

OHIO ASPHALT

THE JOURNAL OF OHIO'S ASPHALT PROFESSIONALS

ISSUE 4 VOLUME 10

WINTER 2013-14



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THE PRESIDENT'S PAGE



CLIFFORD URSICH, P.E.

PRESIDENT & EXECUTIVE DIRECTOR

“To you who the asphalt industry serves through the construction of asphalt pavements ... To you who supply and support the asphalt industry through providing raw materials, man power and brain power ... To you men and women who every day are on the grade working to provide the highest quality in asphalt paving ... To you QA personnel ... To you agency people ... And to you the advocate, thank you ... To all of you who make transportation work, on behalf of Ohio’s asphalt paving industry, thank you!

To Those Who Make Transportation Work, THANK YOU!

It’s said that Thanksgiving Day travel is the busiest of the year. The AAA estimated 43.4 million people would be traveling this past Thanksgiving Day. Like many of you, my family was in that lot. The Ursich family cruised up I-71 homebound to enjoy a great meal – no pardon given to that bird – and have some time doing fun stuff as we caught up on what was happening in one another’s lives.

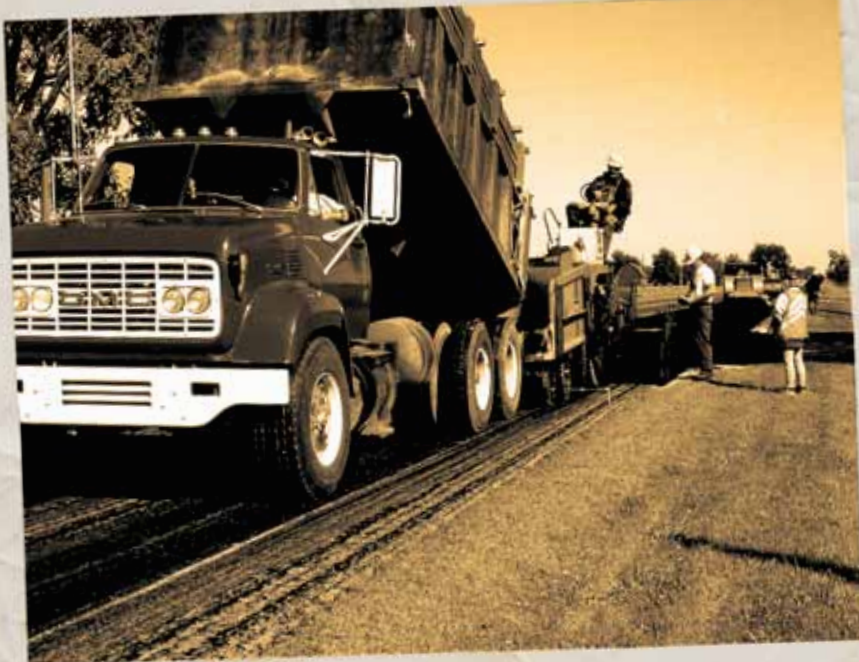
The roads heading north toward Cleveland were clear of snow, heavily traveled and smooth asphalt. Though heavily traveled, I couldn’t help to notice how well traffic was moving. Everyone was on their merry way. As I observed my fellow travelers in their various makes, models and colors of vehicles as we together headed north, I was struck with the enormous impact roads make on our lives. The movement of that mass of humanity was all being made possible by roads. All the relationships being connected that day would in some way be made possible by a road. As I pondered that thought another one came to me ... I bet the ODOT director would be proud to see this; the unimpeded flow of people moving swiftly and comfortably to their various destinations. A job was being well done by the ODOT team. It wasn’t long, though, before I started considering the various moving parts that it takes to make transportation happen – roadway transportation that is.

My thoughts quickly moved to the contracting industry; the businesses, 4,700 men and women of the asphalt paving industry that I have the privilege of serving as their association director. Their long hard work on the grade, building an efficient road network

was on display: smooth asphalt pavements on township, city, county and state roads ensuring access to and from all quarters of Ohio. But none of that could be done were it not for tools – more than \$600 million worth of tools for Ohio’s asphalt industry alone to construct that pavement network. Toolmakers ensure Ohio contractors are provided with the most effective and efficient asphalt manufacturing and road building iron to ensure their job gets done right. Then there are the ingredients. Entire industries support road building through mining of various sorts. More than 14-million tons of raw materials were used in 2012 for building asphalt roads in Ohio. Limestone, sand and gravel, asphalt binder, modifiers of various kinds are asphalt’s not-so-secret ingredients. Lest we forget, quality assurance staffs from consultants, to contractors, to manufacturers ensure what is produced and what is built is done to the highest standards of acceptability; yes, “good enough for government work.” They too had a stake in the safe passage of motorists being seen that Thanksgiving Day.

In the hand of every contractor constructing a road is a set of plans. Roads have purpose, and putting that purpose into action requires people





to plan them and engineers to design them. It used to take up to eight years to jump through all the hoops to get a project from concept to contract. Today, with innovating contracting, the likes of public private partnerships (P3) and design build, time to deliver a completed construction project has been shaved. That takes a huge staff of transportation professionals knowledgeable in everything from road foundations to environmental regulations.



Getting people from point A to B in a safe and efficient manner while conserving the natural environment, raw materials and time, takes hefty problem-

solving skills. Agency engineers, planners and consultants are the brain trust that solves those riddles.

But there would be no need for planners and designers, material or equipment suppliers, nor road builders if there were no advocates. A road begins with a vision; a vision of providing a system that facilitates movement of people and goods. It's a vision of a system that builds the prosperity of a community, county, state

or nation. We are blessed in this state and nation to have had advocates in our past who embraced a vision of mobility, a vision they struggled and succeeded in bringing to fruition. These were advocates that dreamed the dream, articulated the vision, and advocated for the funding. And who are these advocates? John Q. Public, who was just wanting a safer path to travel; a city councilman, who saw the impact that improved mobility would have on his community; the farmer and the manufacturer, who wanted to get their goods to market; the newspaper editor, who advocated for progress;

the politician, who caught the vision and advanced the proposal; and the voters, who said "yes" to safer roads, "yes" to progress, "yes" to the future of those who will follow us.

We have come through a time of thanksgiving, reflecting on the many blessings bestowed on us individually and collectively. My family's safe, smooth and efficient ride to Cleveland this past Thanksgiving makes me think there is much more for which I need to be thankful. To you, who the asphalt industry serves through the construction of asphalt pavements, thank you for your business. To you, who supply and support the asphalt industry through providing raw materials, manpower and brain power, thank you for meeting this industry's needs. To you, men and women who every day are on the grade working to provide the highest quality in asphalt paving, thank you for your steadfastness in doing quality work. To you QA personnel, thank you for making the hard choices — choices that advance quality. To you, agency people who decide what paving materials to use, thanks for choosing asphalt. And to you, the advocate, thank you - for without vision and advocacy there would be little to be thankful for. To all of you who make transportation work, on behalf of Ohio's asphalt paving industry, thank you!



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PAVEMENT PLANING ADVANCING TO MEET THE NEEDS OF THINLAYS

Unquestionably, pavement planing, often referred to as cold milling, has played a substantial role in improving the efficiency of asphalt pavement maintenance.

Multiple pavement maintenance capabilities are afforded by planing. Most familiar is the controlled demolition it provides, milling off pavement to a specific depth in preparation for a new asphalt overlay. Less utilized in Ohio is the capability to reestablish roadway profile and cross slope. Smooth profile and uniform cross slope are necessary in ensuring a smooth ride that benefits vehicle control and fuel economy. Proposed by Flexible Pavements of Ohio (FPO) is a multi-tiered specification that would incorporate micro milling, fine milling and standard milling. FPO is also advocating for greater use of profiling to improve driveability.

In the last two years, FPO, in conjunction with BOCA Construction of Norwalk, has been working with the Ohio Department of

Transportation (ODOT) Construction & Materials Specification Committee to evaluate inclusion of micro and fine milling in the

department's pavement planing specification. This is in response to the increased use of thinlays such as "Smoothseal" (424, Type B) on Ohio roads. Planing is often used in preparation for a Smoothseal, and having a finer-milled surface texture is believed advantageous to obtaining a uniform overlay thickness and good pavement density – properties needed for long life. Also, interest exists in using planing for correcting slippery pavement and removing bumps in asphalt overlays.

The pavement planing industry has made significant advancements since its advent in the late 1970s. Pavement planing made possible the efficient removal of pavement and recycling of the cuttings

(a.k.a. millings) into new asphalt mix. Planing advancements include automated grade-control capability and cutting drums

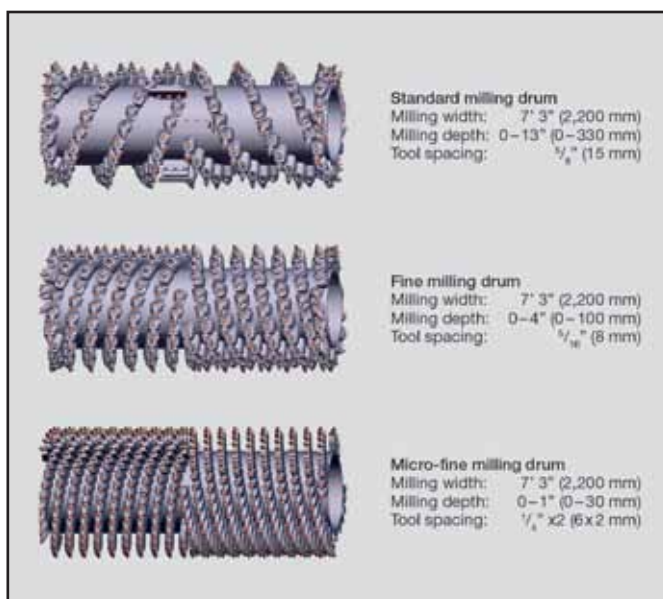
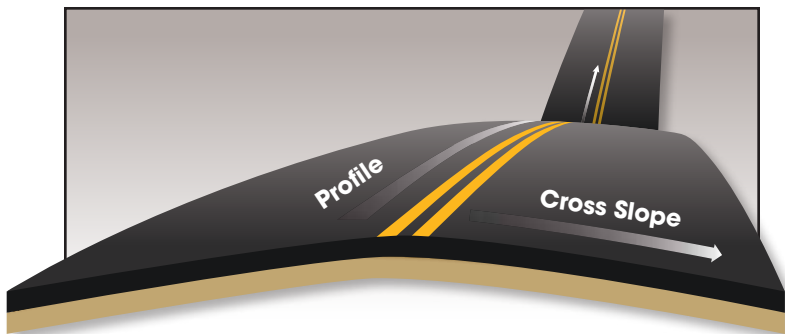


Figure 1: Tool Density for Standard, Fine and Micro-milling



A correct profile and cross slope that maintains consistency through the entire pavement profile will ensure the best driveability.

that vary in their aggressiveness. Improved cutting teeth (tool metallurgy, rotary cutting drum tool density and better overall control features of the equipment makes planing feasible for greater use as part of a systematic approach to pavement preservation. Figure 1 illustrates the tool density for the different types of milling drums.

Micro milling uses a cutting drum having the highest tool density. This facilitates precise scarification of the wearing surface and leaves a texture completely uniform. As one agency employee quipped, it looks like 100 grit sandpaper. Micro milling has been used experimentally on ODOT pavements for improving skid resistance and correcting pavement roughness. The Ohio Turnpike allows micro milling for bump correction.

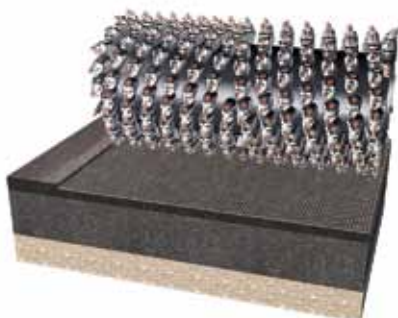


Figure 2: Fine milling texture



Figure 3: Standard milling texture

Of immediate interest to Ohio's asphalt paving industry is the use of fine milling and planing to profile (a.k.a. profile milling), which includes cross-slope correction. Pavement preservation using thinlays has shown to be a cost-effective strategy for maintaining pavements. When used in conjunction with fine milling and profile milling, the greatest opportunity for long life, economy and superior smoothness exists, as well as, safe motoring and fuel economy. Compared to standard milling, a fine-milled pavement surface has a less-aggressive texture – essentially corduroy-like. Figures 2 and 3 illustrates texture difference between the milling pattern.

Planing to profile improves control of thinlay placement depth, thereby ensuring uniform course thickness and quantity. Uniform course thickness in turn facilitates compaction, which is a necessary pavement property for ensuring long life. Cross-slope correction that maintains a consistent slope through the entire pavement profile will ensure the best driveability. A note of caution, when reestablishing profile and cross slope, care needs to be taken to ensure sufficient quantity of asphalt mix in the event cross slope of the existing pavement is greater than the slope being reestablished. Conversely, reestablishing cross slope for lanes having shallow slope may result in an undesirable amount of pavement removal. In either case a strategy should be employed that gradually corrects profile over time with each successive planing and overlay.

ODOT EXPERIMENTS WITH FINE MILLING AND PROFILE MILLING

In the spring of 2013, ODOT District 2 (northwest Ohio) let to contract ODOT's first asphalt preservation project using fine milling. The contractor for the project was The Shelly Company. Fine milling was subcontracted to BOCA Construction (Figure 4)

and was used to prepare the roadway surface for placing a thinlay, Item 424, Fine-Graded Polymer Modified Asphalt (a.k.a. Smoothseal). The project location was U.S. Route 20A in Lucas County. The limits of fine milling were Airport Highway to Alban Road. Item 690, SPECIAL, FINE

MILLING OF ASPHALT PAVEMENT governed the planing process. Eighty-five-thousand square yards of fine milling were required.

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Figure 4: BOCA Construction performs fine milling.

Equipment requirements for fine milling called for a minimum 6-foot-wide cutting head with 5/16-inch maximum tooth spacing. Requirements on the cutting tools ensured the planed surface was free from irregularities that could impact safe vehicle operation. The final surface was to exhibit a corduroy-like texture with 5/16-inch center-to-center striations and peaks of ridges not more than 1/16-inch higher than grooves (Figure 5). Grade controls were required for the purpose of improving road profile.



Figure 5: Specifications required fine milling to exhibit corduroy-like texture.

The design cross-slope correction was 1.6 percent. The project intent was to ensure a milled depth of ½ inch at the center of the lane. To ensure this depth a range of 1.0 to 2.6 percent cross slope was permitted. At the time of construction, pavement conditions were such that a 2.6 percent cross slope was at times insufficient to carry the fine milling to the edge of the pavement (Figure 6).

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Figure 6: Existing pavement cross slope exceeds specified percent

Quality control of the pavement planing included a measure of the milled surface macrotexture. A measurement was taken in the first 3,000 square yards to establish the planing rate of travel. ASTM E-965 provided the testing protocol. If macrotexture met specification requirements, planing was authorized to continue with QC checks every 7,500 square yards. The test method describes a sand-patch test and minimum 9-inch diameter was required (Figure 7). International Roughness Index (IRI) measurements of the pavement prior to planing and following planing were taken to establish smoothness baselines for comparison with standard-milled pavements.



Figure 7: Sand patch test

IRI results indicate that fine milling has the potential to improve ride quality. The condition of the eastbound and westbound lanes of US-20A varied in cross slope. More favorable results were achieved in the eastbound direction. In this lane, fine milling had reduced the roughness

from an IRI of 98 to 75. The IRI following the placement of the thinlay treatment on the eastbound lane was 53. The westbound lane had an initial IRI measurement of 105, an IRI of 91 after being fine milled and a finished pavement value of 53. Federal Highway Administration classifies a “good” IRI as ≤ 95 ; “acceptable” as ≤ 170 . The thinlay treatment coupled with fine milling met the standard of “good” smoothness by a healthy margin. Investigation of fine milling impact on attaining pavement density will follow this effort.

A YouTube video of the US-20A fine milling can be viewed on the Flexible Pavements of Ohio website (www.flexiblepavements.org.)

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SPRINGBORO SAYS: *OUT WITH CONCRETE, IN WITH ASPHALT*



Listed by *Money Magazine* among the top 100 best places to live in the country in 2011, Springboro, Ohio, in Warren County has tripled in size since 1990, because developers and home buyers have found it irresistible.

"It is a great place to live because location is everything in this fast-paced world, and our residents enjoy the I-75 access and ability to reach Cincinnati and Dayton quickly," says City Manager Christine A. Thompson. She should know, as she has worked for the city for nearly a quarter century and has watched it grow and prosper. In July 1987 Springboro became a city, having a population of 5,487 people. Today it is nearing 20,000. Like Mason, a neighbor to the south, Springboro was one of the fastest-growing communities in the state for nearly 15 years running.



As real estate agents like to say, it was primarily location that vaulted Springboro into its present ranking. Just off Interstate 75, the city is an easy commute to both Cincinnati and Dayton, with Wright Patterson Air Force Base a mere stone's throw away. With access to I-70 and I-71 as well, Springboro could hardly avoid development. It has become part of the growing Dayton-Cincinnati megalopolis, enjoying urban amenities nearby and an excellent quality of life at home.

The quality of Springboro's development surely has been affected by the city being home to a couple of top-notch golf courses, the private Sycamore Creek Country Club and the municipal Heatherwoode Golf Club, with their beautifully manicured acres. They set a high standard. It is not

surprising that the city has attracted "quality residential developments," according to Thompson. She adds, "People could find the neighborhood they wanted." Thompson also ascribes Springboro's success to "a city council willing to take risks," a 1 ½ percent income tax, great schools and a municipal government that "takes advantage of opportunities when we see them."

The result is a city population with a median income of more than \$100,000, median home values above \$190,000 and 10-year job growth (2000 to 2010) of 30.37 percent, according to *Money Magazine*. The city operates and maintains six recreational parks, including 137-acre Clear

Creek Park, with eight ball diamonds, 10 soccer fields and two football/soccer fields. At the heart of this successful community is a seven-block historic district that preserves the feel of the Quaker settlement founded in 1815, a well-known stop for escaping slaves on the Underground Railroad.

Quality of life naturally is a high priority in a community with both affluence and deep roots. Springboro residents care about the details of city life as they do about their athletic fields and jogging paths. Take the condition of their streets. As the area's subdivisions were built, developers laid out and paved the streets. Some chose concrete pavement, and the city itself laid concrete until about 20 years ago. When newly laid, the concrete looked good, but longtime City Engineer Raj Sharma could see problems coming.

The problems were in regards to maintenance needing to be done throughout the city, which the City of Springboro assumed responsibility for street maintenance in the subdivisions after one year. So reducing maintenance costs to a manageable level was a big concern for the city,

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and it was apparent that the streets originally laid in concrete were not manageable. "The blacktop we could go and maintain with city forces," Sharma said, but the concrete pavements required much more expensive rebuilding by contractors. "It's cheaper to maintain the asphalt than the concrete," he added. "That was the whole thing."

As city administrations everywhere know, when citizens call City Hall, they usually register a complaint. Development Director Elmer Dudas notes that a few years ago, "We did get citizen complaints. The deteriorating concrete streets had that train track effect — joint, joint, joint, joint."

"They were crumbling," Thompson said. "The residents were correct in not wanting to deal with that anymore."

The city might have followed a conservative course by slowly, over time, replacing the original concrete streets and incorporating replacement costs into the annual maintenance budget. For a time, that's what happened.

But replacing one or two older concrete pavements a year was not good enough for Springboro. "It was being piecemealed and piecemealed," Thompson said. After all, she says, how do you justify your priorities? "How do you tell one street they aren't as bad as the next?"

Her administration drafted a capital improvement program aimed at upgrading all the concrete pavements at once. With the alternatives clearly spelled out, City Council offered no resistance. In 2009, all the remaining concrete streets were replaced with full-depth asphalt. "The community really appreciated it. It worked out great. We're really pleased," Thompson said.

"This is a white collar community," Sharma said. "People are very, very sensitive to disruptions." When traffic was diverted through a subdivision while repairs were going on to a connecting artery, subdivision neighbors did complain. But as for the extensive work completed in 2009, he said, "I think they were happy that we did it because there was no bumping anymore."

With asphalt now covering 100 percent of the streets, the city no longer faces expensive maintenance. Its regular maintenance schedule now consists of planing off two inches, laying Stress Absorbing Membrane Interlayer (SAMI) and 1 3/4-inch top layer about every 15 years, depending on need. For routine maintenance, crack sealing and spray patching can be done economically by city workers.

With the average city street now 15 to 20 years old, the annual maintenance budget of \$600,000 to \$700,000 keeps residents happy year-round. As the subdivisions built in the mid-1990s age, of course, that number will have to rise, but in the meantime, says Sharma, "Asphalt is the obvious choice. It's manageable."

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SPRINGBORO MAINTAINS ITS STANDARDS

In 1980, when Springboro was still a village, David Morgan, the village engineer, signed off on a set of modified pavement standards that would have long-lasting ramifications. They were based on region standards set by the Southwest Ohio Engineering Association.

According to these new standards, the first for Springboro, concrete pavement for a residential street required 6 inches of concrete on a compacted subgrade. For asphalt pavement, the standard required layering two, 2 ½-inch courses of asphalt base (301), a tack coat of 407, a 1 ½-inch leveling course (403) and a 1 ½-inch surface course (404) on a compacted subgrade (203). With current specifications that would be 5 inches of asphalt base (301), topped by a 1 ½-inch 448 Type 1 intermediate course and a 1 ½-inch 448 Type 1 surface course.

These standards were adopted for Springboro city streets and influenced (but didn't rule) the quality of the subdivision streets that were laid out and paved by developers. When the city made its momentous decision to replace all of the city's concrete pavements in 2009, the reconstructed streets followed the 1980 standards.

Only about 1,000 feet of concrete pavement remains, which was planed 2 inches and has 2 inches of asphalt surface course (404). According to Springboro City Development Director Elmer Dudas, "We had ground it not long before we reconstructed streets in 2009, so we didn't redo it. It's fine. No complaints. Otherwise, all streets with exposed concrete have been redone."

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NEXT EXIT

The title of this article harkens back to the headline of an article that appeared in FPO's September 2001 newsletter (archived at http://www.flexiblepavements.org/sites/www.flexiblepavements.org/files/ohio-asphalt-pdf/newsletter_16.pdf) that announced that ODOT was dropping the 404 specification from its upcoming 2002 Construction and Materials Specifications. Now, as then, we are facing a significant change in ODOT's asphalt concrete specifications as ODOT drops Type 1H and several other mix types from its standard specifications.

Early in 2014, ODOT will issue an updated supplemental specification, SS 800, which will pare down the table of mix types in Item 441 to just three: Type 1 Surface, Type 1 Intermediate and Type 2 Intermediate, all designed for medium traffic. Gone will be all of the light- and heavy-traffic mix type variants. ODOT will create a Supplemental Specification (yet to be numbered) to include mix design requirements for light-traffic mixes that are sometimes needed for ODNr or LPA projects.

In addition, ODOT intends to standardize the way it references pay items to conform to the system presently used for Item 442. Under the revised system, the pay item 441 will specify the mix type and a parenthetical stipulation will indicate whether acceptance will be by 448 or 446. For example, a standard Type 1 surface pay item will now look like this: Item 441, quantity, Asphalt Concrete Surface Course, Type 1, (448), PG64-22.

ODOT has been transitioning toward the use of Item 442 (Superpave) asphalt concrete mix types for heavy-traffic and high-stress applications for several years. In a memo dated Dec. 6, 2000, all districts were directed to use 442 mixes for heavy-traffic applications. In the Jan. 20, 2012 revision of the *ODOT Pavement Design Manual* (found at <http://>

www.dot.state.oh.us/Divisions/Engineering/Pavement/PDM%20Revisions%20and%20Updates/PDM_Update_2012-01-20.pdf) all references to Type 1 Heavy uses were deleted. The current action completes the transition to Item 442 mixes for heavy-traffic applications.

Type 1H was originally developed as a deformation and rutting-resistant treatment for heavy-traffic and high-stress applications. While Type 1H was effective in those applications, it also had some deficiencies in production and performance. Type 1H required No. 7 aggregate, which is uncommon and expensive. Most aggregate producers do not want to make 7s because it requires a screen change and they cannot make other coarse aggregates while producing it, which in turn drives up the cost of the product. In addition, Type 1H generally had a coarse texture that required a high level of compaction to ensure impermeability, was prone to segregation and made handwork difficult.



A coarse-graded Type 1H surface course

In the meantime, improvements were being made in ODOT's Item 442 mixes that improved performance. In general, Item 442, Asphalt Concrete, 12.5 mm, Type A or B has proven to be a finer-graded mix, which makes it less permeable when properly compacted, has a smoother finish and has less tendency for segregation while being even more resistant to deformation in heavy-traffic and high-stress applications.



A uniformly textured 442, 12.5mm surface course

HOW TO SPECIFY ITEM 442 ASPHALT CONCRETE:

Guidance on the use of Item 442 Asphalt Concrete Surface Course, 12.5mm, Type A & B (446 & 448) from the Jan. 20, 2012 revision of ODOT's Pavement Design manual is as follows:

"This item is the superpave surface course for heavy-traffic applications. The 12.5mm mix is designed for maximum rut resistance at 1.5 inches (38 mm) thick. The surface course is generally the most expensive layer and an increased thickness may not be economical. In special situations where an intermediate course is not possible, the 12.5mm mix may be specified up to a maximum of 2.5 inches (65 mm). A 12.5mm mix cannot be placed properly at a thickness less than 1.5 inches (38 mm); durability and constructability problems will result. Best practice is to use 1.5 inches (38 mm). If 446 acceptance is specified, a uniform thickness is required."

The designer must be aware of certain mix properties and requirements in properly specifying Item 442. Type A requires all crushed fine and coarse aggregate and produces the most stable aggregate structure for use in the heaviest-traffic and high-stress applications. Type A will require all limestone aggregates, which may increase cost in those parts of the state that have primarily sand and gravel aggregates. Type B allows a lesser amount of crushed aggregates and is very similar to the obsolete T1H in its aggregate structure. If an agency was achieving success with T1H for its applications, then Item 442, asphalt concrete, 12.5 mm, Type B should also be sufficient.

The default binder per 442.04 of the specifications for Item 442, asphalt concrete, 12.5 mm, Type A or B is PG 70-22M. This the lowest level of polymer-modified binder in ODOT specifications and is intended for heavy, constantly moving traffic applications. For high-stress applications where

heavy trucks are stopping, starting and turning, the designer will want to upgrade the binder specification to a PG 76-22M per 702.01 as updated by SS 800 dated Jan. 18, 2013. This more highly polymer-modified binder provides more deformation resistance in the hottest weather conditions.

This change in ODOT specifications and usage should lead to improved performance of asphalt pavements under the most demanding applications. Experience has shown that pavements built to these specifications can withstand the most extreme loading conditions and give satisfactory performance. All asphalt concrete users are encouraged to adopt this specification change where appropriate.

Ohio Asphalt expresses its appreciation to ODOT's David Miller, P.E., Office of Pavement Engineering, and David Powers, P.E., Office of Materials Management, for their review and comment on this article and to Ed Morrison of Shelly and Sands Inc. and Jim Jebsen of Barrett Paving Materials for their contributions.



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Education Sessions

The Asphalt Expo features a variety of education sessions designed to improve your team's knowledge and help develop new skills.

More than a dozen educational presentations and workshops will be held over the event's two days, covering a wide range of topics impacting today's marketplace.

Networking Opportunities

The Expo's venue and format allows attendees ample opportunities to talk with other contractors and producers in the area to share ideas and experiences, as well as to meet with technical experts and other industry leaders.

With several formal events on the agenda – including the industry's annual Quality Paving Awards luncheon



and Chairman's Reception – and many other informal, impromptu gatherings, the Asphalt Expo is a great way to make contacts or stay connected with peers.

Exhibition and Trade Show

The Ohio Asphalt Expo also continues to bring together the area's largest collection of asphalt paving equipment, services providers and other vendors in one place, helping you keep ahead of the technology curve and providing you with direct access with key manufacturers.

This year's showcase will once again feature exhibits on all the latest products and exciting innovations that are creating the buzz right now in the industry, covering everything from asphalt laydown and production to pavement maintenance and traffic safety.

The equipment exhibition and trade show runs each day concurrently with the educational sessions and other events. It is free and open to all attendees.



Who Should attend the Ohio Asphalt Expo?

- Contractors
- Producers
- Specifiers
- Traffic Safety Professionals
- Plant Operators
- Public Officials



EDUCATION SESSIONS

This year's educational program promises to be one of the Ohio Asphalt Expo's best yet, offering several valuable sessions to help your business from technical issues to generating new business.

Note: Program and featured speakers are subject to change.

TUESDAY, MARCH 25, 2014
9:30 AM - 11:00 AM

Education Session 1

- Longitudinal Joint Construction
- Segregation: Causes & Cures
Featuring Jim Scherocman, P.E., Consulting Engineer

Education Session 2

- Maintaining Your Paving Equipment
Featuring Scott McLean and Doug McLean, The McLean Company

Education Session 3

- Rethinking Asphalt Recycling
Featuring Richard Schreck, Virginia Asphalt Association
- Total Recycle Asphalt
Featuring Abdul Dahhan, Illinois DOT

Education Session 4

- Home Safe Tonight – Practical Safety Solutions
Featuring Curtis Hall, Independence Construction Materials
- Safety Tools for Supervisors & Managers
Featuring Gary Fore, ARTBA Consultant, and Emmett Russell, International Union of Operating Engineers

Education Session 5

- Change Orders, Claims and Disputes
Featuring Don Gregory, Kegler, Brown, Hill & Ritter Co.
- Protecting Lien Rights & Collections
Featuring Andy Natale, Frantz Ward LLC

2:30 PM - 4:00 PM

Education Session 6

- Improving Plant Efficiency
Featuring Bill Garrett, Meeker Equipment
- Understanding Plant Operations Using Warm Mix Asphalt
Featuring a representative of Astec Inc.

Education Session 7

- Best Practices for Commercial & Residential Paving
Featuring Scott McLean, The McLean Company

Education Session 8

- Landing the Job by Pitching Asphalt
Featuring Mike Kvach, Asphalt Pavement Alliance
- NAPA Customer Survey Results

Education Session 9

- Methodology for Predicting Smoothness Results for the International Roughness Index (IRI)
Featuring Terry Humphrey, Caterpillar Inc.

Education Session 10

- Preventing Runover and Backover Fatalities during Road Construction
- Preventing Fatalities & Injuries during Night Work
Featuring Gary Fore, ARTBA Consultant, and Emmett Russell, International Union of Operating Engineers





WEDNESDAY, MARCH 26, 2014
9:30 AM - 11:00 AM

Education Session 11

- Environmental Update
Featuring Shara Kay Hayes and Warren Wright, Dine Comply Inc.

Education Session 12

- Best Practices for Tack Coat Applications
Featuring Jim Scherocman, P.E., Consulting Engineer
- Best Practices for the Construction of Porous Asphalt Pavements
Featuring Signe Reichelt, Behnke Materials Engineering

Education Session 13

- Polymer Modified Binders: Issues & Innovations
Featuring Ron Corun, NuStar Asphalt LLC

Education Session 14

- Mix Optimization for Quality & Consistency
Featuring Shane Buchanan, Old Castle Materials
- ODOT Update



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APA'S PAVEMENT ME QUESTIONS & ANSWERS

Editor's note: State DOTs are currently working on deploying the American Association of State Highway and Transportation Officials' (AASHTO) next generation of pavement design software, called AASHTOWare Pavement ME (Mechanistic-Empirical) Design. This production-ready software tool will support day-to-day pavement design functions of public and private pavement engineers.

WHEN DO YOU ANTICIPATE FULL IMPLEMENTATION OF THE PAVEMENT ME?

It takes significant preparation and training on the part of a state to implement AASHTOWare Pavement ME. It is completely different from their past methods and requires considerable effort for both concrete and asphalt.

WILL IT BE IMPLEMENTED FOR ASPHALT AND PCC AT THE SAME TIME?

The implementation of the Pavement ME must be handled so that concrete and asphalt pavement designs are implemented simultaneously. If concrete is implemented ahead of asphalt, then the thickness reduction for concrete pavements could present drastic differences between the two materials. If properly implemented, both pavement types should experience a reduction in thickness.

HAS THE PAVEMENT ME BEEN CALIBRATED OR WILL IT BE CALIBRATED TO THIS STATE'S MATERIALS AND PAVEMENT PERFORMANCE?

The current version of the Pavement ME contains a "national"

calibration, meaning that it may not be valid for your local conditions. It is suggested the Pavement ME parameters be locally calibrated (at level 3) and undergo periodic recalibration to remove bias and improve accuracy. In any case, calibration of the Pavement ME for a given state is generally on the order of \$500,000 to \$1 million; this investment in calibration will be repaid many times over by allowing the DOT to design cost-effective pavements for years to come. Initial calibration requires at least 6 to 12 months. Validation after implementation will be an ongoing process.

WHO PERFORMED OR WILL PERFORM THE CALIBRATION?

It is important that the research organization or consultant responsible be intimately familiar with the development of the Pavement ME and the requirements for the inputs.

WHAT MODELS WITHIN THE PAVEMENT ME WILL BE USED IN DESIGN?

Fatigue Cracking: This is a functional model, but it does need calibration for fatigue cracking within a given state. Make sure the pavements used for calibration truly have fatigue cracking,



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which generally occurs in thinner pavements (<6") and not top-down cracking, which occurs in thicker pavements (>6").

Rutting: The current rutting model in the Pavement ME predicts rutting to occur in the subgrade even under very thick pavements. This model must be calibrated and work being performed under NCHRP Project 9-30 should help. Again, calibration is very important.

Thermal Cracking: The current model works fairly well, but it must be compared against performance in a given state.

Top-Down Cracking: The current model is only a place holder and is not based on performance. Research is under way to define a model that will work, but to date an acceptable model has not been identified. Top-down and reflection cracking should not be used as a basis for rejecting a design.

IRI: The roughness model is based on data from the Long-Term Pavement Performance (LTPP) project. It must be calibrated to local conditions.

HAS A CATALOG OF THE STATE'S MATERIAL PROPERTIES BEEN DEVELOPED?

Testing of a state's materials is an important step toward implementation. It is important that the materials reflect what is typically used in the state.

WHAT TYPES OF ASPHALT MIXES WERE INCLUDED?

It is preferable for the full suite of asphalt mixes to undergo dynamic modulus testing.

HOW ARE OPEN-GRADED FRICTION COURSE MIXES BEING INCORPORATED?

There is currently no standard dynamic modulus test method for this type of material.

WHAT TYPES OF SOILS AND GRANULAR BASES WERE TESTED?

It is important that the inputs for granular bases reflect the in-situ material properties.

WHAT TYPES OF CONCRETE MIXES WERE INCLUDED?

Again, it is important that the material properties for concrete mixes not be assumed.

FOR CONCRETE MATERIALS, HOW WAS THE THERMAL COEFFICIENT OF EXPANSION/CONTRACTION DETERMINED?

This parameter has a large impact on predicted pavement performance.

DID THE TESTING PROTOCOLS FOLLOW PAVEMENT ME RECOMMENDATIONS IN ALL CASES?

Differences in test procedures could lead to different calibration coefficients.

WILL THE FATIGUE ENDURANCE LIMIT BE USED IN THE DESIGN OF ASPHALT PAVEMENTS?

The Pavement ME allows for the fatigue endurance limit used in Perpetual Pavement design. The Pavement ME contains recommended levels for modified and unmodified binders.

WHAT DATA WILL THE TRAFFIC INPUTS BE BASED UPON?

In the past, pavement designs have been done using ESAL levels. These do not relate to the load spectra used in the Pavement ME. It is preferable for the state to characterize load spectra using weigh-in-motion stations and vehicle classifications. Have there been studies to characterize traffic in your state? How do they compare against the Pavement ME nationally based traffic data? States that have made comparisons have found significant differences in some cases.



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ARE THE MEAN (AVERAGE) VALUES OF INPUTS BEING USED WITH THE PAVEMENT ME?

The use of conservative values for inputs should not be done for the Pavement ME. Conservatism is built into the reliability level for the pavement performance prediction and any conservatism used in selecting the inputs will result in unnecessarily thick pavements.

WHO IN THE DOT WAS/IS RESPONSIBLE FOR TESTING THE PAVEMENT ME?

As with the calibration and validation effort, it is important for the testing of the Pavement ME to be done by an engineer familiar with the procedure.

WHAT WERE THE RESULTS FOR BOTH CONCRETE AND ASPHALT PAVEMENTS COMPARED TO THE EXISTING DESIGN PROCEDURE?

Results of testing of the procedure should be shared with the industry and presented in comparison with what the previous design procedure produced for pavement thicknesses. In general, asphalt thicknesses,

particularly at high traffic levels should be thinner than with a purely empirical design procedure. A comparison of asphalt pavement thickness with PerRoad is highly recommended.

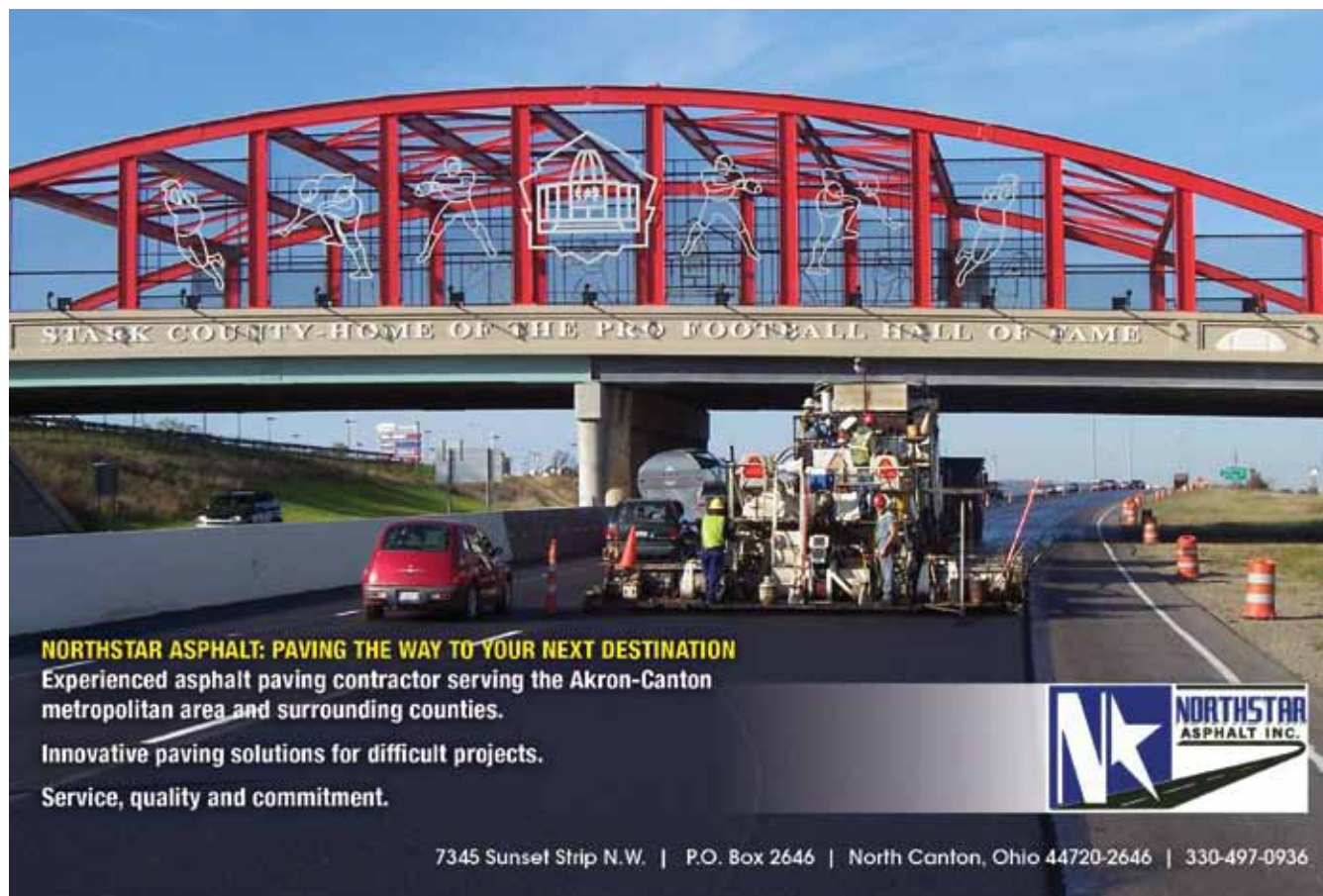
WILL PAVEMENT ME BE USED IN THE DETERMINATION OF REHABILITATION DESIGN?

The rehabilitation component of the Pavement ME is particularly weak. It is suggested that this part of the Pavement ME be carefully scrutinized though testing before implementation.

WILL IT BE USED IN LOW-VOLUME ROAD DESIGN?

The Pavement ME is not suited for low-volume road design.

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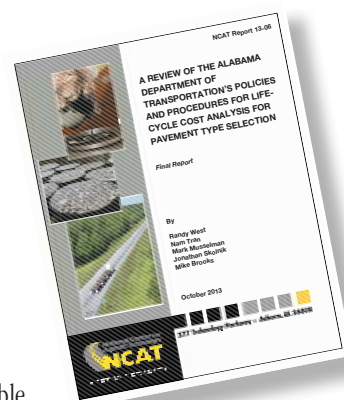


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NCAT Study Shows LCCA of Asphalt Pavements



A study of the Alabama Department of Transportation's lifecycle cost analysis (LCCA) procedures was recently completed and published by the National Center for Asphalt Technology (NCAT) as Report 13-06 and available at <http://www.ncat.us/files/reports/2013/rep13-06.pdf>.

The report was sponsored by the Alabama DOT to review its procedures with respect to performing lifecycle cost analyses in support of its pavement-type selection process. The report is interesting in that it refutes many of the ideas being advanced for manipulating LCCAs to benefit one particular pavement type.

Of particular interest are the findings of the report regarding pavement life and salvage value. The data analysis generally contravened the commonly held perceptions of concrete pavements being longer lived than asphalt pavements. The study found asphalt pavements had longer initial service periods than previously assumed. The report states, *"The best set of reliable data is the nationally funded Long-Term Pavement Performance (LTPP) program managed by FHWA. A 2005 study of new HMA pavements in the LTPP database found that based on the International Roughness Index (IRI), the expected service life was 20 years for a low-distress threshold as commonly used for Interstate highways, and 22 years for moderate-distress thresholds typically used for other highways. Other DOTs that have recently examined their Pavement Management System (PMS) data have also noted much longer initial performance periods for asphalt pavements. Florida and Missouri reported initial performance periods of 18 and 19 years, respectively. Thus, NCAT recommends an initial performance period of 19 years and a rehabilitation performance period of 13.5 years for asphalt pavements in LCCA."* A procedure was recommended in the report for accounting for the costs of the various alternatives.



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Go to www.flexiblepavements.org for additional information or to register for this conference.

Principles of Compaction Workshop Feb. 24, 2014

Ohio Department of Transportation
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The Ohio Department of Transportation (ODOT) and Flexible Pavements of Ohio (FPO) are pleased to present the Principles of Compaction Workshop. This workshop is designed to provide state and local government transportation agencies and asphalt pavement contractors with the fundamentals of compaction for better performing asphalt pavements.

Additional workshop details, including registration information, will be provided at www.flexiblepavements.org as it is available.



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Go to www.ohioasphaltexpo.org for additional information and to register for this event.

NEWSMAKERS

Asphalt Scholarship Program

Applications are being accepted until January 31 for Flexible Pavements of Ohio's (FPO) Asphalt Scholarship Program for the 2014-15 academic year. Undergraduate and graduate civil engineering and construction management students at participating Ohio universities are eligible to apply with qualifying coursework in asphalt pavement technology.

Interested applicants should visit www.flexiblepavements.org for complete program eligibility information and to apply for this scholarship.



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OBITUARIES



Jean E. Snyder

Jean E. Snyder, a 40-year employee of Flexible Pavements of Ohio passed away on Nov. 22, 2013 at the age of 90. Jean served as Flexible Pavements secretary from its inception to 1998. Jean would say she took the

job at Flexible Pavements until something better came along. Forty years later she decided to stop looking. Always known for a warm greeting and enthusiasm for the industry, Jean was the model employee – dedicated, hardworking and had passion for the asphalt industry. Her dedication to the Flexible Pavements membership and advocacy for that “smooth black velvet” pavement was the reason for her to be awarded FPO’s highest recognition, the William W. “Bill” Baker Award, in 1997. Upon her retirement, Jean continued to serve others just as she had with Flexible Pavements.

FPO membership mourns the loss of our dear friend, Jean Snyder, and extends its sympathy to her family and many friends.



Fred McLean

Long-time member and supporter of Flexible Pavements of Ohio, Frederick Hutchins McLean passed peacefully away to be home with the Lord on Nov. 29, 2013. Born Aug. 21, 1930, to the late Donald H. and Mary (Noni) K. McLean,

Fred grew up in Euclid. An athlete, Fred was inducted into the Euclid High School Hall of Fame, and attended the Ohio State University where he earned Big 10 and NCAA honors for his athletic prowess as a wrestler. While attending OSU he met the love of his life, Joan McClure McLean. He proudly served in the

United States Air Force as a 2nd Lieutenant Pilot and flew B-25 bombers. He retired from the Air Force Reserves after serving 20 years. Fred and his late brother Donald K. McLean were the second generation in a successful family business, the McLean



Fred and Joan McLean

Company, a provider of asphalt paving and construction equipment. Now run by the third generation of the family, the McLean Co. has been a member of Flexible Pavements since 1971.

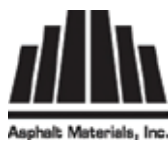
Flexible Pavements staff and members extend their sympathy to the family and friends of Fred McLean.

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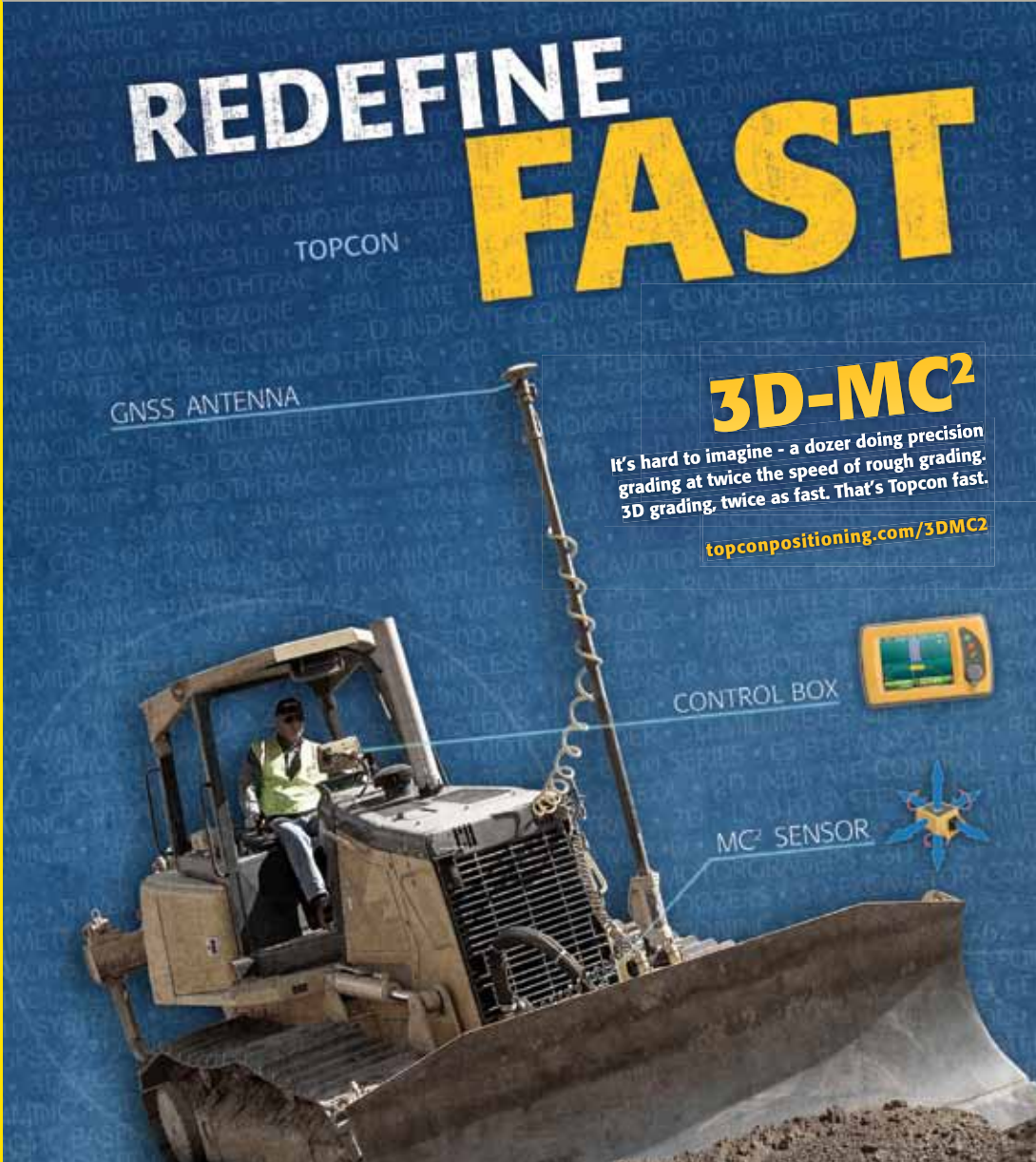
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