

## Transit Supplier Directory

A COMPREHENSIVE LISTING OF COMPANIES  
INVOLVED IN THE TRANSIT INDUSTRY. PAGE 32

New Technologies Aid  
Agencies Against Slippery Rail  
PAGE 12

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## 2023 Transit Safety & Security REPORT

In 2023, the transit industry remains  
focused on continuous improvement  
in its safety and security efforts.

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## MASS TRANSIT

# TRANSIT SUPPLIER DIRECTORY

ANNUAL REPORT

## 32

### Transit Supplier Directory

A COMPREHENSIVE LISTING OF COMPANIES  
INVOLVED IN THE TRANSIT INDUSTRY.

On the cover: 85406217 | Martin Barraud | Getty Images



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[MassTransitmag.com/53079887](https://www.masstransitmag.com/53079887)

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# MASS TRANSIT

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# The big stories of 2023

A year-end look at the top stories of the year.

I've been a transportation journalist for more than two decades and one practice I enjoy doing at the end of each year is look back at all the stories produced to see what themes or other common threads can be spotted. The value of time and hindsight can help shape a clear picture that may not have been obvious when these stories were first published.

The transit industry is one of connections – both geographic and personal. It is no surprise that our 40 Under 40 content package captures readers' attention year after year. The day we release the 40 Under 40 list, our web traffic and social media engagement spikes. This consistent interest in the program tells us the industry is curious about who the up and coming thought leaders are and what their ideas could mean for the future of transit.

While personnel announcements rarely break into the top 100 articles of the year, the social media engagement these People on the Move updates bring to *Mass Transit's* LinkedIn page is impressive. This tells us we are also an industry of supporters and cheerleaders and that should be celebrated.

Another theme that has continued in 2023 was the interest in rail articles. Rail line openings, including Los Angeles County Metropolitan Transportation Authority's Regional Connector, Honolulu's Skyline and Brightline's extension to Orlando all landed in the top articles of the year. Big rail car orders were also high on the list, which we believe is linked to the Federal Transit Administration awarding the first round of grants through its Rail Vehicle Replacement Program in 2023. The program supports projects to replace aging vehicles on subway systems, commuter rail and light-rail systems.

On the bus side of the industry, stories highlighting facility upgrades were popular, such as Washington Metropolitan Area Transit Authority's groundbreaking for its new Bladensburg Garage and the awarding of a contract by the Metropolitan Transportation Authority for the design of the Jamaica Bus Depot and parking lot in the New York City borough of Queens. Additional bus related stories to pique readers' attention include the growing interest in minibuses as supply chain issues persist and Toronto Transit Commission and Amalgamated Transit Union Local 113 working together to unveil their bus-of-the-future design concepts to improve security for bus operators.

Stories covering changes in businesses that support the transit industry also became top news. Proterra's declaration of bankruptcy and the subsequent selling of its three divisions, Transdev's acquisition of First Transit and Nova Bus's planned exit from the U.S. market all were among the top 100 stories.

As we prepare to move into 2024, thank you from the *Mass Transit* team for allowing us into your inbox every day and your mailbox periodically throughout the year. It is our pleasure to report on this industry and we wish you continued success in the new year.

“

The transit industry is one of connections – both geographic and personal.

”

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*Mischa Wanek-Libman*

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# People & Places



Amtrak was joined by Hudson Tunnel Project's sponsor, Gateway Development Commission, USDOT Secretary Pete Buttigieg, New York Gov. Kathy Hochul, New Jersey Gov. Phil Murphy and other officials to celebrate the start of construction of the Hudson Tunnel project.

Photo: Amtrak

## Construction begins on Hudson River Tunnel project

**Construction has started** on the Hudson Tunnel Project. The project is one of the largest infrastructure projects in U.S. history and a key component of the Gateway Program, an effort to revitalize the Northeast Corridor by improving the rail infrastructure along a 10-mile segment. The scope of the Hudson Tunnel Project includes the construction of a two-track Hudson River rail tunnel between Bergen Palisades in New Jersey and New York Penn Station in Manhattan and rehabilitation of the existing North River Tunnel, which sustained significant damage during Superstorm Sandy. The project's purpose and need is to both maintain the level of service provided by Amtrak and New Jersey Transit through the existing North River Tunnel and improve overall reliability, resiliency and redundancy of the rail conduit between New Jersey and New York.

[MassTransitmag.com/53077337](https://www.masstransitmag.com/53077337)

## Santa Clara VTA purchases \$76 million TBM for BART Silicon Valley Phase II Project

► The Santa Clara Valley Transportation Authority has purchased the Tunnel Boring Machine (TBM) that will dig the tunnel for the Bay Area Rapid Transit Silicon Valley Phase II Project. The tunnel will contain five miles of train tracks in both directions and three station platforms to provide safe and efficient travel separated from congested roadways. The \$76 million TBM will be one of the largest machines ever to be built and will remove soil deep from underground forming the tunnel



Santa Clara VTA has purchased a \$76 million TBM for BSVII Project.

Photo: Santa Clara VTA

while keeping the street above intact. The front of the TBM includes a cutter-head, which rotates to dig through soil and rock. The material will then be removed through a conveyor system within the machine.

[MassTransitmag.com/53077435](https://www.masstransitmag.com/53077435)



MTA to begin roll out of new R211A subway cars in 2024

Photo: MTA

## MTA to begin roll out of new R211A subway cars in 2024

► The Metropolitan Transportation Authority (MTA) will take the first step in its plan to improve safety and accessibility to riders by phasing in five R211 subway cars on the Staten Island Railway in early 2024. The cars are part of a 535-car order, which includes 440 R211A standard cars with state-of-the-art amenities, 75 Staten Island Railway cars and 20 cars with the open gangway feature. The R211 cars are a critical part of the MTA's ongoing modernization efforts and feature 58-inch-wide door openings that are eight inches wider than standard door openings on existing cars – designed to speed up boarding and reduce the amount of time trains sit in stations.

[MassTransitmag.com/53075614](https://www.masstransitmag.com/53075614)

## Sound Transit enters pre-revenue phase on East Link light-rail extension project

► Sound Transit has entered the pre-revenue phase on the East Link light-rail extension project. The phase includes training for operators and maintenance staff and continued testing to ensure stations, tracks, utilities and vehicles work together as expected in preparation for the start of service in spring 2024. Light-rail vehicles will run frequently between the South Bellevue and Redmond Technology stations, including at street crossings in the Bel-Red area.

[MassTransitmag.com/53076928](https://www.masstransitmag.com/53076928)

## PEOPLE IN THE NEWS

### Chattanooga Area Regional Transportation Authority (ARTA)



CARTA has named **Charles Frazier** as the agency's CEO, effective January 2024. Frazier currently

serves as the COO of the Jacksonville Transit Authority and previously served as the CEO of the Rock Region Metro transit system in Little Rock, Ark., and as the deputy director of the Palm Tran system in West Palm Beach, Fla. Frazier will be responsible for optimizing operational effectiveness, harnessing technological innovation and delivering on the mobility needs of CARTA community in support of the continued economic development of the Chattanooga region.

[MassTransitmag.com/53078548](http://MassTransitmag.com/53078548)

### Hillsborough Transit Authority (HART)



**Scott Drainville** has been named HART CEO after serving in the position on an interim basis. HART

hired Drainville in 2018 as deputy chief of maintenance, overseeing the authority's core business in maintenance, facilities, inventory control and the communications/electronics divisions and responsible for directing the overall funding, environmental, design, permitting, construction and project close-out of capital construction projects. He would go on to serve as chief of maintenance and transportation. Before coming to HART, Drainville served as the director of transportation and maintenance for CitiBus in Lubbock, Texas.

[MassTransitmag.com/53077594](http://MassTransitmag.com/53077594)

### Massachusetts Department of Transportation (MassDOT)



Massachusetts Gov. Maura T. Healey has appointed **Monica Tibbits-Nutt** as secretary of MassDOT.

Tibbits-Nutt had been serving as acting secretary since mid-September and was previously undersecretary for transportation with the department. She also served on the MassDOT Board of Directors and as the vice chair of the Fiscal Management and Control Board that oversaw the Massachusetts Bay Transportation Authority from 2015-2021. Tibbits-Nutt's areas of specialty are regional and transportation planning, urban design and transit equity.

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### FTA awards \$110.6 million construction grant for Madison's East-West BRT project

► The Federal Transit Administration (FTA) has awarded a \$110.6 million construction grant to the city of Madison, Wis., for the new East-West Bus Rapid Transit (BRT) project. The grant, funded by the Infrastructure Investment and Jobs Act, will be used to build a 15-mile route that will provide fast, frequent, clean and reliable service for the University of Wisconsin, the Madison Central Business District and other important destinations in Madison. New bus stations will provide level boarding and shelters enhanced with real-time bus arrival information and security cameras. The 60-foot zero-emission, battery-electric vehicles will run on 9.5 miles of dedicated lanes and receive transit signal priority to speed travelers on their way.

[MassTransitmag.com/53078575](http://MassTransitmag.com/53078575)

### Miami-Dade County rolls out Better Bus Network

► Miami-Dade County has rolled out its Better Bus Network. The Better Bus Network is part of Phase II of Miami-Dade County's reimagining of MetroBus service, which aims to create better connections and an improved rider experience across Miami-Dade County. Phase I of the reimagining of MetroBus service deployed in July. Phase II includes newly added connections to the MetroConnect (formerly GO Connect) on-demand service, 27 routes with schedule or routing adjustments and two new routes connecting Miami Beach with key destinations. These changes will increase the number of frequent routes from five to 19.

[MassTransitmag.com/53078005](http://MassTransitmag.com/53078005)

### GRTC launches microtransit pilot program

► The Greater Richmond Transit Company (GRTC) has launched the



GRTC has launched the first microtransit pilot program in the Richmond area.

Photo: GRTC

Richmond area's first microtransit zone. GRTC's LINK Microtransit is a pilot program that will eventually include five separate microtransit zones. The first zone is heavily integrated with the existing GRTC network, providing direct access to GRTC Route 1, 2 A/B/C, 14 and 91. LINK is fare-free and there is no cap on the number of rides a passenger can take. The zone will be operating from 5 a.m. to 8 p.m. Monday through Friday.

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## MORE NEWS AT A GLANCE

- Volvo Battery Solutions LLC won the bid to acquire Proterra Inc's Powered business line.  
[MassTransitmag.com/53077997](http://MassTransitmag.com/53077997)
- Phoenix Motor, Inc., was the winning bidder to acquire the Proterra Transit business line while CSI GP I LLC, CSI Prodigy Holdco LP, CSI Prodigy Colvestment LP and CSI PRTA Co-Investment LP has been selected as the winning bidder to acquire the Proterra Energy business line.  
[MassTransitmag.com/53078245](http://MassTransitmag.com/53078245)
- The California Department of Transportation signed an \$80 million contract with Stadler Rail, Inc., to deliver the first zero-emission, hydrogen intercity passenger trains in North America.  
[MassTransitmag.com/53075286](http://MassTransitmag.com/53075286)
- Siemens is investing \$150 million in a manufacturing plant in Dallas-Fort Worth, Texas, to help power American data centers and critical infrastructure.  
[MassTransitmag.com/53077341](http://MassTransitmag.com/53077341)
- Nassau County extends contract with Transdev for the operations, maintenance and management of NICE Bus service.  
[MassTransitmag.com/53078122](http://MassTransitmag.com/53078122)

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# Unlock the full potential of your zero-emission fleet

**Transit is the ultimate equalizer.** It gives people dignity and access to opportunities. When my family came to the United States, transit enabled my parents to provide for us. I remember taking the bus for \$0.75 to my first job at McDonald's. I've come a long way since then but transit helped me get here. Based on my experience working with customers to plan and deploy hundreds of chargers for transit agencies across North America, here are answers to three common questions about how to get the most out of electrification for your agency.

## What key criteria should transit agencies prioritize when evaluating electrification solutions?

It may seem obvious, but one of the most important criteria is selecting an experienced partner that has a proven, successful history with your bus OEM. Surprisingly, a charging vendor's experience and staffing levels are often overlooked. If a transit agency expects to deploy hundreds of buses and chargers in the depot and on route, it must select a partner with experience installing charging at scale. Strong service level agreements (SLAs) are also vital. Few charging companies have experience with multiple large-scale deployments and a full team of transit electrification experts. Choose one that does.

Transit is a lifeline for communities. If a bus is down, people can't get to work, the grocery store or doctor's appointments. Choose a vendor with the experience and staff to ensure your community members can get where they need to go. Don't be a guinea pig — put these criteria high on your list.

## How can agencies help employees adjust to sustainable transportation?

Maintenance workers and drivers see the biggest impact from switching to electric; their experience is overwhelmingly positive. We're seeing maintenance



**The ChargePoint Express Plus DC fast station in use.**

ChargePoint

workers trade in their wrenches for multimeters and computers. Not everyone is excited about the transition initially, but soon you can't tear them away from electric vehicles (EVs) and their colleagues can't wait to go electric too. Quality of life improves when going from breathing diesel fumes to working in a clean environment, and when stations are made with field-replaceable units, turnaround time for repairs is a lot quicker too.

Drivers also appreciate the quiet, responsive operation of e-buses. It can take time to adjust but they have a better work experience and improve on-time route performance. Being able to merge into traffic more quickly thanks to the instant acceleration of electric buses can save significant time. These seconds add up, reducing stress about staying on schedule.

## Where have you seen agencies struggle when transitioning to zero-emission buses?

A common problem is issuing separate RFPs for EV charging hardware, charge management software, telematics, yard management and other systems, without

considering their interoperability. Every company will indicate that its software is interoperable, but achieving seamless integration between these components is complex. You don't want to struggle with your electrification project because your charging stations, software and telematics data aren't synchronized. EVs run routes differently based on driver behavior or route characteristics, potentially getting 20 percent more or less range. Without integrated telematics, you're just guessing about what's going on. And you can't provide on-time service based on a guess.

While agencies may want to procure from multiple vendors to diversify their approach and reduce risk, it can be less risky to deal with one partner instead. With an integrated solution, agencies can count on a suite of products designed to work together and one clear contact to resolve problems. Choosing an integrated solution can increase your likelihood of success.

We also see agencies getting distracted by technologies that are not ready for the market. For example, vehicle-to-grid technology may prove useful in a few years, but today, managed charging — scheduling charging for off-peak times and sharing power across stations — remains the most proven approach to success. Implementing managed charging now will give agencies a foundation in electrification to lean on when other technologies are ready.

Finally, early and active communication with your utility is critical. DC fast charging is an amazing tool to keep transit buses charged and ready. That said, the technology is complex and site make-ready is a major component; agencies should be prepared for that. It's never too soon to start planning. Let us help you start or continue a successful electrification journey: get in touch at [chargepoint.solutions/masstransit](https://chargepoint.solutions/masstransit).

### About the author



**Valery Kang** is director of E-Bus, North America at ChargePoint.

# East Coast Transit Agencies Perfecting Methods of Dealing with **Pectin on the Rails**

Metro-North Railroad, NJ Transit and SEPTA have recently started using new equipment to manage slippery rail conditions.

BY BRANDON LEWIS,  
ASSOCIATE EDITOR







# O

n the East Coast of the U.S., fall can be the most beautiful time of year. As residents put away their summer gear and dig out their snow shovels for the winter season, leaves change colors and fall off the trees.

For transit agencies in this region, falling leaves can be a problem for their railways. Leaves have a slippery substance on them called pectin and, when crushed beneath the wheels of a passing train, said pectin can present a hazard to safety and operations by reducing friction between the wheels and rail. This condition can result in flat spots on wheels, higher maintenance costs, unsafe braking and even derailments.

Three East Coast transit agencies — Metropolitan Transportation Authority's (MTA) Metro-North Railroad in New York, New Jersey Transit (NJ Transit) in New Jersey and Southeastern Pennsylvania Transportation Authority (SEPTA) in Philadelphia, Pa. — recently started using new equipment to clean the tracks of pectin to ensure trains continue operating safely and reliably.

### **Metro-North Railroad laser train**

The MTA's Metro-North Railroad uses its laser train to clean the tracks. The laser train was introduced by Long Island Rail Road in 2017 before Metro-North began using the train on a trial basis in 2022. During the pilot, Metro-North Railroad safely cleaned more than 12,000 miles of track with the laser train, which resulted in a 40 percent reduction in slip-slide events.

The train operates on the Hudson Line, the Harlem Line and the New Haven Line and can travel at speeds up to 60 mph. Two three-kilowatt lasers are mounted on each side of the train to put down an approximate 1.2-inch cleaning band.

Chad Scholes, MTA Metro-North's Railroad's executive director of continuous improvement, explains why the laser train is a better solution for cleaning the pectin off the rails as opposed to a regular power wash, which MTA Metro-North Railroad calls a waterworld.

"We're able to use the laser train even past freezing conditions when we have to actually sit the waterworld down," Scholes said. "Therefore, we're able to operate it over greater environmental conditions and we're able to cover a lot more ground with it and do the entire network in a single day, whereas with waterworld, we're only operating at about 12 mph."

Metro-North Railroad usually starts using the laser train in mid-October. The authority uses the I Love New York website to track conditions of leaves throughout the state. Scholes notes the authority also has access back to 15 years of slippery condition data to determine when it's

MTA's laser train.

Photo: MTA





**NJ Transit's AquaTrack train.**

Photo: NJ Transit

time to start using the laser train.

“We’re trying to get ahead of the conditions from actually building up on the rail,” Scholes explained. “We don’t want to wait until the leaves actually start to fall. We want to start a little bit before then so that we can keep up with the level of leaf debris and pectin that comes down on top of the rail.”

Metro-North Railroad received the Rail Safety Gold Award in 2023 from the American Public Transportation Association for developing a laser train capable of operating 60 mph. In May, the

## Cleaning rail

MTA Board approved a contract to allow Metro-North Railroad to outfit a second train with lasers to help keep tracks clear.

### NJ Transit AquaTrack

The AquaTrack system has been in use by NJ Transit since October 2003. It consists of two 250-horsepower diesel-engine units mounted on a flat car with an operator control cab. Two pressure-pump units dispense water up to 20,000 pounds-per-square-inch directly to the top of the rail.

The original AquaTrack operates primarily on the Morris & Essex Lines and Montclair-Boonton Line, washing the rails twice a day Monday through Friday. On weekends, the Pascack Valley and Main/Bergen County lines are typically covered. In 2016, NJ Transit unveiled its second AquaTrack unit, which allows the cleaning process to maintain a larger coverage area in helping to prevent delays caused by slippery rail.

“Each line has specific and or unique challenges due to the terrain and falling leaves during the fall season,” said Kyalo

Mulumba, NJ Transit senior public information officer. “To effectively remove leaves and the oily residue left behind on the rail, the AquaTrack will operate through specific areas at a reduced or lesser than normal speed to be more effective and make two passes daily. The operating speed of the AquaTrack, the length of track, rail of the line and weather play a major role on the time taken to clear a track.”

Mulumba adds one pass per tour during the morning and night or through an area by the AquaTrack does enhance traction between wheels and the rail resulting in a good travel experience and does limit delays by a significant amount.

### SEPTA's three trains

SEPTA utilizes three trains to combat slippery rail season. Each train consists of a locomotive, a tanker car filled with water that carries all the components of a pressure washer system and a cab car. The trains also feature two spinner nozzles on each side of the trucks of the flat car. The

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trains run six days a week, Sunday through Saturday overnight between 9 p.m. and 5 a.m. when service is not operating.

Rich Mann, assistant chief office for railroad operations at SEPTA, explains the agency does not perform slippery rail cleaning on the Amtrak-owned Northeast Corridor, but the railroad sees an ancillary benefit from SEPTA's use of the technique on its Harrisburg Line.

SEPTA starts using a gel mixture in December as the weather gets colder. The authority lays the gel mixture down in front of the trains along with sand that helps prevent derailment of the trains. The tanker car is filled with 500 pounds of the gel.

"Our mechanics will listen to the engineer and he'll tell us when to turn the gel on and turn it off," said Assistant COO Rail Equipment Engineering and Maintenance at SEPTA Dennis McAnulla, who oversees all regional rail and metro rail vehicle maintenance, as well as rail engineering. "Typically, that's five catenary structures prior to the station. When he's

telling us to turn that gel on, he's also reducing his speed down to five mph."

Mann explains the importance of the technique in allowing a train to both stop at a station and then leave.

"A lot of times when that engineer goes to take power leaving the station, you can't get any traction effort on the wheels because there's slip-slide so you lose time there," said Mann. "You lose time coming in because you're breaking a little further away and you're breaking a little lighter application than you normally would so you can make that stop."

Mann noted most delays are six to 10 minutes. Precipitation can exacerbate slippery rail conditions and, in situations where heavy rain causes more slippage, delays could be up to 20 minutes.

While slippery rails have been an issue during the fall season for a long time, McAnulla explained the technology the trains have in them are similar to the ones he used when he first started in the industry more than three decades ago.



One of SEPTA's three trains that clean the rails to combat slip-slide.

Photo: SEPTA

"I started my career in maintenance as a mechanic at Wayne Junction. In the mid-1990s, we built our first wash train. We had a Chevy Suburban, utility vehicle that was a hi-rail vehicle and we put a gel tub in the back of that. One of the other things that we did back then is we built a rail scrubber, which had six motors on it and it was a hi-rail vehicle that had to be towed behind a locomotive and still, today, that scrubber is used on the Norristown High Speed Line to clean [its] rails in slippery rail season," McAnulla said. [L](#)



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# Digital Transformation Drives Innovation in Transportation

Digital transformation has less to do with a destination and more about how organizations navigate, respond and evolve to challenges faced over time.

BY STEVE COCKERELL, CONTRIBUTOR



MRT Jakarta Phase 2A,  
Jakarta, Indonesia  
Photo: Bentley Systems

**U**nrelenting population growth, rapid urbanization, government investment in new road and rail networks, evolving social and environmental priorities as a result of the urgent need to act on the effects of climate change—all these situations put the transportation industry at the heart of the global disruptions that we are experiencing.

The truth is that building better infrastructure and building infrastructure better really do have the potential to change the

quality of life for the world's population. The evidence was plain to see on a recent business trip to Jakarta, Indonesia. Currently the largest city in southeast Asia, its greater metropolitan area is already home to more than 11 million people, making it the second most populated urban area on planet earth.

Air pollution has long plagued the greater Jakarta area, which is now ranked among the 10 most polluted cities globally. While manufacturing and coal-fired power plants have contributed to the poor air quality in the past, its significant population density causes massive congestion on its roads, with government research showing vehicle emissions account for around 44 percent of air pollution.

While vehicle use is already regulated and there are talks of random vehicle emission tests, the Indonesian government has clearly recognized that sustainable transportation must exist beyond the greater Jakarta area.

Whether looking at PT MRT Jakarta, a past winner in the Bentley Systems *Going Digital* awards Rail and Transit category, who worked on MRT Jakarta Phase 2a to extend the city’s mass rapid transit system, or 2023 Finalist in the Roads and Highways category PT Waskita Karya, who worked to relocate the country’s capital to Nusantara, Borneo, one thing is clear: Bentley technology, through visionary users, is helping to deliver infrastructure that will truly change the lives of millions of Indonesians.

These challenges, however, are not peculiar to southeast Asia. Owner-operators and supply chains around the world are constantly battling with aging assets, tighter budgets, skilled labor shortages, increased project complexity and their contribution to decarbonizing the transportation industry. Now more than ever before, it is critical everyone in the industry grasp the opportunity that going digital provides.

### The future is happening now

To succeed in increasing the levels of service, safety and reliability that the traveling public today both demands and deserves, organizations need timely access to data that they can trust. In addition, they need innovative solutions that enable data-centric digital workflows to streamline activities, deliver the insight needed to make better decisions and realize better business outcomes.

Due to the massive amounts of data generated by technologies—including cloud services, the Internet of Things (IoT), artificial intelligence and machine learning—recent years have seen a surge of interest in how digital twins can transform the way infrastructure is planned, developed, built and operated.

Born at NASA in the 1960s as a “living model” of the Apollo mission, digital twins are neither new, nor the stuff of science fiction. In transportation, infrastructure digital twins are realistic, dynamic digital representations of physical assets, processes or systems in the built or natural environment.

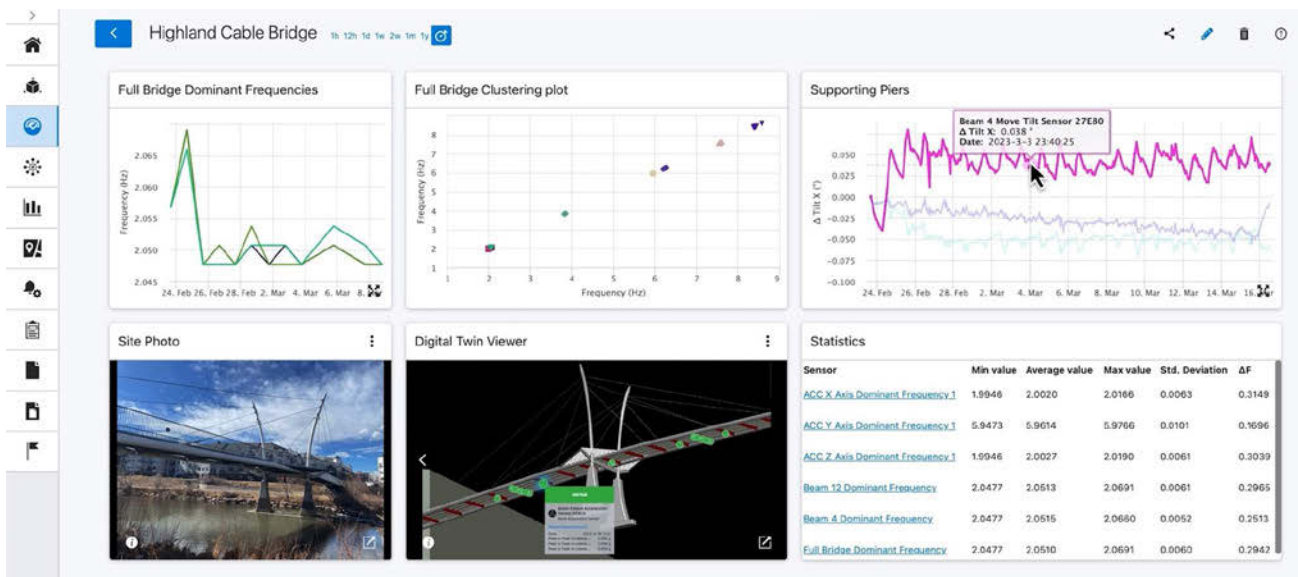
Continuously updated in near-real time from sources that include surveys, inspections and IoT-connected sensors, digital twins represent state, condition, location and performance. They provide real-time views of critical information in the built world to better inform stakeholders with insights that improve the way that we envision, construct, operate and maintain these systems.

The ability to visualize assets, check status, optimize performance and predict failure through digital twin technologies provides the visibility and insight needed to let data drive better decisions. It is the data in digital twins that are the foundation for infrastructure intelligence.

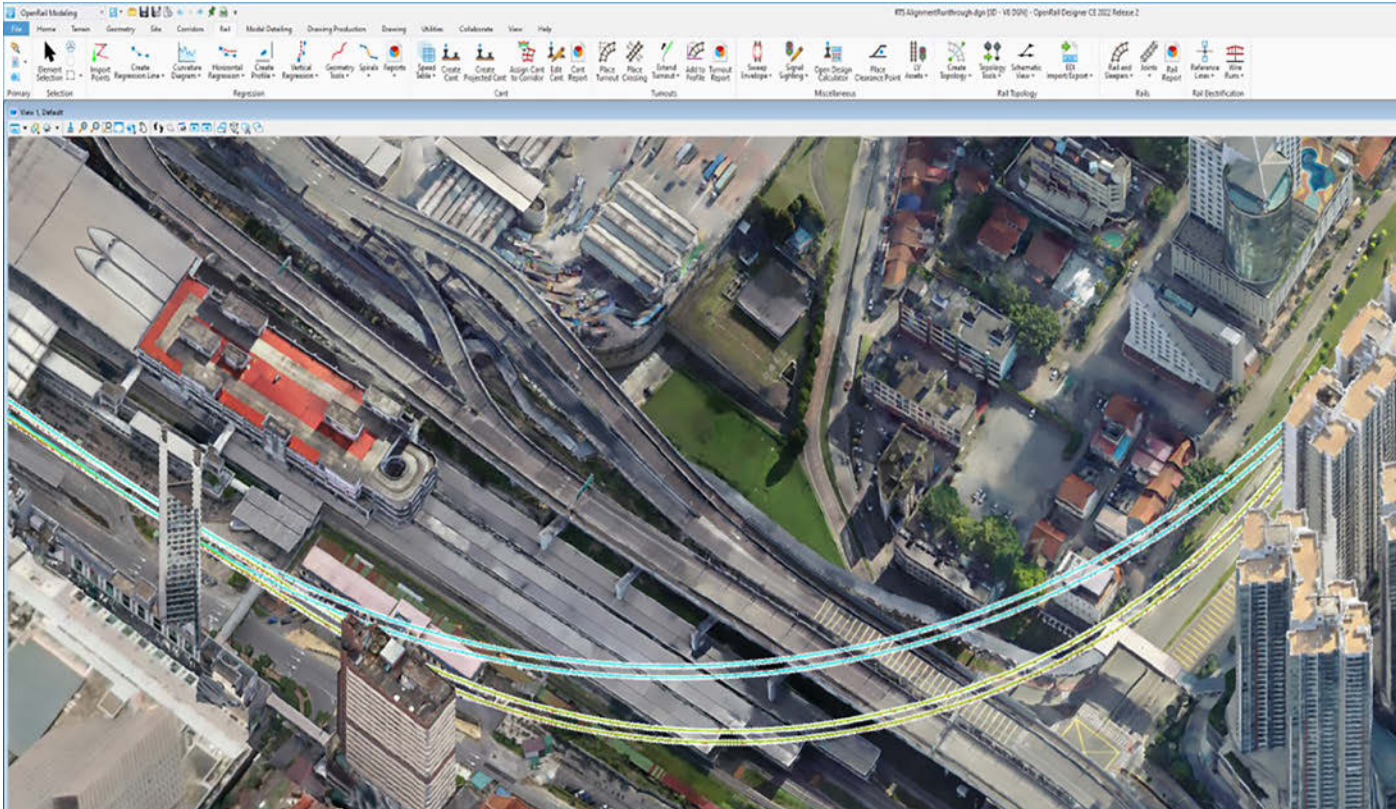
Take Denver, Colo., which puts walkable neighborhoods at the heart of its complete transportation system,

**Highland Bridge, Denver, Colo.**

Image: Stantec







**Johor Bahru–Singapore Rapid Transit System (RTS Link), Singapore and Malaysia.**

Image: AECOM

lessening the need for more carbon-emitting forms of travel and promoting more active living. The availability of pedestrian bridges is crucial. If shut for repairs, pedestrians can find themselves unable to access critical services and recreational activities.

With 630 bridges to keep safe and passable, Courtney Shepard, bridge asset manager for the City and County of Denver, has her hands full regularly inspecting and maintaining these critical links. In parallel, John Barone, infrastructure technology lead with Stantec, was thinking of ways the engineering firm could leverage technology to deliver new levels of service and value to its clients.

Having worked together previously, Shepard and Barone decided to embrace the opportunity that going digital provided, feeling the lessons learned could be scaled to become the basis for a digital twin that encompassed an array of assets. Both wanted

to go beyond simply visualizing an area’s real-world context to include IoT-connected devices that produce continual data into real-world conditions.

They quickly determined Highland Bridge would be the ideal starting point for gathering data that would help operations and maintenance teams improve decision-making. Connecting pedestrians in the Highland neighborhood to downtown Denver, the span crosses Interstate 25, rail lines and the South Platte River.

Shepard and her team were most concerned about bridge vibrations so Stantec installed sensors with accelerometers and tilt meters to capture the dynamic movement of the structure. With sensors secured into place using clamps and adhesive, Bentley’s iTwin® IoT was used to bring together sensor data in one location.

Stantec’s sensors now provide daily data on Highland Bridge’s performance and can send alerts to the team if movement exceeds

specific parameters. This digital twin means that at any given time, the City and County of Denver knows the current state of the bridge, helping them target specific maintenance and avoid the need for extended shutdowns.

With so much data being captured, created and stored on transportation assets, often in siloed systems and multiple formats, it is imperative organizations have an efficient way of making it accessible to all stakeholders. Also critical is the people viewing the data need to understand its context so it can be analyzed to provide insight and inform decision-making.

**Redefining the new normal**

While recognizing that digital twins are still relatively new, the evidence shows they are already transforming the way that our users work. However, at Bentley, we believe digital transformation has less to do with a destination and more about how organizations

**More online**

See how Minnesota DOT and Collins Engineers used AI and digital twins to monitor Robert Street Bridge. [MassTransitMag.com/53079548](https://www.masstransitmag.com/53079548)

navigate, respond and evolve to challenges faced over time.

It is particularly important in transportation infrastructure, given that projects often span many years and continue to grow in complexity. Throughout the planning, design and construction of a road, railway, bridge or tunnel, projects require effective collaboration among specialist disciplines and engagement with internal and external stakeholders, including members of the public.

With building information modeling standards and workflows now part of nearly everyone's new normal, we still see the continued reliance on common data environments (CDEs). CDEs that span the entire lifecycle provide a single view of the truth that can be used in critical decision-making, as well as are a fundamental part of why we introduced Bentley Infrastructure Cloud.

Unifying our industry-leading design, build and operate capabilities, and now powered by iTwin, Bentley Infrastructure Cloud helps teams unlock the full potential of their data. Providing visibility and access to critical project and asset information, it blends file and document-driven workflows to enhance collaboration, as well as provide support for many CAD/industry formats, including IFC.

Bentley Infrastructure Cloud also targets the removal of communication breakdowns on design and build projects, providing direct access to document and deliverables management, design and construction reviews, clash and design validation, 4D/5D/6D costing and performance monitoring and field integration—all via cloud services.

This integrated approach means design models can be used as the foundation for construction models, allowing teams to collaborate iteratively on the same data. A good example is AtkinsRéalis' *Going Digital* Award submission

that features the I-70 Floyd Hill to Veterans Memorial Tunnels project. This Colorado Department of Transportation project provides roadway improvements to enhance safety and reduce crashes on an eight-mile section of I-70, which is prone to severe congestion and bottlenecks.

The team used digital twins to improve visibility of challenges faced by the many disciplines and stakeholders involved. Bentley's open applications helped to facilitate collaborative modeling while ProjectWise saved \$1.2 million on the project and helped manage more than 1,000 file sheets, 5,500 hours in coordination time and 97 percent of effort developing and publishing digital twins for review. AtkinsRéalis was also able to convey design intent, foster community integration and mitigate environmental and social impact.

An example from the Rail and Transit category is the Johor Bahru–Singapore Rapid Transit System from AECOM. Connecting Johor Bahru in Malaysia with Woodlands, Singapore, this project spans two countries and features stations on both sides of the border, each with customs, immigration and quarantine facilities. When complete, the line will reduce vehicular use of the Johor-Singapore Causeway, providing greener transportation for around 10,000 passengers per hour.

To facilitate collaborative workflows and establish optimal project delivery, AECOM adopted a digital twin approach, leveraging Bentley's integrated digital modeling and analysis applications. The team developed a reality mesh from drone-captured images, accelerating survey and processing fivefold. They also established a CDE using ProjectWise to optimize planning, design and construction while Bentley's open applications helped automate workflows, ensure structural

integrity and save 50 percent in drafting time.

### Driving innovation by going digital in transportation

There are many commonalities across these innovative projects. Principally though—whether in the hands of inspectors of bridges, designers of new transit systems or the maintainers of existing road networks—it is clear that, as an industry, we must take advantage of the huge opportunity digital technology and transformation offers to ensure our future success.

Integral to this success is visibility and timely access to trusted data through digital twins—particularly due to their ability to drive data-based decisions that help infrastructure professionals deliver different and improved outcomes. Enabling increased efficiency, enhanced quality and reduced risk, the data in digital twins is the foundation of infrastructure intelligence, helping deliver the safety, service and sustainability levels that are critical to our industry's future success.

While we are still in the relatively early stages of the disruption that digital twins will cause in our industry, they are changing the way that our users are working today. No one can be sure where they will take us, but I am convinced that digital twins with AI—as a means of providing intelligent, data-driven solutions to the industry's most complex problems—will build on existing momentum with increasing velocity, ultimately becoming a key tool in the working lives of engineers the world over.

The future is very definitely happening now. With their potential to redefine our new normal, digital twins will empower the next generation of industry professionals to build better infrastructure, and, in their hands, help build infrastructure better, so that the quality of life for millions of people is changed forever. [L](#)

## More online

Bentley Systems iTwin Ventures' acquisition of Blyncoy® will provide DOTs with deeper asset analytics. [MassTransitMag.com/53079548](https://www.masstransitmag.com/53079548)



### About the author

**Steve Cockerell** is the industry marketing director for transportation at Bentley Systems.





# Audio System Trends in Transit Stations

Public address and emergency communications are paramount to passenger movement, experience and safety but mass transit stations are not built with acoustics in mind, which can create significant challenges for AV integrators.

BY CHARLIE KOWALCZYK, CONTRIBUTOR

**T**ravelers are inundated with a wide range of sights and sounds as they pass through any busy transportation hub: Arrival, boarding and departure announcements, safety and security information, marketing and services messaging and the droning murmur of fellow travelers moving from point A to point B — it's a flood of input for the senses at every step. Transportation managers are challenged to cut through clutter, capture attention and deliver actionable and, perhaps, critical safety information to a widespread, quickly-moving public.

Public address and emergency communications, primarily driven by audio technologies, are paramount to passenger movement, experience and safety. However, mass transit stations are not built with acoustics in mind, which can create significant challenges for audiovisual (AV) integrators. High ceilings and reflective surfaces abound and the background noise floor is high given all the passengers. Overhead announcements are a mix of pre-recorded messages and live pages sharing platform

information or travel updates, such as late arrival details.

Depending on the size and nature of the transit station, a variety of individuals may need to make pages in the facility, including station agents, operations personnel, security staff, customs and immigration officers and emergency response teams. Each has unique requirements for paging and varying levels of urgency, making paging priorities a critical aspect of any new mass communication installation. Most announcements last anywhere from a few seconds to one to two minutes. Another important consideration for the paging system is the allowable length of a pre-recorded message, especially if multi-





**Moynihan Train Hall project.**

Photo: AtlasIED

“

Think of the adage “loud and clear” — “loud” refers to audibility while “clear” refers to intelligibility.

Both are critical to providing proper instructions in an emergency to building occupants.

lingual versions are required. Therefore, public address systems must be easy to use and scalable as needed.

Knowing when to upgrade an existing paging system is complicated. Any change to the AV infrastructure requires a lot of planning, meetings with stakeholders and running the old system in tandem until cutover. System and code requirements for mass communications are increasingly complex, which can cause confusion when choosing a new paging or emergency communication system to install. There are several factors to consider when upgrading or installing a new paging system.

### Intelligibility and acoustic modeling

Most transportation hubs have strict requirements for audibility and intelligibility per local or national fire codes such as NFPA 72. Think of the adage “loud and clear” — “loud” refers to audibility while “clear” refers to intelligibility. Both are critical to providing proper instructions in an emergency to building occupants.

Speech intelligibility is the percentage of speech a listener can understand. Intelligibility is affected by the volume level and quality of the speech signal, the type and level of background noise, room reverberation and more. It’s an essential consideration for AV systems in transportation hubs.

The larger the room or space, the more critical speech intelligibility becomes. If travelers can’t hear or understand announcements and instructions, their ability to learn and retain information is compromised. Intelligibility plays a significant role in information retention. If someone is in a reverberant space like a train station and all they hear is muffled speech, they’ll quickly give up trying to understand what’s being communicated and are likely to experience listener fatigue. The higher the speech intelligibility, the easier it is for listeners to retain information and understand what actions, if any, they need to take.

When designing AV systems for transportation hubs, consulting an acoustician or acoustical engineer and utilizing acoustic modeling software are recommended to ensure adequate coverage, audibility and intelligibility. Even in a retrofit or upgrade where the plan is to use the loudspeakers currently installed, acoustically modeling the space is still worthwhile (and sometimes required by code to meet certain thresholds of intelligibility), as is evaluating the possible degradation of the oldest loudspeakers.

### Emergency communications

The security and safety of staff and passengers is the primary goal of all transit operators, making emergency communications critical for mass transit environments. People don’t behave normally in times of crisis so implementing systems that are easy to use is vital. The fewer steps needed to initiate emergency procedures, the better the chances of getting everyone to safety.

Life safety systems have stringent requirements for operation. For example, under NFPA 72, “public mode signaling” must provide and maintain a sound pressure level of 15 decibels above ambient sound levels. Authorities Having Jurisdiction may require passive or active line detectors on speaker runs to ensure the cable’s viability in case of fire or other emergencies.

Reviewing the capabilities of potential emergency communication system upgrades is an important consideration during the selection process.

### Improved customer experiences

Listener fatigue is a genuine concern for transportation hub operators. Not only can prolonged exposure to audio lead to physical and psychological discomfort, but mental exhaustion, as well. If an important announcement or emergency communication is shared, affected travelers may not be actively listening or respond appropriately. For example, when trains or subways arrive at stations, the squeal of the brakes can reach more than 100dB(A) on the platform. According to the Centers for Disease Control, hearing loss is possible in this environment in as little as 15 minutes of exposure.

Transit operators must consider passenger satisfaction as a factor in their communications system selection. The frequency of pre-recorded message playback should also be considered — it may not be necessary to play a constant stream of messages because passengers may block them out. Instead, consider a paging system that can also play background music, as studies have shown that certain types of music can have a calming effect.

Audio can play a crucial role in enhancing wayfinding and passenger flow in mass transit stations by providing clear and timely information to travelers, such as train arrivals and departures, platform changes, service disruptions and emergency instructions. Directional sound systems can guide passengers to various areas within the station and provide auditory cues for navigating ticketing areas, platforms, exits and other essential locations. Additionally, manual or pre-recorded audio cues can manage queues effectively by instructing passengers to maintain order, move forward or wait for their turn in specific areas.

### Automation

Paging and mass communication systems are becoming increasingly sophisticated. When an emergency is triggered, the paging system can automatically broadcast a pre-defined message to the entire transportation hub or pre-selected zones,



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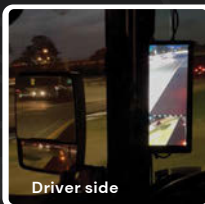


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**Emergency Communication**

depending on the nature of the emergency. Additionally, automation reduces the risk of human error during high-stress situations.

Automated messages help simplify operations in other ways. Many transit hubs broadcast warnings about detecting suspicious behavior or unattended luggage on a regular cadence. Scheduling messages of this nature frees up operations staff to focus on other matters.

**Integration with other systems**

Many transit facilities have separate systems based on function, such as a standalone life safety system entirely separate from the paging system, each with its own cabling. An economy of scale can be gained by integrating the systems or by having a single system that can perform multiple functions while typically being more cost-effective, easier to install and maintain.

Passenger information display systems can also be integrated with the paging system to share information. Some paging systems can create text-to-speech strings based on information received from outside systems, such as transit operators, track numbers and terminals.

**Unifying audio communications with digital signage**

Whether for routine or emergency announcements, audio broadcasts can be augmented by digital signage and visual reinforcement. For example, code requirements for fire safety require visual flashers of a certain brightness but flashers don't provide information about the emergency itself. Passengers also have different learning methods and information retention levels so visual reinforcement can help a broader swath of people who may struggle with audio directives. Digital signage, visual displays and flashers can also aid with standards compliance, such as the Americans with Disabilities Act.

**Final thoughts**

Every passenger and staff deserves the clearest sound possible and intelligibility is especially critical in transportation hubs. When designing AV systems for transportation hubs — especially public address and emergency communication systems — consulting an acoustician or acoustical engineer and utilizing acoustic modeling software are recommended to ensure adequate coverage, audibility and intelligibility. Transit operators also need to look past the system requirements for ways to make staff and passengers' lives easier, whether through automation, playing background music, decreasing audio fatigue or integrating the audio with other systems for improved efficiency. Anything that helps reduce travel-related stress will be looked upon favorably by everyone who passes through the doors. **L**



**About the author**

Charles Kowalczyk is the domestic sales operations manager for AtlasIED.



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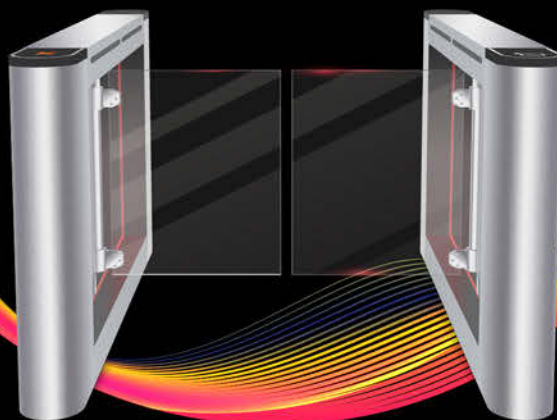
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2023

# Transit Safety & Security Report



**The transit industry remains focused on continuous improvement in its safety and security efforts through initiatives that focus on a mix of technology implementation, community outreach and updated policies.**

**BY MISCHA WANKE-LIBMAN, EDITOR IN CHIEF**



Customers continue their steady return to transit systems throughout North America and as ridership numbers increase, the spotlight has grown brighter on how systems can be made safer for riders and employees. Partnerships with local entities, including law enforcement and community groups, advanced technology and new policies at the state and federal levels all support the work individual agencies are doing to ensure their systems remain a safe environment for all.

In California, a new state law will require the top 10 transit operators to collect and publish data on street harassment incidents to inform their individual agency responses to rider safety concerns. The bill, SB 434, will task Mineta Transportation Institute at San Jose State University with developing a survey the agencies can use to collect uniform data. The survey is required to be ready by Dec. 31, 2023, and the top 10 agencies in the state have until Dec. 31, 2024, to collect the data and publish it.

According to the bill's lead author, State Sen. Dave Min (D-37), the law emphasizes outreach initiatives, targeting specific groups such as women, non-English speakers, members of the LGBTQ+ community and riders with disabilities. Multiple studies cited in the law have determined these groups face a higher risk of street harassment.

"The research is clear: Women, people of color and individuals from LGBTQIA+ community experience disproportionate levels of verbal and physical harassment while riding public transit," noted Michael Pimentel, executive director of the California Transit Association. "California's transit agencies are committed to addressing this unfortunate truth through enhanced engagement with their riders and through the advancement of new evidence-based solutions. We see SB 434 as a central strategy in this work and as a critical step to ensuring the safety of all riders and welcoming our communities back to our systems."

Moving to a more local level, boards of directors, including those at New Jersey Transit (NJ Transit) and TriMet, have taken steps in the past year to empower their agencies to suspend or ban offenders from using transit in their jurisdictions under certain circumstances, such as assaults on operators or passengers, while also preserving avenues to appeal these potential suspensions or bans.

TriMet's amended code expands the types of offenses that can result in long-term exclusions, including those that stretch from six months to a lifetime ban. Felonies were included under the scope of the previous long-term exclusion policy, but attempted felonies and Class A misdemeanors—the most serious category, which includes fourth-degree assault and some bias crimes—were not. These types of crimes are now eligible for longer exclusions under the amended code.

NJ Transit adopted regulations in July 2023 that established a procedure by which the agency is able to administratively suspend ridership privileges for individuals who assault transit employees. The regulations create progressive sanctions, with the length of the suspension increasing with each ensuing offense and provide due process to individuals facing a suspension. The rules also set procedures for the creation of a Ridership Appeal Board, when necessary, to review initial determinations made by NJ Transit. The regulations are supported by legislation signed into law in January 2022 that enables NJ Transit and other carriers to suspend or prohibit individuals who commit assaults against employees.

Moving to the federal level, the Federal Transit Administration (FTA) recently issued two Notices of Proposed Rulemaking (NPRM) pertaining to transit safety. In a proposal issued at the end of October, FTA would update the Public Transportation Safety Certification Training Program regulation that would build upon existing training requirements for safety professionals in rail transit agencies and ensures the training curriculum is more responsive to evolving industry needs. According to FTA, the proposed changes in the NPRM would expand refresher training requirements for mandatory participants and allow for greater flexibility in the curriculum to address changing industry training needs. The NPRM would also streamline administrative requirements to help ensure individuals who serve in designated roles are enrolled in the program and complete training requirements on time.

A second NPRM issued in mid-November would give State Safety Oversight Agencies (SSOAs) the right to inspect rail transit agencies without warning, require agencies to collect metrics and data that better explain rail transit safety and require SSOAs to create an inspection program to decrease risk.

Following issuance of the SSOA proposal, FTA Administrator Nuria Fernandez said, "We intend to make transit one of the safest forms of surface transportation, even safer."

Beyond proposed rules changes, FTA is looking to research efforts to bolster transit safety initiatives throughout the U.S. In late August, FTA awarded a \$500,000 research grant to the University of South Florida to identify safety risks for transit workers and riders and determine the most effective strategies to minimize them. The grant award is the first phase of FTA's Transit Worker and Rider Safety Best Practices initiative. Af-



**L.A. Metro Ambassador Jose Orlando speaks with a rider at Willowbrook/Rosa Parks Station.**

Photo: Mey Lyn Mitteen/L.A. Metro

## Measuring the impact of L.A. Metro's Ambassador Program

63% of L.A. Metro survey respondents report transit ambassadors makes them feel safer.

61% of L.A. Metro survey respondents want to see more transit ambassadors on the system.

54% of L.A. Metro survey respondents report transit ambassadors make them want to use transit more.

ter identifying best practices, a second phase of research will provide technical and financial support to the transit industry and supportive organizations to pursue innovative approaches to reduce safety hazards affecting workers, riders and transit systems.

### Technology boosting security

On the security side of the equation, transit systems have taken steps to improve lighting at stations, equip employees and security personnel with additional communication tools and piloted components, including operator barrier doors and new fare gates to bolster security of systems.

In March 2023, the Washington Metropolitan Area Transit Authority (WMATA) Metro Transit Police Department (MTPD) launched its Body-Worn Camera Program, which will rollout body-worn cameras in stages to MTPD officers, sergeants and lieutenants who are trained in the equipment. The body-worn cameras will supplement the more than 20,000 cameras WMATA has throughout the

rail, bus and paratransit system to further strengthen public safety and security efforts.

A new MTPD policy was established to ensure recordings, investigations and retention of records are conducted in accordance with best practices. The MTPD's Community Services Bureau also began working to ensure customers are educated and informed about the deployment, protocols and use of body-worn cameras.

Another new technology WMATA has deployed that has had a measurable impact on the system is new fare gates. In August, the authority reported the higher, stronger fare gates, which feature an L-shaped door panel, had reduced fare evasion by 70 percent at the stations where the gates were installed.

Moving to Missouri, the Bi-State Development Agency began its Secure Platform Plan for St. Louis Metro's MetroLink stations. The plan is described as a multi-tiered strategy to grow ridership and deliver a stronger transit experience by creating centralized, highly secure customer entrances at all 38 MetroLink stations. The planned upgrades at the stations include welded-wire fencing, roto-gates and swing gates and closed-circuit cameras, among other technology deployed to promote a more secure system.

Additionally, St. Louis Metro began a pilot program in May where metal detectors started being rotated at MetroLink stations in St. Louis, Mo., St. Louis County, Mo., and St. Clair County, Ill. Riders who wish to enter a station where a metal detector is installed will need to walk through them to

gain access to the station. The pilot program will be in partnership with St. Louis Metro Transit's three law enforcement partners – the St. Louis County Police Department, St. Louis Metropolitan Police Department and the St. Clair County Police Department. Police officers will assist in staffing the metal detector checkpoints.

### Partnerships and outreach efforts

The responsibility of improving safety on transit systems is an easier lift with community partners who can bring fresh perspectives and needed expertise to a challenge that will benefit transit systems and the communities in which they operate.

Several transit agencies have worked to increase the number of transit police employed on their systems or partnered with local law enforcement entities to increase uniformed personnel presence. On systems operating in Atlanta, Chicago and San Francisco, this increased presence has been credited with a reduction in transit crime statistics.

In Vancouver, British Columbia, the Metro Vancouver Transit Police launched its Community Safety Officer (CSO) program in 2023. The program introduced a new category of frontline transit police employees who will supplement patrol police officers. CSOs assist with tasks, including community engagement, transit safety education, collection of evidence, perimeter security at police incidents, crowd control, fare enforcement and support at

major events and emergencies, along with other responsibilities. In November 2023, the first 10 CSOs completed their 17-week training and began patrolling the transit system followed shortly after by the second class of CSOs who began their training.

"It's exciting to see the Community Safety Officers program come to fruition. Their status as peace officers will empower CSOs to enforce transit bylaws and the transit conduct and safety regulations, bringing a new level of safety to the transit system," said Metro Vancouver Transit Police Constable Amanda Steed.

In addition to law enforcement partners, transit agencies have started ambassador programs in increasing numbers, with successful programs being launched in Seattle, San Francisco, Philadelphia, Indianapolis, Cleveland, Calgary, Alberta and the Toronto, Ontario, region.

Los Angeles County Metropolitan Transportation Authority (L.A. Metro), through Strive Well-Being and RMI, began a pilot ambassador program in September 2022. L.A. Metro says the program introduced a public safety element of uniformed, unarmed visible presence while providing care-based, in-person assistance to riders, with the primary objective of enhancing the overall customer experience. Since its launch, L.A. Metro says the program has "proven to be an integral part of [L.A.] Metro's broader public safety network."

A recent survey found the program has been effective in achieving its objectives, with 61 percent of respondents saying they want to see more ambassadors on L.A. Metro's system and 54 percent stating the ambassadors make them want to ride L.A. Metro more.

The L.A. Metro Board of Directors voted in October to make the ambassador program permanent and will transition its management to an in-house model during the next 12 months.

"In the first year of service, the pilot Transit Ambassador Program has seen significant achievements and successful outcomes," L.A. Metro staff wrote in a report supporting the transition of the program in-house. "This innovative program exceeded its established objectives, demonstrating its capacity to positively impact public safety and enhance the experience of our Metro riders and employees." **L**



**WMATA's 55-inch fare gates installed at Fort Totten Station.**

Photo: WMATA



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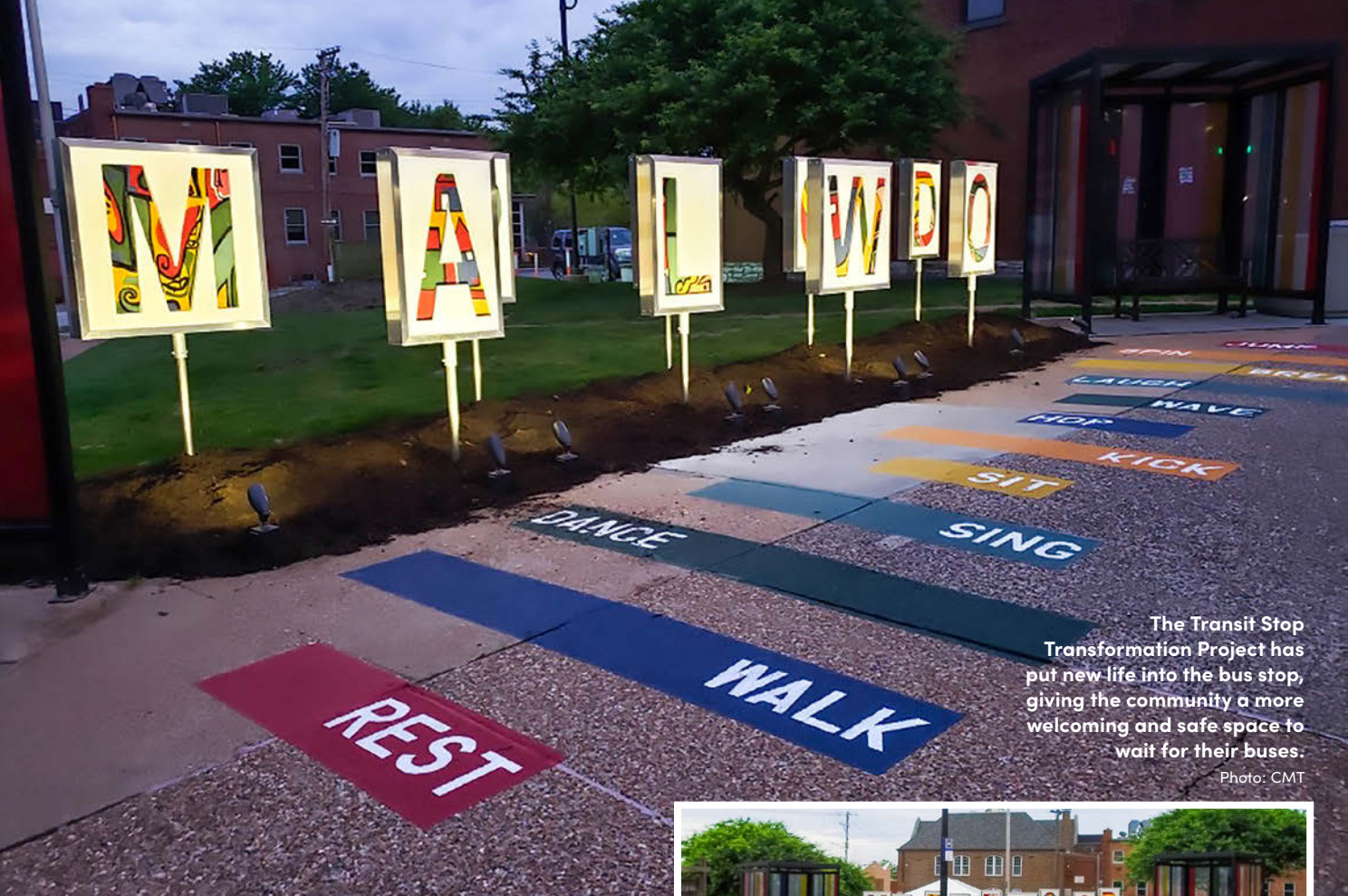
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The Transit Stop Transformation Project has put new life into the bus stop, giving the community a more welcoming and safe space to wait for their buses.

Photo: CMT



# Improving Rider and Transit Experience, One Bus Stop at a Time

CMT and AARP in St. Louis, Mo., are on a mission to improve riders' experience with a focus on the placemaking of bus stops as part of the Transit Stop Transformation Project.

BY EMAN ABU-KHALED, ASSOCIATE EDITOR

**W**aiting is part of life, be it in the long lines at the bank or sitting on the metal benches at the bus stop. Waiting is usually an experience to be endured, rarely enjoyed. However, a partnership developed in St. Louis, Mo., is changing the experience of neighborhood waiting areas, such as bus stops, using the concept of placemaking.

Citizens for Modern Transit (CMT) and St. Louis' AARP launched the "Transit Stop Transformation Project" to activate

bus stops in Missouri communities. One by one, bus stops in the St. Louis region are being flipped to make waiting at a bus shelter a more enjoyable, inclusive and safe experience.

Through the program, communities are given the space to voice and address their bus stop concerns through placemaking



strategy and development with a team of city planners, community leaders and designers. They come together to make a plan to address the needs and wants of the community and turn their standard bus shelters into a community place, fit for riders young and old.

A common concern that was brought up to St. Louis' AARP Community Outreach Director Sheila Holm was the lack of comfort at bus shelters.

"[The bus stops] have seating that don't have backs or armrests to lean on," Holm said. "They don't have a lot of shade, which doesn't just affect older adults, but everybody."

### Taking on Maplewood

The Transit Stop Transformation Project was the product of a pilot program to demonstrate to the St. Louis region what could be made from a public transit space.

The bus stop that became the Transit Stop Transformation Project's first initiative is a MetroLink and MetroBus service bus stop, located adjacent to the Citizens National Bank parklet in Maplewood, which is a diverse, inner-ring suburb of St. Louis with significant transit access. The goal of this program was to determine the impact of activating spaces in Maplewood around transit for current and future riders and residents.

Project work on this site began in fall 2019 and was completed and opened to the public in 2020.

Originally, the Maplewood shelter was an average black metal and clouded glass shelter surrounded by dull grass. Maplewood's community saw a need for this space to become something more accessible and welcoming.



"Identifying who owns the land and property in which the bus stop is on or around the stop needed to happen much earlier than when we ended up doing on our first project..."

Sheila Holm, AARP Community Outreach Director

For a transit stop to qualify through the Transit Stop Transformation Project process, it must first have all funds secured. With the Maplewood MetroBus Stop project, most of the funding and

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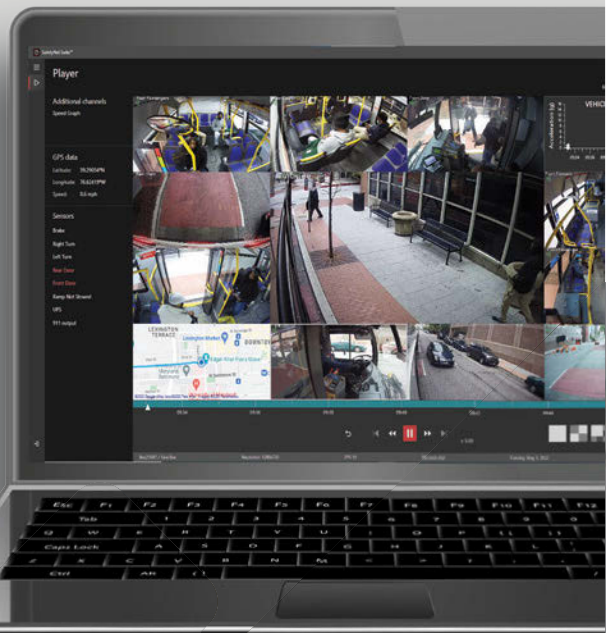
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**The Maplewood shelter was an average black metal and clouded glass shelter surrounded by dull grass.**

Photo: CMT

resources came directly from the CMT and AARP, which began to organize and advertise fundraisers and events.

Getting the details of the project location prior to making plans was an element that Holm said was almost missed while planning everything out.

make it more of the fabric of the community,” Holm said.

### Planting the seed

Holm says the idea of placemaking as a part of transit advocacy for the community she serves was a no brainer. Holm, who has a degree in agriculture, felt it was necessary

perience what it would be like if they could meet friends for coffee, grab groceries or take time out to relax, unwind or play in the vacant spaces currently surrounding MetroLink stations,” said Kimberly Cella, executive director of CMT. “The transformed Maplewood station brings these ideas to life as a permanent installment while creating a more inclusive and engaging transit stop.”

After listening to community members at a combination of in person and virtual meetings, a “modern front porch” setting was the final design direction that Maplewood wanted out of the space.

The design for the overall “Transit Stop Transformation Project” was led by BlackArc Design, with input from residents, including children.

The transformed, ADA accessible, Maplewood MetroBus Stop features vibrant colors and green spaces. New shelters, a glider and bench have been installed, as well as lighting and better sight lines to improve visibility, safety and security. There is also more waiting space, better access to the parklet and surrounding green spaces. In addition, an art installation featuring a Maplewood sign that graphically depicts landmarks in Maplewood was created by painter and mixed media artist Genevieve Esson who resides in Maplewood.

The design supported a playful and interactive safe space for adults to wait for their bus comfortably while their children were given a space to play hopscotch on the sidewalk and take in the colors of the now renovated bus shelter.

The stop itself has also been programmed into other healthy/active living activities such as Ten Toe Express Walks, which gives the surrounding community the chance to join groups on walks that range from 0.3 to five miles, depending on the group and destination. Together these groups walk in a variety of places such as Forest Park or Carondelet Park,

Over the past several years, CMT and AARP in St. Louis have hosted a series of Pop-up Metro Markets to help area residents experience what it would be like if they could meet friends for coffee, grab groceries or take time out to relax, unwind or play in the vacant spaces currently surrounding MetroLink stations.”

Kimberly Cella, executive director of CMT

“Identifying who owns the land and property in which the bus stop is on or around the stop needed to happen much earlier than when we ended up doing on our first project, which in that case, ended up being a Citizens Bank. We had to convince the president of the bank that this was a good thing that we were trying to do, to develop the land and the stop and

“to plant the seed” into a program that works to improve a community overall. Better shelters, seating and design was only the starting point in the plans for the now five completed placemaking projects and one currently in the works.

“During the past several years, CMT and AARP in St. Louis have hosted a series of Pop-up Metro Markets to help area residents ex-



downtown St. Louis or Belleville, Ill. Programs like these use the bus stop as a landmark to reach while on the walks.

According to Cella, the project took between eight to 10 months of planning and construction. It was also a learning experience, as the teams tackled working in a new project size environment in the midst of the COVID-19 pandemic. One of the challenges to overcome included keeping the community actively engaged.

“When the pandemic hit, we had to get creative because that’s when people started to shelter in place,” Cella noted. “We had to figure out a way to get to the community. We did geofencing, direct mail, questionnaires via social media. We were in as many different avenues as we could.”

### Community space put to use

When asked about what makes her job rewarding, Holm noted that seeing riders use spaces AARP puts in place to benefit them makes her proud.

“One of the most rewarding things with these projects is seeing transit riders using what we’ve put in place, knowing they see the value of it and they’re benefiting from it,” Holm stated. “They now see the value in the space. It makes them feel better and gives them a little sense of ownership of the space.”

Holm said that where it was common to have graffiti and trash at the old bus stop, now people are using trash cans and taking better care of the space.

As *Mass Transit* previously reported, Laura Miller, community development director for the city of Maplewood said, “This once unassuming corner in downtown Maplewood is no longer just a portal for transit riders passing through. It’s now a vibrant and engaging space that hopefully will encourage transit riders to explore our community and the wonderful things it has to offer.”

### More to come

The success of the initial Transit Stop Transformation Project sparked interest in transforming other transit stops and stations in the St. Louis region. To date, Transit Stop Transformation Projects have been completed at the Emerson Park Transit Center in

East St. Louis, Ill., the Belleville Transit Center in Belleville, Ill., and the North Hanley Transit Center in unincorporated St. Louis County.

In current development is the Fairview Heights transit center in Fairview Heights, Ill., and St. Clair County, Ill. **L**

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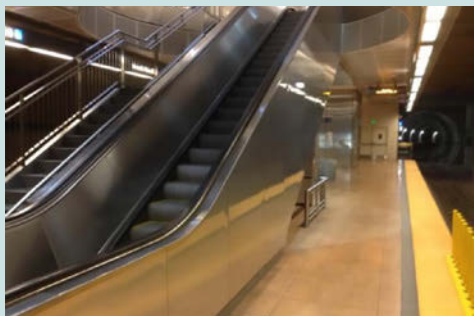
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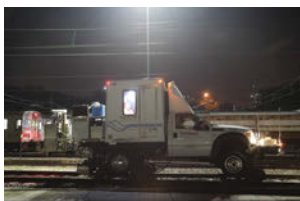


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### Peerless-AV Outdoor Smart City Kiosk

Peerless-AV's Outdoor Smart City Kiosk can be used to display travel updates, wayfinding, traffic or transit closures, as well as weather details on a digital screen to keep riders updated. The kiosks come with a 55-inch Xtreme™ High Bright Outdoor Display, which offers HD1080p resolution for a brighter and cleaner picture even in direct sunlight.

#### PEERLESS-AV

<https://www.peerless-av.com/products/kop55xhb>



### Urban Solar Vandal-Resistant E-Paper Display

Urban Solar Vandal-Resistant E-Paper Display is a real-time passenger information display meant to handle high-vandalism areas. The display integrates a 13-inch e-paper module from Axentia Technologies and is fully configurable via web portal. The display operates entirely on battery power for three to five years.

#### URBAN SOLAR CORP.

<https://urbansolarcorp.com>



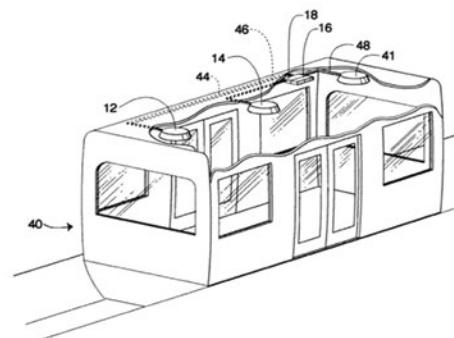
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# Transit Security

Leveraging technology - improving collaboration

## Three ways transit security teams can speed up response and investigation time



**By Shawn Enides**  
Account executive, public sector,  
Genetec

**MONTREAL, QC** • Transit security teams are responsible for keeping commuters and transit employees safe day in and day out. It's a complex task to monitor busy transit stations, passengers and fleets. Here are three best practices to prioritize to keep transit operations running efficiently and securely.

**1. Unify on-board and building security** In the past, transit operations often required stitching together different systems to manage routing, video, access control and more. Modern unified security

solutions enable a holistic view, bringing together data from buses, buildings and other system elements into the same software interface.

When data and monitoring are centralized within one system, it's easier for operators to proactively monitor security throughout the transit network. Data from cameras and sensors can even be plotted on a map for an intuitive location-based view, making it easier to find the data needed.

**2. Collaborate with community partners** When there is a threat of violence, a speedy response is critical. A unified approach to transit security makes sharing data with community partners faster and more secure.

Operators can create automations aligned with standard operating procedures to alert local law enforcement and transit police departments. For example, when the system detects a critical

incident, such as an alert from a gunshot detector or a driver pressing a panic button, automated procedures can trigger a response. The action could entail notifying law enforcement, streaming live video to a security operations center or other predefined steps.

After an incident, cloud-based digital evidence management systems make it easy to collect and



Photo: Adobe Stock 362359236

share video or other evidence with stakeholders such as investigators, legal teams or community members who submit freedom of information requests. The system can also blur the faces of bystanders to protect privacy. Your team can control access through authentication and authorization and a chain of custody report shows who has viewed, shared, downloaded, uploaded or deleted files.

**3. Leverage ALPR to improve operations** Unified security platforms make it easier to effectively incorporate technologies such as automatic license plate recognition (ALPR) analytics to improve safety and streamline operations.

On-board cameras can capture the license plate details of cars parked illegally in bus lanes or driving in dedicated bus lanes. Reviewing video can help authorities determine whether the driver violated the rules. These incidents can be hard to enforce without constant patrols, yet actions like these can result in significant delays for buses and be safety hazards.

ALPR can also be deployed in partnership with law enforcement. Cameras on buses and at transit stations to help police locate vehicles that have been linked to Amber Alerts, watchlists or other incidents of crime.

### Ongoing innovation

As technology evolves, there will be more opportunities to streamline transit operations. Open architecture, unified solutions allow systems to grow and be enhanced as needs evolve and new solutions are introduced. The result is a better customer experience. Riders get to their destinations safely and on time and teams work more efficiently and proactively, knowing their systems are running smoothly and securely. [L](#)



After an incident, cloud-based digital evidence management systems make it easy to collect and share video or other evidence with stakeholders such as investigators, legal teams or community members who submit freedom of information requests.



# SWTA Annual Conference & EXPO



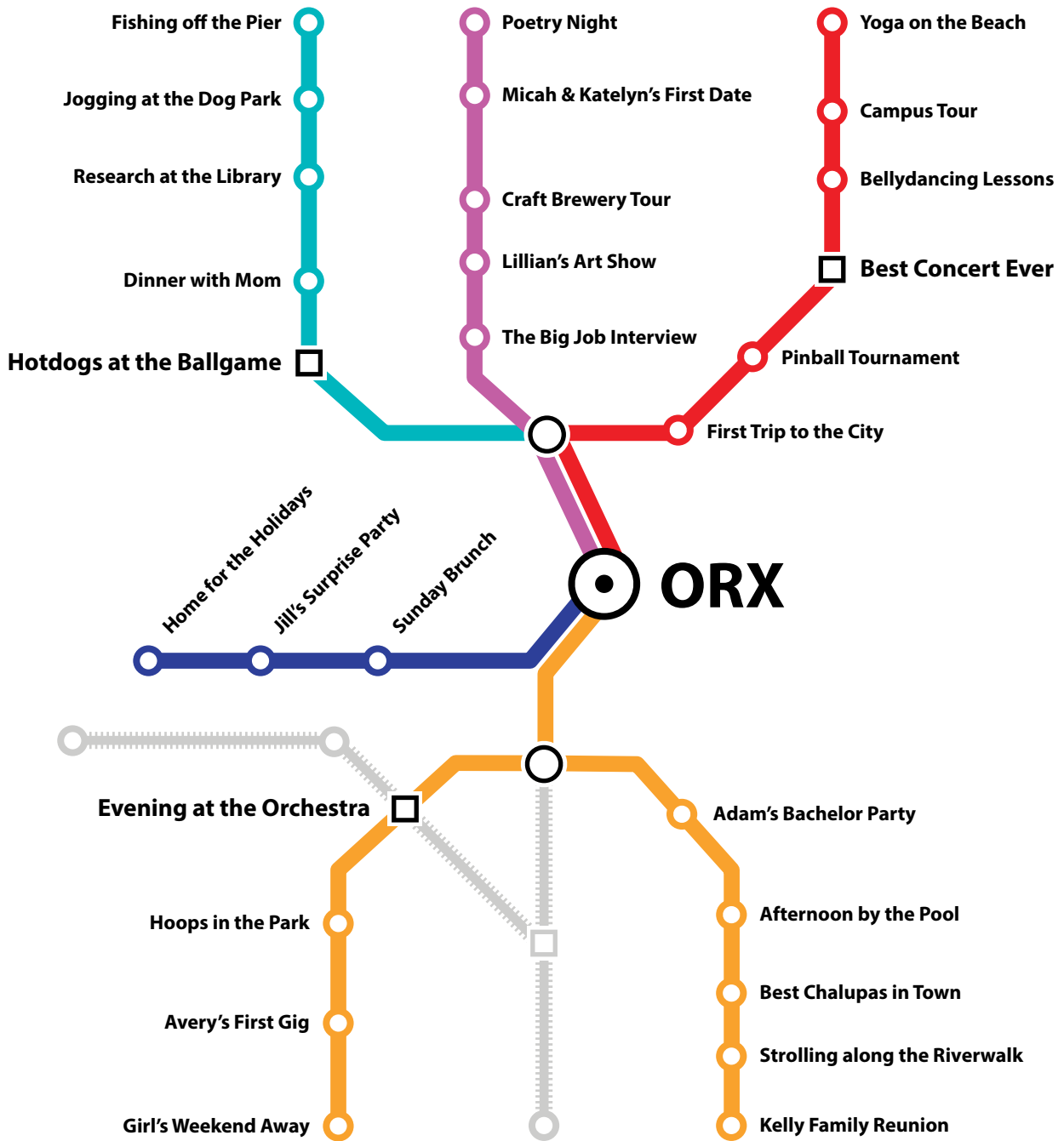
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