Dear Colleague:

It’s been busy recently as we tackle the challenges of securing adequate funding for our statewide transportation needs while simultaneously continuing our Next Generation efforts to modernize PennDOT. As I communicated to you in my February letter, the Governor’s transportation plan now under consideration by the legislature builds on the fine work of the Transportation Funding Advisory Commission (TFAC). When new revenue is made available, we will invest significantly in roads, bridges, and multimodal transportation initiatives.

We continue to identify, pilot and implement initiatives that capitalize on innovation, engagement, collaboration, efficiency, and public/private partnerships. Some highlights on PennDOT Next Generation’s initiatives:

- **PennDOT’s Next Generation (PNG)** project is an initiative of 30 ongoing projects where we are looking for better ways to accomplish our goals. Whether it’s a more intense focus on improving our safety culture or better ways to accomplish line painting efficiently and effectively throughout the commonwealth, PNG helps us identify benefits and savings as we consider new ways to do things at PennDOT.

- **PennDOT’s Modernization** initiative includes 41 projects that span activities from aviation to highway transportation. A focus on improved operations and efficiencies will enable us to provide better service to our customers and increase the value of the commonwealth’s investment in transportation.

- Our partnership with the Federal Highway Administration (FHWA) continues with our active leadership in the **State Transportation Innovation Council (STIC)**. Pennsylvania was one of the first to embrace this approach for identifying and implementing innovations. Read more about the STIC program and our progress on Page 4 of this issue.

- I salute PennDOT employees for their ideas that have created **IdeaLink** initiatives that have made a difference. When each of us looks at better ways to do things at PennDOT, we all win. Keep up the good work!

All of these initiatives will help us to succeed in the face of growing customer demands and limited resources. Read more about these initiatives and the projects at [www.moderndot.pa.gov](http://www.moderndot.pa.gov).

As always, we continue to appreciate and rely on the good ideas and good will of PennDOT employees who work to improve the transportation experience of customers every day of the year.

Sincerely,

Barry J. Schoch
Secretary of Transportation
Stone Matrix Warm Mix Asphalt — Follow Up

As part of the implementation of PennDOT’s Warm Mix Asphalt (WMA) initiative, the Implementation Team observed a trial project on Sep. 6 & 7, 2012 in Crawford County in District 1. Aimed at evaluating WMA with a Stone Matrix Asphalt (SMA) mix, a lower class/volume road served as a test case for this project. The contractor, Glenn O. Hawbaker, employed Maxam Aqua Black foaming process as the WMA technology.

Despite initial hurdles including applying the WMA on an uneven underlying road surface and some handwork required to pave driveway transitions, the overall test went well. The contractor opted to produce the WMA at the higher end of the permissible temperature range (270-310°F), yet the pavement set well, and was ready for traffic (with some refinement of uneven surfaces related to the roadway) after application.

“Overall, the field staff was pleased with the material quality, mat appearance, compactability, and the uniformity of the material,” reports Al Leonori of the Implementation Team. “Initial concerns based on previous opinions of WMA in general, or past experiences with WMA were quickly overcome.”

“PennDOT plans additional field tests utilizing the SMA WMA approach that is environmentally sound, faster, and possibly more cost effective than hot mix,” says Scott Nazar, Bureau of Maintenance and Operations Materials section chief. He continues, “At the Pennsylvania State Association of Township Supervisors Annual Conference in April, we will offer a PowerPoint presentation developed by the WMA Implementation Team to our municipal partners and the engineers who work for them.” Nazar concludes, “We are committed to WMA and will continue to work with the districts and contractors to further its implementation.”

Bridges — Pre-Stressed Girder Update

With work to improve bridge maintenance ongoing, PennDOT has updated bridge repair standards for pre-stressed concrete structures. Using the results of research initiated by PennDOT and conducted by the University of Pittsburgh, the Implementation Team, working with the Bureau of Project Delivery, reviewed the results and identified two successful bridge repair methods. Both methods have been approved for use on Pennsylvania bridges.

One method, the traditional concrete and mortar approach, is useful to repair spalls and cracks. If structural capacity is compromised, PennDOT recommends the second approach: the non-prestressed/post carbon fiber reinforced polymer (CFRP) repair. This method may restore beam capacity, especially in situations with damaged strands.

PennDOT has updated Chapter 5 of the DM-4 Manual (PUB 15M: Design Manual Part 4, Structures) to accommodate these changes. Each bridge inspection must address the cause of beam deterioration. For example, leaky deck joints that lead to salt-laden runoff often cause spalling of the load bearing areas of the bridge, or even more significant damage. In this case, the leaks must be addressed, as well as any structural damage.

Chief Bridge Engineer Tom Macioce notes, “We are pleased with the implementation of this research project, leading to better bridge repair. The manual now has new repair drawings to support the procedures described. We look forward to future research projects to help us with our continued bridge maintenance.”
During the past six months PennDOT’s Research Division has been developing a strategic plan to better support our customers. Division Manager Michael Bonini explains, “Fitting with PennDOT’s vision, our plan focuses on how we can support our division customers with on-target, cost effective and useful research projects.”

The planning process engaged all members of Bonini’s team, and through a facilitated session, the group identified the division’s strengths and opportunities and also talked about ways to confront obstacles for more effective performance. “Our goal is to increase the visibility of our division, to share our knowledge and help our colleagues more efficiently,” adds Bonini.

Key elements of the plan include a set of strategic objectives that encompass satisfying internal and external customers with high quality work products; enhancing value and return on investment in technology transfer projects through use of the Implementation System; improved awareness of the Research Division’s capability and willingness to collaborate with customers; and proactive planning to anticipate PennDOT’s research needs.

PennDOT Deploys Full Depth Reclamation (FDR)

Last May, PennDOT’s Research Division received a final research report on Developing Standards and Specifications for Full Depth Pavement Reclamation, conducted by Quality Engineering Solutions, Inc. (QES). The report supported the broad implementation of a process for recycling asphalt from failing pavements into the replacement roadway.

The Implementation Team has been active in moving the research results from the report to standard operating procedure for PennDOT. This includes reviewing the report with its recommended revisions to current operations, coordinating a review process that engages district personnel, and identifying and updating relevant PennDOT manuals and publications. Technical Advisor Josh Freeman notes, “FDR will save PennDOT time and money – plus it’s ecologically sound. We look forward to full implementation of FDR by the summer paving season.”

SHRP2 — Implementation Assistance Program

The second Strategic Highway Research Program (SHRP2) was developed to help transportation professionals save time, money and lives. To date, more than 100 research projects have evolved from a pressing need identified by transportation officials at the federal, state and local levels of government. From the results of this research come a series of products called SHRP2 Solutions. To aid in the implementation of these research results, FHWA and AASHTO have announced an Implementation Assistance Program (IAP) to help state departments of transportation, metropolitan planning organizations and other interested parties participate in the deployment of SHRP2 Solutions. Applications for the IAP were due Mar. 22, 2013.

In an effort to bring these research results to Pennsylvania, PennDOT has submitted applications for four SHRP2 Solutions:

<table>
<thead>
<tr>
<th>Project</th>
<th>PennDOT Champion</th>
</tr>
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<tbody>
<tr>
<td>Innovative Bridge Designs for Rapid Renewal</td>
<td>Tom Macioce</td>
</tr>
<tr>
<td>Innovative Strategies for Managing Complex Projects</td>
<td>Wayne Willey</td>
</tr>
<tr>
<td>Preservation Options for High Volume Roads</td>
<td>Melissa Batula</td>
</tr>
<tr>
<td>Organizing for Reliability Tools</td>
<td>Doug Tomlinson</td>
</tr>
</tbody>
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Announcements for implementation funding will be made in late April and PennDOT Innovations will provide updates and additional information regarding the awards.
In 2010, the Federal Highway Administration (FHWA) implemented the Every Day Counts initiative to shorten project delivery and expedite the deployment of proven technologies. The initiative’s goals are to create an innovative atmosphere among the transportation community to allow for more efficient and effective delivery of projects to address the general public’s transportation needs. FHWA introduced the State Transportation Innovation Council (STIC) concept to state transportation departments and industry partners to foster ownership and pride in establishing a process in which ideas, innovative techniques and processes can be evaluated and implemented quickly and proficiently.

Since July 2012, the Research Division has been managing and coordinating STIC activities, along with key members of a team from throughout PennDOT (Christine Reilly, Rich Heineman, Nolan Ritchie and Jamie Legenos) and FHWA (Karyn Vandervoort), in an effort to facilitate the collection, review and implementation of successful innovations throughout Pennsylvania. “Our work with successful technology transfer through the Implementation System and Local Technical Assistance Program makes the Research Division a logical place to facilitate STIC activities,” notes Laine Heltebridle, director of the Bureau of Planning and Research. “We are excited to support the Technical Advisory Groups as they review nominated initiatives and prepare white papers for STIC review.”

The varied sources of initiatives, from district offices, local government officials, universities, industry partners and other state and federal partners, illustrate the casting of a wide net for the best, most implementable ideas. Through STIC and in partnership with FHWA, PennDOT is leveraging the good work of others in an effort to streamline project delivery and deliver a better transportation system in Pennsylvania.

Look for more about STIC progress in future issues of PennDOT Innovations. In addition, please visit the STIC website at www.moderndot.pa.gov.

**What is STIC and How Does it Work?**

Designed to foster a collaborative and fast-moving culture among public and private partners, STIC members include:

- PennDOT
- FHWA
- Pennsylvania Turnpike Commission
- Local Public Agencies
- Industry Partners
- Academia
- Department of Environmental Protection

PA Secretary of Transportation Barry Schoch co-chairs STIC with Renee Sigel, FHWA’s division administrator for the Commonwealth of Pennsylvania. STIC is comprised of 10 Technical Advisory Groups (TAGs):

- Project Delivery
- Construction
- Maintenance
- Design
- Environmental
- Safety
- Technology
- ITS
- Materials
- Public Outreach

Each TAG has subject matter experts who evaluate the feasibility of proposed initiatives and determine if sufficient information exists to make a responsible recommendation to proceed to implementation. Each TAG prepares a white paper on the recommended initiatives, and once approved, monitors deployment and reports back to the STIC semi-annually on progress.

STIC meetings were held on Oct. 25, 2012 and Mar. 21, 2013. At these meetings, white papers were presented on 10 initiatives. In an effort to track the implementation and adoption of these STIC initiatives, deployment plans have been developed for each, including:

**October 2012 initiatives -**

- Expanded Polystyrene Geofoam
- Integrating the Highway Safety Manual into Practice
- Data Driven Approaches to Crime and Traffic Safety
- I-95 Variable Speed Limits
- Internal Smart Applications
- Adaptive Traffic Signal Systems and Ramp Management

**March 2013 initiatives -**

- Commercial Vehicle Mainline Virtual Weigh Stations
- Implementation of DarWIN-ME Pavement Design System
- PA Safety Legislative Symposium
- Transportation Operations Data Warehousing and Management

For further information, please contact Michael Bonini, mbonini@pa.gov.
Six PennDOT executives presided over or presented at key sessions at this year’s Transportation Research Board (TRB) meeting in Washington DC. PennDOT Innovations asked one, Bill Petit, District Executive for 1, for his perspective on TRB.

Q: What’s the importance of PennDOT participation in TRB - both on committees and at the annual meeting?

Bill Petit: I’ve been involved for over a decade as chair and as a member of the Management and Productivity Committee, and as a friend to the Strategic Management Committee as well. The TRB annual meeting gives you a tremendous amount of exposure to a diverse mix of professionals – industry partners, other DOT representatives, academics and even international participants. It’s a chance to exchange ideas in short bursts of time. You can get saturated with information – it’s a unique experience!

Q: TRB seems like a bridge between research and action.

BP: The strength of TRB is in getting perspectives from a very good mix representing the entire transportation industry. Research provides insight into new processes and change management to pull efficiencies out of delivery systems – it tells us what works well, what does not, what needs to be changed. TRB helps us adopt tools and practical ideas from these great resources.

Q: As a District Executive (DE), what do you see as the benefits of TRB participation for you, for your District and for PennDOT in general?

As a DE, at some level it’s a validating experience when we’re trying to modify our direction. TRB gives me insight and perspectives from other transportation professionals. But what I bring back is not just for the district. The organization at large can benefit from TRB participation. Other professionals should be engaged, because TRB provides great value: both for research and as an ongoing dialogue that helps with issues across multiple fronts.

We’ve had conversations with Arizona and Oregon DOT about Smart Transportation, for example. I’ve got a unique perspective from my work in the TRB Strategic Management Committee. I learned about “TransLink,” a multi-modal transportation model for the future, in Vancouver, British Columbia in Canada. TransLink has a different vision, a different organizational and funding structure. I’m not saying we should jump on it, but we can learn from pieces of what they do...it’s a message to retool.

“We all get smarter with more knowledge and become better decision makers.”

Q: How do people in field management positions like yours get involved in TRB?

BP: Field experience is valued. First, come to the annual and mid-year meetings and get involved in the exchange of information. This gives you added credibility for placement later on a committee. Then, when you are part of a committee, support it by contributing to a workshop, supporting session planning or making a presentation. Learn from the exchange of information. This can be a great experience and a chance to broaden your perspective as a transportation professional.

Q: You gave two presentations at the January meeting. How did it go?

You can usually gauge by the level of feedback and interest when there are questions and conversation. My experience has always been positive. No tomatoes were thrown! During these sessions, people really try to understand how they can make an impact on the industry. The key is engagement. I can share my perspective, and I encourage others to open up and do the same.

Q: What do you think PennDOT could or should do to increase its participation in TRB?

BP: It’s vitally important for PennDOT to take a leadership role and to encourage participation. The overall industry has a need for dialogue and a forum for an exchange of information. At PennDOT, we have to show we have a stake in TRB – both at the research level and at the national level.

We need to provide more opportunities for exposure for the people within PennDOT. If the executive staff are giving presentations, we should offer them internally. More presentations within PennDOT would be informative especially if we bring an outside perspective here, for example, if we had TRB speakers from other DOTs come to PennDOT.

Q: Any final observations on the value of the relationship between PennDOT and TRB?

TRB is not a “silo activity” for research, design, construction, maintenance – it’s about the entire industry! And TRB is not just for the secretary or division head level. People come to TRB to learn, to grow. To take ideas for a test drive. When this happens, the organization gains because there’s organizational learning.

One of the benefits of PennDOT participation in the National Cooperative Highway Research Program (NCHRP) is the ability to leverage research findings from joint studies conducted with federal agencies and other state DOTs, or in projects piloted in other states, and apply the results in Pennsylvania. PennDOT has launched a series of publications called Smart Solutions from Cooperative Research to spotlight such studies and extend the reach of the research findings and implementation plans.

Research Division Manager Michael Bonini notes, “This series of brief updates showcases the way PennDOT applies the results of cooperatively funded research. Not only do these types of projects save PennDOT money, but they also give our experts an opportunity to work with peers from other states on topics of significant impact in statewide transportation.”

Specific topics covered in initial issues of Smart Solutions include an overview of National Cooperative Highway Research Program (NCHRP) projects including:

- NCHRP Report 500, Strategic Highway Safety Plan: A comprehensive effort addressing 23 critical topics for use by state DOT officials, the report provides guidance on safety measures and contains a wealth of information to assist in statewide implementation.

- Seven focus areas from NCHRP Report 500: aggressive driving, DUI, improving crash data, infrastructure improvements, motorcycle safety, older driver safety and seatbelts. Highway Safety Section Chief Gary Modi uses these research findings to help prioritize safety investments and provide advice to districts as they implement safety countermeasures. (See PennDOT Innovations Issue #10 for more details).

- Research on Bridge Design Specifications: The results of NCHRP research led the American Association of State Highway and Transportation Officials (AASHTO) to improve pedestrian bridge design specifications.

- Winter Maintenance: Complementing its own Winter Services Strategic Plan, PennDOT uses nationally recognized experts’ recommendations contained in the NCHRP report, Guidelines for the Selection of Snow and Ice Control Materials to Mitigate Environmental Impacts.

Look for two inaugural issues of Smart Solutions (Issue #1: Overview, and Issue #2: Spotlight on Highway Safety) released with this issue of PennDOT Innovations!

"Research collaborations pay dividends for PennDOT...By working with other sponsors throughout the nation, Pennsylvania receives substantially greater results than it could accomplish on its own."

- Inaugural issue of Smart Solutions

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**It Starts with an Idea**

If you have an innovation that may have potential for statewide implementation, contact Kenita Honesty (khonesty@pa.gov) or Sean Oldfield (soldfield@pa.gov) of BPR, who will ask some questions and complete a Checklist for Winning Innovations. This starts the process, giving BPR information to evaluate the innovation, and secure resources for implementation.

Likewise, if you see a need that can be addressed by a research project, BPR annually solicits research requests with its IDEA form. Contact Lisa Tarson (ltarson@pa.gov) of BPR for more information. Who knows? Your project may be a future Implementation success story!