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PROJECT TRAFFIC FORECASTING

AUTHORITY:

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

REFERENCES:

Sections 334.03(25), 334.046(1) and (2); 334.063, 334.17, 334.24, and 338.001(5); F.S.

Project Traffic Forecasting Handbook, Florida Department of Transportation (FDOT), Systems Implementation Office

General Interest Roadway Data (GIRD) Procedure, FDOT, Transportation Data and Analytics Office, Topic No. 525-020-310

Florida Traffic Online, FDOT, Transportation Data and Analytics Office

Florida Standard Urban Transportation Model Structure (FSUTMS) Cube Framework Phase II, Model Calibration and Validation Standards, FDOT, Forecasting and Trends Office

New or Modified Interchanges Procedure, FDOT, Systems Implementation Office, Topic No. 525-030-160

Project Development and Environment (PD&E) Manual, FDOT, Office of Environmental Management, Topic No. 650-000-001

Manual on Uniform Traffic Studies, FDOT, Traffic Engineering and Operations Office, Topic No. 750-020-007

FDOT Design Manual (FDM), FDOT, Roadway Design Office, Topic No. 625-000-002,

Flexible Pavement Design Manual, Topic No. 625-010-002, FDOT, Roadway Design Office

A Policy on Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials (AASHTO), 7th Edition, 2018

AASHTO Guidelines for Traffic Data Programs (2nd Edition), AASHTO, 2009

Federal Highway Administration Traffic Monitoring Guide (TMG), U.S. Department of Transportation, Federal Highway Administration (FHWA), October 2016

Highway Capacity Manual (HCM), Transportation Research Board (TRB)

National Cooperative Highway Research Program (NCHRP) Report 277, "Portland Cement Concrete Pavement Evaluation System (COPES)", M. L. Darter, J. M. Becker, M. B. Snyder and R. E. Smith, TRB September 1985

PURPOSE:

The objective is to standardize the traffic forecasting process that will result in consistent and defendable project traffic on all applicable transportation projects. Project traffic forecasting estimates are needed for planning, Project Development and Environmental (PD&E) studies, design, construction, traffic improvements, and pavement design projects. The procedure includes information about the associated state and federal requirements related to the traffic forecasting process.

SCOPE:

This procedure is directed to traffic engineers and planners from the Department who develop project traffic used in forecasting for various highway projects for FDOT and its partner agencies.

DEFINITIONS:

Terms in this procedure, other than those defined below, are used as defined in the ***Highway Capacity Manual (HCM)*** by TRB and ***A Policy on Geometric Design of Highways and Streets*** as stated by AASHTO.

Equivalent Single Axle Load (ESAL): a unit of measurement equating the amount of pavement consumption caused by an axle or group of axles, based on the loaded weight of the axle group, to the consumption caused by a single axle weighing 18,000-lbs, known as 18-KIP ESAL. (AASHTO)

Corridor: a linear geographical area that follows a general directional flow connecting centers of economic activity and may contain several alternate transportation alignments and one or more transportation modes.

K Factor: the proportion of Annual Average Daily Traffic (AADT) that occurs during the peak hour.

Local Government Comprehensive Plan (LGCP): the plan (and amendments thereto) developed and approved by the local governmental entity pursuant to Chapter 163, F.S. (ss. 163.3177 and 163.3178), and found in compliance by the Florida Department of Environmental Protection.

Long Range Transportation Plan (LRTP): a document with a long-term planning horizon, typically ranging from 20 to 35 years, required of each Metropolitan Planning Organization (MPO) that forms the basis for the annual MPO Transportation Improvement Program (TIP), developed pursuant to ***Title 23 United States Code 134*** and ***Title 23 Code of Federal Regulations Part 450 Subpart C.***

Master Plan: a document identifying both short- and long-term capacity improvements to limited access highways mainline and interchanges consistent with SIS/State Highway System (SHS) policies and standards to allow for highspeed and high-volume travel.

Strategic Intermodal System (SIS): a statewide network of high-priority transportation facilities, including the State's largest and most significant airports, spaceports, deep water seaports, freight rail terminals, passenger rail and intercity bus terminals, rail corridors, waterways, and highways. These facilities represent the State's primary means for moving people and freight between Florida's diverse regions, as well as between Florida and other states and nations.

PROCEDURE:

1. USERS OF PROJECT TRAFFIC STUDIES

The following District offices are involved in the preparation and use of project traffic forecasting reports and studies:

(A) Planning and Environmental Management Office (PLEMO)
(B) Roadway Design Office
(C) Traffic Engineering and Operations Office
(D) Consultant Management Office
(E) Project Management Office

This procedure is not intended to be used for traffic engineering studies. However, this procedure will apply to the extent that certain traffic operations, such as major intersection movements, are involved in corridor or other project traffic studies and analyses.

This procedure outlines three processes used to meet three different traffic forecasting needs:

(A) corridor traffic forecasting studies,
(B) project level traffic forecasting studies, and
(C) 18-KIP Equivalent Single Axle Load (ESAL) studies.

Although these three types of studies have different approaches and tools, they use the same methodology to determine some of the project traffic forecasting characteristics, specifically: design year, directional design hourly volume (DDHV), and future traffic and truck volume forecasts.

2. TYPES OF TRAFFIC FORECAST STUDIES

Corridor traffic forecasting is required before establishing a new alignment or making improvements to existing facilities, such as widening or transportation system management and operation (TSM&O) strategies. Corridor traffic forecasting is used in the analysis of transportation alternatives in order to identify the type of improvements needed to meet future anticipated traffic demands.

Project traffic forecasting studies identify specific link volumes, turning movements, and other project-specific data necessary for the geometric design and operational improvements to roadways or intersections. They can also identify the project traffic requirements for the state highway system, the Interchange Access Requests (IAR), Master Plans for the SIS, Resurfacing, Restoration and Rehabilitation (RRR) projects, repurposing lanes, new roadway projects, and major intersection improvements.

The 18-KIP ESAL forecast is required for the pavement design of new construction, reconstruction, and resurfacing projects. The pavement design for new alignment, reconstruction, and resurfacing projects will require a structural loading forecast using the 18-KIP ESAL process.

3. PROJECT TRAFFIC FORECASTING HANDBOOK

The ***Project Traffic Forecasting Handbook*** provides guidelines and techniques on the traffic forecasting process. The Handbook supplements this procedure by providing directions for producing the design traffic parameters, AADT, Standard K, D, and T.

4. CENTRAL OFFICE RESPONSIBILITIES

4.1 SYSTEMS IMPLEMENTATION OFFICE

The Central Office, Systems Implementation Office is responsible for:

(A) Providing the required tools and general guidelines for performing traffic forecast studies.

(B) Maintaining and updating the ***Project Traffic Forecasting Handbook*** and Procedure No. 525-030-120.

(C) Maintaining and improving traffic forecasting tools. These are Excel spreadsheets which can be used to perform historical trend analysis, estimate forecast year’s turning movements, and 18-KIP ESAL estimates.

(D) Developing required computer-based training and testing materials to help explain the project traffic forecasting terminologies and processes.

4.2 TRANSPORTATION DATA AND ANALYTICS OFFICE

The Central Office, Transportation Data and Analytics Office is responsible for:

(A) Maintaining and updating the Traffic Characteristics Inventory (TCI) framework, including providing AADT, Standard K Factor, Directional Factor (D), and Truck Factor (T), based on site-specific counts through the Traffic Count Program.

(B) Publishing and updating the Florida Traffic Online website.

5. DISTRICT OFFICE RESPONSIBILITIES

The District is responsible for carrying out the traffic forecasting process consistent with this procedure and the ***Project Traffic Forecasting Handbook***. Traffic forecasting reports are developed in coordination with requesting offices such as Planning and Environmental Management, Design, and Consultant Management. The traffic forecast reports are generally prepared by, or under the direction of the District offices.

These responsibilities include:

(A) Monitoring the Department's Work Program (WP) to identify the projects that require traffic forecasts.

(B) Establishing the forecast years of the project.

(C) Determining the traffic model suitability and the consistency of the traffic forecast process and its outputs with the adopted MPO Long Range Plan and/or Local Government Comprehensive Plan (LGCP).

(D) Determining the design hour volume (DHV), Directional Design Hour Volume (DDHV), and Design Hour Truck Percentage (DHT) by assigning appropriate Standard K, D, and T Factors for the project, and estimating the AADT for the project.

(E) Performing historical trend analysis and testing its reasonableness. The trend analysis shall include a statement of the method, and the assumptions used to perform the analysis.

(F) Determining the 18-KIP ESAL when required and checking its validity if the forecast has previously been performed.

(G) Performing turning volume forecasts, as required for planning and management purposes.

(H) Preparing the traffic forecasting report based on the comparison of the FHWA and FDOT's Level of Service (LOS) Targets. This report should include all supporting documents used and statements for the traffic forecasting process. If turning movements are involved, schematics diagrams should be included.

(I) Transmitting the traffic forecast reports and its supplemental materials to the requesting office or person.

6. TRAINING

Training related to traffic forecasting process or ***Project Traffic Forecasting Handbook*** can be found on the following websites:

http://cbt.dot.state.fl.us/ois/ProjectTrafficForecasting/index.html

http://wbt.dot.state.fl.us/ois/ProjectTrafficForecasting/index.html

This Virtual Training has material to supplement the ***Project Traffic Forecasting Handbook***. The material includes workable examples for the attendee to apply the lessons learned.

More information available in the Systems Implementation Office Website:
https://www.fdot.gov/planning/systems/training.shtm

7. FORMS

No forms are required by this procedure.