



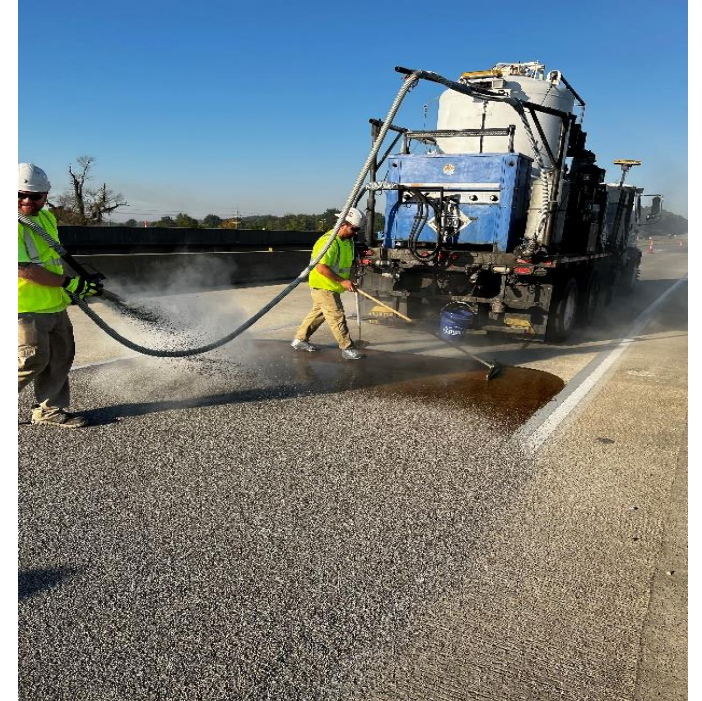
NTPEP Test Deck Performance

Katheryn Malusky, AASHTO



What is a High Friction and Thick Overlay (HFTO)?

HFTO's are cost-effective overlay systems, that can preserve and improve pavements and bridges. They can provide an improve wearing surface and provide protection from water and chloride intrusion. They are lightweight, easy to construct, and durable.



What does the AASHTO Product Evaluation & Audit Solutions HFTO provide?

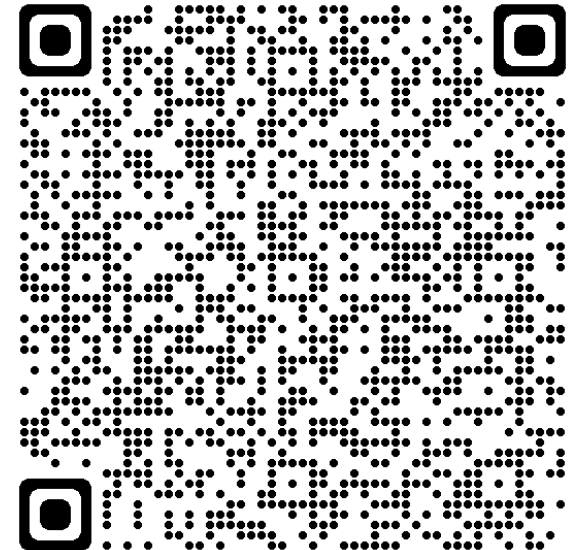
- ▶ Product Evaluation
 - Laboratory
 - Field
- ▶ User Guide
- ▶ **DATA!!!**

HFTO Workplan

NTPEP Committee Work Plan for

Evaluation of High Friction and Thin Overlays for Bridges and Pavements

NTPEP Designation: HFTO-22-01



HFTO Samples

- ▶ Samples must be submitted to the designated testing facility in sufficient quantity to conduct all testing, as instructed by the NTPEP representative along with:
 - Information showing the manufacturer's name and description of product;
 - Manufacturer test results;
 - Sample of the binder and surface aggregate and/or aggregate filler in sufficient quantity to conduct the specified product tests.
 - Materials will be limited to two (2) per manufacturer per year. A generic material composition description and SDS must accompany the submittal for classification purposes. This information will be kept in confidence by NTPEP unless directed otherwise by the manufacturer.

HFTO Workplan

- ▶ Laboratory Evaluation – Future Labs LLC.
- ▶ Field Evaluation – TN DOT and MO DOT
- ▶ Re-certification

Lab Evaluation

- ▶ The various binders used to construct HFTO are tested for:
 - Viscosity, gel time, tensile strength, tensile elongation, tensile modulus, absorption, Shore D hardness, compressive strength, and an infrared spectrum collected.
- ▶ The aggregate used in the HFTO systems is tested for:
 - Gradation, absorption, Micro-Deval, and XRF Spectrum collected.

HFTO Field Test Deck Instillation

- ▶ Test locations are identified by host State
- ▶ Test sites are prepared to a surface profile between CSP5 and CSP 7 in accordance with ICRI Guideline #3102. Site must be free of all dust and loose material prior to application.



Field Evaluation 2021



Hosted by Missouri DOT in Sikeston, MO

- Two days of installation, September 28th, and 29th
- Clear, dry, sunny days.
- Air temperatures: starting 60's, ending 90's °F
- Samples of all materials were collected prior to field installation
- Started with bridges
- Each site had a NTPEP representative to oversee the work



Field Evaluation 2021

Manufacturers:

- ▶ Cornerstone FasTrac CE330 Epoxy Binder
- ▶ Epoplex, Safe-T-Grip 1:1
- ▶ Mineral Research, Inc. SharpGuard
- ▶ A&A Safety P3 Infrastructure, Impervious and Alterra
- ▶ Poly-Tuff Systems International ETUFF

2021 NTPEP HFTO Test Deck Inspection Sheet

HFTO-2021-01-003
State Route: US 60 Westbound
Stoddard Co.
Location: Test Deck A0030
Prep Date: 9/13/21
Application Date(s): 9/20/21 – 9/23/2021

I BRIDGE A0030

Bridge Deck Prep:

- The Concrete deck was shot blast to a textured surface as compared to the ICRI Technical Guideline No. 03732, (Comparative Pad 14# CSP 6).
- The deck was cleaned using air blast.
- The Deck is 200' in length and 12' wide edge line to skip line. (See pictures file)

Bridge Deck:

MIXING

- Part A lot#
- Part B lot#

(See pictures file)

APPLICATION

First Application (1st lift)

Start Time: _____
End Time: _____
Total time: _____
Deck Temperature: _____
Air Temperature: 64°

Second Application (2nd lift)

Start Time: _____
End Time: _____
Total time: _____
Deck Temperature: _____
Air Temperature: _____

Cure Time: First Application (1st lift)

Start Time: _____
End Time: _____
Total time: _____

Cure Time: Second Application (2nd lift)

Start Time: _____
End Time: _____
Total time: _____

(See pictures file)

(See pictures file)

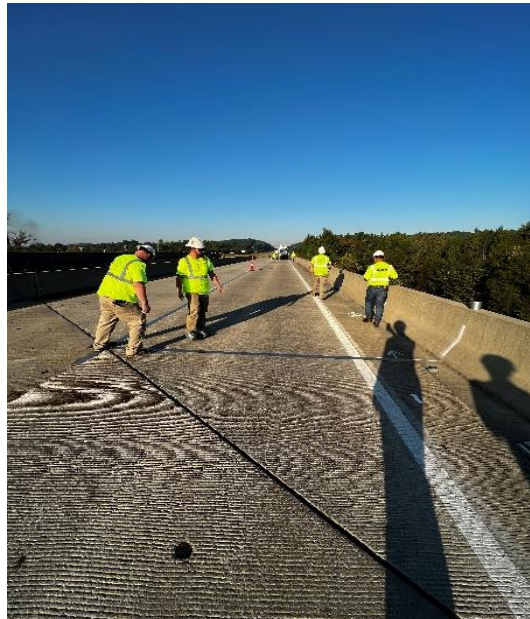
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HFTO 2021-01-003

- **Photograph** of the worksheet to designate the location in photographs
- **Verify** structure number and location
- **Document** the time at the start of the first and second application, Deck Temperature—both applications, air Temperature—both applications, time at the end of the first and second application, and cure time
- **Material Mixing Details** including part A and part B lot numbers and specifics on how the mixing was done.
- **Photographs** taken to demonstrate the process and steps taken to install the HFTO

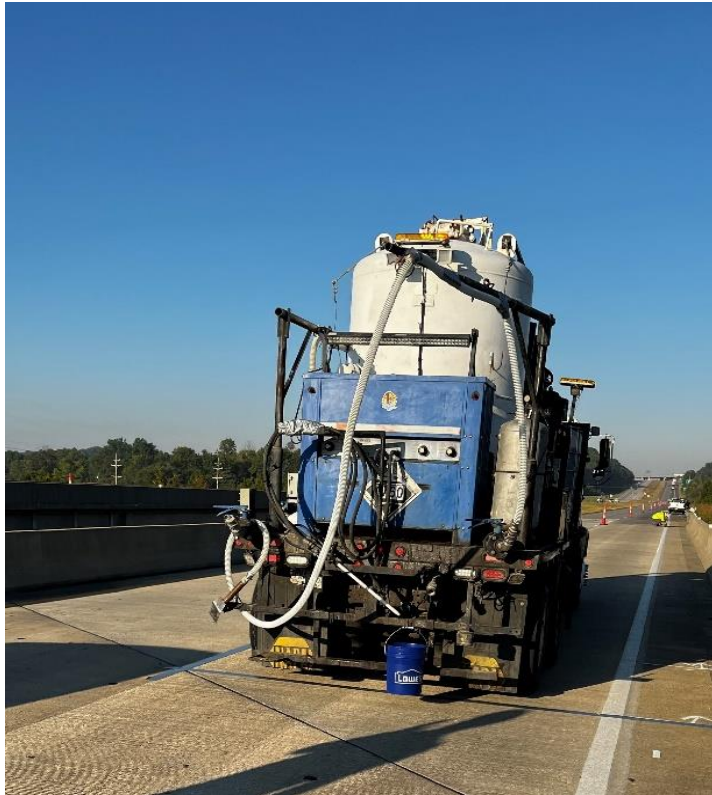
2021 NTPEP HFTO Test Deck Photographs

- ❑ Concrete deck was shot blast to ICRI No. 03732
- ❑ An Air Blast was used to remove latent dust and debris
- ❑ The Deck was 200 feet long and 12-foot-wide edge line to skip line.
- ❑ Extra wide duct tape applied to markings and section ends.



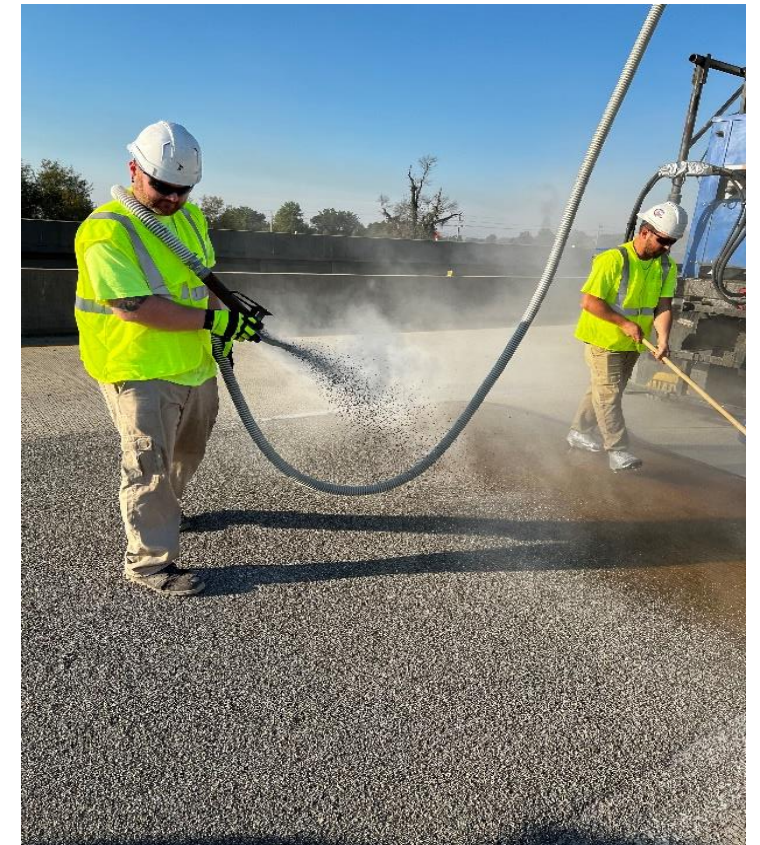
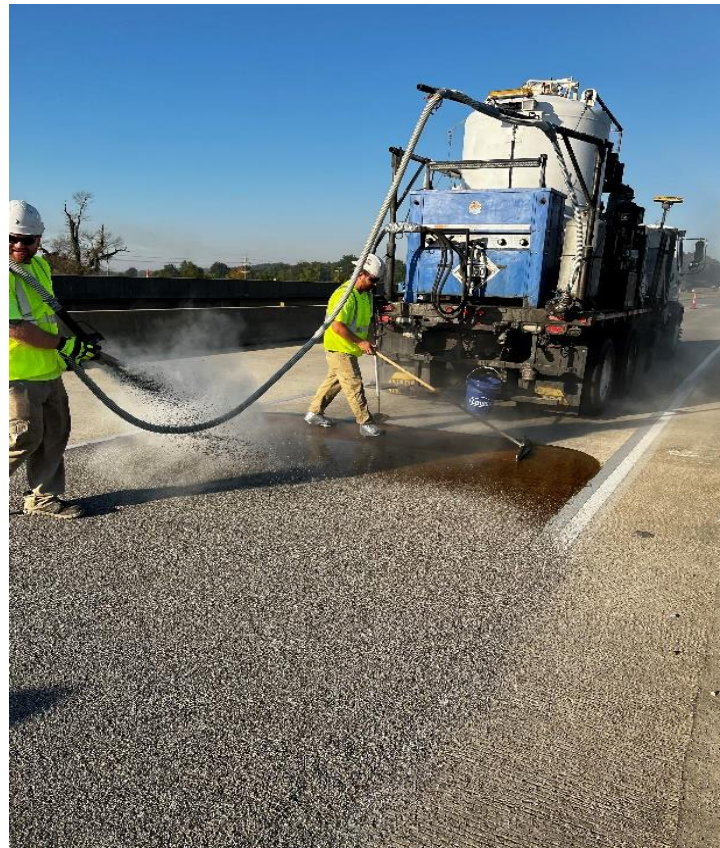
2021 NTPEP HFTO Test Deck Photographs

❑ Truck and Material



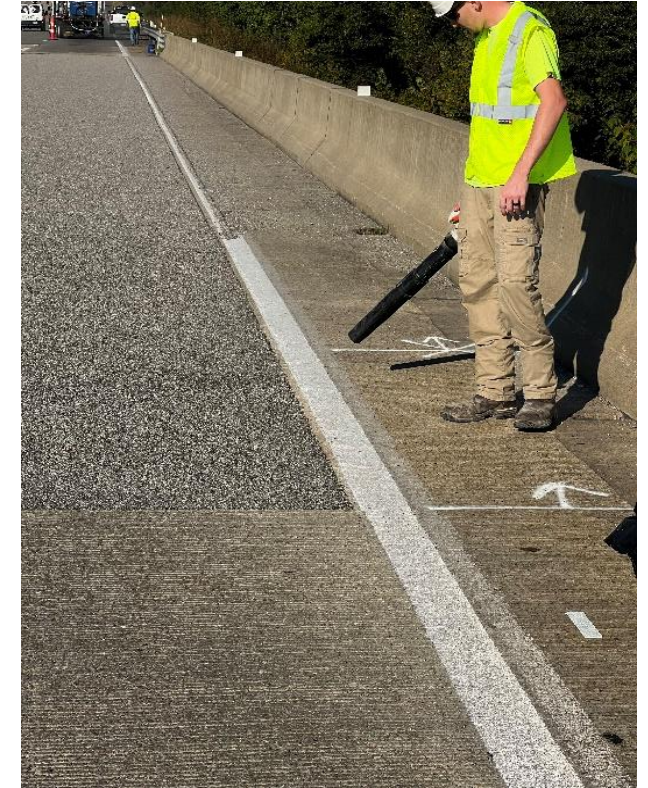
2021 NTPEP HFTO Test Deck Photographs

□ Application



2021 NTPEP HFTO Test Deck Photographs

- ❑ Post Application Deck Preparation
- ❑ Tape removal prior to full cure, blow back aggregate onto the test surface



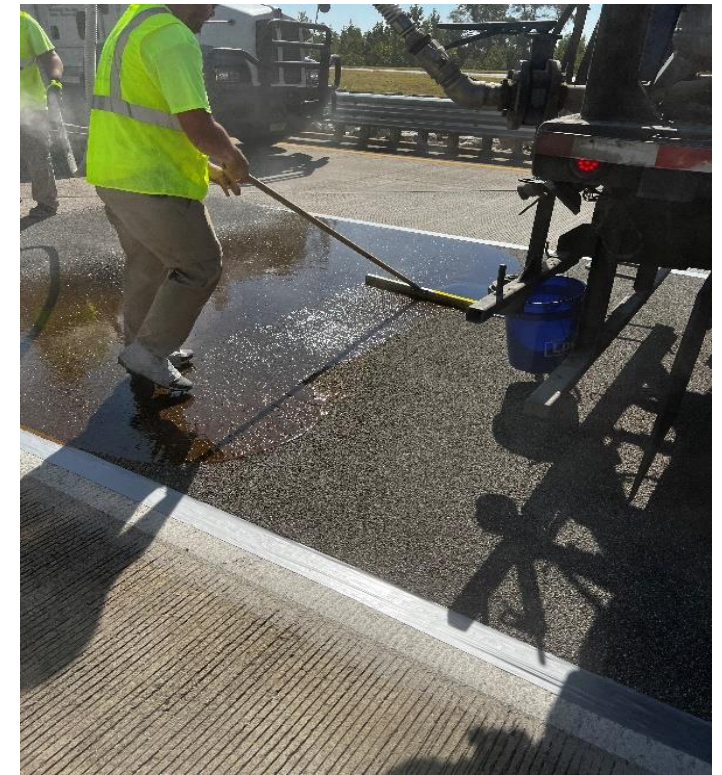
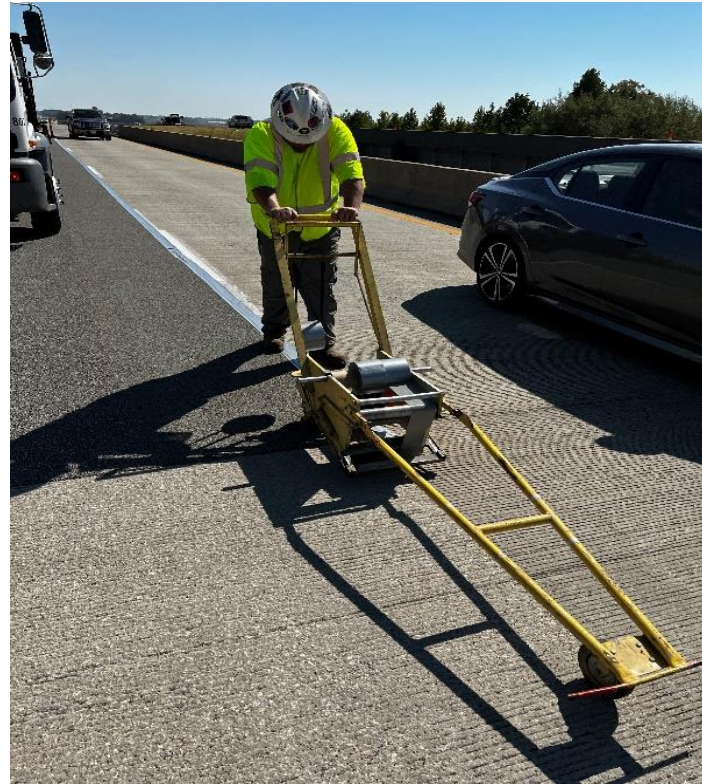
2021 NTPEP HFTO Test Deck Photographs

- Post Application Post Cure Sweeping done in multiple passes.



2021 NTPEP HFTO Test Deck Photographs

- ❑ Second application
- ❑ First application swept, air cleaned, markings and section ends re-taped

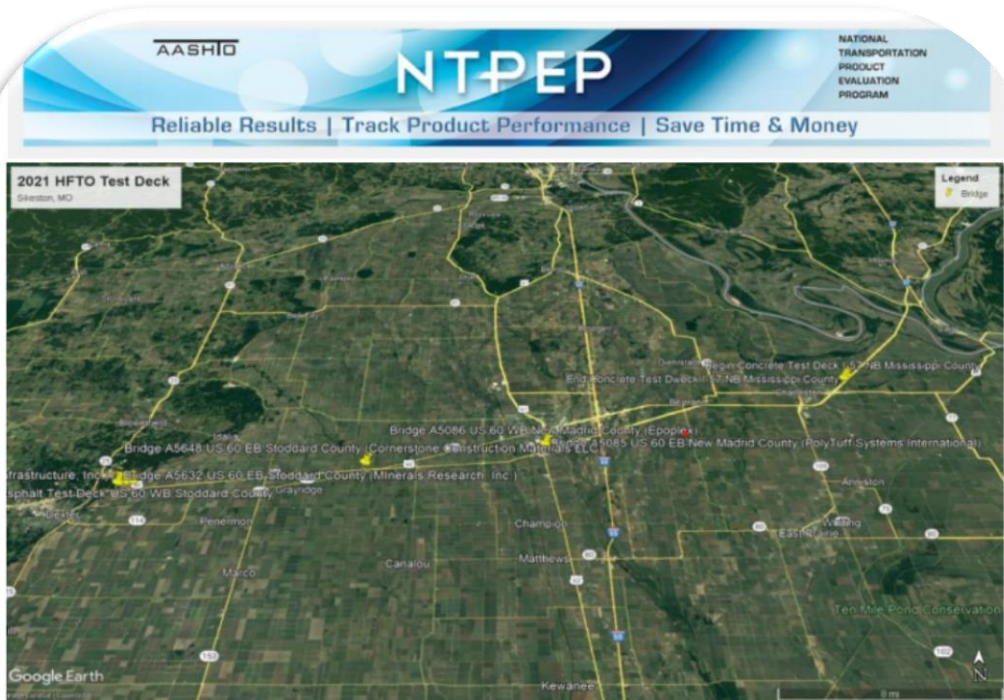


2021 NTPEP HFTO Test Deck Photographs

- ❑ Post Second Application
- ❑ Tape removed before cure, aggregate blown onto deck, swept, final surface



HFTO Test Data



2021 HFTO
 NTPEP - High Friction and Thin Overlays Test
 Deck Evaluation
 of

Full reports can be found in Datamine for each product evaluated.

Reports are .pdf files that include:

- ▶ Lab evaluation data
- ▶ Field installation details: photographs, friction data prior to installation (baseline) and after initial installation, and subsequent year's annual evaluations (3 years total) for each test site

Product Information

Test Data

Timeline

History

Manufacturer

P3 INFRASTRUCTURE, INC.
671 MCCAULEY RD.
STOW, Ohio, 44224
WWW.P3-I.COM

Manufacturer Representative

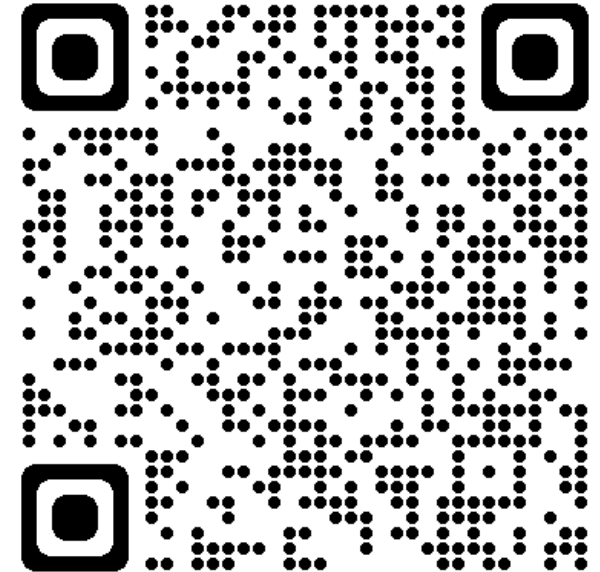
President Singh
P3 INFRASTRUCTURE, INC.
671 McCauley Rd.
Stow, Ohio 44224
Phone: 855-373-6015
Fax: 330-408-9502
E-mail: puneet@p3-i.com

Product Representative

Puneet Singh
P3 INFRASTRUCTURE, INC.
671 McCauley Rd.
Stow, Ohio 44224
Phone: 18553736015
E-mail: puneet@p3-i.com

Product Information

Manufacturer:	P3 INFRASTRUCTURE, INC.
Product Name:	IMPERVIUS ME
Evaluation Type:	New
NTPEP Number:	HFTO-2021-01-003
Submittal Year:	2021
Product Number:	IMPERVIUS™ ME BRIDGE DECK PRESERVATION OVERLAY SYSTEM
Description:	IMPERVIUS™ ME is a 100% solids, 2 component, modified polymer, when used with selected aggregates; is designed to protect reinforced concrete, steel plate and FRP composite bridge decks from adverse effects of traffic, extreme weather conditions and deicing chemicals as well provide a skid resistant surface. Meets applicable ASTM, AASHTO and State specifications.



Application#:	00007573
Status:	Complete

Other Information

Product Category:	Surface Aggregate
Resin Type:	LOW MODULUS MODIFIED EPOXY
Grade:	2
Class:	D, E, F
Surface Aggregate Description:	Use clean, dry aggregate such as Bauxite, Granite or Basalt; that is free of foreign matter
Binder Description:	IMPERVIUS™ ME is a 100% solids, 2 component, modified polymer, when used with selected aggregates; is designed to protect reinforced concrete, steel plate and FRP composite bridge decks from adverse effects of traffic, extreme weather conditions and
Aggregate Filter Description:	

Test Selection

Bridge Deck Evaluation:	Yes
Concrete Pavement Evaluation:	Yes
Asphalt Pavement Evaluation:	Yes

Attached Documents

Document Type	Documents
SDS	Impervius ME Part A SDS 11.19.19.pdf
Installation Instructions	Impervius ME PDS 7.15.19 New Address.pdf

Product Overview

Submittal Year:	2021
NTPEP Number:	HFTO-2021-01-003
Manufacturer Name:	P3 INFRASTRUCTURE, INC.
Product Name:	IMPERVIUS ME
Product Description:	IMPERVIUS™ ME is a 100% solids, 2 component, modified polymer, when used with selected aggregates; is designed to protect reinforced concrete, steel plate and FRP composite bridge decks from adverse effects of traffic, extreme weather conditions and deicing chemicals as well provide a skid resistant surface. Meets applicable ASTM, AASHTO and State specifications.
Product Category:	Surface Aggregate
Surface Aggregate Description:	Use clean, dry aggregate such as Bauxite, Granite or Basalt; that is free of foreign matter
Binder Description:	IMPERVIUS™ ME is a 100% solids, 2 component, modified polymer, when used with selected aggregates; is designed to protect reinforced concrete, steel plate and FRP composite bridge decks from adverse effects of traffic, extreme weather conditions and
Aggregate Filler Description:	

Additional DocumentationRelease Status: **Public**

Report Title	Document	
Installation Report HFTO-2021-01-003 P3 Infrastructure, Inc. Impervious ME	Installation Report HFTO-2021-01-003 P3 Infrastructure, Inc. Impervious ME.pdf	
Report HFTO-2021-01-003 P3 Infrastructure, Inc. Impervious ME Year One	Report HFTO-2021-01-003 P3 Infrastructure, Inc_1. Impervious ME Year One	

HFTO Re-certification

- Systems/products evaluated in this program must be resubmitted for **lab testing** every three (3) years from the date of the release of data.
- Systems evaluated for **field testing** shall be resubmitted every nine (9) years from the release of data.
- Resubmission of the lab and field testing shall be received in order for the current data to remain available to the manufacturer or the state members of AASHTO.

HFTO User Guide

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User Guide

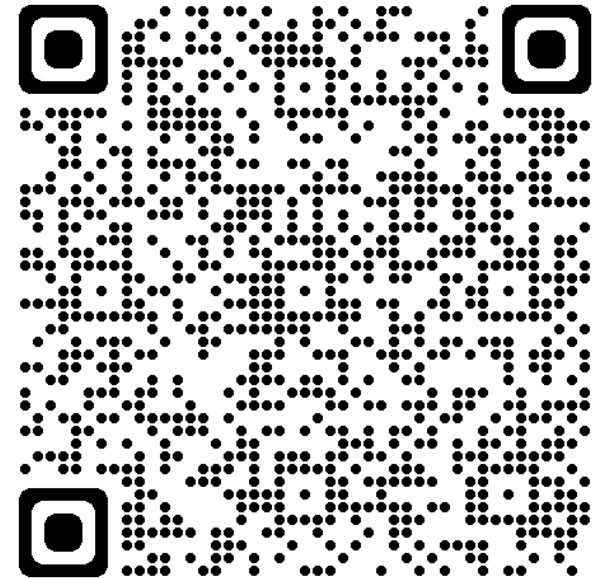
PDF

User Guide for High Friction and Thin
Overlays

Work Plan

PDF

Work Plan for Evaluation of High Friction
and Thin Overlays for Bridges and
Pavements



HFTO User Guide

- Introduction to the HFTO program
- Cured binder properties
- Binder types
- Key aspects of the technical program
- FTIR correlation procedure (quality assurance)
- References for AASHTO specifications for material performance properties.

Subscription Program

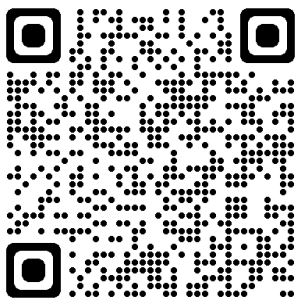


AASHTO Product Evaluation & Audit Solutions provides the capability of non-AASHTO government agencies and associate AASHTO members access to data resulting from product evaluations and manufacturing audits via DataMine.

Data can be accessed through a password protected licensing agreement to safeguard proprietary information.

AASHTO Product Evaluation & Audit Solutions Homepage

- TC homepages
- State Usage Survey
- News and Announcements
- NTPEP YouTube channel
- and more!



<https://transportation.org/product-evaluation-and-audit-solutions/>



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AASHTO Product Evaluation & Audit Solutions – (formerly National Transportation Product Evaluation Program (NTPEP))

AASHTO Staff Contact

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[Let's Talk](#)

Related AASHTO Committee

Committee on Materials and Pavements

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Annual Meeting

The Annual Meeting provides an opportunity for AASHTO Members, FHWA, and industry attendees to learn about the work done by each AASHTO Product Evaluation & Audit Solutions Technical Committee during the past year.

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Datamine

AASHTO Product Evaluation and Audit Solutions DataMine is the online repository of data and audit reports for all AASHTO Product Evaluation & Audit Solutions services.

[View](#)

Subscription Service

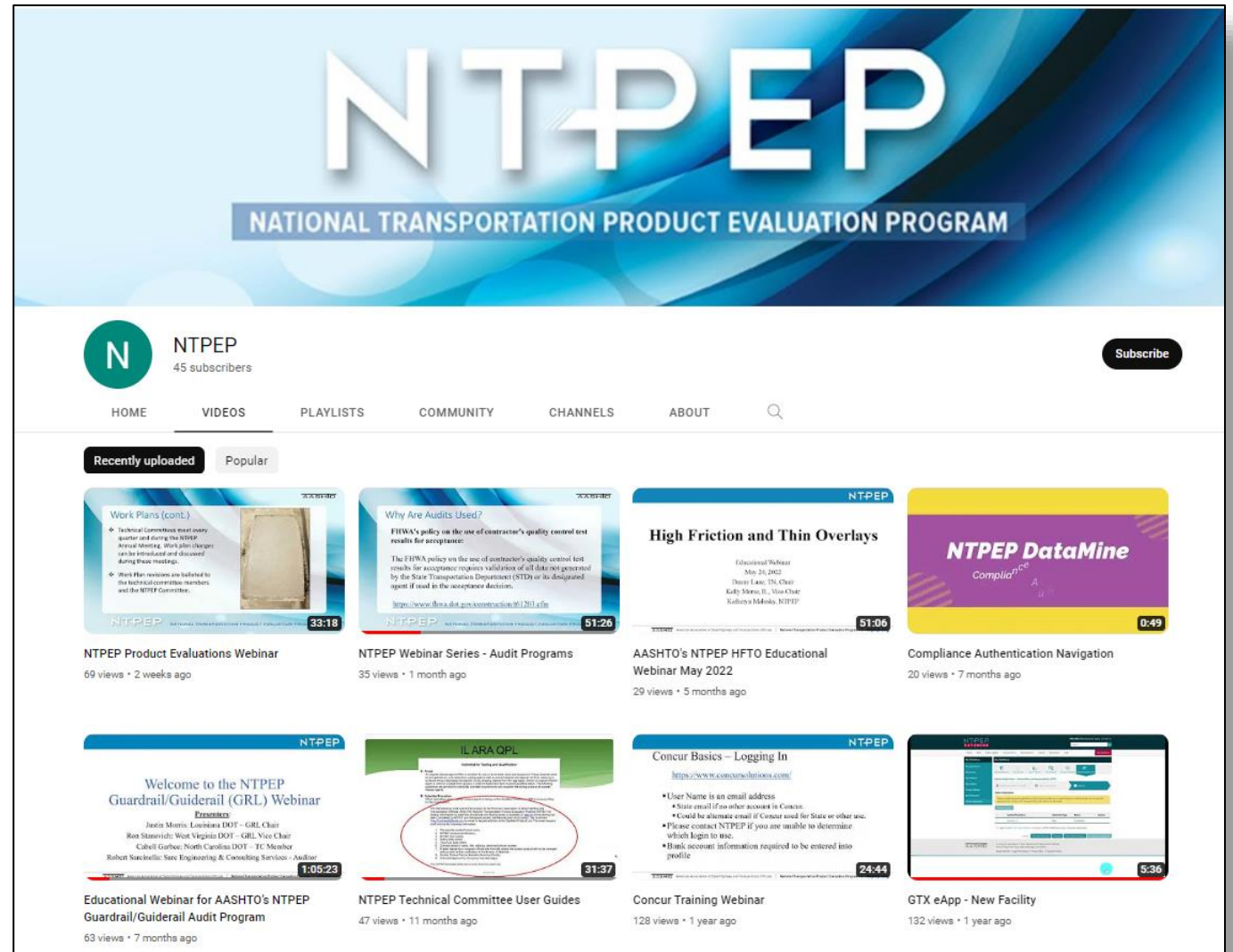
AASHTO Product Evaluation and Audit Solutions allows non-State government agencies and

YouTube Channel

The Annual Meeting provides an opportunity for AASHTO Members, FHWA, and industry attendees to

YouTube Channel

- Webinars describing individual program evaluations and/or audits
- “How to” videos for using DataMine, balloting, and more.
- Available from the AASHTO Product Evaluation & Audit Solutions Homepage.





AASHTO
**PRODUCT
EVALUATION
& AUDIT**
SOLUTIONS

formerly **NTPEP**
TRANSITATION PROGRAMS
PRODUCT EVALUATION & AUDIT

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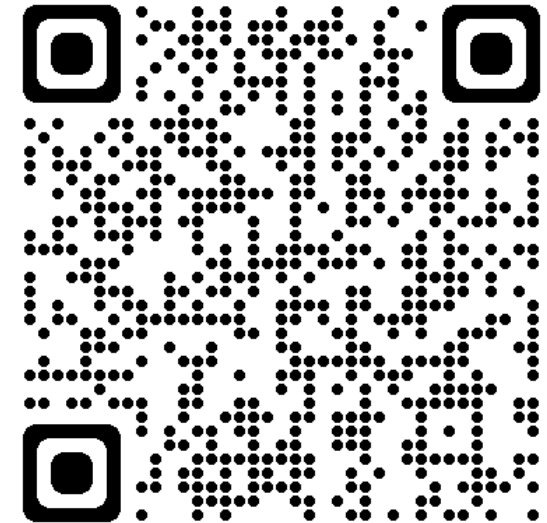
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About

AASHTO Product Evaluations & Audit Solutions combines the professional and physical resources of the AASHTO member departments in order to evaluate materials, products, and devices of common interest





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