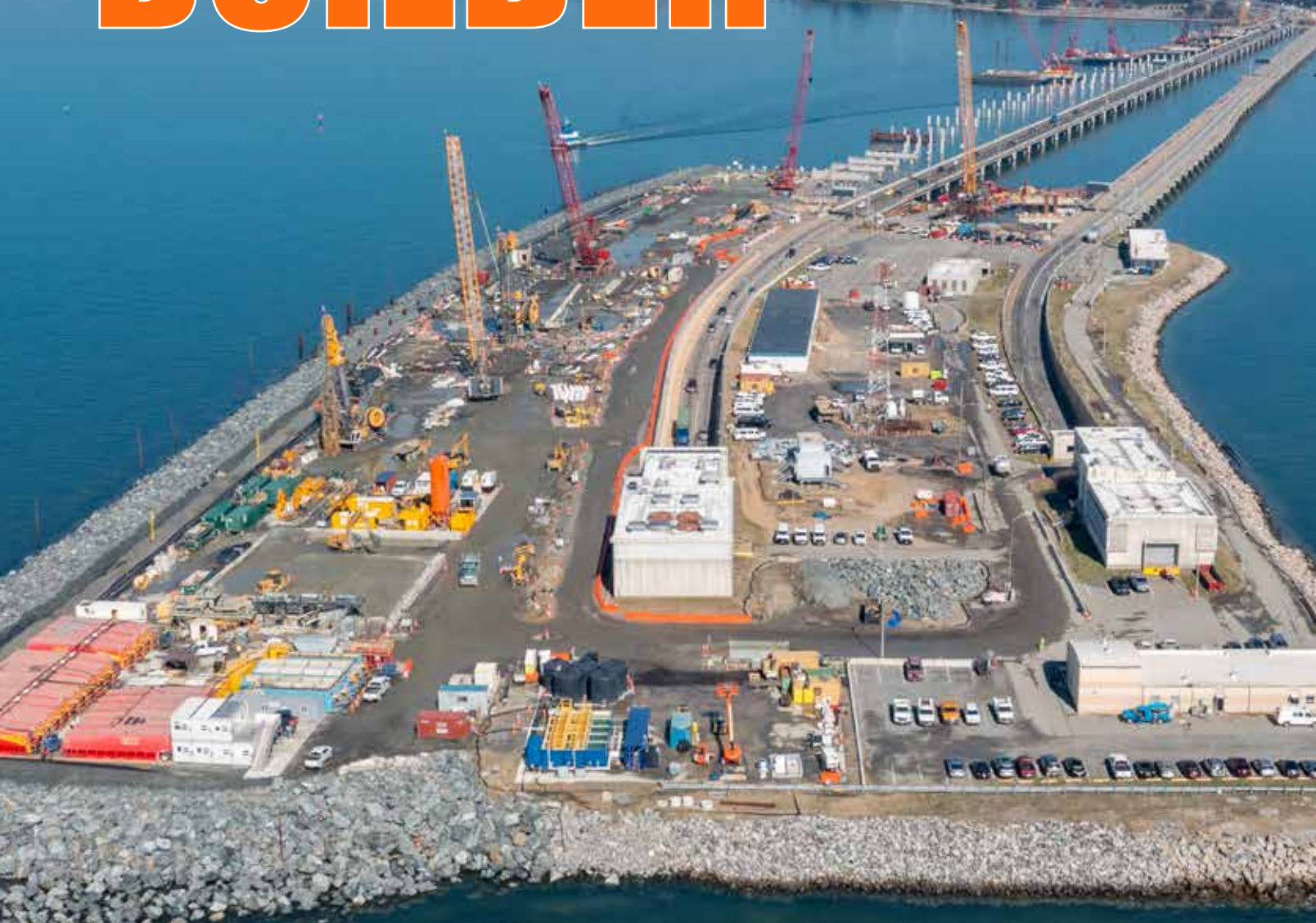


# TRANSPORTATION BUILDER®



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- Annual Safety Source
- A Look at Martin Marietta's Texas Quarry Operations
- States Ramp Up Commitment of Federal Highway Funds

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"Transportation Builder" (TB) is the official publication of the American Road & Transportation Builders Association (ARTBA). We bring together all facets of the transportation construction industry to responsibly advocate for infrastructure investment and policy that meet the nation's need for safe and efficient travel. ARTBA also offers value-added programs and services providing its members with a competitive edge. TB is the primary source of business, legislative, regulatory, safety and economic news that matters most to transportation development professionals.

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# EDITOR'S NOTE

MARK HOLAN | Editorial Director

## Tragic Numbers



**Mark Holan**  
Editorial Director  
mholan@artba.org

The National Highway Traffic Safety Administration (NHTSA) in May reported that road deaths increased by 10.5 percent last year compared to 2020, reaching 42,915 lives lost. It was the highest number of fatalities nationwide since 2005 and the largest annual percentage increase since the Fatality Analysis Reporting System began tracking the data in 1975.

That's the year I began driving as a 16-year-old. That we as a nation are setting new road fatality records nearly 50 years later is tragic.

The federal government is considering new measures to protect "vulnerable road users," or VRUs, which often means pedestrians. ARTBA has played a key advocacy role in reminding government officials and the public that road and highway workers are considered pedestrians. See story on page 21.

This annual safety issue of *Transportation Builder* details some of the ways our industry is protecting workers and the public. As the latest NHTSA figures make clear, however, there is still much more work to be done.

### Adios, ARTBA

This issue also signposts my exit ramp from ARTBA after more than seven years.

I am setting down my red pen after producing 38 regular issues of the magazine and more than 350 editions of the digital Washington Newsline. My wife and I are moving to Boston for her to pursue a great new professional opportunity. So, Route 128 instead of the Capital Beltway; bridges over the Charles instead of bridges of the Potomac; Logan instead of Reagan.

ARTBA Chairman Ward Nye wrote in the last issue: "The transportation design and construction industry has an exceptional story to tell. We need to tell it—in both a compelling and relentless manner." As the Infrastructure Investment and Jobs Act takes off this summer and in the coming years, I hope ARTBA members and other readers will continue to help the staff produce informative print and digital content about the important work being done by the industry.

Keep safe and best wishes,



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## CHAIRMAN'S CORNER

WARD NYE | Chairman & CEO, Martin Marietta

# Safety Must be a Core Value

Chris Hutt died working at a job he loved.

In 2006, he was struck and killed by a car in a work zone while installing signage along I-465 in Tennessee. He left behind a pregnant wife and two young daughters.

This fall, one of those daughters, Katie, will be a sophomore studying architecture at the University of Tennessee. The ARTBA Foundation will be there to provide financial aid through the Lanford Family Highway Worker Memorial Scholarship—a first-of-its-kind initiative that provides post-high school financial assistance to the children of highway workers killed or permanently disabled on the job.

The scholarship program, which has helped dozens of students since it was created 25 years ago, demonstrates ARTBA's ability to quickly identify challenges and then provide the solutions needed to address them properly.

Another example relates to the Infrastructure Investment and Jobs Act (IIJA). ARTBA's Chief Economist Dr. Alison Premo Black estimates there will be an additional 4,000 new work sites created in the next two years as IIJA-related projects ramp up. This will mean greater risk exposure for both industry workers and the motoring public.

Anticipating this reality, ARTBA and the Federal Highway Administration completed a comprehensive overhaul of the National Work Zone Safety Information Clearinghouse ([workzonesafety.org](https://www.workzonesafety.org)) that was unveiled this spring. The Clearinghouse is the world's largest online information source dedicated to work zone safety and features extensive content offerings and search capabilities that make it an incredibly valuable tool for both the public and private sectors. See page 18 to learn more.

ARTBA's forward-thinking leadership extends to other safety areas as well.

Understanding that "runovers" and "backovers" are the leading cause of death and injury for workers on transportation project sites, ARTBA created a pioneering program based on more than a decade of research from the National Institute for Occupational Safety and Health (NIOSH). The national program has trained nearly 20,000 workers in the past 15 years and was the first to widely introduce the concept of "internal traffic control."

ARTBA has additionally spearheaded the effort through NIOSH to create an annual "National Stand Down to Prevent Struck-by Incidents." The third annual event occurred in April and involved the Occupational Safety and Health Administration (OSHA), several labor organizations and hundreds of contractors and workers wishing to "stop, talk and act" to eliminate work zone struck-by hazards.

Finally, to address COVID's effect on in-person training, ARTBA redesigned its Safety Center ([artbasafetycenter.org](https://artbasafetycenter.org)), which now includes nearly 30 online courses that provide workers with customized transportation construction-specific training available 24 hours per day, seven days per week.

I am a firm believer that if we correctly and thoroughly train our people, develop strong cultures, and build the right behaviors, a safety outcome of zero incidents and fatalities is achievable. Continued leadership and collaboration between ARTBA and its members will be the key to making this a reality.

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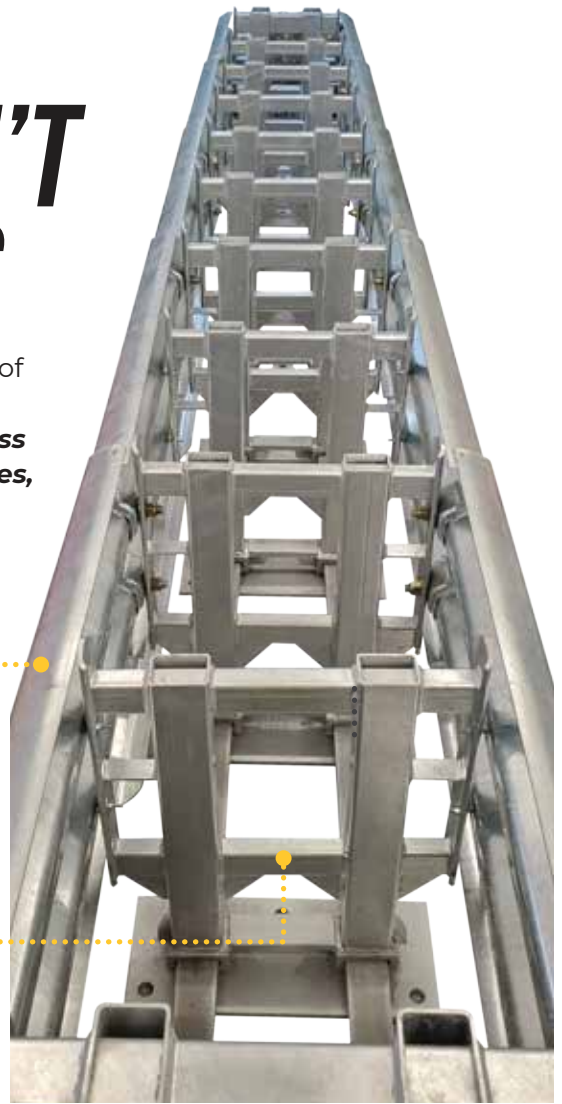


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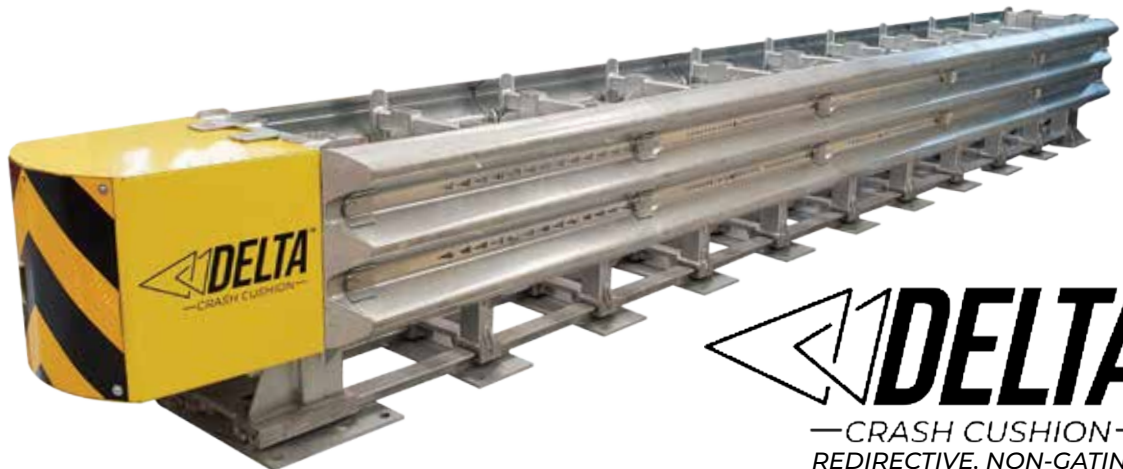
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# THE ARENA

DAVE BAUER | President & CEO, ARTBA

## Showing Up Matters

Often when commuting to work, I cross the Potomac River and see teams of rowers propelling their boats in unison. From a distance, the rowers seem effortless, and the boats glide smoothly across the river. The teamwork involved in this sport is a valuable lesson for the years ahead, as ARTBA members reconnect and set out on the critical task of utilizing increased federal investment to rebuild and renew the nation's transportation infrastructure network.

ARTBA Chair Ward Nye emphasized the importance of reconnecting in the wake of pandemic-related forced separation during his acceptance speech at the 2021 ARTBA National Convention in Pinehurst, North Carolina. The innovation and problem solving that have long been part of the transportation construction industry's DNA is often the result of collaborating and learning from one another. Gathering at ARTBA and other industry events is key to our return to "normal;" the process is underway and could not be timelier.

I was gratified to see nearly 200 ARTBA members show up in Washington, D.C., this spring at our first post-pandemic in-person Federal Issues Program (FIP), Industry Leader Development Program, and Transportation Construction Coalition Fly-In. In fact, more ARTBA members attended this year than at our 2019 FIP. Not only did the FIP reinforce the value of in-person engagement, but it also showed a commitment by ARTBA members to embrace the opportunity before us to make the promises of the landmark Infrastructure Investment and Jobs Act (IIJA) a reality for all Americans. The first step in that process is already underway as FIP attendees heard from federal and state officials, and the ARTBA economics team that funds from the new law are already having an impact on the transportation construction market.

The second step of promoting the IIJA's achievements will be critical over the next few years, as we work to ensure its benefits and outcomes are well-known to Congress and the American public. The work of the transportation construction industry to enhance mobility, safety, and economic strength is a national success story and showing how our community delivers on the new IIJA investments will help assure its enactment is not a one-time event.

Participation in ARTBA meetings goes beyond your "day job," and traveling to Washington takes time away from family and friends. Thank you. This commitment to showing up leaves me optimistic that renewed in-person engagement will continue to grow. I look forward to seeing many of you this fall at the national convention in Nashville, Tennessee and regional meetings to follow.

Watching rowers from afar does not accurately depict the hard work required to balance the boat, achieve a unison "swing," and deliver exceptional results. That's the beauty of the sport. I hope as we reconnect and spend more time together, our efforts to showcase the benefits of the IIJA will be similarly seamless.

A handwritten signature in black ink that reads "Dave Bauer". The signature is fluid and cursive, with a long, sweeping underline.

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## FROM THE FOUNDATION CHAIRMAN

PAUL YAROSSI | Director, HNTB

# Six Scholarship Recipients Earn Their Degrees

For nearly 25 years, the ARTBA Foundation's Lanford Family Highway Worker Memorial Scholarships have helped turn tragedy into triumph. Let me give you a half dozen recent examples:

- **Andrea Pair Winters** of Spiro, Oklahoma, completed her Doctor of Pharmacy degree at Harding University's College of Pharmacy.
- **Stan Jones Jr.** of Gaston, South Carolina, graduated with a master's degree in landscape architecture from Clemson University.
- **Hadley Voudrie** of Trussville, Alabama, now has a bachelor's degree in elementary education from the University of Montevallo.
- **Carolyn Lillis** of Philomath, Oregon, obtained a bachelor's degree in physical therapy from Oregon State University.
- **Amy McNeil Graves** of Lumberton, Texas, graduated with a bachelor's degree in nursing from Lamar State College. She is now pursuing a master's degree in nursing from the University of Texas at Arlington.
- **Willie Blevins** of Athens, Georgia, completed a bachelor's in mechanical engineering at the University of Georgia. He will return to the university this fall for graduate studies.

Since the program's inception, the Foundation has awarded over 200 scholarships to the children of highway workers killed or permanently disabled in highway work zones. Thanks to our donors, we have been able to award \$700,000 in academic aid to students in 33 states.

The scholarship program encourages students to reapply. Award decisions are based on their grades and demonstrated financial need. It is a privilege to watch these students pursue academic excellence and learn vital skills. And they will enter the workforce with reduced trade school or college debt.

This May, the Foundation's board of trustees provided seven deserving students—including four multi-year recipients—with more over \$50,000 in aid for the 2022-2023 academic year. Learn more about them on page 25.

I encourage you to share information about the scholarship program with your colleagues. Help us identify new students for the 2023-2024 academic year. You can contact ARTBA's Scholarship Program Manager Melanie Laird at [mlaird@artba.org](mailto:mlaird@artba.org) to share their names and contact information.

Please also consider making a tax-deductible contribution before the end of the year at [artbafoundation.org](http://artbafoundation.org). Together, we can continue to be a beacon of hope for the children of our industry's fallen.



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# Building on a Foundation of Rock

BY MATT JEANNERET -AND- MARK HOLAN  
mjeanneret@artba.org mholan@artba.org

**W**ith a network of 350 quarries, mines and other operations in 30 states, Canada, and the Bahamas, Martin Marietta produced 201.2 million tons of aggregates in 2021, up from 186.5 million tons the previous year, according to the company's latest annual report.

"In the simplest terms, we make big rocks into little rocks," says Marc Kmec, vice president/general manager of the company's Capital District. "The crushed stone we produce builds the foundations upon which our communities thrive."

The company's Capital District includes 16 locations in Maryland, Virginia, and Pennsylvania that supply a host of commercial and residential projects as well as regional transportation and other construction work. Ensuring both employee safety and environmental sustainability is an absolute necessity at Martin Marietta.

## Crushing Stone

Looking toward the pit with the sun rising at their backs, members of the Texas Quarry team talk safety before the first rock is crushed for the day.

From the initial controlled blast that begins the production process to the maintenance of the machinery, no task is completed at Texas Quarry without first following a safety protocol called a SLAM (Stop, Look, Analyze, Manage), says Plant Manager Robby Hooper.

"We produce stone, but our first priority is doing so safely," he says. "As a team, we look out for one another constantly. We're always looking for new ways to enhance engagement with our safety culture."

See *Quarry*, 14

## Martin Marietta's Texas Quarry at a Glance:

- ◆ Founded: 220 years ago;  
Acquired by Martin Marietta in 2018
- ◆ Supplied marble for the base of the Washington Monument and other historic regional buildings
- ◆ Pit Size: 1-mile long and ½-mile wide
- ◆ Pit Depth: Approximately 500 feet  
(for reference: the Washington Monument is 555 feet tall)
- ◆ Area Covered: 520 acres
- ◆ Number of Employees:  
Approximately 45



← A bird's eye view of the Martin Marietta Texas Quarry in Cockeysville, Maryland. All photos by Doug Kapustin.



## What's in a Name?

Martin Marietta's Texas Quarry is located 15 miles north of Baltimore's Inner Harbor. The quarry's name harkens back to the mid-1800s when Maryland residents reportedly formed a volunteer rifle company to fight in the Mexican-American War (1846-1848). According to one version of the story, they never made it to Texas to aid in the effort but did eventually name their community in support of the Lone Star State. Today, the area surrounding the quarry is known as Cockeysville while the quarry itself retains the Texas name.

Early in the process, the rock is hauled to a crusher by giant trucks with 100-ton payloads and tires taller than their drivers. The rock is crushed, screened and crushed again. Some of the material is turned into product no bigger than the tip of your finger, while much of it remains larger and heavier stone used for such purposes as erosion control.

"The majority of what we have here will be used for concrete and asphalt," Hooper says. "The end-use will be for roads and building foundations around the state."

Looking toward the great many opportunities for such projects created by the Infrastructure Investment and Jobs Act (IIJA), Hooper says the team is excited and prepared to safely meet demand.

## A Partner in Business and the Community

Understanding that their business relies on finite resources, the operation's team devotes a great deal of energy to efficiency and conservation, Kmec says, adding that teams across Martin Marietta strive to responsibly work alongside Mother Nature.

Knowing that being a good neighbor is equally as important as a regulatory license when operating a quarry, the company holds each of its operations to a series of high aesthetic standards, Kmec says.

Berms are carefully maintained along the boundaries of Martin Marietta properties. In addition to preventing people from inadvertently wandering into the operation, they also provide natural planting areas that beautify the surrounding community.

## **“Martin Marietta is not just another vendor. The company is our true partner and understands our business.”**

“Most of our people at Texas Quarry don’t just work in this community, they live here, too,” Kmec says. “In addition to making sure our site looks good, we offer our support to local organizations through the donation of material, money and time.”

Kmec says Martin Marietta’s community impact extends well beyond the life of an active quarry.

Once a site’s rock is exhausted, company teams employ a detailed reclamation plan that seeks to leave the land as pristine as it was before mining began. Often, reclaimed quarries are converted to reservoirs or used for other beneficial purposes.

Hooper says the same spirit that drives Martin Marietta to serve its communities helps move business forward at Texas Quarry.

Gray & Son, a Timonium, Maryland-based construction company and site development contractor, is a frequent Texas Quarry customer that, in recent months, has purchased significant quantities of material for a road construction project between Interstate 70 and Maryland Highway 43.

Rick Scheetz, Gray & Son president and COO, said the relationships he and his team have formed with Martin Marietta have benefited not only both companies, but the community as a whole.

“Martin Marietta is not just another vendor,” he says. “The company is our true partner and understands our business.”

---

*Matt Jeanneret is ARTBA Executive Vice President and COO. Mark Holan is ARTBA editorial director.*



Left to right: ARTBA Editorial Director Mark Holan, Martin Marietta Capital District Vice President/General Manager Marc Kmec, ARTBA Executive Vice President and COO Matt Jeanneret, and Martin Marietta Plant Manager Robby Hooper on an April 19 tour of the company’s Texas Quarry. —————>

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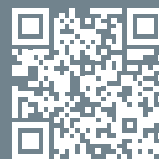


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# New Funding Opportunities for Highway-Rail Projects Can Create a Safety Win-Win For People and Freight

BY KATIE CHIMELEWSKI  
kchimelewski@artba.org

**T**he Infrastructure Investment and Jobs Act (IIJA) provides significant investment in highway-railroad crossing safety improvement work through the previously enacted Railway-Highway Crossing Program and a new Railroad Crossing Elimination grant program. There is \$845 million directly available for highway-rail grade crossing projects in Fiscal Year 2022, with a minimum of \$3.4 billion remaining for the IIJA's last four years.

The Railway-Highway Crossing Program (23 U.S.C.130), also known as the Section 130 Program, provides funds for the elimination of hazards. Since its inception in 1987, this program has correlated with a nearly 60 percent decrease in fatalities at crossings. The reduction has occurred despite increased vehicle miles traveled on both roadways and railways.

Additional pressures include the rapid growth and expansion of communities around existing railroad networks and more distracted or impaired driving and pedestrian behavior. Federal Railroad Administration (FRA) data shows that highway-rail grade crossing collisions and pedestrian trespassing on tracks account for most railroad fatalities.

Crossing eliminations are not the only eligible projects for possible award, with grade separation or closure other possibilities. This is done through engineering treatments such as bridges, embankments, tunnels, or track relocation. Other types of work may also be eligible if the improvements relate to the mobility of people and goods at highway-rail grade crossings, including technological solutions, and the planning, environmental review, and design of an eligible project type.

"One way to improve safety is sharing information on gate activations, traffic backups over the grade crossings, or the need for an emergency vehicle to cross over the tracks," said Greg Krueger, emerging technologies program director at HNTB. "Projects in Columbus, Ohio, Jacksonville, Florida, and San Diego are being implemented and expanded using federal grant funding to better integrate rail operations information into the regional transportation operations framework."

Now is the time to start engaging public partners and railroads for the new crossing elimination grant. Program requirements include a 20 percent non-federal matching share and—with the exception of planning grants—no award will be less than \$1 million. The IIJA increases the maximum payment that a state may allocate to a local government for permanently closing a public highway-rail grade crossing to \$100,000, subject to some conditions. This is the highest authorized incentive payment since the creation of the program.

Municipalities, state transportation departments, railroad companies and private contractors can work together through a diagnostic review process to identify hazardous public highway-rail grade crossing locations. These diagnostic teams use an identification system to classify grade crossings as high, medium, or low. These classifications help determine whether a crossing or corridor of crossings is eligible for closure, consolidation, and/or other safety improvements. Being proactive and engaging with local communities about being in these diagnostic reviews is likely to increase the chance of obtaining a grant.



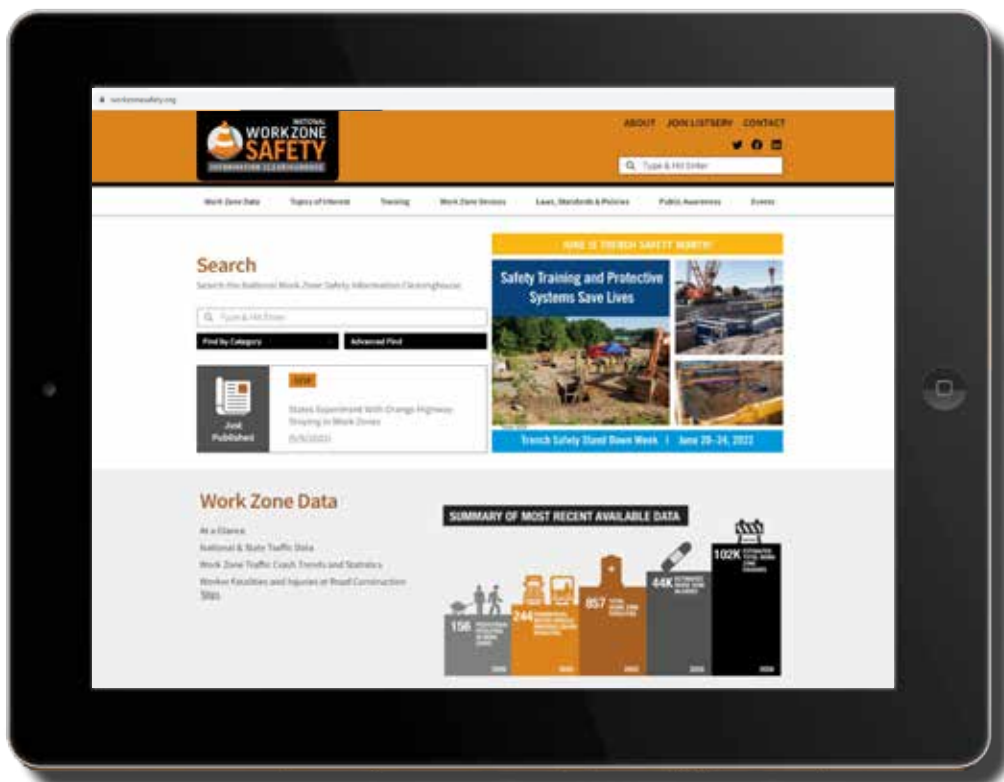
Photo: Robert Rohauer

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*Katie Chimelewski is ARTBA's director of safety and membership engagement.*

# NEW National Work Zone Information Clearinghouse Website Ready to Support IIJA-Related Projects

BY BETH MACNEIL STINSON  
bstinson@artba.org



ARTBA's Foundation and the Federal Highway Administration this past April launched an improved National Work Zone Safety Information Clearinghouse website ([workzonesafety.org](http://workzonesafety.org)) aimed at significantly expanding services that promote roadway work zone safety.

Infrastructure Investment and Jobs Act (IIJA) funding will create thousands of new work sites across the country. As new projects roll out, they have the potential to expose more workers and the public to additional roadway hazards. To help reduce the number of safety incidents, the Clearinghouse provides the latest resources from both the public and private sectors.

The Clearinghouse is the world's largest online library of free information on work zone safety topics, visited by over 250,000 users every year. The new website makes it easier for everyone—agencies, contractors, engineers, workers, and the public, to find key information on work zone safety topics.

The website makeover features a modern interface, intuitive navigation, enhanced search functionality, and expanded user-demanded content, including:

- Centralized crash, injury, fatality, and congestion data so users have a complete picture of the issues affecting safety.
- Info-graphs and downloadable data to clarify trends over the past six years.
- Interactive maps that display national and state traffic data, laws, policy, training, and approved work zone devices.

---

*Beth MacNeil Stinson is ARTBA's vice president for education operations.*

# A Closer Look at the New and Improved Clearinghouse Website



## INTERACTIVE MAPS ►

Interactive maps are used as a way to quickly locate state-specific information. Users can find these maps on the National & State Traffic Data, Training for Flaggers, Work Zone Devices, and Laws, Standards & Policies pages.

- Click on a state or use the drop-down to select a name to see state specific information.
- Details are displayed on the side and below the map.
- Be sure to scroll down to see all the relevant information.



**workzonesafety.org**

## ◀ HOMEPAGE

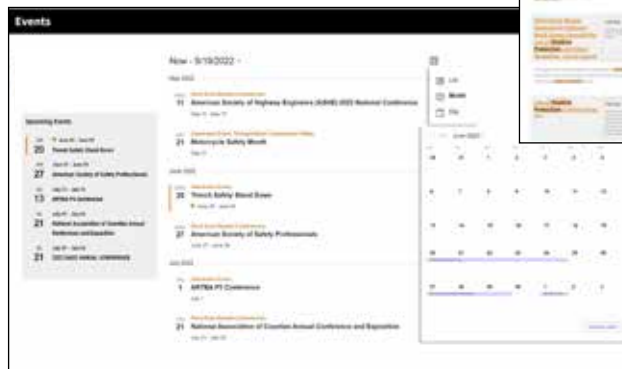
Navigate to any section of the Clearinghouse using the top navigation bar or scroll down the page and explore. The homepage highlights recent articles and upcoming events.

- Search the Clearinghouse using categories or keywords.
- Join the National Work Zone Safety LISTSERV.
- Contact us with questions or comments.
- Engage with us on social media.



## EVENTS ►

- Displays a list of upcoming conferences, meetings, and awareness events.
- Click on an event to get all the details.
- Change the list to a calendar view by clicking the icon.
- Subscribe to the calendar to receive notifications and never miss an important event.



## ◀ WORK ZONE DATA

A rich set of the latest available national and state traffic data, work zone crash trends, and worker fatalities at road construction sites, including their data sources.

- Use the interactive map to find state specific traffic data.
- National and state traffic data can be downloaded in .csv format.
- Click to enlarge crash trends and statistics graphs.



## ▲ ADVANCED SEARCH

The search engine looks for key words first in the title and then in the description, abstract, or body of the content. If you need to search for an exact phrase, use quotation marks, like this: "traffic cone."

- The number of results is listed under the search box.
- Key words are highlighted in the results.
- Narrow your search using the filters on the right side.
  - The number of returns for each filter is listed.
  - Selecting more than one filter widens your search.
  - Click Reset Filters to unselect and display all filters.

Filters are connected to content based on category. Not all filters are available for all categories. For example, the publication year filter is only available when the Publications category is selected.

# NATIONAL WORK ZONE SAFETY INFORMATION CLEARINGHOUSE

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This material is based upon work supported by the U.S. Department of Transportation under Cooperative Agreement No. 693JJ31750009. Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the Author(s) and do not necessarily reflect the view of the U.S. Department of Transportation.

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**Federal Highway Administration**

# Counting Vulnerable Road Users

BY BRAD SANT  
bsant@artba.org

**H**ighway construction workers are vulnerable to many dangers, from speeding motorists on one side of the traffic cones to large equipment on the other. Buried or overhead utilities are hazards. So are extreme temperatures, and slips, trips, and falls. Up to 220 workers are killed annually in transportation project sites, while thousands more are injured.

But the numbers themselves also present a danger if they fail to reflect the realities in the work zone. That's because accurately understanding the scope and complexity of any problem is essential to finding its solution.

For years, ARTBA has challenged the data reported to and by federal agencies as incomplete. For example, the National Highway Traffic Safety Administration (NHTSA) tracks the number of workers killed by motorists' vehicles, but such deaths are classified with other types of fatalities and counted as "pedestrians."

On the other hand, the U.S. Bureau of Labor Statistics (BLS) attempts to account for every worker death but finding transportation construction fatalities is difficult. It requires searching across multiple categories of workers to find all those on transportation construction projects. And the categories can overlap with worker deaths in other areas, such as electrical workers installing signs or lighting.

Now, the Infrastructure Investment and Jobs Act (IIJA) directs state and federal agencies to address safety hazards for "vulnerable road users" (VRUs), which by statutory definition includes roadway workers. When the U.S. Department of Transportation (U.S. DOT) sees data with a high number of "pedestrian" fatalities, however, it is not necessarily considering that a sizable portion of those "pedestrians" are roadway workers, as reported by NHTSA.

In two U.S. DOT meetings about VRUs earlier this year, ARTBA reminded agency officials that roadway workers should be considered in the data. Workers were not reflected in the VRU materials distributed by U.S. DOT.

## Good Data

The hazards of murky data reporting about vulnerable highway workers needs fresh attention. The increased highway investment from the IIJA will result in a significant growth in project sites and with it, comes increased risk exposure for workers.

See *VRUs*, 22



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Since the November 2021 passage of the IIJA, ARTBA has communicated regularly with U.S. DOT Secretary Pete Buttigieg and agency leadership advocating for recognition of workers as VRUs and a distinct strategy to keep their workplaces safe.

These efforts, coordinated through ARTBA's Safety Forum, have included letters, conversations with senior agency officials, and participation in stakeholder meetings. We have organized several industry coalition activities to reinforce this message. In May, ARTBA senior staff met with NHTSA and BLS officials to seek opportunities to improve the collection and reporting of information about our industry.

As a result of those discussions, ARTBA is working with the agencies to better identify roadway workers among their data sets and ensure workers are counted and reported in a uniform manner. The desired outcome is to more accurately quantify the dangers and challenges our industry faces with worker fatalities and injuries in order to direct additional resources to address them.

---

*Brad Sant is ARTBA's senior vice president of safety and education.*



*Industry workers along U.S. 89 in Layton, Utah.  
Photo: ARTBA*

## Safety Training Resources

ARTBA began reaching out to its membership and the industry to learn how it might improve the information contained and presented through the National Work Zone Safety Information Clearinghouse. Our efforts accelerated in the months leading up to passage of the IIJA. We worked closely with the Federal Highway Administration and the Texas Transportation Institute to modernize the Clearinghouse's website at [workzonesafety.org](https://workzonesafety.org). See story on page 18.

During the past 18 months, ARTBA has also created over a dozen new training programs with supporting materials. We've revamped others to directly address the hazards our workers face every day on the job. The training includes classes for in-person and virtual or on-demand formats on these topics can be accessed at [artbasafetycenter.org](https://artbasafetycenter.org):

### Live and Virtual

- Focus-Four Hazards for Roadway Construction (Electrical Contact Emphasis)
- Preventing the Spread of Infectious Diseases
- Trenching and Excavation Hazards
- Safety Certificate for Transportation Project Professionals (re-oriented)
- Preventing Falls in Transportation Construction
- Preventing Caught-In Injuries
- Controlling for Crystalline Silica Exposures
- Using Smart Work Zone Technology to Improve Work Space Access Point Safety
- Reducing Risks to Motorcycles in Texas Work Zones
- Separating Large Trucks from Non-Truck Traffic in Work Zones
- Sight Distance for Work Zones
- Overview of Controlling Silica Exposure in Work Zones
- Speed Management
- Temporary Traffic Control Devices
- Work Zone Access and Egress
- Work Zone Clear Zones, Buffer Spaces, and Positive Protection Deflection Distances

### On-Demand through the ARTBA Online Learning Center

- Applying the Americans with Disabilities Act to Work Zones
- Preventing Caught-in or Crushed Incidents in Work Zones
- Fall Prevention Training Programs
- Flagging on Low Volume Roads
- Improving Large Truck Safety
- Internal Traffic Control Plans
- Designing Work Space Access Points to Better Accommodate Large Trucks
- Preventing Caught-in Incidents by Using Lockout Tagout
- Portable Changeable Message Signs

- Work Zone Safety for Motorcycles and Bicycles
- Work Zone Traffic Incident Management
- Night Work in Work Zones
- Working Outdoors

### Safety Training Videos

- Fall Rescue (English/Spanish)
- Blind Spot Demonstration (English/Spanish)
- Electrical Hazards (English/Spanish)
- Trench Hazards (English/Spanish)
- Safe Mounting and Dismounting of Equipment
- Personal Protective Equipment
- Caught-In Hazards

As growth opportunities increase for transportation construction workers and their employers, ARTBA is likewise increasing its efforts to ensure these vulnerable workers have the information, training, and support necessary to return home safely at the end of each shift.

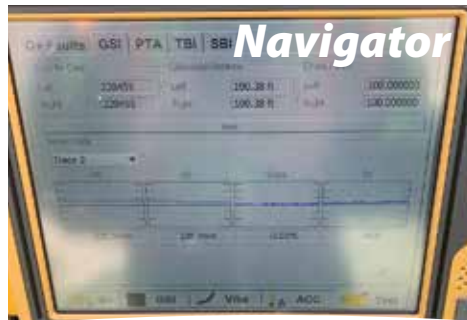
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# Meet our 2022-2023 Highway Worker Memorial Scholarship Students

BY MELANIE LAIRD  
mlaird@artba.org

Seven students have received Lanford Family Highway Memorial Scholarships for the 2022-2023 academic year. The announcement was made in May during ARTBA's Federal Issues Program in Washington, D.C.

**Payton Alcon**, a first-time scholarship recipient, will study nursing as a freshman at Alamance Community College in Elon, North Carolina. Since her father's death and growing up with members of her family in hospice care, Payton said she has dreamed of becoming a nurse. She wants to make both of her parents, who were unable to pursue a college education, proud of her.

**Willie Blevins**, a multi-year scholarship recipient, recently graduated with his bachelor's degree in mechanical engineering from the University of Georgia in Athens. He is returning to the university this fall to pursue graduate studies in mechanical engineering.

**Amy McNeil Graves**, a multi-year scholarship recipient, graduated with her bachelor's degree in nursing from Lamar State College in Port Arthur, Texas. She is returning to pursue her graduate degree as an acute care gerontology nurse practitioner. She is also taking additional courses to earn her registered nurse first assist license (RNFA).

**Katie Hutt**, a new scholarship recipient, is a sophomore at the University of Tennessee, Knoxville. She said her first year at school helped her gain confidence in herself as she pursues her passion for architecture and design.

**Jenna Jares**, a multi-year scholarship recipient, is a rising senior completing her degree in occupational therapy at the University of Mary Hardin Baylor in Belton, Texas.

**Breana Jones**, a new scholarship recipient, will study graphic and fashion design as a freshman at Winthrop University in Rock Hill, South Carolina. Her older brother and multi-year scholarship recipient Stan Jones Jr. completed his master's degree in landscape architecture from Clemson University.

**Joann Jones**, a multi-year scholarship recipient, is studying biology in her junior year at Case Western Reserve University in Ohio. She is on the pre-med pathway with dreams of becoming a doctor.

---

*Melanie Laird is ARTBA's scholarship program manager.*



**Willie Blevins**



**Amy McNeil Graves**



**Payton Alcon**



**Jenna Jares**



**Katie Hutt**



**Joann Jones**



**Breana Jones**

Since the program's inception nearly 25 years ago, ARTBA's Transportation Development Foundation has awarded over 200 scholarships to the children of highway workers killed or permanently disabled in highway work zones. To make a tax-deductible donation or to share the name of a new student who could be eligible for the program, please contact me at 202.683.1029 or [mlaird@artba.org](mailto:mlaird@artba.org).



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# 2022 MEETINGS & EVENTS

SEPT

**ARTBA National Convention**  
Sept. 25-28  
Nashville, Tennessee



OCT

**ARTBA Western & Central  
Regional Meeting**  
Oct. 25-27  
Aspen, Colorado



NOV

**ARTBA Northeastern &  
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The background image shows a construction site under a bright blue sky with scattered white clouds. Large, dark, three-dimensional letters spell out the word "CONNECTED" across the middle of the frame. Several construction workers are visible standing on top of the letters. In the background, a large tower crane is positioned to the left, and a yellow excavator is lifting a large, rectangular concrete block with a crane hook. In the foreground, there is a yellow bulldozer and a surveying instrument mounted on a tripod. A white line with three circular nodes containing a yellow plus sign connects the bulldozer, the surveying instrument, and the excavator, symbolizing connectivity.

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Photo: Shutterstock

# Why Prioritizing Mental Health in the Workplace is Critical

BY HAMILTON BAIDEN  
hbaiden@youturnhealth.com

**A**s the transportation construction industry ramps up to manage the anticipated growth of projects from the Infrastructure Investment and Jobs Act (IIJA), it is faced with ensuring a healthy workforce, both mentally and physically.

After more than two years of dealing with the COVID-19 pandemic, many employers have increased their awareness about how stress, uncertainty, and anxiety can harm workers and the workplace. Many have begun to address mental health in addition to workers' physical safety. They are expanding their efforts to address the underlying challenges facing their employees, such as depression and substance abuse.

Up to 90 percent of people who die by suicide have a mental health condition, according to a 2018 report in the International Journal of Environmental Research and Public Health. Another study found the construction industry has the second highest suicide rate among major employment sectors. Despite advances by women, construction remains a male-dominated industry, and research shows that men have higher suicide rates.

According to the 2021 Mental Health and Well-being in the Construction Industry Report from the Center for Workplace Mental Health, there are many "factors that likely contribute to higher suicide rates and mental health concerns in the construction industry." These include:

- Toughness and strength are valued, while seeking help, especially for mental health, may be seen as weakness;
- Stigma and fear of consequences associated with mental health;
- Shame and fear of judgment;
- Chronic pain;
- Seasonal and cyclical work contribute to family and financial strain;
- High stress and deadline driven work;
- Limited job control;
- Long work hours including overtime lead to fatigue; and
- Separation from family when working at remote sites.

## UPCOMING ARTBA EVENTS:

### 9th Annual National Workshop for State & Local Transportation Advocates

July 12-13

[transportationinvestment.org](https://transportationinvestment.org)

### 2022 ARTBA P3 Conference

July 13-15

[artbap3.org](https://artbap3.org)

**Grand Hyatt Washington**

*See Health, 30*

When it comes to mental health, traditional approaches are no longer sufficient solutions, experts say. New programs are helping employers and employees address these challenges. Construction organizations are encouraged to leverage best practices for a comprehensive approach to this issue. Examples include:

- Training managers to identify stress, mental health, and substance misuse issues before they become a problem.
- Involving family members, when appropriate, in the treatment and support process.
- Ensuring buy-in from company executives and leaders to support mental health programs.
- Reducing stigma surrounding mental health by making it part of a corporate wellness strategy.
- Providing a comprehensive approach to suicide prevention, mental health, and substance misuse—utilizing digital tools for education, peer support coaching and care management.


- Offering innovative programs to keep employees educated and engaged.

Laser focus on these best practices will help decrease workplace impairment, reduce injuries and absenteeism, and potentially help lower healthcare costs. This should also help increase employee productivity.

The pandemic has forced businesses to be more creative and innovative in the workplace. The same applies to reducing suicide and substance abuse. The death or injury of an employee due to mental health conditions is just as tragic as those harmed by physical dangers. Employers should take the necessary steps to prevent these outcomes for their employees.

---


*Hamilton Baiden is CEO of Youturn Health, a Dallas company that specializes in evidence-based strategies to help individuals struggling with stress, substance misuse, suicidal ideation, and grief.*



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## Q & A With Aldridge Electric's Ken Aldridge

*Ken Aldridge is chairman of Illinois-based Aldridge Electric and has been an industry professional since 1973. He is a former ARTBA vice chairman and chairman of the Illinois Road & Transportation Builders Association. He answered these questions from Transportation Builder's editorial team.*

**TB:** Why is Aldridge Electric so committed to safety?

**KA:** I am personally committed to safety as a core value. I put the safety of our people above all else. We are a family-run organization, and I am deeply connected to the 1,500 who fuel our company's success.

**TB:** What caused you to make safety your highest priority?

**KA:** A 2006 fatality on one of our jobsites. I saw how it affected his young family, all his friends and co-workers. It convinced me to make a substantial change. We were having too many injuries, our "great" safety program had plateaued, and we needed to keep learning how to make jobsites safer. It was then that I decided to make major changes to our safety programs and initiated engagements with industry safety leaders to commit to being incident and injury free.

**TB:** What are some of the key changes or initiatives you implemented at Aldridge Electric that have made a significant difference to your safety performance?

**KA:** The first thing we recognized was that our safety effort was not being led from the top. Owners and executives must be passionate about safety. They must lead by example, visit jobsites regularly, and talk more about safety than about production. Ask the question: "What can we do to make this jobsite safer?" We also:

- Adopted the IIF—Incident and Injury Free—culture, which is about care and concern for people, not numbers and policy. We focus on leading indicators, capturing "near misses" and "good catches" to learn how to prevent injuries.
- Switched to helmets instead of traditional hard hats. These helmets reduce traumatic brain injury and save lives. Our goal is that no matter the competitive boundary, all companies in our industry will implement helmets and they will become the new standard in personal protective equipment.
- Added new focus on mental health and raised awareness among our employees to discuss these critical issues. We have implemented an annual Mental

See Q&A, 34

**"Safety is paramount in our business, and it must come from the top. Executive leadership is critical to the overall success of safety programs. Leaders must stay actively involved, be passionate about learning and get into the field to engage with employees." — Ken Aldridge**



Health Awareness Week modeled after Construction Safety Week. We have engaged top mental health professionals. We offer our employees and their families resources to access mental health and wellness support.

**TB:** Why did you seek to take the lead on Construction Safety Week this year?

**KA:** Working with the executive committee for the past four years, seeing their passion for safety and not hurting workers, has been incredibly inspiring. Stepping into the 2022 Safety Week chairmanship was an opportunity to continue highlighting safety as a value and as shared belief. Safety Week is a show of force, an opportunity for people, companies, and even competitors, to work together and celebrate the incredibly hard work by people in our industry who make safety the foundation of everything they do.

As part of my chairmanship, I was able to raise broad awareness regarding the adoption of helmets and the critical importance on discussing mental health across the industry and further promote a call to action on adjusting safety programs to include these important topics.

**TB:** What advice would you give to your peers when it comes to safety and construction?

**KA:** Safety is paramount in our business, and it must come from the top. Executive leadership is critical to the overall success of safety programs. Leaders must stay actively involved, be passionate about learning and get into the field to engage with employees. Quality and safety go together. We learned that incidents usually start with a quality issue, and the crew's reaction to it. So, they belong together to prevent injuries and deaths.

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# ARTBA Members Return to the Nation's Capital

The first in-person Federal Issues Program (FIP) and Transportation Construction Coalition Fly-In since 2019 took place in Washington, D.C., May 15-17. Here are some pictorial highlights from the events:

Photo: David Hathcox



Left to right: ARTBA board member Arthur Walker, III (The Walker Company), U.S. Senate Republican Leader Mitch McConnell (R-Ky.), ARTBA CEO Dave Bauer, and ARTBA Chairman Ward Nye.



A panel discussion on the Infrastructure Investment and Jobs Act (IIJA) implementation. Left to right: ARTBA's Bauer, U.S. DOT Director for IIJA's Implementation Katie Thomson, South Carolina DOT Deputy Director of Engineering Leland Colvin, and District of Columbia DOT Deputy Chief Officer Amanda Stout.



U.S. House T&I Committee Chairman Peter DeFazio (D-Ore.) and Chairman Nye.

Photo: David Hathcox



ARTBA COO Matt Jeanneret, left, and ARTBA First Vice Chair Tim Duit (Duit Construction) outside of the Capitol.

Photo: David Hathcox



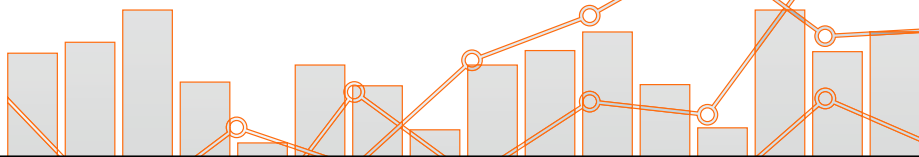
From left: Walker, Senate EPW Chairman Tom Carper (D-Del.), Chairman Nye, and Bauer.



ARTBA Foundation Industry Leader Development Program attendees met U.S. Rep. John Rutherford (R-Fla.), center. Left to right: Felipe Jaramillo (Ajax Paving), Travis Raitt (Preferred Materials), John Taylor (Preferred Materials), and Pat McGriff (Lane Construction).



The ARTBA Award was presented to U.S. Sen. Rob Portman (R-Ohio) and President Joe Biden during the FIP for their leadership on passage of the IIJA. LEFT: Portman is flanked by association board members from Ohio, Paul Gruner (Montgomery County Engineer), left, and Dean Breese (Gerken Paving). RIGHT: Biden administration Infrastructure Coordinator Mitch Landrieu accepted the award on the president's behalf from Chairman Nye.



## States Ramp Up Commitment of Federal Highway Funds

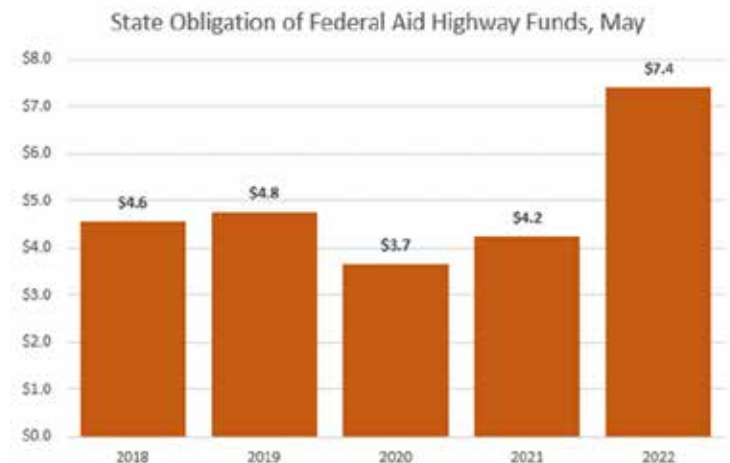
BY DR. ALISON PREMO BLACK  
ablack@artba.org

Federal highway funds from the Infrastructure Investment and Jobs Act (IIJA) are beginning to be felt in the marketplace, according to ARTBA's recent analysis of U.S. Treasury Department and the Federal Highway Administration (FHWA) data.

States have ramped up their commitment funds, including \$7.4 billion towards federal-aid highway projects in May. This was up from \$4.2 billion in May 2021—a 75 percent increase.

Some of the notable projects include interchange modifications on the Interstate 55 in Memphis, Tennessee; widening Interstate 35 in Texas; reconstruction of Route 146 in Rhode Island; repairs to Boston's Sumner Tunnel; and rehabilitation of Louisiana's Berwick Bay Bridge. ARTBA estimates that one in five projects include some sort of bridge repair or rehabilitation work.

The IIJA provided states with \$53.2 billion in formula funds that must be committed by Sept. 30. This increased 42 percent over FY 2021 program levels and includes the new bridge and electric vehicle charging formula programs.



While the IIJA was signed into law late last year, states did not have access to the full amount of the historic increase until Congress approved the annual appropriations bill in mid-March. FHWA released the official funding notice April 1.

Through May, states obligated a total of \$25.4 billion in federal highway funds—up from \$22.7 billion at the same time in FY 2021.

Texas, California, New York, Illinois, Georgia, Tennessee, New Jersey, and Pennsylvania are leading the way in the value of commitments. Ohio, Florida, Michigan, Illinois, California, Texas, Indiana, New York, Tennessee, and Colorado have the most projects under construction.

States have committed an average of \$1.4 million in federal funds towards each new project, with just over 80 projects leveraging \$25 million or more in federal dollars. States with the largest average federal commitment through May include Massachusetts, Texas, California, New Jersey, Arkansas, Nevada, Washington, D.C., Delaware, and Hawaii.

State-by-state details are available through ARTBA's Transportation Construction Market Intelligence Service, found in the economics section of [artba.org](https://artba.org/economics). ARTBA will continue to provide updates as new data is available.

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*Dr. Alison Premo Black is ARTBA's chief economist.*

### Visit ARTBA's Interactive Dashboards:

- Deficient Bridges
- Federal Highway Investment
- National Materials



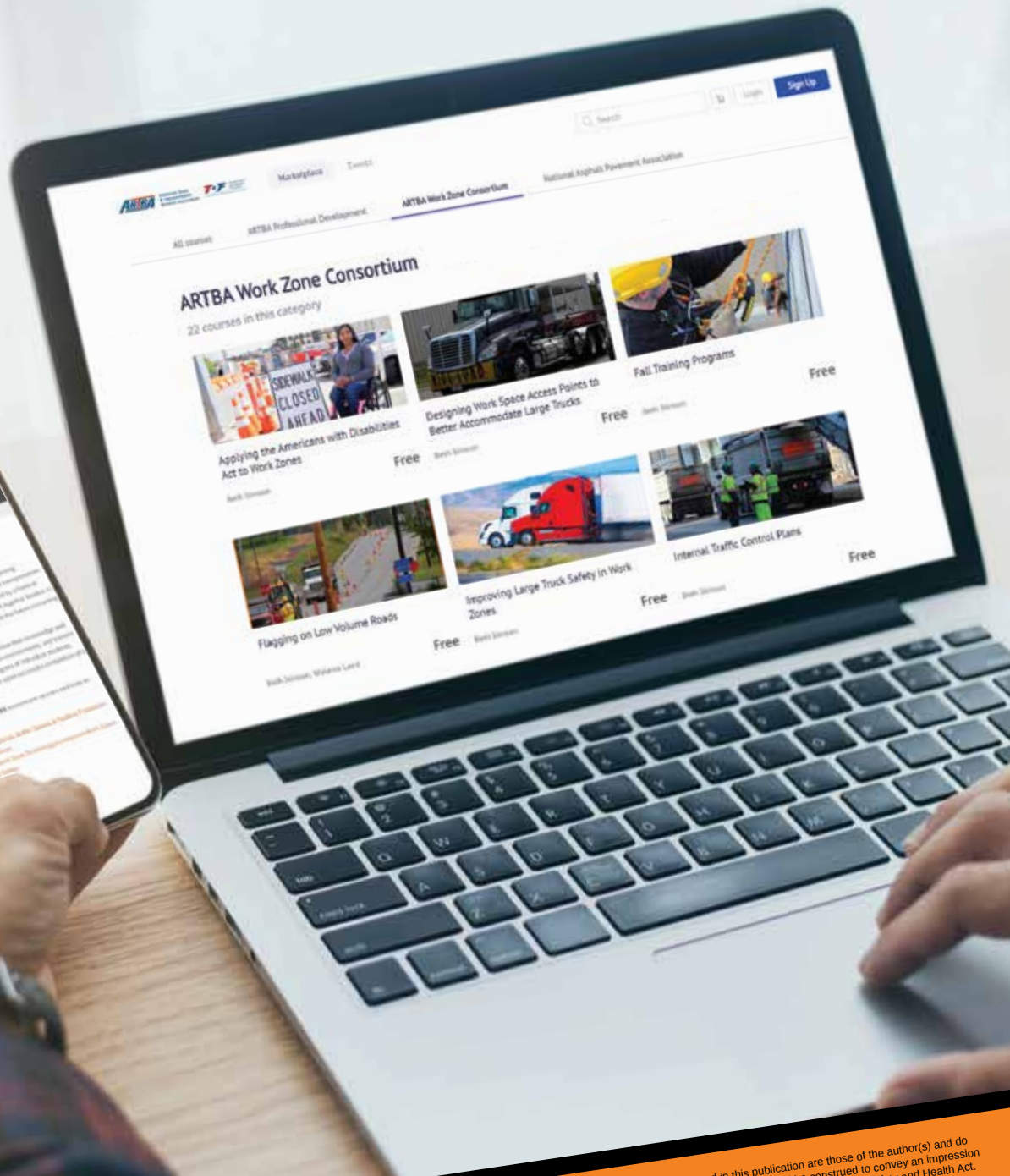
[artba.org/economics](https://artba.org/economics)



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# Oklahoma Contractor Tim Duit joined ARTBA because of its singular focus.



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Highway, public transit, airport, rail, port and waterway design, construction and maintenance generates \$650 billion in annual economic activity and sustains 4.4 million U.S. jobs.

ARTBA and its members:

- Led the industry charge resulting in 2021's Infrastructure Investment & Jobs Act—the largest federal surface transportation funding law since the 1956 Interstate system.
- Have helped advance \$58 billion in approved, yet challenged, U.S. transportation projects via strong regulatory and environmental legal advocacy programs.

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Contact **Allison Klein** at **202.683.1036** or **[aklein@artba.org](mailto:aklein@artba.org)** to learn more about membership.



## Transportation Construction Market Development & Protection is Our Mission



# Regulatory Roundup

## Industry May "Labor" More Under New Proposals

BY NICK GOLDSTEIN  
ngoldstein@artba.org

Recent developments at the U.S. Department of Labor (DOL) will directly impact ARTBA members and likely contribute to increased regulatory burdens felt by the transportation construction industry. Here is what you need to know:

**Updates to the Davis-Bacon Act (DBA):** The DBA requires the use of local prevailing wage rates on federal-aid construction projects. The DOL has proposed multiple changes to these regulations, including the expansion of the Act's coverage to additional types of workers, such as flaggers, surveyors and construction drivers who spend small amounts of time on a worksite. The agency has proposed extending DBA coverage off-site, to areas such as fabrication facilities and material supply sites. The proposal would also require the use of the most current wage rates any time a contract is extended or amended, and hold prime contractors liable for DBA violations of their subcontractors.

DOL is updating out-of-date wage rates, which ARTBA supports. The agency seeks to do this in part by redefining the term "area" for highway construction projects by using state highway or transportation districts instead of counties, where appropriate. The use of a single "area" to determine wages would ensure workers on a project are paid at the same rate regardless of the county where they are working.

ARTBA convened a task force of interested contractor-members and chapter representatives to help craft comments on the proposal, which were submitted in May. They can be found in the regulatory section of [artba.org](https://artba.org). ARTBA has urged DOL to increase its efforts to ensure maximum participation from the contractor community in determining new DBA wage rates.

**Federal Standard for Heat Illness and Exposure:** The Occupational Safety and Health Administration (OSHA) is developing standards for heat illness and exposure on outdoor worksites. OSHA is tying these efforts to the Biden administration's focus on climate change. The agency issued

an advanced notice of public rulemaking that asked the regulated community for data on how heat-related issues are currently being handled.

ARTBA comments—also available at [artba.org](https://artba.org)—to OSHA back in January explained that some transportation construction, such as paving, requires working in high heat, and pointed out that geography impacts heat exposure. Workers in Arizona, for example, would face different levels of (and be more acclimated to) heat than workers in Wisconsin. ARTBA outlined how the transportation community is addressing heat challenges through worker training, rest breaks, and night work when daytime temperatures are too hot. ARTBA is urging OSHA to allow employers to adopt measures best suited to their circumstances.

OSHA has identified "Highway, Street and Bridge Construction" and "Other Heavy and Civil Engineering Construction" as targets under a National Emphasis Program (NEP) for heat exposure, through which the agency said it hopes to double its inspections. An NEP is not a new regulation, but it does indicate where the agency will focus its compliance efforts under existing rules. This means ARTBA members are more likely to see OSHA compliance officers at their job sites. We will continue to share information on OSHA's efforts as it becomes available.

These new rules will present challenges as the industry seeks to deliver the promises of the Infrastructure Investment and Jobs Act (IIJA). As DOL moves forward with implementing updates to the DBA and heat exposure standards, ARTBA will continue to work with the agency to ensure our industry can deploy the historic federal investments from the IIJA, while maximizing safety, efficiency, and cost-effectiveness.

---

*Nick Goldstein is ARTBA's vice president of regulatory and legal issues.*



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# ARTBA On the Road

During the May 15-16 Federal Issues Program in Washington, D.C., ARTBA President and CEO **Dave Bauer**, right, recognized association chairs who provided leadership toward passage of the Infrastructure Investment and Jobs Act. From left is current Chairman **Ward Nye** (Martin Marietta), and past chairmen **Steve McGough** (HCSS) and **Matt Cummings** (T.Y. Lin International). **David Zachry** (Zachry Corporation) and **Robert E. Alger** (SNC-Lavalin Group, Inc.) were unable to attend.



ARTBA Planning & Design Division President **Chad Critcher** (RS&H), standing at podium on far right, moderated a June 6 discussion with state DOT leaders during the Engineering Issues Breakfast at the Western Association of State Highway and Transportation Officials (WASHTO) meeting in Dallas.



At the Georgia Highway Contractors Association (GHCA) Annual Convention April 29 in Amelia Island, Florida, blue stage lighting splashed across (left to right) CEO **David Moellering**, ARTBA General Counsel **Rich Juliano**, and incoming GHCA Chairman **Scott Briscoe** of E.R. Snell Contractor, Inc.



At the May 2 Construction Safety Week kickoff event in Chicago, left to right, host Aldridge Electric Board Chairman **Ken Aldridge** was joined by ARTBA Senior Vice President of Safety & Education **Brad Sant**, Illinois Road and Transportation Builders Association (IRTBA) President & CEO **Mike Sturino**, and IRTBA Chair **Julie Wrightsman** of Maintenance Coatings.

The ARTBA Foundation's Industry Leader Development Program hosted 32 transportation design and construction professionals May 15-17 in Washington, D.C.



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## ELECTRIC DEMOLITION ROBOTS ARE MAKING JOBSITES SAFER

Demolition can be difficult, dirty, dangerous work. It is also necessary work. How best to keep workers safe in a demolition environment? Remove them from that environment.

When the persons come out, the robots move in. Robotic demolition has been soaring in popularity. Demolition includes razing structures, but a growing demand for demo comes from retrofitting and repurposing existing structures. That can be done by an operator on a skid steer with an attachment, but dust, fumes, falling debris, and other hazards have driven contractors to seek out other options to keep their workers safe; enter robotic options. There are also demolition settings where the fumes and oxygen consumption of diesel- and even propane-powered equipment are not allowed due to worker safety. Electric robots answer all these concerns.

### COMPACT DEMOLITION MACHINES WITH BIG-MACHINE PERFORMANCE

While the use of electric robotics for demolition machines has risen recently, this is nothing new to CONEXPO-CON/AGG exhibitor Brokk Incorporated, which has a product line focused around remote demolition equipment. Lightweight and compact size are key for many of the jobs where Brokk robots are used, including interior demolition. Many models are within floor and elevator load limits, making transport and setup much easier. All models have lift points and can be craned into position, if necessary.

Since demolition robots are purpose-built for the task, their size and weight may not good indicators of their capability. Jeff Keeling, Vice President of Sales and Marketing at Brokk states, "It would typically take an excavator three times heavier than a Brokk equipment piece to deliver comparable breaker performance and our four smallest models fit through a standard doorway. We aren't adding an attachment to an existing piece of equipment. We are designing purpose-built demolition machines for use in confined spaces."

### THE APPEAL OF ELECTRIC DEMOLITION EQUIPMENT

Just as electrification is making waves in consumer vehicles and land-moving construction equipment, it continues to affect the future of demolition equipment. While Brokk offers diesel models where their use is appropriate, but their innovations specialize in electric. Power is supplied by plant or building power or by generator if sufficient plant power is not available. Brokk's electric models require 480-volt service of 20 to 100 amps, depending on the model. Wire gauge also varies by model and length of run; Brokk provides guidance.



This raises a question: why not batteries? "Attachments are huge power consumers," says Keeling, "and today's battery technology limits run time to two or three hours, which is clearly not sufficient." How is it other electric equipment has longer run times? Other machines have a lower draw, are hybrids, or have much larger battery packs. In terms of the future of electrification for remote demolition equipment, Keeling states "We're always monitoring battery development and it's conceivable at some point we'll be able to offer battery-powered models, but battery technology is not at that point yet."

### MARKET CONDITIONS FOR DEMOLITION

The switch to robotics has been a hot topic in the manufacturing industry for decades. "In the early days we'd hear, 'You're trying to take away our jobs,'" says Keeling. "Now we hear, 'Please, help reduce our need for labor.'" With an ongoing labor shortage, especially a shortage of operators, customers want to cut their need for hourly workers and shuttle their remaining staff to tasks that provide more return to both the company and the employee.

There's a shift in the workforce recently, with many employees leaving traditional employment to pursue something else. Many who remain are working remotely, either by their choice or that of their employers. Estimates are that up to 30 percent of workers will be remote by 2025. Does this open up commercial properties for repurposing? "Not yet," says Keeling, "Commercial property owners are taking a wait-and-see approach before reconfiguring their properties."

Brokk is one of at least eighteen different exhibitors featuring robotic, smart, or remote-controlled solutions in the construction world at CONEXPO-CON/AGG 2023, March 14-18, 2023, at the Las Vegas Convention Center.

Visit [conexpoconagg.com](http://conexpoconagg.com) to learn more.

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# Drone Use Soars in Transportation Construction

BY JOHN SCHNEIDAWIND  
jschneidawind@artba.org

When a 2020 landslide and pavement cracks wiped out four lanes of Route 231 near Laceys Spring, Alabama, it was anyone's guess when the busy highway near Huntsville would re-open to traffic. That's why J.D. D'Arville deployed the Alabama Department of Transportation's fleet of unmanned aerial systems (UAS). This drone air force surveyed the damage and gathered key data about how to fix the highway.

"The key thing for us was getting the data and information to our contractors and the people who were making the design changes quickly and efficiently," said D'Arville, the state agency's UAS program administrator. "It worked out great for us. We completed the project in seven months, with two new bridges."

A 2019 survey by the American Association of State Highway and Transportation Officials (AASHTO) found that 36 states were using drones equipped with high-definition cameras for a host of transportation construction applications, including inspections and incident response operations. Anticipating this trend about seven years ago, ARTBA formed a member task force to review current and emerging industry uses of UAS, began meeting with numerous federal and state officials, and started advocating for regulatory changes to improve efficiencies and while maintaining high standards of safety.

Drones are impacting transportation project sites in at least three key ways:

- **Keeping transportation construction workers safe.** Traditional bridge inspection requires setting up temporary work zones, detouring traffic, and using heavy equipment. UAS technology can speed data collection while reducing risk to work crews and the traveling public.
- **Speeding up project completion.** UAS technology can accelerate the rate at which information such as survey or aerial photography is collected for project planners. Drones also provide more accurate estimates for how much material is needed for projects.
- **Maintenance.** The ability to consistently map terrain and existing transportation infrastructure over time can help anticipate problems before they become emergencies, saving lives and reducing costs. In an emergency,



UAS technology can quickly and inexpensively survey the damage, allowing for better-informed and efficient recovery operations.

"By using drones, workers can do all the necessary work without needing to walk through the site," said John Frost, vice president of business development at Propeller, a drone-mapping software firm. "With significant labor shortages still impacting the industry, technology such as drone surveying allows workers to be more efficient, while also adding a layer of safety."

Yet a successful UAS program is more than just flying drones over transportation projects and taking pictures. The amount of information drones capture in those images can quickly overwhelm users unless there's a quick and seamless way to understand and utilize the feedback they create, said D'Arville.

"When you're doing 2,600 flights a year on construction projects—which is what we've been averaging—I had to have something that we could use to quickly fly, upload the data, get it processed and get it out to our contractor end-users," he said.

D'Arville hired DroneDeploy, a San Francisco-based company that sells a reality capture and visualization platform for aerial and ground robots. According to DroneDeploy CEO Mike Winn, the company's software has been used by customers to map and analyze more than 200 million acres in over 200 countries. The software enables users to collect, manage, and interpret the massive amounts of data collected by drones by processing scalable images, storing data and creating maps and 3D models that help users get a more accurate view of the landscape under construction.

Without an accurate way to capture and analyze the data from drones, Winn says, "there's no way project managers can walk entire sites on a regular basis and understand what's going on."

*John Schneidawind is ARTBA's vice president of public affairs.*

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