Montana Department of Transportation
PO Box 201001
Helena, MT 59620-1001

Memorandum

To: Kevin Christensen, PE
Construction Engineer

From: Paul Jagoda, PE
Construction Engineering Services Engineer

Date: August 28, 2008

Subject: Construction Review Report-Glendive District - STPS 254-1 (23) 0 JCT MT 16 - Northwest CN 6242

Please find the Construction Review Report for the subject project.
If you have any questions or require further information please contact Doug Martin or myself.

PGJ/DJM/djm

cc:

Loran Frazier, PE	Paul Ferry, PE	Tom Martin, PE
Dwayne Rude, ADCOE	Matt Strizich, PE	Kent Barnes, PE
Jay Fleming ADCE	Jim Jones AEPM	Suzy Price
Ray Mengel, DA	Mike Kulbacki, FHWA	Roger Warner DMS
Lisa Durbin, PE	CES Reviewers	Jeff Patten, FHWA
Lesly Tribelhorn, PE	Jim Walther, PE	Dan Smith, PE
Michael Dyrdahl		

CONSTRUCTION ENGINEERING SERVICES PROJECT REVIEW REPORT	
Project Number: **Project Description:** STPS 254-1 (23) 0 JCT MT 16 - NW **Control Number** 6242	**MDT District:** Glendive **EPM:** Jim Slaska
Review Date: August 18, 2008	
Review Made By: Doug Martin	**In Company With:** **N/A**
Project Description: Cold in Place Recycle, plant mix surfacing, and seal & cover on 9.4 miles of Secondary 254 in Dawson County. The project begins at the JCT of MT 16 at mile post 0.0 and extends northwest.	
Review Type: (See attached sheet on review report types) ☒ **Oversight** ☐ **Subject Specific-** ☐ **Training** ☐ **Investigatory** ☐ **Constructibility** ☐ **Post Construction**	

CONTRACT INFORMATION:

Contractor: Northern Improvement Co. – North Dakota

Contract Amount: $1,638,285.60

Contract Time/Completion Date: 70 WD with 27 WD charged to this review date. Authorized time suspensions allowed for Change Order #1 and another for Change Order #3. Both suspensions dealt with CIR mix designs.

Phases Inspected: Cold in Place Recycle, Fog Seal & Blotter, and Traffic Control.

Work in Progress: Cold in Place Recycle, Fog Seal & Blotter, and Traffic Control.

Cold in Place Recycle: Cold in place recycle (CIR) was being performed in the eastbound lane proceeding back along stationing from 342+50 to 199+25. Based on gradations taken the first day of operations, the percentage of recycling activating agent (CIR-EE) was set at 1% by dry weight of the RAP. Virgin aggregate was added as per Change Order #3 at 15% by dry weight, and the

quick lime stayed at 1.4% as per plan. The following pictures show some of these operations.

Add-rock placed ahead of CIR train. A CIR train that has a paver following.

The finished pavement behind the rollers had some irregularities. These were due to the following situations:

1) Crack sealant used on the existing pavement was milled up and over a scalping screen. However, pieces about the size of a golf ball were sent through the paver. When these chunks were on the surface, the possibility of the chunks loosening and creating a surface void existed. After discussions, the project personnel decided to leave these pieces in place, rather than extract and try to patch with the cold mix. These pieces were too numerous to find them all, and with seal/cover operations within a week, the thought was those operations would help hold the majority of these chunks of sealant in place.

2) The approaches and mailbox turnouts were previously placed with PMS Gr. D Commercial mix. This created a challenge to match the elevations at the horizontal joints evenly outside the shoulder line. This was especially difficult within horizontal curve sections of the alignment. There will probably be some surface raveling at these joints, but it should be contained to a minimum upon a timely seal and cover.

Fog Seal & Blotter: Fog and seal operations were performed for the day from station 397+98 to 358+20 on the left (eastbound). This operation was generally done on the previous days CIR work. However, due to a breakdown with the spreader for the blotter material, the contractor was contemplating using other means (cracked tailgate on an end dump truck) to complete the operation after this reviewer left the project. The blotter material was initially left in place, without brooming to allow the surface to cure. After a few days, the blotter material was basically gone due to traffic and weather conditions. The lane on the left was fogged the day before, while the other lane was fogged 3 days earlier.

Traffic Control: Post mounted signs are in place at each end of the project and traffic control devices are being used and monitored appropriately. Pilot cars are being used in conjunction with Temporary Traffic Signals for all operations. Traffic flow moved through the project easily, with up to 15 minute waiting periods at the signal stations. All devices were clean and appeared in good working order.

Erosion Control & Environmental Issues: N/A

Change Orders: The following change orders have either been fully executed or are in the process at this time:

- CO #1: Addresses a change for the Notice to Proceed Date from May 15, 2008, to April 17, 2008. This date change allowed the contractor to core the existing pavement and obtain the samples for the initial CIR mix design to be run by the contractor's consultant.
- CO #2: Added the following standard MDT provisions to the contract:
  1) Std. Specification 109.04.2 – Allow a 10% pay factor to equipment rates when paying on a force account basis.

2) Std, Specification 109.07 – Clarifies payment by invoices when payment is made for stockpiled materials (materials in storage).
3) Allows for the contractor to have 14 days from the date on the time assessment to appeal contract time.

- CO #3: Addresses the addition of virgin aggregate (CAC) to the CIR at 15% by weight of the in place RAP. In addition, there was a reduction to the Recycling Agent/CIR – EE per ton. These changes and another set of samples obtained through coring the existing PTW enabled the second mix design to meet the stability properties that MDT required for the CIR pavement.

Claims: At this time there are no Certified Claims.

Questions from Project Staff:

No questions at the time of this report.

Areas of Good Practice/Positive Aspects: The EPM and his crew were new to this type of CIR Construction. But due to training such as; prior visits to like projects for visual aids, reading material on CIR construction, and understanding differences between mix designs for CIR and hot mix asphalts, they were not totally at the mercy of the contractor experts when it came time to perform the CIR operations. However, the communications between the contractor personnel prime and MDT personnel seemed to be in good accord.

Follow-up Items: Lessons Learned

- When nominating projects for this type of CIR construction, preliminary data from samples taken, should be scrutinized closely for any and all properties for the end results of the pavement when finished with construction.

- The amount of crack sealant on the existing roadway may be cause for concern when analyzing whether a project is a good candidate for a CIR project. Time will tell if the small concentrated chunks of sealant just below the seal/cover will become a maintenance problem in the future.

This picture is CIR pavement after going through the paver.

This close up shows the pavement after rolling and prior to fog seal.

After going through the paving machine, but prior to rolling, care must be taken to match the previously constructed lane at the horizontal line (centerline).

End of Report