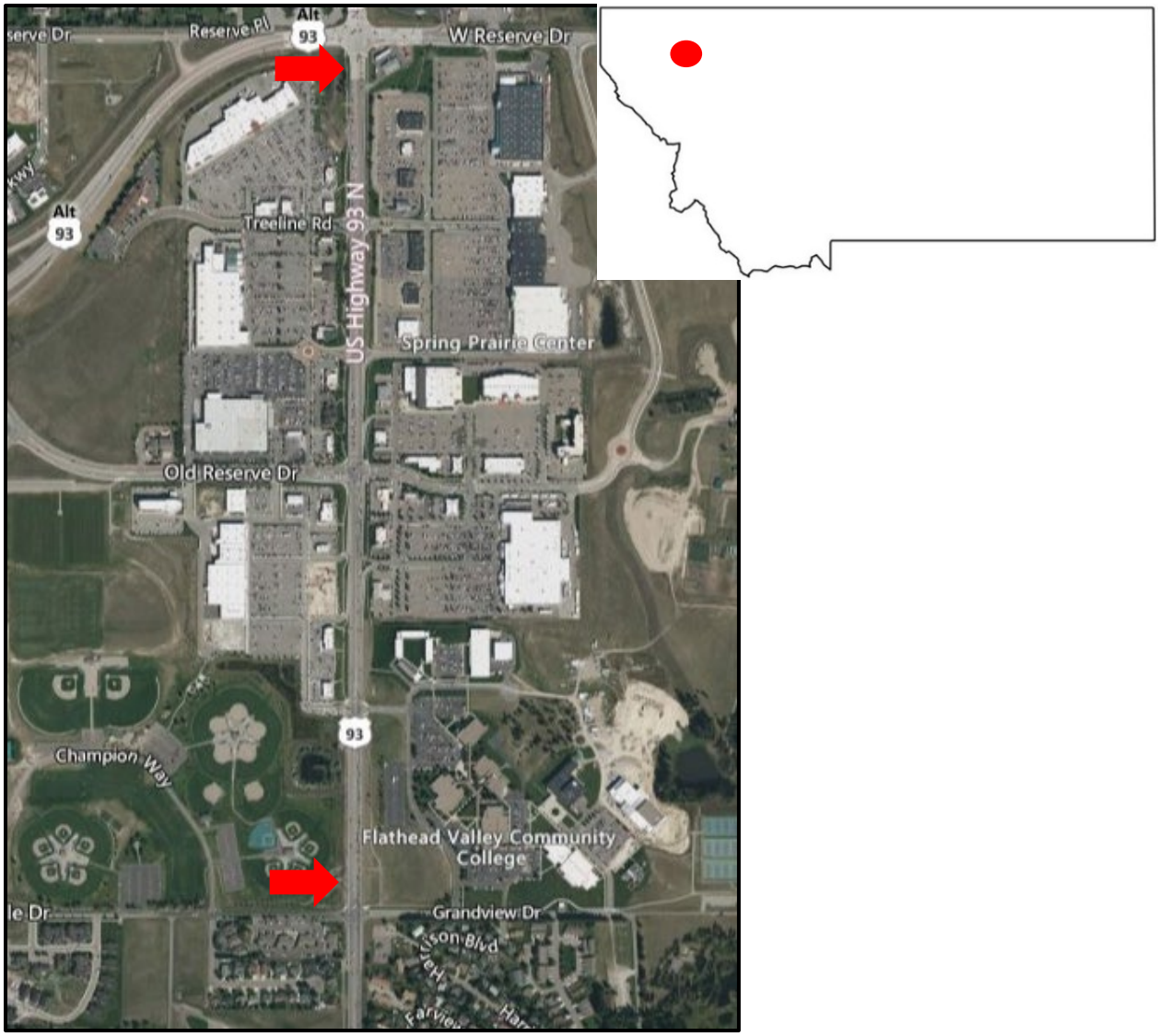
Experimental Feature Construction Report
July 2023

Experimental Feature:	Plant Mix Reinforcing Paving Fibers
Location:	Missoula District, Flathead County, City of Kalispell, US Hwy 93, RP 114.9 – 115.9
MDT Project Name:	Grandview Dr – Reserve Dr (Kal)
MDT Project Number:	NH 5-3(154)115[9862]
Experimental Project Number:	MT-22-02
Principle Investigator:	Chad DeAustin, Experimental Project Manager, (ExPM)
Technical Contact:	Oak Metcalfe, Materials Engineer
Construction Date:	July 2022

Project Map



Feature Description & Outline

Reinforcing fibers for plant mix is a type of aramid (heat resistant) fiber that advertises increased strength and longevity of a roadway. These fibers are added to plant mix in the production phase and if done correctly will be uniformly mixed through the plant mix.

MDT has used fibers in plant mix a few times over the years with differing results. The purpose of this experimental feature is to compare this section of roadway with others that have been completed in the past while also analyzing how this attempt fairs in the delay of reflective cracking.

Per the special provision in the contract, MDT specified a dosage rate of 2.1 ounces of aramid fibers per ton of plant mix. There was also a requirement of having a technical representative from the manufacturer on site for the duration of the project. As well as a required automatic feeding system to feed the fibers into the asphalt production plant.

Evaluation Procedures & Schedule

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

- Construction practices (constructability, construction time, cost effectiveness, etc.),
- Reflective crack tracking against preconstruction locations,
- Comparison with other fiber reinforced plant mix throughout Montana,
- Ride and rut data evaluation.

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

2022:	Installation/Construction Report
2023-2027:	Annual Inspections/Evaluation Reports
2027:	Final Evaluation/Final Report

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

2023 – June Site Visit

The roadway showed normal wear for a relatively high-volume urban roadway in Montana. The wheel paths had more visible wear on the surface.

⬆ View south of southbound lane. Nothing was noticed that wasn't ordinary pavement wear.

⬆ Close up view of the southbound lane in the wheel path.

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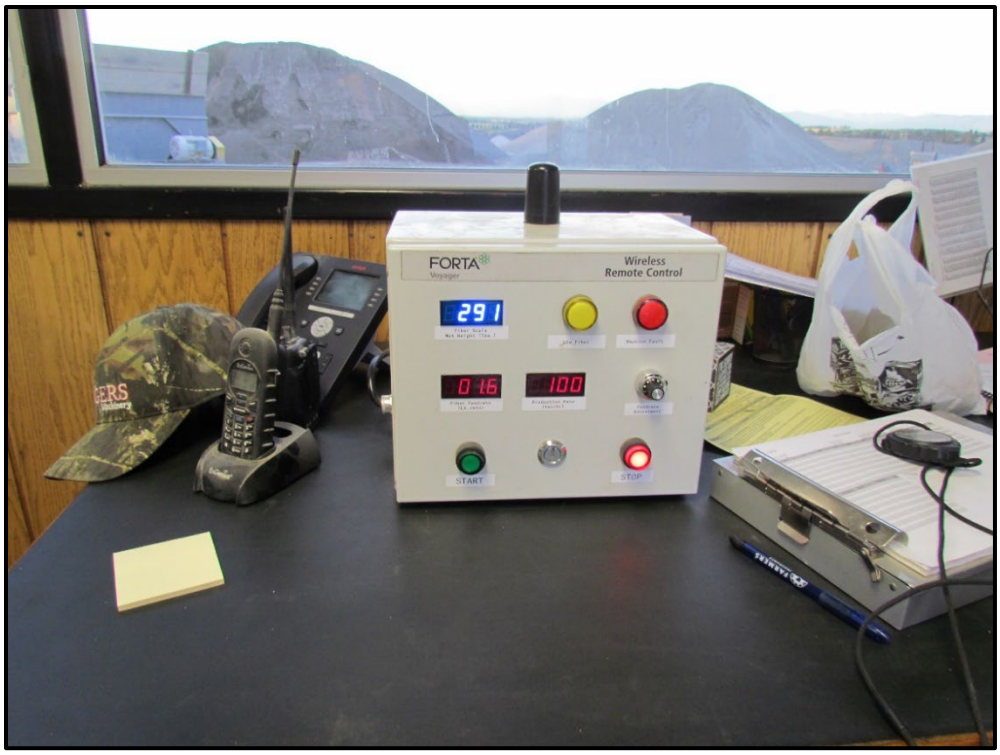
⬆ The required automated feeding system was contained in an enclosed trailer that was parked near the hot plant.

⬆ This trailer included a hopper and feed line as well as controls for the feed system. The hopper had a 300 lb capacity. The technician would input the desired weight of fibers and the production rate of the hot plant and using that information the control board would spin the hopper which would deposit fibers into the feed tube that would then deposit the fibers into the hot plant drum to mix with the plant mix.

View of the aramid fibers loaded in the hopper.

View of the control board in the trailer.



For ease of adjustment, the technician had a wireless control board to update the feed of fibers to the hot plant from the button house.

The feeding tube was incorporated to the hot plant where the RAP belt deposited to the mixing drum.

🡅 Example of the plant mix surfacing deposited out of the hot plant. Notice the fibers hanging from the mix.

🡅 View of the roadway during the paving operation.

View north of the finished project.

Close-up of the plant mix surfacing.

Preconstruction Documentation

⬆ Example of preconstruction conditions. There was a fair amount of longitudinal and transverse cracking.

⬆ Close-up view of the existing surface. There was significant wear and rutting.

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