

Montana Department of Transportation
Research Programs-Experimental Projects
August 2020

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

Location: Hill County/Great Falls District – HWY 2 (N-1-C000002): RP 355-372 (Approx.)

Project Name: Gildford - East

Project Number: NH 1-6(123)355

Experimental Project No. MT-20-3

Type of Project: Chip Seal (CS)/Fog Seal (FS) Performance Comparison

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

Technical Contact: Mike Moore, P.E. EPM/Havre Construction

Date of Construction: June 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 section.

Average annual daily traffic (AADT), for all vehicles is approximately 1471.

Experimental Design

The Project is located on NHS/NI 2 (N-1) in Hill County, from approximate reference point (RP) 355-372.

From RP 355 (west end of project at Rd. 225S) to RP 359, received the CRS-2P (Cationic Rapid Set) as chip seal and CSS-1H (Cationic Slow Set) as the fog application. From RP 359 to 363 (Rd. 305N) this section received only the CRS-2P CS.

From RP 363 to RP 372 received the CHFRS-2P (Cationic High-Float Rapid Set) CS with no added fog seal.

All emulsions used on the project, was supplied by Western Emulsions.

Project sections used type 1 Chips.

See page10 for an overview of the project.

Evaluation Procedures

The purpose of an experimental features construction 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

2020: Installation/Construction Report

2021-2024: Semi-Annual Inspections/ Annual Evaluation Reports

2025: Final Evaluation/Final Report

Project Information to Date:

No construction issues were reported during placement of the CRS-2P/fog and CHFRS-2P chip seal sections.

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

The next formal inspection will take place in Spring of 2021.

July/August 2019 Paving Phase



↙ Representative images of paving using ½ inch Grade S PMS and PG 64-28 binder.

Project did not receive chip seal until summer of 2020.



Project Sections Demarcation



↑ Project delineation for the CRS-2P and CHFRS-2P chip seal sections at RF 363 at the junction of Rd. 305N just west of Kremlin Township (view north).



← Demarcation between completed CS sections CRS-2P & CHFRS-2P at Junction of RD. 305N (RP 363).

This image shows how all section changes are denoted in the field with orange markings.

See page 10 for project layout.

May/June 2020 Chip Sealing



↙↘ Representative images of project CRS-2P emulsion application, chipping phase with type 1 chips, and pneumatic nine-wheel compaction.

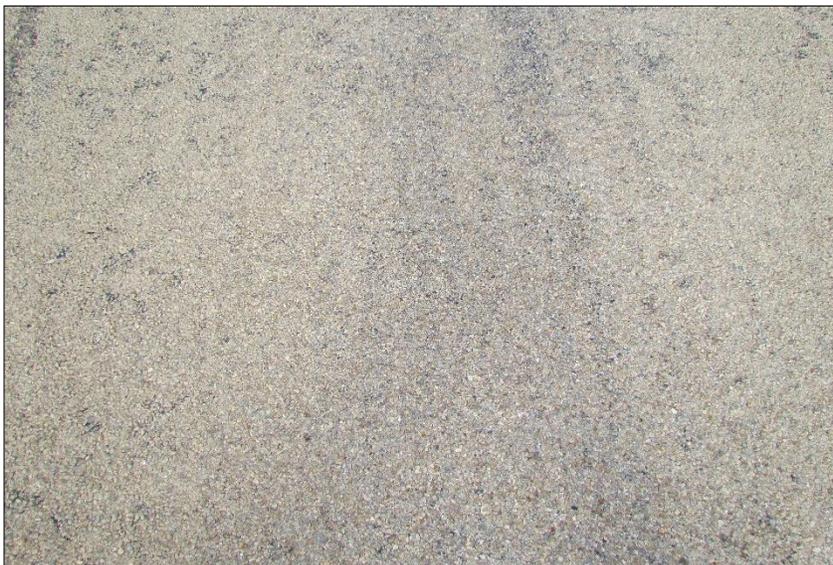


CHFRS-2P Section

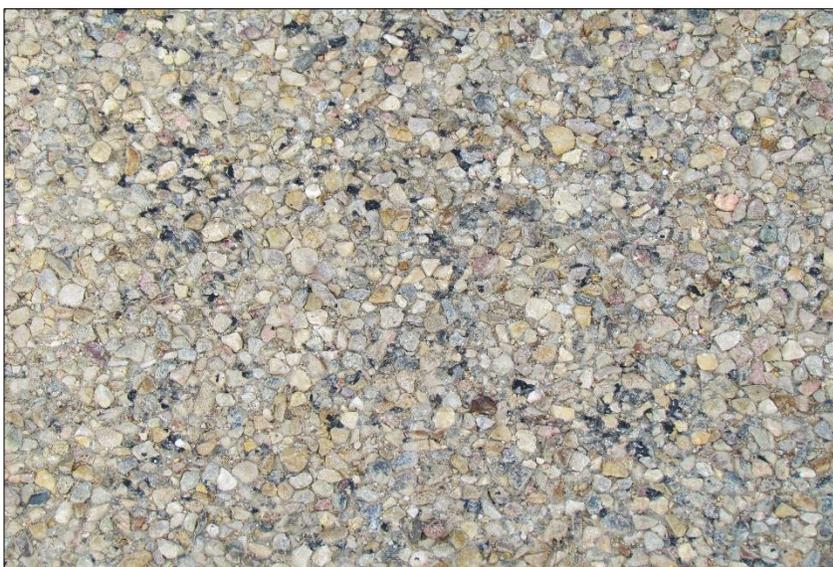


← Completion CHFRS-2P CS placement after sweeping.

View is at east end of project at RF 372, view west.



←↓ Several images of embedded chip texture.



CRS-2P CS and CSS-1H Fog



← Completion CRS-2P CS placement after sweeping.

View is at east end of project at RF 363, view west.



←↓ Several images of embedded chip texture.





← Begin of CSS-1H fog application on CRS-2P CS section at RF 359.

East end of project. view west.



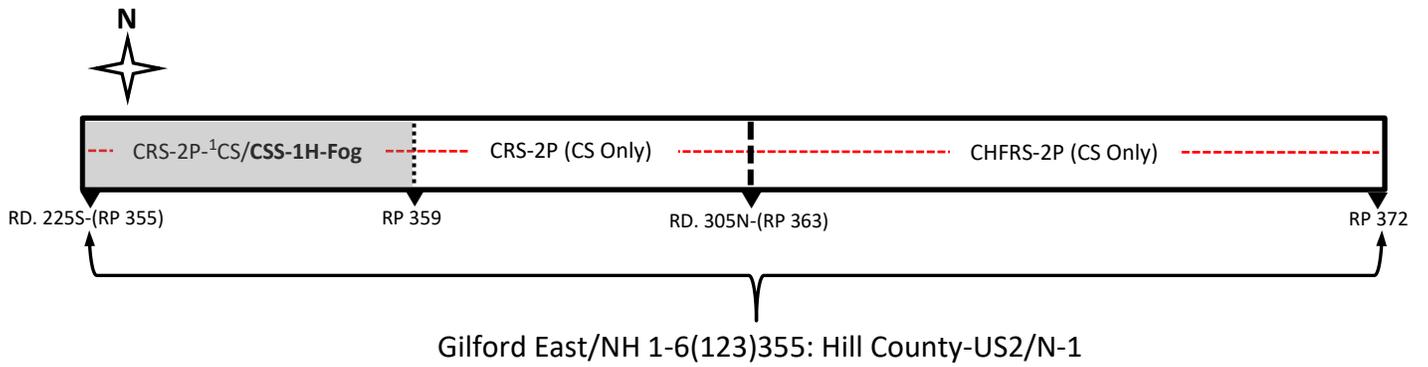
←↓ Several images of fog seal texture.





↑ End of CSS-1H fog seal over CRS-2P project section; west end, view west at approximate RP 355.

*Project Layout



*All values approximate
¹CS-Chip Seal

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.