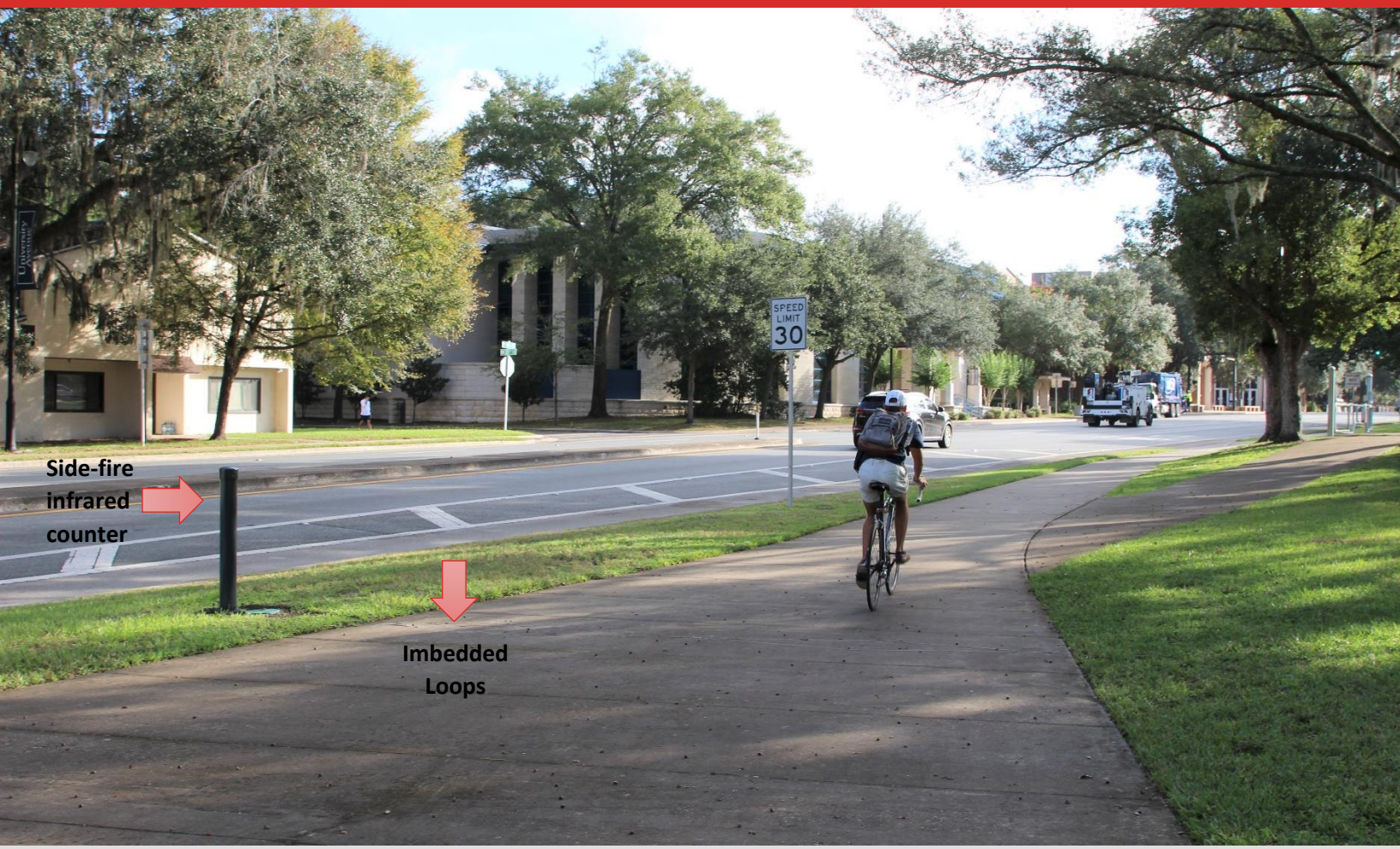
State Transportation Innovation Council (STIC) Grant

Final Report

Federal Highway Administration (FHWA)

FDOT Statewide Non-Motorized Traffic Monitoring Program

NOVEMBER 2020



University Avenue Continuous Count Station, Gainesville, FL

Transportation Data & Analytics Office – Traffic Monitoring Division

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EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) Transportation Data and Analytics (TDA) Office, in partnership with the FDOT Safety Office and local FDOT Districts within Florida have been working for the past year to research, identify, coordinate, and install non-motorized continuous count stations in each of FDOT's eight Districts. Using State Transportation Innovation Council (STIC) Grant funding, FDOT completed the following tasks:

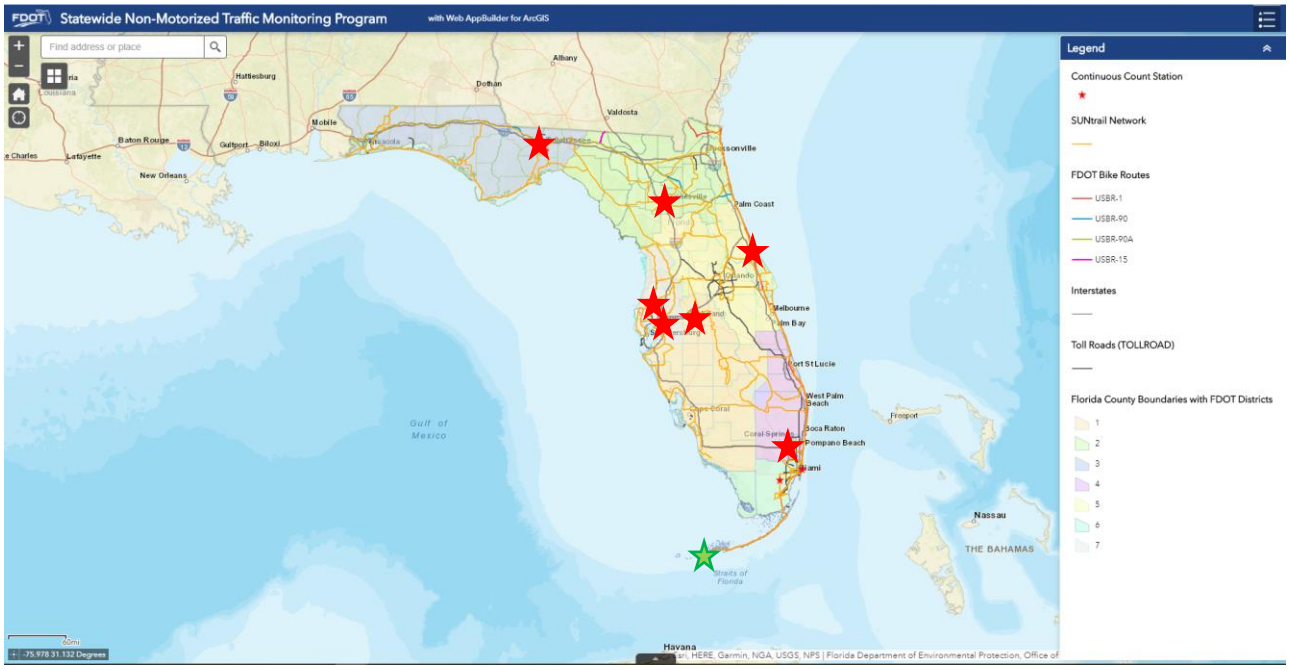
1. FDOT TDA conducted site selection activities identifying eight out of eight continuous count stations
2. FDOT TDA initiated coordination with local agencies to gain final approval for selected sites for installation
3. FDOT TDA installed and inspected seven out of eight non-motorized continuous count stations
    a. The remaining District 6 site is approved and scheduled for installation within the next few weeks

The technology utilized for each count station has been selected with the intent of collecting non-motorized traffic data as accurately and efficiently as possible. Equipment installed at each continuous count station detects total hourly traffic volumes, speed of travel, direction of travel, and classifies detected traveler's into bicycle, pedestrian, and/or other non-motorized traveler modes. The equipment installed at each location provides wireless transmission of the data collected to FDOT's TDA Office in Tallahassee, FL. TDA staff then gather the data collected for processing and reporting within its transportation data management system (TDMS). Once data is validated and entered into the TDMS, the next steps involve reporting the data collected to FHWA's Travel Monitoring Analysis System (TMAS). Finally, validated data will be made available for non-FDOT stakeholders through a public-facing web interface to aid in national, state, and local planning efforts.

The selection criteria involved a combination of safety and traffic data compared across a broad range of geographic areas, roadway characteristics, non-motorized facility types, adjacent land uses, anticipated traffic volumes and travel purpose types. The FDOT Safety Office provided FDOT TDA staff with a list of the Top 25 High-Priority Counties for Bicycle and Pedestrian Safety Improvements as well as a statewide map identifying serious to fatal bicycle and pedestrian crashes across the state's Top 25 counties. For the statewide data collection program, the selection criteria required each district counter to be located within one of the Top 25 counties (each of the 8 FDOT districts had qualifying counties). The selection criteria also required district counters fall within a 1x1 square mile cluster of bicycle and pedestrian crashes which involved serious to fatal injuries. Finally, the site selection criteria require district counters to be located within an on-system facility to ensure FDOT maximum lifetime care and maintenance.

Once the statewide criteria were established, sites were selected and then reviewed by district bicycle/pedestrian coordinators and safety specialists. The next step was to assess all sites for technology and installation feasibility. TDA led the effort on determining equipment and installation logistics, which involved virtual and on-site evaluations, budgets and scheduling, and various communications, i.e. teleconferences, with local agencies and equipment vendors. Results of the recent counter installations are allowing FDOT's Non-motorized Traffic Monitoring Program to provide high quality baseline traffic data to the public. This critical 1st cycle of statewide counters enables FDOT to accelerate the growth and effectiveness of the statewide program by providing public access to the data. FDOT will continue to move forward on installation procedures for the remaining district. Please see summary map and table below for details on the selection criteria. Detailed information about each district's count site can be found in the pages that follow.

Statewide Non-Motorized Site Selection Counting Station Map



Count station installed Count station identified

Site Selection Summary Table

Potential Continuous Count Sites			STIC Grant Criteria			TDA Criteria							
District	Site Name	Managing Agency	Safety's Top 25 counties	Bike/ped crash cluster zone	On-System	Anticipated Factor Group	Anticipated volumes	Anticipated Equipment	Evaluated by TDA	Local Agency Support	Historical Non-Motorized Data	TDA Short-term data	SUN Trail Facility
TPK/7	**SunCoast Trail**	FDOT TurnPike	Yes	Yes	Yes	Rural Recreational	Medium	Overhead sensor and piezos	Yes	Yes	Yes	No	Yes
7	**Jackson St. Cycle track**	City of Tampa/D7/Tampa	Yes	Yes	Yes	Urban commute	Medium	Sidefire infrared and piezos	Yes	Yes	Yes	No	No
6	**Overseas Heritage Trail**	DEP/City of Key West/D6	Yes	Yes	Yes	Urban Mixed	Medium	Loops & overhead sensor	Yes	Yes	Yes	Yes	Yes
5	**East Central Rail Trail**	D5	Yes	Yes	Yes	Urban Mixed	Low	Loops & Overhead sensor	Yes	Yes	Yes	No	Yes
4	**New River Greenway**	D4	Yes	Yes	Yes	Urban Mixed	Low	Overhead sensor and piezos	Yes	Yes	Yes	Yes	Yes
3	**Hwy 90/Tennessee St.**	D3/COT	Yes	Yes	Yes	Urban Mixed	Medium	Post & Loops in sidewalk	Yes	Yes	Yes	Yes	Yes
2	**University Ave.**	D2/City of Gainesville	Yes	Yes	Yes	Urban/University Commute	High	Post & Loops in sidewalk	Yes	Yes	Yes	Yes	No
1	**Fort Fraser Trail**	FDOT	Yes	Yes	Yes	Suburban Recreational	Low	Overhead sensor and piezos	Yes	Yes	Yes	Yes	Yes

DISTRICT 1: FORT FRASER TRAIL, HIGHLAND CITY, FL

Count Site Location Information

The Fort Fraser Trail is located in Highland City, FL. The trail runs parallel to State Road 98 also referred to as Bartow Rd.

FDOT's site selection process included research findings for three candidate locations along the Fort Fraser Trail.

1. Site 1 is located at the main trailhead.
2. Site 2 is located closer to the center of Highland City, adjacent to a fast food establishment.
3. Site 3 is on the southern end of Highland city, adjacent to a transit stop along the trail.

Highland City is located in Polk County, FL which is on the Safety Office's Top-25 List of High-Priority Counties. Crash data shows multiple crashes occurring along the trail corridor. StreetLight data sources indicate Site 2 receives the most non-motorized traffic, and the facility receives low to medium levels of non-motorized traffic. Site 1 was selected as the ideal location for the count station.

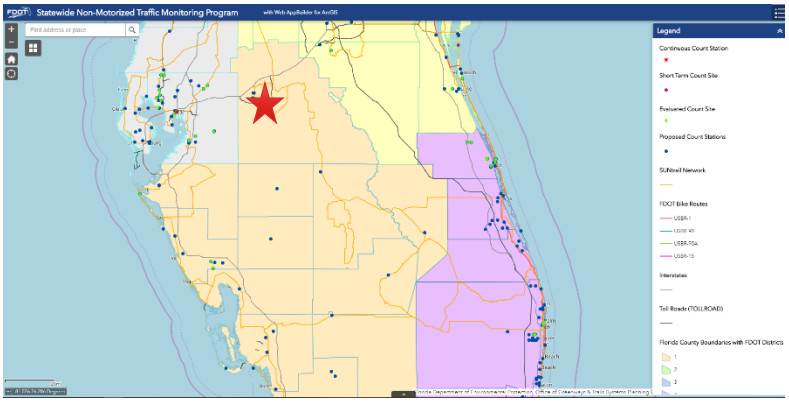


Figure 1: District 1 count station map

Figure 2: District 1 count station location

Selection Criteria

Potential Continuous Count Sites			STIC Grant Criteria			TDA Criteria							
District	Site Name	Managing Agency	Safety's Top 25 counties	Bike/ped crash cluster zone	On-System	Anticipated Factor Group	Anticipated volumes	Anticipated Equipment	Evaluated by TDA	Local Agency Support	Historical Non-Motorized Data	TDA Short-term data	SUN Trail Facility
1	**Fort Fraser Trail**	FDOT	Yes	Yes	Yes	Suburban Recreational	Low	Sidefire sensor and piezos	Yes	Yes	Yes	Yes	Yes

Implementation Checklist

FACILITY IDENTIFIED	COUNT SITE IDENTIFIED	COORD. W/ LOCAL AGENCIES	INSTALLED
YES	Yes	Yes	Yes

DISTRICT 2: UNIVERSITY AVENUE, GAINESVILLE, FL

Count Site Background Information

FDOT TDA has been collaborating with FDOT District 2 to determine the optimal location for a non- motorized continuous counter, partnering agencies include City of Gainesville and University of Florida. University Ave. is a major east-west corridor that runs through the center of Gainesville, FL and the main entrances to the University of Florida.

Gainesville, FL is located in Alachua County which is on the Safety Office's Top-25 List of High-Priority Counties. Crash data shows numerous bicycle and pedestrian crashes occurring along the corridor, near the university and adjacent commercial centers. FDOT TDA performed a short-term count on the facility and confirmed numerous bicyclists using the sidewalks instead of riding on the roadway.

StreetLight Data results indicate this site as a high-volume non-motorized traffic location with hundreds of bicycles and thousands of pedestrians utilizing the facility daily.

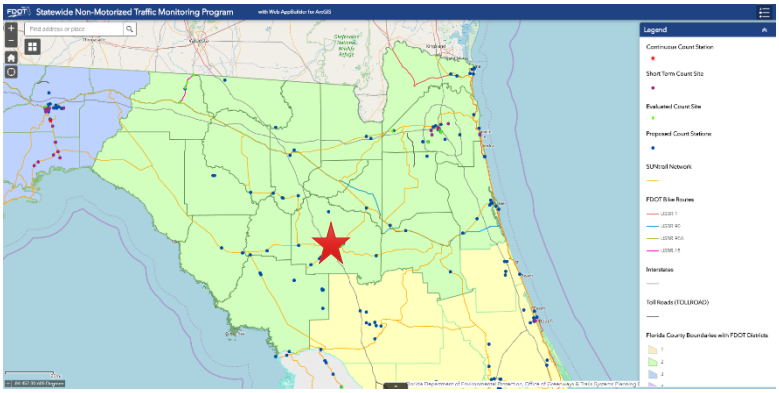


Figure 3: District 2 count station map

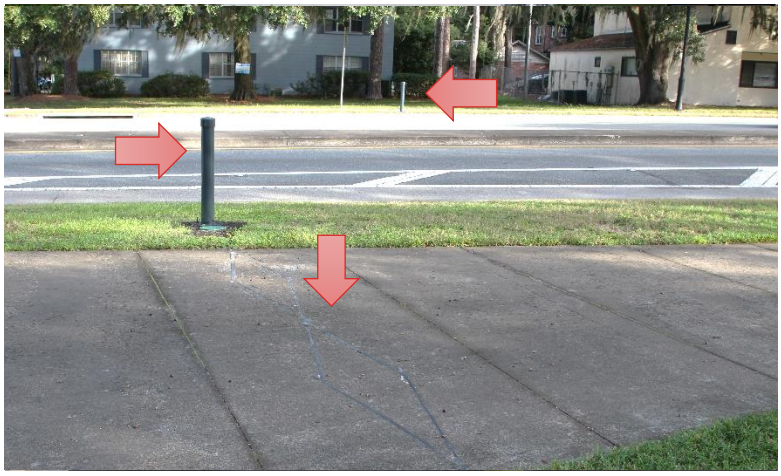


Figure 4: District 2 count station location

Selection Criteria

FDOT TDA Continuous Counter Installation Recommendations - 7/1/2020

Potential Continuous Count Sites			STIC Grant Criteria			TDA Criteria							
District	Site Name	Managing Agency	Safety's Top 25 counties	Bike/ped crash cluster zone	On-System	Anticipated Factor Group	Anticipated volumes	Anticipated Equipment	Evaluated by TDA	Local Agency Support	Historical Non-Motorized Data	TDA Short-term data	SUN Trail Facility
2	University Ave.	D2/City of Gainesville	Yes	Yes	Yes	Urban/University Commute	High	Post & Loops in sidewalk	Yes	Yes	Yes	Yes	No

Implementation Checklist

FACILITY IDENTIFIED	COUNT SITE IDENTIFIED	COORD. W/ LOCAL AGENCIES	INSTALLED
YES	Yes	Yes	Yes

DISTRICT 3: TENNESSEE STREET (HWY 90), TALLAHASSEE, FL

Count Site Background Information

FDOT TDA has been collaborating with District 3 to determine the optimal location for a non- motorized continuous counter, partnering agencies include FDOT's Safety Office, Florida State University, and the City of Tallahassee. Highway 90, also known as Tennessee Street in the City of Tallahassee, is a high-ranking site for a continuous counter.

Tallahassee is located in Leon County, FL which is located on the Safety Office's Top- 25 list of High-Priority counties. Crash data shows numerous bicycle and pedestrian crashes occurring along the corridor, near the university and adjacent commercial centers.

StreetLight Data results indicate this site as a high-volume non-motorized traffic location with hundreds of bicycles and thousands of pedestrians utilizing the facility daily. This segment of Hwy 90 is also designated as a US National Bike Route and a FDOT SUN Trail facility.

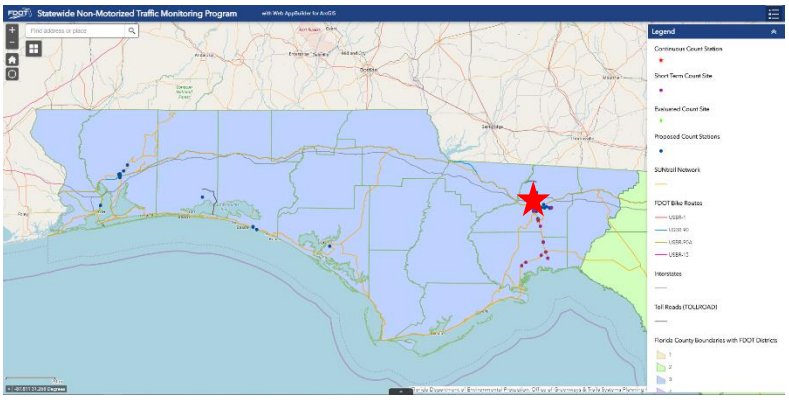


Figure 5: District 3 count station map

Figure 6: District 3 count station location

Selection Criteria

Potential Continuous Count Sites			STIC Grant Criteria			TDA Criteria							
District	Site Name	Managing Agency	Safety's Top 25 counties	Bike/ped crash cluster zone	On-System	Anticipated Factor Group	Anticipated volumes	Anticipated Equipment	Evaluated by TDA	Local Agency Support	Historical Non-Motorized Data	TDA Short-term data	SUN Trail Facility
3	**Hwy 90/Tennessee St.**	D3/COT	Yes	Yes	Yes	Urban Mixed	Medium	Post & Loops in sidewalk	Yes	Yes	Yes	Yes	Yes

Implementation Checklist

FACILITY IDENTIFIED	COUNT SITE IDENTIFIED	COORD. W/ LOCAL AGENCIES	INSTALLED
YES	Yes	Yes	Yes

DISTRICT 4: NEW RIVER GREENWAY, DAVIE, FL

Count Site Background Information

FDOT TDA has been collaborating with District 4 to determine the optimal location for a non- motorized continuous counter. The New River Greenway is a shared use path/trail that runs parallel to I-595. The corridor runs east-west and is approximately 10 miles long.

Davie is located in Broward County which is on the Safety Office's Top-25 List of High-Priority Counties. Crash data shows numerous bicycle and pedestrian crashes occurring on or near the facility. FDOT TDA recently performed a short-term bicycle count study using pneumatic tubes on 5 potential locations to install the counter. According to the tube count data, the location receiving the highest bicycle traffic is on the west wide of the trail, near a regional park which includes a popular mountain bike facility.

StreetLight Data also indicates that the most bicycle traffic was occurring near the regional park, followed by a location adjacent to Flamingo Road. The data will be presented to District 4 for final count station selection.

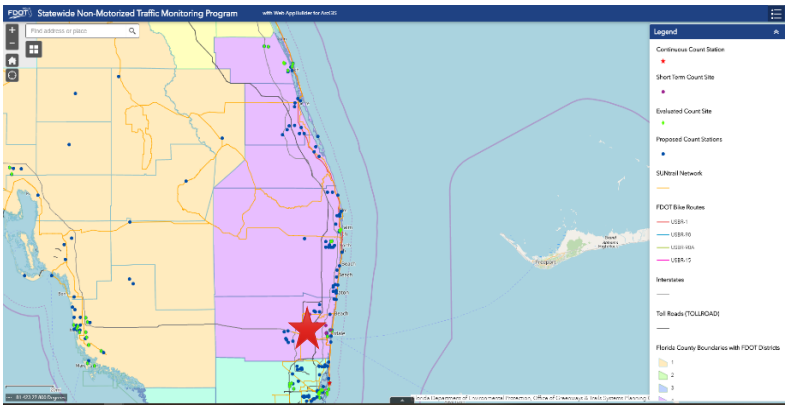


Figure 7: District 4 count station map

Figure 8: District 4 count station location

Selection Criteria

Potential Continuous Count Sites			STIC Grant Criteria			TDA Criteria							
District	Site Name	Managing Agency	Safety's Top 25 counties	Bike/ped crash cluster zone	On-System	Anticipated Factor Group	Anticipated volumes	Anticipated Equipment	Evaluated by TDA	Local Agency Support	Historical Non-Motorized Data	TDA Short-term data	SUN Trail Facility
4	New River Greenway	D4	Yes	Yes	Yes	Urban Mixed	Low	Overhead sensor and piezos	Yes	Yes	Yes	Yes	Yes

Implementation Checklist

FACILITY IDENTIFIED	COUNT SITE IDENTIFIED	COORD. W/ LOCAL AGENCIES	INSTALLED
YES	Yes	Yes	Yes

DISTRICT 5: EAST CENTRAL REGIONAL RAIL TRAIL, EDGEWATER, FL

Count Site Background Information

FDOT TDA has been collaborating with District 5 and the River to Sea TPO to determine the optimal location for a non-motorized continuous counter. The East Central Regional Rail Trail is a separated shared use path for the majority of the facility. This particular site is at the base of a bridge as the trail crosses over SR 442.

Edgewater is located Volusia County, FL which is on the Safety Office's Top-25 List of High-Priority Counties. Crash Data shows past crashes along the corridor.

StreetLight Data results indicate low to medium traffic volumes. The Team has been researching numerous locations along the trail corridor. Considering that bridges provide great pinch-points to more accurately count all non-motorized travelers, this location was decided as the optimal location for the count station installation.

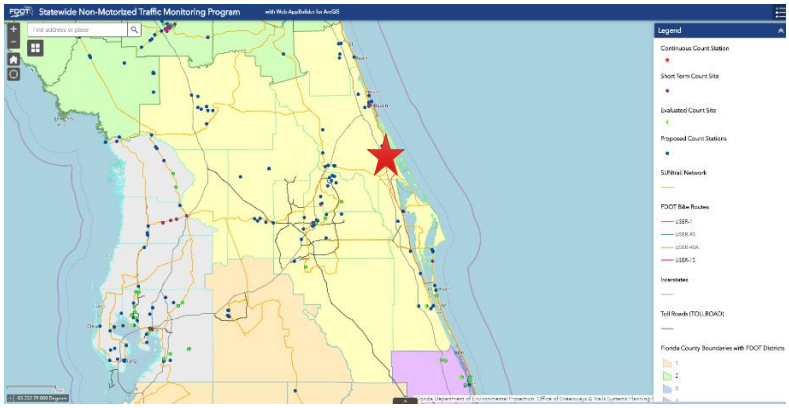


Figure 9: District 5 count station map

Figure 10: District 5 count station location

Selection Criteria

Potential Continuous Count Sites			STIC Grant Criteria			TDA Criteria							
District	Site Name	Managing Agency	Safety's Top 25 counties	Bike/ped crash cluster zone	On-System	Anticipated Factor Group	Anticipated volumes	Anticipated Equipment	Evaluated by TDA	Local Agency Support	Historical Non-Motorized Data	TDA Short-term data	SUN Trail Facility
5	East Central Rail Trail	D5	Yes	Yes	Yes	Urban Mixed	Low	Loops & Overhead sensor	Yes	Yes	Yes	Yes	Yes

Implementation Checklist

FACILITY IDENTIFIED	COUNT SITE IDENTIFIED	COORD. W/ LOCAL AGENCIES	INSTALLED
YES	Yes	Yes	Yes

DISTRICT 6: OVERSEAS HERITAGE TRAIL, KEY WEST, FL

Count Site Background Information

FDOT TDA has been collaborating with District 6 to determine the optimal location for a non- motorized continuous counter, partnering agencies include the City of Key West and Florida Department of Environmental Protection. The Overseas Heritage Trail is a separated shared use path that runs parallel to US-1 from Key Largo to Key West.

Key West is located in Monroe County which is on the Safety Office's Top-25 List of High-Priority Counties. Crash data shows numerous crashes occurring along the corridor. StreetLight Data indicates a high level of non-motorized traffic volume when including the Overseas Heritage Trail, parallel bike lanes on US-1, and sidewalk on the opposite side of the roadway. FDOT TDA visited the proposed location with the City of Key West and District 6, and together agreed the most valuable location for the count station was at the approach to the Key West island.

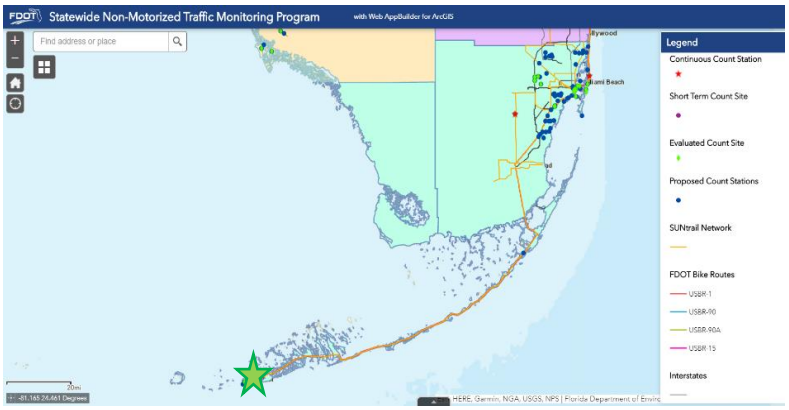


Figure 11: District 6 count station map

Figure 12: District 6 count station location

Selection Criteria

Potential Continuous Count Sites			STIC Grant Criteria			TDA Criteria							
District	Site Name	Managing Agency	Safety's Top 25 counties	Bike/ped crash cluster zone	On-System	Anticipated Factor Group	Anticipated volumes	Anticipated Equipment	Evaluated by TDA	Local Agency Support	Historical Non-Motorized Data	TDA Short-term data	SUN Trail Facility
6	Overseas Heritage Trail	DEP/City of Key West/D6	Yes	Yes	Yes	Urban Mixed	High	Loops & overhead sensor	Yes	Yes	Yes	No	Yes

Implementation Checklist

FACILITY IDENTIFIED	COUNT SITE IDENTIFIED	COORD. W/ LOCAL AGENCIES	INSTALLED
YES	Yes	Yes	No

DISTRICT 7: JACKSON STREET CYCLE TRACK, TAMPA, FL

Count Site Background Information

FDOT TDA has been collaborating with District 7 to determine the optimal location for a non-motorized continuous counter, partnering agencies include Hillsborough County, City of Tampa, and Tampa Downtown Partnership. The Jackson St. Cycle Track is the first fully separated on-road bicycle facility constructed on a state road within the state of Florida.

Tampa is located in Hillsborough County which is on the Safety Office's Top-25 List of High Priority Counties. Crash data shows numerous crashes occurring along the corridor. StreetLight Data indicates a medium volume site when including the Cycle Track and parallel sidewalks. FDOT TDA visited the site with local partners to determine the optimal location for the count device. FDOT TDA installed a side fire infrared continuous counter and piezo strips to detect bicycle traffic. FDOT TDA and its vendor are currently working on counter validation and calibration to ensure data accuracy before sharing with the public and reporting to FHWA.

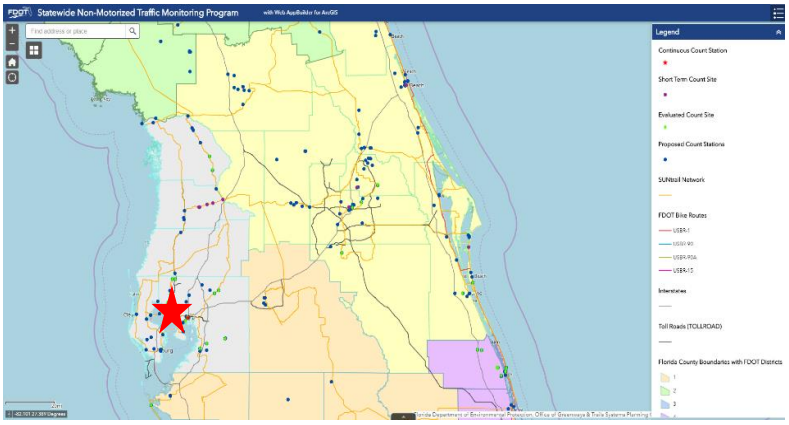


Figure 13: District 7 count station map

Figure 14: District 7 count station location

Selection Criteria

Potential Continuous Count Sites			STIC Grant Criteria			TDA Criteria							
District	Site Name	Managing Agency	Safety's Top 25 counties	Bike/ped crash cluster zone	On-System	Anticipated Factor Group	Anticipated volumes	Anticipated Equipment	Evaluated by TDA	Local Agency Support	Historical Non-Motorized Data	TDA Short-term data	SUN Trail Facility
7	Jackson St. Cycle track	City of Tampa/D7/Tampa	Yes	Yes	Yes	Urban commute	Medium	Sidefire infrared and piezos	Yes	Yes	Yes	No	No

Implementation Checklist

FACILITY IDENTIFIED	COUNT SITE IDENTIFIED	COORD. W/ LOCAL AGENCIES	INSTALLED
YES	Yes	Yes	Yes

FLORIDA TURNPIKE: SUN COAST TRAIL, PASCO COUNTY, FL

Count Site Background Information

FDOT TDA has been collaborating with Florida Turnpike's SUN Trail coordinator to determine the optimal location for a non-motorized continuous counter, partnering agencies include Pasco County MPO. The Sun Coast Trail is a shared use path that runs parallel to Florida's turnpike in west central Florida.

The facility and proposed count station is located in Pasco County which is on the Safety Office's Top 25 List of High-Priority Counties. Crash data shows numerous crashes occurring along the corridor. The count station proposed is near an incoming bridge overpass that is anticipated to enhance safety for non-motorized travelers. StreetLight Data indicates low to medium levels of non-motorized traffic utilizing the facility.

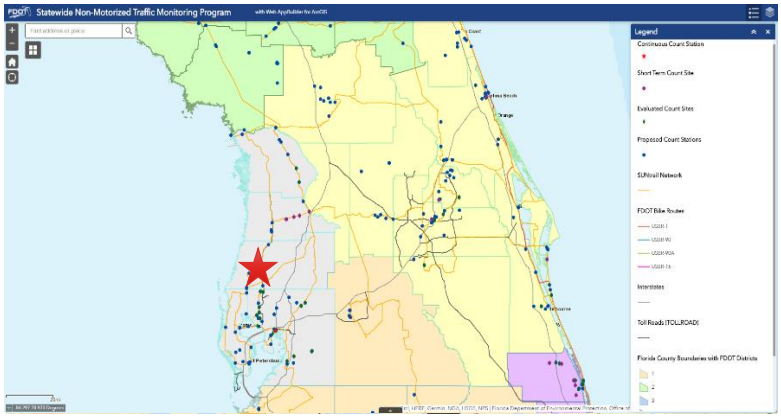


Figure 15: Turnpike count station map

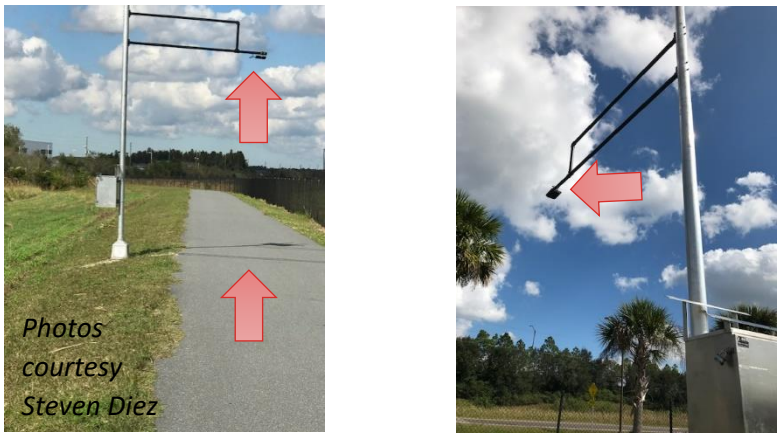


Figure 16: Turnpike count station location

Selection Criteria

Potential Continuous Count Sites			STIC Grant Criteria			TDA Criteria							
District	Site Name	Managing Agency	Safety's Top 25 counties	Bike/ped crash cluster zone	On-System	Anticipated Factor Group	Anticipated volumes	Anticipated Equipment	Evaluated by TDA	Local Agency Support	Historical Non-Motorized Data	TDA Short-term data	SUN Trail Facility
TPK	**SunCoast Trail**	TurnPike	Yes	Yes	Yes	Rural Recreational	Medium	Overhead sensor and piezos	No	Yes	Yes	No	Yes

Implementation Checklist

FACILITY IDENTIFIED	COUNT SITE IDENTIFIED	COORD. W/ LOCAL AGENCIES	INSTALLED
YES	Yes	Yes	Yes

REFERENCES

- *FDOT Top 25 Counties for Bicycle and Pedestrian Safety Improvements* - https://www.alerttodayflorida.com/resources/Top25Countiesmap_dark.pdf

- *FDOT Crash Statistics* - https://fdot.maps.arcgis.com/apps/webappviewer/index.html?id=2af15253ea564927bcbad1cc7002f9ff

- *FDOT Non-Motorized Traffic Monitoring program* - https://fdot.maps.arcgis.com/apps/webappviewer/index.html?id=2af15253ea564927bcbad1cc7002f9ff

- *Bicycle and Pedestrian Traffic Cell Phone Probe Data* – https://www.streetlightdata.com/whitepapers/