



ASHE
Southern New Jersey

Spring 2018 Newsletter

A Message from Lori Wade, ASHE SNJ President 2018

This is the last newsletter of the 2017/2018 season, so I am tempted to reminisce about the work and accomplishments of the past year. We are having a great year, entirely due to the participation and contributions by our members. We had a great series of meetings with excellent topics and presenters. The March presentation of the Route 206 bridges was particularly interesting. I was personally impressed by the way NJDOT, their consultants, and contractors worked together with regulators and stakeholders to reconstruct and preserve the oldest bridge in New Jersey, on an emergency basis and ahead of schedule.

Of course, the year is not yet over. We are just days away from the Project of the Year Awards Banquet. The judges were suitably impressed by all of the entries, making the competition particularly interesting. Take a look at the next two pages of the Newsletter to see some of the judges' compliments. In May, we will have a presentation of the Scudder Falls Bridge Improvement Project, the largest project of the DRJTBC reconstruction program. This summer, we look forward to the Scholarship Golf Outing and the Summer Social at Trenton Thunder.

I'd like to welcome back NJ, Diane Gutierrez-Scaccetti who was appointed Acting Commissioner of the New Jersey Department of Transportation in December. Diane the former Executive Director of the New Jersey Turnpike Authority and more recently the Executive Director and CEO at Florida's Turnpike Enterprise; returns to her native state to lead our industry into the future and we look forward to Diane's leadership in rebuilding/improving our infrastructure for the citizens of NJ. I would also like to congratulate John Keller, P.E., PMP on his recent appointment to Executive Director of the New Jersey Turnpike Authority. A lot of our members have worked side by side with John on numerous projects with the NJTA and it is really exciting to have a leader that has been in the trenches and knows what it takes and understands the engineering involved to deliver NJ's needed infrastructure improvements. We traditionally ask speakers from the state agencies to present their views at our September Joint meeting with ASHE North-Central and would love to get feedback from our members on who they would like to hear from at this meeting.

I would like express special thanks to Richard Grubb on his diligent hard work in helping expand our membership and the development of ASHE Student Chapters. Rich was instrumental in helping Rowan University Student Chapter get up and running and is now helping Mercer Community College (MCC) develop a Student Chapter Mercer County is the first community college in the nation to start an ASHE student chapter. Through our student chapters and annual scholarships, we reaffirm our commitment to fostering and supporting the future leaders of the Highway Engineering industry.

Finally, I ask each member to consider whether they can make a contribution to next year's program. Are you wrapping up a challenging project that you can share with the full SNJ Chapter, or perhaps one of our new Student Chapters? If you prefer to work behind-the-scenes, we always need help running events. Please let me or one of our board members know if you are interested, and we will reserve a spot for you. As a reminder, don't forget to renew your membership for next year and bring a colleague to our next meeting!

UPCOMING EVENTS

Wednesday April 11, 2018
5:00PM - 8:30PM

Project of the Year Banquet
Cranbury Inn
21 S. Main St.
Cranbury, NJ

Wednesday May 10, 2018
**DRJTBC Scudder Falls Bridge
Improvement Project**
The Hamilton Manor
30 NJ-156
Hamilton Township, NJ

Wednesday July 18, 2018
Golf Outing
Ramblewood County Club
200 Country Club Pkwy
Mt. Laurel, NJ

Summer 2018
Social at Trenton Thunder
Arm & Hammer Park
Trenton, NJ

INSIDE THIS ISSUE

2018 POTY	2
Spotlight: Arora	4
Spotlight: AID	6
3rd State Brewing Social	8
Sponsorships	10
Upcoming Events	12

2018 POTY Entries Under \$5 Million

What the Judges are Saying.....

Route 1 Hard Shoulder Running - Pilot Project

NJDOT
T&M Associates
Joseph M. Sanzari, Inc.
\$0.9 million

"This is the first use of HSR on a land service highway"... "Innovative concept"... "Provides an immediate public benefit that can be quantified"... "Reduced travel times and increased safety"... "I imagine we will see more and more projects incorporating this concept"... "The wave of the future!"

Replacement of the Cherry Tree Lane Spillway

NJ Water Supply Authority
Johnson, Mirmiran & Thompson, Inc.
South State, Inc.
\$1.0 million

"Cost effective techniques that provide a high cost benefit for the taxpayer"... "Important work to an often overlooked aspect of civil engineering"... "Innovative open form system for constructing spillway"... "Public benefit to a historic place and park."

Mercer County Bridges 212.12 & 218.1

Mercer County
IH Engineers, Inc.
Montana Construction Group, Inc.
\$2.3 million

"Coordination with SHPO was challenging"... "Great looking bridge with an innovative design"... "Worked with local historical societies to rehab structurally deficient culverts"... "Maintained appearance with lightweight concrete and slab beams to carry loads"... "Project meets the cultural significance needs of the surrounding site."

Catawba Bridge over Miry Run

Atlantic County Department of Regional Planning
and Development
Urban Engineers, Inc.
Midlantic Construction LLC
\$3.0 million

"Innovative precast construction technique"... "Great utilization of ABC construction combined with context sensitive engineering"... "Public benefit by providing increased clearance without replacement"... "Important shore link"... "Great looking bridge."

GSP Cheesequake Culvert Rehabilitation

NJTA
McCormick Taylor, Inc.
Rencor, Inc.
\$3.7 million

"Innovative design for an important transportation link"... "3-D laser scans provided critical spatial geometry info"... "Extended life of culvert 50 to 100 yrs"... "Contractor designed hoist and hauled in material thru culvert, 16% under budget and 2 months early"... "Extra points for the workers who had to work in that confined space."

2018 POTY Entries Over \$5 Million

Route 30, Blue Anchor Dam Reconstruction

NJDOT
Taylor Wiseman & Taylor.
JPC Group, Inc.
\$6.0 million

"Great job balancing the highway operational needs (shore route, evacuation route) with environmental constraints and community concerns"... "\$1M under estimate"... "Important work to an often overlooked aspect of civil engineering."

Route 48 Layton Lake Dam

NJDOT
McCormick Taylor, Inc.
South State, Inc.
\$6.8 million

"High hazard dam upgraded to comply with latest NJDEP Regulations"... "Contractor's innovative VE proposal benefits the taxpayer, the owner, and the highway user"... "Coordinated with locals for sluice gate operation responsibility"... "Semi-integral abutments eliminate water seepage".

Route 206 Bridges over Stony Brook

NJDOT
Arora and Associates, P.C.
South State, Inc.
\$7.4 million

"Oldest bridge in NJ"... "Stone arch bridge built shortly after the Revolutionary War rehabilitated to present day standards while preserving 18th Century historical elements"... "Impressive historic coordination and construction techniques to address the emergency condition"... "Excellent collaboration between stakeholders ."

Delaware River Turnpike Bridge Emergency Repair

NJTA
HNTB Corporation
Cornell & Company
\$14.2 million

"Quick emergency response and repairs to an unprecedented structural failure on a key transportation link"... "Structural model estimated how forces redistributed after the fracture and guided design of permanent repairs and jacking"... "Excellent example of teamwork and project advocacy kept this closure to a minimum."

Route 50, Tuckahoe River Bridge Replacement Project

NJDOT
Michael Baker International, Inc.
South State, Inc.
\$19.5 million

"Attractive and innovative bridge replacement for an important shore route"... "Replaced 3-span bascule bridge with single span using semi-integral abutments with lighter & shallower girders reducing maintenance"... "Managed constraints including gas pipeline, historic district/bridge, and Tuckahoe River ecosystem."

Garden State Parkway Bridge over Great Egg Harbor

NJTA
Hardesty & Hanover
Route 52 Constructors
\$130.0 million

"Innovative design using geofoam to reduce loading and reduced hammer strokes in construction"... "Public benefit of new bike path, new bridge, widened roadway, and fishing area"... "Impressive large scale structure on an important transportation link."

Route 54 Route 322 Over Cape May Point Branch

The Route 54 Route 322 over Cape May Point Branch project exemplifies how social, economic, and sustainable development considerations that add to a project's complexity can be successfully and economically addressed during design and construction. The New Jersey Department of Transportation's (NJDOT) goal was to reconstruct three highway bridges and upgrade the NJ Route 54 and US Route 322 interchange with new pavement, signing and striping, lighting, drainage, stormwater management facilities, and utility relocations.

The project is in the heart of the NJ Pinelands National Reserve and surrounded by forest, wetlands, vernal pools, flood plains, and potentially ten threatened or endangered species and their habitats. Two of the bridges span the former Atlantic City Railroad and are contributing elements to the historic district, which is still an active railroad corridor owned by NJ Transit and operated by Conrail. US Route 322 is a coastal evacuation route, a major arterial to Atlantic City, and experiences high traffic volumes in the summer, the prime construction season.



Failure to address the deteriorated bridges would have resulted in either expensive maintenance to keep them in service, or their eventual closure and disruption to traffic. These constraints introduced complexity into the project because the design had to address competing and sometimes conflicting objectives of stakeholders such as:

- Environmental permitting rules and regulations of the New Jersey Department of Environmental Protection and the Pinelands Commission
- Historic preservation rules and regulations of the State Historic Preservation Office (SHPO)
- Design and operational requirements of Conrail and NJ Transit
- The contractor's constructability needs
- NJDOT's traffic operation requirements for seasonal shore traffic
- Maintenance of the coastal evacuation route
- Needs of residents and the Borough of Folsom
- Needs of utility companies

ARORA & ASSOCIATES, PC CONT.

ARORA and ASSOCIATES, PC laid out retaining walls parallel to the roadway to reduce the project footprint and avoid embankment encroaching into and destroying wetlands, forest, and habitat. During construction, threatened and endangered species were monitored and protected to ensure that they were not harmed. Stormwater impacts were mitigated by constructing two on-site stormwater recharge basins within the previously disturbed areas in the interchange infields. Encroachment into the floodplain of Hospitality Creek was avoided. Impacts to stream buffers were mitigated by restoring a stream buffer on an off-site parcel on US Route 322. Freshwater Wetlands GP #10b and 11, Flood Hazard Area Permits, and a Pineland Development Approval were obtained for the project from NJDEP and the Pinelands Commission.

Two of the bridges (NJ Route 54 over NJ Transit and Hospitality Creek, and US Route 322 over Cape May Branch) span the former Atlantic City Railroad and are contributing elements to the historic district. Rehabilitation of the bridges was eliminated as an option due to their deteriorated condition. Maintaining compatibility with the historic district was required. Working with NJDOT subject matter experts and the SHPO, ARORA incorporated special architectural parapets and fences into the bridge design to acknowledge their historic setting. All work in the active railroad corridor was coordinated with Conrail and NJ Transit to ensure safety of the trains and construction workers.

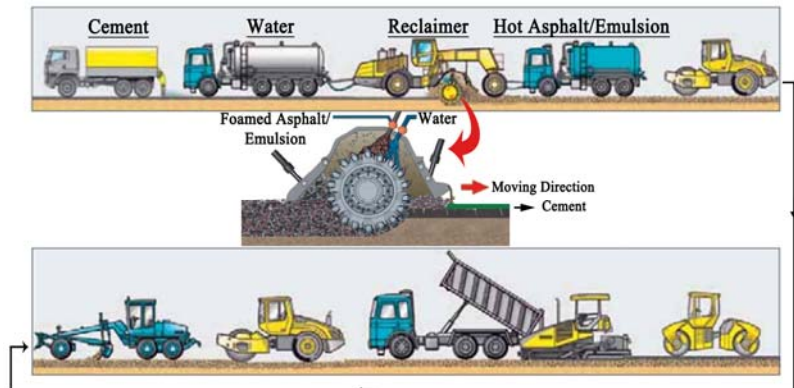
US Route 322 is a coastal evacuation route and experiences high traffic volumes in the summer, the prime construction season. Traffic delays must be avoided during construction. Working with NJDOT's Southern Traffic Operations Unit, ARORA optimized the allowable lane closing times using actual traffic count data to avoid delays while giving the contractor adequate time to accomplish his work. Allowable lane closings and staging schemes were approved by NJDOT during design. Coordination continued during construction to address maintenance and protection of traffic for additional construction operations.

The project design and construction were completed on time, within budget, and with no claims. The innovative techniques to avoid and mitigate impacts to the historic district and environmentally sensitive areas while maintaining seasonal traffic during construction demonstrate that social, economic, and sustainable development considerations can be economically addressed when designing and constructing large complex engineering projects. This encourages public confidence that the engineering profession is aware and will successfully and economically address these important social considerations.



A Sustainable Solution for Rehabilitating Asphalt Pavements

An extensive network of roadways, many built with asphalt pavement, was developed in the second half of the twentieth century, in response to population growth and economic developments in the United States and around the world. Such roadways were originally designed for a service life of 20 to 40 years. Since the construction of these pavements, there have been significant increases in both traffic volume and gross vehicle/axle weights. For the most part, the pavements have performed remarkably well and outlasted their original design lives; however, we are now at the point with many such roadways that it is no longer cost-effective to maintain them. The time has come to rebuild. With this in mind and an eye towards sustainability, agencies are looking for options to re-use or recycle the expansive existing pavement infrastructure in need of replacement.



The Full Depth Reclamation Process (courtesy of Bomag & Wirtgen)

FDR, A Sustainable Alternative

Given the need for a sustainable, cost-effective alternative for replacing the growing number of deficient roadways, Full Depth Reclamation (FDR) presents an enticing and promising solution. Recognizing its potential benefits, the New Jersey Department of Transportation (NJDOT), with design and inspection assistance from ASHE Southern New Jersey Section member firm, Advanced Infrastructure Design (AID), has taken a lead on adding this technology to its pavement toolbox. FDR is an in-place recycling process in which the entire thickness of the asphalt pavement and a predetermined part of the underlying unbound material (i.e., base, subbase, and/or subgrade) is uniformly pulverized and mixed to produce a superior homogenous material. Often, such a blend alone is sufficient to serve as the base layer, once compacted. However, if improvements to the reclaimed material are needed, a stabilizing agent is added to the blend. Stabilizing agents are typically classified as mechanical (corrective aggregate), chemical (e.g., Portland cement, lime, fly ash), or bituminous (asphalt emulsion or foamed asphalt).

FDR can successfully eliminate all forms of surface defects, cracking, permanent deformations and rutting, debonding between Hot Mix Asphalt (HMA) lifts, and HMA stripping, while also addressing inadequate structural capacity, subgrade instability, and base failure. However, deep subgrade deficiencies and drainage issues cannot be addressed through FDR. Project selection for FDR treatment begins by conducting a site reconnaissance visit and visual pavement distress survey. Construction history information, such as thicknesses of the HMA and unbound material, Nominal Maximum Aggregate Size of the HMA and granular material, gradation and plasticity, presence of cobbles/boulders, and presence of any pavement fabric and specialty mixes should also be reviewed for project selection. To complement the construction history information, or in the event that such records are not available, material sampling is required. Samples should be retrieved at a frequency of at least one location per 800 to 1,600 ft., depending on the observed variability. While FDR facilitates most geometric corrections, such as realignment, widening, drainage, and cross-slope, the existing curb, gutter, median, and underground utilities are considered as constraints that can affect the FDR production rate and construction costs. A single FDR crew can typically complete 4,750 to 10,000 square yards in one shift.

To assess the structural capacity of the reclaimed pavement with FDR, the *AASHTO Guide for Design of Pavement Structures (1993)* can be used. The layer coefficient value recommended for FDR with bituminous stabilizing agents typically ranges from 0.2 to 0.3, while, for FDR with cementitious additives, the

value ranges from 0.15 to 0.25, depending on the cement type and application rate. NCHRP Project 09-51 was also initiated to determine the material properties required for Mechanistic Empirical (M-E) design/evaluation of recycled material, including FDR. NCHRP Report 863 provides such inputs for FDR layers using a bituminous stabilizing agent. The expected service life of pavements rehabilitated with FDR is typically limited by the service life of the surface course and not the FDR layer itself; as such, the surface course can be readily resurfaced as part of a typical maintenance program. Given the wide range of available stabilizing agents, a laboratory mix design is required to determine the proper stabilizing agent and optimize the quantity and physical properties of the reclaimed mixtures.

The key benefits of FDR include but are not limited to:

- Conservation of non-renewable resources
- Elimination of hauling and storage of waste material
- Removal of all surface distresses
- Improvement of subgrade deficiencies
- Reclamation of existing materials
- Reshaping and correction of the existing profile
- Elimination of existing pavement structural deficiencies
- Variable depth treatment
- Cost savings compared to conventional reconstruction

Adopting FDR in the Garden State: New Jersey Experience

In 2014, NJDOT initiated its pilot FDR project on the Route 72 Eastbound outside shoulders from Milepost (MP) 16.45-18.46. Since this project was the first of its kind for NJDOT, AID was retained to provide mix designs, develop the construction specification, and support the construction engineering services for material testing and acceptance. Three mix designs using foamed asphalt, asphalt emulsion, and cement were provided. Given the project requirements and the existing material properties, FDR with Portland cement as the stabilizing agent was selected. FDR construction on Route 72 began and was completed in the summer of 2014. In addition to routine QA testing, including measuring cement and moisture content, layer thickness, in-place density, and casting Proctor specimens for compressive strength testing, various non-destructive testing tools, including the Light Weight Deflectometer, were explored for QA and acceptance use.

Following the satisfactory performance of the pilot project, NJDOT launched two additional FDR projects on Route 55 Southbound from Schooner Landing Road to Sherman Avenue (MP 21.49-25.53) and Route 72 from MP 18.56-25.70 in 2017. In both projects, the FDR layer was constructed with Portland cement for rehabilitation of the outside shoulder. While the rehabilitation of the outside shoulder on Route 55 was completed in the summer of 2017, construction of Route 72 is scheduled to be completed in March 2018. NJDOT is currently monitoring its FDR projects in terms of construction specification, staging, and design performance.



AID Material Testing Team Performing QA Testing for FDR on Rt. 55 SB (left to right: Hasan Neamah, Inspector, logging sample information; Dan Nero, Senior Technician, molding FDR Samples for compressive strength; Ahmed Mohamed, Engineer, preparing sieves for gradation control)



FDR Equipment Train on Rt. 55 SB



AID Material Testing Team Performing QA Testing for FDR on Rt. 55 SB (on the left: Ahmed Mohamed, Engineer, measuring moisture content using Speedy Moisture Tester AASHTO T-217; on the Right: Dan Nero, Senior Technician, molding FDR Samples for compressive strength)

Authors: Hadi Rashidi, Ph.D., P.E.; Michael Frabizzio, P.E.

SNJ Social at Third State Brewing

Scholarship Fundraiser & Winter Social at Third State Brewing

In late January ASHE SNJ got together for an evening of brews, socializing, and tavern food in Historic Burlington New Jersey. The owners opened the brew pub just for our group and served-up an impressive selection of hand crafted beer and ale. We all enjoyed the tour and lesson in beer making, unfortunately no PDHs were provided. The company, casual atmosphere and local cats all made for great evening!



MEET THE BOARD

President
Lori Wade, PE



lwade@mbakerintl.com

Vice President
Matt Bencoter, PE



mbencoter
@hardesty-hanover.com

Treasurer
Joseph Macios, PE, PTOE,
CME



joemacios@hotmail.com

Secretary
Heather Jones, PE



heatherbjones1@gmail.com

Executive Board

Board of Directors

Past President
Carrie Strehle



cestrehle@promatechinc.com

PDH Coordinator
Amy Sokalski, PE, PTOE, PTP



asokalski@mccormicktaylor.com

Website Coordinator
Rémy Donahey



remy.donahey@gmail.com

Public Relations Chair
Chris Donahey, PE



cdonahey@gpinet.com

Membership Chair
Richard Grubb



rgrubbs@rgaincorporated.com

Regional Director
Joseph Danyo, PE



jdanyo@mbakerintl.com

Sponsorship/Meetings
Mike Frabizzio, PE



mfrabizzio@aidpe.com

SPONSORSHIPS ARE AVAILABLE FOR 2019

Please contact Michael Frabizzio at mfrabizzio@aidpe.com for 2019 sponsorship

Platinum Annual Sponsorship - \$1,000

- Web-posting of Classified ads on southernnj.ashe.pro
- Company Logo & Featured Sponsor on main page of southernnj.ashe.pro and on Sponsorships page
- Opportunity to display a project photograph with recognition of sponsor firm on southernnj.ashe.pro
- Full page feature article on your firm (topic of your choice) in the ASHE SNJ Newsletter (article provided by the sponsor firm)
- Special Recognition at ASHE SNJ Regular and Special Events on presentation screen
- \$100 discount on Monthly Dinner Sponsorships
- Two Annual ASHE SNJ Memberships

Gold Annual Sponsorship - \$750

- Web-posting of Classified ads on southernnj.ashe.pro
- Company Logo and link on southernnj.ashe.pro Sponsorships page
- Opportunity to display a project photograph with recognition of sponsor firm on southernnj.ashe.pro
- Recognition display at each ASHE SNJ Event
- \$50 discount on Monthly Dinner Sponsorships
- One Annual ASHE SNJ Membership

Silver Annual Sponsorship - \$500

- Web-posting of Classified ads on southernnj.ashe.pro
- Company name and link on southernnj.ashe.pro Sponsorships page
- Opportunity to display a project photograph with recognition of sponsor firm on southernnj.ashe.pro
- Recognition display at each ASHE SNJ Event

Monthly Dinner Sponsorship - \$250

- 5 minute presentation to all attendees to promote your firm or product
- Recognition display on slideshow and each dinner table
- Opportunity to display and distribute materials/pamphlets about your firm or product before, during, and after the meeting
- A seat at the head table with guest speakers for the evening (includes cost of one registration and dinner)
- Company logo in announcement and reminder emails. (Please provide company logo in JPG, TIFF, or GIF format, no larger than 330 px wide x 115 px tall @ 180 DPI.)

THANK YOU TO OUR SPONSORS

PLATINUM LEVEL



GOLD LEVEL



SILVER LEVEL

JMT

REMINGTON AND
VERNICK

URBAN ENGINEERS

PROMATECH

HARDESTY &
HANOVER

NJ ASPHALT
PAVEMENT
ASSOCIATION

STANTEC

PENNONI

UPCOMING EVENTS

Project of the Year Banquet

April 11, 2018

5:00 PM - 8:30 PM

Cranbury Inn
21 S. Main St.
Cranbury, NJ 08512

DRJTBC Scudder Falls Bridge Improvement Project

May 10, 2018

5:00 PM - 8:30 PM

The Hamilton Manor
30 NJ-156
Hamilton Township, NJ 08620

ASHE SNJ Scholarship Golf Outing

July 18, 2018

8:00 AM Tee Time

Ramblewood County Club
200 Country Club Pkwy
Mt. Laurel, NJ 08054

OTHER DATES
TBD

Summer 2018

Social Event at
Trenton Thunder
Arm & Hammer Park
Trenton, NJ