



210 N. 20th St. ♦ McAllen, TX 78501 ♦ (956) 681-2700

Trip Generation and Traffic Impact Analysis (TIA)

Process for calculating trip generation
&
Requirements for Level 1, 2, and 3 TIA reports.

June 6, 2008

1:30 PM

**McAllen City Hall
Commission Rm. (3rd floor)**



CITY OF
McALLEN

TRAFFIC OPERATIONS

Trip Generation
&
Traffic Impact Analysis
Requirements

Introduction

PURPOSE FOR PRESENTATION:

As part of the City's subdivision and site plan process, all developments are required to submit a Trip Generation worksheet and, if applicable, a Traffic Impact Analysis (TIA) report.

The purpose for this presentation is to illustrate the differences between a Trip Generation and a TIA and explain the appropriate procedures for carrying out these processes.

Introduction

differences

1 page

**Trip Generation
Worksheet**

**IF
AM or PM
Peak Hour
Trips > 100**



**Thresholds
determine
TIA level**

**Traffic Impact
Analysis**



PE

*several
pages*

*PE with
experience
in traffic*

Trip Generation

DEFINITION:

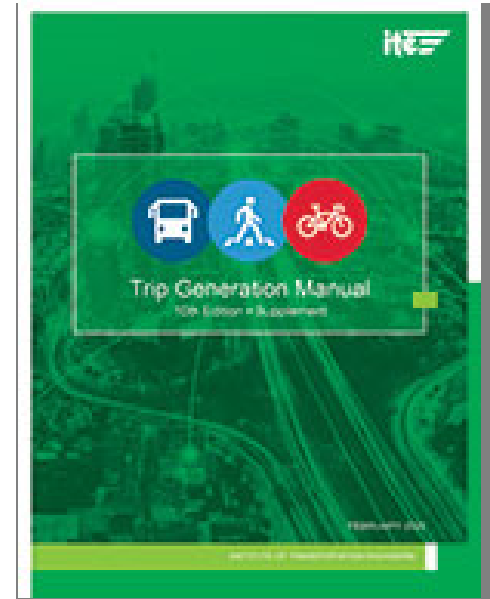
A type of transportation forecasting that predicts the number of trips originating in or destined for a particular traffic analysis zone.

PURPOSE:

To assist staff in determining whether a Traffic Impact Analysis (TIA) will be required.

REFERENCE:

Trip generation numbers are currently calculated using the Institute of Transportation Engineers' (ITE) publication titled *Trip Generation*, 10th edition. The set of books can be purchased from ITE or are available for use at the Traffic Operations Department.



Trip Generation, 10th edition

Institute of Transportation Engineers (ITE)
www.ite.org

Volume 1 Desk Reference
Volume 2 Data: Part 1, 2, and 3 (3 Books)

ISBN: 1-933452-92-7


Trip Generation

WORKSHEET:

A Trip Generation Worksheet is available to simplify calculation requirements. Please use this form when submitting a trip generation for review. The form can be found at the Planning Department and online at www.mcallen.net/departments/traffic.

INFORMATION NEEDED:

- Land Use (not to be confused with Zoning)
- Gross Square Footage, *if applicable*
- Number of units, *if applicable*



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TRIP GENERATION WORKSHEET

Complete parts A and B as an aid to determine if your project requires a Traffic Impact Analysis (TIA).

A. Subdivision Information

Subdivision Name: _____
 Location: _____
 Applicant: _____ Owner Agent
 Address: _____ Phone Number: _____

B. Trip Generation Calculation

The texts needed to complete this table are available at the Planning Department. See back of sheet for more information.

ITE Code	Anticipated Land Use	Project Size			AM Peak Hour Trips	PM Peak Hour Trips	Weekday Trips
		Acres	GFA	# of Units			

Comments: _____
 Prepared by: _____ Date: _____
 Address: _____ Phone Number: _____

(For Official Use Only, Do Not Write In This Box)

_____ A traffic impact analysis is required. The agent preparing the study must meet with City staff to discuss the scope and requirements of the study before beginning the study.
 _____ A traffic impact analysis is **not required**. The traffic generated by the proposed development does not exceed the threshold requirements.

Comments: _____

Reviewed by: _____ Date: _____ STID#: _____

GFA = Gross Floor Area (bldg size sq.ft.) ITE = Institute of Transportation Engineers, Trip Generation, 10th Edition.


Trip Generation

Residential

EXAMPLE:

A14-acre tract of land proposed for residential development to consist of 50 homes.





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 Address: _____ Phone Number: _____

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* Texts needed to complete this table are available at the Planning Department. See back of sheet for more information.

ITE Code	Anticipated Land Use	Project Size			AM Peak Hour Trips	PM Peak Hour Trips	Weekday Trips
		Acres	GFA	# of Units			
210	Single-Family Detached Housing	14	n/a	50			

Comments: _____
 Prepared by: _____ Date: _____
 Address: _____ Phone Number: _____

(For Official Use Only, Do Not Write In This Box)

_____ A traffic impact analysis is required. The agent preparing the study must meet with City staff to discuss the scope and requirements of the study before beginning the study.

ITE Code	Anticipated Land Use	Project Size			AM Peak Hour Trips	PM Peak Hour Trips
		Acres	GFA	# of Units		
210	Single-Family Detached Housing	14	n/a	50		

From ToC

ITE Land Use Name

known

known

p. 272

Single-Family Detached Housing (210)

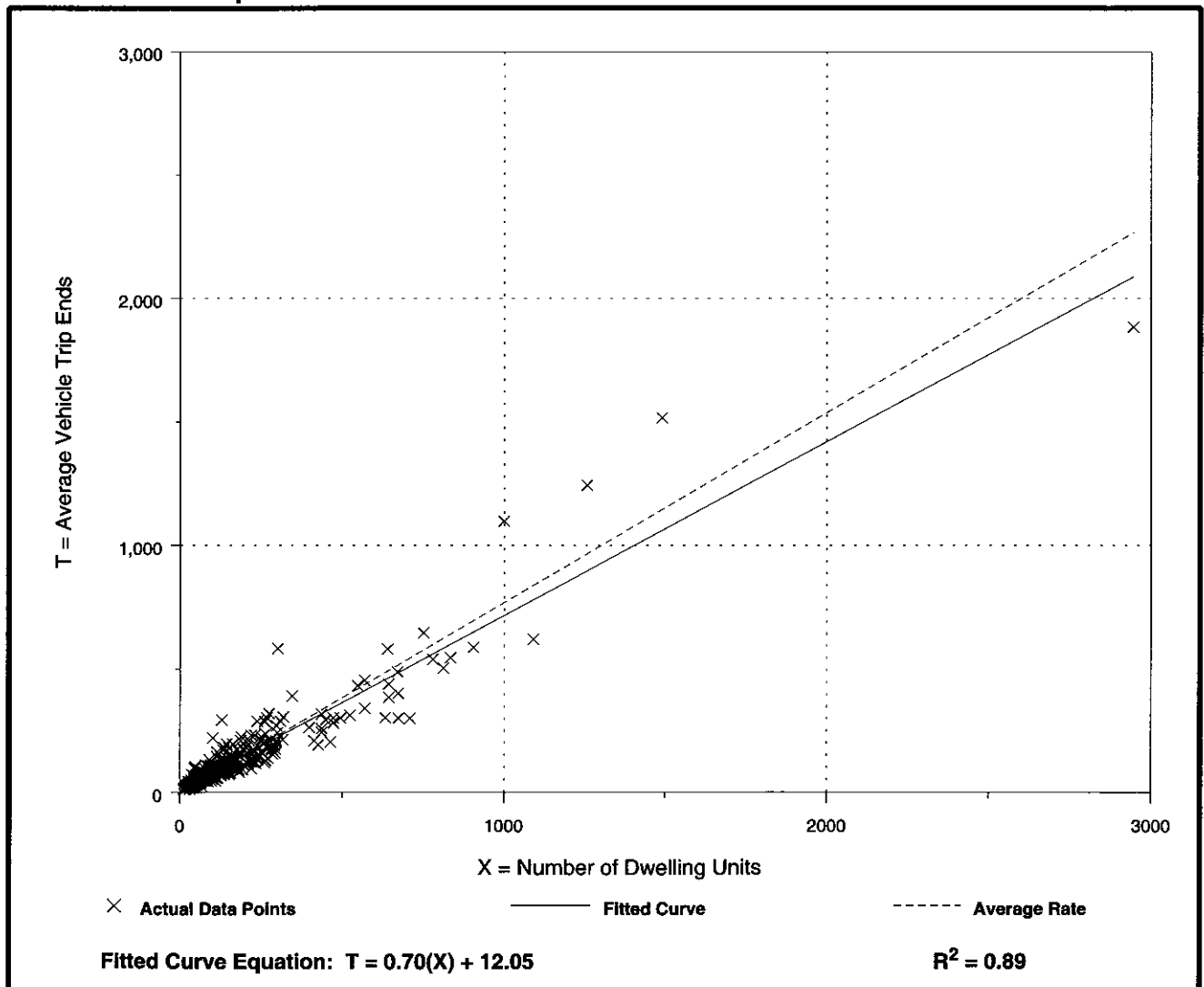
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
A.M. Peak Hour of Generator

Number of Studies: 335
 Avg. Number of Dwelling Units: 183
 Directional Distribution: 26% entering, 74% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.77	0.33 - 2.27	0.91

Data Plot and Equation



Contact
Traffic Staff

Use Weighted Average Rate

1. Compatible with ITE
Land Use Code?

Single-Family
Detached Housing

2. Size within
Data Extremes

50 homes

3. Number of
Data Points?

3+ 335 studies

4. Regression
Equation?

Use Regression
Equation

(Fitted
Curve
Equation)

Yes 335 studies

5. Standard Deviation
≤110 Percent?

No Yes
Fitted Curve
Equation

7. Twenty or More
Data Points?

$$T = 0.70(X) + 12.05$$
$$= 0.70(50) + 12.05$$
$$= 47.05 \text{ trips}$$

= 48 trips

6. Data Cluster Okay?

Use Weighted
Average Rate

8A. R² ≥ 0.75? And
Within Cluster?

8B. Std. Dev. ≤ 110%
And Within Cluster?

If 8A is yes & 8B is yes

Choose Line at Cluster

If 8A is yes & 8B is no

Use Regression Equation

If 8A is no & 8B is yes

Use Weighted Average Rate

If 8A is no & 8B is no

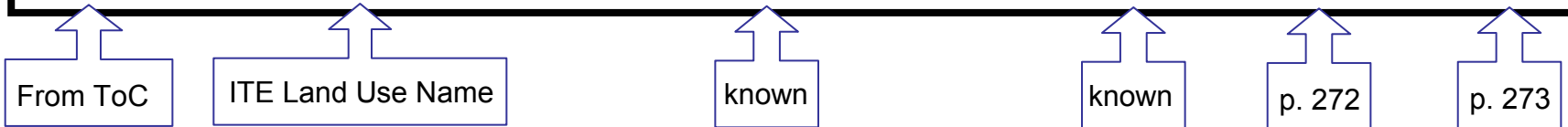
Use Weighted Average Rate

ITE Recommended Procedure for Selecting Between Trip Generation Average Rates and Equations

Example for AM
Peak Hour Trips

Trip Generation

ITE Code	Anticipated Land Use	Project Size			AM Peak Hour Trips	PM Peak Hour Trips
		Acres	GFA	# of Units		
210	Single-Family Detached Housing	14	n/a	50	48	60



Threshold Requirements for TIA:

Am/Pm PHT* ≤ 100

TIA not Required

Am/Pm PHT* > 100

TIA Required

The *PM Peak Hour* is calculated using the same method.

*PHT = Peak Hour Trips


Trip Generation

Commercial

EXAMPLE:

A commercial development proposed as a 7,000-SF clothing store.





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TRIP GENERATION WORKSHEET

Complete parts A and B as an aid to determine if your project requires a Traffic Impact Analysis (TIA).

A. Subdivision Information

Subdivision Name: _____
 Location: _____
 Applicant: _____ Owner Agent
 Address: _____ Phone Number: _____

B. Trip Generation Calculation

The texts needed to complete this table are available at the Planning Department. See back of sheet for more information.

ITE Code	Anticipated Land Use	Project Size			AM Peak	PM Peak	Weekday
		Acres	GFA	# of Units	Hour Trips	Hour Trips	Trips

Comments: _____
 Prepared by: _____ Date: _____
 Address: _____ Phone Number: _____

(For Official Use Only, Do Not Write In This Box)

_____ A traffic impact analysis is required. The agent preparing the study must meet with City staff to discuss the scope and requirements of the study before beginning the study.
 _____ A traffic impact analysis is not required. The traffic generated by the proposed development does not

ITE Code	Anticipated Land Use	Project Size			AM Peak Hour Trips	PM Peak Hour Trips
		Acres	GFA	# of Units		
870	Apparel Store	n/a	7,000	n/a		

From ToC

ITE Land Use Name

known

p. 1630

Apparel Store (870)

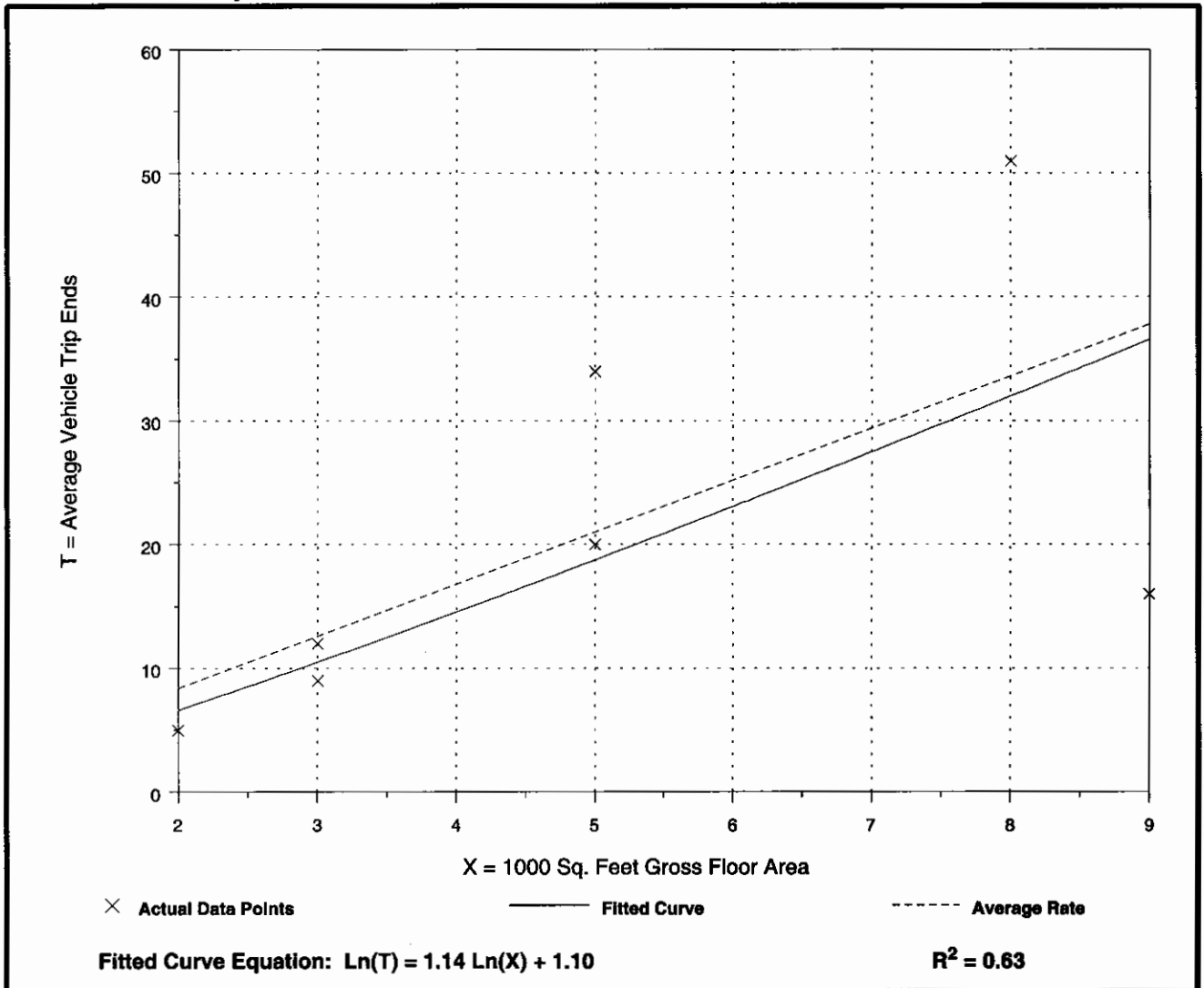
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
P.M. Peak Hour of Generator

Number of Studies: 7
 Average 1000 Sq. Feet GFA: 5
 Directional Distribution: 50% entering, 50% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

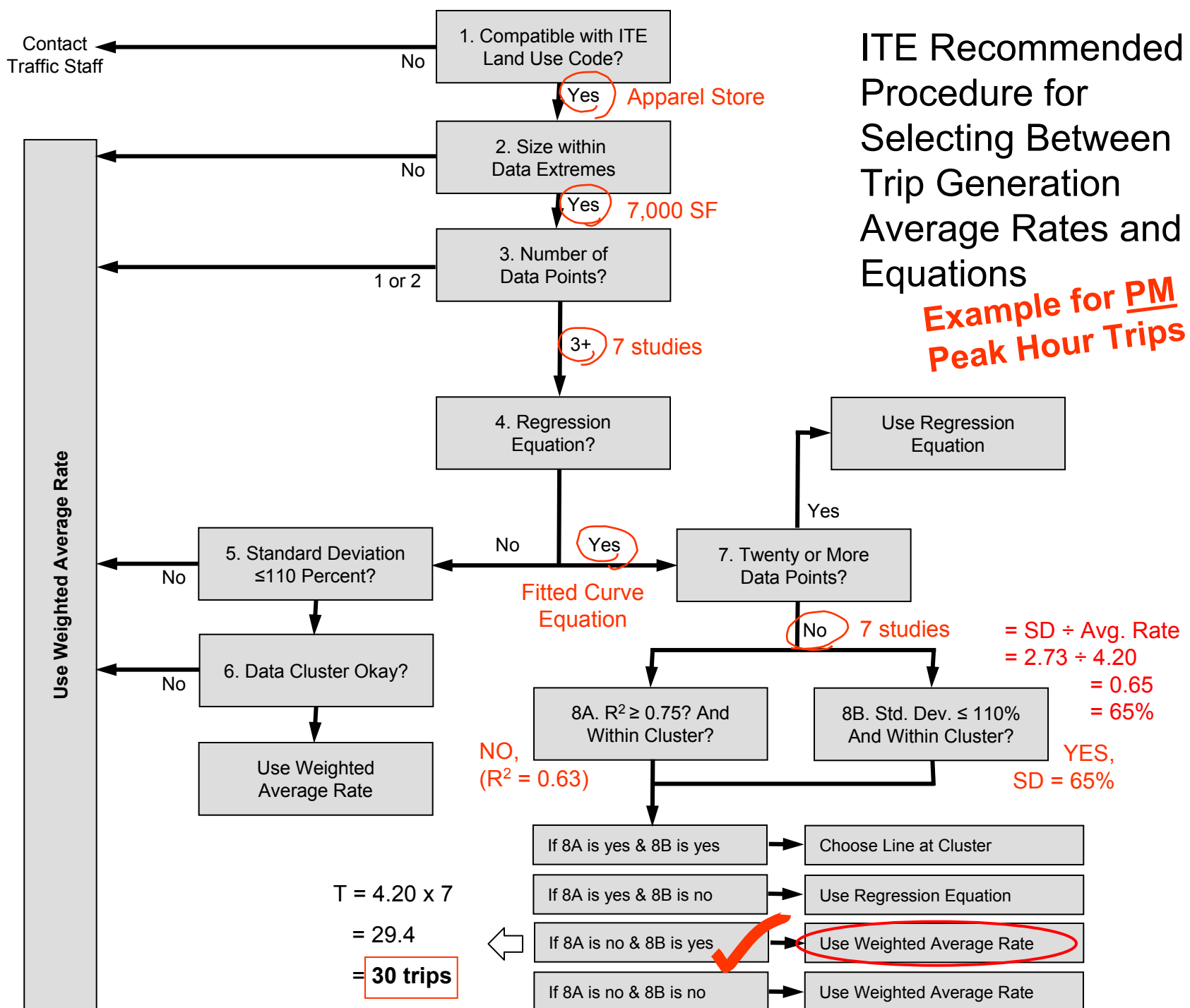
Average Rate	Range of Rates	Standard Deviation
4.20	1.78 - 6.80	2.73

Data Plot and Equation



ITE Recommended Procedure for Selecting Between Trip Generation Average Rates and Equations

Example for PM Peak Hour Trips



Trip Generation

ITE Code	Anticipated Land Use	Project Size			AM Peak Hour Trips	PM Peak Hour Trips
		Acres	GFA	# of Units		
870	Apparel Store	n/a	7,000	n/a	34	30

From ToC

ITE Land Use Name

known

p. 1628

p. 1630

Threshold Requirements for TIA:

Am/Pm PHT* ≤ 100

TIA not Required

Am/Pm PHT* > 100

TIA Required

The *AM Peak Hour* is calculated using the same method.

*PHT = Peak Hour Trips

questions?

Traffic Impact Analysis (TIA)

PURPOSE:

A traffic impact analysis (TIA) is an important tool that identifies the need for any improvements to a transportation system to reduce congestion, improve safety, provide adequate access, and mitigate the impact associated with the project.

Who?

Must be conducted by or under the direction of a licensed professional engineer in the State of Texas with experience in Traffic Engineering

What?

New developments, changes to existing developments, and conditional use permits

When?

Submit at time of application (for plat/site plan, and conditional use permits)

Where?

Submit to the Planning Department; courtesy copies may be sent to Traffic

Why?

Evaluation of site access, traffic circulation, roadway system capacity, and for mitigation requirements for site

Traffic Impact Analysis (TIA)

The purpose of these guidelines is to establish procedures to ensure the following:

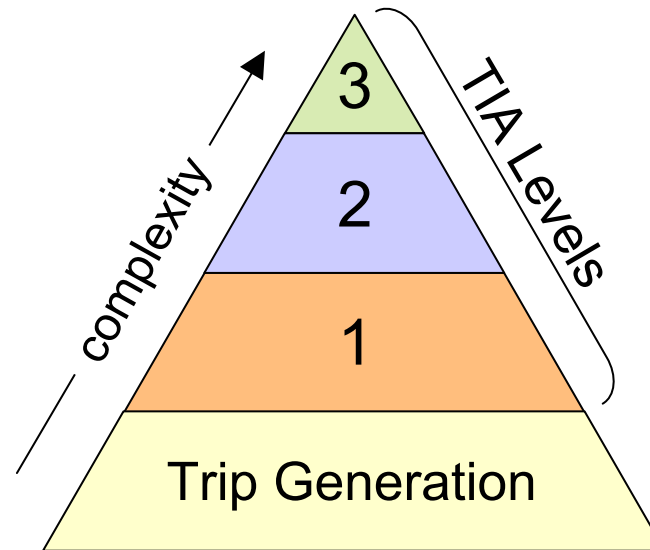
- consistency of analysis
- adequacy of information
- timely review by Traffic Operations staff

LEVELS OF ANALYSIS:

Level 1 – Site Analysis

Level 2 – Project Area Analysis

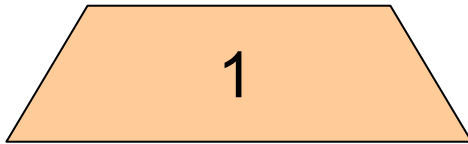
Level 3 – Corridor Analysis



Each successive level builds on the previous level(s) of analysis.

Traffic Impact Analysis (TIA)

LEVEL ONE:



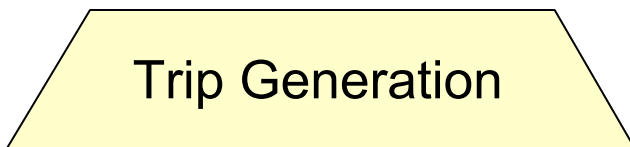
Developments generating 101-300 trips

Placement and design of internal (on site) features such as parking layout, access to public streets, site circulation, intersection sight distance, pedestrian circulation, delivery and loading areas and internal public street layout.

Study radius: $\frac{1}{4}$ mile.

EXAMPLE:

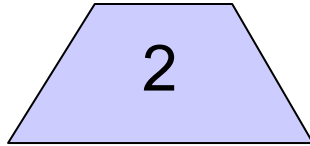
Medium commercial or multi-family development, medium residential subdivisions or an addition to an existing development.



Peak hour traffic

Traffic Impact Analysis (TIA)

LEVEL TWO:



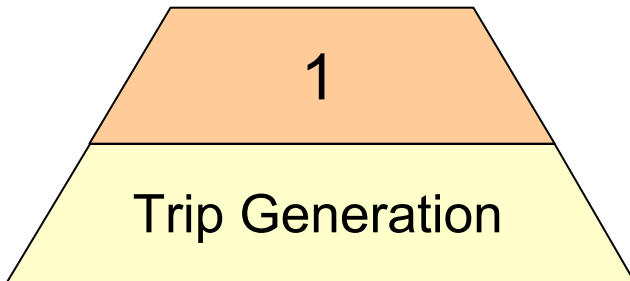
Developments generating 301-500 trips

On site analysis (level one) plus the impact of the development and its traffic on perimeter streets, adjoining developments, pedestrians and public transit facilities.

Study radius: $\frac{1}{2}$ mile.

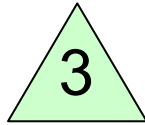
EXAMPLE:

Medium- to large-sized residential and commercial developments in new areas.



Traffic Impact Analysis (TIA)

LEVEL THREE:



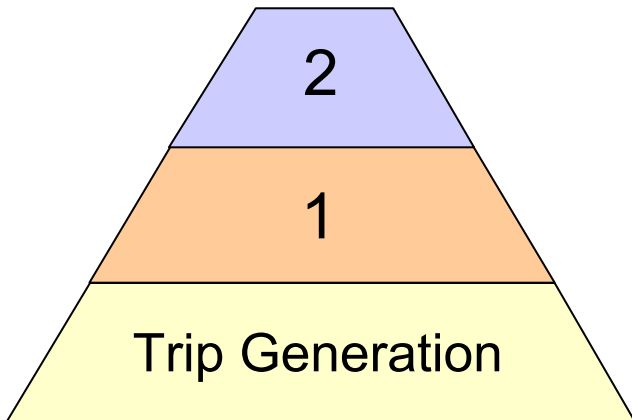
Developments generating 501 or more trips

On site analysis (level one) plus project analysis (level two) plus the impact of the proposed development on a larger study area and the street and highway system that is being impacted by the addition or improvement of arterial streets and by other large developments in the study area.

Study radius: 1 mile.

EXAMPLE:

Large commercial and residential developments.



Traffic Impact Analysis (TIA)



100 or less trips	No TIA
101-300 trips	Level 1
301-500 trips	Level 2
501 or more trips	Level 3

Requirements:

- bound
- typed (8 ½" x 11")
- exhibits (11" x 17")

CAVEATS:

A TIA **may** be required at the discretion of Traffic Operations staff for sensitive areas where a project may impact an already congested or high-accident location, or when specific site access and safety issues are of concern.

A TIA **may not** be required if the project is part of a larger development for which a TIA has already been prepared.

Traffic Impact Analysis (TIA)

Level 1 TIA Outline

- I. Project Description**
 - a. Complete description
 - b. Phase timeline of subdivision breakdown
- II. Transportation Circulation Setting**
 - a. Surrounding land uses
 - b. Site uses
 - c. Roadways
 - d. Features
- III. Analysis and Impact**
 - a. Trip generation
 - b. Trip distribution
 - c. Other impacts
- IV. Recommendations**
- V. Attachments and Figures**

Levels 2 & 3 TIA Outline

- I. Project description**
 - a. Complete description
 - b. Phase timeline/subdivision breakdown
- II. Transportation circulation setting**
 - a. Surrounding land uses
 - b. Site uses
 - c. Roadways
 - d. Photographs
 - e. Features
- III. Analysis and impact**
 - a. Trip generation
 - b. Trip distribution
 - c. Level of service analysis
 - d. Other impacts
- IV. Recommendations and Mitigation measures**
 - a. Measures
 - b. Timeline
- V. Attachments and figures**

Traffic Impact Analysis (TIA)

Level 1 TIA Outline

- I. **Project description**
 - a. Complete description
 - b. Phase timeline/subdivision breakdown
- II. **Transportation circulation setting**
 - a. Surrounding land uses
 - b. Site uses
 - c. Roadways
 - d. Features
- III. **Analysis and impact**
 - a. Trip generation
 - b. Trip distribution
 - c. Other impacts
- IV. **Recommendations**
- V. **Attachments and figures**

City of McAllen - Traffic Operations

Traffic Impact Analysis Guidelines

TIA Report Guidelines

The following are a set of guidelines to assist in the preparation of a Traffic Impact Analysis Report (TIA). These guidelines are not all inclusive; The Traffic Operations staff may require additional information or analysis. Traffic Operations will instruct as to which Level (I, II, III), and radius of study that is required for the TIA on project basis.

Project Description

- **Complete Description**
 - Describe proposed development include all relevant details, such as square footage, number of drive-through lanes. Supplement with exhibits illustrating driveways, parking (site-circulation)
- **Phase Timeline or Subdivision breakdown**
 - Describe phase time table and/or subdivision break down. Present as much of the development as possible this allows for an adequate estimation of the total impact.

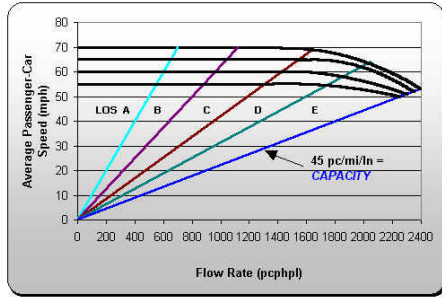
Traffic Impact Analysis (TIA)

Levels 2 & 3 TIA Outline

- I. Project Description**
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- II. Transportation Circulation Setting**
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 - b. Site uses
 - c. Roadways
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- III. Analysis and Impact**
 - a. Trip generation
 - b. Trip distribution
 - c. Level of service analysis
 - d. Safety and operational analysis
- IV. Recommendations and Mitigation measures**
 - a. Measures
 - b. Timeline
- V. Attachments and figures**

Traffic Impact Analysis (TIA)

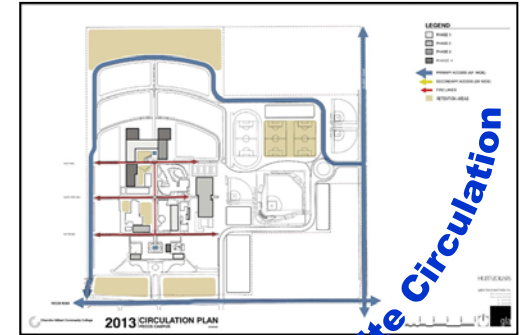
Types of Operational and Safety Analysis:



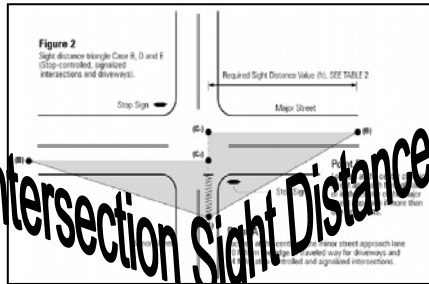
Level of Service (LOS)



Signal Warrant Analysis



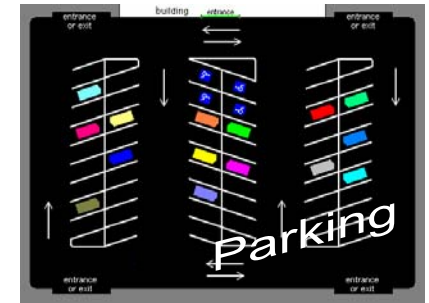
On site Circulation



Intersection Sight Distance



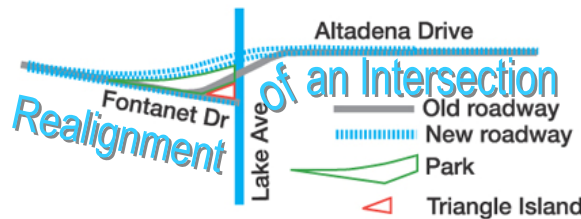
Safe Travel Speed



parking



Turning Bays



Realignment of an Intersection

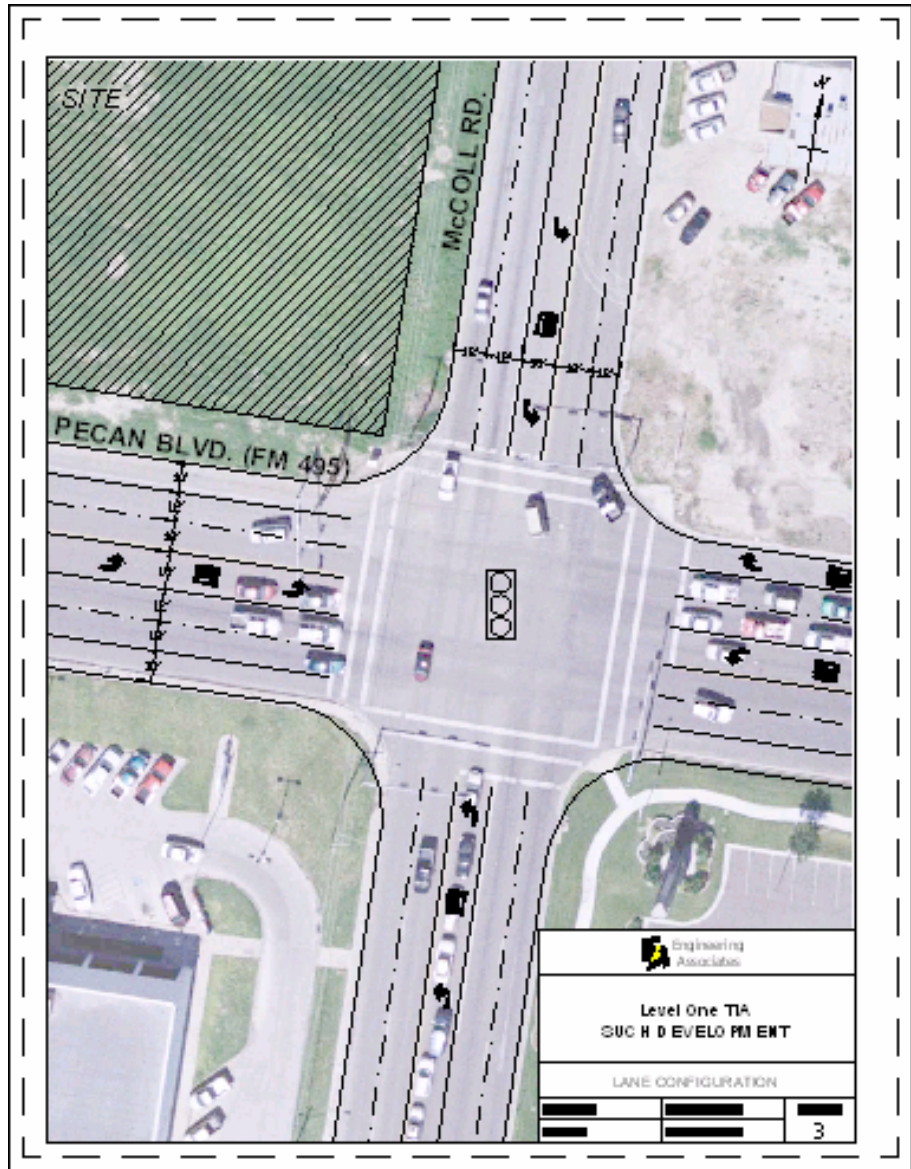


Visibility on Curves

Traffic Impact Analysis (TIA)

Sample
Exhibit

*Lane
Configuration*



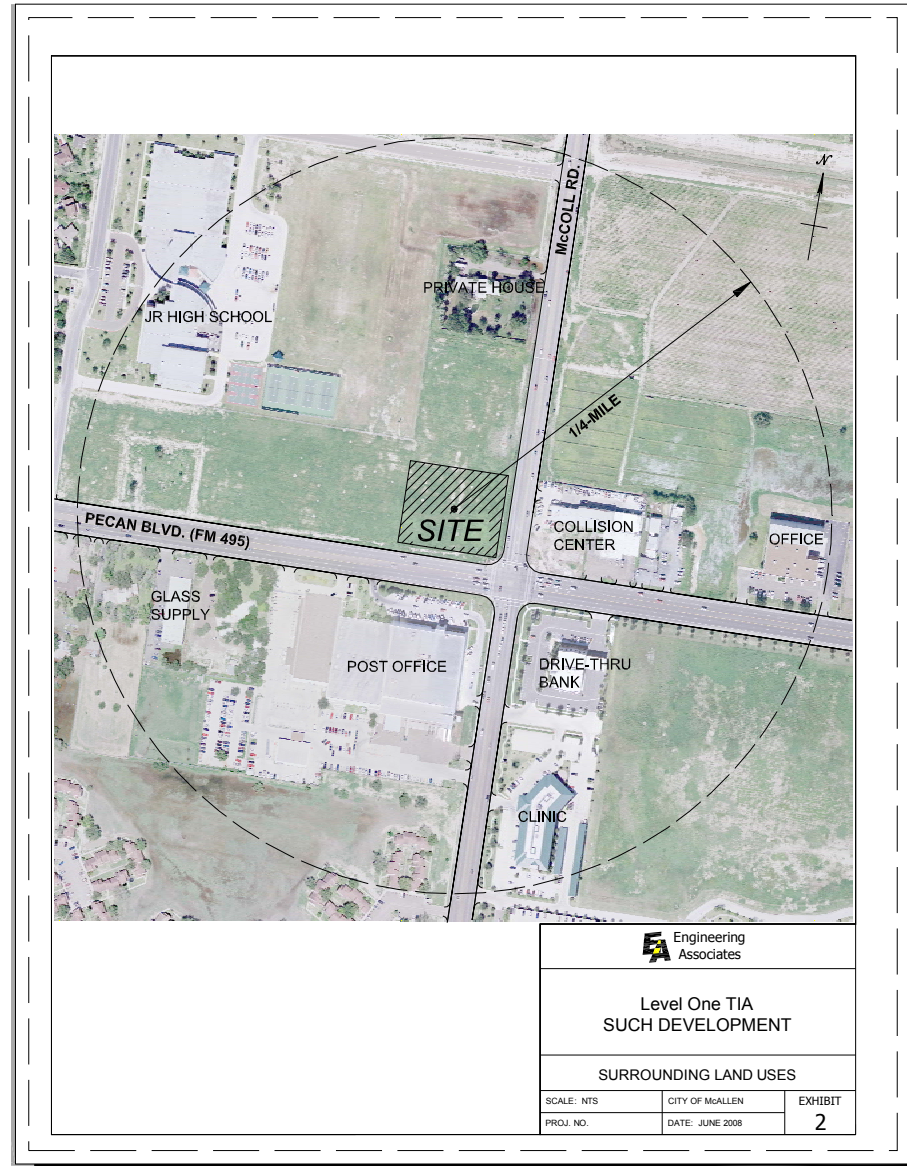
- vicinity map
- aerial photograph
- surrounding land uses
- trip distribution
- trip assignment
- access point spacing
- traffic volumes:
 - ✓ pre-development
 - ✓ post-development
- turning movement counts*
- traffic signs and signals

**shall be conducted on an average Tuesday through Thursday for a 2-hour AM peak period (7AM to 9AM) and a 2-hour PM peak period (4PM to 6PM) excluding weeks with a holiday.*

Traffic Impact Analysis (TIA)

Sample Exhibit

*Surrounding
Land Uses*



Traffic Impact Analysis (TIA)

questions?

Sample TIA OUTLINE LEVEL 1

- I. Project Description
 - a. Complete description
 - b. Phase timeline of subdivision breakdown
- II. Transportation Circulation Setting
 - a. Surrounding land uses
 - b. Site Uses
 - c. Roadways
 - d. Features
- III. Analysis & Impact
 - a. Trip Generation
 - b. Trip Distribution
 - c. Other impacts
- IV. Recommendations
- V. Attachments & Figures

Sample TIA OUTLINE LEVEL 2 & 3

- I. Project Description
 - a. Complete description
 - b. Phase timeline of subdivision breakdown
- II. Transportation Circulation Setting
 - a. Surrounding land uses
 - b. Site Uses
 - c. Roadways
 - d. Photographs
 - e. Features
- III. Analysis & Impact
 - a. Trip Generation
 - b. Trip Distribution
 - c. Level of service analysis
 - d. Safety and Operational Analysis
- IV. Recommendations and Mitigation Measures
 - a. Measures
 - b. Timeline
- V. Attachments & Figures

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- **Phase Timeline or Subdivision breakdown**
 - Describe phase time table and/or subdivision break down. Present as much of the development as possible this allows for an adequate estimation of the total impact.

Transportation Circulation Setting

- **Existing & Proposed site uses:**
 - Describe the existing and proposed site uses including zoning, and land uses. Supplement with an exhibit.
- **Existing & Proposed surrounding land uses:**
 - Describe the existing and proposed land uses and zoning for the adjacent property and surrounding area. Supplement with and exhibit.
- **Existing & Proposed Roadways**
 - Describe existing roadways within the designated area; include: classification, condition, number of lanes, width, dedicated lanes, driveways in study area and signals phases for turning movements. Supplement with an exhibit.
 - Count data shall be includes and shall not be older than 1 year or up to date with development.
- **Photograph and Aerial of Existing Roadways**
 - Photographs of the adjacent streets. Supplement with an exhibit.
- **Existing & Proposed features**
 - Illustrate existing and proposed driveways, medians, pedestrian islands, traffic calming, sidewalks, etc...
- **Analysis & Impact**
 - Trip distribution and justification. Supplement with an exhibit for each proposed and existing driveways showing percentages and volumes.

- Trip generation shall be estimated for the number of daily trips, am peak hour trips and pm peak hour trips. Show break down for entering and exiting trips, include code and description. Supplement with an exhibit illustrating trip assignments per driveway.
- **Level of Service (LOS) Analysis**
 - Where an intersection or roadway may experience a loss in LOS due to the estimated traffic generation of a project an analysis must be performed. Present condition (existing conditions) and projected conditions with the development must be analyzed. The latest version of the “Highway Capacity Manual” (HCM) by the Transportation Research Board (TRB) shall be the method used to conduct this analysis on both signalized and un-signalized intersections.

LOS Pre-Development	A	B	C	D	E	F
Projected LOS	Minimum Acceptable LOS					
A	NA					
B	B	NA				
C	C	C	NA			
D	C	C	C	NA		
E	C	C	C	D	NA	
F	C	C	C	D	E	NA

- The preferred analysis software to determine LOS is Syncho 7.
- **Signal Warrant Analysis**
- **Other Safety and Operational Analysis**
 - On-Site Circulation
 - Intersection Sight Distance
 - Parking
 - Realignment of an intersection
 - Necessity for turning bays
 - Safe travel speed
 - Visibility on curved roadways

Transportation Circulation Setting

- **Mitigation Measures**
 - Address possible mitigation measures
 - Possible improvements
 - Traffic control device warrants
 - Parking control
 - Roadway design features including Traffic Calming
 - Discuss schedule of implementation on measures include milestones

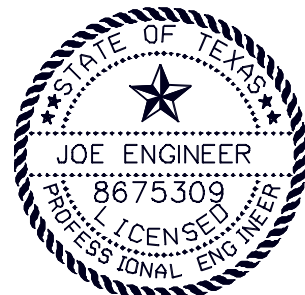
Level One Traffic Impact Analysis (TIA) Report

SUCH DEVELOPMENT

NW Corner, Intersection of N. McColl Road and Pecan Boulevard
McAllen, Texas

Prepared by:
Joe Engineer, P.E.
Engineering Associates
210 N. 20th St.
McAllen, TX 78501

May 30, 2008



Joe Engineer

05/30/08

May 30, 2008

Mr. Esteemed Developer
Developer's Inc.
1 Developer's Row
McAllen, Texas 78501

Re: Level One Traffic Impact Analysis
Proposed Such Development
1600 McColl Road
McAllen, Texas

Dear Mr. Developer:

Engineer Associates has prepared this Level One Traffic Impact Analysis (TIA) as per the request of the City of McAllen Traffic Operations Division for the above mentioned proposed development.

Project Description

The proposed development is located in west McAllen at the northwest corner of East Pecan Boulevard (FM 465) and North McColl Road (FM 2061) within City Council District 6. The proposed development will be a 15,000 square foot dental office and 5,000 square foot pharmacy. The proposed development will be completed in one phase.

Site and Surrounding Land Uses

The study area for the proposed development includes the area within a one-fourth mile radius from the site boundaries. The area directly to the west and the proposed area are currently undeveloped. The area to the northwest is a Junior High School. The area south of the proposed development is the main regional United States Post Office. The areas to the south east and directly to the east are commercial and retail and the area to the north east is undeveloped.

Roadways

The southern boundary of the proposed development is Pecan Boulevard (FM 495). Pecan Boulevard is a four lane high speed arterial with a two-way left turn lane and ten foot shoulders. Both east and west bound approaches to McColl Road have left turn bays and the westbound approach has a dedicated right turn lane. The eastern boundary of the proposed development is McColl Road. McColl road is a four lane principal arterial with a two-way left turn lane. Both north and south approaches to Pecan Boulevard have left turn bays. McColl does not have shoulder in the area.

Estimated Trip Generation

The Seventh Edition of the ITE Trip Generation manual was used to estimate the projected trip generation. These estimations were calculated for the AM and PM peak hours for the generators using land uses Medical-Dental Office Building (ITE Code: 720) and Pharmacy/Drugstore without Drive-Through Window (ITE Code: 880). The trip rates and projections are shown below in Table 1 and Table 2, respectively.

Table 1. ITE Trip Rates

ITE Code	Trips		%entering / % exiting	
	A.M.	P.M.	A.M.	P.M.
720 – Medical-Dental Office Building	3.62/1000 sf.	4.45/1000 sf.	40/60	50/50
880 – Pharmacy/Drugstore w/o Drive-Through Window	7.64/1000 sf.	11.07/1000 sf.	49/51	50/50

Table 2. Total Projected Trips

ITE Code	Trips		entering / exiting	
	A.M.	P.M.	A.M.	P.M.
Dental Office	54	67	22/32	33/34
Pharmacy	38	55	19/19	28/27
Total	92	122	41/51	61/61

The P.M. Peak projection for estimated trip generation of the proposed development warrants an access point trip origins and destination assignment analysis.

Trip Distribution

The proposed development will have two access points: one facing Pecan Boulevard and the other facing McColl Road. Being that Pecan Boulevard is classified as a high speed arterial and is expected to carry more volume, 60% the trip origins and destinations were assigned it's to access point. The McColl access point was assigned 40% the projected trips. An enumeration of the projected trips assigned to each access point is shown in Table 3.

Table 3. PM Peak Trip Assignments

Access Point Distribution	Entering		Exiting	
	Dental Office	Pharmacy	Dental Office	Pharmacy
Pecan Blvd.	20	17	20	16
McColl Rd.	13	11	14	11
Total	33	28	34	27
	61		61	

Study Results

This traffic study identified two generators: the proposed dental office and the proposed pharmacy. The trip generation estimate was based on the PM peak for the generator. The total contribution to the adjacent roadways is 61 trips entering and 61 trips exiting. This does not require mitigations to the existing infrastructure at this time.

Attachments

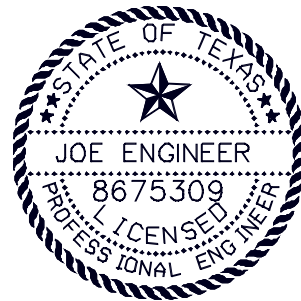
1. Trip Generation Worksheet
2. Exhibit 1: Vicinity Map
3. Exhibit 2: Surrounding Land Uses
4. Exhibit 3: Lane Configuration
5. Exhibit 4: Trip Distribution

This report has been prepared to address the City of McAllen Level One TIA requirements. Please feel free to contact myself for any question related to this report.

Thank you,

Joe Engineer, P.E.
Engineering Associates

Attachments





CITY OF McALLEN

TRAFFIC OPERATIONS

210 N. 20th St. ♦ McAllen, TX 78501 ♦ (956) 681-2700

TRIP GENERATION WORKSHEET

Complete parts A and B as an aid to determine if your project requires a Traffic Impact Analysis (TIA).

A. Subdivision Information

Subdivision Name: Such Development

Location: NW corner of the intersection of N. McColl Rd. and Pecan Blvd.

Applicant: Joe Engineer, P.E. Owner Agent

Address: 210 N. 20th St., McAllen, TX 78501 Phone Number: (956) 688-3420

B. Trip Generation Calculation

The texts needed to complete this table are available at the Planning Department. See back of sheet for more information.

ITE Code	Anticipated Land Use	Project Size			AM Peak Hour Trips	PM Peak Hour Trips
		Acres	GFA	# of Units		
720	Medical-Dental Office Bldg.	n/a	3,620	n/a	54	67
880	Pharmacy/Drugstore w/o DTW	n/a	7,640	n/a	38	55

Comments: Proposed development will be completed in one phase.

Prepared by: Joe Engineer, P.E. Date: 05/15/08

Address: 210 N. 20th St., McAllen, TX 78501 Phone Number: (956) 688-3420

(For Official Use Only, Do Not Write In This Box)

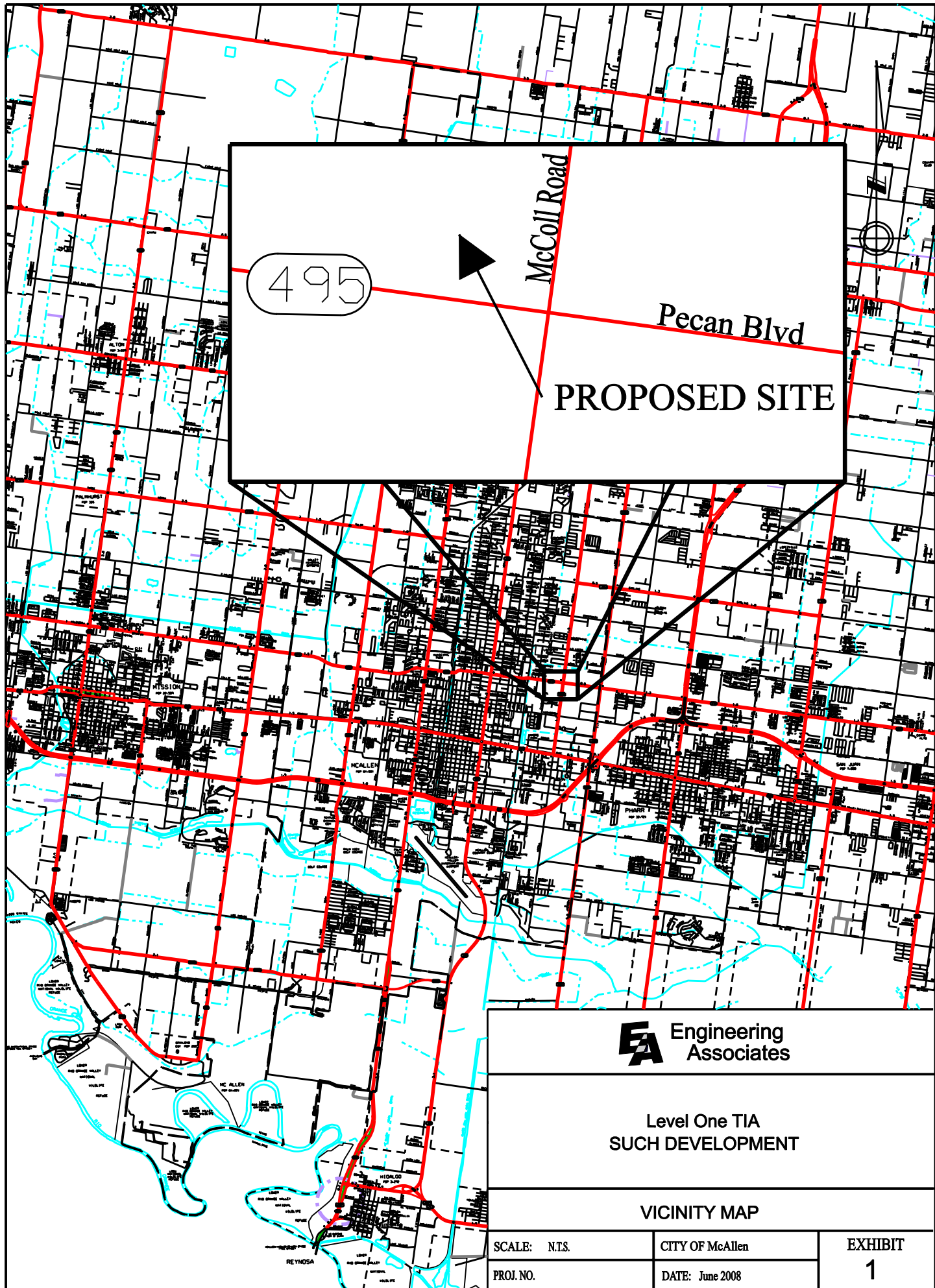
A traffic impact analysis is required. The agent preparing the study must meet with City staff to discuss the scope and requirements of the study before beginning the study.

A traffic impact analysis is **not required**. The traffic generated by the proposed development does not exceed the threshold requirements.

Comments:

The combined PM Peak Hour Trips for the development add up to 122 trips > 100, TIA required.

Reviewed by: Mike Miranda Date: 05/16/08 STID#: 123



495



McColl Road

Pecan Blvd

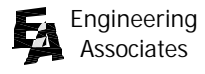
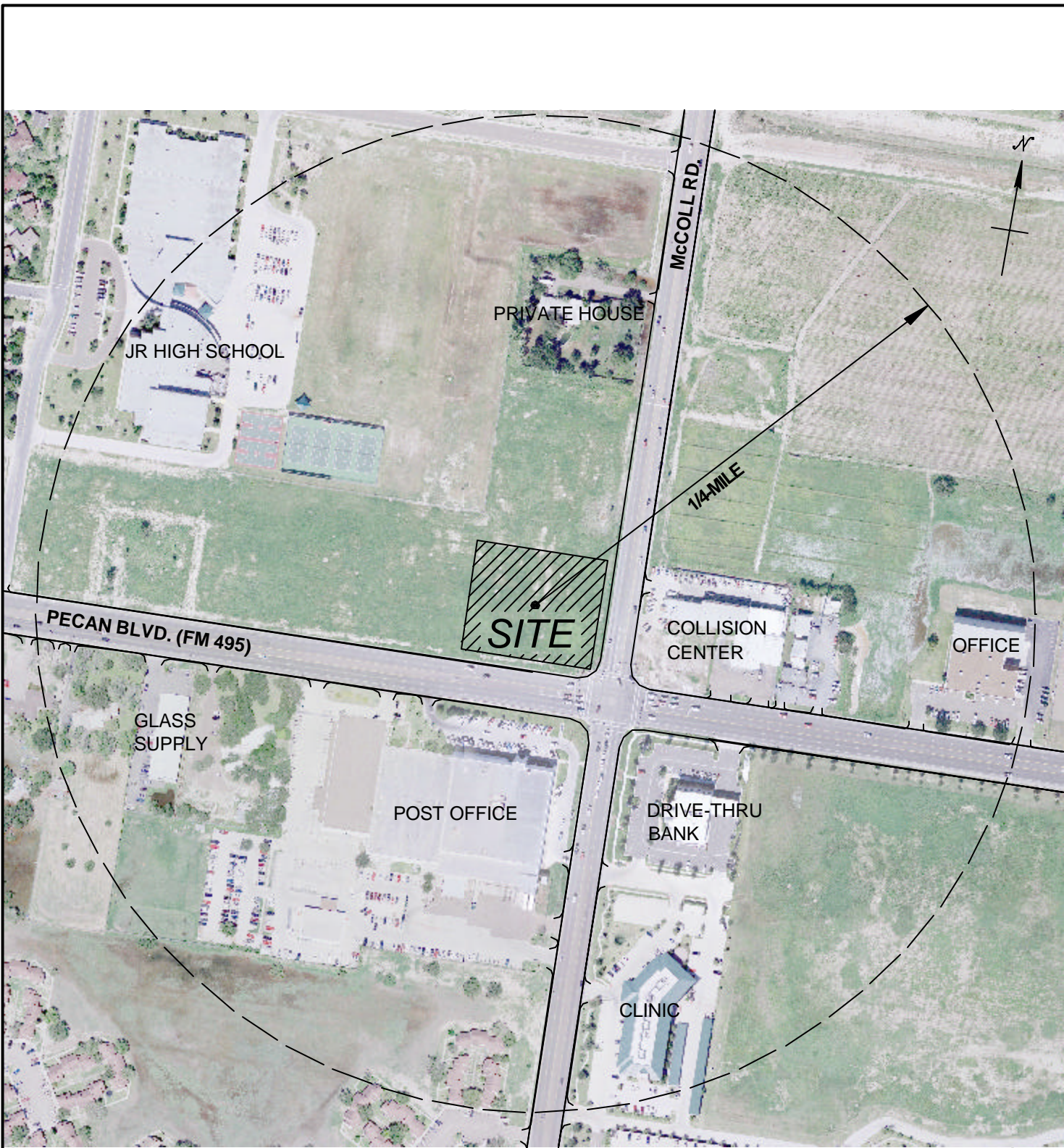
PROPOSED SITE



Level One TIA
SUCH DEVELOPMENT

VICINITY MAP

SCALE: N.T.S.	CITY OF McAllen	EXHIBIT 1
PROJ. NO.	DATE: June 2008	

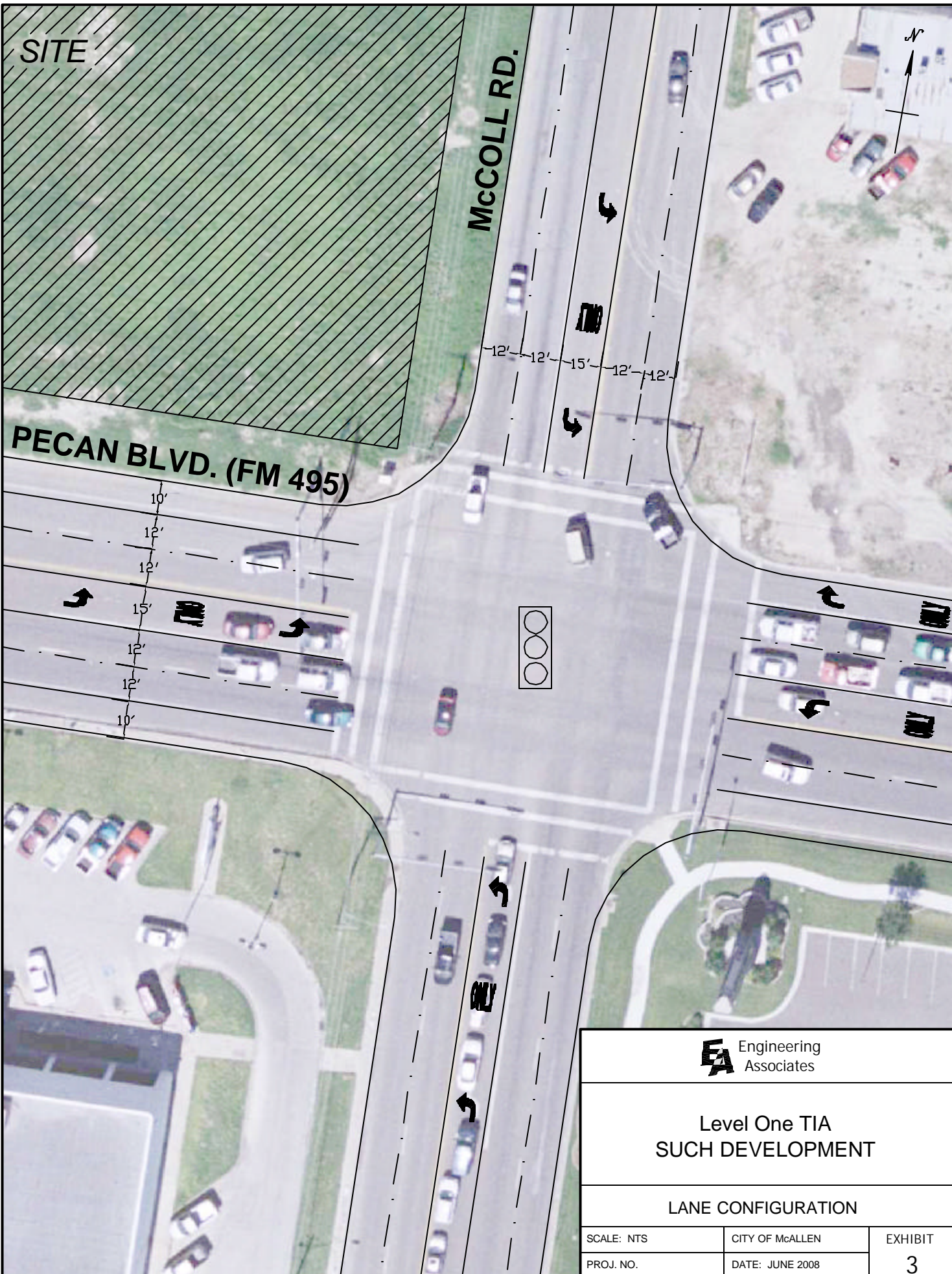


Engineering Associates

Level One TIA
SUCH DEVELOPMENT

SURROUNDING LAND USES

SCALE: NTS	CITY OF McALLEN	EXHIBIT 2
PROJ. NO.	DATE: JUNE 2008	



SITE

McCOLL RD.

PECAN BLVD. (FM 495)

10'
12'
12'
15'
12'
12'
10'

12' 12' 15' 12' 12'

EA Engineering Associates

Level One TIA
SUCH DEVELOPMENT

LANE CONFIGURATION

SCALE: NTS

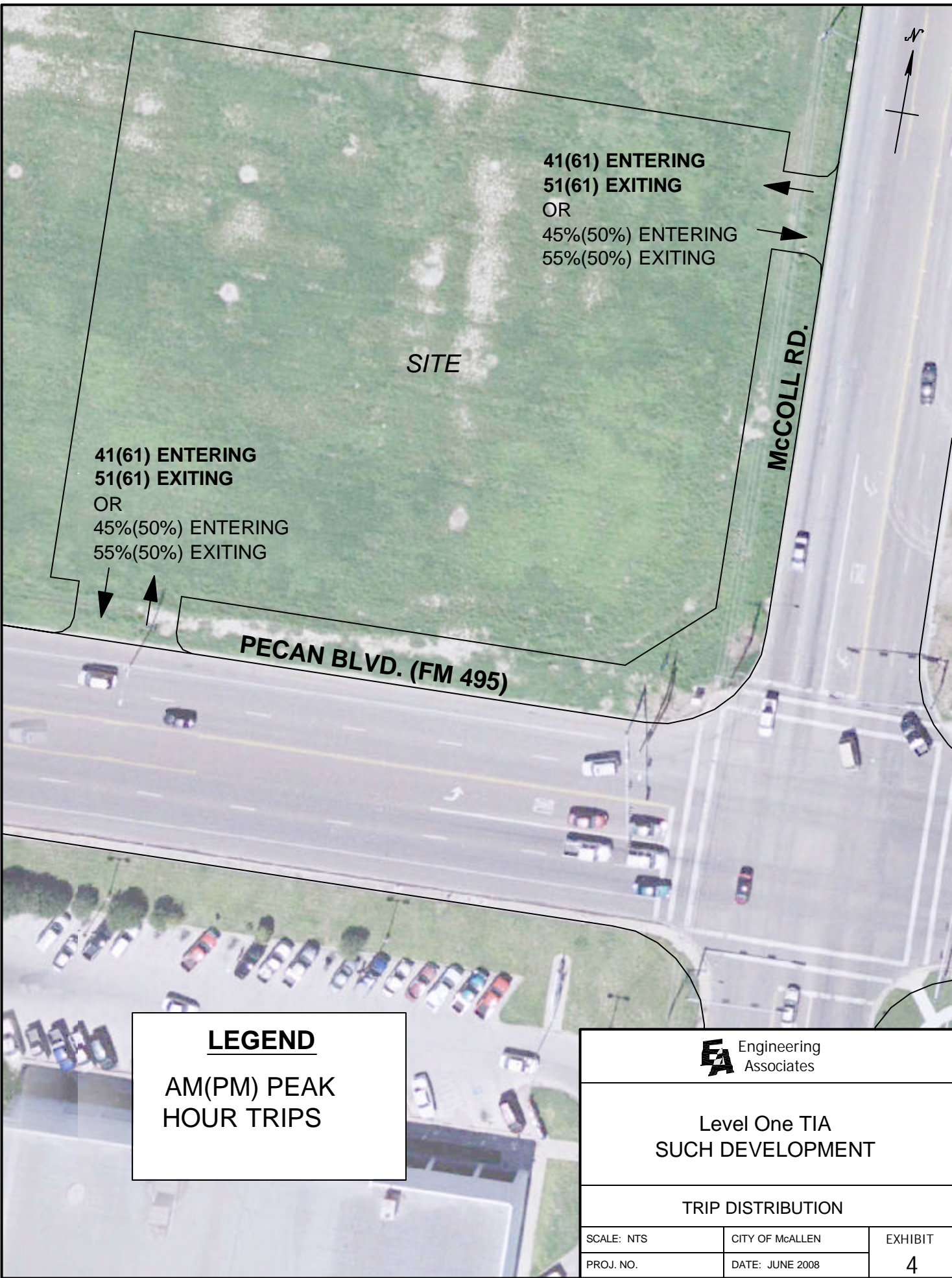
CITY OF McALLEN

EXHIBIT

PROJ. NO.

DATE: JUNE 2008

3



41(61) ENTERING
 51(61) EXITING
 OR
 45%(50%) ENTERING
 55%(50%) EXITING

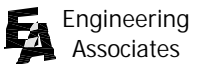
41(61) ENTERING
 51(61) EXITING
 OR
 45%(50%) ENTERING
 55%(50%) EXITING

SITE

PECAN BLVD. (FM 495)

MCCOLL RD.

LEGEND
 AM(PM) PEAK
 HOUR TRIPS

		
Level One TIA SUCH DEVELOPMENT		
TRIP DISTRIBUTION		
SCALE: NTS	CITY OF McALLEN	EXHIBIT 4
PROJ. NO.	DATE: JUNE 2008	



Technical Resources

[Home](#) > [Technical Resources](#) > [Topics](#) > [Trip and Parking Generation](#) > [Trip Generation, 10th Edition Formats](#)

Trip Generation Manual, 10th Edition Supplement - Now Available

Both the electronic and the hard copy versions are available today for purchase. All sales of Trip Generation bundles will now include the Supplement.

ITE, the leader in trip generation for more than four decades, has released *Trip Generation Manual*, 10th Edition. This release offers not only modernized content but also contemporary delivery. In early 2020, ITE released the [Supplement](#) which provides significantly expanded multimodal data. The Supplement is included in purchases of Trip Generation bundles or [can be purchased separately](#) as an add-on to previously purchased bundle.

Users now have access to a significantly expanded and enhanced data set with more than 1,700 new data points—a 30 percent increase—and new urban, person-based trip data. The ability to access the ITE trip generation data set has also been significantly improved through the introduction of searchable electronic material previously only available in hard-copy format and first-ever access to the underlying data through a new web-based application, ITETripGen.

Trip Generation Manual, 10th Edition Bundles							
	Volume 1 - Desk Reference	Volume 2 - Land Use Data Plots	Trip Generation Handbook	Supplement	ITETripGen Web-Based Application	Price	
						Member	Non-Member
Standard Bundle	Print Version	Print Version	Print Version	Included	Included	\$895	\$1,195
Electronic Bundle	PDF	PDF	PDF	Included	Included	\$695	\$995

Trip Generation Manual, 10th Edition Individual Products				Member	Non-Member
Volume 1 - Desk Reference	Hard Copy			\$100	\$150
	PDF			\$75	\$125
Volume 2 - Land Use Data Plots	Volume 2 - Land Use Data Plots in its entirety is not available for individual purchase. It is only available as part of a bundle				
Land Use Package 1 Residential, Lodging, Recreational	PDF			\$350	\$495
Land Use Package 2 Port/Terminal, Industrial, Institutional, Medical, Office	PDF			\$350	\$495
Land Use Package 3 Retail, Services	PDF			\$350	\$495
Trip Generation Handbook	Hard Copy			\$100	\$150
	PDF			\$75	\$125
Trip Generation Manual, 10th Edition - Supplement	Hard Copy			\$100	\$150
	PDF			\$100	\$150
ITETripGen Web-Based App	ITETripGen Web-Based App is not available for individual purchase. It is only available as part of a bundle				