a chip seal should be applied over the rumble strips for a minimum width of 2'.
- If CLRS are being installed over a deteriorated longitudinal joint, it is recommended to fog seal the CLRS and the joint.
- CLRS are not recommended in thin lifts of dense-graded pavement (less than or equal to 1.5" thick).
- All dense-graded pavements older than 2 years should be fog sealed.
- It should be noted that there is an issue with pavement marking materials adhering to fog seals. Paint has to be applied multiple times, and it typically takes 2 years before urethane will adhere.

Open-Graded Pavements

- There is a moderate risk when installing CLRS in an unsealed open-graded pavement. The CLRS may not last due to raveling.
- CLRS should not be installed on sealed open-graded pavements. There is a high risk for pavement deterioration and failure.

Emulsified Asphalt Concrete (EAC) Pavements

- Regardless of condition, it is not recommended to install CLRS in an EAC pavement due to a high risk of early failure. The cost and safety impacts of pavement failure likely outweigh the safety benefit gained on these typically low volume highways.

Portland Cement Concrete (PCC)

- CLRS can be installed into good or better PCC pavements provided that the centerline joint is cleaned and resealed, and only if the CLRS are intended to be permanent.

General Note

It is not recommended to partially inlay the existing longitudinal joint (strip paving) prior to the installation of CLRS. This effectively creates a permeable area in the pavement and may potentially lead to pavement deterioration, failures, or increased maintenance activities.

CC: Bethany Veil (Traffic Devices Engineer)