ASCE & Alabama Section

2015

Shelia Montgomery Mills PE, EnvPV & Verifier, LEED BD&C
President, Alabama Section ASCE
Member, Committee on America’s Infrastructure

shelia@ccsllc.biz
205-936-4064
Recognized by local and national officials as authority on infrastructure

ASCE News

- 150,000 members
- Students up significantly
- Over 7500 very active
- 177/196 countries
- 11 new student chapters (43)
- LinkedIn > 200,000
- Released 9 state report cards
- Dream Big Imax release 2017
- Raise the Bar
- CE Clubs – high schools
- Envision
Entrusted by society to create a sustainable world and enhance the global quality of life, civil engineers serve competently, collaboratively, and ethically as master:

- Planners, designers, constructors, and operators of society’s economic and social engine – the built environment
- Stewards of the natural environment and its resources
- Innovators and integrators of ideas and technology across the public, private, and academic sectors
- Managers of risk and uncertainty caused by natural events, accidents, and other threats, and
- Leaders in discussions and decisions shaping public environmental and infrastructure policy
DISRUPT – Think the Unthinkable to Spark Transformation in Your Business
By Luke Williams

• Change your lens
• Cultivate an instinct for change
• Learn to take ingredients and find a new arrangement, use a different way that provides value
• The problem with problems, they always get attention
• Biggest opportunities for change are the ones that seem to be fine, no change needed, done as always has been done
• How many decisions made today are based on some decision made in a different time/context?
Taking Control & Leading Change

![Diagram of change process](change-process-diagram)

- **TLE**
- **The Little Engineer**

![Mickey Mouse](mickey-mouse)

- **Analyse**
  - Need for change
  - Type of change
  - Organisation culture

- **Plan**
  - Change roles

- **RESISTANCE**
  - Transition management
  - Adoption of change

![Change is in the air](change-in-air)

![Social Change Society](social-change-society)
Trends

CITIES BECOMING SMARTER

Also: Function Takes Form
Upgrades Boost Growth
Urban Design Rebuilding

INFRASTRUCTURE

U.S. DOT Predicts Significant Future Transportation Problems

EINFRASTRUKTUR

U.S. DOT Predicts Significant Future Transportation Problems

MARCH 2019 Civil Engineering '27'

The emerging megaregions

Infrastructure

U.S. DOT predicts significant future transportation problems.

Infrastruktur

U.S. DOT predicts significant future transportation problems.

MARCH 2019 Civil Engineering '27'

The emerging megaregions

Infrastructure

U.S. DOT predicts significant future transportation problems.

Infrastruktur

U.S. DOT predicts significant future transportation problems.

MARCH 2019 Civil Engineering '27'

The emerging megaregions

Infrastructure

U.S. DOT predicts significant future transportation problems.

Infrastruktur

U.S. DOT predicts significant future transportation problems.

MARCH 2019 Civil Engineering '27'

The emerging megaregions

Infrastructure

U.S. DOT predicts significant future transportation problems.
Solutions: Moving Toward the Future

- Life Cycle Cost Analysis
- Game Changers
- Innovative Financing
- Sustainability
- Resiliency
- Local Report Cards
Grand Challenge – Industry Leaders

- Council ’14
- Reduce the life-cycle cost of infrastructure by 50% within 10 yrs
- Demonstrate leadership and innovation in infrastructure investments

Innovation Contest

- Professionals, educators, researchers, and students
- Submit most creative, most innovative ideas for reshaping the world’s infrastructure
- 4 Categories
  - business models and technologies
  - “Internet of Things”
  - green engineering
  - resilience
To support each Branch and Student Chapter in its local efforts, monitoring and coordinating responses best handled at a statewide level, all while promoting and protecting the civil engineering profession and serving the public good by bringing attention to infrastructure needs and opportunities for students in the civil engineering profession.
Alabama Section

Send rising branch, younger member, and student chapter leaders to training

• MLRC’s
• PFATW workshop
• President & Governors Forum
• Statewide Student Chapter Meeting
• Statewide Younger Member Meeting

• Budget
• Report Card
• Dam Safety
• Funds to branches & students
• Younger member event
• Start strategic planning process
• Mission statement
• Update processes
• Constant Contact
• Quarterly newsletter
• Monthly conference calls
Requirements for additional allotment

- Representative attend each Board meeting
- Attend monthly conference calls
- Representative to sit on section meeting planning committee
- Provide a budget
- 3 goals for year and update
- Article for section newsletter
- Travel funds
  - Show hardship to send 1 member to MLRC
  - Send YM to MLRC along with member
  - Send Practitioner Advisor/Faculty Advisor to PFAT Workshop
  - Send officer to President/Governors Forum
Want more information?

Shelia Montgomery Mills
President.al.asce@gmail.com
205-936-4064

Alan Parker
President Elect

Maggie Weems
Secretary/Treasurer

Kendall Kirkpatrick
Vice President

Michael Hora
Past President

Lawren Pratt
Alabama Director

Barbara Lehman
Director at Large
Infrastructure Report Card

Email: AL-IRC@BHAM-ASCE.ORG

Shelia Montgomery Mills PE, EnvPV & Verifier, LEED BD&C
President, Alabama Section ASCE
Member, Committee on America’s Infrastructure

shelia@ccsllc.biz
205-936-4064
Infrastructure Report Card Concept Originated in 1988

- Overall score was a “C” across 10 categories
- Problems - increasing congestion, deferred maintenance, and ageing system
- Concern - inadequate investment for current operation and future demands
- Federal government did not plan to update the report
ASCE took up the reins

- Utilized same approach & methodology
- 1st Report Card produced in 1998
- Infrastructure Report Cards
  - From 11 to 16 categories
- Methodology is rigorously assessed considering all of the changing elements that affect infrastructure
- Committee on America’s Infrastructure
  - Consists of over 30 engineers
  - Guides national and local report cards
  - Oversees the data analysis & development
  - Works with ASCE staff
  - Review and assess data & reports
  - Consult with technical & industry experts
ALABAMA'S INFRASTRUCTURE MATTERS

ABOUT US

BEHIND THE GRADES

ALABAMA GRADE SUMMARIES

Sample

REPORT CARD FOR ALABAMA'S INFRASTRUCTURE

OUR GRADES

Sample

ASCE

AMERICAN SOCIETY OF CIVIL ENGINEERS

INFRASTRUCTUREREPORTCARD.COM/ALABAMA
Why did some sectors improve, while others continued to fall behind?

The answer is simple: in sectors where investment was made – by both the public and private sectors - and innovative solutions pursued, the grades rose.

It is possible to increase the grades but we need to keep the momentum going to keep seeing improvement.

<table>
<thead>
<tr>
<th>Category</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aviation</td>
<td>D</td>
</tr>
<tr>
<td>Bridges</td>
<td>C+</td>
</tr>
<tr>
<td>Dams</td>
<td>D</td>
</tr>
<tr>
<td>Drinking Water</td>
<td>D</td>
</tr>
<tr>
<td>Energy</td>
<td>D+</td>
</tr>
<tr>
<td>Hazardous Waste</td>
<td>D</td>
</tr>
<tr>
<td>Inland Waterways</td>
<td>D-</td>
</tr>
<tr>
<td>Levees</td>
<td>D-</td>
</tr>
<tr>
<td>Ports</td>
<td>C</td>
</tr>
<tr>
<td>Public Parks and Recreation</td>
<td>C-</td>
</tr>
<tr>
<td>Rail</td>
<td>C+</td>
</tr>
<tr>
<td>Roads</td>
<td>D</td>
</tr>
<tr>
<td>Schools</td>
<td>D</td>
</tr>
<tr>
<td>Solid Waste</td>
<td>B-</td>
</tr>
<tr>
<td>Transit</td>
<td>D</td>
</tr>
<tr>
<td>Wastewater</td>
<td>D</td>
</tr>
</tbody>
</table>

America’s Cumulative G.P.A. | D+    |

Each category was evaluated on the basis of capacity, condition, funding, future need, operation and maintenance, public safety, resilience, and innovation.
### CUMULATIVE INFRASTRUCTURE NEEDS BY SYSTEM BASED ON CURRENT TRENDS EXTENDED TO 2020

Dollars in $2010 billions

<table>
<thead>
<tr>
<th>Infrastructure System</th>
<th>Total Needs</th>
<th>Estimated Funding</th>
<th>FUNDING GAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Transportation(^1)</td>
<td>$1,723</td>
<td>$877</td>
<td>$846</td>
</tr>
<tr>
<td>Water/Wastewater Infrastructure(^1)</td>
<td>$126</td>
<td>$42</td>
<td>$84</td>
</tr>
<tr>
<td>Electricity(^1)</td>
<td>$736</td>
<td>$629</td>
<td>$107</td>
</tr>
<tr>
<td>Airports(^1,2)</td>
<td>$134</td>
<td>$95</td>
<td>$39</td>
</tr>
<tr>
<td>Inland Waterways &amp; Marine Ports(^1)</td>
<td>$30</td>
<td>$14</td>
<td>$16</td>
</tr>
<tr>
<td>Dams(^3)</td>
<td>$21</td>
<td>$6</td>
<td>$15</td>
</tr>
<tr>
<td>Hazardous &amp; Solid Waste(^4)</td>
<td>$56</td>
<td>$10</td>
<td>$46</td>
</tr>
<tr>
<td>Levees(^5)</td>
<td>$80</td>
<td>$8</td>
<td>$72</td>
</tr>
<tr>
<td>Public Parks &amp; Recreation(^6)</td>
<td>$238</td>
<td>$134</td>
<td>$104</td>
</tr>
<tr>
<td>Rail(^7)</td>
<td>$100</td>
<td>$89</td>
<td>$11</td>
</tr>
<tr>
<td>Schools(^8)</td>
<td>$391</td>
<td>$120</td>
<td>$271</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>$3,635</strong></td>
<td><strong>$2,024</strong></td>
<td><strong>$1,611</strong></td>
</tr>
<tr>
<td><strong>YEARLY INVESTMENT NEEDED</strong></td>
<td><strong>$454</strong></td>
<td><strong>$253</strong></td>
<td><strong>$201</strong></td>
</tr>
</tbody>
</table>

---

From the ASCE series of economic studies:
“Failure to Act: The Impact of Current Infrastructure Investment on America’s Economic Growth”
From the ASCE series of economic studies:
“Failure to Act: The Impact of Current Infrastructure Investment on America’s Economic Growth”
3 Key Solutions to Raise the Grades

**BOLD LEADERSHIP AND A COMPELLING VISION**

- STRONG LEADERSHIP AT ALL LEVELS OF GOVERNMENT AND THE PRIVATE SECTOR.

**PROMOTE SUSTAINABILITY AND RESILIENCE**

- SUSTAINABILITY, RESILIENCY, AND ONGOING MAINTENANCE BOTH STRUCTURAL AND NON-STRUCTURAL METHODS MUST BE APPLIED TO MEET CHALLENGES

**AGREE ON HOW TO PRIORITIZE AND FUND STRATEGIC NEW INVESTMENTS IN INFRASTRUCTURE**

- INSTILL BETTER DISCIPLINE FOR SETTING PRIORITIES AND FOCUSING FUNDING TO SOLVE THE MOST PRESSING PROBLEMS.
In the 21st century, we see an America that thrives because of high quality infrastructure.

**INFRASTRUCTURE IS THE FOUNDATION THAT CONNECTS THE NATION’S BUSINESSES, COMMUNITIES, AND PEOPLE, DRIVING OUR ECONOMY AND IMPROVING OUR QUALITY OF LIFE.**

For the U.S. economy to be the most competitive in the world, we need a first class infrastructure system — transport systems that move people and goods efficiently and at reasonable cost by land, water, and air; transmission systems that deliver reliable, low-cost power from a wide range of energy sources; and water systems that drive industrial processes as well as the daily functions in our homes.

Yet today, our infrastructure systems are failing to keep pace with the current and expanding needs, and investment in infrastructure is faltering.
A - EXCEPTIONAL: FIT FOR THE FUTURE
In excellent condition, new or recently rehabilitated, and meets capacity needs for the future. Facilities meet modern standards for functionality and resilient to withstand most disasters and severe weather events.

B - GOOD: ADEQUATE FOR NOW
In good to excellent condition; some elements show signs of general deterioration. Safe and reliable with minimal capacity issues and minimal risk.

C - MEDIOCRE: REQUIRES ATTENTION
In fair to good condition; shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies in conditions and functionality, with increasing vulnerability to risk.

D - POOR: AT RISK
In poor to fair condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration. Condition and capacity are of significant concern with strong risk of failure.

F - FAILING/CRITICAL: UNFIT FOR PURPOSE
In unacceptable condition with widespread advanced signs of deterioration. Many of the components of the system exhibit signs of imminent failure.
Report Card Criteria for Grades

• Capacity
  Meet current and future demands.

• Condition
  Existing or near future physical condition.

• Funding
  Current level of funding compared to the estimated need.

• Future Need
  Cost to improve and if future funding will be able to meet the need.

• Operation and Maintenance
  Ability to operate and maintain and compliance with government regs.

• Public Safety
  Extent jeopardized by the condition and the consequences of failure.

• Resilience
  Resist multi-hazard threats & incidents, quickly recover & reconstitute critical services with minimum damage to the public, economy, and national security.

• Innovation
  Strategic use of innovative techniques and delivery methods.
Research & Grading Process

- Review and analyze
  - data sources, surveys, and reports
  - identify the scope and condition
  - budgeted expenditures for maintenance & replacements
- Identify investment needed to upgrade to meet current & future needs
- Interview stakeholders and industry leaders
- Examine current trends and developments
- Develop a summary report citing
  - Criteria and trends
  - Progress from previous Report Card
  - Consequences of inaction
- Establish a grading framework based on past grades using letter-grade scale
The Report Card – Three Ways

1. 2013 Report Card for America’s Infrastructure
   - Grade: G
   - Aviation: Conditions

2. 2013 Report Card for America’s Infrastructure Pocket Guide
   - ASCE
   - Follow on Twitter

3. America's GPA: G
   - Estimated 5-year investment needed: $1.0 trillion
   - Categories:
     - Water & Environment
     - Transportation
     - Public Facilities
   - Launch the App
   - Explore ASCE's 2013 Report Card for America's Infrastructure online
   - Previous Report Cards
Examples

**Average Age of Structurally Deficient Bridges in PA:** 70 years
- Average Bridge Age in PA: 54 years
- Average Design Lifespan: 50 years

**Structurally Deficient Bridges:**
- 5,539 bridges
- End-to-end all the structurally deficient bridges would stretch from Harrisburg to Philadelphia over 100 miles.

**Pennsylvania’s Transportation Funding Needs:**
- Increased cost of construction for aging infrastructure: $11.5 billion
- Impact of 2013 Transportation Funding Bill: $4.9 billion
- Impacted needs without Transportation Funding Bill: $3.5 billion

**Impact of CAFE Standards:**
- Improved vehicle fuel economy reduces fuel tax revenue

**Monthly Motor Fuel Tax:**
- Paid by the Average Driver in 2010 Dollars:
  - 39 states with higher vehicle registration fees
  - 31 states with higher driver’s license fees
  - 14 states with higher gas tax

**Capacity Adding Projects Percentage of Total Program:**
- 2001: 25%
- 2016: 3.2%

**Source:** Pennsylvania Turnpike Commission Report, August 2011
What can you do?

- Participate in the Alabama Infrastructure Report Card Release - 2015
- Download the Report Card App
- Share the Report Card information with others
- Connect with social media: FaceBook, Twitter
- Reach out to members of congress through: ASCE Key Contacts, Fixthetrustfund.org
Want more information?

Alabama Report Card Effort
Shelia Montgomery Mills
shelia@ccsllc.biz
Email: AL-IRC@BHAM-ASCE.ORG
205-936-4064

National Report Card
www.asce.org/reportcard
www.infrastructurerreportcard.org

reportcard@asce.org
202-789-7850

Brian Pallasch
bpallasch@asce.org

Clark Barrineau
cbarrineau@asce.org

Emily Fishkin
efishkin@asce.org

Brittney Kohler
bkhohler@asce.org