Montana Department of Transportation
Research Program
October 2002

RESEARCH PROGRAM ANNUAL EVALUATION REPORT

Thin-Whitetopping Overlay Composite

Location:	Kalispell, Montana
Project No.:	STPP 1-2 (93)121, East Idaho St.
FHWA No.	Experimental Project MT 00-05
Description:	Experimental construction project consisting of milling approximately 130mm of Asphalt Cement (AC) and placement of 130mm Portland Cement (PCCP) onto the milled surface to create a bonded-composite pavement. Project length-0.8 kilometer.
Date of Evaluation:	October 2002, Second Annual Inspection
Report Origin:	Craig Abernathy, Research Program

This was the second annual evaluation of this project since construction in fall of 2000. This inspection consisted of a visual review to document any surface distress or deterioration of the whitetop-bonded composite. In addition, this report will also document the Grade S resurfacing project that is adjacent to the whitetopping section. The AC evaluation encompassed visual determinations and rut measurements at selected intersections.

Figure 1

Figure 1 is an overview, looking west at the whitetopping section.

The overall appearance of the whitetopping is good. Twelve cracked panels were documented in the 2001 report. Two additional panels were found during this inspection, making the estimated totals at (currently) fourteen cracked panels. All cracks are hairline in nature with no vertical displacement or debonding of the composite panels. At this time, there is no indication of a pattern or reasons for the

randomness of the cracked panels; therefore, it is premature to attempt to ascertain a cause. It should be noted that the majority of the cracking occurs on the north half of the project (which was placed first) between the streets of 8th Ave. EN and 6th Ave. EN. The south half of the project is exhibiting almost no cracking at all. Refer to the crack map at the end of this report for a general representation of cracked panel locations and the relationship of how the crack is located within the panel itself. The crack map is strictly an illustration of crack locations within the project, it is not to scale.

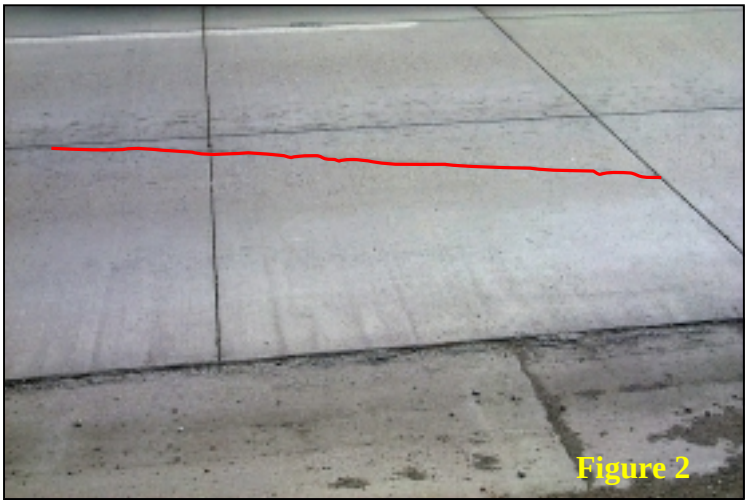
Figure 2

Figures 2 & 3 are examples of the in-lane cracking. A red line has been superimposed over the images to better see the lay of the crack; if this report is viewed in black and white, they will appear as dark gray over the pavement.

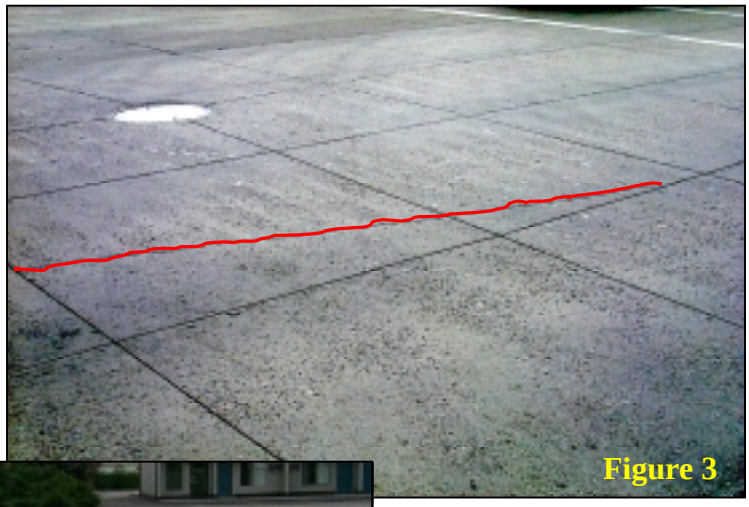
Figure 3

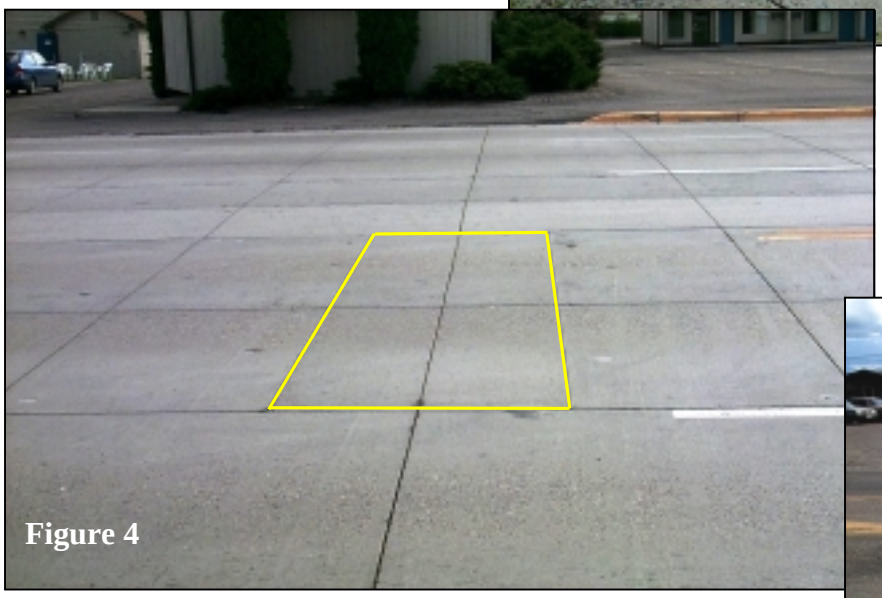
Figure 4

Figure 4 shows the performance of the doweled PCC patch placed during construction due to un-consolidated concrete by lack of adequate vibration (documented in the 2001 fall construction report). The yellow outline is the area of repair. Visual observation of traffic moving over this section display no faulting or movement of the slab. At this time, no visual surface distress was noticed. This repair is approximately located in the center section of the westbound lanes 2 meters past the intersection of Sixth Avenue EN and East Idaho St. Figure 5 is showing the east-


Figure 5

end transition area of the project. It is important to point this feature out due to the innovative way this approach was placed, please refer to the fall 2001 construction report for details (that report can be located on the MDT Research intranet website at http://mdtinfo/research/projects/kal_whitetopping.html). No evidence of distress to the transition was noticed during this evaluation.

Superpave - Grade S

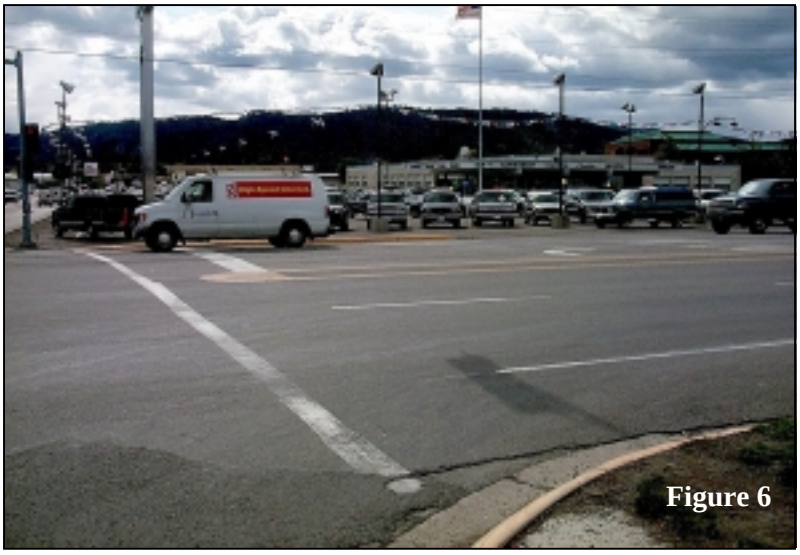
Figure 6

In addition to the whitetop portion, AC Grade S was placed adjacent to this project. The AC treatment is labeled as pavement preservation. The whitetop project type initially was categorized as a work type 182 resurfacing and has since been modified to a minor rehabilitation. Although not an applicable comparison, this report will also publish rutting data at two selected sites involving intersections west of the whitetop project. Transverse cracking, once observed, will be documented in later evaluations. Rut numbers were collected at the intersections of Meridian & West Idaho and 5th Ave. NW & West Idaho. Rut data was collected approximately 2.5 meters west of the intersections stop bar on West Idaho on all four lanes, east and westbound. This was done to supply data with non-stop traffic versus traffic required to stop. Figure 6 is a sample image of West Idaho and Meridian intersection. The following table is the consolidated rut data. The values are listed in millimeters.

Meridian & West Idaho							
Westbound Lanes				Eastbound Lanes			
Right Lane*		Left Lane*		Left Lane*		Right Lane*	
OWP	IWP	IWP	OWP	OWP	IWP	IWP	OWP
4	7	5	2	7	10	6	8

5th Ave NW & West Idaho							
Westbound Lanes				Eastbound Lanes			
Right Lane*		Left Lane*		Left Lane*		Right Lane*	
OWP	IWP	IWP	OWP	OWP	IWP	IWP	OWP
8	7	9	7	21	26	11	26

*Per Direction of Travel

Of the two intersections being monitored, the 5th avenue site displays the most distress in rutting. It is difficult to ascertain the reason for this disparity of numbers. Since this report is not analyzing traffic demographics on these sites, it would be premature to assign cause and effect. We can say that if the whitetopping option had not been selected that a similar AC performance might have been mirrored for that stretch of East Idaho if the AC project had been extended to that portion of P1 (E. Idaho). It was mentioned during a recent meeting of the American Concrete Pavement Association held in Kalispell, that residents who live near the completed whitetopping project have commented on how much quieter the neighborhood has become since there is no longer a rough road which created noise from trucks traveling through this stretch of town.

The whitetopping project has been rated as performing well. The next evaluation will be held in October of 2003. The following page is the representative crack map. Note that the map shows only that portion of the project that currently contains cracked panels.

Thin-Whitetopping Overlay Composite - STPP 1-2(93) East Idaho St., Kalispell Montana
Representative Project Crack Map

Note: Crack map only shows portion of project which contains distress information