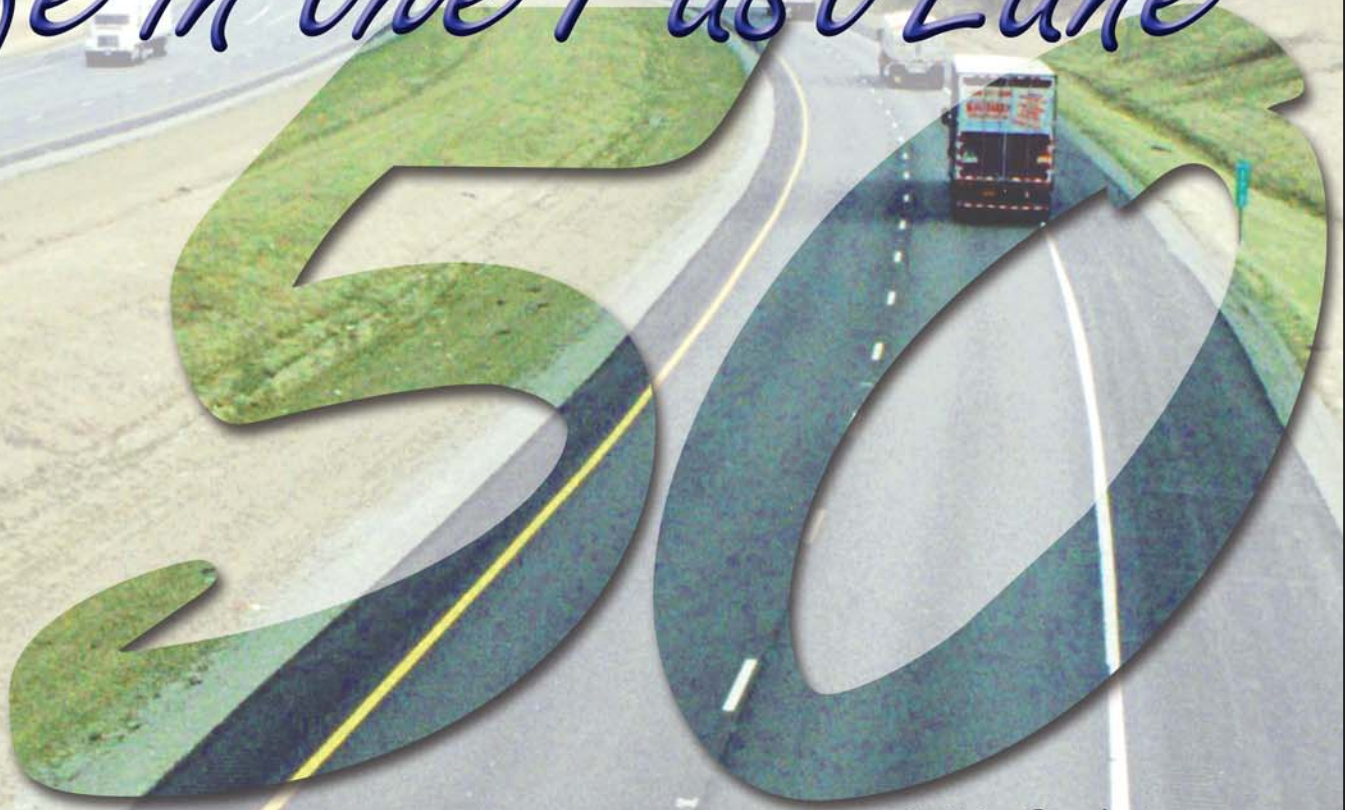


OHIO ASPHALT

Issue 3, Volume 3

Summer 2006

Life in the Fast Lane



Celebrating 50 years of U.S. Interstate

STRIVING FOR SMOOTHER ROADS

ODOT changes way of measuring, paying for pavement smoothness

- ODOT's Move to IRI *page 10*
- IRI Presents New Challenge for Asphalt Pavers *page 14*
- Yield – Thickness – Smoothness *page 18*

CHEW *it up*



Wirtgen

Milling - Cold Recycle



VÖGELE

Asphalt Pavers



SPIT *it out*

SMOOTH *it over*

The Wirtgen Group
delivers it all with
QUALITY and **SERVICE**
that outlasts
the competition.



HAMM

Soil - Asphalt Compactors

McClean



www.themccleancompany.com

The McClean Company
6681 Chittenden Road
Hudson, Ohio 44236
Phone: 330-655-5900
Fax: 330-655-5969

The McClean Company
3155 E. 17th Avenue
Columbus, Ohio 43219
Phone: 614-475-2880
Fax: 614-475-0069

The McClean Company
8131 Regal Lane
West Chester, Ohio 45069
Phone: 513-777-5556
Fax: 513-777-4494

OHIO ASPHALT

SUMMER 2006

- 5 President's Page
- 6 Life in the Fast Lane, Thanks to 6 MPH
Ocean-to-Ocean Convoy
- 10 ODOT's Move to IRI
- 14 IRI Presents New Challenge
for Asphalt Pavers
- 18 Yield – Thickness – Smoothness
*Is it possible for asphalt contractors to
achieve all three?*
- 20 Legal Corner – Contractors Have Vehicle to
Remove County 'Home Court Advantage'
- 21 People & Events
- 22 Index to Advertisers



page 6



page 10



page 14

ON THE COVER: *This stretch of Interstate 70 in Guernsey County, which was rehabilitated with a multi-course Superpave asphalt overlay in 1999 (ODOT Project 93), is part of Ohio's 1,500 miles of Interstate. The nearly 43,000-mile U.S. Interstate Highway System (IHS) is celebrating its 50th anniversary in 2006. See page 6 for an article on how Ohio celebrated the Golden Anniversary of the IHS and the importance this highway system plays in our everyday lives.*



Flexible Pavements of Ohio is an association for the development, improvement and advancement of quality asphalt pavement construction.
info@flexiblepavements.org

Ohio Asphalt is published by Flexible Pavements of Ohio four times a year. Advertising deadline is the 1st of the month preceding publication. Ohio Asphalt is not copyrighted and portions may be reprinted with the permission of Flexible Pavements of Ohio. P.O. Box 16186, Columbus, OH 43216; telephone: 614.221.5402, 888.446.8649 (Ohio only); fax: 614.221.0394; website: www.flexiblepavements.org

Officers

Chairman

James S. Tharp
The Shelly Co., Cincinnati Division

Co-Chairman

Brent Gerken
Gerken Paving, Inc.

Treasurer

Douglas C. Rauh
The Shelly Co., Twinsburg Division

Board of Directors

Wayne Brassell
Kokosing Construction Co., Inc.

James P. Jurgensen
Valley Asphalt Corp.

Don Koski
The Koski Construction Company

Gerald N. Little
Shelly & Sands, Inc.

Michael D. Thompson
Barrett Paving Materials, Inc.

Howard J. Wenger
Northstar Asphalt Co.

Dean Wikel
Erie Blacktop, Inc.

Staff

Fred F. Frecker, P.E.
President & Executive Director

Clifford Ursich, P.E.
Executive Vice President

Florence H. Flowers
Office Manager

William H. Fair, P.E.
Customer Service Engineer

Telephone: 614-221-5402; 888-446-8649
(Ohio only)

Fax: 614-221-0394

Website: www.flexiblepavements.org

Layout & Design
Jennifer Schaefer

Advertising Sales
Megan Brown

Editorial Staff
Jerry Marks
Laura Van Houten

Ad Sales & Editorial Preparation
TRIAD, Inc.

371 County Line Road West
Westerville, OH 43082
614.846.8761 or 1.800.288.7423
fax: 614.846.8763
editorial e-mail: editorial@triad-inc.com
advertising e-mail: sales@triad-inc.com



Road Test Equipment & Mobile Technology Solutions



High Speed Profiler

Precise Class I profile data from 5-70 mph. Robust front mount or portable rear mount system (with wireless data transmission). Industry's most advanced and feature-rich Windows software programs.

Concrete Profiler

New 100 point (4") Selcom RoLine line laser eliminates false impacts of grooves, tines and coarse texture. As accurate on asphalt but now a necessity on concrete.



Multiple Purpose Profiler



Stand-alone hybrid profiling system works as a lightweight profiler (towed behind ATV) or high speed profiler (towed behind any vehicle with a properly configured power supply). No wires between profiling system trailer and host vehicle. Available with Selcom RoLine sensor for concrete pavement.

Walking Profiler

Industry's first walking profiling system with true one-inch data samples and all-Windows application software programs. Ideal for testing bridges, airports, commercial floors, and for generating reference profiles to certify or compare laser profilers.



Toughbook Mobile Computers



Powerful enough for road service or desk duty, Toughbook computers have been tested as the industry's fastest and most versatile rugged notebook. See and input your data under any conditions. Many models to choose from.

SURFACE SYSTEMS & INSTRUMENTS, LLC

501 Park Way Mill Valley, CA 94941 - 307 Plymate Manhattan, KS 66502 - Ph: 800.662.5656 Fax: 415.358.4340

www.smoothroad.com

YOU WOULDN'T DARE THINK OF PUTTING ALL YOUR VIRGIN AGGREGATE INTO ONE COLD FEED BIN. *THEN WHY TREAT YOUR RAP THAT WAY?*



RAP fines can have up to twice as much AC content as 1/2 x 1/4 and more than four times as much as 3/4 x 1/2. So, feeding RAP out of one bin makes it virtually impossible to hold spec, especially with Superpave. Now with an Astec Fold n' Go mobile screening plant, you can consistently fractionate RAP at high tonnages the same as you do your virgin aggregate.

If you run more than one HMA plant, the Fold n' Go is quickly and easily moved to handle RAP fractionating at each plant. This heavy-duty mobile screen plant is totally self-contained with three on-board stacking conveyors and sets up in just 15 minutes. RAP replaces expensive virgin ingredients pound for pound and without loss of mix quality. Start realizing serious material savings with your investment in a Fold n' Go mobile screening plant and call Cantwell Machinery Co.

Celebrating 60 Years Of Service To The Construction Industry 1946-2006

Sales-Rental-Parts-Service-Financing



Columbus	Perrysburg	Old Washington
614-276-5171	419-837-9425	740-489-5031
Cincinnati	Macedonia	Piketon
513-489-3040	330-467-4171	740-289-1818

Email: info@cantwellmachinery.com
Website: www.cantwellmachinery.com



POLITICS...

Like It or Not, It Impacts Us



FRED F. FRECKER P.E.,
President &
Executive Director

This time of year brings out more than orange barrels; political campaign ads also seem to be springing up everywhere. Choosing a governor this season seems to be a fertilizer as the ads are becoming more prolific than ever. Some of us like politics and some of us don't, but it's an integral part of a democracy and makes our country what it is. To ignore it and not participate is like an ostrich sticking its head in the sand and thinking he's hidden.

One of the Goals and Objectives put forth as part of the mission statement of Flexible Pavements of Ohio is to "Educate public officials ... on the advantages of Hot Mix Asphalt pavement." Another is to "Provide informed and vigorous support of all sound legislative proposals affecting the Hot Mix Asphalt industry."

Integral to this goal is vigorous opposition to unsound proposals. FPO cannot carry out these goals and objectives without establishing itself as an authority on transportation issues, especially pavement-related issues. Many things go into establishing oneself as an authority: knowledge of the subject, persuasiveness, ability to articulate, personality, along with the ability to stand out from the crowd and be recognized. Being politically inactive places one in obscurity. If we are to operate in the legislative arena we must be politically active. FPO can only do this through the support of its members. Several opportunities to provide this support exist, and must have your participation if we are to be successful.

The first is the FPO Political Action Committee or FPO-PAC. Every person employed by a producer, contractor and industry-related associate member should support the FPO-PAC. It is your PAC, not someone else's organization or charity that you are being asked to support. It works to further your livelihood.

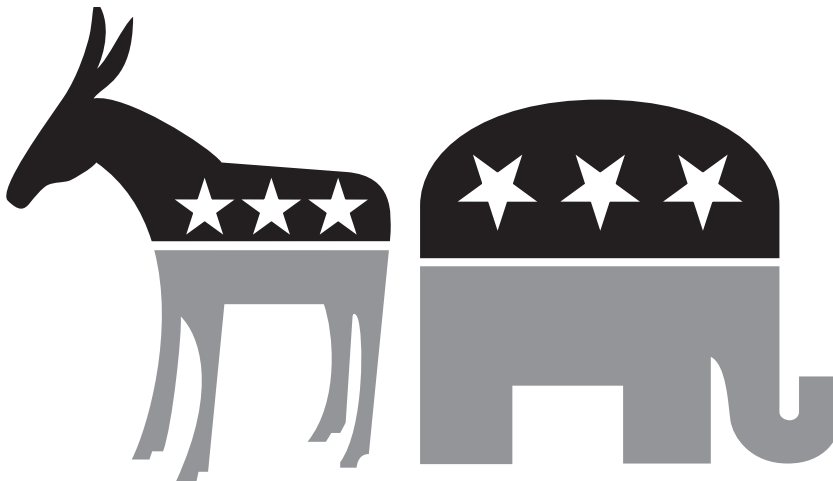
The second is attendance at Association-sponsored fundraisers. FPO will be holding fundraisers for the gubernatorial candidates this year.

This is precedent setting for FPO, as to the best of my knowledge FPO has never sponsored an association fundraiser before. But these are different times and we must adapt to them if we are to survive. You cannot just let your competition go out and become politically involved while you set back and do nothing. We may not have picked this battlefield,

but it's our fight just the same — and we can not afford to lose.

Today, right now, I encourage you to fill out the form accompanying this article and send it in with your PAC donation. Don't set this aside thinking "I'll do it later;" do it now or it will never get done.

Next, when you see the flyer for the FPO fundraiser for the gubernatorial candidates, mark your calendar and send or bring in your contribution.



OA

Life in the Fast Lane

BY JERRY MARKS, TRIAD, INC.



*Celebrating 50 years
of U.S. Interstate*

It seems only appropriate that Ohio's celebration of this year's 50th anniversary of the U.S. Interstate System – which provides the everyday motorist coast-to-coast access – includes the reenactment of the 1919 military convoy that initially laid the foundation for the need of an efficient transcontinental road system.

It's unfathomable for motorists today to think what life was like prior to the June 29, 1956, signing of the Federal Aid Highway Act, which authorized and funded construction of 41,000 miles of toll-free expressways. In today's world of 65-mph, multiple-lane travel, it's important to slow down and look back at what life was like prior to the National System of Interstate and Defense Highways.

Prior to today's Interstate System, which is designed for safety and speed, you had an array of roads, trails and general ideas of how to get from Point A to Point B. This was proven by the 1919 military convoy that started July 7 on the south lawn of the White House and ended nearly two months later on September 1 in San Francisco's Lincoln Park. The convoy was a 3,200-mile trip that included nearly 300 military officers and soldiers and more than 80 vehicles – ranging from giant cargo trucks, mid-sized delivery trucks and ambulances to automobiles – that was described as a slow, arduous journey “over dirt, mud and sand roads,” by Dan McNichol, author of “The Roads that Built America, The Incredible Story of the U.S. Interstate System.” “Sometimes, it was impossible to find a sign showing the way to San Francisco,” he wrote. “As a result, two ‘pilots’ were ordered to move out ahead and blaze a trail . . . with painted arrows.”

While the 1919 convoy was during peacetime, there were still equipment and structure casualties which slowed travel to an average of 6 mph, or 58 miles a day. Trucks crashed through bridges, vehicles skidded off roads and down mountainsides and equipment became stuck on rutted roads – as nine vehicles were abandoned along the convoy's route.

Although the military's first “ocean-to-ocean” motorized convoy was a public relations nightmare for the nation's infrastructure system, it provided a lasting impression for one army officer, and an inspiration that would become reality 37 years later. The young officer was Dwight D. Eisenhower, who after a military career highlighted by being the supreme commander of the Allied forces in World War II, became the 34th U.S. President. It was during his time in Europe that Eisenhower saw Germany's Autobahn and how the network of super-highways assisted Axis troop movement. It was these pole experiences – the 1919 convoy and the enemy's highway network – that led to Eisenhower signing the Federal Highway Act.

“After seeing the Autobahns of modern Germany and knowing the asset those highways were to the Germans, I decided, as President, to put an emphasis on this kind of road building,” Eisenhower said. “. . . The old convoy had started me thinking about good, two-lane highways, but Germany had made me see the wisdom of broader ribbons across the land.”

Big Projects, Big Numbers

In recognition of the U.S. Interstate Highway System's 25th anniversary in 1981, the Federal Highway Administration compared construction of the IHS to other “Wonders of the World,” such as the Great Pyramids and the Great Wall of China. Here is a look at what went into the first 25 years of building the IHS:

- Highway contractors expended 2.4-billion man-hours
- As of 1981, nearly \$80 billion had been obligated to the world's greatest highway network
- 1.78-million acres of right-of-way, which is fenced with enough fencing to go around the world twice
- Material quantities used in the construction of the IHS include:
 - Nearly 2.5-billion tons of sand, gravel and crushed stone, which stockpiled would be two miles in diameter and one mile high
 - Enough pipe, if converted to one, 24-inch diameter size, to encircle the Earth
 - Enough steel reinforcing rod, if converted to a No.4 size (one-half inch diameter), to reach the moon and back 11 times
 - More than 1.5-billion board feet of wood, used in forms and bridge pilings
 - More than 27-million tons of bituminous material (tar, asphalt cement, etc.) for road surfacing

(Source: FHWA News, 1981)

And The Rest Is History

To say the 50 years since the signing of the Federal Highway Act is history, it would be an understatement, as construction of the Interstates made history.

The building of the U.S. Interstate Highway System (IHS) is perhaps the most marveled feat of the 20th century, as 42,500 miles (President Nixon authorized in 1968 an additional 1,400 miles of Interstate) of four-lane road was built in 25 years; that compares to the Romans taking 500 years to build 50,000 miles of roads.

The construction of the IHS, now measuring nearly 43,000 miles, is so awe-inspiring that it was listed among the “Seven Wonders of the United States,” by the American Society of Civil Engineers. According to the ASCE, “The economic impact of the Interstate system, the world’s largest public works project, is incalculable. There is hardly one aspect of American society that hasn’t been affected by the Interstates.”

While other states all tout being the first to build a portion of the Interstate — Kansas opened an eight-mile segment less than five months after Eisenhower signed the legislation; Missouri was first to award a contract and start construction with funding from the act; and Pennsylvania claims its Turnpike was the first portion of the IHS — Ohio began constructing its 1,500 miles of Interstate in 1957.

Within three years of construction, Ohio opened 522 miles of Interstates to the public; had another 162 miles completed by 1962; had more than 1,000 miles of Interstate finished in 1970; and all but 167 miles of the planned IHS opened by 1971. Ironically, it took 32 more years to complete the final 12 percent of the state’s originally planned IHS, as the final project, the I-670 Spring-Sandusky Interchange in Columbus, was opened to traffic in 2003.

Though early officials could imagine what the IHS would mean to the nation, no one really knew the true impact a network of Interstate highways would have.

Because more than half of the state’s 88 counties are served directly by the Interstate, Ohio is one of the leaders in freight traffic. According to a 2002 study, the Buckeye State ranks fourth in the nation for the amount of inbound and outbound freight travel, as nearly 8 percent of all U.S. freight tons ride on Ohio’s highways. Interstates are the major cog in Ohio’s economy as it handles 83 percent of the freight traveling in and out of the state.

With Interstates 70, 71, 74, 75, 76, 77, 80, 90, 270, 271, 275, 277, 280, 470, 475, 480, 670, 675 and 680 crisscrossing Ohio, the state is within a one-day drive of 60 percent of the U.S. population. The Interstate system has provided easy access to the state as the Travel Industry Association of America ranks Ohio as the eighth-most visited state in the country. In 2003, Americans took 156-million trips to or through Ohio.

Today, the Interstate system represents just over 1 percent of the nation’s total highway mileage but carries one quarter of roadway

traffic — or nearly 60,000 people per route-mile each day; the equivalence of 26 times more than all other roads. Annually, nearly 1-trillion person miles are carried on the Interstate Highway System — a figure equivalent to around-the-world-trips for 37-million people.

Today, motorists enjoy life in the fast lane — or at least at 65 mph — on Interstates that provide safer travel and easier access, thanks to a 1919 military convoy that averaged 6 mph.



Akron Among Stops Of Coast-to-Coast Celebration



What else would you expect from Rubber City, USA, than to bounce back to where it began?

Ohio's 50th anniversary celebration of the signing of the U.S. Federal Highway Act – which provided funding for today's Interstate Highway System – visited Akron, or we should say re-visited.

The Rubber City was one of 18 host cities during the 14-day Interstate Highway System's 50th Anniversary Convoy Reenactment Route. Starting June 15 in San Francisco and ending on June 29th in Washington, D.C. – the actual date in 1956 that U.S. President Dwight D. Eisenhower signed the Interstate act – officials and dignitaries traveled via caravan on the Interstate 80 Corridor, which followed the approximate route in which Eisenhower and nearly 300 men followed in 1919 as part of the military's first transcontinental convoy.

Just as it did 87 years ago, the reenactment convoy stopped in Akron on June 26, for a dinner event sponsored by Bridgestone Firestone North American Tire, LLC. In 1919, company founder Harvey Firestone played host to a picnic at the Firestone Homestead. The Akron company, as well as being a sponsor, had two trucks traveling in the original transcontinental motor train to supply replacement tires on the more than 80 vehicles.

Flexible Pavements of Ohio members were informed of the reenactment trip at their annual meeting in March when Alan Pisarski of the Transportation Research Board provided a keynote speech on "Celebrating the 50th Anniversary of the Interstate Highway System."

This summer's celebration in Akron included a picnic and festival featuring show cars, driver and race car haulers, music and games, as the public awaited for the convoy's arrival earlier in the day from South Bend, Ind.

From Akron, the reenactment caravan traveled to Gettysburg, Pa., where Eisenhower's family still has a home, and Frederick, Md., en route to its final destination in Washington, DC.

The convoy's reenactment was organized by the American Association of State Highway and Transportation Officials to both commemorate the golden anniversary of the U.S. Interstate as well as bring together well-respected federal, state and industry leaders and experts to recognize the contribution of the Interstate to our nation's economic and cultural fabric, and to focus their collective wisdom on a vision for the Interstate's next 50 years.





ODOT'S Move to IRI

By BRIAN SCHLEPPI,
ODOT OFFICE OF PAVEMENT ENGINEERING

After reading the title, one might first ask, “What is IRI?” What I hope to convey in this article is what IRI is; why ODOT is moving to IRI and moving away from the California Profilograph Index as a measure of pavement smoothness; the reasoning and logic behind the move; and the steps ODOT plans to take in order to make the transition.

IRI stands for the International Roughness Index. The roots of IRI go back to the late 1970s and early 1980s to National Cooperative Highway Research Program and World Bank research trying to quantify road roughness. The units of IRI are expressed as vertical inches (meters) of roughness per longitudinal mile (kilometer) of travel. In simple terms, IRI represents how much suspension movement (vertical inches) a vehicle will experience after driving one mile down the road at 50 mph. One must recognize that not all vehicles will experience the same amount of suspension movement even if they are traveling the same speed down the same road. With that in mind, I’ll admit that IRI does not do a good job of mimicking the suspension movement of any single type of car or truck. At the same time, it does a great job of representing the “average” suspension movement of all of the vehicles on our highway system. I like to think of IRI as a composite model of vehicle suspension response accounting for Ohio’s (and the nation’s) vehicle fleet.

We calculate IRI by passing its suspension model over the series of discreet surface elevations collected in the wheel paths of our high-



ODOT high-speed profiler-equipped vans will begin measuring a road surface’s IRI instead of a Profilograph Index, as it will better measure what motorists truly feel when traveling Ohio’s highways.

ways by road profilers. Using IRI allows ODOT to objectively quantify or assign roughness/smoothness values to the various segments of our highway network. Lower values of IRI are indicative of smoother-riding roads, just as higher values are indicative of rougher-riding roads. The Federal Highway Administration requires ODOT to collect and report IRI data for the management of the National Highway System. Similarly this data plays a part of ODOT’s pavement management decisions.



Caution, Survey in Progress: This ODOT high-speed profiler-equipped van is used to measure a road surface’s International Roughness Index. (Photos courtesy of ODOT)

ODOT is moving to IRI because it relates well to what our users feel when they travel our highways. The same is not true for the California Profilograph Index. Further, ODOT has experienced several instances in which a newly constructed/resurfaced road had bonus levels for smoothness based on the Profilograph Index, yet the IRI (and actual ride quality experienced) was fair at best. Why is that? It is because the Profilograph Index represents the response of a center trace wheel to an elevated 25-foot straight-edge. Its sensitivity is not related to vehicle suspensions. In fact, it is sensitive to only a small portion of roughness features (bumps and dips) that affect vehicle suspensions.

The California Profilograph was developed in the early 1950s and has been used across the country since the California DOT published testing procedures and specifications for it in 1960. At that time it was the best tool to measure smoothness at the time of construction. Since then, two things

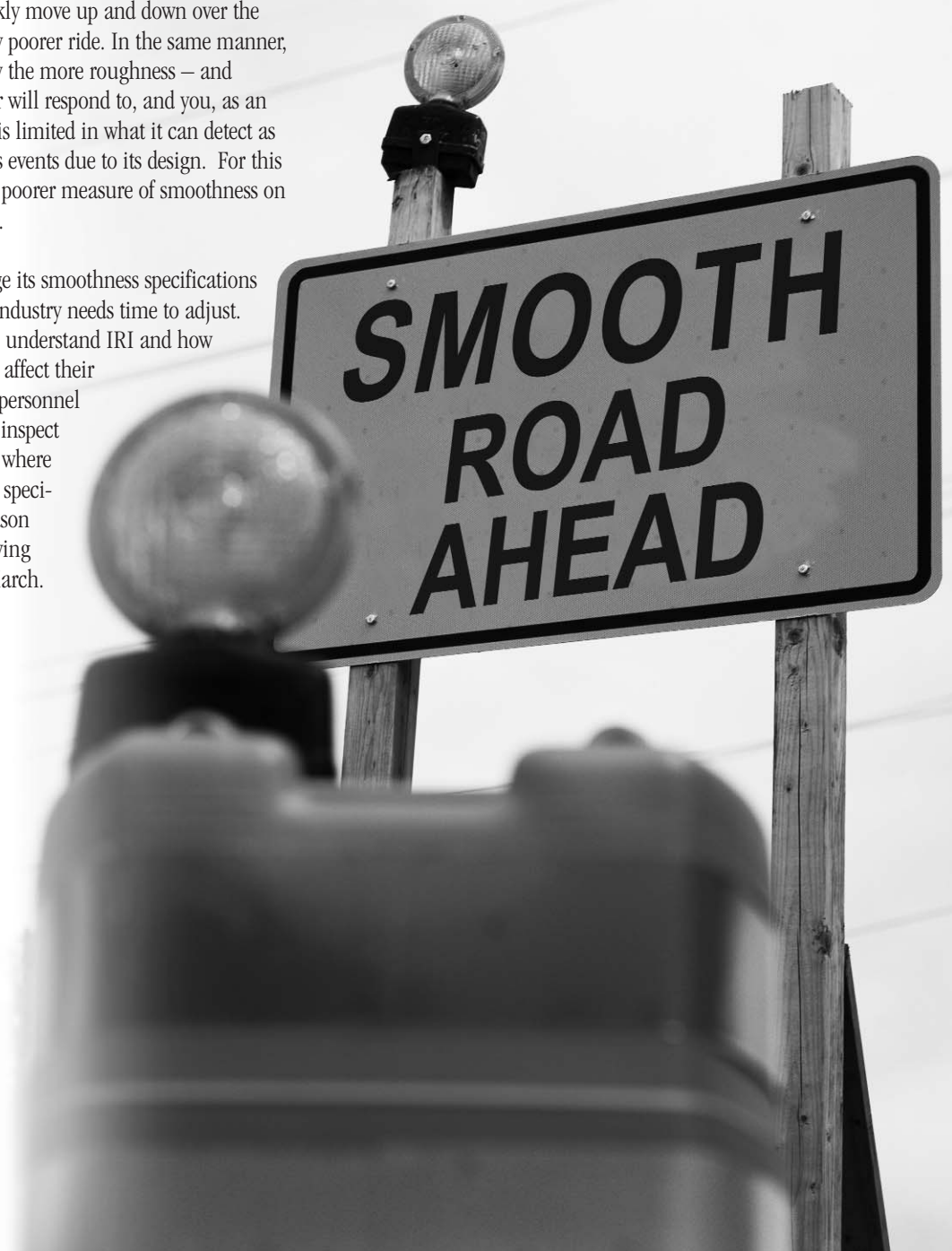
have occurred to make the Profilograph Index increasingly obsolete: 1) technical advancements allowing for efficient measurement of road profiles coinciding with the development of reliable ride quality indices (such as IRI); and 2) an increase in mileage of high-speed highway infrastructure across our country.

Travel speed is an important consideration. Think about driving your car over a speed bump. The way your car responds and the ride you experience are very different depending on the speed you drive across the bump. If you slowly crawl across the bump you feel the car rise up and then down but it does not feel so unpleasant. A little faster and the car, and then you, bounce up and down (perhaps more than once) and the ride becomes more unpleasant. If you drive fast enough, the body of the car will not move up and down but you will feel a sharp jolt as the wheels quickly move up and down over the bump which results in an arguably poorer ride. In the same manner, the faster you drive on the highway the more roughness – and longer roughness – events your car will respond to, and you, as an occupant, will feel. A profilograph is limited in what it can detect as it can only “see” shorter roughness events due to its design. For this reason, the profilograph index is a poorer measure of smoothness on highways with higher travel speeds.

We realized ODOT could not change its smoothness specifications to IRI overnight; the Ohio paving industry needs time to adjust. Contractors need an opportunity to understand IRI and how paving to an IRI specification may affect their paving processes. Similarly, ODOT personnel need to understand IRI in order to inspect construction projects, and to know where and when to apply IRI smoothness specifications. That was the primary reason ODOT hosted the Ohio Smooth Paving Workshop in Columbus this past March.

We wanted to share information and hopefully shorten the learning curve for all involved. In short, make the transition to IRI as easy and painless as possible.

Currently, all jobs with smoothness specifications are being sold with both indexes. The contractor has the opportunity to be paid on the index which yields them the greater pay adjustment, either California Profilograph Index or IRI. This was done to provide contractors a safe environment to experience and adjust to IRI firsthand. After March 1, 2008, the Profilograph Index goes away and all measurements will be made on IRI exclusively.



Hand in hand with the transition to IRI will be changes to measuring equipment certification. ODOT intends to ensure that the equipment used to measure and report the Profilograph Index will be as capable and reliable at measuring and reporting IRI. By the time of publication, ODOT will have a newly constructed profiler certification course located north of 17th Avenue on the Ohio Exposition Center grounds in Columbus. The new course will allow ODOT to certify not only low-speed/lightweight profilers but additionally high-speed profiling equipment. (High-speed profilers make it possible to safely collect smoothness data without aid of traffic control.) Certification criteria – for both operators and equipment – will ramp up over the next two to three years beginning March 1, 2007.

In summary, the IRI is a better measure of smoothness because it is grounded in ride quality. It mimics vehicle suspensions and how they respond to bumps in the road. IRI is a great indicator of what the traveling public feels as they drive across our highway infrastructure. ODOT is transitioning to IRI in its specifications because it is the right thing to do as stewards of that infrastructure. ODOT has been working, and will continue to work, with Ohio's paving industry to make the transition to IRI as smooth as possible (pun intended). More detailed information on IRI can be found on ODOT's website within the Pavement Engineering page. Contact ODOT's Office of Pavement Engineering or FPO if you would like a copy of the video recording from the Ohio Smooth Paving Workshop.



With ODOT for 20 years, Brian Schleppi started in the Central Office Test Lab as an engineering intern and is now the Road Profiling Program Manager in the Office of Pavement Engineering. He has been involved with road profiling and pavement management since 1990, and serves on several committees and research projects at the national level involving ride quality, highway surface characteristics and vehicle interaction.

TRAFFIC CONTROL AND SAFETY MATERIALS

OVER 50 LOCATIONS SERVING 20 STATES PROVIDING ROUND-THE-CLOCK SERVICE



Sign & Sign Stands

Solar Sign Stand

Safety Equipment

Plastic Fencing

Barricades

Fitch Inertial Barriers

Plastic Drums & Cones

Solar Message Centers

Solar Advance Warners

Truck-Mounted Attenuators

Warning Lights & Batteries

Temporary Pavement Markings

Glare Screen

Delineators

Reflectors

Work Area Lighting



**Sales, Rental, and Lease Purchase of
Work Zone Traffic Control Equipment and Services
Installation Specialists**

PROTECTION SERVICES INC.

John Gannon
Cleveland

Steve Fisher
Columbus

"Toll Free" 1-866-489-1234

Protection Services Inc., a Division of Stabler Companies Inc.
(717) 236-9307 • 635 Lucknow Road, Harrisburg, PA 17110
www.protectionservices.com

Quality Pavements now Cost Less and Last Longer...

Because ODOT developed specifications for polymer modified asphalt with the Contractor in mind.

**Next time you want quality and cost savings just specify
PG70-22M asphalt cement.**

"IT WAS SO EASY. When I specified polymer modified asphalt all I had to do was to change the asphalt cement from PG64-22 to PG70-22M using ODOT 702 specifications. Contractors knew what to do. **NOW I HAVE LONGER LASTING PAVEMENTS WHICH REQUIRE LESS MAINTENANCE."**



Thin Overlays
City Streets
County Routes
Interstate Paving
Airports

Rubber Compounds
For Better Paving
Since 1951

rub•r•road

Highway Rubber Products 330-499-2900 Email: pwelsh1000@aol.com

www.betterasphalt.com



IRI Presents New Challenge for Asphalt Pavers

BY CLIFF URSICH, P.E., FPO EXECUTIVE V.P.

Asphalt pavements are already known for smoothness and comfort but a recent specification change by the Ohio Department of Transportation (ODOT) is going to present new challenges that will result in even better ride quality. The change is ODOT's scaling back from Profilograph (Profile) Index (the California Method) and scaling forward to International Roughness Index (IRI) as its smoothness "measuring stick."

The main reason this change will impact riding comfort on asphalt pavements is that IRI is capable of measuring *all* the roughness; motivating asphalt contractors to pave even smoother.

Quantifying Roughness

The initial profile for all pavements contains both short and long wavelength roughness (Figure 1). Short wavelength roughness is the kind of stuff you feel with the seat of your pants. Long-wavelength roughness is more akin to the dips and swells (or humps and hollows) encountered while motoring down the highway. Short-wavelength roughness may spill your piping-hot coffee, but long-wavelength roughness poses little threat of a burnt lap. Given a sufficient amount of material, eliminating short wavelength roughness is readily accomplished by the asphalt paver, while eliminating long wavelength roughness (those dips and swells) is more of a challenge.

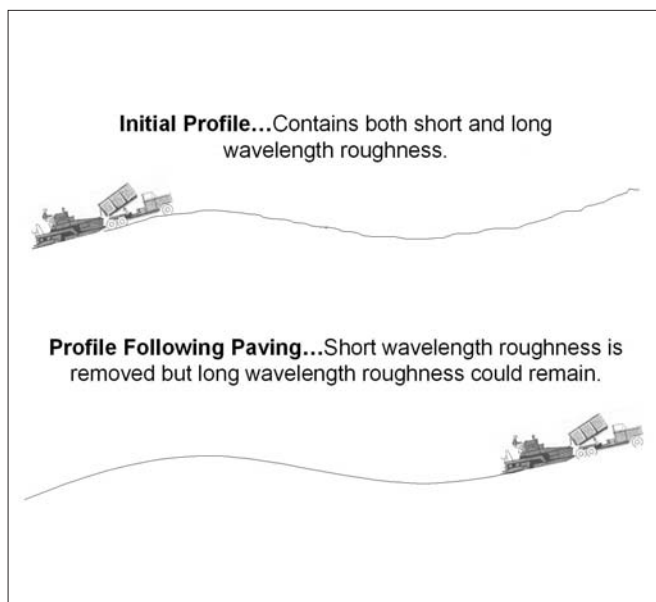


Figure 1

ODOT's current method of measuring smoothness, Profile Index (PI), is very capable of detecting short wavelength roughness but lacks the ability to capture all roughness. With the adoption of IRI both long wavelength as well as short wavelength roughness will be measured; that's what creates the incentive for asphalt pavers to pave even smoother. Now that the asphalt contractor has the method of measurement he will figure a way to getting the job accomplished.

The distance over which PI is able to measure roughness is about 25 feet. IRI, on the other hand, is capable of measuring roughness over a distance of 80 to 100 feet – or longer (see Figure 2). This makes IRI capable of capturing and measuring both short and long wave-

length roughness. So, roughness that once made it out from under the screed without detection will no longer with the adoption of IRI.

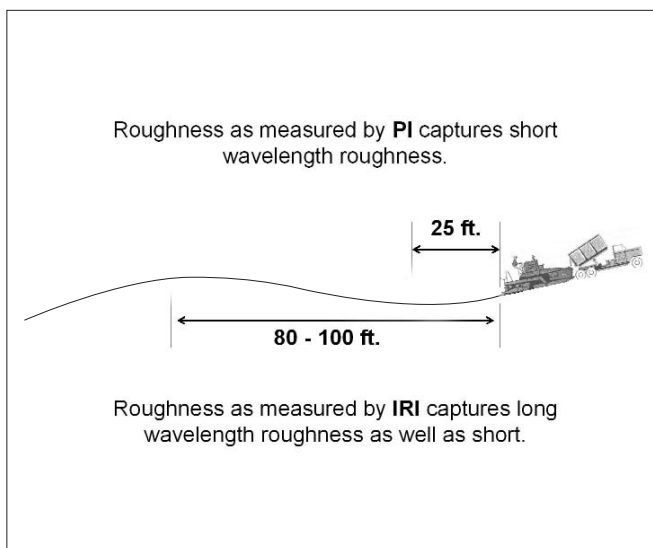


Figure 2

Keys to Getting Good Numbers with IRI

There are several keys to getting good numbers (smoothness) under an IRI system of measuring pavement smoothness, ranging from the severity of the pavement roughness, the amount of material available to correct the problem, the uniformity of material and its delivery and length of grade reference, to the screed operations.

Key No. 1: Ensure the layer is thick enough

The specifier must allot sufficient material to eliminate both long and short wavelength roughness. By using a free-floating screed an asphalt paver can smooth out roughness. The degree to which the screed can smooth the pavement depends upon the magnitude and length of the roughness event (bump). If the bump is abrupt, the screed virtually eliminates it. If the roughness is more characteristic of a dip then the screed eliminates much of it, but not all. Roughness events having long length require multiple lifts of material and grade-control equipment that lengthens the grade reference. Multiple lifts of material and longer grade references add up to a need for more asphalt material. Specifiers must assess what pavement thickness is necessary to ensure hollows will be filled, yet sufficient thickness is achieved over the humps.

Key No. 2: Uniformity Keeps Forces in Equilibrium

Obtaining maximum smoothness under an IRI specification brings renewed emphasis to following paving basics. Attaining uniformity in manufacturing, delivery, laydown and compaction will be critical to achieving the highest level of smoothness. Why is this so? Again, it's because IRI captures both short and long wavelength roughness. A lack of uniformity is more likely to exhibit itself in long wavelength roughness. Where in the past a lack of uniformity that resulted in long wavelength roughness would have escaped detection by PI, IRI will now capture this.

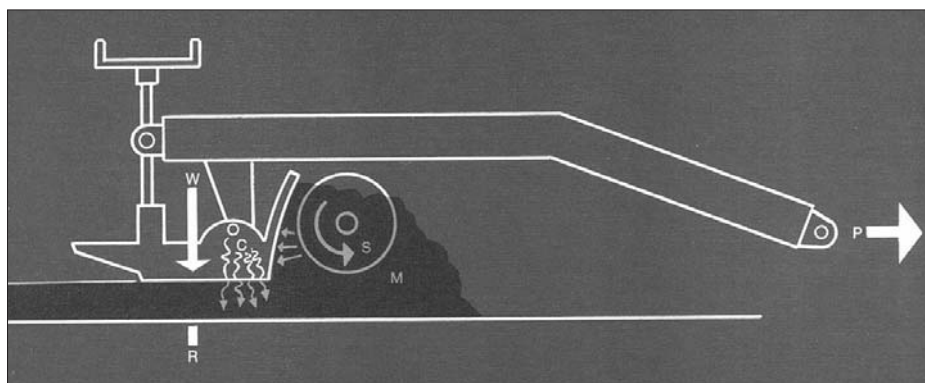


Figure 3 (Courtesy of Barber-Greene Co.)

Uniformity in manufacturing, delivery, and laydown are all critical because of their affect on the forces impacting the screed. A lack of uniformity results in varying forces acting on the screed. As the screed seeks a state of equilibrium the thickness of the pavement varies, this induces long wavelength roughness.

The forces acting on the screed are (see Figure 3):

- Weight of the screed (W)
- Reaction of the material to the screed weight (R)
- The towing force exerted through the leveling arms (P)
- Resistance of the material ahead of and under the screed to forward movement of the screed (M)
- Rotation of the screw conveyor (S)
- Compaction action of the screed (C)

A change in any one of these forces results in a commensurate change in the elevation of the screed and the pavement profile.

To obtain good ride quality the hot mix asphalt manufacturing process must ensure the mixture is comprised of aggregate that is consistent in shape, quality, and gradation. It must ensure the aggregate is mixed at a consistent temperature, and with the specified binder and content. A change in aggregate gradation or shape will affect the internal friction of a mixture, and thereby the force against the screed. For example, if during the manufacturing process aggregate having higher-crushed shape is introduced, the mix would see a commensurate increase in internal friction. This would result in greater force exertion on the paver screed and an increase in elevation. Similarly, as the mixing temperature is reduced the binder becomes more viscous. Increased viscosity results in a mixture becoming stiffer, and the reaction of the screed will be to rise. The converse of these examples is true as well: Hotter mixes and mixes with less angular aggregate will exert less force on the paver screed and the screed will react accordingly.

Mix delivery affects ride quality by its impact on mix properties. Haul vehicles that are loaded properly and appropriately timed will provide a uniform feed of material to the asphalt paver resulting in smooth pavement. Waiting on haul vehicles and being inundated with deliveries are the two extremes that can occur on a paving job. The lack of uniformity in delivery time is sure to affect ride quality by causing a variation in mix temperature. Segregation of the asphalt mix during

the haul will also affect ride quality. Segregation is a lack of uniformity of the aggregate particles. Again, this influences the forces acting against the screed. Segregated mixes cause a change in internal mix friction and resistance to flow, thereby affecting pavement smoothness.

Don't touch that dial! The thickness adjustment screw ... that is. To ensure that top-notch smoothness is achieved, laydown operations must eliminate practices that needlessly introduce long wavelength roughness. One such practice is

the intermittent adjusting of the paver screed's thickness screw. With every crank of the thickness adjustment the angle of the screed changes — and so do the forces acting on it (see Figure 4). The Profile Index's method of measuring roughness does not detect long wavelength roughness introduced by thickness adjustments. The reason for this is that it takes a distance equal to about five times the tow arm length for the full impact of an adjustment to be attained, which exceeds that of the profile measurement when using PI. With the implementation of IRI, however, cranks of the thickness adjustment screw will be detected as long wave-length roughness.

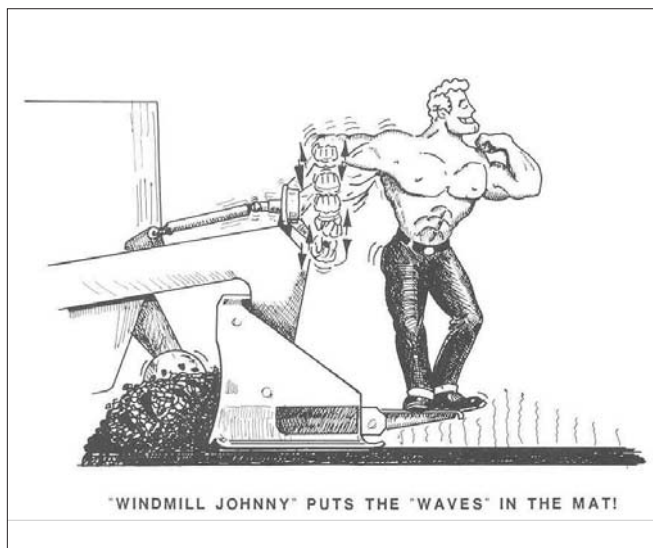


Figure 4 (Courtesy of Blaw-Knox)

Key No. 3: Build it Smooth from Bottom Up

When constructing deep-strength asphalt pavements, the smoothness of base courses has largely been ignored. This may be due to the perception that automatic grade controls used in the intermediate and surface courses will get the pavement smooth enough. However, caution should be exercised here; be aware that a poorly placed base course can introduce long wavelength roughness into the pavement that intermediate and surface course lifts may not be capable of removing. Though not picked up under the PI method of measurement, it will be captured using IRI.

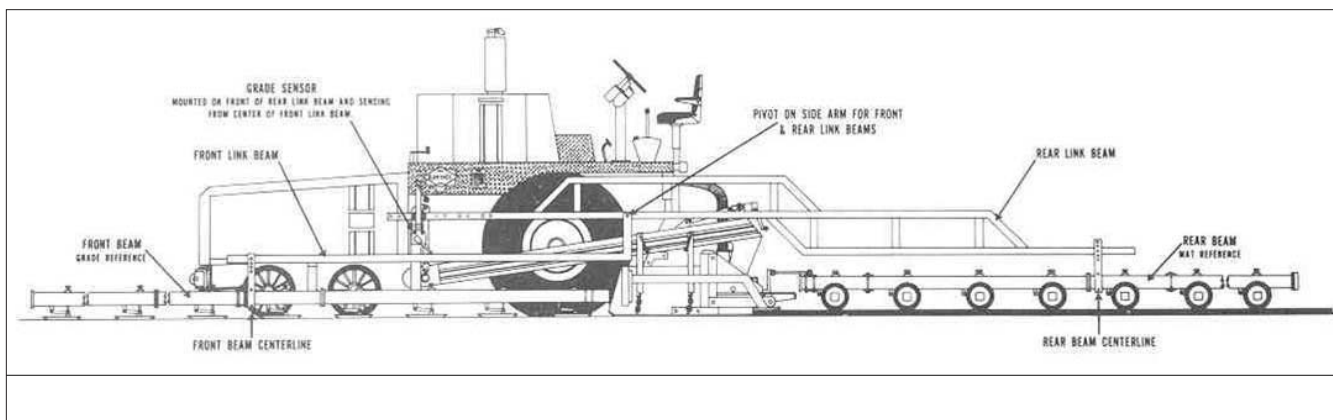


Figure 5 (Courtesy of Blaw-Knox)

Key No. 4: Extend the Grade Reference

Long grade reference systems provide the capability to remove bumps, humps, and hollows in a pavement profile. Given that IRI captures long wavelength roughness such as this, there is no more appropriate action than to use the longest grade-reference feasible. Figure 5 illustrates a grade reference system of 55 feet in length.

For some contractors past practices have been to run grade-reference equipment on leveling courses only. While this ensures a uniform surface course thickness, the opportunity is lost to greatly enhance the pavement smoothness. The unintended consequence of using a long reference is the potential for overrunning material quantity.

ODOT's adoption of the International Roughness Index will provide new challenges to the hot mix asphalt contractor. Long wavelength roughness, having escaped detection under the Profile Index method of measurement, will now be captured using IRI. With careful attention to the basics of asphalt pavement construction and utilization of automation such as grade reference equipment the asphalt paving contractor has the necessary tools to improve on even the smoothest of pavements. The keys to success are found in having a sufficient quantity of material; ensuring that manufacturing, hauling and lay-down operations keep the screed in a state of constant equilibrium; build it smooth from the bottom up; and utilizing as long a grade reference as feasible.

OA

The Smooth Ride

Rough streets and highways can be relics of the past if you smooth them out with asphalt.

Have you ever thought about why nearly all of the major racetracks are paved with asphalt? Racecars can reach speeds up to 240 mph— so the track absolutely must have a smooth surface that can stand up to punishment.

Motorists want to drive on smooth roads, too. In fact, the driving public says that smooth pavements are their Number One priority.

There is only one kind of pavement that can meet that priority while also delivering economy, safety, efficiency, a quiet ride, and long life:

Asphalt. It's the smooth ride.

For more information about how asphalt pavements deliver the smoothest ride, visit www.AsphaltAlliance.com or call toll-free 888-468-6499.

THE NEW ASPHALT
ABSOLUTELY!



www.AsphaltAlliance.com



Yield Thickness Smoothness

Is it possible for asphalt contractors
to achieve all three?

BY JAMES A. SCHEROCMAN, P.E.

Many contractors are faced with a very difficult chore — how to achieve yield, thickness, and smoothness at the same time. Unfortunately, it generally cannot be done.

The way a typical asphalt paver works has not changed since 1931, when the free-floating screed principle was introduced by the Barber-Greene Company. As everyone knows, the primary purpose of the paver is to level — to place more HMA mix in the low spots on the existing pavement surface and less mix on the high spots. For this reason, the amount of mix needed to resurface a state highway, county road, city street or parking lot depends on the smoothness of the existing pavement surface.

Yield

In most cases the amount of mix needed to resurface a pavement is determined from a calculation of length multiplied by width, multiplied by thickness, converted to a tonnage value. If the pavement is “out of shape,” the designer may add 2 to 4 percent more mix to allow for the depressions in the surface. Most pavements, however, require 5 to 15 percent more material so that proper smoothness can be obtained.

In order to place a minimum thickness of mix on the high spots in the existing pavement surface it is necessary to increase the thickness of the mix in the low spots. This situation results in the need for additional mix beyond what is normally calculated based on length,

width and thickness numbers. The contractor must be provided with enough mix to properly construct the pavement. In many instances, the amount of funds available to resurface the pavement is limited and thus the amount of mix included in the contract is also, incorrectly, minimized.

Thickness

Suppose the plans call for a surface course mix that is 1-1/2 inches thick. If the inspector on a paving project takes that to be a minimum thickness everywhere, there is going to be a problem with yield. Again, depending on the smoothness of the existing pavement surface, it is going to take “extra” mix to fill in the low spots. Thus to achieve a minimum thickness on the high spots, the thickness of the mix in the low spots must be greater than the minimum.

The thickness shown on the plans thus becomes an average thickness instead of a minimum thickness. If this is not done, the contractor will run out of mix before he runs out of roadway. Either that, or his mix tonnage will significantly increase over the amount shown in the plans; this, of course, creates a problem with yield.

Smoothness

The amount of smoothness obtained depends on two major factors: the first is the condition or smoothness of the existing pavement surface; the second is the number of layers of HMA mix that is to be placed on top of that existing surface.

Based on the free-floating screed principle, each layer of HMA mix improves the smoothness of the underlying pavement layer by a significant amount. If the present pavement surface is relatively smooth, any new layer placed will be smoother than the original surface since the paver will add more HMA mix in the low spots and thus level that original surface. If the existing pavement surface is rough and uneven, however, the surface of the new layer will be smoother than the original surface, but will still be rough to some extent. This is due to differential compaction.

A layer of dense-graded HMA mix will typically compact 1/4 inch per inch of compacted thickness. That means that a layer of mix that is 1 inch thick, when compacted, must be placed 1-1/4 inches thick by the paver in order to allow for the densification that is going to occur under the compactive effort applied by the rollers. An HMA layer that is compacted to a 2-inch thickness needs to be placed 2-1/2 inches thick in order to achieve the proper amount of density. When mix is placed along a roadway in variable thicknesses, due to the condition of the existing pavement surface, the compacted new surface will still not be completely smooth since the thick areas of mix will compact more than the thinner areas.

A second layer of mix will make the surface of that second layer smoother than the original pavement surface. This is because the amount of differential compaction between the thicker and thinner areas will be reduced. The placement of a third layer will make the new surface even smoother. The greater the number of layers constructed, the smoother the final pavement surface. The final smoothness is still dependent, however, on the smoothness of the original pavement surface.

Yield, Thickness & Smoothness

There are three basic rules in the asphalt paving industry in regard to the resurfacing of an existing pavement surface.

First, if yield is the primary consideration, the paver screed operator will have to continually adjust the angle of attack of the screed in order to reduce the amount of mix placed over the present pavement surface. This, of course, will affect both the minimum thickness of the mix over the high spots in the existing surface and the smoothness of the new pavement layer. The amount of mix set up in the contract must be enough to allow the contractor to properly level the existing pavement surface.

Second, if a minimum thickness of mix over the high spots in the existing surface is required, the amount of mix needed will increase over the quantity shown on the plans. This will result in an increase in the cost to complete the project but will result in a smoother pavement surface. A minimum layer thickness can result in a very rough ride.

Last, if smoothness is a primary consideration several things must happen. First, the number of layers of mix placed must be increased — only one layer will not do the job, even if a “scratch course” of mix

is placed. Second, enough quantity of mix must be available to properly level the surface — fill in the low spots and “shave off” the high spots. Third, the paver screed operator must allow the paver to do its job without continually adjusting the angle of attack of the screed.

Yield, minimum thickness and smoothness can not be obtained at the same time unless enough mix and the number of pavement layers are set up for the contractor to let the paver screed do its job — fill in the low spots and improve the smoothness of the pavement surface, one layer at a time.

OA



James A. Scherocman, P.E.
Consulting Engineer
11205 Brookbridge Dr.
Cincinnati, OH 45249
Phone: 513-489-3338
Fax: 513-489-3349
jim@scherocman.com



Asphalt Materials, Inc.

***Producing quality Asphalt Products including
Asphalt Cements, Modified Asphalt Cements
& Asphalt Emulsions***

Oregon, Ohio

(419) 693-0626

- SHRP, PG Graded Asphalt Cement
- Polymerized Asphalt Cement
- Multigrade Asphalt Cement
- Asphalt Emulsions

Marietta, Ohio

(740) 374-5100

- Asphalt Cement
- Cutback Asphalt Cement
- Asphalt Emulsions

Marion, Ohio

(740) 387-0776

- Asphalt Emulsions
- Slurry & Micro Surfacing Emulsions

“We are your Source for Specialty Asphalt Products”



Legal Corner

Contractors Have Vehicle to Remove County 'Home Court Advantage'

Occasionally contractors performing construction work for Ohio counties have disputes that result in litigation, often in the home of the county which acted as the owner on the project. Some contractors believe this gives the county a "home court advantage," as jurors in the county also are taxpayers in that county.

An obscure state statute, O.R.C. § 2311.42, provides that in these circumstances a contractor can request that jurors be selected from an adjoining county to hear the dispute and eliminate any perception of a home court advantage. Contractors with claims against counties may need to consider utilizing this statute to request out-of-county jurors, and counties should be aware of its existence.



By Donald W. Gregory, Esq.
Kegler, Brown, Hill & Ritter
65 E. State St., Suite 1800
Columbus, OH 43215
614.462.5400



Employment Opportunities

Flexible Pavements of Ohio is seeking to fill the position of Pavements and Materials Engineer. The Pavements and Materials Engineer provides FPO members with technical assistance; represents the interests of the industry before ODOT, OEPA, and various other federal, state and local government agencies; assists pavement owners in the development of HMA specifications and facilitates the development of new materials and specifications; facilitates member involvement in FPO through communication of issues between the membership and agencies regarding paving materials, techniques and specifications, environmental regulations, etc.; represents the interests of the membership on affiliated industry committees and associations, such as OTEC, ASHE, ASCE, etc.; develops training curriculum and instruction; and assists in the development of technical and/or promotional publications. Among other qualifications, applicants must be an engineer registered in the State of Ohio.

It is intended that this person will be on-board on or before March 31, 2007. Interested persons can send their resume to Clifford Ursich, PE and reference Pavement and Materials Engineer position, Flexible Pavements of Ohio, P.O. Box 16186, Columbus, Ohio, 43216. Electronic submissions can be made to cliffursich@flexiblepavements.org. Information received will be treated in a confidential manner.



Educational Opportunities

Sept. 12, 2006 – Warm Mix Asphalt Demonstration: See and hear about the latest technology for reducing the energy requirements for producing asphalt concrete. Workshop includes a field trip to the demonstration paving project and production facility. To be held at Salt Fork State Park Lodge near Cambridge. Obtain more information and register at www.flexiblepavements.org/events.cfm.

Also, while in central Ohio, plan to attend the:

September 13-14, 2006 – International Conference on Perpetual Pavement: Learn of the latest developments in the technology of Perpetual Pavements at this international conference, to be held at the Hilton Columbus Hotel at Easton. Obtain more information and register at <http://www.ohio.edu/icpp/>.

October 24-25, 2006 – OTEC 2006: The Ohio Transportation Engineering Conference is speedily coming upon us. Mark your calendars, as OTEC comes to the Greater Columbus, Ohio Convention Center.

The Asphalt Sessions, occurring Tuesday the 24, will be featuring concepts for sustainable highways. Three presentations will be made. The first, "ODOT Looks at Warm Mix Asphalt," will be an overview of the department's demonstration project constructed on SR 541 in Guernsey County. WMA is a new technology showing potential for improved pavement longevity and greater energy efficiency in the manufacturing process. The second presentation discusses the European approach to recycled asphalt pavement (RAP) management and usage. In Europe, RAP plays an important role in the manufacture of quality hot mix asphalt. The final presentation, "Terminal Blended Ground Tire Rubber," describes a new process for incorporating ground tire rubber (GTR) in asphalt pavement. The presentation will discuss this new technology and provide an overview of projects constructed to date. In an earlier session on bridge deck treatments, a presentation will be made on an alternative overlay and joint material that uses a polymer modified asphalt as a dense, impermeable bridge deck waterproofing material and wearing course.

We hope to see everyone at OTEC. Get more information and register at <http://www.otecohio.org/>.

See <http://www.flexiblepavements.org/events.cfm> for additional educational events.

Ohio's Representative Finishes Second in National HMA Competition

As reported in the Spring 2006 issue of *Ohio Asphalt*, the award for the mixture competition in Ohio was won by the team from Ohio Northern University, consisting of Naomi Schmidt and Jeremy Schroeder and advised by Dr. Subhi Bazlamit. Ohio's award-winning project was submitted for national consideration to the National Center for Asphalt Technology (NCAT) along with submissions from Wisconsin (Michigan Tech University) and New York (Alfred State University).

Results of the national competition have Michigan Tech winning the

2006 title, followed by ONU and Alfred State in second and third place, respectively.

The Michigan Tech team was the 2005 runner-up behind Ohio University.

FPO congratulates all the competitors for their efforts in participating in the national mixture performance competition. We are especially proud of the ONU team for representing Ohio and its great showing at the national level.



Dynatest®
WWW.DYNATEST.COM

DYNATEST PORTABLE ROAD SURFACE PROFILER MARK IV



- Vehicle Independent.
- Quick, easy installation.
- Standard unit with 2 wide-spot lasers.
- "Stop & Go" IRI, speeds up to 70 mph.
- No data conversion needed for ProVal.
- Guaranteed Accuracy.
- Meets ASTM E950 Class 1 and all State DOT certification requirements.
- Real Time reporting of IRI, PI, RN, bumps/dips, must-grinds.

979-776-6700 • Equipmentsales@dynatest.com



FROM ROCKS TO ROADS, WE'VE GOT YOU COVERED!

- ASPHALT PRODUCTION
- CONCRETE PRODUCTION
- LIMESTONE MINING & PRODUCTION
- SAND & GRAVEL MINING & PRODUCTION
- LIQUID ASPHALT STORAGE FACILITY
- QUALITY CONTROL FACILITY
- TURN KEY CAPABILITY on ROAD CONSTRUCTION

FACILITIES THROUGHOUT OHIO
Website: www.shellyco.com

THE SHELLY COMPANY * 80 PARK DRIVE-P.O. BOX 266 * THORNVILLE, OHIO 43076
PHONE 740.246.6315 FAX 740.246.4715

A DIVISION OF OLDCASTLE MATERIALS GROUP-AN EQUAL OPPORTUNITY EMPLOYER

Advertisers Index

ASPHALT MATERIALS	19
ASPHALT PAVEMENT ALLIANCE	17
CANTWELL MACHINERY	4
DYNATEST	21
HIGHWAY RUBBER PRODUCTS	13
OHIO CAT	IBC
PROTECTION SERVICES	13
SEMMATERIALS	BC
SOUTHEASTERN EQUIPMENT	22
SURFACE SYSTEMS AND INSTRUMENTS	4
THE MCLEAN COMPANY	IFC
THE SHELLY COMPANY	21

**TO
ADVERTISE
IN**

**OHIO
ASPHALT**

CALL

Megan Brown

at 614.846.8761 or 800.288.7423

mbrown@triad-inc.com



**Brilliant
Brunswick
Cambridge
Dublin
Gallipolis
Heath
Mansfield
Marietta
Monroe
NorthCanton
Perrysburg
Mentor**

www.southeasternequipment.com

Southeastern

Equipment Co., Inc.



**Sales • Parts • Service • Rental • Leasing
For All Your Construction Equipment Needs**

Call or Visit the Southeastern Branch Nearest You

BOMAG **800-798-5438**
www.southeasternequipment.com

CASE

CAT[®] PAVING PRODUCTS

Setting industry standards for speed, strength and profitability.



Ohio CAT offers a full line of asphalt paving equipment that ranges from specifically designed compaction products to quick, smooth riding pavers. Our equipment is proven in the industry to be the best value for durability and dependability.

- Asphalt, Soil, Vibratory and Pneumatic Compactors
- Cold Planers
- Asphalt Pavers
- Road Reclaimers

When you're looking for the true long-term value in paving equipment, contact Ohio CAT today and find out about our current purchase, lease or rental options.



CADIZ
800.837.6204

CINCINNATI
888.332.4658

COLUMBUS
888.441.4658

LUCASVILLE
888.336.4658

PAINESVILLE
888.901.6620

YOUNGSTOWN
800.837.6203

CANTON
800.837.6207

CLEVELAND
800.837.6200

DAYTON
888.330.4658

NORTHERN KY
888.446.4658

TOLEDO
888.339.4658

ZANESVILLE
800.837.6205

www.OhioCAT.com

Ohio

CAT[®]

CAT, CATERPILLAR, their respective logos and "Caterpillar Yellow," as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.

OhioAsphalt
P.O. Box 16186
Columbus Ohio 43216

PRESRT STD
U.S. POSTAGEPAID
COLUMBUS, OHIO
PERMIT #1560



SemMaterialsSM

*A Solution for Every Road*SM

Flex-A-Fill[®]

Crack Sealant

RoadArmor[®]

High Performance Chip Seal

Ralumac[®]

Micro-Surfacing

Stylink[®]

Polymer Modified Asphalt

ReFlex[®]

Cold In-Place Recycling

Restore[®]

Hot In-Place Recycling

Encore[®]

Hot In-Place Recycling

Recycle PlusSM

Recycled Asphalt Pavement

Strata[®]

Reflective Crack Relief System

NovaChip[®]

Ultrathin Bonded Wearing Course

Fortress[®]

Full Depth Reclamation
Granular Base Stabilization

www.semmaterials.com

