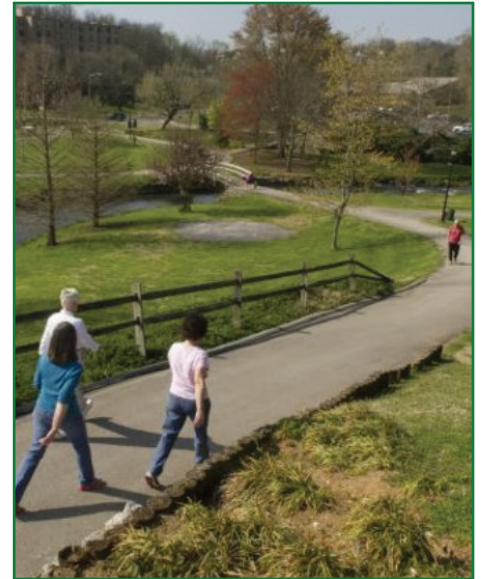




**Pedestrian and Bicycle
Information Center**



Case Studies in Delivering Safe, Comfortable, and Connected Pedestrian and Bicycle Networks Volume II

December 2016



U.S. Department of Transportation
Federal Highway Administration

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Introduction and Background

Network Principles

Exemplary pedestrian and bicycle networks reflect, to varying degrees, the following principles:

Cohesion: How connected and linked together is the network?

Directness: Does the network provide access to destinations along a convenient path?

Accessibility: Does the network provide access to destinations for persons of all abilities?

Alternatives: Does the network enable a range of route choices?

Safety and Security: Does the network reduce risk of injury, danger, or crime?

Comfort: Does the network appeal to a broad range of age and ability levels and is consideration given to user amenities?

The Federal Highway Administration (FHWA) is committed to documenting and promoting connected pedestrian and bicycle networks in communities throughout the U.S. Networks are interconnected pedestrian and/or bicycle transportation facilities that allow people of all ages and abilities to safely and conveniently get where they want to go. This support builds off of the 2010 [United States Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations](#) (1), which identifies the Department’s goal to support an “increased commitment to and investment in bicycle facilities and walking networks.”

In December 2015, FHWA published [Case Studies in Delivering Safe, Comfortable, and Connected Pedestrian and Bicycle Networks](#) (2). The report provided an overview of pedestrian and bicycle network principles and highlights examples from communities across the country that are using a variety of methods to enhance and promote networks. At the core of the report were 86 examples of projects that enhance nonmotorized transportation networks. Projects were summarized in the following categories:

- **Planning and Prioritization** – How agencies are planning their transportation systems and prioritizing improvements so that projects result in a connected network.
- **Shared Use Paths** – Using shared use paths and the off-roadway network to link the transportation system together and allow for more direct pedestrian and bicycle travel.
- **Corridor Improvements** – Changes to high speed, high volume corridors to improve safety, accessibility, and comfort for nonmotorized users.
- **Bridges** – Addressing pinch points and bottle necks in the network to ensure safe and comfortable accommodation for pedestrians and bicyclists to and across bridges and underpasses.
- **On-Road Facilities** – Improvements that can be made within the existing street right of way to create space for more bicycle and pedestrian travel.
- **Intersections and Crossing Improvements** – Addressing the safety of intersections and other crossings that may serve as barriers to the pedestrian and bicycle network.

Since that report was published, FHWA has continued to identify examples of network-enhancing projects. A data collection effort in early 2016 identified 93 new examples of projects from around the U.S. This report summarizes these projects and shares them with the public to provide inspiration to agencies interested in making improvements to their pedestrian and bicycle networks. The report also provides a detailed breakdown of the types of projects that can be completed to improve network connectivity for pedestrians and bicyclists. Within each project type, there are several examples from locations across the country.

This report serves as another example of products and guidance developed and distributed by FHWA on the topic of connected networks. FHWA has developed numerous resources over the last few years to focus attention on this important issue. Those resources, listed in [Table 1](#), provide additional information, guidance, and motivation for agencies interested in improving access to safe, accessible, comfortable, and connected pedestrian and bicycle networks.

Table 1. FHWA Guidance and Publications on Connected Pedestrian and Bicycle Networks

Incorporating On-Road Bicycle Networks into Resurfacing Projects (2015)	Achieving Multimodal Networks: Achieving Design Flexibility and Reducing Conflicts (2016)
Bicycle Network Planning and Facility Design Approaches in the Netherlands and the United States (2016)	Case Studies in Delivering Safe, Comfortable, and Connected Pedestrian and Bicycle Networks (2015)
Road Diet Informational Guide (2014)	Pursuing Equity in Pedestrian and Bicycle Planning (2016)
Separated Bike Lane Planning and Design Guide (2015)	Guidebook for Developing Pedestrian and Bicycle Performance Measures (2016)
Bike Network Mapping Idea Book (2016)	Pedestrian and Bicyclist Road Safety Assessments Summary Report (2015)

The information provided here can help agencies to plan, design, implement, and maintain connected pedestrian and bicycle networks.

Project Examples

Planning and Prioritization

Kansas City Downtown Loop and Neighborhood Bike Connector (Kansas City, Missouri)

This project will establish a 12-mile downtown loop for bicycle facilities and establish key neighborhood connections to 18th/Vine, Crossroads, the Westside, West Bottoms, and a key link to both Wyandotte and Johnson County, Kansas residents. The project seeks to connect existing bicycle facilities by adding bike lanes, buffered bike lanes, and sharrows.

Saint Paul Bicycle Plan (Saint Paul, Minnesota)

The [Saint Paul Bicycle Plan](#) lays out how the City plans to implement an ambitious expansion of bicycle infrastructure to achieve its vision of becoming a world-class bicycling city. The improvements are focused on helping the city achieve specific targets, such as increasing bicycle mode share from 2 percent in 2000 to 5 percent in 2025, and increase the mode share of bicycling commuters from 0.6 percent to 2.5 percent during the same period. The plan is currently moving into the implementation and construction phase, poised to result in many good project examples. For example, the bike lanes on Cleveland Avenue are planned to be installed in 2016, where the City Council made the decision to remove parking for an improved bicycle facility.

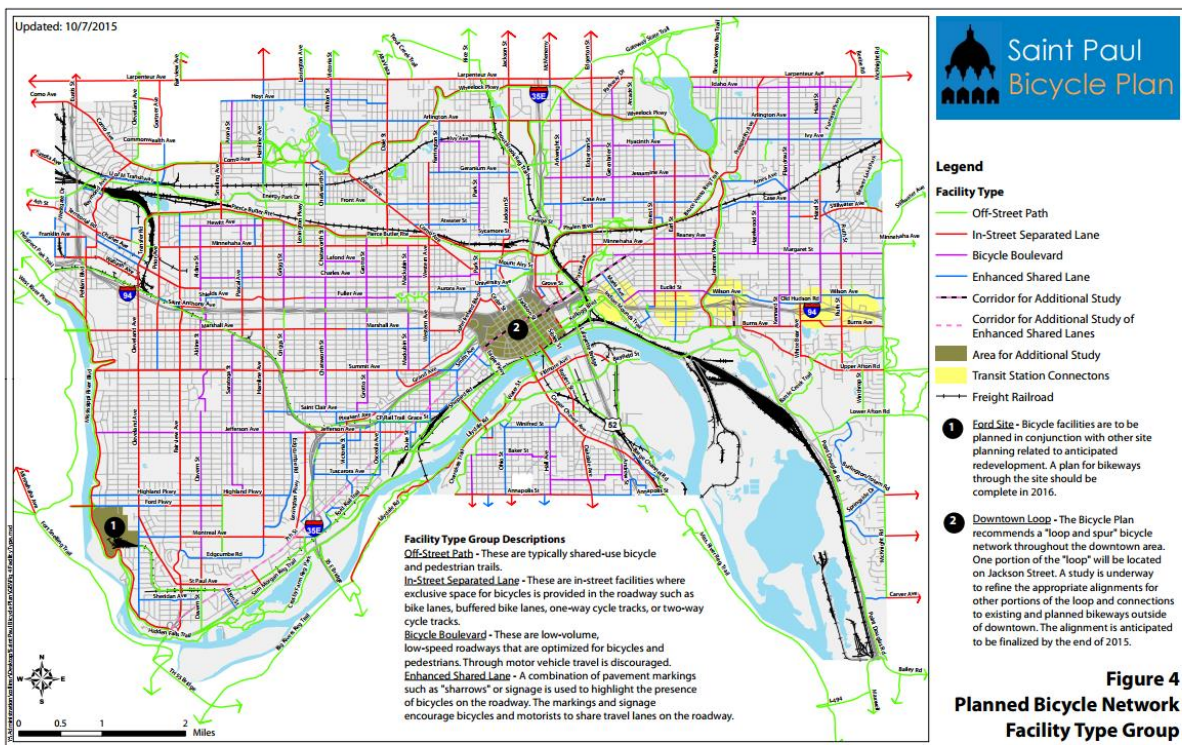


Figure 1. The Saint Paul Bicycle Plan establishes an ambitious agenda for improving bicycle network connectivity across the City. Image taken from the Saint Paul Bicycle Plan.

Northern Virginia Regional Bicycle and Trail Network Assessment and Travel Demand Model (Virginia)

The 2015 Northern Virginia regional bicycle and trail network was based off of a 2004 study and map to provide connectivity through on-road facilities (shoulders, bike lanes, and neighborhood streets) as well as off-road facilities (shared-use path and sidepaths). This update used the “Latent Demand Method” which uses population density, employment centers, and other destinations such as parks, Metro stations, and community centers to predict which routes would have the largest volumes even before the trail or bike lane was built. The 2015 update was initiated to determine how much of the original network had been built and where additional segments should be added. In addition, each segment was rated with the Bicycle Level of Service (Comfort Level) rating to determine the quality level of the overall network. These ratings will provide a benchmark for future work on the network. The study has been assisted through the efforts of a task force composed of representatives from Northern Virginia jurisdictions.

The Lawton Metropolitan Bicycle and Pedestrian Plan (Lawton, Oklahoma)

The Lawton Metropolitan Bicycle and Pedestrian Plan was adopted in 2008, with revisions made in 2010. The first four routes identified in the plan are near completion. These routes provide connections among the metropolitan park (Elmer Thomas Park), several community neighborhoods, Fort Sill, downtown, government buildings, schools, and other residential areas.

In addition to the increased connectivity offered by these routes, design and construction use a mixture of off-street trails, separated bike lanes, and shared roadway lanes. These efforts help to ensure that users of all ages and mobility levels can access this trail network.

Delaware Trails and Pathways Initiative (Delaware)

Delaware Governor Markell challenged a team of State agencies to create an interconnected network of shared-use trails and pathways that will support nonmotorized travel and recreation opportunities for Delawareans and visitors. Governor Markell’s goal was to create a world-class statewide network of path ways and trails for Delaware’s citizens and visitors, to promote biking, hiking, walking, and active living.

In June 2011, the Delaware General Assembly passed Senate Concurrent Resolution 13 requesting the study of the building and maintaining of nonmotorized travel connections within and between communities, cities, and towns in Delaware and to link these connections to form uninterrupted networks for walking and bicycling. The Initiative will support the creation of jobs resulting in investments for bicycling and walking. It will also support construction and trail maintenance jobs. Investing in trails and pathways will create tourism opportunities, support tourism-related jobs, and support recreationally-related goods and services.

The Centre Region Bike Plan (Centre Region Council of Governments, Pennsylvania)

The Centre Region Bike Plan provides a “framework” for coordination between and among the municipalities and other interested stakeholders in the region. The plan identifies critical gaps in the regional bicycle network and emphasizes the important role of bicycling within the greater transportation system. Recommended projects to close the identified gaps and improve conditions for bicycling throughout the region are identified.

Spring 2015 Bike Survey Results - Would the following improvements encourage you to bike more often, or begin biking if you do not bike now?

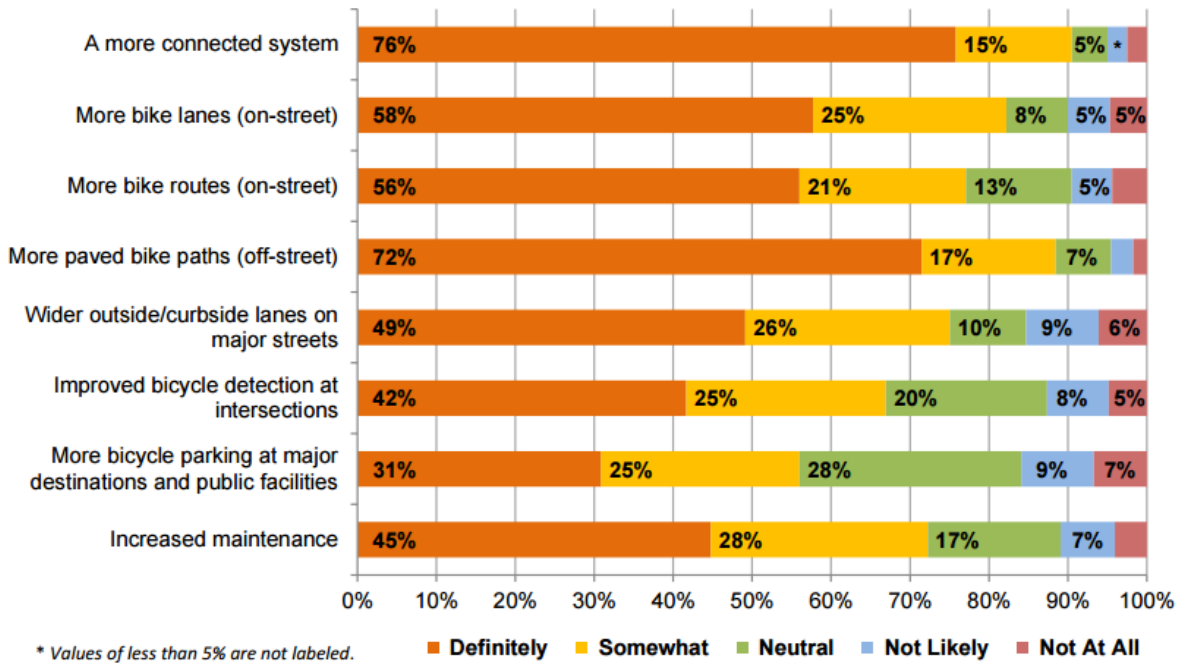


Figure 2. Public input provided a key source of data for the plan. This figure shows the importance of connected networks to those who provided input. Image taken from the Centre Region Bike Plan.

Further, the Bike Plan includes a number of goals and supporting objectives and policies that are intended to provide for safe, efficient, and connected transportation facilities. Although the Bike Plan does not represent a specific project, it does support future transportation decision-making as projects are considered and programmed.

Kansas State University Pedestrian and Bicycle Plan (Manhattan, Kansas)

The active transportation network in Manhattan, KS, is strong, and growing stronger every year. Kansas State recently earned distinction as the first Bicycle Friendly University in Kansas, earning distinction at the Bronze Level from the League of American Bicyclists. Kansas State recently released its University Pedestrian and Bicycle Plan, which calls for the conversion of the center of the university campus into an entirely bike and pedestrian mall with increased bike parking. It also includes plans to extend the bicycle and pedestrian network connecting to the campus to make walking and biking a more attractive option for more people.

Lincoln Connector Trail (Lincoln, Nebraska)

A connection between the Yankee Hill Road Trail and Tierra Williamsburg Trail is identified as one of the existing or committed trail sections to continue implementing the Lincoln MPO 2040 trails needs plan. The connection would enhance transportation opportunities in the City of Lincoln by allowing trail users and local area residents additional access to the City of Lincoln's existing comprehensive trail network. The connection would provide users with disabilities additional access and opportunities for use of the City's existing trail system.

The Lincoln Cavett Connector Trail project consists of construction of a new 10-foot wide pedestrian and bicycle trail in the southern portion of the City of Lincoln. The project is located primarily within a residential area in south Lincoln within the City limits. The new Cavett Trail would provide a connection between the existing Yankee Hill Road Trail and the existing Tierra Williamsburg Trail. The trail would facilitate neighborhood access to Cavett Elementary School located west of South 36th Street between O'Hanlon Drive and Scottsdale Lane.

Fort Worth Trail Plan (Fort Worth, Texas)

Bike Fort Worth is the city's comprehensive plan for promoting bicycling as a safe and attractive transportation alternative by working toward three goals: 1) triple the number of bicycle commuters, 2) decrease bicyclist related crashes by 10 percent, and 3) attain official designation as a Bicycle Friendly Community through the League of American Bicyclists.

One segment of the plan includes a 64-mile trail to link downtown Dallas to downtown Fort Worth. The trail will run mostly along the Trinity River – from existing bike paths in downtown Fort Worth through Arlington, then in a loop through Irving and Grand Prairie and finishing off on the new Trinity Skyline Trail in Downtown Dallas. Currently 30 of the 64 miles have already been constructed.

Dallas Trail Plan (Dallas, Texas)

The award winning Dallas Trail Plan has over 125 miles of the most beautiful and diverse urban hike and bike trails in the country. Located throughout the city, these trails connect communities, provide alternative transportation corridors, and have become an essential recreational amenity for the citizens and visitors. Current plans are to connect these trails, which are scattered around the metro area.

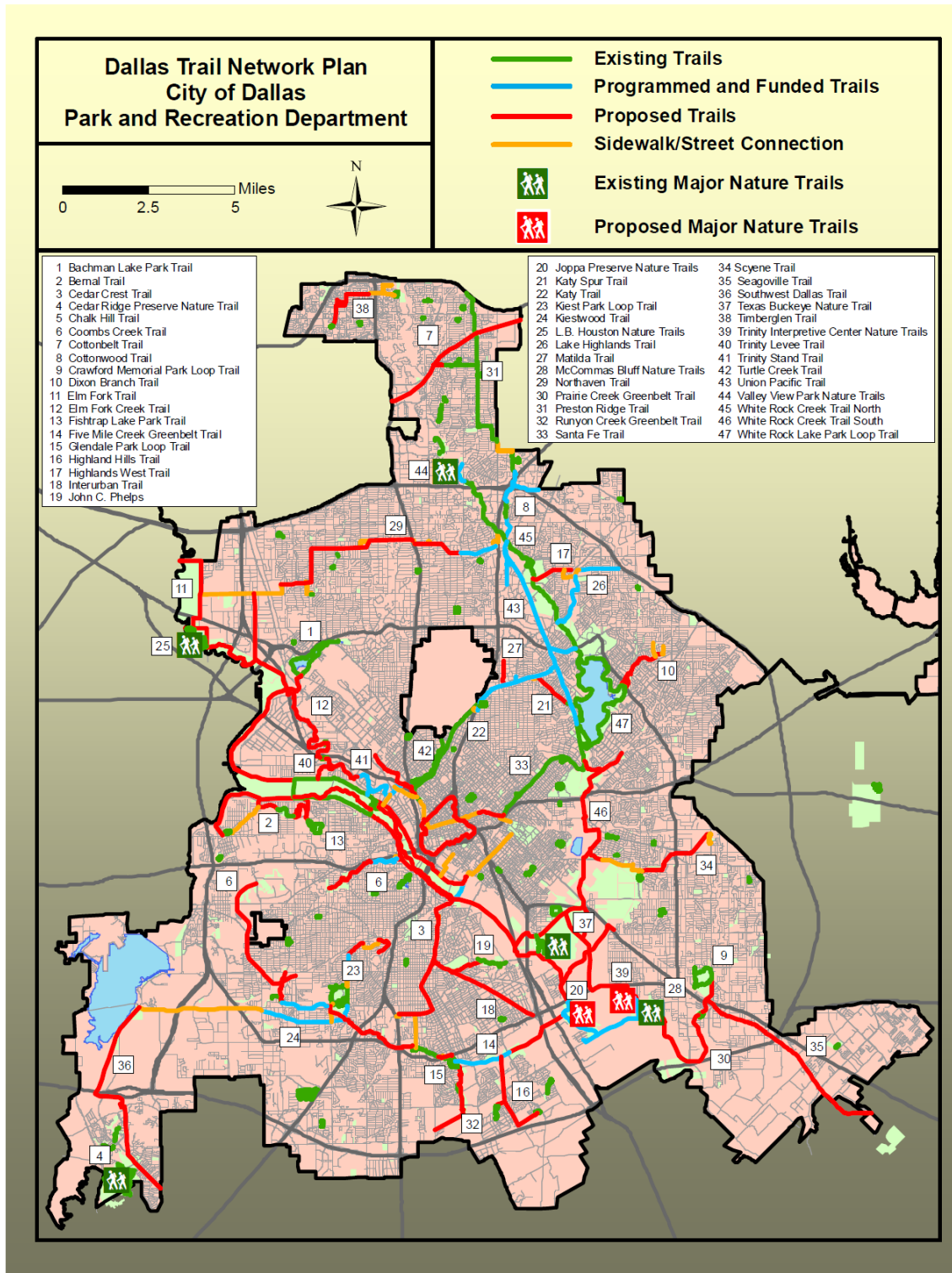


Figure 3. This map shows existing and proposed trails in the City of Dallas. Image from the Dallas Trail Plan.

Shared Use Paths

The San Francisco Bay Trail (San Francisco Bay Area, California)

The Bay Trail provides easily accessible recreational opportunities for outdoor enthusiasts, including hikers, joggers, bicyclists, and skaters. It also offers a setting for wildlife viewing and environmental education, and it increases public respect and appreciation for the Bay area. It also has important transportation benefits, providing a commute alternative for cyclists, and connecting to numerous public transportation facilities (including ferry terminals, light-rail lines, bus stops, and Caltrain, Amtrak, and BART stations). The Bay Trail will eventually cross all the major toll bridges in the Bay Area.

The Bay Trail offers access to commercial, industrial, and residential neighborhoods; points of historic, natural, and cultural interest; recreational areas like beaches, marinas, fishing piers, boat launches, and over 130 parks and wildlife preserves totaling 57,000 acres of open space. It passes through highly urbanized areas like downtown San Francisco as well as remote natural areas like the San Francisco Bay National Wildlife Refuge.



Figure 4. Amenities like benches allow trail users to rest and enjoy the space along the San Francisco Bay Trail. Image taken by Don Weden.

The Rotary Trail (Birmingham, Alabama)

The Rotary Trail is an extension of Railroad Park which is an existing 19-acre green space in downtown Birmingham. The Trail is a linear park which extends 4 city blocks along an old, below-grade rail bed. It incorporates running and walking paths, bench seating, picnic areas, landscaping, lighting, and local destinations such as office buildings, Amtrak station, bus terminals, and office centers. The trail is just one segment of a greenway that will ultimately connect Railroad Park to another destination in downtown Birmingham.



Figure 5. This rendering shows an initial vision for the trail's connection to existing facilities in downtown Birmingham. Image Courtesy of FHWA Alabama Division Office.

Sergeant Henry Plant Memorial Bridge Multimodal Pathway (Ottawa County, Michigan)

M-231 is a new highway in western Michigan, connecting M-45 with I-96 in Ottawa County. This new 7-mile route contains the seventh longest bridge in Michigan, the Sergeant Henry Plant Memorial Bridge, at 3,700 feet. In recognition of the need to serve the bicycle and pedestrian network, the Henry Plant Bridge was designed and built to include a separated pedestrian and bicycle pathway on the structure. The pathway on the structure and the forthcoming shared use pathways along M-231 are known as the Spoonville Trail and will connect to a larger regional shared use pathway system in Ottawa County. This shared use path network includes connecting Grand Rapids with the Lake Michigan shoreline in Grand Haven.

Urban Trail Expansion (St. Joseph, Missouri)

The City of St. Joseph is currently working on “making connections” from major points of interest and residential and commercial areas in order to increase accessibility, safety, and connectivity. To increase the viability of alternate modes of transportation, new trail extensions are creating connections to commercial, retail, health care, educational institutions, and other major points of interest along the urban trail system. Efforts are being targeted to provide east and west connectivity. These connections will connect major residential and commercial areas within the city of St. Joseph and help to improve accessibility and connectivity within the urban core.

Hominy Branch Trail Phase II (Columbia, Missouri)

This project will add another important link to Columbia’s trail network, which is one component of the Columbia Area Transportation Study Organization (CATSO) 2040 Long-range Transportation Plan’s Bicycle & Pedestrian Network Plan. Its implementation will continue the initial phase of the Hominy Branch Trail by providing a route across US 63 and Broadway via underpasses to near Woodridge Park. Phase II will continue another 1.1 miles to the northeast, and provide a critical access across Interstate 70, a major barrier, to areas on the north side of I-70.

New River Path and Grand Canal (Glendale, Arizona)

The City of Glendale is working on the final pieces of the New River Path and Grand Canal that, once completed, will provide a continuous and connected set of corridors for residents to the Grand Canal, New River, and other local path systems. The project was initially included in the City’s plans developed in 2001 that laid out 25 years of transportation projects. The path will open up direct off-street connections to central Phoenix, Westgate employment center in Glendale, Arrowhead Center and the Peoria Sports Complex, Metrocenter Mall, and the light rail extension to Dunlap, among other employment destinations. This will greatly improve the utility of these areas as transportation corridors for both walking and bicycling.

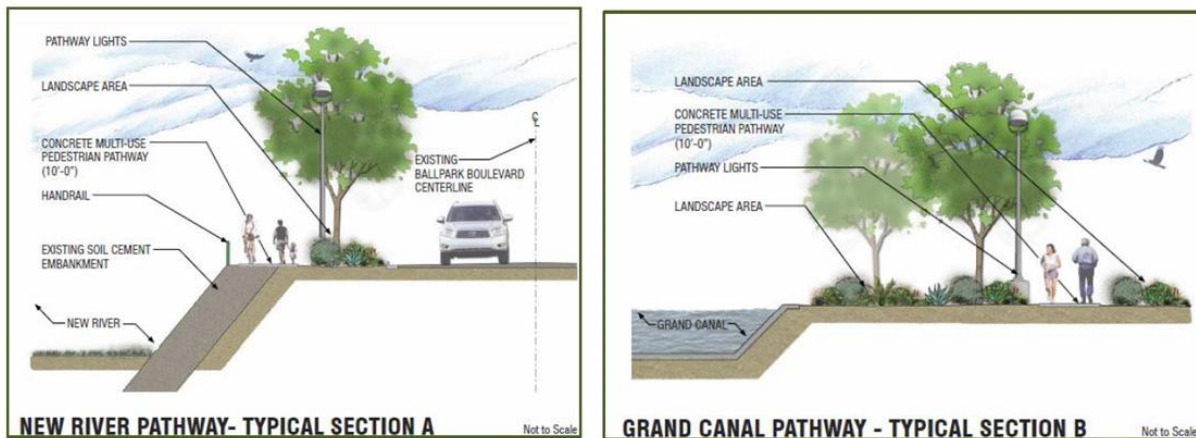


Figure 6. Typical sections for the New River Pathway and Grand Canal Pathway. Images taken from CH2M Hill Newsletter.

Grant's Trail Extension (St. Louis, Missouri)

Grant's Trail Extension closes a critical gap in the GRG River Ring, connecting the existing Grant's Trail to the River des Peres Greenway. The extension will create a continuous 17-mile route for cyclists and pedestrians. The proposed trail is 14 feet wide and there are multiple trailheads, as well as on-street connections. A bridge will be installed over Bayless Avenue, which will create a separation between modes at the intersection.

New Segments of the San Francisco Bay Trail (Martinez, Hercules, Crockett, and Port Costa, California)

Several Transportation Investment Generating Economic Recovery (TIGER) II grant-funded projects were completed in 2015 to close gaps in the Bay Trail network. The Hercules project constructed a 0.63-mile segment of the San Francisco Bay Trail in the City of Hercules. The bicycle and pedestrian trail connects the Bay Trail to the future Hercules Intermodal Center under design. The Hercules Intermodal Transit Center will combine three modes of public transportation – rail, ferry, and bus – at one convenient location along the waterfront.



Figure 7. The Tiburon Path is one of several key connections making up the Bay Area trail in California.

The Martinez Intermodal Station to Crockett segment of the San Francisco Bay Trail provides direct access to Amtrak, the Capitol Corridor commuter rail service, and regional bus service for the residents of Port Costa and Crockett, as well as providing improved connectivity to the intermodal station for Martinez residents. The trail provides safe and convenient access to the station reducing auto traffic and enhancing livability. The project reduced the commute distance for bicyclists from Crockett to Martinez by 7 miles and provides a safe alternative to the existing narrow, high-speed roadways connecting the two communities.

New Castle Industrial Track (New Castle and Wilmington, Delaware)

The New Castle Industrial Track was a rail line connecting the Wilmington Riverfront and the City of New Castle. The line was taken out of service in the 1970s; the right of way is owned by the State of Delaware. Starting in the 1990s, Delaware Department of Transportation (DelDOT) and the Delaware Department of Natural Resources and Environmental Control (DNREC), and New Castle County discussed the possibility of reusing the Industrial Track alignment for an active (bicycle and pedestrian) transportation connection between New Castle and Wilmington. This alignment is desirable not only because of its directness, but because the entire 6-mile alignment has very few at-grade road crossings. Previous plans have outlined the need for a trail in this location.

The project was planned for three phases; the third and final phase will create a bridge across the river and a boardwalk through the wetlands of the Russell Peterson Urban Wildlife Refuge. This phase will complete the continuous route between the City of New Castle and the Wilmington Riverfront.

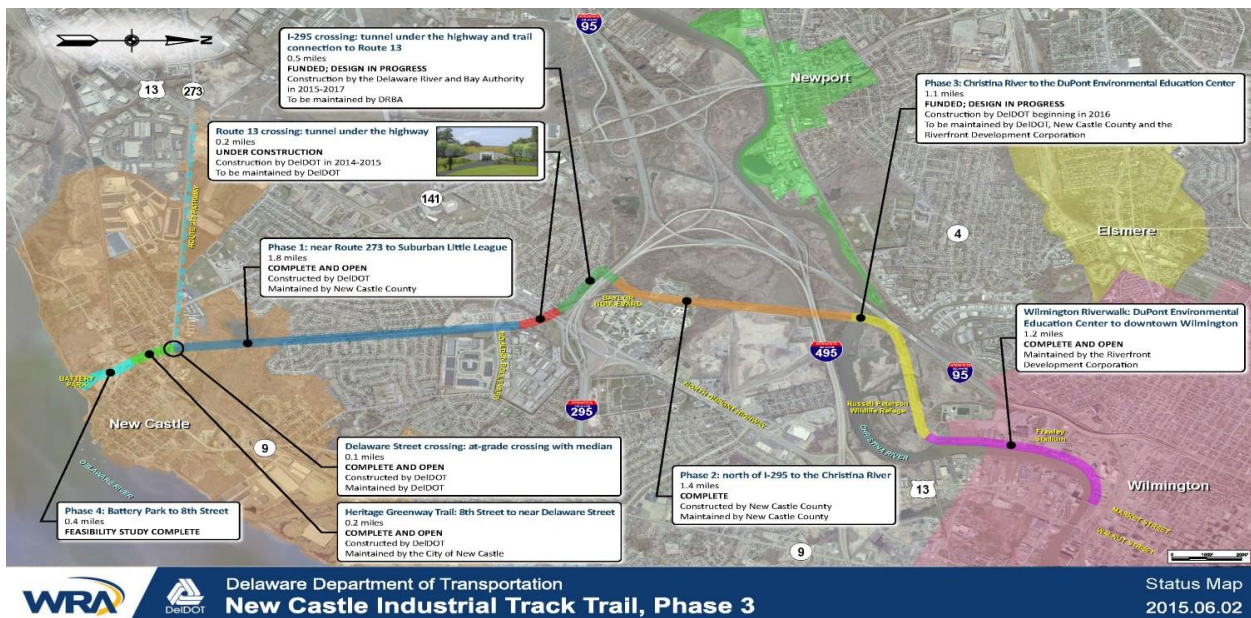


Figure 8. This map shows the various phases of work on the New Castle Industrial Track Trail. Map taken from Delaware Department of Transportation.

Green Mill Run Greenway and South Tar River Greenway (Greenville, North Carolina)

The first project, the Green Mill Run Greenway, will construct a greenway from Charles Boulevard to Evans Park. The second project, phase three of the South Tar River Greenway, will construct a greenway from Pitt Street toward Moye Boulevard in the vicinity of Pitt Memorial Hospital using existing sidewalks, roads, and a new facility along the river. Both projects will improve network connectivity and provide alternative transportation options for local residents.

The Amelia Island Parkway Multiuse Trail, Phase II (Fernandina Beach, Florida)

The Amelia Island Parkway Multiuse Trail, also known as the Amelia Island Trail Phase II Project, is located in Nassau County, Florida. This project was submitted under the Transportation Alternatives Program (TAP) in collaboration with State, local, and regional agencies as well as public and private sector partners.



Figure 9. The Amelia Island Trail is one piece of the East Coast Greenway.

The Amelia Parkway Multiuse Trail, Phase II Project is a continuation of the recently completed Amelia Island Trail. The length of the project is 4 miles. The total length of the trail is approximately 10.5 miles. The trail will provide network connectivity through a separate path from the trailhead located on 8th Street (A1A) from Amelia Island's primary entrance. The trail head lies east of the Shave Bridge and extends to Nassau Sound, the southern tip of Amelia Island. The Amelia Island Parkway Multiuse Trail will be a recreational trail and as an alternative transportation system for the island.

Missoula-to-Lolo Trail (Missoula County, Montana)

Missoula County and its partners received a \$4,580,363 rural Transportation Investment Generating Economic Recovery (TIGER) grant award to construct the Missoula-to-Lolo (M2L) trail. This 8-mile, 10-foot wide shared-use bicycle and pedestrian path will parallel US Highway 93 between Missoula and Lolo. When the project is complete, the new trail will connect Lolo with the City of Missoula's Bitterroot Branch Trail, allowing continuous shared-use path connectivity between downtown Missoula and Hamilton. While the majority of trail construction will be in the County, a portion of the link is located within Missoula City limits.

The Cross Florida Greenway Trail, Santos Gap, and Land Bridge Gap (Ocala, Florida)

The Cross Florida Greenway trail is a planned 22-mile system of trails connecting downtown Ocala, Silver Springs State Park, the Cross Florida Greenway, the Baseline Trail, Blue Run Park, the Withlacoochee Trail, and the Heart of Florida Loop. The greenway offers hiking, bicycling, paddling, and equestrian trails, as well as fishing, camping, and other recreational opportunities. Each of the proposed Bike Ocala-Marion trails would add to the existing amenities of the Cross Florida Greenway, specifically by providing a paved multiuse path that is accessible by all user types. The Cross Florida Greenway Trail will connect communities and attractions along the Cross Florida Greenway, while the proposed Florida Northern Railroad (FNOR) Trail and the Silver Springs Bikeway will provide pedestrian and bicycle access from downtown Ocala to the Cross Florida Greenway.

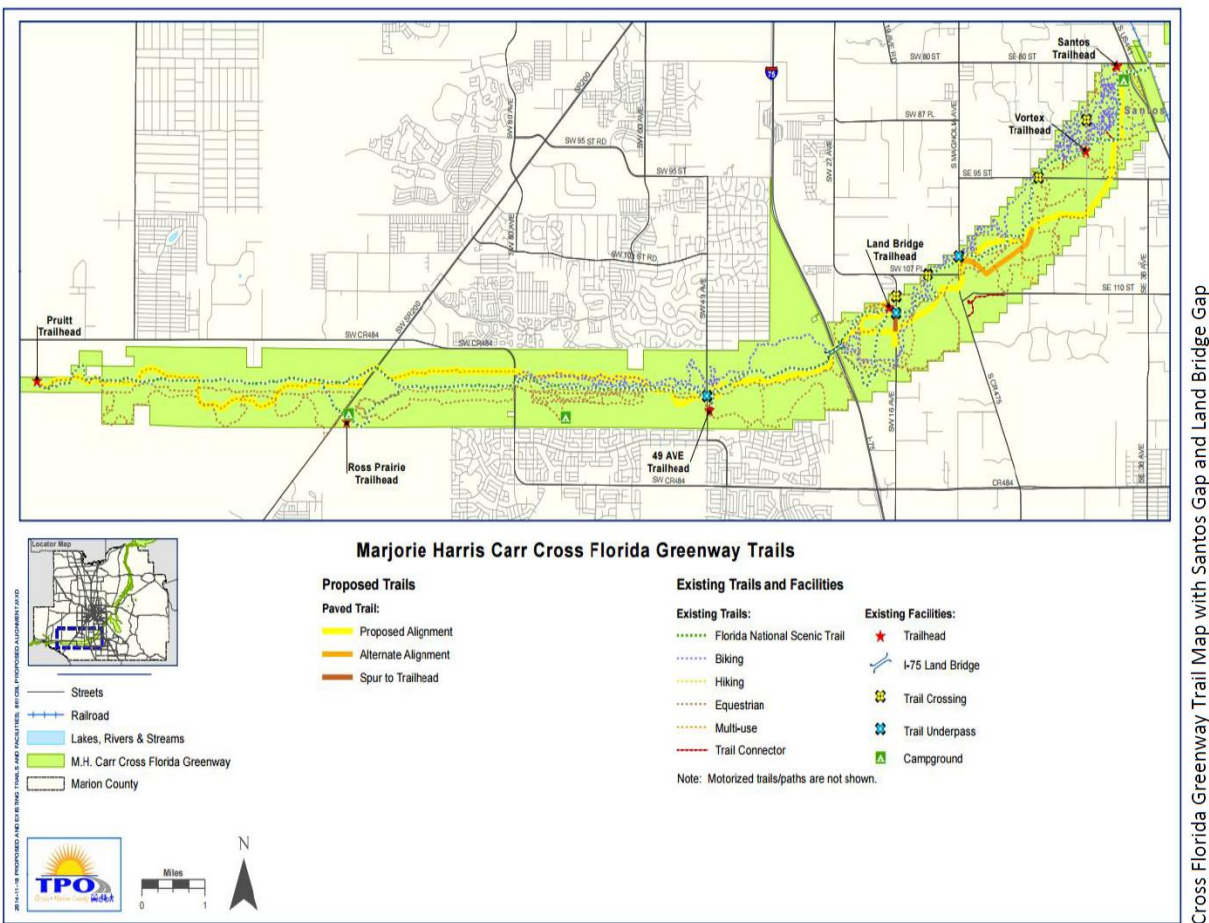


Figure 10. The map above shows routes for the Cross Florida Greenway Trails.

Pine Hills Trail (Pine Hills, Florida)

Pine Hills Trail is approximately 8.2 miles in length which includes an existing 0.7-mile section. The trail uses an existing 100- to 200-foot wide Florida Power power line corridor in its alignment from Colonial Drive North (State Road 50) to the Seminole Wekiva Trail at Rose Avenue. The exception to the power line corridor route is at Beggs Road. At Beggs Road, the trail departs the power line corridor and travel east to and beneath US 441/Orange Blossom Trail where it continues north along the east edge of the US 441 ROW to Maitland Boulevard and the Seminole Wekiva Trail.

In addition to the connection to the Seminole Wekiva Trail and Seminole County's trail system, the intersection of Clarcona Ocoee Road provides a connection west to the West Orange Trail (WOT) and Lake County's trail system via a partially complete 8-foot path (Clarcona Ocoee Connector Trail) along Clarcona Ocoee Road. At the southern end, the Pine Hills Trail joins the Shingle Creek Trail at Colonial Drive (State Road 50) which connects to Osceola County's extension of the Shingle Creek trail to downtown Kissimmee.

Layout of Pine Hills Trail with its connections to trails in close proximity

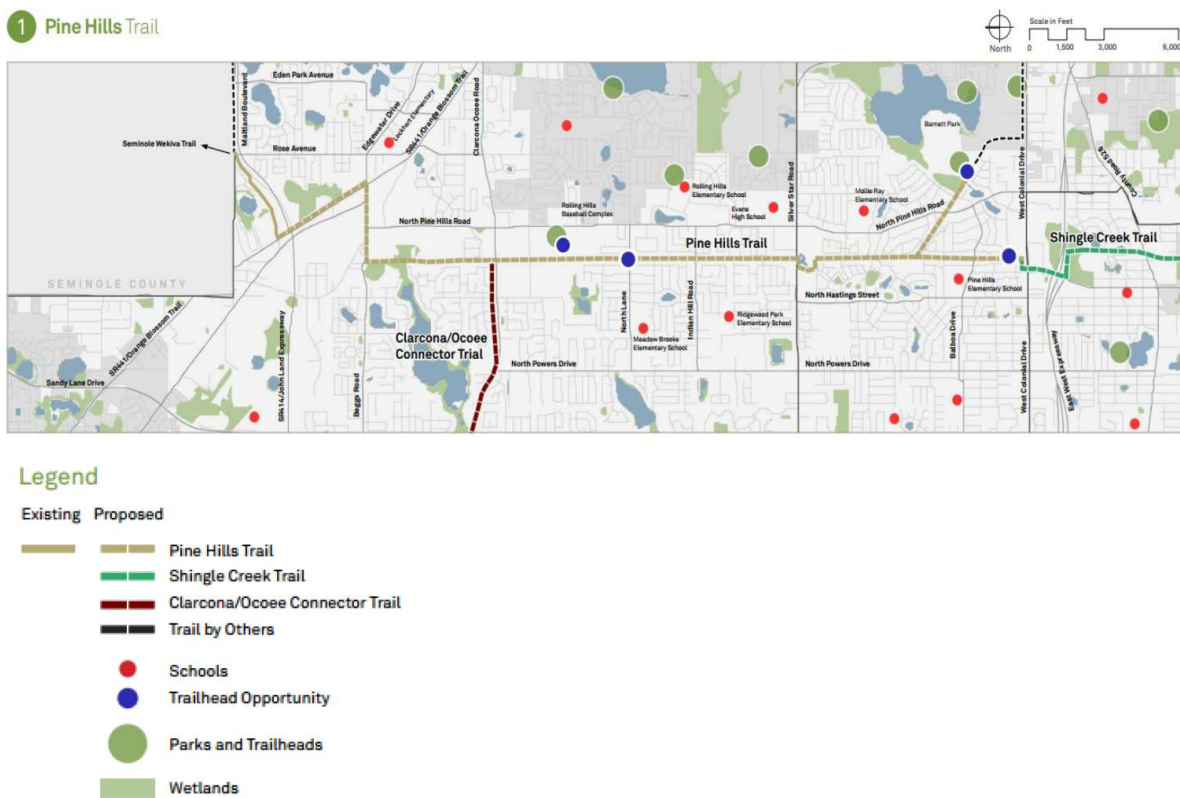


Figure 11. The map above displays the Pine Hills Trail as part of the greater area network.

The West Broadway Corridor (Council Bluffs, Iowa)

The West Broadway Corridor is at the center of a multimodal plan for the City of Council Bluffs that connects downtown Council Bluffs with downtown Omaha across the Missouri River. The plan provides a strong framework of street and trail improvements and introduces the potential for accommodating public transportation that, if implemented, will increase development opportunities, land use densities, and livability in the district. This plan provides connectivity to the Bob Kerrey Pedestrian Bridge, one of the most recognizable pieces of transportation infrastructure in the region, provides a car-free connection across the river, with riverfront trails on either side. The plan will convert an abandoned railroad right of way into a multimodal corridor, primarily serving transit, bicycle, and pedestrian trips. The Mid-City Trail project began construction in 2015.

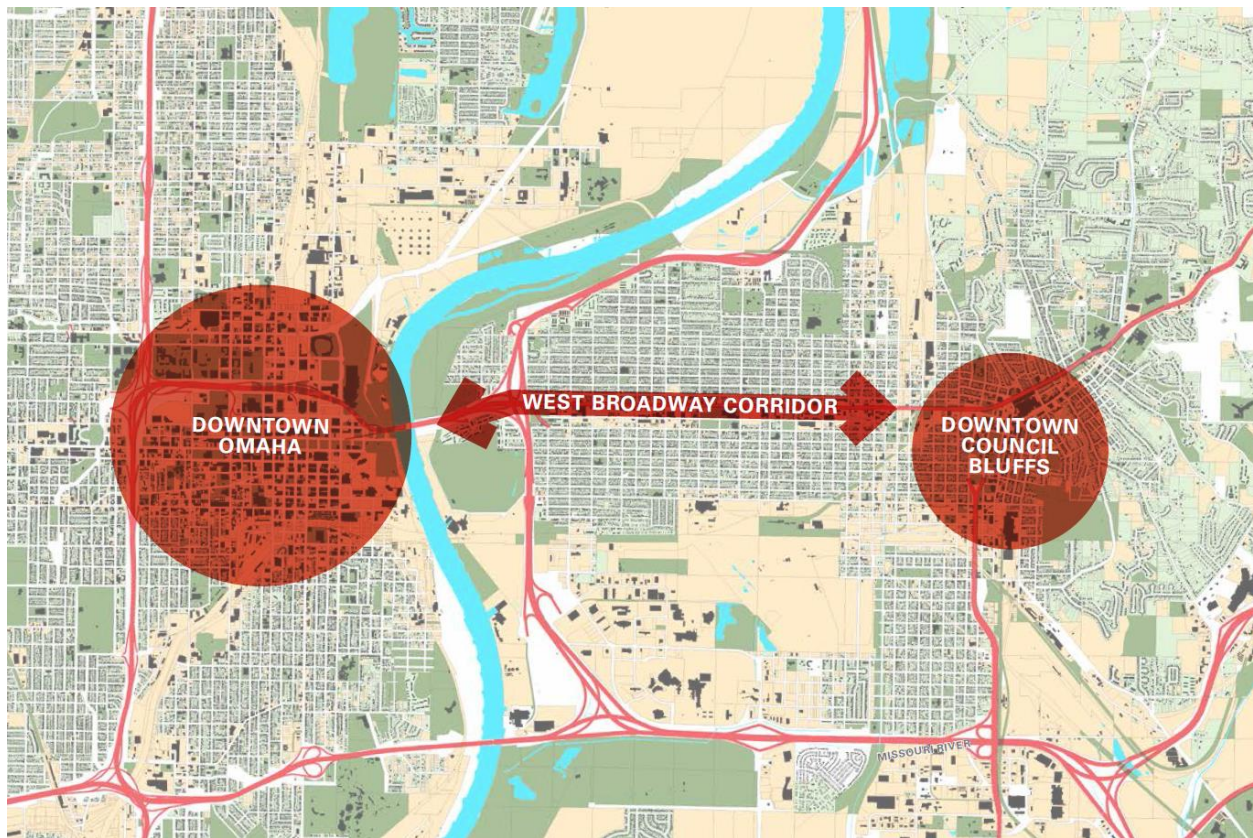


Figure 12. The high-level map above shows the role of the West Broadway corridor in connecting Council Bluffs with Omaha.

The I-290 Shared Use Path (Forest Park and Oak Park, Illinois)

A 2-mile long, 10-foot wide shared-use path is proposed along the north side of I-290 between Des Plaines Avenue and Austin Boulevard. The shared use path would effectively extend the Illinois Prairie Path 2 miles from the CTA Blue Line Terminal in Forest Park to Columbus Park located on the east side of Austin Boulevard in the City of Chicago. The path is proposed to connect to the existing Columbus Park trail system that runs along the south side of the park, which would effectively extend the reach of the Illinois Prairie path an additional ½ mile to Central Avenue.

Trail Recreation Effingham County (TREC) Improvements (Effingham, Illinois)

The TREC Trail has been expanding throughout the City of Effingham and Effingham County for over 10 years. It has provided miles of recreational trails and multiuse paths to connect facilities in the City of Effingham and to provide recreational and physical activities for the surrounding residents and visitors to the area. In 2015 a new pedestrian overpass was constructed over I-55/57 to connect the rural portions of the trail to the urban portions of the trail within the City of Effingham. By connecting the pedestrian overpass with the existing trail network, it provides access to numerous facilities for the users of the trail throughout Effingham County.

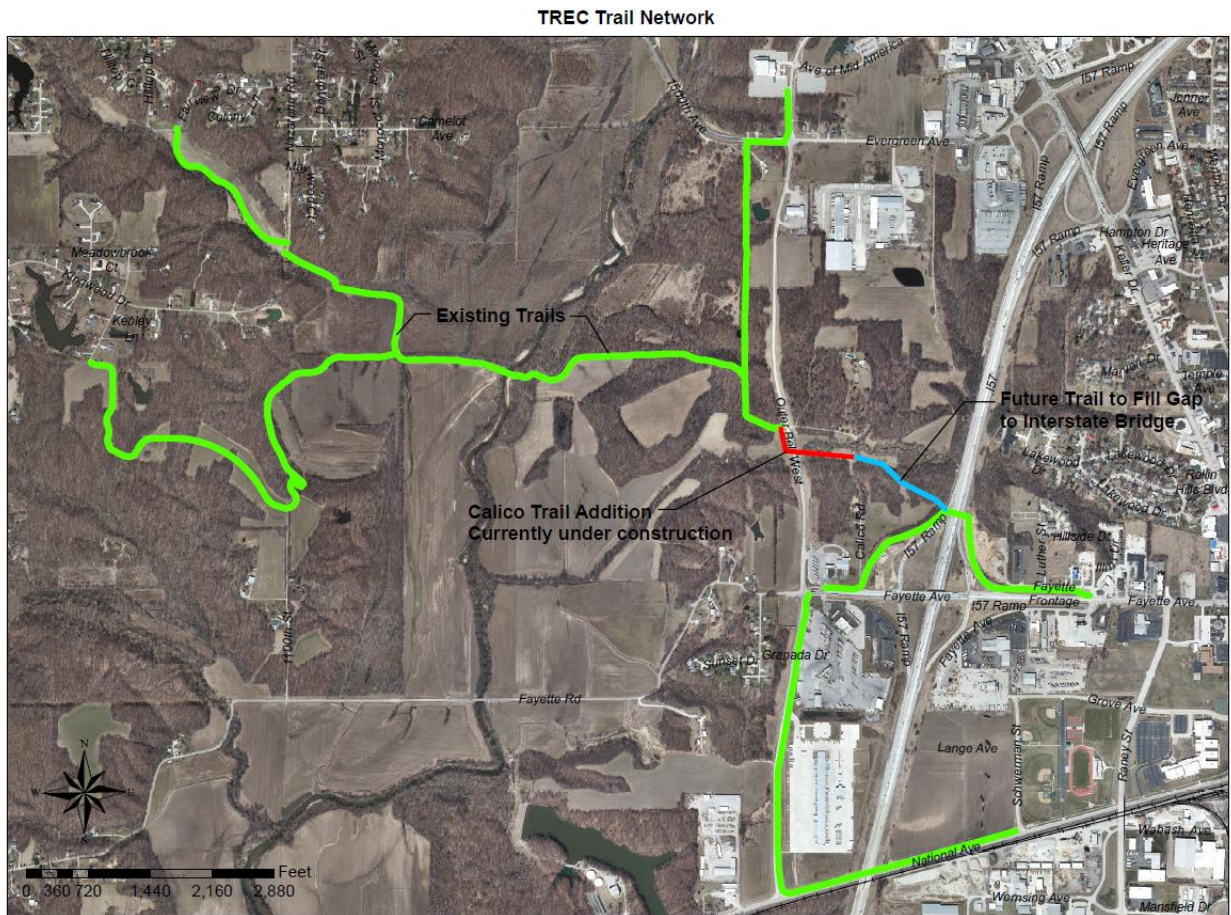


Figure 13. The map above demonstrates how future trail connections will bridge gaps in the existing network.

Shared Use Path (Bismarck, North Dakota)

This project involves the construction of a 10-foot shared-use path from the existing Edgewood Shared Use Path North-South Segment, east to Centennial Road. The trail project extends the trail system east, allowing more access to Bismarck’s extensive trail system to residents in the north and east sections of Bismarck. The project added community connectivity by linking major road arterials within the city to schools, transit, residential areas, work places, and parks. It also provided community cohesion by providing access to recreation and physical activity to Edgewood Village.

The Chicago Riverwalk (Chicago, Illinois)

The Chicago Riverwalk provides an accessible pedestrian route along the north side of Wacker Drive for six blocks from Lake Street to State Street along the Chicago River. It provides a route under bridges so pedestrians can walk the route without crossing busy streets. Each block will feature a distinct theme. Design elements include bicycle and pedestrian facilities, public seating, sustainable native plant landscaping, and recreational spaces. In addition to the under-bridge connections, a 25-foot wide footprint along the river is being constructed to provide the walkway. For Wacker Drive, the ADT is 65,000 and pedestrian volume is estimated at over 140,000 per day.

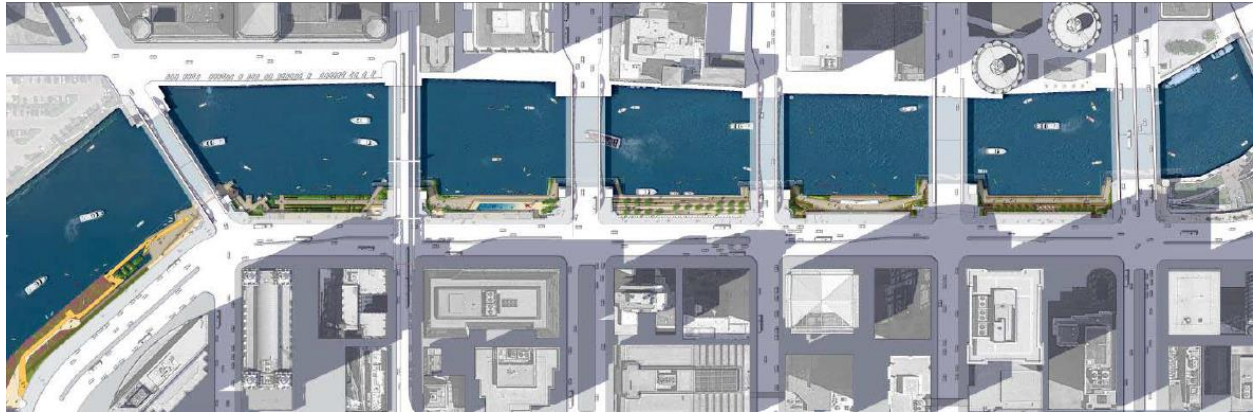


Figure 14. This graphic shows the route of the Chicago Riverwalk and some of the trail's features.

The Baltimore Waterfront Promenade (Baltimore, Maryland)

The Baltimore Waterfront Promenade is popular location in the downtown harbor of Baltimore. Each year thousands of tourists and residents navigate this area to enjoy its amenities. In order to improve the walkability of the area, this project filled the missing section of the existing Promenade on the waterfront pathway. The Promenade extends 7 miles from the Tide Point development in Locust Point to the Canton Crossing development in Canton. Visitors have the ability to travel by foot or bike along the Inner Harbor Vistas, Inner Harbor East Paths, Skyline Vistas, and other waterfront developments between Tide Point and Canton Crossing. Transit is also an option in this area, as the MTAs Route 11 bus travels between north Baltimore and Canton and makes a stop less than a quarter-mile from the Promenade. Most recently, the Charm City Circulator has a stop less than a block from the Promenade. The project offers a recreation opportunity and a transportation alternative for pedestrians. It is also -compliant with accessibility regulations and connects to nearby transit.

East of the Riverway Multimodal Network and Roadway Improvements (Asheville, North Carolina)

These improvements will add multimodal connections to Downtown Asheville via Clingman/Haywood and Hilliard/Haywood as well as to West Asheville via Haywood Road or Riverside Drive. There are also connections made to the Chicken Hill, South French Broad, and River Arts District neighborhoods. The greenways, separated bike lane, and enhanced pedestrian features greatly improve the appeal of traveling by bike or foot in the project area.

Monon Trail (Westfield, Indiana)

Phase 4 of the Monon Trail provided a connection between two of the largest trails in this part of the State – the Monon Trail and the Midland Trace Trail. These trails, which are both situated on former rail corridors, provide both local and regional connections between residential areas, places of employment, and other key destinations. The Phase 4 work involves linking these two trails with a bridge over the Anna Kendall Creek. The bridge runs east-west along the Midland Trace Trail and allows cyclists and pedestrian users to access SR 32 via the Monon Trail. The project extends connectivity from downtown Indianapolis through suburban Westfield and into rural Westfield.



Figure 15. Phase 4 of the Monon Trail with pedestrian and bicyclist wayfinding.

Houston Regional Bike Pedestrian Connections to Transit (Houston, Texas)

The Houston Regional Bike Pedestrian Connections to Transit project creates a continuous system of about 150 miles of trails along Houston’s major waterways. The connections were constructed as 6 projects which aim to improve mobility in Houston eliminating major gaps on primary off-street bicycle and pedestrian transportation routes and in the city’s bike grid. The projects also provide extensive connections to residences, employment centers, and bus and rail transit centers.

Town Branch Trail (Lexington, Kentucky)

The Town Branch Trail Phase is a proposed shared use trail that extends the existing trail another 4 miles. The 12-foot wide trail will begin at Alexander Drive and end at Oliver Lewis Way. The trail is for people of all ages and abilities. Town Branch Trail will connect Downtown Lexington to Masterson Station Park and neighborhoods west of Lexington. There are commercial and newly developing entertainment opportunities in the project corridor. The Town Branch Trail will also connect to the Legacy Trail, a 12-mile trail that connects Downtown to the Kentucky Horse Park.

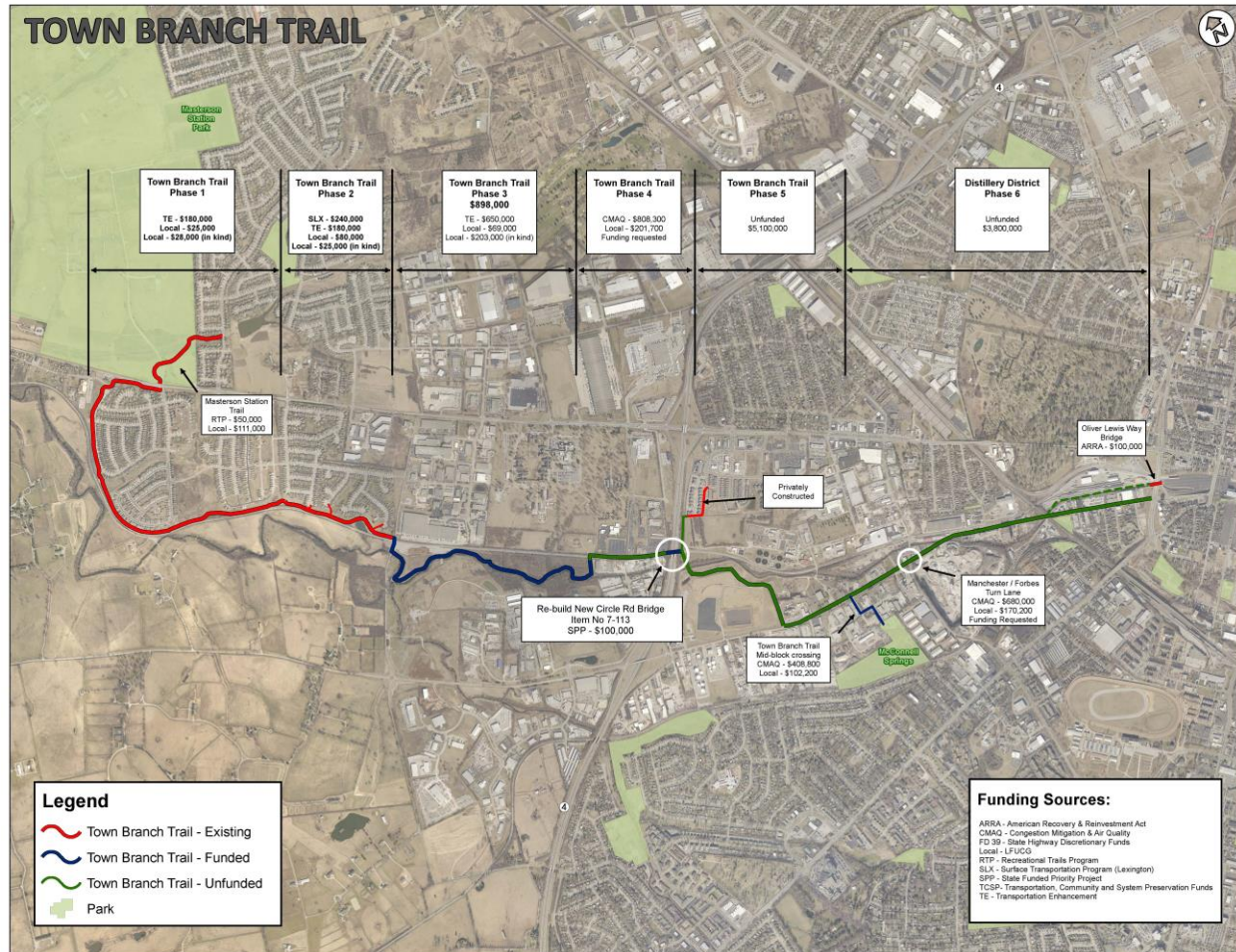


Figure 16. This map shows the various phases of development for the Town Branch Trail. Map provided by the FHWA Kentucky Division Office.

The Lafitte Greenway (New Orleans, Louisiana)

The Lafitte Greenway is a 2.6-mile bicycle and pedestrian trail connecting the French Quarter to Bayou St. John and Mid-City as well as Armstrong Park to City Park. Opened in 2015, the Lafitte Greenway features sports fields, grassy lawns, 500 newly planted trees, energy-efficient lighting, and innovative rain garden and bioswale stormwater management features. Funded by Disaster Community Development Block Grants and Louisiana Recreational Trails grants, the \$9.1 million Lafitte Greenway project was designed with extensive input from neighborhood and civic groups. The Lafitte Greenway project is the first element of the Lafitte Corridor Revitalization Plan

developed by the New Orleans City Planning Commission in partnership with the New Orleans Department of Public Works. Currently, the Friends of Lafitte Greenway is the nonprofit community partner working to ensure that the Lafitte Greenway develops into a community asset by providing community-based programming and promoting the use of the Greenway.



Figure 17. A walking tour along the Lafitte Greenway.

Norwottuck Rail Trail (Northampton, Hadley, Amherst, and Belchertown, Massachusetts)

The Norwottuck Rail Trail is an 11-mile trail that links the communities of Northampton, Hadley, Amherst, and Belchertown. The corridor has received numerous upgrades in recent years. The scope of work for this effort included excavating and repaving the existing trail surface, widening up to 10 feet where possible, embankment stabilization, repair or replacement of existing culverts, construction of new accessible access ramps, enhancing the road crossings, changing the alignment at the Route 9 tunnel, adding turn-arounds and other universal access improvements, redecking bridges, and upgrading trail signage and other amenities to enhance the user experience. The path itself is now glass free (the asphalt originally laid down for the trail was mixed with recycled glass). The upgrades also improved connections to the existing shared use path systems in Northampton, Hadley, and Amherst in addition to new Amtrak passenger service in Northampton.

Marietta River Trail Extension (Marietta, Ohio)

The Marietta River Trail is approximately 3.4 miles and runs along the Muskingum and Ohio Rivers in Marietta, Ohio. The River Trail is currently being extended to connect shopping and commercial destinations with the residential and CBD areas in Marietta. Plans to connect it to the region have been established, but continued work is ongoing in the surrounding communities of Devola and Belpre.

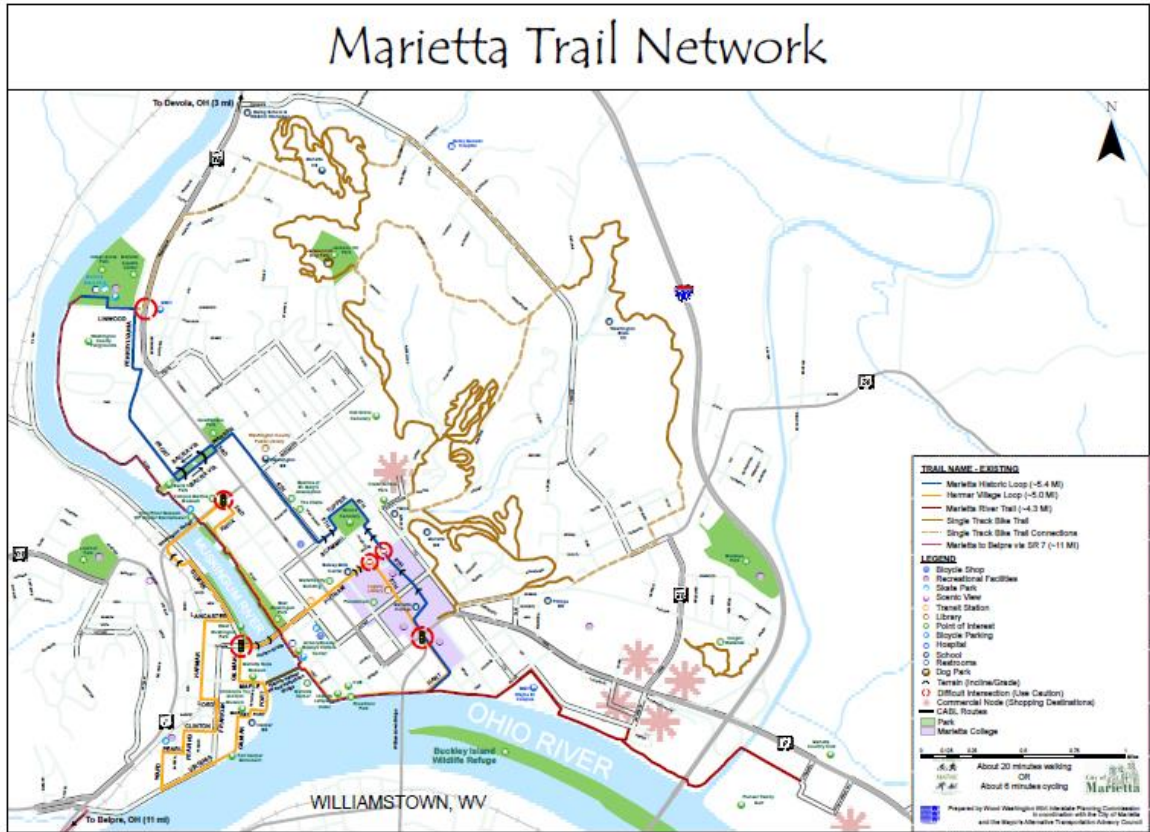


Figure 18. A map of the Marietta Trail Network is shown above.

The Piñones Trail and Connection to Isla Verde (San Juan, Puerto Rico)

The Piñones Trail, a multipurpose trail, provides facilities for cyclists and pedestrians, adjacent to the coastal State road PR-187 and bordering the Piñones and Torrecillas Natural Reserves, areas of significant ecological and scenic value. Phase I of this project, about 11 kilometers in length, provides a safe route for cyclists and pedestrians with recreational and touristic attractions, while preserving and respecting the ecological value of the area it traverses. It was built at a cost of approximately \$7.5 million, and was financed partially with funds from Federal Highway Administration and Puerto Rico Highway and Transportation Authority. An extension of this project provides a separated bicycle lane adjacent to Carolina’s Public Beach to connect Isla Verde’s prime tourist area.

Bicycle and Pedestrian Corridor between the Luis Muñoz Rivera Park at the Entrance to the San Juan Islet and Central Park (San Juan, Puerto Rico)

The project will connect the Luis Muñoz Rivera Park, the Condado Lagoon, and the Convention Center District to get to Central Park through Baldorioty Boulevard. The project will provide the opportunity for pedestrians and cyclists to follow from Central Park through Enrique Martí Coll Linear Park, in the Martín Peña Channel, to the Acuaexpreso Terminal, Urban Train Station, and the Coliseum in Hato Rey. The total length of the trail is 2.4 kilometers.

Paseo Puerta de Tierra (San Juan, Puerto Rico)

The Paseo Puerta de Tierra is part of the proposed bicycle and pedestrian network for the San Juan Metropolitan Area envisioned for 2040 to provide a bicycle and pedestrian corridor along the northern edge of the San Juan Islet. The project will provide a route for bicycle and pedestrian connections, along the Muñoz Rivera and Ponce de León avenues, integrating natural and cultural resources, as well as the recreational and tourist areas on the Isleta de San Juan for the enjoyment of residents and visitors. To achieve this development, public transport routes of the Metropolitan Bus Authority (AMA) and Metrobus will run in the old Calle del Tren, currently used for some of these routes, which will be rehabilitated. By getting all buses to use this street, existing lanes on the Muñoz Rivera and Ponce de León avenues were removed to create the necessary space for pedestrian and bicycle lanes and meet the criteria for Complete Streets.

Presently the first two phases are under construction: Phase I – Calle del Tren and Phase II – Connection between Condado and Muñoz Rivera Avenue to the Escambrón Recreational Area, which are expected to be completed in the third quarter of 2016.



Figure 19. The linear park connects key destinations around San Juan, Puerto Rico. Image courtesy of the FHWA Puerto Rico Division Office.

Enrique Martí Coll Linear Park to Jardín de Puerto Rico (San Juan, Puerto Rico)

The National Parks Trust of Puerto Rico completed the development plan for the Jardín de Puerto Rico in 1991, a linear park to connect major parks in the Municipality of San Juan. At present there are only two segments constructed: one along the Caño Martín Peña, between Acuaexpreso Terminal and Central Park with a connection to Santurce Park, and the other bordering the shore south of the Condado Lagoon connecting to the Jaime Benítez Park. Since its inauguration in 1993, the project was named Enrique Martí Coll Linear Park.

The Maryville-Alcoa Greenway Trail System (Blount County, Tennessee)

The Maryville-Alcoa Greenway connects Springbrook Park in Alcoa with the Bicentennial Greenbelt and Sandy Springs Park in Maryville. The greenway starts near the swimming pool in Alcoa's Springbrook Park, passes by schools, crosses Springbrook Road near Edison Road, then follows Pistol Creek to Maryville. The core of this network has been in existence for many years, but has recently been expanded to bring greater connectivity to Blount County and the surrounding region. American Recovery and Reinvestment (ARRA) funds were used to construct a pedestrian and bicycle bridge over Alcoa Highway, creating a link to formerly separated neighborhoods on each side of the iconic gateway into the City of Alcoa. An additional extension to connect a bustling business center and the Pellissippi Place technology park is currently programmed using Transportation Alternatives Program (TAP) funds and in the design phase.



Figure 20. The Maryville-Alcoa trail system has expanded to provide connectivity throughout Blount County. Image courtesy of the FHWA Tennessee Division Office.

The Lamoille Valley Rail Trail (LVRT) (Vermont)

The Lamoille Valley Rail Trail (LVRT) is a 93-mile rail-to-trail project that stretches almost the width of Vermont from St. Johnsbury in the east to Swanton on Lake Champlain. Two sections of the trail have been completed including replacement or rehabilitation of bridges. Users of the trail vary from winter snowmobile and cross country skiing to summer bicycling and horseback riding.



Figure 21. One of several bridges intended to improve crossings along the Lamoille Valley Rail Trail.

Howard W. Peak Greenway Trails System (San Antonio, Texas)

The Howard W. Peak Greenway Trails System Plan by the City of Antonio consists of three systems that will eventually connect to a combined 32 miles. The Leon Creek Greenway System offers 17 miles of paved multiuse trails and will soon expand to tributaries including Huesta Creek, Culebra Creek, and Huebner Creek. The longest currently connected segment is 13.5 miles. It connects to the University of Texas at San Antonio, Wolff Stadium, and numerous neighborhoods and businesses. Additionally it connects to the VIA Ingram Road Transit Center with a trailhead providing direct bus access. The Medina River Greenway System is a 7-mile predominately recreational and nature trail that will soon connect to Jim Mattox Park and the San Antonio River trails at Mission Espada. The Salado Creek Greenway System consists of three segments with approximately 8 miles connecting Jones Maltsberger and Rittiman Road, 5 miles connecting Huebner Road and Highway 281, and another 8-mile segment connecting Jack White Park to Side Lions Park.

Piscataquog and Goffstown Rail Trails (Manchester and Goffstown, New Hampshire)

The Piscataquog Trail is a 10-foot wide paved trail in the west side of Manchester. The trail is heavily used by cyclists and pedestrians and allows residents from the west side of Manchester to connect to the amenities of downtown. The trail can help link residents between residences, businesses, schools, hospitals and recreational amenities. Through a NHDOT administered FHWA Transportation Enhancement grant, and a generous local match raised by the trail and advocacy group, Manchester Moves, construction of the critical connection across the Piscataquog River was completed in October 2015. With a NHDOT-administered FHWA Transportation Enhancement grant, the Town of Goffstown completed two Pedestrian Hybrid Beacon crossings of NH 113 and critical trail sections that connect Manchester with Goffstown via a 7-mile nonmotorized corridor. The network includes walking paths, sidewalks, transit stops, and thousands of residents within a quarter mile of the trail.

The Virginia Capital Trail (Richmond and Williamsburg, Virginia)

The Virginia Capital Trail, is a 52-mile dedicated multiuse trail connecting Richmond and Williamsburg along the historic and beautiful Route 5 corridor. The trail connects to multiple historic landmarks, parks, businesses, and residences, which provides an attractive transportation option for recreational users as well as commuters.



Figure 22. One of the crossings along the Capital Trail.

Corridor Improvements

Cloverdale Avenue Corridor Improvements (Winston-Salem, North Carolina)

The Cloverdale Avenue corridor improvements to the walking and biking infrastructure have significantly improved the environment for walkers and bikers in the area. The project corridor connects a large residential area to nearby businesses and services and previously was very much auto-centric. The improvements, both completed and proposed, address pedestrian crossings and automobile speeds to improve the safety for walkers. Improved pedestrian crossings, including the use of refuge islands and crosswalks were the emphasis of the project.



Figure 23. A realigned intersection with improved crossings was just one of the improvements along Cloverdale Avenue. Image courtesy of the City of Winston Salem.

Expansion of Jefferson City Greenway System (Jefferson City, Missouri)

The greenway system in the City of Jefferson is an asset to the community connecting several parts of the city to each other and creating an off-street path used for recreation and travel. It connects residential neighborhoods (both single and multifamily residences) with a number of businesses and employers. Additionally, several essential services are either directly located along the greenway or a short walk or ride away.

Fisher Road Improvements (Fayetteville and Hope Mill, North Carolina)

Fisher Road is a 2-lane, approximately 2-mile minor thoroughfare located within the Hope Mills city limit and a predominantly suburban area. The network contains a mix of residential uses including single-family, apartment complexes, and a mobile home park. It is currently programmed as a SPOT project and the proposal is to widen the roadway adding both sidewalks and bicycle lanes throughout the entire length of the project.

4th Street/Prater Way Bus RAPID Transit Project (Reno and Sparks, Nevada)

The 4th Street/Prater Way Bus RAPID Transit Project connects downtown Reno and Sparks with enhanced bus service, accessible sidewalks, and bike lanes. The project will help people better connect to economic and educational opportunities. Additionally, it will improve safety within the corridor and make it accessible to people of all abilities. In 2017, RTC will add four new electric buses to serve this route. This project received a Transportation Investment Generating Economic Recovery (TIGER) grant in the amount of \$16 million from the US Department of Transportation. The transit stations will include historical displays related to 4th Street and Prater Way.

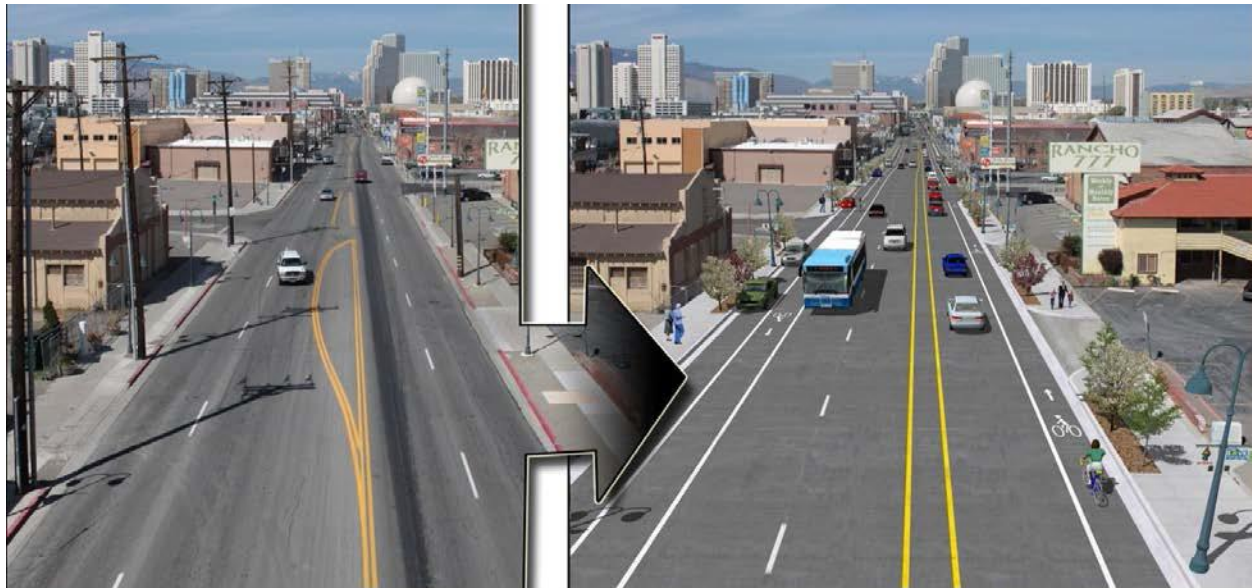


Figure 24. The image above shows the existing conditions on the corridor (left) as well as a graphic of what will be done (right).

Safe Routes to School Improvements (Cape Girardeau, Missouri)

The Safe Routes to School (SRTS) Program constructed sidewalks along Kingsway Drive from Janet Drive to Kurre Lane. A 6-foot wide accessible sidewalk was constructed along the east side of Kingsway Drive. The City was able to construct additional sidewalk coverage along Kingsway from Janet Drive to Storey's Food Giant. This completed two of the three sidewalk sections to eventually connect the Kingsway Drive sidewalk to the City's Cape LaCroix Trail, a network of over 6 miles of trail throughout the City. Before these improvements, pedestrians and bicyclists used the narrow pavement of Kingsway Drive. With construction of the sidewalk, pedestrians and bicyclists now have a safer path to travel to their destinations.

Ocean City Pedestrian and Bicycle Improvements (Ocean City, New Jersey)

Ocean City is a 2015 New Jersey Complete Streets Summit Award Winner. The City, along with Cape May County, has undertaken significant bicycle and pedestrian improvements on the island. These improvements include the West Avenue (CR 619) road-diet project, a Cape May County project, which was a missing link project that links the Haven Avenue Boulevard exclusive bike trail greenway, the Bay Avenue sidewalk, and -curb ramp improvements, and Pedestrian Hybrid Beacon installation at 9th Street. The Bay Avenue project, also a County project, involved resurfacing Bay Avenue, adding bike lanes, and improving accessibility. The signals on Bay Avenue have the audible type push buttons for the pedestrian crossings along with the countdown pedestrian signal displays.



Figure 25. The Pedestrian Hybrid Beacon at 9th Street and Haven Avenue. Image courtesy of the FHWA New Jersey Division Office.

The Pedestrian Hybrid Beacon went live at 9th Street and Haven Avenue in 2014. The signal helps provide a gap in traffic to make crossing the street safer for pedestrians. Pedestrians push a button when they reach the intersection and cross when the appropriate signal shows up.

Route 59 Improvements (Spring Valley and Nanuet, New York)

The project is located on Route 59 in Spring Valley, New York, and was the result of an earlier pedestrian safety audit. As a result of the investigation the project will complete sidewalk networks, restripe crosswalks, add new transit stops and shelters, street lighting at frequent pedestrian locations, and countdown pedestrian signals.

Bluff Road (Columbia, South Carolina)

Bluff Road is a high traffic minor arterial that goes from a two-lane road into a four-lane at the Bluff Road and Rosewood intersection. Safety data showed that between January 1, 2011 and October 31, 2014 there were a total of 93 crashes. In order to reduce pedestrian conflict points, a continuous center turn lane will be installed in the middle of the four-lane road. In addition, sidewalks and shared-use pedestrian and bicycle paths will also be installed on either side.



Figure 26. An audit of the corridor was performed to identify areas of improvement for nonmotorized users.

The Multimodal Corridor Enhancement (MCORE) project (Champaign and Urbana, Illinois)

This project will expand mobility choices and increase user access to employers, education, healthcare, and other services along five core transit corridors in the University District. The project represents a significant investment in public infrastructure that will bring streets to a state of good repair while enhancing connections between the cities' downtown centers and the University of Illinois at Urbana-Champaign campus. The project's five sections serve as critical links between the Champaign, Urbana, and their downtowns. The project will improve the condition of the existing transportation network to increase efficiency for all users while also incorporating complete street design components. Furthermore, the project is geared towards transportation safety, in particular that of bicyclists and pedestrians. It features high-visibility pavement markings and improved street lighting intended to improve safety and security throughout the project corridors.

Bridges

Evansville Pedestrian Bridges (Evansville, Indiana)

Two pedestrian bridges were placed in 2015 to provide access over the Lloyd Expressway (SR 66). The bridge at US 41 provides a north-south connection between the Hi-Rail Corridor multiuse path that is currently under design south of Lloyd Expressway and the existing bike facilities north of Lloyd Expressway. The Vann Avenue bridge provides connections between two major recreational areas. Both projects connect neighborhoods to recreation, schools, local businesses and offices, and other neighborhoods. The bridges provide safe crossings over Lloyd Expressway which carries over 50,000 vehicles per day.



Figure 27. This bridge provides a safe way to cross Lloyd Expressway. Image courtesy of the FHWA Indiana Division Office.

H-Street Bridge Pedestrian Improvements (Washington, District of Columbia)

This project was intended to provide safe, well-lit and inviting pedestrian access for streetcar passengers connecting from the DC Streetcar western terminus on the H Street bridge to Union Station. Ultimately the project will improve transit connections and allow commuters to reach employment destinations or other activities at Union Station. Enhancements will include improved lighting, wayfinding, and aesthetic improvements to the bus deck's northern end. This project was jointly funded by FHWA Federal Aid Program and the Union Station Redevelopment Corporation.

Brotherhood Bridge Replacement (Juneau, Alaska)

In spring 2014 the Alaska Department of Transportation and Public Facilities began the construction on the [Brotherhood Bridge Replacement Project](#). Completed on October 31, 2015, the new Brotherhood Bridge now accommodates two lanes of traffic in each direction, a multiuse path on the upstream side, a sidewalk on the downstream side, and a left turn lane for vehicles turning onto Industrial Blvd. In addition, a multiuse path is currently under construction at Riverside Drive that will continue to Engineer's Cutoff Road. An existing equestrian trail, displaced by the multiuse path construction, will also be rebuilt to accommodate horse traffic between Wild Meadow Lane and Engineer's Cutoff Road. The existing bus stops have been adjusted to fit the new design. Underneath both sides of the bridge, nonmotorized paths have been constructed to allow for pedestrians and bicyclists to safely cross the highway.



Figure 28. The bridge replacement project featured a separated path for bicycling and walking. Image courtesy of the FHWA Alaska Division Office.

Barber Street Extension and New Bridge Construction (Wilsonville, Oregon)

The \$6.3 million Barber Street road extension and bridge project provides a long-desired east-west connection linking Villebois and Wilsonville's western residential neighborhoods with the city's larger street network, industrial employment areas, SMART Transit Center, and the WES Commuter Rail Station complete with sidewalks and bike lanes. There is also hope that the bridge will help to alleviate traffic congestion issues on nearby roads.

Missouri River Pedestrian and Bicycle Bridge (Jefferson City, Missouri)

The Missouri River Pedestrian Bicycle Bridge provides nonmotorized users with the ability to safely travel across the Missouri River. The bridge is 8 feet wide and includes two lookout points with a spectacular view of the Capitol and Jefferson City. This bridge also provides access between the Noren river access park, the Katy Trail and downtown. On the Jefferson City side, the entrance to the bridge is at the intersection of West Main Street and Clay Street.

South Reserve Pedestrian Bridge (Missoula, Montana)

The South Reserve Pedestrian Bridge will give pedestrians and cyclists the ability to safely cross the busy South Reserve Street. The bridge will also provide connections to the Bitterroot Branch Trail, the soon to be completed Missoula-to-Lolo Trail, and the new Fort Missoula Regional Park, thereby improving network connectivity.



Figure 29. An aerial view of the location shows the plan for a bridge at the intersection for several trails in the area.

On-Road Facilities

SR 8/Ponce de Leon Corridor (Atlanta, Georgia)

The SR 8 Ponce de Leon Corridor is a major east-west bicycle and pedestrian corridor for the northeast side of Atlanta. The recent addition of bicycle lanes on Ponce from Juniper to Ponce de Leon Place connects the heart of Midtown and Downtown to the BeltLine Eastside trail. The BeltLine east side trail connects to the PATH Stone Mountain Trail which passes through Decatur, Clarkston, and Stone Mountain. Thus, the addition of these bike lanes have greatly aided to improvements in network connectivity.

Charles Street Federal Resurfacing and Streetscape Project (Baltimore, Maryland)

The project removed a travel lane and replaced it with full time parking and a buffered bike lane. The network connects to University Parkway to the North. The project will ultimately connect to the Maryland Avenue separated bike lane with some minor improvements to the 29th Street connection. This would create a 3-mile connection between Johns Hopkins University and Charles Village to Downtown Baltimore.

MD 170 Bicycle Retrofit Project (Maryland)

The East Coast greenway network provides a bicycle friendly route between Virginia and Delaware through Maryland. In the specific location of the bicycle retrofit project connectivity to transit facilities was improved and overall bicycle accommodations were improved eliminating underused travel lanes and adding bicycle lanes in their place.

Roland Avenue Federal Resurfacing and Streetscape Project (Baltimore, Maryland)

The project replaced a conventional bike lane with a separated bike lane. The street had regular complaints of motorist exceeding the 25 mph speed limit and 4 schools located along the corridor along with neighborhood businesses. These improvements help to connect the network to existing bike lanes on Roland Avenue north and south of the project area. The project is ultimately part of a network that creates a connection between the County line and Downtown Baltimore. There is a bike facility on Roland Avenue, which connects to University Parkway and Charles Street and then the Jones Falls Trail to the Inner Harbor or the (future) Maryland Avenue separated bike lane to downtown.

I-95 Bicycle and Pedestrian Improvements (Providence, Rhode Island)

A reconstruction of the I-95 interchange allowed for improved bicycle and pedestrian connections at this site. This involved 0.8 miles of roads which essentially consisted of busy intersections and approach roads. The projects actually reduced the size of the old system of roads that previously served as part of the old I-195 interchange with Wickenden Street. As part of the project approximately 7,600 linear feet of 9-foot to 30-foot sidewalks, 40 curbcurb ramps, 700 linear feet of bike path, and 1 mile of bike lanes were added. The project also included safer signalization for pedestrian and bicycle street crossing and movement.

Bike St. Louis, Phase 3 (St. Louis, Missouri)

Phase 3 of the Bike St. Louis project upgraded 56 miles of existing on-street bicycle facilities, and expanded the network with an additional 52 miles of on-street facilities. Bike St. Louis, Phase 3 also included the installation of seven bike corrals and wayfinding signage. The network provides access to major destinations in the City of St. Louis, including universities and major parks. The bike network also provides access to transit facilities. Different types of on-street facilities were installed, including bike lanes, separated bike lanes, shared lane markings, and intersection treatments.

Kanawha Blvd Separated Bike Lane (Charleston, West Virginia)

This project is identified in the City of Charleston Bicycle and Pedestrian Master Plan. This specific project extends along Kanawha Blvd from the Patrick Street Bridge to Magic Island. The selected alternative will reduce width of travel lanes on Kanawha Boulevard, provide a buffer between motorists and pedestrians, and increase the width of current bicycle and pedestrian facilities.

Russell Street Reconstruction (Sioux Falls, South Dakota)

The reconstruction of Russell Street in Sioux Falls, South Dakota included bike lanes and a side path on the south side of the road. Prior to reconstruction no bicycle or pedestrian accommodations were provided on the corridor. The new improvements provide a vital pedestrian and bicycle connection from the City's bicycle trail system to the City's Arena and Convention Center complex and to the City's on-street bicycle route system. The route also connects to the Interstate 29 bicycle and pedestrian overpass allowing for east-west connectivity across the City.

Main Avenue Road Diet (Sioux Falls, South Dakota)

The City of Sioux Falls implemented a Road Diet pilot project for Main Avenue from West Sixth Street to West 14th Street. The pilot included traffic calming to enhance bicycle and pedestrian safety. The goal was to make downtown Sioux Falls more pedestrian friendly along one-way streets. The pilot was such a success the road diet has become permanent and more enhancements are planned.

Providence Bicycle and Pedestrian Improvements (Providence, Rhode Island)

This project includes the installation of sidewalks and on-street bicycle lanes on South Main Street and South Water Streets in Providence. The new infrastructure improves connectivity for pedestrians and bicyclists on the city's busy East Side and for users of the East Bay Bicycle Path. It also further prepares land opened up by moving Interstate 195 for redevelopment. The new network allows access to a busy urban center with many businesses and some residents.

Cyclist Connection between Isla Verde and Ocean Park (San Juan, Puerto Rico)

A connection between the bike trail developed by the Municipality of San Juan in Condado and Ocean Park with the "Share the Road" path of Isla Verde Avenue in the Municipality of Carolina is planned. The project includes "share-the-road" pavement markings and signage from Isla Verde Avenue to Barbosa Park in Sector known as "El último trolley". This connection completes the route between Condado, Ocean Park, Isla Verde, and Piñones in the municipality of Loiza. This project is being designed by the Autonomous Municipality of San Juan.

Paseo Río Bayamón (San Juan, Puerto Rico)

The Paseo Río Bayamón, developed by the Autonomous Municipality of Bayamón, provides approximately 9 kilometers of separated paths for pedestrians and cyclists along the Río Bayamón, from PR-177 in Bayamón to PR-165 in Toa Baja. Also the PRHTA installed "Share the road" signs along PR-165, from Punta Salinas in Toa Baja to the Dorado City entrance and is working on designing the Toa Baja Recreational Trail, an earmark project to connect Paseo Río Bayamón.

Town Center Loop East Road Diet (Wilsonville, Oregon)

A road diet in Wilsonville, Oregon, helped create two buffered bike lanes. A rapid flashing beacon was also installed at one crosswalk. This road diet was done during regularly scheduled street maintenance and resurfacing.

Downtown Joseph to North end of Wallowa Lake (Joseph, Oregon)

This project will include the construction of new bike and pedestrian facilities between Joseph and the Oregon State Park facility at the North end of Wallowa Lake, to protect bike and pedestrian users on this section of highway. The facilities will help to link multimodal users to downtown.

Amity Bicycle and Pedestrian Improvements (Amity, Oregon)

A series of projects focused on improving the walking and cycling experience have been implemented in downtown Amity. Improvements include the installation of sidewalks, bike lanes, pedestrian crossing, plus street amenities – lighting, benches, etc. The project will provide bicycle and pedestrian access through downtown Amity and to Amity Middle School.

Hood River Bicycle and Pedestrian Improvements (Hood River, Oregon)

This project will design and construct approximately 3,450 linear feet of sidewalks on May Street between 17th and 30th Streets. This project will include approximately 27 curb ramps as well as bike lanes and intersection improvements. These enhancements will help to improve accessibility to May Street Elementary School and Jackson Park.

Madras Bicycle and Pedestrian Improvements (Madras, Oregon)

Project to construct multiuse path and sidewalks from Jefferson Street to Plum Street along US 97 in Madras. These enhancements will enhance accessibility to the North side of town, thereby improving the overall network connectivity. Enhancements will also include ADA-accessible curb ramps.

Intersection and Crossing Improvements

Evansville Crossing Improvements (Evansville, Indiana)

Eight pedestrian refuge islands were constructed at major intersections on US 41. These islands provide a designated space for pedestrians in the median to wait for traffic on US 41 to stop before finishing to cross. The projects aimed to improve safety for crossings along US 41, along with improving access to schools, parks, commercial areas, and neighborhoods.



Figure 30. Islands like this one were installed to help break up long crossing distances at several intersections in Evansville, Indiana. Image courtesy of the FHWA Indiana Division Office.

Phoenix Bicycle and Pedestrian Improvements (Phoenix, Oregon)

Project to design and construct sidewalks and a pedestrian crossing on Hwy 99 at Oak Street with pedestrian activated crossing signals, including advance warning signals, landscaping, lighting, signage, and new bus stops (concrete pads, shelters, and amenities). These improvements will aid in nonmotorized connections to the nearby Blue Heron Park and improve overall network connectivity.

Forest Avenue at I-295 Interchange Improvement Project (Portland, Maine)

In 2011, the City of Portland and the Portland Area Comprehensive Transportation System (PACTS) collaborated in an intensive 5-month corridor study of Forest Avenue, a critical component of Portland’s transportation network that connects the urbanized peninsula to the suburban residential neighborhoods separated by Interstate 295. Forest Avenue provides access to many transit, bicycle, and pedestrian traffic generators such as the University of Southern Maine, Deering Oaks Park, Portland’s dense commercial district, and the US Post Office and is a critical transportation route for the high population density lower-income population on the peninsula.



Figure 31. The image above shows some of the bicycle treatments that were implemented at the interchange.

Ultimately, the Transforming Forest Avenue corridor study concluded with a wide range of land use, streetscape, and transportation related recommendations, designed to encourage transit supportive development and the evolution of Forest Avenue as a complete street. A key finding was that while multimodal, Forest Avenue was primarily an automobile-dominated corridor with a problem area for pedestrians and cyclists near the I-295 interchange. The City of Portland and PACTS worked with MaineDOT to develop improvements to the I-295 exit 6 interchange to allow for safer bicycle and pedestrian accommodation including bicycle lanes with green pavement, improved sidewalks, lighting, improved ramp crossings, and pedestrian-actuated rectangular rapid flashing beacons.

I-25 Interchange Improvements (Santa Fe, New Mexico)

This project is a new interchange on I-25 at NM 14 at the southern end of the City of Santa Fe. The new interchange is a diverging diamond, the first one in New Mexico. The project includes a separate trail with a tunnel that will connect across each side of Interstate 25 and a significant amount of new trail. The trail link under construction is in advance of the growth and development at the southern end of Santa Fe.

Comprehensive Projects and Programs

Meridian Safe Routes to School Improvements (Meridian, Mississippi)

The project consisted of building approximately 5,600 feet of new sidewalks and a new 100-foot long pedestrian bridge over Gallagher Creek. The new sidewalks provided school children and citizens a safe place to walk to school, businesses and encourage walking instead of using their automobiles. The pedestrian bridge also allowed school children a more direct route to the after school activities at the Boys and Girls Club.



Figure 32. The new bridge over Gallagher Creek provides a critical connection for children to access the school.

Bicycle Plaza (Jefferson City, Missouri)

This project creates a bike plaza at the head of the existing Missouri River pedestrian and bike bridge. The plaza includes bike racks, benches, map displays, a drinking fountain, and additional parking. The plaza serves as a welcoming center for those coming off of the Katy Trail and a place to stop before heading to see views of the river.

Jackson Hole Transit Facility and Intermodal Connectivity Project (Jackson, Wyoming)

A series of coordinated intermodal projects are being focused in a diverse section of Jackson, WY with linkages between neighborhoods, commercial districts, and the downtown. The area is planned for concentrated higher density mixed-use development and intended as transit-oriented, walkable and bikeable neighborhoods and commercial areas. The START Bus Intermodal Transit Facility is at the center of this area and will tie into multiple intermodal components. Other bicycle and pedestrian facilities will complete critical missing links in the pathway system and connect the transit facility to the valleywide multimodal network.



Figure 33. This rendering of the Intermodal Transit Facility highlights some of the opportunities to create bicycle and pedestrian connections. Image courtesy of the FHWA Wyoming Division Office.

Supporting projects to enhance the connections to this Intermodal facility separated bike lanes, expanded 8 feet sidewalks on both sides of the road, and wayfinding signage. The Karns Meadow Pathway will provide bicycle-pedestrian facilities to complete critical missing links in the pathway system and connect to the recently completed START Bus Intermodal Transit Facility.

Amtrak Station Accessibility Improvements (Jefferson City, Missouri)

The Amtrak station in Jefferson City has just undergone a series of accessibility improvements. Such improvements include the installation of accessible curb ramps, increased the number of accessible parking spaces, and removed potential tripping hazards.

Anacortes Schools Pedestrian Bicycle Network Improvements (Anacortes, Washington)

In 2011, the City of Anacortes and Anacortes School District combined forces to apply for an SRTS Grant with extensive engineering, education, and encouragement elements. The project consisted of numerous improvements. Nearly 2,000 feet of new sidewalks were added on 29th Street and I Avenue, where there were no existing pedestrian facilities. The project featured a complete rebuild an intersection of two collector streets just in front of the Middle school and on the same block as the target school, Island View Elementary. This intersection also had a recent pedestrian and automobile collision and the project opened up sight distance using bollards at each corner. Bicycle racks to accommodate 48 bikes were added, and a bicycle education program was funded to bring comprehensive bike safety education to the elementary schools. To help sustain future projects, an SRTS board was created to improve collaboration between numerous partners.



Figure 34. Images above show a before (top) and after (bottom) condition of one street treated as part of the SRTS project.

Nampa Bicycle and Pedestrian Improvements (Nampa, Idaho)

The 16th Avenue Bridge Multimodal Improvements include bicycle safety railing, and bike lane striping and signage. Front Street Pathway Improvements include a 10-foot wide, multiuse path on Front Street from 13th Avenue South to 15th Avenue South, accessible curb ramps, decorative lighting, and open space landscaping. A separate project will include improvements along the 11th Avenue underpass, 1st Street North, development of a bike boulevard on 1st Street South, 9th Avenue South, and 15th Avenue South. These improvements were identified as priority in the Nampa Bicycle and Pedestrian Master Plan adopted in 2011. Together these projects will make it easier for residents on both sides of town to bike and walk to Downtown.



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