Montana Department of Transportation
Research Programs

April 2020

EXPERIMENTAL PROJECTS CONSTRUCTION REPORT

TENCATE-MIRIFI MPV400 POLYPROPYLENE NONWOVEN GEOTEXTILE

Location: Cascade County-Great Falls District: U-5201; Smelter Ave. NW – 5Th St. NW to 1st St. NW

Project Name: Smelter-1st to 5th St NW

Project Number: 8978000 UPP 5201(24)

Experimental Project: MT-17-03

Type of Project: Milled Overlay with Paving Fabric

Principal Investigator: Craig Abernathy: Experimental Project Manager (ExPM)

Date of Installation: August 2017

Inspection Date: April 2018, April 2019, April 2020

Description

The project is located in Cascade County within the township of Great Falls on route U-5201 (C005201); Smelter Ave. NW, beginning at RP 2.5, at 5th St NW and extending approximately 0.4 miles east ending at RP 3.0, at 1st St NW. This is a pavement preservation project involving a cold mill, overlay, and added paving fabric. 2015 AADT is at 7,530 with a commercial number of 180. The contractor for this project was United Materials.

Experimental Design

Install on an approximate length of 0.4 miles (0.64km) the designated paving fabric on prepared milled surface to aid in extending the service life of the pavement.

As claimed by the manufacturer; TenCate Mirafi® MPV400 nonwoven asphalt overlay fabric forms a membrane that minimizes surface water from penetrating pavement systems and provides a stress relief interlayer which inhibits the growth of reflective cracks. Produced from polypropylene staple fibers, TenCate Mirafi is heat-set to provide a waterproofing barrier.

Evaluation Procedures

Construction Documentation: The Research Section will document the construction methods and equipment, material placement, and specification conformance etc.,

Post Documentation: Will entail semi-annual site visits/inspections of the pavement performance; in addition to include any maintenance or other Department inspection information associated with the overlay fabric treatment.

Evaluation Schedule

Research will monitor and report on performance for a minimum period of five years annually, with every year up to *ten years (informally). This is in accordance with the Department's "Experimental Project Procedures". Delivery of a construction/installation report, interim, annual or semi-annual reports is required as well as a final project report (responsibility of Research). A web page will be dedicated to display all reporting from the project.

2017:	Installation/Construction Report
2018-2021:	Semi-Annual Inspections/ Annual Evaluation Reports
2022:	Final Evaluation/Final Report

*If considered the extra data collection and analysis will add value to the overall results of the project.

Process

The purpose of an experimental features report is to document the phases and events of any given project to gain the reader an understanding of the general activities required to install or incorporate the research element into an active construction or maintenance project. This report also establishes a baseline for defining performance for any given feature under actual service conditions to determine its relative merits.

Evaluation to Date: Since construction, site inspections were conducted in April 2018, 2019 and 2020. No relevant pavement performance issues (visible distress) were observed. Representative images from this evaluation is on page 9.

The next inspection will take place in spring of 2021.

Project Pre-Documentation March 2017

↑↓ Project section prior to milling phase; top picture is Smelter Ave & 1st NW, view west. Lower image Smelter Ave. & 5th St. NW, view east.

Project Construction: August 2017

← Mirafi MVP400 ready for application to the prepared road surface.

Each roll is 360′ (110m) in length and 12.5′ (3.8m) in width.

← The geotextile rolls are applied to the road surface using an applicator designed to fit on a front-loading tractor.

← As the tack coat is applied to the clean milled surface, the fabric is rolled out, properly tensioned and prepared for the run.

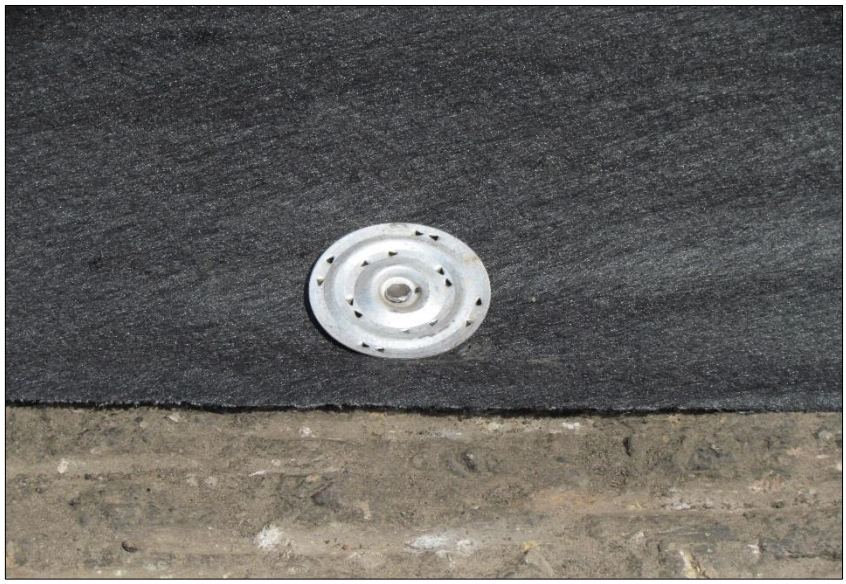
The geotextile should be tight and without excess wrinkles and folds as it is placed.

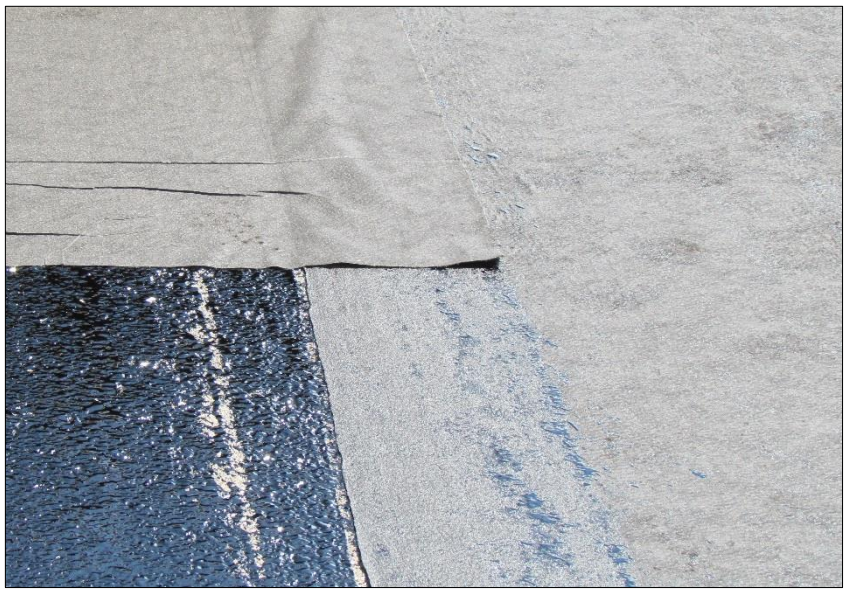
← As the first pass begins a pneumatic compactor 9-wheel roller follows close behind to insure good adhesion to the fabric, tack coat and underlying pavement.

← The second pass of fabric being applied. Note the pneumatic roller insure a direct pass over the overlapping geotextile seam.

← View of fabric placement at front end of geotextile train.

←↓ To insure the geotextile remains in place during the paving phase, galvanized fasteners (perforate metal disks), tacked at longitudinal and transverse seams are to ensure that the geotextile does not shift or fold before or during asphalt cement (AC) placement.





← Longitudinal seams were overlapped on adjacent panels on average eight (8") inches.

Transverse panels seams averaged twenty-four (24") inches in overlap.

← Note that on the west end of the project (approximately 5th St. NW to 2nd St. NW), the condition of the milled pavement required a 1/2" leveling course of AC prior to the placement of the geotextile.

← The application of the geotextile is complete and now ready for paving.

A standard practice for this contractor is to broadcast a topical layer of milled AC aggregate to protect the fabric tearing or shearing from moving equipment during the paving process.

← Image of east end of project transition prior to paving.

← Representative image of completed paving pass; view west.

←Completed project; east end, view west.

←Completed project; west end, view east.

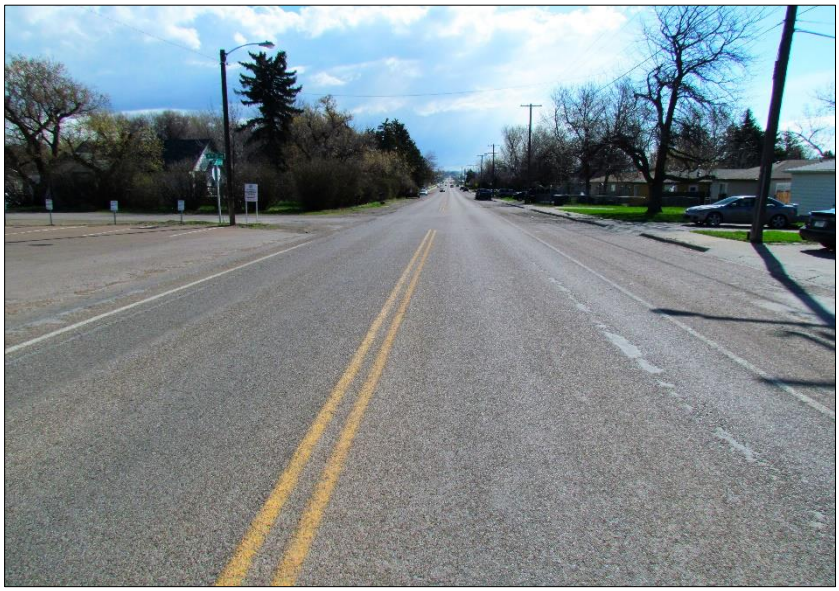
April 2018: Representative Images

🡐 East end of project; view west.

🡐 West end of project; view east.

April 2019: Representative Images

⬅ East end of project; view west.



⬅ West end of project; view east.

⬅ Although difficult to see in this image; one low-severity longitudinal crack has appeared on the project near Riverview B intersection (red arrows).

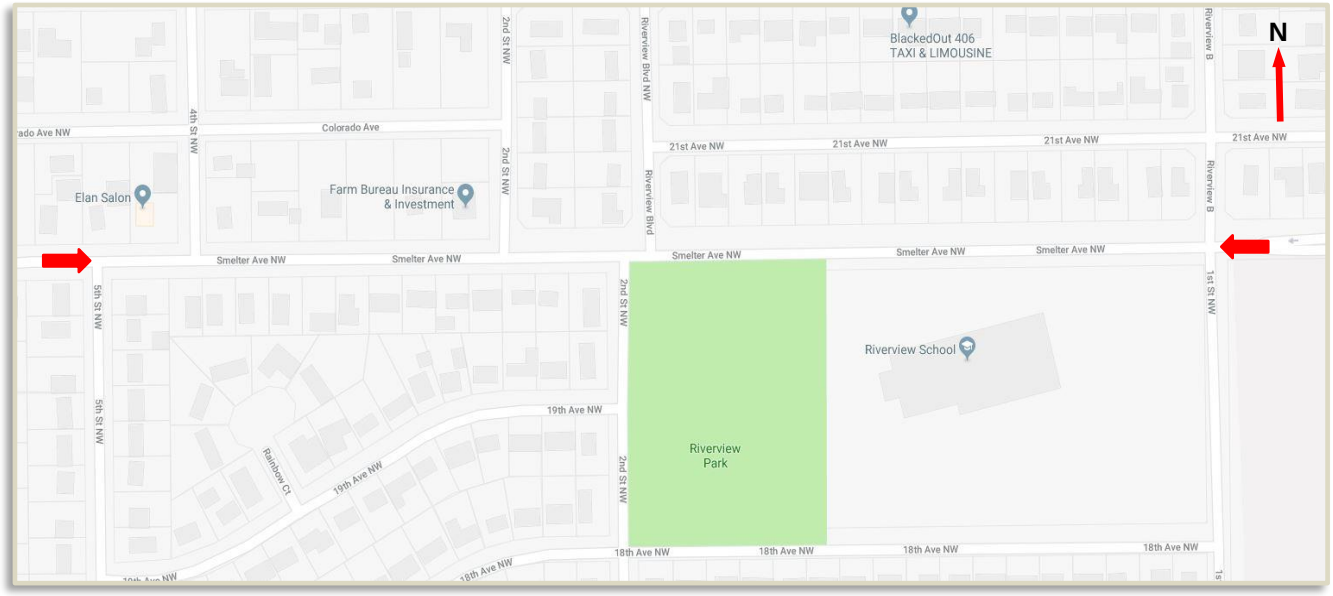
March 2020: Representative Images

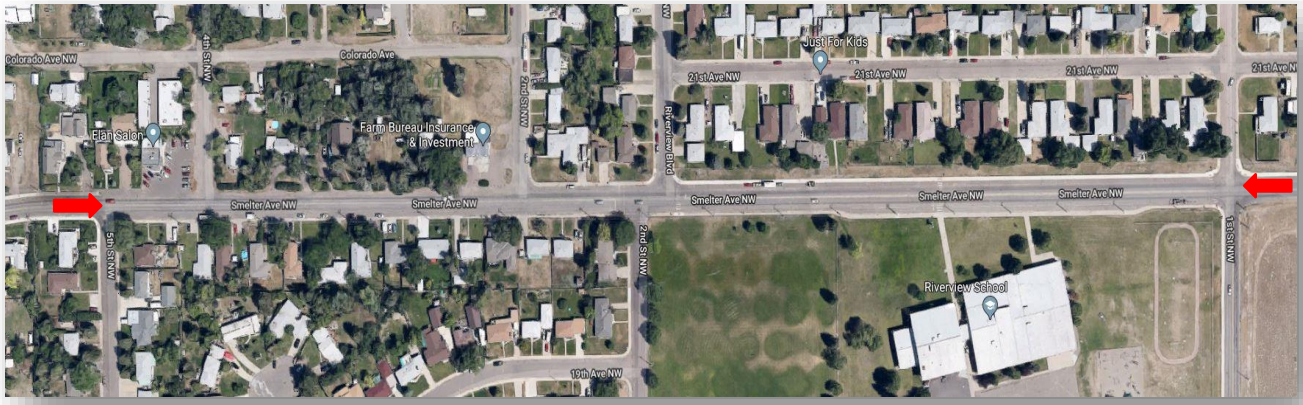
← East end of project; view west.

← Example of pavement surface condition.

← Transverse view of pavement.

Project Location: Cascade County/Great Falls District – Great Falls: U-5201 (C005201)
Smelter Ave. NW – 5Th St. NW to 1st St. NW





Disclaimer

The use of a product and/or procedure during an in-service evaluation does not constitute an endorsement by the Department nor does it imply a commitment to purchase, recommend, or specify the product in the future.

Data resulting from an evaluation of a submitted product or process is public information and will not be considered privileged. The MDT may, at its discretion, release all information developed during and after the product evaluation.