

Approved:



Department of Transportation

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Office: Transportation Data and Analytics

Topic No.: 525-030-150-d

TRAFFIC MONITORING

PURPOSE:

The Department conducts traffic surveys 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 in regard to the Department's traffic monitoring practices.

AUTHORITY:

Sections 20.23(4)(a); and 334.048(3) and (4); Florida Statutes (F.S.)

SCOPE:

This procedure defines the traffic data that is 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 by their consultants and contractors conducting traffic surveys for Department use. Traffic data collected through implementation of this procedure is used by the District and Central Offices of Environmental Management, 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).

REFERENCES:

Sections 334.03(24) and (26); 334.063; 334.17; and 334.24, F.S.
Part 23, Code of Federal Regulations (CFR), Part 500, Subpart B—Traffic Monitoring System

AASHTO 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 (MUTS), Florida Department of Transportation, Traffic Engineering Office, Topic No. 750-020-007

Project Traffic Forecasting Procedure, Florida Department of Transportation, Transportation Data and Analytics Office, Topic No. 525-030-120-h

Project Traffic Forecasting Handbook, Florida Department of Transportation, Transportation Data and Analytics Office

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

Traffic Monitoring Guide, Federal Highway Administration

REVISIONS:

This procedure will be reviewed and updated on a two-year cycle by personnel from each District Office and the Central Office Transportation Data and Analytics Office (TDA). They will be asked to review the procedure and provide input for revisions.

1. TRAFFIC MONITORING HANDBOOK

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 TDA in consultation with the District Offices. The handbook is available for viewing at: <http://www.fdot.gov/statistics/trafficdata/>.

2. CONSTRUCTION OF TRAFFIC MONITORING SITES

The TDA maintains an **Approved Products List, Standard Specifications and Standard Indexes** for the construction of permanent 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 traffic monitoring site is included in the project plans. The District Offices will monitor the Department's Work Program and ensure that any permanent (telemetered or portable) 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.

2.1 TELEMETERED SITES

A system of telemetered (continuous) traffic monitoring sites is operated and maintained by the TDA. The extent, type, and distribution of these sites meet the ongoing needs of the Department and FHWA for system statistics. Collected data is used to develop adjustment factors, which are applied to short-term counts in order to calculate Annual Average Daily Traffic (AADT) values. Telemetered data is also used to develop design hour (K) 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 telemetered sites in order to select locations that will be the most representative of local traffic conditions, capture seasonal traffic variations, and avoid conflicts with planned construction projects.

All telemetered traffic monitoring sites to be operated and maintained by the TDA must be constructed in conformance with specifications and with written approval.

Each District Office may install, operate, and maintain other telemetered sites that will be the sole and complete responsibility of that District. The edit-accepted hourly counts from the District's telemetered sites will be provided by the District Office at the end of each calendar year to the TDA. The District Office may coordinate with the TDA on the use of traffic data from continuous sites operated by local governments.

2.2 PORTABLE SITES

A system of permanent traffic monitoring sites is operated and maintained by the Districts to obtain short-term counts when used with portable collection equipment. 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.

Permanent sensors should only be installed at new portable 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 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 on the use of traffic data from portable sites operated by local governments.

3. MAINTENANCE OF TRAFFIC MONITORING SITES

3.1 CENTRAL OFFICE

The TDA will maintain the telemetered traffic monitoring sites it owns and operates.

3.2 DISTRICT OFFICES

The District Offices will maintain all traffic monitoring sites they own and operate, whether short-term portable, or telemetered. The TDA's repair contract may be used by the District Offices to repair the District count sites upon mutual agreement of the TDA and District Offices.

4. DATA COLLECTION

4.1 CENTRAL OFFICE

4.1.1 Count, Class, and Speed

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

4.1.2 Real Time

A limited number of telemetered traffic monitoring sites that are operated by the TDA are located on emergency evacuation routes and can be used to provide real-time traffic data in case of an evacuation. These sites will be the top priority for maintenance. The TDA will maintain an off-site backup polling system for the emergency evacuation sites. During emergency operations, the needed real-time traffic monitoring sites will be downloaded hourly.

4.1.3 Weigh-In-Motion

A limited number of telemetered traffic monitoring sites that are operated by the TDA are equipped with axle sensors capable of collecting weigh-in-motion data as well as classification counts and speed data. The TDA will download data from these sites daily. Weigh-in-motion sites will be re-calibrated within 1 month of any weight-sensor replacement or as data analysis deems necessary.

4.1.4 Highway Performance Monitoring System (HPMS)

The TDA 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 fairly stable from year to year, with only a few new samples needed to complete the plan each year.

4.2 DISTRICT OFFICES

4.2.1 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 independent contractors. The District Offices are responsible for selecting traffic count locations and maintaining the station inventory for those selected locations in the Department's mainframe 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 scheme "F" categories.

Traffic monitoring stations in urban areas will be counted 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 the 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 shall be vehicle classification count sites.

4.2.2 Strategic Intermodal System (SIS)

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

4.2.3 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>.

4.2.4 Non-HPMS Off-System

Florida also collects traffic data from non-HPMS off-system roads on a six-year cycle, and 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. Classification counts are not required for non-HPMS off-system data collection.

4.2.5 Intelligent Transportation Systems (ITS)

Districts shall make an effort to obtain traffic counts from installed ITS counters, for those roads covered by ITS, instead of using portable 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 Statewide Transportation Engineering Warehouse for Archived Regional Data (STEWARD), or the Regional Intelligent Traffic Information System (RITIS).

5. DATA PROCESSING

5.1 CENTRAL OFFICE

5.1.1 Daily Processing

The TDA shall download the data collected by the telemetered 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 will produce seasonal and axle adjustment factors from available data. Seasonal adjustment factors are derived from the continuous counts program conducted by the TDA. The axle adjustment factors are derived from select classification surveys.

The TDA will produce Seasonal and Axle Adjustment Factor Category Assignment Reports by January 31st for the Districts' review and changes. The TDA 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-8 of the Traffic Monitoring Handbook.

The TDA will provide the software and technical guidance needed to maintain traffic break data. In addition, the TDA will provide quality control reports and on-line tools to help District Office staff eliminate any gaps and/or overlaps in the traffic breaks on all state highways. The TDA, in coordination with the District Offices, will generate estimated AADTs for traffic breaks not surveyed in any given year.

5.1.3 Mainframe Database

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

5.2 DISTRICT OFFICES

5.2.1 Portable Counts

To accurately collect traffic data, the Districts will ensure that each 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 by January 31st.

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

Once the count year is open, the District Office will process collected data, check data validity, and upload accepted data into the mainframe within 30 days of the date of data collection, or within 20 days of receipt of data collected by private contractors or others. 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 mainframe 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 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 posts will be verified and updated in the Roadway Characteristics Inventory (RCI) database by District Office staff. The traffic break beginning and ending mile posts will be tied to intersection features in RCI.

District Office staff are responsible for properly identifying and recording the traffic break locations and the 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**.

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 will be responsible for loading finalized traffic information into the RCI and TCI database for roads both on and off the State Highway System. The District Offices will review the 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 will be responsible for the annual production of the **Florida Transportation Information** (FTI) DVD, and maintaining a current FTI DVD user's mailing list. The TDA will distribute an adequate number of FTI disks to the Districts for in-house use and for regional distribution.

6.3 INTRANET

The TDA will be responsible for maintaining a traffic information web site.

6.4 INTERNET

The TDA will be responsible for maintaining a traffic information web site. Traffic data from the most recent annual DVD will be available on-line at <https://tdaappsprod.dot.state.fl.us/fto/> web site.

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.