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Oldcastle Infrastructure partnered with Woodruff & Sons Inc. to provide a modern drainage solution for Tampa's Cypress Street area, addressing persistent flooding and stormwater runoff. The project improved sustainability, safety and longevity, transforming the community's infrastructure.

# Critical Transportation Links

With funding secured, infrastructure priorities are set

By Kate Gawlik

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- Natural Disaster Responses and Market Trends
- Retrofitting California's High-Speed Rail
- Slope Stabilization and Rockfall Protection
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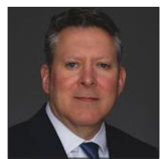
# The New Normal: Mitigating Vulnerability and Economic Impacts

**The coasts' onslaught of natural disasters, from fires to hurricanes and earthquakes, is not new.** There was, however, something different about 2024 incidents that left people stranded, with damaged or completely destroyed transportation infrastructure.

Hurricane Helene, for instance, struck the Blue Ridge Mountains, leaving residents trapped by feet of rainfall, surging rivers, and washed away roadways and bridges. Areas of Florida face a similar situation, prioritizing clean up and rebuilding after back-to-back hurricanes. California reports more than 7,000 wildfires and a resulting 1 million acres of destroyed land through October. The National Interagency Fire Center statistics show the number of wildfires in North America are down year-to-date, but the yearly acres burned has gone up.

Those in the construction industry are examining their roles in the transportation sector as it relates to natural disasters, funding and other trends.

**With an increase in natural disasters, there is more demand for transportation and infrastructure rebuilds. How does the industry approach this?**



**Curt Gillaspie, Commercial Director, Oldcastle Infrastructure:** The transportation and infrastructure industries are adapting to the increased frequency of natural disasters by taking a proactive and collaborative approach. One key strategy is updating standards and specifications in coordination with local, state and federal agencies. This ensures that new builds and repairs meet more resilient design criteria tailored to each region's unique environmental challenges, mitigating future vulnerability.

Additionally, the manufacturers in the building materials industry invest heavily in research and development for new products and systems. This focus on hardening infrastructure includes creating materials and technologies that can withstand extreme weather conditions, as well as smarter, more adaptable systems that can quickly recover after disasters. Combining updated standards with innovative solutions allows the transportation industry to be better equipped to rebuild stronger and more sustainable transportation networks.



**Peter Gaynor, CEM, Hill International Inc., Vice President, Resiliency and Disaster Recovery;**

**Former Administrator of the Federal Emergency Management Administration; Acting Secretary of the Department of Homeland Security:** Rebuilding critical infrastructure is one of the most vital and also one of the most complex components of disaster recovery. Prioritizing which infrastructure systems are rebuilt is as important as deciding how they should be rebuilt. Balancing the immediate needs of a community for power, clean water and, in many cases, basic shelter, with long-term resiliency goals, is one of the toughest decisions leaders have to make. Private industry can contribute to this conversation—often helping to plan for a faster recovery long before disaster strikes.

**What funding or insurance changes are spurring growth in transportation and infrastructure?**

**Gillaspie:** The transportation and infrastructure sector is experiencing growth due in part to significant federal funding. A major driver of



Following a critical landslide on the Teton Pass Highway, Oldcastle Infrastructure teamed up with WYDOT, Evans Construction and HK Contractors to construct an emergency bypass. The project included the installation of 120 ft of box culvert, ensuring the safe restoration of travel between Idaho's Teton Valley and Jackson, Wy.

this growth is the Infrastructure Investment and Jobs Act (IIJA), which has funneled substantial funding through state Depts. of Transportation (DOTs). This increase in federal investment is leading to a rise in project activity, as state DOTs now have the financial resources to undertake large-scale infrastructure projects, from road repairs to bridge rebuilds and public transit improvements.

This expanded funding base allows states to address long-delayed maintenance and upgrade projects while also incentivizing innovation in resilient infrastructure development. By improving access to financial support, the IIJA is boosting construction efforts and ensuring long-term growth in the sector.

**Gaynor:** The catastrophic risk insurance market has a part to play in making infrastructure more resilient and protecting our communities. While insurers are still grasping this new event landscape, their insights can help policymakers, construction industry players, and individual communities make smarter decisions about how and what they build. Effectively, catastrophic risk insurance provides guidance with real financial impact for planners and builders.

### What other trends are you seeing as 2024 comes to a close?

**Gillaspie:** One notable trend is the increase in shoreline resiliency projects. With rising sea levels and more frequent coastal storms, a growing focus is on protecting vulnerable shorelines. These projects aim to strengthen coastal infrastructure, such as seawalls and flood barriers, and implement natural solutions like wetlands restoration to mitigate the impact of extreme weather events.

Additionally, there is a surge in rapid response road and bridge replacement projects. As natural disasters like floods and wildfires become more frequent, infrastructure damage is often severe and widespread. To address this, there is a push for faster, more efficient replacement of damaged roads and bridges to restore critical transportation links. This involves the use of modular construction techniques, prefabrication and streamlined project approvals, all aimed at minimizing disruption and ensuring a quicker recovery. For example, in June, Oldcastle Infrastructure along with other CRH America's companies worked with the Wyoming DOT to design and construct a detour on the Teton Pass following a catastrophic road failure from a massive landslide. Completion of the project was achieved in 15 days and prior to the July 4 holiday weekend, enabling uninterrupted travel for more than 15,000 daily commuters and tourists.

## Retrofitting California's High-Speed Rail in Fresno

**For about 50 years, a historic rail station in Fresno, Calif., has been waiting to be reinvented.**

The Central Pacific Railroad station's original structure opened in 1872 and was renovated and expanded several times until it closed as the Southern Pacific Depot, about 100 years after opening. The chance for a new identity came with California's High-Speed Rail (HSR) Authority system, which will connect 800 miles of rail travel across California.

Page & Turnbull is charged with the rehabilitation design of the historic station and is focused on updating the site for accessibility and to meet current fire, life-safety, structural, building, seismic, and other codes and standards. A joint venture of Foster + Partners with Arup is planning Fresno's intermodal transit station (the joint venture recently released the designs for HSR's first four stations out of a possible 24). This is part of Phase 1 of the HSR expansion, running from San Francisco to Los Angeles, with stations in Merced, Fresno, Kings Tulare and Bakersfield. Stefan Behling, head of studio at Foster + Partners, said in a statement, "We are honored to be part of this once-in-a-generation project that will connect California's urban fabric with the agricultural heartland, transform local communities, and completely revolutionize the way people travel across the state. We are developing an architectural language for the four Central Valley stations, including soaring canopies that draw in fresh air and shield waiting passengers from harsh sunlight. The station design reflects the sustainable ethos of the wider project."

John Eddy, project manager with Arup, added: "The excitement high-speed rail is generating in the four Central Valley cities is tremendous. Residents expressed their pride in being the first to receive high-speed rail service and their appreciation for the economic uplift provided by the current construction and the promise of more economic growth when the system is in operation. We look forward to future engagements with these welcoming cities to confirm we are capturing each of their identities while setting the standard for the entirety of California's high-speed rail stations." ♦



Phase 1 of California's High-Speed Rail Authority system includes renovating a historic rail station in Fresno while adding to the footprint with a modern hub.

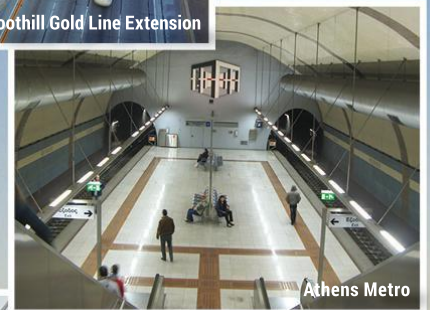


**Mike Smith, Hill International Inc., President, Americas:** Inflationary pressures remain in the

construction market—both in terms of material and labor costs—but the industry has done a good job in mitigating these impacts to date. We expect AEC companies will continue

to find innovative ways to address rising costs in the year ahead. One key innovation is the adoption of more technology across all sectors and markets: drones, real-time decision-making, GIS scheduling, robotics and more are all coming on-site, and I think we're going to start seeing these trends as the new normal next year. ♦

# KSA VISION 2030: **ON TRACK**



Riyadh Metro, Saudi Arabia



Package 3 of the Riyadh Metro encompassed 67 km of track with 48 km of elevated alignment, 5.5 km of mined tunnel, 22 stations, and nearly 13 km of bored tunnel constructed through one of the world's busiest cities.

Hill International helped drive success on this transformational initiative through our extensive communications and stakeholder engagement approach, supported by the latest information management tools.

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# Reinforcing Infrastructure: Slope Stabilization and Rockfall Protection for Public Safety

**When it comes to mitigating the dangers posed by steep slopes, rockfalls and landslides, the combined expertise of Access Limited and GeoStabilization International (GSI) is crucial.**

Access Limited specializes in steep slope mitigation, leveraging advanced equipment, like the spider excavator, to protect critical infrastructure. GSI is renowned for its landslide repair capabilities, providing rapid response and sustainable solutions to stabilize landscapes impacted by natural disasters.

The affiliated brands have delivered critical stabilization and protection measures across some of the most challenging terrain and infrastructure projects in North America. A few key projects illustrate where their combined efforts have ensured the safety and resilience of vital roadways.

## Historic Flooding at Yellowstone National Park

In June 2022, historic flooding devastated Yellowstone National Park, severely damaging key infrastructure and cutting off access to vital areas. GSI was brought in to help restore the park's roadways, securing two emergency design-build contracts to stabilize slopes and ensure safe passage for both staff and visitors. GSI's innovative solutions and rapid response ultimately earned the project the ENR Mountain States 2023



Access Limited and GeoStabilization International protect infrastructure from the unpredictable forces of nature, like at Yellowstone.

Best Project for Specialty Construction. The project focused on stabilizing a significant cut slope along the Old Gardiner Road Bypass near Mammoth Hot Springs. GSI deployed 20,000 sq ft of soil nails combined with high-tension TECCO Green mesh to reinforce the slope and secure the roadway corridor. This critical stabilization effort was essential for restoring safe access to park staff and tourists, especially during the busy summer season.

At Yellowstone's East Entrance, GSI tackled a second critical project: stabilizing 120 linear ft of roadway shoulder near Middle Creek. Using a combination of continuously grouted hollow bar soil nails, shotcrete, vertical micropiles and riprap, GSI provided immediate and lasting stability. Even in the absence of detailed geotechnical data, GSI relied on innovative back analysis and on-site geotechnical testing to design cost-effective solutions that ensured the park remained open to visitors throughout the repair process. Impressively, the crew completed the emergency repairs in under four months, on time and within budget.

## U.S. 340 Rockfall Mitigation

Along U.S. 340 in West Virginia, Access Limited was tasked with mitigating significant rockfall hazards threatening public safety in the historic Loudoun Heights region of Harper's Ferry. This vital route, which sees over 24,500 vehicles daily, including commuters, truck traffic and tourists, required immediate attention to address unstable rock formations that posed serious risks to travelers. Additionally, the project's complexity was heightened by a trail network and overlook connected to the Appalachian Trail. Collaboration with Depts. of Transportation was crucial because the work required a 22-mile detour affecting traffic in West Virginia, Virginia and Maryland.

Working in collaboration with



Rockfall hazards were mitigated along U.S. 340 in West Virginia by Access Limited Construction. Collaboration among departments of transportation was crucial because the project required a 22-mile detour affecting traffic in West Virginia, Virginia and Maryland.

Triton Construction, Access Limited deployed advanced rockfall mitigation techniques. These included rock scaling, rock bolting and the installation of a draped mesh system. Ground-level rockfall barriers and on-slope attenuator systems were critical in reducing future rockfall events and safely catching debris, enhancing the long-term stability of the slopes.

Despite the expanded scope, the team finished nearly two weeks early, reopening the 1-mile stretch 10 days ahead of schedule. This early completion not only improved safety but also contributed to a reduction of 770 tons of carbon emissions due to less traffic diversion.

## Delivering Resilient Infrastructure Solutions

Access Limited and GeoStabilization International work hand-in-hand to protect infrastructure from the unpredictable forces of nature. Whether addressing steep slope risks or landslide-prone areas, their combined efforts are crucial to safeguarding vital transportation routes across the country. These projects not only highlight their technical expertise but also underscore their ability to deliver rapid, effective solutions in the most challenging environments, ensuring the safety and resilience of critical infrastructure for years to come. ♦

# Transforming Safety in Modern Substation Design

As energy consumption surges due to population growth, the proliferation of data centers and rising electric vehicle (EV) sales, the demand for new and upgraded power substations has become critical. This increased need has resulted in longer lead times for transformers and higher-cost projects, creating significant challenges for utility providers.

## Addressing Transformer Challenges

The growing energy demands introduce complexities, particularly regarding fire hazards linked to transformer installations:

**Asset Protection:** Transformers are valuable assets that face heightened fire risks due to their essential role in power infrastructure. Recent transformer-related fires in substations have led to extensive damage and high repair costs, underscoring the urgent need for robust preventive safety measures.

**Space Constraints:** The expansion or construction of substations often involves multiple transformers in confined spaces, raising fire hazard risks due to their close proximity.

**Aging Infrastructure:** Many substations rely on aging transformers, which are more prone to failures and fire risks. Upgrading these systems is often limited by budget constraints and prolonged lead times.



TruFireWalls protecting a substation transformer.



TruFireWalls installed at a substation.

**Regulatory Compliance:** Evolving safety standards require continuous assessment to ensure installations adhere to current fire safety regulations, which vary by location and infrastructure age.

**Infrastructure Strain and Fire Risks:** Increased demand puts additional strain on existing infrastructure, especially with the integration of renewable energy sources and the rapid growth of electric vehicles. This higher load can lead to greater operational risks, making fire hazard prevention more critical than ever. Strategic planning is essential to mitigate these risks and ensure safe, reliable operations.

## TruFireWall: A Key Solution for Fire Risk Mitigation

TruFireWall is an essential asset for utilities involved in new installations, upgrades or protecting aging infrastructure. Several high-profile fires at substations and data centers in recent years have underscored the significant risks associated with these installations, leading to costly downtime and extensive repairs.

**Evolving Safety Standards:** These incidents have prompted a reassessment of distance regulations between transformers, particularly in older installations. TruFireWall helps reduce the

required space between transformers, enabling more efficient use of available space while maintaining essential fire safety standards.

**Enhanced Planning:** Integrating firewalls into new designs improves safety and helps meet evolving regulatory standards, making them crucial for modern energy infrastructure projects.

**Future-Proofing:** TruFireWall not only addresses today's fire safety concerns but also supports the future expansion of energy infrastructure. As renewable energy integration and smart grid technologies evolve, TruFireWall offers a scalable solution that adapts to modern and future energy demands. Its ability to handle increasing transformer density while maintaining strict safety standards makes it a future-proof investment for utility companies. ♦



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## Helping Cities Achieve Equity With USDOT

By **Veronica O. Davis**, Director, AtkinsRéalis Cities Program

**According to the National League of Cities, almost 86% of Americans live in cities.** As cities across America continue to grow and become more diverse, they still struggle with historic inequities concerning transportation and access. To help them overcome these challenges, the U.S. Dept. of Transportation (USDOT) is working to resolve barriers to equity within federal policies and programs.

Last fall, USDOT issued version 2 of Promising Practices for Meaningful Public Involvement in Transportation Decision-Making. The document clarifies and expands the use of federal funds to facilitate engagement with hard-to-reach populations. Federal funds can now be used to provide childcare and food at a public meeting, compensate community members for their time, and hire community-based organizations as consultants.

In addition, on August 14, USDOT's Advisory Committee on Transportation Equity (ACTE) released its final recommendations report that provides a framework to improve transportation in cities by revamping existing programs, removing barriers for implementing federally funded projects and providing guidance for measuring equity. These recommendations include creating a public database of community-based organizations and advocacy groups to increase collaboration between cities and allow city transportation agencies to share public notices with a wider audience. Not to mention, the National Environmental Policy Act process should be adjusted to include alternative analysis of all modes of transportation.

As an ACTE member who represents cities, I see promise and opportunities for communities, big and small, to benefit by having their voices heard during the transportation planning and design process.

### Making it Easier to Apply for Federal Grants

Since the passing of the Bipartisan Infrastructure Law (BIL) in November 2021, we have seen unprecedented amounts of funding from the federal government for transit, roads, bridges, railroads, bicycle infrastructure, sidewalks and other transportation improvements. New programs, such as Reconnecting Communities and Neighbor Access and Equity (NAE), have specifically targeted money to go toward improving areas of persistent poverty that have been disconnected by highway infrastructure.

While cities can submit competitive applications to receive funding, structural, administrative and policy challenges to applying and implementation still exist. Applications are often complicated, and one small clerical error can lead to an application being rejected. In addition, the same level of effort is required to manage a \$5-million grant as a \$50-million grant.

To address these issues, ACTE recommends:

- Streamlining the application process to allow communities to apply for more than one applicable grant for their project.
- Using plain language and simplifying the forms to reduce clerical errors.
- Simplifying grant administration processes to match the level of effort required for the project.
- Expanding technical assistance to smaller communities so they can access funding and have capacity to manage the grant.

### Inclusive Transportation Includes Transit

Across the nation, transit agencies are facing funding challenges. Some lack a dedicated long-term funding source, and others are struggling to maintain operations. It doesn't help that capital funding requirements to obtain federal funding are



The Central 70 Project spans along I-70 between I-25 and Chambers Rd. with a goal to accommodate increased traffic volume, prepare for future growth and improve motorist and pedestrian safety. AtkinsRéalis provided owner's representation and program management services.

more rigorous for transit projects than their highway counterparts. To improve equity in public transit, ACTE recommends:

- **Cool Bus Shelters:** These structures help protect transit users from the elements and include shaded areas to create a more comfortable temperature as people wait. Among the 16 largest transit agencies, less than 20% of bus stops have cool bus shelters. Providing funding for these shelters and mobility hubs can better connect bikes, taxis, shared rides, transit and parking.
- **80/20 Highway/Transit Split:** Currently, only 20% of the Highway Trust Fund can be used for transit projects. Abandoning the current 80/20 split and adopting a mode-neutral approach would help increase funding.
- **Operational Costs:** Increased funding can help transit agencies subsidize operational costs and better maintain operations.

### Metrics – Are We Getting Desired Results?

To better understand how well cities are implementing equity throughout their communities, ACTE's report highlights several metrics, many of which include tracking to ensure USDOT is achieving the objectives of its programs.

These metrics include, but are not

limited to:

- **BIL:** What is the impact of this investment on areas of persistent poverty in urban and rural areas? How has the investment improved safety and economic development, including increasing the revenues of small businesses? Has the community been able to enjoy the improvements, or have they been displaced?

- **Small Cities:** How many are submitting for discretionary grants and successful? The goal is to encourage USDOT to be proactive in reaching out to smaller communities that may not have the internal infrastructure to submit and manage a federal grant.

- **Looking Back:** By auditing past infrastructure projects, we can examine the impact on displaced communities, including the number of residents affected and the price of land versus the value of land. This also includes evaluating fair market value for the long-term impacts of the National Interstate and Defense Highways Act of 1956.

For example, USDOT acknowledges

the impact the development of the Interstate Highway System had on destroying communities within cities during the 20th century. This hits home for me, as my mother's childhood house was taken in the 1960s so Interstate 10 (I-10) could be expanded to run through East Baton Rouge, La. There have been some efforts to quantify that impact within specific cities. However, there has not been a national analysis looking at long-term effects.

### We Can Help

As part of our commitment to engineering a better future for our planet and its people, we are helping cities secure federal funding for their transportation projects. During the last three years, we have managed grant applications for eight agency partners who received more than \$3.2 billion in competitive federal grant funding, enabling their projects to move forward. Some of these grants included:

- \$60.3 million in NAE funds for the city of Miami for the I-395 Underdeck

Open Space and Heritage Trail project.

- \$105.2 million in NAE funds for the city of Austin to construct a 5.3-acre cap over Interstate 35 (I-35), which will include multimodal facilities and community amenities.

- \$23 million in Safe Streets and Roads for All (SS4A) funds for the City of Boulder to implement low-cost, high-impact safety countermeasures on its roadway network.

In addition, we are collaborating with cities to enhance equity through inclusive transportation projects. In Colorado, we partnered with the Colorado Dept. of Transportation to complete the \$1.2-billion Central 70 Project, which reconnected disadvantaged communities in north Denver by prioritizing equity and environmental justice along with people-focused infrastructure improvements.

By working together to implement policy changes and make transportation networks more inclusive, we can help improve equity within communities for generations to come. ♦

## Communication and Coordination Drive Success on the Riyadh Metro

**Transformational infrastructure projects and programs are becoming the norm around the world as populations demand and governments deliver more sustainable, equitable and holistic solutions to transit, healthcare and education needs.** This trend is on display in the Kingdom of Saudi Arabia (KSA) where the bold Vision 2030 plan aims to reimagine infrastructure across multiple sectors—as is the need for robust project communications and coordination.

For example, KSA's Riyadh Metro, one of the biggest engineering projects in the world, is on track to become the largest public transport system in the Middle East. The Royal Commission for Riyadh City (RCRC), the owner and operator of the system, recently announced the completion of Package 3 of the system, which will fulfill the demands of KSA's growing population,

reduce traffic congestion in the metropolis, and improve air quality for residents.

For Package 3, communications and coordination have been key to the project's success. Hill International, as part of the RAMPED joint venture, liaised and coordinated among multiple stakeholders and team members to keep decision-makers informed and up to date on the program. This included working directly with the \$27-billion program's design-build team and RCRC.

The Riyadh Metro also leveraged innovation to drive progress. This encompassed the use of the Aconex Program Management Information System (PMIS) to capture and disseminate data from across the program into stakeholder PMIS dashboards.

Waleed Abdel-Fattah, Hill International president, Middle East and North Africa, said of the achievements of the project: "Mega-programs



Waleed Abdel-Fattah, Hill International President, Middle East and North Africa

and projects demand a management approach backed by good data and good communications. Teams that understand the exponentiality of building billion-dollar-plus, alternative delivery programs with multiple stakeholders are needed around the world to help owners realize these programs on time and within budget." ♦