

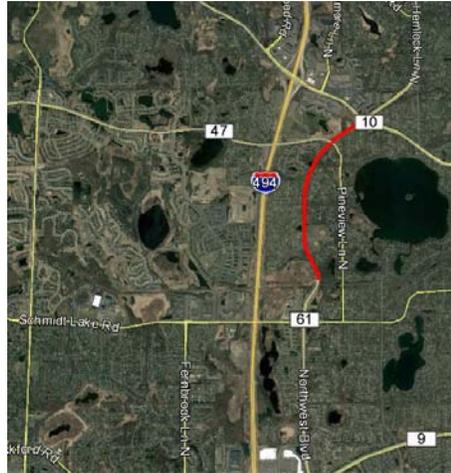
HENNEPIN COUNTY

MINNESOTA

2017 Thin Overlay Mix with Rejuvenator MnDOT and Collaborative Aggregates Trial

Project Location:

The project is located in the City of Plymouth on Northwest Boulevard (CSAH 61) between the CP Rail Bridge just north of Schmidt Lake Road and Bass Lake Road (CSAH 10) and was part of the 2017 Overlay Program.



Background:

Hennepin County has been using a high percent of recycled asphalt pavement (RAP) for in-house maintenance overlays. Use of RAP is a sustainable material and considered an environmentally friendly practice. As recently noticed, however, there has been extensive reflective cracking appearing within the first year after the placement of thin overlays.

Thin overlays using a bituminous mix with high percentages of RAP have been known to lead to premature cracking. Delta S is a new product to rejuvenate the asphalt at a molecular level and designed to resist low end thermal cracking and provide a longer service life of the pavement. Delta S is also used as a warm mix additive as well as a compaction aid for asphalt.

MnDOT and Collaborative Aggregates approached Hennepin County to pilot a project to test this new rejuvenating material in 2017.

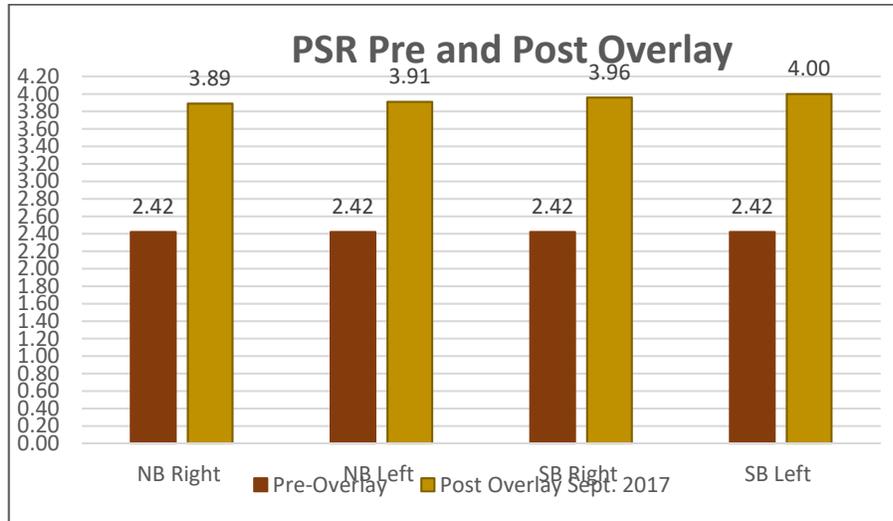
The Hennepin County project is on Northwest Boulevard (CSAH 61). This 5.36 lane mile segment has an Average Daily Traffic (ADT) level of approximately 6,000 vehicles per day. This gives the county a comparative test as the pavement to the south was overlaid early in the 2017 season with a similar ADT level.

Project Details:

MnDOT and Collaborative Aggregates worked with National Center for Asphalt Technology (NCAT) and Commercial Asphalt Corp. out of Maple Grove, Minnesota to determine the appropriate dosing rate for the addition of the Delta S rejuvenator. The dosing rate used was approximately 1.5 lbs. of Delta S per finished ton of asphalt.

The week of September 11, 2017, with warmer than normal temperatures (an average high in the 80's), Hennepin County forces placed the overlay in the two northbound lanes using the MV3 mix (35% RAP) as done on other overlay segments in 2017. The two southbound lanes were paved utilizing the MV3 mix with the Delta S rejuvenator added.

Comments from the crew indicated that the Delta S mix was 'more forgiving'. The county's initial ride ratings indicated that the Delta S lanes improved slightly more than the control lanes.

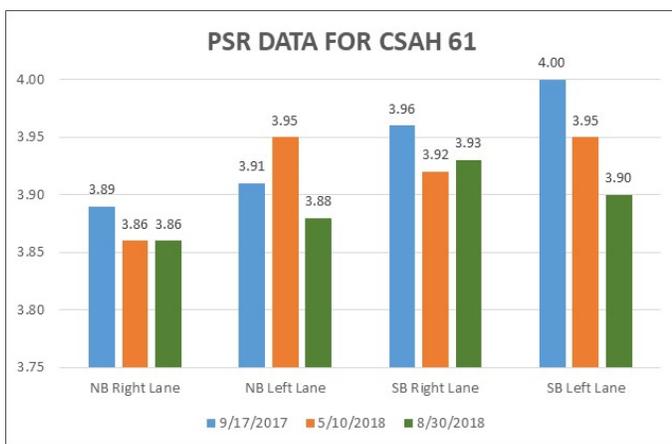


Collaborative Aggregates is working with National Center for Asphalt Technology (NCAT) at Auburn University to help evaluate the performance of the Delta S. MnDOT and NCAT will be performing some testing to determine the Disc-Shaped Compact Tension (DCT) Fracture Energy, Asphalt extraction and ΔT_c or asphalt cracking potential along with other testing.

MnDOT and Hennepin County will both be reviewing the performance of the project with visual and ride quality observations.

Follow Up:

Approximately one year after installation, Hennepin County collected ride ratings. The data at this one year mark has not changed significantly, see chart below.



PSR DATA DATE TAKEN:	9/17/2017	5/10/2018	8/30/2018
NB Right Lane	3.89	3.86	3.86
NB Left Lane	3.91	3.95	3.88
SB Right Lane	3.96	3.92	3.93
SB Left Lane	4.00	3.95	3.90

Pavement cracking has been observed in both the control and the Delta S sections. The secondary cracking however is slightly less in the southbound lanes, those that included the Delta S rejuvenator. The county will continue to monitor the performance between the treated southbound lanes and the untreated northbound lanes.

Contacts:

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