

Transportation and Road Equipment |

Potholes, Pavements & Priorities

Technology and trends re-frame transportation issues

By Linda Mastaglio

Transportation Innovations in the News

FHWA Releases Results of Crash Tests on ET-Plus Guardrail End Terminals

In February, Federal Highway Administration (FHWA) officials released preliminary results and an analysis of four crash tests recently conducted on the Trinity ET-Plus guardrail end terminal at a height of 27-³/₄ in. “Our top priority with the ET-Plus has been to protect travelers by using a data-driven approach to determine the crashworthiness of the device,” says Acting FHWA Administrator Gregory Nadeau. “We’ve concluded that the tests show that the ET-Plus end terminal at the height of 27-³/₄ in. meets the applicable crash test criteria as established by AASHTO.” Crash test results, reviews and analyses are available at www.fhwa.dot.gov/guardrailsafety/. Nadeau says that the crash tests are “one of many projects we are working on to evaluate the safety of the ET-Plus.” Additional test results are forthcoming within the year.

\$2.47 Billion Earmarked for Innovative Projects

In late January, the U.S. Dept. of Transportation awarded FHWA’s Accelerated Innovation Deployment

(AID) Demonstration program funds to the states of Maine, Pennsylvania and Washington to offset the cost of more efficient highway project delivery. “With one out of four bridges [in the U.S.] needing significant repair and 65% of our roads rated in less than good condition, there’s a clear need to invest in our nation’s infrastructure,” says U.S. Transportation Secretary Anthony Foxx. “These investments harness innovation to improve the quality of our roads and bridges and the efficiency of how they are built to get motorists the benefits they deserve as quickly as possible.”

The AID Demonstration program will ultimately invest \$30 million in incentive funding for federal, state, local and tribal government agencies to speed up their use of these innovative methods.

AASHTO Offers Commuting Briefs

The American Association of State Highway and Transportation Officials (AASHTO) recently released the final installment in a series of 16 Commuting in America briefs that examine commuting trends in the U.S. The final brief points to slow growth in commuting. This trend is due to the aging of the American worker and

the decline in the number of younger people entering the workforce. U.S. Census Bureau projections suggest the population in the working age group 18 - 64 will see a sharp decline over the next 20 years—approximately 6 million new potential workers from 2015 to 2030, in sharp contrast to 26 million during the period 2000 to 2012.

In addition to age demographics, the authors point to potential impacts of technology and land use decisions that are likely to affect future commuting trends. For instance, recent growth of wireless devices allows transit riders to work or communicate while on buses or subways, and fast-developing technology for autonomous cars and connected vehicles could soon let roadway commuters tend to other tasks while their cars drive themselves. “Regardless of how these phenomena play out, the boom in commuting growth is behind us, at least at the national level,” the brief claims.

The briefs include topics such as worker trends, vehicle and transit availability, vehicle ownership and licensure levels. They track population trends and the use of transit services, biking, walking and carpool commuting options. ■

GETTING HOME TO WHAT MATTERS, THAT'S

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* Edelman Berland Driver Survey, 2014 | ** Edelman Berland Survey, 2013

55% of drivers today identify traffic delays due to road construction as the most frustrating part of their driving experience.* With off-peak construction, asphalt pavements leave roads open to traffic during rush hour. Surface maintenance and repair is quick, ensuring drivers have a smooth, high performance surface with minimal inconvenience. No wonder an independent survey found 87% of engineers, developers, transportation officials and other key stakeholders chose asphalt for its ease of maintenance.** Smoother, quieter, fewer delays... that's drivability. That's asphalt.

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The APA is a partnership of the Asphalt Institute, National Asphalt Pavement Association and the State Asphalt Pavement Associations.



Perpetual Pavements Deliver Drivability

Mike Acott, President, National Asphalt Pavement Association, www.DriveAsphalt.org

When it comes to our nation's roadways, there are three important interest groups: road builders, owners and users. These groups may find themselves at odds, trying to balance needs and desires with real-world practicalities. Sometimes competing interests converge and compromise isn't necessary. For roadways, this harmony is found in Perpetual Pavement designs.

A long-life asphalt Perpetual Pavement is designed with optimized layers to create a structure that lasts indefinitely. Each layer uses different materials to distribute traffic loading throughout the pavement structure. A thin surface layer provides a safe, smooth, quiet ride, while subsurface layers, which are less impacted by the environment, distribute stresses throughout the structure. Above the prepared foundation

is a durable, fatigue-resistant layer that prevents bottom-up cracking.

This design philosophy limits distress from pavement loading to the surface, where problems are corrected through occasional surface renewal. Perpetual Pavements balance material usage with high-performance design, life-cycle costs and tight public-sector budgets.

Now, how do we know what drivers want? In 2013 and 2014, Edelman Berland conducted a series of surveys for the Asphalt Pavement Alliance. They surveyed both road owners and drivers to gauge the chief complaints and the obstacles each group encounters. Highway users want a smooth, safe ride. Smoothness is the strongest indicator of roadway satisfaction, and Perpetual Pavements are maintained in a way that ensures reliable smoothness over time

and don't require reconstruction, which leads to traffic delays.

When we examined the priorities of the road owners, our surveys found that maintaining infrastructure with a shrinking funding stream was their top challenge. Given budget constraints, decision makers are placing an emphasis on pavement durability, life-cycle costs and the performance of the pavement.

Perpetual Pavement designs create state-of-the-art pavements that last indefinitely thanks to their optimized design. In some cases, these designs can yield pavements that are thinner than conventional pavements without compromising strength. With a thinner, optimized Perpetual Pavement, each inch reduction in pavement thickness can amount to a savings of \$20,000 per lane mile. ■

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Pre-Planning Saves Time, Money in Delivery to Remote Pier

A series of narrow channels winding from the Mississippi River through the West Bank of New Orleans leads to the bayou where a remote pier sits in Westwego, La. The pier is just 8 miles from a major petrochemical site where Burkhalter recently completed the delivery of 60 components—three of which were each over 1 million lb.

Burkhalter chose the roll-off site due to its proximity to the project site and because its location off of the river would keep the transportation route from crossing the Mississippi River levees, saving the client both time and money that the rigorous permitting process for levee transport requires.

The final phase of components was scheduled for January delivery. Burkhalter's engineers foresaw that north winter winds blowing water out



Burkhalter delivered 60 components—with the largest items weighing in at 1.1 million, 1.2 million and 1.8 million lb.

of the roll-off site's already shallow bayou could become a water level issue. In addition, the sheer size of the three heaviest pieces posed separate concerns with barge width limited by a narrow channel and a small bridge on the original route. Burkhalter notes that the heaviest piece was the largest ever received at the Port of New Orleans.

In April 2014, the Burkhalter team began preparations for an alternative solution. Working with the Army Corps of Engineers, the Coastal Protection and Restoration Agency and the Southeast Louisiana Flood Protection Authority—West, Burkhalter provided testing, engineering and surveys and generated profiles to obtain permitting to transport the final pieces across the levee from an alternate roll-off site on the Mississippi River.

As water levels at the original roll-off site lowered enough to require the alternate plan, Burkhalter's foresight and planning paid off. The delivery of all pieces was completed in February. The final lifting and setting of components is scheduled for April completion with the utilization of Burkhalter's Liebherr LR 11350, the newest addition to its fleet of super-heavy crawler cranes. ■

PHOTO: BURKHALTER

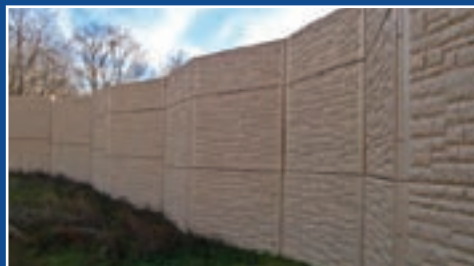


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Orange County/Caltrans Nearing Completion of Highway Connectors

The Orange County, Calif. Transportation Authority, in a joint venture with the California Dept. of Transportation (Caltrans), is nearing completion of the \$277-million West County Connectors project, funded in part by \$50 million from the Federal Highway Administration under the American Recovery and Reinvestment Act.

Reinforced Earth® mechanically stabilized earth retaining walls are topped with eight traffic barriers. According to Jacques Bloomfield with The Reinforced Earth Company, these provide “safe, strong, long-lasting and economical support of roadways throughout the interchange and add to the aesthetics by incorporating Southern California’s seacoast scenery into the walls’ architectural finish.”

Several of the Reinforced Earth walls support flyover ramps, requiring an embankment with two vertical faces instead of two sloping faces to create a narrow footprint. This imparts less total load to the foundation soil compared to the sloping-face embankment “and much less than cast-in-place concrete,” Bloomfield says.

Most of the work to construct back-to-back Reinforced Earth walls is completed from inside the walls, a significant benefit on congested urban construction sites. The project contractor, Atkinson Construction of Foothill Ranch, Calif., erected the back-to-back walls simultaneously since they share the backfill between them.

Lightweight fill cellular concrete (LFCC) was sometimes used instead of soil backfill. With a specified unit weight of 30-42 pcf, the LFCC provided 25 to 33% less weight than ordinary granular backfill. ■

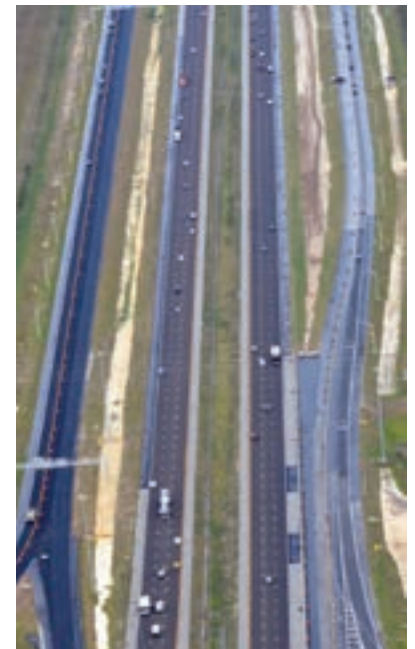


Cast-in-place abutment over I-405 features back-to-back Reinforced Earth walls.

Final Work Underway on I-75 In South Florida

A 795-day, \$54.1-million project is underway to link I-75 to the mid-field terminal facilities at Southwest Florida International Airport (SWFLA) in Ft. Myers, Fla. The Florida Dept. of Transportation project is scheduled for completion this spring. The expanded highway facilities will accommodate about 15,000 vehicles daily and are designed to reduce congestion on local roads and enhance transportation efficiently through southern Lee County. Prince Contracting, a civil construction company that specializes in highway and bridge construction and site development projects, partnered with C3TS to win the design-build project in 2012. Twenty-two subconsultants are working in coordination with the Prince team.

The project scope includes the construction of five bridges, seven miles of north- and southbound collector roads alongside I-75 and a new terminal access road interchange over I-75. The enhanced corridor is expected to provide increased economic growth to the area, bringing more commercial development. ■



The \$54.1-million project includes 7 miles of highway improvements.



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