

Progressive agencies are constantly seeking the most cost effective methods to improve ride quality and decrease cracking as part of their overall pavement management strategy. More and more agencies like MnDOT are finding the use of micro-milling and high performance micro surfacing mixes to be worthwhile investments of their limited funding.

Reflective cracking and plow damage reduced by using softer base asphalts, higher emulsion contents, and increased polymer loadings in the micro surfacing mixes

IRI improved from 166.3¢ per mile to 61.4¢ per mile after micro-milling and micro surfacing

BACKSTORY:

MnDOT has had a long history of successes using micro surfacing. With its harsh wet-freeze climate and frequent snow plowing, the Minnesota agency needed new ways to further improve the crack resistance and plow abrasion durability of their micro surfacing mixes.

PROBLEM:

Beginning in 2005, MnDOT began experimenting with some softer base asphalts (PG48-34) and higher emulsion contents (from 13% up to as high as 16.5%) in some micro surfacing mixes. And then in 2012, the agency started tested a higher polymer loading on selected micro surfacing projects, increasing the polymer from 3% to as high as 6.5%.

“ [Future] monitoring will determine how cost effective this process is for ride improvement and preservation of the pavements, but initial results are promising. ”

— Jerry Geib, MnDOT

SOLUTION:

Further investigation will be ongoing, but thus far it appears the softer base asphalts and mixture composition changes have resulted in more crack resistant and durable mixes in this severe northern climate. The ride quality of projects has been improved with micro-milling before micro surfacing, and MnDOT will continue to evaluate the cost-benefit value of these progressive innovations, with positive initial results.