# How to Prepare a Traffic Study for a Private Development

TexITE Fall 2011 Meeting Aaron W. Nathan, P.E., AICP Kimley-Horn and Associates, Inc. aaron.nathan@kimley-horn.com



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> MARKETING	This recommended practice is a must have for	The second second		
	transportation professionals responsible for preparing and reviewing transportation impact	14 milli alle an can		
> MY PROFILE	analysis studies for new and expanding land			
> LOGIN	developments. This report replaces the proposed			
> LOGOUT	December 2005, containing several key updates	HET NOT		
> CHECK-OUT	such as new references and numerous refinements			
Travel Time Database System	transportation comunity. The report contains practical guidance to encourage consistency in planning site access, on-site circulation and parking layouts, and mitigation alternatives for off-site improvements. It also addresses key topic areas such as trip generation, distribution and assignment, level of service analysis, and traffic impact analysis report preparation. ISBN: ISBN-13: 978-1-933452-56-2; ISBN-10: 1- 933452-56-0 Publisher: ITE Format: Paperback Pages: 128 pp. Publishing Date: 09/10	Member Price: \$ 35.00 Non-Member Price: \$ 43.75 Item #RP-020D		
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# **Purpose and Need for a TIA**

- Provide short- and long-term guidance for on- and off-site improvements
- Assist developers in making critical site planning decisions
- Provide review agencies with critical information to make development review determinations



# Purpose and Need for a TIA (cont.)

The TIA should be a <u>technical</u> document

 Don't let desired outcomes effect your analysis and recommendations



# **Elements of a TIA**

- **1. Project Initiation**
- 2. Context and Framework
- 3. Non-Site Traffic Forecast
- 4. Site Traffic Generation
- 5. Distribution and Assignment
- 6. Analysis
- 7. Site Access and Off-Site Improvements
- 8. On-Site Planning and Parking



# **Common TIA Flaws**

#### What can go wrong along the way...





#### 1a. Common TIA Flaws – Project Initiation

 No initial contact with the reviewing agency to establish project scope

 "Developer needed the study done ASAP"
 "We had to sign a confidentiality agreement"



#### **1b. Keys to Successful Project Initiation**

- Areas of Focus:
  - Study Threshold based on size
  - Study Area limits
  - Committed roadway improvements
  - Other planned development information
  - Accident data
  - Local sensitivities
  - Temporary network anomalies



# 2a. Common TIA Flaws – Context and Framework

#### Field reconnaissance cannot be done via Google Maps and Streetview





# 2a. Common TIA Flaws – Context and Framework (cont.)

Invalid or inappropriate data collection

 Was there a major nearby incident on that day?
 Local ISD calendars (teacher in-service days)

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Academic Calendar/Calendars Home	Acade	emic Calendar				6 8		
Fine Arts Calendar	2011 - 201	2 Academic Calendar Hig	ublights			No.		
Parenting Support Calendar	Date	Event Description	Event Type	1				
Elementary Magnet Application Timeline	August 15-18	Staff Development	Student Holiday	Holiday		1		
Grade Reporting Dates	August 19	Teacher Preparation Day	Student Holiday		1	- TIP		
Assessment Calendar	August 22	First Day of Class First Grading Period Begins						
Graduation Schedule	September 5	Labor Day	Student/Staff Ho	oliday	Academic Calendars			
	September 30	First Grading Period Ends			2044	2042		
	October 3	Fair Day	Student/Staff Ho	oliday	2011 -	endar - English		
	October 4	Staff Development	Student Holiday		<u>▶</u> <u>Cal</u>	endar - Spanish		
	October 5	Second Grading Period Begins	5 ( <sup>1</sup>		High Sch	nool Calendars		

#### 2b. Keys to Successful Context and Framework

- Areas of Focus:
  - Existing Conditions
  - Horizon Years (Build Out, +5 years, etc.)
  - Appropriate Peak Hours (AM, PM, weekend)
  - Background data (traffic, land use, demographics, system, network)
  - Field Reconnaissance during peak periods
  - Traffic data collection



# 3a. Common TIA Flaws – Non-Site Traffic Forecasting

- Inappropriate use of historical trends
  - Exponential growth over an extended period of time
- Regional models may not capture local traffic patterns



# **3b. Keys to Successful Non-Site Traffic Forecasting**

- Areas of Focus:
  - Background traffic growth methodology
    - Build up method
    - Use of modeled volumes
    - Trends or Growth rate
  - Understanding nearby proposed developments



### 4a. Common TIA Flaws – Site Traffic Generation

 Exclusive use of linear rates or regression equations - Need to consider specific land use and its intensity





#### 4b. Keys to Successful Site Traffic Generation

- Areas of Focus:
  - Understanding existing data sources
  - Caution with full reliance on ITE relative to local information
  - Linear rates versus regression equations
  - Special generators
  - Net change in redevelopment scenarios
  - Pass-by, primary, and diverted linked trips



# 5a. Common TIA Flaws – Distribution and Assignment

 "We don't warrant a turn lane – our gas station primarily consists of pass-by trips"
 Difference between driveway volumes and adjacent street traffic volumes



#### 5b. Keys to Successful Distribution and Assignment

- Areas of Focus:
  - Trip Distribution Modeling
  - Trip Assignment, including pass-by trips



# 6a. Common TIA Flaws – Analysis

- No consideration of existing cycle lengths
- Creative use of peak hour factors
- Unsignalized intersections shall consider controlled approaches
- Liberal use of 'optimize splits' in Synchro
- Ignoring multi modal considerations, especially in urban environments



# 6b. Keys to Successful Analysis

- Areas of Focus:
  - Capacity analysis
  - LOS for all modes of travel
  - Signalized versus unsignalized intersections
  - Roadway segment analysis
  - Safety, circulation, neighborhoods, ped / bike, service vehicle access, etc. also need to be considered
  - Formulating mitigation alternatives



# 7a. Common TIA Flaws – Site Access and Off-Site Improvements

#### Ignoring sight distance issues



# 7a. Common TIA Flaws – Site Access and Off-Site Improvements (cont.)

Unattainable mitigation improvements





# 7b. Keys to Successful Site Access and Off-Site Improvements

- Areas of Focus:
  - Establishing goals
  - Developing recommendations
    - Access management
    - Access design
    - Network improvements
    - Local improvements
    - Intersections
  - Implementation schedule



# 8a. Common TIA Flaws - On-Site Planning and Parking

Inadequate / challenging queuing areas



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# 8a. Common TIA Flaws - On-Site Planning and Parking (cont.)

# Review signing and pavement marking plans

# 8a. Common TIA Flaws - On-Site Planning and Parking (cont.)

# Poor pedestrian connectivity





# 8b. Keys to Successful On-Site Planning and Parking

- Areas of Focus:
  - Access points
  - Queuing areas
  - Pedestrian connectivity
  - Speed control
  - Service vehicles
  - Signs and pavement markings
  - Parking



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