



FHWA's Fostering Multimodal Connectivity Newsletter

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Editor's Note: With the New Year and the release of the U.S. Department of Transportation Strategic Plan for Fiscal Years 2018- 2022, we are introducing some formatting changes to this publication to highlight the development and implementation of multimodal transportation projects.

Introduction

The Federal Highway Administration's (FHWA's) Fostering Multimodal Connectivity Newsletter is intended to provide transportation professionals with real-world examples of ways that multimodal transportation investments promote economic revitalization, provide access to jobs, and achieve safer communities through support of accelerated project delivery, technology and design innovation, and public/private partnerships. This newsletter communicates FHWA and partner efforts in support of the U.S. DOT Strategic Plan by improving connectivity, accessibility, safety, and convenience for all users.

Want to access additional tools and resources? Please visit FHWA's [website](#). Past issues of the newsletter are also [available](#). To subscribe to the newsletter, visit [GovDelivery](#).



Improving Pedestrian Safety and Connectivity along a Rail Corridor

Grant Brodehl, Special Project Planner, Rio Metro Regional Transit District, New Mexico

In 1880, the Atchison, Topeka, and Santa Fe Railway (AT&SF) constructed its railroad through the Town of Bernalillo, a small New Mexico community founded along the Rio Grande River in 1695. As the town grew through the 1900s, businesses, schools, and government services continued to locate along Camino del Pueblo, the main street running west of and parallel to the railroad. During that same period, more and more residences developed east of the tracks. To this day, as residents seek to access the town's amenities and businesses, they often have to cross the railroad tracks. Due in part to the one and a half mile distance between formal pedestrian crossings, pedestrians traveling across the town commonly trespass through the railroad right-of-way (ROW).

In the last decade, train traffic within this community of 8,500 has been relatively consistent. Each day, 16 New Mexico Rail Runner Express commuter trains that serve two Bernalillo stations on their way between Albuquerque and Santa Fe travel the corridor, as do two Amtrak "Southwest Chief" trains. Although the AT&SF no longer exists, the Burlington Northern Santa Fe Corporation (BNSF) Railway currently operates freight trains in and through the town, typically at night and on weekends.

After an Amtrak train tragically struck and killed a local high school student in early 2013, town leaders lobbied their State legislators and received a \$300,000 capital outlay grant that could be spent on pedestrian crossings, trails, and fencing. Because the town did not own the railroad ROW, they engaged the New Mexico Department of Transportation (NMDOT) Rail Bureau and the [Rio Metro Regional Transit District \(Rio Metro\)](#), the owner and maintainer of the ROW, respectively. The three partners agreed to investigate pedestrian trespass patterns and develop a comprehensive, corridor-wide plan that valued pedestrians' preferences without compromising their safety.

To design cost-effective and safe pedestrian facilities, the partners first set out to better understand pedestrian trespass patterns. Rio Metro installed mobile traffic counting cameras near the Downtown Bernalillo Rail Runner station and at another popular crossing location near the local elementary school to collect video. The video indicated that on a typical weekday, about 70 pedestrians crossed the tracks illegally near the station, and an additional 30 walked parallel to and within the railroad ROW. These observations corroborated the partners' assumption that businesses and services near Camino del Pueblo were the primary attraction for pedestrians. The footage was very helpful since it showed that there is both significant pedestrian travel and significant danger due to illegal pedestrian crossings along the paths parallel to the tracks.



Figure 1: Video screenshot of trespassers crossing through the railroad ROW. (Image courtesy of Rio Metro Regional Transit District)

Using the quantitative data along with anecdotes from train engineers and town leaders, the partners concluded that a comprehensive solution would require two additional crossings at the most popular locations for trespass, a multiuse trail parallel to the tracks, and barriers and fencing used to



channel pedestrians to crossings protected by audible (bells) and physical safety mechanisms (gates, signage, tactile warnings, etc.). Because the capital outlay grant was not enough to fund this work, the Rail Bureau suggested that NMDOT fund a road safety audit (RSA) in 2016 so that 1) a broader interagency and interdisciplinary team could vet the partners' proposal, and 2) the project would be eligible for Federal Highway Administration (FHWA) [Highway Safety Improvement Program \(HSIP\)](#) funding per NMDOT policy. The resulting RSA supported the partners' initial recommendations, and NMDOT elected to fund the entire project in two phases, allocating \$540,000 in FY2017 [Congestion Mitigation and Air Quality](#) funds and \$1.9 million in FY2019 HSIP funds.

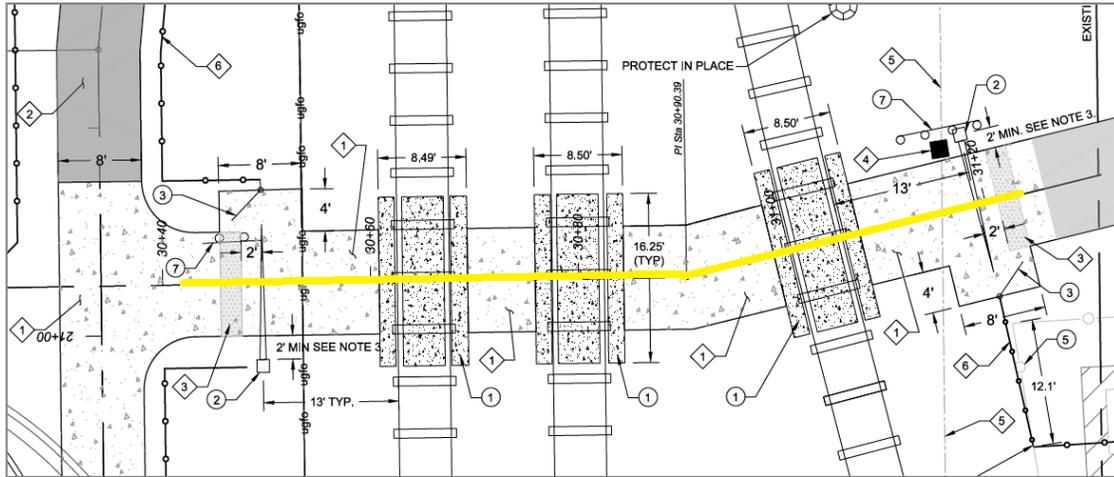


Figure 2: Image from the Phase I design drawings of the proposed pedestrian crossing (path shown in yellow) north of the Downtown Bernalillo Rail Runner station. (Image courtesy of Rio Metro Regional Transit District)

Phase I construction, beginning in mid-2018, will include:

- A pedestrian crossing with automated lights, gates, and bells near the Downtown Bernalillo Rail Runner station;
- Connections from that crossing linking to adjoining streets, sidewalks, and the station platform; and
- Appropriate fencing.

Meanwhile, the partners will proceed with Phase II design, which will include an additional crossing near the local canal, called the Bernalillo Acequia, and a parallel trail with fencing that will connect the town's now four legal crossings. Phase II construction will begin in 2019-2020. Once both phases are complete, train operators expect trespassing incidents to decrease markedly. With enhanced connectivity to local businesses, schools, and other destinations, residents will enjoy a safer and more walkable community.

The Federal Highway Administration, Federal Railroad Administration, Federal Transit Administration, and the National Highway Traffic Safety Administration are currently conducting research on effective practices for the development of rails with trails – shared use paths within or adjacent to active railroad and transit rights-of-way. A report, due to be released in early 2019, will provide examples of widely accepted effective practices to maintain or enhance the safety and security of railroad and transit employees and property, trail users, and the general public, while meeting community mobility and land use goals.



A New Resource to Support Active Transportation for National Parks and Partners

Amy Plovnick, Community Planner, U.S. Department of Transportation Volpe Center, Cambridge, Massachusetts

Traveling to or exploring national parks by foot, bicycle, or other nonmotorized mode provides visitors with opportunities to experience natural, cultural, and historical places in new ways. Infrastructure and programs to support these active modes offer a broad range of benefits to parks and surrounding communities, including helping to better manage vehicle congestion, promoting resource preservation, supporting economic development in gateway communities, and accommodating current and increased visitation by providing alternatives to driving. The National Park Service (NPS) recently published a new resource, the [NPS Active Transportation Guidebook](#), which aims to assist and inspire parks and their partners to identify and pursue opportunities that enhance active transportation to and within national parks.

The NPS developed the Guidebook with technical support from the U.S. DOT Volpe National Transportation Systems Center, and in collaboration with bicycle and pedestrian professionals, transportation experts, park staff, and partners, including the Federal Highway Administration (FHWA). Development of the Guidebook was funded by the Federal Lands Transportation Program, which is distributed by the Office of Federal Lands Highway. The Guidebook covers a number of topics and strategies to support walking and biking in national parks and surrounding communities, from planning and deploying infrastructure such as pedestrian pathways and bike lanes, to evaluating and improving safety for active transportation modes, to offering activities and programs that provide park visitors the opportunity to bike or walk.

The Guidebook includes numerous examples and best practices from parks, communities, and partners that have worked to implement active transportation projects and programs. It also provides links to resources where readers can learn more about a particular topic. These include several FHWA published reports and strategic initiatives encouraging active transportation and multimodal connectivity, such as the [Strategic Agenda for Bicycle and Pedestrian Transportation](#) and the [Small Town and Rural Multimodal Networks Report](#).

The Guidebook highlights how partnerships between parks, surrounding communities, and other stakeholders can help improve connections for walking and bicycling between parks and communities, and help form lasting working relationships between park staff and local governments or other organizations. Active transportation improvements and related efforts can also promote local economic growth in gateway communities by attracting visitors who support businesses such as bicycle shops, sports stores, and restaurants. These opportunities can provide additional jobs and contribute to the overall quality of life for communities.

Potential partners for NPS active transportation efforts are as wide-ranging and diverse as the parks themselves and can bring a variety of skills and resources to a project. Partners may include gateway communities, regional planning organizations, State and local transportation departments, friends of the park groups, national walking and bicycling organizations, and many others. Partnerships also often present opportunities for leveraging funding and other resources.



Figure 3: A park ranger leads a bicycle tour at Saratoga National Historical Park. (Image courtesy of the NPS)



For example, the [Federal Lands Access Program \(FLAP\)](#) funds non-Federal infrastructure that provides access to, is adjacent to, or is located within Federal Lands. In recent years, NPS partners have received FLAP funding for the Bryce Canyon bicycle and pedestrian trail in Utah; the Assateague Gateway bicycle and pedestrian trail in Maryland; and the Pullen Creek Stream bicycle and pedestrian walk in Alaska; among many other active transportation facilities.

While the Guidebook is geared toward national parks and their partners, the information, examples, and resources presented may also help State and local agencies and other organizations think creatively about expanding active transportation in their communities. For example, the information on visitor programming and car-free opportunities could inspire a local transportation department to partner with their parks department to hold an event that promotes walking and biking. The Guidebook covers some of the ways parks, transportation departments, and others can support active transportation, and aims to spark even more ideas for creative partnerships to make walking and biking safer, easier, and more enjoyable.

Washington D.C. Explores Dockless Bikeshare Options

Jonathan Rogers, Transportation Management Specialist, District Department of Transportation

The District of Columbia has operated a bicycle-sharing system since 2008, and today a decade later, [Capital Bikeshare](#) offers more than 4,300 bicycles at nearly 500 stations throughout the region. As the District continues to expand the number of stations and bicycles available to riders, new private-sector stationless or dockless bikeshare companies have emerged as a new model of bicycle sharing. These dockless bikeshare systems require relatively low public investment and have the potential to rapidly improve access to bicycles for residents and visitors. With sustainability and social equity in mind, the District Department of Transportation (DDOT) began a [dockless bikeshare demonstration period](#) in late September 2017. The demonstration period was designed to determine whether this new service could increase bicycle ridership in the District overall, introduce new users to bicycle sharing, complement the Capital Bikeshare system, and provide greater mobility to underserved communities. As the demonstration progressed, the opportunity to evaluate new vehicles such as electric scooters also emerged. Using [Federal Highway Administration \(FHWA\) funding programs](#) to support research staff, DDOT is well positioned to evaluate the success of its dockless demonstration.

The District of Columbia has the second highest share of bicycle commuters in the country, reflecting the District's [Sustainable DC](#) goals for reducing single occupancy motor vehicle trips, as well as DDOT's [moveDC](#) goals to improve mobility and active transportation. To pilot the dockless bikeshare model, DDOT opted to create an open system, in which operators could apply to offer a fleet of vehicles no greater than 400.



Figure 4: Dockless bikeshare bikes parked at bicycle racks. (Image courtesy of DDOT)



Seven companies are participating in the demonstration from September 2017 through August 2018, allowing DDOT to observe several different models of dockless vehicle sharing in action. These models included standard bicycles and motorized (or electric pedal-assist) bicycles, bicycles that utilize rear-wheel locks, and bicycles that require locking to a piece of street furniture, as well as electric standing scooters.

Open data has been a guiding principle in DDOT's dockless demonstration because it provides transparency to the public and enables robust evaluation of the program's performance. DDOT required each dockless company to provide a public application programming interface (API) that displays the location of every vehicle available to rent in real time. In addition, DDOT required internal monthly reporting that includes information on all trips taken, such as the route and duration of each trip. This data has been critical in assessing the interaction of dockless services with Capital Bikeshare and in detecting origin and destination locations of the highest demand.

While a strong foundation of bicycle infrastructure – such as protected bike lanes, trails, and sufficient bicycle parking in public spaces – is integral to the success of any bicycle-sharing approach, local jurisdictions interested in increasing bicycle ridership may consider dockless bikesharing. Setting parameters for the program will help mitigate some of the main drawbacks of dockless bikesharing. During the DDOT demonstration, such challenges included:

- Parking of bicycles at locations not permitted by DDOT (such as national parks or private property) or within DDOT rights-of-way but in a fashion that creates barriers to accessibility (blocking curb ramps and sidewalks).
- The likelihood of some degree of bicycle theft and vandalism in a dockless program.
- Need for regional collaboration, as bicyclists will justifiably cross municipal borders in their travels.

Based on the findings from the demonstration period, DDOT offers a number of recommendations for other jurisdictions to consider regarding dockless bicycle systems:

- Consider a cap on the total number of vehicles, companies, and/or vehicles per company that are allowed to participate in the program.
- Decide what kinds of vehicles should participate, taking existing regulations into account. Will the program include bicycles, motorized bicycles, electric scooters, etc.? Review what current regulations do not explicitly disallow.
- Monetize the value and calculate the cost of private companies operating in public space. Consider offsetting the costs of program administration through a permit fee.
- Evaluate what kind of parking infrastructure will be required. Will the program include new designated parking areas?
- Actively encourage dockless companies to improve access to bicycling for underserved communities. This could include geographic distribution requirements and/or addressing barriers to using bikesharing systems.
- Explore the kinds of data you will need to evaluate the effectiveness of the program and decide which data would be valuable to the public.
- Remember that most dockless bikeshare models involve smartphone applications that track and provide valuable customer data. Ensure there are protections for customer privacy and that user data cannot be exploited.
- Coordinate with law enforcement on an approach to address theft and vandalism.



DDOT continues to evaluate ridership data, survey responses, and public input as the demonstration period moves forward through the summer of 2018. The results of the demonstration will inform the District’s approach to dockless vehicle sharing in the future, likely in the form of regulations that would shape any permanent vision of the program.

The Trail to Safer, More Efficient Travel Options in the Seattle Metro Area

Denise Cieri, Administrator, SR 520 Bridge Replacement and HOV Program, Washington State Department of Transportation

It is a little known fact that bicyclists were among the first to champion the construction of good roads in America. Bicyclists advocated for the Good Roads Movement that spurred the creation of the country’s first State highway department (in New Jersey) in 1891. Although the automobile soon dominated 20th century travel, the 21st century is witnessing a resurgence in multimodal transportation projects. A prime example is the Washington State Department of Transportation’s (WSDOT’s) reconstruction of State Route (SR) 520, a vital highway corridor connecting Seattle and the technology-based “Eastside” cities on the opposite side of Lake Washington.



Figure 5: SR 520 Floating Bridge connecting Seattle to east Washington communities. (Image courtesy of WSDOT)

The [SR 520 Bridge Replacement](#) and high-occupancy vehicle (HOV) program is providing new infrastructure to enhance traffic safety, improve transportation reliability, relieve congestion, and expand travel options for corridor users, whether they are carpoolers, transit riders, bicyclists, solo motorists, commercial drivers, runners, or pedestrians.

Replacing Aging Infrastructure

To address regional growth, Washington State built SR 520 in the early 1960s as a second route across the 200-foot deep Lake Washington. The highway extends approximately 13 miles from Interstate-5 in Seattle to SR 202 in Redmond. To cross nearly three miles of lake and a freshwater bay in Seattle, WSDOT constructed the world’s longest floating bridge and two large, hollow-column bridges spanning shallower water. The State built the initial highway with no shoulders for disabled vehicles and no abutting pathway for nonmotorized travelers.

A half century later, the bridges had reached the end of their serviceable lives and risked failure from an earthquake or severe storm. Moreover, decades of robust population growth had clogged the highway, making stop-and-go traffic routine during peak periods.

WSDOT knew that rebuilding the corridor would involve significant technical challenges. The politics and community issues involved also presented hurdles. During preconstruction planning and community engagement, WSDOT heard diverse views on how – or whether – to rebuild the highway. Some favored a tunnel beneath the lake, while others wanted an eight-lane corridor. Other residents, angered by the highway’s original siting and construction, pushed for a no-build, status quo option.



Public Engagement for a Successful Design

To launch and successfully deliver the project, WSDOT conducted outreach and coordination with elected officials; Federal agencies; State and local regulatory agencies; Native American tribes; neighborhood groups; businesses; environmental organizations; transit agencies; bicycle and pedestrian advocates; the University of Washington; and corridor residents. Building and maintaining strong community relations and addressing stakeholder concerns were important goals for reaching a successful project design, securing funding, and proceeding to construction.

WSDOT held more than 300 events, including public meetings, workshops, open houses, presentations, and legislative work sessions. The community, State Legislature, and the Federal Highway Administration (FHWA) ultimately endorsed a six-lane reconstruction plan emphasizing multimodal travel options.

FHWA is a key partner in the SR 520 Bridge Replacement and HOV Program, providing \$200 million in direct funding support, \$924 million in Grant Anticipation Revenue Vehicle (GARVEE) backed bonds, and a \$300 million Transportation Infrastructure Finance and Innovation Act (TIFIA) loan.



Figure 6: Bicyclists and pedestrians use the shared-use trail on SR 520. (Image courtesy of WSDOT)

Multimodal Enhancements Drive Project

WSDOT is reconstructing SR 520 in phases, mainly from east to west. Crews completed the highway's Eastside improvements in 2014; opened a new, tolled floating bridge in 2016; and completed the first of two, parallel west approach bridges in 2017. Major elements of the \$4.5 billion highway program include:

- Replacing old, structurally vulnerable four-lane bridges with stronger, six-lane bridges built to current seismic standards.
- Adding dedicated transit/HOV lanes in each direction, with median transit stations for safer and easier rider access, and direct access ramps on and off the highway for transit and carpools.
- Adding a cross-lake, 14-foot wide bicycle and pedestrian shared use trail alongside the highway, with connections to local shared-use trails on both sides of Lake Washington.
- Constructing landscaped, community-connecting highway lids on both sides of the lake.
- Using a floating bridge design that can accommodate future light rail on SR 520, if desired.
- Adding shoulders along the roadway to minimize traffic disruptions from disabled vehicles.



State Route 520 corridor



Figure 7: SR 520 corridor components and stages. (Image courtesy of WSDOT)

The highway's new shared-use SR 520 Trail opened across Lake Washington in December 2017, creating an active transportation option between Seattle and the Eastside, home to Microsoft, T-Mobile, Expedia, and many other technology-based companies. In an upcoming phase of construction, WSDOT will extend the SR 520 Trail farther west across Seattle's Portage Bay and I-5, creating a safer route to Seattle's booming South Lake Union area – another technology hub that includes Amazon's 40,000 employee headquarters. The [SR 520 corridor reconstruction](#) will provide enhanced multimodal access to employment centers while making travel by all modes safer and more convenient.

South Florida Installs Safety Measures to Support "Quiet Zones" around Railroad Tracks

Paul Calvaresi, Local Governmental Services Manager, Broward County Metropolitan Planning Organization

In 2012, All Aboard Florida (AAF) announced plans to bring passenger service back to the Florida East Coast (FEC) corridor. AAF planned to capture tourist and business travel by connecting Orlando with rail stations in West Palm Beach, Fort Lauderdale, and Miami. Between South Florida's three largest cities are a few dozen smaller cities whose downtowns were built around these FEC railroad tracks. Since passenger service on the FEC ended in the late 1960s, the rail corridor has served as the main freight line for South Florida with up to 10 freight trains running daily.

AAF's new passenger service would add 32 trains, providing residents and visitors with enhanced transportation options. Residents have voiced concerns, however, about the increased use of train horns. As South Florida recovered from the recession, its historic downtowns experienced a rebirth in activity and investment. Locals have expressed their apprehension that increased frequency of train horns will greatly affect the quality of life, diminishing the recent economic development and progress made in the downtown areas.



The Federal Railroad Administration (FRA) has a mechanism to remove the requirement of sounding train horns at public grade crossings by creating a “Quiet Zone.” A Quiet Zone is a section of rail line at least one-half mile in length that contains one or more consecutive public highway-rail grade crossings where locomotive horns are not sounded as the train approaches, although train horns may be sounded for emergency situations at the conductor’s discretion. Quiet Zones are created by installing supplemental safety measures (SSMs) such as gates or raised medians, to reduce the calculated risk of removing the train horn.

The crux of creating a Quiet Zone revolves around the application of FRA’s Quiet Zone calculator. The calculator applies a formula based on variables including average daily traffic, number of trains, and train speed in order to calculate the risk of each crossing on the rail corridor. Then, the user will apply SSMs – safety improvements which mitigate the risk of removing the train horn - at rail crossings until the corridor risk is reduced below the calculated threshold for a Quiet Zone. The Broward Metropolitan Planning Organization (BMPO) ran the calculator with anticipated future conditions, and then applied the SSMs to the highest risk corridors until the risk threshold was met.

All Aboard Florida, renamed as Brightline, committed to install the upgrades at the BMPO’s expense, as the company already planned to improve the rail corridor and crossings to run the new service. The next step was to design the Quiet Zone. BMPO took the lead, positioning itself as the unifying voice of the municipalities and fully funding the project. BMPO rallied the municipalities behind creating one 26-mile long Quiet Zone. By creating one Quiet Zone, economies of scale are gained in capital improvements and logistics. BMPO served as a single point of contact between the FRA and Brightline, facilitating efficient coordination.

The proposed Quiet Zone also presented an opportunity for multimodal improvements. BMPO coordinated among the municipalities to leverage Brightline’s replacement of existing crossings to install additional multimodal facilities. At a board meeting BMPO and the municipalities decided to devote \$1,000,000 toward sidewalks and pedestrian arms at 18 railroad crossings, which were installed in 2017 and 2018. These multimodal improvements focus on areas currently experiencing rapid development or are expected to experience development in the coming years. The agencies, led by Brightline, also focused on railroad safety education for all users by supplying materials to municipalities and school boards.

BMPO committed millions of dollars to establishing a Quiet Zone. By creating one continuous Quiet Zone, there were only two outcomes possible: a complete Quiet Zone or no Quiet Zone. BMPO worked with Brightline to overcome challenges due to changes in the corridor over the three years between initially running the calculator and completing the design process. The partners were able to work together successfully to add more SSMs to the corridor at an additional cost in order to establish the Quiet Zone.

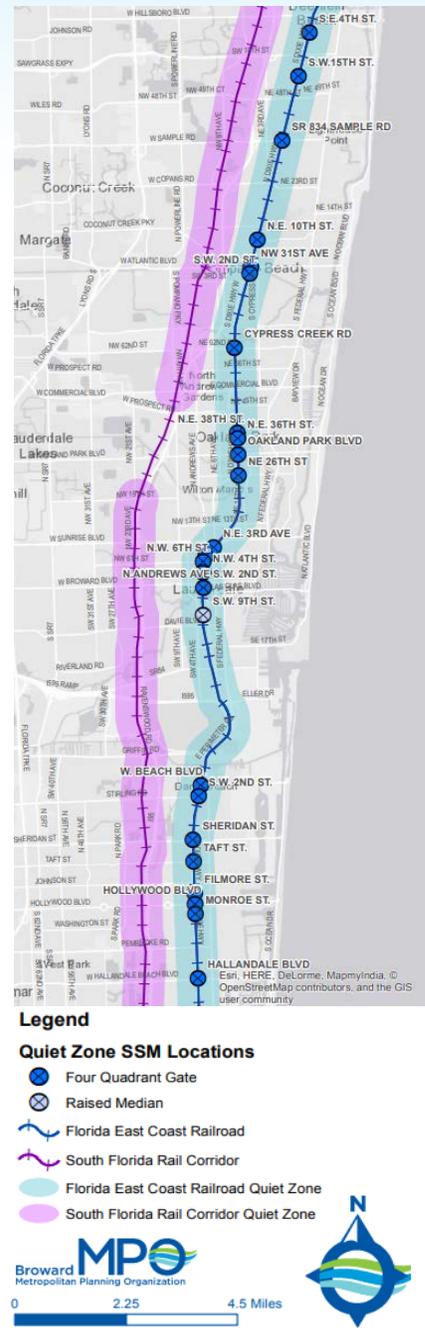


Figure 8: Locations of rail corridors, Quiet Zones, and SSMs. (Image courtesy of BMPO)



The people of South Florida desired Quiet Zones for years before the process with Brightline began. Recently, Brightline began partial service, running 20 trains per day without the Quiet Zone, affecting the public by increasing the frequency of the train horn. The greatest challenge thus far has been keeping open lines of communication with the public to reassure them that the Quiet Zone is coming despite delays. Outreach has included website updates, email blasts, and presentations ranging from City Commission to homeowners' association meetings. Brightline has already constructed several SSMs, and [Broward's Quiet Zone](#), the longest single Quiet Zone in the county, is set to be complete in summer of 2018.

Announcements/New Resources

- The Federal Highway Administration (FHWA) has published a new resource on [Case Studies in Realizing Co-Benefits of Multimodal Roadway Design and Grey and Green Infrastructure](#). This report provides information to encourage agencies interested in making improvements to their pedestrian and bicycle networks that also provide green infrastructure and resiliency benefits.
- FHWA has posted the [Transportation Alternatives Annual Report for Fiscal Year 2017](#). This report details project applications and project selections by State for funds authorized under the Transportation Alternatives Set-Aside, for funds apportioned since FY 2016.
- FHWA published a new report, titled "[Approaches to Presenting External Factors with Operations Performance Measures](#)." The report identifies key external factors that can impact transportation system performance. The report also develops recommendations for including external factors, such as employment levels and economic conditions, in performance reporting.
- FHWA recently released the "[Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations](#)" as part of [Safe Transportation for Every Pedestrian](#) (STEP). The guide details a six-step process for improving safety at uncontrolled crossings and provides new tools to help agencies identify countermeasure options based on roadway characteristics and pedestrian safety issues.
- FHWA recently published the 2018 update to the "Community Impact Assessment (CIA): A Quick Reference for Transportation." The reference guide defines CIA, outlines the community impact assessment process, and identifies tools and information sources. The intent of this update is to ensure that the document reflects current laws and regulations, incorporates technological advancements like the use of social media and enhanced modeling and visualization capabilities, and outlines techniques available to transportation practitioners, including the use of online data sources like [EJSCREEN](#) and analytical tools. [Five new examples](#) have also been posted that demonstrate current CIA techniques and approaches.

