Observations on Recycling Partnership Test Sections

70th in Otsego and Albertville, Minnesota

3 January, 2020

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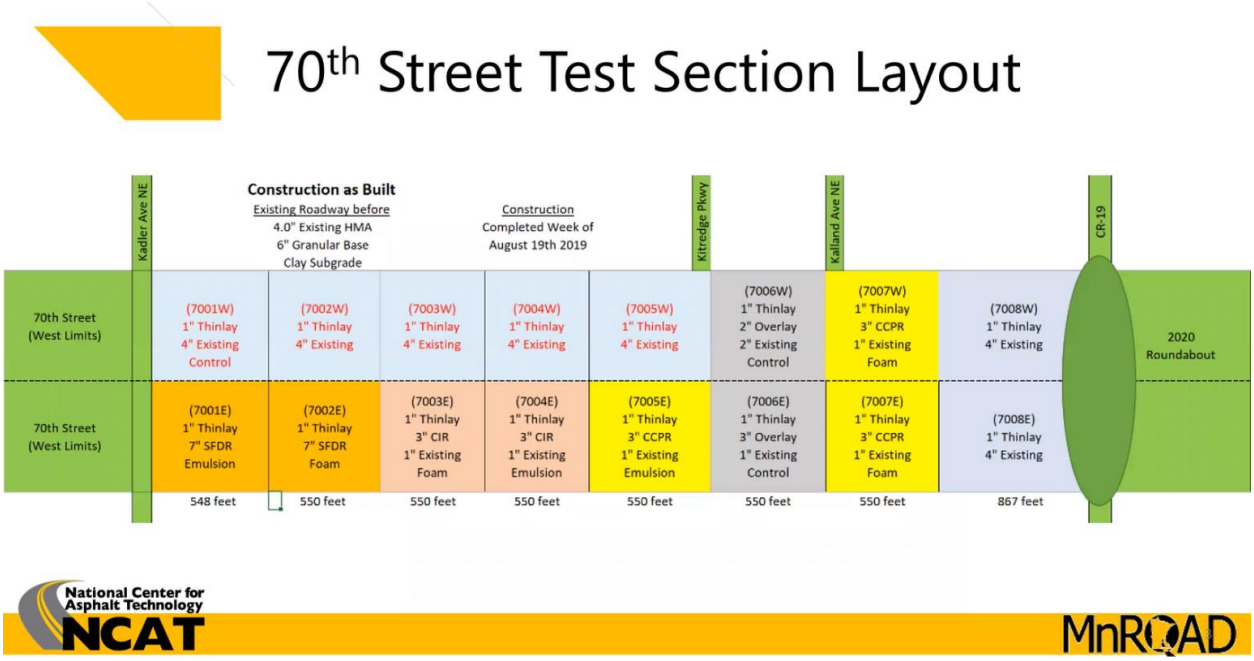
This was a windshield survey, performed from the shoulder without benefit of traffic control. The observation conditions (overcast sky and slightly damp road) made for easy viewing of cracks. All crack lengths were estimated. Spot checks of rutting were performed with a 6-ft straight-edge in the center third of each cell. Rut depths were also estimated.

These sections were constructed in 2019 as the result of a partnership between City of Otsego MN, City of Albertville MN, NCAT, and MnROAD. Prior to constructing the research section, the existing pavement was found to have approximately 4 in. of bituminous surface above granular base. The layout shows sixteen research cells:

- Seven cells have 1-in. Thinlay above 4-in. Existing Pavement (Control)
- Two cells having 1-in. Thinlay above X-in. Mill-Overlay above Existing Pavement
    - Mill-Overlay depths were 2-in. and 3 in.
- Two cells having 1-in. Thinlay above 7-in. Stabilized Full Depth Recycled Base
    - Stabilization done with either Foam or Emulsion
- Five cells having 1-in. Thinlay above 3-in. Cold In-Place Recycle or Cold Central Plant Recycle above 1-in. Existing Pavement
    - Two CIR cells used Foam or Emulsion
    - Three CCPR cells, two used Foam and one used Emulsion



Observations[1]

Random spot-checks indicated that some rutting has occurred in the right wheel path of nearly all test cells. Rutting was less frequent in the left wheel path.

No cracking was observed in cells built using CIR, CCPR, and Mill-Overlay techniques.

Transverse Cracking was observed in the SFDR cells.

Transverse and Longitudinal Cracking was observed in the Thinlay (Control) cells.

Table 1 Tabulated Observations of LOW Severity Cracking by Cell Number

Date	Cell	Transverse Count	Transverse Length,ft	Longitudinal Count	Longitudinal Length, ft	LWP Rutting, in.	RWP Rutting, in.
1/3/2020	7001 WB	30	156	6	98	0	< 0.125
1/3/2020	7002 WB	17	100	9	42	< 0.125	0
1/3/2020	7003 WB	30	146	5	21	0	< 0.125
1/3/2020	7004 WB	54	276	13	135	0	< 0.125
1/3/2020	7005 WB	28	110	0	0	0	< 0.125
1/3/2020	7006 WB	0	0	0	0	0	0
1/3/2020	7007 WB	0	0	0	0	0	< 0.125
1/3/2020	7008 WB	6	25	3	8	0	< 0.125
1/3/2020	7001 EB	9	86	0	0	0	0
1/3/2020	7002 EB	16	110	0	0	0	< 0.125
1/3/2020	7003 EB	0	0	0	0	0	< 0.125
1/3/2020	7004 EB	0	0	0	0	< 0.125	0
1/3/2020	7005 EB	0	0	0	0	< 0.125	0
1/3/2020	7006 EB	0	0	0	0	0	0
1/3/2020	7007 EB	0	0	0	0	0	0
1/3/2020	7008 EB	34	95	3	17	0	< 0.125

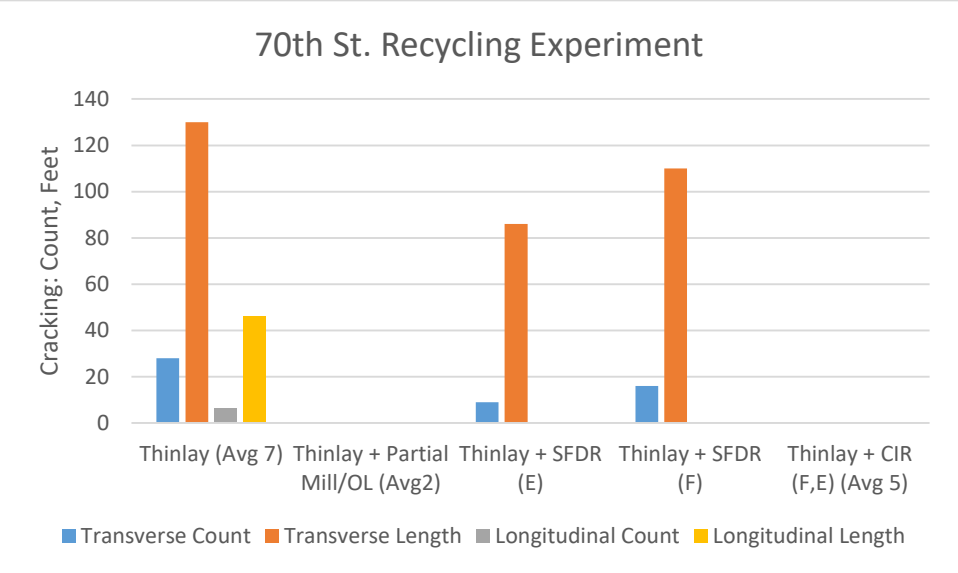


Figure 1 Average LOW Severity Cracking by Construction Type

[1] These observations will defer to measurements conducted with Pathways survey equipment.