

Partners in Quality

A Publication of the Maryland Quality Initiative
Steering Committee (MdQI)

Fall/Winter 2016

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Chairman's Letter

Welcome to the 2016 Fall/Winter issue of Partners in Quality! It has been quite a remarkable year and 2017 is fast approaching. This year we would like to welcome the Motor Vehicle Administration (MVA) to MdQI. Their inclusion broadens MdQI's perspective with respect to safety as we address Maryland transportation issues and solutions.

The MVA Administrator serves as Maryland's Governor's Highway Safety Representative and provides overall leadership for the state's highway safety program. The MVA's Maryland Highway Safety Office is dedicated to saving lives and preventing injuries by reducing motor vehicle crashes through the administration of a comprehensive network of traffic safety programs.

In April 2016, Governor Larry Hogan kicked off our "Work Zone Safety is in Your Hands" campaign. He designated April 11-15 as Work Zone Safety Awareness Week in Maryland to coincide with the national observation. "In Your Hands" is a part of the work zone safety education campaign featuring SHA employees and their children on billboards, web banners, social media and other outreach.

Nationally, on average, 700 people, annually, lose their lives in work zone-related crashes. In Maryland, after a decrease in work zone-related crash fatalities, they are again on the rise. The latest statistics available reflect that nine people lost their lives in Maryland work zone crashes in 2014. These crashes can be prevented, especially if drivers remember Work Zone Safety is In Their Hands.

In the latter part of 2015, MDOT Secretary Pete Rahn convened an initial meeting with the leadership across MDOT to initiate the effort of developing a customer focused Performance Management System. The foundation of the Performance Based Management System is the single focused Mission Statement, which is the guiding light for all our transportation products and services. The MDOT mission statement is as follows:

"The Maryland Department of Transportation is a customer-driven leader that delivers safe, sustainable, intelligent, and exceptional transportation solutions in order to connect our customers to life's opportunities."



Continuous Quality Improvement
Maryland's Transportation Industry

Partners in Quality

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Chairman's Letter (Continued)

This Performance Management System, titled, *Excellerator*, is comprised of 10 *Tangible Results*, which are critical components of MDOT and will drive our business decisions. The tangible results include:

1. Providing excellent customer service
2. Use resources wisely
3. Provide a safe and secure transportation infrastructure
4. Deliver transportation solutions and services of great value
5. Provide an Efficient, Well-Connected Transportation Experience
6. Communicate Effectively With Our Customers
7. Be Fair and Reasonable To Our Partners
8. Be a Good Neighbor
9. Be a good steward of our environment
10. Facilitate Economic Opportunity in Maryland

These tangible results resonate with the breadth of our industry and are in many ways the metrics for which MdQI has practiced for nearly 25 years and tie very well with the Mission of MdQI which is:

"To provide the Maryland transportation industry a forum that fosters coordinated and continuous quality improvement in order to ensure safe, efficient, environmentally sensitive and sustainable systems to meet the needs of all transportation stakeholders."

The Maryland Quality Initiative's 24th Annual Conference is quickly approaching and will be held on January 25 and 26, 2017 at the Baltimore Convention Center. Registration for the upcoming conference opened in mid-November and can be accessed through the MdQI website www.mdqi.org or MTBMA website www.mtbma.org. Many of the leaders of the Maryland Department of Transportation, FHWA, Baltimore City DOT, County Engineers Association of Maryland, consultants, contractors, and material suppliers will be participating in the conference. We look forward to your attendance at the upcoming MdQI Conference and appreciate the efforts and commitment made by our many partners to invest in the quality of our industry.

And finally, we bid farewell to Dave Coyne, MDOT's SHA Deputy Administrator/Chief Engineer for Operations, who is retiring on December 31, 2016. Dave has been a strong supporter of MdQI from inception and as Co-Chair has been instrumental in making MdQI Maryland's largest transportation conference. We thank Dave for his dedicated service and leadership.



Dave Coyne
MdQI Co-Chairman,
SHA Deputy Administrator/
Chief Engineer for Operations



Dan Cheng
MdQI Co-Chairman,
Johnson, Mirmiran & Thompson
Executive Vice President

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An MdQI Publication

24th Annual MdQI Conference

The Maryland Quality Initiative (MdQI) charter members are dedicated to improving the quality of transportation services we provide to Maryland citizens. For 24 years, we have delivered what we promised through continued engagement and communication with our partners and customers of the Maryland transportation industry. Every year, transportation professionals use the MdQI Conference as the fertile ground to develop new ideas which often result in safe transportation infrastructure and better quality of service delivered with higher efficiency.

Since its inception in 1992, the MdQI has been a driving force in promoting partnerships among our sponsoring agencies and forging relationships which allow us to engage in candid discussions that will lead to a continually improving transportation product. This year will be no exception: we will provide 22 technical and workshop sessions, excellent keynote speakers during the general sessions, and many opportunities to network with the leaders of Maryland's transportation industry.

Technical Sessions! The 2017 MdQI Conference focuses on the rapidly changing landscape of the transportation industry. We will examine the possibility of radical changes in the way we design and construct transportation projects. We will consider not only keeping pace with infusion of technology into our cars, roads, and devices, but planning for a safe and sustainable way our smarter world will serve us. Current topics under development include:

- New Leadership in the SHA Project Development Offices
- New Technology: The Future of Automated Vehicles and the Impacts on the Transportation Industry
- eConstruction Workshop
- Alternative Project Delivery Workshop
- Project Close-out Workshop
- Presentations by MDOT Business Units
- Materials sessions for Asphalt and Concrete
- MVA Reversing the Deadly Highway Trend
- Managing Multiple Priorities for Project Managers
- Construction Technician Certification
- Ellicott City Flooding - Response and Rebuilding
- Highlights from 2016 Modal Project of the Year Award Winners
- Smart Work Zones
- Work Zone Traffic Manager Training: Let's Talk About it!
- Partnering – "X" Marks the Spot
- Asset Management - Regional Collaborative

Key Note Speakers! We are excited to have author and humorist, Ron Culberson, return to MdQI to discuss how to "Do It Well. Make it Fun." We will also feature Marc Weller, President of Sagamore Development, to discuss the Port Covington project. Furthermore, we will feature MDOT Secretary of Transportation, Pete Rahn, on day two of the conference.

Bonus Session! The 2017 MdQI Conference will be kicked off by a special ethics session on January 25, 2017 beginning at 9:30am. Article §14-314 of the Annotated Code of Maryland, Chapter 06 Continuing Professional Competency Requirements, requires that Professional Engineers complete 1 PDH for each two-year reporting period in professional engineering ethics. This ethics session will fulfill this requirement.

Vendor Theme and Contests! The vendor theme this year will be "Pirates of the Chesapeake." Each vendor is encouraged to decorate their booth to represent the theme in a creative fashion. In addition to the vendor theme contest, this year, for the first time, we will be witnessing a true test of our engineering minds at the Engineering Challenge "Mouse Trap Powered Car Contest." You can find the details on www.mdqi.org. If the engineering challenge does not provide you with the adrenaline rush you need, our Pinewood Derby will do the job. If the previous year's competition is any indication, you will be witnessing a very close competition. If you are not the type that wants to watch from the sidelines, bring your fast, homemade vehicle to win a trophy. If your vehicle is not the fastest, you can still win a trophy in the "best looking" category. This award, for style points, will be passed on from year to year.

The 24th Annual MdQI Conference will take place on January 25 and 26, 2017. For the fifth year now, it will be held at the Baltimore Convention Center located at 1 West Pratt Street, Baltimore, MD. This two-day conference will be attended by local, state, and federal agencies, as well as consultants, contractors, and suppliers. We look forward to seeing you at the conference.

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MdQI Conference Information

2017 MdQI Conference ~ January 25 - 26, 2017

Day 1 Technical Sessions~ Wednesday, January 25, 2017

9:00am	Vendor Exhibits Open	Registration Begins				
9:30am - 11:00am		Bonus Session:	Room 337/338			
			Ethics Training			
11:30am		Welcome, Overview of Technical Sessions, Lunch (provided) Presentation of FHWA Awards				
		Room 337/338	Room 339/340	Room 341/342	Room 343	Room 344
1:30pm-2:30pm		eConstruction – Part 1	Alternative Project Delivery, Part 1	Project Close-Out Workshop Part 1	“New Leadership in the SHA Project Development Offices”	Materials – Asphalt, “PerRoad: Perpetual Pavement Design”
3:00pm-4:00pm		eConstruction – Part 2	Alternative Project Delivery, Part 2	Project Close-Out Workshop Part 2	New Technology: “The Future of Automated Vehicles and the Impacts on the Transportation Industry”	Materials – Concrete, “MD 210 Award Winning Project & Introduction to Roller Compacted Concrete (RCC)”
4:00pm		Reception, Pinewood Derby Heat Races, Mouse Trap Powered Car Contest				

Day 2 Technical Sessions~ Thursday, January 26, 2017

7:30am	Vendor Exhibits Open	Continental Breakfast and Registration				
9:00am		General Session: Guest Speaker, Ron Culberson - Author & Humorist				
		Room 337/338	Room 339/340	Room 341/342	Room 343	Room 344
11:00am - 12:00pm		Construction Technician Certification	MVA, “Reversing the Deadly Highway Trend”	EDC 3/4, “Every Day Counts - Smarter Work Zones”	MDOT/MTA Update - “BaltimoreLink: Rebuilding an Urban Bus Network in the 21 st Century”	“Managing Multiple Priorities for Project Managers”
12 noon		Lunch and Guest Speaker, Marc Weller - President of Sagamore Development				
2:30pm - 3:30pm		Asset Management - Regional Collaborative	Partnering - “X” Marks the Spot”	Work Zone Managers Class - “Let’s Talk About It,” Part 1	MDOT/ MAA Update, “Baltimore/Washington Thurgood Marshall International Capital Program Update”	Utilities - “Buy America Requirements on Federal-Aid Projects”
4:00pm - 5:00pm		“MGM National Harbor Resort - Concrete Safety Process”	“Ellicott City Flood: Initial Response and Rebuilding” CEAM	Work Zone Managers Class - “Let’s Talk About It,” Part 2	MDOT/MDTA Update, “Main Cable Rewrapping and Dehumidification of the Wm. Preston Lane, Jr. Memorial (Bay) Bridge”	Highlights from 2016 Modal Project of the Year Award Winners
5:00pm		Reception				
6:00pm		MdQI Awards of Excellence Presentation & Banquet, and Pete Rahn - Secretary of Transportation				

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MdQI Conference Registration Form

MdQI Conference/ Baltimore. Convention Center/Wednesday, January 25 – Thursday, January 26, 2017

Conference Rates (NEW OPTIONS!)

(Early Bird / After 1/6/17)

Wednesday, Day 1: Ethics Training/Sessions/Lunch/Reception	\$135 / \$160
Thursday, Day 2: Continental Breakfast/Sessions/Lunch	\$135 / \$160
Wednesday & Thursday (Reception & Awards Dinner <u>not</u> included)	\$270 / \$295
Full Conference (Reception & Awards Dinner included)	\$380 / \$405
Thursday Reception & Awards Dinner Only	\$110 / \$135

Government Rates (State, Federal, County or Municipal Employees)

(Early Bird / After 1/6/17)

Wednesday, Day 1	\$115 / \$140
Thursday, Day 2	\$115 / \$140
Wednesday & Thursday (Reception & Awards Dinner <u>not</u> included)	\$230 / \$255
Full Conference (Reception & Awards Dinner included)	\$325 / \$350
Thursday Reception & Awards Dinner Only	\$95 / \$120

Exhibitor Hall Pass

Two-Day Exhibitor Hall Pass (Food & Beverage not included, must be associated with an Exhibiting Company) \$50.00

Ethics Training

*Must be registered for Day One, both days, or Full Conference

Early Bird Rates until January 5, 2017.

Baltimore Hilton Hotel group room rates of \$159.00 until January 5, 2017.

Additional Registration Information

- Cut-off date for all registrations is January 20, 2017. No refunds for cancellations after this date.
- There will be a charge of \$25.00 for each registration received after January 6, 2017.
- Registration is available online at www.mtbmaonline.org.
- Payments are due at time of registration.
- Registration rate does not include hotel reservations.
- Walk-in registrations will NOT be accepted.
- Name changes of attendees will be charged an additional \$25.00 after the cut-off date.
- Each attendee must display a coded name badge each day before entering any banquet events (breakfast, lunch, reception and awards banquet dinner).

Registration Questions: Shelly Baquol (410) 760-9505 or shelly@mtbma.org

SHA Employee Registration Questions: Tanya McNeil (410) 545-0361 or tmcneil@sha.state.md.us

SHA registration will be coordinated through Senior Management and the Chief Engineer's office.



2017 MDQI Conference

Exhibitor/Sponsorship Information

Exhibitor Registrations Only

Exhibitor Registration Includes the following:

- One complimentary full conference registration (**Dinner not included**) \$950.00 - Member
- Company name and booth number in the conference program \$1,055.00 - Non-Member
- Company name on MdQI website for 6 months
- One Booth, including:
 - 10' x 8' deep space
 - One 6 ft. X 30 in. skirted table
 - Two chairs
 - Complimentary electricity
 - Signage (company name)

Exhibitor Grand Sponsors

Includes one (1) Exhibitor Registration Packet plus the following:

- Full page conference program advertisement \$2,600.00
- Logo on sponsor page of the conference program
- Logo and company website link on MdQI website for 1 year
- Logo on all event signage

Exhibitor Gold Sponsors

Includes one (1) Exhibitor Registration Packet plus the following:

- Half page (horizontal) conference program advertisement \$1,850.00
- Logo on Sponsor Page of the Conference Program
- Logo and Company website link on MdQI website for 1 year
- Logo on all event signage

Exhibitor Silver Sponsors

Includes one (1) Exhibitor Registration Packet plus the following:

- Quarter page (vertical) conference program advertisement \$1,450.00
- Logo on sponsor page of the conference program
- Logo and company website link on MdQI website for 1 year
- Logo on all event signage

Advertisement Bronze Sponsors

Advertisement only

- Quarter page (vertical) conference program advertisement \$500.00
- Logo on sponsor page of the conference program
- Logo and company website link on MdQI website for 1 year
- Logo on all event signage

Questions regarding exhibitor or sponsorship, please contact Shelly at (410)760-9505 or email at shelly@mtbma.org. Questions regarding Print Advertising contact Maureen Hays at MediaEdge, LLC at (352)313-6717 or email at Maureen@mecgnv.com.

Final Deadline for Advertising in the Conference Program is December 12, 2016

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Industry News & Upcoming Events

Upcoming MdQI Events:

24th Annual MdQI Conference:

The 2017 MdQI Conference is scheduled for January 25 and 26, 2017. The Conference will again be held at the Baltimore Convention Center. Conference details and registration information can be found throughout this newsletter, as well as on www.mdqi.org.

Upcoming Industry Events:

Save the date for the following industry events. Further details on these can be found throughout this newsletter:

55th Annual Paving Conference

March 1, 2017

Martin's West, Baltimore, MD

Concrete Conference 2017

March 14, 2017

Radisson Hotel North Baltimore, Timonium, MD

Legislative Reception

February 9, 2017 at 6:00pm

Governor Calvert House, Annapolis, MD

Safety Awards Banquet Bull & Oyster Roast

March 31, 2017 at 4:30pm

Martin's West, Baltimore, MD

Maryland Construction & Materials Conference

June 21 – June 23, 2017

Hyatt Regency Chesapeake Bay, Cambridge, MD

Partnering for Success



- ½ day training session
- Partnering Process:
 - What is partnering?
 - How do I use partnering?
 - Who should be invited?
 - Why should I partner?
- Recommend for new PEs, PMs, Superintendents
- Also a good refresher

Dates (Space is limited, so register early.)

Dec. 8, 2016, Hanover Complex

Feb. 8, 2017, Hanover Complex

Mar. 8, 2017, Hanover Complex

Contact Bridgid Seering, bseering@sha.state.md.us

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Concrete Conference 2017

Planned for those involved with designing, building, and maintaining Maryland's roads and bridges, the Concrete Conference is a one-day educational forum that provides information (and continuing education credits) regarding applications for Portland Cement Concrete on a variety of transportation related projects.

Expert speakers will discuss the latest emerging concrete technology and present recent transportation projects involving concrete products and applications.

Key industry vendors will be exhibiting their products and services throughout the conference.

Information from the speakers and the vendors will be useful to individuals working in Environmental Design, Highway & Bridge Design, Materials & Technology, Landscape Architecture, Construction & Inspection, and Maintenance. Attendees consist of representatives from Federal, State, County, and Municipal Governments; Concrete Suppliers; Contractors; Consultants; Academia; and other Transportation Building Partners.

Block out your calendar for March 14, 2017 and plan to spend the day at the Radisson Hotel North Baltimore in Timonium, MD for the 17th annual Concrete Conference

The Conference is hosted by the Maryland Ready Mix Concrete Association, the American Concrete Pavement Association, the MD State Highway Administration, and the Federal Highway Administration. The planning committee includes representatives from the MD Aviation Administration and the MD Port Administration.

For registration information, please visit www.MarylandConcrete.com or email office@MarylandConcrete.com.

Concrete Provides Quality Roads in Maryland

by MRMCA and ACPA

As "continuous quality improvement" is part of the MdQI Mission Statement, the concrete industry sees nothing but opportunity for improvement in the quality of existing and planned roads and bridges in Maryland! The leaders of the Business Units of the Maryland DOT are recognizing the benefits of concrete pavements for a variety of applications on Maryland's roads and parking lots.

The Concrete Pavement Leadership Team (one of SHA's Quality Partnering groups) has a new mission and charter. The mission statement includes language to ...DESIGN, CONSTRUCT, MAINTAIN QUALITY CONCRETE ROADS. The Team has three sub-committees: Design, Maintenance, and Project Delivery. Each committee is proving to be worth the participant's time and effort. New specifications for new technologies, revised / improved previous specifications, and quality completed projects are a result of this leadership team's recent efforts. Because of this new program, the concrete industry is seeing more concrete overlays being used on existing pavements to improve durability and ride quality in identified problem situations.



Concrete Provides Quality Roads in Maryland

(Continued)

One of the measures of quality in new and existing roads is the International Roughness Index (IRI) which was originally defined by World Bank Technical Report No. 46 as “the variation in surface elevation along a road that causes vibrations in traversing vehicles.” FHWA and SHA have adopted the IRI as a QC/QA program to evaluate whether the construction of new roads meets specific criteria (for example, a “good” ride is based on an IRI number less than 95, which is a primary performance target per FHWA) as well as to evaluate the deterioration of an existing road to guide the decision process for repairs or replacement (a “poor” ride is based on an IRI number greater than 170). The Maryland SHA range for IRI values, as shown in the table below, from Special Provisions Category 500 – Paving, Section 535 – Pavement Surface Profile provides a definition of ride quality.

The AASHTO award-winning MD 210 concrete overlay is a recent example of a road that provides Maryland Drivers with a “very good” ride quality as the IRI numbers exceeded that specified in new construction standards. The MD 210 overlay had excellent IRI numbers with an average IRI of 43. Because of the durability from using concrete, that portion of MD 210 will provide “very good” ride quality for many decades with little to no maintenance.

As an example of the durability of concrete roads and the sustainable ride quality, the Salisbury Bypass was constructed completely of concrete pavement in 2002 and upon completion, was within the then current ride quality criteria. Based on recent IRI data, the ride quality is still similar to what it was then – 14 years later. This road meets a definition of quality by providing a high level of value or excellence with minimal repairs over years of service life.

ROADWAY TYPE	IRI RANGE (in./mile)	RIDE QUALITY
Interstates	< 60	Very Good
	60-94	Good
	95-119	Fair
	120-170	Mediocre
	> 170	Poor
Principal Arterials and Other Routes	< 60	Very Good
	60-94	Good
	95-170	Fair
	171-220	Mediocre
	> 220	Poor

Concrete Provides Quality Roads in Maryland

(Continued)

Another example of a previously constructed quality concrete road in Maryland is I-795 that was just rehabbed with minimal selective patching after nearly 20 years. Utilizing match cure cylinders and high-early concrete mixes, the contractor achieved an “open to traffic” target strength and minimized delays to the traveling public. After final diamond grinding, the road is as good as new, providing a quality ride for Maryland motorists for many years to come.

Recently completed concrete overlays of existing asphalt include an overlay of a truck climbing lane on I-68 in District 6, the cloverleaf of Routes 50 at 301, and the intersection of Routes 355 and 27 in Gaithersburg. All these overlays were built to remedy deteriorated asphalt (mostly rutting or shoving issues) on these heavily traveled roads to restore the ride quality expected by Maryland motorists.

We are seeing increasing interest in Roller Compacted Concrete (RCC), an emerging technology in Maryland, although it is used quite extensively in other parts of the country. The MD Port and several SHA Districts are considering RCC for a variety of pavement areas (tracked vehicle paths, access roads, service roads, shoulders, etc.) in both new and rehab or overlay applications.

In addition to conventional concrete pavements, the State has also completed several pervious concrete pavements in parking lots. The State and all Owners of pervious pavements should have a copy of the *NRMCA Maintenance Guide for Pervious Concrete*. All future project reviews that contain pervious concrete pavement should include an operations and maintenance plan, and every Owner should be referencing this guide in their operations and maintenance plan. Click [here](#) for a copy of maintenance guide.

Due to the success that Maryland SHA has experienced over the past few years with quality concrete paving projects, they now routinely include concrete pavements in their portfolio. All drivers and taxpayers benefit from the decision to incorporate quality concrete pavement options into the system preservation program – for durability, ride quality, and fair market competition.



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MdQI Hosts Anne Arundel County High School Students

On November 1, 2016, MdQI hosted students from several high schools across Anne Arundel County for an Engineering Career Day. The event, held at Michael's 8th Avenue, introduced the approximately 400 students to the many different career paths in the transportation industry. During the event, students were able to interact with professionals, and were able to see and have hands-on experiences in the various design areas of the industry. The event was covered by both *The Baltimore Sun* and the *Capital Gazette*. Video links can be found at:

- <http://www.capitalgazette.com/news/schools/ph-ac-cn-northcounty-stem-1102-20161101-story.html>
- <http://www.baltimoresun.com/ph-ac-cn-northcounty-stem-1102-20161101-story.html>

The annual Career Day event would not be possible without the support of many partners in MdQI and the Anne Arundel County Schools. Our thanks go to the following companies who provided the speakers for the event: Whitman Requardt & Associates, Rummel Klepper & Kahl, Sabra Wang & Associates, Johnson, Mirmiran & Thompson, Development Facilitators Incorporated, AECOM, H. Furrer Associates, and SHA.

Our next event will be at the Engineer's Club in February of 2017 to help celebrate Engineer's Week. If you are interested in helping the MdQI Industry Training and Recruitment Team, please contact Mark Crampton who co-chairs the team. We are always looking for outgoing speakers for our events. Mark can be reached at 301-624-8102, toll free at 1-800-635-5119 or by email at mcrampton@sha.state.md.us.



The MdQI Steering Committee is jointly sponsored by representatives of the following agencies:



Continuous Quality Improvement
Maryland's Transportation Industry

Don't forget to visit our [website at www.mdqi.org](http://www.mdqi.org)

The MdQI Mission - "To provide the Maryland transportation industry a forum that fosters coordinated and continuous quality improvement in order to ensure safe, efficient, environmentally sensitive and sustainable systems to meet the needs of all transportation stakeholders."

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Annual Paving Conference to Be Held March 1, 2017

The 55th Annual Paving Conference, sponsored by the Maryland Asphalt Association and the Maryland State Highway Administration, is scheduled for Thursday, March 1, 2017, at Martin's West, Baltimore, Maryland.

The conference is a full-day event and will include expert speakers from the National Asphalt Pavement Association, Federal Highway Administration, the Asphalt Institute, the University of Maryland, and State Highway Administration, as well as other agencies /organizations / firms.

The program will conclude with the presentation of annual paving awards. For more information about registration, vendor space or the program, please visit www.mdasphalt.org or call 410-761-2160.

Maryland Asphalt Association Maryland State Highway Adm. 2017 Paving Conference Awards Ceremony



PerRoad: Perpetual Pavement Design

BWI's two major runways won a Perpetual Pavement Award from the Asphalt Pavement Alliance in a ceremony in 2002. To qualify for this prestigious award, a pavement must meet strict criteria and demonstrate asphalt pavement's long-life characteristics, excellence in design, quality in construction, and value to the traveling public. It also must have been constructed at least 35 years ago. Engineers at the National Center for Asphalt Technology (NCAT) evaluated the nominations and a panel of industry experts validated the winners.

The award-winning pavement includes the two main 10,000-foot runways at the airport, a 7,000-foot runway, and supporting taxiways and ramps. They were constructed in 1949 and the runways consisted of a 12-inch gravel sub-base, topped by 10 inches of bank gravel asphalt pavement, and 1½ inches of stone surface asphalt pavement. Total asphalt mix used was 300,000 tons.

BWI has never experienced a failure of the asphalt pavement runways or taxi areas. In 2002, 52 years after the original construction, over 95 percent of the base asphalt pavement was still in service. Core samples of the base taken in 1998 showed the asphalt pavement was still performing well. Over time, additional layers of asphalt pavements have been added to maintain the strength of the pavement to withstand the growing number of takeoffs and landings, and the growing weight of aircraft.

PerRoad: Perpetual Pavement Design

(Continued)

These initial asphalt pavements experienced approximately 70,000 takeoffs and landings in 1951 when 211,236 passengers utilized the airport. In the last 12 months, spanning 2015 and 2016, there were 24,700,000 passengers using the airport. If all years exhibited equal growth, the annual rate of growth would be 7.6%.

As the story of BWI exemplifies, engineers have been building perpetual pavements for the past 50 years by either building deep strength pavements or overdesigning asphalt pavements. Recently, the asphalt industry has developed a design philosophy which encourages engineers to consider how best to design a pavement structure for longevity. Over the past 10 years, this philosophy has grown from an abstract concept to a design methodology with tools and scientific findings which engineers can use to develop optimized perpetual pavement designs.

The primary tool for such design, PerRoad, was developed by David Timm at Auburn University. Recently this program has been updated to incorporate the latest perpetual pavement research into the design mechanisms which will still ensure long-life pavements without overdesigning the pavement structure. Dr. J. Richard Willis, Director of Pavement Engineering & Innovation at the National Asphalt Pavement Association (NAPA), will present the background on the history and development of the perpetual pavement design philosophy as well as highlight the capabilities of coupling this philosophy with a design tool, like PerRoad, during the Technical Sessions of the MDQI 2017 conference.





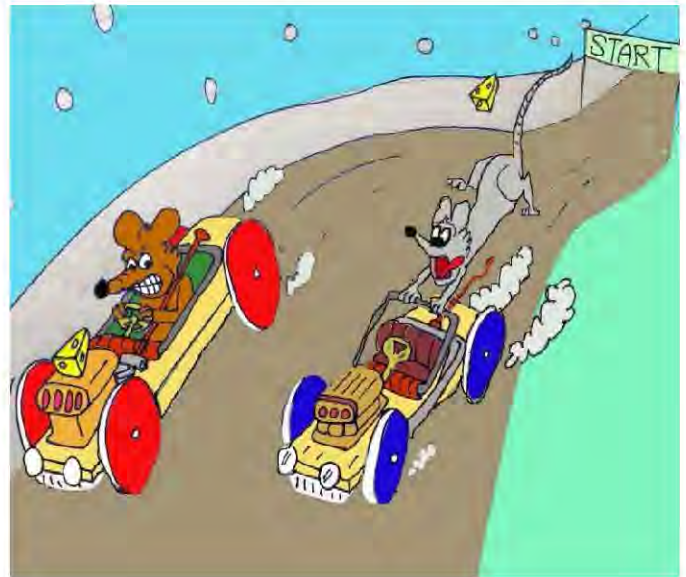
ENGINEERING CHALLENGE

Mouse Trap Powered Car Contest – 2017

MISSION – Build a vehicle powered by a single mouse trap. The mouse trap shall be the sole means of providing power to the vehicle. The vehicle should be capable of traveling long distances, and covering a short distance in a short period of time.

RULES:

All movement must be accomplished using the power of an unmodified mouse trap supplied by MDQI. There are no limitations on the material you can use to build your vehicle. Transfer of power from the mouse trap to the vehicle must be direct (i.e. you may not transfer power to another device which in turn transfers power to the vehicle).



THE CONTEST:

The Contest will have two separate segments. The contestants with the best performance in the initial segment will be allowed to compete in the second segment. The contestant with the best performance in the second segment will be declared the contest winner. In the initial segment contestants will operate their vehicle in an attempt to travel the farthest distance, no time limit. The vehicle will be placed completely behind the starting line and then the trap will be triggered to start the motion. Distance traveled will be measured from the starting line to that portion of the vehicle that is closest to the starting line. The vehicle must travel within the boundary established at the facility. Any vehicle crossing the boundary (all wheels) will be recorded as having stopped at the point that it left the boundary. The top three distance travelers will go on to segment 2 unless there are more than 3 vehicles that exceed the limits of the facility (If 5 vehicles crash into the wall at the end of the boundary then all 5 shall be eligible to compete in segment 2).

In segment 2 the contest will operate similar to a drag race. The clock will start on go and the contestant will trigger their trap. Clock will stop when all portions of the vehicle cross the finish line. The vehicle with the fastest time will be declared the winner. The length of travel for segment 2 shall be 100 feet. Vehicles going out of bounds in segment 2 will be disqualified for that heat. The number of heats (attempts each contestant will be allotted) in each segment will be a function of how many vehicles enter the contest. There can be no modifications to the vehicles between segment 1 and 2, however you do not have to operate your vehicle the same way in segment 1 and 2. Any material broken off a vehicle as a result of an accident, must be repaired in kind to the satisfaction of the judges in order to continue in the contest.

HOW TO ENTER:

There is no entry fee for this year's contest. You must register with gvaughan@SHA.STATE.MD.US and pick up your mouse traps (two per entry) prior to 12/31/2016. Firms may have multiple entries but you need to indicate how many when you register. Check the MDQI website for answers to frequently asked questions as they come in.

Shiver Me Timbers! Back By Popular Demand
MDQI - 2017 'Ye ole' Pinewood Derby
"Quest for the Rose Treasure Cup"

Interested vendor lads and lasses are asked to build a pinewood derby vehicle, with the following dimensions: Maximum Height: 2"; Maximum Width: 1.75"; Maximum Length: 7.0"; Maximum Weight: 5 oz.; Axle width (Lane Guide): 1.625"; Minimum Height to bottom of axle: 0.25"; all vehicles should be marked with your company's name or logo, tis the way of showin ur corporate pride me hearties.



Batten down the hatches for 2017 as we be continuing with the following "Rules" so as to keep the competition fair but spirited for you buccaners: Your vehicle must have started out as part of a "basic" boy scout pinewood derby kit (ie: a block of wood, 4 nails, & 4 plastic BSA wheels - see www.boyscoutstore.com for details); **NO** solid axels; **NO** "pin" axels (you must use nails); **NO** "wafer" wheels, the front of the car must be clearly identified, the front of the car must be at least 0.25" wide so it can rest on the starting pin (**NO** pointed or slotted fronts). Each vehicle **must have four** working BSA wheels and they have to spin. No trickery or we will send you to Davey Jones Locker....Aaaarrggggghhhh!

In 2017 we be desiring to have as many skallywags, I mean participants as possible. Sure winning is fun, but being able to represent your organization with a snazy piratety vehicle is important as well. We will reprise the Tabacek Trophy for the vehicle that most closely resembles our pirate theme. In the spirit of more competition we are again opening up this year's event to vehicles that **have graced** the MdQI track in previous years as long as they meet the specifications outlined above. So take your best shot, and if you can't race well, at least look good and take the Tabacek Trophy for "best in show"

Weigh-ins will occur prior to racing so please make sure your vehicle meets all of the specifications. Only **one (1)** entry per complany/organization, please. The track will be available for a "race-off" for companies with more than one contestant. The winner of the Derby will have their company logo prominently displayed on 2018 Conference promotional items.

Please contact us at mdqiderbvmaster@yahoo.com by COB on Thursday January 19, 2017 if you will be participating in the Derby competition this year. More details will be sent out to participating vendors prior to the conference.

THANK YOU - MdQI Pinewood Derby Contest Team



Past Champions: Flanigan, McCormick Taylor, EJ/East Jordan Iron Works, Century Engineering, Gillespie

