



Research Notes

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Wearing Surfaces for Plastic Bridge Decks

Fiber reinforced polymer (FRP) composite bridge decks based on fiberglass materials are being installed on bridges across the country. In addition to being light-weight and quick to install, these decks do not corrode. Oregon has three state-owned and one county-owned FRP bridge decks.

Unfortunately, many states including Oregon have experienced cracking and delamination of the wearing surfaces, which are applied after the FRP decks are installed on the bridge. Some of these problems may be due to improper installation of the wearing surfaces, but Oregon has had cases in which the materials were unable to accommodate service conditions.

To improve the selection of wearing surfaces for FRP bridge decks, the Oregon Department of Transportation undertook a research project to characterize the service capabilities of four wearing surface systems.

First, critical properties for wearing surface materials were identified. They included tensile strength, failure strain, abrasion resistance, and bond strength. Laboratory tests were then developed to quantify these properties of the materials, taking into consideration whenever possible the service conditions. Finally, the data were collected and analyzed in order to make comparisons between the materials tested and to compile a ranking matrix.

Based on the test results, Ure-Fast PF-60[®] was specified as the wearing surface for Oregon's newest FRP bridge deck on the Siuslaw River Bridge in Florence. The wearing surface was applied by the Albany bridge crew. Though the new deck has only been in service for a few weeks, no problems with the wearing surface have been observed so far.



Testing wearing surface material

Future FRP bridge projects in Oregon, including the replacement of deteriorating wearing surfaces on older FRP decks, will use the information and comparisons generated from this study.



Applying wearing surface on the Siuslaw River Bridge

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