



Modified Warranty Chip Seal - What is it?

- ▶ Concept to construct a chip seal project by using test sections as a comparison for acceptance of the remainder of the project and assess any areas of failure.
- ▶ Contractor is responsible for the quality of the work performed.
- ▶ If necessary, the contractor is to return the following construction season and repair any failure areas at their own cost.
- ▶ Cost saving means to administer a chip seal project as it removes the immediate inspection activities.
- ▶ Another tool for the tool box.



History



- ▶ Early Concept in late 2012/early 2013 and was part of the Strategic Business Plan worked on by Minot and Williston Districts and Construction Services.
- ▶ Developed due to:
 - ▶ Amount of work out for bid.
 - ▶ Available Staffing was not present in the oil impacted districts.
 - ▶ Save engineering costs.
 - ▶ Perceived as Minimal Risk.
- ▶ Shelved until early 2016 when the Deputy Director asked for volunteers to test.
- ▶ Minot District volunteered and developed the plan set.
- ▶ ETS developed the Special Provision



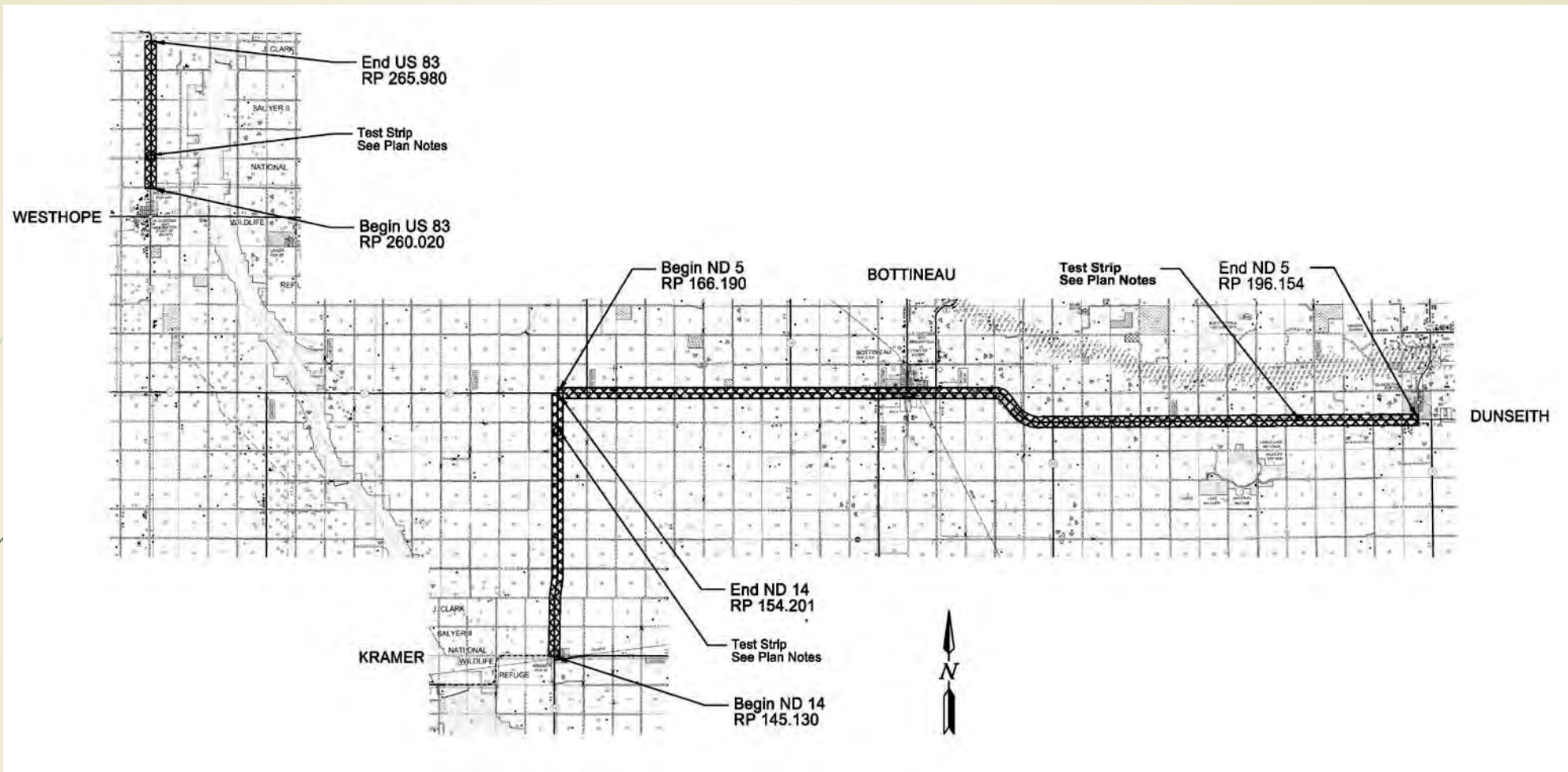
Special Provision

- ▶ Bitumen
 - ▶ Contractor submits test results for CRS-2P emulsion when submitting the Certificate of Compliance
- ▶ Cover Coat Material
 - ▶ Contractor is to notify the Engineer when 500 ton or 25% of the material, whichever is less, is stockpiled at each stockpile location.
 - ▶ Engineer will collect a sample within 5 days and provide results to contractor within 2 working days of sample collection.
 - ▶ If stockpile meets requirements, Engineer will allow its use for construction.
 - ▶ Applies to each individual aggregate source.



Special Provision

- ▶ Deliverables
 - ▶ Contractor supplies daily logs with Aggregate, Seal Coat Oil and Fog Seal Oil quantities.
- ▶ Test Strip
 - ▶ One 1000' test strip on each highway at a location determined by the Engineer.
- ▶ Traffic Control
 - ▶ Contractor maintains own traffic control according to MUTCD and NDDOT Standards.
- ▶ Secondary Review
 - ▶ Completed by May 15th of the following year to determine any repair areas.
- ▶ Measurement
 - ▶ Paid by the SY



Pilot Project Location: ND 5, ND 14, and US 83




Project Details

- ▶ Project Number: SS-4-999(030)
- ▶ PCN 21668
- ▶ Average Cost per mile was \$26,475
- ▶ Total Miles = 45
 - ▶ ND 5 – 30 miles
 - ▶ ND 14 – 9 miles
 - ▶ US 83 – 6 miles
- ▶ Traffic Data
 - ▶ ND 5 – Pass 1576/Truck 219 = 1795 AADT
 - ▶ ND 14 – Pass 310/Truck 70 = 380 AADT
 - ▶ US 83 – Pass 62/Truck 46 = 108 AADT



Bid

- ▶ February 3, 2017 Bid Opening
- ▶ Completion date of August 15, 2017
- ▶ Engineer's Estimate was \$1,227,585
- ▶ Low bidder was Morris Seal Coat & Trucking at \$1,190,860
- ▶ Second Bidder was Bituminous Paving at \$1,240,599
- ▶ Third Bidder was Asphalt Technologies at \$1,599,951



Construction



- ▶ Testing

- ▶ Contractor informed the district when aggregate stockpiles were available.
- ▶ District representative took 3 samples.
- ▶ District tested those samples and gave approvals.

- ▶ Test Strips

- ▶ 3 Test Strips -1000' long each. One on each segment of highway.
- ▶ Locations directed in the plans.
- ▶ No Blotter use allowed on Test Strip
- ▶ Allowed contractor to proceed once Test Strip was approved.

Test Strips

ND 5



US 83



Test Strips

ND 14





Construction

- ▶ Materials
 - ▶ CRS-2P at a rate between 0.38-0.43 Gal/SY – Averaged 0.40 Gal/SY
 - ▶ Cover Coat Class 41-M at a rate between 20-25 lb./SY – Averaged 23 lb./SY
 - ▶ Fog Oil – CSS1H at a rate of 0.05 Gal/SY
 - ▶ Oil acceptance based on certification and performance.
- ▶ Secondary Review
 - ▶ To be conducted before May 15, 2018.
 - ▶ District and contractor representatives will meet on site to review the project.
 - ▶ Any areas found not to meet the condition of the Test Strips are to be repaired by the contractor prior to September 1, 2018.
- ▶ Payment
 - ▶ Chip Seal was paid by the Square Yard. Price includes Chip, CRS-2P, and fog oil.
 - ▶ Contract Bond, Mobilization, Traffic control, and pavement marking paid by normal units.



Deliverables

- ▶ Contractor provides the following to the district upon completion:
 - ▶ Log showing daily and running totals of:
 - ▶ Aggregate
 - ▶ Seal Coat Oil
 - ▶ Fog Seal Oil

How did it turn out?

- Great!
- Good chip embedment.
- Good oil coverage.
- Little or no bleeding.



Reviews

September 2017 (ND 5)



January 2018 (ND 5)



Reviews

September 2017 (US 83)



January 2018 (US 83)



2 Years Later

March 28, 2019 (ND 5)



March 28, 2019 (US 83)



Risks/Concerns

➤ Risks

- Contractors have more of the risk on a project like this. They do not have control of the winter maintenance that the roadways will see.
- Additional contractor risk is suppliers providing poor or dirty materials.
- Department risk is the additional time/labor/travel costs to review in the spring and quantify any failures.
- Late season chip seal projects run a higher risk of failures.
- Department may see higher costs to seal coats if failures are seen, however at this time it is not showing an increase to the bids.

➤ Concerns

- Drilling/Rowing
- Traffic control
 - Not being maintained or removed timely.



Snowplow Damage





Risks/Concerns

- ▶ Excess Chips
- ▶ Overapplication on approaches
- ▶ Out of shape roadway sections – pushing pavements/blade patches
- ▶ Oversized material
- ▶ Debonding from old pavement marking
- ▶ Missing approaches



Excess Chips



Overapplication





Debonding from Pavement Marking



Oversized Material






Adjustments

- ▶ Require additional material be in stockpile locations prior to beginning Test Strips. Adjusted to 500 tons or 25% of material, whichever is less, be at each stockpile site before testing.
- ▶ Test Strips are in odd locations. Test Strip locations will be determined by the engineer in the field.
- ▶ Shot rate application range. Tightened up to 0.40-0.43 Gal/SY
- ▶ Deliverables by the contractor. Added the contractor keep a log of length of project completed each day.



What did others think?

- ▶ District Thoughts
 - ▶ Went well.
 - ▶ Very few issues, mainly with traffic control.
 - ▶ Plan to do it again.
- ▶ Contractor's Thoughts
 - ▶ Felt it went really well and was a good experience.
 - ▶ This was the first of this type of project they had done and would do it again.
 - ▶ Biggest concern was the time factor in the spec for the test strip.
 - ▶ Other concerns included what is to be done with dirty or large material.
 - ▶ Good communication with the district personnel if there were questions. Only a call away.



What has been done since the pilot project?

- ▶ In 2018 there were 7 seal coat projects bid out with this Special Provision with a total of 408 lane miles.
 - ▶ Average cost per mile was \$26,700.
 - ▶ 3 contractors received the bids. Asphalt Technologies, Morris Seal Coat & Trucking, and Northern Improvement Co.
 - ▶ All chip seals appear to be in good shape.
 - ▶ Biggest concern was traffic control.
 - ▶ Working outside of the traffic control.
- ▶ In 2019 there will be 5 more bid with this Special Provision with a total of 324 lane miles.
- ▶ 4 districts are utilizing the Special Provision: Minot, Valley City, Bismarck, and Dickinson.



Take Aways

- ▶ It works.
- ▶ There is a cost savings to the Department
- ▶ Frees up DOT and Consultant staff for other work
- ▶ A minimal risk means to manage a Chip Seal for the Department
- ▶ Another tool for the tool box



QUESTIONS

