



Florida Local Technical Assistance Program



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Highlighting Local Innovations

Local and tribal agencies are responsible for more than three million miles of roadways and roughly 50 percent of the bridges in the United States. These transportation networks are vitally important to both the economic health of the country and the quality of life for all Americans. These agencies must use limited budgets and resources to serve the needs of their customers. Innovation can be the mission critical factor that helps bridge that gap. Local and tribal road practitioners continually implement incremental changes in their processes, tools, and services to reflect groundbreaking technologies and best practices. Check out the winners of the Florida LTAP Center's Build a Better Mousetrap 2023 Competition and celebrate Florida's state and local transportation practitioners.



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FDOT - District 7 Roadway Design, Red Team

SMART Project Award

What was the challenge?

This project is located in Hernando County Florida at the intersection of US 98 (SR 700) and Citrus Way, controlled by a flashing red beacon on Citrus Way. Annual Average Daily Traffic (AADT) is less than 7000, but there were eight traffic fatalities in a recent 5-year period.



Caption: From left to right are Dr. Pei-Sung Lin, Florida LTAP Center Director, FDOT District 7 - Roadway Design, Red Team, and David Gywnn, FDOT District 7 Secretary, holding Florida's 2023 Build A Better Mousetrap Smart Transformation award.

The FDOT Traffic Operations unit determined a benefit-cost ratio of 6.9 when comparing a Roundabout to a Traffic Signal, and forwarded this to FDOT Roadway Design for the development of an In-House Design.

The project goal was to eliminate fatalities and reduce injury crashes through construction of a Modern Single-Lane Roundabout at the intersection of US 98 (SR 700) and Citrus Way.

Designing and constructing this roundabout provided some challenges, and several innovative solutions were used. There were multiple mines in the vicinity and roadway geometry had to allow for a 135ft, 13 axle oversize/overweight truck/trailer (OSOW) to pass through the roundabout. The roundabout would not be able to function if the OSOW could not pass through the intersection. In addition, construction had to have a minimal disruption to the community and adjacent small local businesses (i.e., gas station).



Smart Transformation

A locally relevant significant change in any transportation activity or process that is SMART "Specific, Measurable, Achievable, Realistic and Time-bound" in nature that results in improved efficiencies.



Caption: FDOT District 7 photo of roundabout at the intersection of US 98 (SR 700) and Citrus Way Southbound.



FDOT - District 7 Roadway Design, Red Team

SMART Project Award (cont.)

How did you develop and implement your solution?

The Modern Single-Lane Roundabout was chosen because according to the Federal Highway Administration's (FHWA) Proven Safety Countermeasures, a Modern Roundabout in place of an unsignalized intersection can result in an 82% reduction in fatal and injury crashes. Through 3D modeling and multiple design iterations, a horizontal geometry was developed. Still vertical geometry had to allow for the minimal clearance of OSOW trailers (Low Boys) to pass over the roundabout's truck apron without dragging and causing damage or delaying traffic due to a stuck trailer. To provide the necessary vertical clearance between the bottom of the trailer and the truck apron, the roundabout's circulatory path was crowned forcing the trailer tires to ride higher through the turn compared to a traditional non-crowned circulatory path. This also necessitated the addition of drainage inlets along the inside edge of the circulatory path.

A temporary diversion was built adjacent to and north of the intersection to allow US 98 traffic to continue during full-depth construction of the roundabout. In addition, the south leg of Citrus Way was temporarily closed, but the north leg remained open and business access was maintained at all times to the two adjacent businesses.

What labor, equipment, plans, or materials did it take to make the solution work?

Full-depth reconstruction was required in the intersection. Unsuitable subgrade material was removed and replaced, and the four approaches to the intersection were milled and resurfaced. To confirm the proposed horizontal geometry would work for the OSOW vehicles, AUTOTURN software was used to show how the OSOW would move through the roundabout. Much of the design effort was taking place at the height of the COVID pandemic, but work successfully carried on efficiently through communication via Microsoft Teams while teleworking.

What was the cost of implementation?

The total cost of the project was \$3,500,000. Most of the project construction cost savings was due to the implementation of a detour and temporary pavement diversion that we implemented early in the project construction. This allowed for approximately 75% of the roundabout to be constructed behind the relative safety of temporary barrier wall. The diversion and detour helped to expedite the construction process and minimize the number of traffic shifts during most of the construction process.



What was the positive impact, result, or outcome of your efforts?

People are slowing down (posted at 25mph in the roundabout) where speeds once exceeded the 60 mph pre-construction speed limit on US 98.

FDOT - District 7 Roadway Design, Red Team

SMART Project Award (cont.)

What was the positive impact, result, or outcome of your efforts?

Construction started November 16, 2021, and was completed March 22, 2023. An aerial photo of the completed roundabout is attached. The construction of the roundabout has had a significant positive impact on the safety and function of the intersection of US 98 and Citrus Way. Fatalities and severe injury crashes are expected to be significantly reduced or eliminated. The local businesses are also enjoying a much better alignment of access points to the roadway therefore improving safety and business traffic circulation. One employee commented that they believe business is actually better than it was prior to construction. People are slowing down (posted at 25mph in the roundabout) where speeds once exceeded the 60 mph pre-construction speed limit on US 98. The attached video shows an oversize tractor-trailer rig slowly carrying construction equipment through the roundabout over the truck apron without dragging the ground.

The community has gained a better understanding of the use of well-designed roundabouts through community outreach that took place during design. In response to concerns that some local citizens had regarding a roundabout at this intersection, the Department decided to construct a “mock” roundabout, at nearby, Lecanto High School, with the exact dimensions of our proposed roundabout. We felt that providing an opportunity to test drive the roundabout outside of live traffic conditions would help to relieve their apprehensions and allow us to provide further instruction and education on the virtues and safety features that a roundabout provides.

It is believed that through the successful use of the permanent roundabout, citizens have developed greater confidence in roundabouts and their FDOT. All residents and visitors now enjoy a much safer roundabout intersection at US 98 and Citrus Way.

Additional information can be viewed on the FDOT website -

<https://www.fdotampabay.com/project/779/439448-1-52-01>



Caption: FDOT District 7 photo of truck apron use of roundabout at the intersection of US 98 (SR 700) and Citrus Way.

Broward MPO

Innovative Project Award

What was the challenge?

South Florida continues to lead the nation in traffic fatalities. In the 2022 Dangerous by Design report, Florida, as well as the Ft. Lauderdale area, have some of the highest pedestrian fatality rates in the nation. Every year, Broward County has between 200 and 230 roadway fatalities, many of which can be prevented if we changed the way we designed streets and made safety a priority.

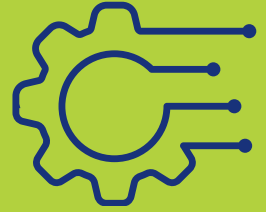


Caption: Mark R. Brown, Broward MPO Sr. Transportation Planner, holding Florida's 2023 Build A Better Mousetrap Innovative Project award.

Both FDOT and FHWA have started their own safety programs, and the Broward MPO wanted to leverage their programs and coordinate with these agencies to create their own safety process. In 2018, Broward MPO recognized that they didn't have a dedicated funding source for safety, so they changed this with our 2045 Metropolitan Transportation Plan, allocating funding for studies and projects for high-crash areas across Broward County

How did you develop and implement your solution?

The Broward MPO has developed a new process to identify, analyze, and prioritize off-system safety projects throughout its jurisdiction. The process involves a modified Road Safety Audit (RSA) process for high-crash, off-system locations identified through our Metropolitan Transportation Plan.



Innovative Project

Any solution that addresses any or all phase(s) of the 'project' life cycle – Planning, Design/Engineering, Construction, Operations and Maintenance. This project shall introduce new ideas, is locally relevant, original, and creative in thinking.



Caption: Broward MPO photo of road safety audit team in the field.

Broward MPO

Innovative Project Award (cont.)

How did you develop and implement your solution (cont.) ?

The off-system process was successfully developed in 2021, and pilot RSAs were completed to test the new framework. The process involves coordination between many stakeholders, beginning with the identification of candidate RSA projects, the development of the RSAs, and continuing with the prioritization of conceptual safety measures and project delivery. It is projected that two RSAs will be developed per year as part of the new off-system safety process, with project development, engineering, and construction taking place in subsequent years over a 5-6 year project implementation cycle. Smaller safety projects recommended in the RSAs may be designed and implemented in an expedited time frame, however, with municipalities taking the lead in their design and construction. Additional information can be viewed on the Broward MPO website - <https://www.browardmpo.org/funding-programs/safety-program>

What labor, equipment, plans, or materials did it take to make the solution work?

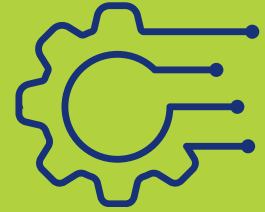
Broward MPO staff time was used to develop this process, as well as consultant resources. The consultant assisted with the final framework document as well as the pilot RSA project.

What was the cost of implementation?

The cost of implementation was approximately \$100,000 in consultant fees. There was labor that was donated as in-kind as well from Broward MPO. The methodology helps Broward MPO make efficient use of funds and results in a plan to utilize available funding for construction of safety projects.

What was the positive impact, result, or outcome of your efforts?

While it is too early to assess post-construction crashes for the projects that came out of this program, it is expected that injuries and fatalities will decline for the project areas we identify and for which we develop a Roadway Safety Audit and subsequent projects. We will also be doing traffic safety studies and projects on behalf of municipalities, alleviating the cost and labor of these projects for cities, and making safety projects more feasible for them. Many recommendations will involve low-cost items such as crosswalks and signage, which a municipality can fund themselves. For larger projects, these will be funded through the MPO, making high-impact safety projects more feasible to implement for cities. As part of this program, the Broward MPO acts as a centralized resource and coordinator between FDOT, Broward County, and municipalities, helping to guide safety projects to construction by coordinating between all agencies.



What was the positive impact, result, or outcome of your efforts?

It is expected that injuries and fatalities will decline for the project areas we identify and for which we develop a Roadway Safety Audit and subsequent projects.

Lee County Transit (LeeTran)

Bold Steps Award

What was the challenge?

Lee County, as with many other counties in Florida, is a sprawling, car-centric community which can present challenges for transit-dependent riders. The lack of transportation options can have a negative impact on the economy, the environment, and the quality of life for a community, making it difficult for people to get around.



Caption: From left to right are the LeeTran Team and Dominic Gemelli, LeeTran Transit Director, holding Florida's 2023 Build A Better Mousetrap Bold Steps award.

This can especially be the case for the elderly or disabled, or for those who have low incomes or don't have the means to easily access fixed route bus service. In addition, Lee County is a popular tourist destination with many people traveling here with no means to get around.

Lack of Convenient Transportation Options:

Lee County is a sprawling community with a large number of retirees and low-income residents. Many people do not own a vehicle and those who do, often find it difficult to locate parking. This can make it difficult for people to get to and from work, school, and other essential activities.

High Cost of Transportation:

The cost of owning and operating a vehicle is a major financial burden for many people. The cost of fuel, insurance, and vehicle maintenance can be unaffordable. This can make it difficult for people to get around, which can have a negative impact on their overall quality of life.



Bold Steps

Any locally relevant high-risk project or process showing a breakthrough solution with demonstrated high-reward.



Caption: LeeTran photo of Bonita Springs Ultra Service Area.

Lee County Transit (LeeTran)

Bold Steps Award (cont.)

What was the challenge (cont.)?

Environmental Impact:

Vehicles are a major source of pollution, causing harmful emissions which can have a negative impact on public health. Emissions of greenhouse gases from vehicle pollutants have a negative impact on our environment.

How did you develop and implement your solution?

Through a collaborative effort between Lee County Transit/LeeTran and the City of Bonita Springs City Council and staff, the decision was made to pilot a Mobility-on-Demand (MOD) service as a solution to better serve the community. This service enables LeeTran to provide an on-demand, curb-to-curb, shared-ride service, available to the public known as the Ultra On-Demand Service.

Steps taken to develop and implement the Bonita Springs Ultra Service:

- The development process began with a series of meetings to gather input from stakeholders, including city officials, residents, and business owners. The goal of these meetings was to identify the needs of the community and to develop a plan for a new kind of transit service.
- LeeTran developed a plan which included ways to procure vehicles and identify software to facilitate the system. The plan also included how to allocate staff to run the service, develop the service area within the City of Bonita Springs, and market the new service to the public.
- LeeTran purchased a fleet of ADA Accessible vans to operate the service, chose an Uber software platform to manage the system, and utilized ArcGIS to create the service area zone.
- The final step was to develop unique branding and launch a marketing campaign to promote the new service, which included printed educational brochures, radio ads, newspaper ads, and social media posts.

What labor, equipment, plans, or materials did it take to make the solution work?

The Bonita Springs Ultra Service required the following labor, equipment, plans, and materials to make it work:

- Labor: LeeTran put together a team of drivers, dispatchers, and customer service representatives.
- Plans: A detailed plan was developed that outlines the service area, hours of operation, fares, and reservations process.
- Materials: A variety of related materials were created that included maps and signage. In addition, brochures were created in both English and Spanish to serve the diverse population and visitors in the area.



What was the positive impact, result, or outcome of your efforts?

Since the launch of the Bonita Springs MOD service, ridership has increased by 50% overall compared to the Route 150 and has increased 84% since November 2022.

Lee County Transit (LeeTran)

Bold Steps Award (cont.)

What labor, equipment, plans, or materials did it take to make the solution work (cont.)?

- Vehicles: LeeTran purchased vehicles to operate the service and each of them needed to be equipped with GPS tracking systems and be ADA accessible with wheelchair lifts.
- Software: An investment in technology was needed and LeeTran procured Uber's shared ride software system to manage the service and track ride requests to ensure transit resources are available when needed.
- Maps: LeeTran collaborated with Bonita Spring's City Council and staff to develop maps of the service area. The maps were used by Uber to upload into their app so MOD drivers could navigate the service area and riders could plan their trips.
- Communications: The LeeTran Marketing Department, in conjunction with the Maintenance Department, posted printed signage throughout the service area. The communication educated users about the service and provided them with information about how to use it. Vehicles wrap advertisements were also designed by the marketing team and installed by a vendor.

The Bonita Springs Ultra Service is a complex operation that requires a significant amount of labor, equipment, plans and materials. However, the service is a valuable addition to the community and provides a convenient, affordable, and accessible way to get around the city.

What was the cost of implementation?

The total cost of implementation was around \$452,000. The operation and maintenance cost is funded through a joint agreement between LeeTran and the City of Bonita Springs. The cost of implementation was a significant investment, but it is expected that the service will generate substantial economic benefits to the city over time. The goal is to assist in the creation of new jobs, boost tourism, and reduce traffic congestion.

- Vehicle acquisition: LeeTran allocated a fleet of 4 vehicles to operate the service zone. The vehicles were equipped with GPS tracking systems and wheelchair lifts. The value of the vehicles was around \$400,000 and were procured through FDOT/CUTR Transit Research Inspections Procurement Services (TRIPS) contract which is a negotiated procurement contract.
- Software development: LeeTran procured the software system by Uber to manage the service. The software system tracks rides, manages trip request, and provides customer support. The cost of the software development was around \$50,000. By using a pre-existing software platform, rather than having one custom developed, LeeTran was able to save a considerable amount of time and money.
- Marketing and outreach: LeeTran launched a marketing campaign to promote the new service. The marketing campaign included bus interior cards, radio ads, printed collateral, and social media posts. The cost of the marketing and outreach was approximately \$2,000. The advertisements were placed on LeeTran assets and distributed at transit locations. Placing and distributing advertisements through the existing transit assets and locations resulted in a significant cost savings, as LeeTran only had to pay for material production and not advertising space.
- Operations and maintenance: The cost of operations and maintenance is approximately \$1,500,000 per year; however, MOD replaced the Route 150 which was roughly \$500,000 annually.



Lee County Transit (LeeTran)

Bold Steps Award (cont.)

What was the positive impact, result, or outcome of your efforts?

While it is too early to assess post-construction crashes for the projects that came out of this program, it is expected that injuries and fatalities will decline for the project areas we identify and for which we develop a Roadway Safety Audit and subsequent projects. We will also be doing traffic safety studies and projects on behalf of municipalities, alleviating the cost and labor of these projects for cities, and making safety projects more feasible for them. Many recommendations will involve low-cost items such as crosswalks and signage, which a municipality can fund themselves. For larger projects, these will be funded through the MPO, making high-impact safety projects more feasible to implement for cities. As part of this program, the Broward MPO acts as a centralized resource and coordinator between FDOT, Broward County, and municipalities, helping to guide safety projects to construction by coordinating between all agencies.

The Fixed Route 150 traveled along primary arterial roads within Bonita Springs; however, the service did not easily accommodate people who needed it most because many residents do not live close to the route or do not have the means to get to and from the fixed route. The Route 150 was replaced by MOD which uses much smaller vehicles and can travel on roads that a fixed route bus cannot. The fixed Route 600 remains along the main corridor of Tamiami Trail/US 41, which runs from North Fort Myers through Bonita Springs to northern Collier County. MOD service brings people to and from their destination within the service area of Bonita Springs, as well as to the main corridor if passengers wish to utilize the fixed route service to travel outside of Bonita Springs.

Since the launch of the Bonita Springs MOD service, ridership has increased by 50% overall compared to the Route 150, excluding one month from the impacts of Hurricane Ian, and has increased 84% since November 2022. The Bonita Springs Ultra Service is available from 7:00am – 6:00pm, seven days a week and riders only pay \$1.50 for each trip. Riders can book a trip on the Uber app or call LeeTran's customer service line. This positive impacts on the city include:

- Increased access to transportation has made it easier for people to get around the city and to the nearby fixed route, furthering their travels to other parts of the county, especially for those who do not have a vehicle.
- Reduced traffic congestion by providing an alternative to driving personal vehicles and improved air quality by reducing the number of vehicles on the road.
- Increased economic activity by making it easier for people to get to and from work, shopping, and other choice activities.
- Improved safety and quality of life by providing a safe and reliable way for people to get around and participate in the activities that they enjoy.
- Increased social interaction for residents, who are able to meet new people and make new friends, by providing them with a way to get around without having to rely on others.

The Bonita Springs Ultra service was designed to provide a convenient, affordable, and environmentally-friendly alternative to vehicles. The service has been a success since its launch and has helped to improve the quality of life for many residents. It has had a positive impact on the community, being accessible to people of all socioeconomic backgrounds while supporting the goal towards greater social equity. The service is expected to continue to have a positive impact in the years to come.

Additional information can be viewed on the LeeTran Ultra on Demand Service website - <https://www.leegov.com/leetran/ultra>

