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# A Culture of Innovation

Once-in-a-lifetime opportunities are happening in rail

By Kate Gawlik

**A trip to Europe makes one envious of well-functioning and easily accessible rail systems.** The Infrastructure Investment and Jobs Act is playing a role in making rail transportation easier in the United States with grants via the Federal-State Partnership for Intercity Passenger Rail Grant Program.

The scope of these projects cannot be achieved without rail market partners across several disciplines. Industry leaders offer insights in the following interviews.

## How has funding from the infrastructure bill changed the rail market?



**Corey Hill, National Rail Practice Lead, Kimley-Horn:** The infrastructure bill is investing over \$100 billion in rail, a

historical amount. In addition to more funding, new programs like the Federal Railroad Administration's (FRA's) Corridor Identification and Development (Corridor ID) program and the Federal-State Partnership for Intercity Passenger Rail Program are changing the way rail corridor programs are developed and implemented.

Over 65 new corridors are in development across the country due to these new programs. At the same time, commuter rail agencies across the country are reexamining their markets

and service patterns to respond to travel pattern shifts caused by COVID-19. That's resulting in a significant increase in projects for our firm, as well as the entire market.



**Thomas J. Spearing III, Senior Vice President, Rail and Transit Sector Leader, Hill International:** We are absolutely seeing an increase

in project opportunities. The funding from the infrastructure bill is a once-in-a-lifetime opportunity, not only for transit advocates and AEC firms but, more importantly, for the riding public. These new programs and projects will create a lasting positive impact for communities across the country.

We are proud to be part of this amazing infrastructure moment, knowing first and foremost the need for equity in infrastructure. This requires a laser focus on being customer-centric and promoting ridership convenience, while at the same time championing knowledge transfer on projects in a meaningful mentor-protégé partnership—to both the transit agencies we work for and the firms we work with.

Together, these partnerships are creating amazing opportunities, such as innovative Transit Oriented Developments (TOD). With an emphasis on not only commercial development but also affordable housing opportunities, TOD

programs will benefit future generations.

## How is your company changing the rail market?



**Simon D'Cruz, AVP, Senior Project Director, Rail and Transit, AtkinsRéalis:** AtkinsRéalis understands the

importance for new rail projects to have a systems-thinking approach that focuses on delivering the technical complexity as well as the socioeconomic values and sustainability goals set by the project. Too often, these objectives are put aside in the rush to build, so embedding a systems-thinking and system-integration culture at the heart of the project from conception through operations maintenance will help ensure all goals are realized.

**Hill:** We are one of the pioneers in changing the approach to rail corridor development. We helped Virginia and now several other states take a service planning approach to rail corridor development that seeks to minimize capital investment versus previous approaches that looked at infrastructure first and service planning second. Our approach was one of the models that contributed to the formation of FRA's Corridor ID program, which is now driving the future of rail corridor development.

Opinions expressed are those of the advertisers.



**Jason Howden, Chief Innovation Officer,**

**Revizto:** Revizto is a powerful technology purpose-built for

de-risking (time and cost) large-scale infrastructure projects, especially linear infrastructure like roads and rail. Our integrated collaboration platform streamlines and brings all stakeholders together in a shared data environment where design and construction information (2D and 3D) coexist seamlessly. Revizto was designed to eliminate information bottlenecks that can lead to potential costly omissions and errors typically found with traditional tools and methodologies during the delivery of infrastructure projects.

**Spearing:** We're breaking ground faster, smarter and better than ever before—with greater access and equity for our communities, new tools and technology to build more sustainably,

and even more consideration for the cities and neighborhoods we serve.

For our clients, Hill's rail and transit leaders bring decades of experience. This includes industry leaders in FTA grant requirements and compliance, risk management and program oversight, as well as hands-on experience in inspection, QA/QC, systems integration and other areas.

**What is your greatest success during the last five years?**


**Hill:** Our greatest success is helping our clients succeed in developing a vision that can be implemented. We have the unique ability to see all aspects of delivering rail projects from beginning to end, including highly complex programs that involve many interrelated projects like Transforming Rail in Virginia and UTA FrontRunner. We have become a leader in supporting complex public-private transactions between multiple operators sharing a rail corridor because

we understand how to optimize rail corridors so all operators in the corridor can be willing partners at the table.

**Howden:** There are several large-scale linear infrastructure projects currently being delivered in Australia with Revizto where our technology has had a direct impact on improving the overall efficiency (time and cost) of the project. Notable projects include Cross River Rail in Queensland and the New Zealand government's digital transformation of state-owned rail enterprise KiwiRail.

**Spearing:** Our focus is project management, which means we are free of any potential design or contracting conflicts of interest. Our sole purpose is protecting our clients' needs, managing any potential risks, and delivering projects on time and within budget.

Major projects include the implementation of major urban transit



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systems aimed at improving mobility and reducing congestion in cities. Also, numerous infrastructure upgrade and expansion projects have focused on modernizing aging infrastructure, increasing capacity and incorporating innovative technologies.

### What is the greatest challenge you face in this market?

**Hill:** The greatest challenge is change. Using new approaches and tools to develop rail projects after working the same way for decades is a difficult ask for many, but proven successes like Virginia and UTA are helping take the fear out of the market and reduce the risk of approaching the work differently.

**Howden:** The greatest challenge is increasing the awareness and adoption of new technologies, like Revizto, in an industry that prides itself on traditional tools and processes that often have not changed in more than 50 years. Once project teams have been made aware of opportunities and efficiencies that can be gained from adopting a powerful purpose-built collaboration technology like Revizto, they don't go back to the old ways of working. Instead, they become our greatest champions for change, innovation and a future construction industry that is more digitally connected and efficient.

**Spearing:** The greatest challenge that we face is having the resources to deliver the unprecedented number of capital programs across the country. In the past, consulting firms competed for resources with other consulting firms. Today, in addition to competing with other consulting firms, consulting firms actually compete with transit agencies and operating railroads. Having received federal, state and local funding, these agencies and operating railroads are now looking to build their own internal infrastructure organizations and are becoming more self-sufficient. What makes this more unique is that transit agencies are hiring key resources from other transit agencies that have also received the same funding. ♦

## Cross-Discipline Collaboration Software Powers Rail Upgrades

**Without a tool for collaboration,** complex rail infrastructure projects can be challenging to deliver on time and on budget. KiwiRail is in the midst of an exciting transformation on the back of a government investment of more than \$4 billion since 2017.

The stakeholders supporting the delivery of KiwiRail projects are now connected with Revizto's platform, eliminating technical challenges and disjointed information. Derek Jannings, digital engineering program manager, says, "Using Revizto as our collaboration environment on projects enables us to reduce risks and errors during construction substantially. Because we work in a live rail environment, when we get access to the rail corridor to conduct infrastructure construction, we must complete the work within the allocated time frames.

This means things must be coordinated. With Revizto, everything went according to plan."

The scale of KiwiRail's Wiri to Quay Park (W2QP) project means there are several work streams at different stages in the project's life cycle, and the tight completion time frames means there is construction and design work happening simultaneously. KiwiRail receives monthly as-built models and imports them into Revizto to coordinate with the proposed design models. This enables a next level of coordination, further reducing the likelihood of issues needing to be resolved onsite.

Scan the QR code to read the full case study and learn more about Revizto. ♦



## MSE Walls Support Florida High-Speed Rail

**In 2023, Phase 2 of the Brightline railway project was completed.** This connected central and south Florida with high-speed rail infrastructure, marking a significant milestone in Florida's transportation landscape. This phase included a segment between Orlando and Cocoa, which operates at speeds up to 125 mph—the lower limit of the high-speed rail standard. As with the entire Brightline system to date, one notable engineering feature along this 35-mile segment is the extensive use of mechanically stabilized earth (MSE) retaining walls to elevate the track over other infrastructure and difficult terrain.

The Reinforced Earth Company (RECo) supplied dozens of retaining walls totaling more than 450,000 sq ft for the segment between Orlando and Cocoa. In addition to conven-

tional square-panel faced walls, about 3.5 miles of lower-height walls were installed using RECo's Piano Wall system. This system uses full-height facing panels and is very economical for installation over long distances. Both wall systems are crucial components of the railway's infrastructure, providing stability and structural integrity and ensuring the new passenger rail system will reliably and comfortably move passengers quickly through the state. ♦



New Reinforced Earth walls were used for bridge abutments and embankments along SR 528 near Orlando International Airport for the Brightline railway project.



# A DIFFERENT TRAIN OF THOUGHT.

**"If everyone is thinking alike, then somebody isn't thinking."**

**George S. Patton**

In the rail industry, system integration typically takes place toward the end of a project's lifecycle. But our perspective is different. System integration, and most importantly railway integration, bringing together technology, people, program and processes to form a single system, is where it all starts, literally, at the beginning of a project.

The benefit? More time to pivot and make a change before putting trains on tracks.

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## Partnering for Rail Expansion

**The Federal-State Partnership for Intercity Passenger Rail Grant Program**—part of the Infrastructure Investment and Jobs Act—announced in December 2023 the funding of 10 passenger rail projects in nine states. Completing these projects with a focus on schedule, budget, safety and quality will take the right partners.

Valtir Rentals is poised and ready to support the passenger rail expansion projects as they come online by offering flexible rental options to accommodate the various phases of the construction project. Water-filled barricades with perimeter fencing panels can be used around the construction sites to delineate pedestrian walkways and traffic from the construction work zones.

Options include the Yodock 2001 or

2001MB barricade, a plastic, water-filled longitudinal channelizing device (LCD) that attaches end-to-end using a plastic coupler. There are additional construction site safety possibilities, too; Valtir Rentals is the sole manufacturer and the No. 1 supplier of the Yodock brand water-filled barrier and barricade. There also is SiteGuide, an ADA-compliant, plastic, water-filled LCD that is MASH-16 TL-3 tested. Individual units can articulate 270 degrees while connected to create inside and outside corners.

The grants for some of the proposed projects are at historic levels. The standards by which the projects are completed should hit another level too, with the right products, in every application. Whether it is traffic control,

perimeter fencing, temporary sign support, work zone barricades or pedestrian channelization, Valtir Rentals has an ideal product for each rail project. Head to [www.valtir.com](http://www.valtir.com) to discover the next generation of construction site safety products. ♦



Valtir Rentals' 2001MB Barricades were used in the Phoenix Passenger Rail Project.

PHOTO: COURTESY OF VALTIR



## All Modes of Travel Benefit From Transit-Oriented Development

By Sami Soufi, PE., Vice President, Hill International

**Transit-Oriented Development (TOD) has emerged as a pivotal strategy** in urban planning and transportation infrastructure, revolutionizing the way cities approach growth. At its heart, TOD fosters sustainable communities centered around transit hubs. In the past decade, cities and regions have allocated substantial funds to infrastructure improvements, and developers are recognizing the value of TOD. For TOD projects to succeed, collaboration, innovation and delivery are key.

**Collaborate:** For program managers overseeing TOD projects, several factors must be addressed, including: collaboration among stakeholders; transit connectivity that includes accessibility and efficiency; mixed-use development close to transit hubs; affordable housing; responsive community engagement; equity in transit

**Innovate:** Key challenges faced by TOD include zoning and land use poli-

cies, public-private partnerships, last-mile connectivity, affordable housing initiatives, transit infrastructure investments, community engagement/participation and TOD design principles. A robust management approach can help TODs achieve their objectives while minimizing cost and schedule risks.

These objectives include accessibility and visibility offered by transit hubs that attract businesses, investors and residents. This creates a concentration of development around transit hubs, fostering a dense, diverse community that supports local businesses and creates job opportunities.

Moreover, TOD presents a solution to urban sprawl. By promoting compact, mixed-use development patterns, TOD encourages walkability and cycling. The reduction in vehicular emissions and conservation of green spaces contribute to improved air quality and environ-

mental sustainability.

**Deliver:** Since 2015, the Federal Transit Administration (FTA) TOD program has provided more than \$104 million to help communities plan for new transit opportunities. Additionally, FTA recently announced that \$13.4 million in competitive grants are available through the FY23 Pilot Program for TOD planning. Recognizing the connection between accessible transportation and affordable housing, the FTA is encouraging TOD in areas where communities are trying to preserve, protect and increase the supply of affordable housing. As a result, FY23 applications with a substantial focus on affordable housing may receive up to 100% federal support.

Overall, the statistics indicate a promising future for TODs in the U.S., with increasing investment, project timely completion and positive impact on mobility and sustainability. ♦

# Collaborate

Hill's Program and Project Managers play an important role in helping our clients achieve equitable outcomes for diverse communities, providing customer-centric solutions at the forefront of every project where we are engaged.



# Innovate

Together with our clients, we are breaking ground faster, smarter, and better than ever before—providing greater access and equity. This includes implementing new tools and technologies to promote knowledge transfer for building more sustainable transit-oriented development opportunities, including workforce development and affordable housing for the cities and neighborhoods that we serve.

# Deliver

Hill's foundation includes a culture of managing project risk, with effective mitigation and opportunity planning. This includes the selection of the right project delivery method, combined with a robust project management information system (PMIS) that focuses on schedule, cost, and quality with real-time dashboard reporting systems.

We view our transit clients and colleagues as an integrated team and a vital resource to positively impact the lives of future generations.

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## Railway Integration

Worldwide, rail projects are struggling to deliver technology solutions on time and on budget, and directors of major projects are reporting system integration as a primary cause. Railway integration, which connects people, programs, processes and technology from the beginning of a rail project, is a potential solution. Starting railway integration during conception and embedding it into the project culture ensures collaborative decision-making to design and construct a high-performance railway on time and on budget.

Railway integration has four components:

**Technical integration** connects different subsystems from different entities on physical and technical levels. Understanding how, when and why they must be connected is imperative.

**People integration** ensures a railway is functional for those delivering it, operators, maintenance teams and

passengers. To achieve this, consider why people use it.

**Program integration** coordinates contractors' scopes and schedules so the right information is provided at the right time to the right parties. It's vital technical integration occurs before information is shared.

**Process integration** ensures systems engineering is delivered correctly through a framework that values contractors' processes to improve collaboration and coordination. Therefore, systems engineering can proceed in a controlled manner encouraging innovation and helping the project finish on time and on budget.

Each component must be understood, resourced, planned and budgeted from the beginning to achieve successful railway integration. Using a systems-thinking approach to railway integration helps define the project challenge, not just in terms of civil

engineering and rail systems construction, but also the ability to integrate different elements to form a single railway system.

Delivering an integrated, high-performance railway starts on day one with partners like AtkinsRéalis. Visit [www.atkinsrealis.com](http://www.atkinsrealis.com) for details. ♦



Collaborative decision-making starts early when railway integration is embedded into the project culture.

PHOTO: COURTESY OF ATKINSREALIS

## Transforming Rail With Innovative Solutions

As highways, airports and seaports face growing congestion, rail is playing an important role in the nation's transportation network. Firms are responding with innovative, client-focused solutions. Kimley-Horn, an Engineering News-Record top-ranked firm, tackles complex rail projects nationwide, including the Transforming Rail in Virginia Program, Caltrain's Corridor Crossings Strategy, Utah's FrontRunner Forward Plan and Central Florida's Sunshine Corridor Program.

**Beyond Design First, Ask Questions Later:** Engineering approaches that solely fulfill an agency's initial requests without fully understanding the ultimate objective and implications often leave agencies dissatisfied. Kimley-Horn prioritizes collaboration, understanding project goals and identifying challenges before crafting solutions. This extends to ensuring successful buy-in on solutions from

agencies, stakeholders, municipalities, communities and operators.

**A Vision for Enhanced Commuter Experience:** The FrontRunner Forward Plan developed by Kimley-Horn, the Utah Transit Authority (UTA), and Utah DOT, leverages rail assets in groundbreaking ways. This comprehensive plan outlines a vision for investment in the corridor to expand services, increase reliability and improve travel time, offering commuters an enhanced passenger experience. To realize the first phase of this vision, Kimley-Horn helped prepare documentation for a Core Capacity grant from the Federal Transit Administration which will help fund nine new segments of double tracking in the corridor. Kimley-Horn's role as project manager also meant overseeing seven different multidisciplinary teams. By organizing information from these teams and subcontractors into one cohesive plan, Kimley-Horn was able

to recommend precise track locations to increase the frequency of the service.

**Delivering More Than Engineering:** Successful firms adopt an "owner's mindset," partnering with agencies and treating their success as their own. More agencies are seeing the value in hiring consultants who can navigate all project phases—from grant applications and planning to final design. Visit [Kimley-Horn.com](http://Kimley-Horn.com) to learn more about innovative rail project delivery. ♦



Kimley-Horn helped secure a \$691-million core capacity grant to fund nine new segments of double tracking for Utah's FrontRunner Forward Program.

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