

Montana Department of Transportation
Helena, Montana
Research Program

Experimental Whitetopping Annual Evaluation

Location: Great Falls, Montana; Northwest Quadrant of Intersection of N. W. Bypass & 3rd St. N. W. (U5206 & U5203). Three southbound lanes of 3rd St. N. W.

P. O. Number: 305626 (Original Project - Maintenance)

Description: Experimental maintenance project consisting of milling approximately 90mm of Asphalt Cement (AC) and placement of 130mm Portland Cement (PCCP) onto the milled surface to create a bonded-composite pavement. Project length – 58 meters (190 ft.).

Evaluation Date: July 24, 2003

Construction Date: September 1999

Report Origin: Craig Abernathy
Experimental Project Coordinator

History

This Whitetopping project was initially constructed in fall of 1999 to alleviate the continued heavy rutting and shoving of the asphalt concrete at this intersection. During late summer of 2000, a small portion of the right-turn lane developed severe cracking. This was initially documented in the fall of 2000 evaluation report on this project. This failure of the pavement (Due to failure of the AC layer and subgrade)



occurred at a rapid rate, estimated at 3-6 weeks. The failed section comprised five panels longitudinally and three panels transversely, approximately 10' x 15' located in the right-hand turn lane. This section went through the entire 2000-2001 winters in this condition, withstanding freeze-thaw cycles, traffic and maintenance snow removal. The failed area was removed and repaired in the spring of 2001. At the date of this report, the right lane is

continuing to exhibit pavement distress. Only the west half of the project displays panel cracking.

Evaluation

Since the 2002 evaluation, continuing panel cracking in the right-hand turn lane adjacent to the repaired area (south in the direction of travel – outlined in yellow in figure 1). This panel cracking may be an extension of the underlying AC stripping which was determined as the main factor of failure and consequential replacement of the 10' x 15' section replaced in March 2001. The moisture stripping the bottom AC layer may be attributed to the close proximity of the storm sewer line directly under the lane. Since the last evaluation, cracking has increased and approaching to severe in nature. No deflection or debonding of the individual panels was seen as traffic passed over.



Additional cracking is located in the right side of the center lane approximately 40 ft. north of the repaired area. Since this cracking is near the storm line, it may be an indication of AC stripping due to abnormal water



infiltration causing structural failure (figure 2). Cracking has also appeared in the south-end of the right-hand turn lane, ten feet north of the manhole cover. The same scenario may be occurring at this site (figure 3).

The east half of the project (through lanes), at this evaluation, is showing no signs of cracking or any other visual deterioration. There are no apparent signs of debonding on any of the panels in any area of this section of whitetopping.

This project has been rated as performing well. The next evaluation will be in the summer of 2004.

This report and other related project information can be found at:
http://mdtinfo/research/projects/gtf_whitetopping.shtml