Two New and Proven

Pavement Preservation Processes

for State DOT's

JOHN CALVERT

The Processes

- **Surface Abrasion/Rejuvenator Application for Interstates and other Higher Speed Roadways**
- **Longitudinal Joint Stabilization** for Asphalt Roadways
- Both have been tested and approved for usage by DOTs.

Surface Abrasion/Rejuvenator Project Goals:

- **Improve the surface friction numbers of the pavement to acceptable standards;**

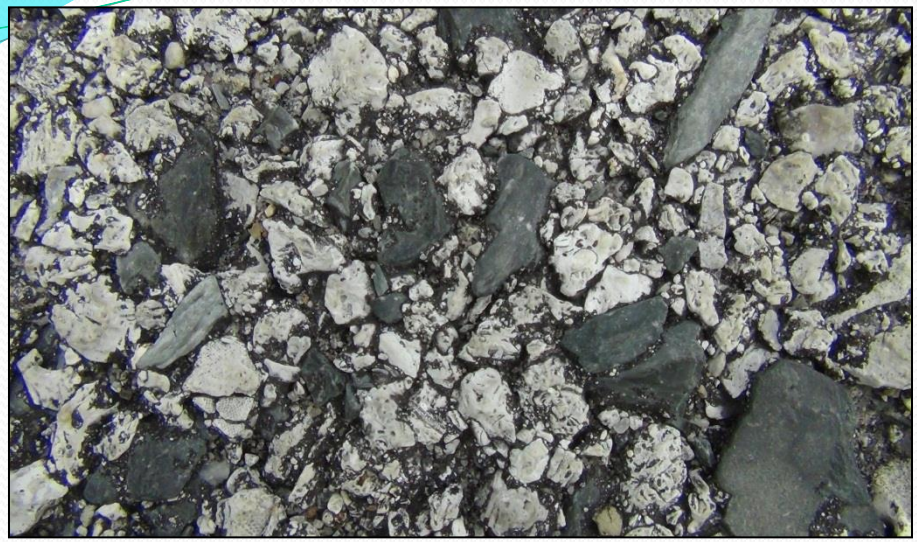
- **Extend the life of the aged OGFC pavement by improving the AC viscosity by at least 20%.**

Pre-Testing

- Cores pulled to determine AC viscosity before
- Skid tests conducted to determine existing skid numbers
- Hydro-timer outflow tests to determine surface macro and micro texture

Surface Abrasion conducted by Skidabrader

BEFORE



AFTER

Reclamite maltene based **asphalt rejuvenator** is applied to the abraded surface.

Light water mist applied to aid in allowing the Reclamite to quickly penetrate into the OGFC surface.

The Reclamite completely penetrated down into the pavement within 15 minutes of its application

Post Testing

Skid tests conducted 30 minutes after application.

Skid tests conducted 48 hours after application.

Cores removed and tested 2 weeks after application.

CORE TESTS RESULTS

Pavement core samples were taken and tested by Tri Mat Materials Testing two weeks before and after the Reclamite was applied.

The asphalt binder's Viscosity had an average improvement of 40.25% at 4 of the 5 locations.

Table 1 - Core Results for Pre and Post Treatment

TRIMAT MATERIALS TESTING, INC.

	Sample Number and Location				
	3374	3375	3376	3377	3378
Test	MM 418 W	MM 418E	MM 411 In	MM 411 Out	MM 409
	Pre-Treatment				
Complex Modulus, 60C, G* (kPa)	230.0	209.0	283.0	294.0	257.0
Viscosity, 60C, (Pa-s)	230000	209000	283000	294000	257000
Phase Angle, 60C (degrees)	60.6	60.8	58.3	59.9	59.6
	Post-Treatment				
Complex Modulus, 60C, G* (kPa)	227.0	125.0	160.0	174.0	162.0
Viscosity, 60C, (Pa-s)	227000	125000	160000	174000	162000
Phase Angle, 60C (degrees)	57.6	57.5	59.7	58.1	58.6
Percent Reduction	**1%**	**40%**	**43%**	**41%**	**37%**

- Extraction and recovery testing performed as per ASTM D1856 and D5404.
- Asphalt binder viscosity tested per AASHTO Test Method T315.

Skid Numbers Before & After

Dynatest

Average Skid Test **Before:**

39.34

Average Skid 30 Minutes After Skidabrader/Reclamite Process:

47.33

Average Skid 24 Hours After Skidabrader/Reclamite Process:

51.7

Average Skid **48 Hours After** Skidabrader/Reclamite Process:

54.6

Testing summary

I40

Location	Lane	Direction	Test	Average SNR40
MP 417.73 to 418.37	Right	East	Before	36.27
			After abrasion	79.34
			After spray	46.88
			After 24 hrs	51.94
			After 48 hours	49.77
MP 417.73 to 418.37	Left	East	Before	40.98
			After abrasion	74.58
			After spray	49.10
			After 24 hrs	50.75
			After 48 hours	61.02
MP 418.37 to 417.73	Right	West	Before	41.10
			After abrasion	67.8
			After spray	44.50
			After 24 hrs	52.43
			After 48 hours	50.63
MP 418.37 to 417.73	Left	West	Before	39.02
			After abrasion	73.66
			After spray	48.86
			After 48 hours	57.01

Project Results:

40.25% Improvement in AC Viscosity.

Average Skid Numbers improved from:

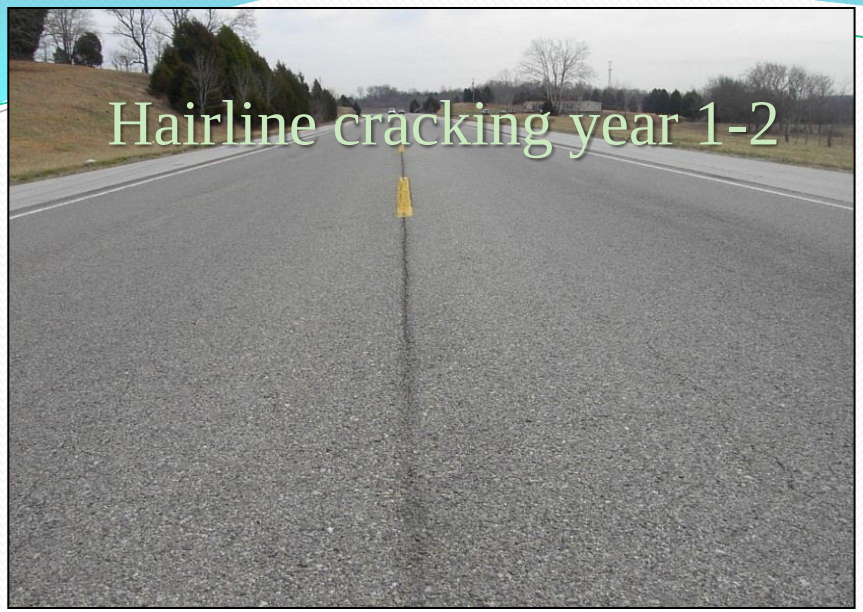
39.34 - Before

54.6 - After

Longitudinal Joint Stabilization

Longitudinal joint failure is a common pavement distress experienced by most every highway agency.

General Deterioration Process



Typical Corrective Remedies

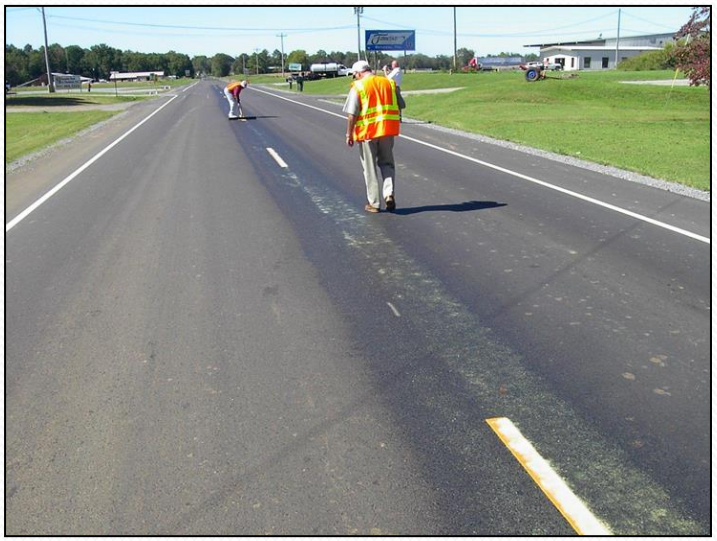
Crack filling/ sealing

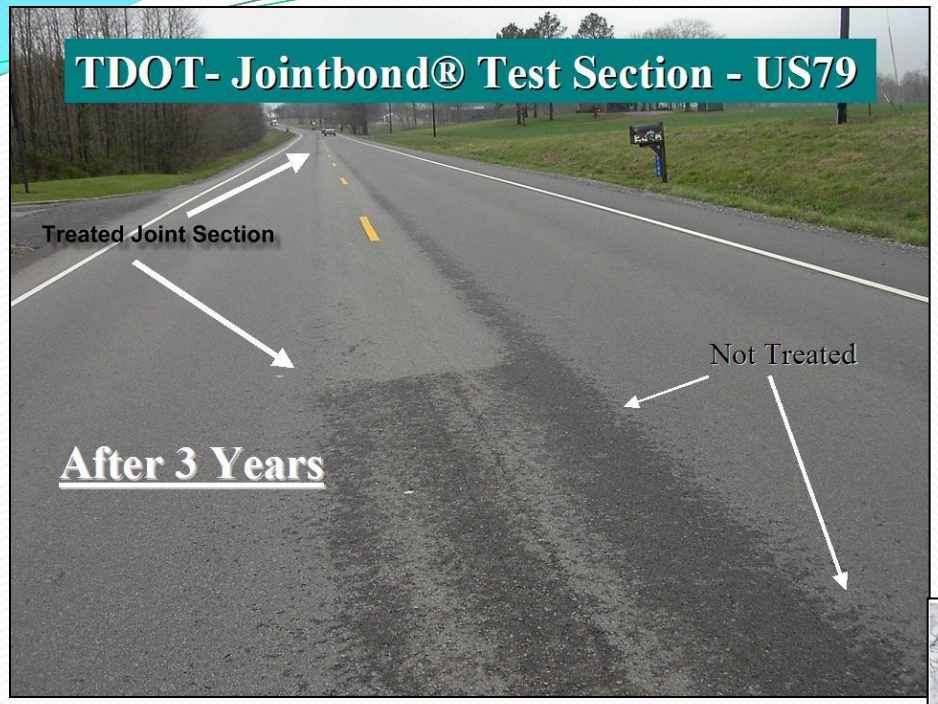
Joint patching

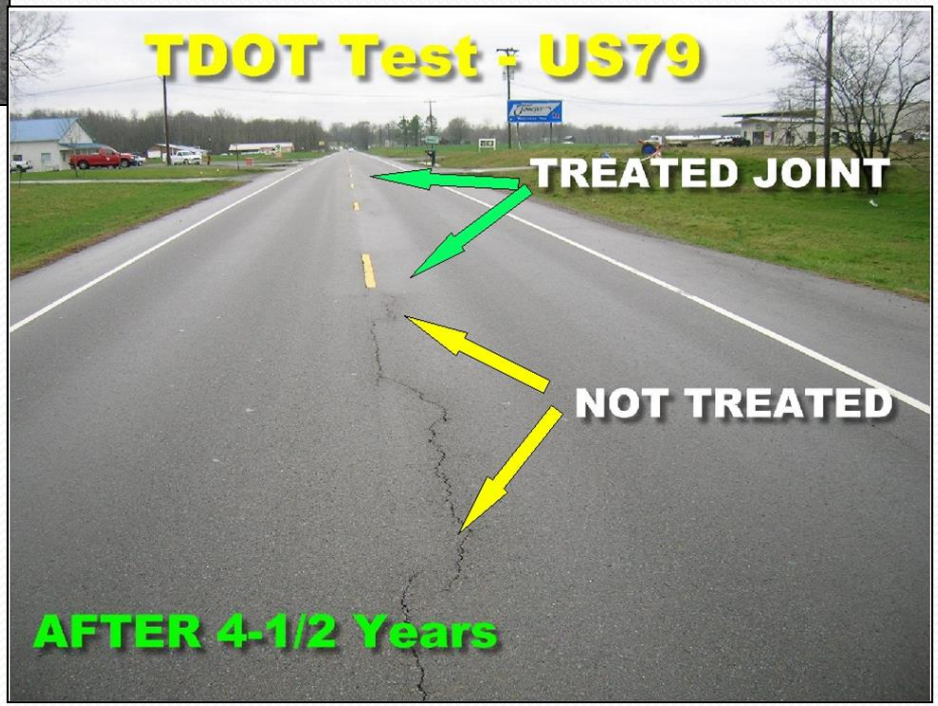
JOINTBOND®

Longitudinal Joint Stabilizer

JOINTBOND® can prevent the failures as it penetrates into the pavement carrying the maltenes along with its unique polymers down into the upper 1/2” - 3/4” of the pavement where it restores flexibility and cohesive property of the AC while also reinforcing the treated area.




TDOT- Jointbond® Test Section - US79
Treated Joint Section
Not Treated
After 3 Years


TDOT Test - US79
TREATED JOINT
NOT TREATED
AFTER 4-1/2 Years

Typical Applications for D.O.T.s

TDOT, Since 2006

- Jointbond® has now been applied to **950+ miles** of joint on TDOT interstates and state routes.
- Regions 2 & 3 now have the joints treated on all one-year old interstate and state routes.
- TDOT approved the use of Jointbond application as a fix in lieu of milling/re-paving new paving joints where contractors do not meet joint density requirements.

COST COMPARISON

Skidabrader/Reclamite Process	$2.25	SY	**$14,500**	11' W Lane Mile
Jointbond LJS Application 2'W	$0.25	SF	**$2,640**	Joint Mile
OGFC or UTBWC*	$10.00	SY	**$70,400**	11' W Lane Mile
Crack Sealing/Filling	$1.25	LF	**$8,800**	Joint Mile
Chip Seal, slurry seal, fog seal*	$4.00	SY	**$28,160**	11' W Lane Mile

* Unit prices as noted in NCDOT "Typical Pavement Preservation Activity Unit Costs"

Any Questions or Comments?

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