



Experimental Feature Evaluation July 2023

Experimental Feature:	Electrified Wildlife Deterrent Mat
Location:	Butte District, Broadwater County, US Hwy 287, RP 85.9
	- 89.3
MDT Project Name:	Toston Structures
MDT Project Number:	NHIP-NHPBIP 8-4(66)86[7668]
Experimental Project Number:	MT-20-01
Principle Investigator:	Chad DeAustin, Experimental Project Manager (ExPM)
Technical Contact:	Deb Wambach, MDT Helena Environmental
Construction Date:	Fall 2020/Spring and Summer 2021
Date of Inspections	July 2022, June 2023

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Feature Description & Outline

ZapCrete, generically known as electrified wildlife deterrent mats (EWDM), are crossing deterrents used to create a wildlife free zone and mitigate conflicts with travelling motorists. These mats incorporate a mild electric shock when an animal attempts to enter the crossing. The EWDM units are embedded directly in the pavement across a roadway and serve as an alternative to cattle guards and other non-electric crossing structures. The information gathered and analyzed from this feature may result in a better understanding of how existing roadways may be utilized as wildlife barrier structures. In addition, gaining a better understanding of how funnel fencing can be used on existing and future projects. The result will be a roadway system that is safer for motorists and wildlife.

The feature creates a wildlife free zone along US Hwy 287 from the bridge over the Missouri River to the connection with the Hwy 287 Bypass. This includes wildlife fencing and two electrified wildlife deterrent mats. The EWDM is ZapCrete which is a product by CrossTek, LLC.

This experimental feature is being monitored in conjunction with the EWDM experimental feature on the East of Thompson River – East (UPN 4039) project.

Evaluation Procedures & Schedule

The measure of effectiveness prevalent with this feature are:

- Construction practices (constructability, construction time, cost effectiveness, etc.),
- Wildlife incident data before and after installation,
- Durability and lifespan of the EWDMS.

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.

2021:	Installation/Construction Report
2022-2025:	Annual Inspections/Evaluation Reports
2026:	Final Evaluation/Final Report

A dedicated <u>website</u> provides all reporting for the experimental feature.

2023 Inspection – June

The small crack slightly increased in size. This was shared with MDT Maintenance staff. Other than that, the mats visually are in good condition and appear to be operating correctly.



♠ North EWDM, view south.



↑ North EWDM, transverse view.



♠ South EWDM, view north.



♠ South EWDM, transverse view.



♠ South EWDM, closer view of the surface of the mat.



↑ South EWDM, crack that was noticed during last year's visit. Other than this damage, little to no other damage was noticed.

Construction – Fall 2020 into Spring/Summer 2021

CrossTek, LLC began the process of placing the EWDM after the paving was completed. They cut the plant mix and removed material for a total depth of 10" below the plant mix surface. The base was then covered with a layer of crushed fines and compacted. Then a thin layer of sand was placed to aid in leveling the forms.



↑ Tyvek was laid to aid in the separation of the mat and mitigate moisture seepage. A neoprene mat was also laid to aid in moisture seepage mitigation.



♠ View of grid layout after rebar and form placement.



← ♥ Close-up view of grid with the rebar seen below. The rebar was set on stands that keep it 3-4" above the neoprene mat.



← View after concrete was poured. The grid is completely covered during this process then the surface is ground off to expose the grid.



← Transverse view of the EWDM after grinding was completed.

← View of the electrical control box.

Completed north EWDM, view south.



← North EWDM, fencing at EWDM that wasn't completed but when finished will create the wildlife free zone in tandem with the EWDM.

← South EWDM, view north.



← South EWDM, fencing at EWDM that wasn't completed but when finished will create the wildlife free zone in tandem with the EWDM.

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