

2017 Arizona DOT Black & Green Sustainable Pavement Systems Program



Arizona DOT Sustainable Transportation Program Linkage

ADOT's pavement management contributes to sustainability by enhancing roadway safety, optimizing pavement life cycles to reduce costs, while considering the environmental impacts of construction and material usage.

Sustainable Pavement Defined

FHWA *TechBrief* on Pavement Sustainability (2014)

<http://www.fhwa.dot.gov/pavement/sustainability/hif14012.pdf>

FHWA's *Toward Sustainable Pavement Systems* (2015)

<http://www.fhwa.dot.gov/pavement/sustainability/hif15002/hif15002.pdf>

- FHWA defines a sustainable pavement as one which “achieves its specific engineering goal” (i.e., meeting accepted performance standards) while meeting “basic human needs,” using “resources effectively,” and preserving/restoring ecosystems
- Pavement sustainability is meant to involve every phase of the pavement life cycle, including **1)** materials production, **2)** pavement design, **3)** construction, **4)** use, **5)** preservation, maintenance, and rehabilitation (the main emphasis of INVEST OM-07), and **6)** end-of-life management

ADOT Application Sustainability Matrix

Treatment	Description	Economic	Social	Environmental
Crack Filling	Placement of adhesive material	Life : Low Cost: Low	Aesthetics/Roughness	Low
Crack Sealing	Placement of adhesive material	Life : Low Cost: Low	Aesthetics/Roughness	Low
Asphalt Patching	Localized structural distress	Life : Medium/Low Cost: Medium/Low	Aesthetics/Roughness	Low Variable
Fog/Seal Rejuvenators	Very light asphalt emulsion application	Life: Low Cost: Low	Improved Aesthetics	Medium Variable
Chip Seal	Sprayed application/subsequent chips	Life : Medium/Low Cost: Medium/Low	Improved Friction/Roughness	Medium High
Slurry Seal	Mix of well-graded aggregate/emulsion	Life : Medium/Low Cost: Medium/Low	Aesthetics/Improved Friction	Medium
Microsurfacing	Crushed, well graded aggregate/emulsion/multiple course	Life: Medium/High Cost: Medium	Aesthetics/Improved Friction	Medium Variable
Hot In-Place Recycling	Heat or mechanically loosening within top 2"	Life: Medium/High Cost: Medium/High	Aesthetics/Ride Quality/Friction	Medium High
Cold In-Place Recycling	Milling and sizing reclaimed asphalt pavement (RAP)	Life: Medium/High Cost: Medium	Aesthetics/Ride Quality/Friction	Medium Variable

2017 ADOT Black & Green Program Goals

- Develop working group
- Leverage lessons learned from the 2015 INVEST OM Project - Although ADOT received all points available within the FHWA INVEST OM-07: Pavement Management System criteria, the agency recognized that further sustainability gains can be achieved by furthering internal, industry, and academic expertise
- Begin documenting ADOT BMPs of each of the six (6) lifecycle phases in a single sustainable pavement systems framework
- Pilot a selection of suggested sustainable practices, innovations, and applications identified through the initial BMP process

Additional information can be found in the 2016 *ADOT Sustainable Transportation Final Report – Appendix A Case Study*