

OCTOBER 2019

STATEWIDE NON-MOTORIZED TRAFFIC MONITORING PROGRAM:

RECOMMENDATIONS REPORT #2 – Implementation Plan

Contract # C9T46



FDOT

Transportation Data
and Analytics (TDA)

STATEWIDE NON-MOTORIZED TRAFFIC MONITORING PROGRAM

Contract # C9T46

PREPARED FOR
Florida Department of Transportation
Office of Transportation Data & Analytics



Recommendations Report #2
Implementation Plan

October 2019

PREPARED BY
MARLIN Engineering, Inc.



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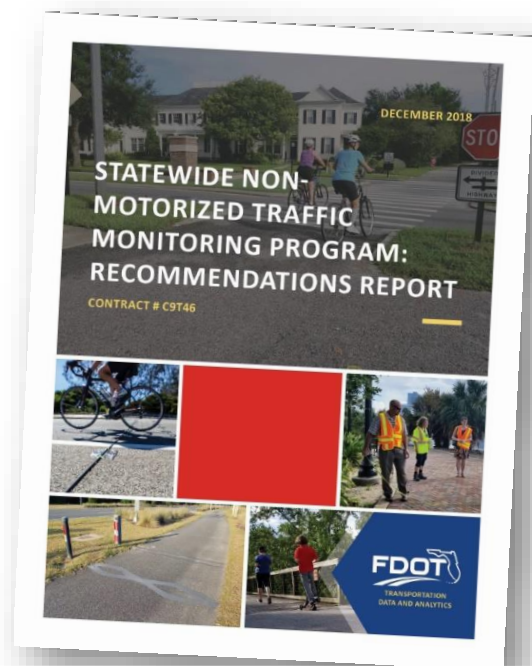
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1.0 EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) Office of Transportation Data and Analytics (TDA) began the development of a Non-Motorized Traffic Counting Program in May 2018 with a need to provide bicycle and pedestrian (non-motorized) volume and supporting statistics and information to new and existing data customers. The purpose of developing the non-motorized data program is similar to motorized traffic volume data in that non-motorized data can be used for all the same type of analyses such as safety studies, planning and programming FDOT facilities, pavement and trail maintenance, etc. One example that illustrates the critical need for a non-motorized data program is to understand safety crash rates to accurately determine exposure so that valid statistical methods can be used to report the increased or decreased rates of accidents involving non-motorized traffic. Without volume data, accident rates and volumes are challenging (at best) to determine. Below is the executive summary describing FDOT’s Non-Motorized data program with a defined purpose, methodology, outcomes, and benefits to the program.

The first Statewide Non-Motorized Program Recommendations Report was published by FDOT December 2018. This report focused on the Non-Motorized program development work from the program’s inception (May 2018) to December 2018 and provides a detailed description of work accomplished for the first 8 months. In summary, the program’s development activities in the first 8 months included a focus on the following:

1. Developing/Establishing 4 Program Components – continuous counting, short-term counting, data repository, and statewide outreach & partnerships.
2. Establishing project team members and creating initial strategic data partnerships with agencies across the state of Florida.
3. Evaluating continuous counting sites for potential future equipment installation.
4. Creating and documenting FDOT’s non-motorized site selection methods



This report is the second Statewide Non-motorized Program Recommendations Report that covers the Non-motorized program development activities from January 1, 2019 to September 30, 2019. This report is a continuation of the first report and subsequent program development activities of the FDOT statewide non-motorized traffic monitoring program.

Focus of the FDOT non-motorized program’s development in the past 9 months has been on the following activities:

1. Expansion of program components including the continuous counting, short-term counting, data repository, and statewide outreach & partnerships.
2. Developing a Statewide Traffic Data Collaborative (TDC)
3. Creating and documenting FDOT data analyses and findings methodologies
4. Further expanding FDOT statewide data partnerships with local agencies
5. Creating creative program partnership opportunities (including partner funded data collection sites)

All of these focus areas fit in with the overall Non-motorized program purposes which includes:

1. To develop a Statewide Non-Motorized Traffic Monitoring Program that provides data customers with bicycle and pedestrian traffic volume data
 - a. Data customers include: FDOT districts, federal, state, regional and local agencies, data partners, bicycle and pedestrian stakeholders and the public
2. To develop a statistically valid bike & pedestrian data collection program that is consistent with the FHWA reporting format and is up-loadable to the FHWA Traffic Monitoring Analysis System (TMAS)
3. To develop a data collection effort that should help state decision-makers understand and address non-motorized traffic patterns, bicycle and pedestrian safety, design and evaluation of bicycle and pedestrian infrastructure, planning for bicycles and pedestrians, as well as traffic signal timing for bicycles and pedestrians.

Looking into the future as the FDOT non-motorized traffic data program continues to develop, expand, and evolve, many program components will continue to need attention and allocated resources will need to focus on the following activities going forward:

- On-going identification of opportunities for establishing data partnerships
- On-going standardization of data collection methods that require standard site selection and evaluation
- Development of an organized equipment and resource schedule with geographic considerations
- Develop methods for checking the quality of data collected
- Development of a standardized database repository
- On-going development of other data and program management processes and procedures.

2.0 NON-MOTORIZED PROGRAM REVIEW AND EXPANSION

There are several program components to developing and expanding the FDOT statewide non-motorized data collection program. These components include developing standardized data collection methods that require site selection, an organized equipment and resource schedule with geographic considerations, methods for checking the quality of data collected, the development of a standardized database repository, as well as several other data and program management processes and procedures. For example, one of the program management processes that will impact the expansion of the statewide program is on-going agency outreach and communication as this is one of several components to expanding the FDOT non-motorized traffic monitoring program.

The FDOT non-motorized data program is organized into 4 distinct sub-programs. A detailed review of each program component is provided below in the program components review section 2.1. In order to maintain and expand each non-motorized program component, the creation of a formalized statewide traffic data collaborative has been established by FDOT. This collaborative was developed using lessons learned and following other national, statewide and local programs.

FDOT Central Office Non-Motorized Working Group Contributing Offices

- Transportation Data and Analytics Office
- Safety Office
- Transit Office
- Systems Planning Office
- Design Office
- Office of Policy Planning
- Traffic Operations Office
- Forecasting and Trends Office

2.1 Program Components Review

The NMTM program is organized into four sub-programs: Continuous Count Program; Short-Term Count Program, Statewide Data Repository, finally, Outreach & Partnerships. These sub-programs will run distinctive programmatic operations while integrating with the entire data collection program and will be on-going throughout the duration of the program.

The **Continuous Count program** remains in the research phase while working towards its first round of continuous count installations. Once final selections have been made, FDOT TDA will move forward with installation procedures and coordination with FDOT Districts and local agencies. Continuous Count data collection will follow national guidelines so the data collected can be submitted to FHWA.

The **Short-Term program** is preparing for its first round of statewide deployments. Coordination with local agencies regarding where and when short-term count deployments will occur will continue. Short-term count procedures will follow national guidelines so the data collected can be submitted to FHWA.

The **Statewide data repository** will serve as the data warehouse for all non-motorized data, both FDOT obtained and non-FDOT obtained. Any statewide agency currently involved in collecting non-motorized data is welcome to voluntarily submit their data to be included in the statewide data repository. In order for data to be submitted to FHWA, it must be formatted to the specific standards found in the [FHWA Traffic Monitoring Guide \(TMG\)](#).

Outreach and Partnerships is an ongoing dynamic process of keeping the state and other agency staff informed as to the program status, as well as discovering opportunities to collaborate with other entities to maximize non-motorized traffic monitoring data collection resources. More details about the status of each sub-program are in the sections that follow.

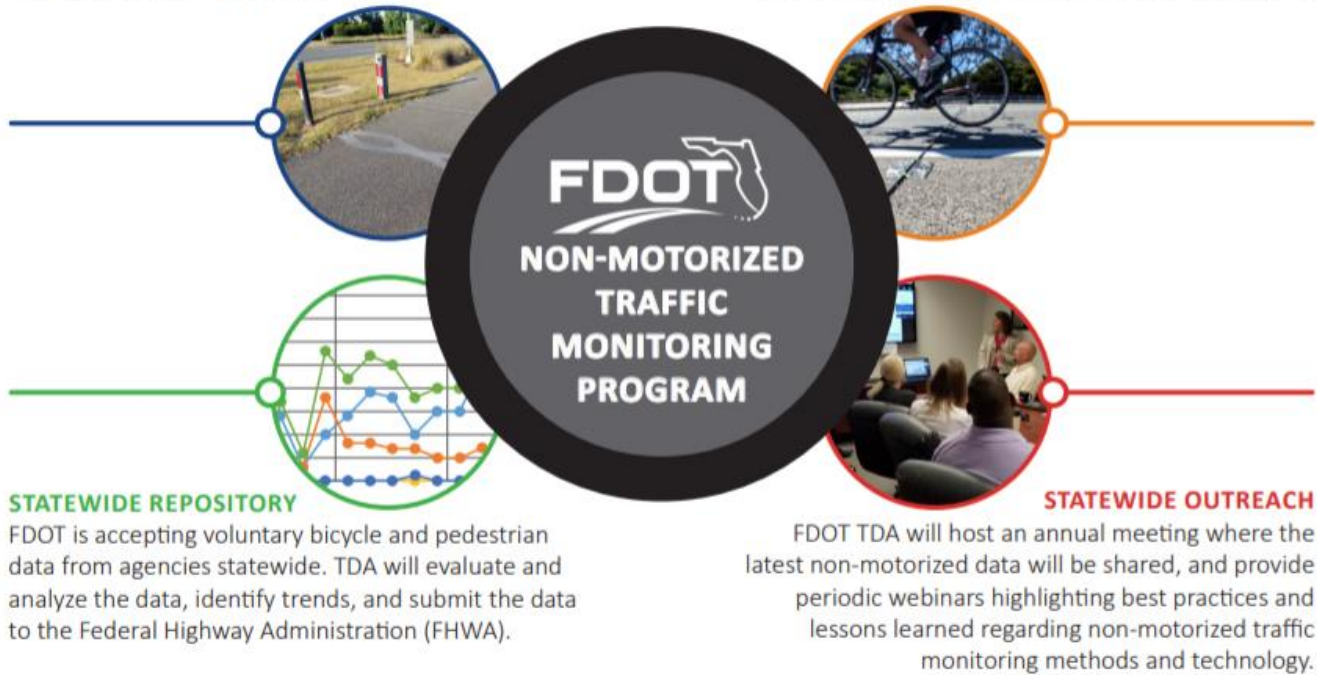
NMTM Sub-Programs in Summary

STATEWIDE CONTINUOUS COUNT PROGRAM

FDOT’s goal is to install 1- 2 Continuous Count stations per district, per year. The data will be published and shared on Florida Traffic Online.

STATEWIDE SHORT-TERM COUNT LOANER PROGRAM

FDOT TDA is providing partnering agencies with short-term count equipment and training. In return, FDOT TDA will receive localized non-motorized count data.



STATEWIDE REPOSITORY

FDOT is accepting voluntary bicycle and pedestrian data from agencies statewide. TDA will evaluate and analyze the data, identify trends, and submit the data to the Federal Highway Administration (FHWA).

STATEWIDE OUTREACH

FDOT TDA will host an annual meeting where the latest non-motorized data will be shared, and provide periodic webinars highlighting best practices and lessons learned regarding non-motorized traffic monitoring methods and technology.

2.1.1 Continuous Counting Program

FDOT intends to develop a non-motorized traffic volume data program that has adequate continuous counting stations (CCS) coverage. Similar to the motorized traffic data program, adequate CCS coverage is defined in the TMG as 3 to 5 CCS sites per factor group. Since very little is known about what non-motorized factor groups might adequately represent traffic volumes in the state of Florida, FDOT intends to install 1 to 2 CCS stations per district per year until adequate, 3 to 5 CCS stations per factor group, are represented.

It is FDOT’s intention to publish and share data within the existing Florida Traffic Online software application which will serve as the public-facing domain of non-motorized data collection and results. As seen in the map below, the non-motorized proposed station location map provides a list of sites where FDOT used nationally accepted and standardized site selection methods and filtering criteria that included virtual and on-site evaluation visits where FDOT could install counting equipment in the future. The blue dots represent the 500+ statewide proposed non-motorized count stations. The user can click on the dot and obtain the x, y coordinates and identify the survey respondent who proposed the site. The green diamonds represent the locations that were evaluated by FDOT TDA staff and the survey respondent on-site. The user can click on the triangle and open up the evaluation form to view

detailed information regarding the land use characteristics, roadway characteristics, bicycle and pedestrian behavior observations, FDOT context classification, and available infrastructure for device installation.

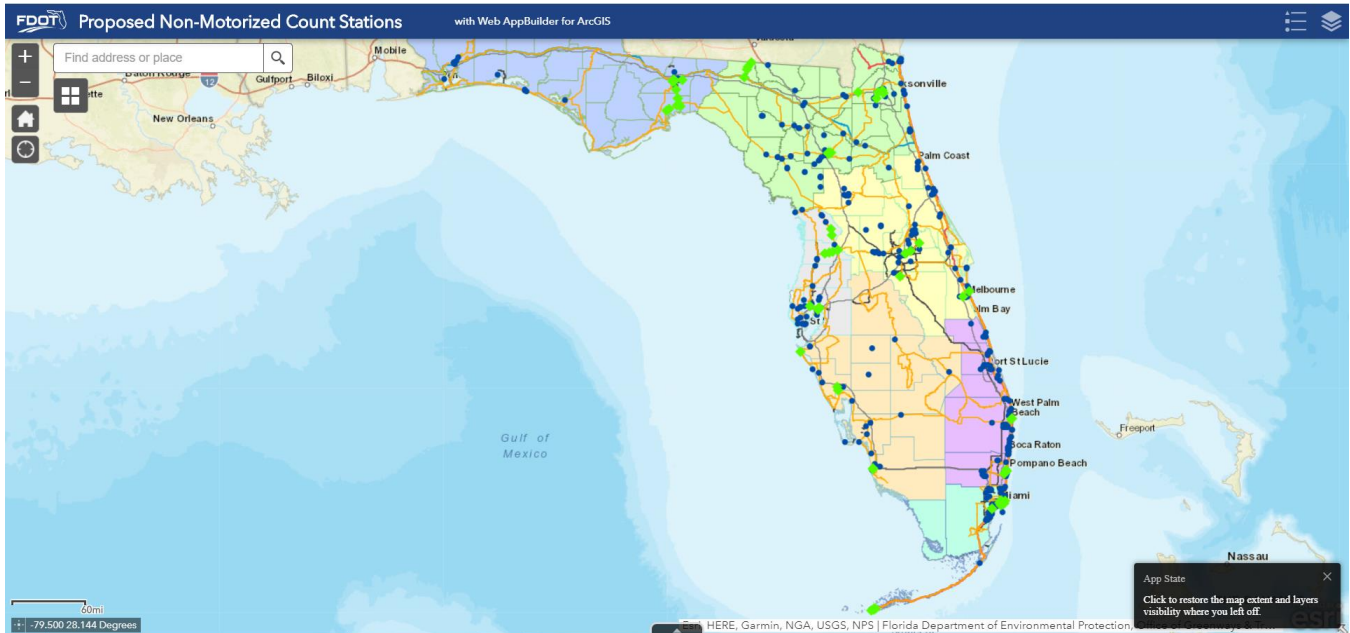


Figure 1: [Public-facing Map](#) displaying Proposes Non-Motorized Count Stations

As part of the nationally accepted and documented statewide standardized site selection methodology, which FDOT has adopted, developing a count program should include performing virtual site visits. As such, the TDA team continues to perform virtual site visits on each of the 500+ proposed sites. Many of the sites that were proposed would fit in with the overall statewide data collection program goals and thus qualify for further consideration to installing counting equipment for both short-term and continuous count data collection.

Also following the nationally accepted and documented statewide standardized site selection methodology, the TDA Team continues to conduct on-site evaluations of recommended counting locations. To date, TDA has conducted 116 on-site evaluations stretching from Pensacola, Jacksonville, and Key West. TDA will continue to conduct on-site evaluations as this activity will be on-going for the life of the data collection program.

Automated Data Collection during Site Evaluation

Prior to making an investment in the installation of short-term and/or continuous counting equipment, several selection criteria must be met. For example, one of the criteria required to select a count site (continuous or short-term) is that TDA staff must have completed both a virtual and on-site evaluation of the recommended counting location. Conducting virtual and on-site evaluations requires TDA staff to match site selection criteria with the physical and behavioral aspects of the site. For example, TDA staff need to take into account the land use characteristics, roadway characteristics, real-time behaviors of existing non-motorized travelers, potential choke point(s) where non-motorized travelers are forced to funnel through, existing infrastructure such as poles, signs, access to power, and more. All of these physical and behavioral characteristics of the site help to prioritize site selection investments in installing continuous and short-term counting equipment.

The TDA Team used nationally accepted and well documented site selection criteria to develop a detailed Site Evaluation form. This automated form can now be used to document site selection details. This process and site selection criteria have been used by others where a printed list of questions would be captured manually while conducting the on-site visit. A unique and new development of an electronic on-site selection form was developed for the purpose of capturing information electronically while conducting the on-site evaluations. Using this methodology to capture information is of national significance as no other agency has implemented this methodology. This break-through methodology using technology to capture information on-site eliminates data capture errors, provides a better method of documenting site details and allows for immediate electronic storage of on-site details.

The Site Evaluation form provides electronic on-the-spot data capture for much of the key information needed for a planner, engineer, and / or data technician to understand the context of the site, evaluate site conditions, and properly document types of count devices that would be needed to successfully install non-motorized continuous or short-term counting equipment. The evaluation form contains automated and embedded on-form help and general guidelines to follow that assist the user when they are out in the field to help ensure no details are missed.

With so many factors to consider when on-site, FDOT TDA recommends performing a site visit with at least two experienced and trained subject matter specialists. Each of these specialists should have experience and training in the site selection process, installation of equipment, and traffic volume counting instrumentation including hardware/software technologies with a trained eye to identify the nuances in selecting and later installing short-term and/or continuous counting equipment.

Regarding the statewide program, the site evaluations were performed by the in-house non-motorized traffic monitoring program staff and consultant. The site evaluation team had one person completing the form electronically, while another person manually completed the same form. The manual form for each site was intentionally a duplicate form meant to provide a manual back-up. After conducting numerous site selection evaluations at several proposed counting site locations, the team would gather at the end of the day to compare notes and make sure nothing was missed. The electronic form would serve as the official form to be documented in the report and linked to/shared on the interactive map. A sample of the Evaluation Forms is on page 8 and 9. In summary, the forms document the following characteristics:

- **Geography and Infrastructure**
 - Water features, bridges, trees, etc.
- **Land Use**
 - Residential, commercial, retail, etc.
- **Roadway Characteristics**
 - Sidewalk, dedicated bike lane, signage, etc.
- **Existing bicycle and pedestrian behaviors**
 - Travel in both directions, un-safe behaviors
- **Exact Location**
 - GPS x, y coordinates for counting device
- **Installation Details**
 - Traveler’s present, need for MOT?

Site Visit Evaluation Photos



Figure 2: FDOT TDA staff evaluating count stations with FDOT District 7 and the Tampa Downtown Partnership. This location is located in Tampa’s urban core which has one of the state’s first constructed separated bicycle lanes.



Figure 3: Site Evaluation with MetroPlan MPO. This specific location is a merge point between two trails: Cady Way Trail and Little Econ Trail.



Figure 4: Site Evaluation with City of Gainesville. The team observed numerous shared-use paths leading in and out of the University of Florida.

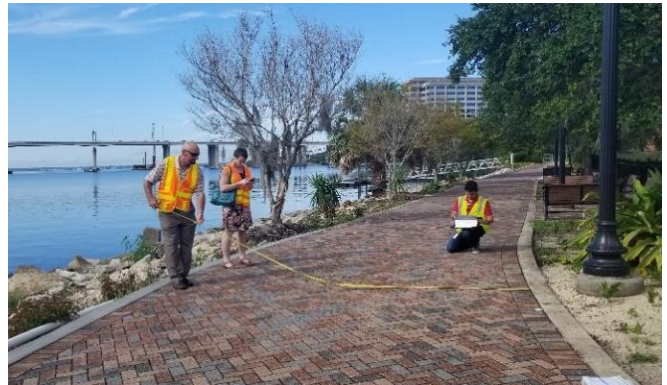


Figure 5: Site Evaluation with the City of Jacksonville. This location is a Riverwalk that receives bicycle and pedestrian traffic. The count station is also near a recreational facility. There are numerous Riverwalk facilities that can be found throughout the state.



Figure 6: Site Evaluation with the Collier MPO and City of Naples. This location was under construction as a new bridge is being added to a popular park.

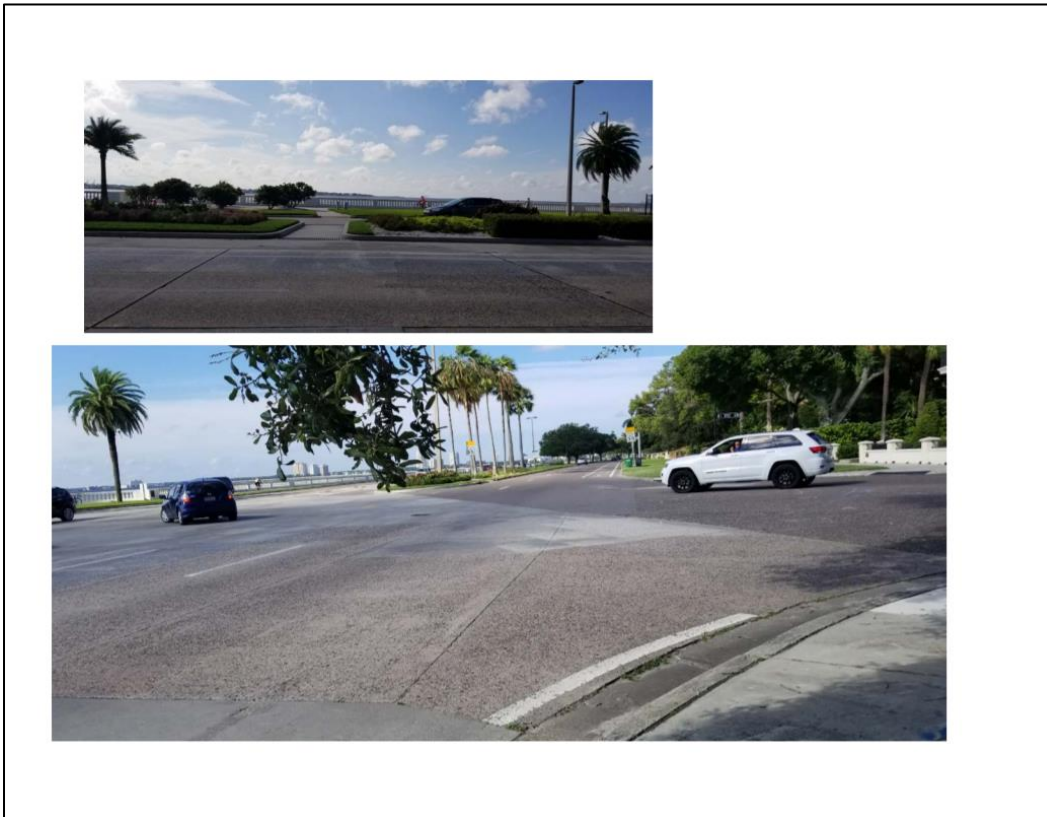


Figure 7: Site Evaluation with Madison County. Madison County lies on the Florida / Georgia border.

On-Site Visit Form			
SITE NAME: Rome @ Bayfront		DATE OF SITE VISIT: 8/31/2018	
LOCATION: Rome @ Bayfront		WEATHER CONDITIONS: Sunny - partly cloudy - warm	
FACTOR GROUP: Mixed Recreational		PICTURES TAKEN: Yes	
GPS: 27.92953, -82.475726		CITY AND DOT DISTRICT: DISTRICT 7 - TAMPA	
LANE WIDTH:	# of LANES: 4	COUNT TYPE: Short-term	
SIDEWALK WIDTH: 10	# of SIDEWALKS:	SITE RANKING: 1	RANKING NOTE: Expensive to count
NOTES: ON-SITE VISIT #29 on Friday, August 31, 2018. Met with D7 at 10:10am.			
1 - ON-SITE CHARACTERISTICS			
Step 1 - Evaluate On-Site Characteristics. Below are some guidelines and things to look for when choosing sites for continuous counting purposes. Check the boxes as applicable below.			
1. Avoid power lines	<input type="checkbox"/> Good Mid-Block Location	<input type="checkbox"/> Curves	<input type="checkbox"/> Special Events Nearby
2. Avoid water bodies	<input type="checkbox"/> Powerlines	<input type="checkbox"/> Hills	<input type="checkbox"/> School or University Nearby
3. Avoid installation of counters that point towards traffic (Infrared counters)	<input checked="" type="checkbox"/> Water Bodies	<input type="checkbox"/> Choke Points	<input type="checkbox"/> Parks and/or Recreation Facility Nearby
4. Avoid areas where people stop and mill around an area	<input checked="" type="checkbox"/> Motorized Traffic Present	<input type="checkbox"/> People Hanging Around Area (milling around)	
5. Avoid curves	NOTES: Count site is too wide of a right-of-way and too complex for counting at this time. Lots of motorized traffic present. Site too complicated at this time for a continuous counter. Keep on list for short-term counting.		
6. Avoid hills			
7. Select locations with pinch points that allows a counter to capture all travelers			
8. Avoid counting at the intersection, preferred counting locations are mid-block			
2 - SITE SPECIFIC OBSERVATIONS and BEHAVIORS			
Step 2 -- Determine Baseline Activity Levels and Evaluate Site Specific Observations and Behaviors. When on-site, evaluate conditions and baseline activity levels using the checklist below. If the site has no bicycle and/or pedestrian activity during the site visit and there is no evidence to substantiate activity may occur at other time periods at the site, note that further investigation would be needed before investing in CCS equipment. Activity and behavioral observations on-site can influence and potentially increase the site's ranking such as a diversity of users from differing perceived socioeconomic status to a diversity of bicyclist types (commuter, recreational, mixed).			
1. Determine Baseline Activity Levels and Behaviors	NOTES: Medium To High volume		
2. Test for Interference, are there visible power lines	NOTES:		
3. Watch Traffic, Look for Origin and Destinations	NOTES:		
4. Look for Choke Points (natural funneling point such as bridges, tunnels or overpasses)	NOTES:		
5. Note all Observations during the On-Site visit	NOTES:		
6. Gather additional information from recommending Agency	NOTES:		
7. Search for data sources such as Strava	NOTES:		
8. Other sources of information	NOTES:		
9. Perform Short Duration Counts at potential CCS!!!	NOTES:		

3 - INSTALLATION DETAILS	
Step 3 - Evaluate the site for potential continuous counting installation of equipment. During this step, make sure to consider all the items below and check the yes/no boxes and provide notes if necessary	
Installation Details to evaluate are listed below.	Check the Boxes if Applicable Below and Select Surface, Installation, and Count Types:
1. Look and observe bicycle, pedestrian, and motorized traffic behaviors	<input checked="" type="checkbox"/> Travelers Present
2. Take pictures of bicycle travelers to determine the best counter installation location	<input checked="" type="checkbox"/> Pictures Taken
3. Look for the pinch points where all travelers will pass within a 12 to 15' detection zone	<input checked="" type="checkbox"/> Good Pinch Points for Install
4. Look at the surface type and note whether it is asphalt, concrete, gravel, etc.	<input checked="" type="checkbox"/> Smooth Surface
5. Look at facilities to count on-site and make note of sidewalks, roadway, trails, etc.	<input checked="" type="checkbox"/> Sidewalks Present
6. Look for travel volume generators such as hospitals, shopping malls, schools, etc.	<input checked="" type="checkbox"/> Roadways Present
7. Sites should be evaluated as a potential short-duration versus continuous counting site	<input type="checkbox"/> Trails Present
8. Document site technology types (tube, infrared, video, etc.)	<input type="checkbox"/> Post Required
	SELECT SURFACE TYPE: Asphalt SELECT INSTALLATION TYPE: Loop, Piezo, and IR SELECT COUNT TYPE(S): Continuous Counting
	NOTES:
4 - ORIGIN and DESTINATION OBSERVATIONS	
Step 4 -- Look at Origins and Destinations Finding where trips begin and end can help to determine the anticipated pattern (e.g. Recreational, Commuting, or Mixed) for assigning a factor group. Even general observations such as bicyclists wearing backpacks or having saddle bags, the type of bicycle utilized, or the clothing type are good indications of traveler type. Making such observations of environment or users helps locate specifically where equipment should be placed to capture these trips. Look for downtown business districts, hospitals, transit stops, major employers, universities, public recreation lands, and bodies of water as examples of non-motorized travel generators. Look for sites to populate all factor groups with an emphasis on finding sites uniquely qualified to capture those patterns.	
Check the boxes to the right that apply during on-site observation evaluation and provide more specific details in the notes box below:	<input type="checkbox"/> Downtown Business District <input type="checkbox"/> Hospitals Nearby <input checked="" type="checkbox"/> Transit Stop Nearby <input type="checkbox"/> Major Employers Nearby
	<input type="checkbox"/> Universities Nearby <input type="checkbox"/> Public Recreational Lands Nearby <input checked="" type="checkbox"/> Bodies of Water Nearby <input type="checkbox"/> Other Nearby Origin/Destination Observations
NOTES:	

5 - ADDITIONAL INFRASTRUCTURE SITE OBSERVATIONS and SITE DRAWING									
<p>STEP 5 - Evaluate Infrastructure by making site specific observations and make additional site observations of bicyclists and pedestrians and the surrounding environmental conditions. For some sites, specific factors that could make it a complicated install include proximity to transit stops, no funneling point, etc. If these complicated installation conditions exist on site, refine the site location (i.e. moved up, down, or over a block), or drop the site lower in ranking and provide a descriptive explanation.</p>									
<p>NOTES:</p>	<p>Check Boxes Below if Observed While On-Site:</p> <table border="0"> <tr> <td><input type="checkbox"/> Trees Present Nearby</td> <td><input type="checkbox"/> Obstacles (in trail or road) Nearby</td> </tr> <tr> <td><input type="checkbox"/> Polls Present Nearby</td> <td><input type="checkbox"/> Outdoor Siting Areas Nearby</td> </tr> <tr> <td><input type="checkbox"/> Bollards Present Nearby</td> <td><input type="checkbox"/> Vehicles Queuing in Roadway Nearby</td> </tr> <tr> <td><input type="checkbox"/> Parallel Parked Vehicles Present Nearby</td> <td></td> </tr> </table>	<input type="checkbox"/> Trees Present Nearby	<input type="checkbox"/> Obstacles (in trail or road) Nearby	<input type="checkbox"/> Polls Present Nearby	<input type="checkbox"/> Outdoor Siting Areas Nearby	<input type="checkbox"/> Bollards Present Nearby	<input type="checkbox"/> Vehicles Queuing in Roadway Nearby	<input type="checkbox"/> Parallel Parked Vehicles Present Nearby	
<input type="checkbox"/> Trees Present Nearby	<input type="checkbox"/> Obstacles (in trail or road) Nearby								
<input type="checkbox"/> Polls Present Nearby	<input type="checkbox"/> Outdoor Siting Areas Nearby								
<input type="checkbox"/> Bollards Present Nearby	<input type="checkbox"/> Vehicles Queuing in Roadway Nearby								
<input type="checkbox"/> Parallel Parked Vehicles Present Nearby									
<p>ENTER SITE DRAWING:</p> <div style="text-align: center;"> </div>									



CCS Site Selection Recommendations

The FDOT TDA team has identified many qualified candidates and sites for CCS installation. A list of qualified CCS installation sites will be continuously updated and maintained as the program continues to expand. If an agency has resources to either install a continuous counter, or deploy a short-term count at any station, FDOT will support these efforts as needed. The FDOT TDA Office encourages other agencies to play an active role in developing/modifying their own count programs, and to use the resources provided in this statewide program to assist them. The interactive mapping tool is provided to help determine and coordinate appropriate count site selection of stations among FDOT and its data partners. FDOT data partners can select sites within their own jurisdiction, perform the non-motorized count, validate the data, and then share that data with the statewide NMTM program that can then be added to the Statewide Data Repository.

The following table represents the short-list of recommended locations for continuous count installations per district. Each of these sites possess much of the attributes needed to develop a statewide non-motorized traffic monitoring program. Further coordination with local agencies and technology vendors will be needed prior to installation.

FDOT TDA Continuous Counter Installation Recommendations - Round 1

District	Site Name	Managing Agency	Potential Factor Group	Anticipated volumes	Anticipated Equipment	Evaluated by TDA	Local Agency Support	Historical Non-Motorized Data	TDA Short-term data	SUN Trail Facility	MOU Status
7	Jackson St Cycle track	City of Tampa/D7/Tampa	Urban commute	Medium	Camera or loops & overhead sensor	Yes	Yes	No	No	No	In development
7	Tampa Riverwalk	City of Tampa/D7/Tampa	Urban Mixed	High	Camera or loops & overhead sensor	Yes	Yes	No	No	Yes	In development
6	SE 1st Street Complete Street	Miami-Dade County	Urban Commute	High	Camera or loops & overhead sensor	Yes	Yes	Yes	No	No	In development
6	Atlantic Greenway Trail	City of Miami Beach	Urban Mixed	High	Loops & overhead sensor	Yes	Yes	No	No	Yes	Being reviewed by City
6	Krome Path	Miami-Dade County	Rural Recreational	High	Loops & overhead sensor	Yes	Yes	No	No	Yes	In development
5	More research Required										
4	Trans Florida Rail Trail bridge	Sebastian, FL	Rural Recreational	Medium	Overhead sensor and piezos	Yes	Yes	Yes	No	No	In development
4	Fort Lauderdale Riverwalk	City of Fort Lauderdale	Urban Mixed	High	Overhead sensor and piezos	No	Yes	No	No		In development
3	Hold for Tallahassee short-term site results	City of Tallahassee									
2	Hold for Gainesville Short-term Site results	City of Gainesville									
1	Gordon River @ Baker Park bridge 1	City of Naples	Urban Recreational	Medium	Overhead sensor and piezos	Yes	Yes	No	No	No	In development

2.2.2 Short Term Loaner Counting Program

The FHWA Traffic Monitoring Guide states, “in order to establish a comprehensive count program, a diversified assortment of continuous counters is required, and a larger, more rigorous, array of short-term counts is also

required.” FDOT TDA is utilizing the statewide interactive map as its database of potential short-term and continuous count stations. As part of the best practices criteria of finalizing investments in a continuous count station, it is recommended to first perform a short-term count. This best practice allows the statewide non-motorized program to gain an understanding of baseline traffic volumes before making the larger investment of a continuous count installation.

Since the State of Florida covers a large geographic area and diverse population demographics, it is not feasible, at this time, for one FDOT office to be solely responsible for developing and maintaining a comprehensive statewide non-motorized traffic monitoring program. Therefore, a traffic data consortium of data practitioners has been developed with the purpose of creating a data collection collaborative program where data collection activities are shared across multiple geographic regions, several different agencies, and many different resources within each partner agency. As the program continues to develop over time, additional input and participation from FDOT districts and local agencies will enable accelerated program expansion. Currently, FDOT TDA is providing local agencies with short-term count equipment and installation training, while the local agency is required to share data back with FDOT TDA.

In order to test the concept of working together across agencies with multiple resources (staffing and equipment) regarding the loaner equipment program, FDOT TDA first extended the partnership opportunity to the City of Tallahassee. The City of Tallahassee served as an ideal partner given that: (a) they were an agency in need of non-motorized data, (b) they had staff on-hand that possessed the training needed to install bicycle pneumatic tubes, and (c) they were open to establishing a formal Memorandum of Agreement (MOA) before deploying. These three factors were critically important for establishing resource utilization protocols and standard methods of data collection from the beginning. In other words, this data partner established an actively engaged and large interest in the process of obtaining non-motorized data from the start. As equipment was deployed, on-site training that was provided to ensure resources would properly install equipment for a successful deployment. Upon data collection completion, a proof of concept was successfully established so that this process and methodology of implementing formal partnership roles can and will be replicated across the state with all other data partner agencies.

As part of the process, technician installation crews from both agencies met at the location for the first scheduled deployment. The FDOT technician crew took the lead installing the first counter on the ground, provided training and advising on-site, while the City of Tallahassee technician crew observed and asked questions. Once the first counter was installed, the two technician teams swapped roles in which the City team took the lead installing the second counter, while the FDOT team observed and offered any corrections if necessary. Once the units were installed, both the FDOT and City of Tallahassee team monitored the devices during the two-week data collection period. Half way through the scheduled data collection event and upon completion of one-week, the teams extracted data to confirm the data being collected was accurately captured. After analyzing the first week’s data, it was determined that one location should include the installation of another counter to capture the data from the entire facility so that a complete across the facility (CAT-F) compliant site could be collected. In this case, a counter was added to a parallel sidewalk across the street.

This successful partnership will serve as a model to be replicated with other data partners across the state of Florida. As an established methodology and process, this important partnership serves as an example that is documented

here and can be verbally communicated to new potential data partners. Please refer to the following page for images of the short-term count deployment operations in action.

2.2.2.1 Memorandum of Agreement Process

As mentioned in the previous section, an important element of established statewide data collection partners is to establish a Memorandum of Agreement (MOA) between FDOT TDA and the partnering agency(ies). The MOA is written to address the specific roles and responsibilities between FDOT and the partnering agency.

The MOA establishes agreements documenting resources that will be installing devices and monitoring the devices during the two-week data collection period. Some equipment requires frequent monitoring such as a bicycle tube because the tubes are fastened to the asphalt/cement with special road-tape. This equipment requires monitoring once installed so that the tubes remain securely installed throughout the duration of the count. If a data collection partner during an on-site monitoring visit observes the device where the tape is no longer safely secured, it is the data collection partner’s responsibility to fasten the tube with more of the road tape so the tubes are secure to the ground.

FDOT TDA statewide MOA’s have been established and signed with the City of Tallahassee, City of Key West, Florida Forest Service, and Miami Downtown Development Authority. Each partnering agency receives the MOA, reviews the MOA with their internal staff, and returns the MOA to FDOT with specific comments that address the needs and constraints of the partnering agency. FDOT reviews the requested changes, and if all comments are acceptable, the two parties proceed to signing the document and establishing an agreed deployment date.

During Program Development Year 2, FDOT TDA anticipates establishing on-going MOAs with agencies around the state. FDOT will continue to work towards developing partnership agreements. These agreements are standardized and generic by design so that MOA agreements are consistent, replicable, and easily understood. Please refer to Appendix E for a copy of the MOA template. Photographs showing data partner agreements in action during data partner site visits can be seen below.

Partner Site Visit Photos



Figure 8: Equipment non-motorized demonstration with the City of Tallahassee. In addition to showing off the short-term bicycle tube units, the FDOT team also provided demonstrations of the continuous count equipment also located at the Test-Site.



Figure 9: Site Evaluation with Capital Region TPA at various locations along the St. Marks Trail and Coastal Trail. Both trails are SUN Trail funded facilities and can support non-motorized transportation in addition to recreation.



Figure 10: Similar to the statewide outreach meetings, the FDOT and COT teams traveled together to numerous locations to conduct site evaluations.



Figure 11: The Shared Path along FAMU Way is also a segment of trail that qualifies for SUN Trail Funding.

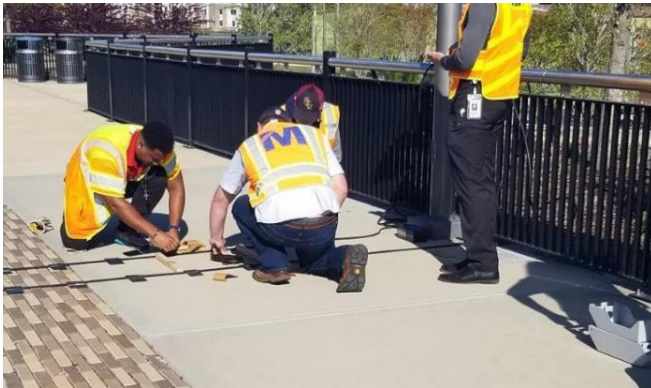


Figure 12: The FAMU Way locations required 3 total counters. The first counter was installed on the shared use path.



Figure 13: City of Tallahassee team installing the second bicycle counter along eastbound bicycle lane.



Figure 14: The third counter at the FAMU Way location was a sidewalk located parallel to the eastbound bicycle lane.



Figure 15: The Lafayette Greenway bridge was a good test location because the TDA team was interested in how the counters would

react to being on a wood surface as opposed to a more common asphalt or cement surface.



Figure 16: Technicians utilize poles, signs, and trees as potential features to attach the lock for the count device.



Figure 17: Non-Motorized test-site includes numerous CCS devices which the TDA Office is evaluating throughout the year. This location now includes the short-term bicycle tubes to be used in statewide short-term deployments.



Figure 18: Once counters are installed, it's important to periodically check on the counts during the two-week deployment to ensure the technology is recording traffic accurately.



Figure 19: Here the FDOT and City Teams visited this count location one-week into the deployment to monitor the counter activity.

2.2.2.2 Short-Term Preliminary Findings

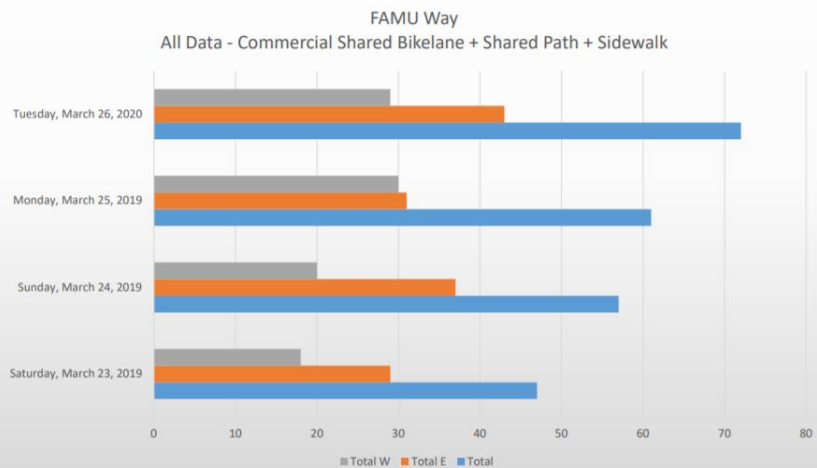
Once the data was extracted from the units, the data was validated for accuracy by the TDA staff. Any anomalies in the data were flagged and later reviewed by the team. Once the data was cleaned and formatted, the data was shared with the City of Tallahassee staff for review and further validation of data accuracy. The data still requires further review and analysis, and will not be shared in this report until further validation is provided. Below are general takeaways that the data was able to provide for each site.

- **FAMU Way Complete Street** – The FAMU Way Complete Street was a site that required 3 total bike tube units to cover the westbound shared path, and eastbound bike lane and sidewalk. The data showed that daily usage averaged 50 bicycle travelers per day. Bicycles were utilizing the shared path more than any other facility. See figure below.

- **Lafayette Greenway** – The Lafayette Greenway bridge is an example of a recreational facility with a choke-point bridge location found along the trail. The bridge connects to residential land uses and is part of a larger greenway system. Data shows an average of 40 bicycle travelers per day.
- **St. Marks Trail @ Lake Bradford Rd.** – This location represents the newest trail segment added to the St. Marks Trail. The segment terminates at the FSU football stadium and is adjacent to student housing and commercial land uses. Data showed daily bicycle traffic averaging between 5 – 15 users per day.
- **Lake Bradford Rd @ Hutchinson St.** – This location is in an economically challenged neighborhood with zero-car household clusters in the area. The data collected showed that bicycle usage in both directions averaged between 20 – 100 bicycle travelers per day.
- **Franklin Blvd. Shared Path** – This shared path is located near a city park, residential, business, and government land uses. The counters showed daily bicycle usage averaging between 30 – 90 users per day.
- **Test Site** – The test site is located on the Capital Circle Trail / shared use path in a rural section of the city. The trail is Live and has numerous FDOT data collection devices continuously capturing data. The bicycle tube counter has been at the test-site since September 2018. Data shows an average of 5 bicycle travelers per day.

FAMU WAY – ALL – Shared Path + Bike Lane + Sidewalk Volumes by Direction

- Total DAILY Usage: 50 Travelers
- Times: 6am – 7pm



2.2.2.3 Short-term Program Moving Forward

The FDOT TDA Office is actively solidifying loaner program partnerships with agencies across the state. Once count site locations have been agreed upon by local and state representatives, and partnership roles and responsibilities have been agreed upon with a signed MOA, FDOT TDA will move forward with counter deployment statewide.

A short-term count deployment plan is being developed and will include prescriptive steps for how to deploy short-term count equipment. This includes implementing the standard site selection methods documented in Recommendations Report #1 and the development of statewide program data collection schedules. The drafted deployment plan can be found in the Appendices.

The Draft 2020 schedule below displays a conceptual plan for statewide counter deployment. The plan divides the state into 3 geographic regions: North Florida, Central Florida, and South Florida. Within in each region are 2-3 FDOT District offices, dozens of counties and MPOs, and hundreds of cities, townships, and villages that can serve as data partners. Since statewide traffic monitoring programs require a balanced distribution (representation) of count sites across a state’s various geographic boundaries, volumes expected, and various other criteria, the FDOT TDA office will seek to distribute count equipment so that data collected is statistically representative for factor, volume, and geographic location groups.

Table Draft 2019-2020 schedule

Month 1				Month 2				Month 3				Month 4				Month 5				Month 6							
North Florida								Central Florida								South Florida											
Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4
Mobilization	Deployment/Monitoring	Data Processing		Mobilization	Deployment/Monitoring	Data Processing		Mobilization	Deployment/Monitoring	Data Processing		Mobilization	Deployment/Monitoring	Data Processing		Mobilization	Deployment/Monitoring	Data Processing		Mobilization	Deployment/Monitoring	Data Processing		Mobilization	Deployment/Monitoring	Data Processing	
Month 7				Month 8				Month 9				Month 10				Month 11				Month 12							
North Florida								Central Florida								South Florida											
Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4
Mobilization	Deployment/Monitoring	Data Processing		Mobilization	Deployment/Monitoring	Data Processing		Mobilization	Deployment/Monitoring	Data Processing		Mobilization	Deployment/Monitoring	Data Processing		Mobilization	Deployment/Monitoring	Data Processing		Mobilization	Deployment/Monitoring	Data Processing		Mobilization	Deployment/Monitoring	Data Processing	

2.2.3 Data Repository

FDOT TDA is accepting bicycle and pedestrian data from agencies statewide. TDA will evaluate and analyze the data, identify trends, and submit the data to the Federal Highway Administration (FHWA) with the permission of the partnering agency. Below are agencies who have submitted data for FDOT to evaluate, submit to FHWA, and publish in the statewide repository. The data collected requires additional data analyses. Since formal quality control and assurance processes have not yet been established and approved data will not be shared until the validation and formatting process is completed.

Data Sharing Agencies



2.2.4 Outreach and Partnerships

FDOT is providing on-going technical assistance to data partner agencies currently involved (or agencies that want to get involved and become data partners) in the field of non-motorized data collection. In addition to solidifying partnerships for the loaner program, FDOT TDA will continue to actively provide NMTM program updates at various statewide, regional, and local transportation related venues. A list and images of past outreach events are found below.

Outreach in 2018-2019

- Institute of Transportation Engineers – Florida Chapter Annual Meeting (2018)
- Transportation Research Board – Bicycle and Pedestrian Data Subcommittee (2018)
- Baptist Health South Florida – Leadership Development Institute (2019)
- FDOT Statewide Bicycle and Pedestrian monthly conference calls (On-going)
- FDOT Statewide SUN Trail monthly conference calls (On-going)
- FDOT Statewide Bicycle and Pedestrian Partnership Quarterly meetings (On-going)
- FDOT Statewide Bicycle and Pedestrian Quarterly Safety Coalition Meetings (On-going)
- FDOT Transportation Symposium (2019)

Outreach Photos

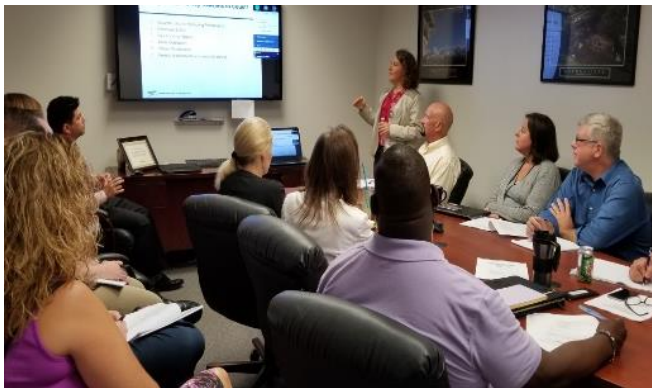


Figure 20: Quarterly meetings with key staff from Central Office make-up the NMTM program Working Group.



Figure 21: Presenting at the 2019 FDOT Transportation Symposium



Figure 22: Outreach meeting in Miami-Dade County with representatives from Baptist Health South Florida.



Figure 23: The program's first year of outreach was important to inform local districts and non-FDOT agencies about the existence of the NMTM program and what the plans were moving forward. This presentation was given to the Hillsborough County Greenways and Trails Committee



Figure 24: Quarterly program updates are provided at FDOT Pedestrian and Bicycle Partnership



Figure 25: The NMTM program's first statewide webinar was attended by representatives joining from around the state and Washington DC.



Figure 26: Quarterly program updates are provided at FDOT Bicycle and Pedestrian Safety Coalition.



Figure 27: FDOT TDA also integrates with other FDOT related outreach such as this FDOT Safety activation tent at a local Tallahassee event.

Webinars

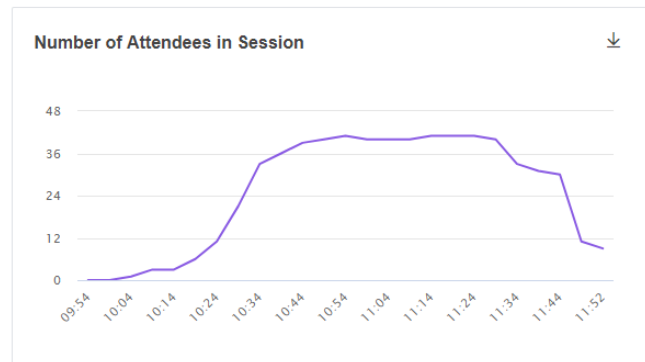
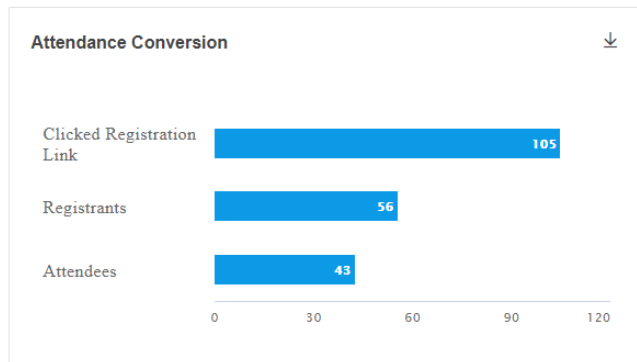
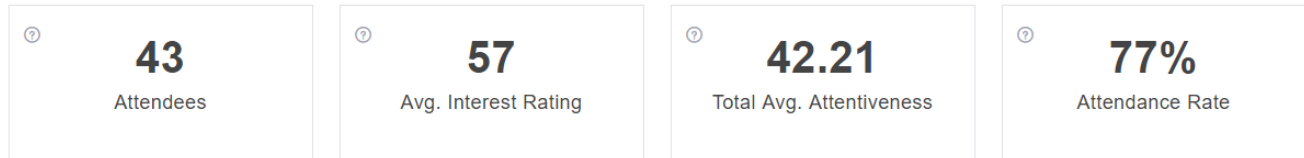
FDOT's NMTM program has developed a webinar series as part of the outreach and training activities within the statewide NMTM program. The purpose and focus of these webinars are to provide (1) statewide stakeholders with up-to-date information regarding the progress of the program, (2) a regularly scheduled communication venue and (3) an opportunity for data partners to give feedback on the program such as to how to improve site selection methods. TDA's first webinar was held of February 19, 2019. All survey respondents and any agencies/organizations who requested to be added to the NMTM program's mailing list were invited to the webinar. Attendees of the webinar included statewide data partners representing district, county, MPO, city, and non-profit organizations.

The 90-minute webinar included a 30-minute presentation on why FDOT is beginning to collect non-motorized traffic data, a 30-minute program update divided into the program 4 main components, and finally 30 minutes of questions and answers. The Q & A session included interactive on-line polling questions directed back at the audience. In addition to providing state agencies with information, the Q & A session provided FDOT valuable feedback regarding, which agencies wanted to share data, which agencies wanted to participate in the loaner

program, and feedback on the format and structure of future webinars and other outreach events. Below are some quick statistics regarding the webinar. 100% of Question 2 respondents stated they were interested in developing a data sharing relationship with FDOT TDA.

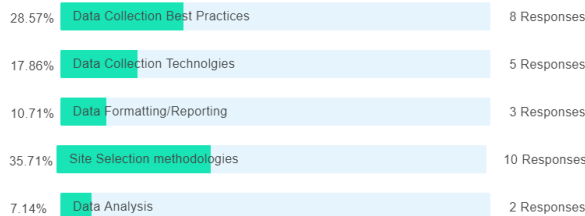
FDOT Statewide Non-Motorized Traffic Monitoring Program: Webinar #1

Tuesday, Feb 19, 2019 09:54 AM EST - 11:52 AM EST



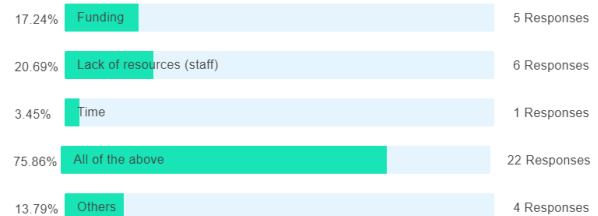
1 of 3. What topics would be most important to a local/regional agency in our following webinars?

Multiple choice with single answer



3 of 3. What do you see as obstacles to collecting non-motorized traffic data?

Multiple choice with multiple answers



2 of 3. Is your agency interested in developing a data sharing partnership with FDOT?

Multiple choice with single answer



Annual Statewide Training (in-person)

On June 18 - 20, FDOT TDA hosted the first-ever statewide in-person meeting for the NMTM Program. The meeting was attended by 100 transportation and data professionals representing all 7 FDOT Districts, including Turnpike, and numerous counties, cities, MPOs, universities, non-profit organizations, bicycle/pedestrian advocacy groups, professional planning and engineering firms, and data collection technology vendors.

The main objective of the meeting was to provide the state with an in-depth review of all the milestones the program has surpassed thus far, what the plans are for Year-2 of the program, and gain feedback from local agencies regarding where to count and when. In addition, representatives from FHWA, (Washington DC), participated in the program and informed the state about its new national non-motorized traffic monitoring program. Day-3 was a field day where technology vendors provided demonstrations of their latest data collection products and services.

The meeting presentations can be found by clicking [here](#). The meeting attendees were provided Evaluation Forms and below are a few highlighted responses and quotes from the evaluation forms:

“Was great to connect with resources and peers across the state while learning about the non-motorized program. We are excited to be involved! Opportunities for more focused break-out sessions would be great at future events. Thank you for putting this on!” – University of Florida

“Great opportunity to learn about new technology. Great experience for learning how important data is.” – Anonymous

“The meeting/conference was very necessary and it’s great that real progress has been made. For next year’s meeting, I would put more emphasis on getting funding for a moderate, but comprehensive statewide program.” – FDOT

THANK YOU TO THE FOLLOWING AGENCIES FOR CONTRIBUTING TO THE STATEWIDE MEETING PROGRAM



STATE OF FLORIDA NON-MOTORIZED DATA COLLABORATION MEMBERS



Statewide Meeting #1 Photos



Figure 28: FHWA informing public about national need for non-motorized data



Figure 29: Systems Planning Office informing the public audience about the SUNRail program's need for volume data

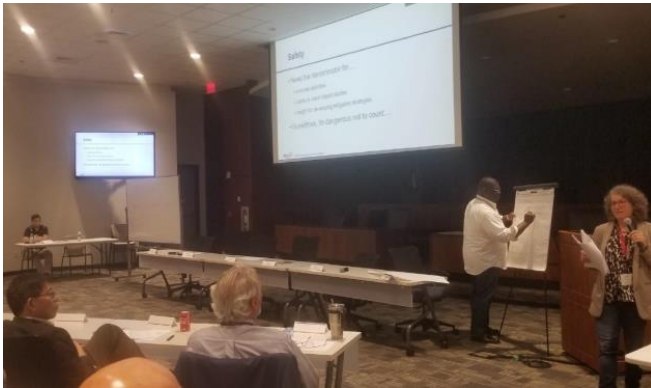


Figure 30: Liz Stolz and FDOT Safety Office performing a demonstration about how traffic volume data can develop an accurate crash rate



Figure 31: MPOAC discussing how traffic volume data can help with prioritizing funding for infrastructure projects



Figure 32: Audience members broke into 7 groups representing the FDOT districts and helped prioritize count sites for

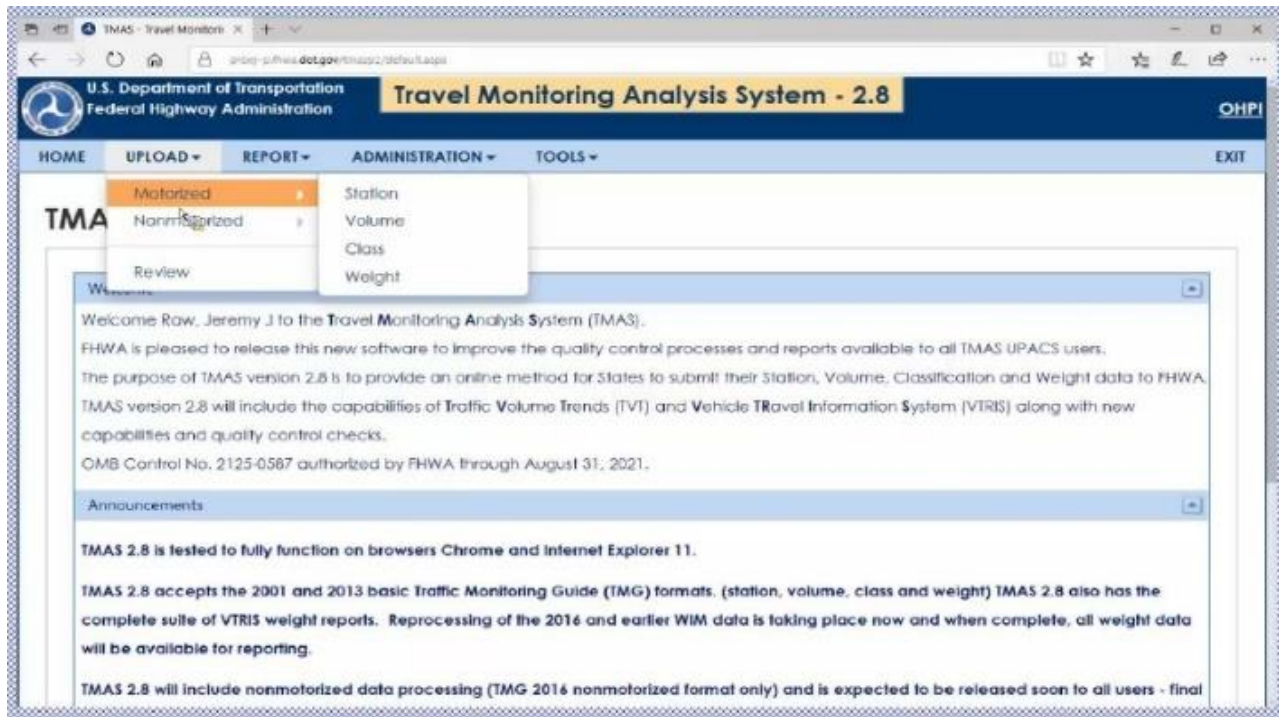


Figure 33: The group took a walk along the cascades trail and reviewed an on-site pedestrian continuous counter

FHWA Program and FDOT Participation

The FHWA program has been accepting motorized traffic data for many years and is now expanding its program to include non-motorized traffic data. FHWA has developed an electronic centralized data repository called the Traffic Monitoring Analysis System or “TMAS” that stores all motorized traffic data and now accepts non-motorized traffic data. FDOT staff are working with FHWA staff to ensure data will be shared from the FDOT statewide data repository to the TMAS federal data repository. Similar to TMAS, FDOT is working on deploying a statewide data repository that will have software tools to help ensure quality data. Within the software, factor group designations will be assigned to every CCS location. General software functionality of TMAS includes Quality Control and Quality Checking (QA/QC) tools, Error handling, searching for data, exporting data into a spreadsheet or TMG formats, Federal review/error checking of data, etc.

Preliminary data findings from both CCS and SDC sites show that Florida non-motorized traffic volumes can be lower in the summer and higher in the winter and some sites might not be suitable for CCS equipment installation. With electronic automation of traffic volume statistics, more data findings and quality control will be possible. Below is screen-shot of the FHWA TMAS.

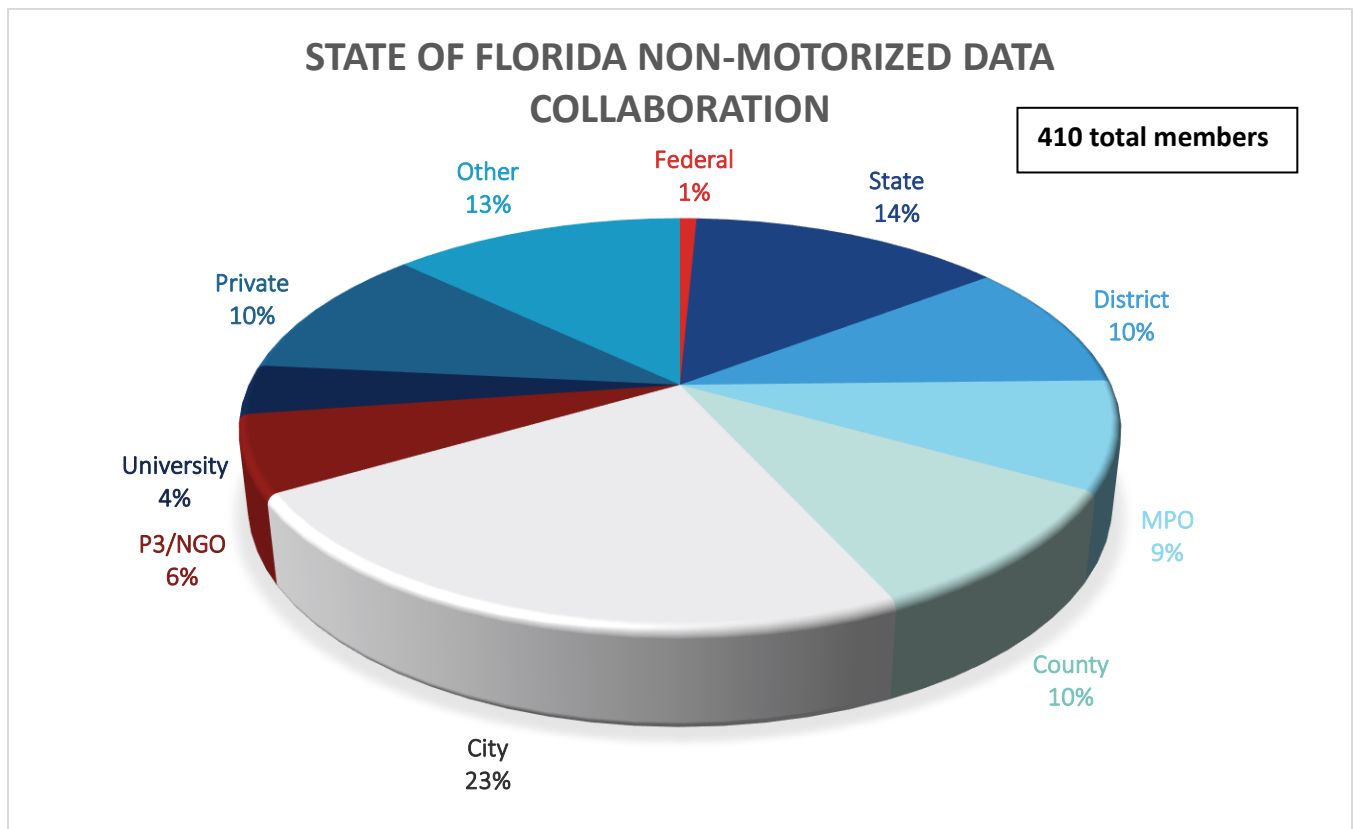


2.2 Program Expansion - Establishing a Formal Traffic Data Collaborative (TDC)

As the NMTM program enters its 2nd year of program development, the TDA Team will seek opportunities to accelerate the impact and results of each of the program’s 4 sub-programs. A key component to ensure success of the program is to keep the state data partners informed and engaged. For that purpose, FDOT TDA established a State of Florida Non-Motorized Traffic Data Collaborative. The Collaborative includes a group of professionals that are involved in the equipment installation, collecting, using, and reporting non-motorized data. This group includes both FDOT and non-FDOT participants. Moving forward FDOT is providing program announcements and major updates to the collaborative.

2.2.1 History and Defining Collaboration Needs

Out of the 410 existing NMTM Collaborative members, the graphic below illustrates the stratification of individuals and the agencies they represent.



Other Department of Transportation agencies have paved the way for FDOT in developing methods and establishing statewide committees for sharing and promoting shared data collection efforts. For example, back in April 2012, Kaiser Permanente, Colorado published and Active Transportation (AT) report titled “Measuring Active Transportation: Recommendations for Colorado” that encouraged public agencies to work together in collecting and sharing non-motorized traffic volume data.

Here is an excerpt of the report:

"In general, agencies struggle with the desire, ability, time, and resources to share common active transportation (AT) datasets across jurisdictions owing to lack of standard methods and resources. Addressing this issue, the Colorado Department of Transportation (CDOT) created a statewide Traffic Data Committee to create a venue for agencies to share data and work together within some common data collection methodologies and formats. With a main focus of acquiring and sharing travel monitoring data, the statewide traffic data committee was also designed to share AT (non-motorized) travel monitoring data. The traffic data committee concept is a model that could serve as an example to creating a future AT statewide committee that could focus on the larger scope of creating "indicators" for AT for which travel monitoring data is one aspect. Activities sponsored by the Transportation Research Board (TRB) are creating opportunities for Colorado agencies to benefit from specific AT travel monitoring data collection approaches. Spearheaded by the Bicycle and Pedestrian Data Subcommittee (chair, Liz Stolz) a central aim is to offer nationally accepted data collection methods and subsequent strategies for AT data formatting/sharing. This effort will sponsor and facilitate several activities during the annual TRB meeting in January 2013. These activities will include a workshop on AT travel monitoring data sharing methods, a workshop on how to factor and annualize AT travel monitoring data, and a call for papers will focus on AT travel monitoring methodologies that will likely result in one or more paper sessions to be held at the annual TRB meeting."

In another report published in 2011 by the Federal Highway Administration on Pedestrian and Bicycle Data Collection, a series of contacts were interviewed and findings of the current state of the practice were documented.

Here are the contacts that were interviewed in the report in 2011:

Ms. Lisa Austin – Minnesota Department of Transportation

Ms. Cheryl Stacks – City of St. Petersburg, FL

Dr. Robert Schneider – University of California, Berkeley

Ms. Elizabeth Sall – San Francisco County Transportation Authority

Mr. Michael Sweeney – City of Boulder, CO

Mr. Shawn Turner – Texas Transportation Institute (TTI)

Ms. Elizabeth Stolz – Colorado Department of Transportation

Mr. Brett Little – Transport for London

Historical references can be found with respect to struggling to expand data collection programs for non-motorized counting as stated from Mr. Sweeney from the city of Boulder, Colorado. Mr. Sweeney is quoted in the report stating, "Boulder is having difficulty in storing and sharing count data and suggested that it would be easier to offer "not best practices" than best practices on the subject. Mr. Sweeney did indicate that the City is looking into creating web-based access to the data through a future grant. Boulder continues to be challenged by how to either expand the count program or extrapolate the existing counts for a better city-wide estimate of use. They have considered implementing a spreadsheet-based model to do just that, but they worry about inappropriate extrapolation and wonder whether the twelve or thirteen existing locations constitute a representative sample."

Another historical reference within the FHWA publication is from the Texas Transportation Institute's Shawn Turner who states, "Regarding the potential for a standard count procedure, Mr. Turner is struck by the current system for storing auto travel data and believes that the bicycle and pedestrian community should

be able to take advantage of that. He is aware that the Colorado Department of Transportation is doing just that by calculating reports that are already set up. He has the impression that those using the National Bicycle and Pedestrian Documentation Project system are sending data to the clearinghouse in an inconsistent format. He wonders whether someone at the Federal level should be in charge of a similar program, though it might not be mandatory. Mr. Turner notes that extrapolation of counts is a key question, and that it is very expensive to try to do so in a responsible way. He suggests that one needs to focus on high-activity areas and recognize the inherent statistical shortcomings. More than anything, he is alarmed by some of the city-wide or region-wide count estimates he has seen that are estimated based on minimal counts (duration, locations, or both). Mr. Turner sees the ongoing update to the Traffic Monitoring Guide as a “best first stab” at documenting procedures for bicycle and pedestrian monitoring, and he is hopeful that further research, specifically National Cooperative Highway Research Program project 7-19, will significantly improve the state-of-the-practice.

Finally, the FHWA report also references the Colorado Department of Transportation (CDOT) summarizing the program by stating, “For two and a half years the CDOT traffic monitoring program staff have been working with the Bicycle and Pedestrian Program staff to incorporate bicycle counts into their traffic monitoring program. A specification has been developed for the types of counters to be used on CDOT projects. A Kaiser Grant was used to start the bicycle and pedestrian count program off with six permanent count stations. The Colorado Traffic Data Committee, MPOs and other planning contacts were asked to recommend locations for count stations. More than 100 responses were received in just two days. Initial screening criteria - including the recommended roadway being on a connector to a CDOT facility and a willingness on the part of the local agency to help install, maintain and review data – were used to reduce the suggested locations to a top ten list. Through site visits and further conversations with local agencies six final locations were selected to be included in the initial count program. Five movable counters are included in the program. Two of these were placed and have not been moved; consequently, there are essentially eight permanent count locations...Data are compiled at a centralized data location. Local partners submit the data in a variety of formats including spreadsheets and TrafX among others. One person at CDOT is responsible for translating all data into TRADAS software (altered for bicycle and pedestrian counts. With regard to how the data can be used to address safety, funding and design topics, Ms. Stolz gave several examples. The City of Durango used counts to justify adjustments to signal timing for bicyclists. Count stations have also been used to justify snow plowing of trails; counts reveal 100–200 users will use trails where snow has fallen if the trails are plowed. Because of bicycle counts, Boulder is considering building a trail adjacent to a 60-mph roadway. She also observed that some funding – that uses either incentives or mandates – would require counts. Ms. Stolz also indicated that for a DOT count program to be useful, there must be a centralized data warehouse.”

These are just a few historical documents showing the standard best practices and FDOT’s need for statewide collaboration.

2.2.2 Developing and Maintaining the Traffic Data Committee Informational Website

A public-facing website for the NMTM program was developed and published in June of 2019. The website at this time provides general information about the program, access to the live statewide survey, survey results map or proposed non-motorized count stations, and contact information to NMTM program coordinator. The website will continue to be updated with more relevant information and resources to be of service to data customers statewide.



Transportation Data and Analytics Office

Transportation Data and Analytics / Traffic Information / Statewide Non-Motorized Traffic Monitoring Program



Statewide Non-Motorized Traffic Monitoring Program

Program Overview

The Florida Department of Transportation Office of Transportation Data and Analytics (TDA) began the development of a Non-Motorized Traffic Counting Program in May 2018 with a need to provide bicycle and pedestrian (Non-Motorized) volume and supporting statistics and information to new and existing data customers. The intent of developing the non-motorized data program is similar to motorized traffic volume data in that non-motorized data can be used for all the same types of analyses such as safety studies, planning and programming FDOT facilities, pavement and trail maintenance, etc.



Purpose

To collect statistically valid bicycle and pedestrian (non-motorized) traffic volume data so that traffic volume statistics can be calculated and published annually.

Available Resources

- [Traffic Monitoring Handbook](#)
- [Propose a Count Station Survey link](#)
- [Proposed Count Station Survey Results Map link](#)
- [Non-Motorized Statewide Meeting 2019 \(19 MB PDF\)](#)

3.0 PROGRAM DATA REVIEW AND FINDINGS

3.1 Introduction to Data Analyses and Findings - FDOT Methods Documented

While FDOT has made a lot of strides towards installing a motorized traffic volume data software solution, it is not yet ready for the uploading of non-motorized traffic volume data. TDA anticipates working for the next year towards developing standardized methods, processes and implementing procedures that encourage the automated data handling, data analyses, and reporting findings from these activities.

Quality assurance and quality checking (QA/QC) of non-motorized traffic volume data is also a process that is currently being worked on by TDA staff. Similar to the motorized data collection program, non-motorized data will have automated QA/QC software to ensure the quality of data whether it is collected by the state or its data partners. As stated earlier, TDA staff are currently working on processes and procedures for developing FDOT specific data standards and specifications. Several manual processes have provided a successful proof of concept that non-motorized traffic volume data can produce meaningful traffic volume statistics. The next step in the program’s development is to standardize these methods and implement automated software to handle datasets as they are submitted and collected by FDOT.

Data sets provided and analyzed to date include:

1. FDOT TDA St. Marks Trail - Tallahassee, FL
2. FDOT TDA South Florida (17 Sites)
 1. Vizcaya Metrorail Station, Miami, FL
 2. Flagler Drive @ Okeechobee Road Trinity Pl, Miami FL
 3. Atlantic Greenway, Miami Beach, FL
 4. Oleta River State Park, Miami, FL
 5. Rickenbacker and Toll Booth, Miami, FL
 6. Grand Avenue, SW 37th Avenue North, Miami, FL
 7. Broward Boulevard, Fort Lauderdale, FL
 8. US27 & I-75, Fort Lauderdale, FL
 9. Okeechobee Road and Palmetto
 10. Flagler Drive @ Okeechobee Road Trinity Pl, Miami FL
 11. Atlantic Greenway
 12. Oleta River State Park
 13. Rickenbacker and Toll Booth
 14. Grand Avenue, SW 37th Avenue North, Miami, FL
 15. Broward Boulevard, Fort Lauderdale, FL
 16. US27 & I-75, Fort Lauderdale, FL
 17. Okeechobee Road and Palmetto
3. FDOT District 5 – Districtwide Non-Motorized Counts
4. FDOT District 4 – 74 bridge counts
5. FL DEP - Key West, FL
 - a. Overseas Heritage Trail, Key West, FL (13 Sites)
6. Pinellas County Pinellas County, FL (8 Sites)
7. Palm Beach TPA
 - a. Flagler and A1A, West Palm Beach, FL
8. City of Gainesville

4.0 CONCLUSIONS

The State of Florida Department of Transportation (DOT) has completed one full year of working towards building a statewide non-motorized traffic data program. During this first year of program development, several program deliverables on on-going activities have contributed to the program. These deliverables and on-going activities are listed below:

1. Developed Traffic Monitoring Handbook
2. Conducted statewide survey
3. Developed on-line site selection, data collection scheduling, and informational GIS-map
4. Conducted 100 on-site evaluations
5. Developed a manual and electronic method and form for conducting on-site evaluations
6. Developed and implemented site selection and evaluation process
7. Hosted on-line webinar - an on-going activity
8. Hosted in-person statewide meeting - an on-going activity
9. Conducted data partner training and outreach - an on-going activity
10. Collected short-term 2-week duration counts at 15 sites - an on-going activity
11. Developed data partnerships with Memorandum of Agreement (MOA) - an on-going activity
12. Completed data collection and analyses of 1 Continuous Count station
13. Working to develop traffic volume statistics (Peak Hour, AADT, etc.) methodologies - an on-going activity
14. Completed 2 program recommendation reports
15. Developed Traffic Data Collaboration on-line informational program website
16. Conducted outreach and presented program at national Transportation Research Board (TRB) annual meeting
17. Published a public-facing website

Looking ahead to the second year of program development, there are still many deliverables and on-going activities that will require strategic and thoughtful planning to ensure a standardized and methodical approach to expanding the non-motorized data collection program. Currently and during the next two years, TDA staff will be working on methods for implementing the following program elements:

1. Centralized electronic data storage
2. Data analyses, findings, and reporting
3. Quality Assurance and Quality Control (QA/QC)
 - a. Manual checks
 - b. Automated checks
 - c. Training and lessons learned outreach
4. Data handling and integration of data partners
 - a. Manual integration
 - b. Electronic integration
5. Continuous count site installations
6. Short-term installations and data collection
7. Calculating traffic volume statistics, sharing data and publishing data across the state
8. Uploading data to the federal highway administration's (FHWA) Traffic Monitoring Analysis System (TMAS)
9. Continued development of outreach activities and development more data partnerships across agencies

APPENDIX A – 2018 – 2019 TRAINING FLYERS

Webinar Flyer – Distributed 1 month from event

FEBRUARY 19TH
2019

 10:30AM - 12:00PM

STATEWIDE NON-MOTORIZED TRAFFIC MONITORING PROGRAM

WEBINAR #1

WHO: FDOT's Transportation Data & Analytics Office

WHERE: GoTo Meeting Invite will be shared with those who RSVP

WHY:

- » Get an update on the status of the Statewide Non-Motorized Traffic Monitoring program
- » Meet the team involved with developing the program
- » Gain insights on how to modify or develop your local non-motorized traffic monitoring program
- » Learn how your agency can partner with FDOT
- » Understand how the program will move forward
- » The Team will be on the line to answer any questions or provide any clarifications needed

RSVP by emailing Eric.Katz@dot.state.fl.us

Save the Date – Distributed 3 months prior to event



STATEWIDE NON-MOTORIZED TRAFFIC MONITORING PROGRAM

.....

STATEWIDE MEETING #1

.....

WHERE:
FDOT Central Office Auditorium
605 Suwannee Street
Tallahassee, FL 32308

SAVE THE DATE

JUNE 18 - 20
2019

Learn the latest developments regarding the statewide program, and how your agency/organization can partner with the FDOT Transportation Data & Analytics Office.

RSVP by emailing Eric.Katz@dot.state.fl.us

Event Flyer – Distributed 2 months prior to event

JUNE 18 - 20
2019

STATEWIDE NON-MOTORIZED TRAFFIC MONITORING PROGRAM

STATEWIDE MEETING #1

WHERE:
FDOT Central Office Auditorium
605 Suwannee Street
Tallahassee, FL 32308

Learn the latest developments regarding the statewide program, and how your agency/ organization can partner with the FDOT Transportation Data & Analytics Office.

MEETING SCHEDULE

18 TUE	1:00 PM- 2:00 PM 2:00 PM- 2:45 PM 2:45 PM- 4:15 PM 4:15 PM- 5:00 PM	<p>Welcome & Introductions</p> <p>Statewide Non-Motorized Traffic Monitoring Program Year in Review</p> <p>FDOT Statewide Non-Motorized Data Needs</p> <p>Non-Motorized Data Application Examples</p>
19 WED	9:00 AM- 10:00 AM 10:00 AM- 11:00 AM 11:00 AM- 12:00 PM 12:00 PM- 1:00 PM 1:00 PM- 2:00 PM 2:00 PM- 3:00 PM 4:00 PM- 5:00 PM	<p>Continuous Count Program Presentations & Discussion</p> <p>Short Term Count Program Presentations & Discussion</p> <p>Statewide Repository Presentations & Discussion</p> <p style="text-align: center;">Lunch</p> <p>Local & Regional Non-Motorized Data Collection Initiatives</p> <p>Count Site Deployment Workshop</p> <p>Data Collection Vendor Introductions</p>
20 THU	9:00 AM - 12:00 PM	<p>Non-Motorized Technology Mini-Expo Mini-Expo will be held at FDOT Non-Motorized Test-Site located on Capital Circle Southeast</p>

* Schedule subject to change

RSVP Deadline: June 3rd, 2019 | Email Eric.Katz@dot.state.fl.us to reserve your space

Event Flyer Update – Distributed 2 weeks prior to event

JUNE 18 - 20
2019

STATEWIDE NON-MOTORIZED TRAFFIC MONITORING PROGRAM

STATEWIDE MEETING #1

WHERE:
FDOT Central Office Auditorium
 605 Suwannee Street
 Tallahassee, FL 32308

- Learn the latest developments regarding non-motorized data collection methodologies, technologies, best practices, and how your agency can partner with FDOT's Transportation Data and Analytics Office.
- Learn about FHWA's National Non-Motorized Data Program.
- Help FDOT plan its second year of statewide short-term count deployments.

MEETING SCHEDULE

18 TUE
 1:00 PM - Welcome & Introductions
 2:00 PM -
 2:00 PM - FHWA's National Non-Motorized Data Program
 2:15 PM -
 2:15 PM - Non-Motorized Data Needs from the perspectives of Safety, Transit, Design, Systems Planning, Traffic Operations, Policy and Economic Analysis
 3:15 PM -
 3:30 PM - Non-Motorized Data Application Strategies
 5:00 PM -

19 WED
 9:00 AM - Continuous Count Program Presentations & Discussion
 10:00 AM - Short Term Count Program Presentations & Discussion
 11:00 AM - Statewide Repository Presentations & Discussion
 12:00 PM -
 12:00 PM - Lunch
 1:00 PM -
 1:00 PM - Local & Regional Non-Motorized Data Collection Initiatives
 2:00 PM -
 2:00 PM - Count Site Evaluation Techniques and Recommendations
 3:00 PM -
 3:00 PM - Statewide Short-Term Count Deployment Workshop
 4:00 PM -
 4:00 PM - Data Collection Vendor Introductions
 5:00 PM -

20 THU
 9:00 AM - Non-Motorized Technology Mini-Expo
 12:00 PM - Mini-Expo will be held at FDOT Non-Motorized Test-Site located on Capital Circle Southeast

Vendors: Diamond Traffic, Eco-Counter, MetroCount, Miovision, Motionloft, RoadSys, and StreetLight Data

** Schedule subject to change*

RSVP Deadline: Wednesday, June 12th, 2019 | Email Eric.Katz@dot.state.fl.us to reserve your space

Event Program – Distributed 2 days prior to event

STATEWIDE NON-MOTORIZED TRAFFIC MONITORING PROGRAM *MOVING FORWARD*

STATEWIDE CONTINUOUS COUNT PROGRAM
FDOT's goal is to install 1-2 Continuous Count Stations per district, per year. The data will be published and shared on Florida Traffic Online.

STATEWIDE SHORT-TERM COUNT LOANER PROGRAM
FDOT TDA is providing partnering agencies with short-term count equipment and training. In return, FDOT TDA will receive localized non-motorized count data.

STATEWIDE REPOSITORY
FDOT is accepting voluntary bicycle and pedestrian data from agencies statewide. TDA will evaluate and analyze the data, identify trends, and submit the data to the Federal Highway Administration (FHWA).

STATEWIDE OUTREACH
FDOT TDA will host an annual meeting where the latest non-motorized data will be shared, and provide periodic webinars highlighting best practices and lessons learned regarding non-motorized traffic monitoring methods and technology.

THANK YOU TO THE FOLLOWING AGENCIES FOR CONTRIBUTING TO THE STATEWIDE MEETING PROGRAM

STATE OF FLORIDA NON-MOTORIZED DATA COLLABORATION MEMBERS

STATEWIDE NON-MOTORIZED TRAFFIC MONITORING PROGRAM

STATEWIDE MEETING #1

JUNE 18 - 20 2019

Learn the latest developments regarding non-motorized data collection methodologies, technologies, best practices, and how your agency can partner with FDOT's Transportation Data and Analytics Office.

STATEWIDE MEETING PROGRAM

For more information, contact Eric.Katz.@dot.state.fl.us

WELCOME FROM THE TRANSPORTATION DATA AND ANALYTICS OFFICE

"Welcome to our first-ever Statewide Non-Motorized Traffic Monitoring Program meeting. Our Transportation Data and Analytics team welcome you to FDOT Central Office and sincerely thank you for participating in the development of this statewide program. For the past year, our staff has been working hard to develop an impactful data collection program that will service Federal, State, and Local agencies with high-quality data sets across the state. We have crossed many milestones and eagerly want to share with you our progress thus far. More importantly, we want to gain your feedback and learn from your individual agency's experiences regarding the practice of non-motorized data collection. Your feedback will greatly assist our office as we move into year 2 of the program."
Eric Lutzman
Transportation Data and Analytics Office Manager

"Thank you for attending our statewide meeting. We understand multi-modal infrastructure is part of the safe and sustainable direction of Florida's transportation future. We are exploring all readily available resources to accelerate the results of this very important program. We look forward to building an effective statewide program, collaboratively, with your partnership."
Steve Kertz, PE
Traffic Monitoring Program Manager

"We realize that high-quality non-motorized data is in high-demand throughout the state. Thank you for coming, and we look forward to partnering with you and your agency."
Joey Gordon
Transportation Data and Analytics Supervisor

Short-term count deployment along Good Neighbor Trail in Brooksville, FL

Short-term counter monitoring with the City of Tallahassee

JUNE 18 TUESDAY

PROGRAM	SPEAKER
12:00 PM Auditorium doors open / Brown bag lunch	Networking
1:00 PM Welcome	Ed Hutcherson / Steve Benzel
1:05 PM The Role of the Transportation Data & Analytics Office	Steve Benzel
1:15 PM Next Generation Traffic Data Management System	Eric Katz
1:25 PM FDOT Statewide Non-Motorized Program - Year in Review	Dr. Tai-Vinh Thong
2:00 PM FHWA's National Non-Motorized Data Program	Chris W. Wiggsworth
2:15 PM Non-Motorized Transit Needs	Huyat Cirok
2:25 PM Non-Motorized Safety Needs	Darbywe Carter
2:35 PM Non-Motorized Design Needs	Huiwen Shen
2:45 PM Non-Motorized System Planning Needs	David Ponce
3:15 PM Non-Motorized System Operations Needs	Martha Markovich
3:30 PM Non-Motorized Policy / Economic Analysis Needs	Networking
3:35 PM Break	Li: Sozic / Group
3:40 PM Non-Motorized Traffic Data Application Strategies	Li: Sozic / Group
4:15 PM Room Introductions	Group
4:30 PM Question & Answer Session	Group
5:00 PM Auditorium doors close	

JUNE 19 WEDNESDAY

8:30 AM Doors open / Brown bag breakfast	Networking
9:00 AM Continuous Count program	Eric Katz / Joey Gordon
9:05 AM Motorized Count Data Program	Steven Weisberger
9:10 AM FHWA Travel Monitoring Analysis System (TMAS)	Li: Sozic
9:30 AM St. Johns Trail Linear Analysis	Li: Sozic
9:45 AM ASST-CALTRANS Methodology	Eric Katz
10:00 AM Short-Term Count Program	Joey Gordon
10:05 AM Motorized Short-Term Count Program	Li: Sozic / Eric Katz
10:10 AM City of Tallahassee Short-Term Count Analysis	Eric Katz
10:40 AM Short-Term Count MDA Process	Networking
10:50 AM Break	Eric Katz
11:00 AM Looking Ahead	Carl McKenna
11:05 AM Statewide Non-Motorized Performance Measures	Joel Worrell
11:15 AM Transportation Data Inventory Section Update	Li: Sozic
11:25 AM Statewide Non-Motorized Data Repository	Li: Sozic / Eric Katz
11:30 AM Review of Statewide Observed Data Sets	Networking
12:00 PM Lunch (Eat at the FDOT Cafeteria, per Brown bag lunch)	Li: Sozic / Eric Katz
1:15 PM Court Site Evaluation Techniques and Recommendations	Eric Katz
2:00 PM Local & Regional Non-Motorized Counting Initiatives	Julie Christensen
2:05 PM City of Tallahassee Non-Motorized Count Program	Michael James
2:20 PM FDOT District 5 Non-Motorized Count Program	Networking
2:35 PM Forward Pinellas Non-Motorized Count Program	Li: Sozic / Group
3:30 PM Break	Li: Sozic / Group
3:40 PM Short-Term Count Deployment Workshop	Li: Sozic / Group
3:40 PM Vendor Introductions	Jean-Francois Rheault
3:40 PM L&S Counter	Scott Wallace
3:50 PM L&S	Sean Hareway
4:00 PM MicroScan	Joanna Davis
4:20 PM MicroScan	Danielle LaFrance
4:30 PM RoadSense	Julie Hoffman
4:40 PM StreetLight Data	Terry Robinson
4:50 PM Southern Traffic Services	Networking
5:00 PM Doors close	
9:00 AM Test-bed demonstration with vendors and FDOT staff	Networking
12:00 PM Meeting closes	

JUNE 20 THURSDAY

APPENDIX B – TDC STATEWIDE MEETING SLIDES

**APPENDIX C – KAISER PERMANENTE MEASURING ACTIVE
TRANSPORTATION: RECOMMENDATIONS FOR COLORADO REPORT**

APPENDIX D – FHWA PEDESTRIAN AND BICYCLE DATA COLLECTION REPORT

[PEDESTRIAN AND BICYCLE DATA COLLECTION](#)

[Final Report](#)

[Contract No. DTFH61-11-F-00031](#)

[December 9, 2011](#)

[Federal Highway Administration, HPPI-30](#)

APPENDIX E – MOA TEMPLATE

FDOT Non-Motorized Traffic Counting Hardware

Memorandum of Agreement

This Memorandum of Agreement, hereinafter referred to as the "Agreement" is made and entered into on the last date executed below, by and between the Florida Department of Transportation, an agency of the State of Florida, hereinafter referred to as the "Department", and the (Agency Name) hereinafter referred to as the " (Abbreviated name) ".

WITNESSETH:

WHEREAS, the Department seeks to establish a statewide Non-Motorized Traffic Monitoring Program: and,

WHEREAS, the _____ has agreed to participate in data collection needs and to assume certain responsibilities in the matter and to the extent as hereinafter set out; and,

NOW, THEREFORE, the parties hereto shall approve this Agreement within sixty (60) days of receipt of this Agreement. In the event the _____ fails to approve said Agreement within sixty (60) days of receipt, the _____ forfeits its access to the equipment and training offered by the Department as hereinafter stated.

This Agreement states the promises and undertakings of each party as herein provided, and the parties do hereby covenant and agree, each with the other, as follows:

1. GENERAL PROVISIONS

The Department and _____ shall be responsible for administering all work performed and that all terms set forth in this Agreement are met and adhered to by the Department and _____ and/or its agents. The Department and the _____ may select any agent with which it has established agreements or contracts equal to the terms of the Agreement. Such agents may include a local government member of the _____ or a contractor qualified and approved by the Department to perform the work described in this Agreement.

The Department and/or its agents will provide technical oversight to guide the _____ and/or its agent. The _____ and/or its agent must provide a primary contact for the program to the Department upon approving this Agreement.

The _____ and the Department and/or its agent shall complete installation activities of the first non-motorized counter together as a form of training to the _____ and its agent. The remaining counters will be installed by the _____ and/or its agent, with support from the Department as needed.

Failure on the part of the _____ to comply with any of the provisions of this Agreement will be grounds for the Department to terminate its participation, take the counter equipment back from the _____ and if applicable, seek repayment for any damages done to the equipment beyond standard wear and tear.

Any administrative modifications to this Agreement or its terms will be agreed upon in writing by all parties prior to being implemented. The Department may delegate the approval of these administrative modifications to the Manager of the Department's Transportation Data Analytics (TDA) Office.

2. SCOPE OF PROJECT

The _____ and/or its agent is responsible for providing installation approval and access to the proposed short-term count locations. The _____, at their sole expense, shall install, monitor and inspect the equipment. All station locations must be identified and selected in accordance with the Department's Non-Motorized Traffic Monitoring Program. The _____ will submit candidate sites to the Department for approval prior to the installation of any counter equipment. Both parties will provide access to data collected through the provided equipment. ~~At the conclusion of the project,~~ the _____ will return the bicycle counter equipment, and other related hardware, to the Department.

The Department will provide, at their sole expense, the _____ and/or its agents with the bicycle counter equipment and other hardware which adhere to the following specifications:

- Capture bicycles using bicycle only road tubes
- Measure the direction of travel of cyclists
- Transmit data wirelessly or are required to have data downloaded and sent to the Department
- Do not have any speed restrictions on capturing data
- Record count data at 1-hour intervals for a minimum of 2 weeks per location
- May be removed using readily available tools and street maintenance equipment
- Include necessary supporting installation equipment such as any enclosure box, screws, cables, nails, road tape etc.
- Include an enclosed secure box or structure with key entry or another unlocking device included
- Include any necessary cords to connect a field computer or other mobile device to the count device
- Include a minimum 1-year manufacturer's and/or seller's warranty for all equipment and software
- Include a manual describing installation procedures, specifications, and maintenance instructions
- Counters are contained by a waterproof design
- Counters have a battery life of 2 years minimum
- Counters have data compatibility with Microsoft Office Excel (v2010 or later)

3. CONTRACT TERM; TERMINATION

The useful life of this equipment can be up to ten (10) years. Any agreements entered into shall be for a period of five (5) years. Either party may terminate this agreement at any time with a 30-day written notice of intent to terminate.

4. ENCROACHMENT AGREEMENT

If any part of the equipment is to be located on State Highway System right of way or property, the _____ shall secure an Encroachment Agreement with the Department prior to performing any work or improvement on that right of way or property.

5. RIGHT TO INSPECT

The Department and/or its agent shall have the right to inspect, test, approve or reject, any portion of the work being performed by the _____ or its agent(s) to ensure compliance with the provisions of this Agreement. Any deficiencies inconsistent with the Department's data collection protocols or Non-Motorized Travel Monitoring Handbook and specifications found during an inspection must be corrected by _____.

6. CONTRACTOR COMPLIANCE

The _____ will be responsible for ensuring that its agent(s) and contractor(s) comply with all terms of the contract and any instructions issued by the Department as a result of any review or inspection made by said representatives.

AGENCY ROLES AND RESPONSIBILITIES

This section explains the general guidelines for agency roles and responsibilities related to short-term counting equipment installation for the Florida statewide Non-Motorized Traffic Data Collection Program. It clarifies roles and responsibilities between the Department and partner agencies and/or its contractors.

The Department, in coordination with statewide data partners, will select the installation site based on interference testing, feasibility, and the factor groups(s) it is expected to represent.

Data Partner Responsibility

1. Locate Utilities, if necessary, for equipment installation

2. Set up and manage traffic control, if necessary, for equipment installation
3. Clean up site
4. Approve equipment installation locations
5. Meet Department staff on site during installation
6. Install, inspect, and monitor equipment according to training
7. Retrieve and submit data to Department in accordance with training

Department Responsibility

1. Conduct equipment test prior to field deployment
2. Deliver counter equipment to be installed to Data Partner
3. Test for environmental interference with equipment
4. Determine final counter placement
5. Provide installation training to data partner and/or its agent
6. Conduct diagnostics/compile logger information after installation
7. Counter battery upkeep

Data Partner Responsibilities for both parties during installation of first counter device

1. Bring installation equipment, such as: hammer, tape measure, rake, broom, road tape, cones, safety vests, etc.
2. Provide bicycle for testing
3. Provide laptop for finalizing and testing equipment

IN WITNESS WHEREOF, each of the undersigned Parties has caused its duly authorized representative to execute this Memorandum of Agreement.

"Agency Name"

SIGNED BY: _____

TITLE: _____

DATE: _____

ATTEST TO: _____ Approved as to form:

By: _____ By: _____

DEPARTMENT OF TRANSPORTATION

SIGNED BY: _____

DATE: _____

APPROVED BY THE DEPARTMENT OF TRANSPORTATION BOARD: _____ (Date)

APPENDIX F – DEPLOYMENT PLAN DRAFT

FDOT Short-term Count Deployment Plan
Documented Methods and Procedures for collecting Non-motorized Short-term
Counts
October 2019

DRAFT

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SECTION 1 - INTRODUCTION

As FDOT begins to develop and expand the overall statewide non-motorized traffic volume data collection program, the most important element within the program is to ensure data collected is of the highest quality standard possible. Part of building a quality data collection program is to document all the processes and procedures required to develop, grow, and maintain a successful program. While updates to this plan are expected, this deployment plan serves as a critically important guide to specifically developing a successful statewide short-term data collection program.

Providing more details, expanding, and supplementing other documentation that has already been developed, this plan has been carefully developed integrating and referencing FDOT's recommendations reports specifically expanding information within the short-term count deployment program area. This plan will increase the quality of the overall data collection program by documenting methods, processes, and procedures that can be replicated, updated, and followed throughout the years to come.

Other documents are integrated and referenced into this document such as:

1. FDOT Traffic Monitoring Handbook: July 2018

Provides general information on short-term counting best practices, detailed technology type (radar, infra-red, tube, etc.) descriptions

As referenced in the FDOT Traffic Monitoring Handbook on page 61, more data and research will be required to establish standard methods to specify optimal locations for collecting non-motorized short-term counts. This short-duration count deployment plan has been developed to address specific needs for more data and more research to establish the processes required to develop a statewide non-motorized short-term count program.

2. FDOT Statewide Non-motorized Traffic Monitoring Program: Recommendations Report #1, December 2018
3. Federal Highway Administration (FHWA) Traffic Monitoring Guidebook: October 2016

DRAFT

SECTION 2 - SITE SELECTION METHODS

There are many reasons to deploy short-term counting equipment. The focus of this document is to support the mission of building a statewide non-motorized counting program and therefore all the same site selection methods documented in the Recommendations Report #1 should be followed.

As a review, here are the steps outlined in Section 5 of the Recommendations Report #1:

Step 1 – Conduct Agency Outreach

Step 2 – Create and Document Site Selection Criteria

Step 3 – Assess Site Recommendations (See expanded for short-term counting section on Conduct Evaluation and Determine Equipment Type Required below)

3.1 Conduct Virtual Site Audits

3.2 Conduct On-Site Visits – When conducting and evaluating a site, the electronic form should be completed. This requires a computer with the form loaded to be available on-site during the visit. If a computer is not available, a manual form will need to be completed. Blank forms should always be printed and available to be completed as a back-up to the electronic form. Filling out both the electronic and manual form should be done on every on-site visit.

Step 4 – Create preliminary site installation schedules and start coordinating resources (See Scheduling and Resource Coordination expanded sections below)

4.1 Create Partnership Agreements (MOU's)

4.2 Coordinate with Existing Resources

Step 5 – Install equipment (this is a NEWLY UPDATED and final step in the process that would include all the steps documented within this plan that are required to successfully install equipment.)

SECTION 3 – DETERMINE COUNT TECHNOLOGY SELECTION CRITERIA

(Site Selection Steps 3 and 4 Expanded)

During Step #3 of the site selection process, it is critically important to consider short-term counting equipment available for the specific locations where traffic volume data is requested. Since there are several types of technology such as radar, infra-red, tube, etc., a critical and technical evaluation of the site needs to include a data collection and installation subject matter expert who can determine if the type of equipment available is appropriate for the site installation and data collection. Conducting this careful evaluation will increase the quality of data by taking the necessary time to plan for data collection activities with the appropriate technologies. This will also help in the quality of the installation of equipment by selecting the appropriate technologies that can collect data for the exact site location. Conducting an equipment evaluation and determining equipment type required for data collection requires reviewing an inventory of available equipment. An inventory of available equipment is critically important to completing this step, thus a draft tracking sheet has been developed as seen the graphic of available equipment.

Short-Term Counters						
IV No.	Description	Site Last Visited	Technician	Site Location	County Location	Purchase Date
866799	MC RidePod 5926	12/18/2018	Joey Gordon	WHSE	37-LEON	6/28/2018
866800	MC RidePod 5926	12/18/2018	Joey Gordon	WHSE	37-LEON	6/28/2018
866801	MC RidePod 5926	12/18/2018	Joey Gordon	WHSE	37-LEON	6/28/2018
866802	MC RidePod 5926	12/18/2018	Joey Gordon	WHSE	37-LEON	6/28/2018
866803	MC RidePod 5926	12/18/2018	Joey Gordon	WHSE	37-LEON	6/28/2018
866804	MC RidePod 5926	12/18/2018	Joey Gordon	WHSE	37-LEON	6/28/2018

IMPORTANT NOTE: Develop, update and use inventory of available equipment to complete this step.

SECTION 4 - DEVELOPING SHORT-TERM TRAFFIC COUNTING FIELD DATA COLLECTION SCHEDULES

Developing a field data collection schedule for collecting short-term counts can be challenging and time consuming but well worth the pre-installation preparation that must take place prior to installing equipment on-site. Several types of short-term counts are considered within the statewide data collection program. Each type of short-term count needs to have a schedule and all schedules should be combined into a master statewide short-term count schedule.

These types of counts include:

1. **Annual Cyclic Counts** – these are regularly scheduled counts that are taken every year for a 2 week-duration
2. **Short-Term Coverage Counts** – these are counts that are collected with the intention of being adjusted by factoring and creating annual traffic statistics such as the Annual Average Daily Traffic (AADT) volume. These types of counts are typically collected once every three to six years on a regularly schedule rotation cycle that fits into a master statewide schedule
3. **Special Request/Project Specific Counts** – these are typically unscheduled counts that are driven by a project, political, or weather event type of need and are squeezed into the master statewide schedule
4. **Statewide Master Count Schedule** – the statewide master count schedule is a combination of the annual cyclic counts, short-term coverage counts, and special request/project specific counts

FDOT is working on developing all 4 of these schedules with the goal of having a process and procedure to follow for scheduling short-term counts to be collected in the field.

SECTION 5 - COORDINATE WITH LOCAL RESOURCES

Coordination with location resources is key to installing and collecting any type of traffic volume data. Local resources typically have traffic operations staff that are already trained in motorized traffic operations. Local agency outreach efforts should include working with traffic operations staff that can provide traffic control, help with installation of equipment, and supporting tools to ensure field installations are completed with the highest quality of data collection as possible.

SECTION 6 - ENSURE FIELD READINESS, PREPARE EQUIPMENT FOR FIELDWORK

Step 1 – Print Checklist

A checklist of field equipment and tools required for installation has been developed for the purpose of installing short-term count equipment. This checklist is meant to help guide and document the process of installing short-term non-motorized counting equipment.

Step 2 – Fill out Checklist form, Sign, Date Form

Filling out the checklist form requires the following information:

1. **Field Deployment Staff Names:** Provide the field deployment staff names of people that will be present during the installation of the short-duration count equipment
2. **Date:** Provide the data in which the checklist was filled out (this could be different from the date at the bottom of the form – the bottom date is when form is completed that might require several days until the equipment is ready for deployment)
3. **Purpose and Location of Deployment:** Provide the purpose for collecting the counts and where (city/county, attach address lists of deployment locations, etc.) EXAMPLE: Tallahassee, 6 locations – see attached list with GPS locations
4. **Counter Deployment Check Boxes:** Provide checkmarks in the boxes for all equipment available on the vehicle for the installation of the short-term counters

IMPORTANT NOTE: Make sure all counter manuals set-up and installation guides are printed and read these manuals prior to installing any equipment.

Step 3- Ensure all Tools and Counters are Packed into Vehicle for Deployment

While filling out the checklist form, the field staff should check the inventory of tools found within the vehicle. If counters or tools are missing, it is critical to obtain these items prior to field deployment so that all the necessary equipment and tools are available during the installation process. Installation staff should have all counter equipment manuals on-hand and follow all procedures documented in the manual for counter set-up and installation.

Step 4 – Drive to Site, Contact Local Agency

It is best to contact the local agency resources prior to arriving on-site for the first installation. Coordinating with the local agency should have been done prior to this step and a phone call or text message to the local agency contact is to provide the local agency resources with an estimated time of arrival to the first installation site.

Step 5 - Install Equipment

Upon arriving on-site, several safety precautions should be taken prior to exiting vehicle. This includes parking in a safe location such that motorized and non-motorized traffic is not impacted. Installation staff should always put on a safety vest and hard hat prior to exiting vehicles. Traffic safety cones should also be available and put out in front and behind the vehicle with all safety flashing lights turned on. Safety guidelines of MOT and MUTCD need to be adhered to as well. **IMPORTANT NOTE: TAKE A GPS READING WHERE THE COUNTER IS INSTALLED!** And Take photographs of the site installation as well as travel behaviors while on-site.

SECTION 7 – POST DEPLOYMENT DEVICE OPERATIONS

Upon completion of the data collection period, there are several post deployment device operations that need to be completed. This includes downloading and exporting the data so that quality control operations

can be performed. It is critically important to check the following prior, during, and after data has been exported:

1. Match the site description with the Site location
2. Check the GPS coordinates with the site location/description
3. Check the direction of travel with the site description
4. Note anything that stands out that could have caused possible issues with data (construction, accidents, debris, etc...)
5. Also note any travel behaviors (example: cyclists observed riding around tubes causing them not to be counted)

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SECTION 8 – POST DEPLOYMENT DATA QUALITY AND DATA CHECKING

Post Deployment Data Quality and Data Checking will continue to be updated as more sophisticated methods and tools are developed for the statewide data repository. Currently FDOT is installing and transitioning the motorized traffic data program software from one platform to another but once completed, it is envisioned this motorized software platform will also be the data repository for the non-motorized data.

In the meantime, several manual and semi-automated processes are being developed that will take advantage of already existing data platforms and software such as Microsoft (MS) Excel, Access, etc. Once the new statewide data repository is developed, these manual and semi-automated processes will remain in place for spot checking the statewide repository software.

Below are some of the quality checks and detailed steps currently being developed. These quality checks will be fully tested on all datasets and continue to be updated as the standard methodologies being used are refined and perfected.

In MS Excel, exported non-motorized traffic data files should be checked using the following quality checks and steps outlined below:

STEP 1 – Quality Check Data

- Check the data to make sure there is data in the file
- Is there header information, does it match the expected location information?
- Check directional distributions
- Math checks to ensure total volumes are correct (direction 1 hourly volume + direction 2 hourly volume = total hourly volume)

Step 2 – Format and Prepare Data for Analyses

- Get Rid of Header/Footer/and blank rows
- Create Separate DOW and Date fields – Monday, Tues, etc. and 5/1/2018, 5/2/2018...etc.
- If data only has directional data and not totals (combined directions), create totals table and calculate totals
- Generally, data should include 3 tables, direction one, direction two, and totals

STEP 3 – Calculate Monthly Average by Hour

STEP 4 – Graph Results, Highlight Anomalies, Analyze Data

NOTE: Additional data handling rules to be documented and applied later

STEP 5 – Calculate Total Hourly Average Day of the Week (DOW) by Month

- Sort data by DOW and Month of the Year
- Calculate Average DOW by month (there will be 7 values per month for 12 month which includes 84 total values)

STEP 6 – Calculate Total Daily Average DOW by Month

- Sort data by DOW and Month of the Year
- Calculate Average DOW by month (there will be 7 values per month for 12 month which includes 84 total values)

STEP 7 – Create 84 Values Table that includes the AADT

- Sort data by DOW and Month
- 7 values per month for 12 month which includes 84 total values

SECTION 9 – CONDUCT ADDITIONAL BEST PRACTICES RESEARCH TO INFORM FDOT METHODS AND PROCESSES

9.1 Road tube research

Additional road tube research needs to be conducted to inform the process of installing and collecting short-term traffic volume data. This section of the deployment plan provides links to research already conducted.

9.1.1 Helpful Links:

<https://www.fhwa.dot.gov/policyinformation/pubs/vdstits2007/04.cfm>

9.1.2 10 Common Mistakes to Avoid when Using Pneumatic Tube Counters

<http://www.mikeontraffic.com/pneumatic-tube-counters/>

9.1.3 Accuracy of Pneumatic Road Tube Counters

<https://pdfs.semanticscholar.org/5cc6/c853d00c948f61af9636c94508a981cc1416.pdf>

https://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1365&context=cengin_fac

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SECTION 10 - APPENDICIES

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Appendix A - Short-term Count Deployment Checklist

Form Development 8/12/2019

Field _____ **Deployment** _____ **Staff** _____
Names: _____ **Date:** _____
Purpose _____ **and** _____ **Location** _____
Deployment: _____
of _____

For all counter technology deployments, per unit:

- Traffic counter unit
- Traffic counter communications cable
- Laptop or tablet with vendor software installed
- Bicycle road tubes
- Road nails (For in-asphalt applications)
- Deck spikes (For in-ground applications)
- Figure 8 road cleats (For use with road nails)
- Figure 8 road cleats – Large (For use with deck spikes)
- Asphalt/sidewalk tape
- Duct tape
- Combination Lock (and unlocking CODE)
- Chain
- Zip ties
- Broom or blower
- Maps
- Camera
- Printed equipment manual
- Cell phone
- Cell Phone and Other Equipment Chargers
- Safety equipment (Hard Hat, Cones, Safety Vest, Lights, etc.)
- Bicycle for testing
- Claw hammer
- Measuring tape or precut measuring gauge
- Razor knife
- Crowbar
- Gloves
- Keys to open (wake) Counter

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- Tube counter communications cable
- Laptop or tablet with vendor software installed
- Camera
- Razor knife
- Claw hammer
- Crowbar
- Gloves
- Pliers

SIGNATURE: _____

DATE: _____

COMMENTS:

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Appendix B - Traffic Product Data Sheet

This provides traffic counter equipment specifications for:

Tubes

Nails

Cables

Etc.

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Appendix C - [HI-TRAC OH-PED PRODUCT MANUAL](#)

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Appendix D - [HI-TRAC Cycle Monitoring Unit by Jamar PRODUCT MANUAL](#)

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Appendix E - [TDC Hi-TRAC CMU Installation and Operation PRODUCT SHEET](#)

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Appendix F - [SDR Traffic Counter data collect PRODUCT SPEC](#)

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Appendix G - [ECO-COUNTER URBAN POST MULTI Pedestrians/Cyclists Counter PRODUCT OVERVIEW](#)

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Appendix H - COLORADO DOT BICYCLE AND PEDESTRIAN TRAFFIC COUNTER BICYCLE SPECIFICATIONS EXAMPLE

Colorado DOT uses a Purchase Order process to acquire equipment. Below is the text example provided by CDOT.

DESCRIPTION

This work consists of the installation of a counter for collecting and storing bicycle and pedestrian volume counts.

MATERIALS

All bicycle and pedestrian counters shall be waterproof, and conform to an Ingress Protection (IP) rating of 68. Counters shall operate in a temperature range of negative 40° F to 120° F. Continuous count sites should be installed with batteries which can operate continuously for two years. The detection range of pedestrian counting units shall be such that the unit detects the entire width of the multi-use trail, path, or sidewalk on which it is placed. Inductive loop bicycle counters shall be configured to have a detection area as specified by the Engineer. Any counter installed shall be capable of recording traffic at varying speeds, including speeds exceeding 20 miles per hour.

All bicycle and pedestrian counters shall collect and store volume counts by direction. Counters must be able to store a minimum of one year of count data. Counters shall bin data in 15 minute, 1 hour, and 24 hour increments, and have the ability to use a 24 hour clock. The collection device shall be capable of displaying the volume count data at the site through either the device itself or by means of a retrieval device such as a laptop or tablet. Counters shall report and store data in a format which can be imported into Microsoft Excel. The count collection device shall provide a way to download count data to a retrieval device at the site of the counting unit. Remote data transmission capabilities shall be provided for all permanent bicycle and pedestrian counting units. Counters must count and report bicycling and pedestrian modes separately.

INSTALLATION REQUIREMENTS

Prior to the start of work, the Contractor shall submit a traffic control plan which addresses pedestrian, bicycle, and motorized traffic during the installation. The plan must conform to applicable CDOT and MUTCD traffic control requirements.

A minimum of two weeks prior to the installation of the traffic counter, the Contractor will coordinate the installation date and installation location with the Engineer or a member of the DTD Traffic Analysis Unit (Phone: 303-757-9804). During the installation of the traffic counter the Engineer, a DTD Traffic Analysis Unit representative, or a Manufacturer Representative must be present. Only if CDOT Division of Transportation Development staff states in writing that one of these individuals is not needed on site will they not be required to be present.

The contractor shall locate all buried and overhead utilities near the planned installation location of the counter. The Contractor shall contact the Utility Notification Center of Colorado (UNCC) at 811 or 1-800-922-1987 for location of member utilities at least three working days prior to any excavation, not including the day of actual notice. The Contractor shall also locate non-member utilities, such as storm sewer. All utility conflicts encountered at the proposed installation site shall be brought to the attention of the Engineer immediately.

The location of the counters shall be as close as possible to the locations shown on the plans or as identified by the Engineer. Final placement may vary so that counters are not located near bodies of water, overhead power lines, or pointing towards vehicular traffic. Exact locations shall be approved by the Engineer or the DTD Traffic Analysis Unit representative. For counters which require inductive loops, the Engineer, a DTD Traffic Analysis Unit representative, or Counter Manufacturer representative will identify the loop locations on the pavement surface with chalk or a visible marker. Loops shall be the dimensions shown on CDOT's standard details or as provided by the Counter Manufacturer. The Contractor will perform saw cuts along identified lines to complete any inductive loop installations. The saw cut slots shall be as straight as possible and shall not vary more than ½ inch when checked against a straight-edge. Loop lead wires shall be twisted in accordance with manufacturer's recommendations, or 10 complete revolutions per foot. Saw cuts shall be hydro-blasted with a mixture of water and air and then blown free of water and debris with compressed air, using a large capacity air compressor of at least 150 CFM. The cuts shall be dry prior to placement of loop wire.

The piezo loop wire and paired loop lead wires shall be placed in the saw slot with a blunt non-metallic object. Half-inch backer-rod may be used to ensure the loop wire does not float to the surface during sealing. Backer-rod shall be installed in 4 to 6 inch pieces with 1 to 2 foot gaps in-between, to ensure the sealant will come in contact with the piezo loop and lead wires. One continuous piece of backer-rod will not be allowed.

Prior to sealing inductive loops the Contractor will test the loops and verify the level of inductance matches what is required by the Manufacturer. Prior to completing the installation the contractor is required to test any loops or passive infrared counting device to ensure that such devices are detecting properly. For counters which are to detect bicycle traffic this will require the contractor test the device using a bicycle.

Loop lead wires from the pavement edge to the pull box shall be enclosed in a minimum ¾ inch diameter electrical conduit to protect the wire from abrasion. Loop lead wires from the pavement edge, to pull box, shall be twisted 10 turns per foot. Pull boxes or irrigation boxes shall contain a minimum of 3 feet of loop lead wire for splicing. All loop and loop leads shall be clearly labeled in all pull boxes or irrigation boxes.

Saw cuts shall be sealed with a two-part self-curing, self-bonding, weatherproof epoxy approved for sealing traffic loops. Loop sealant shall conform to manufacturer's recommendations. Loop sealant shall not coagulate prior to installation and shall be spread out across the loop installation area with a sealant spreader tool such that the sealant is flush with the pavement surface. At sites where a curb exists, backer board shall be installed along sidewalk and curb joints to prevent sealant from spilling. Loop sealants which are in excess of 60° C or 140° F shall not be used.

The Contractor shall follow all environmental regulations and best management practices during the saw cutting and installation of the loops. All damages or penalties associated with failing to meet environmental requirements shall be at the Contractor's expense.

Acceptance will be based on the Contractor performing a complete test of the counter to ensure that it is functioning correctly and is fully operational. Non-functioning systems will not be accepted and will be repaired or replaced at the Contractor's expense.

METHOD OF MEASUREMENT

Bicycle and Pedestrian Traffic Counter will be measured as the actual number of counters that are installed and accepted.

BASIS OF PAYMENT

Payment will be made under:

Pay Item	Pay Unit
Bicycle and Pedestrian Traffic Counter	Each

Payment will be full compensation for all labor, materials and equipment required to install the counter.

Electrical conduit will not be measured and paid for separately, but shall be included in the work.

All costs associated with the manufacturer's representative will not be measured and paid for separately, but shall be included in the work.

Traffic Control items and associated costs will not be measured and paid for separately, but shall be included in the work.

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Appendix I - Colorado DOT Continuous counting Specification

Computer File Information		Sheet Revisions		Colorado Department of Transportation		As Constructed		BIKE/PEDESTRIAN TRAFFIC COUNTER LOOP WIRING DIAGRAMS		Project No./Code	
Creation Date: 04/25/11	Initials: DD	(DESC)	mm/dd/yy	XXXXXXXX	XXXXXXXX	4300 S. ARAPAHO AVE.	No. Revisions: mm/dd/yy	BIKE/PEDESTRIAN TRAFFIC COUNTER	D-614-3		
Last Modification Date: 03/02/15	Initials: KJB	(DESC)	mm/dd/yy	XXXXXXXX	XXXXXXXX	DENVER, CO 80222	Revised: mm/dd/yy	LOOP WIRING DIAGRAMS	Code		
Full Path: \\www.dot.state.co.us\DesignSupport\		(DESC)	mm/dd/yy	XXXXXXXX	XXXXXXXX	Phone: 303-757-9804	Designer: XXXXXXXX		Sheet Number: 3 of 3		
Drawing File Name: D061402010		(DESC)	mm/dd/yy	XXXXXXXX	XXXXXXXX	DTU	Date: mm/dd/yy				
CAD Version: Mediation V8 Scale: Not to Scale Units: English		(DESC)	mm/dd/yy	XXXXXXXX	XXXXXXXX		Sheet Subject: XXXXXXXX	Sheet Sheets: xxx of xxx			

Appendix J - WISCONSIN DOT SCOB Modems RFP Template EXAMPLE

GENERAL NOTES

1. THE BIDDING SITE MUST BE SECURED AND ADHERED TO MEET ALL SAFETY CONCERNS.
2. ALL COMPONENTS OF THE BIKE COUNTER DEVICE SHALL BE INSTALLED ON PAVEMENT SURFACE ONLY.
3. ALL SHIM CUTS SHALL BE SPACED.
4. BEFORE INSTALLATION OF THE WIRE, ALL SHIM CUTS SHALL BE CLEANED BY SCRAPED AND BE DRY.
5. ALL WIRES SHALL BE CONFINED AND TAUGHT IN THE PAVEMENT AND TO THE LOGGER DEVICE.
6. ALL SHIM CUTS AND HOLES SHALL BE SEALED USING A SELF-HEALING, SELF-FLUORING, REPAIRABLE, DURABLE SEALANT APPROVED BY THE DOT INSTALLATION MANAGER AND BE FLUSH WITH THE EXISTING PAVEMENT SURFACE.
7. THE LOOP LEAD WIRE SHALL BE TWISTED A MINIMUM OF 36 TIMES PER 48 INCHES.
8. ONLY ONE SET OF LOOP WIRES SHALL BE PLACED IN A SHIM CUT SLOT.
9. ONLY A MINIMUM OF THE LOOPS SHALL BE CONSTRUCTED.
10. INSTALLATION OF THE BIKE COUNTER DEVICE SHALL BE DONE IN THE PRESENCE OF THE DOT ENGINEER, TRAFFIC ANALYST, AND REPRESENTATIVE FROM THE DOT SITE SECTION AND A MANUFACTURER'S REPRESENTATIVE. INSTALLATION SHALL BE MONITORED BY THE DOT TRAFFIC ANALYST. LET THAT THE MANUFACTURER'S REPRESENTATIVE SHALL NOT BE RESPONSIBLE FOR THE DEVICE.
11. AFTER INSTALLATION OF THE DEVICE IS COMPLETED, TESTING SHALL BE PROVIDED USING A CYCLES PER HOUR (CPH) OTHER MEASUREMENT DEVICE THAT CAN BE SELECTED BY THE DEVICE.

BIKE COUNTER
D-615-1

APPLICATION: THESE COUNTERS ARE FOR USE ON A CITY HIGHWAY OR ROAD USED TO BE COUNTED.
INSTALLATION: REQUESTED BY THE TRAFFIC ANALYST UNIT IN SITE.

DESIGNER NOTES:
PLEASE CALL THE STATIONER NUMBER AT 303-757-4303 FOR ANY QUESTIONS.
PLEASE SEE THIS BIDDING BEFORE USING THIS DETAIL ON A PROJECT. DATED: DECEMBER 16, 2014.

Computer File Information		Sheet Revisions		Colorado Department of Transportation		As Constructed		BIKE COUNTER		Project No./Code	
Creation Date: 04/27/11	Initials: DD	(DESC)	mm/dd/yy	XXXXXXXX	XXXXXXXX	4300 S. ARAPAHO AVE.	No. Revisions: mm/dd/yy	BIKE COUNTER	D-615-1		
Last Modification Date: 12/28/11	Initials: KJB	(DESC)	mm/dd/yy	XXXXXXXX	XXXXXXXX	DENVER, CO 80222	Revised: mm/dd/yy		Code		
Full Path: \\www.dot.state.co.us\DesignSupport\		(DESC)	mm/dd/yy	XXXXXXXX	XXXXXXXX	Phone: 303-757-9804	Designer: XXXXXXXX		Sheet Number: 1 of 1		
Drawing File Name: D061501010		(DESC)	mm/dd/yy	XXXXXXXX	XXXXXXXX	DTU	Date: mm/dd/yy				
CAD Version: Mediation V8 Scale: Not to Scale Units: English		(DESC)	mm/dd/yy	XXXXXXXX	XXXXXXXX		Sheet Subject: XXXXXXXX	Sheet Sheets: xxx of xxx			