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