Using Environmentally Sustainable Hot in Place Repaving on Baseline Road, MCDOT was able to save money, Improve Ride and safety by adding a safety edge and reducing carbon emmissions in a single pass, including use of tire rubber.

20-30% less expensive than conventional mill and overelay.

33% reduction in carbon emissions.

1/3 less new hot mix asphalt used, saving new aggregate and new liquid AC.

54% improvement in Smoothness from IRI 108 to 51 in a single pass. Safety edge added for improved Safety. Tire rubber used.

BACKSTORY:

Maricopa County, Arizona is sizeable, with 2,099 miles of asphalt pavement to maintain. Asphalt Rubber (AR) overlays have been used effectively since 1989.

PROBLEM:

Maricopa County Department of Transportation was looking for not only more cost-effective solutions, but more environmentally friendly methods to complement their pavement preservation program.

> “ Projects such as the 2018 Hot in Place Repaving on Baseline Road ensure we continue to focus on the needs of the public while also creating innovative solutions that are cost-effective and environmentally friendly. ”
>
> *— Jennifer Toth, Maricopa County Department of Transportation Director*

SOLUTION:

When the pavement management system indicates a mid-level treatment (PCI 54-84) is required, they are to consider alternative recycling methods to their standard mill and overlay. Single pass Hot in Place Repaving was chosen because:

PCI was between 54-84, (moderate condition). The pavement did not have wide cracks, severe fatigue cracks, excessive rutting, subgrade failures, shoving, or potholes. If these conditions were present at isolated areas, a repair would be needed first. There was moderate block cracking, very light to light fatigue cracking, bleeding and raveling.

Ride was rough, 108 IRI, (recycling layer acts as a leveling course). Excellent smoothness can be achieved due to the weight of the equipment and continuous movement.

Less new AR material would be used, (1” vs 1.5”)

No existing material would be wasted. 1/3 less new aggregate and liquid AC required. Less trucking and emissions, leading to the environmental benefit of a lower carbon footprint.

A safety edge could be added in the same single pass.

The roadway is a straight, 2 Lane rural arterial, 8 miles in length.

Less traffic disruption since everything is accomplished in a single pass.

1” AR overlay is thermally bonded to the recycle layer.

Longitudinal seam down the centerline is a hot seam.

Better Reflective cracking remediation as surface cracking in the existing surface are recycled in the top 1”.

PHOTOS:

Existing Condition/ some patching

Hot in Place Repaving/safety edge

Final 1" recycled layer under 1"new layer AR.

Repaver