

# Texas Underseal

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NDDOT – Bismarck District



# Who?

- 2015 North Dakota Asphalt Conference – April 1, 2015  
Dan Wood, MNDOT Research Project Supervisor gave a presentation
- NDDOT Transportation Innovation Program (TRIP)  
Steph Weigel, NDDOT submitted the idea in April 2015
- Added to ND 22 project by addendum prior to May 2015 bid opening

# More Who?

- Prime Contractor: Knife River Corp.
- Chip Seal Contractor: Asphalt Surface Technologies
- Project Designer: Jason Fischer, Dickinson District
- Project Engineer: Dan Schneider, AECOM
- Consultant Oversight: Tyler Wollmuth, Bismarck District

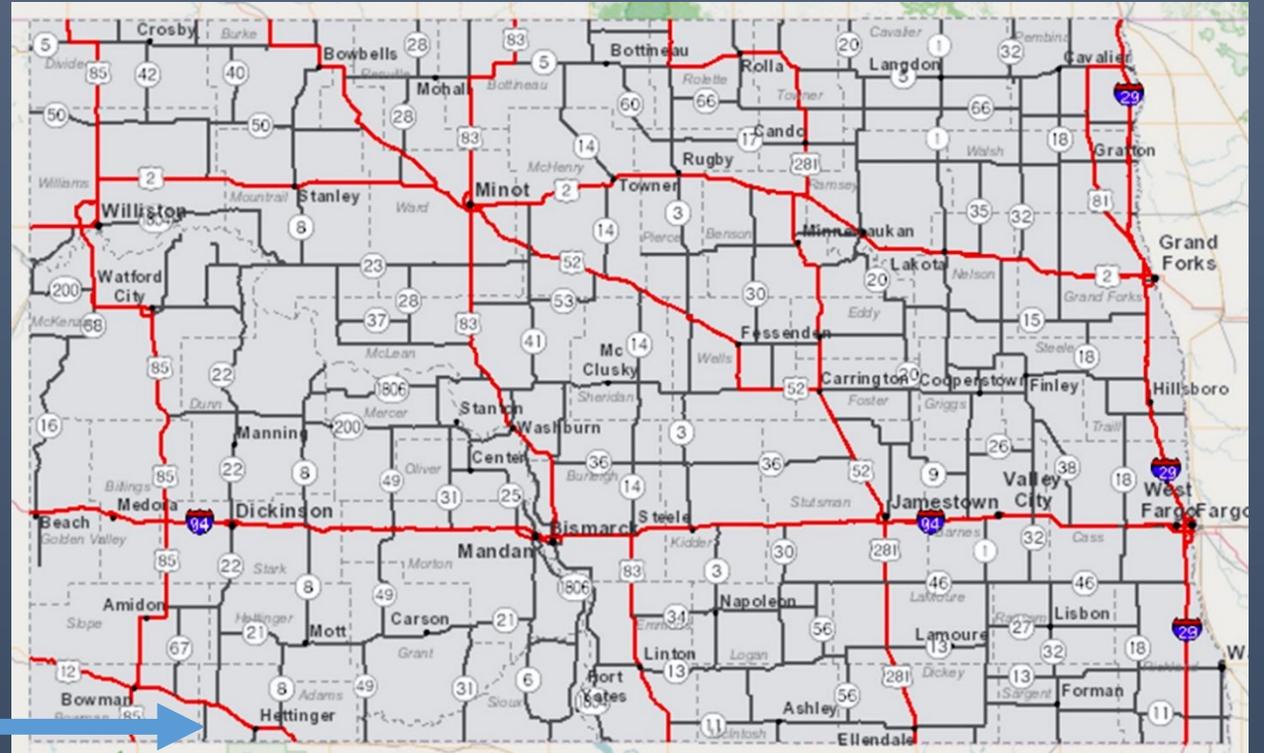
# What?

- “Texas Underseal” is an application of a chip seal coat prior to overlaying the pavement to provide an impervious membrane to stop the intrusion of moisture.
- In Texas the #1 usage is to prevent intrusion of surface water into underlying layers of asphalt. While using the underseal they found a 2<sup>nd</sup> benefit which was delayed reflection cracking.

Credit: Report FHWA/TX-06/0-4391-1 - Guidelines for the use of underseals as a pavement moisture barrier published in November 2006

# Where?

- Project SOIB-5-022(092)000  
RP 0.00 to RP 11.918
- Texas Underseal Test Section  
RP 1.497 to RP 6.171
- Control Section  
Remainder of Project



# Why?

- MNDOT started using this process several years ago and found the delayed reflective cracking beneficial.
- 5-6 years before thermal cracks reflected thru the pavement when undersealed as compared to 1-2 years on a typical HMA overlay.
- “We don’t know why it works, but it just does” - Tom Wood, MNDOT

# How?



Mill



Chip Seal



Overlay

# Project Specifics

➤ Milling 1" Depth

➤ Chip Seal

Design application rate    CRS2P = 0.35 GAL/SY    CL 41 = 18 LBS/SY

Actual application rate    CRS2P = 0.343 GAL/SY    CL 41 = 17.2 LBS/SY

➤ 3" HMA Overlay

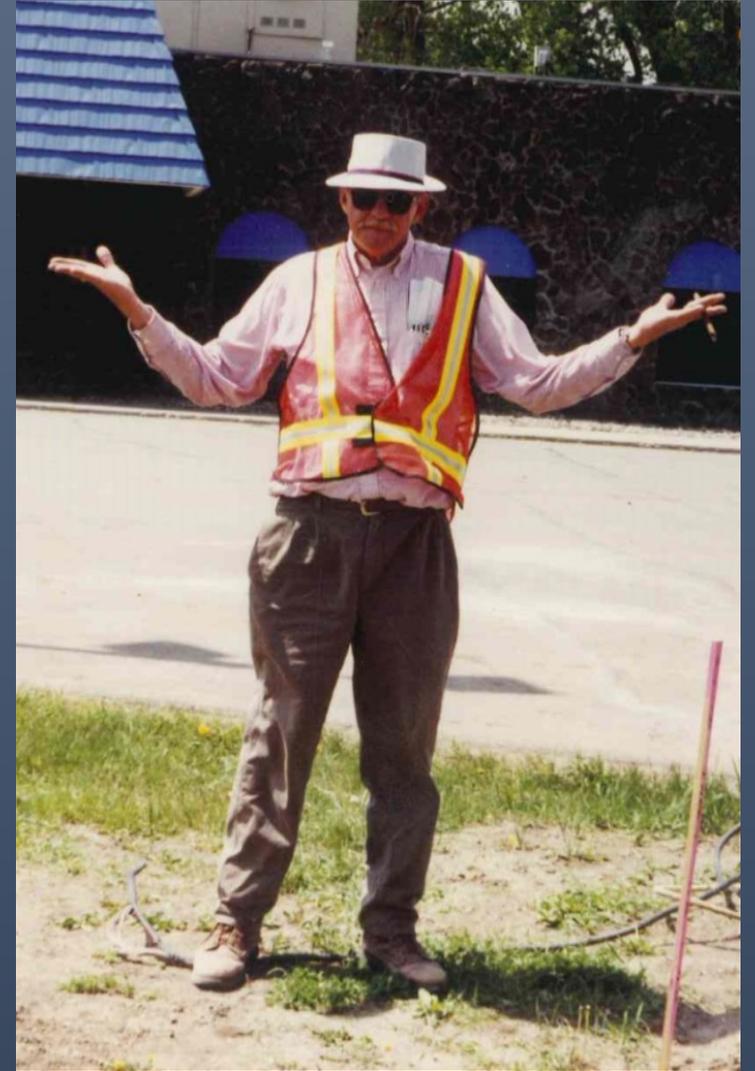
2 equal lifts of RAP Superpave FAA 45 with PG 64-28 Asphalt Cement

# Quotes from the Field

“Why are we putting the chip seal on the wrong side of the asphalt”

“I’ve never seen a chip seal stop a crack”

“You want us to do what?”



# What we learned

- Additional Cost of Texas Underseal: \$29,027 / Mile
- Biggest challenge was scheduling chip seal contractor
- Application rates seemed right



# Ride (IRI) Results

<u>Mile</u>	<u>Before</u>	<u>After</u>
0	241	41
1	220	40
2	209	33
3	203	34
4	181	34
5	203	32
6	298	33
7	200	30
8	197	28
9	268	29
10	262	29
11	197	47



# What we hope to learn

- Field Review on February 25, 2016 showed that no cracks had reflected thru the new pavement, but there was a noticeable difference in ride.
- Transverse cracks could be felt in the control section more than the Underseal section.
- M&R and Planning will monitor for 5-6 years

Questions?

