

STREET Talk

NORTHWEST CEMENT PRODUCERS GROUP

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Bellevue, WA. Ultra-Thin White Topping. A quick pavement fix that lasts!

Going back to 1998, the city of Bellevue, WA fixed a constantly deteriorating surface at Main Street and 112th. Avenue with ultra-thin concrete white topping.

Ultra-thin white topping is defined as a thin layer of concrete that contractors place over traditionally milled asphalt. Stronger and more durable than asphalt, the process promises to last longer than asphalt, and be ready for traffic quickly.



Figure 1. During construction, looking eastbound.



Figure 2. Completed pavement and curb detail, looking eastbound.

The city had experienced constant problems with the asphalt intersection because of the heavy traffic coming down a 13 percent slope and stopping at the traffic signal below. Asphalt overlays to repair the spot lasted only about five years. “The replacement UTW should easily last four times that long,” according to Bob Goenen, then the project manager with the city of Bellevue. (Note: As of 2008, the project is performing as predicted.)

The 350-foot-long, 56-foot-wide test section is the first use of the process in Washington State, but is common in the Midwest. The city of Bellevue opted to use a three inch deep concrete section on top of a milled asphalt surface.

As a demonstration project, most of the money for the \$26,000 contract came from members of the Washington Aggregates and Concrete Association. Participants included Merlino Construction, Zualaga Construction, Miles Sand and Gravel, Cadman, Lone Star Northwest, Stoneway Concrete, Salmon Bay Sand and Gravel, Salinas Construction, Ash Grove Cement, Lafarge Corp., Tibury Cement, Master Builders Inc. and W.R. Grace & Co. Bellevue paid \$7,500 or about as much as an asphalt repair to the intersection would have cost in 1998.

The schedule was similar to a traditional asphalt repair job. To achieve the usual 3,500 p.s.i. rating, concrete suppliers devised a special mix that would reach that level in 24 hours. The designers chose combined aggregate gradations for durability, fly ash for workability, Type I cement, admixtures and about two pounds of propylene per cubic yard for paste integrity, surface durability and to reduce shrinkage. More fibers were added during construction after the team decided the mix needed to be stronger. Concrete test results showed the mix produced over 6,000 p.s.i. at 28 days.

Mr. Goenen was pleased with the project as it neared its first anniversary, despite some cracking at the curb side. "We know that was caused because we used fresh asphalt to fill in where the contractors took out bad sections of asphalt," said Bruce Chattin, Executive Director of WACA. "The fresh asphalt was not compacted enough."



Figure 1. Rooftop view of the finished project, looking to the southwest.



Figure 2. Finished project, looking eastbound.

The speedy turnaround time in the Bellevue project was another consideration in choosing this method. Work was completed over the weekend and the section could handle heavy traffic again Monday morning.

Many thanks to the Washington Aggregates & Concrete Association for the background on this project and to John Arroyo of the Northwest Cement Producers Group for the "historic" photographs.

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