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Department of Transportation

TRAFFIC MONITORING

AUTHORITY:

Sections 20.23(3); 334.048(3), Florida Statutes (F.S.).

REFERENCES:

Sections 334.044(20); 334.063; and 334.17, Florida Statutes (F.S.). Part 23, Code of Federal Regulations (CFR), Part 500, Subpart B—Traffic Monitoring System

Guidelines for Traffic Data Programs, American Association of State Highway and Transportation Officials (AASHTO)

Highway Capacity Manual (HCM), Transportation Research Board

Highway Performance Monitoring System Field Manual, Federal Highway Administration

Manual on Uniform Traffic Studies, Florida Department of Transportation, Traffic Engineering Office, Topic No. 750-020-007

Traffic Monitoring Handbook, Florida Department of Transportation, Transportation Data and Analytics Office

Traffic Monitoring Guide, Federal Highway Administration

PURPOSE:

The Department monitors traffic conditions by conducting traffic surveys, also known as counts or data collection, to determine the volumes and types of vehicles and the weight of the trucks using the highway network of Florida. Traffic surveys provide information essential to the general administration of highway programs. Traffic data is fundamental to determining vehicle-miles of travel, project design parameters, highway classification, and the level of service provided by a highway facility. This procedure will guide users on the Department's traffic monitoring practices.

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SCOPE:

This procedure defines the traffic data that are used in transportation planning, design and maintenance of Florida's transportation system throughout the Department as well as by the general public. It assigns the responsibility for data collection, processing, editing, reporting and distribution. This procedure is used by the Central and District Offices as well as their consultants and contractors taking traffic surveys for Department use. Traffic data collected through implementation of this procedure are used by the District and Central Offices of Civil Integrated Management (CIM), Project Management, Roadway Design, Traffic Engineering and Operations, Pavement Design, Safety, Planning, and various other entities within and outside of the Department, including the Federal Highway Administration (FHWA).

A ***Traffic Monitoring Handbook*** has been developed to guide users of this procedure to the Department's best traffic monitoring practices. It will be maintained by the Transportation Data and Analytics (TDA) Office in consultation with the District Offices. The handbook is available for viewing at: http://www.fdot.gov/statistics/trafficdata.

1 CONSTRUCTION OF TRAFFIC MONITORING SITES

The Central Office maintains an ***Approved Products List, Standard Specifications and Standard Plans*** for the construction of continuous count traffic monitoring sites. It is the responsibility of the District Office and the Design Engineer of each project to ensure that the repair or replacement of any affected short-term count traffic monitoring site that is included in the project plans. The District Offices will monitor the Department's Work Program and ensure that any (continuous or short-term count) traffic monitoring sites eliminated or rendered ineffective by road construction are replaced, as a part of the construction project, unless specifically exempted by the TDA Office.

1.1 CONTINUOUS COUNT SITES

A system of continuous count traffic monitoring sites is operated and maintained by the TDA Office. The extent, type, and distribution of these sites meet the ongoing needs of the Department and FHWA for system statistics. Continuous count data is used to develop seasonal and axle adjustment factors, which are applied to short-term counts in order to calculate Annual Average Daily Traffic (AADT) values. Continuous count data is also used to develop design hour (K), truck percentages (T) factors, and directional distribution (D) factors. Types of sites include those for volume and classification counts, speeds, and weights. The TDA will consult with District Office staff when developing new continuous count sites in order to select locations that will be the most representative of local traffic conditions, capture seasonal traffic variations, and to avoid conflicts with planned construction projects.

All continuous count traffic monitoring sites to be operated and maintained by the TDA Office must be constructed in conformance with specifications. Each District Office may install, operate, and maintain their own continuous count sites that will be the sole and complete responsibility of that District. The edit-accepted hourly counts from the

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district's continuous count sites will be provided by the District Office at the end of each calendar year to the TDA Office. The District Office may coordinate with the TDA on the use of traffic data from continuous sites operated by local governments.

1.2 SHORT-TERM COUNT SITES

A system of short-term count traffic monitoring sites is operated and maintained by each District to obtain short-term count data when used with portable collection equipment. The minimum requirements for short-term counts are 24-hours in urban areas and 48-hours for rural areas. The extent, type, and distribution of these sites will meet the ongoing needs of the Department and FHWA to provide segment-specific traffic count information.

Embedded sensors in the roadway should be installed at short-term count sites when one or more of the following criteria are met:

- Sites with 3 or more undivided lanes
- Sites with 1 or more turn lanes and 2 or more travel lanes in one direction
- Sites that experience queuing of traffic
- Limited access roads with 85th percentile speed 10 MPH or more higher than posted speed
- Sites with a history of being difficult to count (high-volume, on-street parking, etc.)

The District Office may coordinate with the TDA Office on the use of traffic data from portable sites operated by local governments.

2 MAINTENANCE OF TRAFFIC MONITORING SITES

2.1 CENTRAL OFFICE

The TDA Office will maintain the continuous traffic monitoring sites it owns and operates. All continuous traffic monitoring sites on the State Highway System shall be constructed in accordance with Standard Specifications for Road and Bridge Construction, regardless of who maintains or operates them.

2.2 DISTRICT OFFICES

The District Offices will maintain all traffic monitoring sites they own and operate. The TDA Office's repair contract may be used by the District Offices to repair the short-term count sites or upgrade them to continuous count sites which will be owned/maintained by the Central Office upon mutual agreement of the TDA Office and District Offices if sufficient funds are available.

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3 DATA COLLECTION

3.1 Count, Class, and Speed

The TDA Office is responsible for the operation and maintenance of an automated system used to gather data from continuous count traffic monitoring sites. This data includes vehicle volume counts, classification counts, speed data, and weight data. The TDA Office must maintain a system capable of polling, editing, processing and storing data gathered from these sites through an automated polling system. Data from the continuous count traffic monitoring sites will be downloaded daily.

3.2 Real Time

The TDA Office operates a strategic selection of continuous count traffic monitoring sites located on emergency evacuation routes that can be used to provide near real-time (up to the last complete hour) traffic data during any event of an emergency. These sites are the top priority for maintenance, and the TDA Office will maintain an off-site backup polling system for downloading traffic volume data from the emergency evacuation sites. During emergency operations, the needed near real-time traffic data will be downloaded hourly once the last previous hour's data has been downloaded.

3.3 Weigh-In-Motion

A strategic number of the continuous count traffic monitoring sites operated by the TDA Office have been specifically equipped with axle sensors capable of collecting weigh-in-motion data as well as volume, classification and speed data. Traffic data is automatically downloaded from these sites daily. Weigh-In-Motion sites will be re-calibrated upon any weight-sensor replacement or as data analysis indicates; with a minimum frequency of annually recommended.

3.4 Non-Motorized

The TDA Office has implemented a non-motorized (pedestrian/bicycle) traffic monitoring program, modeled after the motorized program. With a focus on safety, the program's purpose is to collect and maintain a statistically valid bicycle and pedestrian traffic volume database to serve all FDOT data customers and partner agencies. Both continuous and short-term count programs will be coordinated by the Central Office.

4 Highway Performance Monitoring System (HPMS)

The TDA Office will provide to the District Offices an updated list of off-system HPMS Samples that require traffic counts, at least 2 months prior to the beginning of the next count year cycle. It is anticipated that the list of off-system HPMS samples will remain stable from year to year, with only a few new samples needed to complete the plan each year.

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4.1 DISTRICT OFFICES

4.1.1 State Highway System

Each District Office is responsible for conducting short-term traffic surveys taken with automated equipment. Surveys may be conducted by District staff, personnel from other District Offices, or approved contractors. The District Offices are responsible for selecting traffic count locations and maintaining the station inventory for those selected locations in the Department's databases. The types of surveys covered under this topic include volume counts for estimating AADT and vehicle classification counts. A volume count produces a 24-hour total number of vehicles of all types in intervals of 15 minutes and one hour. A vehicle classification count categorizes vehicles by type into the FHWA classification scheme "F" categories. Traffic monitoring stations in urban areas will be counted for a minimum of 24-hours while those in rural areas will be counted for a minimum of 48-hours. At a minimum, one-third of each District's active traffic monitoring sites on the State Highway System shall be counted each year. All state highways shall be counted at least once every three years; construction, or other factors, permitting. Additionally, a minimum of one-third of the active traffic monitoring sites for any given count year shall be vehicle classification count sites.

4.1.2 Strategic Intermodal System (SIS)

The districts shall conduct annual vehicle classification surveys on all SIS connector routes in their Districts.

4.1.3 Highway Performance Monitoring System (HPMS)

HPMS provides data that reflects the extent, condition, performance, use, and operating characteristics of the nation's highways. HPMS data collection is a cooperative effort between state DOTs, local governments and metropolitan planning organizations to collect, assemble, and report the information FHWA requires. Florida HPMS traffic data samples for off-system roads will be retained in the Roadway Characteristics Inventory (RCI) and the Traffic Characteristics Inventory (TCI). Each District Office shall collect sampling from one-third of their HPMS sites annually. Length, lane-mile, and travel data are used for apportionment of Federal-aid highway funds. HPMS data is also used for policy-sensitive system, corridor, and sub-area planning and programming. As such, all HPMS counts need to be classification counts, collected on a three-year cycle.

For detailed guidance, refer to chapter IV of the ***Highway Performance Monitoring System Field Manual*** at: http://www.fhwa.dot.gov/policy/ohpi/hpms/index.htm.

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4.1.4 Non-HPMS Off-System

Florida also collects traffic data from non-HPMS off-system roads on a six-year cycle. This data will be retained in RCI and TCI. Each District Office shall collect volume sampling from one-sixth of their off-system sites annually. All non-HPMS off-system highways shall be counted at least once every six years; construction, or other factors, permitting. Classification counts are not required for non-HPMS off-system data collection.

4.1.5 Intelligent Transportation Systems (ITS)

Districts may obtain traffic counts from installed ITS counters, for those roads covered by ITS, instead of using short-term counters. These count values may be obtained through the utilization of data mining software, or the use of a data warehousing system, such as the Regional Intelligent Traffic Information System (RITIS).

5 DATA PROCESSING

5.1 CENTRAL OFFICE

5.1.1 Daily Processing

The TDA Office shall download the data collected by the continuous count traffic monitoring sites daily. This data will be summarized and loaded into the traffic database tables daily. The count data will be examined within three weeks of its loading and will be flagged according to its quality. Vehicle class data will be examined within six weeks of its loading to the database.

5.1.2 Annual Processing

The TDA Office will produce seasonal and axle adjustment factors from available data. Seasonal adjustment factors are derived from the continuous counts program conducted by the TDA Office. The axle adjustment factors are derived from select classification surveys. The TDA Office will produce Seasonal and Axle Adjustment Factor Category Assignment Reports by January 31st for the Districts' review and changes. The TDA Office will produce AADTs for all sites and send them to the District Offices for their concurrence/approval prior to adoption of the AADTs by March 15th. The collaborative process to meet the March 15th AADT production date is included in Section-3 of the Traffic Monitoring Handbook. The TDA Office will provide the software and technical guidance needed to maintain traffic flow break data. In addition, the TDA Office will provide quality control reports and on-line tools to help District Office staff eliminate any gaps and/or overlaps in the traffic flow breaks on all state highways. The TDA Office, in coordination with the District Offices, will generate estimated AADTs for traffic flow breaks not counted in any given year.

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5.1.3 Traffic Characteristics Inventory

The TDA Office shall work with the District Offices and the Office of Information Systems to maintain the Traffic Characteristics Inventory database, and to make improvements to it as needed.

5.1.4 Survey Processing Software

The TDA Office will provide the software and technical guidance needed to process individual traffic surveys.

5.2 DISTRICT OFFICES

5.2.1 Short-Term Counts

To accurately collect traffic data, the districts will ensure that each traffic survey instrument is tested annually. Prior to starting data collection, the districts will ensure that the equipment is performing properly and furnish an annual statement of equipment certification to the TDA Office by January 31st.

Each District Office will develop a traffic collection schedule and provide it to the TDA Office by January 31st.

Once the current count year is open, the District Offices will process collected data, check data validity, and upload accepted data into the TCI database within 30 days of the date of data collection, or within 20 days of receipt of data collected by private contractors or others. Field data collection must be essentially completed by November 15th. New count sites, recounts, supplemental counts, and counts that were delayed by unforeseen circumstances may be collected after November 15th. All counts must be loaded into the TCI database by December 31st.

5.2.2 Traffic Section Breaks

A traffic break, by definition, represents a segment of highway with uniform traffic volume and vehicle classification mix. Only one traffic count site is required per traffic break. The count obtained at this site will be used for estimating the traffic break's AADT. The official record of traffic break beginning and ending mile points will be verified and updated in the RCI database by District Office staff. The traffic break beginning and ending mile points will be tied to intersection features in RCI.
District Office staff are responsible for properly identifying and recording the traffic break locations and the traffic survey site assignments within each traffic break. District Office staff should consider related needs of the District Traffic Operations Office and other customers when choosing traffic break endpoints and count site locations. For detailed guidance, refer to the **Traffic Monitoring Handbook**.

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5.2.3 Axle and Seasonal Factor Categories

The assignment of adjustment factor categories for each short-term count site is the responsibility of the districts. For detailed guidance, refer to the ***Traffic Monitoring Handbook***.

6 REPORTING

6.1 RCI and TCI

The TDA Office will be responsible for loading finalized traffic information into the RCI and TCI databases for roads both on and off the State Highway System. The District Offices will review the End of Year Processing (EOYP) Seasonal and Axle Adjustment Factor Category Assignment data for errors or omissions and provide corrections by February 15th for end-of-year processing. Final AADT report reviews and corrections will be completed by March 15th, when the data is loaded into RCI and TCI.

6.2 TRAFFIC INFORMATION DISTRIBUTION

The TDA Office will be responsible for maintaining a traffic information web site. Traffic Data from the most recent annual traffic data collection cycle will be available on-line at: https://tdaappsprod.dot.state.fl.us/fto/ . Traffic DVDs are available for years prior to 2017.

7 TRAINING

The TDA provides the ***Traffic Monitoring Handbook*** to the Districts as a foundational instruction manual for Florida's traffic monitoring program. Detailed training for traffic data collection and end of year processing are available on request.

8 FORMS

None required.