

**INDOT Pavement Preservation Initiative
Policy Statement
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1.0 General

1.1 Program Description

The goal of the Pavement Preservation Initiative (PPI) is to implement a strategic, long term program of identifying, programming, budgeting, and completing pavement preservation projects to improve the statewide condition of INDOT's pavement network at the lowest possible cost to taxpayers. PPI is only one component of INDOT's overall Pavement Preservation Program, which includes elements of the Maintenance Work Program and District Pavement Program.

INDOT's Division of Highway Maintenance (DHM) will manage the PPI with oversight from the Roadway Asset Management Team.

1.2 Benefits

The long-term benefits of the PPI will be:

1. An overall improvement in network pavement condition
2. An overall reduction in spending required to maintain INDOT pavements, compared to traditional pavement maintenance practices.

INDOT's network pavement condition will be determined by INDOT's Pavement Management System (PMS) utilizing parameters determined by the Roadway Asset Management Team.

The PPI is a long-term strategy that will improve the overall condition of INDOT pavements.

1.3 Integration with Pavement Management System

Monitoring of INDOT pavement conditions, identifying roadway sections as pavement preservation candidates, and tracking performance of PPI projects will be facilitated by utilizing INDOT's Pavement Management System (PMS).

Identifying specific sections of roadways for pavement preservation projects will be done by determining screening criteria. Specific criteria used are detailed in Section 3.

2.0 Technical Foundation

2.1 Available Treatments

Beginning in FY 2010, the primary pavement preservation treatments to be considered by INDOT are:

HMA Treatments:

1. Asphalt Crack Seal (Activity 207, crack filling)
2. Rout and Seal (Activity 209, crack sealing)
3. Seal Coat
4. Microsurface
5. QC/QA HMA Surface 4.75mm (0.75 in. thickness)
6. UBWC

PCCP Treatments:

1. PCCP Patching
2. PCCP Joint Sealing
3. PCCP Profiling/Retexturing
4. PCCP Dowel Bar Retrofit

ADA requirements must be met as necessary.

See Indiana Design Manual (IDM) Chapter 52.11 and the INDOT Standard Specifications for specific details on each treatment.

Minor Asphalt Patching and minor Wedge and Level may also be considered when used in conjunction with a surface treatment.

Fog seal may be used in conjunction with seal coat.

2.2 Treatment Life/Cost

Pavement preservation treatments have their maximum benefit when used on the right road at the right time. Crack sealing a road with no cracks obviously offers no benefit; likewise, seal coating a road with severe structural problems will not increase the structural capacity of the road.

Treatment design lives are detailed in the IDM Chapter 52-12. Costs will be tracked per Section 5.0, published bid histories and are also maintained by the Office of Pavement Engineering (OPE).

3.0 Selection Criteria

3.1 PMS Candidate Generation

The PMS data will be used to identify initial candidates for pavement preservation projects. This list will be generated by the OPE, when requested by DHM, using the criteria below. Section 3.2 identifies the project selection process.

The most recent PMS data available will be used.

Beginning in FY 2010, screening criteria for development of the candidate PPI treatment list are:

Asphalt Surface Criteria*:

List 1: Age between 8 and 12 years and IRI < 130

List 2: Rut > 3/8"

List 3: Friction Number < 25

Additional screening criteria for Seal Coat:

Rutting < 1/4 Inch

ADT < 5,000 (ADT level can be customized per District)

PCCP Surface Criteria*:

List 1: Age = between 8 and 12 years

List 2: IRI > 130

List 3: Friction Number < 25

* These criteria must be met in both directions to qualify as a candidate section.

3.2 Candidate Project Selection

The PPI District representative (Systems Assessment Manager or Pavement Design Engineer) will review the candidate list and develop a list of proposed roads to be treated. A District may select a candidate section that is not on the candidate list. This list will be ranked according to priority and the method of performing the work (INDOT work forces or contract).

The District, in conjunction with representatives from the DHM and OPE will conduct field checks for the proposed pavement preservation projects. Separate field checks may be done for seal coating and contract surface treatment work. Each section (DHM, OPE, District) will have 1 vote on each candidate section. If a consensus is reached, further investigation will be done.

Core and/or Falling Weight Deflectometer (FWD) data and Mechanistic Empirical Pavement Design Guide (MEPDG) analysis will be obtained to validate selected projects. MEPDG analysis will be conducted by either the District Pavement Design Engineer or the OPE. If further investigation shows that the road is not a viable PPI project, the

District should consider other alternatives. If the investigation supports the roadway section as a viable PPI candidate, the District will program the project.

The identified list of PPI projects will be finalized and programmed as detailed in Section 4 to allow adequate contract development time (contract) or procurement of materials and scheduling of resources (District work forces).

A minimal amount of corrective action (i.e. patching) is expected for all surface treatment projects. The requirements of Chapter 56 will be satisfied, including consideration of safety improvements.

The intent of the PPI is to preserve and maintain the existing highway system, however, PPI projects should consider appropriate ways to maintain or enhance the current level of safety and accessibility. Isolated or obvious deficiencies should always be addressed. Safety enhancements such as the installation or upgrading of guardrail and end treatments, installation or replacement of traffic signs and pavement markings, removal or shielding of roadside obstacles, mitigation of edge drop offs, the addition of paved or stabilization of unpaved shoulders, or installation of milled rumble strips should be encouraged and included in projects or assigned to in-house forces where they are determined to be a cost effective way to improve safety. In no way should PPI projects adversely impact the safety of the traveled way or its users. Safety issues that cannot be cost-effectively addressed may be deferred and included in a future project.

3.3 Monitoring

Performance of selected project treatments will be monitored according to the criteria below. Each year, through the monitoring and field review process, the project selection criteria in Section 3.1 may be refined.

DHM will lead the performance monitoring effort.

Monitoring Criteria (before/after construction)

1. IRI¹
2. Rutting¹
3. Friction¹
4. Cracking²
5. Delamination²
6. Raveling²
7. Performance of joint seals²
8. Contract costs³

Notes:

1. Data from Research or PMS
2. Field observations
3. Data from contract or WMS

4.0 Pavement Preservation Initiative Funding

4.1 Funding Constraints and Programming Requirements

PPI Projects should be programmed assuming FHWA funding will be utilized.

FHWA funds may be used for any of the treatments detailed in Section 2.1, for either contract work, or procuring materials or equipment rentals for District work forces. The requirements of Chapter 52 of the IDM should be met, as well as the federal funding matrix detailed in Figure 4.1-1.

All pavement preservation projects must be programmed into SPMS using the appropriate work code, and be in the STIP (or TIP if in a Metropolitan Planning Organization). See Section 4.2 for additional details for programming work done with District work forces.

Work codes for approved treatments are:

- J113 = Crack Sealing
- J121 = PCCP Patching
- J123 = Profiling, PCCP
- J124 = PCCP Cleaning and Sealing Joints
- J126 = Retrofit Joint Load Transfer
- J216 = Surface Treatment, Thin HMA Overlay
- J217 = Surface Treatment, Seal Coat
- J218 = Surface Treatment, Microsurface
- J219 = Surface Treatment, UBWC

The SPMS program class "Pavement Preservation Initiative" will be used to identify these projects.

All other SPMS entries and programming requirements for contract work should be the same as for any other road project (location, RP's, work type, etc) utilizing the resurface template.

There are certain National Environmental Policy Act (NEPA) Requirements for Pavement Preservation Projects that utilize Federal Funds. A statewide categorical exclusion has been developed for preservation and maintenance type projects. See Figure 4.1-1 for details.

Any project that will include work in waters of the US/State may require a permit. Likewise any project that disturbs more than one acre of land must comply with Rule 5. Most PPI projects are not likely to involve work in neither the waters of the US/State nor minor extension of pipes/culverts. If applicable, this will probably fall under Nationwide. INDOT needs to work closely with Office of Environmental Services permit section to ensure compliance.

If Karst fissures are discovered in the pavement to be rehabilitated, this programmatic Categorical Exclusion may not be used. If these features are discovered during project development, the Office of Environmental Services (OES) shall be contacted to coordinate with the US Fish and Wildlife Service and manage preparation of a separate environmental document.

<i>Work Performed By:</i>	<i>District Work Forces</i>	<i>Contracted Forces</i>
Time Covered	Each project covers one State Fiscal Year	Per Normal Process, covers a single contract
Proposed Funding: The total amount of funding will be per Section 4.2.	To be determined.	To be determined.
Use of DES Number	If INDOT's Work Management System (WMS) is used, then one DES Number is issued, per district, per State fiscal year for tracking purposes, and is referenced in the FMIS authorization.	Per Normal Process
STIP Inclusion	Program is "banded" by district, by year, with additional coordination when work occurs within an MPO's planning area	Per Normal Process, inclusion is by project, and must be coordinated in an MPO planning area
Public Involvement: Recommend INDOT issue a press release announcing "preventive maintenance" program.	Additional coordination when working within a MPO's planning area	Per Normal Process, public involvement occurs when projects are included in the MPO TIP document
Environmental Document	Programmatic, By District	Programmatic, By District
Authorization in FMIS	One FMIS authorization approved per District, per State fiscal year	Per normal process, one FMIS authorization is prepared, per contract

Figure 4.1-1: Federal Funding Requirements Matrix

4.2 Additional Requirements for District Work Force Projects Utilizing Federal Funds

This section applies if in-house projects utilize federal funds. If Work Program funds are used (100% state), normal procurement procedures will apply.

Each District will program 1 DES number to include all of the in-house projects to be done in the FY as part of the PPI. The "project log" in SPMS would detail which individual roads are included (with RP limits). The letting date shown in SPMS will be the anticipated completion date of the projects, and be designated with a "T" for tracking purposes only.

The Technical Services Directors (TSD's), Highway Maintenance Directors (HMD's) or their designee will technically be the project managers for these projects. They will submit information to the District Funds/Program Managers (DFPM) at the completion of the jobs so they can update SPMS accordingly. This information will consist of the WMS work orders for the project roads.

WMS will be used as the monitoring and reporting mechanism. The work order for each PPI project will contain cost, material and equipment usage/rental information. The INDOT Sub-District responsible for the PPI project will be required to manually enter the actual material unit costs from their material purchase orders. Equipment rental costs will be the total rental purchase order price divided by the number of days to get a daily price.

The rental and material costs shown on the work order will be used for FHWA funding reimbursement. FHWA funds are reimbursed after INDOT has actually expended money. Therefore, INDOT will need to provide the money "up front" to requisition materials and rent equipment, most likely out of District Work Program funds.

Districts will requisition materials (stone and emulsion) separately per job. Rental equipment may be charged District-wide and tracked as described above. The rental PO cost will be divided by the number of work days in the rental period to obtain a daily rate. This daily rate will be included in the WMS work order. FHWA reimbursement will only be for the total amount charged to the WMS work orders for PPI projects.

Fiscal Management Information System (FMIS) forms will be submitted by the District (Funds/Program Managers or others). They will include the list of roads with limits in the "state remarks box".

WMS work order information will be used to justify the reimbursement requests sent to FHWA.

Summary of Steps to Obtain Federal Funding:

1. Program into SPMS – 1 DES/District, with individual roads detailed in the project log section, using proper work code and funding category.
2. Include project in TIP/STIP as appropriate, performed by the DFPM or others in each District.
3. Obtain Environmental approval
4. Obtain FMIS authorization
5. Districts to requisition materials (individual by road)
6. Obtain materials
7. Build projects
8. Invoice FHWA based on WMS work order

5.0 Reporting

At the end of each FY, DHM will prepare a summary report for the Executive Staff, the OPE, and the Roadway Asset Management Team on the status of this initiative. It will detail, by District, the following items:

1. List of roads treated by contract (and type of treatment)
 - a) Including RP limits
 - b) Total contract and unit costs
2. List of roads seal coated by District work forces
 - a) Including RP limits
 - b) Total labor, equipment, material, and rental costs
3. Total dollars spent
4. Total lane miles treated
5. Total lane mile years bought
6. Network Condition as determined by PMS
7. Cost per Lane Mile Year for Resurfacing and Preservation, separated for District Work Force and Contract projects

This report will allow for tracking the accomplishments of the program.

6.0 Supporting Information

The following sources have been used in support of this procedure:

- 1 "Network Health Strategy" developed by NCPP and FHWA
- 2 "Pavement Management: Characteristics of an Effective Program" (NHI 131116)
- 3 IDM Chapters 52-11 (Preventive Maintenance), 52-12 (Economic Analysis), and 56 (Partial 3R)
- 4 "Integrating Pvmnt Preservation Practices into Pvmnt Management" (NHI 131104)
- 5 "Pavement Preservation Technical Appraisal, Indiana Executive Summary" by NCPP
- 6 "Pavement Preservation Definitions" memorandum (9/12/05) from FHWA
- 7 "Preventive Maintenance Eligibility" memorandum (10/8/04) from FHWA
- 8 "Treatment Guidelines for Pavement Preservation" SPR 3114

7.0 Glossary of Terms

The following is a list of terms and abbreviations used in this document.

ADT – Average Daily Traffic

CS – Chip Seal or Seal Coat

DES Number – Designation in SPMS to identify projects.

DFPM – District Funds/Program Manager

DHM – Division of Highway Maintenance

FWD – Falling Weight Deflectometer. A field test conducted by the Research Section to determine in-situ pavement strength.

FHWA – Federal Highway Administration

FY – Fiscal Year. Indiana's fiscal year runs July 1 thru June 30.

IDM – Indiana Design Manual

IRI – International Roughness Index. A measure of pavement smoothness, in inches per mile.

Lane Mile Years – the amount of life “bought” by a certain treatment, given its expected effect on the road. For example, 10 lane miles treated with a seal coat (5 year life) is “buying” the network 50 lane mile years.

MEPDG – Mechanistic Empirical Pavement Design Guide

MPO – Metropolitan Planning Organization

NCPP – the National Center for Pavement Preservation

OPE – Office of Pavement Engineering

PCR – Pavement Condition Rating. A measure of pavement cracking.

PM – Preventive Maintenance

PMS – Pavement Management System.

PPI – Pavement Preservation Initiative

PQI – Pavement Quality Index. A composite “score” of 0 to 100 calculated from surface data collected annually (rut, cracking, ride quality).

SPMS – Scheduling and Production Management System, INDOT’s project scheduling and tracking system

ST – Surface Treatment

STIP – Statewide Transportation Improvement Plan

TIP – Transportation Improvement Program, managed by an MPO

UBWC – Ultrathin Bonded Wearing Course (trade name “NovaChip”)

WMS – Work Management System. System used by Maintenance to plan and track in-house work activities.