pennsylvania
DEPARTMENT OF TRANSPORTATION

494-25-01

DATE: Feburary 25, 2025

SUBJECT: Publication 46, Chapter 12 – Traffic Engineering Software

TO: District Executives

FROM: Daniel Farley, P.E., Director
Bureau of Operations

Daniel Farley, P.E.

This Strike-off Letter (SOL) is time and resource neutral and provides updates to Chapter 12 – of Publication 46: *Traffic Engineering Manual*, regarding acceptable Traffic Engineering software. This update was reviewed in accordance with Publication 693: *Specification Review Manual*, Chapter 2.1 Standard Clearance Transmittal Process and will rescind the October 25, 2022 SOL (494-22-07).

The following is a summary of changes:

- Synchro Version 12/SimTraffic 12 will replace Synchro Version 11/SimTraffic 11.

Should you have any questions or require additional information, please contact Rickey Barnett, TSMO Arterials and Planning Section, Traffic Signal Unit, at 717.705.6178.

4945/SAG/acp

cc: FHWA Pennsylvania Division Office
Assistant District Executives – Maintenance
Assistant District Executives – Design
Assistant District Executives – Construction
Francis Hanney, P.E., Senior Assistant District Executive – Operations, District 6
Ashwin Patel, P.E., Assistant District Executive – Operations, District 6
District Traffic Engineers
District Traffic Signal Supervisors
District HOP Managers
District Plans Engineers
PennDOT Local Technical Assistance Program
Municipal Advisory Committee
Daryl St. Clair, P.E., Special Assistant, Highway Administration
Douglas Tomlinson, P.E., Chief, Highway Safety and Traffic Operations Division, BOO
Brent Trivelpiece, P.E., Director, Bureau of Construction and Materials
Christine Spangler, P.E., Director, Bureau of Project and Delivery
Daniel Farley, P.E., Director, Bureau of Operations
Stephen Gault, P.E., PTOE, Chief, TSMO Arterials & Planning Section, BOO
Ryan McNary, Chief, TSMO Operations & Performance Section, BOO
Robert Pento, P.E., Chief, Traffic Engineering and Permits Section, BOO
Thomas Glass, Chief, Highway Safety Section, BOO
Jason Bewley, P.E., Senior Civil Engineer Manager, BOO
Benjamin Flanagan, Manager, Traffic Signals Unit, BOO
Michael Dzurko, Manager, Highway Occupancy Permit Unit, BOO
Rickey Barnett, Senior Civil Engineer, Traffic Signals Unit, BOO

12. TRAFFIC ENGINEERING SOFTWARE

12.1 General

Purpose

~~Various software packages are available for use by traffic engineers. Traffic analysis software packages are used to optimize traffic flows and capacity, or to simulate traffic flow. In general, the definition of simulation is the *"dynamic representation of some part of the real world achieved by building a computer model and moving it through time."*~~

~~The purpose of this chapter is to summarize the Department's policy on the use of traffic engineering software.~~ Traffic engineers have access to a variety of software tools designed to improve traffic flow and capacity or simulate traffic operations. This chapter outlines the Department's policies regarding the use of traffic engineering software.

12.2 Specific Software

Supported Software

The Department supports the following traffic analysis tools, methods, and commercial software packages for analysis of the facility types indicated:

Exhibit 12-1 Supported Traffic Engineering Software

Tools/Software	Category[1]	Facility Type					
		Stop Control	Single-Lane Roundabout	Two-Lane Roundabout[2]	Signalized Intersection	Urban Streets	Uninterrupted Flow
HCM Generalized Service Volume Tables	Sketch-Planning				X	X	X
ICU (Intersection Capacity Utilization)	Sketch-Planning				X		
FREEVAL-PA	Sketch-Planning						X
Highway Capacity Software	HCM-Based Analytical	X	X	X	X	X	X
TRANSYT-7F	Optimization				X	X	
Synchro Version ~~11~~12	Optimization and HCM-Based	X[3]	X		X[3]	X[3]	
SimTraffic Version ~~11~~12	Microscopic Simulation	X			X	X	
Trip Generation Software	Sketch-Planning	N/A					
PTV Vistro	Optimization and HCM-Based	X			X		
TruTraffic	Optimization					X	
GDOT Roundabout Analysis Tool	HCM-Based Analytical		X	X			

Notes:
[1]Refer to HCM, Chapter 6, for definitions of Traffic Analysis Tool and Model categories.
[2]Two lane roundabouts refer to two lanes on any approach or within the circulating roadway.
[3]HCM 6th Edition reports in Synchro may be accepted since the HCM 7th Edition did not change the methodology.

Traffic Analysis Tool Selection Process

Based on the recommended traffic analysis tool category or categories identified in Publication 46, Chapter 10.3, the process provided in Chapter 10.3, Traffic Analysis Tool Selection, should be applied to determine which software shown in Exhibit 12-1 should be used when evaluating traffic capacity.

If the desired analytical or simulation software is not found within Publication 46, Chapter 12.2:

1) ~~A written request is to be sent to the appropriate Engineering District Office for consideration;~~ Submit a written request to the appropriate Engineering District Office for consideration.

~~2) Within the request, the reasons why an alternative analytical or simulation software should be clearly identified along with the added benefits of using the alternative software compared to the Department supported software platforms;~~

a) Clearly identify within the request the reasons for using an alternative analytical or simulation software.

b) Include the added benefits of the alternative software compared to the Department-supported software platforms.

2) ~~3) The Engineering District Office will evaluate each request and the District Traffic Engineer will provide a written response as to whether the alternative analytical or simulation software could be used on a particular project;~~ The Engineering District Office will evaluate each request. The District Traffic Engineer will provide a written response indicating whether the alternative analytical or simulation software may be used for a particular project.

3) ~~4) Note that an alternative analytical or simulation software analysis should not be submitted to the Department until a written response has been received by the District Traffic Engineer; and~~ Do not submit an analysis using the alternative analytical or simulation software to the Department until a written response has been received from the District Traffic Engineer.

4) ~~5) If an Engineering District Office receives an alternative analytical or simulation software then coordination with the Bureau of Operations, TSMO Arterials and Planning Section is recommended to ensure that an appropriate way of evaluating the accuracy of the model has been determined.~~ If an Engineering District Office receives an alternative analytical or simulation software request, coordination with the Bureau of Operations, TSMO Arterials and Planning Section is recommended. This ensures an appropriate method for evaluating the model's accuracy has been determined.

Required Use by Department and Consultants

Applicable work done by the Department, or by engineering consultants making submissions for Department review and approval, including but not necessarily limited to design, operational assessments, or Highway Occupancy Permit (HOP) projects, should use the Highway Capacity Manual (7th Edition) and supporting software packages as directed in Publication 46, Chapter 10, and listed in Exhibit 12-1, unless directed otherwise in writing by the Department, and as dictated by a subject project's scope of work.

Unless an alternative analysis tool is used, level-of-service (LOS) calculations and resultant measures of effectiveness should be calculated using the methodologies established by the Highway Capacity Manual (7th Edition) using a supported HCM-based tool identified in Publication 46, Chapter 12.2.

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Synchro Version 12	Optimization and HCM-Based	X[3]	X		X[3]	X[3]	
SimTraffic Version 12	Microscopic Simulation	X			X	X	
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If the desired analytical or simulation software is not found within Publication 46, Chapter 12.2:

1) Submit a written request to the appropriate Engineering District Office for consideration.

   a) Clearly identify within the request the reasons for using an alternative analytical or simulation software.

b) Include the added benefits of the alternative software compared to the Department-supported software platforms.

2) The Engineering District Office will evaluate each request. The District Traffic Engineer will provide a written response indicating whether the alternative analytical or simulation software may be used for a particular project.

3) Do not submit an analysis using the alternative analytical or simulation software to the Department until a written response has been received from the District Traffic Engineer.

4) If an Engineering District Office receives an alternative analytical or simulation software request, coordination with the Bureau of Operations, TSMO Arterials and Planning Section is recommended. This ensures an appropriate method for evaluating the model's accuracy has been determined.

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