Montana Department of Transportation
Research Programs-Experimental Projects
October 2019

CRS-2P AND CHFRS-2P EMULSION COMPARISON ON CHIP SEAL

Location: Sanders County/MISSoula District – HWY 200 (P-6/C000006): RP 99-116 (Approx.)

Project Name: Dixon – West/Dixon – Ravalli

Project Number: STPP 6-1(155)99/STPP 6-1(153)109

Experimental Project No.: MT-19-02

Type of Project: Chip Seal (CS) Performance Comparison

Principal Investigator: Craig Abernathy: Experimental Project Manager (ExPM)

Technical Contact: Jim Davies, P.E. Materials Bureau Chief

Date of Construction: July 2019

Date of Inspection: Pending April 2020

Description

The project was nominated to evaluate two types of asphalt emulsion chip seals (CS) placed adjacently to compare efficacy in chip retention and overall CS performance without an added fog seal.

The roadway selected is a river valley route with an average elevation of 2600 ft. Average annual daily traffic (AADT), for all vehicles is approximately 1677.

Experimental Design

The Project is located on Primary Highway 200 (P-6) in Sanders County.

The Dixon-West portion of the project is from reference point (RF) 98.7 to 108.5; and will use the Cationic Rapid-Set High-Viscosity Polymer Modified (CRS-2P) emulsion.

The Dixon-Ravalli portion is from RF 108.5 to 116.1 (approximate); and will use the Cationic High Float Rapid-Set High-Viscosity Polymer Modified (CHFRS-2P) emulsion.

Both project sections used type 1 Chips.

See page 7 for an overview of the project.
**Evaluation Procedures**

The purpose of an experimental features report is to document the phases and events of any given project to gain the reader an understanding of the general activities required to install or incorporate the research element into an active construction or maintenance project. This report also establishes a baseline for defining performance for any given feature under actual service conditions to determine its relative merits.

Research will document the installation phase for best practice and any construction concerns germane to the performance of the project test sections. Semi-annual inspections will report on seal integrity and any other measurable outcomes. Additional site inspections may supplement the semi-annual visits based on need.

**Construction Documentation:** Will include information specific to the installation events of the seal and cover sections.

**Post Documentation:** Will entail semi-annual inspections (late fall/early spring) of the seals durability based on visual distress.

**Evaluation Schedule**

Research will monitor performance for a minimum period of five years annually, with every year up to ten years (informally if project requires additional quantitative data).

This is in accordance with the Department's Experimental Project Procedures. Delivery of a construction/installation report, interim, annual or semi-annual reports is required as well as a final project report (responsibility of Research). A web page with all project information is located at: *Pending*

2019: Installation/Construction Report

2020-2023: Semi-Annual Inspections/ Annual Evaluation Reports

2024: Final Evaluation/Final Report

**Project Information to Date:**

No construction issues were reported during placement of the CRS-2P and CHFRS-2P chip seal sections. An informal drive-through inspection took place in late November 2019; No distress to report.

The following images are representations of the general placement activities of both project sections.

The next formal inspection will take place in March 2020.
CRS-2P application pass.

Self-propelled chip spreader in action.

Two nine-wheel pneumatic rollers were used to set the chips.
Several aggregates sweepers were used on the projects.

Completed chip seal – Dixon/Ravalli CHFRS-2P near reference post 113 (view east).

Completed chip seal – west end of Dixon-West CRS-2P near reference post 99 (view east).
↑ Close-up of CRS-2P chips after sweeping.

↓ Close-up of CHFRS-2P chips after sweeping.
Example of how sections are marked in the field.
Project Layout

*Dixon-West/Dixon-Ravalli HWY 200 (P-6/C000006): Missoula District

1Dixon-West: Cationic Rapid-Set High-Viscosity Polymer Modified (CRS-2P)
2Dixon-Ravalli: Cationic High-Float Rapid-Set High-Viscosity Polymer Modified (CHFRS-2P)

• Type 1 Chips
• 2018 ADDT 1677
Disclaimer

The use of a product and/or procedure in the course of an in-service evaluation does not constitute an endorsement by the Department nor does it imply a commitment to purchase, recommend, or specify the product in the future.

Data resulting from an evaluation of a submitted product or procedure is public information and will not be considered privileged. The MDT may, at its discretion, release all information developed during and after the experimental project assessment.