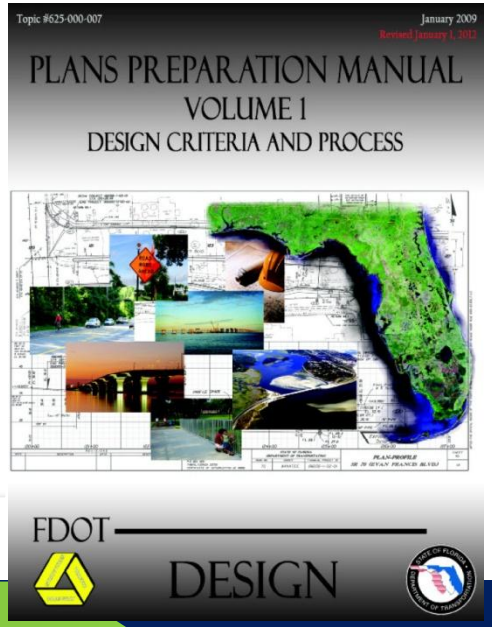
Design Aspects of Standard K Factors

Standard K Factor



FTI & FHD
Florida
Traffic Information
& Highway Data

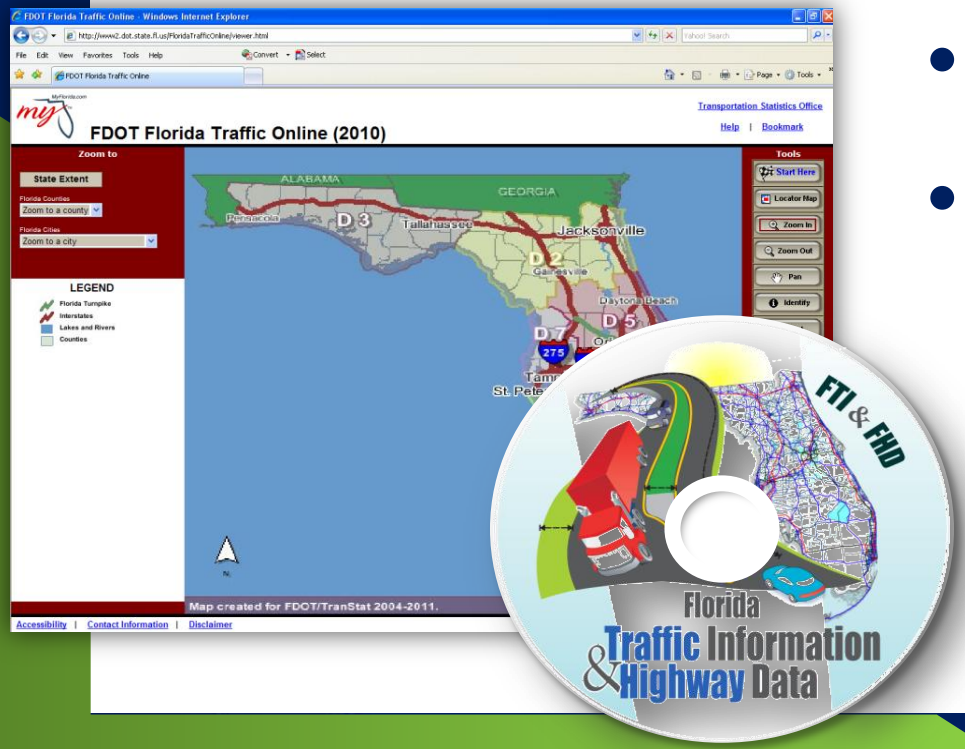
Doug McLeod

What is the K Factor?

Ratio of study hour traffic to the Annual Average Daily Traffic

Standard K Factor

K = Ratio of study hour traffic to the AADT



- Design approach
- Pre-determined
  - For every state road
  - Based on:
    - Area type
    - Facility type

Urbanized Roads & Congestion

Urbanized roadways are heavily congested

- LOS A in the early morning hours
- LOS E during the evening rush hour

Problem with Measured K

Use of measured K factors on congested roads masks true mobility desires and the original intent of planning and designing our roadways for an appropriate level of service.

Operating Conditions

Different conclusions about a highway's operating conditions depending upon the analysis period

Design Approach

Adopting a "design" approach

- K factors are set for planning through design

K becomes a fixed, cost effective parameter

- Standard use of 12-foot through lanes on major high-speed roadways

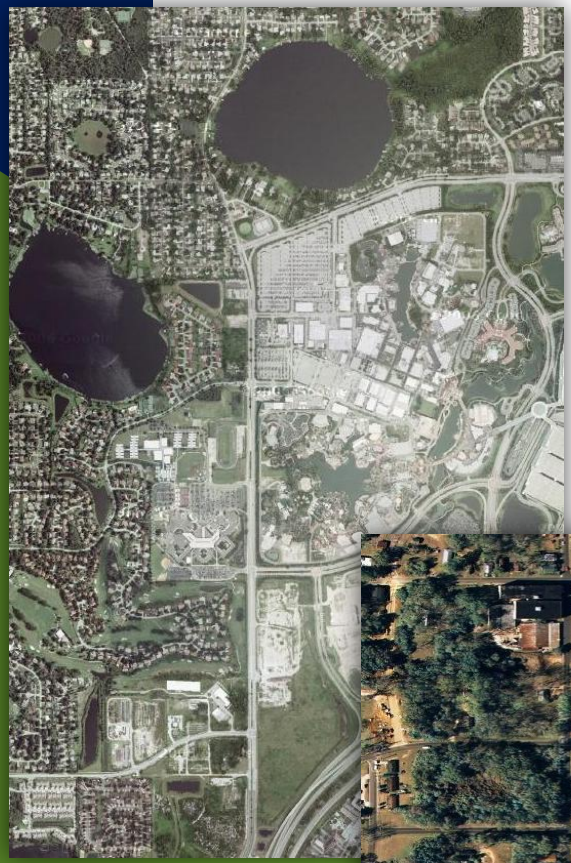
High Speed Roadway Design

High speed roadways:

- Don't design roadways to the nearest inch based on traffic and other considerations
- Simply design with 12-foot lanes, based on previous engineering research

Standard K Factors: Urban/Urbanized

- **Predominant K factor used in urban and urbanized areas is 9%**
  - Approximates a typical weekday peak hour in these developed areas



Recommended Standard K Factors: Developed Areas

In more developed situations, the Department may implement standard K values below the 9% value.

Two Cases:

- **"Core" Limited Access Roadways**
- **Multimodal Designated Areas**

K Factors: Large Urbanized Areas

"Core" limited access roadways leading to the downtowns of the state's largest urbanized areas.

K Factors:
Freeways in Large Urbanized Areas

Example:

Interstate 95 in Miami-Dade & Broward counties

- **Lower K factor in the range of 8% is essentially implementing a multi-hour peak period approach**
- **Decision on exact values**

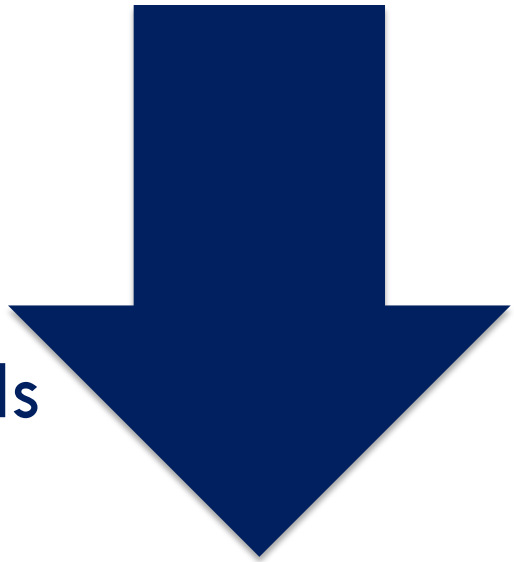
Recommended Standard K Factors: Multimodal Designated Areas

Can use a lower K factor in approved Multimodal Designated Areas, where secondary priority is given to automobiles

- Should include community design standards and a mix of land uses
  - ensure quality pedestrian mobility

MDA & 7.5% K Factor

- 7.5% K factor
  - state arterials

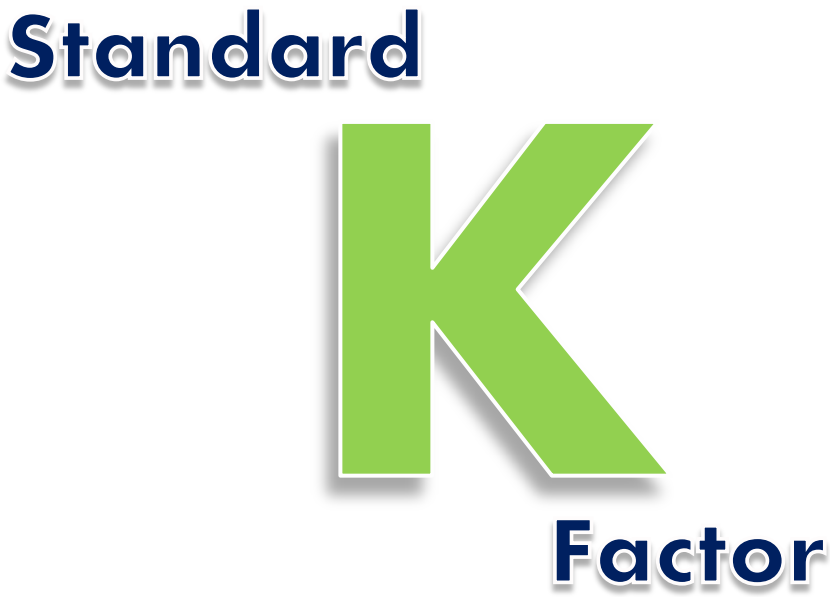


- Lower factor represents the promotion of lower auto speeds over a multi-hour peak period

- Lower auto speeds for travelers in these areas is offset by the positive multimodal planning and design

Benefits of Standard K

- Routine reliance on traffic studies
- Site counts would be minimized
- Factors would be set primarily by the area where roadways are located



1. Promotes better transportation policies and projects by leading to more cost effective plans & designs

Better support future growth in existing developed areas to focus more on multimodal solutions

Practice of predetermining K factors reduces time and effort spent developing K factors

Getting approval for individual K factors for every project

2. Standard K Factor Approach is Consistent

The Department's planning through design staffs understand what K number is to be used and avoids duplication of effort or development of multiple and inconsistent traffic projections at different project levels.

This approach provides a reliable standard avoiding significant debate and circumvents paper exercises to justify numbers.

3. Simple to Understand

The new standards and standard K factor approach are simple to understand and do not involve multiple calculation processes or assumptions.

4. Does Not Imply False Precision

The Standard K factor process does not imply false precision like showing numbers to the nearest one-hundredth of a percent when forecasted traffic volumes may vary by at least 10%.

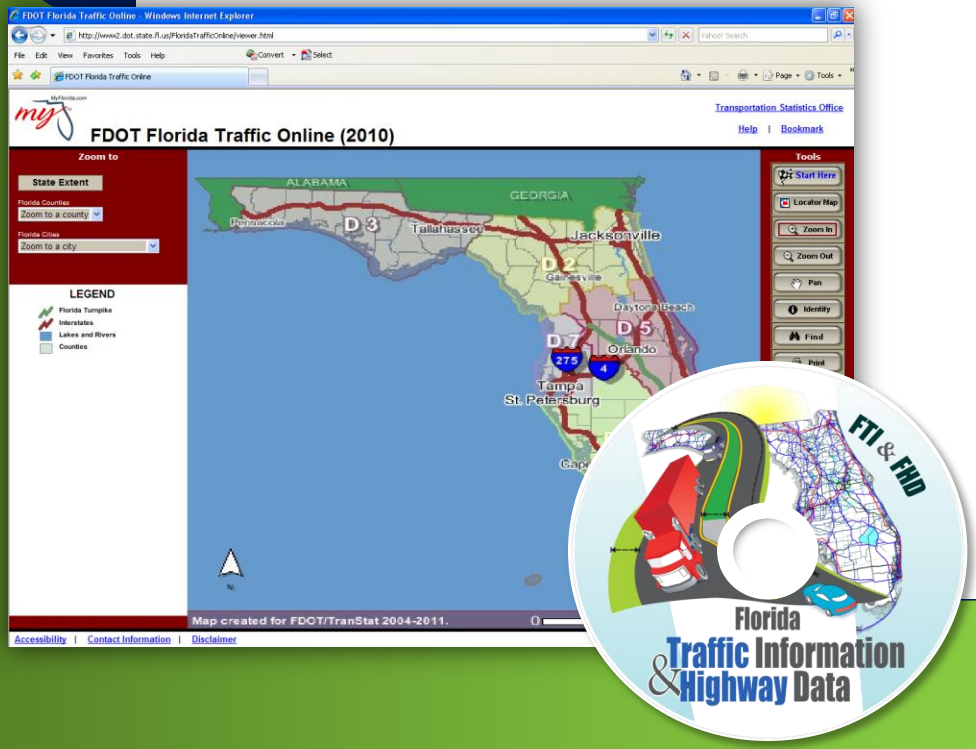
Standard K Factors Concepts

Journal of Transportation of ITE

*The reviews of your paper **"Standard K Factors for Transportation Planning and Design"** were unanimously positive; the first time I have seen that happen with any ITE Journal submission. Congratulations to you and your team on doing some outstanding work that passed a very rigorous review with flying colors.*

Florida Traffic and Highway Data Online Tool & DVD

- One of the most popular technical resources
- Contains virtually all major highway traffic data



Including daily traffic volumes

Applicable K factors for every state roadway segment in Florida

Traffic DVD

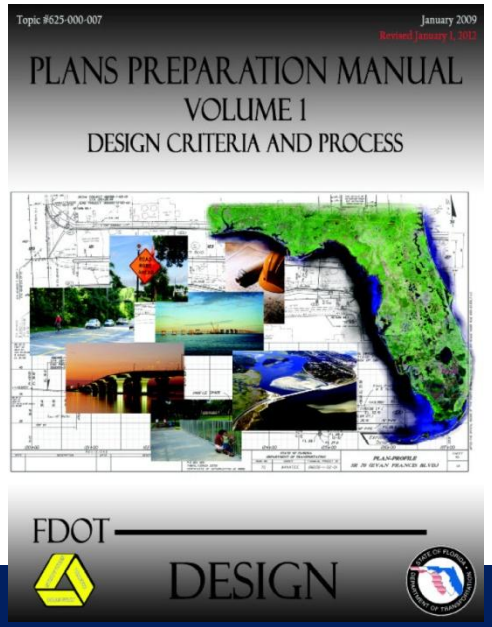
Incorporate Standard K factors into the May 2012 Traffic DVD and Online Tool

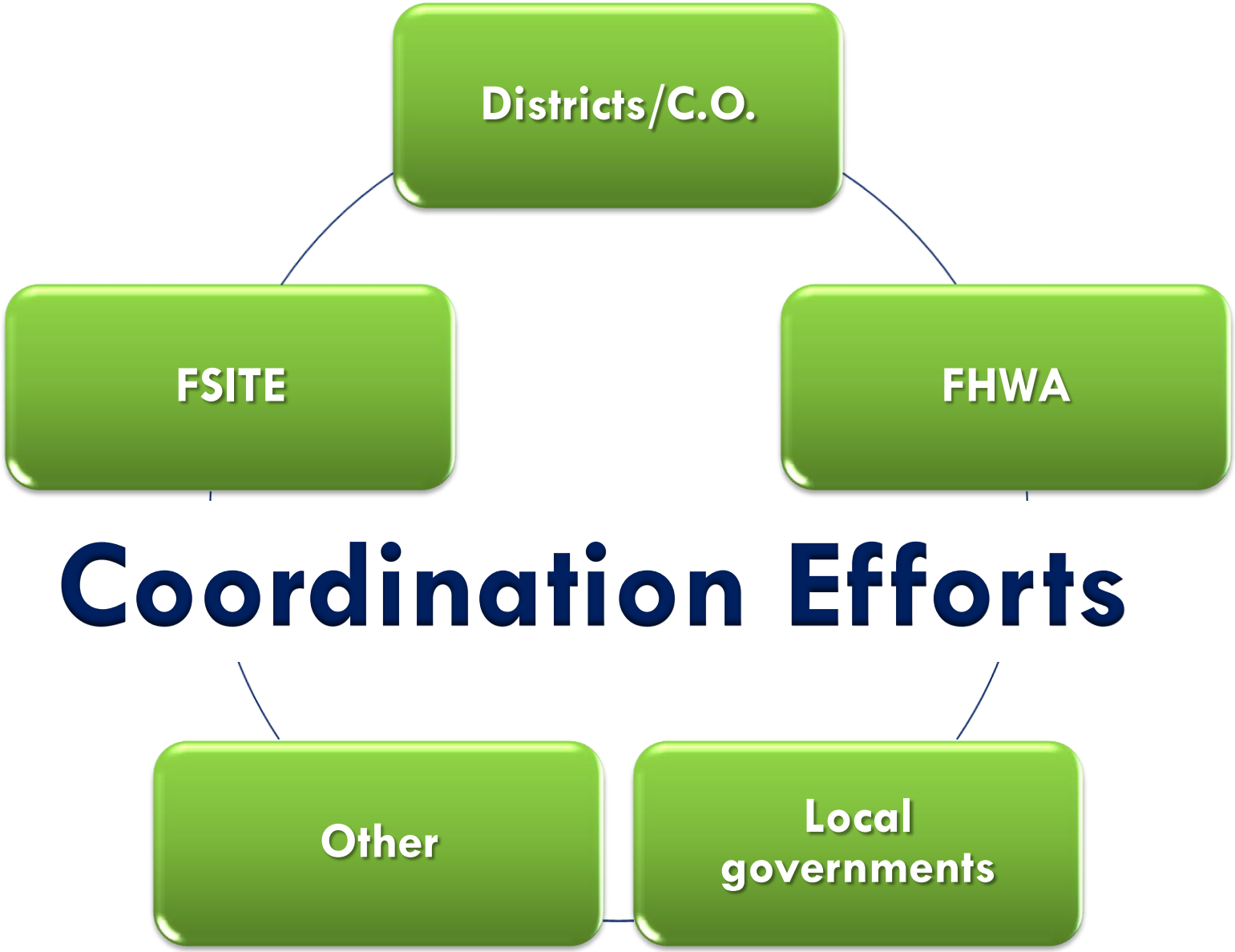
Gives the applicable standard K factor for any state roadway

Consistency in initial planning through final design of projects

Treatment of Standard K Factors in the Plans Preparation Manual

- Relatively minor update to the PPM
  - Probably won't notice a difference
  - Should have minor to no effect on designers
- Reference is simply made to the K factor
  - Not to standard K factor
  - Removal of references to K_{30}




Districts/C.O.
FSITE
FHWA
Coordination Efforts
Other
Local governments

QUESTIONS?

Standard **K** Factor