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Preservation Resource®

U.S. Highway 153, Mosinee, Wis.

>>> PARTIAL DEPTH REPAIR A STANDARD SOLUTION FOR SURFACE DEFECTS

REPAIRING OUR NATION'S ROADWAYS IS a continuous concern and costly burden to our state Departments of Transportation and municipalities. Many states in the Midwest, including Minnesota, Wisconsin, Missouri, Iowa, Michigan, Colorado and Kansas, are using the partial depth repair (PDR) method developed in Minnesota in the early 1980s to efficiently repair damaged roadways. The unique attribute of this method is that it can be used for both highway and urban applications with minimal interruption to traffic. When properly used, partial depth repairs can be more cost-effective than full depth repairs and are accomplished with less time, labor and material.

Quick Repairs in Mosinee, Wis.

The Wisconsin Department of Transportation (WisDOT) roadway repair on U.S. Highway 153 in Mosinee included a mile and a half of repairs on a four-lane divided highway. The work on the highway consisted primarily of concrete pavement partial depth repair and some full depth repair.

Repairs began in September 2010 and concluded smoothly in mid-November 2010. The quick 2½ month rehabilitation using the PDR technique was appropriate for the type of deterioration suffered by this highway. In this situation, it was a more appropriate repair than doing a full depth repair, as the remainder of the pavement was still in good functioning condition. Avoiding a full depth repair can reduce the costs involved with repairing the roadway.



Placement of PDR
backfill material

“Partial depth repair allows you to address more area for less money,” said Tom Bonness Jr., President, C.P.R., Inc., the contractor for the repair work on U.S. Highway 153.

PDR has been used in Wisconsin since the mid-1990s. He continues to see new projects that call for this repair technique. “Wisconsin is looking more and more to partial depth repair and it is now a standard repair technique in their arsenal,” said Bonness. “Many municipalities have also adopted the PDR technique for repair of their roads.”

Effective Technique

PDR is used to repair pavement deterioration in the top 1/3 to 1/2 of the slab. The repairs are generally located at the joints, but can be placed anywhere surface defects occur. In Wisconsin, the contractor milled out the deteriorated pavement sections and placed the patch mix within the removal area. The repair sections were sandblasted clean and a grout was applied prior to the concrete placement and then cure was applied. All existing joints and random cracks

TEAM MEMBERS

- C.P.R., Inc. (Contractor)
- Wisconsin Department of Transportation (Owner)

have to be re-established through the full depth of the repair.

Advantages of PDR

At the Highway 153 repair, several benefits of PDR are evident. The biggest advantages are that it quickly restores structural integrity, improves ride quality, and extends the service life of a pavement with shallow problems at joints. Another obvious benefit is the cost. Rather than replacing or overlaying an entire road, an otherwise structurally sound road can be kept intact and the problem areas repaired. The speed of the repair made it evident that this highway could be opened to traffic within a shorter amount of time, reducing the time delay to motorists.

>>> STEP-BY-STEP PARTIAL DEPTH REPAIR

The steps to a successful partial depth repair on a roadway include:

- Cut and/or mill out the deteriorated concrete from the repair area.
- Sandblast the repair area to remove debris.
- Apply a bonding slurry to promote the bond when using a cementitious material.

- Place an approved backfill material in the repair area.
- Vibrate the concrete when using a cementitious material.
- Finish and texture the repair area.
- Broom a bonding slurry around the edge of repair when using a cementitious material.
- Apply curing compound to the repair area when using a cementitious material.