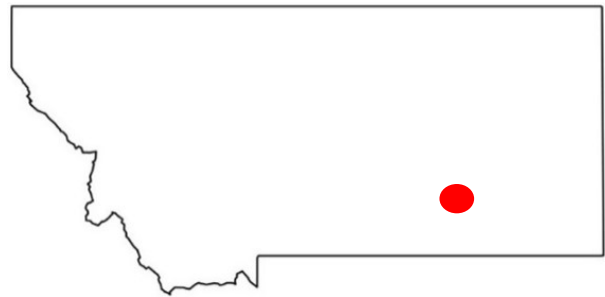
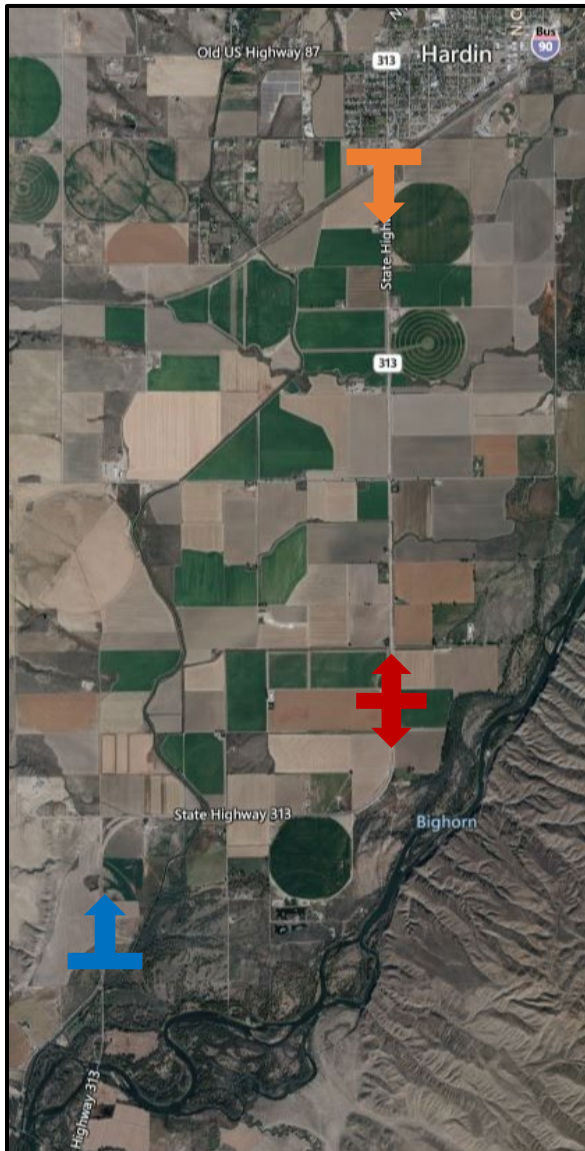


**Experimental Feature Construction Report
 December 2022**

Experimental Feature:	TENAX LBO 220 Geogrid
Location:	Billings District, Big Horn County, MT Hwy 313, RP 1.3 – 7.8
MDT Project Name:	Hardin – South
MDT Project Number:	STPS 313-1(17)1[5793]
Experimental Project Number:	MT-21-03
Principle Investigator:	Chad DeAustin, Experimental Project Manager (ExPM)
Construction Date:	2021 & 2022

Project Map

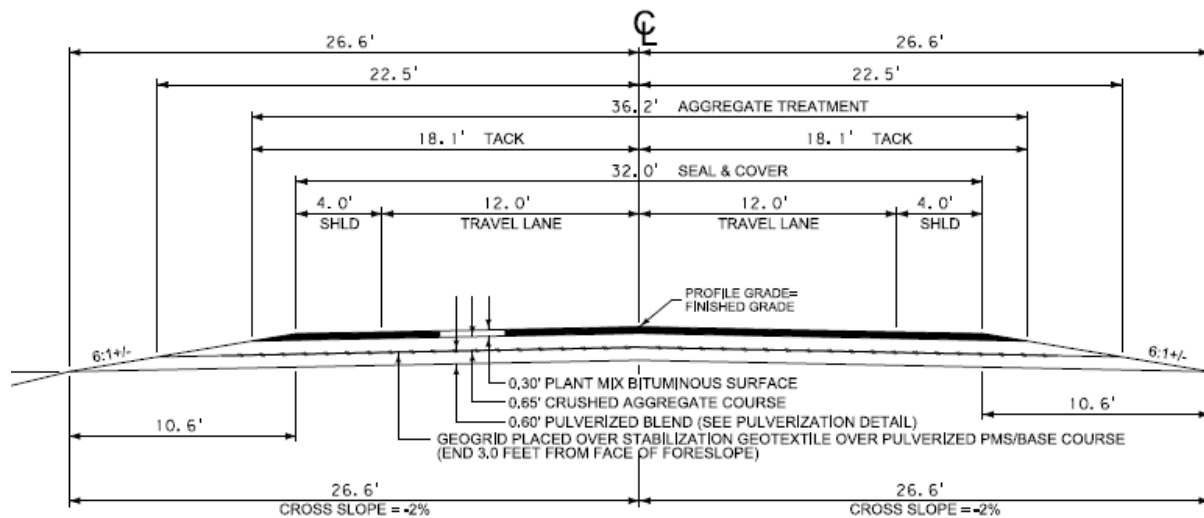


← to ← completed in 2021
 ← to ← completed in 2022

Feature Description & Outline

TENAX LBO 220 is a geogrid made with of a high-quality polypropylene resin that is intended to stabilize and reinforce weak soils or aggregate base by preventing lateral shearing. This project was chosen as a test site for this product due to poor subgrade in an agriculture dominated landscape. The geogrid is to be used in conjunction with a stabilization geotextile fabric and will be laid to separate the subgrade and crushed aggregate base.

There are a few different surfacing sections on this project. The crushed aggregate base calls for depths of .65' and .85' while the plant mix surfacing is mostly .3' with some .5' at the bridge ends. To aid in the stabilization efforts, there are also two sections that require pulverization blends below the crushed aggregate base. These sections will be watched for any variation of wear or differing results. Below is a sample typical section.



Evaluation Procedures & Schedule

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

- Construction practices (constructability, construction time, cost effectiveness, etc.),
- Visual inspection of the surfacing,
- Rut and ride analysis of the roadway.

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.

2022: Installation/Construction Report
2023-2026: Annual Inspections/Evaluation Reports
2027: Final Evaluation Report/Project Conclusion

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

URL: <https://mdt.mt.gov/research/projects/tenax.aspx>

Preconstruction Documentation – March 2021



↑ Examples of preconstruction roadway conditions. Left photo is view south and right is view north. There is heavy rutting as well as longitudinal and transverse cracking. Per the project manager, the northbound lane experiences higher amounts heavy commercial truck traffic due to sugar beet operations in the area.

Construction Documentation – June 2022



↑ During subgrade and pulverization work, some soft areas were addressed. The material was removed, fabric and geogrid were laid and then material was placed and compacted. This was a dig out near station 60+00.



↑ Completed subgrade work near station 70+00.



↑ View of the geogrid and fabric. Note that the grid was being tied together with zip ties and laid in accordance with the special provision. Every 10' on the longitudinal joint and 4' for transverse joints. Near station 82+00.



↑ The contractor opted to use a dozer for CAC placement rather than a grader to avoid causing damage due to excessive tire activity on the geogrid. Near station 78+00.



↑ Completed southbound lane of CAC surfacing after spreading and during compaction. Note that enough grid was exposed to meet the 24" overlap required in the special provisions. Near station 90+00, view north.



↑ Close up view of the grid. There was slight waviness in the product but was being mitigated as well as possible. MDT inspectors stated it might have helped to require anchors for the grid but upon reviewing the product information from the supplier, when using anchors, the waviness issues were harder to eliminate.



↑ Completed CAC surfacing after compaction. Approximately station 92+00, view south.



↑ Between stations 343+17 (south end of project) to 196+23, geogrid, fabric and CAC work was completed in the late summer and fall of 2021. This is an example of that section near station 275+00, view south. Per the MDT inspection crew, the material held up well through the winter and snowplow activities.



↑ RP 2.0, Sta 44+17, view north. Completed plant mix surfacing.



↑ RP 6.0, Sta 255+37, view west. Completed plant mix surfacing.

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