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THE JOURNAL OF OHIO'S ASPHALT PROFESSIONALS

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WINTER 2021

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ON THE COVER: WITH THE HELP OF THIS QUALITY ASPHALT PAVING AWARD-WINNING PROJECT ANNOUNCED EARLIER THIS YEAR, THE FLEXIBLE PAVEMENTS OF OHIO STAFF WISH YOU A MERRY CHRISTMAS AND HAPPY NEW YEAR. THIS CITY OF LIMA ROUNDABOUT AT ELM STREET AND BELLEFONTAINE AVENUE WAS CONSTRUCTED BY EBONY CONSTRUCTION COMPANY AND WON A QUALITY ASPHALT AWARD IN THE LOCAL ROADS OR STREETS CATEGORY.



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THE PRESIDENT'S PAGE



ANDREW GALL

PRESIDENT & EXECUTIVE DIRECTOR

“This infusion of additional federal dollars should assist ODOT in offsetting its looming budget shortfalls and likely grow its construction and preservation programs. This needed investment will ultimately provide funding stability for ODOT and our industry, and will go a long way in building, reconstructing and maintaining Ohio’s roadways.”

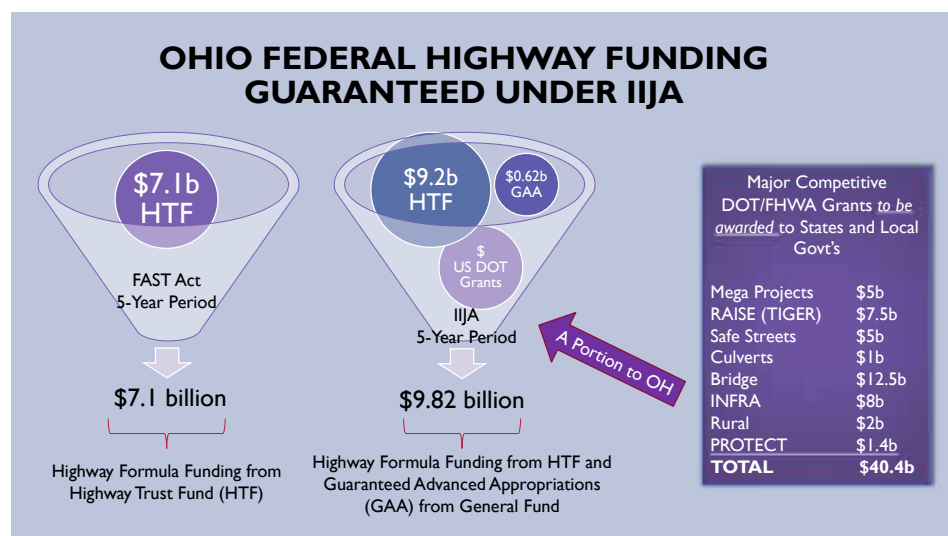
We Have a Federal Transportation Funding Bill! Now, What’s in It?

The long-delayed Infrastructure Investment and Jobs Act (IIJA) was passed with bipartisan support in Congress and signed by President Biden in November. This \$1.2 trillion legislation is the largest infrastructure bill in history and includes funding for a host of items in addition to the traditional dollars for roads and bridges. This bill also contains funding for items such as ports, rail, transit, water systems, the power grid, broadband expansion and more.

This legislation is important as the previous transportation funding bill, Fixing America's Surface Transportation Act (FAST Act), expired on September 30 of this year. Congress included a temporary one-year extension on the FAST Act in early October as part of a larger continuing resolution

to avert a government shutdown. However, extensions do not provide the long-term certainty a multi-year bill provides state departments of transportation and the heavy-highway industry to adequately plan for the future.

Flexible Pavements of Ohio (FPO) joined our members and industry partners across the country, such as the National Asphalt Pavement Association (NAPA) and Asphalt Pavement Alliance (APA) and other state asphalt associations, in advocating for this legislation. I would like to thank our partners for their outreach efforts in articulating the importance and need for this investment. But, in the fluid environment that is the legislative process, there is wide public uncertainty as to what exactly the final bill provides. The question



Source: The National Asphalt Pavement Association

currently being asked of the association is, “What’s really in this bill and how much will go toward Ohio’s roads and bridges?” It turns out it is a lot.

The infrastructure bill as passed and signed into law certainly contains much more than expected in a typical transportation funding bill. It is true, many hundreds of billions of dollars in this legislation will not directly benefit our industry or transportation infrastructure. However, it does ultimately provide a boost in funds for pavements in Ohio and across the nation. The IIJA provides a certainty of five years of federal transportation policy stability and funding from Federal Fiscal Year (FFY) 2022 to 2026. In addition, it appears to deliver for both Ohio and our nation’s roads and bridges. Of the \$550 billion in new spending, the single-biggest category is roads and bridges with an infusion of an additional \$110 billion. The bill provides approximately \$70 billion annually for roads and bridges starting in FFY 2022 compared to the \$46 billion in the last year of the FAST Act.

According to the United States Department of Transportation, Ohio is projected to receive a more than 30% increase over the previous spending levels from the FAST Act in the first year alone. There are also more than \$40 billion available in competitive grants for roads and bridges; \$15 billion for airfield grants; and \$15 billion in private-activity bonds, which provides low-cost financing for private entities to construct roadway and freight projects. Ohio is eligible to apply for all these grants, which could provide even more funding for our transportation system. The chart (page 6) illustrates a comparison of the funds available to Ohio from the FAST Act and the recently passed IIJA.

During the Ohio Department of Transportation (ODOT) budget deliberations earlier this year, the department reported on anticipated revenue reductions for State Fiscal Years 2022 and 2023 for its Major/New Construction program. These reductions were attributed to loss of state gas tax

revenue stemming from reduced travel due to COVID-19-related closures that resulted in a decline in fuel consumption. This infusion of additional federal dollars should assist ODOT in offsetting its looming budget shortfalls and likely grow its construction and preservation programs. This needed investment will ultimately provide funding stability for ODOT and our industry, and will go a long way in building, reconstructing and maintaining Ohio’s roadways.

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OTEC '21 RETURNS TO COLUMBUS;



On October 26 and 27, engineers and technicians from throughout Ohio traveled to Columbus for the 75th Ohio Transportation Engineering Conference (OTEC).

Nearly 3,400 attendees were able to leave behind the 2020 COVID protocols of computers and virtual training in favor of OTEC's traditional in-person event, where attendees could reacquaint with friends and colleagues, renew work relationships and meet new people with similar transportation/pavement interests. The 2021 attendees were able to visit and interact with hundreds of exhibitors representing consulting engineers, contractors, material and specialty product suppliers and other services related to Ohio's transportation industry.

In addition to networking with exhibitors, attendees were able to attend any of the 88 technical sessions featuring 370 speakers covering most every facet of the transportation industry, including transportation policy, planning, environmental, design, construction, maintenance, operation, local government and management of transportation resources.

Flexible Pavements of Ohio (FPO), in collaboration with ODOT, once again provided an interesting and informative Flexible Pavement technical session. This session, conducted on the conference's opening afternoon, was popular with attendees as speakers Dr. Ala Abbas and Dr. Shad Sargand were welcomed by a room full of pavement engineers looking for the latest information on asphalt pavements.

Dr. Abbas, of the University of Akron, and Dr. Sargand, of Ohio University, are two veteran members of Ohio academia with well-established reputations of working with and assisting the flexible pavement industry.

The first speaker, Dr. Abbas, presented the results of an Ohio's Research Initiative for Locals (ORIL) study, titled "Asphalt Mix Overlay Alternative for Low Volume Roads on the Local Transportation System." This research project identified, evaluated and optimized a hot-mix alternative to a mix provided by the old(er) and somewhat antiquated motor paving process. Motor paving is basically a type of cold-mix paving, where a cutback asphalt is mixed with aggregate in a unique paver and placed on low-volume roads to function as a highly flexible fatigue-resistant layer. This mix has been favored by county engineers, but availability and economics have diminished as the equipment and contractors have decreased over time. In this presentation, Dr. Abbas presented 402LVT (low-volume traffic), which uses readily available No. 57 aggregate, sand and a softer



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PG 58-22 binder designed to replicate performance of the motor paving mixtures. Recommended lift thickness is 2 inches (compacted) followed by a choker course using No. 9 aggregate or an overlay with 404LVT or Thinlay Asphalt.

FPO is optimistic that 402LVT fatigue-resistant intermediate mix will provide local agencies a mix-alternative specifically designed to be resistant to fatigue (cracking) and environmental aging (oxidation) that excels in low-volume roadway applications. Look for additional information on 402LVT in future issues of *Ohio Asphalt*. Contact FPO with any questions or for a copy of a 402LVT specification.


The second presentation, by Dr. Sargand, spoke about “Structural Capacity of Flexible Pavement Constructed on a Stabilized Subgrade.” Dr. Sargand presented research that demonstrated the advantages and value provided by a stabilized subgrade (ODOT Item 206 – Chemically Stabilized Subgrade) when designing and building a full-depth asphalt or a full-depth perpetual asphalt pavement. Data from the SHRP Delaware County, US-23 Test Road, Controlled Vehicle Load (CVL) Testing, Viscoelastic Finite Element Modeling and Material Properties from DCP (Dynamic Cone Penetrometer) testing was presented to show the impact of subgrade stabilization on asphalt pavements. Dr. Sargand demonstrated how subgrade stabilization creates stress confinement, which reduces tensile

strain at the bottom of an asphalt pavement and reduces compressive strain at the top of the natural subgrade, and how this reduction of strain in your pavement structure permits thinner asphalt pavement or perpetual asphalt pavement design without any loss of performance or durability.

This presentation showed why today’s pavements with chemical subgrade stabilization are designed and constructed at a reduced thickness when compared to pavements 20 or 30 years ago, while still providing the expected performance, durability and economy. Once again, confirmation that **Asphalt is your best choice for your roadways!**

Mark October 25-26 on your calendars for OTEC 2022 and another opportunity to refresh or update your knowledge in Asphalt.





ODOT ASPHALT SPECIFICATIONS TO BE REORGANIZED

Big changes are coming to the structure of ODOT's asphalt specifications. ODOT is revising the way asphalt specifications are presented with the intent to make them more straightforward. These changes will be incorporated into a release of SS 800, dated Jan. 21, 2022, and will be applicable to projects beginning with the March 3, 2022 letting. This is primarily a reorganization of how the existing specifications are presented. Technical changes are expected to be minor and not change the intent of the existing specifications.

ODOT's asphalt concrete specifications have evolved over many years with items added and deleted; changes to processes, equipment,

testing and mix design requirements; and many other revisions to the point they had become difficult to navigate and understand. A group comprised of representatives of the Office of Pavement Engineering, the Office of Construction Administration, the Office of Materials Management and District 2 spent the last year and a half rewriting and reorganizing all the asphalt concrete specifications. The goal was to untangle the web of cross-references and exceptions, to make the specifications easier to understand and to make future updates easier. The accompanying graphics (page 11) show how the existing and proposed specifications simplify the interrelationships of the various specifications.

AC Spec Re-Organization Goals:

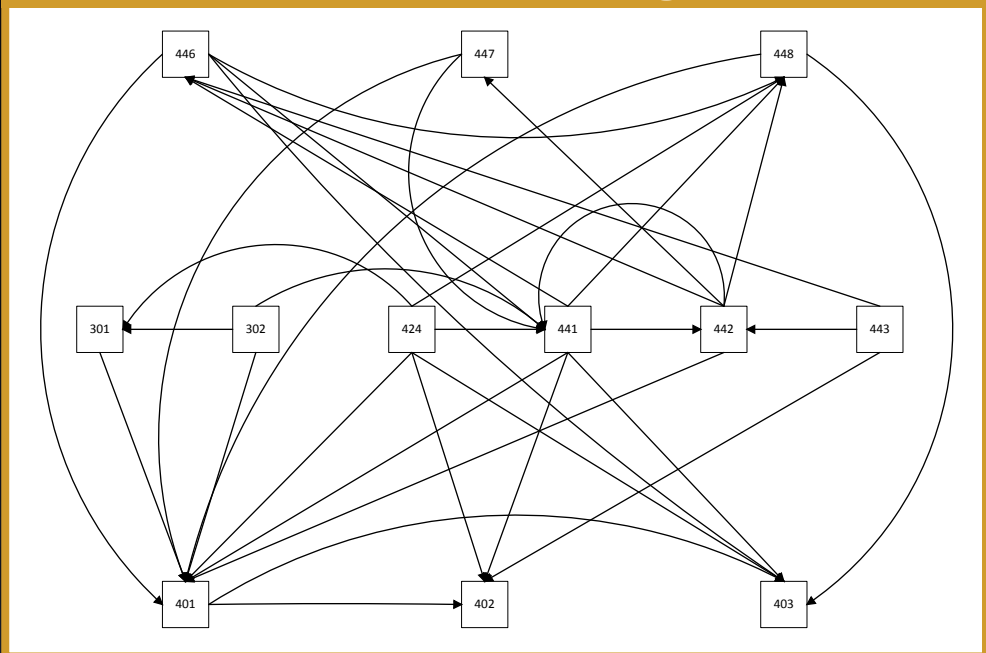
- Organize the various pieces into individual silos
 - Laydown/Field Operations
 - Plant Operations
 - QC Requirements
 - Common mix design requirements
 - Specified acceptance methods for all mixes
- Keep pay item numbers the same
- Add or remove other item numbers as needed
- Have specifications build on each other, reduce exceptions and cross references
- Attempt to refrain from technical changes until reorganization is agreed

Current/New Item Changes Summarized

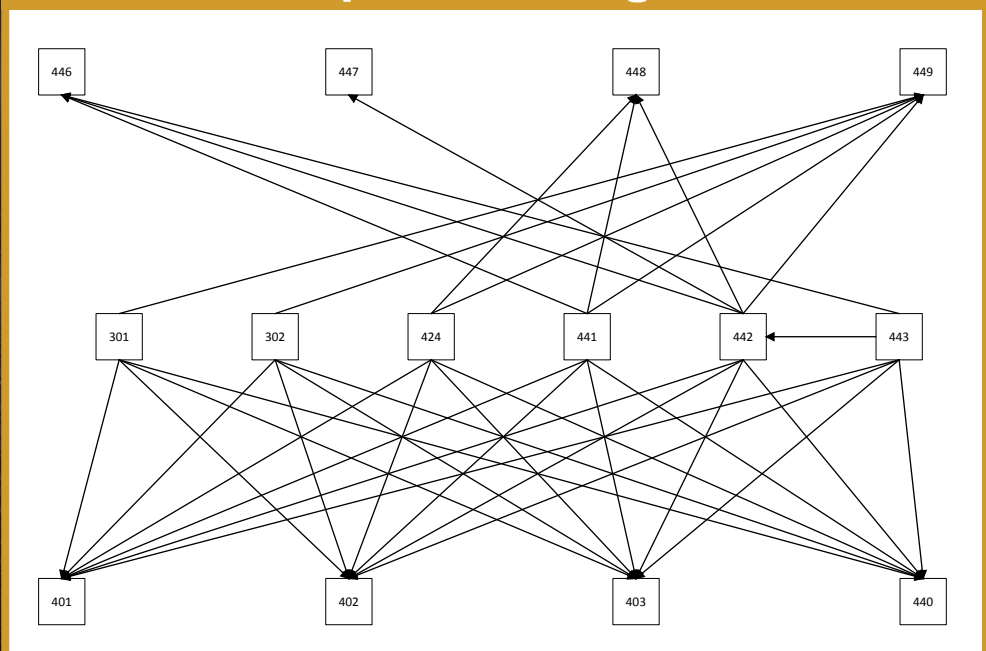
- **301 Asphalt Concrete Base:** Stays mostly the same except 301.03 Mixing moves to 402; 301.05 Spreading and Surface Tolerances moves to 401; and a new Acceptance section is added.
- **302 Asphalt Concrete Base:** Remains mostly the same but with reorganization for consistency. 302.03 mixing is moved to 402; and 302.05 Spreading and Surface Tolerances are moved to 401. A minimum binder content requirement of 3.8% was added to item 302 mixes. A new Acceptance section is added.
- **401 Asphalt Concrete Field Operations:** All the general construction requirements from the truck leaving the plant through finish rolling and opening to traffic. Various mix design (RAP and RAS) and plant requirements move to 440 and 402, respectively. The order the information is presented was revised to be more consistent with other specifications, easier to find and understand and more in the order that operations occur in the field.

- **402 Asphalt Concrete Mixing Plants:** All the plant and production requirements including calibration, RAP and RAS processing and stockpiling, warm-mix systems, mixing and production and loading trucks. Language brought in from 401 and 403 primarily.
- **403 Asphalt Concrete Quality Assurance:** All the contractor QC requirements including QCP requirements, contractor testing,

Current AC Specifications Organization



New AC Specifications Organization



(ODOT)

monitoring, splits, comparisons, shutdowns, small quantity, restricted acceptance and ODOT's QA requirements. Most of 441 moves here.

- **440 Asphalt Concrete Mix Design – General:** New non-pay item containing mix design information common to nearly all items such as material requirements, JMF submittals, RAP and RAS limits, and antistrip additives. Mix design language from 401 moves here, also parts of 441. This includes the aggregate and binder material requirements, the requirements for a JMF submittal, and the allowable limits for RAP and RAS. The mix specific requirements remain in 301, 302, 424, 441, 442, and 443.
- **441 Marshall Asphalt Concrete:** Nearly all of 441 was stripped out and moved elsewhere, primarily to items 403 and 440. Item 441 is now specifically Marshall mix requirements.

- **442 Superpave Asphalt Concrete:** Same as current, except 442.05 Quality Control moves to 403 and 442.06 Compaction moves to 401. A new 12.5mm intermediate course used the last few years by plan note and SS 861 was incorporated.
- **443 Stone Matrix Asphalt Concrete:** Stays mostly the same, as current with re-organization for consistency and clarity.
- **424 Fine Graded Polymer Asphalt Concrete:** Stays mostly the same, except 424.05, 424.06, and 424.07 all are deleted or moved elsewhere.
- **446 Asphalt Concrete Density Acceptance:** Stays mostly the same with some re-organization. Items 446.02 Monitoring and 446.03 Reports move to 403. All reference to notched wedge joint is deleted and revisions will be made to PN 415.

- **447 Asphalt Concrete Mat and Joint Core Density Acceptance:** Remains mostly the same except Monitoring and Reports move to 403 and re-organized for clarity and consistency.
- **448 Asphalt Concrete Gauge Density Acceptance:** Revised to always require S 1055 density and brought in acceptance tables from 403.
- **449 Asphalt Concrete Non-Density Acceptance:** Is a new, non-density acceptance method that brings together the basic mix acceptance from 403.05 and the 448 non-density acceptance requirements. It will be included in pay item descriptions in parentheses when density acceptance is not used. 449 acceptance requires using roller coverage only. It includes roller capacity tables and compaction requirements from 401 as well as repeats the 448 acceptance tables from 403 as 449 acceptance tables.

FPO expects this reorganization to make ODOT asphalt specifications easier to navigate and understand, although familiarization with the new layout will be required. To this end, ODOT will revise the **Pavement Design Manual** that explains how all the specification items are to be applied as of January 2022.

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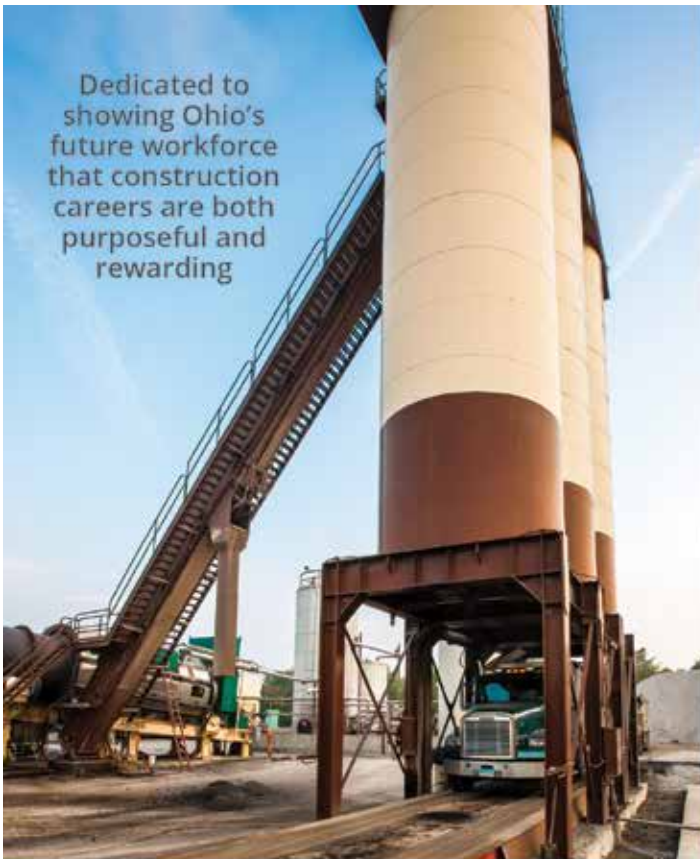
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SMOOTHSEAL OVERLAY FOR MAINTENANCE: A DIFFERENT PERSPECTIVE

JAMES A MARSZAL, P.E., PAVEMENTS, MATERIALS AND
FIELD APPLICATIONS ENGINEER—FLEXIBLE PAVEMENTS OF OHIO

(Editor's note: This article originally appeared in the summer 2021 issue of Texas Asphalt magazine. It is being reprinted with permission of the Texas Asphalt Pavement Association.)



**DEVELOPMENT CONTINUED
THROUGHOUT THE 1990s AS
INDUSTRY PARTNERED WITH
ODOT ON SEVERAL TEST
PROJECTS TO FURTHER REFINE
THE SMOOTHSEAL PRODUCT
AND SPECIFICATION.**

A As agencies struggle with the challenges of maintaining network level pavement assets with limited resources, the concept of pavement preservation (aka preventive maintenance or PM) becomes increasingly important. The FHWA has defined pavement preservation as “Work that is planned and performed to improve or sustain the condition of the transportation facility in a state of good repair. Keeping good roads good.” Or ... we’ve all heard the popular definition of “Applying the right treatment to the right road at the right time.”

ALL ARTICLE IMAGES COURTESY OF FLEXIBLE PAVEMENTS OF OHIO

Type B Smoothseal placed on a rural Ohio highway



Preservation treatments have become popular over the last two decades as chip seal, slurry seal, micro-surfacing and other treatments compete for projects. Fortunately, asphalt concrete can also compete in the pavement preservation market and offer a variety of benefits including performance, durability and value when placed in thin lift applications.

In Ohio, thin lift asphalt concrete mixes have been evolving over the last 55 years. Pavement engineers at the Ohio Department of Transportation (ODOT) and other agencies started using thin lift asphalt in the mid-1960s well before the formal concept of pavement preservation became popular.

Ohio Smoothseal, or ODOT specification Item 424 – Fine Graded Polymer Asphalt Concrete, offers two different mix types designed for thin lift preservation applications. Type A polymer-modified sand asphalt was Ohio's first thin lift asphalt specification developed in the mid-1960s. This mix was originally produced as a Styrene Butadiene Rubber (SBR) modified sand asphalt. It was a recipe mix that consisted of 8.5% binder with a silica dioxide natural sand requirement for surface friction. This mix was typically placed as thin as 5/8 inch on roads with light or medium traffic loading. Today's specification, although substantially unchanged from the 1960s, has been updated to permit use of a PG 76-22 (SBS) polymer-modified binder. This mix remains popular in select Ohio regions and

communities as a high-quality preservation treatment or surface course.

The Item 424 Type B mix developed in the 1990s is more commonly identified as Ohio Smoothseal. This mix has become popular throughout Ohio and beyond as a high-quality material that has proven to provide consistent long-term durability and performance when used as a preservation treatment or as a high-quality surface course on a resurfacing or rehabilitation project.

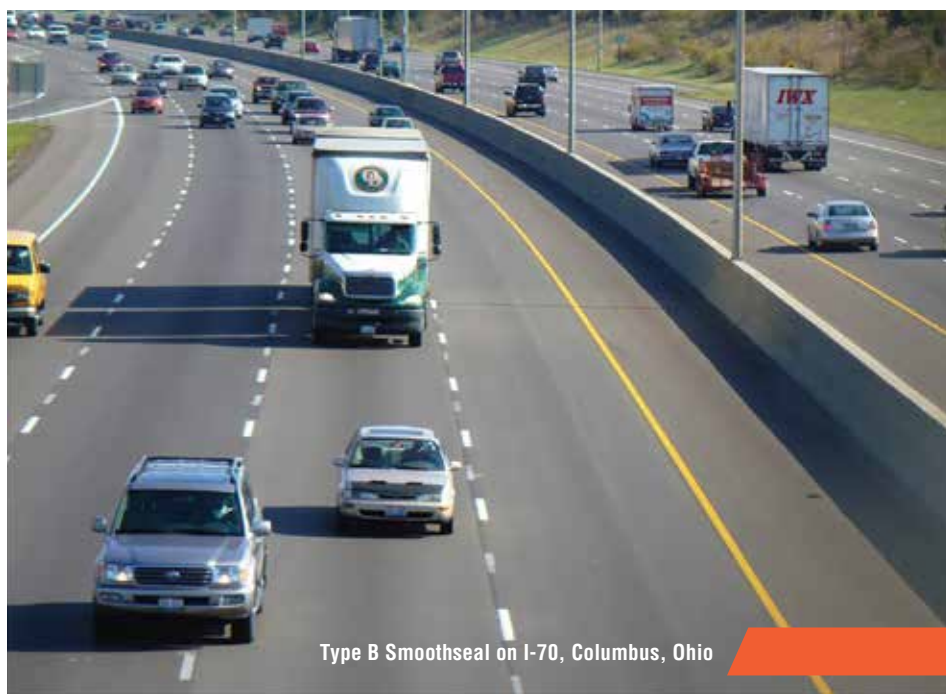
Type B Smoothseal was developed as an industry initiative beginning in 1991 as ODOT contemplated a dedicated preventive maintenance program to maintain pavements and extend service life. Mix development began with the following goals:

- 1) Preserve the pavement
- 2) Provide some structure
- 3) Improve safety and ride by “trueing up” the pavement (longitudinally & transversely)
- 4) Be economical
 - a. Placed in thin lifts to reduce cost per SY
 - b. Non-proprietary – using local producers and materials

Development continued throughout the 1990s as industry partnered with ODOT on several test projects to further refine the Smoothseal product and specification. Fortunately, these efforts positioned Smoothseal as a viable PM treatment as the FHWA preventive maintenance initiative in the early 2000s generated additional interest in preventive maintenance. Smoothseal was included in ODOT's Pavement Preventive Maintenance Guidelines published in 2001 and continues in 2021 as Ohio's premium thin lift asphalt preservation treatment offering consistent durability and performance on all types of roadways.

Type B Smoothseal is considered a 4.75mm NMA mix designed using the Marshall

TYPE B SMOOTHSEAL IS CONSIDERED A 4.75 MM NMA MIX DESIGNED USING THE MARSHALL METHOD.



Method. Although it has been placed on some low-volume roadways, this mix is typically designed for medium- or heavy-traffic applications. The Type B mix is composed of ½ inch maximum-sized coarse aggregate with sand particles. The mix requires 100% two-faced crushed coarse aggregate for heavy mixes to provide stability and includes a silica dioxide natural sand requirement for the fine aggregate to ensure good skid resistance. Narrow grading bands are specified to reduce variability and ensure consistently good statewide performance. Minimum polymer binder content is 6.4% using PG 76-22 (SBS) or PG 64-22 with 5% SBR. The polymer-modified binder is required to enhance mix durability, stability and long-life performance. This mix has design air voids of 4% and a minimum VMA requirement of 15.0. The specification allows 10% RAP but, RAS (recycled asphalt shingles) is not permitted.

Ohio's Smoothseal was developed to be placed as a preservation treatment on structurally sound pavements that are showing signs of aging, oxidation, or minor surface disintegration/distress.

Acceptable types of distress when specifying Smoothseal include:

- Dry-looking oxidized or “bony” looking pavements
 - Pavements that have begun to ravel
 - Pavements with cracking too fine or too extensive for crack sealing
 - Pavements where curb reveal does not permit heavy-lift thicknesses
 - Minor rutting typically less than or equal to ¼ inch
 - Pavements with low or limited structural distress or fatigue failure
- Note: If localized distressed areas exist, appropriate pavement repairs must be undertaken to correct, prior to using Smoothseal.

Suitable projects for Smoothseal have no unrepaired structural/fatigue damage and adequate structural capacity to carry the projected traffic over the course of the expected life of the Smoothseal preservation treatment.

Ohio Type B Smoothseal can be placed as thin as ¾ inch or as thick as 1½ inches. A 1-inch lift thickness is most common. Existing pavement surfaces having significant irregularity will require a leveling course or cold milling prior to placement of Smoothseal. If milling is selected, a fine-planing process is recommended when placing any single-course thin lift asphalt inlay.

Since 2016, ODOT has placed over 1.37M tons of Smoothseal on more than 7,010 lane miles of pavement on all route types including urban and suburban arterials, two-lane rural highways and interstate highways with average daily traffic



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Type B Smoothseal on a rural Ohio state highway

(ADT) exceeding 100,000 vehicles. Local agencies have also specified Smoothseal for minor arterials, local roads and residential streets embracing the mixes for their smooth ride, pleasant aesthetics and outstanding performance. Smoothseal mixes are considered premium products that are favored by pavement engineers due to their outstanding durability and long-term performance. When placed upon a structurally sound pavement, service life of 9-12 years is common, with some projects performing up to 15 years or more. Smoothseal service life can be optimized if placed on full-depth or deep-strength asphalt pavements.

Ohio has embraced the concept of pavement preservation to extend pavement life. Smoothseal has become a valuable treatment option for Ohio engineers to maintain their pavement infrastructure, keep their good roads in good condition and delay costly major rehabilitation and reconstruction projects. Smoothseal has proven to be a quality product that can be competitive in the pavement preservation market by providing pavement engineers and Ohio taxpayers a thin-lift treatment that offers durability, performance and value along with an exceedingly smooth ride and positive aesthetics.

For additional details, the specification and Technical Bulletin for Ohio's Smoothseal can be found at www.flexiblepavements.org.





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Mark Your Calendars

Level 2 Asphalt Quality Control Technician Training

January 11-13, 2022

Ohio University Lancaster Campus
1570 Granville Pike
Lancaster, OH 43130

Flexible Pavements of Ohio (FPO) offers this training course to prepare individuals having basic lab familiarity to take the ODOT Level 2 Asphalt Technician Exam. After the training, students will have the opportunity to take the Ohio Department of Transportation (ODOT) written examination for Level 2 Asphalt Concrete Technician approval.



Ohio Asphalt Expo

March 8-9, 2022

Columbus/Polaris Hilton Hotel
8700 Lyra Dr.
Columbus, OH 43240

The Asphalt Expo is Ohio's premier asphalt pavement event with multiple concurrent educational sessions and an indoor and outdoor trade show and exhibition. If you construct, inspect, manage or maintain local or private transportation infrastructure, the Ohio Asphalt Expo has the information you need to ensure a successful, long-lasting asphalt pavement.

Visit FPO's website at www.flexiblepavements.org for more information regarding these events.



Ohio Asphalt Paving Conference

February 2, 2022

The Fawcett Center
The Ohio State University
2400 Olentangy River Rd.
Columbus, OH 43210

The Ohio Asphalt Paving Conference is a collaborative effort of state and local government, academia and the asphalt industry to present practical, usable technologies and strategies for the design and construction of asphalt pavements.

Comprehensive Asphalt Mix Design School

February 7-11, 2022

Ohio University Lancaster Campus
1570 Granville Pike
Lancaster, OH 43130

This course meets the requirements for ODOT HT.306, Asphalt Level 3 training. It is designed to provide participants a working knowledge of the principles associated with asphalt concrete volumetric mix design. On the final day of the course, students will have the opportunity to take the ODOT examination for Level 3 Asphalt Concrete Technician approval.

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FPO's Crane Named APAWV Exec. Director

The Asphalt Pavement Association of West Virginia (APAWV) recently announced John Crane, P.E., has been named executive director of the organization.

Crane, who for the past two years with Flexible Pavements of Ohio served as Pavements, Materials & Field Applications Engineer, also has eight years of experience with the West Virginia Division of Highways' Materials Control, Soils and Testing Division.

He fills the role of Pat Parsons, who is retiring following 43 years with the Contractors Association of West Virginia (CAWV) — including the last 35 years in the role of executive director of APAWV.

The FPO Board of Directors, members and staff wish to congratulate John and look forward to a continued partnership between the West Virginia and Ohio asphalt industries.



2022-2023 FPO Scholarship Entries Now Being Accepted



Flexible Pavements of Ohio is pleased to announce the online application period for the 2022-2023 Ohio Asphalt Scholarship Program is open now through Jan. 31, 2022.



During this period, students may find information about the program and apply using the online application on the FPO website at: <http://www.flexiblepavements.org/scholarships/asphalt-scholarships-program>.

The college scholarship program is available to undergraduate civil engineering and construction management/engineering students in their sophomore or junior years who will be juniors or seniors during the 2022-2023 academic year. Scholarship recipients must agree to take a course in asphalt pavement technology prior to graduating. Graduate civil engineering students studying asphalt pavement technology are also eligible for an Ohio Asphalt Scholarship.


The Ohio Asphalt Scholarship Program is in its 27th year of providing scholarship opportunities.



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