2021 Initial Idea Development

2021-2022 NRRA Research and MnROAD Construction Development
(Form - January 22, 2021)

Initial Proposal is for NRRA Executive Team to Approve for further development (keep to two pages)

Short Research Title:	Developing a SP048SMA as a thinlay (3/4 to 1") option for preventative maintenance.
NRRA Team(s):	PM
Research/Synthesis:	Can a SP048 mix provide a realistic thin lay treatment at the above referenced thickness? What is the expected design life?
Developed By:	John Senger IDOT, Phil Ruffus (MoDOT)
Email:	John.senger@illinois.com phillip.ruffus@modot.mo.gov
Phone:	(217) 782-8582 (314) 581-5690

Expected Construction Costs:	$5.75/square yard or $48,500 for 2 lanes at ½ mile
Expected Research Cost:	$48,230
Research Years Expected:	**Minimum 5 years**
Partnerships:	**None**

Research Outline:

1. Develop and/or use an existing 048SMA mix (in MoDOT that mix contains a significant noncarbonate fraction.
2. Place the mix on a heavily travelled roadway at ¾ and/or 1" thickness.
3. Perform friction tests at annual intervals
4. Evaluate mix performance at intervals determined by a TAP or others
5. Produce a report detailing the sustainability or similar concepts as to the realistic use of this mix type and thickness as a preventive maintenance tool. (This variance as determined by others could include different mix designs with higher percentages of noncarbonates, or it could direct focus on utilizing different emulsions instead of the 76-22 used in MoDOT's SMA mixes)

Thin lays are increasingly grabbing the interests of DOTs and local agencies as a cost-effective alternative in pavement preservation treatments. Developing a research project that defines the usefulness of a SP048 SMA mix will definitively define this mix type's place. The key from MoDOT's view is obtaining end of useful life data for SP048 mix types.

Pavement Test Cell Outline:

MnRoad could be utilized. (oil types would be assumed lower than 76-22 or even 70-22)
MoDOT has three routes in the St. Louis District that are available for use as well.
IDOT has lower volume Interstates and high-volume state routes that would be available.

NRRA Sustainability/Resiliency and or Intelligent Construction:

The cornerstone of Phase-II is to continue to support research into efforts of common interest. As funding levels wax and wane in the Agencies, cost effective preventative maintenance treatments are more important than ever. The members (IDOT and MoDOT specifically) are currently utilizing mixes with a minimum thickness of 1.5". {at MoDOT this is a SP125CLP or SP125BSM mix).

The members also are using a UBWAS (or UTWAC) ultra-thin asphalt wearing surface at ¾". If a proven SP048SMA mix could be shown to be as effective as a UBAWS, it would add a closed mat mix to the toolbox.

The drawback with UBAWS from an Operations perspective is snow and ice control. This issue has been at the front in St. Louis Metro District as the open graded UBAWS is challenging in the removal of that last 1/2" of snow and ice.

A closed mat proven 048SMA mix on the interstates would provide a welcome alternative. The added safety of increased friction would also make the roadway safer.

Implementation Plan:

If a SP048 SMA mix can been shown to last as well as a UBAWS, the increased friction numbers alone would add a closed mat treatment to the toolbox. MoDOT has placed SP048 mixes in the past, yet there is no documentation regarding the success or lack therein available. This SP048 mix could also be utilized on Interstates as a more cost-effective treatment than a traditional SP125CLP.