OHIO ASPHALT

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Acres of Diamonds

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ON THE COVER: Unlike the man who searched the world to find his fortune in diamonds, let's take inventory of our own backyard and the many attributes asphalt pavements provide Ohio. See The President's Page on page 4.

Flexible Pavements of Ohio

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

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The President's Page

Clifford Ursich, P.E.
President & Executive Director

"Fortunately, we do not have to travel the world to find the diamonds that are in our own backyard. The historical performance of asphalt pavements in Ohio, and around the nation, point to the profound wealth we have stored up in our asphalt pavements."

Acres of Diamonds

It's probably been about 20 years since I read the book, "Acres of Diamonds." My vague recollection is that it chronicles the story of a wealthy man who found himself discontented once hearing of grander fortunes to be made in the discovery of diamonds. The man, consumed with the thought of even greater wealth, sold all that he had, including home and land, to search the world over for the evasive fortune. His life ended in poverty. The great irony is that buried in the land he once owned was the richest diamond discovery in history.

If you're a regular reader of *Ohio Asphalt,* you've likely taken notice of the "VALUE" message that we have been seeking to communicate. We've touched on just about every aspect of "value" as it relates to asphalt pavement; from exhorting our association's contractor members to the highest in asphalt paving quality, to providing "valuable" information to pavement specifiers to ensure successful performance of their pavements, to the principles of benefit/cost and how they define "VALUE." VALUE, VALUE, VALUE. I hope you are getting the message, because if you are, you will have discovered acres of diamonds; perhaps not in your own backyard, but certainly in the vault of asphalt pavements that serve as Ohio's largest contributor to mobility.

Mining for Diamonds

There is a lot of discussion these days about asset management. That's a good thing because it gives a proper view of pavements. Pavements are assets. Assets have value; value in the physical sense and value in an economic and societal sense. Pavement owners do well when in the course of making a selection for pavement or treatment type they consider how the selection will impact the roadway system's asset value, in terms of physical, economic and societal impacts.

There is, you know, more to selecting pavement or treatment type than just the cost of the materials. Considering only the initial construction cost can lead you to purchasing inferior quality, and as we all know that leads to poor performance and dissatisfaction for those who use the product. If I may borrow an analogy, the next time your shoes wear out and you find yourself having to purchase some new ones, you can go the low-cost route and get the cheapest thing on the shelf, but if the cheap shoes proved dissatisfactory for comfort, appearance or durability, would they still be a good value?.

How does a person choose that pavement or treatment type that maximizes the roadway system asset value? What are the elements to be considered? Once the elements are known, how do you properly prioritize to ensure that the right pavement type (or treatment type) is chosen? Good questions. Let's address them.

Provided in the table on page 5 is a list of elements that should be considered when seeking to build or preserve the asset value of a roadway system. You will see that they are broken down into "Physical," "Economic" and "Societal" considerations. Some are objective in nature (i.e. supported analytically), while others are subjective (i.e. supported through engineering judgment). Whether they are objective or subjective is not so much of consequence. After all, doesn't the road user vote by the seat of their pants; that is, the relative level of comfort provided by the roadway; or by the increase in volume of their radio necessary to overcome the road noise? You bet! That being said, not all of the considerations need apply in each and every pavement (or treatment) type selection. The idea here is to incorporate those items that serve to meet the agency's goals and priorities as they seek to build the roadway infrastructure that provides the highest asset value.

Table: Value-Based Pavement Selection Criteria

Physical Considerations:	Explanation
Durability	A pavement's resistance to wear that occurs from vehicle use and Ohio's climate
Longevity	Pavement life from the point of initial construction to reconstruction/removal
Ease of Pavement Maintenance	A relative measure of labor, knowledge and equipment necessary to perform a maintenance task (e.g. filling a pothole in asphalt vs. repairing a blown concrete joint). As well, a pavement's affinity toward extended pavement life through use of low-cost preventive maintenance treatments
Swiftness of Pavement Construction and Maintenance	A relative measure of the speed at which a pavement (or treatment) can be constructed such that traffic inconvenience is minimized; or the use of a less costly strategy is facilitated
Safety	A pavement attribute wherein the wearing course can readily be renewed or changed to address different safety concerns (i.e. Open Graded Asphalt Friction Course – OGFC, Smoothseal for skid resistance, SMA to avoid pavement rutting in a high-traffic stress condition, etc.)
Economic Considerations:	
Cost to Construct Initially	Cost associated with the initial construction of the pavement or treatment type
Cost to Maintain Over Pavement Life	Cost associated with construction to occur in the future for the purpose of maintaining the pavement in acceptable riding condition
Cost to Reconstruct Pavement	Cost associated with the removal and replacement of a pavement that has expended its useful life
Asset Preservation	A measure of a pavement value as a lasting component of the roadway system (e.g. current economic value of asphalt base pavements if determined to be structurally "Perpetual")
Societal Considerations:	
Disruption to Traffic Flow	Primarily a measure of delay to road users resulting from the construction, maintenance and reconstruction of a pavement type
Smoothness	A measure of the ride quality associated with a pavement type
Quietness	A measure of the noise emanation from a pavement type as it relates to its impact on adjacent property owners and vehicle occupants
Sustainable Construction	A consideration of how well a pavement type meets the "sustainability" objectives of the local jurisdiction (i.e. raw material reduction, noise reduction, etc.)
Reuse/Recyclability	A measure of the affinity for a paving material to incorporate recycled materials, and the ability to reuse those materials in highest-and-best use applications (e.g. recycled asphalt pavement reused in the production of new asphalt mixtures vs. crushed concrete used as aggregate base).

If after reading through this list you're thinking that there's a lot to be considered to ensure the highest value roadway asset, congratulations! You are on the way to discovering how you can maximize your roadway system asset. You are on your way to discovering acres of diamonds.

Like anyone on a journey to a new discovery, a roadmap passed along from someone who has already arrived there is most helpful and appreciated. I would be doing a disservice to both our readers and the asphalt industry if I didn't do my part to pass along to you a roadmap and point you in the right direction.

If we were to view the above table through an impartial lens, as it were, we would find that asphalt supersedes its competition in virtually all categories. From cost, to durability, to societal considerations, asphalt has historically provided the highest value. Think about this … Asphalt base pavements on Ohio's interstate system have never needed replacing. Can you imagine? Even after the beating of millions and millions of trucks, these pavements still provide good ride service. That FACT can only be said of asphalt pavements. Consider the cost

saving and safety savings of that FACT! Not only dollars, but how many lives have been spared from injury by the lack of need to reconstruct these pavements. That's an asset of such high value that it simply cannot be assessed. Chalk those up to "Cost" and "Societal" considerations met.

If we were to look at the pavement attribute of "Durability," you would find behind it a legacy of devotion by industry and agency persons who have invested their lives' work in making asphalt better; better lasting, better riding and a better asset. Polymer-modified asphalt mixtures, Perpetual Asphalt Pavement, Warm Mix Asphalt, and Smoothseal are just some of the products of transportation professionals' devotion to the road users' riding experience. These efforts have provided more than just "Durability" and "Longevity" but also "Smoothness" and "Quietness;" both are hallmark attributes of asphalt pavements.

Ask pavement maintenance engineers what makes a pavement an asset and they'll tell you simply: "fixes that don't bust the budget." That's a job for asphalt. That's value.

Diamonds in Our Own Backyard

Fortunately, we do not have to travel the world to find the diamonds that are in our own backyard. The historical performance of asphalt pavements in Ohio, and around the nation, point to the profound wealth we have stored up in our asphalt pavements. There is no greater transportation asset than asphalt pavement. If you do not believe, I encourage you to search it out.

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THE UNITED STATES HAS MORE THAN TWO MILLION MILES OF PAVED ROADS, OF WHICH FULLY **94%** ARE ASPHALT. INTERSECTIONS PLAY AN INTEGRAL ROLE AND MUST BE GIVEN SPECIAL ATTENTION TO HANDLE THE UNIQUE STRESSES TO WHICH THEY ARE EXPOSED.

HIGH-PERFORMANCE INTERSECTIONS

*(Editor's note: The Asphalt Pavement Alliance has released a new technical publication, **High-Performance Intersections**, which provides useful guidelines to pavement designers who deal with the challenges of intersections and other high-stress pavements. To illustrate the principles, the publication chronicles two head-to-head competitions between asphalt and concrete intersections. It also discusses the "World's Strongest Intersection," located next to a quarry in Illinois. Below is an excerpt. The entire publication is available as a free download at www.asphaltroads.org.)*

Pavement designers and contractors have learned that some intersections need special attention. Heavy, slow-moving vehicles that are stopping, turning, or accelerating expose intersections to some of the highest stress levels found on pavements. High-stress locations also include climbing lanes, truck weigh stations, rest areas, and other slow-speed areas. Giving special attention to these areas can ensure that high-stress areas deliver the same outstanding performance as other asphalt pavements. Pavement engineers have adopted a four-point strategy to ensure good performance for intersections and other high-stress applications.

THE KEY TO ACHIEVING THIS DESIRED PERFORMANCE AT HIGH-STRESS INSTALLATIONS IS RECOGNIZING THAT THESE PAVEMENTS MAY NEED TO BE TREATED DIFFERENTLY FROM REGULAR, POSTED-SPEED PAVEMENTS

A basic intersection strategy consists of four steps:

- Assess the problem
- Ensure structural adequacy
- Select high-performance materials and confirm the mixture design
- Use proper construction techniques

Assess the Problem

Two types of pavement evaluations are normally conducted: a functional evaluation and a structural evaluation. A functional evaluation considers the surface characteristics of a road, including certain types of cracking, surface smoothness, noise, and surface friction characteristics. A structural evaluation is used to determine the ability of the pavement structure to carry current and future traffic. A structural evaluation typically requires detailed information about pavement layer thicknesses, paving layer material properties, subgrade support conditions, traffic, and the response of the existing pavement to loading.

Ensure Structural Adequacy

To perform well, an intersection must first have adequate thickness to provide the structural strength to meet traffic needs. For new pavements, thickness must account for normal factors such as subgrade strength, base thickness, and traffic. For existing pavements, it is critical that the structural adequacy of the in-place material be evaluated. Any failed or weak layers must be removed. Simply paving over existing failed material will likely result in reoccurring failure.

For slow-moving traffic, the binder should be selected one, high-temperature grade higher than climate conditions on the project call for, such as a PG-70 instead of PG-64. For standing or stopping traffic, the binder should be selected two, high-temperature grades higher, such as a PG-76 instead of a PG-64.

Select High-Performance Materials and Confirm Mix Design

Current technology, known as the Superpave process, provides engineers the necessary tools for improving the performance of asphalt intersections and other high-stress locations. The performance-graded (PG) binder system is used to select the proper type of liquid asphalt to bind the aggregate particles together in the finished pavement. This selection is based on each project's expected climatic and loading conditions. One of the provisions for selecting the appropriate PG binder recognizes the need for a stiffer binder for slowed or stopped traffic associated with intersections. This provision, commonly called "grade bumping," rounds up one grade higher for slow-moving traffic or two grades higher for standing or stopping traffic.

While the asphalt binds the pavement together, waterproofs, and gives additional stiffness, it is the aggregate structure that actually carries the load. This makes aggregate selection and blending a critical step. The Superpave aggregate requirements (coarse aggregate angularity, fine aggregate angularity, flat and elongated particles, and clay content) are used to characterize the aggregate being considered. As the expected traffic loading on the pavement increases, the aggregate and aggregate blend must meet higher standards. A successful blend of aggregate must have high internal friction to develop the degree of interlock needed to resist shearing or rutting. Tough, durable aggregates are necessary. Rounded aggregate must be avoided in both the coarse and fine fractions.

The purpose of the mix design process is to develop an economical and constructible blend of component materials that will satisfy the engineering requirements of the application. For intersection mixtures, it is particularly important to use a mix design that produces stone-to-stone interlock and orientation – without having the stone fracture. The Superpave gyratory compactor is well suited for the mix design process because it "kneads" the mix to simulate traffic action on the roadway. With higher traffic stresses, higher numbers of gyrations (typically over 100) are used to confirm how well a mix will perform in a high-stress installation. For intersection applications, additional laboratory performance tests of the mixture, such as the Hamburg wheel test or the asphalt mix performance tester, should be performed.

Proper Construction Techniques

Use of proper construction techniques is of course important for all pavements, and it is critical for high-performance intersections. Three aspects are worth special mention here: proper compaction, avoidance of segregation, and excellent joint construction.

Proper density is vital for long-term durability. The mixture must be properly compacted to resist additional compaction under heavy traffic. Proper compaction also reduces air and water intrusion that could cause accelerated aging and reduce the long-term durability of a pavement.

Segregation occurs when different-size aggregate particles separate in the mixture during handling and placement, creating a weaker, more open-textured pavement that is less durable. Best management practices to **prevent segregation** must be followed closely in intersection work; otherwise, problems may occur.

Proper joint construction techniques must be executed to prevent the intrusion of air and water at the construction joints.

Conclusions

Using this four-step strategy, high-performance intersections have been routinely constructed for years. Documented proof can be found in three case studies from three different states where exposure to intensive high-stress loading had required annual rehabilitations. After the intersections were rebuilt using this four-step strategy, all three have provided superior performance without additional maintenance or rehabilitation expenditures in the intervening years.

World's Strongest Intersection

The sign on the corner of Williams and Margaret Streets in downtown Thornton, Ill., reads "Thornton Quarry, Largest Limestone Quarry in the World." The quarry produces up to 50,000 tons of stone each day. The only way in and out of the quarry is through the intersection of Williams

and Margaret streets, the site of the "World's Strongest Intersection." The Thornton Quarry provides the majority of the mineral aggregates used throughout south Chicago and northwest Indiana. Aggregate from the quarry gets trucked as far away as Michigan because of its excellent quality, inherent to a quarry formed from a coral reef. The vast majority of this aggregate is shipped by truck and passes through the intersection of Williams and Margaret.

Background

The pavement endures around-the-clock pounding of thousands of fully loaded semi-trailers hauling stone and asphalt pavement material to construction sites and material producers throughout the greater metropolitan area. The pavement never fully relaxes; this leads to additional distresses. Over 1,200 heavy trucks per day enter the intersection, most of them stopping at the traffic light or making turns in 11-foot-wide lanes, heavily channelizing the load applications. On several previous occasions, the intersection had been paved, repaved, and even reworked to the sub-base. Until the intersection's rehabilitation in 1998, however, regardless of the effort or dollars expended, the performance of the pavement surface continually fell short of Illinois Department of Transportation (IDOT) expectations. Typically, it required maintenance or rehabilitation even before a year had passed.

24-Hour Repair Window

One of the significant challenges facing IDOT was how to repair the intersection in a cost-effective manner within a 24-hour period. Neither the quarry owner nor the customers wanted the intersection shut down, even for a few hours, in the height of construction season. Meeting the time-constraint challenge required extensive analysis and a true collaborative effort between experts from IDOT and the asphalt industry. The partners became known as the "tough mix team." The team met for numerous technical discussions and analysis sessions to develop the pavement design. The surface mix and the intermediate layers would have to handle the torture of the extraordinarily high-traffic loads in order to meet the mix team's high expectations.

Solution

As a result of the analysis, the experts determined that a previously placed stone-matrix asphalt (SMA) overlay had not failed, but the older mix below the SMA showed signs of serious deformation to a depth of approximately 6 inches. After extensive analysis, the team recommended using a properly applied SMA mixture over a completely restructured foundation. IDOT decided to mill the existing intersection pavement full-depth to ensure that the SMA would be placed on a solid foundation. IDOT specified that an SMA dolomite binder course be placed directly

on the milled surface, then topped with a 2-inch SMA surface mix. The aggregate for the SMA was steel slag, a by-product of the steel manufacturing in the region. The steel slag SMA mixture was specified for the surface course to provide a high-friction surface and the necessary stone-on-stone contact needed to handle the high stresses of the heavily loaded, slow-moving trucks.

Conclusion

An evaluation of the 1998 pavement fix was performed in 2010. After 12 years, and the application of almost 10 million equivalent single axle loads (ESALs), the intersection of Williams and Margaret streets has required essentially no maintenance and quietly continues its amazing performance as "the world's strongest intersection." The steel slag mixture has performed so successfully that it has become the mix of choice whenever IDOT needs to overlay an expressway in the Chicago area.

"High Performance Intersections" is a copyrighted article being reprinted with the permission of the National Asphalt Pavement Association (NAPA). This article originally appeared in the March-April 2011 issue of NAPA's HMAT *magazine (Volume 16, Number 2).*

Porous Asphalt Gaining Favor in Ohio

Increasing environmental regulation has resulted in a growing interest in permeable pavement technology for onsite storm water management. Porous pavements can virtually eliminate storm water outflow and maximize the available land for development and use. With a more than 30-year history of performance, pavement designers have naturally turned to porous asphalt as an economical and durable solution for storm water management in sustainable and low-impact developments.

A porous asphalt installation is typically comprised of an open-graded asphalt surface placed over a storage reservoir (sometimes called a stone-recharge bed) comprised of large aggregate, approximately 3 inches in diameter. The reservoir is designed at a depth calculated to provide a storage capacity sufficient for the anticipated rainfall. The soil below the reservoir is left un-compacted to allow for storm water infiltration. If the subgrade has low permeability, then the porous asphalt installation can be incorporated into a conventional storm water management system.

The last few years have seen porous asphalt installations in parks, universities and commercial applications throughout the state. Most recently, the historic Mansfield Arts Center specified porous pavement for their parking lot and grounds improvement project. The parking lot was built with a combination of conventional hot mix asphalt in high-traffic locations and porous asphalt pavement was utilized in the parking stalls. The use of porous asphalt provided the Arts Center with an effective solution to manage storm water runoff while maintaining the natural beauty of the wooded 8.5-acre property.

The Mansfield Arts Center project was designed by Marion Zaugg, Architect + Designer, Mansfield, Ohio, and used a two-course porous asphalt overlay placed over a stone-recharge bed. Previous porous asphalt projects in Ohio have used a single-course overlay. The porous asphalt pavement consisted of porous asphalt base mix (2½ inches thick), and a porous asphalt surface course (1½ inches thick). The asphalt mixtures were manufactured by Kokosing Materials, Mansfield, and mixture placement was by Ambry Asphalt, Mansfield.

The porous asphalt base course was comprised of 100 percent crushed aggregate (approximately ¾ inch diameter) coated with approximately 3½ percent of polymer modified asphalt binder. The surface course was comprised of 3/8-inch aggregate with 6 percent (minimum) polymer modified asphalt binder.

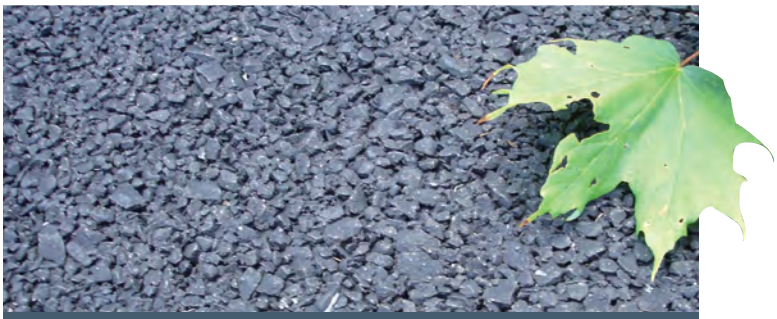


Figure 1: Porous Asphalt Surface Course, Mansfield Arts Center

The asphalt binder in porous asphalt mixtures uses the highest level of polymer modification in Ohio. The Arts Center project was the first to use an SBS (styrene butadiene styrene) polymer binder. A performance graded binder PG76-22M (ER80) having an elastic recovery value of at least 80 helps ensure the long-term durability of the Mansfield Arts Center's porous asphalt pavement.

To ensure the success of the pavement as a storm water control technology, the architect specified drains

to be placed around the perimeter of the parking facility. This redundant design is helpful in ensuring that the pavement has a means of releasing water in the event the volume of storm water reaching the underlying soil exceeds the soil's capacity to absorb it. Research from the University of New Hampshire Stormwater Center indicates porous asphalt can be designed for all soil types, including the poorest draining soils.

A stable paving platform is necessary for the successful placement of porous asphalt. Originally designed with a 12-inch-thick stone-recharge bed consisting entirely of ¾-inch stone, a modification was made in the Mansfield Arts Center's pavement to incorporate larger aggregate (AASHTO grading sizes No.1 and No.2) in the recharge bed. This provided the stability needed to both place and compact the porous asphalt mixtures using conventional paving and rolling practices.

Porous asphalt continues to gain favor in Ohio with the addition of the Mansfield Arts Center parking facility. The 2011 construction season is seeing additional porous asphalt projects on contractor's books. Asphalt is a well-suited material for porous pavements; it is "The Sustainable Pavement," having demonstrated its effectiveness not only in the area of reuse/recyclability, but also in water environments such as asphalt liners for drinking water, fish hatcheries, water pipes and industrial ponds.

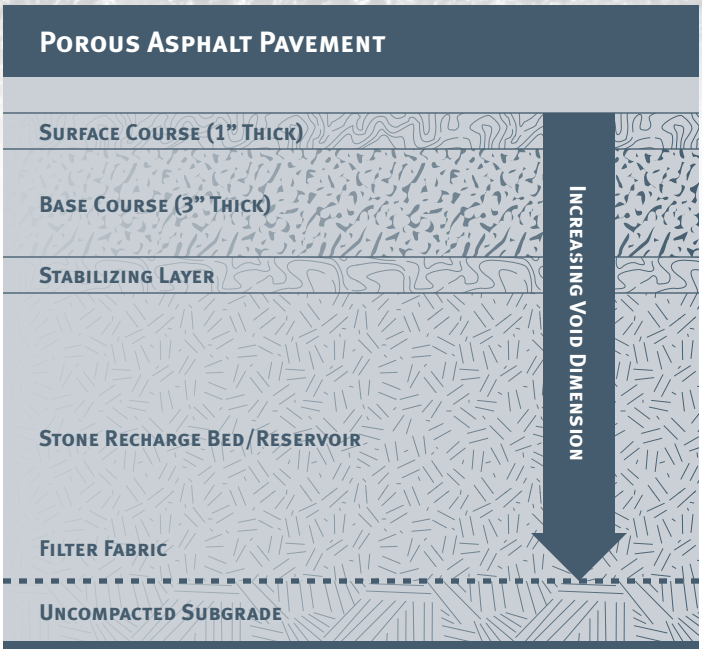
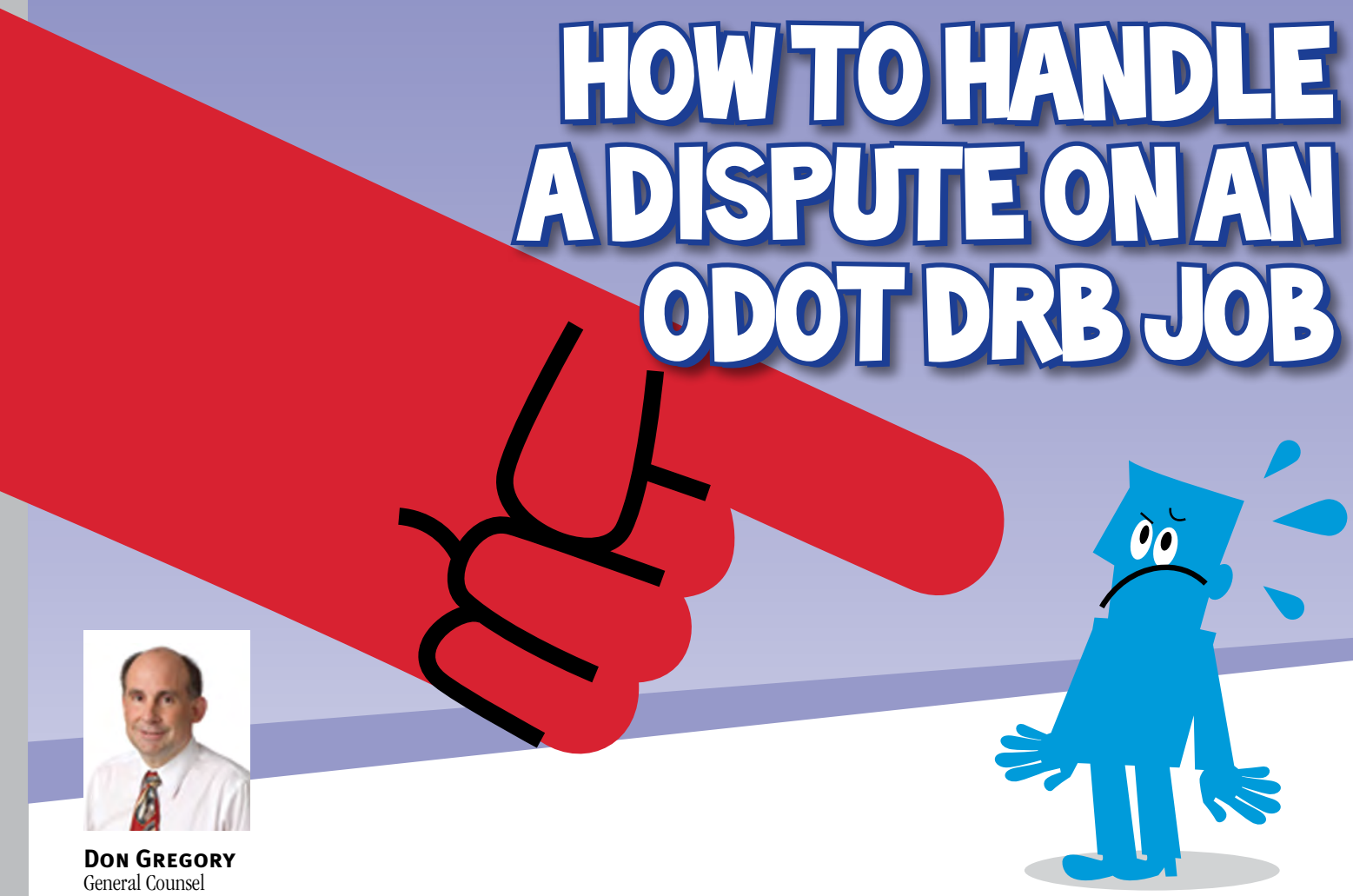


Figure 2: Typical porous asphalt pavement buildup to ensure pavement permeability and stability.

How to Handle a Dispute on an ODOT DRB Job



Don Gregory
General Counsel

I. Introduction

In order to foster a "partnering approach" to large construction projects, the Ohio Department of Transportation (ODOT) often uses Dispute Review Boards (DRB) in place of the standard dispute resolution process. Since 2004, roughly 21 percent of claims resolved through the ODOT dispute resolution process have ended with recommendations issued by DRBs. The DRB process is designed to "provide special expertise to assist in and facilitate the timely and equitable resolution of disputes and claims."[1] Since ODOT uses the DRB process in an attempt to avoid project delays and minimize the expense of settlement or litigation, it is essential for contractors to understand how the DRB process works in order to increase the chances of succeeding in the event that a dispute with ODOT arises.

II. Overview of the DRB

Once a contract with ODOT is established, the DRB is formed. The DRB consists of three members: one member selected by ODOT; one member selected by the contractor; and a third member selected by the existing two members, who serves as the DRB chair. All three members are required to have at least 10 years of experience with the type of construction involved in the project, and must be impartial and without any conflicts of interest with respect to both ODOT and the contractor. DRB membership often consists of attorneys, engineers and construction professionals. After the contactor and ODOT agree on the DRB members, the DRB will establish its "Operating Procedures for Dispute Resolution" based entirely or in part on a template of procedures provided by ODOT.

During the project, the DRB plays an active role in monitoring construction progress in order to anticipate and resolve disputes. The DRB members are obligated to make quarterly visits to the project site, keep current files on the project, meet with the other members of the DRB, and meet with both the contractor and ODOT. The DRB remains active throughout the life of the project, up until all unresolved claims are closed.

III. Dispute Resolution Process

The primary function of the DRB is to facilitate the dispute resolution process so that the project is allowed to continue. During the dispute resolution process, the contractor is obligated to continue work, while ODOT is obligated to continue to pay for the work. The process consists of three steps, each of which must be completed before the other. The first two steps involve direct negotiations between the contractor and ODOT, but the DRB must monitor both steps to ensure compliance with the procedure.

In Step 1, the contractor must meet with the engineer and area engineer at the project site. The contractor and engineers will review the contract and attempt to negotiate a resolution. The engineers will then make an "onsite determination" of the dispute and issue a written decision to the contractor.

If the contractor is unsatisfied with the onsite determination, then it must submit a written request for a "Step 2 meeting" to the district construction engineer (DCE), along with documents outlining and relating to the dispute. The contractor must then meet with the District Dispute Resolution Committee (DDRC), which will issue a written decision of the dispute within 14 calendar days of the meeting.

If the contractor is unsatisfied with the decision of the DDRC, it must then submit an appeal to the DRB to obtain a Step 3 hearing. The contractor must submit all claim documentation to the DRB, including a narrative of the dispute in question. During the hearing, the DRB will hear oral presentations from both the contractor and ODOT. After considering the arguments and all relevant documentation, the DRB makes a decision through majority vote and issues a written opinion, providing detailed directions to both parties. The recommendation is non-binding; however, the contractor must indicate to ODOT what its intentions are with regard to the DRB's recommendation.

If the contractor disagrees with the DRB recommendation, two primary courses of action remain. First, if new evidence emerges, the contractor or ODOT may appeal the recommendation for reconsideration by the DRB. However, if there is no new evidence to submit, the DRB recommendation is considered the final step in the dispute resolution process and it may not be appealed at any other level within ODOT. At that point the contractor's only recourse is to file a lawsuit against the State of Ohio in the Court of Claims.

IV. Advisory Recommendation Process

Another critical function of the DRB is to act in an advisory capacity during the course of the project. Anytime after completion of Step 1 of the dispute resolution process, the DRB may be contacted by either the contractor or ODOT in order to hold an advisory meeting. After considering the positions of both parties, the DRB will make a preliminary recommendation. The recommendation is not binding, does not have to be accepted or rejected by either side, and does not preclude a Step 3 appeal to the DRB in the dispute resolution process.

V. Winning a DRB Claim

Since 2004, DRBs have issued 11 recommendations with respect to contractor/ODOT disputes that have reached the Step 3 level of the dispute resolution process. Of these 11 recommendations, seven found that the contractor was entitled to at least some degree of compensation. However, the DRB often reduces the amount of compensation to reflect what it feels is the appropriate proportion of blame on the part of both the contractor and ODOT. For example, in a dispute between Mahan/National A Joint Venture and ODOT in 2006, the DRB found the contractor to be 75 percent at fault for the dispute, and therefore recommended that it receive 25 percent of its claim.[2]

The deciding issue in many DRB recommendations is the interpretation of the contract itself, along with the Construction and Materials Specifications (CMS). The DRB will often look to the provisions of the CMS to determine if they address and control the outcome of the particular issue in dispute. For example, in a dispute between Kokosing Construction Inc. and ODOT in 2009, the DRB determined that because of change of conditions requiring extra work, CMS 104.02D mandated that the contractor be awarded a change order, and given compensation.[3]

DRB recommendations often emphasize continued negotiations between the contractor and ODOT in order to resolve the dispute with minimal disruption of work. In a 2005 dispute between National Engineering & Construction Co. and ODOT, the DRB recommended that the contractor and ODOT resolve issues regarding material testing through continued negotiations.[4] Likewise, in another dispute between National Engineering and ODOT in 2005, the DRB suggested that the parties reconsider the proposals put forth in past failed negotiations.[5]

Based on the DRB dispute resolution process and past DRB recommendations, general trends emerge that may help a contractor increase its odds for successfully resolving a dispute with ODOT. First, a good-faith effort to comply with the dispute resolution process, especially with respect to providing adequate and timely documentation of its claim, will increase the odds of a favorable resolution. Failure by a contractor to observe the time limitations associated with the process may foreclose the opportunity to proceed to a Step 3 hearing, or even file a complaint with the Court of Claims. In addition, submitting thorough claim documentation during the process will increase the chances that the DRB will award entitlement close to the amount claimed by the contractor. If the DRB is not presented with enough evidence to make the determination it may recommend that the parties return to negotiations.

Second, since the DRBs rely heavily on the provisions of the CMS, a contractor can increase its chances of successful dispute resolution significantly by understanding and complying with those provisions from the outset of the project. Utilizing experienced counsel to come to a better understanding of both the contactor's and ODOT's obligations under the specifications will help the contractor anticipate and avoid unnecessary conflicts, and better state its entitlement if such conflicts do arise.

Finally, willingness toward a "partnering approach" in the DRB process may also increase a contractor's chances of obtaining a favorable outcome in ODOT disputes. Since much of the DRB process is centered on keeping an open dialogue between the parties, and since many DRB recommendations encourage continued negotiations, demonstrating a commitment to meaningful and principled negotiation may help a contractor ultimately receive a favorable DRB outcome.

VI. Conclusion

As ODOT continues to use the DRB process to handle conflicts on large construction projects, it is imperative for contractors to know and understand the steps they must take to pursue a claim against ODOT. By following the required steps, adhering to the CMS guidelines, timely submitting the proper documentation, and demonstrating a commitment to open negotiation, a contractor can help ensure it will obtain a successful outcome on a DRB claim.

[1] *ODOT Proposal Note 108.*
[2] *ODOT Claim No. 10-020510-02. ODOT's DRB decisions can be found on the ODOT website whose address is http://www.dot.state.oh.us/Divisions/ContractAdmin/Claims/Claims-HTMs/YearList.html).*
[3] *ODOT Claim No. 07-070387-01.*
[4] *ODOT Claim No. 06-0163(04)-01.*
[5] *ODOT Claim No. 06-0163(04)-02.*

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Since 2005, when the Ohio Department of Transportation (ODOT) first specified the requirement for a Field Quality Control Supervisor (FQCS) on ODOT asphalt paving projects, the department has been approving contractor personnel who have the required minimum experience and completed the required training. The FQCS program has always specified that approval was for a five-year period. This past April, contractors were notified through an ODOT-issued letter of the department's requirements for the five-year, re-approval of contractor personnel serving as FQCS. The letter and attachments can be viewed at www.flexiblepavements.org.

Specification requirements for the FQCS are found in Item 403.03 A of the 2010 Construction and Materials Specifications and testing Supplement S 1041.01, A.3., and C.1. ODOT maintains a list of currently approved FQCS personnel on the Office of Materials management (OMM) website at http://www.dot.state.oh.us/Divisions/ConstructionMgt/Materials/Asphalt%20Information/Approved-FQCS-List.pdf.

Since 2006, Flexible Pavements of Ohio (FPO) has provided the one-day training course required for FQCS approval to more than 700 participants. In addition to the contractor personnel seeking FQCS approval, other public agency and consultant personnel have taken the training in order to broaden their knowledge of asphalt paving inspection and specification requirements. ODOT is requiring the Independent Quality Firm on design-build projects to have a person who has completed the FQCS training.

The plan described in the letter and attachment requires that a currently approved FQCS receive update training five years after having taken the original FQCS training provided by FPO. The preferred method of delivering this re-training is an approved, company-delivered training program tailored to meet the update needs of the FQCS and emphasizing the management support needed for the FQCS to perform their duties. The intended procedure is for the company employing the FQCS to develop and submit to the ODOT Lab for approval a plan for re-training the FQCS. Attached to the ODOT letter is a course outline that indicates the topics that must be addressed in the FQCS re-training course.

Contracting companies are urged to start preparing their training programs and submitting them to ODOT for approval as soon as possible, as some FQCS who received their initial training in the spring of 2006, during the program's rollout, are already beyond the five-year window for re-training.

To assist those companies that may be unable to develop and offer their own training programs, FPO is developing a seminar for FQCS re-approval training. As before, the training will be open to any interested persons wanting to enhance their knowledge of asphalt paving inspection and specification requirements.

Watch the FPO website calendar for the schedule of the FQCS training seminars beginning this fall at www.flexiblepavements.org, or contact FPO at (888) 446-8649.

50th Annual Meeting & Equipment Exposition

Columbus/Polaris Hilton Hotel
March 6-7, 2012

Come celebrate Flexible Pavements of Ohio's (FPO) golden anniversary on March 6 & 7, 2012, during the 50th Annual Meeting & Equipment Exposition at the Polaris Hilton Hotel in Columbus, Ohio. This meeting will be a tribute to the legacy of accomplishment and the promising future of Ohio's asphalt industry.

Planning is currently underway for this must-attend event. For conference registration and additional information, go to www.flexiblepavements.org or visit FPO on Facebook.

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PRICE ADJUSTMENT

Clauses are Focus of NCHRP Research

The National Cooperative Highway Research Program (NCHRP) has recently released a study titled, "Price Indexing in Transportation Construction Projects." The objectives of the research were fourfold: (1) Describe the current state of departments of transportation (DOT) practices in using price indexing or price adjustment clauses in construction contracts; (2) Collect data on the experience with adjustment clauses from state DOTs, highway construction contractors and other industries; (3) Conduct a quantitative analysis of the effectiveness of the clauses using highway construction bid data; (4) Provide guidance for DOT staff making decisions about whether and how they should use such clauses. Evaluated in the research were cement, steel, asphalt and fuel adjustment clauses.

Price Adjustments – An Anti-inflation Measure

Ohio's use of price adjustment clauses (PAC) dates back 31 years to 1980. The late 1970s saw the OPEC Oil Embargo, which caused a rapid escalation in the price of crude oil. Products related to crude oil, of which asphalt is one such product, saw dramatic increases in volatility and price. In 1979, the Federal Highway Administration (FHWA) provided guidance in its report "Combating Inflation in Highway Construction Costs." Of the anti-inflation measures suggested, the FHWA guidance stated price adjustments for asphalt should be given in order to minimize the effects of supply and price uncertainties. Following that guidance, the Ohio Department of Transportation (ODOT) implemented in 1980 the asphalt binder price adjustment. Since that time, Ohio has continued to use what has become a best-practice of highway agencies for the purpose of fighting the inflationary effect brought on by volatility in the supply of petroleum. Throughout the United States such practices were adopted and have since expanded to include commodities such as portland cement, steel and fuel.

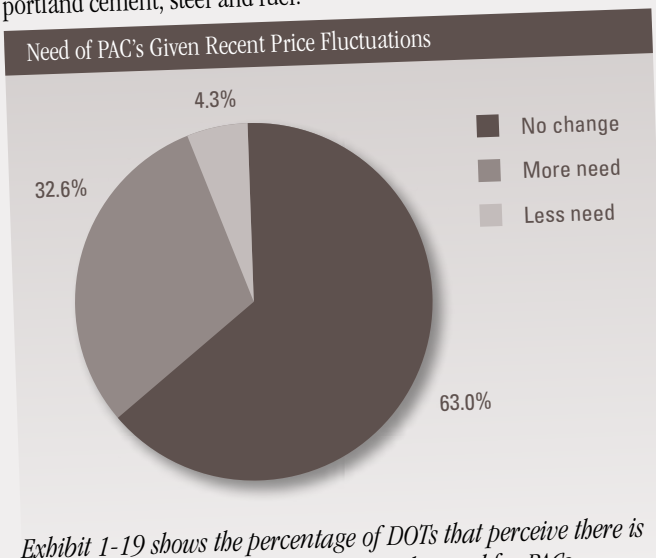

Exhibit 1-19 shows the percentage of DOTs that perceive there is more need, less need or no change in the need for PACs.

Misconceptions about Price Adjustment Clauses

Sometimes inappropriately referred to as "escalation clauses," PACs of all sorts do more than compensate a contractor when the price of a commodity increases; PACs are designed to return dollars to the agency when a commodity falls in price. In 2008, the escalation of the price of crude oil resulted in the cost of asphalt binder rising substantially. The 2009 paving season saw the opposite, a tumbling of asphalt binder prices and a return of dollars to agencies. The

benefit realized by those agencies that utilized a price adjustment was more than the return of dollars; a further benefit was the anti-inflationary effect on bid prices.

Without the anti-inflationary benefits of price adjustments, contractors are faced with substantial risk when bidding work that incorporates volatile commodities, leading to the likelihood of bid inflation. The NCHRP findings state that when surveyed, *"nearly all responding contractors (approximately 91 percent) claim they add contingencies to their bids in the absence of PACs (price adjustment clauses). The problem of increased material price risk in contracts is largely mitigated by the inclusion of such clauses."*

Additional NCHRP Findings

Trigger Value

The term "trigger value" is used to describe the percentage increase or decrease in commodity price at which point a price adjustment is "triggered" (i.e. compensation or deduction made). NCHRP found lower trigger values will increase the cost of administering the program, as well as program costs. However, lower trigger values also will decrease any risk premium (i.e. cost added to bid for purpose of covering risk) that may be included in the pricing. Conversely, higher trigger values may reduce the effectiveness of PAC programs, as contractors may still need to add a risk factor in pricing. NCHRP recommended trigger values are 0 percent to 10 percent (plus or minus). The report makes this important note … *"It is worth noting that the statistical model for Missouri showed that the price adjustment clause lowered average bid prices. Missouri was the only state tested that has a zero trigger value (0 percent) and the only state for which the statistical model provided consistently positive results for the price adjustment clause."*

Lower Bid Prices

Among state DOT survey respondents, 78 percent reported a moderate or large benefit form PACs in terms of better pricing, while only 4 percent reported no benefits. Contractors agreed, with 58 percent responding, that the presence of PACs led to moderately or significantly lower bid prices, while only 13 percent responded that they led to moderately or significantly higher bid prices. When PACs are not in place, almost all responding contractors claim they add contingencies to their bids to cover the material price risk.

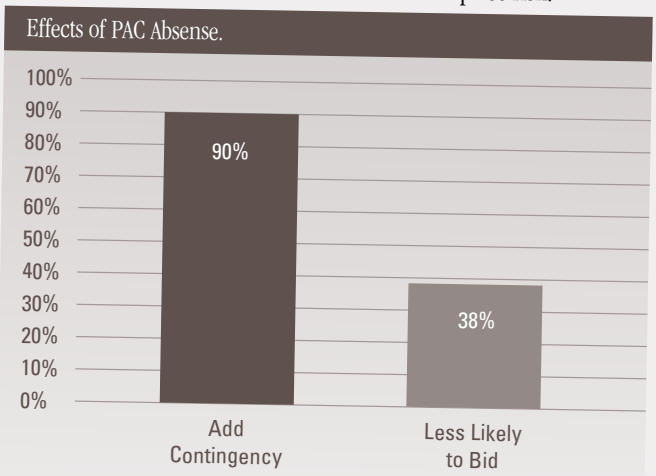

Exhibit 2-4 provides a compilation of responses on how bid prices and number of bids change without a PAC.

Market Stability

The NCHRP report notes that anecdotal evidence from state DOTs and construction contractors indicate PACs lead to overall greater stability in the highway construction market. Sixty to 80 percent of responding DOTs perceive a moderate to large benefit from PACs to all stakeholders in the market – DOTs, prime contractors, subcontractors and suppliers. Only 4 to 7 percent of DOTs perceive no benefit from PACs to themselves, prime contractors or subcontractors. The responses from DOTs indicate that contractor stability afforded by PAC programs provides a significant benefit.

Increased Number of Bids

Another potential benefit of PAC programs is an increase in

the number of bids received per project. NCHRP found that the consensus of the survey respondents is that there would be little change in the number of bids. The statistical analysis performed as part of this research did not provide evidence that PAC programs increase the number of bidders. The author notes a confounding factor is that the economy generally performs poorly during periods of rapidly increasing fuel prices, and this tends to increase the number of bids as contractors become more desperate for sales.

Implementation on the Local Level

As previously stated, since 1980, ODOT has employed the best-practice of using an asphalt binder price adjustment. As well, many local governments have adopted its use. There are, however, those who do not use the asphalt binder price adjustment because a fixed contract amount is needed to ensure budgets are met. There is cost for ensuring budgets are not impacted; it is found in the likelihood of inflated bid prices.

Some local agencies have been creative in devising a means of utilizing the asphalt binder price adjustment while still controlling total project costs. In so doing, they avail themselves of both the opportunity to reduce risk premium and attain savings through the price adjustment when prices are falling. To address those occasions where the cost of asphalt is escalating and a cost outlay is necessary, a maximum compensation amount is set up as a contingency in the contract. This gives the contractor some assurance that there will be some compensation if binder prices escalate, and confidence to the agency that the allotted financial resources will not be exceeded.

Legislative Update: New Laws Impact Ohio's Asphalt Industry

State Scale Registration Fee Takes Effect

In July, Gov. John Kasich signed House Bill 153, the biennial state budget. This bill included a provision authorizing the Ohio Department of Agriculture to institute an annual device registration for all new and existing scales used in assigning the final value of a commercial transaction.

This new registration applies to scales located at hot mix asphalt (HMA) plants and quarry operations and includes a fee of $75 per device. Registrations are due annually on July 1. However, for 2011 only, device owners have until September 30 to register. All registrations received after September 30 will incur a $20 late fee in addition to the $75 cost of registration.

For additional information regarding this new registration go to the Ohio Department of Agriculture Division of Weights and Measures webpage at http://www.agri.ohio.gov/weights/.

State Legislature Approves Haul Vehicle Weight Variance

The Ohio Department of Transportation (ODOT) budget, which became effective on July 1, included language which allowed for a weight variance for vehicles on non-interstate routes hauling HMA, certain agriculture products and specific construction materials including aggregates. This variance applies to vehicles transporting asphalt from the plant where it is produced to the paving site. This law originally permitted a 5 percent variance on gross vehicle weight as well as a 5 percent variance on axle and wheel loads. In addition, this legislation provided an exemption for wheel and axle loads, provided the gross weight variance is not exceeded.

In July, the state legislature amended this law to increase the allowable variance to 7.5 percent on both gross vehicle weight and axle weights and removed the exemption for wheel and axle loads. This amendment was signed into law as an emergency measure on July 27, by Gov. Kasich and is effective immediately.

Go to the Ohio State Highway Patrol's Truck Drivers Guide Book at: http://statepatrol.ohio.gov/doc/2010TDGB.pdf for additional information regarding Ohio's truck weight limits.

OA

FPO Advocates for Transportation Reauthorization

Flexible Pavements of Ohio (FPO) joined transportation stakeholders in May for the 2011 Transportation Construction Coalition's (TCC) Washington, D.C. fly-in to urge action on the long overdue federal transportation funding bill. The Ohio coalition included FPO member companies Kokosing Construction, Gerken Paving, The Shelly Co., Shelly and Sands and representatives from the Ohio Contractors Association. In addition to industry representation, public officials from the Ohio Department of Transportation and the Butler County Engineer's Office joined the efforts.

The coalition advocated for the passage of a well-funded, multi-year highway bill during a series of 15 meetings with members of Ohio's Congressional delegation and their senior staff. The current bill, SAFETEA-LU, expired two years ago and the federal transportation program has been operating on a series of short-term extensions. These extensions have seriously hindered the ability of state and local governments to design and plan long-term infrastructure improvements due to the continued uncertainty of future funding. Equally important to a long-term bill is the need for additional revenue to adequately address the growing needs of the nation's transportation infrastructure.

Committees in both chambers of Congress have offered competing visions of the highway bill without supplying many specifics. The leadership of the House Transportation and Infrastructure Committee supports a fiscally constrained six-year bill focused on programmatic reform while the Senate Environment and Public Works Committee is developing a bipartisan two-year bill funded at a slightly higher level. The details of these rival plans remain unclear and competing legislative priorities have resulted in little substantive progress. Much work remains as Congress continues to deliberate through the summer and the goal of a well-funded, multi-year bill remains a top priority of Ohio's asphalt industry.

OA

(From left) FPO President/Executive Director Cliff Ursich, Congressman Pat Tiberi, The Shelly Co. President Doug Rauh and The Shelly Co. Senior Vice President Ty Nofziger talk at the TCC Fly-in in Washington, D.C. The goal of this year's event was to urge Congress to proceed with transportation reauthorization.

Mark Your Calendars

International Warm-Mix Conference St. Louis, Mo., October 11-13

The National Asphalt Pavement Association (NAPA) and the Federal Highway Administration (FHWA) are co-hosting the Second International Warm-Mix Conference, October 11-13 in St. Louis, Mo., at the Hyatt at the Arch. This 2½-day conference will provide a progress report on the implementation of warm-mix asphalt.

Registration and additional conference information is available on NAPA's website at http://www.hotmix.org/warmmix.

Ohio Transportation Engineering Conference Columbus Convention Center, October 25-26

The 2011 Ohio Transportation Engineering Conference (OTEC) is scheduled for October 25-26 at the Columbus Convention Center. This year's theme: "Financing Our Future" will focus on maximizing the public's investment in Ohio's transportation system.

FPO is organizing an Asphalt Technology session on Tuesday, October 25, as well as co-organizing a session on Pavement Preservation on Wednesday, October 26. Visit the OTEC website at http://www.dot.state.oh.us/engineering/OTEC/Pages/default.aspx for registration and conference information as well as archived material from previous conferences.

Ohio Asphalt Paving Conference The Fawcett Center, Feb. 1, 2012

The 2012 Ohio Asphalt Paving Conference (OAPC) is scheduled for Feb. 1, 2012, at the Fawcett Center located on the campus of The Ohio State University.

Registration and conference information will be provided as it becomes available on FPO's website at www.flexiblepavements.org, or visit us on Facebook.

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