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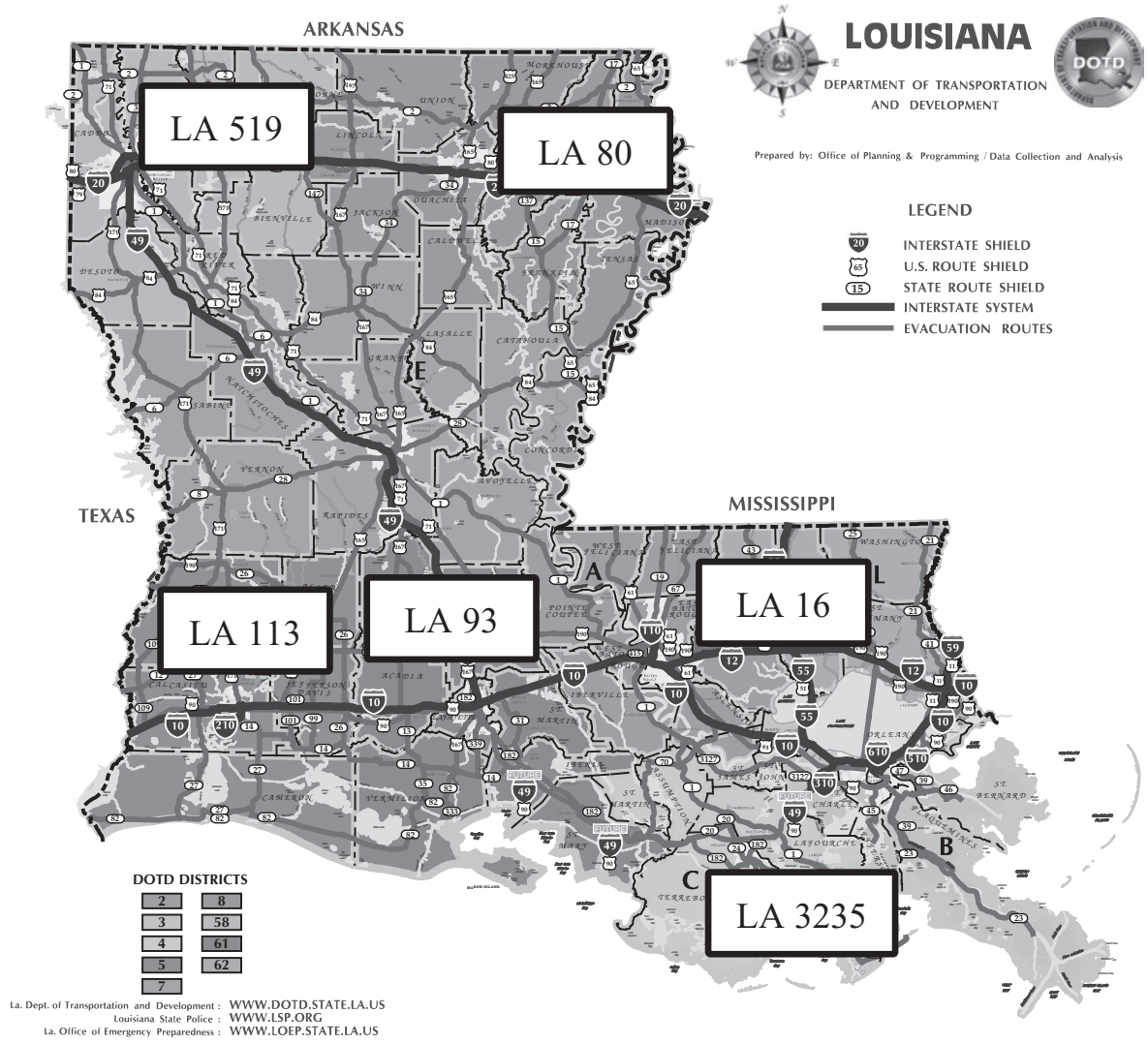

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Field Project Locations (Cooper et al., 2014)

FEATURE:

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Advocacy During August Recess is Critical

AUGUST 2017
VOLUME 25 • NO 4

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President's Message

By Matthew D. Redmon, PE

Matthew D. Redmon, PE

The thermometer is consistently reading in the upper 90's. It must be summertime in Louisiana. That means the end of the ASCE fiscal year is coming up soon. On September 30, 2017, my term as President of the Louisiana Section will come to an end. As a Section, we accomplished quite a bit this year, and I am thankful and proud of all the members that supported these activities.

Our report card committee rolled out an update to the *Report Card for Louisiana's Infrastructure*. The report card release received a lot of press. I saw media coverage from across the state, and most of these stories were shared on the Section's Facebook© page https://www.facebook.com/ascelouisiana. We need to continue to share this information with our lawmakers and the public. Ongoing presentations and information concerning the report card can be addressed to Kirk Lowery and the Government Relations Committee.

New Orleans will be a happening place this fall. The Louisiana Civil Engineering Conference and Show will be held on September 27-28, 2017 at the Pontchartrain Center. Two weeks later, civil engineers from around the globe will descend upon the Crescent City for the ASCE 2017 Convention. The convention will take place on October 8-11, 2017 at the New Orleans Marriott. The convention is a great place to learn about cutting edge innovation in the industry, participate in thought-provoking education sessions, develop leadership skills that can further enhance your career, and provide networking opportunities with potential clients, colleagues, and project team leads. I encourage you to attend the convention, especially if you haven't attended one before. The Society needs assistance from our local members to help support the convention. If you are interested in volunteering at the convention, please contact me. Convention information can be found using the following link http://www.asceconvention.org/

As my term as President comes to an end, I look back at why I became a civil engineer and a member of ASCE. I can thank the engineers at KBJM Architects in Knoxville, TN for introducing to me to engineering. I was in a work experience program for architecture, but KBJM also provided engineering services. So, my time was split between architects and engineers. One engineer told me, "You don't want to be an architect. They only dream up the designs. We make them constructible." After this comment, I knew I wanted to be the one making a design come to life. I went on to attend the University of Tennessee and graduated in 2007 with a civil engineering degree.

While at the University of Tennessee, I was first introduced to ASCE. The student chapter hosted several pizza lunch meetings with guest speakers from different disciplines of civil engineering. In addition, the student chapter participated in the conference competition. It wasn't until I became employed at PSI that I became actively involved in ASCE. I initially joined to network with colleagues and potential clients as well as attend continuing education opportunities. When I moved to Shreveport, I became a branch officer and eventually a section officer. Being an officer gave me the opportunity to meet new colleagues from across the country. My involvement with ASCE has helped me grow professionally and personally. I encourage each member to pursue a leadership position. If that is not for you, at least stay actively involved with your branch.

Thank you for allowing me to serve our membership. Thank you to those who served alongside me. I have enjoyed my time as an officer of the Louisiana Section of ASCE. I will continue to serve the Society. I welcome any ideas or comments regarding the Section and how we can better provide for and represent our membership. I can be reached at matthew.redmon@shreveportla.gov.

Development and Implementation of Louisiana's Balanced Asphalt Mixture Design Procedure

By Louay N. Mohammad, PhD, PE and Samuel B. Cooper III, PhD, PE

ABSTRACT: *Conventional asphalt mixture design methodologies such as Superpave, Marshall, and Hveem are used to determine the optimum asphalt binder content by means of physical and volumetric laboratory measurements. All three procedures ensure the materials proportion and quantity of the asphalt cement binder are adequate to meet stability and durability concerns. However, with the increased use of recycled materials, there is a need to develop laboratory mechanical tests in order to evaluate the quality of the asphalt cement binder to complement the Superpave volumetric mixture design procedure. An important component to successful mixture design is the balance between volumetric composition and material compatibility. Balanced asphalt mixture design offers innovation in designing mixtures for performance and evaluation of the quality of a mix design relative to the anticipated performance using a rational approach. This research documents the selection of laboratory mechanical tests, in addition to volumetric requirements, that can ascertain a mixture's resistance to common asphalt pavement distresses. Factors in the selection of laboratory mechanical tests such as availability of standard test procedures, advantages and limitations, laboratory-to-field correlations, and sensitivity to mixture composition will be reviewed. Further, an implementation framework and case histories will also be discussed.*

KEYWORDS: *Balanced Mixture Design, LWT, Semi-Circular Bend, Intermediate Temperature Cracking, Rutting*

INTRODUCTION

Conventional asphalt mixture design methodologies such as Superpave, Marshall, and Hveem are used to determine the optimum asphalt content by means of empirical laboratory measurements (Zhou et al., 2006). Marshall and Hveem mixture design procedures utilize both volumetric computation and stability measurements, while Superpave requires a volumetric and densification criteria evaluation of the mixture. Superpave was implemented to address the inadequacies of the Marshall and Hveem procedures. However, there is a need to develop laboratory tests to complement the Superpave procedure (Pellinen, 2004).

Fatigue cracking, permanent deformation (rutting), and thermal cracking are three major modes of distress to consider in asphalt concrete pavements (Monismith, 1992). A proper mixture design should consider these distresses where applicable. This may be accomplished through mechanistic laboratory evaluation of the mixture (Monismith et al.). The concept of mixture performance evaluation as a part of mixture design is not a new concept (Monismith, 1992; Brown, 1980; Brown et al., 1985). However, much of the consideration in the 1980s and 1990s was given to rutting resistance of the asphalt pavement layers. To address the rutting concern, asphalt mixtures were produced with less asphalt content, stiffer binder, and coarser aggregate structures. These changes led to increased cracking, reduced durability, and workability issues of asphalt mixtures (Zhou et al., 2006). In addition, the recent use of recycled materials and sustainable practices have further strained the capabilities of volumetric mixture design, thus increasing the importance of laboratory evaluation during the design of asphalt mixtures (Elseifi et al., 2011).

An important component to successful mixture design is the balance between volumetric composition and material compatibility (Pellinen, 2004). Laboratory testing, capable of ascertaining an asphalt mixture's internal compatibility is necessary to complement current design methodologies. To accomplish this, mechanistic laboratory testing that can determine a mixture's resistance to common distresses should be conducted.

The Louisiana Department of Transportation and Development (LADOTD) contracted 10.4 million tons of Superpave asphalt mixture from April 2009 to June 2013. That corresponds to 780 million dollars over the same period, nearly 200 million dollars per year. With significant financial and temporal investment in asphalt pavement systems, it is critical to ensure the pavement will meet performance expectations and provide years of service. To address this concern, LADOTD has made efforts to improve conventional asphalt mixture procedures through specification modification.

For Louisiana mixtures, which are typically rut resistant, balanced mixture design commonly results in increased asphalt content. In 2016 LADOTD implemented new specification requirements to increase the asphalt content of asphalt mixtures. This was accomplished by reducing the number of gyrations at N design, as well as increasing the minimum voids in the mineral aggregate (VMA) and voids filled with asphalt (VFA) requirements. This paper documents Louisiana's experience with the development of a balanced mixture design by complementing volumetric criteria with the (HLWT) and SCB tests for high temperature and intermediate temperature performance, respectively.

OBJECTIVE AND SCOPE

The objective of this study was to evaluate the effects of the 2016 LADOTD specification modification on the laboratory performance of asphalt mixtures. Mixtures were produced in accordance with newly implemented specifications to achieve a balance with respect to rutting and fatigue cracking. Eleven plant-produced mixtures were collected from six field projects using the newly implemented balanced specification criteria. HLWT and SCB data were compared between mixtures produced under the new specification with that of mixtures produced using the previous specification criteria. Mixture details are provided in the methodology section of this report.

BACKGROUND

Balanced Mixture Design

Studies have shown achieving mixture designs that satisfy rutting, cracking and volumetric criteria is possible (Zhou et al., 2006;

Zamhari et al., 1998; Walubita et al., 2013; Zhou et al., 2007; Scullion, 2010; Blankenship et al., 2010; Cooper et al., 2014). Walibuta et al. (Walubita et al., 2013) conducted extensive laboratory and field testing of asphalt mixtures constructed in accordance with Texas Department of Transportation (TXDOT) specifications. The research included the development of specification criteria modification to generate more balanced mixtures. The HLWT was used to evaluate rutting potential while the Texas Overlay tester (OT) was used to evaluate resistance to fatigue cracking. Accelerated testing was conducted to evaluate field performance of the mixtures. Results of the experimental program indicate the balanced mix design (BMD) method resulted in mixtures with superior cracking resistance and constructability when compared to conventionally designed mixtures (Walubita et al., 2013).

Zhou et al. (Zhou et al., 2007) evaluated the effects of BMD procedures on 11 commonly used TXDOT mixtures. The mixtures were designed to meet HLWT and OT in addition to TXDOT volumetric criteria. The study found BMD methodologies typically resulted in higher optimum asphalt content as compared to volumetric analysis alone. Overall, the research stated balanced mixtures are achievable provided acceptable materials (i.e. aggregates, and asphalt cement) are used in the mixture design process (Zhou et al., 2007).

Scullion (Scullion, 2010) further evaluated the use of BMD methodologies for crack attenuating mixtures (CAM). The research concluded a CAM with asphalt content of 8.3% under conventional design methodologies experienced a reduction in optimum asphalt content (7.5%) under BMD methodology. The research also noted a balanced mixture was not achieved when using a PG 70-22 binder. However, a balanced mixture was achieved utilizing a PG 76-22 binder (Scullion, 2010).

Blankenship (Blankenship et al., 2010) evaluated the effect of increasing the density of a mixture to improve laboratory performance by increasing the design asphalt content. The mixture was evaluated using beam fatigue, dynamic modulus, and flow number. The research concluded a more balanced mixture could be achieved through increase density and asphalt content (Blankenship et al., 2010).

Cooper et al. (Cooper et al., 2014) conducted preliminary research evaluating the impacts of specification modification for an improved balanced mixture design. Cooper et al. conducted laboratory evaluation using pilot specifications for LADOTD to determine whether the mixtures designed would be balanced. The research showed that the adjustments to the volumetric requirements resulted in an increase of balanced mixture, when compared to previous specification criteria.

A balance of both rut and crack resistance in response to the traffic loads and environment conditions is required by the pavement to perform well in the field. Controlling volumetric properties of asphalt mixture is not enough to ensure good pavement performance, as often pavements do not perform as designed. A possible solution would be the development of laboratory test procedures to evaluate the as-built pavement-qualities to predict pavement performance and life.

Selection of Mechanical Tests

There are several factors to consider when determining a suitable mechanical test for distress mitigation. The following factors were used by LADOTD for laboratory performance test evaluation:

- Measure/relate to fundamental properties,
- Simple, repeatable, easily-calibrated,
- quick, not requiring highly-trained personnel,
- Can utilize low-cost equipment,
- Sensitive to subtle changes in mixture properties, and
- Relate to pavement performance, criteria

Rutting Resistance

Numerous state transportation agencies use a version of the Loaded Wheel Test (LWT) to evaluate rutting potential and moisture susceptibility of asphalt mixtures (Izzo et al., 1999; Cooley Jr. et al., 2000). This test has shown potential as a verification tool for mixture design as well as QC/QA practices. Since 2004, TXDOT has successfully included the LWT (Hamburg type) in their Standard Specification for HMA pavement (TXDOT, 2004). TXDOT specifications allow a maximum rutting value of 12.5 mm at 20,000, 15,000 and 10,000 passes for mixtures containing PG 76-22, PG 70-22, and PG 64-22 binders respectively (TXDOT, 2004).

Additionally, LADOTD has implemented the use of HLWT test during mixture design approval, validation and quality control. Mohammad et al conducted research regarding performance-based specification implementation for LADOTD (Mohammad et al., 2016). The research found a suitable correlation between LWT rut depth and field performance. Mohammad et al. recommended maximum HLWT rut depths of 10mm and 6mm at 20,000 passes for medium traffic and high traffic respectively (Mohammad et al., 2016).

Intermediate Temperature Cracking Resistance

Similar to rutting, fatigue cracking of HMA pavement is another major concern. The fatigue cracking process includes two phases: (1) crack initiation in which micro-cracks grow from microscopic size until a critical length is obtained and (2) Crack propagation, where a single crack or a few cracks grow until the crack(s) reach the pavement surface. Both micro-cracks and macro-cracks can be propagated by tensile or shear stresses or their combinations. Unfortunately, there is a lack of rapid, simple, practical, and performance-related test procedure to characterize the crack resistance of asphalt mixtures.

The SCB test, however, adopted by Mohammad et al. (Mohammad et al., 2004), has shown promise to predict the fracture resistance of asphalt pavements. This test is a traditional strength of materials approach that accounts for flaws as represented by a notch of a certain depth that in turn reveals the resistance of the material to crack propagation. The fracture resistance of a material is

represented by the term critical value of J-integral (Jc). Greater Jc values represent a better fracture resistance of the material. Note that, previous fracture resistance data from other studies (Mohammad et al., 2004; Mull et al., 2002) indicated that mixtures achieving Jc values of greater than 0.50 kJ/m2 - 0.65 kJ/m2 are expected to exhibit good fracture resistance in the field, Figure 1 (Kim et al., 2012).

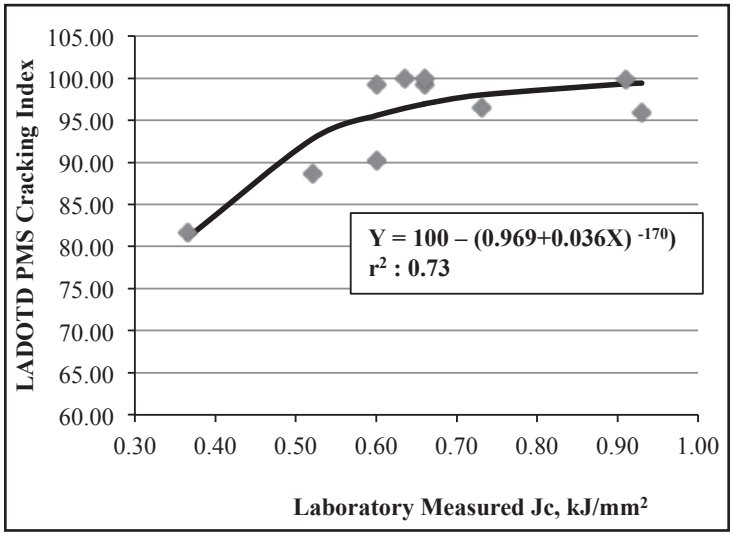


Figure 1. Measured Jc vs. Field Performance (Kim et al., 2012)

LADOTD has implemented the use of HLWT and SCB tests to evaluate the balance of mixture designed with conventional volumetric criteria, Figure 2.

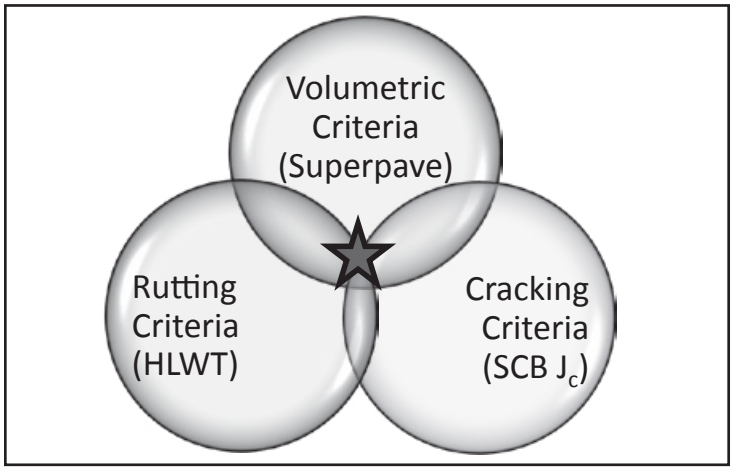


Figure 2. Balanced mixture objectives

METHODOLOGY

LADOTD Volumetric Mixture Design

The mixtures evaluated in this study were designed according to AASHTO TP 28 "Standard Practice for Designing Superpave HMA" and Section 502 of the 2006 Louisiana Standard Specifications for Roads and Bridges (Louisiana, 2006). The optimum asphalt cement content was determined based on volumetric (VTM = 2.5 - 4.5 percent, VMA ≥ 12%, VFA = 68% -78%) and densification (%Gmm at Ninitial ≤ 89, %Gmm at Nfinal ≤ 98) requirements. Aggregates commonly used in Louisiana (siliceous limestone, granite, sandstone, river gravel, and coarse natural sand) were used in mix preparation. In addition, aggregate testing was conducted to verify their aggregate consensus properties. Consensus properties included coarse aggregate angularity (CAA), fine aggregate angularity (FAA), flat and elongated particles (F&E), and sand equivalency (SE).

A new specification criterion implemented by LADOTD in 2016 was evaluated. Table 1 presents modifications to the LADOTD volumetric mixture design specifications. It is noted that the required specifications are based on the type of mixture and its intended use (i.e., binder or wearing course, traffic level, etc.). LADOTD newly implemented specification changes increase the effective binder content of the mixtures to address cracking potential while considering possible impacts to rutting.

Property	2016 LADOTD Specifications
$N_{design,}$ Gyrations	65 – 75[a]
Minimum VMA, %	10.5 – 13.0
VFA, %	69 – 80
Air Voids, %	2.5 – 4.5
LWT Required	Yes
SCB Required	Yes

[a] *specification based on traffic level and mix type*

Table 1. LADOTD Volumetric Specifications

Project Description

The laboratory performance of 51 mixtures was evaluated using the HLWT and SCB test. Both laboratory and plant-produced mixtures were evaluated. Of the 51 mixtures, 11 projects were selected to utilize mixtures designed to meet the criteria of Louisiana Balanced Mixture Design methodologies as per 2016 LADOTD balanced mixture specifications. The remaining 40 mixtures were designed using conventional volumetric mixture design methodologies as per 2006 LADOTD specifications. Table 2 presents the 11 mixtures, from six field projects, designed under the 2016 LADOTD specification guidelines.

Mixture Designation	Route	Mixture Level	NMAS, mm
LA3235BC	LA 3235	Binder	19.0
LA3235WC		Wearing	12.5
LA93BC	LA 93	Binder	19.0
LA93WC		Wearing	12.5
LA113BC	LA 113	Binder	25.0
LA113WC		Wearing	12.5
LA519WC	LA 519	Wearing	12.5
US80BC	US 80	Binder	19.0
US80WC		Wearing	12.5
LA16BC	LA 16	Binder	19.0
LA16WC		Wearing	12.5

Table 2. Field Project Descriptions (Cooper et al., 2014)

Figure 3 shows the locations of the six field projects. Five of the projects provided both binder and wearing courses, while the sixth project only consisted of wearing course.

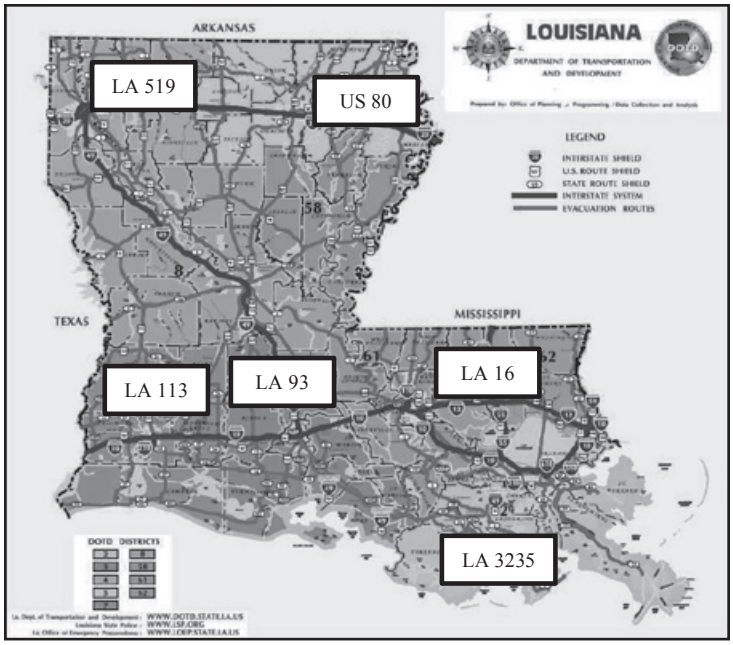
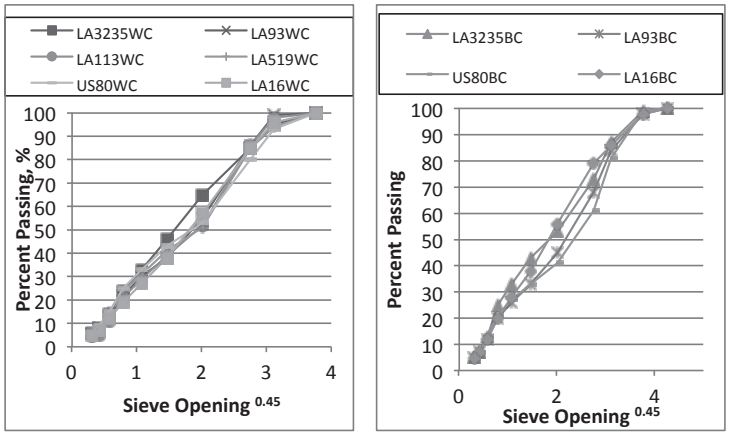


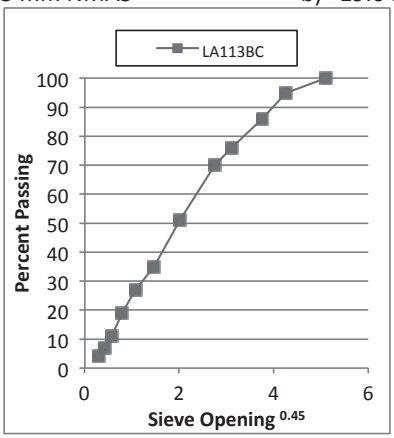
Figure 3. Field Project Locations (Cooper et al., 2014)

LADOTD Balanced Mixtures

Figure 4 presents the design gradations of the 11 mixtures formulated under the 2016 LADOTD specification. As shown in the figure, there were six 12.5-mm mixtures, four 19-mm mixtures, and one 25-mm mixture. In general, the mixtures were designed in the fine side of the maximum density line. Table 3 presents the design job mix formulas (JMFs). It is noted that there was an increase in the values of VMA (+0.5%) and VFA (+2%). In addition, the film thickness and asphalt content are greater than that of mixtures meeting the 2006 LADOTD specification criteria. It is also noted the LA 113 mixtures did not contain Reclaimed asphalt pavement (RAP).



a) 12.5 mm NMAS b) 19.0 mm NMAS



c) 25.0 mm NMAS

Figure 4. Field project gradations (Cooper et al., 2014)

Mixture Designation	LA3235 BC	LA3235 WC	LA93 BC	LA93 WC	LA113 BC	LA113 WC
Mix Type	19.0 mm	12.5 mm	19.0 mm	12.5 mm	25.0 mm	12.5 mm
Binder type	PG 70-22 M	PG 70-22 M	PG 64-22	PG 70-22 M	PG 70-22 M	PG 70-22 M
Binder Content, %	4.4	5.2	4.2	4.6	3.7	4.6
G_{mm}	2.447	2.416	2.505	2.481	2.532	2.501
% G_{mm} at N_{Ini}	90.5	89.6	88.5	88.5	87.6	88.6
% G_{mm} at N_{Max}	96.5	97.2	97.3	97.5	97.5	97.7
Design air void, %	3.4	3.5	3.5	3.5	3.5	3.5
VMA, %	13.0	14.2	13.0	14.0	11.8	13.7
VFA, %	74	75	73	75	70	74
Sieve Size	Composite Gradation Blend					
37. 5 mm	100	100	100	100	100	100
25.0 mm	100	100	100	100	95	100
19.0 mm	99	100	98	100	86	100
12. 5 mm	87	95	84	99	76	98
9. 5 mm	73	85	68	86	70	86
4. 75 mm	53	65	45	55	51	52
2. 36 mm	43	46	33	38	35	39
1. 18 mm	33	33	26	30	27	29
0.600 mm	25	24	20	22	19	21
0.300 mm	13	14	12	12	11	11
0.150 mm	7	8	7	8	7	5
0.075 mm	5.1	5.8	5.1	5.6	4.3	4.6
D:A	1.2	1.2	1.3	1.2	1.2	1.1
T_f, micron	7.6	8.0	8.0	8.2	7.4	9.2

Mixture Designation	LA519 WC	US80 BC	US80 WC	LA16 BC	LA16 WC
Mix Type	12.5 mm	19.0 mm	12.5 mm	19.0 mm	12.5 mm
Binder type	PG 70-22 M	PG 70-22 M	PG 70-22 M	PG 82-22 CRM	PG 82-2 CRM
Binder Content, %	5.2	4.4	5.1	4.9	5.5
G_{mm}	2.456	2.493	2.467	2.376	2.371
% G_{mm} at N_{Ini}	89.2	89.7	89.1	88.9	55.2
% G_{mm} at N_{Max}	97.7	97.4	97.4	97.2	97.3
Design air void, %	3.2	3.5	3.5	3.5	3.5
VMA, %	14.9	13.5	14.8	14.0	15.6
VFA, %	79	74	76	75	78
Sieve Size	Composite Gradation Blend				
37. 5 mm	100	100	100	100	100
25.0 mm	100	100	100	100	100
19.0 mm	100	99	100	98	100
12. 5 mm	94	81	93	86	96
9. 5 mm	85	61	80	79	85
4. 75 mm	51	41	53	56	57
2. 36 mm	41	33	43	38	38
1. 18 mm	31	27	33	28	27
0.600 mm	24	21	25	20	19
0.300 mm	15	13	15	12	12
0.150 mm	8	7	9	7	7
0.075 mm	4.3	4.4	5.7	4.6	5.0
D:A	0.8	1.0	1.2	1.0	0.9

BC: Binder Course; WC: Wearing Course; M: Elastomeric Polymer Modified; CRM: Crumb Rubber Modified; D:A : Dust to Effective Asphalt Ratio; T_f: Film Thickness

Table 3. Job mix formula (Cooper et al., 2014)

Experimental Program

Triplicate specimens were prepared for testing, except for the LWT where two specimens were tested. All specimens were compacted to an air void level of 7.0% ± 0.50%. Results of the tests had a coefficient of variation (COV) of 20% or less. A brief description of each of the test methods considered are presented in the following sections.

Hamburg Loaded Wheel Tester (HLWT)

Rutting performance of the mix was assessed using an HLWT, manufactured by PMW, Inc. of Salina, Kansas. This test was conducted in accordance with AASHTO T 324, "Standard Method of Test for Hamburg Wheel-Track Testing of Compacted Hot Mix Asphalt (HMA)." This test is considered a torture test that produces damage by rolling a 703-N (158-lb.) steel wheel across the surface of a specimen that is submerged in 50°C water for 20,000 passes at 56 passes a minute. A maximum allowable rut depth of 6 mm at 20,000 passes at 50ºC was used. The rut depth at 20,000 cycles was measured and used in the analysis (AASHTO T 324).

The HLWT may also be used to evaluate the moisture sensitivity of the mixture. The Stripping Inflection Point (SIP), calculated from LWT test results can be used to determine the stripping potential of HMA mixtures. SIP is the number of wheel passes at which a sudden increase in rut depth occurs, (e.g., tertiary flow occurs). The SIP is related to the mechanical energy required to produce stripping; therefore, a higher stripping inflection point indicates that a mixture is less likely to strip.

Semi-Circular Bend Test

Fracture resistance potential was assessed using the SCB approach proposed by Wu et al. (Louisiana, 2006). This test characterizes the fracture resistance of asphalt mixtures based on fracture mechanics principals, the critical strain energy release rate, also called the critical value of J-integral, or Jc. Figure 5 presents the three-point bend load configuration and typical test result outputs from the SCB test. To determine the critical value of J-integral (Jc), semi-circular specimens with at least two different notch depths need to be tested for each mixture. In this study, three notch depths of 25.4 mm, 31.8 mm, and 38 mm were selected based on an a/rd ratio (the notch depth to the radius of the specimen) between 0.50 and 0.65. Test temperature was selected to be 25°C. The semi-circular specimen is loaded monotonically until fracture failure under a constant cross-head deformation rate of 0.5 mm/min in a three-point bending load configuration. The load and deformation are continuously recorded and the critical value of J-integral (Jc) is determined using the Equation 1 (Wu et al., 2005):

$$J_c = \left(\frac{U_3}{b_3} - \frac{U_4}{b_4} \right) \frac{3}{a_4 - a_3}$$

Where,

b = sample thickness, mm;
a = the notch depth, mm; and
U = the strain energy to failure, KN mm.

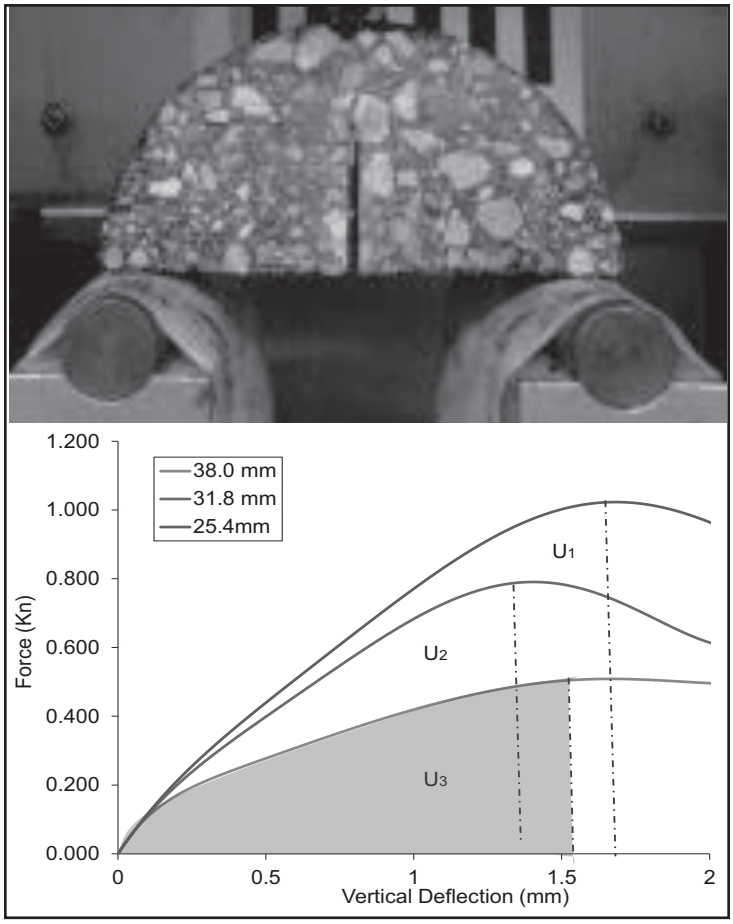


Figure 5. The Semi-Circular Bending Test

RESULTS AND ANALYSIS

Rutting Resistance

Figure 6 presents the results of the HLWT test results at 50°C for the mixtures evaluated in this study. Mixtures designed according to the new LADOTD specifications are indicated by star symbols. In general, mixtures designed according to the 2006 and the new LADOTD specifications performed well in the HWLT test with a mean rut depth of less than 6.0 mm and 10.0 mm at 20,000 passes. The 10.0-mm criterion is used for mixtures containing unmodified PG 64-22 binder, while the 6.0-mm criterion is used for modified binders. It is noted the 11 mixtures that were designed according to the new specifications (indicated by star symbols) exhibited improved or similar performance with respect to rut resistance as measured by the HLWT. In addition, the 11 mixtures produced under the new specification criteria did not exhibit tertiary flow, thus do not exhibit moisture susceptibility as indicated by the HLWT. Therefore, the newly implemented LADOTD specification modifications do not appear to have adversely affected the rutting resistance of the mixtures. In addition, mixtures containing polymer-modified binders (i.e., PG70-22M and PG76-22M) resulted in the improved performance when compared to unmodified binders (i.e., PG64-22). Figure 7 presents the average rut depths by binder grade. The figure shows a decrease in rut depth with increase in high temperature grade of the binder. This is to be expected as the HLWT was conducted at a single temperature (50°C) regardless of binder grade.

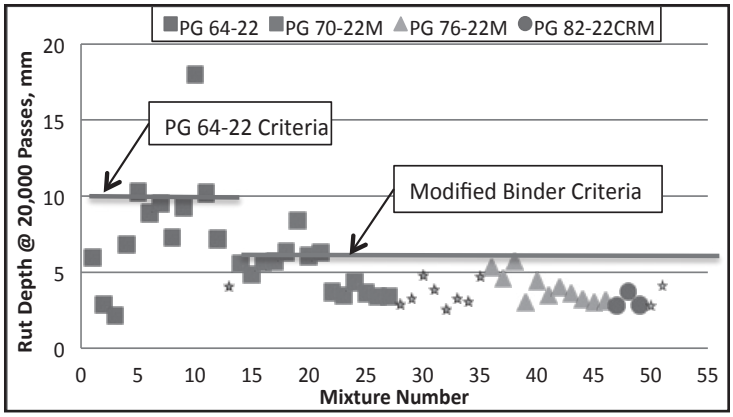


Figure 6. HLWT Test Results (Cooper et al., 2014)

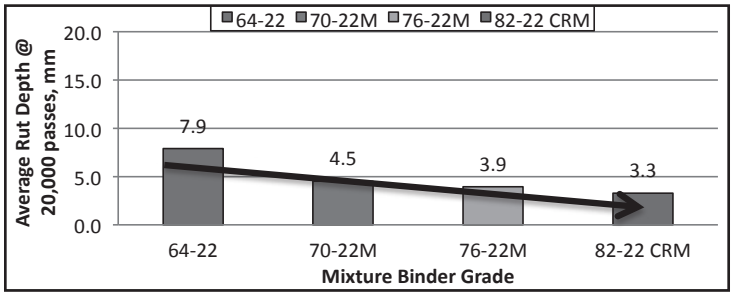


Figure 7. HLWT Test Results - Binder Grade Comparison (Cooper et al., 2014)

Fatigue Cracking Resistance

Figure 8 presents the SCB test data generated for this study. The minimum passing criterion used in this analysis is 0.5 kJ/m2 (Kim et al., 2012). Mixtures designed according to the new LADOTD specifications are indicated by star symbols. This figure shows nearly 50% of the pilot mixtures met or exceeded the cracking criteria. However, historically mixture containing PG 70-22M binder met the criteria at the same percentage (50%). In general, mixtures containing elastomeric type of polymer modified binder (PG 76-22M) outperformed mixtures containing other binders. In addition, mixtures containing crumb rubber modifiers should be monitored closely as the base binder is a PG 64-22. Figure 9 presents the Jc values comparison with respect to binder grade. This figure clearly identifies the effect of binder grade on cracking resistance as measured by the SCB test. The improved cracking resistance may be attributed to the elastomeric polymer modifiers used in the PG70-22M and PG76-22M binders. In general, mixtures containing no reclaimed asphalt pavement (RAP) exhibited improved Jc.

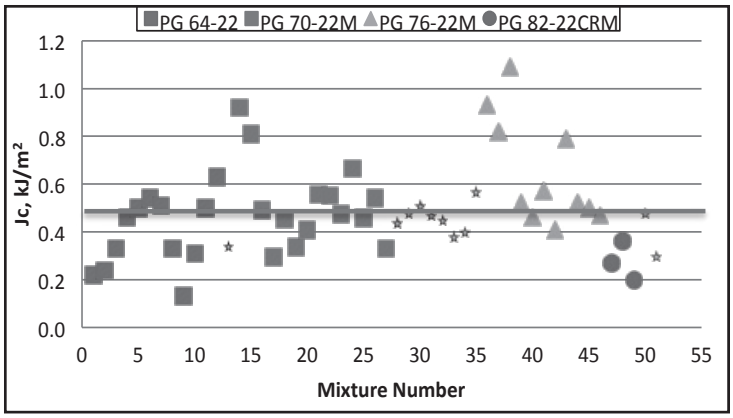


Figure 8. Semi-Circular Bend Test Results (Cooper et al., 2014)

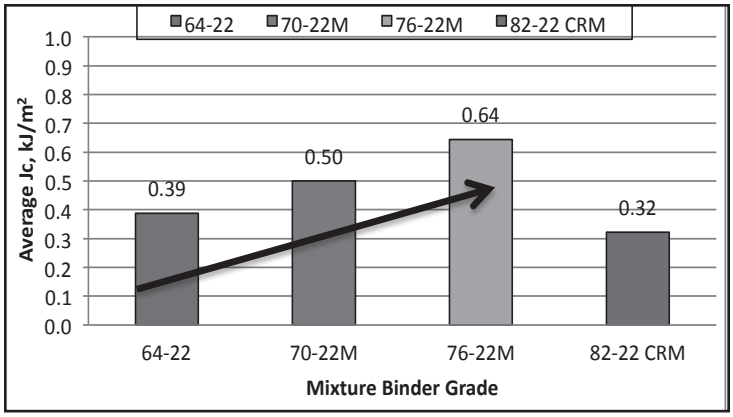


Figure 9. Semi-Circular Bend Test Binder Comparison (Cooper et al., 2014)

Balanced Mixture Analysis

Figure 10 presents the balanced mixture analysis for the 51 mixtures evaluated in this paper. The balanced region highlighted indicates mixtures that satisfied both rutting and fracture criteria. As shown in the figure, the mixtures designed using the newly implemented specification balanced 50% of the time. It is noted, the mixtures produced under the new specification containing PG 64-22 binder did not balance. Mixtures designed according to the 2006 LADOTD specifications were balanced 52% of the time (PG64-22-36%; PG70-22M-50%; PG76-22M-92%; PG82-22CRM-0%). It is noted the percentage of PG82-22CRM mixtures that balanced increased from 0% to 50%. However, the sample size for PG 82-22 CRM mixtures was limited.

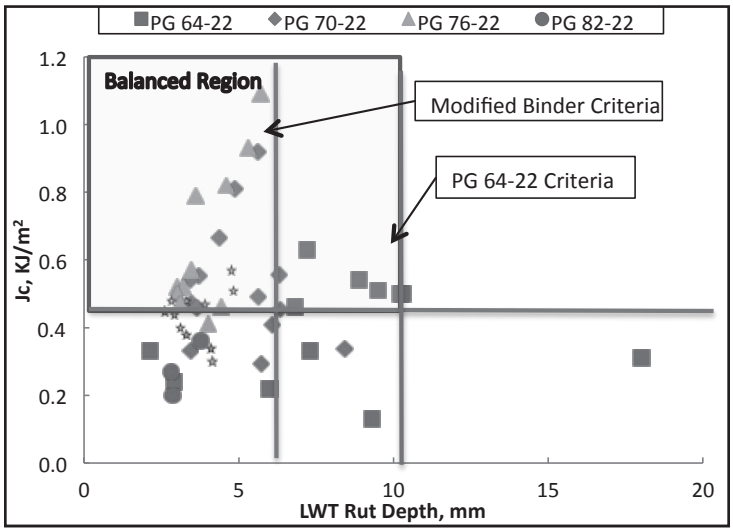


Figure 10. Balance Mixture Analysis (Cooper et al., 2014)

SUMMARY AND CONCLUSIONS

The objective of this study was to evaluate the effects of LADOTD specification modification on the laboratory performance of asphalt mixtures. Mixtures were produced in accordance with newly implemented specifications to achieve a balance with respect to rutting and fatigue cracking. Eleven plant-produced mixtures were collected from six field projects using balanced specification criteria. HLWT and SCB data were compared between mixtures produced under the new specification with that of mixtures produced using the 2006 specification criteria. Based on the

results of the analysis, the following findings and conclusions may be drawn:

- With respect to rut resistance, the 11 mixtures produced using the 2016 LADOTD specifications exhibited improved or similar performance to mixtures produced using the 2006 LADOTD specification.

- Mixtures containing polymer modified binders (i.e., PG70-22M and PG76-22M) resulted in improved rutting performance when compared to unmodified binders (i.e., PG64-22).

- Fifty percent of the mixtures designed according to the 2016 LADOTD specifications met or exceeded the cracking criteria of 0.5 kJ/m2 as determined by the SCB test.

- Mixtures containing PG 76-22M modified binder outperformed the mixtures containing other binders (e.g., PG64-22, PG70-22M and PG82-22CRM).

- In general, mixtures containing no reclaimed asphalt pavement (RAP) exhibited improved Jc.

ACKNOWLEDGEMENTS

This work was supported by the Louisiana Transportation Research Center in cooperation with the Louisiana Department of Transportation and Development and the Federal Highway Administration. The authors would like to acknowledge the efforts of William Gueho, Patrick Frazier, and Jeremy Icenogle at LTRC asphalt laboratory as well as the contributions of Engineering Material Characterization and Research Facility staff.

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Advocacy During August Recess is Critical

With the recent release of the 2017 Louisiana Infrastructure Report Card, there are many good reasons to take a moment to remind legislators at the state and federal levels that now is the time to invest in infrastructure.

The gas tax has been a prime topic of discussion in Baton Rouge past few years, and this year a significant gas tax increase bill came close to a floor vote in the House Chamber. Take time to share the "D" roads grade and "D+" bridge grades as prime examples of why a robust transportation funding bill should be placed on the Governor's desk. You can do so by visiting town halls and other events hosted by your state representative during the interim legislative period. Help Louisiana join the 24 states that have raised their gas taxes over the last four years!

ASCE's transportation funding policy statement recommends that adequate funding for operating, maintaining, and improving the nation's transportation system be provided by a comprehensive program with sustainable dedicated revenue sources at the federal, state, and local levels. While this "all options on the table" approach makes any number of proposals attractive, legislators need prompting from infrastructure experts like you to get the job done.

In addition to promoting roads, there's opportunity to raise awareness on other low grades like Coastal Areas (D+), Drinking Water (D-), and Inland Waterways(D-). Some of these areas are not only funded by the state but, rely on federal matching dollars or other grant programs. One immediate ask is for the support of the Safe Drinking Water Act (SDWA), specifically H.R. 3387, the "Drinking Water System Improvement Act of 2017." The SWDA includes the Drinking Water State Revolving Fund program, which provides low-interest loans for state and local water infrastructure projects. H.R. 3387 would reauthorize the SDWA for the first time since 1996 and was unanimously approved by the full Energy & Commerce Committee on July 27, 2017.

The Drinking Water System Improvement Act of 2017 provides $8 billion in capitalization grants for FY18 through FY2022. During the committee markup, an amendment was added to the bill to require water systems to develop emergency response plans addressing their vulnerability to natural disasters and terrorism; for the creation of an EPA grant program to help utilities improve their resiliency; to provide additional assistance for disadvantaged communities; and to require water systems to make their reports to consumers more understandable. However, we would remind you that ASCE and other organizations, sent a letter to Congress expressing concerns about a provision in H.R. 3387 that appears to legislate engineering decisions on materials choices. This legislation, which operates under the guise of promoting "open competition," seeks to legislate technical engineering decisions related to pipes and other materials that should be made by licensed professional engineers and local communities. These efforts could supersede engineering judgement and impose new mandates on communities in order to promote the use of specific materials for water projects. We strongly believe that these decisions should be made by licensed engineers in consultation with their utility clients and local communities. This is part of a larger effort to enact laws at the federal, state and local level.

On programs such as these we encourage you to connect with your Congressional Delegation. Louisiana's eight-member federal delegation are home until September 5th. There are many opportunities to interact with your Senators and Representatives during these weeks. Check out their websites, social media pages and local events pages in the newspaper to find out where they'll be. If you need help preparing for these events, ASCE's Government Relations Staff is here to help. Simply contact us at govwash@asce.org and we can send you talking points.

Policymakers need civil engineers like you to put the state and national 2017 Infrastructure Report Cards in their hands and provide firsthand information about the current conditions of Louisiana's infrastructure. Connecting with state and federal policymakers in-district is an excellent way to form a relationship with them and their staff. Make sure you collect cards and create a lasting relationship with period e-mails to update or thank them for casting key votes.

Ready to get involved beyond attending district events? Make sure you're among the first to know when to reach out to elected officials on critical infrastructure matters by becoming an ASCE Key Contact. Key Contacts are among the first to receive information from ASCE's Government Relations Staff when infrastructure policies are being debated. Whether it's a lift as simple as sending a quick e-mail urging them to continue their dialogue on transportation funding or a phone call asking for a specific vote on a water infrastructure measure, Key Contacts will receive timely and in-depth briefing information that can be passed along to elected officials. Learn more by visiting ASCE's Key Contact page at http://www.asce.org/keycontacts/.

In addition to receiving e-mail updates with legislative information, you can follow along at your leisure by visiting ASCE Legislative Tracking page at http://cqrcengage.com/asce/state/louisiana for the latest information on legislative and regulatory action items at the state level. The page also features action centers that will highlight the latest state and federal Key Alerts requiring your attention. To check out the legislative trends in neighboring states visit http://cqrcengage.com/asce/states and click on one of the state pages to view their legislative and regulatory reports.

Last but not least, one additional way to stay engaged during the summer recess is to complete ASCE's RAP Index Survey (http://re.spon.se/VPq1fA). RAP Index is a tool that allows the Society to gauge its network of relationships with local, state and federal elected officials (and their staff). Your responses let us know how strong our connections are in both Baton Rouge and Washington, DC. The survey is your opportunity to tell us which elected officials you know and how well you know them. It's an additional resource the Society can rely upon when pushing specific measures in the states or on Capitol Hill. Completion of the RAP Index is also one of the requirements to attend ASCE's annual Legislative Fly-In.

Your advocacy efforts can help make infrastructure a priority to legislators. Flex your rights as a citizen to advance the Society's initiative to improve the nation's infrastructure.

ASCE-COPRI Louisiana Chapter News

By Venu Tammineni, PE, Director - Communications

COPRI
COAST, OCEANS, PORTS AND RIVERS INSTITUTE
Louisiana Chapter

The Louisiana Chapter of the American Society of Civil Engineers (ASCE) Coasts, Oceans, Ports, and Rivers Institute (L.COPRI) is continuing to promote membership and visibility throughout the State of Louisiana.

Annual Lake Pontchartrain Basin Foundation Spring Beach Sweep

On May 20, 2017, the L.COPRI Young Professional Group (YPG) members participated in the Annual Lake Pontchartrain Basin Foundation (LPBF) Spring Beach Sweep. This event takes place in the areas surrounding Lake Pontchartrain and is an opportunity for volunteers, partners, and sponsors to help care for the areas that drain the Pontchartrain Basin by cleaning curbs, ditches, and storm drains on city streets and rural roadways. Erin Rooney, Lizzy Miano, Myriam Bou Mekhayel, Goh Sakulpitakphon, and Paul Anderson from L. COPRI YPG volunteered and were designated with picking up trash along the West End Park area. The group picked up a total of 14 pounds of trash. This was a great event for the YPG members and we hope to participate in future events with the LPBF.

Left to Right: Erin Rooney, Lizzy Miano, Myriam Bou Mekhayel, Goh Sakulpitakphon, and Paul Anderson (not in picture)

L.COPRI Scholarship

L.COPRI initiated an annual scholarship program in 2015 in which a graduate or undergraduate student studying Civil, Coastal or Environmental Engineering in Louisiana is awarded $1,000 for their accomplishments and interest in protecting or improving the nation's coasts, oceans, ports or rivers. For 2017, the scholarship forms will be sent out to students in the third quarter.

Board Members

Chair – Paul Tschirky
Vice-Chair – Dennis Lambert
Secretary – Tyler Ortego
Treasurer – Erin Rooney
Director of Programs– Andrew Woodroof
Director of Communications – Venu Tammineni
Director of Education – Ashly Adams-Tschirky
YPG Chair – Myriam Bou-Mekhayel
Past-Chair – Rudy Simoneaux

Academic and Practitioner Advisory Committee:

Ehab Meselhe
Nancy Powell
Clint Willson

Other Information

For more information on all COPRI conferences, please visit http://www.asce.org/coasts-oceans-ports-and-rivers-engineering/coastal-engineering-conferences-and-events/.

The activities of L.COPRI will include seminars, workshops and other activities to benefit all ASCE and COPRI members. One does not have to be an engineer to join COPRI. These Institutes are formed for the benefit of ASCE and non-ASCE members to participate and interact with other professionals interested in coastal, oceans, ports, and riverine efforts in Louisiana. If you have any questions or to add your name to our mailing list, please contact Venu Tammineni, at LCOPRI@yahoo.com.

2017 Infrastructure Report Card a Success

ASCE | GOVERNMENT RELATIONS

Dear 2017 Infrastructure Report Card Committee Chairpersons

As part of the executive team for the 2017 ASCE Louisiana Infrastructure Report Card, we want to say thank you. Although you get very little recognition, you need to know that you are the reason the 2017 Report Card is a success. This updated version of the inaugural 2012 ASCE Louisiana Infrastructure Report Card provides information documenting how very little improvement has been realized in five years. In fact in some cases, Louisiana's infrastructure has detreated during this span. The hard work of each of you has once again provided a quality product that is being referenced by state agency heads, by local, state and national representatives, and by local and national news outlets. Unlike Louisiana's inaugural report card, this updated version is being used more as a resource to advance the case for the funding and evaluation of Louisiana's infrastructure. The time and commitment of each of you, Blake Roussel, PE for Aviation; James Gregg, PE for Bridges; Ehab Meselhe, PhD, PE for Coastal; Eric Marx, PE for Dams; Jack Koban, PE for Drinking Water; Deborah Keller, PE for Ports and Inland Waterways; William Gwyn, PE for Levees; Gordon Nelson, PE and Ken Perret, PE for Roads; Rick Buller, PE for Solid Waste; and, David Peters, PE for Wastewater is admirable. The time volunteered to recruit committee members, collect data, writing, rewriting and re-rewriting each infrastructure sections is a credit to ASCE as an organization and to each of you as professional engineers.

Thank you,
Dr. Kam, Jan, Kirk

Please see the Section website to view the 2017 Report Card: http://lasce.org/#news

ASCE-T&DI Louisiana Chapter News

By Joffrey Easley, PE - Newsletter Editor

2017-2018 Louisiana T&DI Scholarship Program

It's almost that time of the year again! LA T&DI will again be awarding two $500 scholarships to Junior and Senior level university students in Louisiana who anticipate pursuing a career in transportation. Announcements, along with application instructions, should be going out to University colleges of engineering and civil engineering department heads in October. All eligible students should contact their department head to request an application.

Geotechnical Topics in Pavement Engineering Seminar

The Louisiana T&DI Chapter held a seminar on June 14th at the UNO Engineering Auditorium to discuss Geotechnical topics pertaining to Pavement Engineering. The speakers for this seminar were Gavin Gautreau, PE, who is a Senior Geotechnical Research Engineer with LTRC, and Mostafa Elseifi, PhD, PE, who is an Associate Professor in the Civil and Environmental Engineering Department at LSU. The seminar covered field investigation and construction inspection criteria in the 2016 LADOTD Standard Specifications for Road and Bridges for soils, aggregates, and stabilized materials used in pavement engineering. It also presented tools to determine soil subgrade design values and to aid in forensic evaluations.

Seminar Speakers, Gavin Gautreau, PE and Mostafa Elseifi, PhD, PE

LA Civil Engineering Conference and Show

The 2017 Louisiana Civil Engineering Conference and Show is fast approaching! This annual conference will once again be held at the Pontchartrain Center in Kenner. The conference dates are September 27th and 28th, 2017. Don't miss this opportunity to network with your fellow engineers and hear about new research activities and innovative projects that are being built in and around Louisiana, as well as earn up to 13 professional development hours. Check out www.lcecs.org for schedule information and to register for this fantastic conference.

Looking Ahead

The intent of T&DI is to promote transportation and development as a career path, and to provide training and networking opportunities for all professionals involved in transportation projects. If you are interested in co-sponsoring a seminar at your branch, the T&DI Louisiana Chapter has prepared a Seminar Coordinator's Check List to assist you in your preparation Contact Louay Mohammad, PhD, PE, at louaym@lsu.edu for a copy of the checklist. Our seminars are two hours in length and are typically presented from 5:30-7:30 pm in either the New Orleans or Baton Rouge area. We have also presented out-reach seminars with the ASCE Acadiana Branch and Shreveport Branch. We are open to co-hosting seminars in additional Louisiana cities if requested. In keeping with the intent of the Institute to provide training and networking opportunities for all professionals involved in transportation projects, the Chapter is planning the following future seminars:

- Mitigation Banking – NEPA Method
- Historic Louisiana Bridges
- Green Infrastructure: Integrating Infrastructure Needs
- Highway Safety Seminar

Branch News

ACADIANA BRANCH

By Sasan Daneshvar, PE, Branch President

The Acadiana branch in conjunction with IEEE and LES hosted their annual crawfish boil event at Girard Park in Lafayette on May 10th. This event, which is a joint networking event open free-of-charge to students, professional members and their guests is our way of expressing gratitude for our members and their support throughout a successful year while celebrating the end of school season, and welcoming summer vacations.

At the popular request of our members, the Acadiana branch hosted a half-day Life Safety Code seminar in Lake Charles on May 15th. Robert Miller with The Building Code Institute presented topics in Passive Fire Protection for engineers and architects. The LAPELS rules currently require every professional engineer licensee who designs buildings and/or building systems to earn a minimum of eight PDHs in Life Safety Code, building codes and/or Americans with Disabilities Act Accessibility Guidelines during each biennial licensure renewal period beginning before January 1, 2017.

The Acadiana branch is continually coordinating with the University of Louisiana at Lafayette (ULL) and local professionals to plan a successful 2018 Deep South Conference which will be hosted at ULL. We will need judges for competitions, sponsors, and volunteers to organize the event. If you are interested in participating, please contact us or visit http://asceacadiana.net

As I am completing my term as president, our Nominating Committee have recruited a few new board member candidates who will be elected and inducted at our September luncheon, as well as a few committee chairs that will be appointed by the incoming 2017-2018 president Jared Veazey. I am very excited about having these new leaders onboard and am looking forward to the new ideas and the energy they bring in with them. Please take a moment to meet and greet them at our September luncheon, and don't hesitate to contact us if you'd like to be involved.

SHREVEPORT BRANCH

By Jared Boogaerts, PE, Branch President

I mentioned the Golf Tournament in the last article from the Shreveport Branch. Since then we have tallied up the results and I'm excited to announce that we raised over 3,000 dollars to go towards scholarships for Outstanding Engineering Students at Tech. Thanks again to everyone who was able to attend and contribute to this fundraiser.

We have been on summer hiatus since June but we will resume regular monthly meetings in September. We do not have a speaker lined up as of yet for our next meeting on Thursday September 21. This will be our last meeting of the 2016-2017 year. I will be handing off my position as ASCE Shreveport Branch President to Tim Wright, EI for the 2017-2018 year. I know Tim is going to do a fantastic job as Branch President much as he did for President Elect this year. Also transitioning will be Joy Etkins, EI as Branch President Elect, and Marcus Taylor, PE as Branch Treasurer. As of now we have not yet elected our new Branch Secretary.

BATON ROUGE BRANCH

By Khali Cohran, PE, Branch President

The summer of 2017 was rather lively for the Baton Rouge Branch. Leading into the season our newly elected Mayor-President Sharon Weston Broome was the key note speaker for our May joint luncheon with LES. Of the numerous critical issues the administration is working on, transportation & drainage rose to the forefront. Mayor Broome gave an overview of both regional and local efforts currently ongoing to address both. As always, the turnout for the joint luncheon was at capacity, and the accommodations at Juban's were exceptional. We are anticipating another capacity crowd in August, as Congress Garret Graves, will be joining us for the second ASCE/LES joint luncheon for 2017. In addition to the high-profile luncheon for the season, the branch has hosted our second "Bridging The Gap" series, after work social. The concept was initiated to draw members that may not have availability to attend 2-hour luncheons during the work day, but are interested in professional development topics and opportunities. The second session of the series was entitled: "Getting Connected: How Networking May Influence Your Career Path". The panelist for the afternoon, Mary Danka and Chris Knotts, have been heavily involved in ASCE, as well as other professional organizations at local and state levels and brought a wealth of experience to a diverse group of members, both seasoned professionals and younger members.

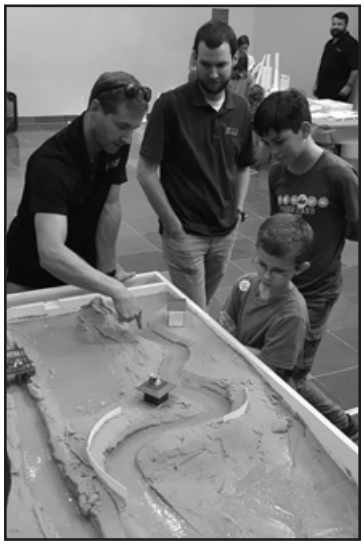
Panelist for the Getting Connected Series: Mary Danka and Chris Knotts

Getting Connected Series was well attended

Our "Engineer It" program, in a partnership with the Louisiana Arts and Science Museum (LASM), introduced its fourth module, XXX, on August 19th. Special thanks to Stokka Brown for developing the curriculum and facilitating the workshop, along with Sarah Ollenburger who arranged the volunteers. As an additional treat in conjunction with LASM we were able make arrangements for viewings of the Dream Big production to be shown. The Engineer It workshop and viewing of the Dream Big production will be held at LASM on the dates below. We invite you to come out, and bring the family and friends for an awesome introduction to the world of engineering!

Stokka Brown demonstrating how water flows and affects erosion at Engineer It!

Nedra Hains helps our future engineers build the Cable-Stay Bridge exercise at Engineer It!



Stokka and Tyler demonstrating how water flows and affects erosion at Engineer It!

Our future engineers build towers for the Wind City Tower exercise at Engineer It!

Engineer It & Dream Big Future Dates:

- September 16: 10 to 11:30 am
- October 21: 10 to 11:30 am

All around the world, engineers are pushing the limits of ingenuity and innovation in unexpected, imaginative, and amazing ways. Dream Big: Engineering Our World, a giant-screen film about engineering, will take viewers on a journey of discovery from the world's tallest building to a bridge higher than the clouds. Along the way, the audience will witness how today's engineers are shaping the world of tomorrow.

NEW ORLEANS BRANCH

By Tonja Koob, PhD, PE, Branch President

The New Orleans celebrated in July at its annual awards banquet and new board installation. Our new board for 2017-2018 is: Karishma Desai, President; Robert Delaune, President-Elect; Dean Nicoladis, Vice President; Myriam Bou Mekhayel, Treasurer; Andrew Woodroof, Secretary; Kyle Galloway, Director; Stephanie Bayne, Director; and Tonja Koob, Past President. We awarded life memberships to William Beakley, PE; Bruce J. Bivona; William B. Haensel, PE; Alan Hunter, PE; Richard Lambert, PE; Alan G. Moody, PE; Alan D. Schulz, Sr, PE; Luis Sosa, PE; and Frank Stuart, PE, PLS. Three University of New Orleans Civil Engineering students received $500 scholarships: Jacob E. Bordelon, Matthew C. Thomas, and Christian P. McClung.

Branch awards went to Kyle Galloway, PE for Outstanding Young Civil Engineer; Travis Richards, PE for Outstanding Civil Engineer; Stephanie Bayne, PE for Outstanding Engineering Outreach; Alex McCorquodale, PhD, PE, PEng for Educator of the Year. Scott Smith, PE received the President's Medal.

Deborah Keller, PE received the Lifetime Achievement Award and Frank Nicoladia, PE received the Wall of Fame Award.

New Orleans Branch will host the Louisiana Section officer installation luncheon on September 22, 2017 at the Metairie Country Club.

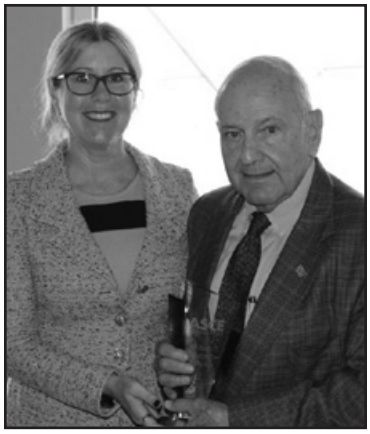
Chris Humphreys installing officers, Tonja Koob, Andrew Woodroof, Dean Nicoladis, Rob Delaune, Karishma Desai, Stephanie Bayne, and Kyle Galloway

Tonja Koob, PhD, PE presents the gavel to Karishma Desai, PE

Travis Richards, PE
Outstanding Civil Engineer

Alex McCorquodale, PhD, PE, PEng
Educator of the Year

Deborah Keller, PE
Lifetime Achievement Award



Frank Nicoladia, PE
Wall of Fame Award

Kyle Galloway, PE
Outstanding Young Civil Engineer

Scott Smith, PE
President's Medal

Stephanie Bayne, PE
Outstanding Engineering Outreach

ASCE-SEI New Orleans Chapter News

By Om Dixit, PE, FASCE, F-SEI

The ASCE SEI New Orleans Chapter has been busy hosting and planning seminars and workshops and volunteer efforts. All seminars are held from 5:30 PM to 8 PM.

On June 28, 2017, SEI New Orleans Chapter invited Michael Miller, PE (NUCOR/Vulcraft, Dallas, Texas) to present the seminar *"Design of Vulcraft Steel & Composite Joists and Steel Roof Decks Subjected to High Wind and Uplift Loads."* Mr. Miller provided an overview of important and practical design considerations of Steel & Composite Joists, and Steel Roof & Floor Decks which an engineer must be aware of when specifying products on a project. Mr. Miller covered the following topics: (1) Steel Joist Institute design philosophy and assumptions (2) Several methods for specifying joists for non-uniform loads (3) Composite joist design (4) Considerations for high wind loads, including uplift and lateral loads on joists, diaphragm shear in deck (5) New deck connection methods for improved diaphragm shear capacity (6) Common mistakes and how to avoid them. This seminar was attended by about 42 members.

ASCE SEI NO is planning a seminar in Late August on Sheet Piles and Cofferdams Design. Other topics in planning are Offshore-Floatover Installation, Masonry Design and a few interesting Structural projects.

SEI NO Exec. Committee Member Jay Jani, PhD, PE (on right) and seminar speaker Michael Miller, PE at the Seminar in New Orleans

ASCE SEI New Orleans Chapter arranged a few structural presentations for 2017 Louisiana Civil Engineering Conference and Show (2017 LCECS). 2017 Herbert J. Roussel Jr. Lecture will be given by Raymond (Ray0 Messer, PE (Chairman Emeritus, Walter P. Moore and Associates, Houston, TX). The title for the lecture will be *Structural Engineers and Design Build - Do not be Afraid.* This lecture is to honor the late Herbert J. Roussel, Jr. who was one of the founding members of ASCE Structural Committee of New Orleans Branch and served on its Executive Committee 1991-2005. Since 2006 each year a distinguished presenter is selected by the Structural Engineering Institute Chapter of New Orleans (SEI NO) to deliver this Lecture.

Besides the 2017 Herbert J. Roussel Jr. Lecture, SEI NO has provided speakers for 2017 LCECS on structural topics such as "Design and Construction of the Tallest Building West of the Mississippi", "The New Structural Engineer's Toolbox: 360 Cameras, Drones, Scanners and 3D PDFs", "Cathodic Protection of Infrastructure", "High Strength Reinforcement in ACI 318: Changing the Grade" and "Lessons Learned in 30 Years of Timber Pile Repairs"

The committee is looking for good topics and speakers for future presentations. Members with expertise in the field of structural engineering are welcome to join the Executive Committee. For any suggestion and information on joining the Executive Committee, contact Chairman Mark Castay, PE at mcastay@trcsolutions.com. For adding your name to our mailing list, please visit ASCE New Orleans Branch website at www.asceneworleans.org and add name to the email list.

MCNEESE STATE UNIVERSITY

By Caleb Greathouse, Student Chapter President

In April, several of our students had the opportunity to attend the ASCE Louisiana Section Spring Conference hosted by the Acadiana Branch in Lafayette. The conference was a great opportunity to network with professionals and stay up to date on the latest technology and methods. We appreciate the generosity of the Acadiana Branch which made it possible for our students to attend, and look forward to greater student participation at future conferences.

In May, we held our annual crawfish boil and elected new officers for the 2017-2018 Academic Year. Since all last year's officers were seniors, we will have an entirely new Executive Committee leading the club this year. Though our leadership will be new to their roles, we are enthusiastic to get started this fall and have great expectations for the coming year. One of our most important goals for the coming year is to increase membership – especially at the sophomore and freshman levels – so we can strengthen the chapter and its value to our members in the years to come. We also plan to attend the ASCE Deep South Conference at the University of Louisiana at Lafayette, and compete in the Steel Bridge and Concrete Canoe competitions. McNeese has not competed in the Steel Bridge competition in several years and did not compete in the Concrete Canoe competition last year, but we are excited to get started on these projects early and hope to make a strong showing at conference. Participation in these competitions is a great learning experience for our student members and a way to have fun and get students excited about membership.

Our Student Chapter has been approached by the Calcasieu Parish Police Jury to assist with an educational program they are developing to teach children about the environmental and infrastructure problems in the area. This opportunity to serve our community will also give us a chance to promote ASCE as an educational resource and increase awareness of the role of civil engineers our society. We hope to encourage students to consider a career in civil engineering and play a part in developing the next generation of engineers.

As summer ends and our members are coming back to school, we're looking forward to a great year and welcoming many new members to our chapter. Geaux Pokes!

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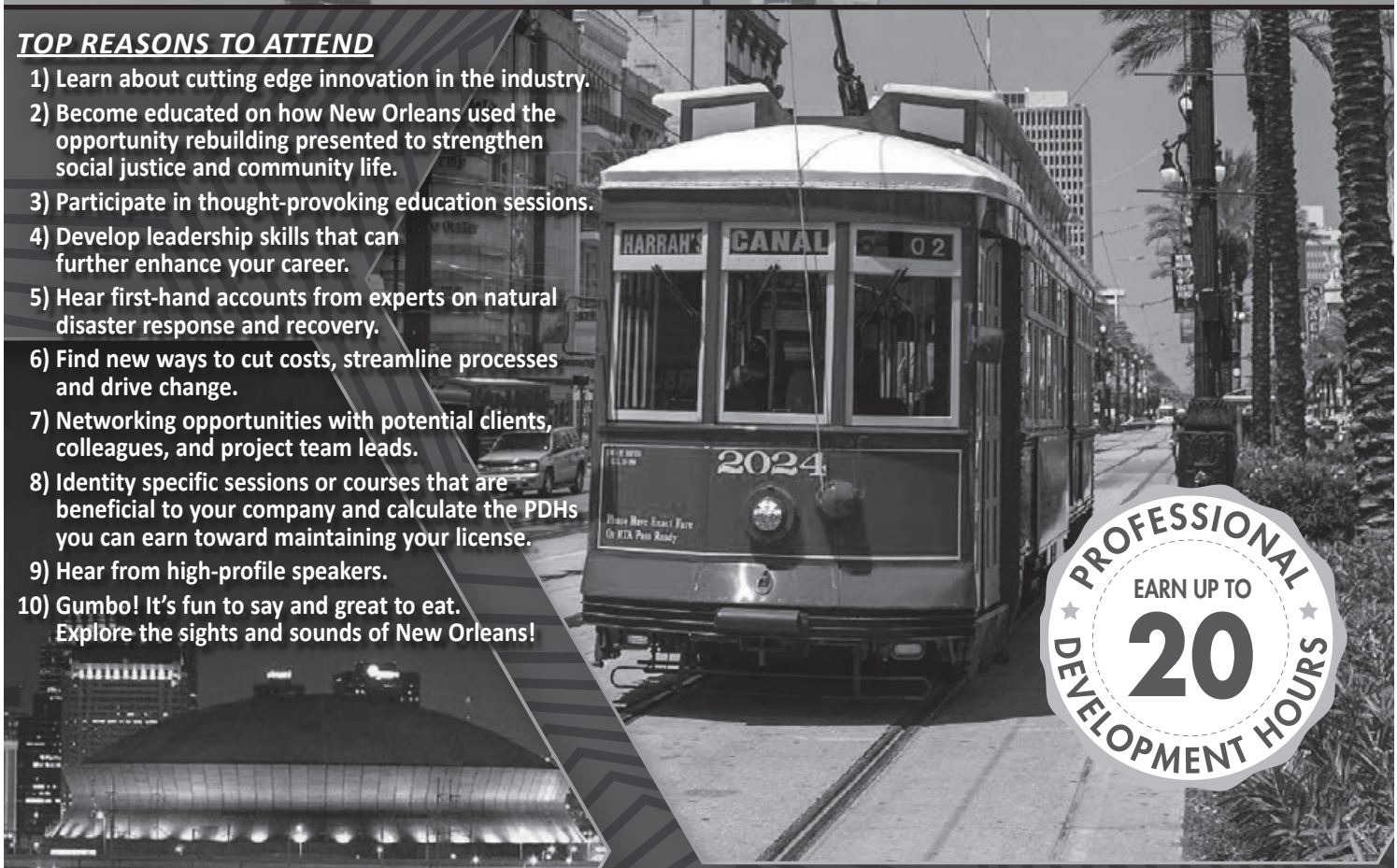
TOP REASONS TO ATTEND

1) Learn about cutting edge innovation in the industry.
2) Become educated on how New Orleans used the opportunity rebuilding presented to strengthen social justice and community life.
3) Participate in thought-provoking education sessions.
4) Develop leadership skills that can further enhance your career.
5) Hear first-hand accounts from experts on natural disaster response and recovery.
6) Find new ways to cut costs, streamline processes and drive change.
7) Networking opportunities with potential clients, colleagues, and project team leads.
8) Identity specific sessions or courses that are beneficial to your company and calculate the PDHs you can earn toward maintaining your license.
9) Hear from high-profile speakers.
10) Gumbo! It's fun to say and great to eat. Explore the sights and sounds of New Orleans!



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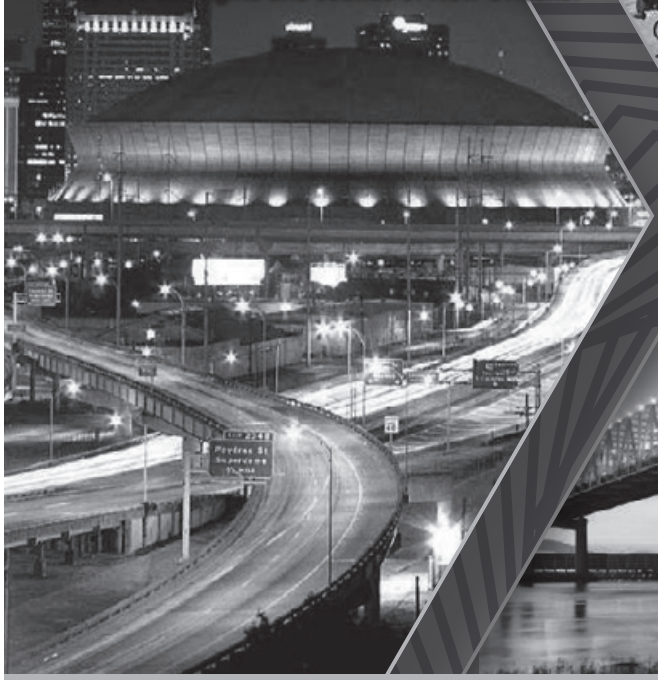

#ASCE17 | **www.asceconvention.org**

IMPORTANT DATES

Sep 13 **Advance Registration Ends**
Sep 14 **Onsite Registration rate begins**
Sep 18 **Hotel Booking deadline**
Sep 20 **Cancellation/Refund Deadline**
Oct 8 **Convention starts**

Questions

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The State contact person is Ms. Stephanie Aymond at Stephanie.Aymond@LA.GOV. Applicants need to complete the official application, which can be found at the following link: http://www.coastal.louisiana.gov/wp-content/uploads/2013/09/SLFPAApplication1.pdf. Applicants are needed to fill the following Board vacancies:

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1. Non-Resident (a person that does not reside in the Parishes of Jefferson or Orleans).

Note the Non-Resident applicant can apply for one or both boards. The Non-Resident means that the person can be a resident of Louisiana; but, cannot reside in the aforementioned SLFPA- E&W Board Parishes, or can be a resident of some other state.

— CALENDAR OF EVENTS —

SEPTEMBER 2017	
September 27-28	**Louisiana Civil Engineering Conference and Trade Show – New Orleans, LA**
OCTOBER 2017	
October 8-11	**ASCE 2017 Convention – New Orleans, LA**

For more events visit the ASCE Events Calendar: **http://www.lasce.org/calendar.html**

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