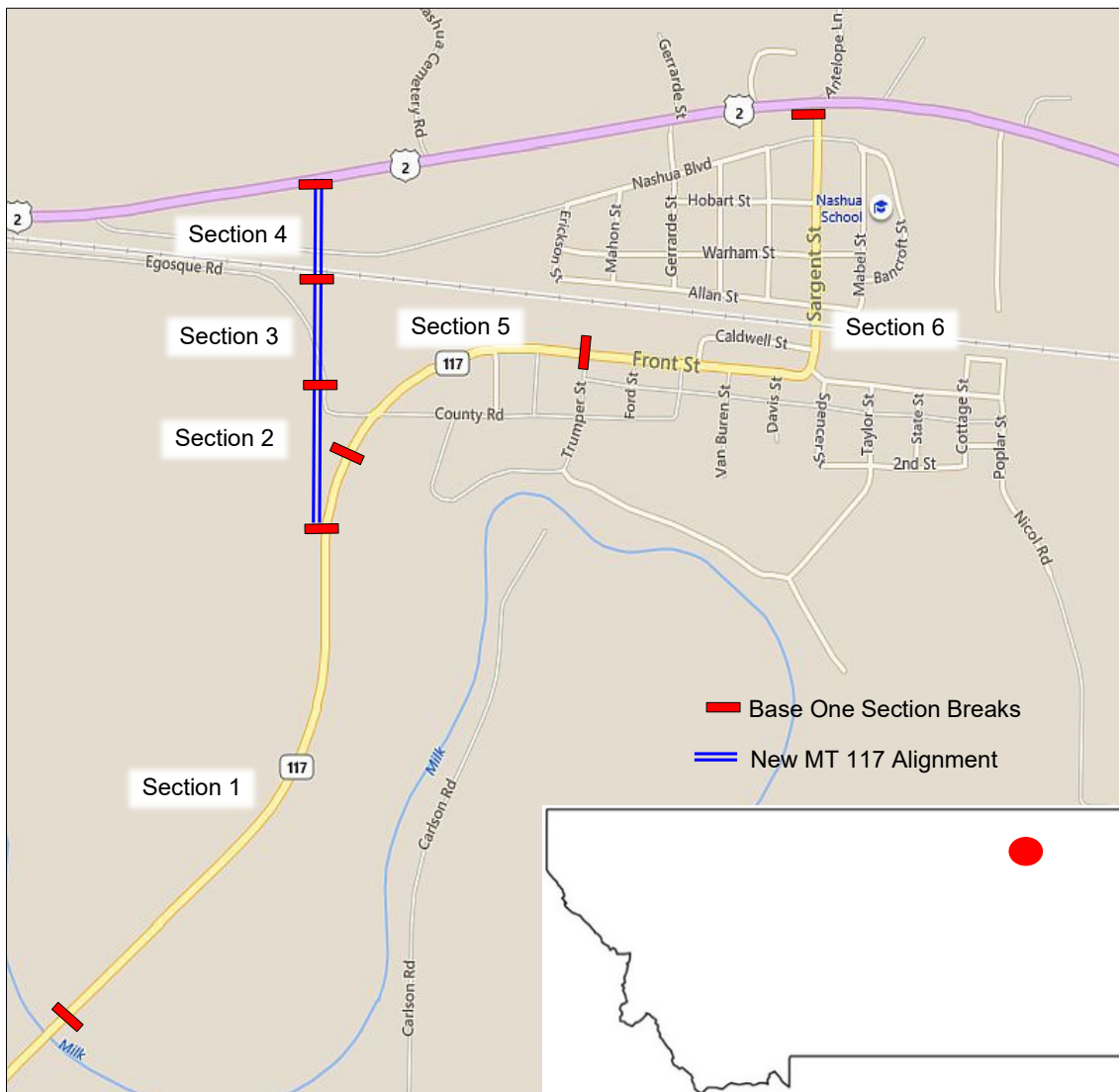


Experimental Feature Evaluation  
 January 2023

<b>Experimental Feature:</b>	T15 Base One Soil Stabilization
<b>Location:</b>	Glendive District, Valley County, City of Nashua, MT Hwy 117
<b>MDT Project Name:</b>	Milk River – North
<b>MDT Project Number:</b>	STPP 17-1(10)11[5157]
<b>Experimental Project Number:</b>	MT-18-05
<b>Principle Investigator:</b>	Chad DeAustin, Experimental Project Manager (ExPM)
<b>Technical Contact:</b>	Jacquelyn Smith
<b>Construction Date:</b>	June/July 2018
<b>Date of Inspections:</b>	September 2019, May 2020, May 2021, September 2022

Project Map



- Section 1: 12" full depth reclamation with 8" stabilization
- Section 2: New base with 4" stabilization
- Section 3: New base with 4" stabilization
- Section 4: No treatment
- Section 5: New base with 7" stabilization
- Section 6: 8" full depth reclamation with 4" stabilization

### **Feature Description & Outline**

This project consists of a reconstruction of MT Hwy 117 through the town of Nashua as well as a new 1.91 miles of roadway that connects the roadway to US Hwy 2 bypassing Nashua. Test sections are included in the new construction as well as the reconstruction with section 4 acting as a control.

The chosen soil stabilizer is Team Labs T15 Base One, a proprietary blend of Silicic Acid and Sodium Salt. Six test sections were installed on the project. A road reclaimer is used for pavement reclamation and for the homogeneous mixing/injection of the soil stabilizer. The soil stabilizer application rate was set at 0.005 (0.5%) gallons per square yard per inch of reclamation depth. The depth of stabilization varies by section (see above for details) with .3' of new plant mix surfacing for all sections, with a small section of .5' at bridge ends in section 3 and 4.

A Tetra Tech representative, one of the sub-contractors on the project, was on hand to assist and monitor the reclamation and application phase of the Base One soil stabilizer.

### **Evaluation Procedures & Schedule**

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

- Construction practices (constructability, construction time, cost effectiveness, etc.),
- Falling Weight Deflectometer result comparison,
- Durability comparison of each test section and control.

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 Report/Project Conclusion

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

URL: <https://www.mdt.mt.gov/research/projects/t5baseone.aspx>

**2022 Update**

There was little to no change noticed through the project. A few transverse cracks were noticed during the site visit, the most were seen in section 6.



↑ Example of pavement conditions in section 1, view north.



↑ Example of pavement conditions in section 2, view north.





↑ Example of pavement conditions in section 4, view south.



↑ Example of pavement conditions in section 5, view east.





↑ Transverse view of a crack noticed in section 5.



↑ Transverse view of a crack noticed in section 6.



## Construction Documentation – July 2018



← The T15 Base One was stored on-site in 275-gallon totes. Note the totes were marked off in 25-gallon increments to allow visual reference for the required amount of product to be added to the mixing truck.



← Totes were lifted to the mixer using a loader fitted with forks.



← The crew monitored the correct ratio of Base One as it was mixed with water. The Base One is added first to the tank. Then water is added, this insures adequate blending of the stabilizer.





← A high-performance Wirtgen wr250 was utilized on the project for both reclamation of the existing pavement as well as the soil stabilization mixing phase. This image shows the mixing phase (Sargent St.).



← Additional view of the Base One soil binder mixture in process. The wr250 uses a computer-controlled metering system to ensure a homogeneous mix based on project specifications. The Wirtgen wr250 is connected to the tank truck which doubles as the tow unit. The metering systems automatically adjust mixing ratio as speed varies.



← Rear view of the Wirtgen unit and blended base.





← Completed pass, Sargent St. view north. Prior to compaction.



←↓ Representative images were taken several days after stabilization phase was completed. Compaction was completed with a nine-wheel pneumatic roller and drum roller.







↑ View of treated base approximately two weeks after compaction, Section 1 view south towards Milk River bridge.

↓ Close-up of compacted base.







↑ Representative image of completed paving phase of project, Section 6. (Sargent St., view south)



Milk River North - Pavement Section Thicknesses			
Section	Thickness (inches)	Material	Comments
1	3.6	Asphalt	
1	6	Base 1 Stabilized Reclaimed AC/Base	
1	6	Reclaimed AC/Existing Base	Combine with lower layer for 8 inch thickness
1	6	Existing Base - Non-crushed	
1	Subgrade - 1st 1/3 of section nearest bridge	Silty Sand	
1	Subgrade - middle 1/3	PG Gravel with silt	
1	Subgrade - last 1/3	Lean Clay	
2	3.6	Asphalt	
2	4	Base 1 Stabilized Crushed Base	
2	7.4	Crushed Base - New	
2	Subgrade	Sand/Gravel Fill	
3	6	Asphalt	Bridge End - Thicker Asphalt
3	4	Base 1 Stabilized Crushed Base	
3	4.8	Crushed Base - New	
3	Subgrade	Sand/Gravel Fill	
4a	6	Asphalt	Station 644+57-646+24 - Bridge End Thick AC
4a	11.4	Crushed Base - New	Station 644+57-646+24
4a	Subgrade	Sand/Gravel Fill	Station 644+57-646+24
4b	3.6	Asphalt	Station 646+24-648+64
4b	11.4	Crushed Base - New	Station 646+24-648+64
4b	Subgrade	Sand/Gravel Fill	Station 646+24-648+64
5	3.6	Asphalt	
5	7	Base 1 Stabilized Crushed Base	
5	Subgrade	Fat Clay	
6	3.6	Asphalt	
6	4	Base 1 Stabilized Reclaimed AC/Base	
6	4	Reclaimed AC/Existing Base	Combine with lower layer for 8 inch thickness
6	10	Existing Base - Non-crushed	
6	Subgrade	Fat Clay	

Post construction plant mix and subgrade survey with depths and information provided by Tetra Tech.

**Preconstruction Documentation – August 2017**



← Representative images of pavement condition prior to reclamation. Areas of visible fatigue, distress, and excessive patching. Area is north end near US Hwy 2 of Sargent St., view south towards town.



← Front St., view west.



← Front St. merge to MT 117, view west.



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