

Pavement Preservation Training Resources

As of December 17, 2012

Name	Resource Type	Duration	Audience	Difficulty Level	Description	Cost	Contact
Basic Concepts for Pavement Preservation	Instructor Led Training Course	1 day	Elected officials, mid to senior level engineers, public works directors, pavement managers, and road superintendents.	Basic	Provides elected officials and practitioners with an introduction to the concept of pavement preservation and its applicability within road agencies. Topics include definitions, pavement life, road networks, alternative strategies, pavement distresses, guidelines, and preservation treatments.	Between \$100 and \$150 per person.	National Center for Pavement Preservation ncpp@egr.msu.edu 517-432-8220
Chip Seal Best Practices	Instructor Led Training Course	1 day	Pavement practitioners including engineers, foreman, superintendents, designers, inspectors, and equipment operators.	Intermediate	Provides participants with a thorough and comprehensive understanding of chip seal design, construction, equipment, and inspection.	Between \$100 and \$200 per person.	National Center for Pavement Preservation Patte at 517-432-8220 ncpp@egr.msu.edu
Slurry Seal & Micro Surfacing	Instructor Led Training Course	1 day	Engineers, managers, superintendents, designers, estimators, technicians, and inspectors.	Intermediate	Provides participants with a comprehensive understanding of slurry seal and micro-surfacing systems, and offers pavement practitioners the essential skills for selecting good candidate pavements, designing and estimating projects, and gaining awareness of good construction practices.	Between \$100 and \$200 per person.	National Center for Pavement Preservation Patte at 517-432-8220 <a href="mailto:ncpp@egr.msu.edu">ncpp@egr.msu.edu</a>
Top of the Curve: Fog seals, Rejuvenators, Crack Sealing and Filling	Instructor Led Training Course	1 day	Engineers, technicians, and specialists with a technical interest in learning details about suitable preservation techniques and their application at the project level.	Basic	Provides transportation officials and practitioners with a comprehensive understanding of pavement preservation treatments that are best applied early in a pavement’s life, viz., at the top of a pavement’s typical deterioration curve (condition versus time). It provides a brief introduction to the concept of pavement asset management and addresses techniques to extend pavement life through early intervention.	Between \$100 and \$150 per person.	National Center for Pavement Preservation 517-432-8220 <a href="mailto:ncpp@egr.msu.edu">ncpp@egr.msu.edu</a>

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<b>Applied Asset Management</b>	Instructor Led Training Course	2 days	Policy level administrators and managers, planners, economists, persons interested in focusing on highways or streets at the network level, engineers, technicians, and specialists with a technical interest in learning details about suitable preservation techniques and their application at the project level.	Intermediate	Provides transportation officials and practitioners with a comprehensive understanding of pavement preservation. It identifies the efficiencies gained by developing and selecting pavement strategies that reduce long-term operating costs, improve safety, pavement condition, and user satisfaction. It provides personnel with an understanding of pavement condition indices, terminology, and applied asset management principles appropriate for both network and project application.	Between \$250 and \$400 per person.	National Center for Pavement Preservation  Patte at 517-432-8220  <a href="mailto:ncpp@egr.msu.edu">ncpp@egr.msu.edu</a>
<b>Pavement Preservation Treatment Construction Guide (PPTCG)</b>  COURSE NUMBER: FHWA-NHI-131110	Web-based training module.	6.5 hours	Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.	Intermediate	This course is designed to provide participants with an introduction to the PPTCG, so that they can better use it to familiarize themselves with general information on pavement preservation concepts and techniques. The guide covers basic pavement preservation concepts, as well as information on specific treatments to extend the life of asphalt pavements. The module topics are:  1. Introduction to Pavement Preservation (NHI-131110A) 2. Materials (NHI-131110B) 3. Crack Sealing, Crack Filling and Joint Sealing of Flexible and Rigid Pavements (NHI-131110C) 4. Patching and Edge Repairs (NHI-131110D) 5. Chip Seals (NHI-131110E) 6. Fog Seals (NHI-131110F) 7. Slurry Seals (NHI-131110G) 8. Micro-surfacing Projects (NHI-131110H) 9. Thin Functional and Maintenance Overlay Projects (NHI-131110I)	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>

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					10. Ultra Thin, Hot-Mixed, Bonded Overlay Projects (NHI-131110J)  11. Selecting a Pavement Presentation Treatment (NHI-131110K)  Each of the modules is also offered as individual trainings and can be accessed by registering for the course number listed with each module.		
<b>TCCC Concrete Pavement Preservation Series</b>  COURSE NUMBER: FHWA-NHI-131126	Web-based training module.	11 hours	Design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field.	Intermediate	<p>This Concrete Pavement Preservation Series presents current guidelines and recommendations for the design, construction, and selection of cost-effective concrete pavement preservation strategies. It concentrates primarily on strategies and methods that are applicable at the project level, and not at the network level, where pavement management activities function and address such issues as prioritizing and budgeting.</p> <p>This comprehensive training series comes in 10 modules. They are as follows:</p> <p>Module 1: Preventive Maintenance and Pavement Preservation Concepts (FHWA-NHI-131126A)</p> <p>Module 2: Concrete Pavement Evaluation (FHWA-NHI-131126B)</p> <p>Module 3: Slab Stabilization and Slab Jacking (FHWA-NHI-131126C)</p> <p>Module 4: Partial-Depth Repairs (FHWA-NHI-131126D)</p> <p>Module 5: Full-Depth Repairs (FHWA-NHI-131126E)</p> <p>Module 6: Retrofitted Edge Drains (FHWA-NHI-131126F)</p> <p>Module 7: Load Transfer Restoration (FHWA-NHI-131126G)</p> <p>Module 8: Diamond Grinding and Grooving (FHWA-NHI-131126H)</p> <p>Module 9: Joint Resealing and Crack Sealing</p>	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>

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					(FHWA-NHI-131126I) Module 10: Strategy Selection (FHWA-NHI-131126J)		
<b>TCCC Preventative Maintenance and Pavement Preservation Concepts</b>  COURSE NUMBER: FHWA-NHI-131126A	Web-based training module.	1 hour	Design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field.	Intermediate	This module discusses how preventative maintenance impacts pavement preservation, good candidates for preservation, and the benefits to pavement preservation.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>Pavement Preservation Treatment Series: Introduction to Pavement Preservation</b>  COURSE NUMBER: FHWA-NHI-131110A	Web-based training module.	½ hour	Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical	Basic	Provides information on basic pavement preservation concepts and the different treatments available and how they should be applied, so agencies can make informed decisions when determining which treatments best fit their pavement preservation needs. The training is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>

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			information.				
<b>Pavement Preservation Treatment Series: Materials</b> COURSE NUMBER: FHWA-NHI-131110B	Web-based training module.	1 hour	Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.	Intermediate	Provides participants with information on the materials used for preventive maintenance treatments. Topics include: materials comprising maintenance treatments, emulsions, and aggregates.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>Pavement Preservation Treatment Series: Selecting the Right Treatment</b> COURSE NUMBER: FHWA-NHI-131110K	Web-based training module.	½ hour	Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with	Intermediate	This training is designed to provide participants with information on preservation treatment selection.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>

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			pavement preservation policy and technical information.				
<b>Optimal Timing of Pavement Preservation</b>  COURSE NUMBER: FHWA-NHI-131114	Web Conference	3 Hours	Upper- and mid-level highway agency professionals who are responsible for pavement preservation and management. Pertaining to job tasks, participants may be responsible for: selecting rehabilitation, reconstruction, and preservation treatments for highways; surveying roads and determining which projects to schedule; program planning; allotment of funds. Possible attendees also include those who may currently be using preservation methods, but may not be using the entire "toolbox" of preservation techniques. Those attending this training should have some knowledge of pavement maintenance and preservation, information on the preservation treatments being	Intermediate	This three-hour seminar explores some of the work performed under NCHRP Project 14-14 and the OPTime tool that was developed as part of that project to help agencies determine the optimal time to apply a treatment. Topics range from treatment timing and selection, collecting treatment performance relationship data, and key cost and benefit considerations. Taught online in a virtual classroom, the course is taught by a lead author of the report and includes access to the NCHRP 523 report and a download of the OPTime timing software add-on.	\$40 per participant – 15 participants minimum, 30 participants maximum	More information available on the internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>

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			used at their agency, and some familiarity with how decisions are being made about which treatments to use and when to apply them.				
<b>Pavement Preservation Treatment Series: Localized Pavement Repair</b> COURSE NUMBER: FHWA-NHI-131110D	Web-based training module.	1 hour	Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.	Intermediate	This training is designed to provide participants with information on localized pavement repair. Topics include: pothole formation and edge failure, seal or fill decisions, construction of, and problems with, pothole patching, dig outs, edge repairs, and skin patching, and capabilities and limitations of localized repairs.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>Pavement Preservation: Preventive Maintenance Treatment, Timing, and Selection</b> COURSE NUMBER: FHWA-NHI-131115	Instructor Led Training	2 days	Mid- or upper-level highway agency professionals responsible for pavement preservation/maintenance and management. This might include a Pavement Engineer, Project Manager/Maintenance Engineer, Regional	Basic	The purpose of this 2-day course is to improve the skills of those involved in implementing pavement preservation programs. This includes improving the selection of pavement preventive maintenance projects and the selection of preventive maintenance treatments.	\$400 per participant – 20 participants minimum, 30 participants maximum	More information available on the internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>



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			Director, Materials Lab personnel, Planning/Programmi ng staff, Pavement Management Engineer/Manager, or Road Superintendent within a state highway agency. For local agencies, this group might include Public Works Directors or Chief Engineers/engineers of cities, towns, counties, and metropolitan planning organizations (MPOs). Current performance and responsibilities of the target audience include evaluating pavements, selecting pavements and treatments for preservation projects, and/or making budget determinations for pavement preservation projects (preservation vs. reconstruction). Appropriate background information or prior knowledge which would be useful for the course participants includes: Basic understanding				



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			of the information imported in a pavement condition report; Ability to interpret the results of a pavement condition report; Identify deterioration/distress using visual information and determine the causes of that deterioration/distress.				
<b>Pavement Preservation Treatment Series: Chip Seals</b>  COURSE NUMBER: FHWA-NHI-131110E	Web-based training module.	1 hour	Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.	Intermediate	This training is designed to provide participants with information on chip seals. Topics include: project selection, pavement and weather condition requirements, storage, traffic control, construction sequence, aggregate spreading distance, brooming, chip spreading process, distributor preparation, and troubleshooting.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>Pavement Preservation Treatment Series: Fog Seals</b>  COURSE NUMBER: FHWA-NHI-131110F	Web-based training module.	1 hour	Federal, State, and local highway construction and maintenance teams, specifically the highway workers and	Intermediate	This training is designed to provide participants with information on fog seals. Topics include: uses of fog seals, suitable pavement surfaces, storage and handling of materials, application process, and problems and causation.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>

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			inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.				
<b>Pavement Preservation Treatment Series: Micro-Surfacing</b> COURSE NUMBER: FHWA-NHI-131110H	Web-based training module.	1 Hour	Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.	Intermediate	This training is designed to provide participants with information on micro-surfacing. Topics include: pavement and traffic condition considerations, construction, and troubleshooting.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>Pavement Preservation Treatment Series: Thin Functional HMA Overlay</b>	Web-based training module.	1 hour	Federal, State, and local highway construction and	Intermediate	This training is designed to provide participants with information on thin functional hot-mix asphalt overlays. Topics include: proper usage,	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>

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COURSE NUMBER: FHWA-NHI-131110I			maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.		suitable pavement conditions, construction, and troubleshooting.		<a href="#">t.gov/</a>
<b>Pavement Preservation Treatment Series: Ultra Thin HMA Bonded Wearing Course</b> COURSE NUMBER: FHWA-NHI-131110J	Web-based training module.	1 Hour	Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.	Intermediate	This training is designed to provide participants with information on ultra thin, hot-mixed asphalt bonded wearing course. Topics include: usage, distresses and application considerations, construction, and troubleshooting.	No cost	Available on internet at: <a href="#">www.nhi.fhwa.do</a> <a href="#">t.gov/</a>

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<b>Pavement Preservation Treatment Series: Crack Sealing &amp; Filling, and Joint Sealing</b> COURSE NUMBER: FHWA-NHI-131110C	Web-based training module.	1 Hour	Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement preservation policy and technical information.	Intermediate	This training is designed to provide participants with information on crack sealing, crack filling, and joint sealing of flexible and rigid pavements. Topics include: working and non-working cracks, fatigue and longitudinal cracks, correct temperatures for crack sealant, crack repair sequence, hot sealant, and crack sealing or filling criteria.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>Pavement Preservation Treatment Series: Slurry Seals</b> COURSE NUMBER: FHWA-NHI-131110G	Web-based training module.	1 Hour	Federal, State, and local highway construction and maintenance teams, specifically the highway workers and inspectors involved in the placement of pavement preservation treatments. Design engineers will also benefit from the online guide and the associated training. The training course is primarily targeted at individuals unfamiliar with pavement	Intermediate	This training is designed to provide participants with information on slurry seals. Topics include: reasons to use slurry seals, gradations of slurry seal aggregate, preparation and application process, and problems and solutions.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>

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			preservation policy and technical information.				
<b>Maintenance Training Series: Pavement Preservation Program</b> COURSE NUMBER: FHWA-NHI-134109A	Web-based training module.	1 Hour	State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.	Basic	<p>The course provides basic information on what comprises a pavement preservation program and how it is implemented. It places particular emphasis on changes in practice and assignment of dedicated funding.</p> <p>Additionally, the training covers the benefits and challenges to a preservation program; Federal and State resources available to support a preservation program; and approaches for communicating the advantages of pavement preservation to stakeholders.</p>	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>TCCC Concrete Pavement Evaluation</b> COURSE NUMBER: FHWA-NHI-131126B	Web-based training module.	2 Hours	Design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field.	Intermediate	This module discusses how preventative maintenance impacts pavement preservation, good candidates for preservation, and the benefits to pavement preservation. This module also describes the common procedures associated with conducting thorough pavement evaluations.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>TCCC Slab Stabilization and Slab Jacking</b> COURSE NUMBER: FHWA-NHI-131126C	Web-based training module.	1 Hour	Design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at	Intermediate	This module covers the use of slab stabilization (also known as undersealing) and slab jacking of concrete pavements. Slab stabilization restores support beneath slabs where voids have been detected, and slab jacking is used to raise depressed or settled slabs.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>

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			those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field.				
<b>TCCC Partial-Depth Repairs</b> COURSE NUMBER: FHWA-NHI-131126D	Web-based training module.	1 Hour	Design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field.	Intermediate	This module covers the procedures for partial-depth repairs (PDR) on PCC pavements. PDR is the removal and replacement of small, shallow areas of deteriorated PCC at spalled or distressed joints.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>TCCC Full-Depth Repairs</b> COURSE NUMBER: FHWA-NHI-131126E	Web-based training module.	2 Hours	Design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field.	Intermediate	This module covers the procedures for cast-in-place Portland cement concrete (PCC) full-depth repair (FDR) of jointed concrete pavements (JCP) including jointed plain (JPCP) and jointed reinforced concrete pavements (JRCP). FDR techniques for continuously reinforced concrete pavements (CRCP) are discussed separately toward the end of the presentation. FDR is the cast-in-place concrete repairs that extend the full-depth of the existing slab.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>TCCC Retrofitted Edge Drains</b>	Web-based training module.	1 Hour	Design engineers, quality control	Intermediate	This module presents design and construction information on retrofitted edge drains. This treatment is not as widely used as it once was,	No cost	Available on internet at:

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COURSE NUMBER: FHWA-NHI-131126F			personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field.		largely because it has limited applicability. Specifically, it must be targeted to those pavements that are 1) in good structural condition and 2) have bases with some degree of permeability that would allow water to be drained from beneath the pavement and to the edge drain.		<a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>TCCC Load Transfer Restoration</b> COURSE NUMBER: FHWA-NHI-131126G	Web-based training module.	1 Hour	Design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field.	Intermediate	This module presents design and construction information on load transfer restoration (LTR), sometimes referred to as retrofitted load transfer. In the introduction we will describe the difference between load transfer restoration (generic term) and dowel bar retrofitting (DBR) which is a specific means of achieving LTR. There are other methods available, but DBR is the most proven.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>TCCC Diamond Grinding and Grooving</b> COURSE NUMBER: FHWA-NHI-131126H	Web-based training module.	1 Hour	Design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it	Intermediate	This module describes recommended procedures for surface restoration of Portland cement concrete (PCC) pavements, specifically diamond grinding and diamond grooving operations.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>



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			should also be of value to those that are new to the field.				
<b>TCCC Joint Sealing and Crack Resealing</b> COURSE NUMBER: FHWA-NHI-131126I	Web-based training module.	1 Hour	Design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field.	Intermediate	This module covers joint resealing and crack sealing for concrete pavements. Joint resealing and crack sealing is defined as placement of an approved sealant material in an existing joint or crack to reduce moisture infiltration and prevent intrusion of incompressibles.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>TCCC Strategy Selection</b> COURSE NUMBER: FHWA-NHI-131126J	Web-based training module.	1 Hour	Design engineers, quality control personnel, contractors, suppliers, technicians, and trades people. While the course is aimed at those who have some familiarity with concrete pavements and pavement preservation, it should also be of value to those that are new to the field.	Intermediate	This module provides guidance on the selection of concrete pavement preservation strategies. Based on a collective review of a number of recent published documents, this module covers the seven step process that can be used to determine the most appropriate treatment (or combination of treatments) for a PCC pavement.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments</b> COURSE NUMBER: FHWA-NHI-131103A	Instructor Led Training Course	2 Days	Construction foremen and agency construction inspectors, up to and including middle managers. While it is aimed at those who	Intermediate	This course targets those field personnel involved in constructing preventive maintenance treatments, including both buying agency's inspectors and the contractors' foremen and field crews. It contains modules on all of the categories of preventive maintenance treatments in widespread use today, focusing on the best practices for designing and constructing those	\$400 per participant – 20 participants minimum, 30 participants maximum	More information available on the internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>

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			have some familiarity with the equipment and materials used to construct effective preventive maintenance treatments, it should also be of value to those just starting out in the maintenance field. This course is also recommended for asset management team members.		<p>treatments. It also addresses troubleshooting construction practices, so that participants can clearly identify the results of poor construction practices. This course is the second in a series of three courses (NHI 131115, 131103, and 131116) on the general subject of pavement preservation.</p> <p>The 2-day version consists of Modules 1 and 4, with content selected by the hosting organization from topics in Modules 2 and 3. The course instructor will assist the host in selecting the most appropriate topics for the target audience and length of the session.</p> <p>Module 1: Introduction to Preventive Maintenance</p> <p>Module 2: Crack Filling and Sealing; Fog Seals, Sand Seals, Scrub Seals, and Rejuvenators; Slurry Seals and Microsurfacing; Chip Seals; In-Place Recycling; Thin and Ultra-Thin HMA Overlays</p> <p>Module 3: Joint Resealing and Crack Sealing; Diamond Grinding and Grooving; Full-Depth Repairs; Partial-Depth Repairs; Load Transfer Restoration; Thin PCC Overlays; Undersealing</p> <p>Module 4: Course Summary</p>		
<b>Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments</b>  COURSE NUMBER: FHWA-NHI-131103B	Instructor Led Training Course	3 days	Construction foremen and agency construction inspectors, up to and including middle managers. While it is aimed at those who have some familiarity with the equipment and materials used to construct effective preventive maintenance treatments, it should	Intermediate	This course targets those field personnel involved in constructing preventive maintenance treatments, including both buying agency's inspectors and the contractors' foremen and field crews. It contains modules on all of the categories of preventive maintenance treatments in widespread use today, focusing on the best practices for designing and constructing those treatments. It also addresses troubleshooting construction practices, so that participants can clearly identify the results of poor construction practices. This course is the second in a series of three courses (NHI 131115, 131103, and 131116) on the general subject of pavement preservation.	\$500 per participant – 20 participants minimum, 30 participants maximum	More information available on the internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>

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			also be of value to those just starting out in the maintenance field. This course is also recommended for asset management team members.		<p>The 3-day version consists of Modules 1 and 4, with content selected by the hosting organization from topics in Modules 2 and 3. The course instructor will assist the host in selecting the most appropriate topics for the target audience and length of the session.</p> <p>Module 1: Introduction to Preventive Maintenance</p> <p>Module 2: Crack Filling and Sealing; Fog Seals, Sand Seals, Scrub Seals, and Rejuvenators; Slurry Seals and Microsurfacing; Chip Seals; In-Place Recycling; Thin and Ultra-Thin HMA Overlays</p> <p>Module 3: Joint Resealing and Crack Sealing; Diamond Grinding and Grooving; Full-Depth Repairs; Partial-Depth Repairs; Load Transfer Restoration; Thin PCC Overlays; Undersealing</p> <p>Module 4: Course Summary</p>		
<p><b>Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments</b></p> <p>COURSE NUMBER: FHWA-NHI-131103C</p>	Instructor Led Training Course	4 Days	Construction foremen and agency construction inspectors, up to and including middle managers. While it is aimed at those who have some familiarity with the equipment and materials used to construct effective preventive maintenance treatments, it should also be of value to those just starting out in the maintenance field. This course is also recommended for asset management team	Intermediate	<p>This course targets those field personnel involved in constructing preventive maintenance treatments, including both buying agency's inspectors and the contractors' foremen and field crews. It contains modules on all of the categories of preventive maintenance treatments in widespread use today, focusing on the best practices for designing and constructing those treatments. It also addresses troubleshooting construction practices, so that participants can clearly identify the results of poor construction practices. This course is the second in a series of three courses (NHI 131115, 131103, and 131116) on the general subject of pavement preservation.</p> <p>The 4-day version includes all of the following:</p> <p>Module 1: Introduction to Preventive Maintenance</p> <p>Module 2: Crack Filling and Sealing; Fog Seals, Sand Seals, Scrub Seals, and Rejuvenators; Slurry</p>	\$600 per participant – 20 participants minimum, 30 participants maximum	More information available on the internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>

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			members.		Seals and Microsurfacing; Chip Seals; In-Place Recycling; Thin and Ultra-Thin HMA Overlays  Module 3: Joint Resealing and Crack Sealing; Diamond Grinding and Grooving; Full-Depth Repairs; Partial-Depth Repairs; Load Transfer Restoration; Thin PCC Overlays; Undersealing  Module 4: Course Summary		
<b>Maintenance Training Series: Shaping and Shoulders</b>  COURSE NUMBER: FHWA-NHI-134109B	Web-based training module.	1.5 Hours	State, regional, and county personnel who manage operations programs and deal with oversight and quality assurance across broad geographic areas. This target audience also is involved with handling materials, scheduling, budgeting, and planning.	Basic	Shoulders play an important role in both pavement performance and roadway safety. Maintaining shoulders in a proper and timely manner is a primary goal of transportation agencies. In an effort to assist agencies in meeting this goal, the Shaping and Shoulders training provides information on the maintenance of both paved and unpaved shoulders, including specific details on the maintenance of gravel shoulders. In addition to a discussion of the various types of shoulders, project selection considerations, and key maintenance issues, this training places shoulders and shaping into the context of an overall maintenance and pavement preservation program.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>Pavement Management Systems: Characteristics of an Effective Program</b>  COURSE NUMBER: FHWA-NHI-131116A	Instructor Led Training Course	1.5 days	Transportation professionals from state and local agencies responsible for managing and maintaining pavements and/or prioritizing pavement projects for programming purposes. Course participants should be directly involved with providing data to support pavement management activities, selecting	Basic	This 1.5-day course was designed to help improve the effectiveness of an existing pavement management program. In addition to introducing the basic components of an effective pavement management program, the course materials illustrate the effective use of pavement management information and provide opportunities for participants to identify strategies that will help enhance their existing capabilities. The focus of the class is broad enough to include data collection activities, condition assessment, program development, investment analysis, and other uses of pavement management information to support an agency's decision processes to improve pavement performance. The role of pavement management in supporting an agency's transportation asset management program at the strategic, network, and project	No cost – 20 participants minimum, 30 participants maximum	More information available on the internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>

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Name	Resource Type	Duration	Audience	Difficulty Level	Description	Cost	Contact
			pavement projects, developing candidate project recommendations, or determining funding allocations for pavement-related activities. The primary audience will be practitioners from state highway agencies, but the course is also appropriate for individuals from local agencies.		levels is also introduced. This 1.5-day version of the course allows for a state to receive all of the lessons in Module 4: Lesson 4-1 (strategies to improve the effectiveness of the agency's pavement management program), Lesson 4-2 (pavement condition assessment and performance modeling), and Lesson 4-3 (using pavement management to support a pavement preservation program). Since it is offered at no charge, availability of instructors may be limited.		
<b>TCCC Chip Seal Best Practices</b>  COURSE NUMBER: FHWA-NHI-131132	Web-based training module.	3 Hours	Entry level construction inspectors, maintenance employees and contractor personnel as well as serve as refresher training for those already well versed in the selection and application of a chip seal as a preventive maintenance treatment.	Basic	This course presents ways to assist in the development and implementation of pavement preservation programs by identifying the benefits of using chip seal as part of a preventive maintenance program.  This course has six modules. Module 1 is an introduction into chip seals, module 2 covers designing chip seal mixes, module 3 is selecting the proper materials for the chip seal mix, module 4 focuses on the use of the equipment, module 5 covers proper construction practices, and module 6 rounds out the course with performance measures of chip seals. The combination of all this information provides an excellent overview of successful chip seal practices worldwide.	No cost	Available on internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>
<b>Pavement Management Systems: Characteristics of an Effective Program</b>  COURSE NUMBER: FHWA-NHI-131116	Instructor Led Training Course	1 Day	Transportation professionals from state and local agencies responsible for managing and maintaining pavements and/or prioritizing pavement projects for programming purposes. Course	Basic	This 1-day course was designed to help improve the effectiveness of an existing pavement management program. In addition to introducing the basic components of an effective pavement management program, the course materials illustrate the effective use of pavement management information and provide opportunities for participants to identify strategies that will help enhance their existing capabilities. The focus of the class is broad enough to include data collection activities, condition assessment, program development, investment	No cost – 20 participants minimum, 30 participants maximum	More information available on the internet at: <a href="http://www.nhi.fhwa.dot.gov/">www.nhi.fhwa.dot.gov/</a>



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			participants should be directly involved with providing data to support pavement management activities, selecting pavement projects, developing candidate project recommendations, or determining funding allocations for pavement-related activities. The primary audience will be practitioners from state highway agencies, but the course is also appropriate for individuals from local agencies.		analysis, and other uses of pavement management information to support an agency's decision processes to improve pavement performance. The role of pavement management in supporting an agency's transportation asset management program at the strategic, network, and project levels is also introduced. Only Lesson 4-1 of Module 4 will be covered during this 1-day version of the course, introducing strategies to improve the effectiveness of the agency's pavement management program. Since the training is offered at no charge, availability of instructors may be limited.		
For Pavement Preservation FP <sup>2</sup>	Online Information	Continual	Road agencies that are strapped for cash looking for ways to optimize their limited dollars.	Basic	Pavement preservation techniques are being promoted by the Federal Highway Administration (FHWA) and the American Association of State Highway & Transportation Officials (AASHTO) as cost-effective and environmentally sustainable strategies designed to extend the life of existing pavements before they deteriorate substantially. Pavement preservation techniques include nonstructural preventive maintenance surface treatments such as crack sealing, chip sealing, micro surfacing, rejuvenation, hot and cold in-place recycling and thin-lift hot-mix asphalt paving; and structural preservation techniques used in concrete pavement restoration (CPR). Pavement preservation methods prolong pavement life, avoiding high future costs of reconstruction or rehabilitation through the expenditure of lesser amounts of money at critical points in a pavement's life. Pavement preservation pays off in both the short and long term. Experience shows that spending a dollar on pavement preservation can eliminate or delay	No cost	Available on internet at: <a href="http://www.fp2.org/">http://www.fp2.org/</a>

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					spending \$6 to \$10 on future rehabilitation or reconstruction costs. We at FP <sup>2</sup> Inc. support the adoption of pavement preservation at all levels of government, and work to ensure pavement preservation becomes a part of road programs from coast-to-coast. We invite you to browse these pages to learn more about pavement preservation, and view our quarterly magazine, <a href="#">Pavement Preservation Journal</a> .		
<b>Pavement Preservation: A Road Map for the Future</b>	Online Information	Continual	Pavement Practitioners	Intermediate	Pavement preservation is at the core of all future highway programs. It calls for a concerted effort by industry and Federal, State, and local highway agencies to generate support for a program of activities that will provide highway users—our customers—with a higher level of quality and cost-effectiveness. To accomplish this, highway agencies will first have to clearly identify needed preservation activities, and then implement those activities. State and local governments will have to increase the amount of funding available for pavement preservation. A key step in creating support for pavement preservation will be to increase the awareness of both elected officials and the highway community as to its value and benefits. Highway agencies must be able to communicate a new philosophy—one that focuses on preserving our investment in, rather than expanding, our existing highway system.	No cost	<a href="http://www.fhwa.dot.gov/infrastructure/asstmgmt/roadmap.pdf">http://www.fhwa.dot.gov/infrastructure/asstmgmt/roadmap.pdf</a>
<b>MN LTAP Annual Asphalt Pavement Maintenance and Preservation Workshop</b>	Online Information	Updated yearly.	Pavement Practitioners	Basic to Intermediate	Presentations that were given at the Minnesota LTAP annual Asphalt Pavement Maintenance and Preservation Workshop are posted at this site.	No cost.	<a href="http://www.ltap.org/resources/searchdetail.php?id=5">http://www.ltap.org/resources/searchdetail.php?id=5</a>
<b>Ohio LTAP Asphalt Pavement Preservation: Evaluation, Maintenance and Rehabilitation Workshop</b>	Online Information	Continual	Pavement Practitioners	Basic	Downloaded slides (CD w/PDF files) & course book from the Ohio LTAP Asphalt Pavement Preservation: Evaluation, Maintenance, and Rehabilitation Workshop.	No cost.	<a href="http://www.ltap.org/resources/searchdetail.php?id=6">http://www.ltap.org/resources/searchdetail.php?id=6</a>
<b>Cornell Local Roads Program Publication Number: CLRP No. 04-3 Asphalt Paving Principles</b>	Online Information	Continual	Pavement Practitioners	Basic	Listing of links to numerous workshop manuals and publications on pavement preservation that are made available by the Cornell Local Roads Program.	No cost.	<a href="http://www.clrp.cornell.edu/Library/Publications.htm">http://www.clrp.cornell.edu/Library/Publications.htm</a>



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<b>Asphalt Recycling &amp; Reclaiming Association</b>	Online information	Continual	Pavement Practitioners	Basic	ARRA's primary function has been to promote the recycling of existing roadway materials through various construction methodologies, to preserve limited natural resources and reduce costs. This ongoing effort continues through education, strategic alliances and partnering at both the industry and agency level.	No cost.	<a href="http://www.arra.org/">http://www.arra.org/</a>
<b>International Slurry Surfacing Association</b>	Online information	Continual	Pavement Practitioners	Basic	The International Slurry Surfacing Association (ISSA) is an international non-profit trade association comprised of contractors, equipment manufacturers, public officials, research personnel, consulting engineers and other industry professionals, working together to promote the concept of pavement preservation. ISSA promotes the highest standards of ethics and quality while providing its members with information, technical assistance and ongoing opportunities for networking and professional development.	No cost.	<a href="http://www.slurry.org/">http://www.slurry.org/</a>
<b>Asphalt Emulsion Manufacturers Association</b>	Online information	Continual	Pavement Practitioners	Basic	AEMA is a proactive organization dedicated to the advancement of the asphalt emulsion industry, constantly focusing on system preservation and the construction of the world's infrastructure.	No cost.	<a href="http://www.aema.org/">http://www.aema.org/</a>
<b>American Concrete Pavement Association</b>	Online information	Continual	Pavement Practitioners	Basic	American Concrete Pavement Association is a national trade organization for concrete paving contractors, cement and material producers, equipment manufacturers and any company with an interest in concrete airports, highways, roads, streets and industrial pavements.	No cost.	<a href="http://www.pavement.com">http://www.pavement.com</a>
<b>Delaware T2 Center</b>	Videos	Short and long formats.	Pavement Practitioners	Basic	Un-narrated videos of pavement preservation techniques in short (~2 minutes) and longer formats.	0 cost.	Matt Carter, Delaware T2 Center (302) 831-7236 <a href="mailto:matheu@udel.edu">matheu@udel.edu</a>