WASHTO COCM

NDDOT Pavement Preservation Test Sections

NORTH DAKOTA DIFFERENT

- Wide Open Spaces
- 3 times as many cows as people
- More road miles per person than any other state
- Cold in the Winter, Hot in the summer
  - Lowest recorded temp -60˚ F (without windchill)
  - Highest recorded temp 121˚ F

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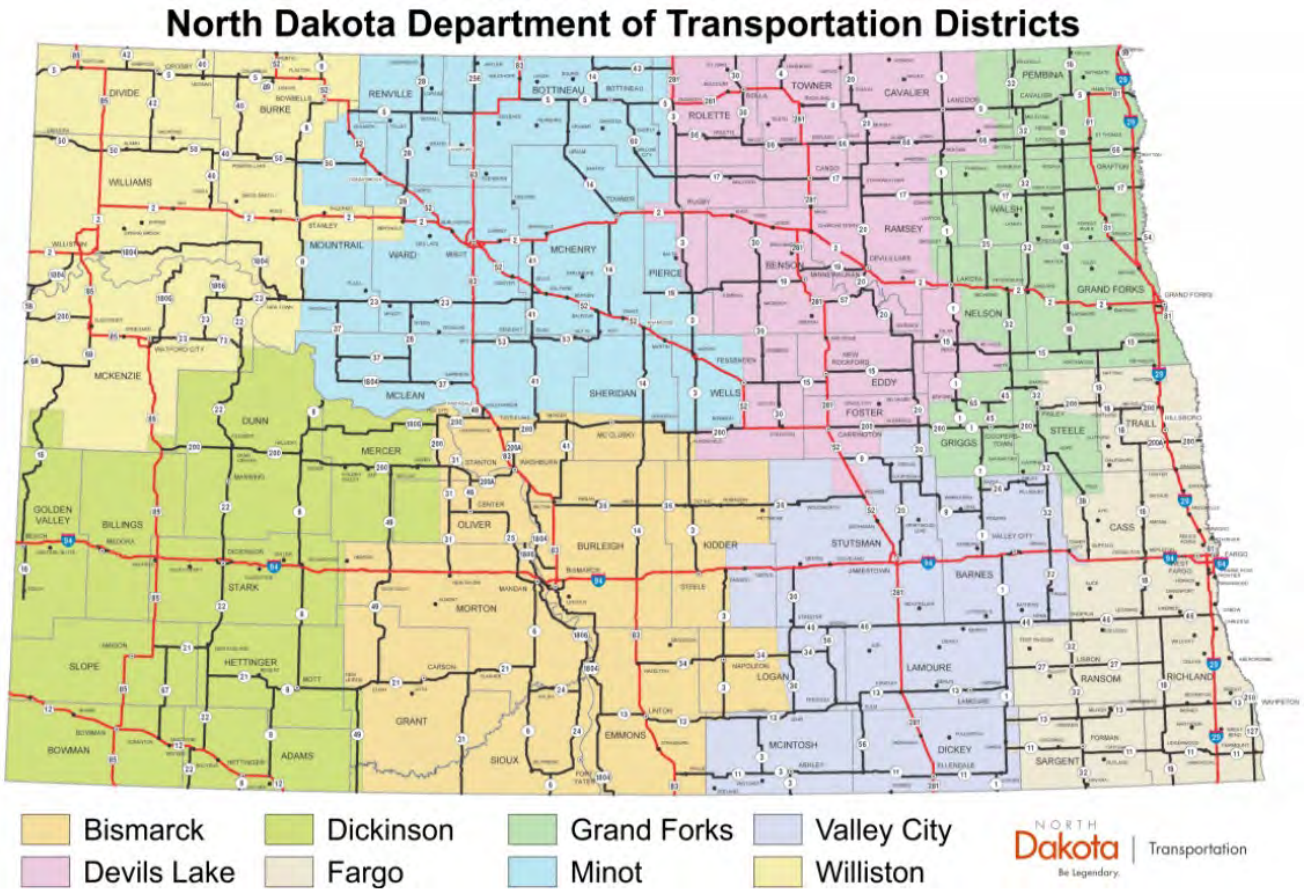

NDDOT

- 2nd smallest DOT by # of employees
- 1000 full time employees

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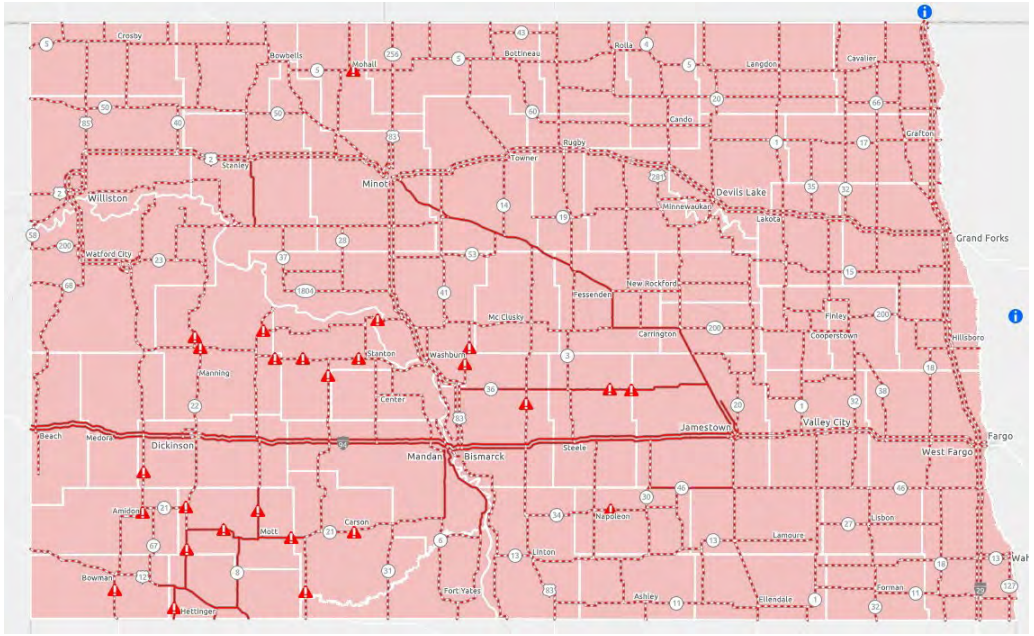

WINTER

- 2022/2023 – 2nd highest snowfall on record
- Snow lasted from October 2022 to May 2023

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49TH OR 50TH STATE VISITED

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ND 1804 PAVEMENT PRESERVATION

- Objectives:
  - Evaluate constructability of different pavement preservation methods
  - Develop specifications for these methods to be used on future projects
  - Evaluate performance
  - Find preservation methods that utilize RAP
  - Encourage Districts to use these methods on future projects

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PROJECT DETAILS

- NHU-SU-1-804(050)072, PCN: 23223 (North Project)
  - University Drive – Signal Street to Expressway
  - ADA Curb Ramps, Milling, Hot Mix Asphalt, & Lighting
  - RP 78.55 – 72.16, Approx. 6 Miles

- SS-1-804(051)047, PCN: 23336 (Test Section/South Project)
  - Hazelton Corner North to Signal Street
  - Various Surface Treatment Test Sections
  - RP 72.20 – 47.21, Approx. 25 Miles

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NORTH PROJECT: 9.5 MM MIX

- Superpave FAA 45 – 9.5 mm
- 58H-34 Asphalt Binder
- 15% RAP
- VMA: Minimum 15%
- Mill 1.25”
- HMA thickness of 1.25”

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NORTH PROJECT: 9.5 MM MIX

- 430 North Dakota Mix:
  - 12.5 mm (1/2”) Nominal Max Aggregate Size
  - Higher Coarse Aggregate %
- 23223 Mix Chosen:
  - 9.5 mm (3/8”) Nominal Max Aggregate Size
  - Higher Fine Aggregate %

Table 430-01
Aggregate Gradation for Mix Design

Sieve Size	1/2 Inch Nominal Maximum Aggregate Size[1] Percent Passing	
	Min.	Max.
⅝ Inch	100	100
½ Inch	90	100
#4	40	70
#30	15	35
#200	2.0	7.0

[1] Nominal maximum aggregate size is defined as 1 sieve size larger than the first sieve to retain more than 10 percent.

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NORTH PROJECT: 9.5 MM MIX

- Benefits of 9.5 mm
  - Decreased Permeability
  - Surface Appearance
  - Less susceptible to segregation
  - Can be placed in thinner lifts
  - Another “Tool in the Toolbox”
  - Ride = 31 MRI

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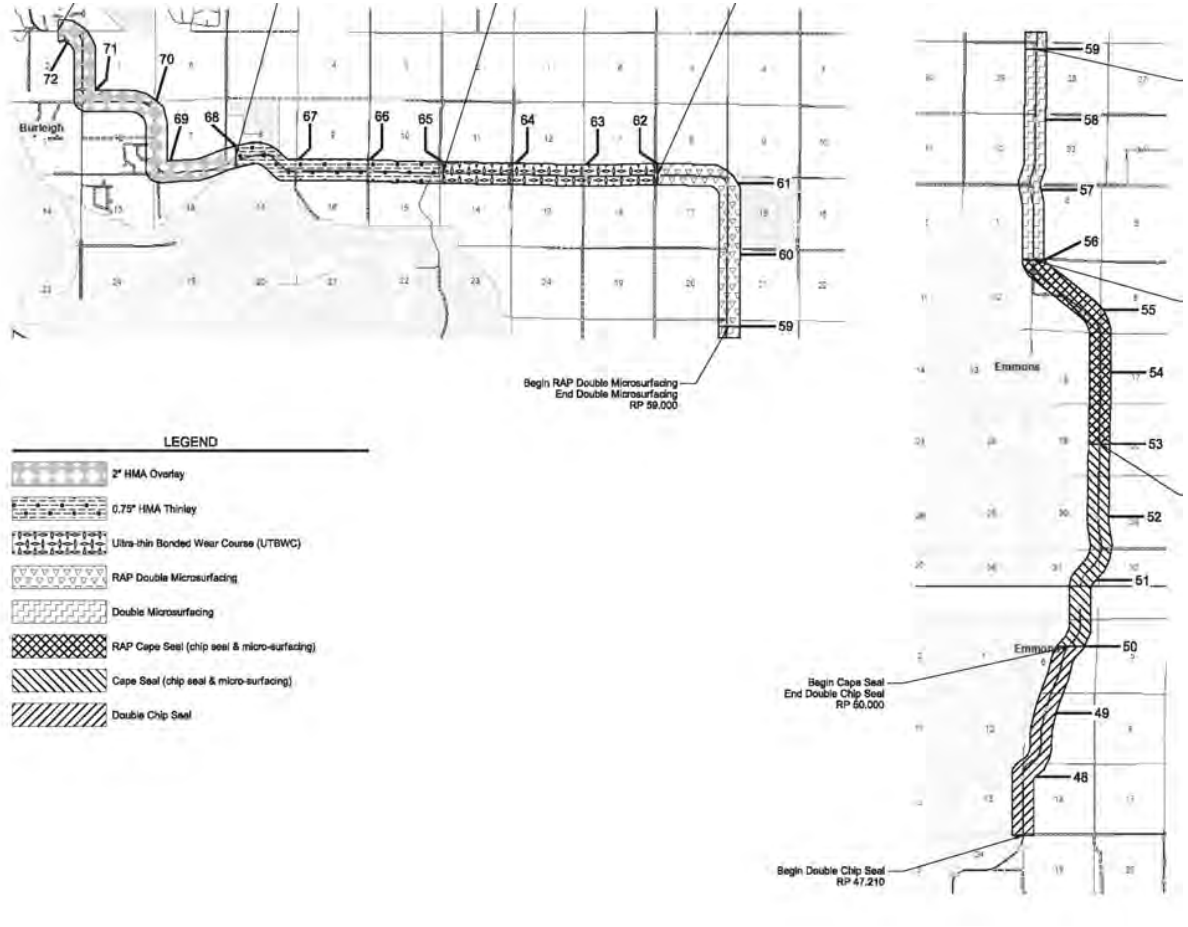
TEST SECTION PROJECT

- Eight Total Test Sections
- 3 Miles Each
- 0.5” Micro-mill
- Aggregates all locally available
  - Marmont Pit
  - Weinmann Pit
  - Steves Pit
  - McKenzie Pit



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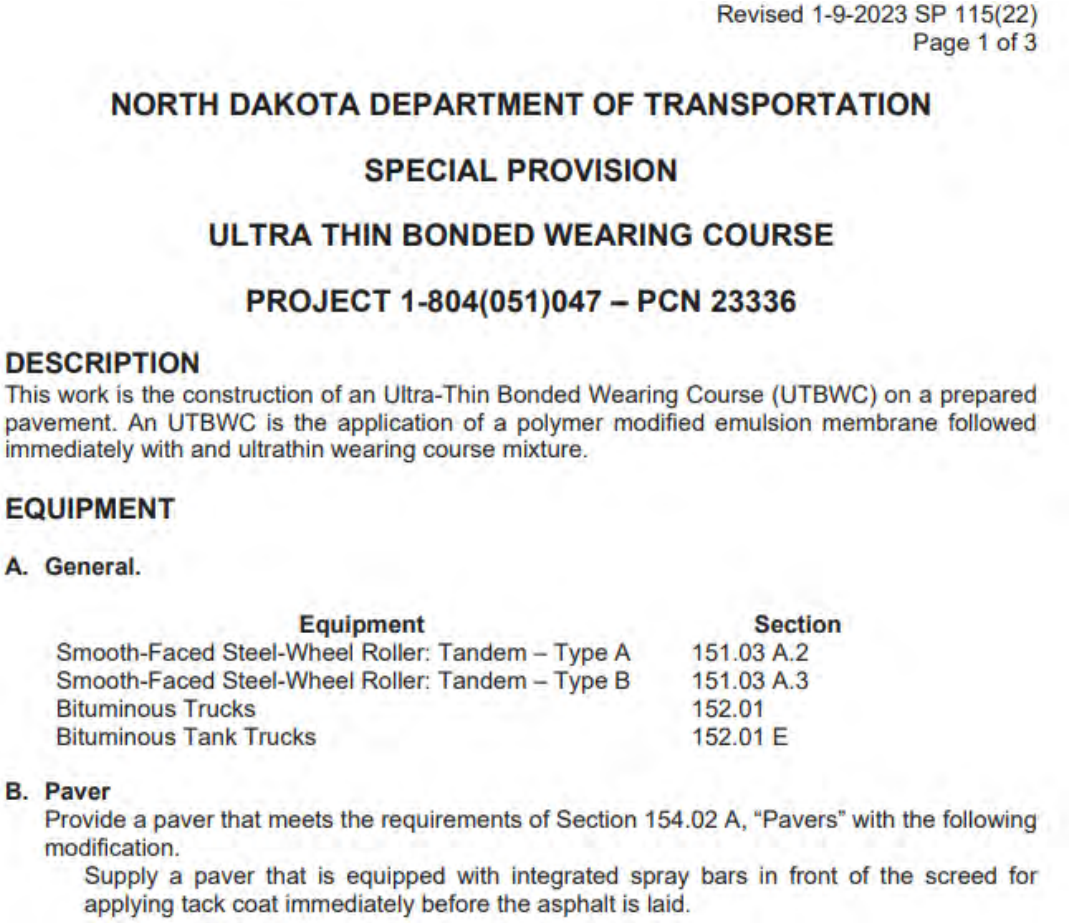
TEST SECTION PROJECT

- Working Group:
  - Materials & Research
  - Bismarck District
  - Pavement Management
  - Transportation Services
  - Contractor feedback



Revised 1-9-2023 SP 115(22)
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NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

ULTRA THIN BONDED WEARING COURSE

PROJECT 1-804(051)047 – PCN 23336

DESCRIPTION

This work is the construction of an Ultra-Thin Bonded Wearing Course (UTBWC) on a prepared pavement. An UTBWC is the application of a polymer modified emulsion membrane followed immediately with and ultrathin wearing course mixture.

EQUIPMENT

A. General.

Equipment	Section
Smooth-Faced Steel-Wheel Roller: Tandem – Type A	151.03 A.2
Smooth-Faced Steel-Wheel Roller: Tandem – Type B	151.03 A.3
Bituminous Trucks	152.01
Bituminous Tank Trucks	152.01 E

B. Paver

Provide a paver that meets the requirements of Section 154.02 A, "Pavers" with the following modification.

Supply a paver that is equipped with integrated spray bars in front of the screed for applying tack coat immediately before the asphalt is laid.

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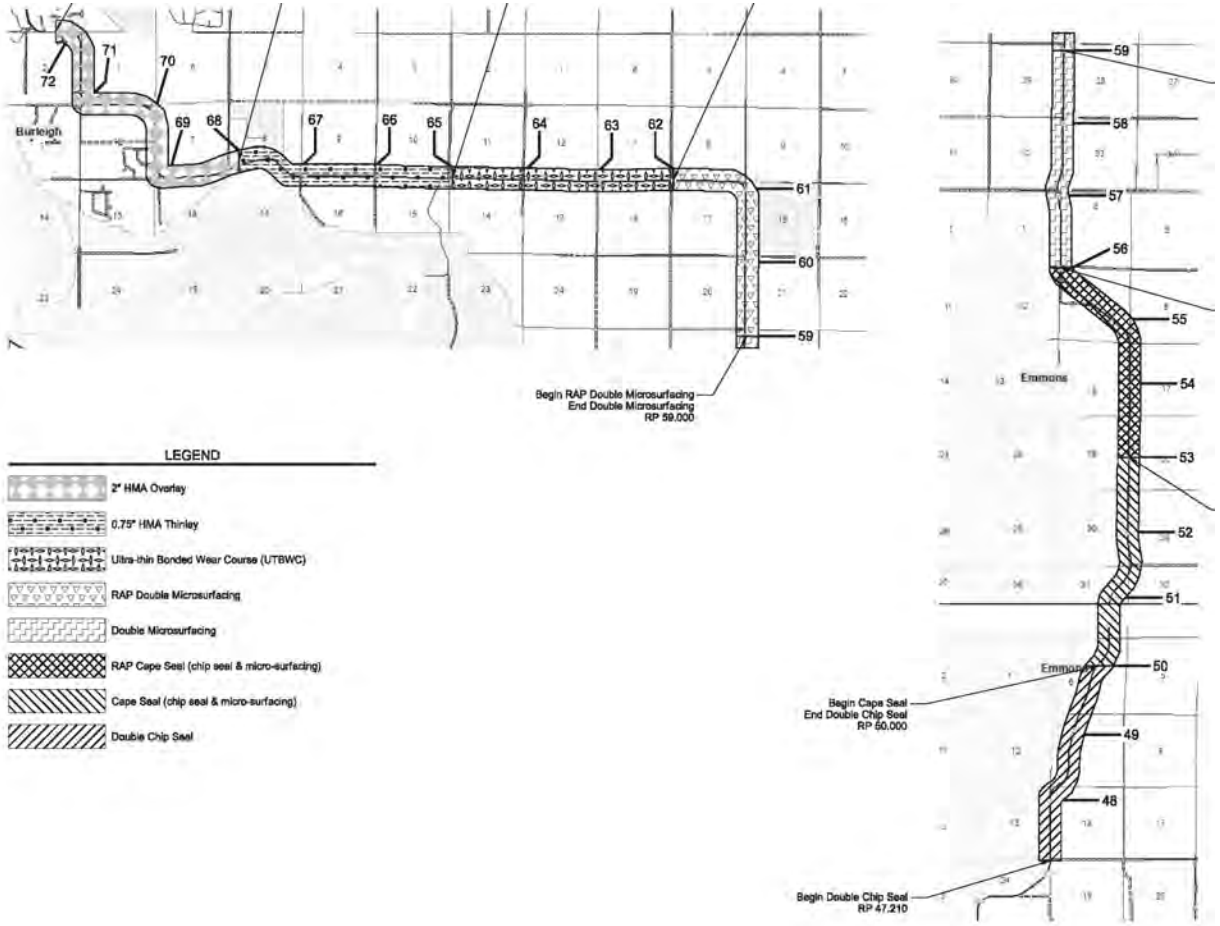
TEST SECTION PROJECT



- Double Chip Seal
- Cape Seal
- RAP Cape Seal
- Double Micro-surfacing
- RAP Double Micro
- Ultra-Thin Bonded
- 4.75 mm HMA Thinlay
- 2" RAP FAA 43 (control)

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TEST SECTION PROJECT

- **Section 1: Double Chip Seal (0.5”)**
  - RP 47.2 – RP 50.0
  - Cost per Mile: $193,749
- **Section 2: Cape Seal (0.5”)**
  - RP 50.0 – RP 53.0
  - Cost per Mile: $166,644
- **Section 3: RAP Cape Seal (0.5”)**
  - RP 53.0 – RP 56.0
  - Cost Per Mile: $169,938
- **Section 4: Double Micro-Surfacing (0.5”)**
  - RP 56.0 – RP 59.0
  - Cost per Mile: $160,670

RAP Cape Seal

RAP Double Micro-surfacing

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TEST SECTION PROJECT

- **Section 5: RAP Double Micro-Surfacing (0.5”)**
  - RP 59.0 – RP 62.0
  - Cost per Mile: $163,785

- **Section 6: Ultra-Thin Bonded (0.75”)**
  - RP 62.0 – RP 65.0
  - Cost per Mile: $403,968

- **Section 7: 4.75 HMA Thinlay (0.75”)**
  - RP 65.0 – RP 68.0
  - Cost Per Mile: $261,836

- **Section 8: FAA 43 2” Overlay (2.0” Control)**
  - RP 68.0 – RP 72.2
  - Cost per Mile: $389,486

Ultra-Thin Bonded

4.75 HMA Thinlay

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