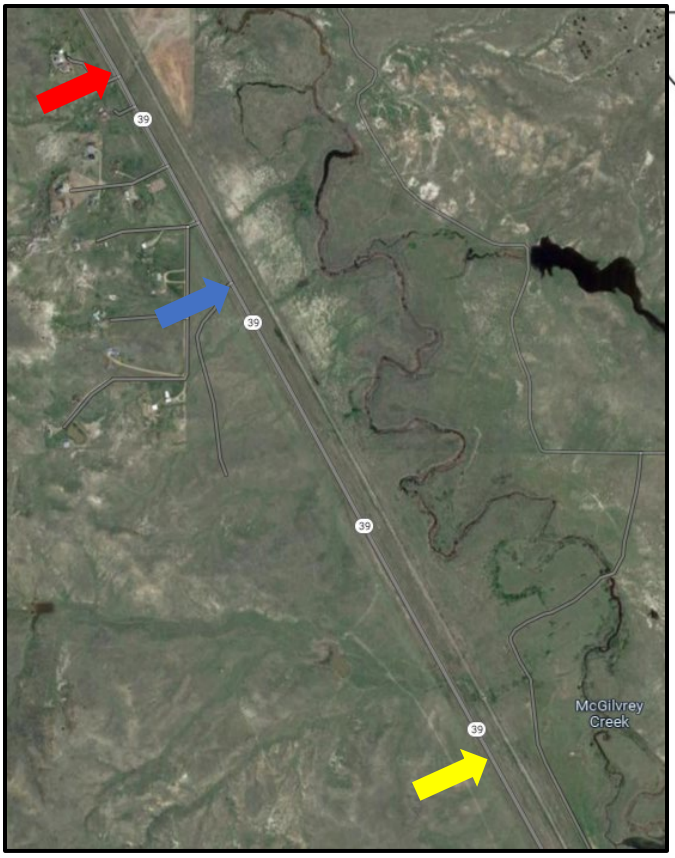
Experimental Feature Evaluation
December 2022

Experimental Feature:	Sinusoidal Centerline Rumble Strip Evaluation
Location:	Glendive District, Rosebud County, MT Hwy 39, RP 31.0 – 32.4
MDT Project Name:	Sinusoidal CLRS – Colstrip
MDT Project Number:	UPN 9370
Experimental Project Number:	MT-18-02
Principle Investigator:	Chad DeAustin, Experimental Project Manager (ExPM)
Construction Date:	April 2018
Date of Inspections:	April 2019, February 2020, May 2020, May 2021, May 2022

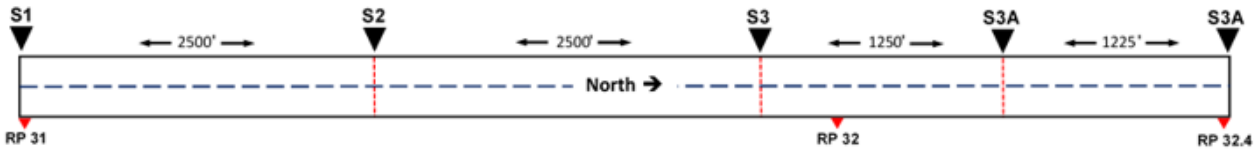
Project Map



RP 32.4
RP 32.0
RP 31.0

S1 – 14” longitudinal frequency, 12” wide.
S2 – 24” longitudinal frequency, 12” wide.
S3 – 14” longitudinal frequency, 14” wide tapered.
S3A – 24” longitudinal frequency, 14” wide tapered.

- All depths 1/8” to 1/2”.



Feature Description & Outline

This feature is to document the application phase of different styles of sinusoidal centerline rumble strip (SCLRS) installation in addition to long-term performance evaluation.

Centerline rumble strips are extremely effective in reducing severe roadway departure crashes at a low cost. Rumble strips use both noise and vibration to alert a driver that their vehicle is leaving the travel path. To be effective, the noise generated inside the vehicle must rouse a drowsy driver or grab the attention of a distracted driver. Since there is a wide range of "drowsiness" and "distraction" inside the vehicle compartment, more noise is typically better.

Conversely, the noise generated outside the vehicle can be disruptive to residents or businesses in the area, and the goal is to produce as little sound as possible broadcast outside the vehicle and still maintain the needed level of safety. The focus of this feature is to document the method of installation and equipment used to apply this feature and to compare to the current noise level of the conventional strips the Department currently applies.

The contractor who installed the sinusoidal rumble strips was Surface Preparation Technologies (SPT) LLC (http://www.rumblestrips.com/).

Evaluation Procedures & Schedule

The measure of effectiveness (MOE) prevalent with this project will focus on:

- Construction practices (constructability, construction time, cost effectiveness, etc.),
- In vehicle decibel reading comparison,
- Durability comparison of SCLRS.

In accordance with MDT's Experimental Features Procedures, the Experimental Project Manager will monitor and report on performance for a minimum of five years annually. This includes delivery of a work plan, construction report, annual reports, and final project report.

2018:	Installation/Construction Report
2019-2022:	Annual Inspections/Evaluation Reports
2023:	Final Evaluation/Final Report

A web page will be dedicated to display all reporting from the project.

URL: https://www.mdt.mt.gov/research/projects/sclrs.shtml

2022 Update – May

During this site visit, the centerline cracks through the rumble strips, first noticed in 2020, continued to increase in quantity and severity. An official measurement was not taken during the visit. Also noticed during this visit was the decreased definition of the sinosoidal rumble strips. Sections 1 and 3A still had some noticeable definition of the depression but sections 2 and 3 looked to have little to no defined depression of the rumble strip. For the 2023 visit, a straight edge will be used to better display this wear in the photos. Also note that MDT Maintenace has begun some crack seal work in the area and a few of the test sections received treatment.

← Control section of standard center line rumble strips just south of test section 1 near RP 31.0.

← RP 31.0, control section close-up.

⬆⬇ S1, RP 31.0, view north.

⬆⬇ S2, RP 31.7, view south. Note this section was wet due to a rainstorm.

⬆⬇ S3, RP 32.0, view south. The lower photo better depicts the lack of depression.

⬆⬇ S3A, RP 32.4, view south.

Construction Documentation – April 2018

⬅ Front view of the SPT Noiseprint Rumble Strip Mill truck used on the project.

⬅ Rear view of the SPT Noiseprint Rumble Strip Mill truck in operation.

← View of mill cutting head.

← Sweeper performing the SCLRS clean-up prior to the application of the temporary striping.

⬅⬇ Close-up of SCLRS cut with temporary striping. Lower image is overview of rumble strip section, view north.

🡸 Additional image of SCLRS mill with temporary striping, view north.

🡻 The SCLRS was fog sealed (SS-1) and restriped, view north.

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