

DOCUMENTATION REPORT

APPLICATION OF ASPHALT SEAL COAT (OR FOG COATING) OVER EXISTING ASPHALT CEMENT (AC) MAT FOLLOWED BY FOG SEAL OVER CHIP SEAL (FSCS)

Location: Flathead County, US2/N1 (C000001)
Project Name: Marias Pass
Project Number: P.O. 311641
Project Description: Fog Seal – Seal and cover – Post Fog Seal
Principal Investigator: Craig Abernathy, Experimental Program Manager
Date of Documentation: August 2015/May 2016

Objective

The section of pavement, approximately eight miles, was placed in the summer of 2011 with a conventional seal and cover (chip seal) added in the summer of 2012.

Per input from MDT staff associated with the project, visual pavement distress, mainly in the form of raveling, appeared prior to the initial chip seal. Velocity patching was chosen as the main repair solution to maintain road integrity.

In July of 2015, due to the continuing deterioration of the pavement surface, in an effort to increase the longevity of the pavement investment; a mineral free fog seal was applied to the existing mat in an effort to seal and tighten (or rejuvenate) the pavement in an attempt to minimize the raveling.

Approximately one month later a conventional chip seal was laid down augmented by an additional post fog seal to provide a maximum intent to reinforce the topical chip layer and reduce moisture infiltration to the underlying asphalt cement (AC) pavement.

Project Description

The project was paved with a Grade D Commercial mix. AC was reported at 4.8% with 58-28 binder from MRC Contracting. Mix voids averaged 3.8% with a VMA of 12.3 and VFA of 68.8 and a Rice Gravity of 2.452.

The project site is located on Route US 2, from approximate reference point 189.9 to 197.8; with an average roadway width of 31 ft.

2015 Events

A fog sealed was applied to the existing AC pavement. The subsequent chip seal cover material used was Type 2 with a CHFRS-2P asphalt emulsion with a post fog seal application using CSS-1H asphalt emulsion. All labor and materials provided by Pavement Maintenance Solutions.

Evaluation Process

The information in this report will focus on visual documentation of the pre-fog seal application of the existing asphalt mat, and the accompanying chip seal/post fog seal treatment.

The main intent of the report is to establish, to what level, the added fog seal and enhanced chip seal has arrested the deterioration of the asphalt cement (AC) pavement.

Research will inspect/evaluate the project at a minimum biannually (late fall/early spring) to document performance of the FSCS section (more if there is an incident with the project that requires additional reporting).

To date there has been no report of any relevant inconsistencies or construction issues with installation of the project regarding the FSCS section.

All information pertaining to the performance of the chip seal and added emulsion seals (including documentation by district personnel, anecdotal, etc., if available) will be included in the annual and final reports.

Along with this initial reporting the first full project evaluation will be conducted in the early spring of 2016. All project information will be available at:
http://www.mdt.mt.gov/research/projects/seal_coat.shtml

The following are images and comments representative of the general condition to the project to date, including the pre-fog seal, chip seal and the post-emulsion seal treatments conducted June-August 2015; and the April 2016 inspection.

April 2016 Site Inspection

Visually, after the first winter season; the majority of the project is in good condition with surface conditions displaying a tight mat with the fogged surface appearing to have a good bond to the exposed aggregate matrix (see page 9 for a close-up of the surface texture). The topical layer of bitumen to the aggregate, apparent after application, (see page 6) has now for the most part flaked off which is normal.

There are sections of the project which do exhibit distress in the form of topical aggregate loss due traffic loads, high frequency of snow plow activities, or environmental extremes. Currently it appears at some areas where velocity patching was performed the underlying pavement distress is reflecting through the FSCS treatment. This trend will be looked at with the next scheduled inspection in the spring of 2017, (see pages 7-9 for representative images of the project).

Fog Seal on Existing Asphalt Mat – Documented August 2015



← Fog seal application to existing pavement; approximate reference point 198: View West.



← Fog seal application to existing pavement; approximate reference point 190: View East.



← Example of section delineation in the field.



↙ Image of the type of raveling documented on the project; conversely there are areas of the project where currently the surface has a tight appearance.

Lower image shows sections where velocity patching was applied.



Fog Seal on Chip Seal (FSCS) – Documented August 2015



← FSCS application to existing pavement; approximate reference point 198: View West.



← FSCS application to existing pavement; approximate reference point 190: View East.



← Reference point 196: General condition of FSCS application to date.



↕ Representative image of enhanced chip seal; on average (visually), the FSCS has a consistent application throughout the project. Chips are locked-in with a substantial bitumen layer.



Fog Seal on Chip Seal (FSCS) – April 2016 Site Inspection



← West end of FSCS application to existing pavement; approximate reference point 190: View East.



←↓ Several examples of aggregate loss documented during the inspection.





← Another section of pavement, where the loosening or stripping away of the FSCS cover material exposing the fogged base mat.



← Representative image (post FSCS) of patched section of raveling continued fragmentation at the surface.



← As stated prior in the report, to date the majority of the pre-fogged FSCS pavement treatment is intact.



↑ Representative image of surface texture indicative on most of the project.

↓ Previously patched areas of raveled pavement are beginning to reflect through to the pavement surface.

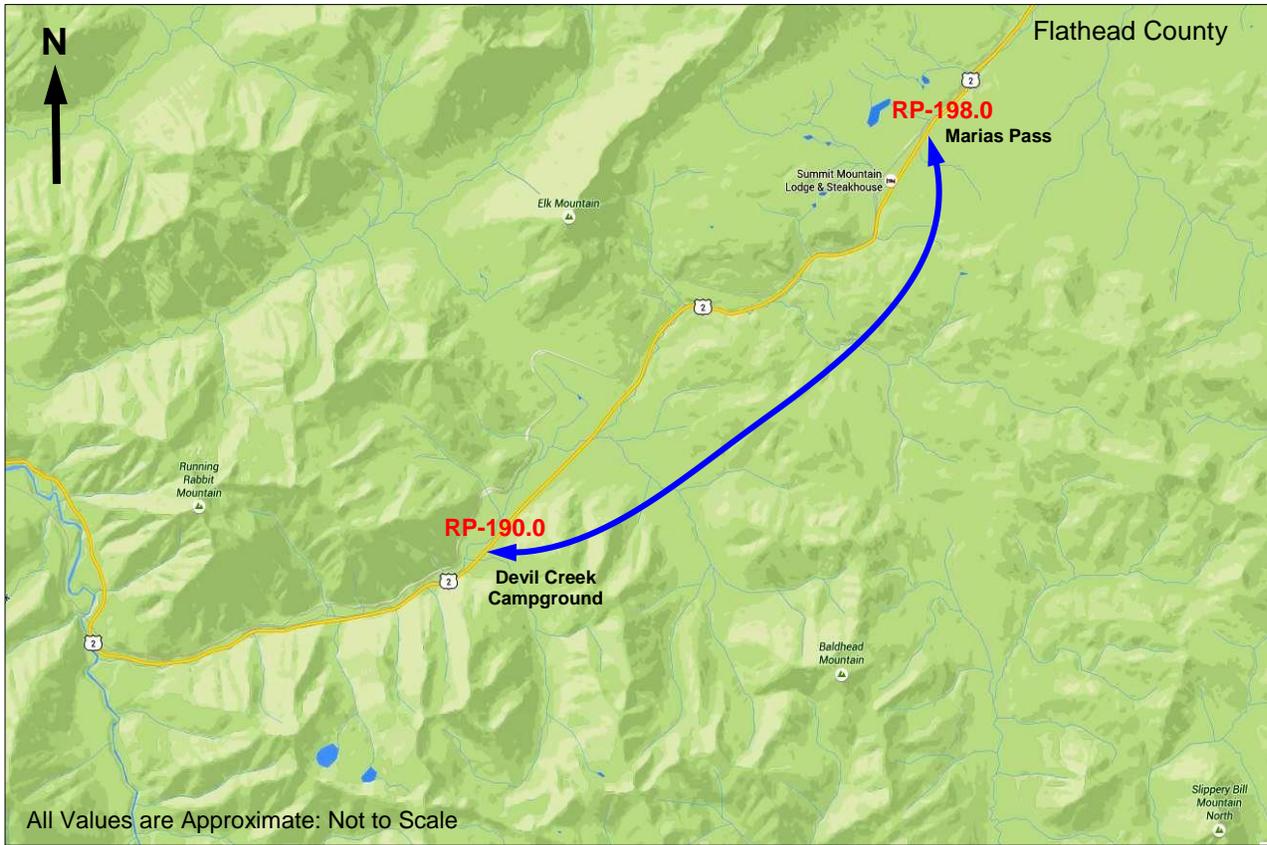


Supplemental



↑ Close-up of fog seal on existing pavement prior to the chips seal with added fog seal (FSCS): The pre-seal appeared to adequately coat and penetrate areas of existing raveling as well as the mat in general. Lighter color material is dust and sediment.

Graphic Representation of Project Coverage



Project Location: Montana, Flathead County – US2 (N1-C00001) Section length 7.9 miles (12.7K): Approximate reference point (RP) 190-198.