

# Field Review Memo: Mastic and Crack Seal Performance 2017

Observations taken March 1 and 2, 2017.

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## Sites, Materials, and Performance

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- A number of pavement patching and crack sealing projects were visited.
- Briefly discussed material availability and purchasing with district maintenance personnel. The situation is satisfactory in D7, and it does not appear that a material specification would benefit the purchasing process at this time. D7 maintenance is using several different mastic products and working to utilize the most appropriate materials for various situations.

### Claremont, MN

County Road 3 (Front Street): Bituminous, block cracking, previously cracksealed. Extensive mastic treatment applied in 2006 by city forces. On this date the mastic was semi-rigid to the touch, and a coin could penetrate approximately 1/8 inch. On this date ride was satisfactory. Evidence of some crack growth was observed. Drainage adequacy may be an issue on this site.



Figure 1 (Left) County Road 3 in 2014, prior to mastic. (Right) In 2017, after mastic.



Figure 2 "Coin test" of mastic repair.

### **Grant, MN**

Minnesota Trunk Highway 96 RP 15.9 -16.0 (Dellwood Road): Bituminous transverse cracking. Crack seal treatment was applied between May 2015 and October 2016 pavement management videolog. On this date the crack sealant showed inconsistent performance; adhesion was problematic. Observers made several checks of rout dimensions. Ride was satisfactory.

### **Winnebago, MN**

United States Trunk Highway 169 in Winnebago between 2<sup>nd</sup> Ave. SW and 3<sup>rd</sup> Ave. SW RP 19.85: Concrete, potholes and other deterioration associated with Alkali Silica Reaction. Variety of crack seal, mastic, and bituminous patching treatment exist throughout the city, various ages. Mastic was applied approximately 2015 – 2016 by MnDOT district maintenance forces. On this date the mastic sealant showed good performance; some treatments were 0.5ft deep or greater in irregular holes at corners and joints . Ride was satisfactory.

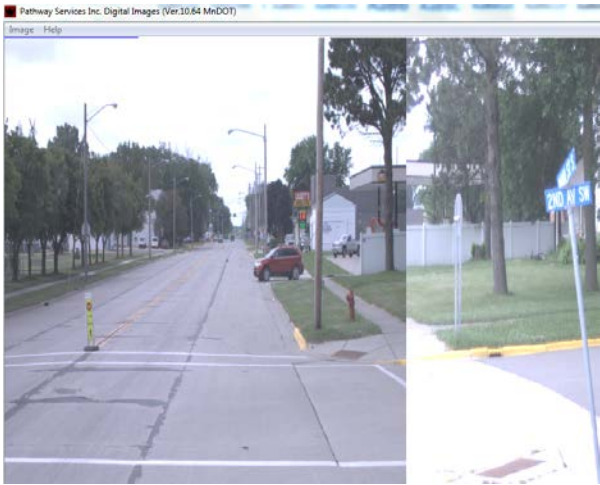


Figure 3 US 169 in Winnebago, Mastic patches 2016.

### Roads near St. James, MN

Multiple formulations of mastic material was tried on Bituminous: transverse cracked full-depth asphalt, and Concrete ramps: sound joints with panel breaks. District forces installed material between 2016 – 2017. The installation involved trying various aggregate sizes, formulations of the hot melt component, and kettle temperatures. Material that had been overheated was still able to perform, but had a sunken appearance. Ride was satisfactory.

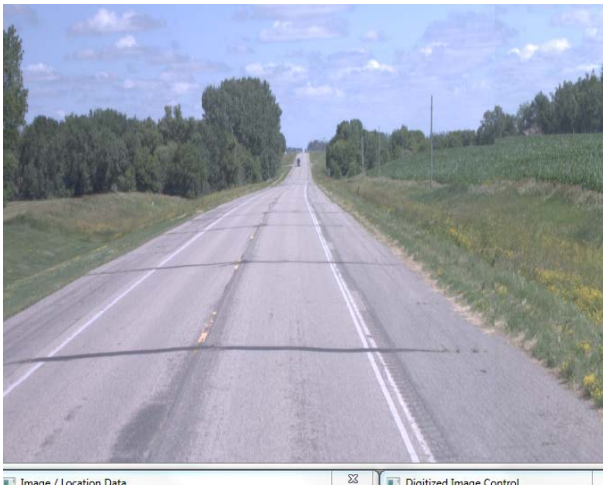


Figure 4 Mastic treatment on MN TH15.

### Marshall, MN

Minnesota Trunk Highway 19 received a Mill-Overlay using Ultra Thin Bonded Wearing Course in 2016. Bituminous: as preparation to overlay, mastic material was used to dress the transverse cracks and any holes in

the milled surface. It was observed that reflective cracking had occurred during the first winter, and that the aggregates around the cracks appeared to be exposed to damage by snow plowing; indicating possible localized heaving, or tenting of cracks. Ride was satisfactory.



Figure 5 Minnesota Trunk Highway 15: (Left) during 2016 UTBWC mill and overaly, (Right) spring 2017.



Figure 6 Minnesota Trunk Highway 19, 2017 performance of UTBWC mill and overaly in Marshall, MN