

NDSU | UPPER GREAT PLAINS TRANSPORTATION INSTITUTE
NORTH DAKOTA LOCAL TECHNICAL ASSISTANCE PROGRAM



- City of Crosby, ND Scrub Seal

- Troy Kelsey, P.E.



- Mo Henman

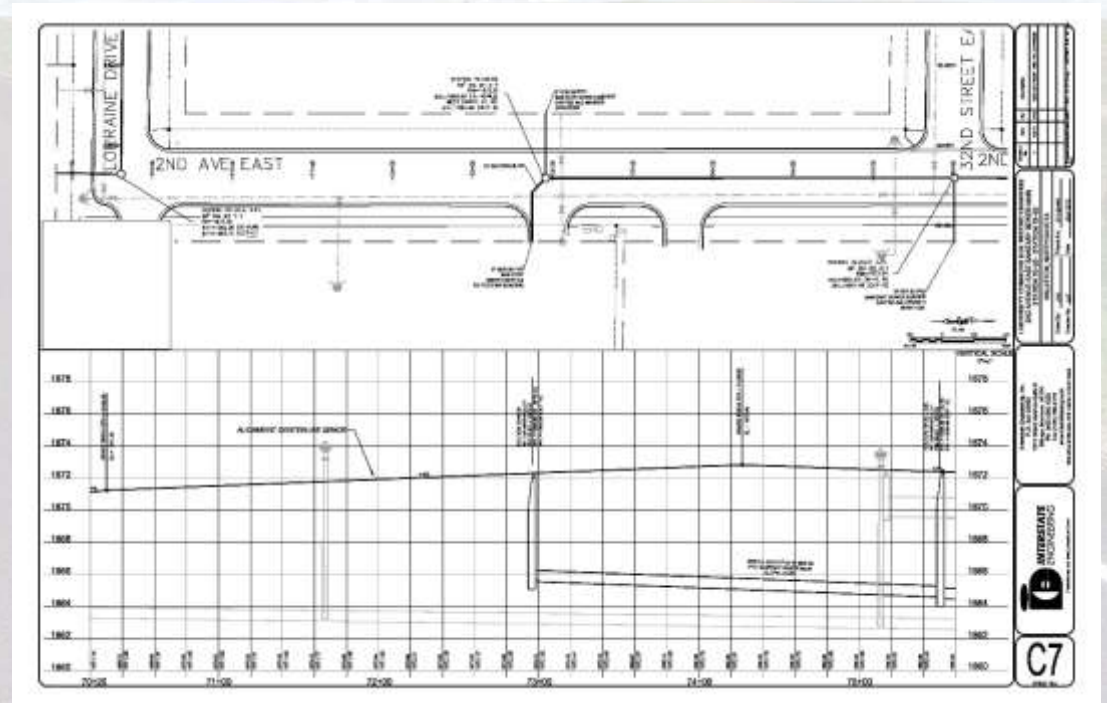
North Dakota Asphalt Conference

Bismarck, ND - April 10-11-2018



PROJECT SCOPE

- Seal & Cover all streets not recently paved
- Mitigate existing cracks
- Bituminous patching



PRELIMINARY FIELD REVIEW

- Review pavement conditions with City of Crosby
- Evaluate pavements and what options work best
- Explore options with the City



EVALUATE OPTIONS

- Traditional Chip Seal

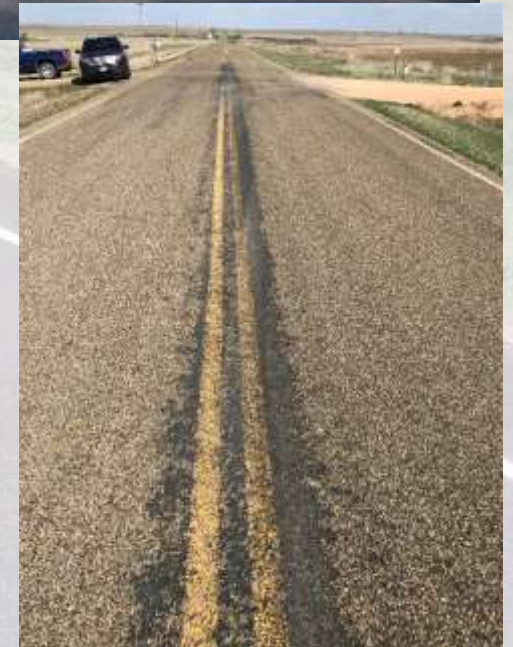
- Scrub Seal

VS



TRADITIONAL CHIP SEAL

- Common practice, contractors know process
- Have to mitigate cracks before chipping operation – crack seal
- With crack seal, adding another operation to project
- Chip loss in urban environment
- Cost with two major operations may not be cost effective
- Life expectancy – 3 to 5 years



SCRUB SEAL

- Not a common practice, contractors not used to process
- Using rejuvenating emulsion (PMRE) and brushes eliminates crack-seal operation
- Eliminating crack seal, lowers overall cost
- Better chip retention with PMRE
- With one major operation eliminated, project completed early
- Add Fog Seal to enhance chip retention



Base Bid: 2017 Street Improvements - Chip Seal

Item	Description	Unit	Quantity	Estimated Unit Price	Estimated Total Price
1	General Requirements and Mobilization	L.S.	1	\$ 76,880.00	\$ 76,880.00
2	Traffic Control	L.S.	1	\$ 30,000.00	\$ 30,000.00
3	Bituminous Patching w/ 6" Aggregate	S.Y.	1,000	\$ 75.00	\$ 75,000.00
4	Crack Sealing	L.S.	1	\$120,000.00	\$ 120,000.00
5	CRS-2P Emulsified Asphalt (App. Rate - 0.42 gals/sy)	GAL.	75,600	\$ 2.30	\$ 173,880.00
6	Cover Coat Material CL 43 (App. Rate - 0.23 lbs/sy)	S.Y.	180,000	\$ 0.80	\$ 144,000.00
7	Fog Seal CSS-1H Emulsified Asphalt 50/50 (App. - 0.12 gals/sy)	GAL.	21,600	\$ 1.40	\$ 30,240.00
8	Miscellaneous Work	L.S.	1	\$ 10,000.00	\$ 10,000.00
				\$ -	\$ -
					\$660,000.00



Compare Cost – Prelim. Estimate

- Scrub Seal more cost effective, by eliminating Crack-Seal



Alternate Bid: 2017 Street Improvements - Scrub Seal

	Description	Unit	Quantity	Estimated Unit Price	Estimated Total Price
1	General Requirements and Mobilization	L.S.	1	\$ 80,010.00	\$ 80,010.00
2	Traffic Control	L.S.	1	\$ 15,000.00	\$ 15,000.00
3	Bituminous Patching w/ 6" Aggregate	S.Y.	1,000	\$ 75.00	\$ 75,000.00
4	Cleaning Existing Cracks	S.Y.	180,000	\$ 0.05	\$ 9,000.00
5	PASS-CR Emulsified Asphalt (App. Rate - 0.41 gals/sy)	GAL.	73,800	\$ 3.75	\$ 276,750.00
6	Cover Coat Material CL 43 (App. Rate - 0.22 lbs/sy)	S.Y.	180,000	\$ 0.80	\$ 144,000.00
7	Fog Seal CSS-1H Emulsified Asphalt 50/50 (App. - 0.12 gals/sy)	GAL.	21,600	\$ 1.40	\$ 30,240.00
8	Miscellaneous Work	L.S.	1	\$ 10,000.00	\$ 10,000.00
				\$ -	\$ -
				\$ -	\$ -
					\$640,000.00

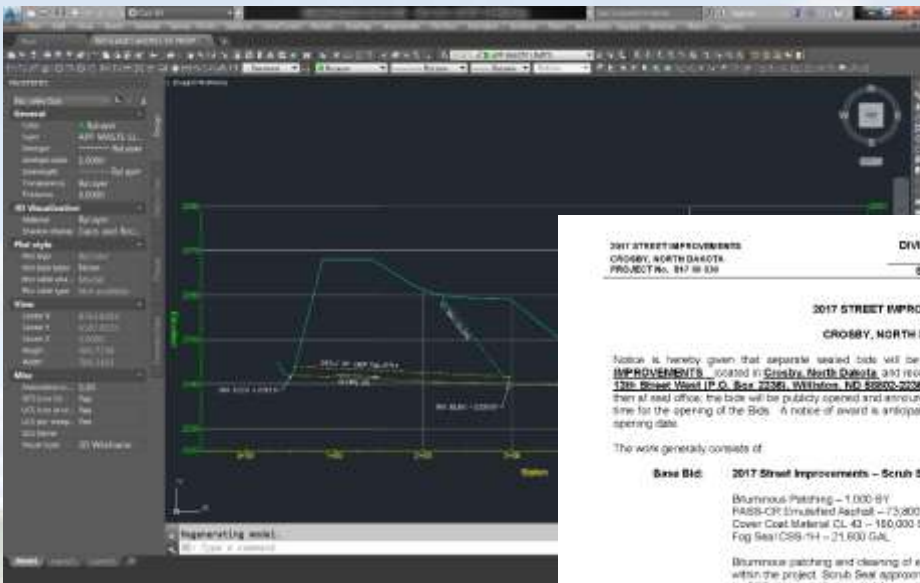
PRESENT OPTIONS

- Look at options, compare cost/benefit
- Evaluate traditional vs. scrub seal
- Present preliminary cost estimates for both
- Present chip seal vs. scrub seal costs and what is best for City
- Make recommendation to City, the City prefers the scrub seal



PLANS TO AWARDDING THE PROJECT

- Prepare plans, specifications and final estimate
- Crosby Centennial starts August 4th, project has to be finished August 2nd
- Bids due June 1st
- Three contractors bid project
- Award to Bituminous Paving, Inc.
- Preconstruction Meeting – June 21st
- Construction start date is July 17, two and half weeks to finish before Centennial



2017 STREET IMPROVEMENTS
CROSBY, NORTH DAKOTA
PROJECT No. 817 88 536

DIVISION 86 - PROCUREMENT AND CONTRACTING REQUIREMENTS
SECTION 00 11 13 - ADVERTISEMENT FOR BIDS

**2017 STREET IMPROVEMENTS
CROSBY, NORTH DAKOTA**

Notice is hereby given that separate sealed bids will be received for the construction of **2017 STREET IMPROVEMENTS** located in Crosby, North Dakota, 393 received at Interstate Engineering, Inc. located at 202 13th Street West P.O. Box 72361, Williston, ND 58850-2026 until **1:00 P.M. LOCAL TIME on June 1, 2017** and then at local office, the bids will be publicly opened and announced. No bids may be withdrawn after the scheduled time for the opening of the Bids. A notice of award is anticipated to be issued no later than 30 days from the bid opening date.

The work generally consists of

Base Bid: 2017 Street Improvements - Scrub Seal

Bituminous Patching - 1,000 SY
 PASS-OR Simulated Asphalt - 75,000 GAL
 Cover Coat Material CL 43 - 100,000 SY
 Fog Seal/CSS-TH - 21,000 GAL

Bituminous patching and cleaning of existing cracks prior to scrub seal in streets incropated within the project. Scrub Seal approximately 100,000 square yards of city streets, followed by CSS-TH simulated asphalt fog seal.

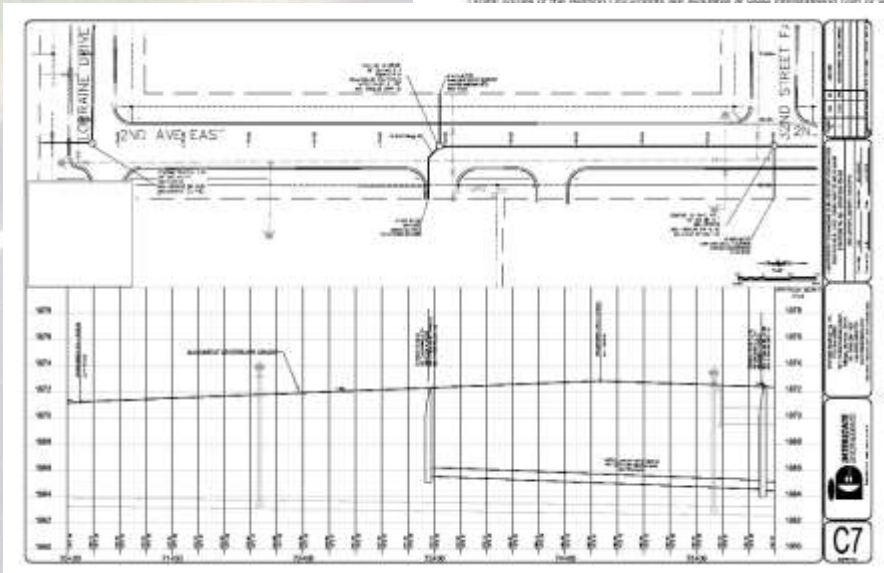
One contract may be awarded. The award will be based on the lowest responsive, responsible bid received for the Base Bid Schedule.

Contract Time:

1. Construction shall be substantially complete and ready for OWNER use and pre final inspection by August 2, 2017.
2. All construction schedules shall be ready for final payment within thirty (30) calendar days of substantial completion.
3. The CONTRACTOR shall pay the OWNER \$1,000.00 for each day that expires after the time specified for Substantial Completion of any construction schedule until the Work is substantially complete. At any given time, the maximum amount the CONTRACTOR will pay is \$1,000.00 per day regardless of the number of construction schedules or additive alternates that are not substantially complete per the time described above.

Final version of the Division Documents are available at www.international.com or www.iguestbook.com for a fee of \$100.00 and by ordering as membership registration. Bidding Documents may be obtained by phone (701) 475-0900, faxed at the office of Interstate (701) 475-0900.

Registration to be a registered bidder. Address and other information must be accompanied by a Bidder's compliance with the appropriate if the contractor's license or registration documents. All bids must





PROJECT AND SCRUB SEAL PROCESS

- Bituminous Patching Before Scrub Seal
- Scrub Seal
 - Blowing out cracks
 - Sweep, cover manholes and valves
 - Set up Distributor and Brooms
 - Shoot PMRE at application rate, adjust if necessary
 - Spread Chips at application rate, adjust if necessary
 - Roll with rubber-tired rollers
 - Sweep, reclaim chips with pick-up broom for the City
 - Fog Seal at application rate
 - Uncover manholes and valves

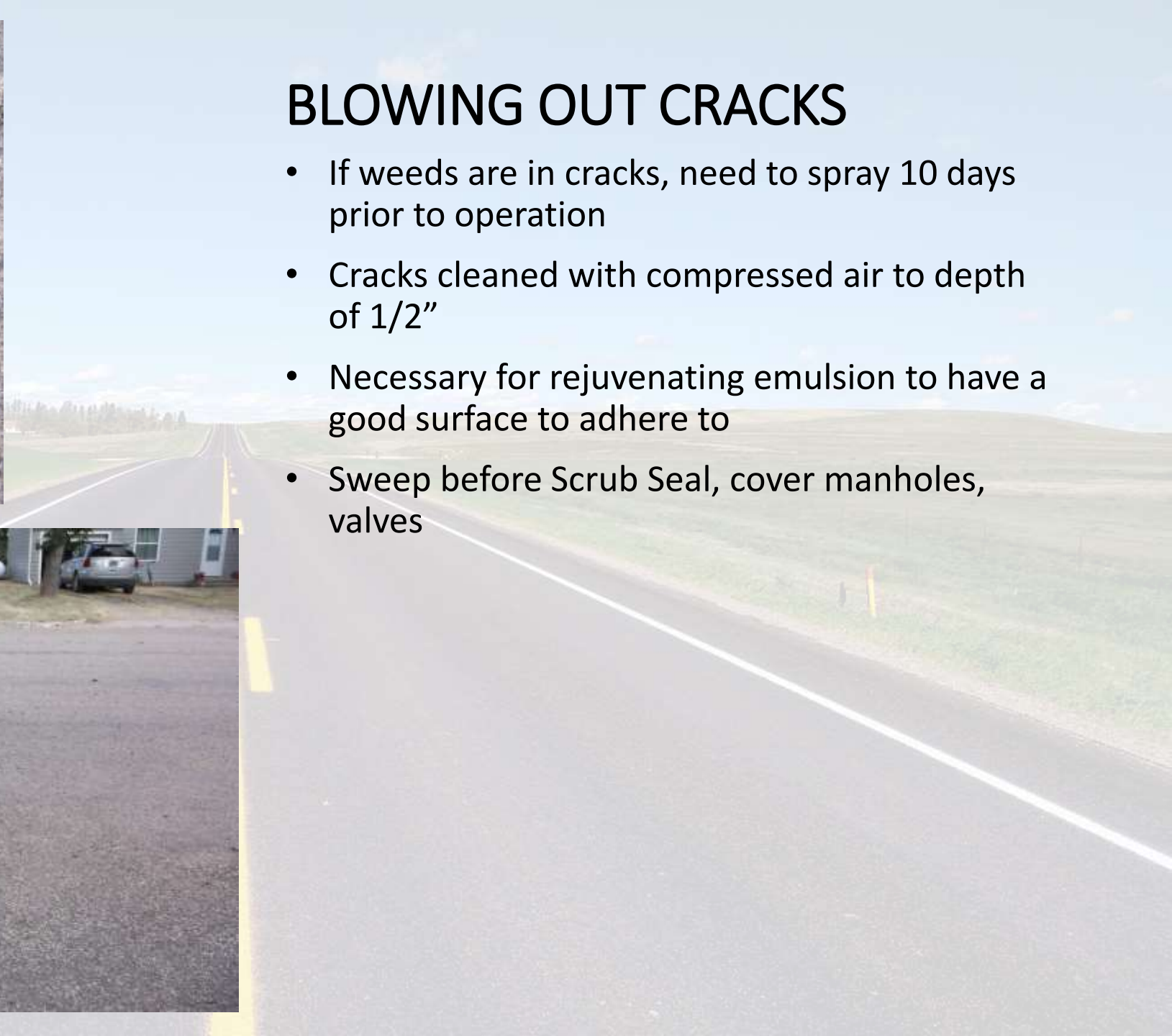
BITUMINOUS PATCHING

- 4" Asphalt patch, with 6" Base Course Aggregate
- Approximately 800 SY
- Subgrade Modification if necessary
- 4" Asphalt, 6" – 18" Base Course Aggregate



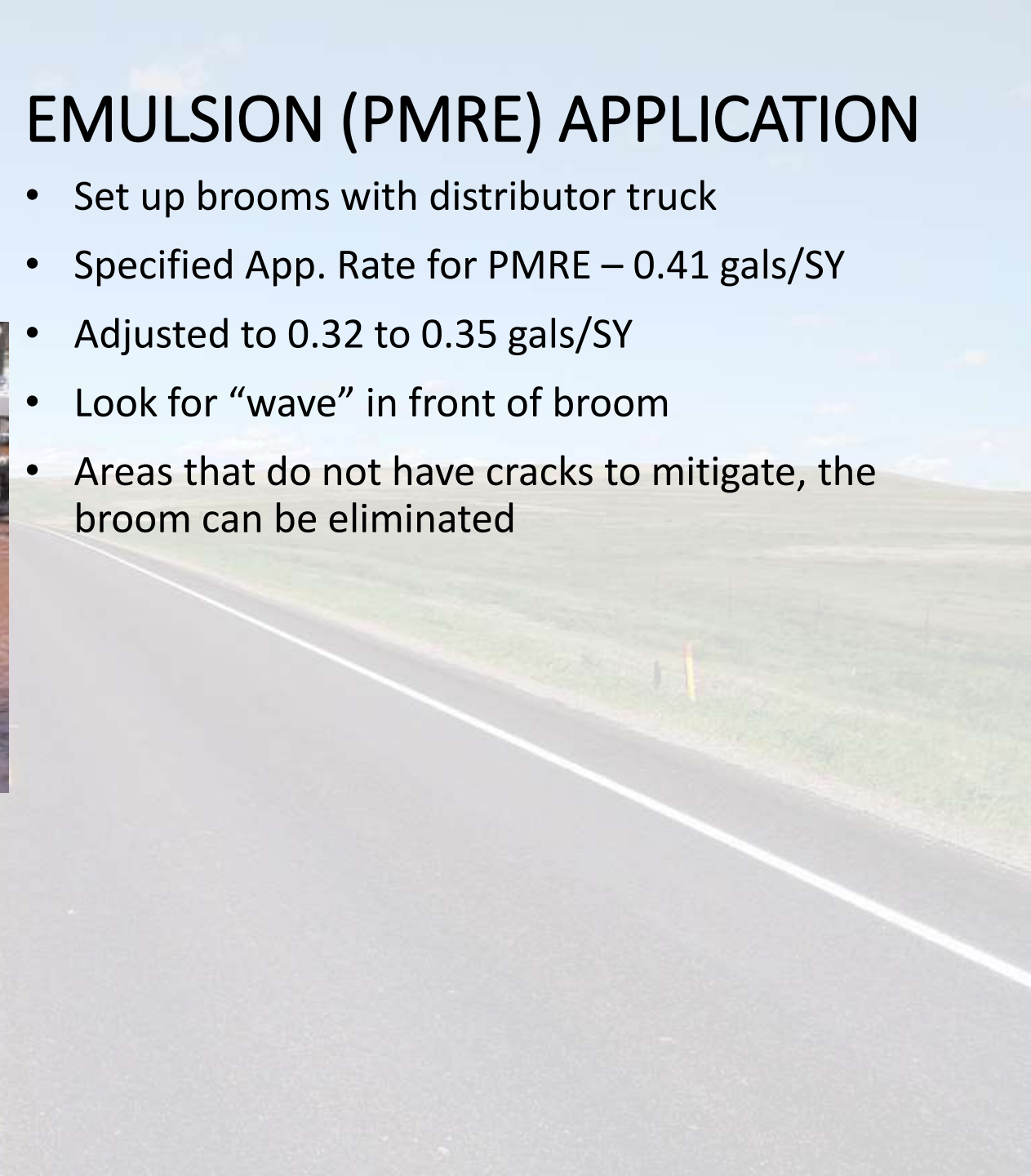
BLOWING OUT CRACKS

- If weeds are in cracks, need to spray 10 days prior to operation
- Cracks cleaned with compressed air to depth of 1/2"
- Necessary for rejuvenating emulsion to have a good surface to adhere to
- Sweep before Scrub Seal, cover manholes, valves



EMULSION (PMRE) APPLICATION

- Set up brooms with distributor truck
- Specified App. Rate for PMRE – 0.41 gals/SY
- Adjusted to 0.32 to 0.35 gals/SY
- Look for “wave” in front of broom
- Areas that do not have cracks to mitigate, the broom can be eliminated





CHIP APPLICATION

- Class 41 Cover Coat Material
- Can use “dirty” chips with PMRE
- Specified App. Rate for chips– 0.22 lbs/SY
- Adjusted to 0.22 to 0.25 lbs/SY
- Use pneumatic tire rollers
- Offset rollers
- Roll 3 times
- Sweep and reclaim chips

FOG SEAL (CSS-1H) APPLICATION

- Specified App. Rate for CSS-1H (50/50) – 0.12 gals/SY
- Additional 10 – 15% chip retention with fog seal
- Nice black appearance when done, good public perception
- Inexpensive
- Uncover manholes and valves



PROJECT CLOSEOUT

- Final walk-through and punch list
- Small punch list after walk-through
- A couple small areas that were missed
- Mostly manholes and valves that were covered during process
- Done in ~ 2 weeks, well before City of Crosby Centennial
- After final payment, the City saved ~ \$120,000 from bid price and engineers estimate



PROJECT SUMMARY



PROJECT SUMMARY

- Contractor had never done a scrub seal, no issues during construction
- Lower cost with better results, PMRE should extend time for next pavement maintenance project
- A fresh start with cracks on streets
- Efficient, quick process, contractor performed well
- First Scrub Seal in North Dakota
- North Dakota LTAP visited project during construction inviting other municipalities
- Montana DOT using Scrub Seals often



THANK YOU



Troy Kelsey, P.E. – Interstate Engineering, Inc.

troy.kelsey@interstateeng.com

Mo Henman – Western Emulsions

Mo.Henman@westernemulsions.com

- Resource list.....



"Build with Asphalt"

Dakota Asphalt Pavement Association, Inc.

"Dedicated to Quality Asphalt Paving Through Engineering, Research, and Education"

ASPHALT

conference

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NDDOT
North Dakota
Department of Transportation

THE ASSOCIATED GENERAL CONTRACTORS
AGC
North Dakota

U.S. Department of Transportation
**Federal Highway
Administration**

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