

Long Lasting Concrete Repair

Maximizing UDOT's Investment

Mitzi McIntyre, P.E. - Utah ACPA, Bryan Lee, P.E. - Utah DOT

Preservation Techniques:



Full Depth Repair

Purpose: Restore Structure, Restore Ride
Use: Joint Deterioration, Transverse Cracking, Longitudinal Cracking, Broken slabs, Corner breaks
Longevity: 20+ years



Partial Depth Repair

Diamond Grind

Purpose: Repair surface distress, extend life, improve performance
Use: Joint Deterioration, Transverse Cracking, Longitudinal Cracking, Broken slabs, Corner breaks
Longevity: 20+ years

Purpose: Improve ride, reduce noise, re-establish skid resistance
Use: Faulted joints, wheel track wear, polished pavements
Longevity: 20+ years



Slab Stabilization

Dowel Bar Retrofit

Purpose: Reduce stresses and deflection, Re-establish support.
Use: Loss of fines under pavement, overloading, poor compaction
Longevity: 15+ years. Cost effective alternative to remove and Replace when slabs are in good condition.

Purpose: Re-establish load transfer across joints or cracks.
Use: Load transfer.
Longevity: 15+ years.

A shift in priorities has led the Utah Department of Transportation to consider the benefits of a pavement maintenance program designed to extend the life of concrete pavements that have already exceeded their design expectations. The benefits of an effective maintenance program are several, including a more cost-effective use of funds, less delay, and better long-term performance. A well-executed maintenance program will maximize the life of concrete pavements and the DOT's investment.

Cost benefits of Pavement Preservation

I-70

1983 Initial cost: \$12.69/SY – converted to 2012 \$ = \$29.28/SY
2004 rehab \$5.77/SY – converted to 2012 \$ = \$7.02/SY @ 5000 /SY
2009 Slab replacement \$89.50/SY converted to 2012 \$ = \$95.87
306,099 SY = Initial cost \$8,962,578
All rehab costs = \$2,148,814 + \$479,350 = \$2,628,164
Total initial cost plus rehab over 29 years = \$11,590,742 **Or \$1.30/SY/year**

I-15

1984 (28 years old) Initial cost: \$13.64/SY – converted to 2012 \$ = \$30.17/SY
2007 rehab \$37.03/SY – converted to 2012 \$ = \$41.04/SY
166,144 SY = Initial cost \$5,012,564
All rehab costs = \$6,818,549
Total initial cost plus rehab over 28 years = \$11,831,113 **Or \$2.54/SY/year**

I-80

1967 (45 years old) Initial cost: \$3.69/SY – converted to 2012 \$ = \$25.39/SY
1997 Joint repair \$6.02/SY – converted to 2012 \$ = \$8.62/SY, 2001 Grinding \$3.49 -
Converted to 2012 \$ = \$4.53, 2004 joint reseal \$0.93/SY in 2012 \$ = \$1.13.
2007 recon \$27.94 (additional lanes) in 2012 \$ = \$33.99.
184,378 initial cost \$4,681,357 + Total rehab cost \$6,933,960 = \$13,749,234
Or \$1.65/SY/year



I-70

Project: I-70, MP 6.86 – 17.73. Original Construction – 1983 (29 years old), 10.87 miles, 2-12' lanes each direction. 9" PCCP, 4" LCB, 4" UTBC. Two maintenance projects – 2004 rehab grinding, 2009 Slab replacement.



I-15

Project: I-15, MP 194 - 200. Original Construction – 1984 (28 years old), 5.9 miles, 2-12' lanes each direction. 10" PCCP, 4" LCB, 5" UTBC, 12" GB. One maintenance project – 2007 DBR, grinding, full depth, paving.



I-80

Project: I-80, State to end of PCCP. Original Construction – 1967 (45 years old), 4.3 miles, 3-12' lanes each direction. 9" PCCP, 4" LCB, 4" UTBC. Three maintenance projects, – 1997 Joint repair, 2001 grinding, 2004 joint seal. 2010 Joint re-seal, partial, precast.