



Concrete Pavement Maintenance Cost Reductions – Achieved Through New Material Compatible Repair (MCR) Method

Partial-depth repairs to concrete pavements have limited-service life. This leads to higher than desirable maintenance costs that diverts funds from other maintenance needs. The MCR research project developed a new method for designing partial depth repairs for concrete pavements that produces material similar to the original concrete construction to extend the life of the repairs.

As determined through the research project, the MCR repair method increases future repair costs by 7%. However this added expense enables the service life to be extended significantly to provide substantial benefit even with the additional construction cost. Additional potential benefits are better ride quality, safer travel, and a decrease in closure time.

The benefit analysis estimated a total of \$7,720,360 in potential savings to PennDOT over a 15-year cycle of repairs statewide. The analysis, based upon current costs incurred by PennDOT, used an average service life of 2-3 years for the existing repair method as compared to an expected service life of 15 years with the MCR repair method. The current service life of 2-3 years was determined on the basis of case studies of recent repair failures in PennDOT district 11-0. An expected service life for the new MCR Method of 15 years is an assumption of the Pavement Design Manual life cycle analysis method for repairs, but will need to be confirmed through field testing which began in 2022.

Pavement Repair Research Results Benefit Analysis Summary					
Repair Method and PennDOT Costs per Year	Total Repairs Cost	Adjustment for Increased Repair Costs (7%)	Average 2-Year Life Cycle Annual Replacements Costs – Current Method	Average 15-Year Annual Life Cycle Replacement Costs – New Method	Potential Savings Over 15-Year Cycle of Repairs
Partial Depth Repairs (Material Comptable Repairs)					
2018	\$1,049,049.65	\$1,122,483.13	\$600,339	\$85,648	\$7,720,360
2019	\$3,045,572.50	\$3,258,762.58			
2020	\$383,670.00	\$410,526.90			
2021	\$324,420.00	\$347,129.40			