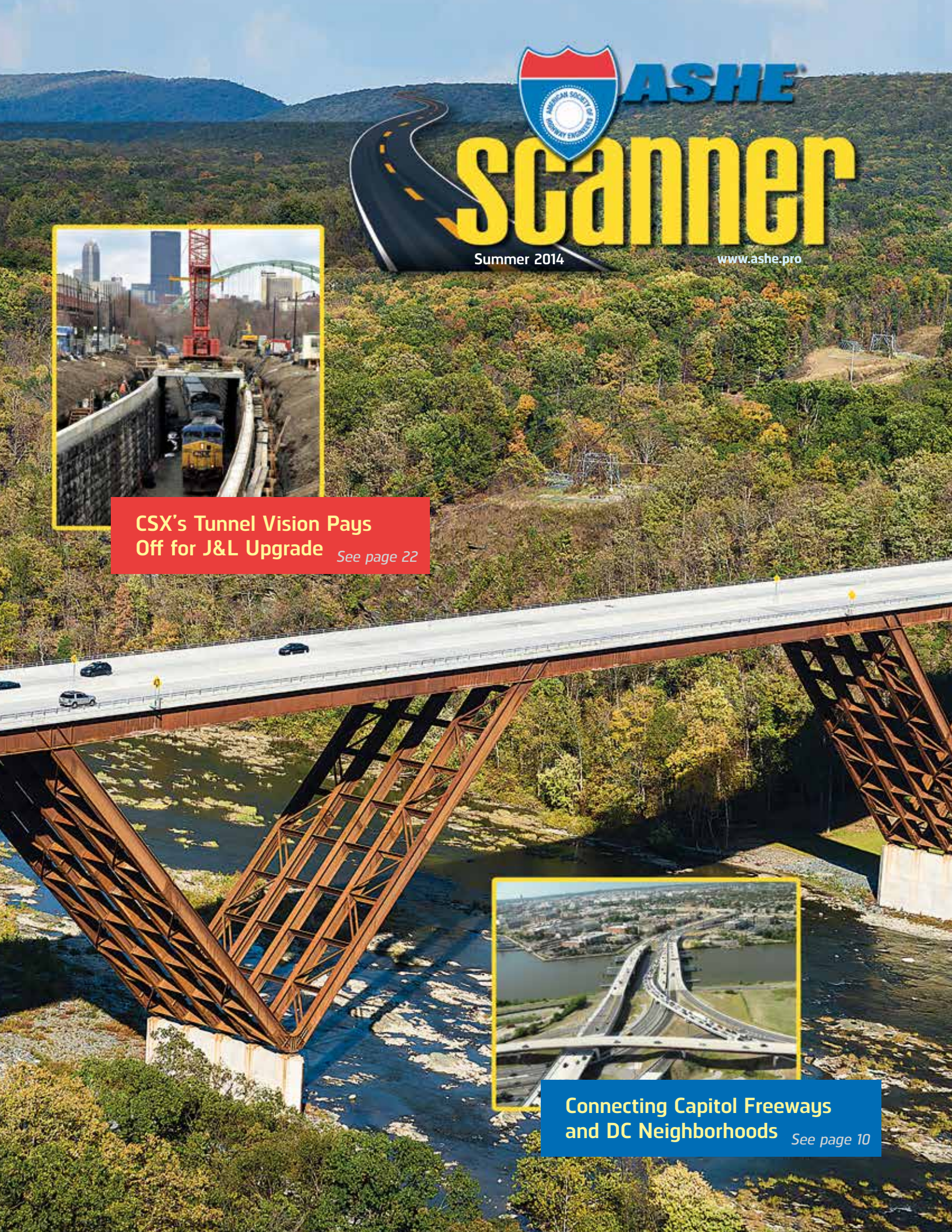

ASHE
AMERICAN SOCIETY OF HIGHWAY ENGINEERS
scanner
Summer 2014
www.ashe.pro
CSX's Tunnel Vision Pays Off for J&L Upgrade
See page 22
Connecting Capitol Freeways and DC Neighborhoods
See page 10

MISSION

Provide a forum for members and partners of the highway industry to promote a safe, efficient and sustainable highway system through education, innovation and fellowship.

NATIONAL HEADQUARTERS
65 Beacon Hill
Henderson, NC 27537
(919) 909-2987
ashenational@embarqmail.com
www.ashe.pro

The *SCANNER* is published quarterly by the American Society of Highway Engineers. Statements of fact and opinion are the responsibility of the authors alone and do not imply an opinion on the part of the officers or the members of ASHE.

Samir Mody, PE
ASHE National President 2014-2015

New Directions

I hope this issue of the SCANNER finds everyone in an energetic mood as we approach warmer weather after a challenging winter season.

It is a privilege to have been elected as your 54th ASHE National President. I am truly honored and humbled to join the distinguished list of National Presidents and industry leaders who have preceded me to lead this outstanding organization. I am also grateful for the confidence and encouragement received from the ASHE membership, my former "Region 6" colleagues, the Naik Consulting Group and my family as I embark on this incredible journey. ASHE provided the foundation for my becoming a professional engineer, and has fostered many of the most rewarding relationships in my life, both personal and professional. This distinction is one of the biggest achievements of my career, and I pledge to serve you to the best of my ability.

My introduction to ASHE began in December 1985 when I, a young civil engineer with the NJ Department of Transportation, attended an "informal" Southern New Jersey (SNJ) Section membership meeting and was "hooked." It is through the idealities of that young civil engineer that for the next 27 years I served the organization at the Section, Region and National levels in various capacities that have led me to stand here now, ready to lead and serve the next generation of engineers through ASHE. The success of the SNJ Section golf outing during my tenure as chairman raised in excess of $125,000 in scholarship money that was distributed to civil engineering students attending local universities, and it is one of my proudest achievements.

For the past two years, I have had the opportunity and honor to serve on the Executive Board under the leadership of National Presidents Frank O'Hare and Thomas Morisi, and Past National Presidents Calvin Leggett, David Jones and Charles Flowe, who were all instrumental in preparing me for the challenges, expectations and commitment associated with serving in this capacity. This was further reinforced by President Morisi in soliciting ideas from the First and Second Vice Presidents, in the collaboration of a three-year plan commencing in 2013 to provide the organization with a cohesive and stable leadership. The three of us maintained open communication lines over the past year, and we are proud of the accomplishments and legacy realized under his tenure.

As a volunteer-based organization, it is important to be open to seeing the potential in different members as they offer their commitment to serve the organization. As I assessed the assignment of committee chairs for the upcoming calendar year, I made a concerted effort to balance the responsibilities of the National Board of Directors and integrate "future leaders" who expressed a desire to become more involved at the National Board level. I have seen firsthand where an organization, open to the ideals of many, can make a significant contribution to the highway industry when we all work together in a well-orchestrated, collaborative fashion toward the preservation of the vision, mission and values of ASHE.

During the coming year, I would like to build on the momentum created by my predecessors and focus our energy and allocation of resources with the following strategies:

Challenges of the Organization. In an effort to prepare ASHE to meet the challenges of the future, the National Executive Board conducted a SWOT

(continued on page 13)

In This Issue

ASHE scanner

on the cover

Bridging Aesthetics with Practicality

ASHE North Central West Virginia

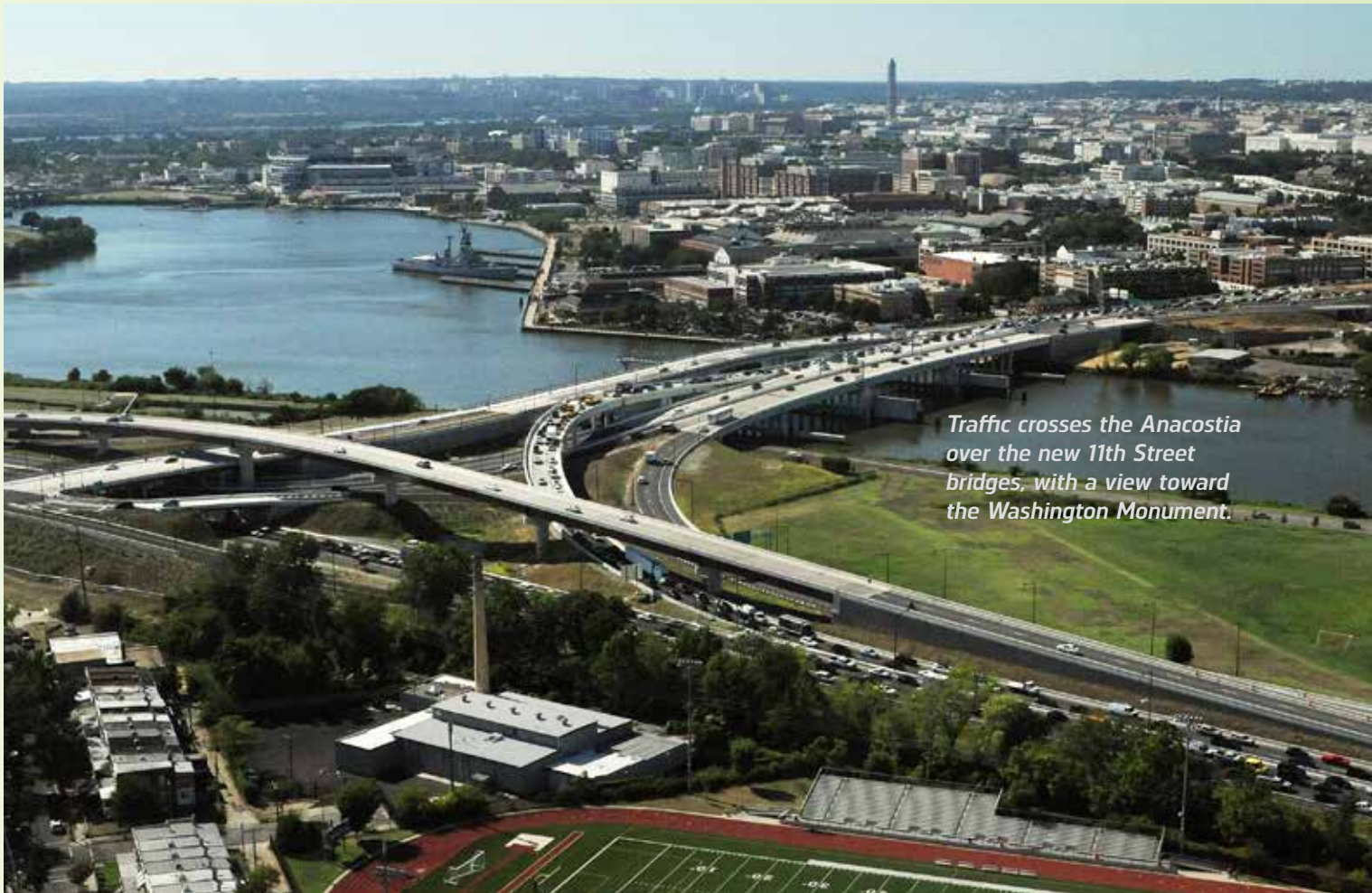
See page 14

11th Street Bridges: Connecting Capitol Freeways and DC Neighborhoods

by Michael Blair, PE. Johnson, Mirmiran & Thompson, Inc., Sparks, MD, **ASHE Chesapeake Section**

The history of bridges at 11th Street, SE, over the Anacostia River, adjacent to the Washington Navy Yard and approximately one mile from Capitol Hill in the District of Columbia, dates back nearly 200 years. The most recent 11th Street bridges, built in the 1960s, handled extensive traffic. Unfortunately, unfinished roadway connections at this location prevented direct access between the Southeast Freeway (I-695) and the northern segment of the Anacostia Freeway (DC 295/I-295), forcing thousands of commuters to divert onto local roads to travel between freeway segments. The District Department of Transportation (DDOT) sought a solution that would complete all freeway connections and replace structurally deficient bridges along the 11th Street corridor between the Southeast and Anacostia Freeways, providing maximum accessibility while separating local traffic from regional traffic. With innovative elements and creative approaches, this challenge was met.

The original engineer's estimate to complete the project was $460 million. Due to budgetary constraints, DDOT undertook a $260 million Design-Build-to-Budget Stipulated Sum procurement with a challenge of seeking "best value," engaging firms to build a facility while providing as much functional improvement as possible for this sum. The key to this challenge was maximizing construction of crucial project elements, including rehabilitation or replacement of existing bridges and providing interchange connectivity. The Design-Build team of Skanska/Facchina JV (contractor) and Johnson, Mirmiran & Thompson (JMT—lead designer) was selected to provide three



Traffic crosses the Anacostia over the new 11th Street bridges, with a view toward the Washington Monument.

Phase 1 is open to traffic. The 16-foot-wide, multi-use trail/sidewalk and overlooks are evident in the left-most bridge.

new bridges over the Anacostia River and build approximately 75 percent of the ultimate project, known as Phase 1. The team refined the planning document alignments and interchanges to reduce environmental and community impacts and to save substantial construction costs through numerous Alternative Technical Concepts.

This project, the largest construction job in DDOT history, includes better regional connections as well as easier accessibility to DC neighborhoods, not only by adding bridges to connect the freeways, but also by adding a dedicated bridge for local traffic. Primary structures include three new major continuous steel multi-girder bridge crossings of the Anacostia River and a complex interchange on each side of the river. In addition to new construction, several existing bridges have been rehabilitated for use in the new interchanges.

By redesigning the geometric layouts of both interchanges, the team was able to provide shorter grade-separated bridges with embankment fill over reinforced ground, in lieu of flyover bridges. This approach reduced costs significantly, while still providing the functional requirements of the approved environmental documents.

A large portion of the project on the south side of the river was to be constructed over poor material that had been placed as fill on the south bank in the 1920s, creating what is now National Park Service land. The proposed construction, which included large approach embankments, would result in significant settlement of up to a few feet. Several innovative ground improvement methods, including lightweight aggregate, geofoam block (read more about geofoam on page 32), geosteel columns and geoconcrete columns, were successfully implemented to mitigate settlement and global stability issues.

A key design element was a smooth and minimally impactive maintenance of traffic strategy. As a major commuter route within the nation's capital, this project not only impacts hundreds of thousands of commuters every day, but is also part of a major emergency access route. With this in mind, the design and sequencing of construction allowed for approximately 70 percent of the project to be constructed offline with minimal impact to the existing roadway. Generally, regional traffic was moved from existing alignments to final alignments with one traffic shift. Temporary roadways and detours were typically used only for local movements. The design and sequencing was accomplished with minimal phases and constructed in significantly less time than specified in the original planning documents.

Benefits to the community were key objectives on the 11th Street project. The mere act of removing through traffic from neighborhoods was essential. The local traffic bridge provided a new way to link the two sides of the river, uniting DC communities. This bridge included a 16-foot-wide, multi-use trail/sidewalk, as well as overlooks that have already become popular for their excellent vantage points during river recreational events.

The roadway was designed with provisions for full multi-modal use. Accommodations have been incorporated into the design for DC's new streetcar system to be extended across the local bridge. The 11th Street thoroughfare was designed and constructed to accommodate a simple retrofit to provide two track lines.

JMT's five-person Environmental Compliance (EC) team developed the project Environmental Compliance Plan and subsequent updates and obtained all environmental permits and/or permit updates, including Section 404 and 401, Rivers & Harbors Act Section 10, NPDES, US Coast Guard permits and National Park Service Use Permits. Additionally, the EC team researched anadromous fish migration in the Anacostia River in order to avoid wildlife impacts during the installation of river bridge cylinder piles.

With Phase 1 now open to traffic, the 11th Street project connects the freeways, separates access for local traffic, enables better accessibility to DC neighborhoods, enhances safety and quality of life for residents and improves regional connections with new traffic movements. All work was completed while maintaining full environmental compliance throughout construction over a major waterway.

DDOT elected to continue with Skanska/Facchina/JMT for Phase 2 to complete the project, which is scheduled for 2015. All told, the team has saved DDOT more than $80 million compared to the engineer's estimate.