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Memorandum

Date	May 29, 2008	From	Ali Kazmi Sindhu Avalokita
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Subject	Border Highway West FINAL Traffic Projection Methodology		

INTRODUCTION

TxDOT El Paso District has asked Jacobs Engineering to develop traffic projections for the Border Highway project, the limits of which extend from the interchange of I-10 with US 85 to the interchange of Cesar Chavez (Loop 375) with US 54. The traffic projections will be developed for 2015 (base year) and 2035 (design year). The limits of this project (hereinafter called the 'Border Highway West' corridor) are as shown in **Figure 1**. These projections will be used in support of 30% schematic design plans and environmental documentation for this project. The projections will be developed for the No-Build scenario and three "build" alternatives, with each build alternative including a toll and non-toll scenario.

Upon analyzing the link volume to capacity under these three different scenarios, Jacobs will recommend a preferred set of improvements from a traffic operations standpoint. This memorandum describes the proposed methodology for developing the link traffic projections in this corridor.

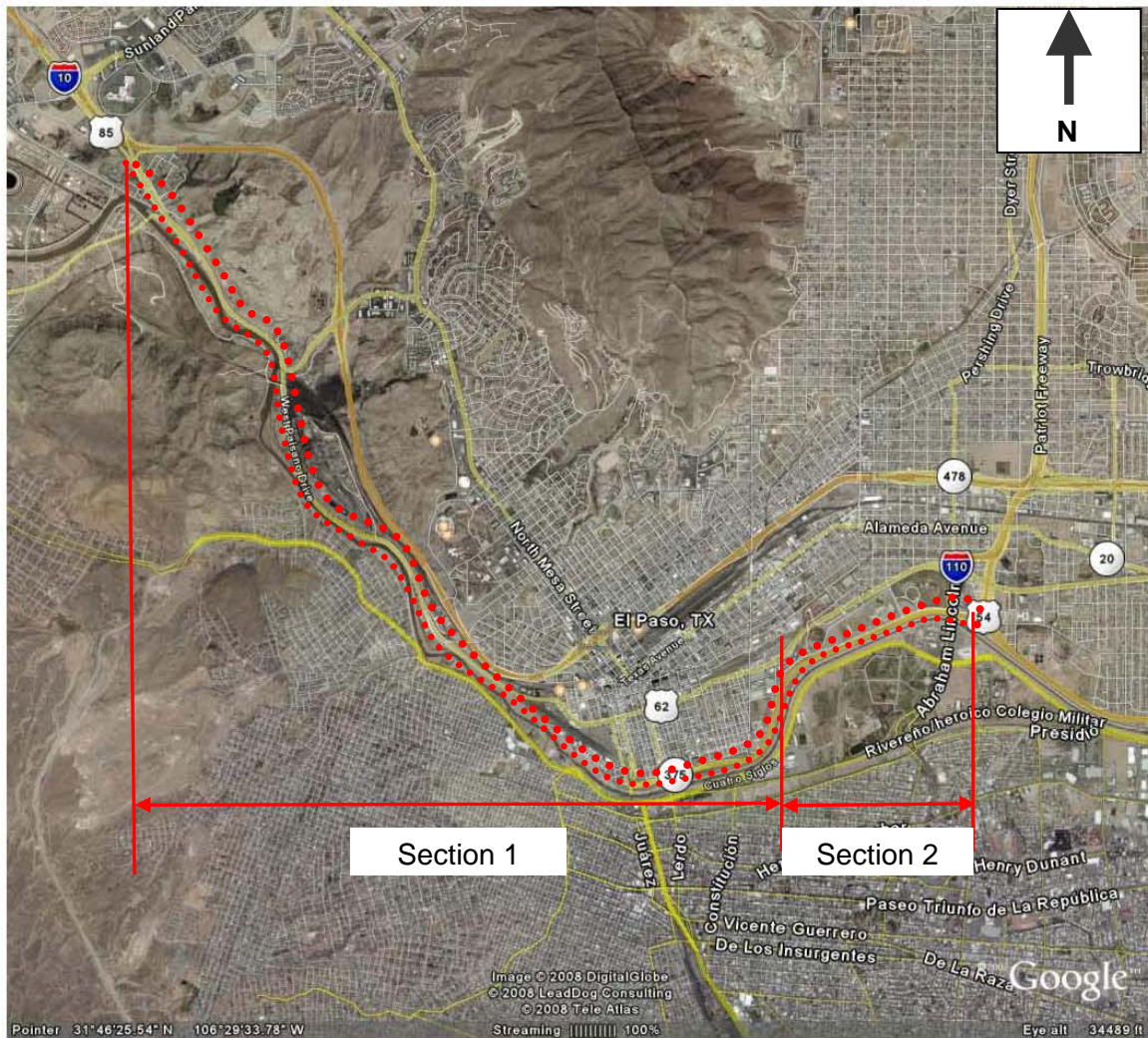


Figure 1. Study Area

BACKGROUND

TxDOT has provided Jacobs with the Official Transborder Travel Demand Model (TDM) in the TransCAD environment for use in this study. Jacobs reviewed the model and compared it to historic counts provided by TxDOT for years 2004, 2005, and 2006, and counts collected as part of this work authorization. The review, summarized in **Table 1**, indicates that the major difference in volume between historic data and the model is along US 85 between Doniphan Road and Executive Center Boulevard. The Transborder model shifts traffic from I-10 (due to heavy congestion) to the parallel routes of Doniphan Road and NM 273. Also, because the 2035 Model assumes the downtown connection to be in-place, some of the through traffic currently using I-10 will use Border Highway West. Therefore, the model shows higher volumes along the Border Highway West corridor as compared to the historic counts.

TABLE 1
TxDOT Historic Counts vs. Official Transborder Model Traffic Volumes

Roadway	TxDOT Counts			Official Transborder Model			
	2004	2005	2006	2007	2015	2025	2035
Border Highway West							
S of I-10	12000	14200	15000	14798	17441	23195	45265
S of NM 273	14900	15300	14400	49515	56545	63431	82973
S of Executive Ctr. Boulevard	23000	24000	25000	29275	36693	48597	65162
N of Yandell Drive	17200	20310	21000	29346	39812	48769	65259
E of Santa Fe	10800	12010	13000	11270	15278	32320	40653
E of Coles	18500	18200	22000	36228	37863	52271	64616
E of US 54	40000	41780	43000	54145	47553	64162	73935
US 54							
N of US 62	72000	72180	53000	87553	81705	93436	107630
I-10							
N of Executive Ctr. Boulevard	128000	130350	128000	99913	129267	149262	177777
S of Executive Ctr. Boulevard	136000	139100	136000	112759	130663	144188	170963

The infrastructure and the various attributes coded for year 2035 in the official Transborder Model were also reviewed and a few modifications were made. A description of the review and the modifications that were made to the official Transborder model for year 2035 are described in detail in the **Appendix**. The deletion of the Border Highway West connection between Paisano Drive and Santa Fe will apply only to the “no-build” scenario. Under the “build” scenarios, this connection will exist.

The revised model will be run and traffic volumes for year 2035 will be extracted. The official Transborder Model for year 2015 will be revised to include the Border Highway West connection between Paisano Drive and Santa Fe Street. The model already includes the I-10 CD system and most of the improvements along Cesar Chavez east of US 54. The changes that were applied to the official Transborder Model for year 2035, for the segment of Cesar Chavez between US 54 and

Border Highway West FINAL Traffic Projection Methodology

Gus Sanchez

Page 4 of 6

Zaragoza Road (to match the approved schematics), will be applied to the 2015 model also. The revised 2015 model will be run and volumes for this year will be extracted.

Using historic data and engineering judgment, a reasonableness review of the volumes extracted for year 2015 and 2035 will be conducted and finalized.

METHODOLOGY

This project will utilize the following sources:

1. El Paso MPO Official TransBorder Travel Demand Model (years 2007, 2015, 2025, and 2035);
2. TxDOT El Paso District Traffic Maps (1986-2006); and
3. TxDOT T-Log (2004) and VC data (2001 – 2005).

The steps below will be followed in developing the years 2015 and 2035 traffic projections.

Step 1: Historical Growth Calculation:

In this step the District traffic maps will be used as input to the CALYPSO 5.1 regression table to calculate the historical growth rate in the Border Highway West corridor. The results of these calculations are shown in **Table 2** and indicate that the average growth rate in the Border Highway West study corridor between 1986 and 2006 is 1.90%. The CALYPSO regression table is provided in the **Appendix**.

TABLE 2
Study Corridor Historical Growth Rates

Roadway	Simple Average Annual Growth Rate (1986-2006)
Border Highway West	1.90%
US 54	2.40%
I-10	2.50%

Step 2: El Paso MPO 2035 & 2015 TransBorder Model Traffic Volumes:

The El Paso MPO's official Transborder Model includes traffic volumes for years 2007, 2015, 2025 and 2035. The traffic volumes extracted from the model at various locations along the Border Highway West corridor and US 54 are shown in **Table 3**. The corresponding growth rates are shown in **Table 4**.

TABLE 3

Border Highway West Corridor MPO Traffic Volumes
(2035 Official TransBorder Model)

Year	Border Highway West						US 54
	S of I 10	S of NM 273	S of Executive Ctr Boulevard	E of Santa Fe	E of Coles	E of US 54	N of I 10
2007	14,798	49,515	29,275	11,270	36,228	54,145	87,553
2015	17,441	56,545	39,693	15,278	37,863	47,553	81,705
2025	23,195	63,431	48,597	32,320	52,271	64,162	93,436
2035	45,265	82,973	65,162	40,653	64,616	73,935	107,630

Note: Traffic volumes shown include mainlane volumes and frontage road volumes.

TABLE 4
Border Highway West Corridor MPO Growth Rates
(2035 Official TransBorder Model)

Year	Border Highway West						US 54	I-10	
	S of I 10	S of NM 273	S of Executive Ctr Boulevard	E of Santa Fe	E of Coles	E of US 54	N of I 10	N of Executive Ctr Boulevard	S of Executive Ctr Boulevard
2007 - 2015	2.23%	1.77%	4.45%	4.45%	0.56%	-1.52%	-0.83%	3.67%	3.48%
2015 - 2025	3.30%	1.22%	2.24%	11.15%	3.81%	3.49%	1.44%	1.55%	1.04%
2025 - 2035	9.51%	3.08%	3.41%	2.58%	2.36%	1.52%	1.52%	1.91%	1.86%
2015 - 2035	7.98%	2.34%	3.21%	8.30%	3.53%	2.77%	1.59%	1.88%	0.93%
Average (2015-2035)	6.93%	2.21%	2.95%	7.35%	3.23%	2.60%	1.51%	1.78%	1.27%

As described earlier, the official Transborder Model will be revised to mainly incorporate the approved schematics for Cesar Chavez between US 54 and Zaragoza Road. Based on the revised model runs, traffic volumes for years 2015 and 2035 will be extracted. Based on these volumes, a growth rate will be calculated. A reasonableness review of the growth rate as compared to the historic growth rate in the area will be conducted before arriving at a recommended growth rate for the study corridor.

Step 3: Corridor Traffic Volume Adjustments:

Compare historical growth (from Step 1) and projected future growth (from Step 2) to determine the trends. Adjust the traffic volumes extracted from the model runs based on the trends, volume to capacity ratios (V/C) and engineering judgment. The effect of infrastructure changes on travel patterns will be considered while adjusting traffic volumes obtained from the model runs.

Step 4: Design Hour Volume and Truck Percentages:

From TP&P 2004 T-Log data, the K and D factors and the percent trucks have been extracted as follows:

- K-factor = 9.1%
- Directional Distribution = 54% - 46%

Border Highway West FINAL Traffic Projection Methodology

Gus Sanchez

Page 6 of 6

- Truck Percentages:
 - Border Highway West Corridor: 5.00% of ADT, and 3.35% of DHV

Vehicle classification counts along the study corridor between the interchanges of I-10 with US 85 and Cesar Chavez with US 54 were collected on April 22, 2008. The truck percentages based on current counts show a variation of % trucks in the ADT in the range of 5 – 8 %. Considering the possible shift in traffic (including truck traffic) from I-10 to US 85, we recommend using 8% of trucks in ADT throughout the study corridor. The classification counts collected are included in the **Appendix**.