CENTRAL TEXAS TURNPIKE SYSTEM
2010 TRAFFIC AND REVENUE FORECAST

FINAL REPORT

Texas Department of Transportation
Texas Turnpike Authority Division

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Prepared by:
Stantec Consulting Services. Inc.

Executive Summary

PROJECT

The Texas Turnpike Authority Division of the Texas Department of Transportation (TTA) constructed the turnpike system known as the Central Texas Turnpike System Project (CTTS), in the Greater Austin Area. The initial investment-grade study of traffic and toll revenues completed for the CTTS, hereinafter referred to as the "2002" Project," was updated due to project design changes in 2005, hereinafter referred to as the "2005" Project. As portions of the toll facility opened in November 2006 a subsequent "2008 Review" was prepared to analyze the existing traffic and toll revenue and changing socioeconomic conditions in the Greater Austin Area. Stantec has prepared this CTTS Traffic and Revenue 2010 Update, based upon a review of current conditions, updated travel demand model, and updated socioeconomic projections. In the current work, Stantec takes full responsibility for all CTTS elements or "forecasts" as a group of new staff from Systra Mobility has recently joined Stantec (many of whom have worked on prior SH 130 Projects).

The 2005 Report, referred to herein, is entitled, Central Texas Turnpike System 2002 Project Traffic and Revenue Forecast 2005 Update, dated December 8, 2005.

The 2002 Report, referred to herein, is entitled, Central Texas Turnpike System 2002 Project Traffic and Revenue Forecast, dated July 22, 2002.

As described in the attached Report and shown in Figure 1-1, the project consists of three turnpike elements:

- SH 45 N and Loop 1 elements are collectively referred to as the Northwest Elements, and
- The third element being SH 130, extending from Georgetown in the north to US 183 south of the Austin-Bergstrom International Airport.

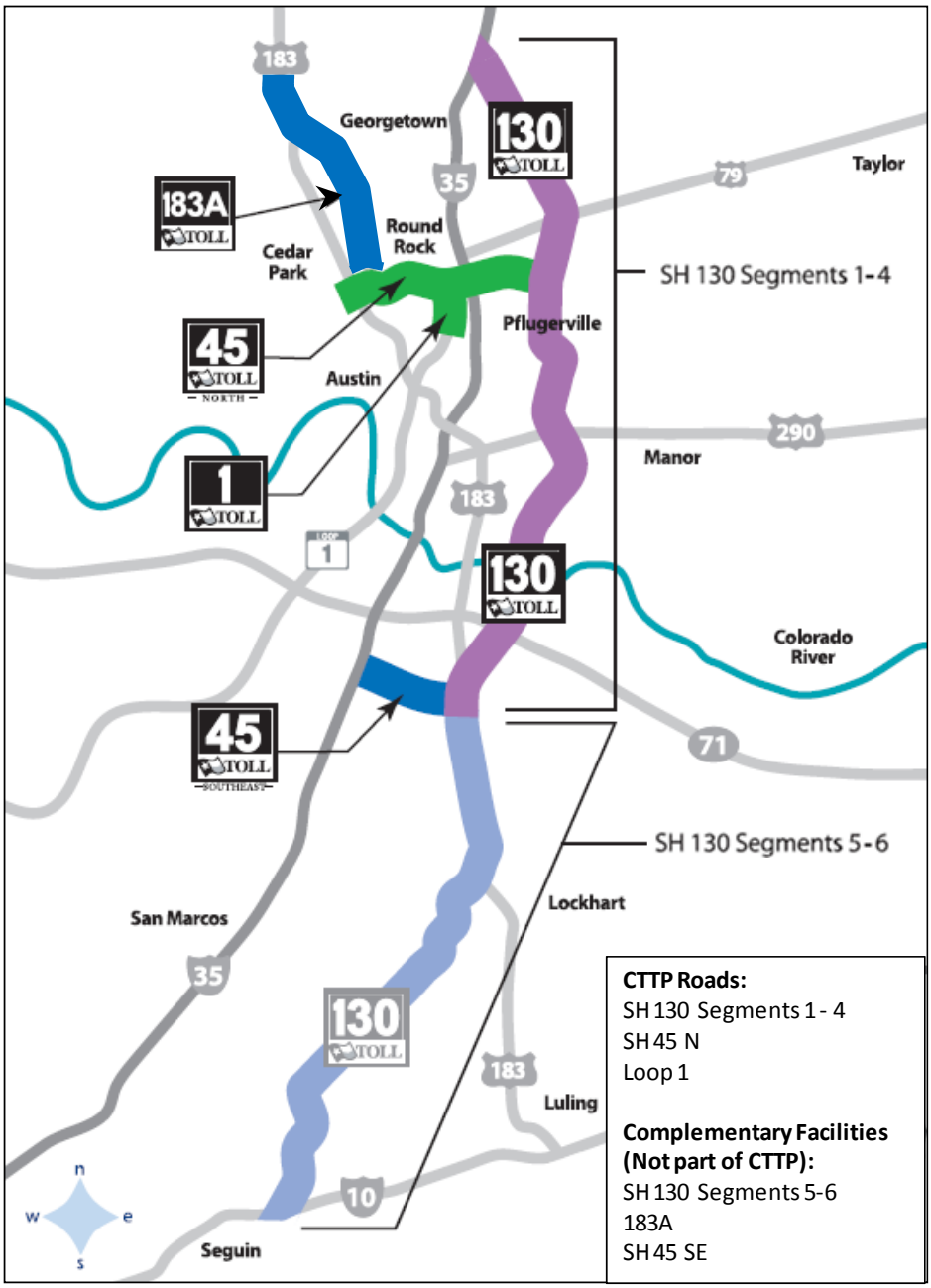
This study provides several new analyses and information compared to work performed in the 2008 Review:

- The CTTS project was opened in several stages from November of 2006 to May of 2008. Most CTTS elements have been opened for more than three years, and Stantec has had a chance to review the traffic statistics during this period, and compare the actual traffic to expectations set in the 2008 Review. The discussion of this review is presented in "Chapter 2 Existing Travel Patterns."
- The travel demand model has been updated so as to integrate the San Antonio/Bexar County (SABC) with the Capital Area Metropolitan Planning Organization's (CAMPO's) for the CTTS study area. The discussion of the travel demand model is presented in "Chapter 3 Model Validation and Refinement."
- Socioeconomic projections have been updated for this study, both by reviewing current conditions on the ground and providing a new projection of future development. The

discussion pertaining to the new socioeconomic data is presented in "Chapter 4 Socioeconomic Forecasts."

- Several major roadways in the Austin area have been updated based on the most recent information. The discussion pertaining to the network updates is presented in "Chapter 5 Roadway Networks."

Figure ES-1: CTTS Toll Roads and Study Area



Source: http://www.centraltexasturnpike.org/

EXISTING TRAFFIC AND TOLL REVENUE

A data collection program conducted by Alliance Transportation Group, Inc. (ATG) was designed to provide information on travel within the study area and support the travel demand model described in Chapter 3. The data were gathered by the Consultant team in September 2010. Travel data compiled for the study consisted of 43 Automatic Traffic Recorders (ATRs) presented in Chapter 2.

Most of the ATRs were placed at defined screenline locations which are used to better understand traffic demand within the CTTS corridor. Screenlines 1 through 4 represent the four east-west screenlines along the north-south toll road SH 130. Screenlines A and B represent the two north-south screenline along the east-west toll road SH 45 N and Screenline C represents the north-south toll road Loop 1.

A travel time data collection program was conducted by *Brown & Gay Engineers, Inc*. For this study, travel time runs were measured along IH 35, Loop 1, SH 130, SH 45 N, US 183, SH 21, SH 360, US 79, US 973, FM 685, RM 620, Gattis School Rd., Parmer Lane, IH 10, and SH 123. On each road travel time runs were conducted for the AM Peak, PM Peak, and the Off Peak period. Details in Chapter 2 compare the speeds on these routes on a typical weekday for the length of the entire route.

Table ES-1 shows the actual monthly average weekday transactions by roadway and the percent change year over year, respectively. SH 45 N average weekday transactions have been steadily increasing with 5.5 percent increase in FY 2009 and 2.5 percent increase in FY 2010 and recently reaching 100,000. Growth on Loop 1 has remained virtually flat, with average weekday transactions only reaching 56,900 for FY 2010. SH 130 transactions have experienced double digit growth since opening, with weekday volumes recently almost reaching 90,000.

Table ES-1: Average Weekday Transactions

Toll Road	Not Open		Toll-Free		Discounted Tolls		Full Toll Rate					
	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07
SH 45 Total	-	-	NA	NA	38,312	41,409	39,714	41,034	42,995	42,725	42,800	45,757
Loop1 Turnpike	-	-	NA	NA	49,752	53,821	51,682	52,583	53,633	53,116	52,887	55,342
SH 130 Turnpike	-	-	NA	NA	29,789	33,417	32,314	32,803	33,052	32,164	31,467	34,334
CTTP TOTAL	-	-	NA	NA	117,853	128,647	123,710	126,420	129,680	128,005	127,154	135,433

Toll Road	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	FY 08
SH 45 Total	88,697	90,181	88,485	86,574	86,363	91,601	90,064	94,469	96,942	93,482	91,771	94,053	**91,057**
Loop1 Turnpike	55,085	54,726	53,929	52,263	53,074	55,639	54,645	56,356	56,452	55,378	54,594	55,104	**54,770**
SH 130 Turnpike	39,741	43,220	59,311	55,318	52,592	58,240	58,825	60,233	65,716	65,358	69,670	70,975	**58,267**
CTTP TOTAL	183,523	188,127	201,725	194,155	192,029	205,480	203,534	211,058	219,110	214,218	216,035	220,132	**204,094**

Toll Road	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	FY 09
SH 45 Total	95,283	96,496	93,982	91,614	91,260	94,583	93,629	97,972	101,507	99,779	97,701	99,042	**96,071**
Loop1 Turnpike	55,757	55,696	54,455	52,955	53,181	54,923	54,039	55,839	56,380	56,189	55,362	56,491	**55,106**
SH 130 Turnpike	69,999	70,765	69,968	66,563	63,679	67,940	70,384	71,812	79,731	82,663	82,054	81,555	**73,093**
CTTP TOTAL	221,039	222,957	218,405	211,132	208,120	217,446	218,052	225,623	237,618	238,631	235,117	237,088	**224,269**

Toll Road	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	FY 10
SH 45 Total	98,080	98,938	97,511	94,200	94,291	94,273	98,760	102,392	103,115	100,502	98,416	100,872	**98,446**
Loop1 Turnpike	56,006	56,575	55,652	54,125	55,399	55,244	57,475	58,845	58,951	58,324	57,487	58,716	**56,900**
SH 130 Turnpike	79,743	81,292	83,610	78,074	74,433	78,824	86,870	88,569	89,225	88,537	89,015	89,228	**83,952**
CTTP TOTAL	233,829	236,805	236,773	226,399	224,123	228,341	243,105	249,806	251,291	247,363	244,918	248,816	**239,297**

Notes:
(1) Values for SH 130 include only the two northern segments (Segments 1 & 2) in operation as of October 2007.
(2) Values for SH 130 include only the three northern segments (Segments 1,2, and 3) in operation between November 2007 and June 2008.
(3) Values for SH 130 include all four segments in operation between July 2008 and September 2008.
Source: CTTS Annual Reports (FY 07, FY 08, FY 09, and FY 10)

Table ES-2 shows the historic trends in toll revenue since the toll road began collecting revenue in January 2007 to August 2010. Total revenue on SH 45 N increased 6.2 percent in FY 2009 and slightly declined by 0.5 percent in FY 2010. Total revenue on Loop 1 has continually collected on average $10.7 million for FY 2008, FY 2009, and FY 2010. These downward influences on SH 45 N and Loop 1 are most likely due to the recent recession and the congestion in the Loop 1 corridor. CTTS total revenue growth has been significant and steady since the start-up of this toll facility with $48.9 million in FY 2008, $58.9 million in FY 2009, and $66.2 million in FY 2010.

Table ES-2: Actual Monthly Fiscal Year Toll Revenues

Toll Road	Not Open		Toll-Free		Discounted Tolls		Full Toll Rate					
	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07
SH 45 Total	$ -	$ -	$ -	$ -	$ 53,900	$ 363,500	$ 625,400	$ 614,200	$ 682,800	$ 661,700	$ 661,000	$ 887,600
Loop1 Turnpike	$ -	$ -	$ -	$ -	$ 116,300	$ 539,200	$ 900,100	$ 866,600	$ 936,800	$ 900,000	$ 894,600	$ 981,100
SH 130 Turnpike	$ -	$ -	$ -	$ -	$ 108,400	$ 465,200	$ 820,000	$ 795,800	$ 858,200	$ 841,200	$ 817,300	$ 927,800
CTTP TOTAL	$ -	$ -	$ -	$ -	$ 278,900	$1,386,100	$2,388,400	$2,328,400	$2,553,000	$2,473,600	$2,448,800	$ 2,886,700

Toll Road	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	FY 08
SH 45 Total	$1,328,600	$1,466,800	$1,342,400	$1,353,600	$1,370,300	$1,393,800	$1,435,100	$1,469,200	$1,517,700	$1,425,600	$1,420,300	$ 1,459,100	**$ 16,982,500**
Loop1 Turnpike	$ 883,100	$ 961,200	$ 883,700	$ 874,100	$ 902,200	$ 896,700	$ 915,000	$ 925,400	$ 923,900	$ 879,200	$ 885,700	$ 892,400	**$ 10,822,600**
SH 130 Turnpike	$1,045,900	$1,215,800	$1,247,000	$1,359,700	$1,429,400	$1,538,200	$1,652,900	$1,636,700	$1,781,700	$1,775,400	$1,777,700	$ 1,909,600	**$ 18,370,000**
CTTP TOTAL	$3,344,100	$3,769,300	$3,611,700	$3,772,900	$3,943,700	$4,030,500	$4,195,500	$4,253,100	$4,479,800	$4,392,500	$4,458,800	$ 4,653,900	**$ 48,905,800**

Toll Road	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	FY 09
SH 45 Total	$1,482,700	$1,551,500	$1,389,700	$1,456,800	$1,471,800	$1,420,900	$1,533,200	$1,546,500	$1,582,900	$1,565,700	$1,529,100	$ 1,506,100	**$ 18,036,900**
Loop1 Turnpike	$ 902,300	$ 942,000	$ 836,300	$ 880,000	$ 894,500	$ 865,700	$ 929,300	$ 929,700	$ 914,400	$ 919,200	$ 904,700	$ 893,600	**$ 10,811,700**
SH 130 Turnpike	$1,946,600	$2,021,100	$1,825,400	$1,831,500	$1,782,700	$1,795,500	$2,066,200	$1,981,600	$2,211,800	$2,433,400	$2,412,300	$ 2,289,800	**$ 24,597,900**
CTTP TOTAL	$4,671,600	$4,939,300	$4,456,700	$4,563,400	$4,625,600	$4,545,100	$4,971,700	$4,868,700	$5,109,200	$5,429,700	$5,403,100	$ 5,329,900	**$ 58,914,000**

Toll Road	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	FY 10
SH 45 Total	$1,424,100	$1,467,700	$1,386,500	$1,476,900	$1,429,200	$1,373,900	$1,579,000	$1,583,500	$1,592,100	$1,557,800	$1,543,900	$ 1,540,900	**$ 17,955,500**
Loop1 Turnpike	$ 851,800	$ 878,000	$ 824,600	$ 878,800	$ 860,400	$ 834,400	$ 961,000	$ 958,300	$ 945,200	$ 640,700	$ 938,200	$ 961,500	**$ 10,532,900**
SH 130 Turnpike	$2,160,400	$2,199,400	$2,226,400	$2,227,500	$1,966,700	$2,040,000	$2,577,200	$2,538,000	$2,532,600	$2,522,200	$2,562,300	$ 2,529,100	**$ 28,081,800**
CTTP TOTAL	$5,220,000	$5,359,900	$5,492,400	$5,319,200	$4,994,900	$4,937,300	$5,834,900	$5,929,000	$5,716,500	$5,723,200	$5,778,200	$ 5,845,600	**$ 66,151,100**

Note:
(1) Individual roadway revenue do not include Pay by Mail revenue.
(2) Totals do not add because Pay by Mail revenue is included in CTTS total.
(3) Values for SH 130 include only the two northern segments (Segments 1 & 2) in operation as of October 2007.
(4) Values for SH 130 include only the three northern segments (Segments 1,2, and 3) in operation between November 2007 and June 2008.
(5) Values for SH 130 include all four segments in operation between July 2008 and September 2008.
Source: CTTS Annual Reports (FY 07, FY 08, FY 09, and FY 10)

TRAFFIC MODELING

In preparing to estimate traffic and toll revenue for this project, a decision was made to update the existing travel demand modeling process used to forecast traffic and toll diversion. The objective of this model development effort was to provide a more robust tool for modeling the CTTS toll roads as well as other local toll roads that influence traffic on the CTTS.

A key element of the model development was the expansion of the modeled region to encompass areas and facilities that would influence traffic volumes on the various CTTS roadways. The expanded region included two additional counties east of Austin (Bastrop and Caldwell) and a significant extension south of Austin by incorporating the area within the San Antonio Regional Model. The expanded area south of Austin was included primarily to reflect the anticipated growth in the I-35 corridor southward towards San Antonio and impacts of growing congestion that would influence diversion to the planned extension of the SH 130 Toll Road southward towards Seguin.

In addition to the expansion of the modeled region, the toll diversion modeling techniques were also updated to reflect new aspects of the tolling policy including the option of video tolling or pay by mail. The toll diversion model was updated to provide for greater flexibility in representing the variations in toll policy utilized by TTA and CTRMA both in terms of discounts and the integration of configuration-based tolls for newer facilities such SH 45 Southeast. Lastly, the toll diversion models were further enhanced to improve the representation of several planned toll facilities that will be operated as managed lanes with variable pricing. The effect of all of these enhancements is the creation of improved modeling process that is capable of supporting forecasting in the growing region surrounding Austin.

The final toll diversion model was subjected to an in-depth calibration using the observed transaction data for each of the toll roads in the Austin region. This calibration included replication of overall traffic by facility type and area type as well as transaction data at each toll plaza by vehicle type and payment type. A more comprehensive description of the modeling process and calibration analysis is provided in Chapter 3.

LAND USE AND DEMOGRAPHICS

Socioeoconomic indicators were used to identify current demographic and economic trends in the Austin, Texas and San Antonio, Texas Metropolitan Statistical Areas (MSAs). These trends were reviewed and adjustments were applied to the Capital Area Metropolitan Planning Organization's (CAMPO's) and the San Antonio/Bexar County Metropolitan Planning Organization's (SABC's) socioeconomic forecasts for the CTTS 2010 Update study area. This section also discusses the methodology used to assess and adjust the MPOs' socioeconomic forecasts. It compares the revised county control total figures for the overall CAMPO and SABC study areas to the county control totals from the recently updated Metropolitan Transportation Plans (MTPs), and provides a brief description of the methodology used to assess and adjust the socioeconomic data at the Traffic Serial Zone (TSZ) level.

Despite the relative strength of the two regions' economies, the national recession and the difficulties of obtaining financing for homes and commercial projects has had an observable impact on the pace of the development along SH 130 and the competing IH 35 corridor. During the field surveys, residential construction continued at a modest pace and was concentrated in subdivisions that were already under development, with few new subdivisions. Over the near term, these trends are expected to continue. As existing subdivisions build out and the regions' overall housing inventory becomes more conducive to expanding supply, new subdivisions will begin to be developed (although still subject to the constraints in the residential and commercial credit markets). It is also possible that as the economy improves, there will be a lag between the market demand and market supply of new housing. In terms of commercial projects, fewer sites were observed under construction and, among the commercial projects that were recently completed, it was not uncommon for these structures to be unfinished or partially or entirely vacant. However, this pattern was not uniform throughout the study area and some projects appeared to be doing very well.

The Austin and San Antonio MSAs are currently recovering from the effects of the severe downturn in the national economy and have likely entered into a period of prolonged, but modest growth. As they proceed through this period, the recovery will continue to be at risk from the effects of any new national economic downturns, a new global financial crisis, and energy price fluctuations. Although the fundamental elements of the two regional economies

appear to be relatively strong, when compared to the national economy, national economic conditions are nonetheless continuing to have local impacts. At a minimum, modest growth is expected to continue in the two regions for at least the next 12 to 24 months and could continue for an additional 1 to 2 years before regaining strength, if additional unanticipated events weaken the national economy. The rate of economic and population growth in the Austin MSA will outpace the San Antonio MSA but both regions will likely outperform national trends.

The new updated 2010 CTTS Socioeconomic forecasts were compared to the original 2002 report, 2005 Update, and the 2008 review. Table 4-18 shows the total population and employment comparison for the CAMPO region between these four studies. While population is much higher in the 2010 CTTS Update study, the employment growth between the 2008 and 2015 model years is significantly lower.

Table ES-3 SED Comparison for Various CTTS Studies

Year	2002 CTTS (2)	2005 CTTS Update (2)	2008 CTTS Review (2)	2010 CTTS Update
	Population			
2008	1,286,283	1,354,084	1,411,370	1,527,890
2015	1,593,072	1,614,996	1,698,917	1,871,047
2025	2,020,370	1,998,326	2,099,054	2,316,883
2035				2,802,768
	Employment			
2008	639,445	679,947	707,048	744,105
2015	821,933	822,519	868,068	784,794
2025	1,061,625	1,006,654	1,103,389	976,325
2035				1,193,118
	Population AAGR			
08 - 15	3.1%	2.5%	2.7%	2.9%
15 - 25	2.4%	2.2%	2.1%	2.2%
25 - 35				1.9%
	Employment AAGR			
08 - 15	3.7%	2.8%	3.0%	0.8%
15 - 25	2.6%	2.0%	2.4%	2.2%
25 - 35				2.0%

Note: 2015, 2020, and 2025 SED for the 2005 Update, 2008 Review were interpolated from 2012, 2017, 2023 and 2030 SED.

ROADWAY NETWORKS

Roadway networks were developed for 2008, 2015, 2025, and 2035. The latest roadway improvement plans were obtained from the CAMPO 2035 Regional Transportation Plan (dated May 24, 2010). Based on the degree of commitment (feasibility studies, funding, ROW status, and program inclusion) judgments were made as to whether or not to include project elements in future highway networks.

Other toll road projects currently contemplated for the Austin region have been incorporated into the background network. These projects were implemented based on information received from TxDOT and CTRMA.

REVENUE PROJECTIONS

Table ES-4 provides a listing of the transactions for the combined elements of the CTTS for the original 2002 financing study, the 2005 Update, the 2008 Review and the 2010 Update. Table ES-5 includes the revenue forecasts for each of the studies. All of these values are provided as fiscal year values and it should be noted that the first three years of the 2010 Update include the observed transactions and revenue as reported by TTA in their respective annual reports.

In general the CTTS transactions in the 2010 Update are higher than the original forecast prepared for the 2002 financing study. The revenue stream is generally higher as well except for the period encompassing FY 2011 through FY 2013. These minor reduction is reflects the lingering impacts of the recent recession and the reduced level of truck transactions within the overall revenue stream. For FY 2014 and beyond, the 2010 Update forecasts exceed the 2002 forecasts.

In comparison the 2008 Update, the new forecast is generally higher in terms of revenue but slightly lower in terms of total transactions. As part of the calibration of the new model, it was recognized that the previous model was under-predicting transactions at the mainline plazas and over-predicting transactions at the ramps. The new model is now calibrated against observed data and while transactions are somewhat lower, the percentage at the higher rate mainline plazas in now higher, leading to higher overall revenue.

Table ES – 4: 2010 CTTS Update Total Toll Transaction Projections

Fiscal Year	CTTS Total			
	2002 Report	2005 Update	2008 Review	2010 Update
2008	118,360	138,492	202,269	***204,133***
2009	169,103	182,163	220,937	***224,276***
2010	206,917	226,221	237,493	***239,343***
2011	244,235	265,528	256,845	252,931
2012	270,361	291,858	276,433	275,508
2013	286,652	308,460	294,893	296,472
2014	299,981	321,743	312,989	316,168
2015	313,309	335,026	330,670	335,845
2016	287,287	303,598	322,450	315,830
2017	300,831	307,145	340,249	332,677
2018	314,374	318,864	359,924	349,727
2019	327,918	333,307	380,220	366,987
2020	341,461	347,751	397,996	384,463
2021	366,425	361,549	415,060	402,162
2022	389,357	376,000	432,846	420,091
2023	412,291	398,873	451,233	438,259
2024	435,223	420,697	469,484	456,672
2025	458,156	441,236	487,625	475,339
2026	427,217	428,172	467,082	455,416
2027	443,203	449,074	485,245	475,316
2028	459,181	469,976	503,408	495,600
2029	475,108	490,879	521,571	516,232
2030	490,938	502,381	525,258	537,179
2031	506,627	518,068	536,045	558,404
2032	522,129	536,840	550,644	579,872
2033	537,396	555,062	565,597	601,544
2034	552,380	572,597	579,962	623,387
2035	567,034	589,313	594,602	645,363
2036	546,799	563,528	572,113	621,641
2037	559,815	577,195	585,706	632,083
2038	572,749	590,639	599,301	642,465
2039	585,707	604,111	612,923	652,912
2040	598,681	617,604	626,567	663,412
2041	611,667	631,111	640,223	673,962
2042	624,659	644,626	653,886	684,556

Notes: Toll Rate Increased in this year
Actual Average Weekday Traffic

Table ES – 5: 2010 CTTS Update Total Toll Revenue Projections

Fiscal Year	CTTS Total ($000)					
				2010 Update		
	2002 Report	2005 Update	2008 Review	Base Toll Cash, ETC, & Video	Video Surcharge Revenue	Total
2008	$34,996	$40,019	$48,905			***$48,875***
2009	$49,654	$53,322	$57,882			***$58,907***
2010	$59,693	$66,764	$63,629			***$66,151***
2011	$72,167	$79,021	$69,572	$68,652	$1,873	$70,525
2012	$80,209	$87,259	$75,374	$75,272	$2,418	$77,690
2013	$85,791	$93,388	$80,988	$81,619	$2,632	$84,250
2014	$90,060	$98,221	$86,535	$87,774	$2,844	$90,619
2015	$94,330	$103,055	$91,993	$93,956	$3,060	$97,016
2016	$117,342	$126,359	$122,393	$125,379	$3,902	$129,281
2017	$124,053	$127,907	$131,973	$134,647	$4,254	$138,901
2018	$130,764	$133,734	$141,765	$143,969	$4,607	$148,576
2019	$137,476	$140,987	$151,609	$153,346	$4,963	$158,309
2020	$144,187	$148,240	$160,053	$162,779	$5,322	$168,100
2021	$154,764	$155,304	$168,286	$172,270	$5,683	$177,953
2022	$164,852	$162,560	$176,734	$181,822	$6,047	$187,870
2023	$174,940	$176,702	$187,636	$191,437	$6,414	$197,851
2024	$185,028	$188,809	$196,912	$201,116	$6,784	$207,900
2025	$195,115	$199,473	$205,376	$210,861	$7,158	$218,019
2026	$232,938	$243,320	$251,597	$264,273	$8,543	$272,816
2027	$242,654	$256,823	$262,641	$276,519	$8,960	$285,478
2028	$252,361	$270,325	$273,685	$288,882	$9,382	$298,264
2029	$262,025	$283,827	$284,730	$301,325	$9,808	$311,134
2030	$271,611	$287,308	$284,251	$313,808	$10,238	$324,045
2031	$281,080	$295,710	$289,272	$326,285	$10,669	$336,954
2032	$290,393	$307,011	$297,786	$338,716	$11,100	$349,817
2033	$299,512	$317,946	$306,261	$351,056	$11,531	$362,586
2034	$308,397	$328,428	$314,670	$363,260	$11,959	$375,218
2035	$317,370	$338,374	$322,987	$375,747	$12,398	$388,145
2036	$356,750	$387,085	$376,212	$422,185	$13,943	$436,128
2037	$365,448	$396,677	$385,366	$432,197	$14,274	$446,471
2038	$374,070	$406,096	$394,499	$442,169	$14,603	$456,772
2039	$382,713	$415,541	$403,657	$452,226	$14,935	$467,161
2040	$391,372	$425,006	$412,832	$462,363	$15,269	$477,632
2041	$400,042	$434,484	$422,021	$471,035	$15,555	$486,590
2042	$408,717	$443,968	$431,216	$479,729	$15,841	$495,571

Notes: Toll Rate Increased in this year
2010 CTTS Revenue includes pay-by-mail surcharge (20% of cash toll).
Actual Revenue

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1.0 Introduction

The Texas Turnpike Authority Division of the Texas Department of Transportation (TTA) constructed the turnpike systems known as the Central Texas Turnpike System Project (CTTS), in the Greater Austin Area. The initial investment-grade study of traffic and toll revenues completed for the CTTS, hereinafter referred to as the "2002" Project," was updated due to project design changes in 2005, hereinafter referred to as the "2005" Project. As portions of the toll facility opened in November 2006 a subsequent "2008 Review" was prepared to analyze the existing traffic and toll revenue and changing socioeconomic conditions in the Greater Austin Area. Stantec has prepared this CTTS Traffic and Revenue 2010 Update, based upon a review of current conditions, updated travel demand model, and updated socioeconomic projections. In the current work, Stantec takes full responsibility for all CTTS elements or "forecasts" as a group of new staff from Systra Mobility has recently joined Stantec (many of whom have worked on prior SH 130 Projects).

The 2005 Report, referred to herein, is entitled, Central Texas Turnpike System 2002 Project Traffic and Revenue Forecast 2005 Update, dated December 8, 2005.

The 2002 Report, referred to herein, is entitled, Central Texas Turnpike System 2002 Project Traffic and Revenue Forecast, dated July 22, 2002.

1.1 CENTRAL TEXAS TURPIKE SYSTEM PROJECT (CTTS)

As described in the attached Report and shown in Figure 1-1, the project consists of three turnpike elements:

- SH 45 N and Loop 1 elements are collectively referred to as the Northwest Elements, and
- The third element being SH 130, extending from Georgetown in the north to US 183 south of the Austin-Bergstrom International Airport.

This study provides several new analyses and information compared to work performed in the 2008 Review:

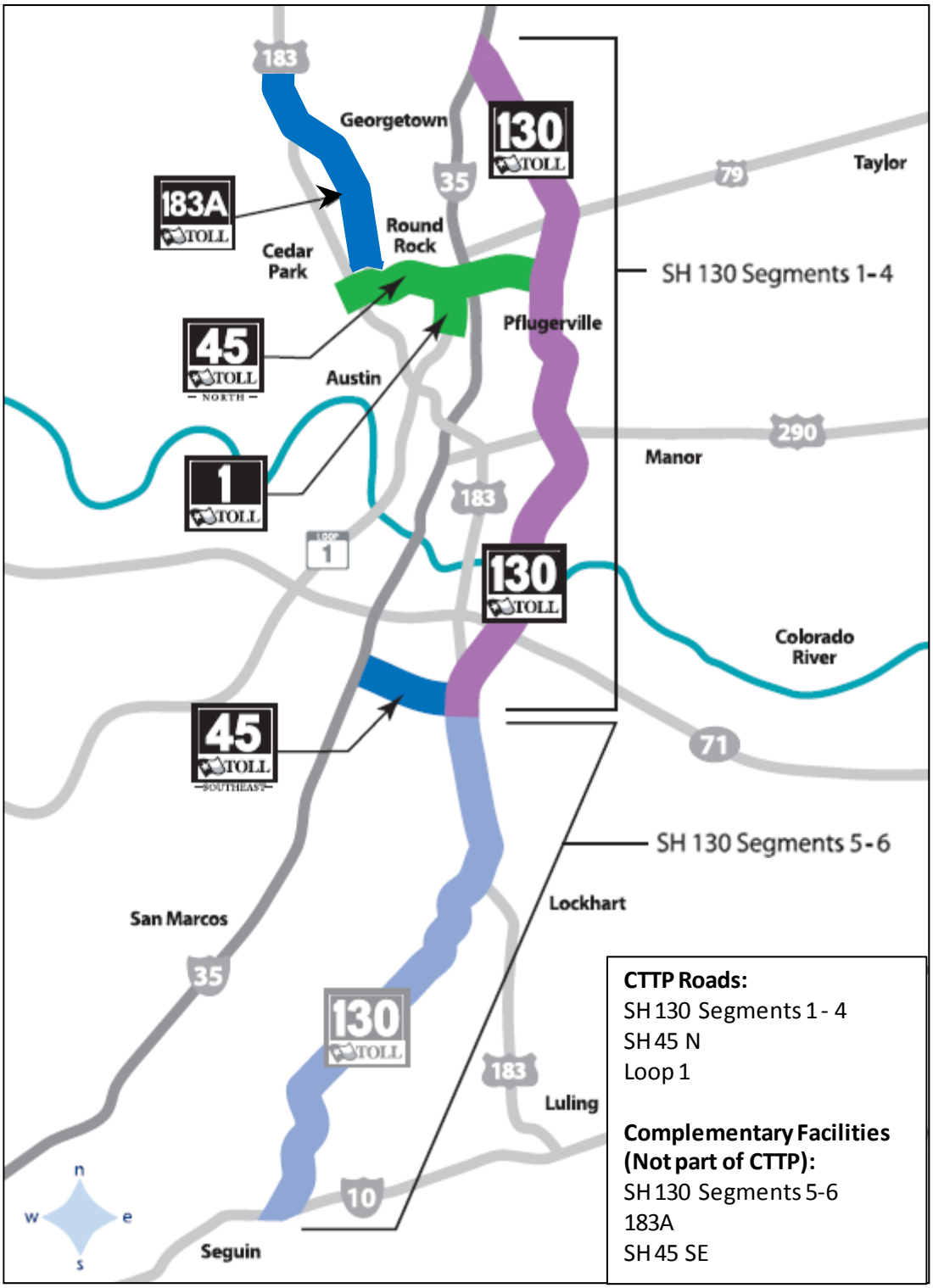
- The CTTS project was opened in several stages from November of 2006 to May of 2008. Most CTTS elements have been opened for more than three years, and Stantec has had a chance to review the traffic statistics during this period, and compare the actual traffic to expectations set in 2008 Review. The discussion of this review is presented in "Chapter 2 Existing Travel Patterns."

- The travel demand model has been updated so as to integrate the San Antonio/Bexar County (SABC) with the Capital Area Metropolitan Planning Organization's (CAMPO's) for the CTTS study area. The discussion of the travel demand model is presented in "Chapter 3 Model Validation and Refinement."

- Socioeconomic projections have been updated for this study, both by reviewing current conditions on the ground and providing a new projection of future development. The discussion pertaining to the new socioeconomic data is presented in "Chapter 4 Socioeconomic Forecasts."

- Several major roadways in the Austin area have been updated based on the most recent information. The discussion pertaining to the network updates is presented in "Chapter 5 Roadway Networks."

Figure 1-1: CTTS Toll Roads and Study Area



Source: http://www.centraltexasturnpike.org/

1.2 CONSULTANT TEAM

The purpose of this study is to provide updated traffic and revenue forecasts for review by potential investors in bonds supporting the CTTS. *Stantec Consulting Services Inc* (Stantec) led the consultant team for the Traffic and Revenue Study and was responsible for project management, coordination, and forecasting gross toll revenues. Two firms assisted in work effort:

- *Alliance Transportation Group.* (ATG) provided traffic counts within the study area which was used for model validation. ATG also provided the socioeconomic review and updated employment and population projections used in the traffic model.

- *Brown & Gay Engineers, Inc.* provided local engineering support identifying regional highway network improvements and conducted travel time surveys

1.3 REPORT ORGANIZATION

The remainder of this report is organized into the following chapters as described below:

- Chapter 2 – Existing Travel Patterns – presents a summary of travel time surveys, traffic count data and historic toll transactions for the CTTS 2010 Update. These data were used in developing and validating the base year model.

- Chapter 3 – Model Validation and Refinement – explains the methodology used to produce travel demand forecasts for the CTTS Study area, based upon an adaptation of the CAMPO and San Antonio Model. The toll diversion model and results of the model validation are also described.

- Chapter 4 – Socioeconomic Forecasts – describes the assumptions used to assess future development in the Austin and San Antonio metropolitan areas, more specifically the CTTS Study Area.

- Chapter 5 – Roadway Networks – describes the key network changes between traffic model analysis years.

- Chapter 6 – Revenue Forecasts – presents the base case toll structure and the resulting traffic and revenue forecasts.

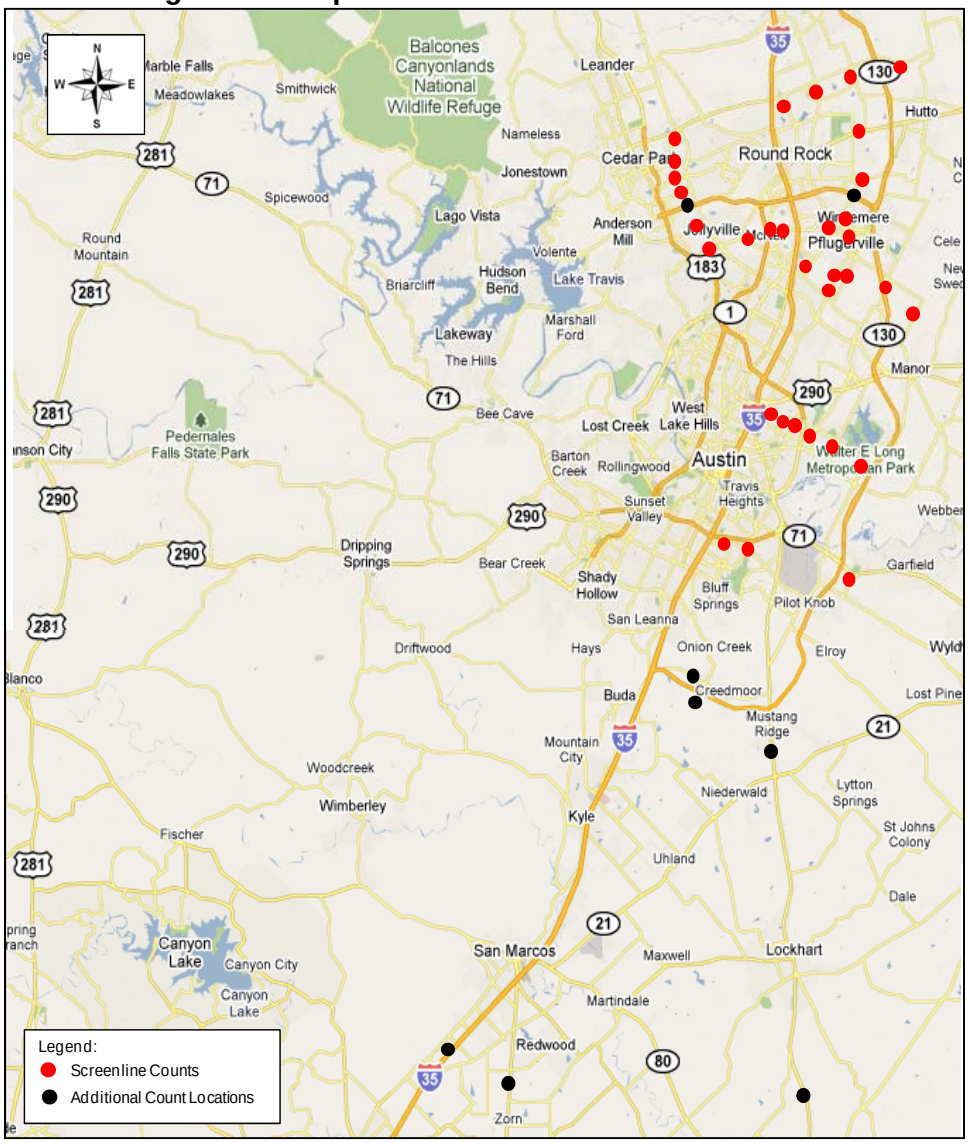
- Chapter 7 – Sensitivity Analysis – presents impacts of changing key input parameters on transaction and revenue forecasts.

2.0 Existing Travel Patterns

2.1 STUDY AREA TRAFFIC DATA COLLECTION

A data collection program conducted by *Alliance Transportation Group, Inc.* (ATG) was designed to provide information on travel within the study area and support the travel demand model described in Chapter 3. The data were gathered by the Consultant team in September 2010. Travel data compiled for the study consisted of 43 Automatic Traffic Recorders (ATRs) shown in Figure 2-1 and travel time surveys shown in Figure 2-3.

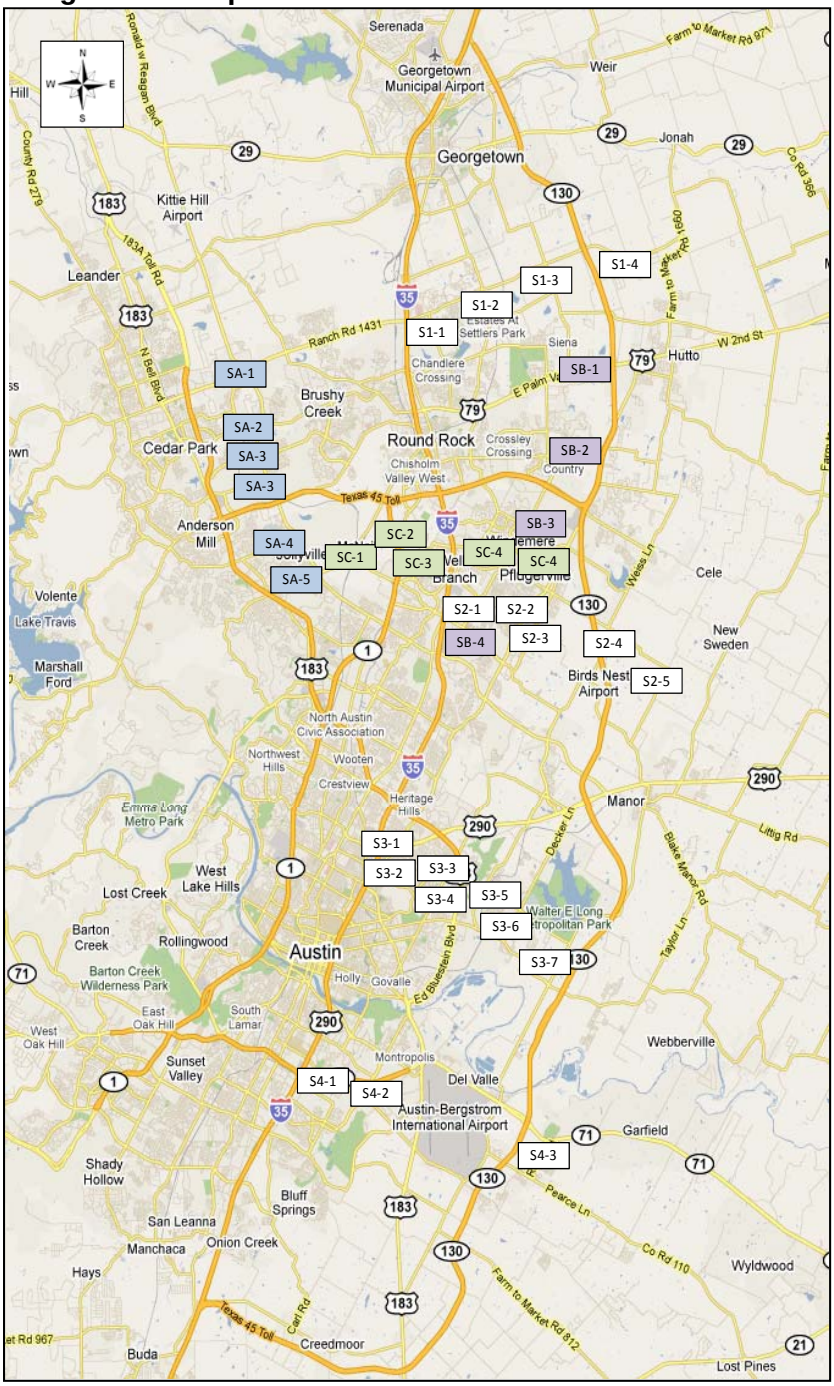
Figure 2-1: September 2010 ATR Count Locations



Source: maps.google.com

Most of the ATRs were placed at defined screenline locations and are shown in Figure 2-2. These screenline locations are used to better understand traffic demand within the CTTS corridor. Screenlines 1 through 4 represent the four east-west screenlines along the north-south toll road SH 130. Screenlines A and B represent the two north-south screenlines along the east-west toll road SH 45 N, and Screenline C represents the north-south toll road Loop 1.

Figure 2-2: September 2010 Screenline Count Location



Source: maps.google.com See Table 2-1

Table 2-1 shows the average weekday traffic volume recorded in September 2010 at each screenline count location.

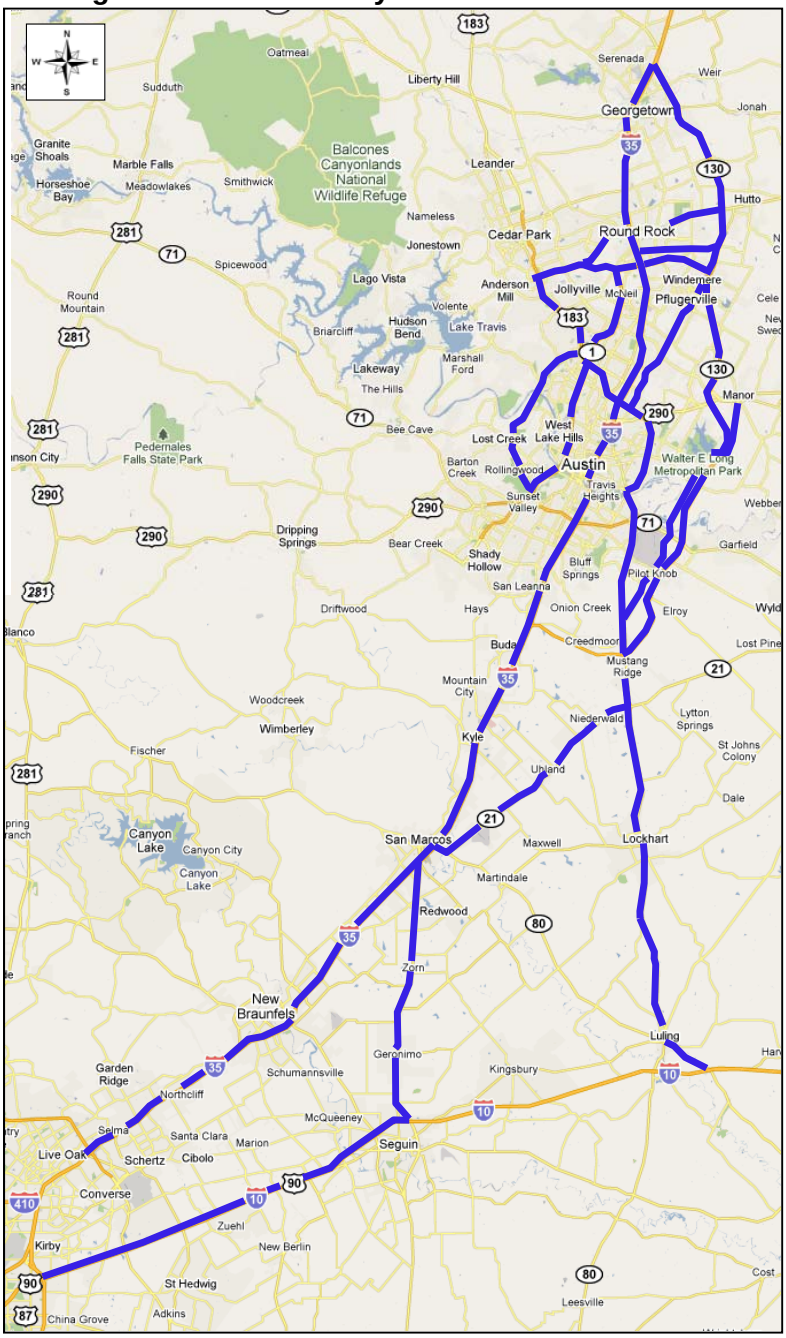
Table 2-1: Average Weekday Traffic Counts in CTTS Study Area

ID	ROADWAY	LOCATION	TOTAL
SH 130 - Screenline 1			
S1-1	Sunrise Rd (CR 115)	Between University Blvd/E. Chandler St. and FM 3406/E. Old Settlers Blvd.	11,189
S1-2	N Aw Grimes Blvd (FM 1460)	Between E. Chandler St. and CR 112	7,776
S1-3	Hutto Rd (CR 110)	Between University Blvd/E. Chandler St. and Limmer Loop/CR 164	2,767
S1-4	CR 100	Between Chandler Rd. and CF 394	448
SH 130 - Screenline 2			
S2-1	S. Heatherwilde Blvd.	Between Wells Branch Pkwy and Howard Lane	8,039
S2-2	Dessau Road	Between Howard Ln. and Wells Branch Pkwy	18,445
S2-3	Immanuel Road	Between Howard Ln. and Wells Branch Pkwy	2,991
S2-4	Cameron Rd.	Between Pfluggerville East Rd. and SH 130	2,245
S2-5	Fuchs Grove Rd.	Between Cameron Rd. and Gregg Ln.	1,729
SH 130 - Screenline 3			
S3-1	Cameron Rd	Between E. Koenig Ln. and E. 51st St.	15,915
S3-2	Berkman Dr	Between US 290E and E. 51st St.	7,718
S3-3	Manor Rd	Between E. 51st St. and US Springdale/Manor Rd Intersection	9,159
S3-4	Springdale Rd	Between E. 51st St. and US Springdale/Manor Rd Intersection	10,108
S3-5	Johnny Morris Rd	Between MLK Blvd (FM 969) and Loyola Ln.	4,852
S3-6	Decker Ln (FM 3177)	Between MLK Blvd (FM 969) and Loyola Ln.	8,371
S3-7	FM 973	Between MLK Blvd (FM 969) and Loyola Ln.	5,734
SH 130 - Screenline 4			
S4-1	Todd Ln	Between E Street Elmo Rd and SH 71	9,776
S4-2	Stassney Ln	Between Burleston Rd. and SH 71	19,437
S4-3	Ross Rd	Between Pearce Ln. and Elroy Rd.	3,075
SH 45 N West - Screenline A			
SA-1	Colonial Parkway	Between N Vista Ridge Blvd. and W Parmer Ln.	3,931
SA-2	Brushy Creek Rd	Between S Vista Ridge Blvd. and W Parmer Ln.	10,794
SA-3	Avery Ranch Blvd	Between N Canoa Hills Trail and Casditas Dr. (W of Parmer Ln)	11,902
SA-4	Lakeline Blvd	Between Rutledge Spur and W Parmer Ln.	7,938
SA-5	Anderson Mill Rd	Between Villa Park Dr. and Morris Rd.	15,457
SA-6	McNeil Dr	Between Blackfoot Trail and Corpus Christ Dr.	27,596
SH 45 N East - Screenline B			
SB-1	US 79	Between Red Bud Ln. and County Road 110	22,161
SB-2	CR 168/Gattis School Rd	Between Red Bud Ln. and SH 130	12,763
SB-3	Pflugerville Loop Rd	Between Wilke Ridge Ln and Great Basin Ave.	9,257
SB-4	Howard Lane	East of Heatherwilde Blvd.	19,675
Loop 1 - Screenline C			
SC-1	Howard Lane	Between McNeil Round Rock Rd. and Loop 1	14,484
SC-2	FM 1325/Lp 1 SR	Parallel to the Mainline Plaza	16,012
SC-3	Bratton Lane	Between Merriltown Dr. and Shoreline Dr.	6,450
SC-4	Heatherwilde	North of FM 1825 (Pecan St. W)	14,375
SC-5	N Railroad Rd	Between FM 1825 and Pfenning Ln.	4,690
Additional Counts			
X-1	SR 123	Between S. Old Bastrop Highway and FM 1978	11,575
X-2	IH 35	Between S. Old Bastrop Highway and CR 235/Posey Road	69,859
X-3	US 183S	Just North of Luling (North of the Carter Memorial Airport)	6,026
X-4	US 183S	Between Margo Dr and Laws Rd in Mustang Ridge	15,160
X-5	FM 1327	West of Palmer Road	8,639
X-6	Turnerville Road	West of Palmer Road	334
X-7	SH 45 NE Frontage Road	East of Heatherwide Blvd	7,604
X-8	SH 45 NW Frontage Road	past Briar Hollow Drive, prior to on-ramp adjacent to Amberglen Road	28,890

2.2 CTTS STUDY AREA TRAVEL TIME RUNS

A travel time data collection program was conducted by *Brown & Gay Engineers, Inc*. For this study, travel time runs were measured along IH 35, Loop 1, SH 130, SH 45 N, US 183, SH 21, SH 360, US 79, US 973, FM 685, RM 620, Gattis School Rd., Parmer Lane, IH 10, and SH 123. The travel time run locations are shown in Figure 2-3.

Figure 2-3: CTTS Study Area Travel Time Runs



Source: maps.google.com

On each road travel time runs were conducted for the AM Peak, PM Peak, and the Off Peak period. Table 2-2 compares the speeds on these routes on a typical weekday for the length of the entire route. Details for individual sections may be found in Appendix A.

In the northbound and southbound direction SH 130 experiences average travel speeds of about 70 mph during peak and off-peak hours. In the northbound direction from MLK Boulevard to SH 130, IH 35 experiences average travel time speeds of around 67 mph in the AM peak and off-peak, but only 47 mph during the PM peak. In the southbound direction from SH 130 to MLK Boulevard, IH 35 experiences average travel time speeds of 34 mph in the AM peak and 44 mph during the PM peak. FM 973, US 183, and Parmer Lane experience average travel speeds ranging from 27 to 66 mph during peak hours. Overall, SH 130 provides the fastest route to and from north of the Austin central business district.

In the northbound direction Loop 1 provides average travel speeds of 54 mph during the AM peak, 36 mph in the PM peak, and 63 mph in the off-peak. From US 290 to SH 45 N, US 183 provides average northbound travel speeds of 66 mph during the AM peak and 45 mph during the PM peak. FM 685 provides average travel speeds of 35 mph during the AM peak and 27 mph during the PM peak. Overall, Loop 1 does not provide the fastest north-south travel route in the corridor and the PM peak average travel speeds indicate congestion.

In the eastbound and westbound direction SH 45 N provides average travel speeds ranging from 66 to 74 mph during peak and off-peak hours. Competing roadways RM 620, Gattis Rd., and US 79 provide average travel speeds ranging from 24 to 39 mph during peak hours. Therefore SH 45 N provides the fastest east-west alternative.

Table 2-2: September 2010 Travel Time Runs

Location			DIST (mile)	Speed (MPH)		
				AM Peak	PM Peak	Off Peak
Northbound						
Loop 1	***US 290 - SH 45 N***	***NB***	***19.9***	***54***	***36***	***63***
SH 130	***US 183 - IH 35***	***NB***	***46.9***	***73***	***72***	***71***
IH 35	MLK Blvd - SH 130	NB	30.0	67	47	68
	SH 80 - MLK Blvd	NB	30.1	34	52	62
	Loop 1604 - SH 80	NB	33.7	73	71	70
US 183	US 290 - SH 45 N	NB	14.3	66	45	65
	SH 130 - Manor Rd	NB	17.1	38	46	51
	IH 10 - SH 130	NB	32.3	54	53	53
SH 21	SH 80 - US 183	NB	17.0	57	58	60
SH 360	Loop 1 - US 183	NB	12.7	36	24	46
FM 973	US 183 - US 290	NB	19.5	41	40	43
SH 123	IH 10 - IH 35	NB	19.2	54	53	51
FM 685	US 290 - SH 45 N	NB	12.5	35	27	34
Parmer Ln.	Loop 1 - FM 1431	NB	9.9	38	39	47
Southbound						
Loop 1	***SH 45 N - US 290***	***SB***	***19.9***	***34***	***37***	***65***
SH 130	***IH 35 - US 183***	***SB***	***46.9***	***72***	***72***	***71***
IH 35	SH 130 - MLK Blvd	SB	29.9	34	44	68
	MLK Blvd - SH 80	SB	30.1	67	45	70
	SH 80 - Loop 1604	SB	33.7	63	72	71
US 183	SH 45 N - US 290	SB	14.3	35	66	67
	Manor Rd - SH 130	SB	17.1	44	37	50
	SH 130 - IH 10	SB	32.3	52	51	52
SH 21	US 183 - SH 80	SB	17.0	60	58	61
SH 360	US 183 - Loop 1	SB	12.7	30	34	45
FM 973	US 290 - US 183	SB	19.5	44	42	44
SH 123	IH 35 - IH 10	SB	19.2	53	52	52
FM 685	SH 45 N - US 290	SB	12.5	24	32	37
Parmer Ln.	FM 1431 - Loop 1	SB	9.9	34	32	38
Eastbound						
SH 45 N	***US 183 - SH 130***	***EB***	***12.8***	***66***	***68***	***71***
US 79	IH 35 - SH 130	EB	6.9	40	37	40
IH 10	Loop 410 - SH 123	EB	29.1	71	72	70
RM 620	US 183 - IH 35	EB	7.8	33	30	36
Gattis School Rd.	IH 35 - SH 130	EB	5.4	27	25	30
Westbound						
SH 45 N	***SH 130 - US 183***	***WB***	***12.8***	***68***	***66***	***74***
US 79	SH 130 - IH 35	WB	6.9	31	31	33
IH 10	SH 123 - Loop 410	WB	29.1	67	71	72
RM 620	IH 35 - US 183	WB	7.8	30	30	39
Gattis School Rd.	SH 130 - IH 35	WB	5.4	24	25	29

2.3 HISTORIC CTTS TOLL TRANSACTIONS AND REVENUE

The CTTS is a fully operational 65-mile turnpike system, with all sections currently opened for traffic. The project was opened in Phases as follows:

- The eastern portion of SH 45 N, Loop 1, Segment 2 of SH 130 were opened in November 2006
- A month later, Segment 1 of SH 130 was opened in December 2006.
- The remaining Western portion of SH 45 N was completed and opened in spring 2007
- Segment 3 of SH 130 was opened almost a year later in September 2007. By May 2008, the CTTS elements were complete with the opening of SH 130 Segment 4.

Another pertinent event was the opening of SH 45 Southeast in May, 2009. This toll facility is a major connector between IH-35 and SH 130/US 183 Interchange and functions as a feeder road to CTTS elements, particularly SH 130. The opening of SH 45 Southeast completes the "half-beltway" that provides an alternative route for through traffic going north-south of the region as well as traffic traveling east of the region, in order to avoid Austin's busy traffic.

Historic toll rates for passenger cars are shown in Table 2-3. The CTTS operated toll-free at all paypoint locations for the first full two months of operation (November and December 2006). In the second and third months of operation all paypoint locations operated under reduced toll rates. Full tolling began in March 2007.

Table 2-3: Historic Toll Rates

Toll Road		Payment Type	Toll-Free		Discounted Tolls		Full Toll Rate
			Nov-06	Dec-06	Jan-07	Feb-07	Mar 2007 - Current
SH 45 N and Loop 1	Mainlines	Cash	-	-	$0.75	$0.75	$0.75
		ETC	-	-	-	$0.34	$0.68
		Pay by Mail	-	-	-	-	$0.90
	Ramps	Cash	-	-	$0.50	$0.50	$0.50
		ETC	-	-	-	$0.23	$0.45
		Pay by Mail	-	-	-	-	$0.60
SH 130 Turnpike	Mainlines	Cash	-	-	$1.50	$1.50	$1.50
		ETC	-	-	-	$0.68	$1.35
		Pay by Mail	-	-	-	-	$1.80
	Ramps	Cash	-	-	$0.50	$0.50	$0.50
		ETC	-	-	-	$0.23	$0.45
		Pay by Mail	-	-	-	-	$0.60

The percentages of payment type by facility and fiscal year for average weekday transactions are presented in Table 2-4. The Electronic Toll Collection (ETC) usage for the Northwest Elements has been consistently in the vicinity of 75 percent or higher for all fiscal years, while the ETC usage for SH 130 is slightly lower, at approximately 63 percent. These rates are much higher than the expected rate of use in the original 2002 study. The ETC rates were adjusted in the 2008 Review Study to reflect observed conditions and were also used for the 2010 Update. The ETC percentage for SH 130 in FY07 mainly reflects the usage of segments 1 and 2 of the facility since the other segments were opened later. These two segments served the users with higher transponder usage at 67 percent. However, as the other segments were opened (Segments 3 & 4) the ETC toll percentage dropped to approximately 62 percent. Please note

that in the model validation process, SH 130 utilized percentages by payment type from FY10, rather than FY08, to reflect the trends experienced for the entire facility's operation. .

It should be noted that TxDOT has a pilot program that permits the option of paying for tolls using video license plate technology, where the patron does not pay at the plaza but passes through and is billed later based up on the reading and identification of the license plate. This option was not considered in the original 2002 CTTS Study or 2005 Update. In subsequent studies, including 2008 Review, the video transactions were estimated in the post-model adjustment process as a fraction of cash transactions, based primarily upon observed transaction data. For the 2010 Update, video transactions were estimated by the modeling process and adjusted manually as necessary.

Table 2-4: Payment Type Percentages by Facility and Fiscal Year

Toll Road	Payment Type	FY 07	FY 08	FY 09	FY 10
SH 45 N	**Cash**		10%	8%	7%
	ETC	77%	75%	74%	74%
	Pay by Mail		15%	18%	19%
	Total	**77%**	**100%**	**100%**	**100%**
Loop 1	**Cash**		11%	8%	7%
	ETC	77%	75%	75%	75%
	Pay by Mail		14%	17%	18%
	Total	**77%**	**101%**	**100%**	**100%**
SH 130 Turnpike	**Cash**	18%	15%	12%	9%
	ETC	67%	63%	62%	62%
	Pay by Mail	15%	22%	26%	28%
	Total	**100%**	**100%**	**100%**	**99%**

Source: Transactions Data provided by TTA.

Table 2-5 and Table 2-6 show the actual monthly average weekday transactions by roadway and the percent change year over year, respectively. SH 45 N average weekday transactions have been steadily increasing with 5.5 percent increase in FY 2009 and 2.5 percent increase in FY 2010 and recently reaching 100,000. Growth on Loop 1 has remained virtually flat, with average weekday transactions only reaching 56,900 for FY 2010. SH 130 transactions have experienced double digit growth since opening, with weekday volumes recently almost reaching 90,000.

Table 2-5: Average Weekday Transactions by Fiscal Year

Toll Road	Not Open		Toll-Free		Discounted Tolls		Full Toll Rate					
	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07
SH 45 Total	-	-	NA	NA	38,312	41,409	39,714	41,034	42,995	42,725	42,800	45,757
Loop1 Turnpike	-	-	NA	NA	49,752	53,821	51,682	52,583	53,633	53,116	52,887	55,342
SH 130 Turnpike	-	-	NA	NA	29,789	33,417	32,314	32,803	33,052	32,164	31,467	34,334
CTTS TOTAL	-	-	NA	NA	117,853	128,647	123,710	126,420	129,680	128,005	127,154	135,433

Toll Road	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	FY 08
SH 45 Total	88,697	90,181	88,485	86,574	86,363	91,601	90,064	94,469	96,942	93,482	91,771	94,053	**91,057**
Loop1 Turnpike	55,085	54,726	53,929	52,263	53,074	55,639	54,645	56,356	56,452	55,378	54,594	55,104	**54,770**
SH 130 Turnpike	39,741	43,220	59,311	55,318	52,592	58,240	58,825	60,233	65,716	65,358	69,670	70,975	**58,267**
CTTS TOTAL	183,523	188,127	201,725	194,155	192,029	205,480	203,534	211,058	219,110	214,218	216,035	220,132	**204,094**

Toll Road	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	FY 09
SH 45 Total	95,283	96,496	93,982	91,614	91,260	94,583	93,629	97,972	101,507	99,779	97,701	99,042	**96,071**
Loop1 Turnpike	55,757	55,696	54,455	52,955	53,181	54,923	54,039	55,839	56,380	56,189	55,362	56,491	**55,106**
SH 130 Turnpike	69,999	70,765	69,968	66,563	63,679	67,940	70,384	71,812	79,731	82,663	82,054	81,555	**73,093**
CTTS TOTAL	221,039	222,957	218,405	211,132	208,120	217,446	218,052	225,623	237,618	238,631	235,117	237,088	**224,269**

Toll Road	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	FY 10
SH 45 Total	98,080	98,938	97,511	94,200	94,291	94,273	98,760	102,392	103,115	100,502	98,416	100,872	**98,446**
Loop1 Turnpike	56,006	56,575	55,652	54,125	55,399	55,244	57,475	58,845	58,951	58,324	57,487	58,716	**56,900**
SH 130 Turnpike	79,743	81,292	83,610	78,074	74,433	78,824	86,870	88,569	89,225	88,537	89,015	89,228	**83,952**
CTTS TOTAL	233,829	236,805	236,773	226,399	224,123	228,341	243,105	249,806	251,291	247,363	244,918	248,816	**239,297**

Toll Road	Sep-10	Oct-10	Nov-10
SH 45 Total			
Loop1 Turnpike			
SH 130 Turnpike			
CTTS TOTAL			

Notes:
(1) Values for SH 130 include only the two northern segments (Segments 1 & 2) in operation as of October 2007.
(2) Values for SH 130 include only the three northern segments (Segments 1,2, and 3) in operation between November 2007 and June 2008.
(3) Values for SH 130 include all four segments in operation starting in July 2008.

Source: CTTS Annual Reports (FY 07, FY 08, FY 09, and FY 10)

Table 2-6: Average Weekday Transaction - Monthly Percent Change

	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08
SH 45 Total					125.4%	121.2%	126.8%	130.2%	125.5%	118.8%	114.4%	105.5%
Loop1 Turnpike					6.7%	3.4%	5.7%	7.2%	5.3%	4.3%	3.2%	-0.4%
SH 130 Turnpike					76.5%	74.3%	82.0%	83.6%	98.8%	103.2%	121.4%	106.7%
CTTS TOTAL					62.9%	59.7%	64.5%	66.9%	69.0%	67.4%	69.9%	62.5%

	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	FY 09
SH 45 Total	7.4%	7.0%	6.2%	5.8%	5.7%	3.3%	4.0%	3.7%	4.7%	6.7%	6.5%	5.3%	**5.5%**
Loop1 Turnpike	1.2%	1.8%	1.0%	1.3%	0.2%	-1.3%	-1.1%	-0.9%	-0.1%	1.5%	1.4%	2.5%	**0.6%**
SH 130 Turnpike	76.1%	63.7%	18.0%	20.3%	21.1%	16.7%	19.6%	19.2%	21.3%	26.5%	17.8%	14.9%	**25.4%**
CTTS TOTAL	20.4%	18.5%	8.3%	8.7%	8.4%	5.8%	7.1%	6.9%	8.4%	11.4%	8.8%	7.7%	**9.9%**

	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	FY 10
SH 45 Total	2.9%	2.5%	3.8%	2.8%	3.3%	-0.3%	5.5%	4.5%	1.6%	0.7%	0.7%	1.8%	**2.5%**
Loop1 Turnpike	0.4%	1.6%	2.2%	2.2%	4.2%	0.6%	6.4%	5.4%	4.6%	3.8%	3.8%	3.9%	**3.3%**
SH 130 Turnpike	13.9%	14.9%	19.5%	17.3%	16.9%	16.0%	23.4%	23.3%	11.9%	7.1%	8.5%	9.4%	**14.9%**
CTTS TOTAL	5.8%	6.2%	8.4%	7.2%	7.7%	5.0%	11.5%	10.7%	5.8%	3.7%	4.2%	4.9%	**6.7%**

Note: Monthly Percent Change is comparison to the same month in prior year

Overall, the CTTS project was well received by patrons as shown in the comparison between estimated and observed transactions in the past three years shown in Figure 2-4.

Figure 2-4: Actual Average Weekday Toll Transactions vs. Prior Forecasts

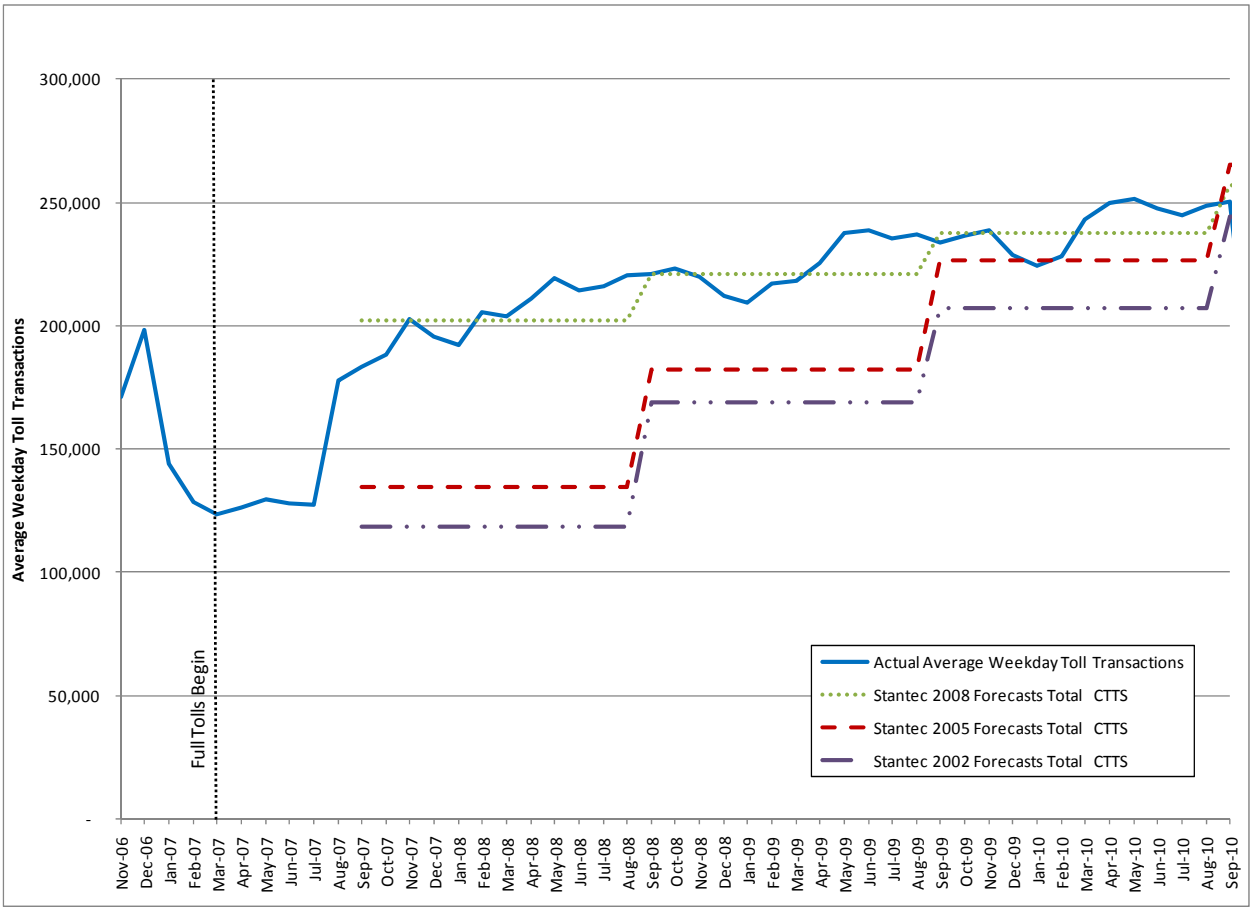


Table 2-7 and Table 2-8 show the historic trends in toll revenue since the toll road began collecting revenue in January 2007 to August 2010. Total revenue on SH 45 N increased 6.2 percent in FY 2009 and slightly declined by 0.5 percent in FY 2010. Total revenue on Loop 1 has continually collected on average $10.7 million for FY 2008, FY 2009, and FY 2010. These downward influences on SH 45 N and Loop 1 are most likely due to the recent recession and the congestion in the Loop 1 corridor. CTTS total revenue growth has been significant and steady since the start-up of this toll facility with toll revenues of $48.9 million in FY 2008, $58.9 million in FY 2009, and $66.2 million in FY 2010.

Table 2-7: Actual Monthly Toll Fiscal Year Toll Revenues

Toll Road	Not Open		Toll-Free		Discounted Tolls		Full Toll Rate					
	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07
SH 45 Total	$ -	$ -	$ -	$ -	$ 53,900	$ 363,500	$ 625,400	$ 614,200	$ 682,800	$ 661,700	$ 661,000	$ 887,600
Loop1 Turnpike	$ -	$ -	$ -	$ -	$ 116,300	$ 539,200	$ 900,100	$ 866,600	$ 936,800	$ 900,000	$ 894,600	$ 981,100
SH 130 Turnpike	$ -	$ -	$ -	$ -	$ 108,400	$ 465,200	$ 820,000	$ 795,800	$ 858,200	$ 841,200	$ 817,300	$ 927,800
CTTS TOTAL	$ -	$ -	$ -	$ -	$ 278,900	$1,386,100	$2,388,400	$2,328,400	$2,553,000	$2,473,600	$2,448,800	$ 2,886,700

Toll Road	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	FY 08
SH 45 Total	$1,328,600	$1,466,800	$1,342,400	$1,353,600	$1,370,300	$1,393,800	$1,435,100	$1,469,200	$1,517,700	$1,425,600	$1,420,300	$ 1,459,100	**$ 16,982,500**
Loop1 Turnpike	$ 883,100	$ 961,200	$ 883,700	$ 874,100	$ 902,200	$ 896,700	$ 915,000	$ 925,400	$ 923,900	$ 879,200	$ 885,700	$ 892,400	**$ 10,822,600**
SH 130 Turnpike	$1,045,900	$1,215,800	$1,247,000	$1,359,700	$1,429,400	$1,538,200	$1,652,900	$1,636,700	$1,781,700	$1,775,400	$1,777,700	$ 1,909,600	**$ 18,370,000**
CTTS TOTAL	$3,344,100	$3,769,300	$3,611,700	$3,772,900	$3,943,700	$4,030,500	$4,195,500	$4,253,100	$4,479,800	$4,392,500	$4,458,800	$ 4,653,900	**$ 48,905,800**

Toll Road	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	FY 09
SH 45 Total	$1,482,700	$1,551,500	$1,389,700	$1,456,800	$1,471,800	$1,420,900	$1,533,200	$1,546,500	$1,582,900	$1,565,700	$1,529,100	$ 1,506,100	**$ 18,036,900**
Loop1 Turnpike	$ 902,300	$ 942,000	$ 836,300	$ 880,000	$ 894,500	$ 865,700	$ 929,300	$ 929,700	$ 914,400	$ 919,200	$ 904,700	$ 893,600	**$ 10,811,700**
SH 130 Turnpike	$1,946,600	$2,021,100	$1,825,400	$1,831,500	$1,782,700	$1,795,500	$2,066,200	$1,981,600	$2,211,800	$2,433,400	$2,412,300	$ 2,289,800	**$ 24,597,900**
CTTS TOTAL	$4,671,600	$4,939,300	$4,456,700	$4,563,400	$4,625,600	$4,545,100	$4,971,700	$4,868,700	$5,109,200	$5,429,700	$5,403,100	$ 5,329,900	**$ 58,914,000**

Toll Road	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	FY 10
SH 45 Total	$1,424,100	$1,467,700	$1,386,500	$1,476,900	$1,429,200	$1,373,900	$1,579,000	$1,583,500	$1,592,100	$1,557,800	$1,543,900	$ 1,540,900	**$ 17,955,500**
Loop1 Turnpike	$ 851,800	$ 878,000	$ 824,600	$ 878,800	$ 860,400	$ 834,400	$ 961,000	$ 958,300	$ 945,200	$ 640,700	$ 938,200	$ 961,500	**$ 10,532,900**
SH 130 Turnpike	$2,160,400	$2,199,400	$2,226,400	$2,227,500	$1,966,700	$2,040,000	$2,577,200	$2,538,000	$2,532,600	$2,522,200	$2,562,300	$ 2,529,100	**$ 28,081,800**
CTTS TOTAL	$5,220,000	$5,359,900	$5,492,400	$5,319,200	$4,994,900	$4,937,300	$5,834,900	$5,929,000	$5,716,500	$5,723,200	$5,778,200	$ 5,845,600	**$ 66,151,100**

Note:
(1) Individual roadway revenue does not include Pay by Mail revenue.
(2) Totals do not add because Pay by Mail revenue is included in CTTS total.
(3) Values for SH 130 include only the two northern segments (Segments 1 & 2) in operation as of October 2007.
(4) Values for SH 130 include only the three northern segments (Segments 1,2, and 3) in operation between November 2007 and June 2008.
(5) Values for SH 130 include all four segments in operation between July 2008 and September 2008.

Source: CTTS Annual Reports (FY 07, FY 08, FY 09, and FY 10)

Table 2-8: Actual Monthly Toll Revenue - Monthly Percent Change

	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08
SH 45 Total					2442.3%	283.4%	129.5%	139.2%	122.3%	115.4%	114.9%	64.4%
Loop1 Turnpike					675.8%	66.3%	1.7%	6.8%	-1.4%	-2.3%	-1.0%	-9.0%
SH 130 Turnpike					1218.6%	230.7%	101.6%	105.7%	107.6%	111.1%	117.5%	105.8%
CTTS TOTAL					1314.0%	190.8%	75.7%	82.7%	75.5%	77.6%	82.1%	61.2%

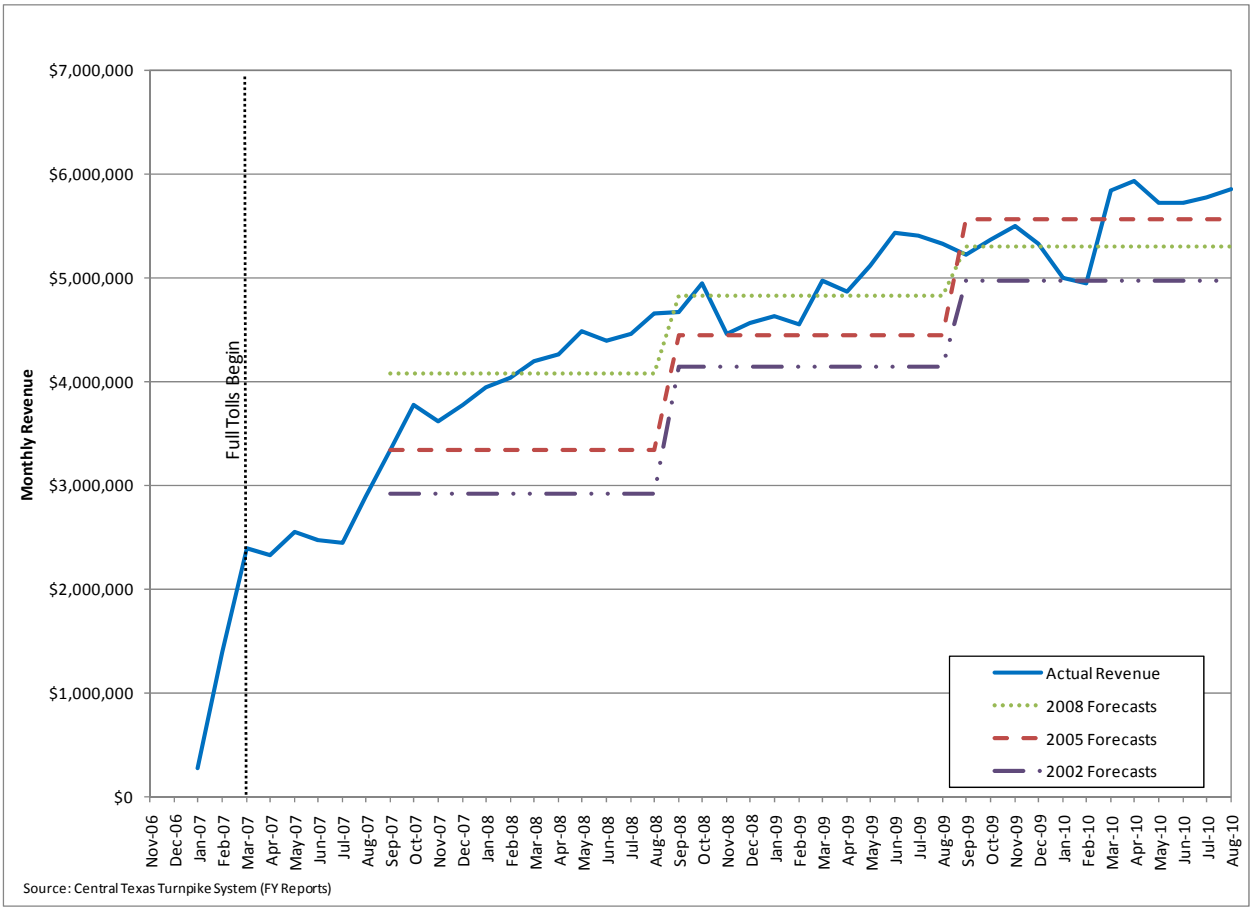
	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	FY 09
SH 45 Total	11.6%	5.8%	3.5%	7.6%	7.4%	1.9%	6.8%	5.3%	4.3%	9.8%	7.7%	3.2%	**6.2%**
Loop1 Turnpike	2.2%	-2.0%	-5.4%	0.7%	-0.9%	-3.5%	1.6%	0.5%	-1.0%	4.5%	2.1%	0.1%	**-0.1%**
SH 130 Turnpike	86.1%	66.2%	46.4%	34.7%	24.7%	16.7%	25.0%	21.1%	24.1%	37.1%	35.7%	19.9%	**33.9%**
CTTS TOTAL	39.7%	31.0%	23.4%	21.0%	17.3%	12.8%	18.5%	14.5%	14.0%	23.6%	21.2%	14.5%	**20.5%**

	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	FY 10
SH 45 Total	-4.0%	-5.4%	-0.2%	1.4%	-2.9%	-3.3%	3.0%	2.4%	0.6%	-0.5%	1.0%	2.3%	**-0.5%**
Loop1 Turnpike	-5.6%	-6.8%	-1.4%	-0.1%	-3.8%	-3.6%	3.4%	3.1%	3.4%	-30.3%	3.7%	7.6%	**-2.6%**
SH 130 Turnpike	11.0%	8.8%	22.0%	21.6%	10.3%	13.6%	24.7%	28.1%	14.5%	3.6%	6.2%	10.5%	**14.2%**
CTTS TOTAL	11.7%	8.5%	23.2%	16.6%	8.0%	8.6%	17.4%	21.8%	11.9%	5.4%	6.9%	9.7%	**12.3%**

Note: Monthly Percent Change is comparison to the same month in prior year

Figure 2-5 shows the actual total monthly toll revenue including pay by mail for the entire CTTS since the roadway was opened in November 2006, compared to prior revenue forecasts.

Figure 2-5: Monthly Toll Revenue Collections vs. Prior Forecasts



3.0 Model Validation and Refinement

In preparing to estimate traffic and toll revenue for this project, a decision was made to update the existing travel demand modeling process used to forecast traffic and toll diversion. This decision was based on several issues related to the growth in the region and the expansion of the underlying regional models as well as the availability of several years of observed data for the CTTS facilities. The objective of this model development effort was to provide a more robust tool for modeling the CTTS toll roads as well as other local toll roads that influence traffic on the CTTS.

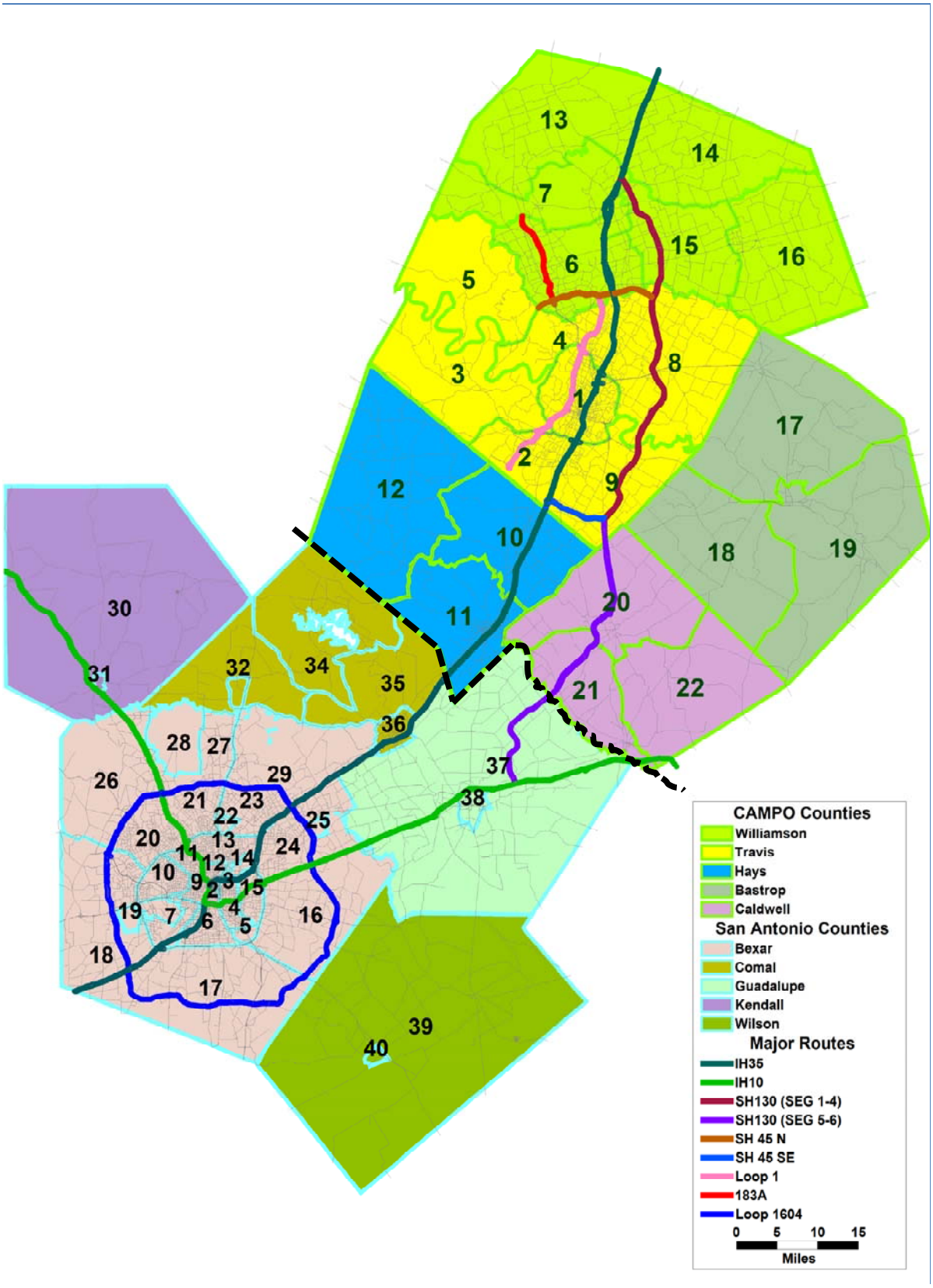
A key element of the model development was the expansion of the modeled region to encompass areas and facilities that would influence traffic volumes on the various CTTS roadways. The expanded region included two additional counties east of Austin (Bastrop and Caldwell) that were recently added to the CAMPO, the Austin MPO, and a significant extension south of Austin by incorporating the area within the San Antonio regional model. The expanded area south of Austin was included primarily to reflect the anticipated growth in the I-35 corridor southward towards San Antonio and impacts of growing congestion that would influence diversion to the planned extension of the SH 130 Toll Road southward towards Seguin. This extension includes SH 130 Segments 5 and 6 which are now under construction with anticipated completion date in early 2013. While this extension is not part of the CTTS, it is anticipated that these new segments would provide some additional traffic to the CTTS, particularly the southern segments of existing SH 130.

In addition to the expansion of the modeled region, the toll diversion modeling techniques were also updated to reflect new aspects of the tolling policy including the option of video tolling. The toll diversion model was updated to provide for greater flexibility in representing the variations in toll policy utilized by TTA and CTRMA both in terms of discounts and the integration of configuration-based tolls for newer facilities such as SH 45 Southeast. The modeling process was also enhanced to provide variation in the methods of payments by individual subregions. Lastly, the toll diversion models were further enhanced to improve the representation of several planned toll facilities that will be operated as managed lanes with variable pricing. The effect of all of these enhancements is the creation of improved modeling process that is capable of supporting forecasting in the growing region surrounding Austin. These enhancements will enable the modeling process to be responsive to a wide range of potential changes in toll policies as well as specific conditions that will influence traffic diversion for the next generation of toll facilities.

3.1 TRAVEL DEMAND MODEL DEVELOPMENT

The model development effort was designed specifically to take advantage of the existing regional models that encompass the expanded study area and to refine the toll diversion process that was originally developed for the 2002 CTTS Financing Study. The expanded study area encompassing both the Austin and San Antonio regional models is shown in Figure 3-1. Note that regional models share a common boundary along the Hays-Comal and Caldwell-Guadalupe county lines.

Figure 3-1: Austin - San Antonio Integrated Model



In order to integrate the individual regional models into single unified modeling process, it was necessary to merge the network and vehicle trip tables. As with the original model development for the 2002 study, the regional models are utilized to estimate total vehicle trips in the study. Each of the regional models is executed from trip generation, through trip distribution and mode choice using the revised socioeconomic data described in Chapter 4 to create vehicle trips by trip purpose and vehicle type (SOV, HOV, and Truck). The networks from each regional model were compared and a decision was made to adopt the network facility type –area type definitions as well the speeds and capacities from the Austin Model. Similarly the resulting vehicle trip tables from the execution of both regional models were integrated using the trip purpose designations from the Austin Model. The use of the Austin Model network parameters and trip purposes for the final integrated model reflect the fact the CTTS is entirely within the Austin modeled region and the Austin model represents a more advanced modeling process.

As part of the model development, it was recognized that several specific issues would influence the approach to model calibration. In contrast to the model development for the original 2002 financing study, the current model calibration would need to replicate volumes across the entire study area and traffic on the recently completed toll facilities. A further complication was the fact that the speed run data and traffic count data for this study would reflect the impact of several recently completed improvement projects such as SH 45 Southeast. Since the latest available socioeconomic data available for both regions was for the year 2008, a decision was made to set 2008 as the calibration year. As a result of this decision, it was necessary to factor the traffic count data collected for this study back to 2008, but to utilize a network that reflects the 2010 conditions, including the recent improvements, to be consistent with the speed and travel time data collected for this study. This approach required the estimation of traffic counts for the year 2008 assuming that major projects such as SH 45 Southeast were in place at that time. These adjusted counts were created near the new facilities (primarily SH 45 Southeast) using the volumes reported for the toll facilities as well as counts performed on parallel roadways as part of this project.

The new model utilized the existing toll diversion process as the basis for estimating tolled traffic. Several refinements were incorporated into the toll diversion modeling to account for both for new tolling technologies, such as video tolling pilot program being evaluated by TTA and dynamic pricing for managed lane facilities that are planned for the Austin region. In addition to these refinements, the new toll diversion model provides for variation by sub region in setting parameters, such as transponder usage, rather than using a single, regional value for all toll facilities. Similarly parameters reflecting the tolling policies of each agency (TTA and CTRMA) and the tolling plans for trucks (either axle-based or vehicle configuration-based) are now established at each tolling pay point, rather than regional averages. This enhancement permits variation in the tolling plans for each agency as well the transition to newer toll collection technologies.

Toll diversion equations were established for each of six trip purposes, including:

- Home Based Work (HBW)
- Home Based Shop (HBS)
- Home Based School (HBSch)
- Home Based Other (HBO)
- Work Based Other (WBO)
- Other Based Other (OBO)

As noted above, the new toll diversion process utilized the existing toll diversion equations as the basis for the forecasts. The formula is a basic binary logit equation and is defined as follows:

$$\text{Toll Share} = 1 / (1 + e^{U})$$

where:

Toll Share	=	Probability of selecting a toll road
e	=	Base of natural logarithm (ln)
U (work)	=	$a * (Time_{TR}-Time_{FR}) + b *(Cost)/ln(Inc) + C_{TR} + C_{ETC}$
U (nonwork)	=	$a * (Time_{TR}-Time_{FR}) + b *(Cost) + C_{TR} + C_{ETC}$
$Time_{TR}$	=	Toll road travel time in minutes
$Time_{FR}$	=	Nontoll road travel time in minutes
Cost	=	Toll in dollars
Inc	=	Annual income / 1000
C_{TR}	=	Constant for toll road bias
C_{ETC}	=	Constant for ETC bias
a,b	=	Coefficients

Several adjustments to the existing procedures were implemented as part of the development process. As an initial step, the value of time for each purpose was increased to reflect the increased household incomes in the Austin region from 1997 to 2008. While the values of time were increased, the resulting weighted average of all trip purposes ($16.67 per hour) is 59.8 % of Austin's 2008 median household income $57,973 per year, nearly identical the percentage for the 1997 calibration year of the original 2002 financing study. Table 3-1 lists the coefficients for each trip purpose as well as the bias terms and equivalent minute values for the negative toll bias term applicable to all payment method and the positive bias term for payment by transponder

Table 3-1: Toll Diversion Coefficients

TRIP PURPOSE	(ALPHA) TIME (MIN)	PEAK (BETA) COST ($) (1)	PEAK VOT ($/HR)	OFF-PEAK (BETA) COST ($) (1)	OFF-PEAK VOT ($/HR)	BIAS TERMS VALUES TOLL (2)	BIAS TERMS VALUES ETC (3)	BIAS TERMS EQUIVALENT MINUTES TOLL	BIAS TERMS EQUIVALENT MINUTES ETC
HBW	0.1053	1.3821	$ 18.56	2.0732	$ 12.37	0.0000	-0.2960	0.0	-2.8
HBS	0.0754	0.4049	$ 11.17	0.6074	$ 7.45	0.1872	-0.2423	2.5	-3.2
HBSCH	0.0777	0.4536	$ 10.28	0.6804	$ 6.85	0.1632	-0.2226	2.1	-2.9
HBO	0.0441	0.1672	$ 15.83	0.2508	$ 10.55	0.1716	-0.1650	3.9	-3.7
WBO	0.1396	1.9066	$ 17.84	2.8599	$ 11.89	0.0000	-0.3400	0.0	-2.4
OBO	0.0872	0.2408	$ 21.72	0.3613	$ 14.48	0.2667	-0.2980	3.1	-3.4
TRUCK	0.0884	0.1111	$ 47.73	0.1111	$ 47.73	0.3375	-0.2652	3.8	-3.0

Notes:

(1) HBW and WBO purposes use toll costs divided by LN(income/1000)

All cost coefficients scaled from the 1997 values in the original CTTP 2002 financing study to the year 2008.
All time coefficients and bias constants retained as in the original CTTP 2002 financing study, except:

(2) *Toll Bias terms for HBW and WBO are reduced to zero as trip makers for these purposes assumed familiar with tradeoffs*

(3) *Truck has a positive bias for payment by transponders*

As part of the original model development, the trips in the region were partitioned into those trips with transponder equipped vehicles and those trips that elected to pay tolls via traditional cash payments. In order to estimate the conditions of trips being assessed toll with the pilot program for video billing, it was necessary to create a third market segment in addition to the market segments for cash and transponder payment options. For the video tolling market segment, these trips had the relevant surcharge applied to the base tolls at each pay point, but also utilized the positive bias term associated with transponder payments since these trips have the convenience of not needing to stop to pay tolls as they would have if paying by cash.

A final set of refinements were included in the model. In order to be conservative, a decision was made to retain the lower value of time for each trip purpose during the off-peak period. The value of time was reduced by 33.3 percent and was applied to trips in each toll corridor. The toll diversion share estimates were also reduced for all trips where time savings were less than 2 minutes. For these trips with under 2 minutes of time savings, as the time savings transitioned towards zero, the toll shares were reduced from the shares predicted by the logit equations towards zero. This ensured that the toll traffic and revenue stream had a lower contribution from trips with minimal time savings. Lastly, since the individual toll facilities have now been in operation for several years, it is anticipated that those trips that have the highest frequency and are work-related would no longer incorporate a general bias against toll roads in the choice evaluation. These travelers, due to their frequency of travel, now are assumed to have an accurate assessment of the benefits and costs associated with the toll road options and no longer incorporate the biases in their decision making process. These trips elect to use or avoid the toll road based strictly on the time savings and associated costs. Due the large proportion of trucks using transponders, a decision was made to incorporate a bias term for truck transponder usage. This term is worth approximately 3 minutes of equivalent time.

The final toll shares by purpose as a function of time savings for $2.00 toll are shown in Figure 3-2 through Figure 3-8. In each graph, two lines are shown depicting the shares for trips paying with cash and those trips using transponders for payment.

Figure 3-2: Toll Diversion for Home Based Work (Auto) - $2.00 Toll

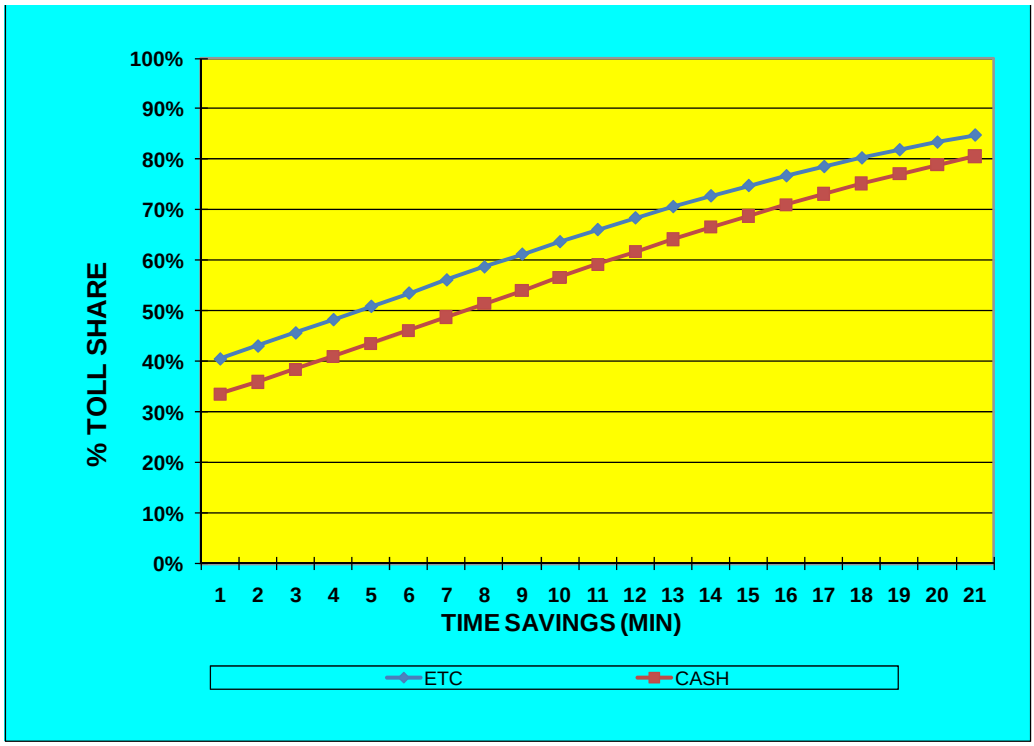


Figure 3-3: Toll Diversion for Home Based Shop (Auto) - $2.00 Toll

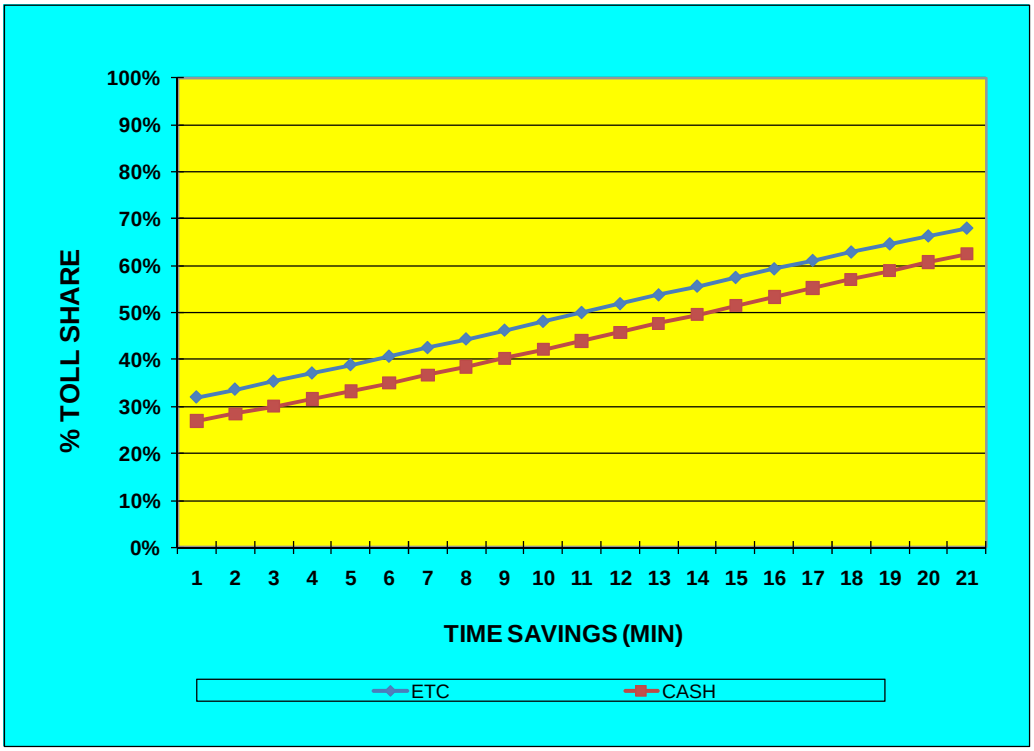


Figure 3-4: Toll Diversion for Home Based School (Auto) - $2.00 Toll

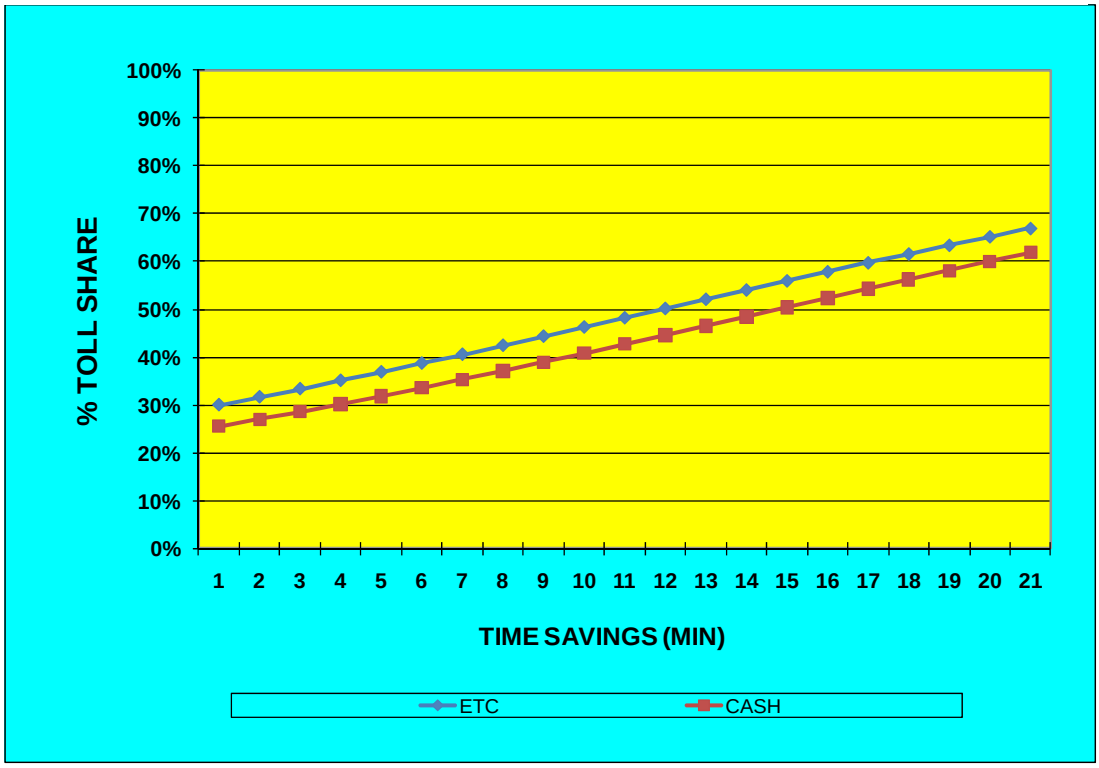


Figure 3-5: Toll Diversion for Home Based Other (Auto) - $2.00 Toll

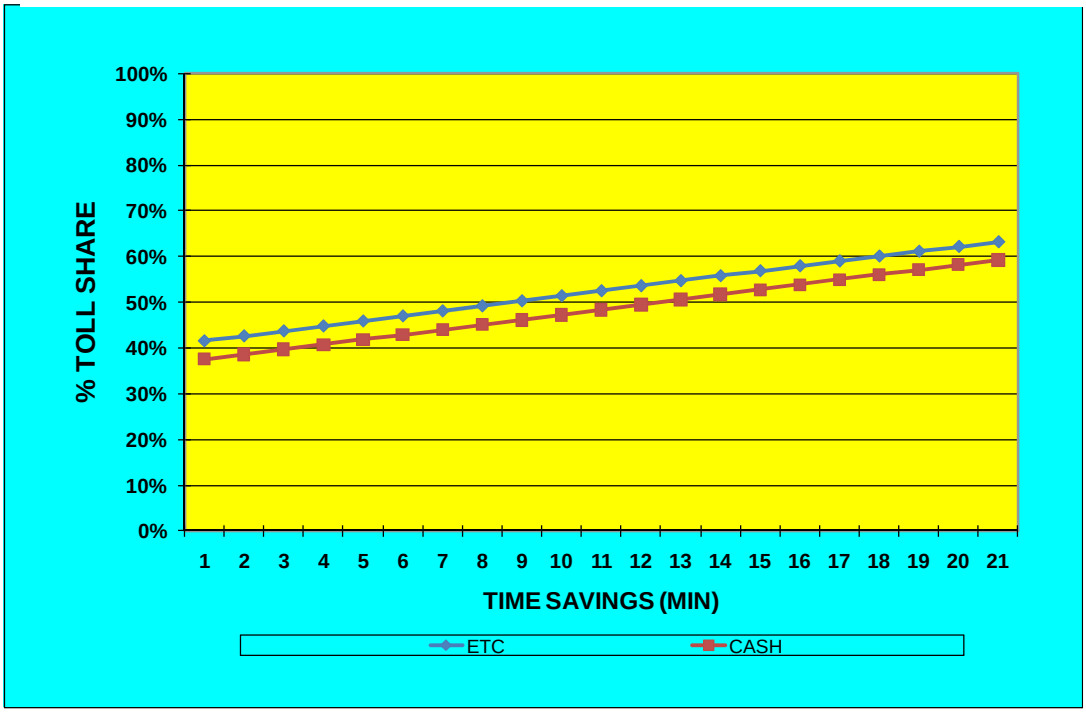


Figure 3-6: Toll Diversion for Work Based Other (Auto) - $2.00 Toll

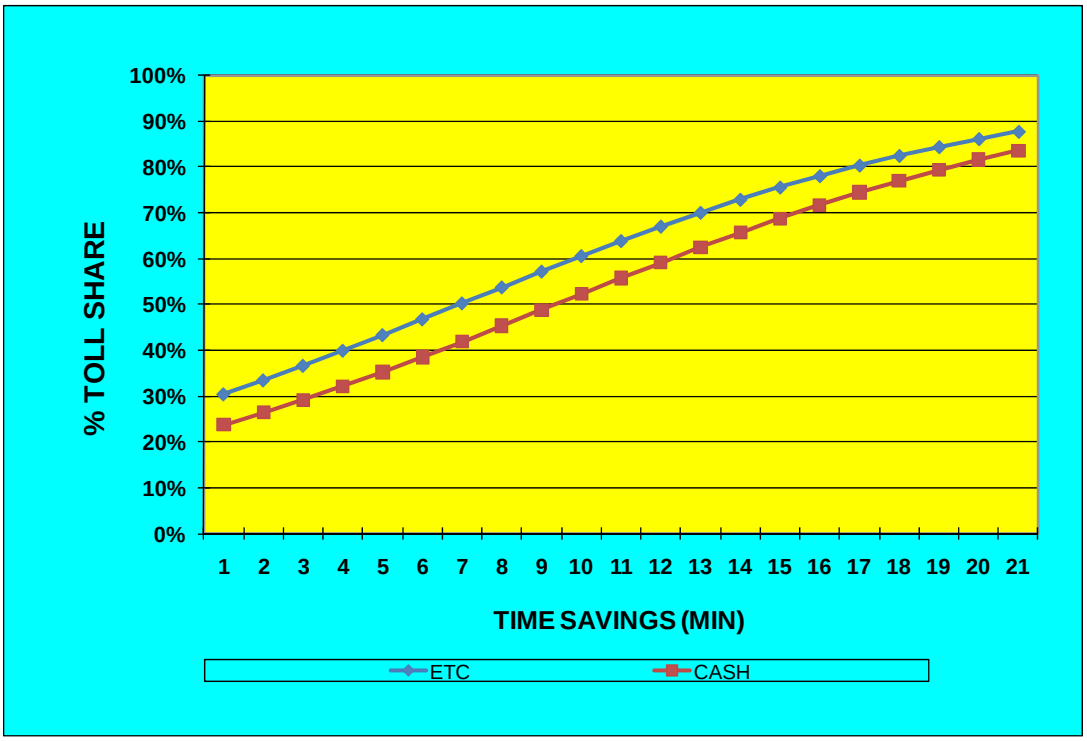


Figure 3-7: Toll Diversion for Other Based Other (Auto) - $2.00 Toll

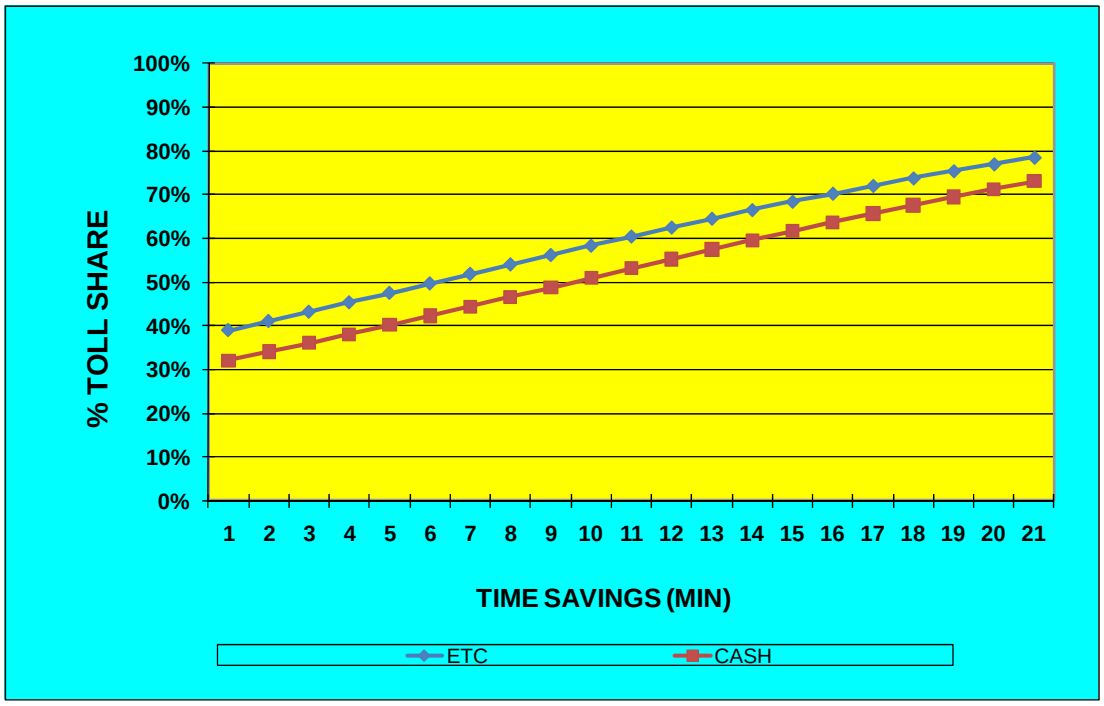
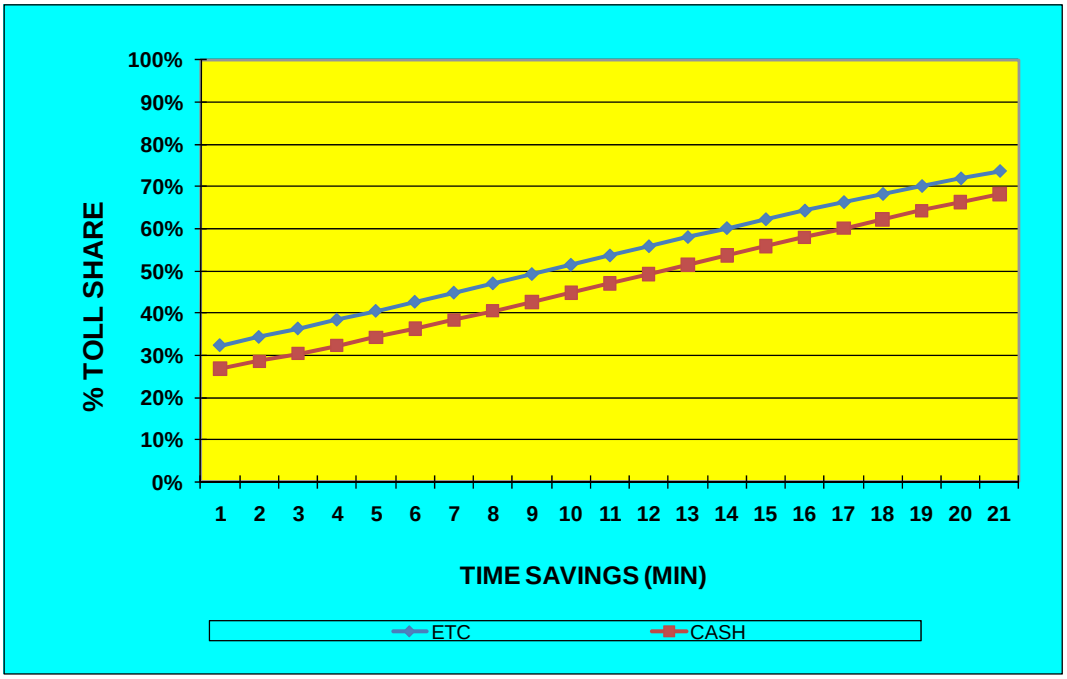


Figure 3-8: Toll Diversion for Trucks - $6.00 Toll



3.1.1 Highway Assignment Process Modifications

Consistent with the existing highway assignment process, trips are assigned to the network for three specific time-of-day conditions. The hours within each of these three periods are as follows:

- AM Peak (2-hour)– 7:00 AM to 9:00 AM
- PM Peak (2-hour)– 5:00 PM to 7:00 PM
- Off Peak (20 hours) – the remaining hours

The CAMPO Regional Model's current volume delay functions (VDFs) were adopted for the assignment and were augmented with routine to estimate queuing at roadway intersections and merge points on limited access roadways. The queuing formula estimates the additional time encountered when traffic volumes exceed the physical capacity of a roadway segment. This modification is only enabled on a roadway segment if a traffic control device (signals, stop signs, or yield signs) is present and the roadway segment's volume/capacity ratio exceeds a value of 1.0. As part of the model calibration, the 'free flow' speeds, link capacities, and queuing routines were refined as necessary to ensure that the model adequately replicated both peak and off-peak speeds for the primary roadway facilities in each toll road corridor.

3.2 MODEL CALIBRATION

The objective of the model calibration was to ensure that the modeling process adequately replicates both the observed traffic volumes and the observed speeds by time of day for each of the project corridors. The calibration was also structured to replicate the traffic and transactions by payment method to the extent feasible for each toll road by pay point. It should be noted that the calibration was performed solely on the integrated model highway assignment process and toll diversion routines and no adjustments were made to the individual regional models.

The initial element of the calibration was to adjust the assignment procedures to ensure that estimated speeds in both the peak and off-peak periods were adequately replicating the observed speed data collected for this project. The assumed free flow speeds were adjusted as necessary to replicate the off-peak speeds which reflect generally uncongested conditions. Peak speeds were adjusted in an iterative process including refinements to the capacity and the queuing formula to ensure that estimated congested speeds replicated the observed values and that the overall traffic assigned to the roadways replicated the observed volumes on a daily basis. This approach for calibration of peak speeds was adopted since period specific traffic counts were available only at limited locations throughout the region. Volumes and vehicle-miles of travel (VMT) were also summarized on a regional basis to evaluate the assignment process on an aggregate level.

After the speeds and regional calibration analysis was completed, the calibration of traffic within each corridor was performed. This process included the replication of traffic by screenline total and individual roadways as well as by vehicle type. This analysis included the use of in-house trip table adjustment routine to ensure that the aggregate travel across each screenline replicated the observed traffic by vehicle type.

The final element of the calibration was to adjust the toll diversion model equations to replicate the observed traffic by vehicle type and payment method across each of the toll corridors. This analysis resulted in adjustments to the assumed market segments by payment type in each subarea as well as minor adjustments to the toll bias constants and ETC bias constants.

3.2.1 Speed Calibration

As part of the speed calibration effort, Stantec, assisted by Brown and Gay, Associates, collected the observed speed data on for corridors across the study region. The speed data was collected for both directions across three different time-of-day period. Table 3-2 shows the results of the speed calibration by corridor and by time-of-day. These corridors were depicted earlier in Chapter 2 in Figure 2-3. Note that the top section of roadways is located primarily in the Austin region within the corridors of the individual roadways. The final four roadway segments are south of Austin and include facilities that generally parallel the proposed alignment of SH 130 Segments 5 and 6.

Table 3-2: Speed Calibration Summary

ROADWAY CORRIDOR	DIR	DIST (MILE)	AM				PM				OP			
			TIME(MIN)		SPEED (MPH)		TIME (MIN)		SPEED (MPH)		TIME (MIN)		SPEED (MPH)	
			OBS	EST	OBS	EST	OBS	EST	OBS	EST	Time (Min)	Time (Min)	Speed (MPH)	Speed (MPH)
IH 35	NB	30.0	26.9	27.0	66.8	65.3	38.6	37.3	46.6	47.2	26.6	28.0	67.7	62.9
(From SH 130 to MLK Blvd.)	SB	29.9	51.3	42.6	35.0	41.5	39.3	28.9	45.6	61.3	26.3	29.0	68.1	61.0
IH 35	NB	30.1	52.5	39.3	34.4	45.3	34.8	28.6	51.9	62.3	29.0	28.7	62.3	61.9
(From MLK Blvd. to SH 80)	SB	30.1	26.8	27.3	67.5	65.0	40.3	37.6	44.8	47.2	25.9	27.0	69.7	65.9
Loop 1	NB	19.9	22.0	31.8	54.1	37.1	32.7	29.5	36.4	40.0	18.9	18.9	63.0	62.5
(From SH 45N to US 290W)	SB	19.9	34.9	27.6	34.1	42.8	32.2	29.8	37.0	39.7	18.3	18.9	65.0	62.7
SH 130	NB	46.9	38.4	38.5	73.3	73.6	39.0	38.6	72.1	73.4	39.6	38.4	71.1	73.7
(From IH-35 to US 183S)	SB	46.9	38.9	38.3	72.4	73.6	39.2	38.2	71.8	73.7	39.7	38.2	70.9	73.8
SH 45N	EB	12.8	11.7	11.1	66.0	69.1	11.3	11.1	68.2	69.4	10.8	11.0	71.2	69.6
(From US 183 to SH 130)	WB	12.8	11.4	11.0	67.6	69.4	11.6	11.0	66.2	69.6	10.4	11.0	74.1	69.7
US 183	NB	14.3	13.1	13.0	65.9	64.9	18.9	16.4	45.5	51.5	13.3	13.2	64.6	64.2
(From SH 45N to Manor Rd.)	SB	14.3	24.9	19.7	34.5	42.6	13.1	13.2	65.8	63.7	12.9	13.3	66.9	63.3
US 183	NB	17.1	27.0	30.8	38.0	33.4	22.4	25.0	45.6	41.3	20.1	21.0	51.0	49.1
(From Manor Rd. to SH 130)	SB	17.1	23.0	21.6	44.5	48.1	27.6	28.3	37.1	36.7	20.4	20.7	50.1	50.0
SH 21	NB	17.0	18.0	17.8	56.7	57.2	17.5	18.3	58.3	55.4	17.0	17.8	60.0	57.2
(From US 80 to US 183)	SB	17.0	17.1	21.0	59.6	48.5	17.7	17.8	57.6	57.1	16.8	17.7	60.6	57.2
SH 360	NB	12.7	21.1	22.5	36.1	33.7	32.3	23.5	23.6	32.2	16.5	16.5	46.2	46.0
(From Loop 1 to US 183)	SB	12.7	25.8	19.5	29.5	39.1	22.3	24.1	34.2	31.6	16.8	16.3	45.4	46.7
US 79	EB	6.9	10.5	10.5	39.7	38.9	11.2	11.7	37.2	34.9	10.5	10.5	39.6	39.0
(From IH 35 to SH 130))	WB	6.9	13.6	12.1	30.6	33.7	13.6	10.6	30.6	38.4	12.6	10.4	33.1	39.5
FM 973	NB	19.5	28.7	31.4	40.8	37.4	29.1	31.7	40.2	37.0	27.2	25.9	43.1	45.2
(From US 183S to US 290E)	SB	19.5	26.9	31.4	43.6	37.3	27.6	31.5	42.5	37.2	26.6	25.9	44.0	45.2
FM 685	NB	12.5	21.8	19.2	34.5	39.1	27.5	26.6	27.3	28.2	22.2	19.9	33.9	37.5
(From SH45N/Kelly Ln. to US 290E)	SB	12.5	30.9	28.9	24.3	25.9	23.6	19.5	31.8	38.4	20.3	19.6	36.9	38.2
RM 620	EB	7.8	14.2	17.3	32.9	27.0	15.7	19.4	29.7	24.1	13.1	13.8	35.8	33.8
(From US 183 to IH 35)	WB	7.8	15.3	16.3	30.4	28.5	15.7	17.0	29.8	27.3	11.9	13.7	39.2	33.7
GATTIS SCHOOL	EB	5.4	12.0	12.1	27.3	28.4	13.0	14.2	25.1	24.2	11.0	12.4	29.8	27.8
(from S. May St. to SH 130)	WB	5.4	13.3	13.6	24.5	25.3	13.2	12.0	24.7	28.6	11.2	11.8	29.0	29.1
PARMER LN.	NB	9.9	15.8	13.3	37.7	44.8	15.2	20.4	39.2	29.1	12.5	13.6	47.5	43.9
(From FM 1431 to Loop 1)	SB	9.9	17.5	20.2	34.0	29.4	18.8	13.7	31.7	43.3	15.7	13.6	38.0	43.7
US 183	NB	32.3	36.1	35.6	53.6	54.5	36.9	35.0	52.5	55.5	36.3	35.0	53.5	55.5
(From IH 10 to SH 130)	SB	32.3	37.6	34.9	51.6	55.6	38.2	35.3	50.7	54.9	37.6	34.9	51.6	55.5
IH 35	NB	33.7	27.7	29.1	73.1	70.3	28.5	31.2	71.1	65.5	28.8	29.3	70.2	69.7
(From SH 80 to Loop 1604)	SB	33.7	32.3	31.9	62.6	64.3	28.3	29.2	71.6	70.1	28.5	29.3	71.1	70.0
IH 10	EB	29.1	24.5	23.7	71.3	73.4	24.1	24.6	72.5	70.8	24.8	23.8	70.4	73.3
(From Loop 410 to SH 123)	WB	29.1	25.9	25.2	67.2	69.5	24.6	23.8	71.0	73.3	24.3	23.9	71.9	73.3
SH 123	NB	19.2	21.3	22.4	54.3	51.0	21.9	22.9	52.7	50.0	22.6	22.4	51.0	51.0
(From IH-35 to IH 10)	SB	19.2	21.8	23.3	52.9	49.0	22.3	22.5	51.9	50.8	22.1	22.4	52.1	51.0

Note: AM = Morning Peak Period (7AM – 9 AM)
PM = Afternoon Peak Period (5PM – 7PM)
OP = Off-Peak period (the remaining hours)
OBS = Observed Data
EST = Model Estimated Values

The results indicated that the estimated speed replicated the observed speed reasonably well in the off-peak period. In the peak periods, while the replication of speed for most roadways is adequate there are a few corridors where the difference between the estimated speed and the observed speed is approximately 10 mph or higher, such as the southbound direction of IH-35 (Northern Section), and the northbound direction of IH-35 (Southern Section). In these cases, it appears that excessive congestion in a short segment of the roadway is causing excessive delays in the observed speeds.

3.2.2 Aggregate Calibration by Facility Type and Area Type

The aggregate calibration by facility type and area type was performed for both traffic volumes as well as vehicle-miles travelled (VMT). This calibration utilized more than 1,300 link-counts that were collected from several different sources. These data included the TxDOT 2008 AADT Traffic Maps and a limited set of classification counts provided by TxDOT, as well as other existing counts from previous Stantec studies in the Austin region. Traffic counts along the screenlines were also performed by Stantec's subconsultant, ATG to provide estimates where 2008 counts were not available. These counts were factored back to 2008 estimates using a reduction factor of 2 percent per year. Stantec also obtained the transactions by pay point for all toll facilities in the region, including SH 45 Southeast and 183A. These data were also adjusted, where necessary, to represent assumed conditions in 2008 in response to the completion of several new roadways that have occurred since 2008. In situations where multiple counts were available for an individual roadway segment, the most reliable count data was determined using a hierarchy which used TTA transaction data first, then classification counts collected for this project, and then lastly either counts from previous studies or TxDOT counts.

The comparison summaries are listed in Table 3-3 and Table 3-4. Table 3-3 lists the aggregate comparison of volume and VMT by facility for the entire region. Table 3-4 provides a similar summary by area type. While this calibration includes the entire modeled area, the results by facility type are generally consistent with CAMPO's results although slightly lower. The regional ratio of estimated to observed VMT is 0.97, slightly lower than CAMPO's model at just under 1.00. Recent calibrations statistics for the San Antonio Model are not currently available.

Table 3-3: Volume and VMT Comparison by Facility Type

FACILITY TYPE	NUMBER OF COUNTS	VOLUME			VMT		
		OBSERVED	ESTIMATED	EST/OBS	OBSERVED	ESTIMATED	EST/OBS
Limited-Access Facility	295	15,398,784	14,840,409	0.96	7,398,912	7,189,168	0.97
Expressway	36	924,000	867,091	0.94	423,113	402,548	0.95
Principal Arterial Divided	270	3,427,414	3,564,573	1.04	1,327,660	1,382,730	1.04
Principal Arterial Undivided	169	1,127,900	1,226,408	1.09	580,011	651,840	1.12
Minor Arterial Divided	68	709,374	492,186	0.69	326,297	243,537	0.75
Minor Arterial Undivided	363	1,166,318	1,023,155	0.88	726,785	620,903	0.85
Frontage Road	24	215,030	206,044	0.96	55,345	53,066	0.96
Collector/Local	56	55,649	56,843	1.02	85,509	90,917	1.06
Ramp	65	174,838	152,220	0.87	53,841	49,257	0.91
TOTAL	**1346**	**23,199,307**	**22,428,929**	**0.97**	**10,977,473**	**10,683,966**	**0.97**

Table 3-4: Volume Comparison by Area Type

AREA TYPE	NUMBER OF COUNTS	VOLUME			VMT		
		OBSERVED	ESTIMATED	EST/OBS	OBSERVED	ESTIMATED	EST/OBS
CBD	12	559,885	572,947	1.02	99,408	100,390	1.01
CBD Fringe	61	2,575,748	2,621,208	1.02	621,831	658,980	1.06
Urban	367	11,667,239	10,642,475	0.91	4,952,435	4,493,911	0.91
Suburban	551	6,655,258	6,634,386	1.00	3,534,770	3,507,027	0.99
Rural	355	1,741,177	1,957,913	1.12	1,769,029	1,923,658	1.09
TOTAL	**1346**	**23,199,307**	**22,428,929**	**0.97**	**10,977,473**	**10,683,966**	**0.97**

3.2.3 Screenline Calibration

The screenline calibration was performed to ensure that the aggregate demand within each toll road corridor replicates the observed traffic. As part of this calibration, an in-house routine was applied to minimize any variation between estimated and observed demand across each of the screenline. The adjustment provides a matrix of 'base year' trip changes (either increases or reductions) that is then retained for application in each of the horizon years. Since these trips are stored as a matrix, these additional trips are not tied to specific roadways and can be diverted to different routes in exactly the same manner as the trips estimated directly by the model. As a result of the screenline calibration, for origin-destination zonal pairs where trip changes were provided by the adjustment routine, the net increase change in trips was less than 1 percent with an increase in autos being offset by a reduction in truck trips. Note that since the magnitude of the additional trips is held constant for all future years, their contribution to the overall assignment results are further minimized in each successive horizon year as the underlying model trip tables continue to increase due to growth in the region's population and employment.

A series of screenlines were developed within each of the toll road corridors to intersect each of the mainline toll plazas and similar locations on the adjacent non-tolled roads. Four screenlines were created for SH 130 and three for the Northwest Elements. Additional screenlines were also created to quantify demand for the remaining toll facilities, 183A and SH 45 Southeast. Figure 3-9 shows the screenline locations within each toll road corridor. Table 3-5 and Table 3-6 list the screenline calibration results for total traffic and by mode, respectively.

The total traffic of each screenline is generally within reasonable tolerance of the total counts. The distribution of traffic encompassing roadway corridors in the same screenlines is also within reasonable tolerance. However, traffic along IH-35 is generally underestimated with respect to the observed counts from TxDOT. The traffic volumes at the mainline plazas on the toll facilities are also estimated adequately. Total traffic on SH 130 is slightly overassigned while Loop 1 is nearly identical to the observed volume and SH 45 N is underassigned.

Figure 3-9: Screenline Locations

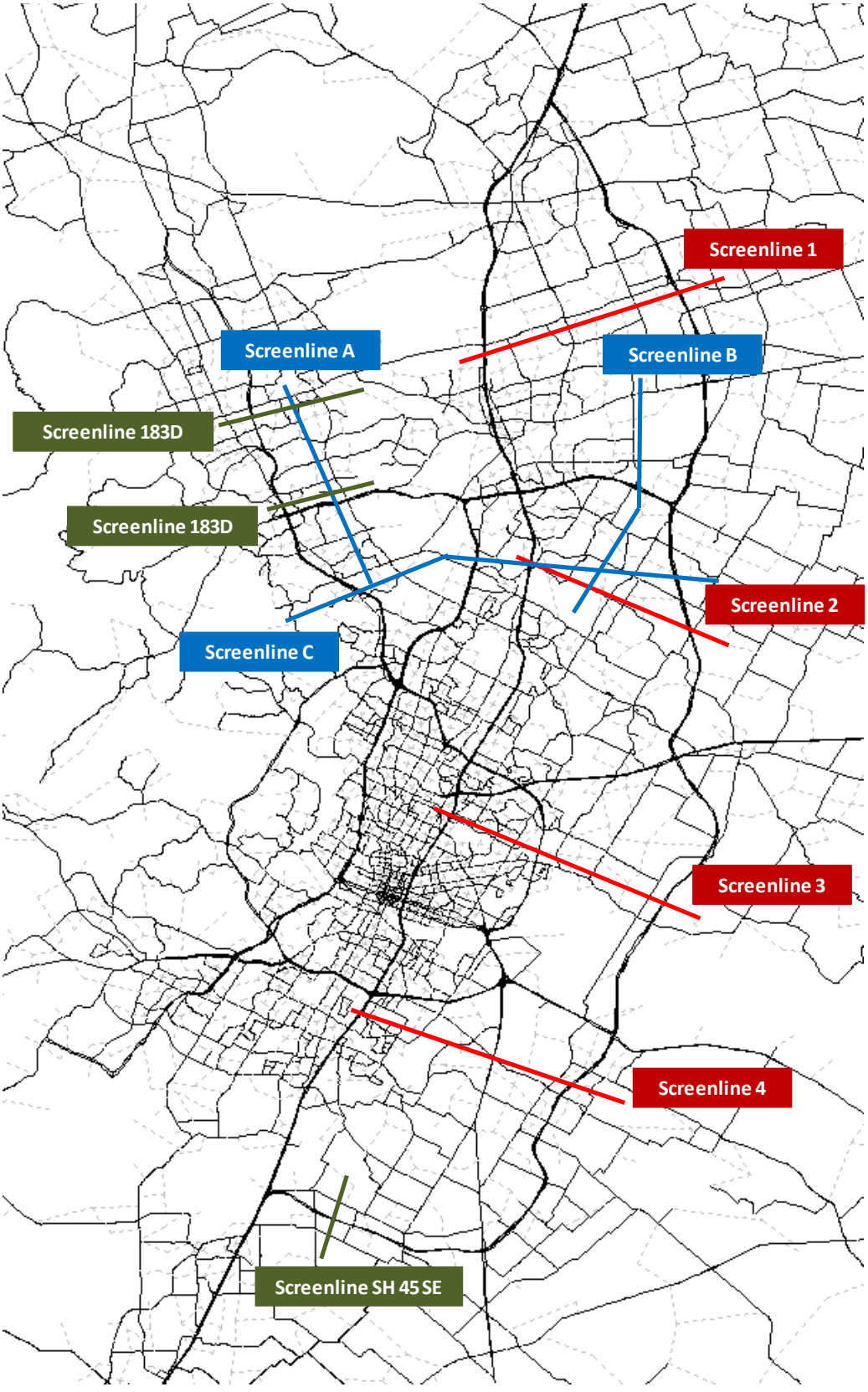


Table 3-5: Screenline Comparison for Total Traffic

		Counts	Estimated
Screenline 1	IH 35	139,650	134,433
	CR 115	11,189	11,685
	FM 1460	7,776	6,727
	CR 110	2,767	4,913
	SH 130	11,395	11,892
	CR 100	448	818
	FM 1660	2,205	1,624
	TOTAL	**175,430**	**172,093**
Screenline 2	IH 35	173,250	158,404
	Heatherwilde Blvd	8,039	9,663
	Dessau / FM 685	18,445	12,896
	Immanuel	2,991	3,446
	SH 130	21,518	23,297
	Cameron Rd	2,245	5,281
	Fuchs Grove	1,729	5,245
	TOTAL	**228,217**	**218,232**
Screenline 3	IH 35	256,200	236,254
	Cameron Rd.	15,915	17,316
	Berkman Dr.	7,718	7,961
	Manor Rd.	9,159	13,017
	Springdale Rd.	10,108	15,130
	US 183	66,150	62,735
	Johnny Morris Rd.	4,852	6,483
	FM 3177	8,371	12,759
	FM 973	5,734	4,131
	SH 130	17,587	18,635
	FM 969	4,935	4,978
	TOTAL	**406,729**	**399,400**
Screenline 4	IH 35	182,700	171,445
	Todd Ln.	9,776	10,527
	Stassney Ln.	19,437	26,602
	US 183	32,550	29,709
	FM 973	8,505	6,363
	SH 130	9,495	8,268
	Ross Rd.	3,075	4,336
	TOTAL	**265,538**	**257,250**
Screenline 183C	Lakeline Blvd	21,741	21,893
	US 183	42,465	45,237
	183A ML	30,500	28,289
	Vista Ridge Blvd	6,033	14,995
	Parmer Ln	28,334	31,096
	TOTAL	**129,073**	**141,510**
Screenline 183D	Pecan Park Blvd	6,249	8,763
	US 183	70,760	54,768
	183A ML	30,200	26,739
	US 183/SH 45 DC	10,553	13,069
	Lake Creek Pkwy	5,514	9,197
	Parmer Ln	39,780	42,830
	TOTAL	**163,056**	**155,366**

		Counts	Estimated
Screenline A	FM 1431	36,709	37,561
	Colonial Parkway	3,931	8,400
	Brushy Creek Rd.	10,794	11,850
	Avery Ranch Blvd.	11,902	12,531
	Lakeline Blvd.	7,938	9,592
	SH 45 NW ML	31,900	30,163
	SH 45 NW Frontage	28,890	32,614
	Anderson Mill Rd.	15,457	17,858
	McNeil Dr.	27,596	29,436
	TOTAL	**175,117**	**190,006**
Screenline B	US 79	22,161	19,666
	CR 168/Gattis School Rd.	12,763	9,264
	SH 45 NE ML	27,100	23,745
	SH 45 NE Frontage	7,604	12,691
	Pflugerville Loop Rd.	9,257	10,370
	FM 1825/Pecan St.	20,475	17,579
	Howard Lane	19,675	21,406
	TOTAL	**119,035**	**114,721**
Screenline C	US 183	162,750	156,859
	Parmer Lane	32,550	41,002
	Howard Lane	14,484	17,500
	FM 1325/Loop 1 SR	16,012	13,143
	Loop 1 Mainline Plaza	52,000	52,400
	Bratton Lane	6,450	4,429
	IH 35	173,250	158,404
	Heatherwilde	14,375	13,988
	N Railroad Rd	4,690	5,475
	FM 685	21,000	17,727
	SH 130	21,518	23,297
	TOTAL	**519,079**	**504,224**
SH 45 SE	FM 1327	8,639	10,045
	SH 45 SE ML	7,400	7,358
	Turnersville Rd.	334	940
	TOTAL	**16,373**	**18,343**

Note: Toll facilities are highlighted in yellow

The distribution of the traffic by vehicle type (auto and truck), provides an adequate replication of the observed data. At an aggregate level, the estimated truck percentage across screenlines is within 1% of the observed percentage. The estimated truck percentages at the toll facilities were also estimated reasonably well. Note that the truck traffic presented in these summaries includes 2-axle 6-tire trucks, consistent with the definition of trucks in the individual regional models.

Table 3-6: Screenline Comparison by Vehicle Type

		AUTO		TRUCK		TOTAL		% TRUCK	
		Counts	Volume	Counts	Volume	Counts	Volume	Counts	Volume
	SH 130								
Screenline 1	IH 35	116,468	112,867	23,182	21,566	139,650	134,433	16.6%	16.0%
	CR 115	10,783	11,129	406	556	11,189	11,685	3.6%	4.8%
	FM 1460	7,448	6,508	328	219	7,776	6,727	4.2%	3.3%
	CR 110	2,510	4,551	257	362	2,767	4,913	9.3%	7.4%
	SH 130	10,347	10,714	1,048	1,178	11,395	11,892	9.2%	9.9%
	CR 100	396	809	52	9	448	818	11.6%	1.1%
	FM 1660	2,095	1,597	110	27	2,205	1,624	5.0%	1.7%
	TOTAL	**150,046**	**148,175**	**25,384**	**23,918**	**175,430**	**172,093**	**14.5%**	**13.9%**
Screenline 2	IH 35	150,382	138,791	22,868	19,613	173,250	158,404	13.2%	12.4%
	Heatherwilde Blvd	7,810	9,384	229	279	8,039	9,663	2.8%	2.9%
	Dessau / FM 685	17,557	12,505	888	390	18,445	12,896	4.8%	3.0%
	Immanuel	2,586	3,359	405	87	2,991	3,446	13.5%	2.5%
	SH 130	19,755	21,343	1,763	1,953	21,518	23,297	8.2%	8.4%
	Cameron Rd	1,994	5,019	251	262	2,245	5,281	11.2%	5.0%
	Fuchs Grove	1,578	5,029	151	216	1,729	5,245	8.7%	4.1%
	TOTAL	**201,662**	**195,431**	**26,555**	**22,801**	**228,217**	**218,232**	**11.6%**	**10.4%**
Screenline 3	IH 35	230,580	213,266	25,620	22,988	256,200	236,254	10.0%	9.7%
	Cameron Rd.	15,342	16,709	573	607	15,915	17,316	3.6%	3.5%
	Berkman Dr.	7,379	7,651	339	310	7,718	7,961	4.4%	3.9%
	Manor Rd.	8,765	12,558	394	459	9,159	13,017	4.3%	3.5%
	Springdale Rd.	9,622	14,367	486	764	10,108	15,130	4.8%	5.0%
	US 183	59,535	56,059	6,615	6,676	66,150	62,735	10.0%	10.6%
	Johnny Morris Rd.	4,534	6,024	318	459	4,852	6,483	6.6%	7.1%
	FM 3177	7,569	11,784	802	976	8,371	12,759	9.6%	7.6%
	FM 973	5,070	3,967	664	164	5,734	4,131	11.6%	4.0%
	SH 130	15,985	16,519	1,602	2,117	17,587	18,635	9.1%	11.4%
	FM 969	4,688	4,812	247	166	4,935	4,978	5.0%	3.3%
	TOTAL	**369,070**	**363,713**	**37,659**	**35,687**	**406,729**	**399,400**	**9.3%**	**8.9%**
Screenline 4	IH 35	153,834	144,579	28,866	26,865	182,700	171,445	15.8%	15.7%
	Todd Ln.	9,238	9,876	538	651	9,776	10,527	5.5%	6.2%
	Stassney Ln.	17,807	24,311	1,630	2,291	19,437	26,602	8.4%	8.6%
	US 183	29,295	27,047	3,255	2,661	32,550	29,709	10.0%	9.0%
	FM 973	8,080	6,010	425	353	8,505	6,363	5.0%	5.5%
	SH 130	8,378	7,244	1,117	1,025	9,495	8,268	11.8%	12.4%
	Ross Rd.	2,949	4,050	126	286	3,075	4,336	4.1%	6.6%
	TOTAL	**229,580**	**223,117**	**35,958**	**34,133**	**265,538**	**257,250**	**13.5%**	**13.3%**

Table 3-6 Continued

		AUTO		TRUCK		TOTAL		% TRUCK	
		Counts	Volume	Counts	Volume	Counts	Volume	Counts	Volume
	NORTHWEST ELEMENT								
Screenline A	FM 1431	34,874	35,580	1,835	1,981	36,709	37,561	5.0%	5.3%
	Colonial Parkway	3,816	8,045	115	356	3,931	8,400	2.9%	4.2%
	Brushy Creek Rd.	10,418	11,529	376	321	10,794	11,850	3.5%	2.7%
	Avery Ranch Blvd.	11,365	12,054	537	477	11,902	12,531	4.5%	3.8%
	Lakeline Blvd.	7,854	9,274	84	318	7,938	9,592	1.1%	3.3%
	SH 45 NW ML	30,856	28,894	1,044	1,269	31,900	30,163	3.3%	4.2%
	SH 45 NW Frontage	27,916	31,311	974	1,303	28,890	32,614	3.4%	4.0%
	Anderson Mill Rd.	14,815	17,093	642	765	15,457	17,858	4.2%	4.3%
	McNeil Dr.	26,470	28,280	1,126	1,156	27,596	29,436	4.1%	3.9%
	TOTAL	168,383	182,060	6,734	7,947	175,117	190,006	3.8%	4.2%
Screenline B	US 79	20,245	18,339	1,916	1,327	22,161	19,666	8.6%	6.7%
	CR 168/Gattis School Rd.	12,300	9,101	463	162	12,763	9,264	3.6%	1.8%
	SH 45 NE ML	26,214	22,727	886	1,019	27,100	23,745	3.3%	4.3%
	SH 45 NE Frontage	7,303	12,146	301	546	7,604	12,691	4.0%	4.3%
	Pflugerville Loop Rd.	8,844	10,033	413	336	9,257	10,370	4.5%	3.2%
	FM 1825/Pecan St.	19,451	16,408	1,024	1,171	20,475	17,579	5.0%	6.7%
	Howard Lane	18,430	19,767	1,245	1,639	19,675	21,406	6.3%	7.7%
	TOTAL	112,787	108,520	6,248	6,201	119,035	114,721	5.2%	5.4%
Screenline C	US 183	154,613	147,775	8,138	9,084	162,750	156,859	5.0%	5.8%
	Parmer Lane	30,923	39,049	1,628	1,953	32,550	41,002	5.0%	4.8%
	Howard Lane	13,734	16,949	750	551	14,484	17,500	5.2%	3.1%
	FM 1325/Loop 1 SR	15,280	12,635	732	508	16,012	13,143	4.6%	3.9%
	Loop 1 Mainline Plaza	50,298	50,626	1,702	1,774	52,000	52,400	3.3%	3.4%
	Bratton Lane	6,191	4,298	259	131	6,450	4,429	4.0%	3.0%
	IH 35	150,382	138,791	22,868	19,613	173,250	158,404	13.2%	12.4%
	Heatherwilde	13,986	13,385	389	604	14,375	13,988	2.7%	4.3%
	N Railroad Rd	4,546	5,221	144	254	4,690	5,475	3.1%	4.6%
	FM 685	19,950	17,074	1,050	653	21,000	17,727	5.0%	3.7%
	SH 130	19,755	21,343	1,763	1,953	21,518	23,297	8.2%	8.4%
	TOTAL	479,656	467,147	39,423	37,077	519,079	504,224	7.6%	7.4%
	US 183A								
Screenline 183C	Lakeline Blvd	20,654	20,909	1,087	984	21,741	21,893	5.0%	4.5%
	US 183	40,342	42,837	2,123	2,400	42,465	45,237	5.0%	5.3%
	183A ML	29,350	26,632	1,150	1,657	30,500	28,289	3.8%	5.9%
	Vista Ridge Blvd	5,731	14,474	302	521	6,033	14,995	5.0%	3.5%
	Parmer Ln	26,917	29,257	1,417	1,838	28,334	31,096	5.0%	5.9%
	TOTAL	122,994	134,110	6,079	7,401	129,073	141,510	4.7%	5.2%
Screenline 183D	Pecan Park Blvd	5,937	8,168	312	595	6,249	8,763	5.0%	6.8%
	US 183	16,151	13,215	850	1,028	17,001	14,243	5.0%	7.2%
	183A ML	28,690	25,440	1,510	1,299	30,200	26,739	5.0%	4.9%
	US 183 Frontage	51,071	37,569	2,688	2,956	53,759	40,525	5.0%	7.3%
	US 183/SH 45 DC	10,025	12,384	528	685	10,553	13,069	5.0%	5.2%
	Lake Creek Pkwy	5,238	8,708	276	489	5,514	9,197	5.0%	5.3%
	Parmer Ln	37,791	40,738	1,989	2,093	39,780	42,830	5.0%	4.9%
	TOTAL	154,903	146,222	8,153	9,144	163,056	155,366	5.0%	5.9%
	SH 45 SOUTHEAST								
SH 45 SE	FM 1327	7,275	8,153	1,364	1,892	8,639	10,045	15.8%	18.8%
	SH 45 SE ML	6,619	6,190	781	1,168	7,400	7,358	10.6%	15.9%
	Turnersville Rd.	303	903	31	38	334	940	9.3%	4.0%
	TOTAL	14,197	15,245	2,176	3,098	16,373	18,343	13.3%	16.9%

3.2.4 Toll Diversion by Mode and by Payment Method

The final element of the calibration was focused on the replicating toll transactions by both vehicle type and payment method. For this analysis, Stantec obtained the transaction data by paypoint, vehicle type and payment method. Table 3-7 provides a comparison of the transactions by vehicle type at each pay point in the CTTS. The toll transactions along SH 130 and Loop 1 are approximately 4% and 7% higher than observed transactions, respectively, while transactions on SH 45 N is approximately 13% lower than the observed data. While the total transactions for each toll road vary from the observed totals, the transactions by vehicle type on a percentage basis demonstrate a good replication of the observed data.

In general the model provides a much closer replication of transactions by mainline paypoints than the ramp paypoints. For SH130 there is only minor variation by paypoint type when compared to the total variation of 4.4 percent. Similarly, the variation of paypoint type For SH 45 N approximates the overall variation of 13 percent. In contrast, Loop 1 has minimal variation in the mainline transactions but significant variation at the ramp plazas, which contribute to the overall 7.3% over assignment.

Table 3-8 provides a summary of total transactions by vehicle type and payment method as well as a separate summary by vehicle type. As shown in the top section of the table, the overall replication of transactions by payment method for SH 130 is nearly identical to the observed data. For the Northwest Elements, the replication of transactions for cash payments is adequate, but the model slightly underestimates ETC transactions and overestimates video transactions.

In the middle section of Table 3-8, the replication of transactions by payment type for auto trips is provided. The model provides an adequate replication by payment type. For the Northwest elements, the model underestimates the share of auto transactions via ETC and overestimates the share of video transactions. For Loop 1 the share of auto transactions by payment type at the ramps has a significant increase in the share of payment by ETC with a corresponding reduction in cash and video shares.

The last section of Table 3-8 has the share of truck transactions by payment type. For each of the CTTS toll roads, the model is generally underestimating the share ETC and cash transactions while over-estimating the share of video transactions. This is mostly likely related the toll surcharge associated with the video payment option or other issues associated with relating those charges to specific trips or customers that are not reflected properly in the truck toll bias terms.

During the calibration process Stantec refined both the assumed market shares by payment type and the bias terms for selected trip purposes and trucks. Toll bias terms for Home-Based Work and Work-Based Other trips were reduced to zero as trip makers for these purposes assumed to be familiar with the tradeoff between toll and free roads. Truck trips have a favorable bias constant equivalent of 3 minutes penalty for payment by transponders. The final toll diversion constants were shown in Table 3-1 in a previous section of this chapter.

Table 3-7: Toll Diversion Comparison by Pay Point and Vehicle Type

	CROSSROAD	TYPE	VEHICLE TYPE						TOTAL		
			AUTO			TRUCK					
			OBS	EST	%DIFF	OBS	EST	%DIFF	OBS	EST	%DIFF
SH 130	SH 29	Ramp	1,239	1,070	-13.6%	92	20	-78.4%	1,331	1,090	-18.1%
	FM 104	Ramp	86	289	235.5%	5	11	114.2%	91	299	228.9%
	Chandler Rd	Ramp	491	413	-16.0%	42	15	-65.4%	533	427	-19.9%
	N. of CR 109	Mainline	10,348	10,714	3.5%	1,047	1,178	12.5%	11,395	11,892	4.4%
	US 79	Ramp	8,029	7,569	-5.7%	447	475	6.2%	8,476	8,044	-5.1%
	CR 138	Ramp	6,024	5,333	-11.5%	274	61	-77.8%	6,298	5,394	-14.4%
	Pecan St	Ramp	1,444	903	-37.5%	67	44	-34.0%	1,511	947	-37.3%
	N. of Cameron Rd	Mainline	19,755	21,343	8.0%	1,763	1,953	10.8%	21,518	23,297	8.3%
	Howard Ln / Gregg Manor	Ramp	321	632	96.9%	39	26	-33.5%	360	658	82.7%
	Blue Bluff Rd.	Ramp	79	384	386.1%	5	16	218.6%	84	400	376.1%
	Bloor Rd / FM 973	Ramp	325	222	-31.6%	25	3	-86.3%	350	226	-35.6%
	N. of FM 969	Mainline	15,986	16,519	3.3%	1,602	2,117	32.1%	17,588	18,635	6.0%
	FM 969	Ramp	2,320	3,079	32.7%	128	584	356.4%	2,448	3,664	49.7%
	Harold Green Rd	Ramp	96	22	-77.4%	102	0	-100.0%	198	22	-89.0%
	Pearce Ln.	Ramp	657	1,796	173.3%	38	72	90.0%	695	1,868	168.8%
	N. of Elroy Rd	Mainline	8,378	7,244	-13.5%	1,117	1,025	-8.2%	9,495	8,268	-12.9%
	Elroy Rd	Ramp	283	771	172.5%	17	67	295.5%	300	838	179.5%
	FM 812	Ramp	174	51	-70.8%	21	5	-74.4%	195	56	-71.2%
	Moore Rd	Ramp	62	518	736.0%	5	40	706.4%	67	559	733.8%
	MAINLINE	**Total**	**54,467**	**55,819**	**2.5%**	**5,529**	**6,273**	**13.5%**	**59,996**	**62,093**	**3.5%**
		%Share	**90.8%**	**89.9%**		**9.2%**	**10.1%**		**100.0%**	**100.0%**	
	RAMPS	**Total**	**21,630**	**23,052**	**6.6%**	**1,307**	**1,439**	**10.1%**	**22,937**	**24,491**	**6.8%**
		%Share	**94.3%**	**94.1%**		**5.7%**	**5.9%**		**100.0%**	**100.0%**	
	TOTAL	**Total**	**76,097**	**78,871**	**3.6%**	**6,836**	**7,713**	**12.8%**	**82,933**	**86,584**	**4.4%**
		%Share	**91.8%**	**91.1%**		**8.2%**	**8.9%**		**100.0%**	**100.0%**	
SH 45 N	W. ML Plaza	Mainline	30,856	28,894	-6.4%	1,044	1,269	21.6%	31,900	30,163	-5.4%
	Parmer Ln.	Ramp	7,351	9,817	33.6%	249	609	144.7%	7,600	10,427	37.2%
	Howard Ln.	Ramp	7,449	8,385	12.6%	251	162	-35.4%	7,700	8,547	11.0%
	Greenlawn	Ramp	7,158	2,631	-63.2%	242	139	-42.8%	7,400	2,769	-62.6%
	CR 170	Ramp	8,318	5,602	-32.7%	282	218	-22.5%	8,600	5,820	-32.3%
	Arterial A	Ramp	4,934	2,948	-40.2%	166	84	-49.4%	5,100	3,032	-40.5%
	Heatherwilde	Ramp	5,418	2,874	-47.0%	182	48	-73.8%	5,600	2,921	-47.8%
	E. ML Plaza	Mainline	26,214	22,727	-13.3%	886	1,019	15.0%	27,100	23,745	-12.4%
	MAINLINE	**Total**	**57,070**	**51,621**	**-9.5%**	**1,930**	**2,288**	**18.6%**	**59,000**	**53,909**	**-8.6%**
		%Share	**96.7%**	**95.8%**		**3.3%**	**4.2%**		**100.0%**	**100.0%**	
	RAMPS	**Total**	**40,628**	**32,257**	**-20.6%**	**1,372**	**1,260**	**-8.2%**	**42,000**	**33,517**	**-20.2%**
		%Share	**96.7%**	**96.2%**		**3.3%**	**3.8%**		**100.0%**	**100.0%**	
	TOTAL	**Total**	**97,698**	**83,878**	**-14.1%**	**3,302**	**3,548**	**7.4%**	**101,000**	**87,426**	**-13.4%**
		%Share	**96.7%**	**95.9%**		**3.3%**	**4.1%**		**100.0%**	**100.0%**	
Loop 1 N	Shoreline Dr	Ramp	484	765	58.1%	16	32	97.7%	500	797	59.3%
	ML Plaza	Mainline	50,298	50,626	0.7%	1,702	1,774	4.2%	52,000	52,400	0.8%
	Howard	Ramp	3,773	7,120	88.7%	127	189	49.2%	3,900	7,310	87.4%
	MAINLINE	**Total**	**50,298**	**50,626**	**0.7%**	**1,702**	**1,774**	**4.2%**	**52,000**	**52,400**	**0.8%**
		%Share	**96.7%**	**96.6%**		**3.3%**	**3.4%**		**100.0%**	**100.0%**	
	RAMPS	**Total**	**4,257**	**7,885**	**85.2%**	**143**	**221**	**54.6%**	**4,400**	**8,106**	**84.2%**
		%Share	**96.8%**	**97.3%**		**3.3%**	**2.7%**		**100.0%**	**100.0%**	
	TOTAL	**Total**	**54,555**	**58,511**	**7.3%**	**1,845**	**1,995**	**8.1%**	**56,400**	**60,506**	**7.3%**
		%Share	**96.7%**	**96.7%**		**3.3%**	**3.3%**		**100.0%**	**100.0%**	

NOTE:
% SHARE = % Share by vehicle type

Table 3-8: Toll Diversion Comparison by Payment Method

	LOCATION	TYPE	PAYMENT METHODS								
			ETC			CASH			VIDEO		
			OBS	EST	%DIFF	OBS	EST	%DIFF	OBS	EST	%DIFF
	TOTAL TRANSACTIONS										
SH 130	MAINLINE	Total	37,618	38,685	2.8%	5,461	5,636	3.2%	16,917	17,772	5.1%
		%Share	62.7%	62.3%		9.1%	9.1%		28.2%	28.6%	
	RAMPS	RAMPS	14,917	16,463	10.4%	1,914	1,806	-5.6%	6,107	6,222	1.9%
			65.0%	67.2%		8.3%	7.4%		26.6%	25.4%	
	TOTAL	Total	52,534	55,148	5.0%	7,375	7,441	0.9%	23,024	23,994	4.2%
		%Share	63.3%	63.7%		8.9%	8.6%		27.8%	27.7%	
SH 45N	MAINLINE	Total	44,250	37,498	-15.3%	4,130	3,705	-10.3%	10,620	12,706	19.6%
		%Share	75.0%	69.6%		7.0%	6.9%		18.0%	23.6%	
	RAMPS	RAMPS	31,499	24,115	-23.4%	2,940	2,380	-19.0%	7,561	7,021	-7.1%
			75.0%	72.0%		7.0%	7.1%		18.0%	20.9%	
	TOTAL	Total	75,749	61,614	-18.7%	7,071	6,085	-13.9%	18,181	19,727	8.5%
		%Share	75.0%	70.5%		7.0%	7.0%		18.0%	22.6%	
Loop 1 N	MAINLINE	Total	39,000	36,550	-6.3%	3,640	3,730	2.5%	9,360	12,120	29.5%
		%Share	75.0%	69.8%		7.0%	7.1%		18.0%	23.1%	
	RAMPS	RAMPS	3,300	6,921	109.7%	308	266	-13.6%	792	919	16.0%
			75.0%	85.4%		7.0%	3.3%		18.0%	11.3%	
	TOTAL	Total	42,300	43,471	2.8%	3,948	3,996	1.2%	10,152	13,039	28.4%
		%Share	75.0%	71.8%		7.0%	6.6%		18.0%	21.6%	
	AUTO TRANSACTIONS										
SH 130	MAINLINE	Total	33,862	34,758	2.6%	5,265	5,274	0.2%	15,340	15,787	2.9%
		% Share	62.2%	62.3%		9.7%	9.4%		28.2%	28.3%	
	RAMPS	RAMPS	14,007	15,564	11.1%	1,867	1,744	-6.6%	5,756	5,744	-0.2%
			64.8%	67.5%		8.6%	7.6%		26.6%	24.9%	
	TOTAL	Total	47,869	50,322	5.1%	7,131	7,018	-1.6%	21,096	21,531	2.1%
		%Share	62.9%	63.8%		9.4%	8.9%		27.7%	27.3%	
SH 45N	MAINLINE	Total	42,803	35,931	-16.1%	3,994	3,614	-9.5%	10,273	12,076	17.6%
		% Share	75.0%	69.6%		7.0%	7.0%		18.0%	23.4%	
	RAMPS	RAMPS	30,473	23,212	-23.8%	2,844	2,330	-18.1%	7,312	6,715	-8.2%
			75.0%	72.0%		7.0%	7.2%		18.0%	20.8%	
	TOTAL	Total	73,275	59,142	-19.3%	6,838	5,944	-13.1%	17,585	18,791	6.9%
		%Share	75.0%	70.5%		7.0%	7.1%		18.0%	22.4%	
Loop 1 N	MAINLINE	Total	37,724	35,322	-6.4%	3,521	3,664	4.1%	9,054	11,641	28.6%
		% Share	75.0%	69.8%		7.0%	7.2%		18.0%	23.0%	
	RAMPS	RAMPS	3,193	6,758	111.6%	298	259	-13.0%	766	868	13.3%
			75.0%	85.7%		7.0%	3.3%		18.0%	11.0%	
	TOTAL	TOTAL	40,916	42,079	2.8%	3,819	3,923	2.7%	9,820	12,508	27.4%
			75.0%	71.9%		7.0%	6.7%		18.0%	21.4%	
	TRUCK TRANSACTIONS										
SH 130	MAINLINE	Total	3,755	3,927	4.6%	197	361	83.6%	1,577	1,985	25.9%
		% Share	67.9%	62.6%		3.6%	5.8%		28.5%	31.6%	
	RAMPS	RAMPS	909	899	-1.1%	47	62	30.6%	350	478	36.6%
			69.6%	62.5%		3.6%	4.3%		26.8%	33.2%	
	TOTAL	Total	4,665	4,826	3.5%	244	423	73.4%	1,927	2,464	27.8%
		%Share	68.2%	62.6%		3.6%	5.5%		28.2%	31.9%	
SH 45N	MAINLINE	Total	1,447	1,568	8.3%	136	91	-33.1%	347	630	81.4%
		% Share	75.0%	68.5%		7.0%	4.0%		18.0%	27.5%	
	RAMPS	RAMPS	1,026	903	-12.0%	97	51	-47.8%	249	306	22.8%
			74.8%	71.7%		7.0%	4.0%		18.2%	24.3%	
	TOTAL	Total	2,473	2,471	-0.1%	233	141	-39.2%	596	936	56.9%
		%Share	74.9%	69.6%		7.0%	4.0%		18.1%	26.4%	
Loop 1 N	MAINLINE	Total	1,277	1,229	-3.7%	119	66	-45.0%	306	479	56.6%
		% Share	75.0%	69.3%		7.0%	3.7%		18.0%	27.0%	
	RAMPS	RAMPS	107	163	52.5%	10	7	-30.7%	26	51	95.4%
			74.7%	73.7%		6.9%	3.1%		18.4%	23.2%	
	TOTAL	Total	1,383	1,392	0.6%	129	73	-43.9%	332	531	59.7%
		%Share	75.0%	69.8%		7.0%	3.6%		18.0%	26.6%	

3.3 ELASTICITY ANALYSIS

Using the final adjusted toll coefficients listed in Table 3-1, a range of toll values above and below the existing toll rates were tested. As a check on the reasonableness of the model outputs, tests were conducted on all three CTTS elements, separately. The elasticity tests were performed for the base year scenario (2008). Note that these elasticity estimates are a function of both the overall travel demand and network options in the 2008 network. In order to develop toll elasticity curves, scenarios with a number of alternate tolls expressed as multiples of the base tolls were run. The multiples range from 0.5 to 7.0 and reveal how traffic and revenues change at various multiples. The results were plotted for the three facilities as shown in Figures Figure 3-10 to Figure 3-12.

As expected, Loop 1 has the lowest elasticity at approximately -0.16, while SH 130 has the highest at approximately -0.39. SH 45 N's elasticity falls between the other two facilities at approximately -0.22. These trends are consistent with the previous studies, including the 2002 CTTS Project and the latest 2008 CTTS Review Study. As seen from these graphs, SH 130 revenue will peak at approximately two times the base toll, and SH 45 N revenue will peak at five times the base toll. Loop 1, being the most inelastic among the three, will peak at approximately seven times the base toll. The inelasticity of Loop 1 North can be attributed primarily to the level of congestion on the competing roads, such as US 183 North, Parmer Lanes, and IH-35. Note that no observed elasticity data is available for the Austin Region that can be used to gauge the reasonableness of the elasticity estimated by the model as toll rates has not been increased since the opening of the facilities. The elasticity rates estimated by the model appear to be reasonable based on Stantec's experience with similar analysis for toll facilities in other regions.

Figure 3-10: Toll Sensitivity for SH 130

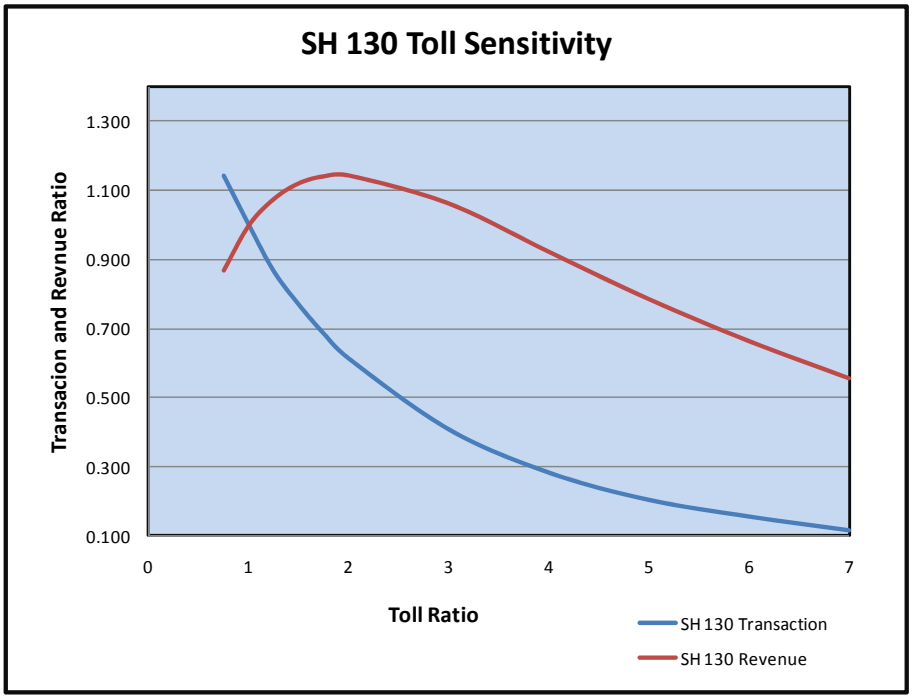


Figure 3-11: Toll Sensitivity for SH 45 N

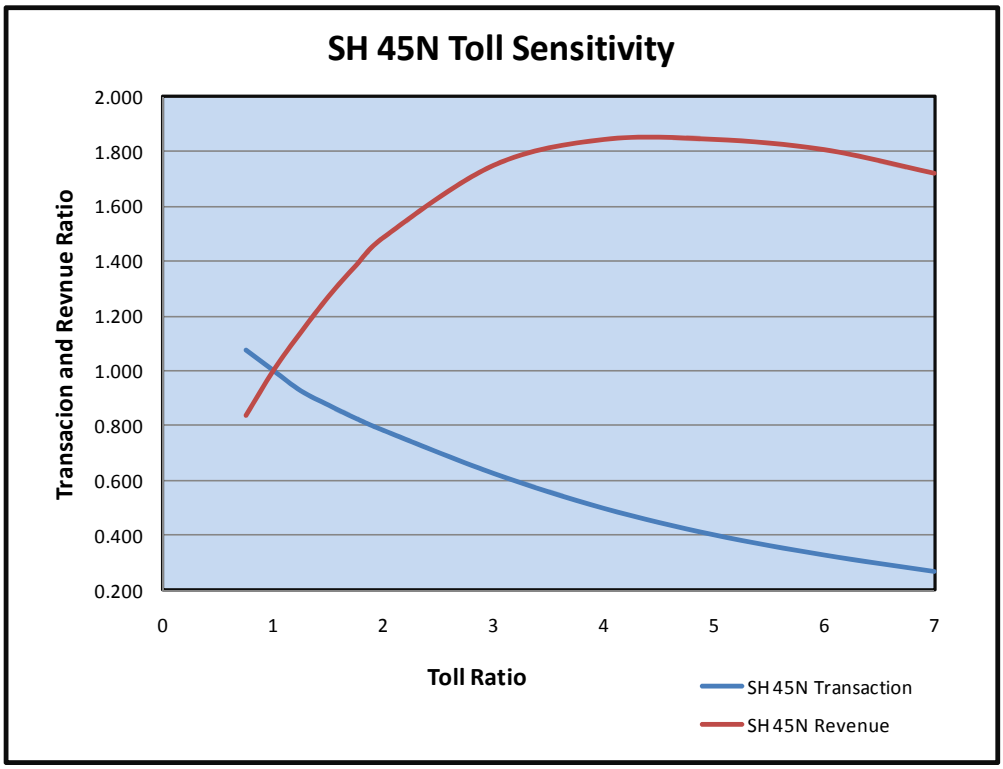
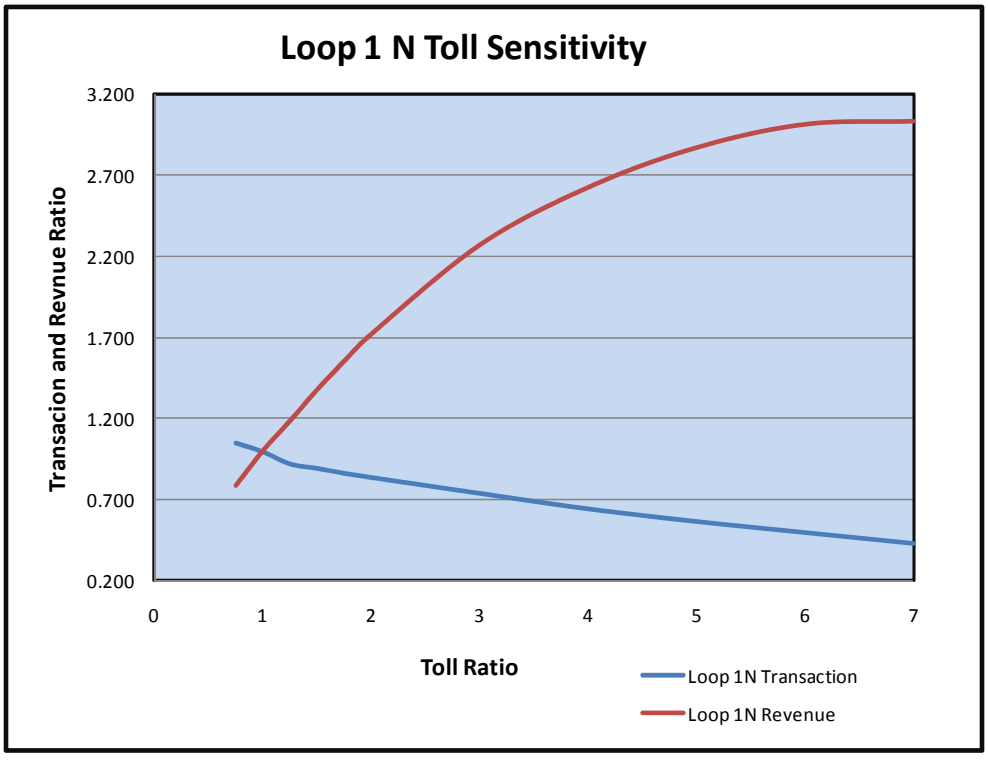


Figure 3-12: Toll Sensitivity for Loop 1



4.0 Socioeconomic Review

Socioeoconomic indicators were used to identify current demographic and economic trends in the Austin, Texas and San Antonio, Texas Metropolitan Statistical Areas (MSAs). These trends were reviewed and adjustments were applied to the Capital Area Metropolitan Planning Organization's (CAMPO's) and the San Antonio/Bexar County Metropolitan Planning Organization's (SABC's) socioeconomic forecasts for the CTTS 2010 Update study area. This section also discusses the methodology used to assess and adjust the MPOs' socioeconomic forecasts. It compares the revised county control total figures for the overall CAMPO and SABC study areas to the county control totals from the recently updated Metropolitan Transportation Plans (MTPs), and provides a brief description of the methodology used to assess and adjust the socioeconomic data at the Traffic Serial Zone (TSZ) level.

4.1 REGIONAL POPULATION AND EMPLOYMENT TRENDS

4.1.1 Population Trends

The state of Texas's population has grown rapidly since 1970, increasing from 11.2 million residents to more than 20.8 million residents during the 2000 Census. Since 2000, the population has added another 3.9 million residents, making it the fastest growing U.S. state, in terms of total population. Population figures from the U.S. Census Bureau also show that Texas had the second highest total net migration (superseded only by Florida) and, within this, strong domestic and international migration growth rates. The state's positive net migration was encouraged by its robust economy, pro-business environment, and reasonable cost-of-living. Most of Texas's population increase during this period has been in the urbanized areas of the state, namely Dallas-Fort Worth, Houston, Austin, and San Antonio, in addition to the counties along the Texas-Mexico border.

The total population of the five counties that make up the CAMPO study area (Travis, Williamson, Hays, Bastrop, and Caldwell Counties) grew by 213 percent between 1970 and 2000 from 398,938 to 1,249,763 persons or more than 850,000 new residents (See Table 4-1). In terms of total population, Travis County grew the most, from 295,516 residents in 1970 to 812,280 residents in 2000 or an increase of 175 percent. Williamson County grew at a more rapid rate between 1970 and 2000, from 37,305 residents to 249,967 residents or an increase of 570 percent. During the same period, Hays County's population grew by almost 70,000 residents or 253 percent, increasing to 97,589 residents. Bastrop County's population also increased significantly between 1970 and 2000, closely resembling the growth patterns of Hays County. However, its population is still relatively small and totaled 57,733 residents in 2000. Caldwell County, despite its proximity to rapid growth, has been mostly unaffected. Its population growth rate did accelerate to a CAGR of 2.01 percent between 1990 and 2000, but lagged the region's growth by almost one-half.

Table 4-1: Historic Population Trends for CAMPO Counties, 1970 to 2000

COUNTY POPULATION						
Year	**Travis**	**Williamson**	**Hays**	**Bastrop**	**Caldwell**	**Total**
1970	295,516	37,305	27,642	17,297	21,178	398,938
1980	419,573	76,521	40,594	24,726	23,637	585,051
1990	576,407	139,551	65,614	38,263	26,392	846,227
2000	812,280	249,967	97,589	57,733	32,194	1,249,763
AVERAGE ANNUAL CHANGE						
Year	**Travis**	**Williamson**	**Hays**	**Bastrop**	**Caldwell**	**Total**
1970-1980	12,406	3,922	1,295	743	246	18,611
1980-1990	15,683	6,303	2,502	1,354	276	26,118
1990-2000	23,587	11,042	3,198	1,947	580	40,354
COMPOUNDED ANNUAL GROWTH RATE						
Year	**Travis**	**Williamson**	**Hays**	**Bastrop**	**Caldwell**	**Total**
1970-1980	3.57%	7.45%	3.92%	3.64%	1.10%	3.90%
1980-1990	3.23%	6.19%	4.92%	4.46%	1.11%	3.76%
1990-2000	3.49%	6.00%	4.05%	4.20%	2.01%	3.98%

Source: U.S. Census Bureau, 2010

Despite its larger size, the population in the SABC study area has grown at roughly half the rate of the Austin MSA, a CAGR of slightly less than 2 percent a year. The SABC study area is made up of Bexar, Guadalupe, Comal, Wilson, and Kendall Counties. The region's total population in 2000 was 1,616,126 residents, an increase of 78 percent from its 1970 population of 908,184 residents. Most persons in the MSA lived in Bexar County, which had a population of 1,392,931 residents in 2000, which has grown by 68 percent since 1970. The remaining counties of the MSA were significantly smaller: Guadalupe County (89,023 residents); Comal County (78,021 residents); Wilson County (32,408 residents); and Kendall County (23,743 residents). Each of these four surrounding counties had high population growth rates between 1990 and 2000, but Guadalupe and Comal Counties have experienced the most substantive growth, due to their location along the IH 35 corridor between Austin and San Antonio, as well as their proximity to each of the two cities. Comal County's population has increased by 223 percent between 1970 and 2000, while Guadalupe County's population is 165 percent higher. During the same period, Wilson County grew by 149 percent and Kendall County's population increased 241 percent.

Table 4-2: Historic Population Trends for SABC Counties, 1970 - 2000

COUNTY POPULATION						
Year	**Bexar**	**Guadalupe**	**Comal**	**Wilson**	**Kendall**	**Total**
1970	830,460	33,554	24,165	13,041	6,964	908,184
1980	988,800	46,708	36,446	16,756	10,635	1,099,345
1990	1,185,394	64,873	51,832	22,650	14,589	1,339,338
2000	1,392,931	89,023	78,021	32,408	23,743	1,616,126
AVERAGE ANNUAL CHANGE						
Year	**Bexar**	**Guadalupe**	**Comal**	**Wilson**	**Kendall**	**Total**
1970-1980	15,834	1,315	1,228	372	367	19,116
1980-1990	19,659	1,817	1,539	589	395	23,999
1990-2000	20,754	2,415	2,619	976	915	27,679
COMPOUNDED ANNUAL GROWTH RATE						
Year	**Bexar**	**Guadalupe**	**Comal**	**Wilson**	**Kendall**	**Total**
1970-1980	1.76%	3.36%	4.19%	2.54%	4.32%	1.93%
1980-1990	1.83%	3.34%	3.58%	3.06%	3.21%	1.99%
1990-2000	1.63%	3.22%	4.17%	3.65%	4.99%	1.90%

Source: U.S. Census Bureau, 2010

Recent population estimates produced by the Texas State Data Center (TxSDC) and the U.S. Census Bureau suggest that the total number of residents has increased significantly in the five-county CAMPO study area since the 2000 U.S. Census (see Table 4-2). The most recent population estimates from the TxSDC are for July 1, 2009 and are considered the most accurate measures of population, since the TxSDC employs multiple techniques to produce its figures, as opposed to the U.S. Census Bureau which only uses one of these three techniques. The TxSDC's July 1, 2009 population estimates show the five-county CAMPO region grew by more than 437,000 residents or approximately 47,300 new residents per year since the 2000 U.S. Census (See Table 4-3). This growth increased the region's total population by 35 percent or by a CAGR of 3.30 percent. During this period, Travis County added approximately 200,500 new residents and grew at a CAGR of 2.41 percent. Williamson and Hays Counties grew at even faster CAGRs of 5.44 percent and 5.08 percent, respectively. Williamson County was estimated to have added approximately 158,000 new residents during this period, while Hays County was estimated to have grown by almost 57,000 new residents. Bastrop and Caldwell Counties added 17,000 and 5,000 residents, respectively, or at CAGRs of 2.86 percent and 1.59 percent, respectively.

Between 2000 and 2009, the five-county SABC region grew by 343,000 residents or a CAGR of 2.11 percent. Bexar County's population grew the most in absolute terms, by approximately 257,000 residents or a CAGR of 1.85 percent (See Table 4-4). Comal County had the second largest increase with approximately 35,800 new residents and a CAGR of 4.17 percent. Guadalupe County grew at a similar rate with 32,100 new residents and a CAGR of 3.39 percent. Wilson and Kendall Counties grew by 8,600 and 10,300 residents, respectively. The CAGR of their population growth during the 2000 to 2009 period was 2.58 percent and 3.93 percent, respectively.

Table 4-3: 2008 and 2009 Population Estimates for Counties in the CAMPO Study Area

	COUNTY					
	Travis	**Williamson**	**Hays**	**Bastrop**	**Caldwell**	**Total**
April 1, 2000 Census Count	812,280	249,967	97,589	57,733	32,194	1,249,763
TxSDC Estimate – Jul. 1, 2008	988,312	392,043	147,555	73,382	36,644	1,637,936
U.S. Census Estimate – Jul. 1, 2008	998,561	395,146	149,424	73,346	37,533	1,654,010
TxSDC Estimate – Jul. 1, 2009	1,012,789	408,128	154,354	74,912	37,253	1,687,436
U.S. Census Estimate – Jul. 1, 2009	1,026,158	410,686	155,545	74,876	37,810	1,705,075
Difference 2000 Census - 2008 TxSDC	176,032	142,076	49,966	15,649	4,450	388,173
Annual Change 2000 Census – 2008 TxSDC	21,339	17,223	6,057	1,897	539	47,055
Compounded Annual Growth Rate	2.41%	5.61%	5.14%	2.95%	1.58%	3.33%
Difference U.S. Census 2000-2008	186,281	145,179	51,835	15,613	5,339	404,247
Annual Change U.S. Census 2000-2008	22,581	17,599	6,284	1,893	647	49,004
Compounded Annual Growth Rate	2.53%	5.71%	5.30%	2.94%	1.88%	3.46%
Difference 2000 Census - 2009 TxSDC	200,509	158,161	56,765	17,179	5,059	437,673
Annual Change 2000 Census – 2009 TxSDC	21,678	17,100	6,137	1,857	547	47,320
Compounded Annual Growth Rate	2.41%	5.44%	5.08%	2.86%	1.59%	3.30%
Difference U.S. Census 2000-2009	213,878	160,719	57,956	17,143	5,616	455,312
Annual Change U.S. Census 2000-2009	23,124	17,376	6,266	1,853	607	49,227
Compounded Annual Growth Rate	2.56%	5.51%	5.17%	2.85%	1.75%	3.42%

Note: All growth rates are calculated based upon the specific date of the figures. For example, the period between the April 1, 2000 Census and the July 1, 2007 U.S. Census estimate is 7.25 years rather than 7.0 years.

Source: Texas State Data Center, 2009 and 2010 and U.S. Census Bureau, 2010.

Table 4-4: 2008 and 2009 Population Estimates for Counties in the SABC Study Area

	COUNTY					
	Bexar	**Guadalupe**	**Comal**	**Wilson**	**Kendall**	**Total**
April 1, 2000 Census Count	1,392,931	89,023	78,021	32,408	23,743	1,616,126
TxSDC Estimate – Jul. 1, 2008	1,618,284	118,101	110,105	40,979	32,832	
U.S. Census Estimate – Jul. 1, 2008	1,621,304	117,341	110,119	40,350	32,923	
TxSDC Estimate – Jul. 1, 2009	1,649,956	121,172	113,819	41,023	33,916	1,959,886
U.S. Census Estimate – Jul. 1, 2009	1,651,448	121,432	114,525	40,479	34,053	1,961,937
Difference 2000 Census - 2009 TxSDC	225,353	29,078	32,084	8,571	9,089	304,175
Annual Change 2000 Census – 2009 TxSDC	27,318	3,525	3,889	1,039	1102	36,873
Compounded Annual Growth Rate	1.83%	3.49%	4.26%	2.89%	4.01%	2.11%
Difference U.S. Census 2000-2009	228,373	28,318	32,098	7,942	9,180	305,911
Annual Change U.S. Census 2000-2009	27,684	3,433	3,891	963	1113	37,083
Compounded Annual Growth Rate	1.86%	3.40%	4.27%	2.69%	4.04%	2.12%
Difference 2000 Census - 2009 TxSDC	257,025	32,149	35,798	8,615	10,173	343,760
Annual Change 2000 Census – 2009 TxSDC	27,789	3,476	3,870	931	1100	37,166
Compounded Annual Growth Rate	1.85%	3.39%	4.17%	2.58%	3.93%	2.11%
Difference U.S. Census 2000-2009	258,517	32,409	36,504	8,071	10,310	345,811
Annual Change U.S. Census 2000-2009	27,950	3,504	3,947	873	1115	37,388
Compounded Annual Growth Rate	1.86%	3.41%	4.24%	2.43%	3.98%	2.12%

Note: All growth rates are calculated based upon the specific date of the figures. For example, the period between the April 1, 2000 Census and the July 1, 2007 U.S. Census estimate is 7.25 years rather than 7.0 years.

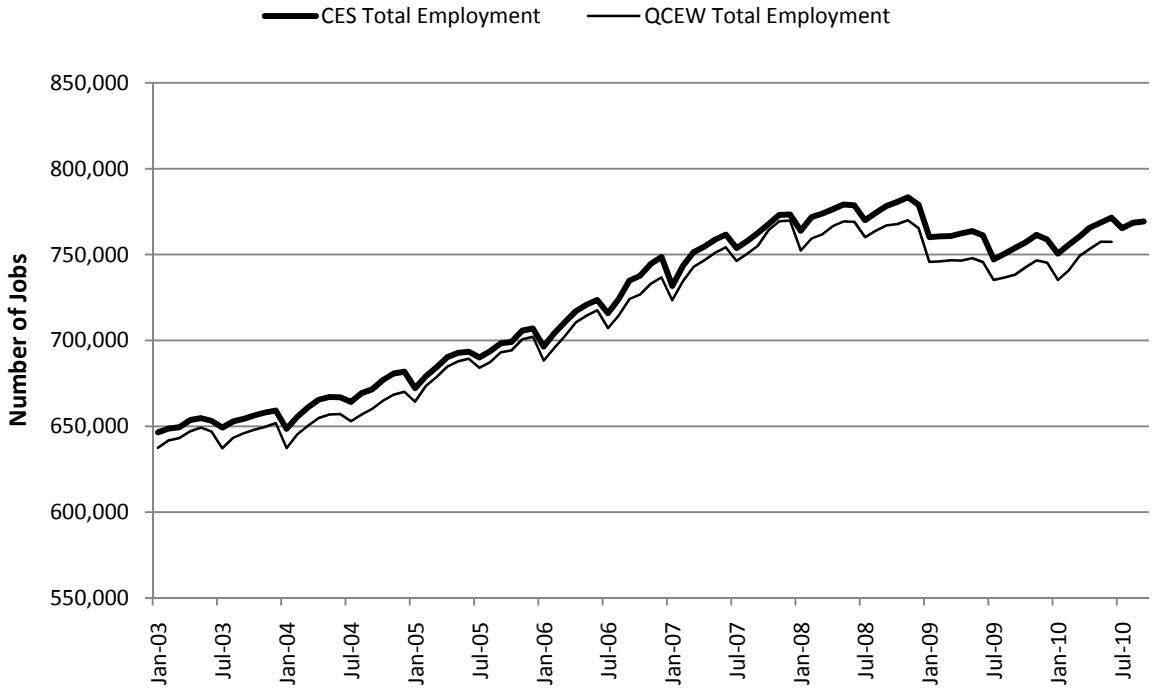
Source: Texas State Data Center, 2009 and 2010 and U.S. Census Bureau, 2010.

4.1.2 Employment

Figure 4-1 and Figure 4-2 graph two different employment counts for the Austin and San Antonio MSAs. The Current Employment Statistics (CES) report the results of a monthly survey of non-farm business establishments conducted by state and federal agencies. The Quarterly Census of Employment and Wages Program (QCEW) collects and complies employment data on the number of workers with unemployment insurance. The public is most familiar with the CES data, since it is produced with a short lag time (usually less than one month) and it gives a reasonably accurate snapshot of local, state and national labor market. It is commonly used by various news media to report the condition of national and regional economies. However, the QCEW data are the more accurate of the two, in terms of comprehensively accounting for workers. While these data do have some shortcomings, for example some employees (like railroad workers) are not covered by unemployment insurance and therefore are not counted; they are probably the most reasonable dataset for transportation modeling purposes because they reflect individuals in traditional employment arrangements. Two drawbacks to the QCEW data are that there is usually a six-month lag before it is released and it is only available from January 2003. Despite their differences, this discussion will make use of both datasets to provide a more comprehensive picture of the regional job markets in the Austin and San Antonio MSAs.

Total employment in the Austin MSA has grown substantially between January 2003 and October 2010, although it has not grown consistently. During January 2003, the total QCEW employment for the Austin MSA was 637,493 workers. Total employment rose consistently from this point to its peak in November 2007, when it reached 769,979 workers or an increase of approximately 132,500 new jobs. However, as the national recession began to take its toll on the local economy, job losses continued through July 2009 when total employment fell to 735,265 workers. Since then, the general trend has been upward and total employment during June 2010 was 757,383 workers or an increase of 22,000 new jobs. It should be noted that the CES employment estimate for June 2010 is 771,500 jobs, which is 14,000 more jobs than the QCEW estimate. Despite the recent improvements, during June 2010, the local job market was still more than 12,000 jobs lower than its November 2007 peak (and more than 24,000 jobs lower than the CES peak).

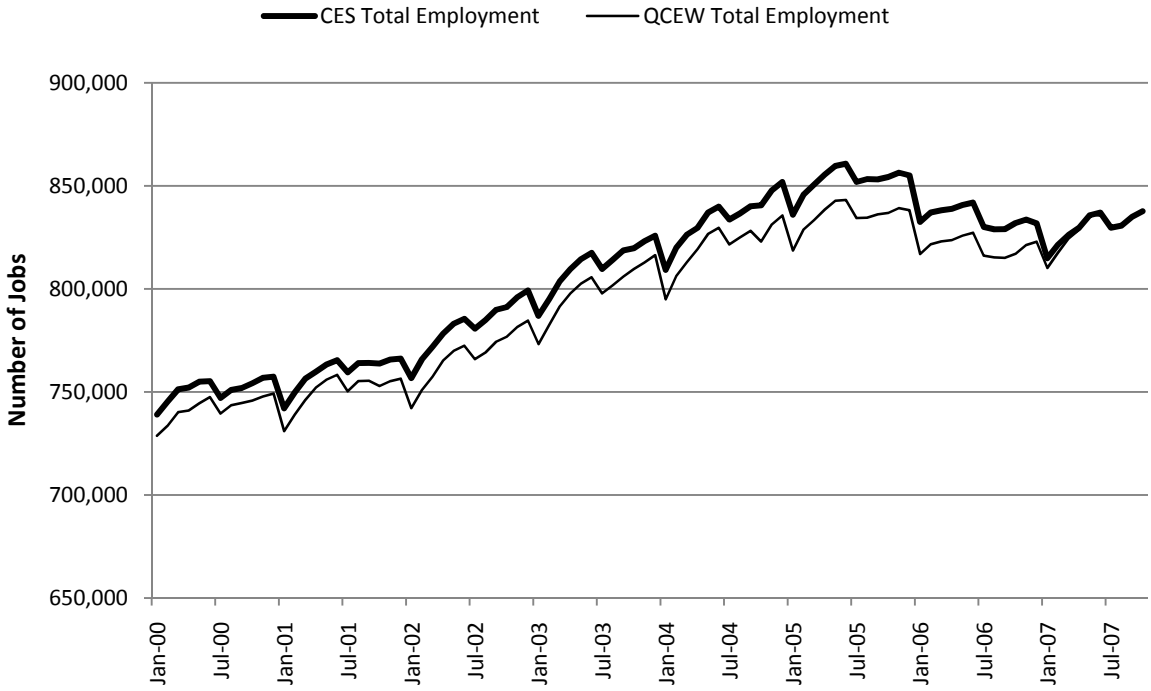
Figure 4-1: Total Employment in the Austin, TX MSA – Jan 2008 to Oct 2010



Source: Texas Workforce Commission, 2010.

Total employment in the San Antonio MSA also grew strongly between 2003 and 2010, increasing from 728,749 jobs in January 2003 to a peak of 843,167 workers during June 2008 or an increase of almost 114,500 jobs. From that peak, which occurred substantially later than the national economy's dip into severe recession (as well as the Austin economy's) total employment began to fall and reached its nadir during January 2010 at 810,199 jobs. Following that point, the number of employed began to expand once again and there were 835,554 jobs as of June 2010. Yet, the total number of employed was still roughly 7,600 fewer workers than June 2008.

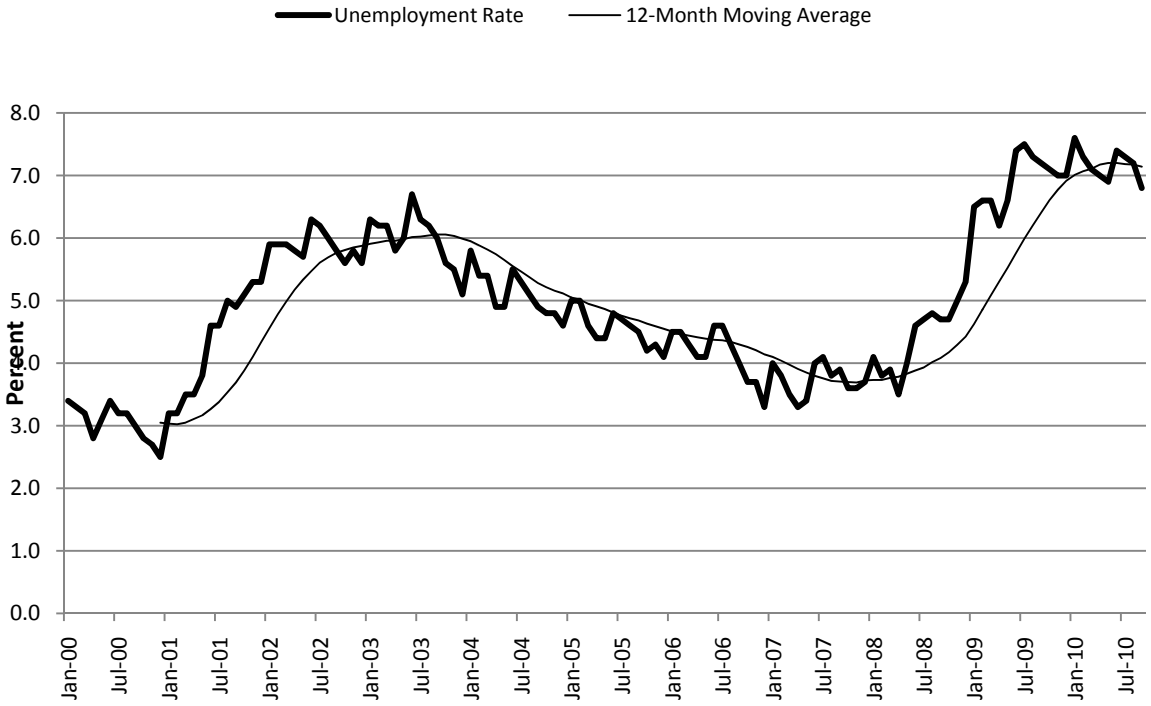
Figure 4-2: Total Employment in the San Antonio, TX MSA – Jan 2008 to Oct 2010



Source: Texas Workforce Commission, 2010.

Figure 4-3 shows that during the Austin region's previous economic expansion, local unemployment rates fell to impressive levels; well below 3.0 percent. However, there was a substantial increase in the number of unemployed beginning in January 2001. The unemployment rate moved upward until reaching a peak level of 6.7 percent during June 2003. After that, unemployment rates in the Austin MSA began to fall and local unemployment stood at 3.3 percent during April 2008. The unemployment rate then began to rise again, reaching a high of 7.6 percent in January 2010. As of September 2010, the situation had improved somewhat and the Austin MSA had an unemployment rate of 6.8 percent. The unemployment rate's 12-month moving average also showed signs of leveling out and perhaps the start of a decline. Regardless, the Austin region's unemployment rate is considerably lower than the national rate of 9.2 percent and also lower than Texas's rate of 7.9 percent (September 2010). While recent declines in unemployment rates are, to some degree, the result of job growth, the declining rates also may reflect a certain segment of the unemployed who have given up on finding a job and who are no longer counted as unemployed.

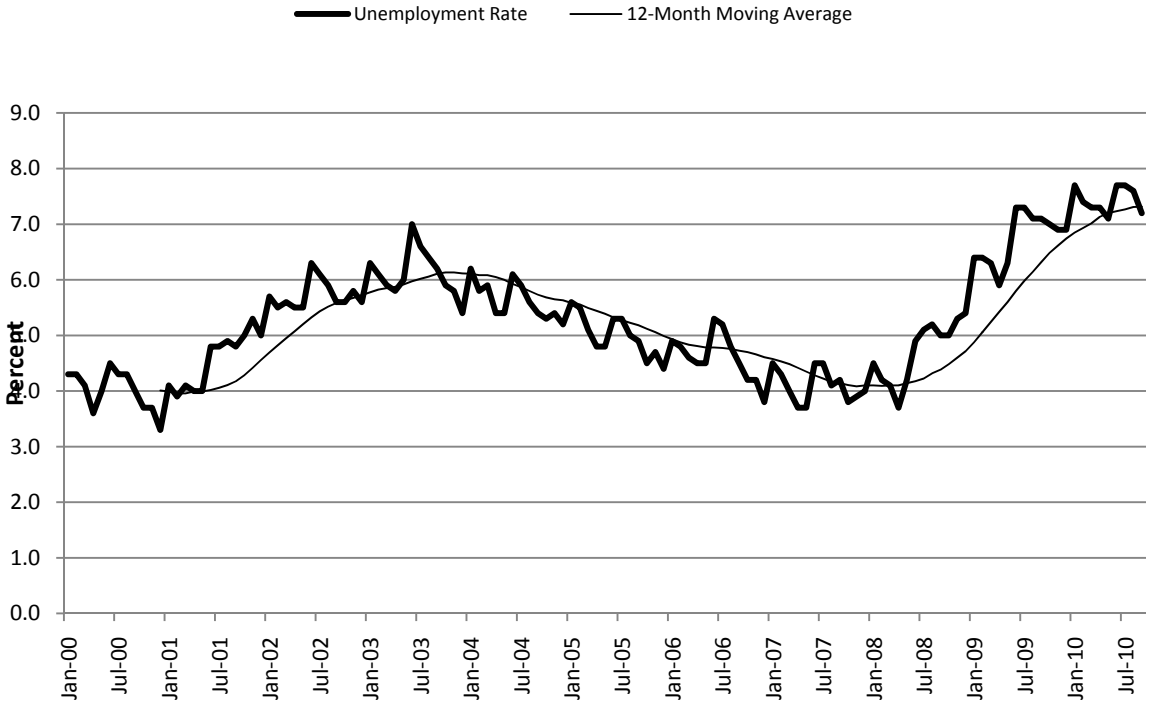
Figure 4-3: Unadjusted Unemployment Rate - Austin, TX MSA - Jan 2000 - Sept 2010



Source: Local Area Unemployment Statistics. Texas Workforce Commission, 2010.

The unemployment rate in the San Antonio MSA has shown a very similar trend, although it was somewhat higher throughout this period (See Figure 4-4). During 2000, at the peak of the previous expansion, the San Antonio MSA's unemployment rate reached a low of 3.3 percent during December 2000. As the subsequent recession ensued, the region's unemployment rate grew to a high of 7.0 percent during June 2003. This was followed by a period of slow decline until a new low of 3.7 percent was reached during April 2008. The region's unemployment rate then began to rise very quickly, as the national recession deepened and an unemployment rate of 7.7 percent was reached three times during 2010. The unemployment rate during September 2010 was 7.2 percent. The 12-month moving average of the MSA's unemployment rate shows that it is still on a slight upward trend but may be close to leveling out.

Figure 4-4: Unadjusted Unemployment Rate - San Antonio, TX MSA - Jan 2000 - Apr 2010



Source: Texas Workforce Commission, 2010.

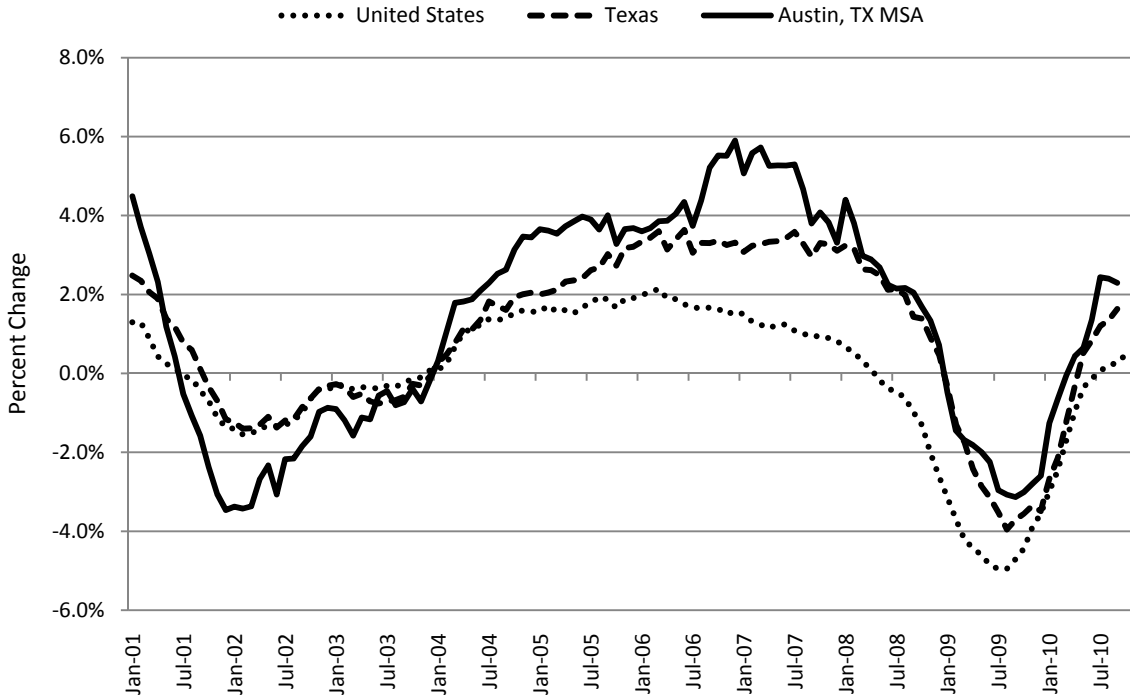
The Nation's Lingering Economic Difficulties and Their Local Impacts

The State of Texas's economy and the Austin and San Antonio MSA economies (in particular) have proven to be surprisingly resilient during the current economic downturn. While the state and the region have not been untouched by the nation's economic troubles, they have avoided some of the job losses that have affected other fast growing areas of the country. The Austin MSA even had the envious position of being the only major city in the nation to have a net job gain for four consecutive months during early 2009. However, by early 2009, the Austin MSA began to experience employment loss, as national economic conditions finally began taking a toll.

Figure 4-5 provides a year-on-year comparison of monthly employment data for the United States, Texas, and the Austin MSA. These data show that Texas and, particularly the Austin MSA, experienced more significant employment loss during the last recession than did the nation overall. This is not surprising since the Austin MSA's economy and the Texas economy were disproportionately affected by their large technology sector. During the subsequent economic rebound between 2004 and 2007, employment growth in Texas and the Austin MSA surpassed national levels. In fact, during this period, the rate of employment growth in the Austin MSA was significantly greater than the state of Texas. Year-on-year employment change during 2009 was also less negative in Texas and the Austin MSA than it was at the national level. During the period of improvement that has occurred since early 2010, employment growth in all three economies has improved markedly. Among them, the Austin

MSA's economy has performed the best and showed positive year-over-year employment growth during most of 2010, while the national economy just barely achieved positive job growth.

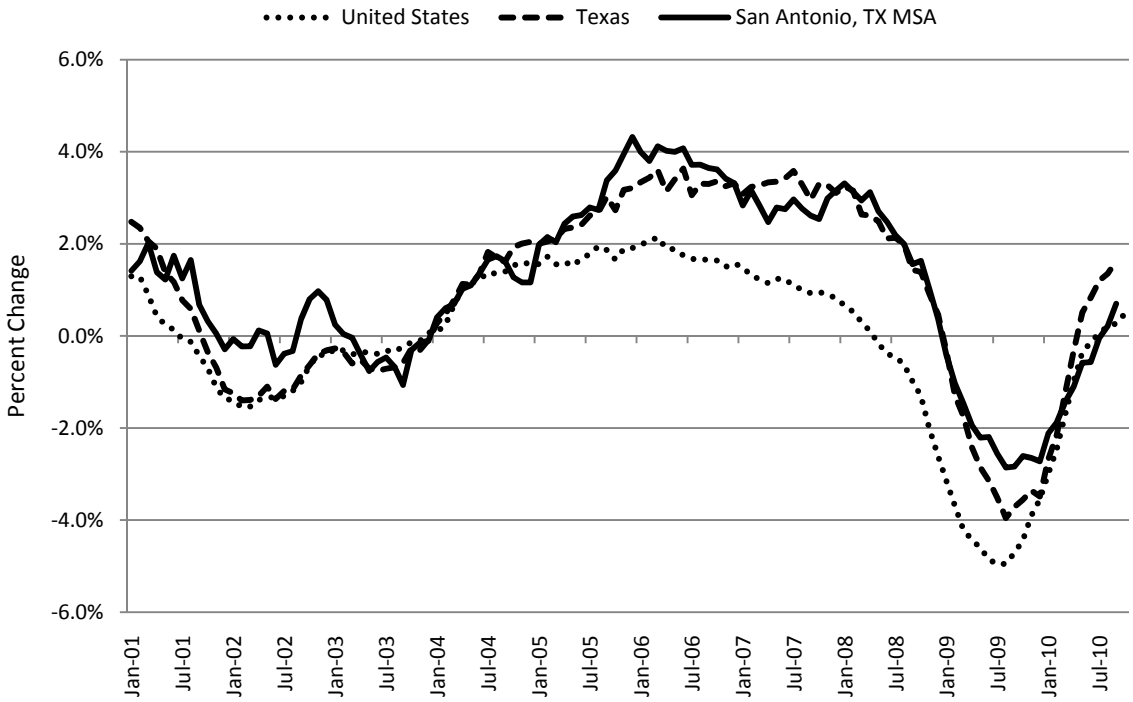
Figure 4-5: Year-on Year CES Monthly Employment Change, Jan 2001 - Sept 2010



Source: Current Employment Estimates. Texas Workforce Commission, 2010.

The San Antonio MSA's year-over-year employment change again showed a similar pattern, although the periods of growth and retraction, were likely buffered by the large number of federal government jobs in the region, particularly at its multiple military installations. The data show that the San Antonio MSA, unlike nearby Austin, escaped with relatively little job loss during the 2001 to 2003 recession. During the subsequent period of recovery, the region's job growth was robust but lower than in the Austin MSA. During the most recent downturn, the San Antonio MSA has experienced greater job loss, although still outperforming the state of Texas overall and the United States as a whole. However, starting in early 2010, the San Antonio MSA's performance slipped and the region has lagged even the nation's slow pace of job growth. As of September 2010, the region's year-over-year rate of job growth was only slightly higher than the national rate but lower than Texas overall.

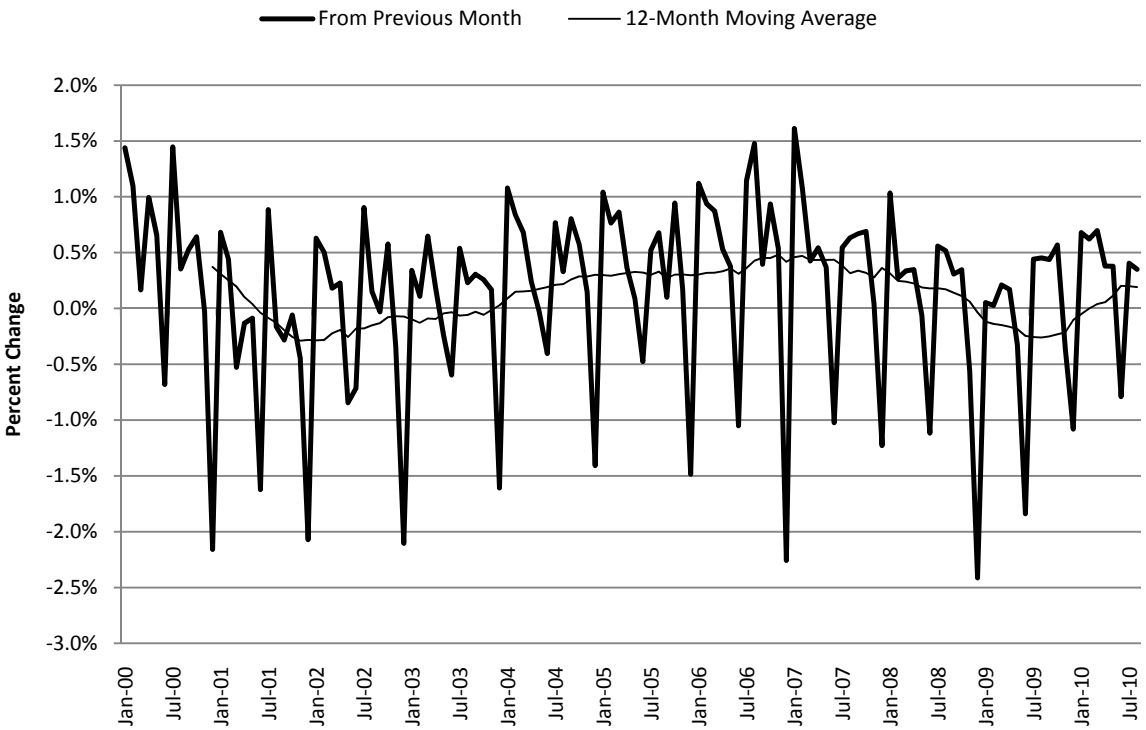
Figure 4-6: Year-on-Year CES Monthly Employment Change, Jan 2001 - Sept 2010



Source: Current Employment Estimates. Texas Workforce Commission, 2010.

Figure 4-7 shows the percent change of employment in the Austin MSA between each month from January 2000 through September 2010. While there is a vaguely discernible trend when these data are graphed, a more useful metric for identifying a pattern is the 12-month moving average. This measure produces a smoothed trend line by averaging values over a 12-month period and then graphing these points on the chart. The 12-month moving average of monthly employment change clearly shows that employment growth in the Austin region slowed throughout 2008 and was negative during much of 2009. However, during late-2009, the trend turned towards very modest growth.

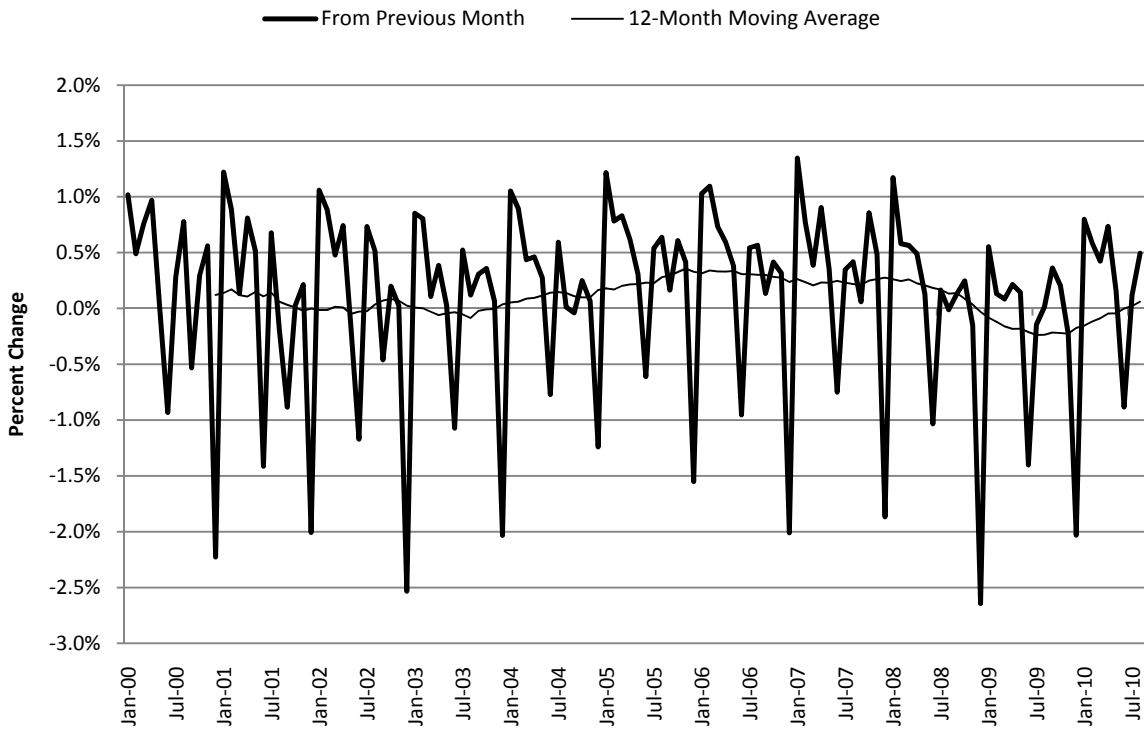
Figure 4-7: Austin, TX MSA CES Percent Monthly Employment Change, Jan 2000 - Sept 2010



Source: Current Employment Estimates. Texas Workforce Commission, 2010.

The San Antonio MSA has shown a similar pattern of growth and shrinkage of the labor market, although less extreme than the Austin MSA. Most notably, the 12-month moving average of month-over-month employment change in the San Antonio MSA was negative during all of 2009 and the first half of 2010. Only during mid-2010 did it become slightly positive. As with Figure 4-6, these data suggests that the San Antonio MSA's economy is emerging from the current downturn at a slower pace than the state of Texas and the Austin MSA. It also suggests that it could be more susceptible to any short-term economic shocks.

Figure 4-8: San Antonio, TX MSA CES Percent Monthly Employment Change, Jan 2000 - Sept 2010



Source: Current Employment Estimates. Texas Workforce Commission, 2010.

Employment Trends by Sector

Examining employment change by industry reveals that certain sectors have played an important role in the region's economic growth during the past seven years. Table 4-4 provides data showing employment change in each employment sector between June 2003 and June 2010, as well as between June 2007 and June 2010 (the current economic downturn). The data in Table 4-5 show that more than 110,000 net jobs were created in the Austin MSA between June 2003 and 2010. However, Table 4-5 also shows that the region has only grown by 3,125 jobs between June 2007 and June 2010.

While job growth occurred in most of the Austin MSA's employment sectors between 2003 and 2010, the education and health services sector led the region with 38,200 new jobs. In fact, even during the economic contraction between June 2007 and June 2010, the sector added more than 20,300 jobs. The employment increase in health services was a factor of population growth and supported by the opening of several major medical facilities in the Austin region, including the Dell Children's Medical Center and hospitals in Round Rock, Cedar Park, and Kyle. Employment in the education sector also grew steadily; since the region's rapid population growth requires the construction of new elementary and secondary schools. The trade, transportation, and utilities sector added more than 22,800 jobs between 2003 and 2010, although more than 1,300 jobs were lost between 2007 and 2010. The retail industry accounts

for most of the employment in this sector (about 58 percent) and for most of the new job growth (approximately 64 percent). Employment in the retail subsector grew by 14,686 jobs between 2003 and 2010 or 22 percent. However, given the retail trade subsector's cyclical nature and temporary hiring practices, it is difficult to determine precise trends. The sector's employment growth has been driven by a number of new retail developments, including: expansions to the outlet mall in San Marcos; the construction of an outlet mall in Round Rock and nearby stores (e.g. IKEA and JC Penney); the retail center at Southpark Meadows in South Austin; The Domain, a high-end (e.g. Neiman-Marcus, Tiffany's, Louis Vuitton, etc.) retail center in North Austin; La Frontera retail center in Round Rock; and the Wolf Ranch and Rivery retail centers in Georgetown. The professional and business services sector added almost 22,800 jobs between 2003 and 2010, although approximately 1,300 jobs were lost between 2007 and 2010. Another local employment growth sector has been the hospitality and leisure industry, which increased by almost 20,700 jobs between 2003 and 2010 (including more than 6,000 jobs since 2007). The industry has expanded as Austin's population has increased but also because the city has become a popular travel destination, especially during events such as the SXSW Music, Film, and Interactive Conference and the Austin City Limits Music Festival each year, as well as college sporting events.

The data in Table 4-5 also show that employment in the manufacturing sector (which consists almost entirely of computer, semiconductor, and electronics production) has experienced the steepest decline with almost 13,600 jobs lost between 2007 and 2010. In addition to reduced demand from the national recession, job losses have also occurred as outdated facilities are closed and as jobs are sent offshore. The region's manufacturing sector, which at one time peaked at more than 85,000 jobs in 2000, is unlikely to recover from its subsequent 45 percent loss of jobs. Likewise, although at a smaller scale, the information sector was a net employment loser, shedding more than 3,000 jobs between 2007 and 2010. The construction sector, which is more cyclical and tends to lag employment changes in the economy as a whole, has lost most of its gains between 2003 and 2010, shedding more than 11,000 jobs between 2007 and 2010, as housing demand sharply contracted. The financial activities sector also lost almost 1,300 jobs between 2007 and 2010, although the industry still had a net increase of 4,600 jobs between 2003 and 2010.

Table 4-5: QCEW Employment Change – Austin, TX MSA by Sector

Employment Sector	Change 06/03-06/10		Change 06/07-06/10	
	Employment	CAGR	Employment	CAGR
Manufacturing	-10,933	-2.92%	-13,590	-8.06%
Construction	1,044	0.36%	-11,090	-7.55%
Information	-1,838	-1.23%	-3,030	-4.55%
Trade, Transportation and Utilities	22,817	2.54%	-1,362	-0.32%
Professional and Business Services	22,793	3.38%	-1,294	-0.39%
Financial Activities	4,655	1.58%	-648	-0.48%
Unclassified	-418	-9.14%	-436	-20.60%
Natural Resources and Mining	1,505	7.95%	-158	-1.41%
Other Services	5,837	3.41%	1,718	2.14%
Leisure and Hospitality	20,683	3.85%	6,044	2.37%
Public Administration	6,136	1.53%	6,642	3.94%
Education and Health Services	38,243	3.70%	20,329	4.33%
TOTAL	**110,524**	**2.28%**	**3,125**	**0.14%**

Source: Texas Workforce Commission, 2010.

Overall industry employment trends in the San Antonio MSA show a similar pattern to the Austin MSA, relatively strong growth between 2003 and 2007, followed by an abrupt slowdown between 2007 and 2010 (See Table 4-6). Total job growth between June 2003 and June 2010 was more than 88,000 jobs. However, job growth between 2007 and 2010 was less than 6,000 jobs. Most of the job growth in the San Antonio MSA during this period was in the Education and Health Services sector, which added 20,300 workers. The San Antonio MSA serves as a regional health center and is an important military medical center. The Public Administration sector increased by almost 6,500 jobs and the Leisure and Hospitality sector added 4,200 workers. Surprisingly, total employment in the Financial Services sector grew by 1,600 jobs. Job losses between 2007 and 2010 were most significant in the Trade, Transportation, and Utilities sector and the Construction sector, which lost 7,200 and 7,100 jobs, respectively. The manufacturing sector in the San Antonio MSA was not as hard hit as in the Austin MSA, but there was still an employment loss of 5,200 jobs. The Professional and Business Services sector cut 4,300 jobs and the Information sector pared 3,200 workers.

Table 4-6: QCEW Employment Change - San Antonio, TX MSA by Sector

	Change 06/03-06/10		Change 06/07-06/10	
Employment Sector	**Employment**	**CAGR**	**Employment**	**CAGR**
Trade, Transportation and Utilities	5,694	0.54%	-7,215	-1.50%
Construction	1,212	0.39%	-7,138	-4.74%
Manufacturing	-4,747	-1.46%	-5,234	-3.69%
Professional and Business Services	13,556	2.03%	-4,365	-1.37%
Information	-5,255	-3.40%	-3,242	-5.07%
Unclassified	-144	-6.43%	-237	-20.30%
Natural Resources and Mining	351	0.92%	123	0.74%
Other Services	2,029	1.14%	1129	1.46%
Financial Activities	5,496	1.24%	1,616	0.83%
Leisure and Hospitality	17,900	2.58%	4,327	1.35%
Public Administration	9,532	3.58%	6,484	5.50%
Education and Health Services	42,401	3.16%	19,636	3.22%
TOTAL	**88,025**	**1.60%**	**5,884**	**0.24%**

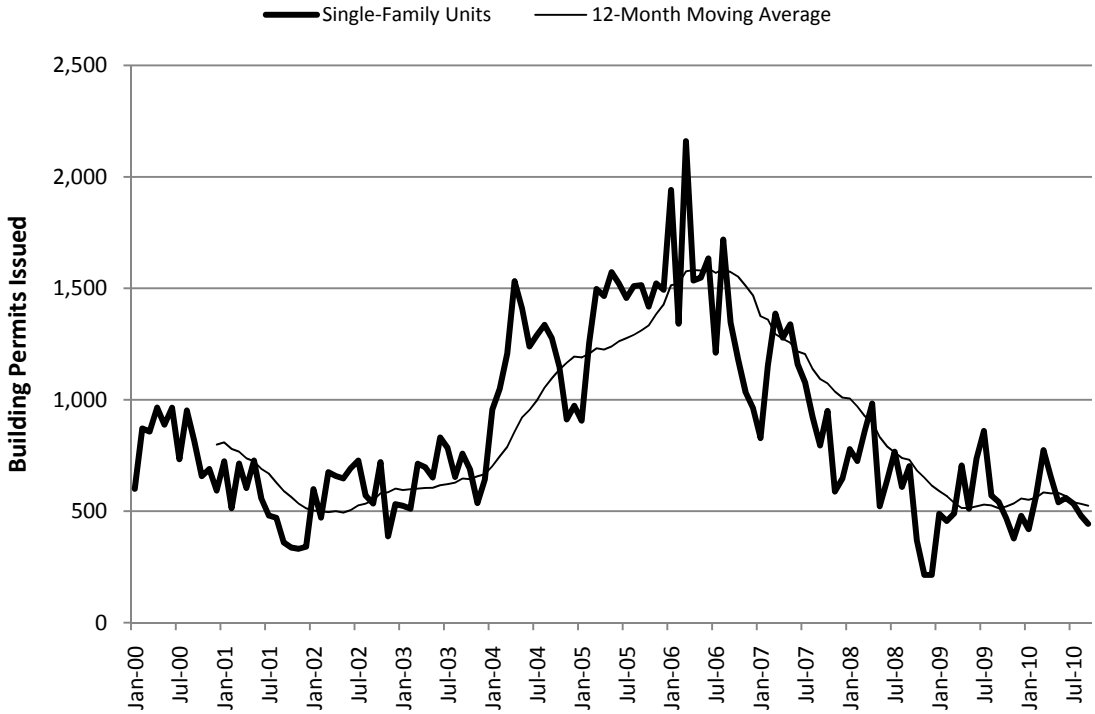
Source: Texas Workforce Commission, 2010.

4.2 REGIONAL REAL ESTATE TRENDS

Single-family

The number of single-family residential building permits issued within the Austin MSA has declined significantly since early 2006. Figure 9 shows that the number of permits issued has fallen from an average of approximately 1,600 per month (12-month moving average) to approximately 500 per month during mid-2010. During mid-2009, the amount of construction activity in the single-family housing sector was similar to the level experienced during low point of the 2001-2003 recession (12-month moving average). Since reaching this most recent nadir, there was a slight uptick in the number of permits issued during early 2010, but the number of permits issued has returned near its previously low levels.

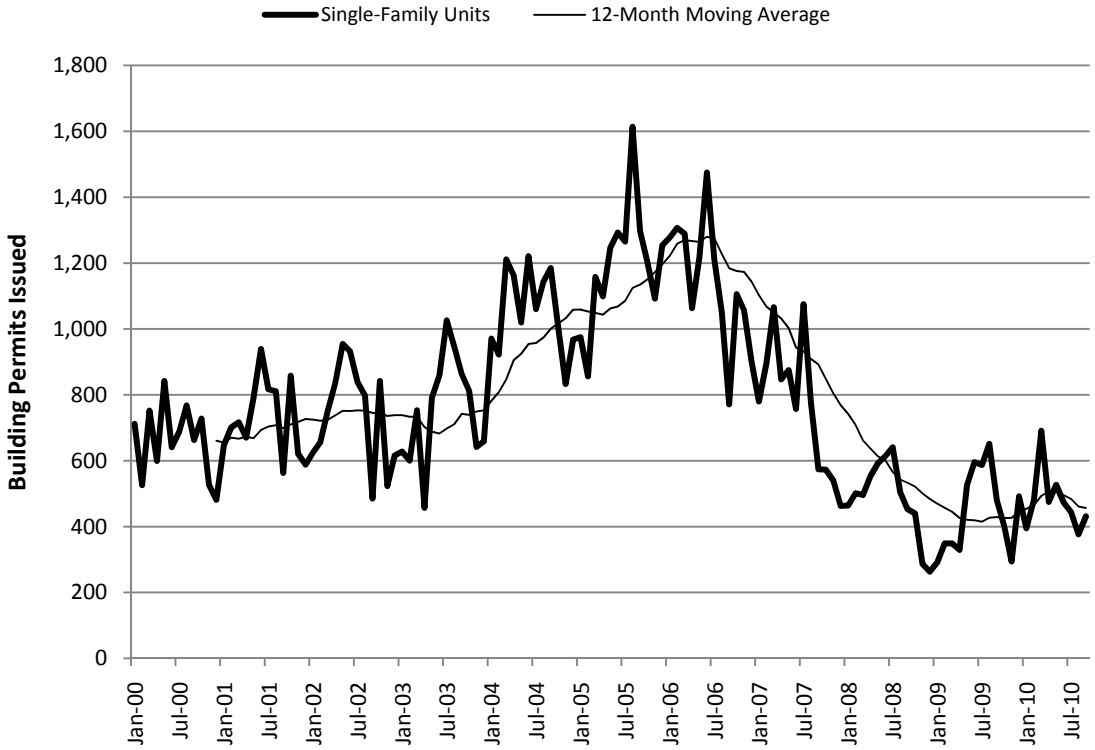
Figure 4-9: Single-Family Building Permits Issued - Austin, TX MSA, Jan 2000 - Sept 2010



Source: Texas A&M University Real Estate Center, 2010.

The pattern of issued single-family building permits in the San Antonio MSA was similar to the Austin MSA, with the notable exception that there was not a downturn during the 2001-2003 recession (See Figure 4-10). The region's peak activity was in early 2006, when roughly 1,300 monthly housing permits were issued (12-month moving average). After that point, the volume dropped steeply to slightly more than 400 residential building permits per month during late 2009. There was a slight uptick in the market during early 2010, but number of building permits again fell near their previously low levels.

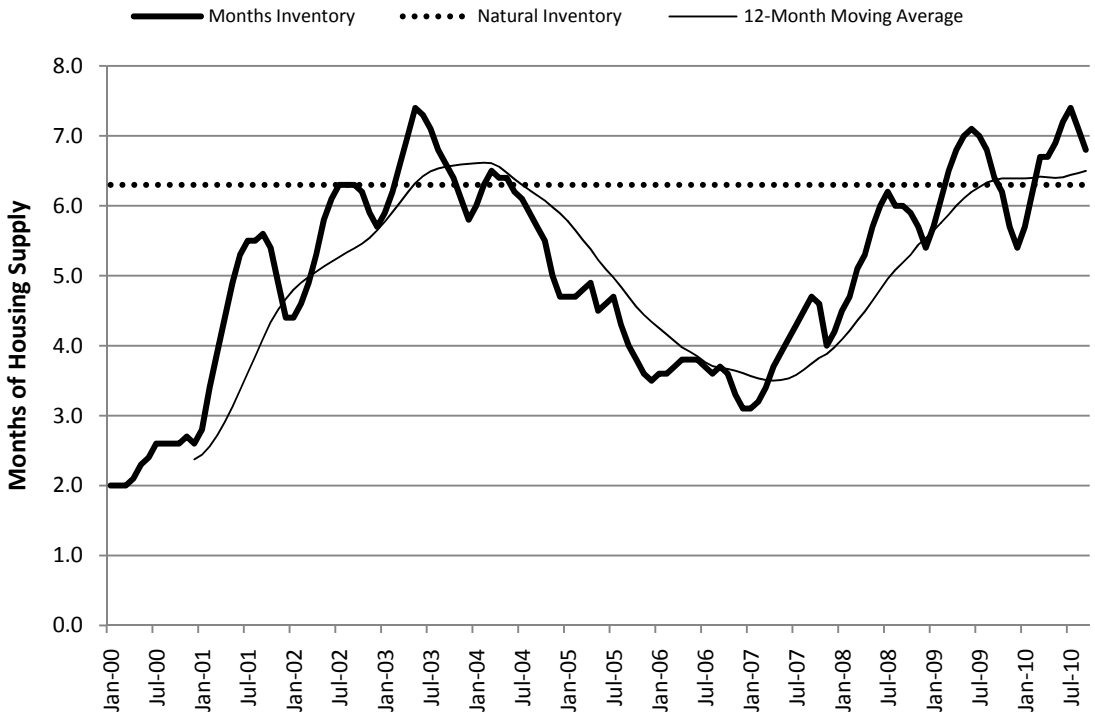
Figure 4-10: Single-Family Building Permits - San Antonio, TX MSA, Jan 2010 - Sept 2010



Source: Texas A&M University Real Estate Center, 2010.

Another gauge of the housing crisis' effect on the local economy is the inventory of unsold homes. According to a 2008 study by researchers at the Real Estate Center at Texas A&M University, the Austin MSA has a "natural" homes-for-sale inventory of 6.3 months. This value is said to show that when there is fewer than 6.3 months of housing inventory on the market, home prices appreciate, and when there is more than 6.3 months area, home prices fall. Figure 4-11 shows the Austin MSA had 6.8 months of housing inventory during September 2010. This level of inventory was a substantial increase over the January 2007 level, when there was just over a 3-month supply. It should be noted that even during the height of the most recent housing boom, the region's inventory of single-family homes was still not as constrained as it was during January 2000, when the region had only a 2-month supply of homes nor has it had as many homes on the market as during May 2003 when there was a 7.4 month supply.

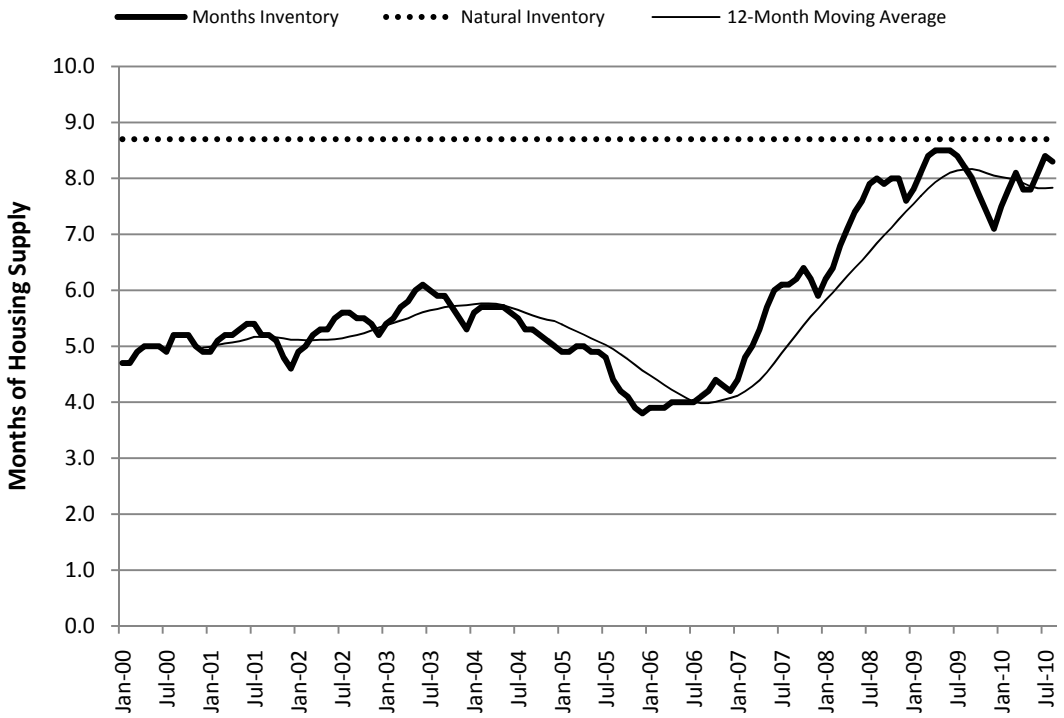
Figure 4-11: Months of Housing Supply in the Austin, TX MSA Market, Jan 2000 - Apr 2010



Source: Texas A&M University Real Estate Center, 2010.

A similar measure of natural inventory for the San Antonio MSA is not available, but Figure 4-12 shows the region's housing inventory compared to the natural inventory for the state of Texas. The data show that the region has maintained a somewhat constrained housing market between 2000 and 2006. Beginning in 2007, the market became less constrained and, assumedly, housing prices began to fall.

Figure 4-12: Months of Housing Supply in the San Antonio, TX MSA Market, Jan 2000 - Apr 2010



Source: Texas A&M University Real Estate Center, 2010.

Multifamily

Apartment vacancy rates in the Austin region trended upward between 2007 and 2008 but have declined during 2009 and 2010. Yet, nationally, household formation has slowed dramatically since 2009, which has constrained the demand for new apartments. Between 2007 and 2008, for example, 1.17 million new households were formed. Between 2008 and 2009, household formation had fallen to 357,000 households (U.S. Census Bureau, 2010). The slowing rate of household formation, coupled with the large supply of housing on the market, means there is significantly less market demand for new housing construction than there has been in the recent past. Young adults, for example, are continuing to live with family members rather than moving into their own home. Other unrelated individuals are sharing dwelling units to reduce their housing costs or to conserve income. However, the Austin region has also received a large amount of in-migration of job-seekers from the rest of the nation, which has created new demand for housing. Even with these countervailing trends, the apartment vacancy rate for the Austin region, as a whole, was 8.2 percent during the third quarter of 2010 which is high by historic standards. Table 4-7 provides a submarket review of apartment vacancy rates during the third quarter of 2010.

Table 4-7: Apartment Vacancy Conditions in the Austin Area - Third Quarter 2010

Rank	Submarket	Vacancy Rate	Year-on-Year Change
1	North Travis	5.80%	1.50%
2	Ranch Road 620 N./FM 2222	6.90%	2.00%
3	Far Northwest	7.10%	1.10%
4	Near Northwest	7.30%	1.10%
5	US 183/Cedar Park/Leander	8.20%	2.00%
6	Central	8.70%	1.80%
7	San Marcos/North Hays County	8.80%	-0.10%
8	Round Rock/Georgetown/Hutto	9.80%	0.00%
9	Southeast	10.10%	-1.80%
10	East	11.10%	1.80%

Source: Marcus & Millichap, 2010.

Data for a similar description of San Antonio's apartment submarkets were not readily available. However, summary data for the region from ALN Apartment Data show that the occupancy rate was 91.1 percent during October 2010. Over a 12-month period, the region absorbed 3,877 units or an increase of 3.3 percent.

Office

The Austin MSA office rental market is under considerable pressure due to the current economic downturn. Overall, the region's office vacancy rate was 22.9 percent during the third quarter of 2010 (See Table 4-8). The Austin MSA's net absorption of office space improved during this period by 527,213 square feet. Although the SH 130 study area contributes relatively little to the overall supply of the region's office space, the Round Rock and East Austin submarkets had the highest vacancy rates. Table 4-8 also shows that none of the submarkets in the region were adding new office space because, for obvious reasons, builders have stopped supplying space to the market.

Table 4-8: Office Rental Market Conditions in the Austin Area - Third Quarter 2010

Submarket	Rentable Area (SF)	Total Vacancy	Net Absorption (SF)	Under Construction (SF)
CBD	9,031,715	15.10%	64,078	0
Northwest	15,351,933	27.10%	174,682	0
North Central	3,302,421	28.60%	112,389	0
Round Rock	964,611	46.80%	-2,337	0
East	1,534,677	32.40%	25,553	0
South	1,712,674	25.60%	-3,948	0
Southwest	9,259,675	16.70%	156,796	0
TOTAL	**41,157,706**	**22.90%**	**527,213**	**0**

Source: CB Richard Ellis, 2010.

The San Antonio office market, although with considerably less supply than the Austin market, is performing relatively well under the current economic environment. Total vacancy for the region was 17.6 percent with 47,065 feet of space being returned to the market during the third quarter of 2010 (See Table 4-9). No new office space was under construction during this period.

Table 4-9: Office Rental Market Conditions in the San Antonio Area - Third Quarter 2010

Submarket	Rentable Area (SF)	Total Vacancy	Net Absorption (SF)	Under Construction (SF)
CBD	4,939,798	22.90%	-49,182	0
North Central	9,438,579	15.80%	23,505	0
Northeast	1,699,722	11.90%	18,525	0
Northwest	8,493,359	17.90%	-39,013	0
South	305,063	12.30%	-900	0
TOTAL	**24,876,521**	**17.60%**	**-47,065**	**0**

Source: CB Richard Ellis, 2010.

Retail

According to a 2010 study by Marcus & Millichap, the Austin region's market for retail space remains depressed, but its second quarter 2010 vacancy rate was 9.3 percent, which was an improvement from the fourth quarter of 2009 rate of 9.6 percent. A listing of select retail rental submarkets is provided in Table 4-10. Retail construction is still occurring at a slow pace and there are several projects underway that will add approximately 400,000 square feet of space to the local market. More than twenty times that amount of space is still being planned for the region, but these projects will trickle into the market as demand dictates (Marcus & Millichap, 2010).

Table 4-10: Retail Rental Market Conditions in the Austin Area - Second Quarter 2010

Submarket	Vacancy Rate	Year-on-Year Change
South Austin	6.40%	-3.40%
Central/Downtown Austin	8.20%	-3.20%
Round Rock/Williamson County	14.60%	-4.10%

Source: Marcus & Millichap, 2010.

A study of San Antonio's retail market by NAI REOC San Antonio found a similar retail vacancy rate of 14.0 percent (See Table 4-11). Vacancy rates were lower in San Antonio's CBD and the south part of the city at 13.3 percent than its northern side with 14.1 percent. However, more than 85 percent of the region's retail space is located north of the CBD, which had a net absorption of 66,972 square feet during the second quarter of 2010.

Table 4-11: Retail Rental Market Conditions in the Austin Area - Second Quarter 2010

Submarket	Rentable Area	Vacancy Rate	2Q Absorption
CBD/South	5,516,414	13.30%	-5,022
Non-CBD/North	39,304,903	14.10%	66,972
Citywide	**44,821,317**	**14.00%**	**61,950**

Source: NAI REOC San Antonio, 2010.

Industrial

Table 4-12 provides an overview of the industrial real estate market in the Austin region during the third quarter of 2010. The data show that the overall vacancy rate for industrial real estate in the region was 21.3 percent. The data also show that no new industrial space was under construction. During the past quarter, a modest amount of industrial space has returned to the market. A significant share of the region's industrial space is located in the CTTS study area along the SH 130 and IH 35 corridors.

Table 4-12: Industrial Rental Market Conditions in the Austin Area - Third Quarter 2010

Submarket	Rentable Area (SF)	Vacancy Rate	Net Absorption (SF)	Under Construction (SF)
CBD	41,626	8.90%	0	0
Central	1,366,893	12.20%	8,009	0
East	3,641,742	28.30%	-70,549	0
Far Northeast	2,208,328	33.60%	-5,543	0
Far Northwest	524,790	14.80%	-18,779	0
Georgetown	1,213,215	2.90%	26,454	0
Hays County	565,549	26.00%	0	0
North	14,097,769	19.10%	-27,859	0
Northeast	7,648,102	23.50%	-13,579	0
Northwest	2,759,300	11.00%	-36,796	0
Round Rock	3,506,367	34.90%	-29,503	0
South	1,962,886	5.40%	42,860	0
Southeast	10,355,028	22.30%	-40,059	0
Southwest	414,928	14.50%	-15,751	0
TOTAL	**50,310,943**	**21.30%**	**-181,113**	**0**

Source: CB Richard Ellis, 2010.

The San Antonio industrial market is smaller than the Austin market and also has a lower overall vacancy rate of 17.2 percent (See Table 4-13). During the third quarter of 2010, a modest amount (188,029 square feet) of industrial space was absorbed. No new industrial space was under construction during this period.

Table 4-13: Industrial Rental Market Conditions in the San Antonio Area - Third Quarter 2010

Submarket	Rentable Area (SF)	Vacancy Rate	Net Absorption (SF)	Under Construction (SF)
CBD	522,081	28.10%	13,009	0
North Central	5,350,636	12.90%	61,973	0
Northeast	17,723,068	15.70%	-5,640	0
Northwest	6,043,352	17.80%	59,757	0
South	1,770,529	40.40%	58,930	0
TOTAL	**31,409,666**	**17.20%**	**188,029**	**0**

Source: CB Richard Ellis, 2010.

4.3 ADJUSTMENTS TO POPULATION AND EMPLOYMENT FOR 2010 CTTS UPDATE FORECASTS

4.3.1 Control Total Assessments and Adjustments

The population and employment control totals used for this study anticipate reasonably strong growth for the CAMPO and SABC study areas through the year 2035 (See through Table 4-17). However, the revised forecast figures also account for greater than anticipated population growth during the early forecasts years in the CAMPO counties (with the exceptions of Bastrop and Caldwell Counties), based upon the current population growth trends, and slower than forecasted (with few exceptions) population growth in the SABC counties. The employment forecast control totals for each county in the CAMPO and SABC study areas were reduced to more reasonable figures that reflect the current economic situation and the uncertainty that remains over the long term. Yet, overall, the revised population and employment forecasts anticipate strong, yet measured, growth throughout the forecast horizon.

Table 4-14: Adjustments to the CAMPO Counties Population Control Totals

TRAVIS COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Population Forecast	Compounded Annual Growth Rate		Population Forecast	Compounded Annual Growth Rate		
2008	966,138	--		988,304	--		22,166
2010	1,038,595	3.68%	(+36,229)	1,047,634	2.96%	(+29,665)	9,039
2015	1,105,083	1.25%	(+13,298)	1,163,665	2.12%	(+23,206)	58,582
2025	1,318,041	1.78%	(+21,296)	1,356,840	1.55%	(+19,318)	38,799
2035	1,555,281	1.67%	(+23,724)	1,553,170	1.36%	(+19,633)	-2,111

WILLIAMSON COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Population Forecast	Compounded Annual Growth Rate		Population Forecast	Compounded Annual Growth Rate		
2008	385,570	--		392,034	--		6,464
2010	418,000	4.12%	(+16,215)	427,922	4.48%	(+17,944)	9,922
2015	473,316	2.52%	(+11,063)	516,462	3.83%	(+17,708)	43,146
2025	702,694	4.03%	(+22,938)	697,820	3.06%	(+18,136)	-4,874
2035	1,026,484	3.86%	(+32,379)	915,534	2.75%	(+21,771)	-110,950

HAYS COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Population Forecast	Compounded Annual Growth Rate		Population Forecast	Compounded Annual Growth Rate		
2008	144,759	--		147,552	--		2,793
2010	152,180	2.53%	(+3,711)	159,941	4.11%	(+6,195)	7,761
2015	189,153	4.45%	(+7,395)	190,920	3.60%	(+6,196)	1,767
2025	271,593	3.68%	(+8,244)	262,223	3.22%	(+7,130)	-9,370
2035	371,245	3.17%	(+9,965)	334,063	2.45%	(+7,184)	-37,182

BASTROP COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Population Forecast	Compounded Annual Growth Rate		Population Forecast	Compounded Annual Growth Rate		
2008	73,372	--		73,372	--		0
2010	77,485	2.76%	(+2,057)	77,490	2.77%	(+2,059)	5
2015	102,289	5.71%	(+4,961)	91,050	3.28%	(+2,712)	-11,239
2025	149,185	3.85%	(+4,690)	123,201	3.07%	(+3,215)	-25,984
2035	215,452	3.74%	(+6,627)	161,348	2.73%	(+3,815)	-54,104

CALDWELL COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Population Forecast	Compounded Annual Growth Rate		Population Forecast	Compounded Annual Growth Rate		
2008	35,880	--		36,649	--		769
2010	39,000	4.26%	(+1,560)	37,822	1.59%	(+587)	-1,178
2015	50,127	5.15%	(+2,225)	41,299	1.77%	(+695)	-8,828
2025	65,321	2.68%	(+1,519)	47,569	1.42%	(+627)	-17,752
2035	82,069	2.31%	(+1,675)	52,599	1.01%	(+503)	-29,470

Table 4-15: Adjustments to the CAMPO Counties Employment Control Totals

TRAVIS COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Employment Forecast	Compounded Annual Growth Rate		Employment Forecast	Compounded Annual Growth Rate		
2008	611,085	--		581,572	--		-29,513
2010	654,433	3.49%	(+21,674)	567,136	-1.25%	-(7,218)	-87,297
2015	707,253	1.56%	(+10,564)	596,438	1.01%	(+5,860)	-110,815
2025	843,546	1.78%	(+13,629)	718,554	1.88%	(+12,212)	-124,992
2035	1,026,485	1.98%	(+18,294)	855,278	1.76%	(+13,672)	-171,207

WILLIAMSON COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Employment Forecast	Compounded Annual Growth Rate		Employment Forecast	Compounded Annual Growth Rate		
2008	130,516	--		115,690	--		-14,826
2010	146,313	5.88%	(+7,899)	120,500	2.06%	(+2,405)	-25,813
2015	165,661	2.52%	(+3,870)	134,194	2.18%	(+2,739)	-31,467
2025	252,970	4.32%	(+8,731)	183,043	3.15%	(+4,885)	-69,927
2035	400,329	4.70%	(+14,736)	239,062	2.71%	(+5,602)	-161,267

HAYS COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Employment Forecast	Compounded Annual Growth Rate		Employment Forecast	Compounded Annual Growth Rate		
2008	52,137	--		46,843	--		-5,294
2010	56,330	3.94%	(+2,097)	48,000	1.23%	(+579)	-8,330
2015	71,878	5.00%	(+3,110)	54,162	2.44%	(+1,232)	-17,716
2025	104,563	3.82%	(+3,269)	74,728	3.27%	(+2,057)	-29,835
2035	144,786	3.31%	(+4,022)	98,778	2.83%	(+2,405)	-46,008

BASTROP COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Employment Forecast	Compounded Annual Growth Rate		Employment Forecast	Compounded Annual Growth Rate		
2008	16,274	--		13,865	--		-2,409
2010	17,047	2.35%	(+387)	14,250	1.38%	(+193)	-2,797
2015	23,526	6.65%	(+1,296)	16,079	2.44%	(+366)	-7,447
2025	37,296	4.72%	(+1,377)	22,185	3.27%	(+611)	-15,111
2035	58,172	4.55%	(+2,088)	29,325	2.83%	(+714)	-28,847

CALDWELL COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Employment Forecast	Compounded Annual Growth Rate		Employment Forecast	Compounded Annual Growth Rate		
2008	8,588	--		6,887	--		-1,701
2010	9,360	4.40%	(+386)	6,850	-0.27%	-(+19)	-2,510
2015	12,030	5.15%	(+534)	7,729	2.44%	(+176)	-4,301
2025	16,330	3.10%	(+430)	10,664	3.27%	(+294)	-5,666
2035	20,517	2.31%	(+419)	14,096	2.83%	(+343)	-6,421

Table 4-16: Adjustments to the San Antonio Counties Population Control Totals

BEXAR COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Population Forecast	Compounded Annual Growth Rate		Population Forecast	Compounded Annual Growth Rate		
2008	1,630,520	--		1,618,295	--		-12,225
2015	1,767,648	1.16%	(+19,590)	1,685,845	0.59%	(+9,650)	-81,803
2025	1,944,729	0.96%	(+17,708)	1,846,066	0.91%	(+16,022)	-98,663
2035	2,149,142	1.00%	(+20,441)	1,971,897	0.66%	(+12,583)	-177,245

GUADALUPE COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Population Forecast	Compounded Annual Growth Rate		Population Forecast	Compounded Annual Growth Rate		
2008	112,110	--		118,110	--		6,000
2015	140,286	3.25%	(+4,025)	130,383	1.42%	(+1,753)	-9,903
2025	184,586	2.78%	(+4,430)	163,714	2.30%	(+3,333)	-20,872
2035	228,911	2.18%	(+4,433)	197,133	1.87%	(+3,342)	-31,778

COMAL COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Population Forecast	Compounded Annual Growth Rate		Population Forecast	Compounded Annual Growth Rate		
2008	109,145	--		110,105	--		960
2015	144,767	4.12%	(+5,089)	127,074	2.07%	(+2,424)	-17,693
2025	206,338	3.61%	(+6,157)	169,767	2.94%	(+4,269)	-36,571
2035	267,876	2.64%	(+6,154)	214,842	2.38%	(+4,508)	-53,034

KENDALL COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Population Forecast	Compounded Annual Growth Rate		Population Forecast	Compounded Annual Growth Rate		
2008	32,310	--		40,979	--		8,669
2015	44,289	4.61%	(+1,711)	42,352	0.47%	(+196)	-1,937
2025	62,181	3.45%	(+1,789)	56,225	2.87%	(+1,387)	-5,956
2035	79,580	2.50%	(+1,740)	68,828	2.04%	(+1,260)	-10,752

WILSON COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Population Forecast	Compounded Annual Growth Rate		Population Forecast	Compounded Annual Growth Rate		
2008	41,820	--		32,833	--		-8,987
2015	57,209	4.58%	(+2,198)	42,352	3.70%	(+1,360)	-14,857
2025	78,801	3.25%	(+2,159)	55,762	2.79%	(+1,341)	-23,039
2035	101,821	2.60%	(+2,302)	65,306	1.59%	(+954)	-36,515

Table 4-17: Adjustments to the San Antonio Counties Employment Control Totals

BEXAR COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Employment Forecast	Compounded Annual Growth Rate		Employment Forecast	Compounded Annual Growth Rate		
2008	782,328	--		728,338	--		-53,990
2015	902,923	2.07%	(+17,228)	812,242	1.57%	(+11,986)	-90,681
2025	1,022,573	1.25%	(+11,965)	919,888	1.25%	(+10,765)	-102,685
2035	1,162,044	1.29%	(+13,947)	1,045,353	1.29%	(+12,547)	-116,691

GUADALUPE COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Employment Forecast	Compounded Annual Growth Rate		Employment Forecast	Compounded Annual Growth Rate		
2008	29,902	--		29,810	--		-92
2015	38,020	3.49%	(+1,160)	36,641	2.99%	(+976)	-1,379
2025	52,372	3.25%	(+1,435)	48,056	2.75%	(+1,142)	-4,316
2035	66,625	2.44%	(+1,425)	58,237	1.94%	(+1,018)	-8,388

COMAL COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Employment Forecast	Compounded Annual Growth Rate		Employment Forecast	Compounded Annual Growth Rate		
2008	38,958	--		38,962	--		4
2015	49,993	3.63%	(+1,576)	48,016	3.03%	(+1,293)	-1,977
2025	206,338	15.23%	(+15,635)	67,924	3.53%	(+1,991)	-138,414
2035	267,876	2.64%	(+6,154)	85,688	2.35%	(+1,776)	-182,188

KENDALL COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Employment Forecast	Compounded Annual Growth Rate		Employment Forecast	Compounded Annual Growth Rate		
2008	10,727	--		10,681	--		-46
2015	14,760	4.66%	(+576)	12,835	2.66%	(+308)	-1,925
2025	20,357	3.27%	(+560)	16,068	2.27%	(+323)	-4,289
2035	27,261	2.96%	(+690)	19,507	1.96%	(+344)	-7,754

WILSON COUNTY							
Year	2010 CAMPO			2010 CTTS Update			Difference (2010 Update - Campo)
	Employment Forecast	Compounded Annual Growth Rate		Employment Forecast	Compounded Annual Growth Rate		
2008	7,382	--		6,539	--		-843
2015	9,719	4.01%	(+334)	7,517	2.01%	(+140)	-2,202
2025	13,446	3.30%	(+373)	9,436	2.30%	(+192)	-4,010
2035	16,985	2.36%	(+354)	10,800	1.36%	(+136)	-6,185

Assessment and Adjustment at the TSZ level

An initial assessment of the baseline population and employment estimates within the SH 130 project study area found that most TSZs had reasonable values. In some cases, it was determined that adjustments were necessary so they would more accurately reflect 2008 conditions. On the other hand, a cursory review of the forecasts found that some TSZs had significant increases of population and employment that did not reflect most likely growth patterns, based upon the previously collected data. Since the project schedule did not permit a complete reconstruction of the zonal forecasts in the study area, the population and employment forecasts from the previous CTTS study were used. More specifically, using the 2010 CAMPO baseline population and employment estimates, the previously forecasted zonal changes was applied to each TSZ. This created a new, hybrid forecast that was based on the most recent baseline estimates but with forecast values that have been updated multiple times over the past few years. For TSZs outside of the CTTS study area, the original 2010 CAMPO zonal forecasts were used.

For some areas along the SH 130 and IH 35 corridors, outside of the original CTTS study area and in the SABC study area, the existing population and employment forecasts for each TSZ were assessed and adjustments were made when deemed necessary. It should be noted that a TSZ forecast was deemed "reasonable" if it was determined to have a reasonable likelihood of occurring. Hence, those forecasts that were determined to be unlikely to occur were adjusted to more appropriate values after reviewing several data sources including: windshield surveys, interviews with local planning agencies, digital aerial photography, and other relevant literature.

As the final step, all population and employment forecasts at the zonal level, in both models, were adjusted to conform to the countywide control totals, shown in Table 4-14 through Table 4-17.

Employment by Sector

A limited review of employment by sector was performed, primarily to ensure that schools and other special generators were accounted for in the forecasts within the CTTS study area. As county employment control totals were adjusted, a weighted proportional adjustment was made to the total zonal employment. Employment by sector was adjusted proportionately to the changes made to the total zonal employment.

Median Household Income

The assessment of median household income assumed that CAMPO's and the SABC's updated forecasts were reasonable. In a few instances, the adjusted population forecasts placed new households in TSZs that were previously assumed vacant. When this occurred, the median household income for an adjacent TSZ with similar housing characteristics was used.

Households

The assessment maintained CAMPO's and the SABC's estimates of persons per household. When population forecasts were adjusted at the zonal level, the original persons per household values were used to calculate the revised persons per household.

Adjustments to Forecasts Outside of the Study Area

The assessment and adjustments to the population and employment forecasts of TSZs outside of the project area occurred during the adjustments to the county population and employment control totals. The forecasts for individuals TSZs were not assessed.

4.3.2 Current and Future Risk to Growth

Problems in the national economy have introduced more uncertainty into the assessment of the region's population and employment forecasts than has existed during previous efforts. Generally, it is conventional wisdom that the nation's economic problems will not end within the next six months, but will continue for some unknown period of time before solid economic and employment growth returns. However, in addition to the immediate effects from the mortgage crisis, there are other risks to near-term and long-term economic growth that, if realized, could have some undetermined effect on local development patterns. The purpose of this section is to identify and acknowledge these risks, which were considered when assessing and adjusting the CAMPO and SABC population and employment forecasts for the SH 130 study area, particularly at the county control total level.

The residential mortgage crisis is expected to continue for another 2 to 3 years, although foreclosure delays or moratoriums (due to incorrect foreclosure procedures by banks) could extend this period and create other serious problems within the residential mortgage industry. There are also ongoing concerns about the commercial real estate industry. Some industry experts have anticipated that the inability of commercial real estate developers and property owners to refinance projects would lead to a growing number of foreclosures and bankruptcies. Commercial property owners' could be further stressed by tenants who go bankrupt or who scale back their operations as a result of depressed economic conditions. To date, these concerns have not been realized to the same extent as the housing crisis, but serious problems remain in the commercial real estate industry and they too are expected to continue for another 2 to 3 years. Tight credit markets in the commercial real estate industry could also affect the ability of developers to bring new projects to market. A third financial concern is further weakening of the unsecured consumer loan industry (primarily credit cards), which could further exacerbate the nation's consumer spending woes. High unemployment rates and lower salaries are making it more difficult for many households to service their consumer debt. Finally, some economists are concerned that recent efforts by the Federal Reserve to stimulate economic growth through monetary policy will have the unintentional effect of spurring inflation. Collectively, all of these financial issues, coupled with high rates of unemployment, will affect the spatial allocation of growth, since consumers, developers, and retailers have become reliant upon steady incomes, low interest rates, and easy access to credit to create and sustain cheap housing, high levels of consumption, and sprawling development patterns.

Although oil prices in November 2010 ($80-$90 per barrel) were significantly lower than they were during July 2008 (almost $150 per barrel), higher oil prices will likely return once the global economy recovers and the demand for oil returns. It is too soon to determine how future increases to the price of oil will precisely affect growth patterns in the Austin and San Antonio MSAs or the timing of changes to these patterns, but it is likely (over the long term) that these

new conditions will begin to curb the desire for exurban development. However, suburban development will likely continue for as long as it is affordable in the Austin MSA, because there are simply few alternatives for the average income household to purchase a single-family home in Austin's urban core, given the general population's current demands and expectations of living space and amenities. In the San Antonio MSA, suburban sprawl is an entrenched preference of the population and many of its past growth patterns and local government decisions reinforce the current practice and make a future revitalization of the urban core more difficult. Over the long-term, meaning a decade or more, as petroleum prices continue to rise, the pressure to reduce travel trips and household expenses will likely shift consumer preferences towards living closer to urbanized areas or in denser neighborhoods, with a reduced expectation of housing amenities and adjusted lifestyle choices. However, this will likely to be a slow transition, even if there are abrupt changes on the supply side, and it will not occur until there is an ultimate acknowledgement by consumers that past practices are no longer financially sustainable.

Despite the current and future economic risks that face the nation and the regions, population and employment growth in the Austin and San Antonio MSAs still appear sustainable, although employment growth will be at more modest rates than in the past. This slower growth is likely because national and global economic conditions will exert a greater influence on the local economy than they have previously. In addition to these aforementioned concerns, the Austin and San Antonio regions will continue to be susceptible to exogenous influences that could affect all regions in the United States, such as future economic recessions, global competition, shifts to offshore manufacturing, and outsourcing. Additionally, like all regions in the United States, the Austin and San Antonio MSAs will eventually be forced to respond to the consequences of climate change and any attempts to mitigate it. Fortunately, despite these many challenges, the Austin region's young and well-educated population, along with Texas's business-friendly climate and culture of entrepreneurship, will place it in a competitive advantage over many other regions in the United States. The San Antonio MSA will also be strongly positioned due to the state's business climate and entrepreneurship and the region's low cost of living and low labor costs. However, both regions must confront important challenges. In the Austin MSA, the decline of its manufacturing base is particularly troubling, because it is not convincingly being replaced by another emergent industry that will propel the region forward as the semiconductor and computer industries did. The San Antonio MSA must confront the poor level of educational attainment among its residents and concerns about future water availability. If these two key issues continue unaddressed, they will cripple the San Antonio MSA's future ability to prosper.

4.3.3 2010 CTTS Update Control Total Conclusion

Despite the relative strength of the two regions economies, the national recession and the difficulties of obtaining financing for homes and commercial projects has had an observable impact on the pace of the development along SH 130 and the competing IH 35 corridor. During the field surveys, residential construction continued at a modest pace and was concentrated in subdivisions that were already under development, with few new subdivisions. Over the near term, these trends are expected to continue. As existing subdivisions build out and the regions' overall housing inventory becomes more conducive to expanding supply, new subdivisions will

begin to be developed (although still subject to the constraints in the residential and commercial credit markets). It is also possible that as the economy improves, there will be a lag between the market demand and market supply of new housing. In terms of commercial projects, fewer sites were observed under construction and, among the commercial projects that were recently completed, it was not uncommon for these structures to be unfinished or partially or entirely vacant. However, this pattern was not uniform throughout the study area and some projects appeared to be doing very well.

The Austin and San Antonio MSAs are currently recovering from the effects of the severe downturn in the national economy and have likely entered into a period of prolonged, but modest growth. As they proceed through this period, the recovery will continue to be at risk from the effects of any new national economic downturns, a new global financial crisis, and energy price fluctuations. Although the fundamental elements of the two regional economies appear to be relatively strong, when compared to the national economy, national economic conditions are nonetheless continuing to have local impacts. At a minimum, barring a significant economic shock, most growth is expected to continue in the two regions for at least the next 12 to 24 months and could continue for an additional 1 to 2 years before regaining strength, if unanticipated events weaken the national economy. The rate of economic and population growth in the Austin MSA will outpace the San Antonio MSA but both regions will likely outperform national trends.

4.4 2002, 2005, 2008 AND 2010 UPDATE COMPARISON

The new updated 2010 CTTS Socioeconomic forecasts were compared to the original 2002 report, 2005 Update, and the 2008 review. Table 4-18 shows the total population and employment comparison for the CAMPO region between these four studies. While population is much higher in the 2010 CTTS Update study, the employment growth between the 2008 and 2015 model years is significantly lower.

Table 4-18: SED Comparison for Various CTTS Studies

Year	2002 CTTS [2]	2005 CTTS Update [2]	2008 CTTS Review [2]	2010 CTTS Update
	Population			
2008	1,286,283	1,354,084	1,411,370	1,527,890
2015	1,593,072	1,614,996	1,698,917	1,871,047
2025	2,020,370	1,998,326	2,099,054	2,316,883
2035				2,802,768
	Employment			
2008	639,445	679,947	707,048	744,105
2015	821,933	822,519	868,068	784,794
2025	1,061,625	1,006,654	1,103,389	976,325
2035				1,193,118
	Population AAGR			
08 - 15	3.1%	2.5%	2.7%	2.9%
15 - 25	2.4%	2.2%	2.1%	2.2%
25 - 35				1.9%
	Employment AAGR			
08 - 15	3.7%	2.8%	3.0%	0.8%
15 - 25	2.6%	2.0%	2.4%	2.2%
25 - 35				2.0%

Note: 2015, 2020, and 2025 SED for the 2005 Update, 2008 Review were interpolated from 2012, 2017, 2023 and 2030 SED.

5.0 Roadway Networks

Roadway networks were developed for 2008, 2015, 2025, and 2035. The latest roadway improvement plans were obtained from the CAMPO 2035 Regional Transportation Plan (dated May 24, 2010). Based on the degree of commitment (feasibility studies, funding, ROW status, and program inclusion) judgments were made as to whether or not to include project elements in future highway networks.

Other toll road projects currently contemplated for the Austin region have been incorporated into the background network. These projects were implemented based on information received from TxDOT and CTRMA.

5.1 BASE YEAR NETWORK CHANGES

There were only a few major network changes for the base year. SH 45 Southeast toll road from IH 35 to SH 130/US 183 is now assumed to be opened in the base case condition. The opening of SH 45 Southeast completes the “half-beltway” that provides an alternative route for through traffic going north-south in the region, as well as traffic traveling east of the region.

5.2 2008 – 2015 NETWORK CHANGES

The most important change to the highway network in 2015 is the opening of SH 130 Segments 5 and 6 scheduled to open late 2012. This will extend the existing SH 130 toll road to IH-10. Two new toll ramps will be added to the CTTS, O’Connor Dr. on SH 45 N and the new ramps on SH 130 to and from the south at Cameron Road for the Birds Nest Airport. Several other toll road improvements are likely to be completed during this time as well, including 183A Phase II, US 183 S, and US 290 E.

A number of other major network changes are expected during this period as well. These include the widening of existing roadways (US 79, US 183 N, FM 973, and RM 620) and building new sections of exiting roadways (Arterial A, Howard Ln., O’Connor Dr., and FM 734). Table 5-1 presents the significant network improvements that are expected to occur between 2008 and 2015. Another major network change was the addition of the proposed tolled ramps at Cameron Road to/from the south to provide access to the Birds Nest Airport on SH 130 roadway.

Table 5-1: Key Network Changes - 2008 - 2015

Roadway	Limits	Formerly	Improved Condition
Toll Road Network Improvements			
183A - Phase II	FM 1431 – RM 2243	Frontage Rd	6-lane toll facility
US 183 S	Springdale Rd. - N. of Boggy Creek	6-lane expressway	6-lane toll facility
SH 45 N	O'Connor Dr	Nonexistent	Tolled ramps
SH 130	Birds Nest Airport	Nonexistent	Tolled ramps
SH 130 - Segments 5 & 6	IH 10 - 45 SE	Nonexistent	4-lane toll facility with frontage roads
US 290 E	US 183 - FM 734	4-lane divided major arterial	6-lane toll facility with frontage roads
Non Tolled Network Improvements			
US 79	FM 685 - FM 3349	4-lane undivided arterial	4-lane divided arterial
US 79	IH 35 - SH 130	4-lane undivided arterial	4-lane divided arterial
US 183 N	SH 29 - 183A	4-lane undivided arterial	4-lane divided arterial
FM 973	South of SH 71 to Burleson Rd	4-lane undivided arterial	4-lane divided arterial
RM 620	SH 45 N - Deepwood Dr	4-lane divided major arterial	6-lane divided arterial
Brushy Creek	S Cougar Ln - Arrowhead Trail	2-lane undivided arterial	4-lane divided major arterial
Arterial A (Round Rock)	SH 45 N - US 79	Nonexistent	4-lane divided arterial
Howard Ln	Avery Ranch Rd - RM 620	Nonexistent	4-lane divided arterial
O'Connor Dr	RM 620 - SH 45 N	Nonexistent	4-lane divided arterial
FM 734	US 290E - SH 130	Nonexistent	4-lane divided arterial

5.3 2016 – 2025 NETWORK CHANGES

Managed lanes will be added on Loop 1 N from FM 734 to Lady Bird Lake and on 183 N from Pond Springs Rd to Loop 1 Mainline Plaza. SH 45 Southwest will also open a 4-lane toll facility from Loop 1 to FM 1626. US 290 W / SH 71 W will open a 6-lane toll facility with frontage roads from the Scenic Loop to Williamson Creek.

Several major routes will be widened from 2016 to 2025 which include, SH 29, SH 195, US 183 N, SH 71 E, Lakeline Boulevard, Blake-Manor Road, CR 110, Kelly Lane, E Pflugerville Parkway, and Plfuger Lane. Several of these projects represent the significant network improvements that are expected to occur between 2016 and 2025.

Table 5-2: Key Network Changes - 2016 - 2025

Roadway	Limits	Formerly	Improved Condition
Toll Road Network Improvements			
SH 45 SW	Loop 1 - FM 1626	Nonexistent	4-lane toll facility
Loop 1 N Managed Lanes	FM 734 - Cesar Chavez St	Nonexistent	Managed Lanes - 1/dir
183 N Managed Lanes	Pond Springs Rd - Loop 1 ML	Nonexistent	Managed Lanes - 1/dir
US 290W/SH 71W	Scenic Loop - Williamson Creek	Nonexistent	6-lane toll facility with frontage road
Non Tolled Network Improvements			
SH 29	Georgetown Inner Loop - SH 95	2-lane undivided arterial	4-lane divided arterial
SH 195	Northern Study Boundary - IH 35 N	2-lane divided arterial	4-lane divided arterial
US 183 N	FM 970 - SH 29	4 -lane divided major arterial	4-lane divided arterial
SH 71 E	Riverside Rd - e of Presidential Blvd	6-lane divided arterial	4-6 lane divided arterial with frontage road
Lakeline Blvd	Arterial A - Parmer Ln	2-lane undivided arterial	4-lane divided arterial
Blake-Manor Rd	FM 973 - Burleson Manor Rd	2-lane undivided arterial	4-lane divided arterial
CR 110/Southwestern Blvd	Westinghouse Rd - US 79	2-lane undivided arterial	4-lane divided arterial
Kelly Ln	E of SH 130 - Weiss Ln	2-lane undivided arterial	4-lane divided arterial
E Pflugerville Pkwy	E of SH 130 - Weiss Ln	2-lane undivided arterial	4-lane divided arterial
Pfluger Lane	Weiss Ln - Decker Ln/Cameron Rd	2-lane divided arterial	4-lane divided arterial

5.4 2026 - 2035 NETWORK CHANGES

High-occupancy vehicle (HOV) lanes will be added along Loop 1 S from Cesar Chavez St. to US 290 W. Several other major non tolled routes will be widened from 2026 to 2035 as well. These include, SH 21, FM 969, US 183, McNeil Drive, Ronald Reagan Boulevard, and FM 1660. Several of these projects represent the significant network improvements that are expected to occur between 2026 and 2035.

Table 5-3: Key Network Changes - 2026 - 2035

Roadway	Limits	Formerly	Improved Condition
Non Tolled Network Improvements			
Loop 1 S	Lady Bird Lake - US 290W	nonexistent	HOV lanes
SH 21	SH 80 - Valley Way Dr	4-lane undivided major arterial	4-lane divided major arterial
SH 21	Valley Way Dr - Williamson Rd	2-lane undivided major arterial	4-lane divided arterial
SH 21	FM 1854 - SH 71	2-lane undivided arterial	4-lane divided arterial
FM 969	SH 130 - SH 71	2 lane undivided arterial	4-lane divided arterial
US 183	SH 29 - S Gabriel Dr	4-lane divided arterial	6-lane divided arterial with frontage road
McNeil Dr	IH 35 - Anderson Mill Rd	4-lane divided arterial	6-lane divided arterial
Ronald Reagan Blvd	FM 2338 - n of SH 29	2 lane undivided arterial	6-lane divided arterial
FM 1660	SH 29 - Carl Stern Blvd	2 lane undivided arterial	4-lane divided arterial

While these projects have been identified in the current CAMPO 2035 Regional Transportation Plan, the level of anticipated socioeconomic growth in the region will increase demands on the anticipated network and result in overall lowered speeds on the non-tolled facilities. As this on-going growth causes conditions on the background network to deteriorate, the competitive aspects of the CTTS facilities are increased.

6.0 Traffic and Revenue Forecasts

This chapter presents the 2010 CTTS Update traffic and revenue forecasts for the Northwest Elements and SH 130. These forecasts are produced from the traffic model output and post-processing procedures which include: validated base model, demographic forecast, background highway network changes, project configuration, toll rate schedules, and ETC market share.

Within this chapter, all reference years are calendar years, unless otherwise noted as fiscal years (which begin September 1st of the previous year). The toll increases occur on September 1st of the year specified.

6.1 TOLL ROAD CONFIGURATION

The CTTS consists of three turnpike elements:

- SH 45 N and Loop 1 elements are collectively referred to as the Northwest Elements, and
- The third element being SH 130, extending from Georgetown in the north to US 183 south of the Austin-Bergstrom International Airport.

Figure 6-1 and Figure 6-6: Average Weekday Traffic SH 45 N and Loop 1 - 2035 Base Case are schematic drawings of the Northwest Elements and SH 130, respectively, with the frontages road, connections, and toll locations as they will exist in 2030. These schematics reflect the design changes to the CTTS Elements since the 2008 Review Study which include the additional O'Connor ramps along SH 45 N (coming to/from Loop 1) and the proposed ramps at Cameron Road to/from the south to provide access to the Birds Nest Airport on SH 130. As shown in Figure 6-2, the line diagram depicts the SH 130 element with its interchanges, frontage roads and pay points. Tolls are collected utilizing the basic barrier/ramp method of collection. Electronic transponder users will be detected at each of the barrier and ramp toll locations. Under the pilot program for video tolling, patrons are identified via the high-speed transponder lanes and the ramp barriers.

The barrier/ramp toll system for the SH 130 element has been designed so that there will be no toll-free use of the project (i.e., a *closed* system). Under the barrier/ramp system of toll collection, each of the four SH 130 segments each have a single mainline barrier, which together with the associated ramp plazas, maintains the integrity of the closed barrier/ ramp system. The mainline barriers were designed with express transponder lanes (at highway speed) through the middle of the plazas that are physically separated from the adjoining cash lanes. They are located roughly halfway between the principal interchanges at IH 35, SH 45 N element, US 290, SH 71 and the US 183/SH 45 South junction. In addition, the mainline barriers are located on segments without adjacent frontage roads, thereby minimizing the toll-free competition by preventing motorists from bypassing the barriers on the frontage roads.

Figure 6-1: SH 45 N and Loop 1 Configuration and Toll Plaza Locations

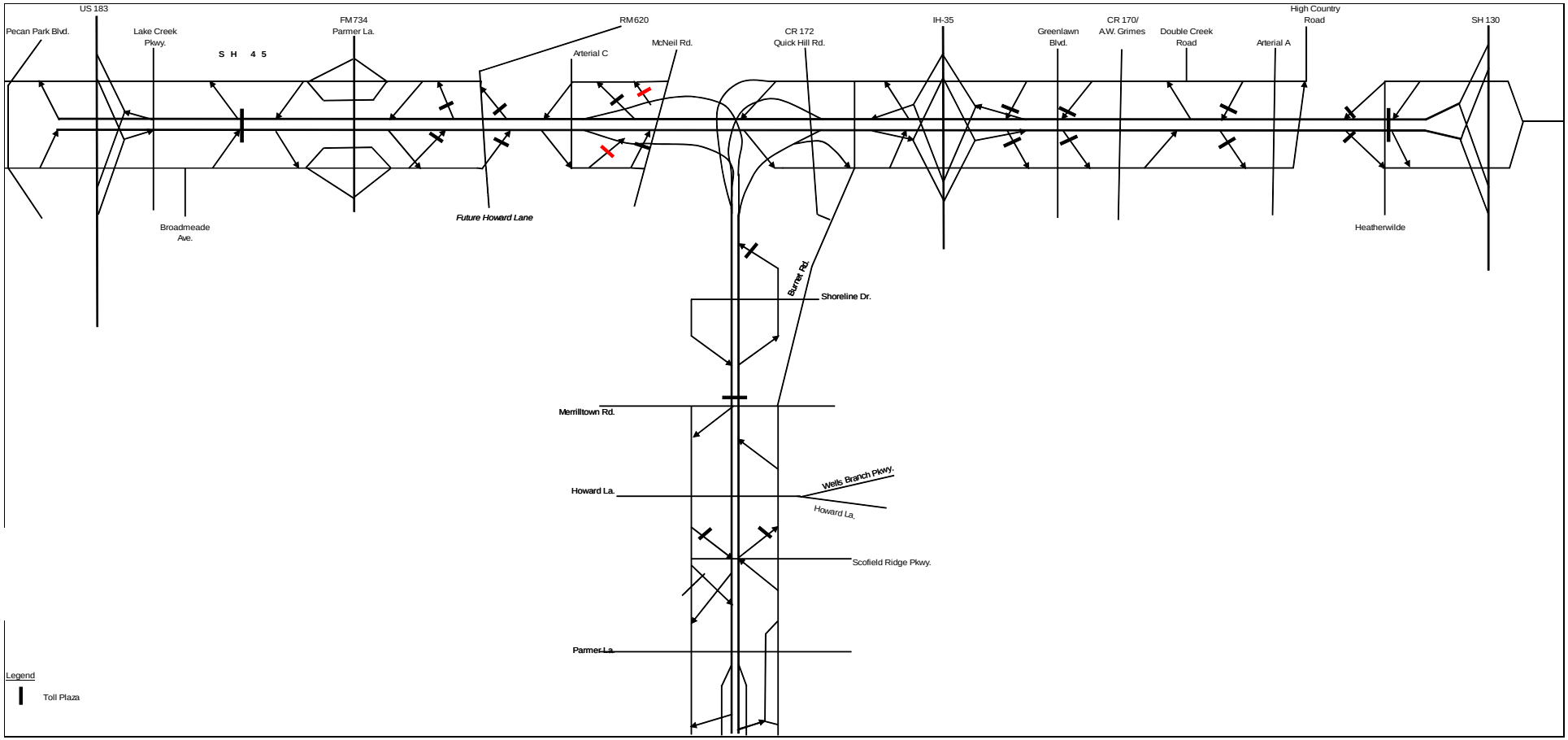


Figure 6-2: SH 130 Configuration and Toll Plaza Locations

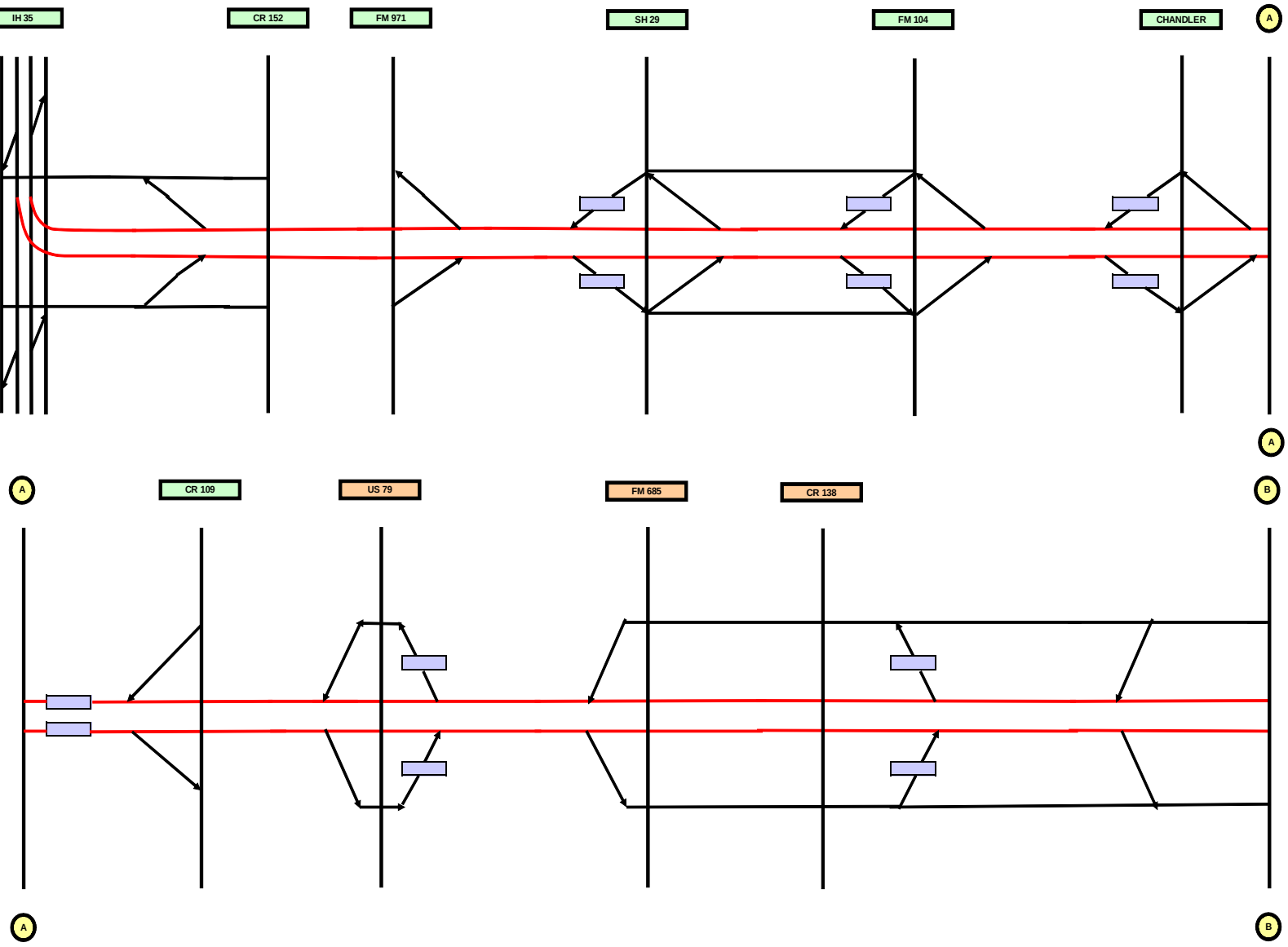


Figure 6-2: SH 130 Configuration and Toll Plaza Locations (Continued)

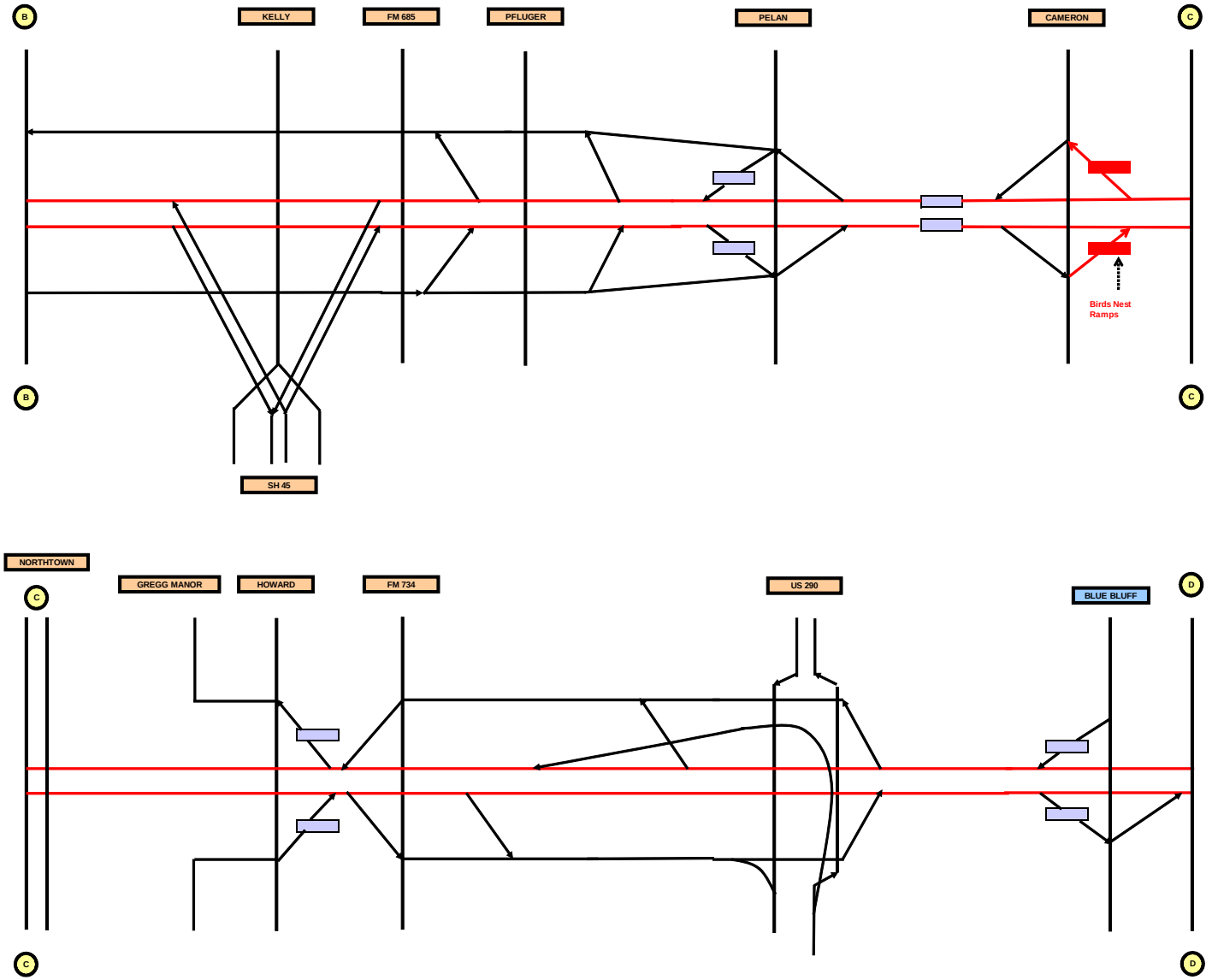
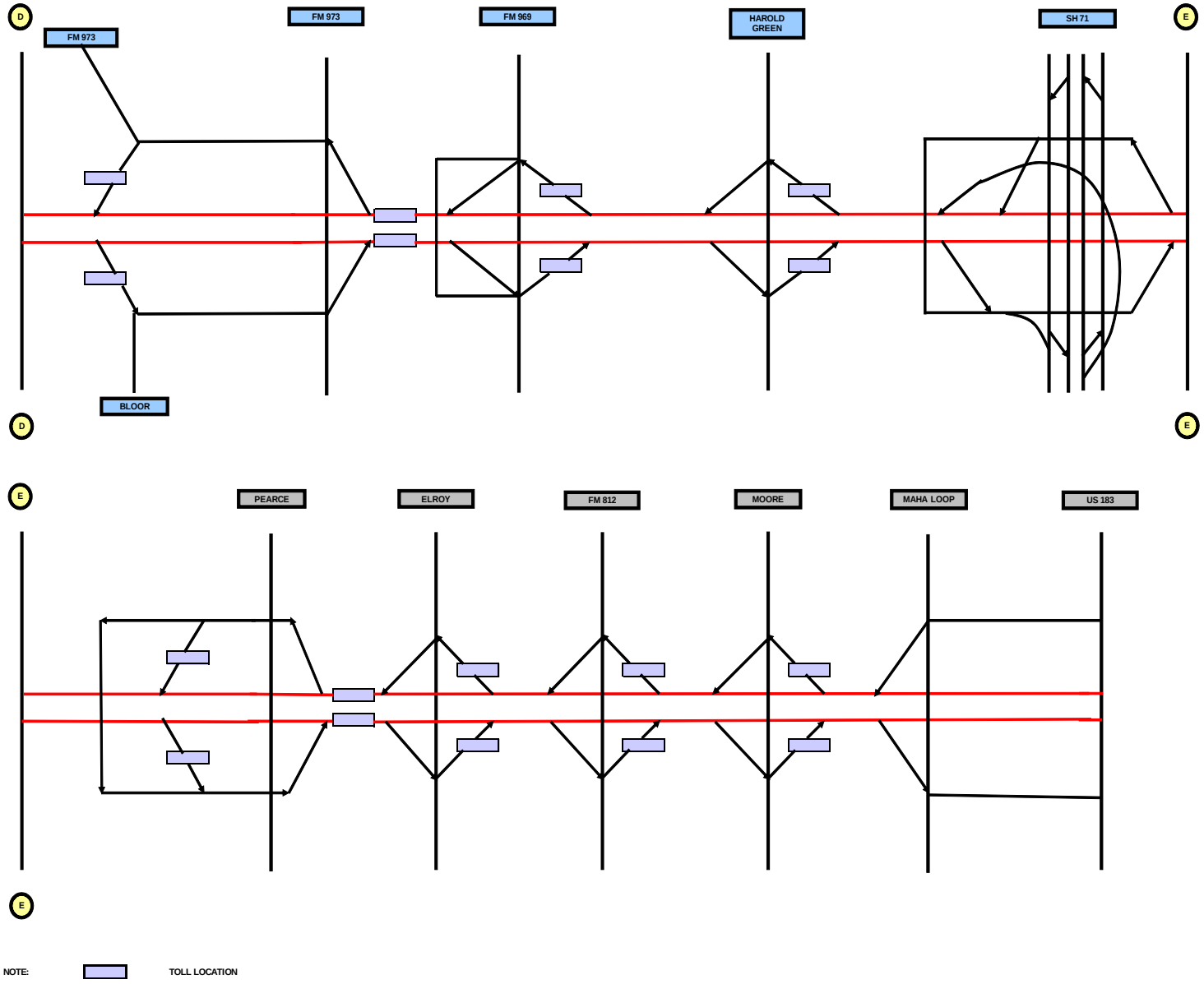


Figure 6-2: SH 130 Configuration and Toll Plaza Locations (Continued)



6.2 TOLL RATES

The passenger car toll rates from opening year 2007 through 2035 are shown in Table 6-1. These historic, current, and anticipated rates remain unchanged since the 2005 Update except for the addition of O'Connor Drive ramps and the new ramps on SH 130 to and from the south at Cameron Road for the Birds Nest Airport.

Table 6-1: Base Toll Schedule – Passenger Cars

Toll Location	Payment Type	Opening Year 2007	2010	2012	2015	2025	2035
SH 45 N							
Lake Creek Plaza (West Mainline Barrier)	Pay-by-Mail	-	$0.90	$0.90	$1.20	$1.50	$1.80
	Cash	$0.75	$0.75	$0.75	$1.00	$1.25	$1.50
	ETC	$0.68	$0.68	$0.68	$0.90	$1.13	$1.35
Parmer Lane (FM 734) Ramps	Pay-by-Mail	-	$0.60	$0.60	$0.90	$1.20	$1.50
	Cash	$0.50	$0.50	$0.50	$0.75	$1.00	$1.25
	ETC	$0.45	$0.45	$0.45	$0.68	$0.90	$1.13
RM 620 (Howard Lane) Ramps	Pay-by-Mail	-	$0.60	$0.60	$0.90	$1.20	$1.50
	Cash	$0.50	$0.50	$0.50	$0.75	$1.00	$1.25
	ETC	$0.45	$0.45	$0.45	$0.68	$0.90	$1.13
O'Connor Drive (Arterial C) Ramps	Pay-by-Mail	-	-	$0.60	$0.90	$1.20	$1.50
	Cash	-	-	$0.50	$0.75	$1.00	$1.25
	ETC	-	-	$0.45	$0.68	$0.90	$1.13
Greenlawn Ramps	Pay-by-Mail	-	$0.60	$0.60	$0.90	$1.20	$1.50
	Cash	$0.50	$0.50	$0.50	$0.75	$1.00	$1.25
	ETC	$0.45	$0.45	$0.45	$0.68	$0.90	$1.13
AW Grimes (Pflugerville Loop) CR 170 Ramps	Pay-by-Mail	-	$0.60	$0.60	$0.90	$1.20	$1.50
	Cash	$0.50	$0.50	$0.50	$0.75	$1.00	$1.25
	ETC	$0.45	$0.45	$0.45	$0.68	$0.90	$1.13
Schultz Lane (Arterial A) Ramps	Pay-by-Mail	-	$0.90	$0.90	$1.20	$1.50	$1.80
	Cash	$0.75	$0.75	$0.75	$1.00	$1.25	$1.50
	ETC	$0.68	$0.68	$0.68	$0.90	$1.13	$1.35
Wilke Lane (Heatherwide) Ramps	Pay-by-Mail	-	$0.90	$0.90	$1.20	$1.50	$1.80
	Cash	$0.75	$0.75	$0.75	$1.00	$1.25	$1.50
	ETC	$0.68	$0.68	$0.68	$0.90	$1.13	$1.35
Heatherwide Plaza (East Mainline Barrier)	Pay-by-Mail	-	$0.90	$0.90	$1.20	$1.50	$1.80
	Cash	$0.75	$0.75	$0.75	$1.00	$1.25	$1.50
	ETC	$0.68	$0.68	$0.68	$0.90	$1.13	$1.35
Loop 1							
Howard Lane / Wells Branch Ramps	Pay-by-Mail	-	$0.60	$0.60	$0.90	$1.20	$1.50
	Cash	$0.50	$0.50	$0.50	$0.75	$1.00	$1.25
	ETC	$0.45	$0.45	$0.45	$0.68	$0.90	$1.13
Merrilltown Plaza (Mainline Barrier)	Pay-by-Mail	-	$0.90	$0.90	$1.20	$1.50	$1.80
	Cash	$0.75	$0.75	$0.75	$1.00	$1.25	$1.50
	ETC	$0.68	$0.68	$0.68	$0.90	$1.13	$1.35
Shoreline Drive	Pay-by-Mail	-	$0.60	$0.60	$0.90	$1.20	$1.50
	Cash	$0.50	$0.50	$0.50	$0.75	$1.00	$1.25
	ETC	$0.45	$0.45	$0.45	$0.68	$0.90	$1.13
O'Connor Drive	Pay-by-Mail	-	-	$0.60	$0.90	$1.20	$1.50
	Cash	-	-	$0.50	$0.75	$1.00	$1.25
	ETC	-	-	$0.45	$0.68	$0.90	$1.13
SH 130							
Mainline Barrier -- Segment 1	Pay-by-Mail	-	$1.80	$1.80	$2.70	$3.60	$4.20
	Cash	$1.50	$1.50	$1.50	$2.25	$3.00	$3.50
	ETC	$1.35	$1.35	$1.35	$2.03	$2.70	$3.15
Mainline Barrier -- Segment 2	Pay-by-Mail	-	$1.80	$1.80	$2.70	$3.60	$4.20
	Cash	$1.50	$1.50	$1.50	$2.25	$3.00	$3.50
	ETC	$1.35	$1.35	$1.35	$2.03	$2.70	$3.15
Mainline Barrier -- Segment 3	Pay-by-Mail	-	$1.80	$1.80	$2.70	$3.60	$4.20
	Cash	$1.50	$1.50	$1.50	$2.25	$3.00	$3.50
	ETC	$1.35	$1.35	$1.35	$2.03	$2.70	$3.15
Mainline Barrier -- Segment 4	Pay-by-Mail	-	$1.80	$1.80	$2.70	$3.60	$4.20
	Cash	$1.50	$1.50	$1.50	$2.25	$3.00	$3.50
	ETC	$1.35	$1.35	$1.35	$2.03	$2.70	$3.15
Ramps -- Segments 1, 2 ,3 and 4	Pay-by-Mail	-	$0.60	$0.60	$0.90	$1.20	$1.50
	Cash	$0.50	$0.50	$0.50	$0.75	$1.00	$1.25
	ETC	$0.45	$0.45	$0.45	$0.68	$0.90	$1.13

For vehicles with more than two axles, tolls are established in even multiples of the two axle base rate (shown in Table 6-2):

Table 6-2: Vehicle Classification and Toll Multiples

No of Axles	Toll Multiple
2	1.0
3	2.0
4	3.0
5	4.0
6	5.0

Mathematically, this is referred to as the *N minus 1* toll formula, under which the toll and revenue expectations are tied to the lane treadle, as follows:

Toll = (Number of Axles minus 1) x (Two-Axle Toll)
Revenue Expectation = (Treadle Count minus Traffic Volume) x (Two-Axle Toll)

6.3 TOLL COLLECTION

Table 6-3: Historic CTTS Toll Violations

Month	Cash		Non-Cash							Total		
			AVI		Interop		Image Based					
	Paid	Unpaid	Paid	Unpaid	Paid	Unpaid	Paid	Unpaid	Unbilled	Paid	Unpaid	Total
Sep-09	547,038	-	4,333,001	48,805	303,325	4,605	555,883	438,468	138,364	5,739,247	630,242	6,369,489
Oct-09	556,273	-	4,547,859	53,875	330,676	4,393	529,275	505,259	150,279	5,964,083	713,806	6,677,889
Nov-09	545,525	-	4,260,043	47,839	357,777	3,441	558,942	468,567	147,244	5,722,287	667,091	6,389,378
Dec-09	538,998	-	4,328,812	49,827	338,865	3,267	573,525	416,512	148,546	5,780,200	618,152	6,398,352
Jan-10	485,406	-	4,166,396	58,172	300,065	2,579	494,832	366,927	139,915	5,446,699	567,593	6,014,292
Feb-10	489,598	-	4,087,991	57,643	300,065	2,579	490,772	368,025	140,429	5,368,426	568,676	5,937,102
Mar-10	602,059	-	4,824,667	72,683	337,698	798	531,921	434,005	177,390	6,296,345	684,876	6,981,221
Apr-10	590,364	-	4,762,061	74,652	339,007	713	570,604	403,818	156,489	6,262,036	635,672	6,897,708
May-10	606,270	-	4,762,061	57,768	350,259	1,106	588,472	382,172	150,864	6,307,062	591,910	6,898,972
Jun-10	594,978	-	4,692,730	54,271	349,381	711	585,031	368,541	162,612	6,222,120	586,135	6,808,255
Jul-10	603,381	-	4,609,101	50,923	355,164	754	604,311	378,042	163,159	6,171,957	592,878	6,764,835
Aug-10	598,884	-	4,790,488	36,204	347,028	837	603,250	424,914	187,951	6,339,650	649,906	6,989,556
FY 2010 Total	6,758,774	-	54,165,210	662,662	4,009,310	25,783	6,686,818	4,955,250	1,863,242	71,620,112	7,506,937	79,127,049
	8.5%	0.0%	68.5%	0.8%	5.1%	0.0%	8.5%	6.3%	2.4%	90.5%	9.5%	100.0%
% Unpaid by Payment Type			AVI	1.2%	Interop	0.6%	Image Based	36.7%	13.8%			

*Unpaid AVI includes non-revenue transactions

6.4 NORTHWEST ELEMENTS TRAFFIC AND REVENUE FORECASTS

The traffic model produces average weekday traffic projections for each of the four analysis years for which land use information was developed: 2008, 2015, 2025, and 2035. Gross toll revenues are calculated by multiplying traffic at the toll locations by the effective toll structure for that year. An annualization factor of 300 was applied to convert the average weekday traffic outputs from the model to annual transaction estimates. A truck toll multiplier of 2.5 is applied based on actual data regarding number of axles for larger vehicles. A screenline analysis was also performed to determine whether project element traffic capture rates are reasonable compared to the nearby, parallel toll-free alternative roadways.

6.4.1 Traffic Forecasts

Traffic volumes on the model network links that represent toll locations were summarized to provide forecasts of toll transactions on the Northwest Elements. Table 6-4 presents the forecasts of toll transactions and revenues for calendar years 2008, 2015, 2025, and 2035. The average weekday transactions, passenger car toll, and the revenues for each toll location are presented. The numbers in this table have been adjusted to account for toll evasion (see section 6.3 for details). The Northwest Elements are no longer believed to be in a period of ramp-up.

The calculated revenue shown in Table 6-4 is the traffic volumes broken down by vehicle and payment type multiplied by their respective toll rates. The current percentage of trucks on the Northwest Elements is approximately 2.0 percent of the total traffic. In model year 2008 about 142,000 toll transactions are estimated per average weekday on the Northwest Elements with 90,500 on SH 45 N and 51,500 on Loop 1. In 2015, 2025, and 2035 the facility will average 195,900, 249,000, and 348,000 transactions on an average weekday, respectively.

Assigned traffic at the mainline plazas, ramps, and frontage roads on the Northwest Elements for model years 2008, 2015, 2025, and 2035 are presented in Figure 6-3 through Figure 6-6. These diagrams represent unadjusted model output for average weekday transactions and are intended to give the reader a sense of scale of the traffic movements from end-to-end, as well as entry/exit activity. By comparing each diagram the change in transactions over time can be seen.

Table 6-4: Northwest Austin Elements - Model Year Average Weekday Toll Transactions and Revenue (Adjusted for Calibration and Evasion)

	2008			2015			2025			2035		
Toll Location	**Transactions**	**Avg Toll**	**Revenue**	**Transactions**	**Avg Toll**	**Revenue**	**Transactions**	**Avg Toll**	**Revenue**	**Transactions**	**Avg Toll**	**Revenue**
SH 45 N Turnpike												
W Mainline Toll Plaza	28,676	$ 0.71	$ 20,419	45,655	$ 0.95	$ 43,358	58,343	$ 1.19	$ 69,532	90,275	$ 1.44	$ 129,599
Parmer/FM 734	9,443	$ 0.47	$ 4,483	7,324	$ 0.71	$ 5,217	9,960	$ 0.95	$ 9,496	12,780	$ 1.20	$ 15,289
Howard Ln	7,741	$ 0.47	$ 3,674	4,036	$ 0.71	$ 2,875	3,577	$ 0.95	$ 3,411	7,731	$ 1.20	$ 9,249
SH 45 - O'Connor				8,792	$ 0.72	$ 6,304	9,153	$ 0.96	$ 8,794	10,822	$ 1.21	$ 13,060
Loop 1 - O'Connor				7,760	$ 0.72	$ 5,564	8,160	$ 0.96	$ 7,840	9,331	$ 1.21	$ 11,260
Greenlawn	6,131	$ 0.47	$ 2,910	8,041	$ 0.71	$ 5,728	7,563	$ 0.95	$ 7,211	12,296	$ 1.20	$ 14,711
CR 170	5,271	$ 0.47	$ 2,502	6,120	$ 0.71	$ 4,359	7,549	$ 0.95	$ 7,197	11,010	$ 1.20	$ 13,172
Arterial A	4,558	$ 0.71	$ 3,245	7,231	$ 0.95	$ 6,867	11,376	$ 1.19	$ 13,558	14,778	$ 1.44	$ 21,216
Heatherwilde Ramps	4,457	$ 0.71	$ 3,174	5,752	$ 0.95	$ 5,463	10,454	$ 1.19	$ 12,459	11,099	$ 1.44	$ 15,934
E Mainline Toll Plaza	24,222	$ 0.71	$ 17,248	27,464	$ 0.95	$ 26,083	40,460	$ 1.19	$ 48,220	59,902	$ 1.44	$ 85,996
SH 45 N Subtotal	**90,498**		**$ 57,655**	**128,176**		**$ 111,818**	**166,597**		**$ 187,718**	**240,025**		**$ 329,487**
SH 45 Annual Rev in Millions			**$ 17.3**			**$ 33.5**			**$ 56.3**			**$ 98.8**
Loop 1 Turnpike												
Shoreline Dr	450	$ 0.47	$ 214	456	$ 0.71	$ 325	1,437	$ 0.95	$ 1,370	2,645	$ 1.20	$ 3,165
Mainline Toll Plaza	47,456	$ 0.71	$ 33,791	64,053	$ 0.95	$ 60,831	75,739	$ 1.19	$ 90,264	98,293	$ 1.44	$ 141,110
Howard/Wells Branch	3,541	$ 0.47	$ 1,681	3,193	$ 0.71	$ 2,275	5,632	$ 0.95	$ 5,370	7,168	$ 1.20	$ 8,575
Loop 1 Subtotal	**51,447**		**$ 35,686**	**67,702**		**$ 63,430**	**82,809**		**$ 97,004**	**108,106**		**$ 152,850**
Loop 1 Annual Rev in Millions			**$ 10.7**			**$ 19.0**			**$ 29.1**			**$ 45.9**
TOTAL	**141,944**		**$ 93,341**	**195,878**		**$ 175,248**	**249,405**		**$ 284,723**	**348,131**		**$ 482,337**
Total Annual Rev in Millions			**$ 28.0**			**$ 52.6**			**$ 85.4**			**$ 144.7**

Assumptions				
Truck / Auto Toll Ratio	2.5	2.5	2.5	2.5
Video / ETC Toll Ratio	1.33	1.33	1.33	1.33
Auto & Truck ETC Discount	10%	10%	10%	10%
Payment Type				
Video	15%	15%	15%	15%
Cash	7%	7%	7%	7%
ETC	78%	78%	78%	78%
% Evasion				
Video	50.5%	50.0%	45.0%	40.0%
Cash	0.0%	0.0%	0.0%	0.0%
ETC	1.2%	1.0%	1.0%	1.0%
Vehicle Type				
% Auto	97.8%	97.5%	97.0%	96.0%
% Truck	2.2%	2.5%	3.0%	4.0%

Figure 6-3: Average Weekday Traffic – SH 45 N and Loop 1 - 2008 Base Case

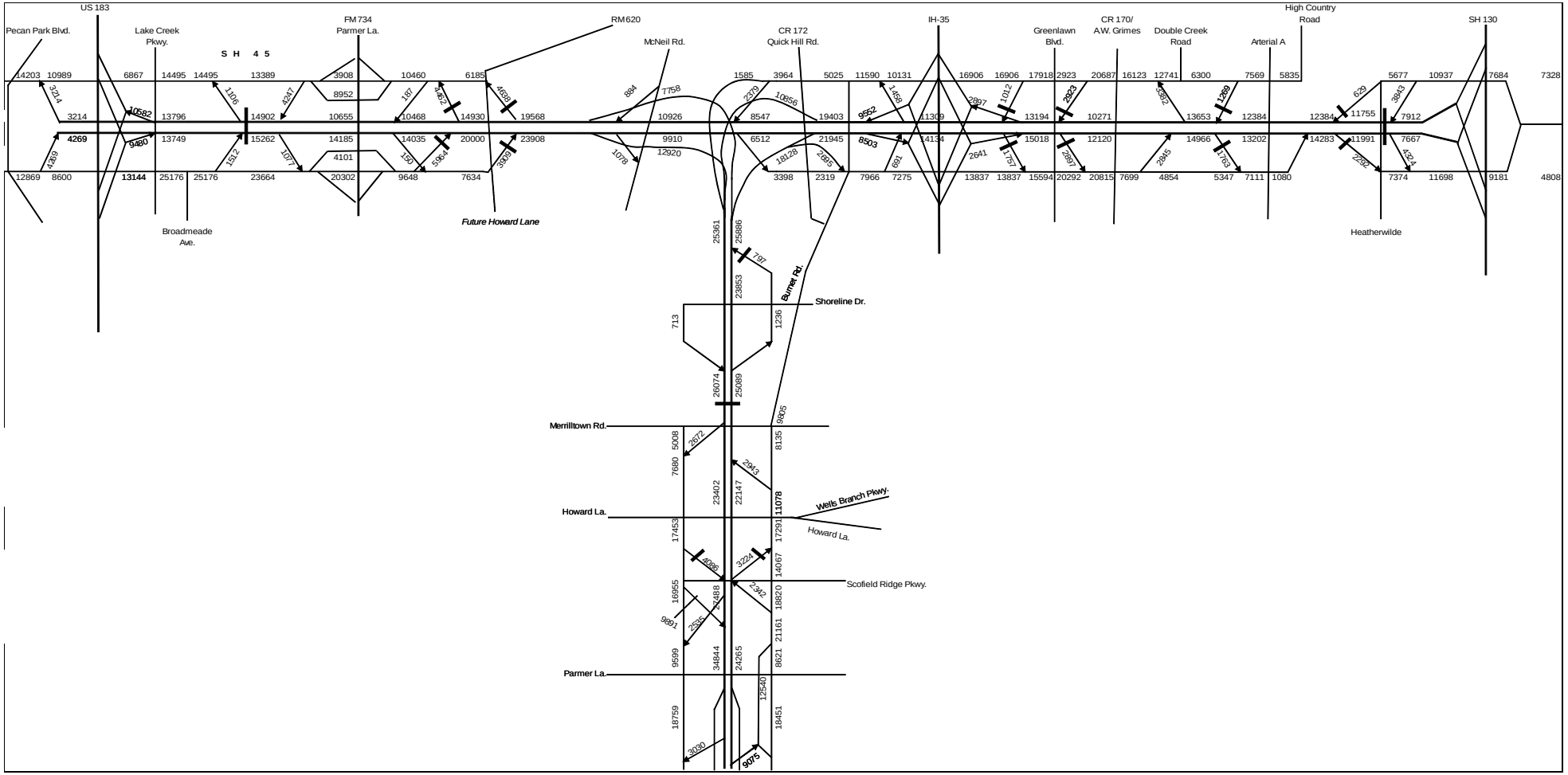


Figure 6-4: Average Weekday Traffic – SH 45 N And Loop 1 - 2015 Base Case

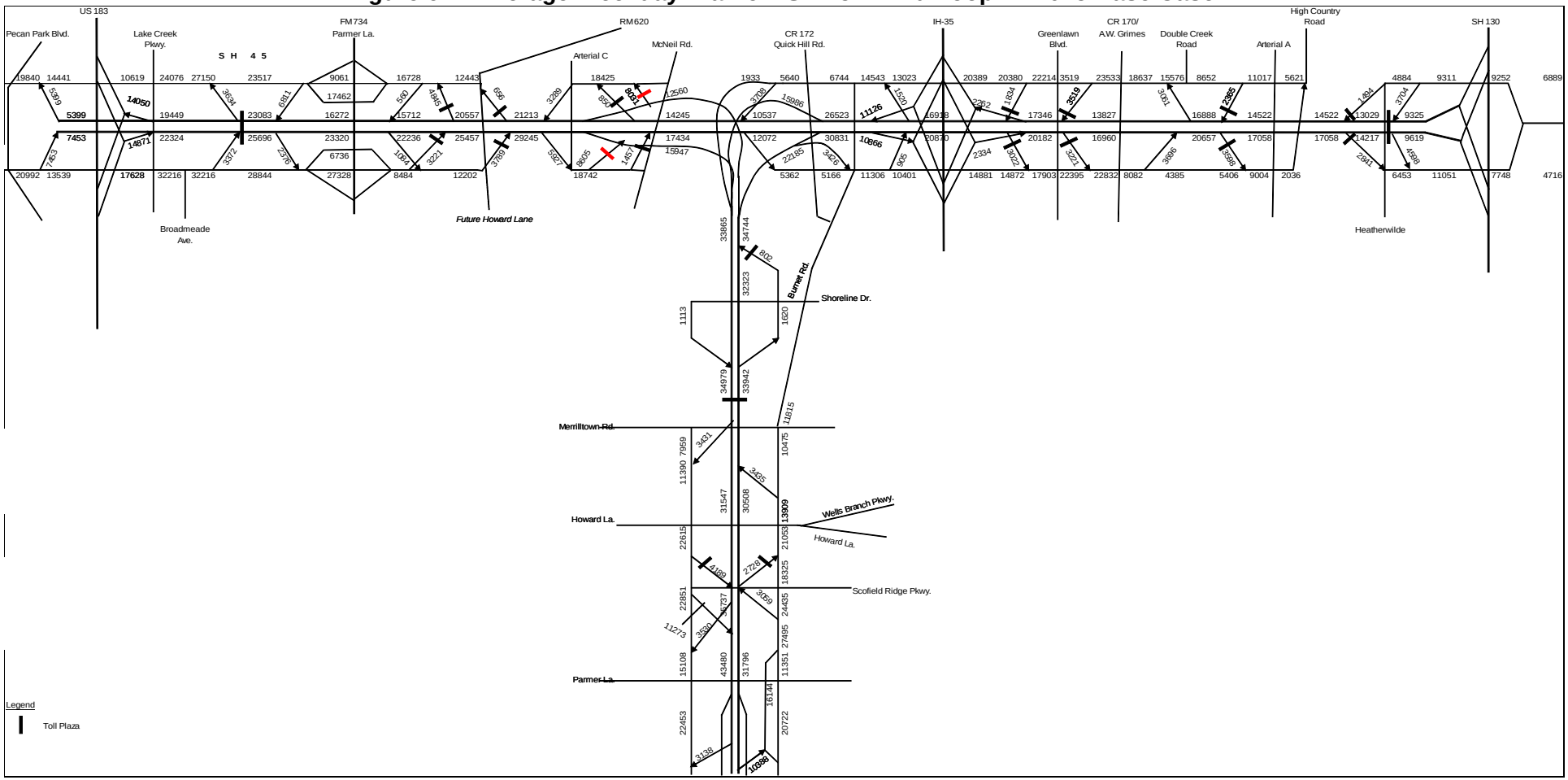


Figure 6-5: Average Weekday Traffic SH 45 N and Loop 1 - 2025 Base Case

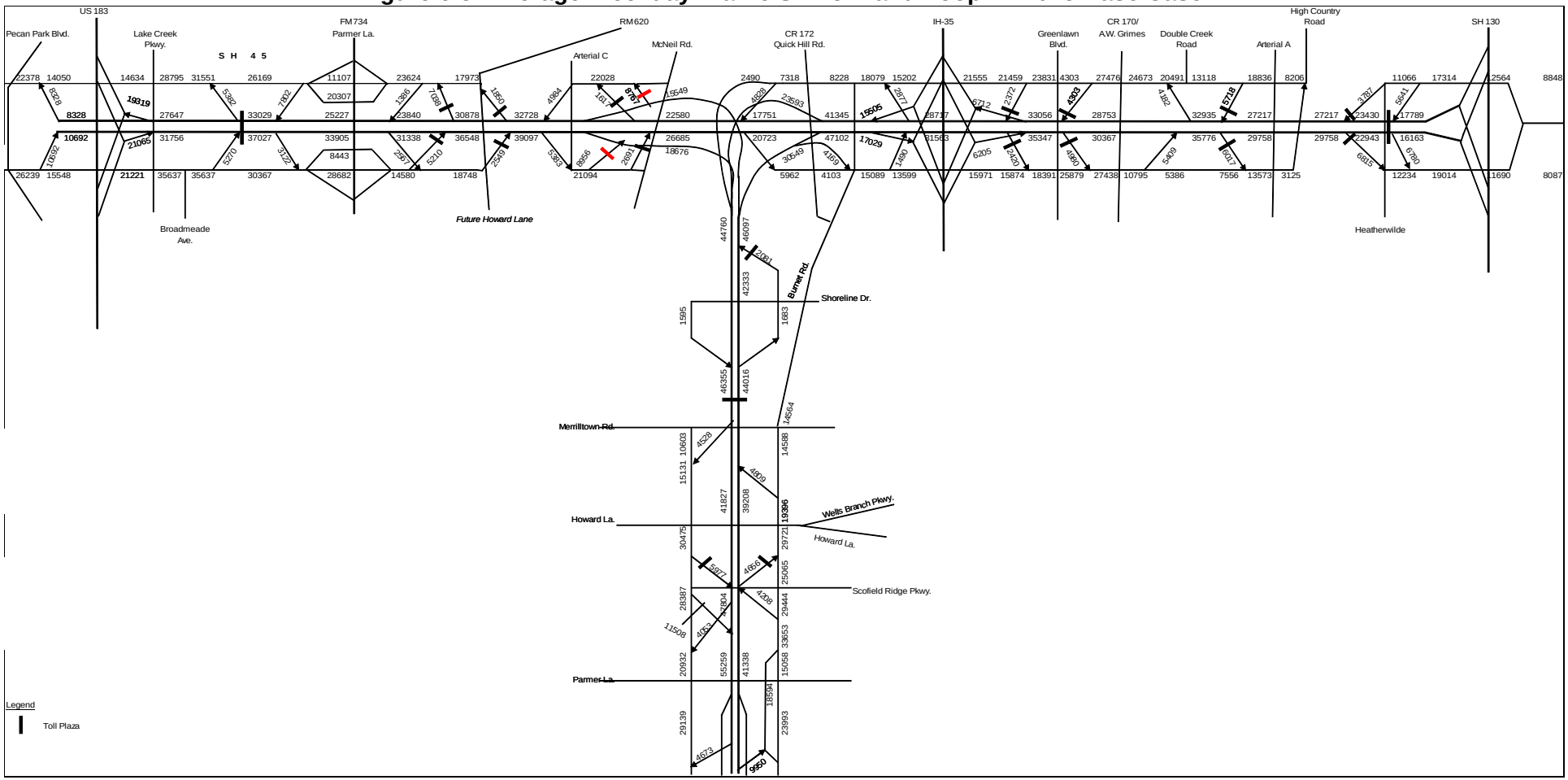
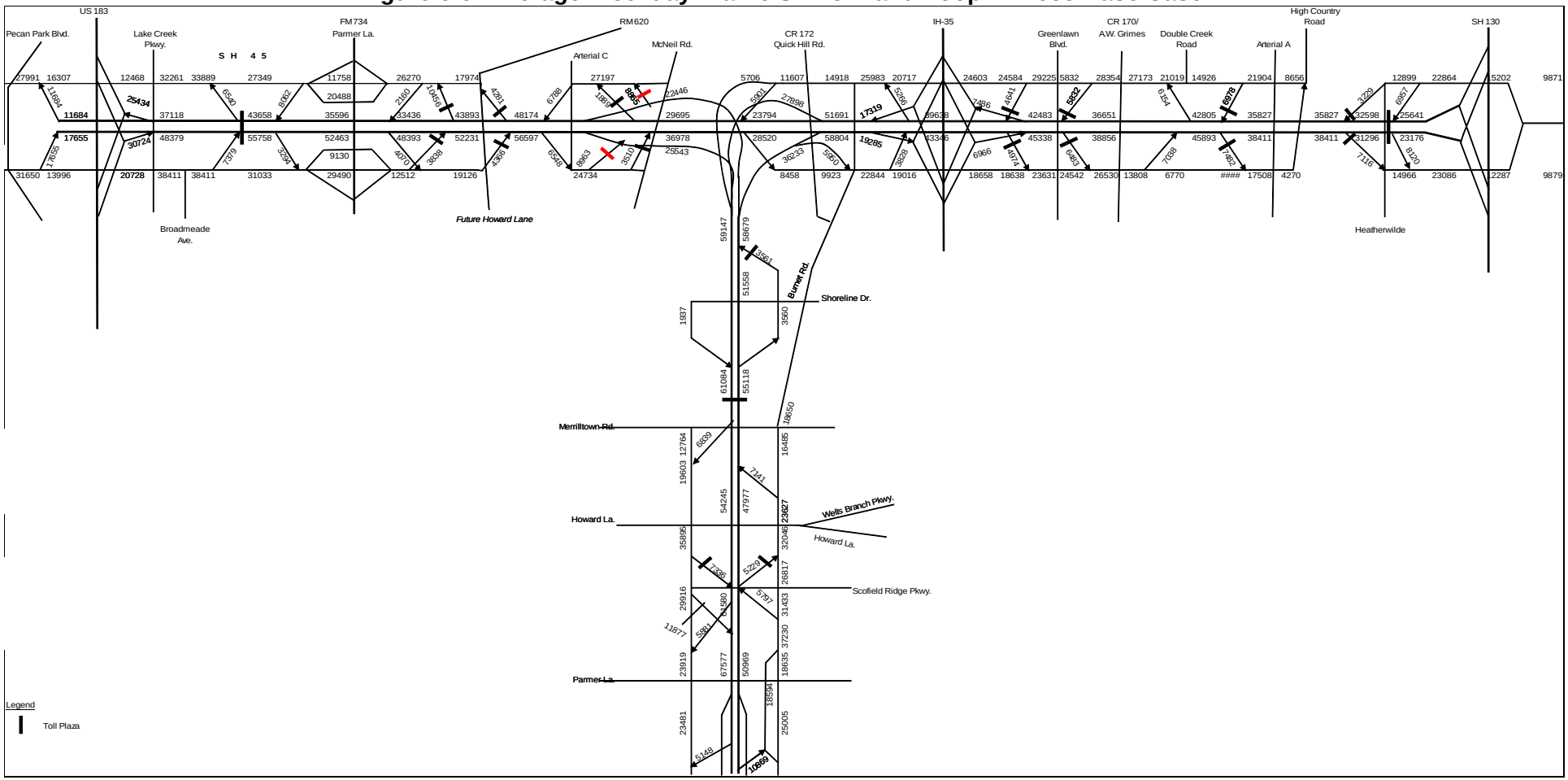


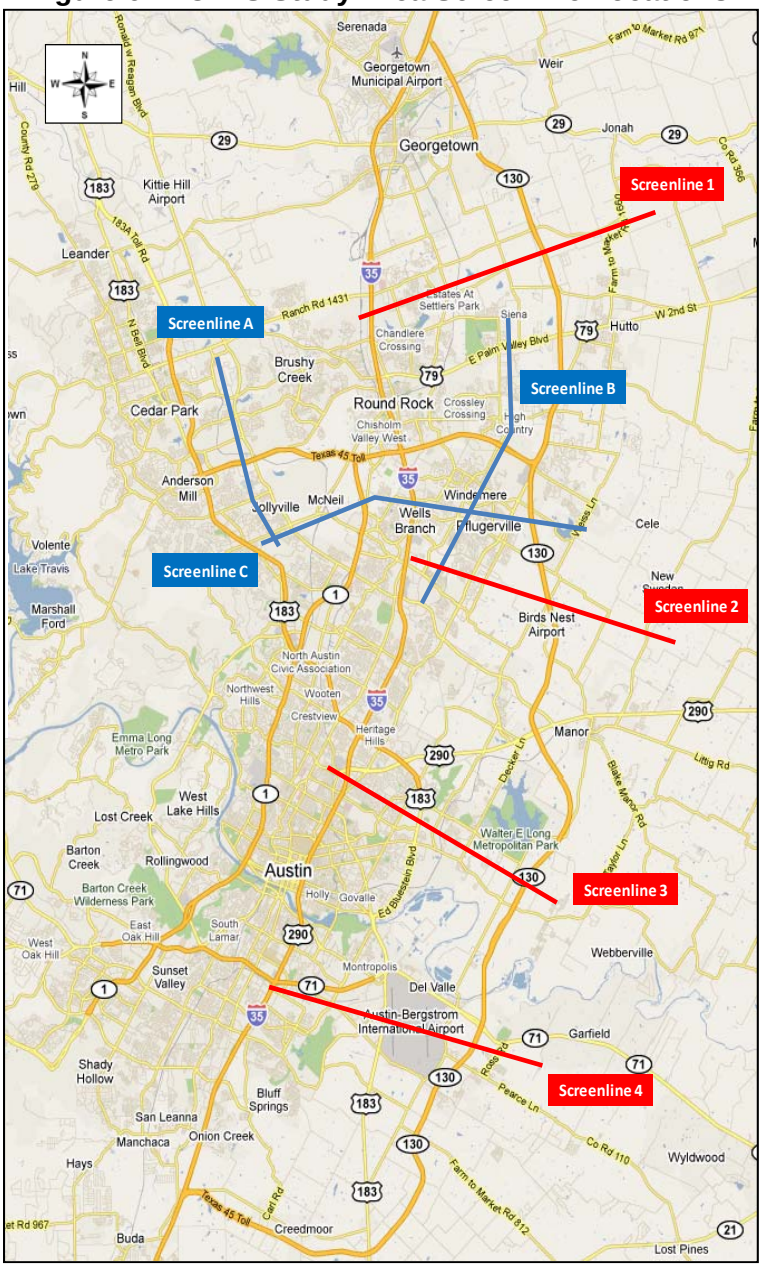
Figure 6-6: Average Weekday Traffic SH 45 N and Loop 1 - 2035 Base Case



6.4.2 Screenline Analysis

Typically, screenlines are used for analyzing the growth in traffic and the distribution of traffic by roadway. Three screenlines were chosen for the Northwest Elements each of which goes through a mainline toll plaza. Screenline A, Screenline B, and Screenline C are shown on Figure 6-7: CTTS Study Area Screenline Locations. Traffic volumes on individual roadways are shown on Table 6-5 through Table 6-7 for the base year and key forecast years. It should be noted that the traffic represents unadjusted traffic model output and was not used directly to calculate revenues.

Figure 6-7: CTTS Study Area Screenline Locations



Source: maps.google.com

Screenline A crosses SH 45 N at its western toll plaza, just west of Parmer Lane. In 2008 a total of some 190,000 vehicles crossed the screenline on an average weekday. The most traffic is carried by FM 1431 (nearly 20% of the total); followed by SH 45 N frontage roads (17% of the total), then the SH 45 N toll road and McNeil Drive each of which carry about 15% of the total. Growth in this corridor will cause total screenline traffic to increase by 44% to nearly 275,000 vehicles by 2015. SH 45 N mainline and frontage roads are expected to carry about 35% of the total screenline traffic with roughly equal amounts on each road; Brushy Creek Road traffic is expected to more than double during this period due to programmed capacity improvements; more modest growth is expected along FM 1431 and McNeil Road due to capacity constraints. After 2015 there are very few programmed improvements on the non-tolled highway network and as a result, the limited capacities force the growth to use the less congested toll road corridors. In order to offset some of this surcharge, we have assumed that the overall screenline growth applies to the toll road corridors. This approach produces 29% growth in SH 45 N mainline traffic between 2015 and 2025 and 23% growth between 2025 and 2035.

Table 6-5: Screenline A - SH 45 N West
Unadjusted Model Output

Location	2008	% of Screenline	2015	% of Screenline	2025	% of Screenline	2035	% of Screenline
FM 1431	37,561	19.8%	39,308	14.3%	35,899	10.1%	45,199	10.3%
Colonial Parkway	8,400	4.4%	10,536	3.8%	17,408	4.9%	22,893	5.2%
Brushy Creek Rd.	11,850	6.2%	32,000	11.7%	39,896	11.2%	38,645	8.8%
Avery Ranch Blvd.	12,531	6.6%	21,561	7.9%	20,591	5.8%	33,570	7.7%
Lakeline Blvd.	9,592	5.0%	14,958	5.4%	52,338	14.7%	60,506	13.8%
SH 45 NW ML	30,163	15.9%	48,779	17.8%	70,055	19.7%	99,415	22.7%
SH 45 NW Frontage	32,614	17.2%	48,468	17.6%	51,728	14.6%	53,545	12.2%
Anderson Mill Rd.	17,858	9.4%	25,979	9.5%	34,487	9.7%	43,060	9.8%
McNeil Dr.	29,436	15.5%	33,038	12.0%	32,744	9.2%	41,580	9.5%
TOTAL	**190,006**	**100.0%**	**274,628**	**100.0%**	**355,147**	**100.0%**	**438,414**	**100.0%**

Screenline B crosses SH 45 N at its eastern toll plaza and carries much less traffic than the western end. In 2008 some 114,000 vehicles per day cross the screenline. The largest share of traffic is carried by SH 45 N mainline (nearly 21%), followed by Howard Lane (nearly 19%), US 79 (17%) and FM 1825 (15%). Growth in this corridor is more modest than the western end with 34% more screenline traffic in 2015. The SH 45 N mainline share drops to less than 18% due to capacity improvements on CR 168 and Pflugerville Loop Rd and also due to a programmed toll increase; US 79 is expected to carry the most traffic (23%) followed by Howard Lane (20%). Growth in SH 45 N mainline traffic is assumed to follow the growth in overall screenline traffic in the longer term -- between 2015 and 2025 growth would be 34% and between 2025 and 2035, growth would be 31%.

Table 6-6: Screenline B - SH 45 N East
Unadjusted Model Output

Location	2008	% of Screenline	2015	% of Screenline	2025	% of Screenline	2035	% of Screenline
US 79	19,666	17.1%	35,350	23.0%	36,260	17.6%	45,802	16.9%
CR 168/Gattis School Rd	9,264	8.1%	20,431	13.3%	22,534	10.9%	38,265	14.2%
SH 45 NE ML	23,745	20.7%	27,246	17.7%	46,374	22.5%	63,894	23.6%
SH 45 NE Frontage	12,691	11.1%	11,351	7.4%	23,089	11.2%	25,725	9.5%
Pflugerville Loop Rd.	10,370	9.0%	18,127	11.8%	23,349	11.3%	42,196	15.6%
FM 1825/Pecan St.	17,579	15.3%	10,439	6.8%	14,295	6.9%	14,884	5.5%
Howard Lane	21,406	18.7%	30,686	20.0%	40,336	19.6%	39,458	14.6%
TOTAL	**114,721**	**100.0%**	**153,631**	**100.0%**	**206,237**	**100.0%**	**270,224**	**100.0%**

Screenline C crosses Loop 1 at the mainline plaza south of McNeil Drive and is the busiest screenline carrying more than 504,000 weekday vehicles. The busiest roads are US 183 and IH 35 each of which carry more than 31% of the total screenline traffic; next busiest is the Loop 1 mainline plaza which carries about 10% of the total; and the remainder of the roadways are relatively minor facilities. Traffic in 2015 is expected to be 27% greater than 2008 baseline levels along this screenline. The distribution is expected to be similar in 2015 with US 183 and IH 35 each carrying more than 29% of the total and Loop 1 carrying 11%. Beyond 2015, growth in Loop 1 mainline traffic is expected to follow the overall screenline trend -- between 2015 and 2025 growth would be 16% and between 2025 and 2035, growth would be 13%.

Table 6-7: Screenline C - Loop 1
Unadjusted Model Output

Location	2008	% of Screenline	2015	% of Screenline	2025	% of Screenline	2035	% of Screenline
US 183	156,859	31.1%	189,387	29.5%	203,378	27.2%	214,944	25.4%
Parmer Lane	41,002	8.1%	59,675	9.3%	65,635	8.8%	72,763	8.6%
Howard Lane	17,500	3.5%	29,191	4.5%	40,268	5.4%	36,585	4.3%
FM 1325/Loop 1 SR	13,143	2.6%	18,434	2.9%	25,191	3.4%	29,249	3.5%
Loop 1 Mainline Plaza	52,400	10.4%	70,541	11.0%	92,054	12.3%	119,762	14.2%
Bratton Lane	4,429	0.9%	6,192	1.0%	8,445	1.1%	7,366	0.9%
IH 35	158,404	31.4%	186,149	29.0%	203,278	27.2%	214,028	25.3%
Heatherwilde	13,988	2.8%	22,187	3.5%	28,075	3.8%	37,946	4.5%
N Railroad Rd	5,475	1.1%	7,038	1.1%	9,089	1.2%	12,033	1.4%
FM 685	17,727	3.5%	21,837	3.4%	25,098	3.4%	26,542	3.1%
SH 130	23,297	4.6%	32,114	5.0%	47,086	6.3%	74,735	8.8%
TOTAL	**504,224**	**100.0%**	**642,745**	**100.0%**	**747,597**	**100.0%**	**845,953**	**100.0%**

6.4.3 Revenue Forecasts

Following are the annual forecasts of transactions for the period FY 2011 through FY 2042. Early years of the forecast (FY 2008 – FY 2010) represent actual values, whereas subsequent years are based on traffic model output with post processing adjustments.

Table 6-8: 2010 CTTS Update Average Weekday Toll Transactions - Northwest Elements

Fiscal Year	Average Weekday Transactions		
	SH 45 N	Loop 1	Northwest Elements Total
2008	***91,057***	***54,770***	***145,827***
2009	***96,071***	***55,106***	***151,177***
2010	***98,446***	***56,900***	***155,346***
2011	103,505	59,218	162,722
2012	112,086	62,155	174,241
2013	121,883	65,145	187,028
2014	129,454	69,093	198,547
2015	136,491	73,555	210,046
2016	131,468	69,050	200,518
2017	135,971	70,884	206,854
2018	140,628	72,766	213,393
2019	145,444	74,698	220,142
2020	150,425	76,681	227,106
2021	155,577	78,717	234,294
2022	160,905	80,807	241,713
2023	166,416	82,953	249,369
2024	172,115	85,156	257,271
2025	178,010	87,417	265,427
2026	171,910	84,750	256,659
2027	179,219	87,398	266,618
2028	186,840	90,130	276,970
2029	194,785	92,947	287,732
2030	203,067	95,852	298,919
2031	211,702	98,848	310,550
2032	220,704	101,937	322,641
2033	230,089	105,123	335,211
2034	239,872	108,408	348,281
2035	250,072	111,797	361,869
2036	241,825	108,916	350,742
2037	244,244	110,006	354,249
2038	246,686	111,106	357,792
2039	249,153	112,217	361,370
2040	251,644	113,339	364,983
2041	254,161	114,472	368,633
2042	256,702	115,617	372,319

Notes: Toll Rate Increased in this year
Actual Average Weekday Traffic

Table 6-9: 2010 CTTS Update Annual Revenue Projections (in $000) - Northwest Elements

Fiscal Year	SH 45 N			Loop 1			Northwest Elements Total		
	Base Toll Cash, ETC, & Video	Video Surcharge Revenue	Total	Base Toll Cash, ETC, & Video	Video Surcharge Revenue	Total	Base Toll Cash, ETC, & Video	Video Surcharge Revenue	Total
2008			***$17,971***			***$11,448***			***$29,419***
2009			***$19,878***			***$11,915***			***$31,793***
2010			***$19,799***			***$11,937***			***$31,736***
2011	$19,590	$535	$20,125	$11,977	$329	$12,305	$31,567	$863	$32,430
2012	$21,090	$588	$21,678	$12,502	$344	$12,846	$33,592	$932	$34,524
2013	$23,086	$655	$23,741	$13,064	$359	$13,423	$36,150	$1,014	$37,164
2014	$24,692	$714	$25,406	$13,825	$381	$14,206	$38,516	$1,095	$39,612
2015	$26,220	$774	$26,994	$14,688	$406	$15,095	$40,909	$1,180	$42,089
2016	$33,453	$984	$34,437	$18,861	$526	$19,387	$52,314	$1,510	$53,824
2017	$34,632	$1,026	$35,659	$19,329	$543	$19,873	$53,962	$1,570	$55,531
2018	$35,853	$1,070	$36,923	$19,809	$562	$20,371	$55,662	$1,632	$57,294
2019	$37,116	$1,116	$38,232	$20,301	$580	$20,882	$57,417	$1,697	$59,114
2020	$38,424	$1,164	$39,588	$20,805	$600	$21,405	$59,229	$1,764	$60,993
2021	$39,778	$1,214	$40,991	$21,322	$620	$21,942	$61,100	$1,834	$62,933
2022	$41,179	$1,266	$42,445	$21,851	$641	$22,492	$63,030	$1,907	$64,937
2023	$42,630	$1,320	$43,950	$22,394	$662	$23,056	$65,023	$1,982	$67,006
2024	$44,132	$1,377	$45,508	$22,949	$685	$23,634	$67,081	$2,061	$69,142
2025	$45,686	$1,436	$47,122	$23,519	$707	$24,226	$69,205	$2,143	$71,348
2026	$56,333	$1,786	$58,119	$28,900	$876	$29,776	$85,233	$2,662	$87,894
2027	$58,725	$1,874	$60,600	$29,786	$910	$30,696	$88,511	$2,784	$91,296
2028	$61,220	$1,967	$63,187	$30,700	$945	$31,645	$91,919	$2,912	$94,831
2029	$63,819	$2,065	$65,884	$31,641	$981	$32,622	$95,460	$3,046	$98,507
2030	$66,530	$2,167	$68,697	$32,611	$1,019	$33,631	$99,141	$3,186	$102,327
2031	$69,355	$2,275	$71,630	$33,611	$1,059	$34,670	$102,966	$3,333	$106,299
2032	$72,300	$2,387	$74,687	$34,642	$1,099	$35,741	$106,942	$3,487	$110,429
2033	$75,370	$2,506	$77,876	$35,704	$1,142	$36,846	$111,074	$3,648	$114,722
2034	$78,570	$2,630	$81,200	$36,799	$1,186	$37,984	$115,369	$3,816	$119,185
2035	$81,907	$2,760	$84,667	$37,927	$1,232	$39,158	$119,833	$3,992	$123,825
2036	$97,051	$3,277	$100,329	$45,076	$1,466	$46,543	$142,128	$4,744	$146,872
2037	$98,992	$3,343	$102,335	$45,978	$1,496	$47,474	$144,970	$4,839	$149,809
2038	$100,972	$3,410	$104,382	$46,897	$1,526	$48,423	$147,870	$4,936	$152,805
2039	$102,992	$3,478	$106,470	$47,835	$1,556	$49,392	$150,827	$5,034	$155,861
2040	$105,052	$3,548	$108,599	$48,792	$1,587	$50,379	$153,844	$5,135	$158,979
2041	$106,102	$3,583	$109,685	$49,280	$1,603	$50,883	$155,382	$5,186	$160,568
2042	$107,163	$3,619	$110,782	$49,773	$1,619	$51,392	$156,936	$5,238	$162,174

Notes: Toll Rate Increased in this year
2010 CTTS Revenue includes pay-by-mail surcharge (20% of cash toll).
Actual Revenue

Table 6-10: 2010 CTTS Update Average Weekday Transactions Comparison - Northwest Elements

Northwest Elements Total			
2002 Report	2005 Update	2008 Review	CTTS 2010 Update
76,199	87,624	143,889	***145,827***
111,247	113,296	146,947	***151,177***
140,859	141,742	154,107	***155,346***
159,628	163,372	164,028	162,722
174,557	177,341	174,168	174,241
181,083	181,425	183,114	187,028
187,610	185,080	191,668	198,547
194,136	188,735	199,799	210,046
186,414	177,962	198,929	200,518
191,878	182,068	202,197	206,854
197,342	187,282	207,379	213,393
202,806	192,864	213,198	220,142
208,269	198,446	219,018	227,106
217,791	203,383	224,126	234,294
228,665	208,973	229,956	241,713
239,540	214,564	235,786	249,369
250,414	220,829	242,592	257,271
261,289	227,320	249,724	265,427
256,710	221,986	238,794	256,659
264,168	228,707	246,399	266,618
271,626	235,428	254,004	276,970
279,085	242,149	261,609	287,732
286,543	248,870	268,714	298,919
294,001	254,629	275,840	310,550
301,459	261,048	282,801	322,641
308,918	267,467	289,763	335,211
316,376	273,885	296,724	348,281
323,834	280,304	303,686	361,869
314,404	272,193	294,888	350,742
321,471	278,276	301,485	354,249
328,537	284,359	308,082	357,792
335,603	290,443	314,679	361,370
342,669	296,526	321,277	364,983
349,736	302,609	327,874	368,633
356,802	308,692	334,471	372,319

Table 6-11: 2010 CTTS Update Average Weekday Revenue Comparison (in $000) - Northwest Elements

Northwest Elements Total					
			2010 CTTS Update		
2002 Report	2005 Update	2008 Review	Base Toll Cash, ETC & Video	Video Surcharge Revenue	Total
$16,511	$19,874	$29,449			***$29,419***
$24,111	$25,560	$30,071			***$31,793***
$30,418	$31,910	$31,540			***$31,736***
$34,665	$36,499	$33,582	$31,567	$863	$32,430
$37,757	$39,444	$35,672	$33,592	$932	$34,524
$39,024	$40,223	$37,625	$36,150	$1,014	$37,164
$40,292	$40,919	$39,529	$38,516	$1,095	$39,612
$41,559	$41,616	$41,343	$40,909	$1,180	$42,089
$54,274	$53,079	$54,359	$52,314	$1,510	$53,824
$55,811	$54,155	$55,473	$53,962	$1,570	$55,531
$57,348	$55,601	$57,014	$55,662	$1,632	$57,294
$58,885	$57,170	$58,696	$57,417	$1,697	$59,114
$60,421	$58,739	$60,378	$59,229	$1,764	$60,993
$62,890	$60,119	$61,849	$61,100	$1,834	$62,933
$65,668	$61,691	$63,535	$63,030	$1,907	$64,937
$68,447	$63,263	$65,222	$65,023	$1,982	$67,006
$71,226	$64,987	$66,944	$67,081	$2,061	$69,142
$74,004	$66,762	$68,679	$69,205	$2,143	$71,348
$92,295	$82,462	$85,281	$85,233	$2,662	$87,894
$94,967	$84,820	$87,594	$88,511	$2,784	$91,296
$97,639	$87,177	$89,907	$91,919	$2,912	$94,831
$100,310	$89,535	$92,220	$95,460	$3,046	$98,507
$102,982	$91,893	$94,562	$99,141	$3,186	$102,327
$105,654	$93,979	$96,678	$102,966	$3,333	$106,299
$108,325	$96,343	$99,111	$106,942	$3,487	$110,429
$110,997	$98,707	$101,545	$111,074	$3,648	$114,722
$113,669	$101,070	$103,979	$115,369	$3,816	$119,185
$116,340	$103,434	$106,413	$119,833	$3,992	$123,825
$136,754	$121,594	$125,094	$142,128	$4,744	$146,872
$139,820	$124,307	$127,888	$144,970	$4,839	$149,809
$142,886	$127,020	$130,681	$147,870	$4,936	$152,805
$145,952	$129,733	$133,475	$150,827	$5,034	$155,861
$149,018	$132,446	$136,268	$153,844	$5,135	$158,979
$152,084	$135,159	$139,062	$155,382	$5,186	$160,568
$155,150	$137,872	$141,855	$156,936	$5,238	$162,174

6.5 SH 130 TRAFFIC AND REVENUE FORECASTS

As noted in the previous discussion of the Northwest Elements the toll diversion model produces traffic estimates for several model years including 2008, 2011, 2015, 2025, and 2035. Gross toll revenues are estimated by multiplying the traffic, in terms of transactions, at the toll locations by the effective toll structure by payment type for each year. Annual estimates of transactions and revenue were generated using an annualization factor of 320. The forecasts for the SH 130 have been adjusted to account for the final years of ramp-up assumed in the original forecasting process and evasion data for the various payment options.

As noted in the Chapter 5 discussion the committed improvements to the transportation network are limited in terms of additional capacity for the period beyond 2025. As a result, for the longer-term estimates beyond 2025, the lack of additional specific committed projects in the transportation network for facilities that compete with SH 130 caused the estimates from the toll diversion model to increase significantly for the year 2035. In order to be conservative, Stantec reduced the growth in transactions for the years after 2025 to reflect the likelihood that additional, but as of yet undefined improvements to facilities will occur in response to ongoing growth in the SH 130 corridor.

6.5.1 Traffic Forecasts

Table 6-12 lists the estimated transactions by pay point for each of the primary model years (2008, 2015, 2020 and 2025) and for each of the toll collection points. They include provision for ramp-up and toll evasion by payment method. The average weekday transactions, average toll and the revenues for each location are shown. Note that the average toll rate represents a blend of the individual rates by payment type and vehicle type. This blended value includes a 33 percent surcharge over the ETC rates for video patrons and 10 percent discount of the cash rate for those patrons using transponders. The current truck percentage on SH 130 is approximately 7.5 percent and will increase over the forecast period to approximately 18.4 percent by 2035. Note that these truck percentages include only 3+ axle vehicles consistent with the transactions reports provided by TTA. For SH 130, in the years 2015, 2025, and 2035, the facility will average 8.9%, 13.0%, and 18.4% respectively

The traffic along the individual segments of SH 130 by pay point for the model (calendar) years 2008, 2015, 2025, and 2035 are presented in Figure 6-8 through Figure 6-11. These diagrams represent the unadjusted model outputs for average weekday transactions and are intended to provide the reader a sense of the scale of the traffic volumes across the entire facility as well as the entry/exit points. An approximation of the estimated growth for various segments of the roadway can be determined by reviewing these diagrams across the individual horizon years.

Table 6-12: SH 130 Element - Model Year Average Weekday Toll Transactions and Revenue (Adjusted for Calibration and Evasion)

Toll Location	2008			2015			2025			2035		
	Transactions	Average Toll	Revenue	Transactions	Average Toll	Revenue	Transactions	Average Toll	Revenue	Transactions	Average Toll	Revenue
SH 29	644	$ 0.48	$ 307	755	$ 0.74	$ 561	1,058	$ 1.03	$ 1,091	1,319	$ 1.23	$ 1,619
FM 104	174	$ 0.49	$ 85	323	$ 0.77	$ 250	946	$ 1.01	$ 958	2,352	$ 1.19	$ 2,793
Chandler Rd.	244	$ 0.49	$ 120	662	$ 0.76	$ 506	2,473	$ 1.06	$ 2,626	6,070	$ 1.22	$ 7,385
N of CR 109	6,506	$ 1.64	$ 10,683	13,624	$ 2.46	$ 33,575	26,172	$ 3.41	$ 89,207	37,802	$ 4.04	$ 152,891
US 79	4,467	$ 0.52	$ 2,314	8,468	$ 0.86	$ 7,266	13,343	$ 1.20	$ 15,986	13,925	$ 1.49	$ 20,735
CR 138	3,047	$ 0.48	$ 1,471	4,993	$ 0.75	$ 3,729	7,093	$ 1.02	$ 7,269	6,790	$ 1.28	$ 8,708
Pecan St.	529	$ 0.51	$ 269	1,330	$ 0.77	$ 1,026	3,097	$ 1.05	$ 3,248	5,145	$ 1.25	$ 6,421
N. of Cameron Rd.	12,903	$ 1.61	$ 20,715	27,991	$ 2.46	$ 68,853	41,900	$ 3.60	$ 150,947	57,878	$ 4.38	$ 253,297
Birds' Nest Airport		-		810	$ 2.39	$ 1,934	3,143	$ 3.22	$ 10,121	6,271	$ 1.22	$ 7,626
Howard Ln/Gregg Manor	376	$ 0.50	$ 187	2,522	$ 0.85	$ 2,151	5,065	$ 1.07	$ 5,421	5,738	$ 1.26	$ 7,253
Blue Bluff Rd.	224	$ 0.50	$ 113	2,782	$ 0.75	$ 2,090	3,220	$ 1.03	$ 3,316	8,189	$ 1.32	$ 10,771
Bloor Rd/FM 973	127	$ 0.49	$ 62	824	$ 0.75	$ 616	2,917	$ 1.02	$ 2,984	3,470	$ 1.63	$ 5,663
N. of FM 969	10,285	$ 1.67	$ 17,135	21,754	$ 2.56	$ 55,751	38,523	$ 3.73	$ 143,768	50,101	$ 4.43	$ 221,723
FM 969	2,057	$ 0.58	$ 1,185	4,964	$ 0.85	$ 4,210	7,567	$ 1.10	$ 8,330	10,828	$ 1.32	$ 14,260
Harold Green Rd.	12	$ 0.47	$ 6	17	$ 0.76	$ 13	343	$ 1.16	$ 398	3,365	$ 1.47	$ 4,949
Pearce Ln.	1,055	$ 0.50	$ 528	2,063	$ 0.77	$ 1,593	5,610	$ 1.06	$ 5,934	7,132	$ 1.24	$ 8,863
N. of Elroy Rd	4,530	$ 1.69	$ 7,661	12,232	$ 2.62	$ 32,058	22,858	$ 3.82	$ 87,281	35,683	$ 4.57	$ 163,189
Elroy Rd.	472	$ 0.52	$ 248	667	$ 0.84	$ 561	1,370	$ 1.11	$ 1,523	2,431	$ 1.31	$ 3,196
FM 812	29	$ 0.55	$ 16	73	$ 0.84	$ 61	243	$ 1.09	$ 264	281	$ 1.45	$ 408
Moore Rd.	290	$ 0.54	$ 156	573	$ 0.79	$ 453	769	$ 1.06	$ 812	469	$ 1.24	$ 583
TOTAL	**47,973**		**$ 63,262**	**107,427**		**$ 217,257**	**187,710**		**$ 541,485**	**265,239**		**$ 902,332**
Total Annual Revenue in Millions			**$ 20.2**			**$ 69.5**			**$ 173.3**			**$ 288.7**

Assumptions				
Truck/Auto Toll Ratio	2.9	2.9	2.9	2.9
Video/ETC Toll Ratio	1.33	1.33	1.33	1.33
ETC Discount	10%	10%	10%	10%
Payment Type - Transactions				
Video	27.7%	25.4%	23.9%	21.7%
Cash	8.7%	8.7%	8.3%	6.9%
ETC	63.7%	65.9%	67.8%	71.3%
% Evasion				
Video	50.5%	50.0%	45.0%	40.0%
Cash	0.0%	0.0%	0.0%	0.0%
ETC	1.2%	1.0%	1.0%	1.0%
Vehicle Type - Transactions				
%Auto	90.5%	91.1%	87.0%	81.6%
%Truck	7.5%	8.9%	13.0%	18.4%

Note:
Truck includes 3-axle and larger trucks
FY08 Payment Type By Transactions was derived from FY10 transactions as described in Chapter 2.3

Figure 6-8: SH 130 Element - Average Weekday Traffic – 2008

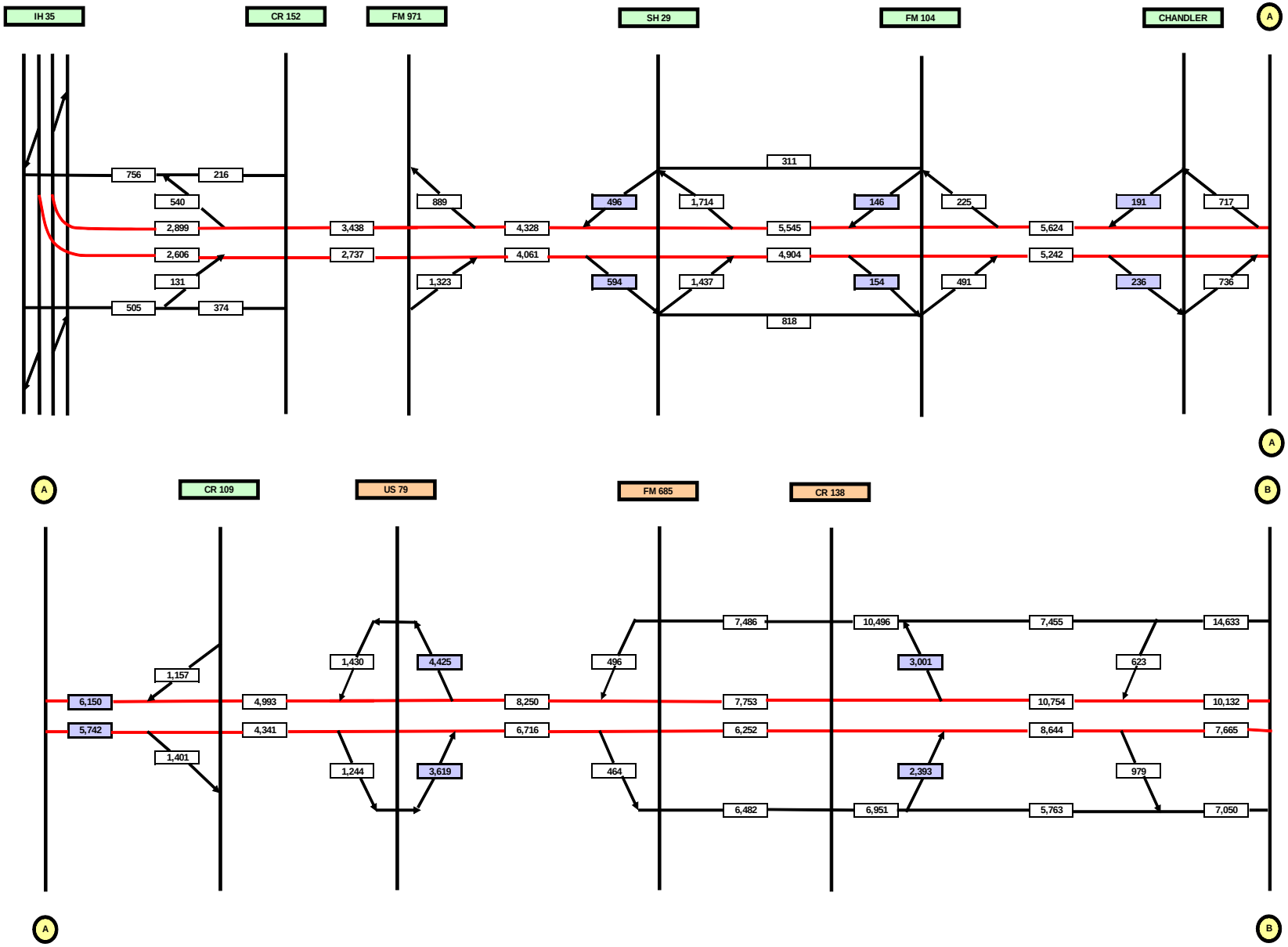


Figure 6-8: SH 130 Element - Average Weekday Traffic – 2008 (Continued)

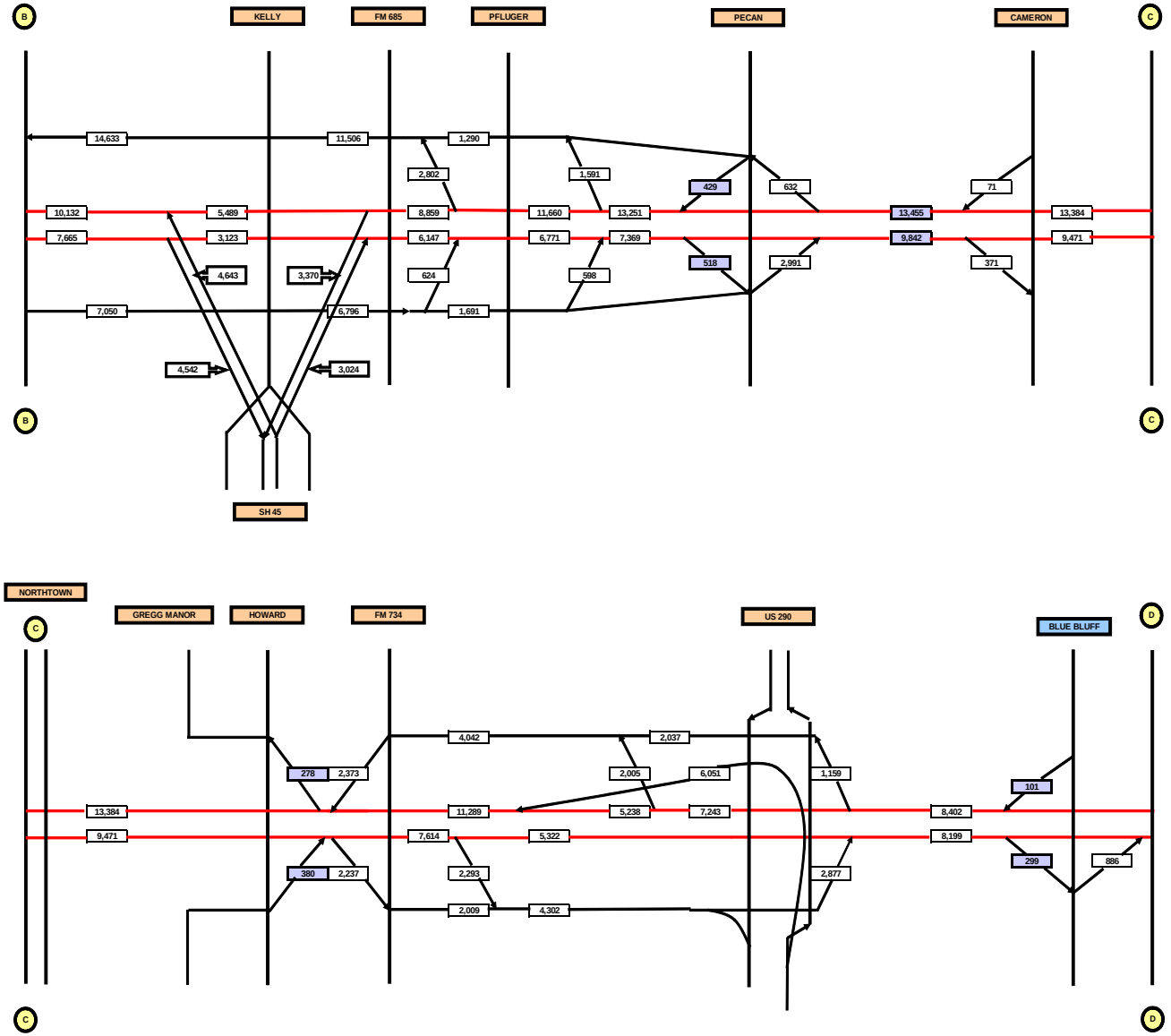


Figure 6-8: SH 130 Element - Average Weekday Traffic – 2008 (Continued)

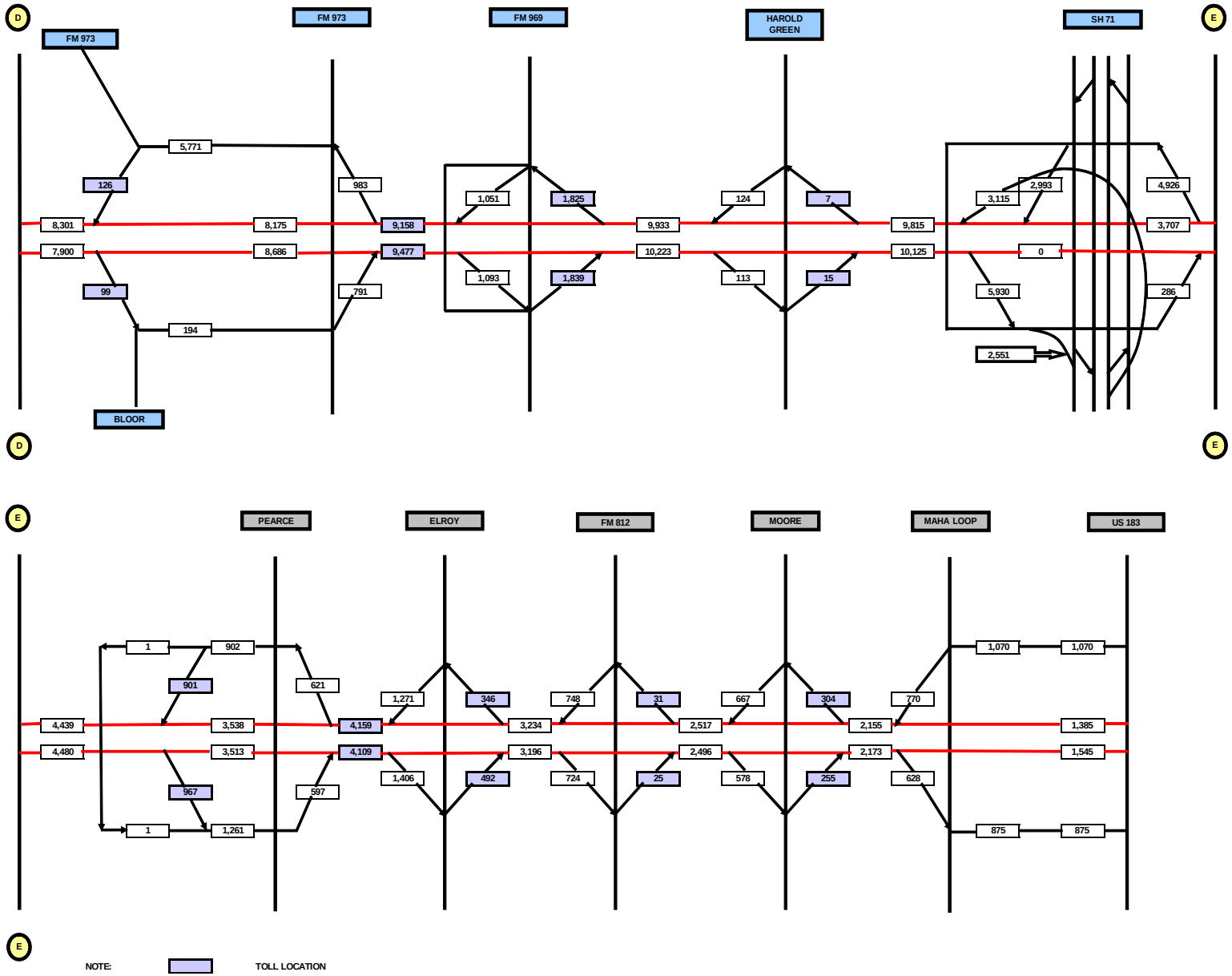


Figure 6-9: SH 130 Element - Average Weekday Traffic - 2015

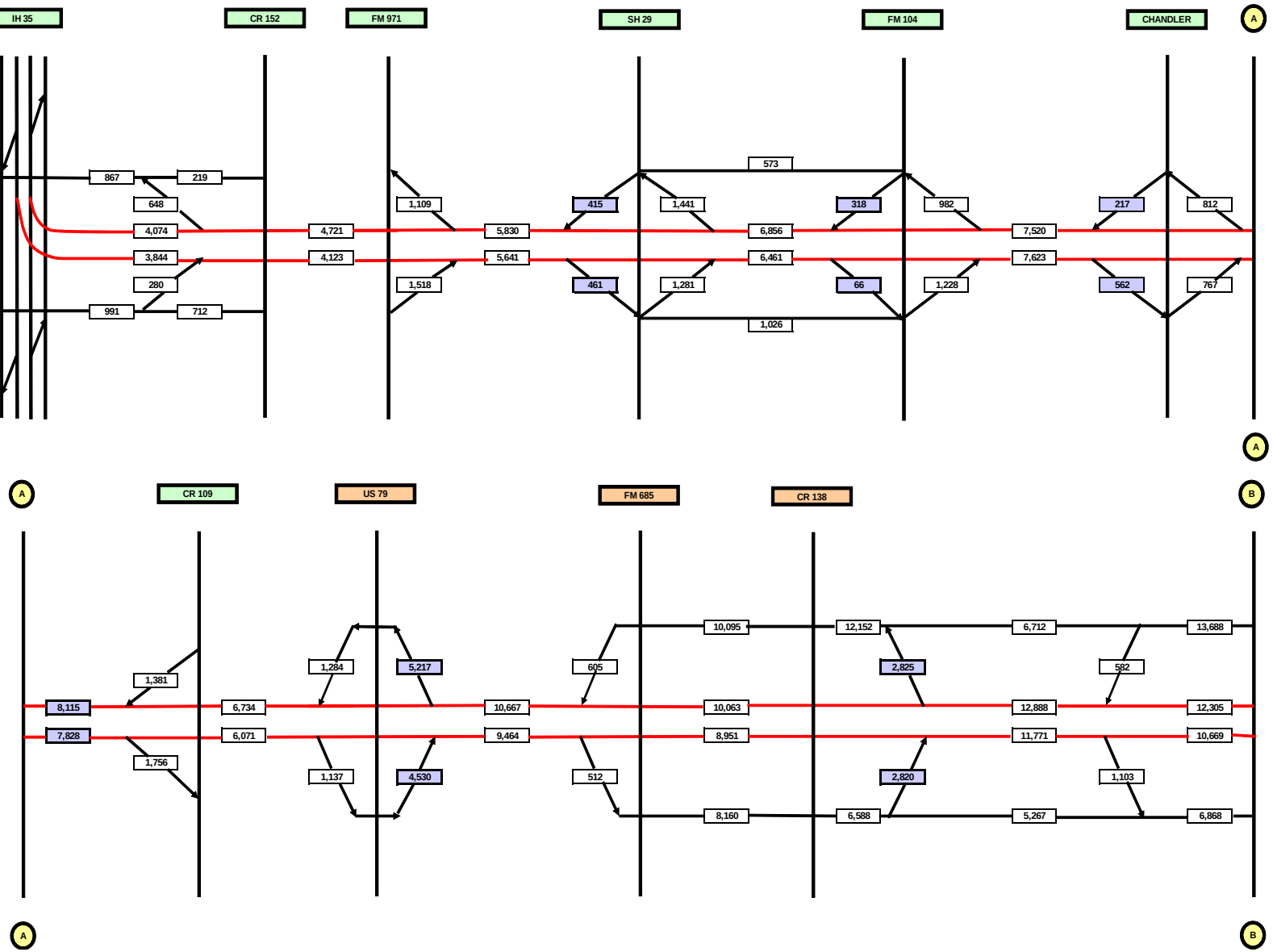


Figure 6-9: SH 130 Element - Average Weekday Traffic - 2015 (Continued)

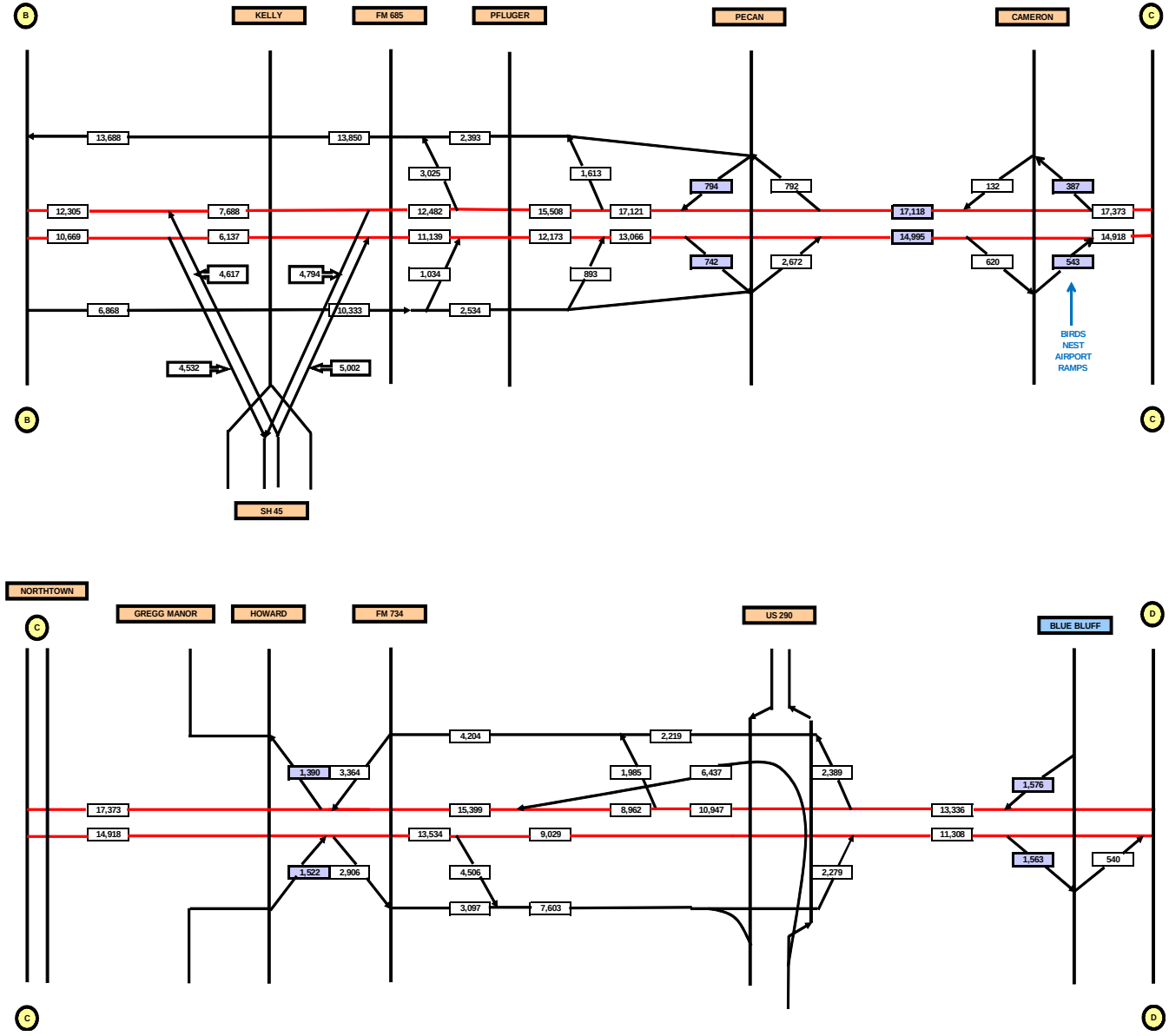


Figure 6-9: SH 130 Element - Average Weekday Traffic - 2015 (Continued)

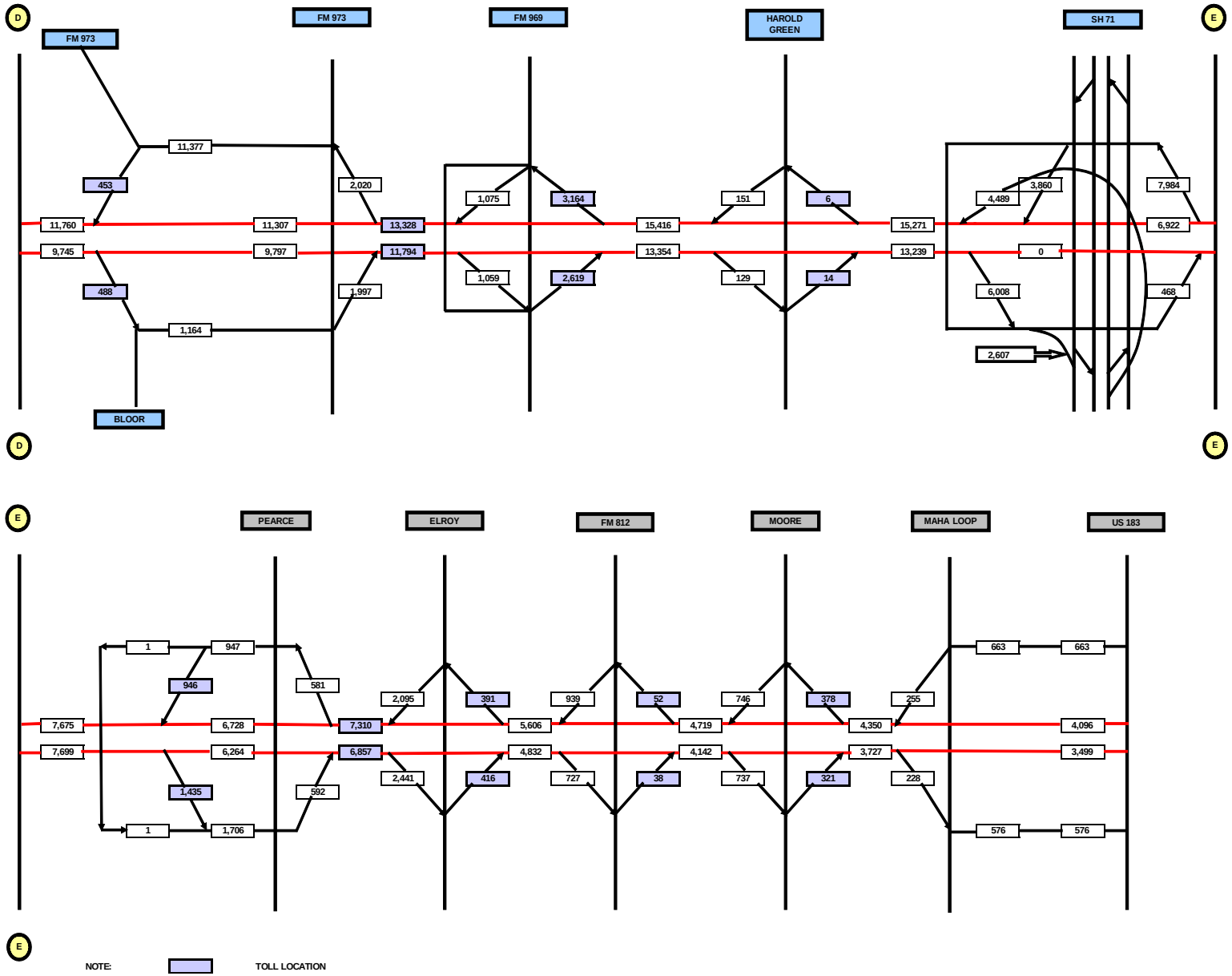


Figure 6-10: SH 130 Element - Average Weekday Traffic - 2025

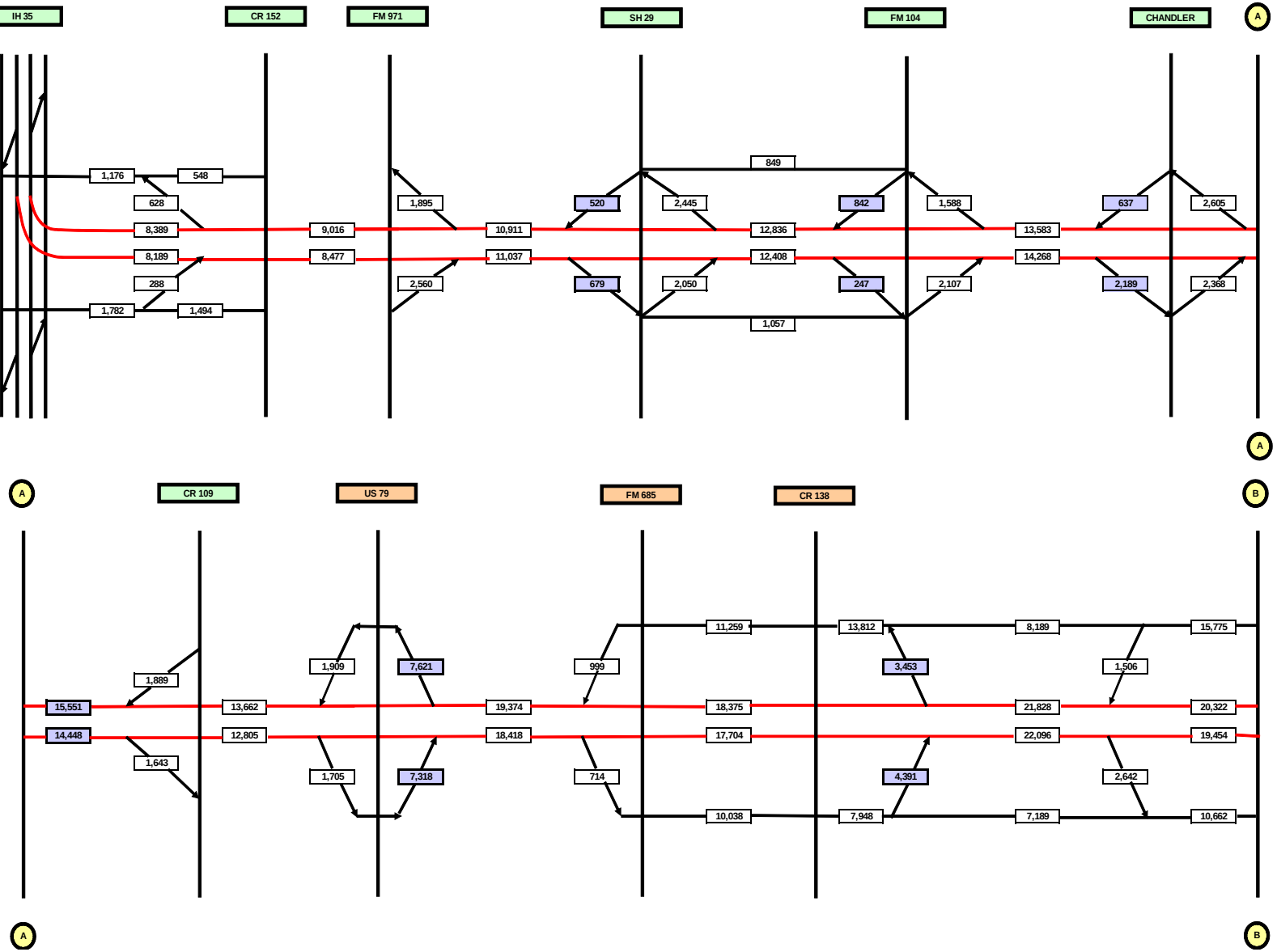


Figure 6-10: SH 130 Element - Average Weekday Traffic - 2025 (Continued)

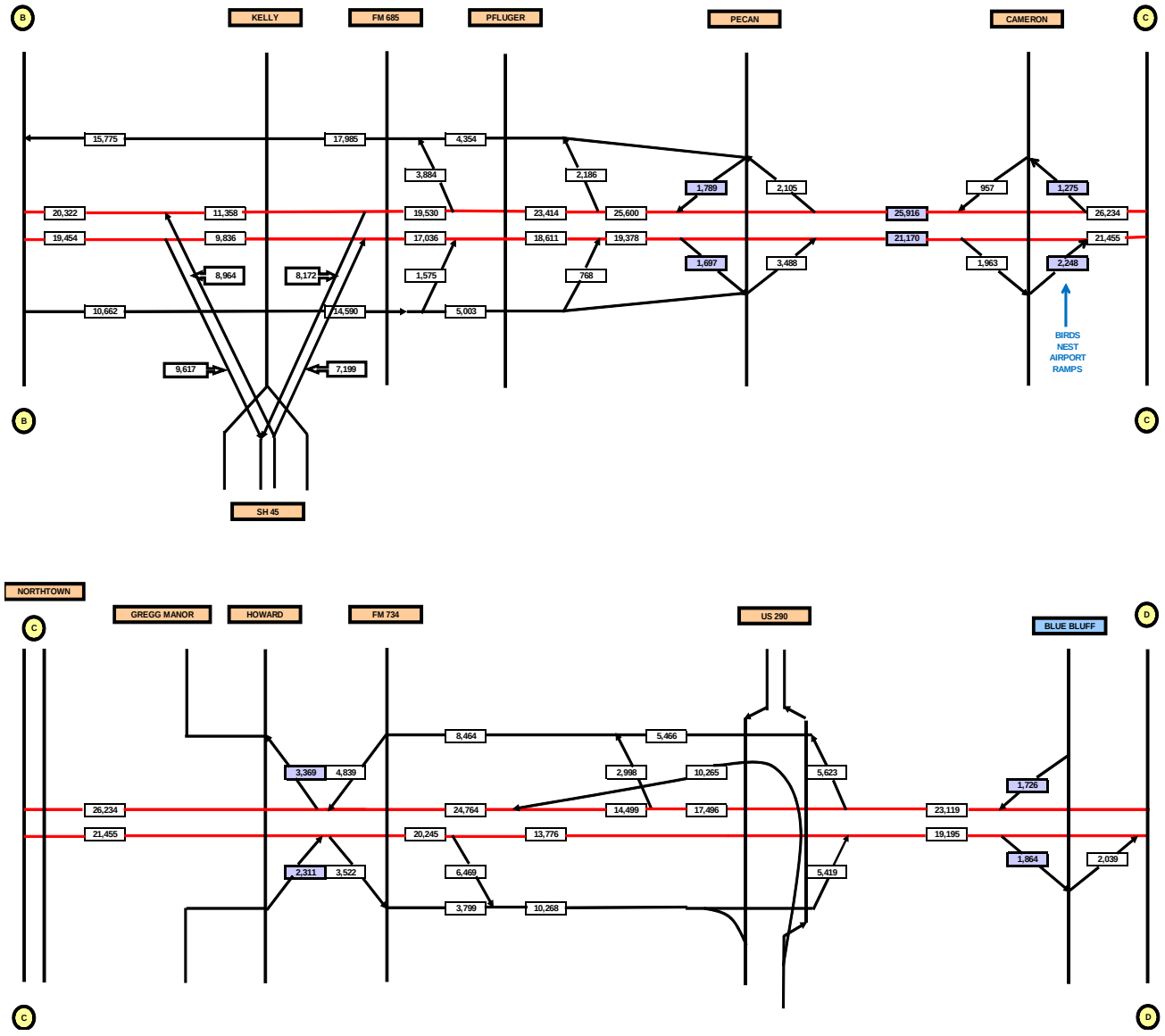


Figure 6-10: SH 130 Element - Average Weekday Traffic - 2025 (Continued)

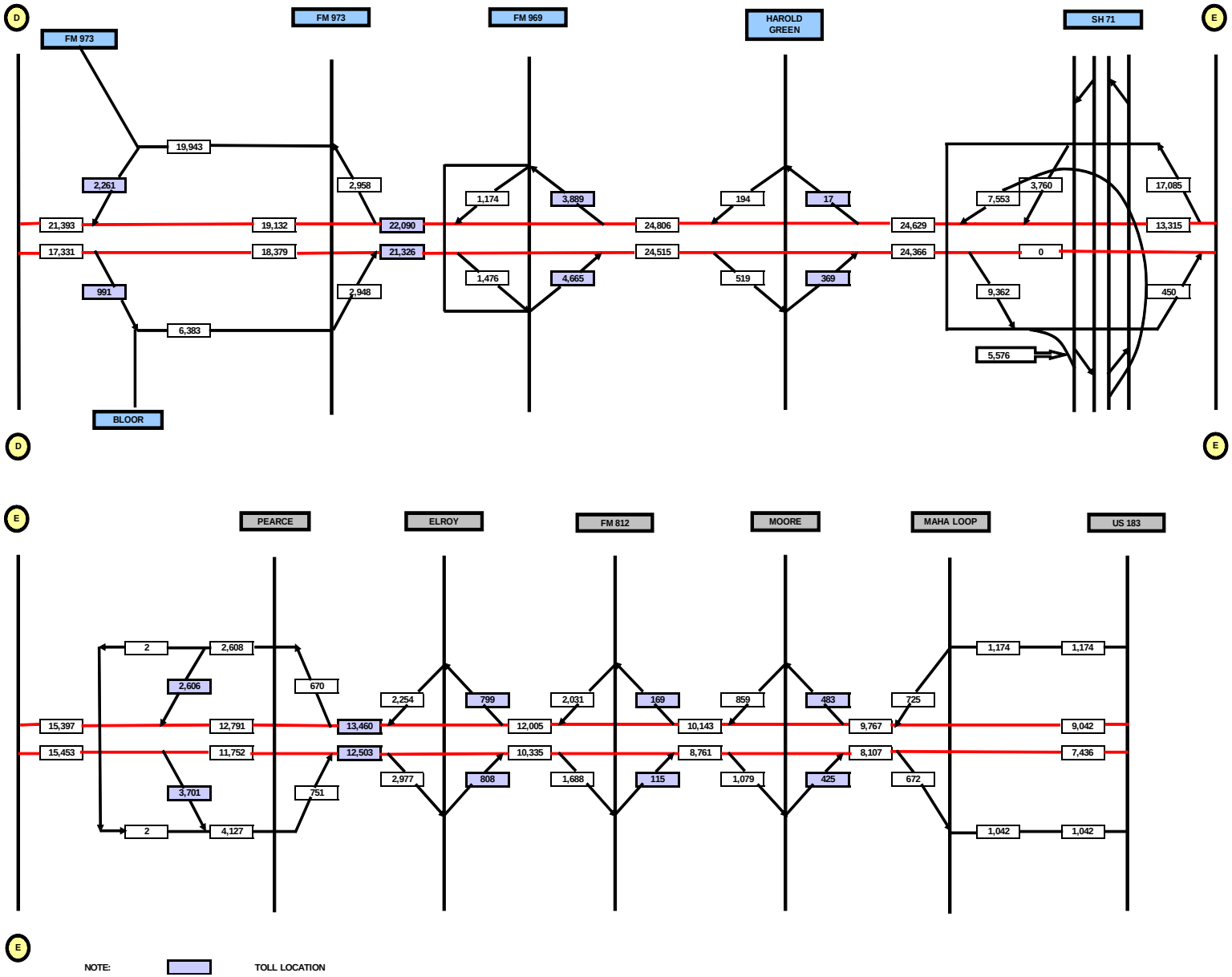


Figure 6-11: SH 130 Element - Average Weekday Traffic - 2035

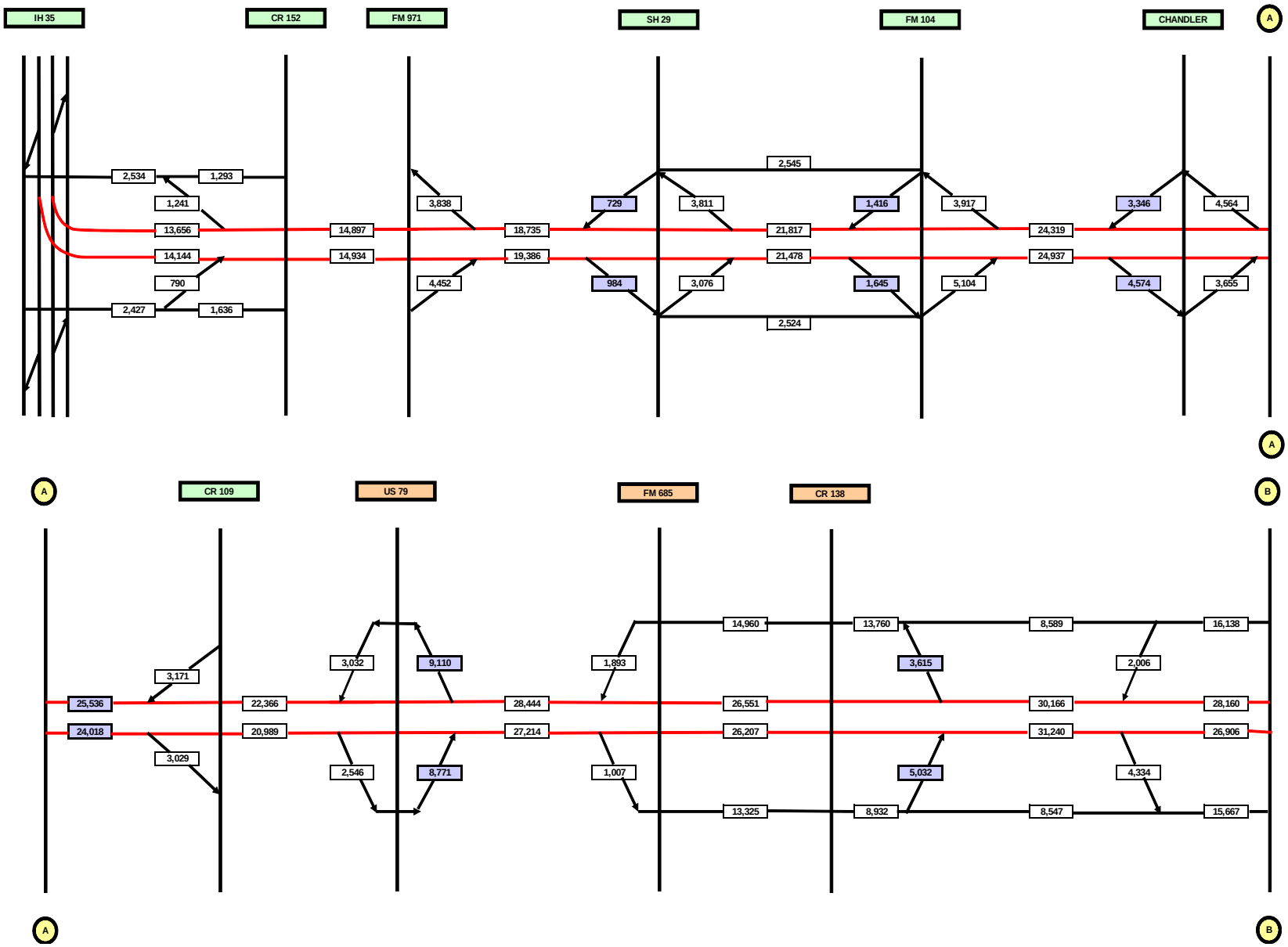


Figure 6-11: SH 130 Element - Average Weekday Traffic - 2035 (Continued)

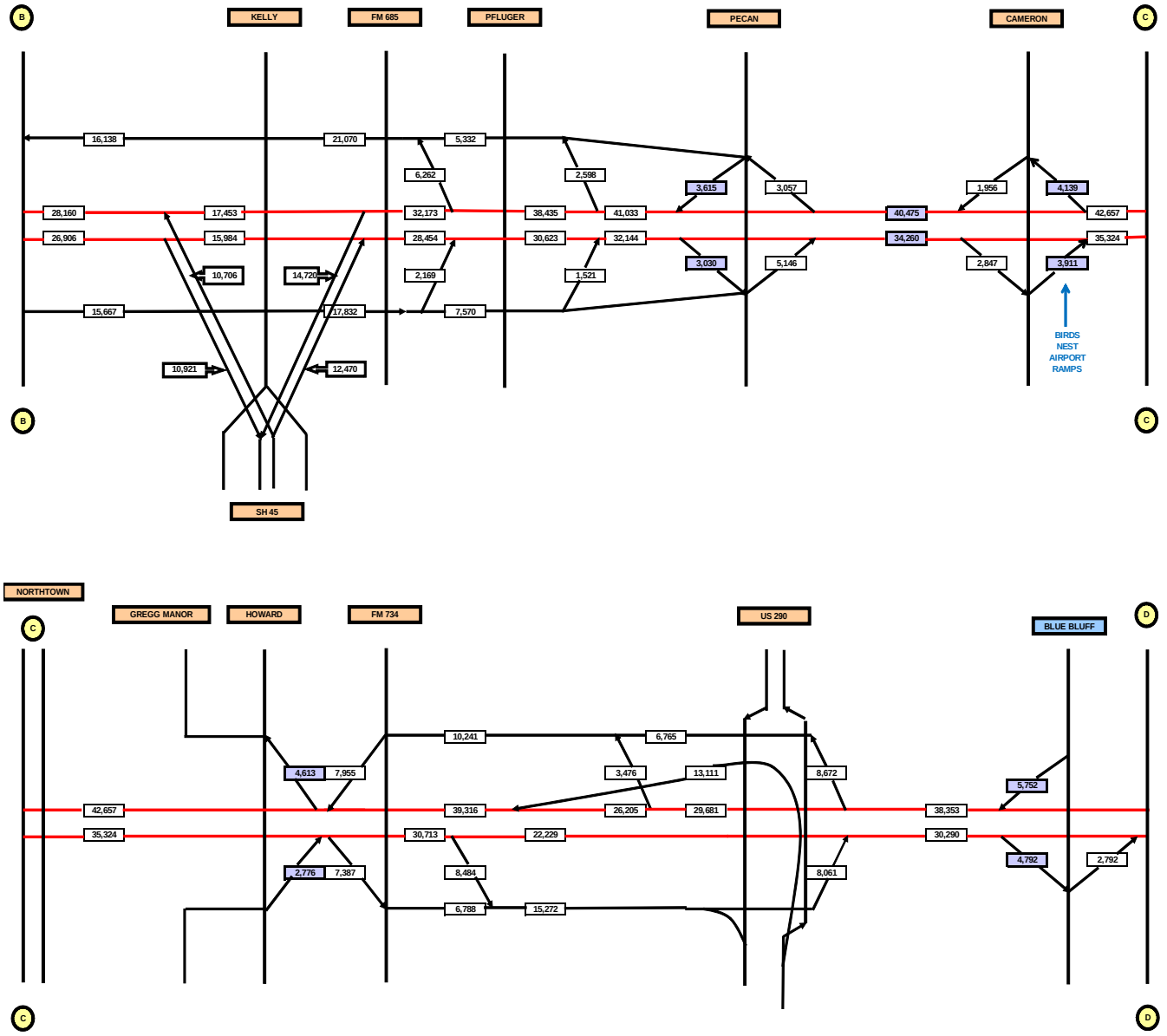
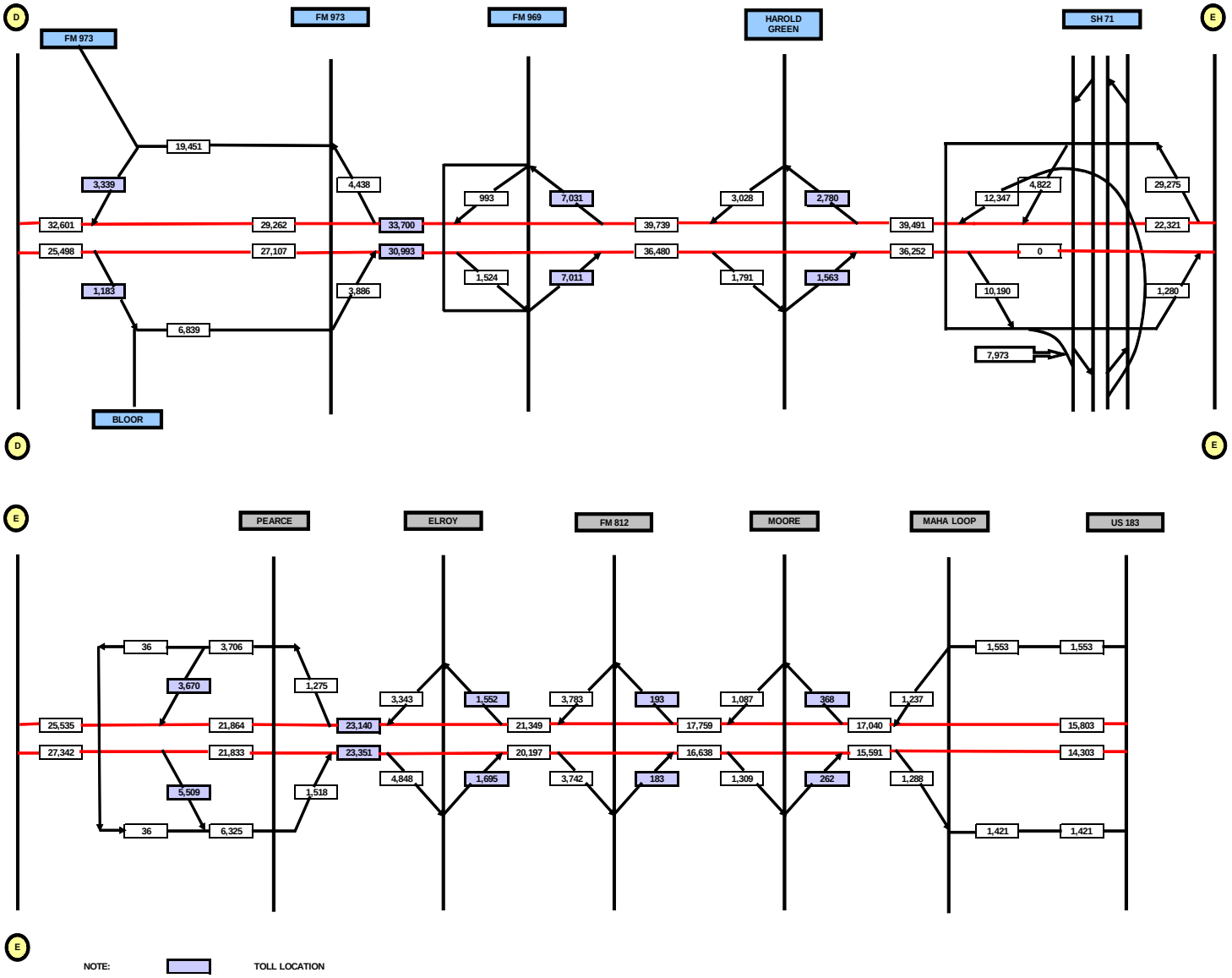


Figure 6-11: SH 130 Element - Average Weekday Traffic - 2035 (Continued)



6.5.2 Screenline Analysis

For the purpose of the SH 130 element screenline analysis, four screenlines were selected, corresponding to the location and latitude of the four SH 130 mainline toll barriers (within each of the four SH 130 segments). Figure 6-12 on page 6.34 shows the locations of the four screenlines. Note that all four screenlines extend from IH 35 eastward (i.e., bounded on the western edge by IH 35), as representative of the SH 130 corridor.

Traffic on individual routes for each screenline is shown in Table 6-13. Note that these values are unadjusted model estimates and intended to indicate the future demand of traffic in the corridor as estimated by the model as well as the share of traffic using SH 130. In the year 2008, SH 130 has values ranging from 3.2 percent to 10.7 percent of the corridor traffic with the highest percent share in Segment 2, represented by Screenline 2. In contrast, IH-35 dominates the share of corridor traffic with values ranging from 59.2 percent to 78.1 percent. In the future years, the share of traffic on SH 130 increases as congestion along IH-35 reduces the attractiveness of that roadway and future growth in population and employment occurs in the areas adjacent to SH 130. As a result SH 130 increases its share of traffic to values ranging from 9.8 percent to 20.3 percent by 2035. It should be noted that the percent share of traffic on each roadway by year will vary due to changes in nearby development along with improvements to individual roadways that either complement or compete with a given road.

Figure 6-12: CTTS Study Area Screenline Locations

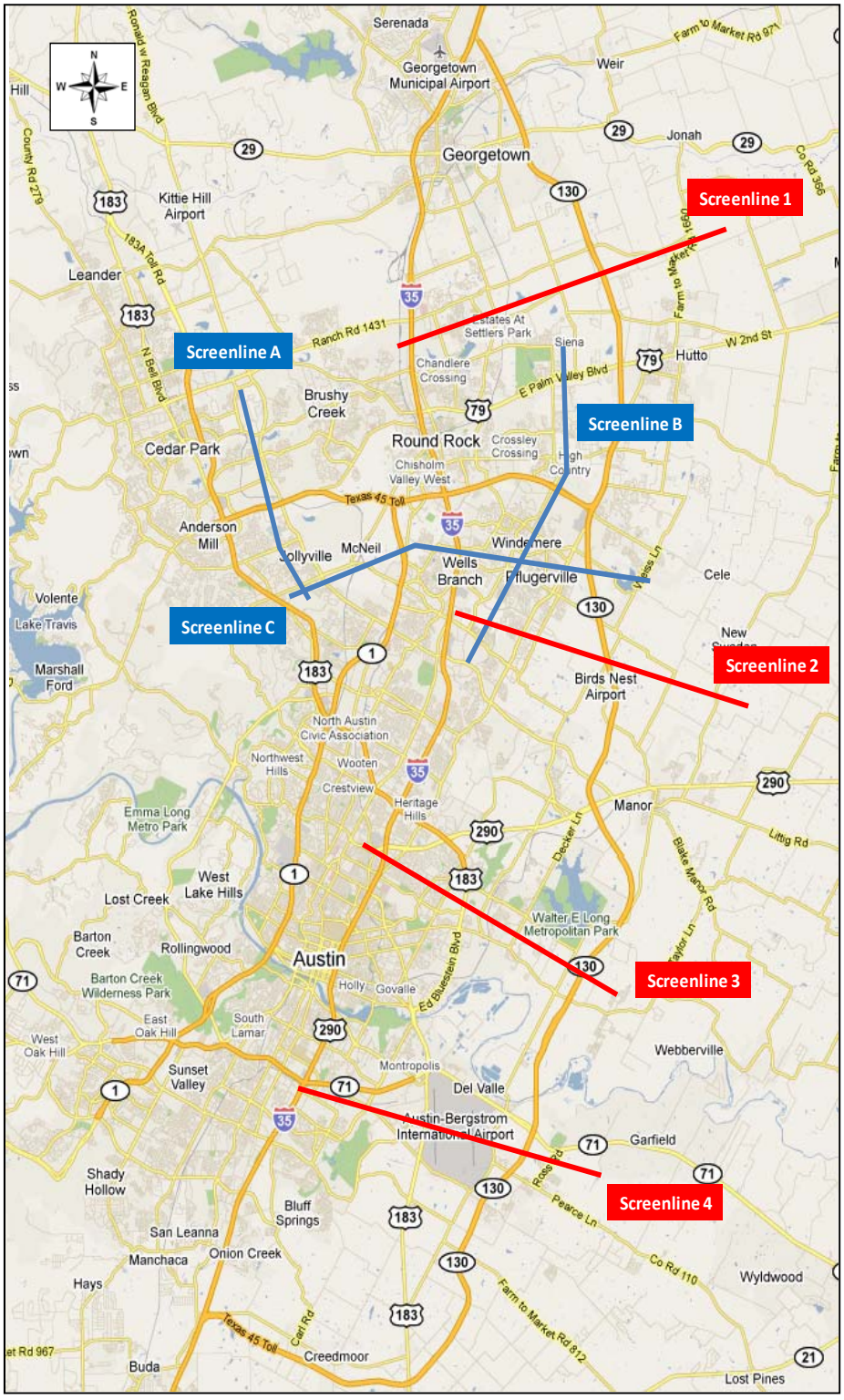


Table 6-13: SH 130 Element Screenline Analysis

Location	2008	% of Screenline	2015	% of Screenline	2025	% of Screenline	2035	% of Screenline
IH 35	134,433	78.1%	161,146	73.0%	170,055	64.7%	192,510	60.0%
CR 115	11,685	6.8%	14,460	6.6%	14,210	5.4%	22,160	6.9%
FM 1460	6,727	3.9%	13,054	5.9%	20,739	7.9%	27,450	8.6%
CR 110	4,913	2.9%	4,454	2.0%	14,966	5.7%	14,068	4.4%
SH 130	11,892	6.9%	15,942	7.2%	29,999	11.4%	49,555	15.4%
CR 100	818	0.5%	10,261	4.6%	8,672	3.3%	4,598	1.4%
FM 1660	1,624	0.9%	1,360	0.6%	4,067	1.5%	10,560	3.3%
TOTAL	**172,093**	**100.0%**	**220,678**	**100.0%**	**262,708**	**100.0%**	**320,901**	**100.0%**

Location	2008	% of Screenline	2015	% of Screenline	2025	% of Screenline	2035	% of Screenline
IH 35	158,404	72.6%	186,149	70.0%	203,278	64.3%	214,028	58.0%
Heatherwilde Blvd	9,663	4.4%	11,766	4.4%	18,757	5.9%	23,979	6.5%
Dessau / FM 685	12,896	5.9%	17,174	6.5%	20,442	6.5%	28,512	7.7%
Immanuel	3,446	1.6%	2,753	1.0%	4,837	1.5%	2,615	0.7%
SH 130	23,297	10.7%	32,114	12.1%	47,086	14.9%	74,735	20.3%
Cameron Rd	5,281	2.4%	8,946	3.4%	13,769	4.4%	16,696	4.5%
Fuchs Grove	5,245	2.4%	7,121	2.7%	7,953	2.5%	8,361	2.3%
TOTAL	**218,232**	**100.0%**	**266,023**	**100.0%**	**316,123**	**100.0%**	**368,926**	**100.0%**

Location	2008	% of Screenline	2015	% of Screenline	2025	% of Screenline	2035	% of Screenline
IH 35	236,254	59.2%	264,184	54.6%	286,232	51.1%	299,872	45.5%
Cameron Rd.	17,316	4.3%	27,349	5.7%	27,768	5.0%	28,853	4.4%
Berkman Dr.	7,961	2.0%	10,502	2.2%	12,609	2.2%	13,212	2.0%
Manor Rd.	13,017	3.3%	14,771	3.1%	19,335	3.4%	24,588	3.7%
Springdale Rd.	15,130	3.8%	17,995	3.7%	20,456	3.6%	24,372	3.7%
US 183	62,735	15.7%	90,653	18.7%	101,291	18.1%	123,564	18.8%
Johnny Morris Rd.	6,483	1.6%	5,823	1.2%	7,457	1.3%	10,570	1.6%
FM 3177	12,759	3.2%	14,728	3.0%	24,673	4.4%	37,318	5.7%
FM 973	4,131	1.0%	6,202	1.3%	6,952	1.2%	10,589	1.6%
SH 130	18,635	4.7%	25,121	5.2%	43,416	7.7%	64,694	9.8%
FM 969	4,978	1.2%	6,170	1.3%	10,373	1.9%	21,161	3.2%
TOTAL	**399,400**	**100.0%**	**483,498**	**100.0%**	**560,564**	**100.0%**	**658,793**	**100.0%**

Location	2008	% of Screenline	2015	% of Screenline	2025	% of Screenline	2035	% of Screenline
IH 35	171,445	66.6%	211,420	64.6%	228,224	60.2%	234,272	54.5%
Todd Ln.	10,527	4.1%	22,604	6.9%	28,071	7.4%	34,018	7.9%
Stassney Ln.	26,602	10.3%	33,676	10.3%	42,303	11.2%	41,563	9.7%
US 183	29,709	11.5%	28,485	8.7%	34,543	9.1%	46,487	10.8%
FM 973	6,363	2.5%	11,803	3.6%	10,520	2.8%	13,816	3.2%
SH 130	8,268	3.2%	14,167	4.3%	25,964	6.8%	46,490	10.8%
Ross Rd.	4,336	1.7%	5,372	1.6%	9,504	2.5%	13,400	3.1%
TOTAL	**257,250**	**100.0%**	**327,526**	**100.0%**	**379,129**	**100.0%**	**430,045**	**100.0%**

6.5.3 Revenue Forecasts

Using the average weekday traffic forecasts from the model outputs the revenue forecast for the SH 130 element was developed. As an initial step the transactions on a yearly basis were estimated for the entire forecast period from 2011 to 2042. Using the forecasts from the model years (2008, 2011, 2015, 2025, 2035), the volumes by year were calculated by interpolation. Due to the limited background network improvements beyond 2025, Stantec apply a reduction to the model forecasts from 2025 to 2035 by reducing the 2035 transactions by 15.0 percent and the years beyond 2035 were extrapolated based on a tapering annual rate of growth declining to 2.3 percent by 2042. As a final step the transactions were then converted from calendar year to fiscal year and shown in Table 6-14.

Note that the transactions for the first three fiscal years reflect the observed transactions as provided by TTA's annual reports. For the current Fiscal year, the transactions include observed transactions of the first three months and model forecasts for the remaining nine months. Note that the traffic reductions shown in selected horizon years reflect the impact of the toll increases as discussed in Section 6.1 and listed in Table 6-1. These reductions reflect the adjustment from the forecasts initially developed on a calendar year basis to those stated on a fiscal (bond) year basis, with the fiscal year beginning September 1 and ending August 31. Accordingly, for example, the toll increase in September 2015 affects the traffic forecast in fiscal year 2016 (the fiscal year ending August 2016).

The revenue forecasts for each horizon were developed from the adjusted transaction estimates described above and shown in Table 6-15. The estimates include several assumptions regarding costs by payment type and changes in the share of transactions by payment type. ETC transactions receive a 10 percent discount from the cash rate and video tolling includes a 33% surcharge over the ETC rates. For these revenue estimates, the cash payment option is assumed available for the entire forecast period. The share of transactions by payment type will change over the forecast period, with ETC transaction shares increasing from approximately 63.7 percent in 2008 to 71.3% by 2035. Cash shares decline over the period and video share also decline as more patrons utilize transponders. Note that SH 130 has exhibited a lower transponder share than the Northwest elements as more of the SH 130 patrons are traveling from areas outside of the Austin region.

The revenue forecasts for SH 130 also included a ramp-up period since the alignment is primarily east of the major developed areas of Austin. In the initial forecasts, a six-year ramp up period was assumed. Half of ramp-up period is now complete and the revenue forecasts for the fiscal years of 2011-2013 include discounts for the remaining ramp-up period as follows:

Calendar Year	Fiscal Year	Ratio to Raw Model Output
2007	2008	0.54
2008	2009	0.65
2009	2010	0.78
2010	2011	0.83
2011	2012	0.92
2012	2013	0.97
2013	2014	1.00

The average weekday traffic volumes from the model have been annualized conservatively using a factor of 320. This factor was selected previously from actual data compiled from four locations — two non-toll facilities in the Austin area and two suburban toll projects in Florida. For the first three years of observed transactions for SH 130, the annualization factor has been approximately 329, so the use of 320 for forecasting is conservative in the near term and reflects an assumption that as the corridor further develops, locally oriented traffic will increase and the observed annualization rate will gradually decline.

Table 6-14: 2010 CTTS Update Average Weekday Toll Transactions – SH 130 Element

Fiscal Year	SH 130			
	2002 Report	2005 Update	2008 Review	2010 Update
2008	42,161	50,868	58,380	***58,306***
2009	57,856	68,867	73,990	***73,099***
2010	66,058	84,479	83,386	***83,997***
2011	84,607	102,156	92,817	90,209
2012	95,804	114,517	102,265	101,267
2013	105,569	127,035	111,779	109,444
2014	112,371	136,663	121,321	117,621
2015	119,173	146,291	130,871	125,799
2016	100,873	125,636	123,521	115,312
2017	108,953	125,077	138,052	125,823
2018	117,032	131,582	152,545	136,334
2019	125,112	140,443	167,022	146,845
2020	133,192	149,305	178,978	157,356
2021	148,634	158,166	190,934	167,867
2022	160,692	167,027	202,890	178,378
2023	172,751	184,309	215,447	188,890
2024	184,809	199,868	226,892	199,401
2025	196,867	213,916	237,901	209,912
2026	170,507	206,186	228,288	198,757
2027	179,035	220,367	238,846	208,698
2028	187,555	234,548	249,404	218,630
2029	196,023	248,730	259,962	228,501
2030	204,395	253,511	256,544	238,260
2031	212,626	263,439	260,205	247,855
2032	220,670	275,792	267,843	257,231
2033	228,478	287,595	275,834	266,333
2034	236,004	298,712	283,238	275,106
2035	243,200	309,009	290,916	283,494
2036	232,395	291,335	277,225	270,899
2037	238,344	298,919	284,221	277,834
2038	244,212	306,280	291,219	284,674
2039	250,104	313,668	298,244	291,542
2040	256,012	321,078	305,290	298,429
2041	261,931	328,502	312,349	305,329
2042	267,857	335,934	319,415	312,236

Notes: Toll Rate Increased in this year
Actual Average Weekday Traffic

Table 6-15: 2010 CTTS Update Annual Revenue Projections (in $000) – SH 130 Element

Fiscal Year	SH 130					
				2010 Update		
	2002 Report	2005 Update	2008 Review	Base Toll Cash, ETC, & Video	Video Surcharge Revenue	Total
2008	$18,485	$20,145	$19,456			***$19,456***
2009	$25,543	$27,762	$27,811			***$27,114***
2010	$29,275	$34,854	$32,089			***$34,415***
2011	$37,502	$42,522	$35,990	$37,086	$1,009	$38,095
2012	$42,452	$47,815	$39,702	$41,680	$1,486	$43,166
2013	$46,767	$53,165	$43,363	$45,469	$1,617	$47,086
2014	$49,768	$57,302	$47,006	$49,258	$1,749	$51,007
2015	$52,771	$61,439	$50,650	$53,047	$1,880	$54,927
2016	$63,068	$73,280	$68,034	$73,064	$2,393	$75,457
2017	$68,242	$73,752	$76,500	$80,686	$2,684	$83,370
2018	$73,416	$78,133	$84,751	$88,307	$2,975	$91,282
2019	$78,591	$83,817	$92,913	$95,928	$3,266	$99,195
2020	$83,766	$89,501	$99,675	$103,550	$3,558	$107,107
2021	$91,874	$95,185	$106,437	$111,171	$3,849	$115,020
2022	$99,184	$100,869	$113,199	$118,792	$4,140	$122,933
2023	$106,493	$113,439	$122,414	$126,414	$4,432	$130,845
2024	$113,802	$123,822	$129,968	$134,035	$4,723	$138,758
2025	$121,111	$132,711	$136,697	$141,656	$5,014	$146,671
2026	$140,643	$160,858	$166,316	$179,040	$5,881	$184,921
2027	$147,687	$172,003	$175,047	$188,007	$6,176	$194,183
2028	$154,722	$183,148	$183,778	$196,963	$6,470	$203,433
2029	$161,715	$194,292	$192,510	$205,865	$6,762	$212,627
2030	$168,629	$195,415	$189,689	$214,666	$7,051	$221,718
2031	$175,426	$201,731	$192,594	$223,319	$7,336	$230,655
2032	$182,068	$210,668	$198,675	$231,774	$7,613	$239,388
2033	$188,515	$219,239	$204,716	$239,982	$7,883	$247,865
2034	$194,728	$227,358	$210,691	$247,891	$8,143	$256,034
2035	$201,030	$234,940	$216,574	$255,913	$8,406	$264,320
2036	$219,996	$265,491	$251,118	$280,057	$9,199	$289,257
2037	$225,628	$272,370	$257,478	$287,227	$9,435	$296,662
2038	$231,184	$279,076	$263,818	$294,300	$9,667	$303,967
2039	$236,761	$285,808	$270,182	$301,399	$9,900	$311,300
2040	$242,354	$292,560	$276,564	$308,519	$10,134	$318,653
2041	$247,958	$299,325	$282,959	$315,653	$10,369	$326,022
2042	$253,567	$306,096	$289,361	$322,793	$10,603	$333,397

Notes: Toll Rate Increased in this year
2010 CTTS Revenue includes pay-by-mail surcharge (20% of cash toll).
Actual Revenue

6.6 TOTAL CTTS TRAFFIC AND REVENUE FORECASTS AND COMPARISON

Table 6-16 provides a listing of the transactions for the combined elements of the CTTS for the original 2002 financing study, the 2005 Update, the 2008 Review and the 2010 Update. Table 6-17 includes the revenue forecasts for each of the studies. All of these values are provided as fiscal year values and it should be noted that the first three years of the 2010 Update include the observed transactions and revenue as reported by TTA in their respective annual reports.

When comparing across the various forecasts prepared for the CTTS, there are several significant differences in terms of the assumed payment methods and the economic conditions. For the 2002 Report and the 2005 Update, both of these studies were performed prior to the opening of any of the individual toll road elements. The 2008 Review did reflect knowledge of initial transactions for several elements and included the revenue estimation of the video billing pilot program along with the strong increase in growth prior to recession. The 2010 Update included a comprehensive recalibration of the forecasting process as well as recognition of the impacts of the recession coupled with the first three years of tolled operations to evaluation key assumptions related to evasion and ramp-up.

In general the CTTS transactions in the 2010 Update are higher than the original forecast prepared for the 2002 financing study. The revenue stream is generally higher as well except for the period encompassing FY 2011 through FY 2013. These minor reduction is reflects the lingering impacts of the recent recession and the reduced level of truck transactions within the overall revenue stream. For FY 2014 and beyond, the 2010 Update forecasts exceed the 2002 forecasts.

In comparison the 2008 Update, the new forecast is generally higher in terms of revenue but slightly lower in terms of total transactions. As part of the calibration of the new model, it was recognized that the previous model was under-predicting transactions at the mainline plazas and over-predicting transactions at the ramps. The new model is now calibrated against observed data and while transactions are somewhat lower, the percentage at the higher rate mainline plazas in now higher, leading to higher overall revenue.

Table 6-16: 2010 CTTS Update Average Weekday Toll Transactions – All CTTS Elements

Fiscal Year	CTTS Total			
	2002 Report	2005 Update	2008 Review	2010 Update
2008	118,360	138,492	202,269	***204,133***
2009	169,103	182,163	220,937	***224,276***
2010	206,917	226,221	237,493	***239,343***
2011	244,235	265,528	256,845	252,931
2012	270,361	291,858	276,433	275,508
2013	286,652	308,460	294,893	296,472
2014	299,981	321,743	312,989	316,168
2015	313,309	335,026	330,670	335,845
2016	287,287	303,598	322,450	315,830
2017	300,831	307,145	340,249	332,677
2018	314,374	318,864	359,924	349,727
2019	327,918	333,307	380,220	366,987
2020	341,461	347,751	397,996	384,463
2021	366,425	361,549	415,060	402,162
2022	389,357	376,000	432,846	420,091
2023	412,291	398,873	451,233	438,259
2024	435,223	420,697	469,484	456,672
2025	458,156	441,236	487,625	475,339
2026	427,217	428,172	467,082	455,416
2027	443,203	449,074	485,245	475,316
2028	459,181	469,976	503,408	495,600
2029	475,108	490,879	521,571	516,232
2030	490,938	502,381	525,258	537,179
2031	506,627	518,068	536,045	558,404
2032	522,129	536,840	550,644	579,872
2033	537,396	555,062	565,597	601,544
2034	552,380	572,597	579,962	623,387
2035	567,034	589,313	594,602	645,363
2036	546,799	563,528	572,113	621,641
2037	559,815	577,195	585,706	632,083
2038	572,749	590,639	599,301	642,465
2039	585,707	604,111	612,923	652,912
2040	598,681	617,604	626,567	663,412
2041	611,667	631,111	640,223	673,962
2042	624,659	644,626	653,886	684,556

Notes: Toll Rate Increased in this year
Actual Average Weekday Traffic

Table 6-17: 2010 CTTS Update Annual Revenue Projections (in $000) – All CTTS Elements

Fiscal Year	CTTS Total ($000)					
				2010 Update		
	2002 Report	2005 Update	2008 Review	Base Toll Cash, ETC, & Video	Video Surcharge Revenue	Total
2008	$34,996	$40,019	$48,905			***$48,875***
2009	$49,654	$53,322	$57,882			***$58,907***
2010	$59,693	$66,764	$63,629			***$66,151***
2011	$72,167	$79,021	$69,572	$68,652	$1,873	$70,525
2012	$80,209	$87,259	$75,374	$75,272	$2,418	$77,690
2013	$85,791	$93,388	$80,988	$81,619	$2,632	$84,250
2014	$90,060	$98,221	$86,535	$87,774	$2,844	$90,619
2015	$94,330	$103,055	$91,993	$93,956	$3,060	$97,016
2016	$117,342	$126,359	$122,393	$125,379	$3,902	$129,281
2017	$124,053	$127,907	$131,973	$134,647	$4,254	$138,901
2018	$130,764	$133,734	$141,765	$143,969	$4,607	$148,576
2019	$137,476	$140,987	$151,609	$153,346	$4,963	$158,309
2020	$144,187	$148,240	$160,053	$162,779	$5,322	$168,100
2021	$154,764	$155,304	$168,286	$172,270	$5,683	$177,953
2022	$164,852	$162,560	$176,734	$181,822	$6,047	$187,870
2023	$174,940	$176,702	$187,636	$191,437	$6,414	$197,851
2024	$185,028	$188,809	$196,912	$201,116	$6,784	$207,900
2025	$195,115	$199,473	$205,376	$210,861	$7,158	$218,019
2026	$232,938	$243,320	$251,597	$264,273	$8,543	$272,816
2027	$242,654	$256,823	$262,641	$276,519	$8,960	$285,478
2028	$252,361	$270,325	$273,685	$288,882	$9,382	$298,264
2029	$262,025	$283,827	$284,730	$301,325	$9,808	$311,134
2030	$271,611	$287,308	$284,251	$313,808	$10,238	$324,045
2031	$281,080	$295,710	$289,272	$326,285	$10,669	$336,954
2032	$290,393	$307,011	$297,786	$338,716	$11,100	$349,817
2033	$299,512	$317,946	$306,261	$351,056	$11,531	$362,586
2034	$308,397	$328,428	$314,670	$363,260	$11,959	$375,218
2035	$317,370	$338,374	$322,987	$375,747	$12,398	$388,145
2036	$356,750	$387,085	$376,212	$422,185	$13,943	$436,128
2037	$365,448	$396,677	$385,366	$432,197	$14,274	$446,471
2038	$374,070	$406,096	$394,499	$442,169	$14,603	$456,772
2039	$382,713	$415,541	$403,657	$452,226	$14,935	$467,161
2040	$391,372	$425,006	$412,832	$462,363	$15,269	$477,632
2041	$400,042	$434,484	$422,021	$471,035	$15,555	$486,590
2042	$408,717	$443,968	$431,216	$479,729	$15,841	$495,571

Notes: Toll Rate Increased in this year
2010 CTTS Revenue includes pay-by-mail surcharge (20% of cash toll).
Actual Revenue

7.0 Sensitivity Analysis

The traffic and revenue projections provided in Section 6 utilized our baseline assumptions for the socioeconomic growth, planned network improvements, and current toll policy. An alternative toll policy was identified for subsequent testing and a sensitivity trial was performed to evaluate the impact of the alternative tolling scheme. The objective of this sensitivity trial was to assess the potential diversion of 5+ axle trucks to SH 130 if toll rates for these vehicles were reduced to the rates charged for 4 axle trucks. Note that toll rates for the remaining CTTS elements were not reduced, but toll rates for trucks on SH 45 SE were also reduced to support the overall diversion potential of this scenario.

In this scenario, 5-axle and larger trucks using SH 130 were assumed to pay the same toll rates as 4-axle trucks. Due to the limitations of the configuration-based tolling scheme implemented on SH 45 SE the tractor-trailer vehicles (currently paying $4.00) were reduced to the rate charged for single unit trucks (currently $3.00). Tables 7-1 and 7-2 compare the average weekday transactions between the base scenario and the reduced truck toll rates scenario for SH 130 elements and all CTTS elements, respectively. The scenario generated higher truck transactions and minimal changes to auto transactions than the base case, with net increase in total transactions. The increase in transactions is approximately one percent of the SH 130 transactions above the base forecast of average weekday transactions, and approximately 0.5 percent of the total CTTS's average weekday transactions.

Tables 7-3 and 7-4 summarize the annual toll revenue by fiscal year. The scenario reduces the annual toll revenue by less than one percent for SH 130 in early years (prior to 2016), and the loss gradually increases to two percent by 2026, and stays at approximately two percents beyond 2026. The percentage of revenue loss is lower at the CTTS level. The loss of revenue is at one percent or below for the years prior to 2026 and slightly higher than one percent for the years beyond 2026.

Table 7-1: Average Weekday Transaction Comparison – SH 130 Element

FISCAL YEAR	AVERAGE WEEKDAY TRANSACTIONS			
	BASE CASE	REDUCED TRUCK TOLL RATES	CHANGE IN	
			TRANSACTIONS	PERCENT CHANGE
2008	58,306	58,306	0	0.0%
2009	73,099	73,099	0	0.0%
2010	83,997	83,997	0	0.0%
2011	90,209	90,492	283	0.3%
2012	101,267	101,852	585	0.6%
2013	109,444	110,292	847	0.8%
2014	117,621	118,731	1,110	0.9%
2015	125,799	127,171	1,372	1.1%
2016	**115,312**	**116,533**	**1,221**	**1.1%**
2017	125,823	127,176	1,353	1.1%
2018	136,334	137,818	1,484	1.1%
2019	146,845	148,460	1,615	1.1%
2020	157,356	159,103	1,747	1.1%
2021	167,867	169,745	1,878	1.1%
2022	178,378	180,387	2,009	1.1%
2023	188,890	191,030	2,140	1.1%
2024	199,401	201,672	2,272	1.1%
2025	209,912	212,315	2,403	1.1%
2026	**198,757**	**200,604**	**1,847**	**0.9%**
2027	208,698	210,637	1,939	0.9%
2028	218,630	220,661	2,032	0.9%
2029	228,501	230,624	2,123	0.9%
2030	238,260	240,474	2,214	0.9%
2031	247,855	250,158	2,303	0.9%
2032	257,231	259,622	2,390	0.9%
2033	266,333	268,808	2,475	0.9%
2034	275,106	277,662	2,556	0.9%
2035	283,494	286,129	2,634	0.9%
2036	**270,899**	**273,416**	**2,517**	**0.9%**
2037	277,834	280,415	2,582	0.9%
2038	284,674	287,319	2,645	0.9%
2039	291,542	294,251	2,709	0.9%
2040	298,429	301,202	2,773	0.9%
2041	305,329	308,166	2,837	0.9%
2042	312,236	315,138	2,902	0.9%

NOTE:
In "Reduced Truck Toll Rates" Scenario, the 5-axle and larger trucks are assumed to pay 4-axle trucks' toll rates.

Table 7-2: Average Weekday Transactions – All CTTS Elements

FISCAL YEAR	AVERAGE WEEKDAY TRANSACTIONS						
	2002 REPORT	2005 UPDATE	2008 REVIEW	BASE CASE	REDUCED TRUCK TOLL RATES	CHANGE IN	
						TRANSACTIONS	PERCENT CHANGE
2008	118,360	138,492	202,269	204,133	204,133	0	0.0%
2009	169,103	182,163	220,937	224,276	224,276	0	0.0%
2010	206,917	226,221	237,493	239,343	239,343	0	0.0%
2011	244,235	265,528	256,845	252,931	253,214	283	0.1%
2012	270,361	291,858	276,433	275,508	276,093	585	0.2%
2013	286,652	308,460	294,893	296,472	297,320	847	0.3%
2014	299,981	321,743	312,989	316,168	317,278	1,110	0.4%
2015	313,309	335,026	330,670	335,845	337,217	1,372	0.4%
2016	**287,287**	**303,598**	**322,450**	**315,830**	**317,052**	**1,221**	**0.4%**
2017	300,831	307,145	340,249	332,677	334,030	1,353	0.4%
2018	314,374	318,864	359,924	349,727	351,211	1,484	0.4%
2019	327,918	333,307	380,220	366,987	368,602	1,615	0.4%
2020	341,461	347,751	397,996	384,463	386,209	1,747	0.5%
2021	366,425	361,549	415,060	402,162	404,039	1,878	0.5%
2022	389,357	376,000	432,846	420,091	422,100	2,009	0.5%
2023	412,291	398,873	451,233	438,259	440,399	2,140	0.5%
2024	435,223	420,697	469,484	456,672	458,943	2,272	0.5%
2025	458,156	441,236	487,625	475,339	477,741	2,403	0.5%
2026	**427,217**	**428,172**	**467,082**	**455,416**	**457,263**	**1,847**	**0.4%**
2027	443,203	449,074	485,245	475,316	477,255	1,939	0.4%
2028	459,181	469,976	503,408	495,600	497,632	2,032	0.4%
2029	475,108	490,879	521,571	516,232	518,356	2,123	0.4%
2030	490,938	502,381	525,258	537,179	539,393	2,214	0.4%
2031	506,627	518,068	536,045	558,404	560,708	2,303	0.4%
2032	522,129	536,840	550,644	579,872	582,263	2,390	0.4%
2033	537,396	555,062	565,597	601,544	604,019	2,475	0.4%
2034	552,380	572,597	579,962	623,387	625,943	2,556	0.4%
2035	567,034	589,313	594,602	645,363	647,997	2,634	0.4%
2036	**546,799**	**563,528**	**572,113**	**621,641**	**624,158**	**2,517**	**0.4%**
2037	559,815	577,195	585,706	632,083	634,665	2,582	0.4%
2038	572,749	590,639	599,301	642,465	645,111	2,645	0.4%
2039	585,707	604,111	612,923	652,912	655,621	2,709	0.4%
2040	598,681	617,604	626,567	663,412	666,185	2,773	0.4%
2041	611,667	631,111	640,223	673,962	676,799	2,837	0.4%
2042	624,659	644,626	653,886	684,556	687,457	2,902	0.4%

NOTE:
In "Reduced Truck Toll Rates" Scenario, the 5-axle and larger trucks are assumed to pay 4-axle trucks' toll rates.

Table 7-3: Annual Toll Revenue Comparison – SH 130 Element

FISCAL YEAR	ANNUAL TOLL REVENUE (IN 000$)			
	BASE CASE	REDUCED TRUCK TOLL RATES	CHANGE IN	
			REVENUE	PERCENT CHANGE
2008	$19,456	$19,456	$0	0.0%
2009	$27,114	$27,114	$0	0.0%
2010	$34,415	$34,415	$0	0.0%
2011	$38,095	**$37,636**	**-$459**	-1.2%
2012	$43,166	$42,575	-$591	-1.4%
2013	$47,086	$46,549	-$537	-1.1%
2014	$51,007	$50,523	-$483	-0.9%
2015	$54,927	$54,498	-$430	-0.8%
2016	**$75,457**	**$74,839**	**-$618**	**-0.8%**
2017	$83,370	$82,567	-$803	-1.0%
2018	$91,282	$90,295	-$987	-1.1%
2019	$99,195	$98,023	-$1,172	-1.2%
2020	$107,107	$105,751	-$1,356	-1.3%
2021	$115,020	$113,479	-$1,541	-1.3%
2022	$122,933	$121,207	-$1,725	-1.4%
2023	$130,845	$128,935	-$1,910	-1.5%
2024	$138,758	$136,664	-$2,094	-1.5%
2025	$146,671	$144,392	-$2,279	-1.6%
2026	**$184,921**	**$181,213**	**-$3,708**	**-2.0%**
2027	$194,183	$190,289	-$3,894	-2.0%
2028	$203,433	$199,353	-$4,080	-2.0%
2029	$212,627	$208,363	-$4,264	-2.0%
2030	$221,718	$217,272	-$4,446	-2.0%
2031	$230,655	$226,029	-$4,626	-2.0%
2032	$239,388	$234,587	-$4,801	-2.0%
2033	$247,865	$242,894	-$4,971	-2.0%
2034	$256,034	$250,899	-$5,135	-2.0%
2035	$264,320	$259,019	-$5,301	-2.0%
2036	**$289,257**	**$283,456**	**-$5,801**	**-2.0%**
2037	$296,662	$290,712	-$5,949	-2.0%
2038	$303,967	$297,871	-$6,096	-2.0%
2039	$311,300	$305,057	-$6,243	-2.0%
2040	$318,653	$312,263	-$6,390	-2.0%
2041	$326,022	$319,484	-$6,538	-2.0%
2042	$333,397	$326,711	-$6,686	-2.0%

NOTE:
In "Reduced Truck Toll Rates" Scenario, the 5-axle and larger trucks are assumed to pay 4-axle trucks' toll rates.
All Revenues include video surcharge revenue

Table 7-4: Annual Toll Revenue Comparison – All CTTS Elements

FISCAL YEAR	ANNUAL TOLL REVENUE (IN 000$)						
	2002 REPORT	2005 UPDATE	2008 REVIEW	BASE CASE	REDUCED TRUCK TOLL RATES	CHANGE IN REVENUE	CHANGE IN PERCENT CHANGE
2008	34,996	40,019	48,905	$48,875	$48,875	$0	0.0%
2009	49,654	53,322	57,882	$58,907	$58,907	$0	0.0%
2010	59,693	66,764	63,629	$66,151	$66,151	$0	0.0%
2011	72,167	79,021	69,572	$70,525	$70,065	-$459	-0.7%
2012	80,209	87,259	75,374	$77,690	$77,099	-$591	-0.8%
2013	85,791	93,388	80,988	$84,250	$83,713	-$537	-0.6%
2014	90,060	98,221	86,535	$90,619	$90,135	-$483	-0.5%
2015	94,330	103,055	91,993	$97,016	$96,587	-$430	-0.4%
2016	**117,342**	**126,359**	**122,393**	**$129,281**	**$128,663**	**-$618**	**-0.5%**
2017	124,053	127,907	131,973	$138,901	$138,098	-$803	-0.6%
2018	130,764	133,734	141,765	$148,576	$147,589	-$987	-0.7%
2019	137,476	140,987	151,609	$158,309	$157,137	-$1,172	-0.7%
2020	144,187	148,240	160,053	$168,100	$166,744	-$1,356	-0.8%
2021	154,764	155,304	168,286	$177,953	$176,413	-$1,541	-0.9%
2022	164,852	162,560	176,734	$187,870	$186,144	-$1,725	-0.9%
2023	174,940	176,702	187,636	$197,851	$195,941	-$1,910	-1.0%
2024	185,028	188,809	196,912	$207,900	$205,806	-$2,094	-1.0%
2025	195,115	199,473	205,376	$218,019	$215,740	-$2,279	-1.0%
2026	**232,938**	**243,320**	**251,597**	**$272,816**	**$269,107**	**-$3,708**	**-1.4%**
2027	242,654	256,823	262,641	$285,478	$281,584	-$3,894	-1.4%
2028	252,361	270,325	273,685	$298,264	$294,184	-$4,080	-1.4%
2029	262,025	283,827	284,730	$311,134	$306,870	-$4,264	-1.4%
2030	271,611	287,308	284,251	$324,045	$319,599	-$4,446	-1.4%
2031	281,080	295,710	289,272	$336,954	$332,329	-$4,626	-1.4%
2032	290,393	307,011	297,786	$349,817	$345,016	-$4,801	-1.4%
2033	299,512	317,946	306,261	$362,586	$357,616	-$4,971	-1.4%
2034	308,397	328,428	314,670	$375,218	$370,084	-$5,135	-1.4%
2035	317,370	338,374	322,987	$388,145	$382,844	-$5,301	-1.4%
2036	**356,750**	**387,085**	**376,212**	**$436,128**	**$430,327**	**-$5,801**	**-1.3%**
2037	365,448	396,677	385,366	$446,471	$440,521	-$5,949	-1.3%
2038	374,070	406,096	394,499	$456,772	$450,676	-$6,096	-1.3%
2039	382,713	415,541	403,657	$467,161	$460,918	-$6,243	-1.3%
2040	391,372	425,006	412,832	$477,632	$471,242	-$6,390	-1.3%
2041	400,042	434,484	422,021	$486,590	$480,052	-$6,538	-1.3%
2042	408,717	443,968	431,216	$495,571	$488,885	-$6,686	-1.3%

NOTE:
In "Reduced Truck Toll Rates" Scenario, the 5-axle and larger trucks are assumed to pay 4-axle trucks' toll rates.

8.0 Disclaimer

It is Stantec's opinion that the revenue projections are reasonable and that they have been prepared in accordance with accepted practice for investment-grade studies. However, given the uncertainties within the current international and economic climate, Stantec considers it is necessary to state that the traffic and revenue projections are based on the following caveats:

1. This report presents the results of Stantec's consideration of the information available to us as of the date hereof and the application of Stantec's experience and professional judgment to that information. It is not a guarantee of any future events or trends.

2. The traffic and revenue forecasts will be subject to future economic and social conditions and demographic developments that cannot be predicted with certainty.

3. The projections contained in this report, while presented with numerical specificity, are based on a number of estimates and assumptions which, though considered reasonable to us, are inherently subject to significant economic and competitive uncertainties and contingencies, many of which will be beyond Stantec's control and that of TxDOT. In many instances, a broad range of alternative assumptions could be considered reasonable. Changes in the assumptions used could result in material differences in projected outcomes.

4. If, for any reason, any of these conditions should change due to changes in the economy or competitive environment, or other factors, the consultant team's opinions or estimates may require amendment or further adjustments.

5. Stantec's toll revenue projections only represent its best judgment and Stantec does not warrant or represent that actual toll revenues will not vary from its projections, estimates and forecasts.

Many statements contained in this report that are not historical facts are forward-looking statements, which are based on Stantec's beliefs, as well as assumptions made by, and information currently available to, the management and staff of Stantec. Because the statements are based on expectations about future events and economic performance and are not statements of fact, actual results may differ materially from those projected. The words "anticipate", "assume", "estimate", "expect", "objective", "projection", "plan", "forecast", "goal", "budget", or similar words are intended to identify forward-looking statements. The words or phrases "to date", "now", "currently", and the like are intended to mean as of the date of this official statement.

Stantec shall have the right to review, and to require any changes it believes to be appropriate be made to any official statement, prospectus, private placement memorandum or other document used in connection with any such financing that refers to Stantec, its reports, opinions or other documents, or the Services. TxDOT shall provide copies of any such materials to Stantec for review by Stantec and its legal counsel at a reasonable time prior to the use of any such materials. Stantec shall have the right to retain copies of all such materials.

Appendix A
Detailed Travel Time Runs

				AM		PM		OP	
			DIST (mile)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)
IH 35 NB	US 29	SH 130	4.2	3.6	72	3.7	69	3.5	74
	INNER LOOP	US 29	1.8	1.6	67	1.5	70	1.5	72
	UNIVERSITY BLVD	INNER LOOP	3.5	2.9	72	3.1	68	3.0	70
	US 79	UNIVERSITY BLVD	2.9	2.5	68	2.6	65	2.6	66
	SH 45 SE	US 79	2.7	2.3	69	5.5	29	2.4	69
	WELLS BRANCH PKWY	SH 45 SE	2.8	2.6	66	4.1	41	2.5	69
	FM 734	WELLS BRANCH PKWY	2.3	2.0	69	2.5	54	2.0	70
	EAST BRAKER	FM 734	2.2	2.0	67	4.6	29	2.0	66
	EAST RUNBERG	EAST BRAKER	1.5	1.5	60	1.7	52	1.4	66
	US 183	EAST RUNDBERG	1.5	1.3	68	1.4	64	1.4	65
	US 290 E	US 183	1.3	1.2	65	1.7	45	1.1	68
	AIRPORT BLVD	US 290 E	1.5	1.6	58	2.3	40	1.5	60
	MLK BLVD	AIRPORT BLVD	1.8	2.0	56	3.8	29	1.9	59
	IH 35 NB - TOTAL		**30.0**	**26.9**	**66.8**	**38.6**	**46.6**	**26.6**	**67.7**
IH 35 NB	EAST RIVERSIDE	MLK BLVD	2.2	3.5	37	8.8	15	2.8	47
	US 71	EAST RIVERSIDE	2.4	9.6	15	4.5	32	4.6	32
	WILLIAM CANNON	US 71	2.1	6.5	20	1.9	69	2.2	57
	SLAUGHTER LN	WILLIAM CANNON	1.9	6.4	17	1.6	69	1.6	69
	SH 45 N	SLAUGHTER LN	4.0	12.0	20	3.3	73	3.3	72
	FM 2001	SH 45 N	2.5	2.1	72	2.1	71	2.0	74
	FM 1626	FM 2001	5.1	4.2	74	4.2	72	4.2	73
	CENTER STREET	FM 1626	1.9	1.5	75	1.5	72	1.5	74
	YARRINGTON	CENTER STREET	2.9	2.4	71	2.5	71	2.4	73
	SH 80	YARRINGTON	5.1	4.4	70	4.4	70	4.3	71
	IH 35 NB - TOTAL		**30.1**	**52.5**	**34.4**	**34.8**	**51.9**	**29.0**	**62.3**
Loop 1 NB	US 290	SH 360	1.6	3.3	28	1.5	64	1.4	66
	SH 360	FM 2244(BEE CAVE)	1.9	3.9	29	2.5	46	1.8	65
	FM 2244(BEE CAVE)	ENFIELD ROAD(15TH)	1.8	2.2	50	5.2	21	1.7	63
	ENFIELD ROAD(15TH)	W 35TH ST	1.7	1.5	68	8.3	12	1.7	60
	W 35TH ST	RM 2222(NORTHLAND)	1.9	1.7	67	4.7	24	2.0	56
	FM 2222(NORTHLAND)	W ANDERSON LN	1.8	1.6	66	2.2	50	1.8	61
	W ANDERSON LN	US 183	1.4	1.2	72	1.3	65	1.4	62
	US 183	FM 734(W PARMER LN)	3.7	3.3	68	3.4	66	3.4	65
	FM 734(W PARMER LN)	W HOWARD(WELLS BRANCH)	1.4	1.2	70	1.2	69	1.4	60
	W HOWARD(WELLS BRANCH)	SH 45 N	2.7	2.2	73	2.5	63	2.3	69
	Loop 1 NB - TOTAL		**19.9**	**22.0**	**54.1**	**32.7**	**36.4**	**18.9**	**63.0**
SH 130 NB	FM 971	IH 35	1.7	1.4	72	1.4	74	1.5	68
	SH 29	FM 971	1.8	1.5	74	1.5	71	1.5	71
	UNIVERSITY BLVD	SH 29	4.5	3.6	74	3.6	74	3.7	72
	US 79	UNIVERSITY BLVD	3.8	3.2	72	3.1	73	3.2	71
	GATTIS SCHOOL RD	US 79	2.7	2.1	77	2.2	74	2.3	71
	SH 45 N	GATTIS SCHOOL RD	2.0	1.7	70	1.7	72	1.7	69
	CAMERON	SH 45 N	4.8	3.9	74	3.9	74	4.0	73
	US 290	CAMERON	4.7	4.0	70	4.0	70	4.0	70
	FM 973	US 290	4.1	3.2	76	3.3	74	3.4	72
	FM 969	FM 973	3.0	2.4	76	2.6	71	2.5	72
	US 71	FM 969	4.3	3.6	71	3.8	69	3.7	69
	FM 812	US 71	4.6	3.6	76	3.8	73	3.8	73
	US 183	FM 812	4.9	4.1	71	4.2	71	4.2	71
	SH 130 NB - TOTAL		**46.9**	**38.4**	**73.3**	**39.0**	**72.1**	**39.6**	**71.1**
SH 45 EB	US 183	FM 734	2.0	1.9	64	1.8	68	1.6	75
	FM 734	LOOP 1	3.7	3.4	65	3.3	67	3.2	69
	LOOP 1	IH 35	1.9	1.6	70	1.7	69	1.5	75
	IH 35	A.W. GRIMES BLVD	1.5	1.3	65	1.1	78	1.2	72
	A.W. GRIMES BLVD	HEATHERWILDE BLVD	2.3	2.1	66	2.1	65	2.0	68
	HEATHERWILDE BLVD	SH 130	1.5	1.4	66	1.3	68	1.3	72
	SH 45 EB - TOTAL		**12.8**	**11.7**	**66.0**	**11.3**	**68.2**	**10.8**	**71.2**

				AM		PM		OP	
			DIST (mile)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)
IH 35 SB	SH 130	SH 29	4.2	3.8	67	3.7	67	3.5	71
	SH 29	INNER LOOP	1.8	1.6	67	1.6	69	1.6	66
	INNER LOOP	UNIVERSITY BLVD	3.5	3.1	68	3.1	68	2.9	73
	UNIVERSITY BLVD	US 79	2.9	6.4	27	2.6	67	2.7	64
	US 79	SH 45 SE	2.7	4.7	35	2.5	66	2.2	73
	SH 45 SE	WELLS BRANCH PKWY	2.8	5.5	31	2.5	68	2.1	80
	WELLS BRANCH PKWY	FM 734	2.3	4.8	29	2.1	64	2.2	61
	FM 734	EAST BRAKER	2.2	3.8	35	2.0	67	2.0	68
	EAST BRAKER	EAST RUNDBERG	1.5	4.0	22	1.3	66	1.3	70
	EAST RUNDBERG	US 183	1.5	4.4	20	1.5	61	1.4	67
	US 183	US 290	1.3	4.5	17	1.2	61	1.2	65
	US 290	AIRPORT BLVD	1.5	4.1	22	3.5	25	1.7	52
	AIRPORT BLVD	MLK BLVD	1.8	2.5	44	13.1	8	1.6	68
	IH 35 SB - TOTAL		**29.9**	**53.1**	**33.8**	**40.8**	**43.9**	**26.3**	**68.1**
IH 35 SB	MLK BLVD	EAST RIVERSIDE	2.2	2.3	57	10.5	12	2.3	56
	EAST RIVERSIDE	US 71	2.4	2.5	58	4.4	33	2.3	64
	US 71	WILLIAM CANNON	2.1	1.9	69	3.7	34	2.0	65
	WILLIAM CANNON	SLAUGHTER LN	1.9	1.7	64	2.7	42	1.6	69
	SLAUGHTER LN	SH 45 N	4.0	3.8	64	3.7	66	3.4	71
	SH 45 N	FM 2001	2.5	2.1	71	2.2	67	2.0	72
	FM 2001	FM1626	5.1	4.3	72	4.5	69	4.2	73
	FM 1626	CENTER STREET	1.9	1.6	69	1.7	67	1.6	71
	CENTER STREET	YARRINGTON	2.9	2.4	74	2.4	72	2.4	73
	YARRINGTON	SH 80	5.1	4.2	73	4.6	68	4.2	74
	IH 35 SB - TOTAL		**30.1**	**26.8**	**67.5**	**40.3**	**44.8**	**25.9**	**69.7**
Loop 1 SB	SH 360	US 290	1.6	1.4	68	1.7	54	1.6	57
	FM 2244(BEE CAVE)	SH 360	1.9	1.7	69	3.6	32	1.9	61
	ENFIELD ROAD(15TH)	FM 2244(BEE CAVE)	1.8	1.6	68	6.2	18	1.7	64
	W 35TH ST	ENFIELD ROAD(15TH)	1.7	1.6	65	5.8	18	1.5	66
	RM 2222(NORTHLAND)	W 35TH ST	1.9	2.6	45	4.6	25	1.8	62
	W ANDERSON LN	RM 2222(NORTHLAND)	1.8	6.5	17	2.0	53	1.4	76
	US 183	W ANDERSON LN	1.4	6.0	14	1.3	64	1.5	56
	FM 734(W PARMER LN)	US 183	3.7	9.3	24	3.4	65	3.4	66
	W HOWARD(WELLS BRANCH)	FM 734(W PARMER LN)	1.4	2.1	41	1.1	73	1.2	73
	SH 45 N	W HOWARD(WELLS BRANCH)	2.7	2.3	69	2.5	65	2.3	69
	Loop 1 SB - TOTAL		**19.9**	**34.9**	**34.1**	**32.2**	**37.0**	**18.3**	**65.0**
SH 130 SB	IH 35	FM 971	1.7	1.4	72	1.4	71	1.5	67
	FM 971	SH 29	1.8	1.5	71	1.6	66	1.6	68
	SH 29	UNIVERSITY BLVD	4.5	3.7	73	3.7	72	3.8	70
	UNIVERSITY BLVD	US 79	3.8	3.3	70	3.3	70	3.3	70
	US 79	GATTIS SCHOOL RD	2.7	2.3	71	2.3	71	2.3	70
	GATTIS SCHOOL RD	TEXAS 45 TOLL	2.0	1.8	68	1.7	71	1.7	71
	TEXAS 45 TOLL	CAMERON	4.8	4.0	72	3.9	73	4.1	70
	CAMERON	US 290	4.7	3.9	72	3.9	72	4.1	70
	US 290	FM 973	4.1	3.2	76	3.4	72	3.4	72
	FM 973	FM 969	3.0	2.5	73	2.4	74	2.5	73
	FM 969	US 71	4.3	3.5	74	3.7	71	3.6	71
	US 71	FM 812	4.6	3.8	73	3.7	74	3.8	73
	FM 812	US 183	4.9	4.0	73	4.1	72	4.0	73
	SH 130 SB - TOTAL		**46.9**	**38.9**	**72.4**	**39.2**	**71.8**	**39.7**	**70.9**
SH 45 WB	FM 734	US 183	2.0	1.8	65	1.9	64	1.6	75
	LOOP 1	FM 734	3.7	3.3	66	3.5	64	3.2	70
	IH 35	LOOP 1	1.9	1.5	77	1.6	70	1.4	81
	A.W. GRIMES BLVD	IH 35	1.5	1.3	67	1.3	66	1.2	73
	HEATHERWILDE BLVD	A.W. GRIMES BLVD	2.3	2.0	68	2.1	66	1.9	73
	SH 130	HEATHERWILDE BLVD	1.5	1.4	64	1.2	74	1.2	78
	SH 45 WB - TOTAL		**12.8**	**11.4**	**67.6**	**11.6**	**66.2**	**10.4**	**74.1**

				AM		PM		OP	
			DIST (mile)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)
US 183 NB	ANDERSON MILL RD	SH 45 N	1.4	1.2	69	1.3	67	1.3	66
	McNEIL DR	ANDERSON MILL RD	1.6	1.4	68	1.5	63	1.5	66
	DUVAL RD	McNEIL DR	1.8	1.8	60	2.1	51	1.7	63
	LOOP 360	DUVAL RD	2.1	1.7	72	5.2	24	1.9	65
	LOOP 1	LOOP 360	0.8	0.8	66	2.1	24	0.8	64
	BURNET RD	LOOP 1	0.8	0.7	69	0.8	59	0.7	69
	SH 275	BURNET RD	2.1	1.9	64	2.3	55	1.9	66
	IH 35	SH 275	1.0	0.9	64	0.9	61	0.9	62
	CAMERON RD	IH 35	0.9	0.8	66	0.9	64	0.9	64
	US 290	CAMERON RD	0.9	0.8	67	0.9	62	0.9	63
	MANOR RD	US 290	0.9	0.9	64	0.8	64	0.9	64
	US 183 NB - TOTAL		**14.3**	**13.1**	**65.9**	**18.9**	**45.5**	**13.3**	**64.6**
US 183 NB	LOYOLA LN	MANOR RD	0.9	1.1	52	1.1	51	1.1	51
	51 ST	LOYOLA LN	0.7	3.4	13	2.6	17	1.6	27
	FM 969	51 ST	0.5	1.1	25	0.8	36	0.6	48
	BOLM RD	FM 969	2.4	2.8	51	2.7	53	2.6	56
	LEVANDER LOOP	BOLM RD	0.8	1.0	51	0.9	57	1.1	46
	VARGAS RD	LEVANDER LOOP	0.5	1.0	31	0.9	36	0.6	49
	US 71	VARGAS RD	1.3	3.5	22	2.1	37	1.8	44
	McKINNEY FALLS PKWY	US 71	1.6	2.5	39	1.8	55	1.7	58
	BURLESON RD	McKINNEY FALLS PKWY	1.1	1.9	35	1.4	48	1.2	53
	FM 812	BURLESON RD	1.3	1.9	42	2.3	35	1.5	52
	FM 973	FM 812	3.4	3.7	55	3.5	58	3.6	57
	FM 1327	FM 973	1.5	1.7	55	1.5	59	1.5	59
	SH 130	FM 1327	0.8	1.3	38	0.9	57	1.1	48
	US 183 NB - TOTAL		**17.1**	**27.0**	**38.0**	**22.4**	**45.6**	**20.1**	**51.0**
SH 21 NB	US 80	FM 1966	5.3	5.9	54	5.6	56	5.4	59
	FM 1966	FM 2720	3.0	3.0	59	2.9	62	2.8	62
	FM 2720	CR 129	1.0	1.0	58	1.0	58	1.0	57
	CR 129	FM 2001	3.6	3.6	61	3.5	62	3.6	61
	FM 2001	US 183	4.2	4.5	55	4.5	56	4.2	59
	SH 21 NB - TOTAL		**17.0**	**18.0**	**56.7**	**17.5**	**58.3**	**17.0**	**60.0**
SH 360 NB	LP 1 NB FRTG	LP 1 SB FRTG	0.3	0.6	28	0.5	35	0.4	43
	LP 1 SB FRTG	WALSH TARLTON	0.6	1.2	28	0.8	46	0.7	50
	WALSH TARLTON	SCOTTISH WOODS-WESTBANK	1.5	4.1	22	1.6	56	2.1	42
	SCOTTISH WOODS-WESTBANK	LOST CREEK	0.5	0.9	33	0.6	49	1.3	25
	LOST CREEK	RM 2244-BEE CAVE	0.9	1.0	52	1.4	39	1.1	47
	RM 2244-BEE CAVE	WESTLAKE	3.3	4.6	43	7.4	27	3.5	55
	WESTLAKE	FM 2222	1.9	2.0	58	5.3	21	2.2	53
	FM 2222	LAKEWOOD	1.0	1.4	42	3.9	15	1.2	48
	LAKEWOOD	SPICEWOOD SPRINGS	1.1	1.3	52	5.7	12	1.4	50
	SPICEWOOD SPR	SPICEWOODS SPR-BLUFFS	0.3	1.0	19	1.4	14	0.7	28
	SPICEWOODS SPR-BLUFFS	GREAT HILLS TRL	0.5	0.9	32	0.7	43	0.7	41
	GREAT HILLS TRL	US 183	0.9	2.1	26	3.2	17	1.3	42
	SH 360 NB - TOTAL		**12.7**	**21.1**	**36.1**	**32.3**	**23.6**	**16.5**	**46.2**

				AM		PM		OP	
			DIST (mile)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)
US 183 SB	SH 45 N	ANDERSON MILL RD	1.4	3.1	27	1.2	70	1.3	68
	ANDERSON MILL RD	McNEIL DR	1.6	6.1	16	1.4	70	1.4	67
	McNEIL DR	DUVAL RD	1.8	4.3	25	1.6	65	1.6	67
	DUVAL RD	LOOP 360	2.1	2.5	49	2.0	64	1.9	64
	LOOP 360	LOOP 1	0.8	0.9	56	0.7	67	0.7	70
	LOOP 1	BURNET RD	0.8	1.0	49	0.8	65	0.7	66
	BURNET RD	SH 275	2.1	3.0	41	1.9	64	1.8	67
	SH 275	IH 35	1.0	1.3	44	0.9	63	0.9	68
	IH 35	CAMERON RD	0.9	0.9	60	0.8	70	0.8	70
	CAMERON RD	US 290	0.9	0.9	64	0.8	69	0.8	68
	US 290	MANOR RD	0.9	0.9	62	0.9	61	0.8	65
	US 183 SB - TOTAL		**14.3**	**24.9**	**34.5**	**13.1**	**65.8**	**12.9**	**66.9**
US 183 SB	MANOR RD	LOYOLA LN	0.9	2.2	25	2.6	21	1.3	44
	LOYOLA LN	51 ST	0.7	0.9	49	1.5	30	1.0	44
	51 ST	FM 969	0.5	0.5	55	0.5	53	0.7	42
	FM 969	BOLM RD	2.4	3.2	45	3.0	49	2.6	56
	BOLM RD	LEVANDER LOOP	0.8	0.9	55	0.7	73	1.1	48
	LEVANDER LOOP	VARGAS RD	0.5	1.1	28	2.7	12	0.6	51
	VARGAS RD	US 71	1.3	1.5	50	1.9	42	1.6	50
	US 71	McKINNEY FALLS PKWY	1.6	1.8	54	2.2	44	1.9	52
	McKINNEY FALLS PKWY	BURLESON RD	1.1	2.1	31	2.5	26	1.6	40
	BURLESON RD	FM 812	1.3	2.3	35	2.9	28	1.9	42
	FM 812	FM 973	3.4	3.5	59	3.5	58	3.4	60
	FM 973	FM 1327	1.5	1.6	57	1.9	47	1.6	56
	FM 1327	SH 130	0.8	1.4	37	1.8	29	1.2	42
	US 183 SB - TOTAL		**17.1**	**23.0**	**44.5**	**27.6**	**37.1**	**20.4**	**50.1**
SH 21 SB	FM 1966	US 80	5.3	5.4	58	5.4	59	5.5	57
	FM 2720	FM 1966	3.0	2.8	63	3.0	60	2.9	62
	CR 129	FM 2720	1.0	1.0	58	1.1	51	1.1	55
	FM 2001	CR 129	3.6	3.4	63	3.5	61	3.4	64
	US 183	FM 2001	4.2	4.4	57	4.7	54	4.0	63
	SH 21 SB (S6) - TOTAL		**17.0**	**17.1**	**59.6**	**17.7**	**57.6**	**16.8**	**60.6**
SH 360 SB	LP 1 SB FRTG	LP 1 NB FRTG	0.3	0.5	34	0.3	51	0.4	45
	WALSH TARLTON	LP 1 SB FRTG	0.6	1.1	31	1.9	19	1.5	24
	SCOTTISH WOODS-WESTBANK	WALSH TARLTON	1.5	1.5	58	2.4	37	1.6	57
	LOST CREEK	SCOTTISH WOODS-WESTBANK	0.5	0.6	54	0.7	45	0.6	51
	RM 2244-BEE CAVE	LOST CREEK	0.9	2.1	25	1.6	34	1.7	30
	WESTLAKE	RM 2244-BEE CAVE	3.3	3.4	57	3.5	57	3.7	53
	FM 2222	WESTLAKE	1.9	7.6	15	3.6	31	3.0	38
	LAKEWOOD	FM 2222	1.0	1.0	57	1.0	56	1.0	57
	SPICEWOOD SPRINGS	LAKEWOOD	1.1	1.3	52	3.1	23	1.2	59
	SPICEWOODS SPR-BLUFFS	SPICEWOOD SPR	0.3	0.4	48	0.6	30	0.4	52
	GREAT HILLS TRL	SPICEWOODS SPR-BLUFFS	0.5	2.3	13	1.6	18	0.7	43
	US 183	GREAT HILLS TRL	0.9	3.9	14	2.0	26	1.2	46
	SH 360 SB - TOTAL		**12.7**	**25.8**	**29.5**	**22.3**	**34.2**	**16.8**	**45.4**

				AM		PM		OP	
			DIST (mile)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)
US 183 NB	IH 10	US 90-PIERCE	3.9	4.7	49	4.8	49	4.7	50
	US 90-PIERCE	AUSTIN ST-CR122	0.2	0.5	23	0.5	22	0.7	17
	AUSTIN ST-CR 122	FM 86	0.8	0.9	52	1.1	43	1.0	46
	FM 86	CR 114-TULIP TRAIL	6.3	5.9	64	5.9	64	6.1	63
	CR 114-TULIP TRAIL	FM 671	2.0	1.6	73	1.8	66	1.8	66
	FM 671	FM 20(BLACK JACK)	4.2	5.3	48	5.3	48	5.2	49
	FM 20(BLACK JACK)	FM 20(STATE PARK)	0.1	0.2	29	0.3	26	0.2	26
	FM 20(STATE PARK)	PRAIRIE LEA	0.8	1.5	30	1.4	34	1.3	35
	PRAIRIE LEA	SH 142	0.1	0.4	17	0.3	23	0.2	32
	SH 142	FM 672	0.5	0.9	33	0.8	40	0.8	36
	FM 672	FM 2001	0.5	0.7	45	0.7	45	0.7	44
	FM 2001	FM 1185	3.8	3.9	58	4.0	56	3.9	58
	FM 1185	SH 21	5.4	5.3	60	5.3	61	5.4	60
	SH 21	SH 130 EB FRTG	3.7	4.1	54	4.7	47	4.1	54
	SH 130 EB FRTG	SH 130 WB FRTG	0.1	0.1	43	0.2	32	0.2	27
	US 183 NB - TOTAL		**32.3**	**36.1**	**53.6**	**36.9**	**52.5**	**36.3**	**53.5**
US 79 EB	IH 35	MAYS ST	0.3	0.8	23	0.9	21	1.1	17
	MAYS ST	GEORGETOWN ST	0.7	1.6	28	1.4	31	1.6	27
	GEORGETOWN ST	SUNRISE ROAD	0.2	0.3	32	0.3	36	0.3	35
	SUNRISE ROAD	A W GRIMES BLVD	0.7	1.2	36	1.8	25	1.0	43
	A W GRIMES BLVD	RED BUDD LN	2.6	3.4	46	3.9	40	4.0	40
	RED BUDD LN	SH 130	2.4	3.1	45	2.9	48	2.5	57
	US 79 EB - TOTAL		**6.9**	**10.5**	**39.7**	**11.2**	**37.2**	**10.5**	**39.6**
FM 973 NB	US 183	FM 812	2.5	3.4	43	3.2	47	3.0	50
	FM 812	BURLESON-ELROY	1.8	2.1	49	2.8	37	2.5	41
	BURLESON-ELROY	PEARCE LN	1.2	1.5	48	1.7	42	1.7	43
	PEARCE LN	SH 71 SOUTH	1.7	4.6	23	3.7	29	3.0	35
	SH 71 SOUTH	SH 71 NORTH	0.1	0.5	15	0.4	20	0.4	18
	SH 71 NORTH	FM 969	4.2	6.1	41	5.7	44	5.2	48
	FM 969	DECKER LAKE	1.5	1.3	69	1.5	58	1.6	55
	DECKER LAKE	SH 130 SB FRTG	1.9	2.2	50	1.8	62	1.9	60
	SH 130 SB FRTG	SH 130 NB FRTG	0.1	0.2	34	0.1	54	0.1	54
	SH 130 NB FRTG	PARSONS	3.9	4.4	54	4.9	48	4.5	52
	PARSONS	US 290	0.7	2.4	17	3.4	12	3.2	12
	FM 973 NB - TOTAL		**19.5**	**28.7**	**40.8**	**29.1**	**40.2**	**27.2**	**43.1**
IH 10 EB	LOOP 410	FOSTER RD	1.9	1.7	65	1.8	61	1.8	64
	FOSTER RD	FM 1516	2.8	2.3	72	2.3	72	2.4	69
	FM 1516	LOOP 1604	1.6	1.3	72	1.3	72	1.4	68
	LOOP 1604	FM 1518	4.4	3.8	70	3.7	71	3.8	70
	FM 1518	FM 2538	1.8	1.5	71	1.5	74	1.6	70
	FM 2538	CR 315-SANTA CLARA	3.7	3.1	72	3.0	74	3.2	71
	CR 315-SANTA CLARA	FM 775	4.3	3.6	72	3.5	74	3.6	72
	FM 775	FM 725	2.9	2.4	72	2.3	74	2.4	72
	FM 725	SH 46	2.9	2.4	72	2.3	74	2.4	71
	SH 46	SH 123	2.9	2.4	72	2.3	77	2.4	73
	IH 10 EB - TOTAL		**29.1**	**24.5**	**71.3**	**24.1**	**72.5**	**24.8**	**70.4**
IH 35 NB	LOOP 82	SH 80	1.4	1.2	71	1.1	74	1.3	66
	FM 1102	LOOP 82	7.2	6.0	72	5.8	75	6.3	70
	FM 306	FM 1102	5.6	4.5	75	4.7	72	4.7	72
	SH 46	FM 306	2.3	1.9	71	1.9	71	1.9	71
	FM 725	SH 46	1.1	1.0	72	1.1	65	1.0	67
	LOOP 337 S	FM 725	3.0	2.4	75	2.4	75	2.5	73
	FM 1103	LOOP 337 S	6.1	5.0	75	5.0	73	5.2	71
	FM 3009	FM 1103	2.9	2.3	74	2.3	75	2.5	69
	LOOP 1604	FM 3009	4.1	3.4	71	4.2	58	3.6	69
	IH 35 NB - TOTAL		**33.7**	**27.7**	**73.1**	**28.5**	**71.1**	**28.8**	**70.2**

				AM		PM		OP	
			DIST (mile)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)
US 183 SB	US 90-PIERCE	IH 10	3.9	5.0	47	5.2	45	5.4	43
	AUSTIN-CR 122	US 90-PIERCE	0.2	1.2	10	1.2	9	0.4	26
	FM 86	AUSTIN-CR 122	0.8	1.0	47	1.1	43	1.0	45
	CR 114-TULIP TRAIL	FM 86	6.3	6.2	61	6.1	62	6.0	64
	FM 671	CR 114-TULIP TRAIL	2.0	1.9	61	1.9	62	1.9	63
	FM 20(BLACK JACK)	FM 671	4.2	4.8	53	4.7	55	4.9	52
	FM 20(STATE PARK)	FM 20(BLACK JACK)	0.1	0.2	32	0.3	23	0.2	27
	PRAIRIE LEA	FM 20(STATE PARK)	0.8	1.7	27	1.5	31	2.4	19
	SH 142	PRAIRIE LEA	0.1	0.4	17	0.4	18	0.2	30
	FM 672	SH 142	0.5	0.8	38	1.0	30	0.8	38
	FM 2001	FM 672	0.5	0.7	42	0.8	37	0.7	46
	FM 1185	FM 2001	3.8	4.0	57	4.0	57	4.0	57
	SH 21	FM 1185	5.4	5.5	59	5.6	57	5.5	58
	SH 130 EB FRTG	SH 21	3.7	3.9	57	4.2	52	4.0	55
	SH 130 WB FRTG	SH 130 EB FRTG	0.1	0.1	41	0.2	33	0.1	39
	US 183 SB - TOTAL		**32.3**	**37.6**	**51.6**	**38.2**	**50.7**	**37.6**	**51.6**
US 79 WB	MAYS ST	IH 35	0.3	1.7	11	1.3	14	1.2	16
	GEORGETOWN ST	MAYS ST	0.7	2.3	19	2.0	22	1.8	24
	SUNRISE ROAD	GEORGETOWN ST	0.2	0.3	35	0.3	33	0.3	32
	A W GRIMES BLVD	SUNRISE ROAD	0.7	1.3	34	1.1	42	1.3	35
	RED BUDD LN	A W GRIMES BLVD	2.6	4.1	38	4.7	34	4.4	36
	SH 130	RED BUDD LN	2.4	3.8	37	4.2	34	3.6	39
	US 79 WB - TOTAL		**6.9**	**13.6**	**30.6**	**13.6**	**30.6**	**12.6**	**33.1**
FM 973 SB	FM 812	US 183	2.5	4.4	34	3.6	41	3.5	43
	BURLESON-ELROY	FM 812	1.8	2.1	50	2.0	53	2.4	44
	PEARCE LN	BURLESON-ELROY	1.2	1.7	42	1.8	41	2.2	33
	SH 71 SOUTH	PEARCE LN	1.7	2.3	46	2.5	41	2.2	47
	SH 71 NORTH	SH 71 SOUTH	0.1	0.3	26	0.3	26	0.3	22
	FM 969	SH 71 NORTH	4.2	5.0	51	5.5	46	6.5	39
	DECKER LAKE	FM 969	1.5	2.5	35	2.5	36	2.0	46
	SH 130 SB FRTG	DECKER LAKE	1.9	1.9	58	2.0	55	2.0	56
	SH 130 NB FRTG	SH 130 SB FRTG	0.1	0.1	61	0.1	54	0.1	61
	PARSONS	SH 130 NB FRTG	3.9	4.4	53	4.7	50	4.0	58
	US 290	PARSONS	0.7	2.2	18	2.6	15	1.4	28
	FM 973 SB - TOTAL		**19.5**	**26.9**	**43.6**	**27.6**	**42.5**	**26.6**	**44.0**
IH 10 WB	FOSTER RD	LOOP 410	1.9	2.7	41	1.5	73	1.6	72
	FM 1516	FOSTER RD	2.8	2.5	68	2.4	70	2.3	72
	LOOP 1604	FM 1516	1.6	1.6	59	1.4	70	1.3	70
	FM 1518	LOOP 1604	4.4	3.7	72	3.6	73	3.6	74
	FM 2538	FM 1518	1.8	1.5	74	1.5	71	1.5	72
	CR 315-SANTA CLARA	FM 2538	3.7	3.0	74	3.0	74	3.1	73
	FM 775	CR 315-SANTA CLARA	4.3	3.8	67	3.8	67	3.7	70
	FM 725	FM 775	2.9	2.3	73	2.4	72	2.4	72
	SH 46	FM 725	2.9	2.4	72	2.4	72	2.4	72
	SH 123	SH 46	2.9	2.4	71	2.5	69	2.4	71
	IH 10 WB - TOTAL		**29.1**	**25.9**	**67.2**	**24.6**	**71.0**	**24.3**	**71.9**
IH 35 SB	SH 80	LOOP 82	1.4	1.1	76	1.2	72	1.3	66
	LOOP 82	FM 1102	7.2	5.9	73	6.1	72	6.1	72
	FM 1102	FM 306	5.6	4.7	72	4.6	73	4.6	73
	FM 306	SH 46	2.3	1.8	75	1.9	71	1.9	72
	SH 46	FM 725	1.1	0.9	80	1.0	73	0.9	79
	FM 725	LOOP 337 S	3.0	2.5	72	2.4	75	2.6	68
	LOOP 337 S	FM 1103	6.1	5.1	72	5.1	73	5.1	72
	FM 1103	FM 3009	2.9	2.4	71	2.4	72	2.2	79
	FM 3009	LOOP 1604	4.1	7.8	31	3.7	66	3.8	64
	IH 35 SB - TOTAL		**33.7**	**32.3**	**62.6**	**28.3**	**71.6**	**28.5**	**71.1**

				AM		PM		OP	
			DIST (mile)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)
SH 123 NB	STAPLES-HAYS	IH 35	0.3	0.6	28	0.6	26	1.2	14
	BROADWAY	STAPLES-HAYS	0.4	0.7	37	0.6	40	0.6	39
	DE ZAVALA	BROADWAY	0.3	0.6	33	0.6	30	0.8	25
	WONDER WORLD	DE ZAVALA	0.6	0.8	47	1.0	39	0.8	46
	CR 266	WONDER WORLD	1.2	1.7	41	1.4	51	1.9	38
	FM 1979	CR 266	3.9	4.1	58	4.6	51	4.4	54
	FM 1101	FM 1979	2.3	2.2	64	2.1	64	2.2	64
	FM 758	FM 1101	2.8	2.6	64	2.5	66	2.5	65
	FM 2623	FM 758	2.2	2.1	62	2.1	63	2.1	62
	LAUBACH-CORDOVA	FM 2623	3.0	3.4	52	3.6	50	3.5	51
	FM 20	LAUBACH-CORDOVA	0.6	0.8	49	0.9	41	0.7	51
	IH 10	FM 20	1.7	1.9	53	1.9	54	2.0	52
	SH 123 NB - TOTAL		**19.2**	**21.3**	**54.3**	**21.9**	**52.7**	**22.6**	**51.0**
FM 685 NB	US 290 EB FRTG	US 290 WB FRTG	0.1	0.2	31	0.2	28	0.2	30
	US 290 WB FRTG	ST JOHNS	0.3	0.7	29	0.8	24	0.6	32
	ST JOHNS	MCKIE-CORONADO HILLS	0.2	0.5	28	0.5	26	0.6	26
	MCKIE-CORONADO HILLS	US 183 SB FRTG	0.3	1.7	12	1.6	13	1.7	12
	US 183 SB FRTG	US 183 NB FRTG	0.0	0.1	22	0.2	19	0.1	32
	US 183 NB FRTG	RUTHERFORD	0.4	0.7	30	1.6	13	0.7	30
	RUTHERFORD	CROSS PARK	0.6	0.9	39	0.9	37	0.7	48
	CROSS PARK	FERGUSON	0.1	0.2	34	0.3	24	0.2	48
	FERGUSON	RUNDBERG	0.4	0.5	41	0.7	32	0.7	32
	RUNDBERG	BRAKER	1.7	2.2	46	2.2	46	2.3	44
	BRAKER	SHROPSHIRE	0.5	0.7	47	1.3	24	0.8	40
	SHROPSHIRE	FM 734	0.9	2.5	22	2.2	26	2.4	23
	FM 734	HOWARD	1.3	2.0	39	2.9	27	1.9	42
	HOWARD	WELLS BRANCH	1.6	2.5	40	2.7	36	2.0	48
	WELLS BRANCH	PECAN	1.1	1.5	47	2.1	33	2.6	26
	PECAN	PFLUGERVILLE	1.5	2.5	36	3.8	24	2.8	33
	PFLUGERVILLE	SH 130 SB FRTG	0.8	1.5	30	1.4	33	1.1	42
	SH 130 SB FRTG	SH 45-KELLY	0.6	1.0	38	2.3	16	1.0	37
	FM 685 NB - TOTAL		**12.5**	**21.8**	**34.5**	**27.5**	**27.3**	**22.2**	**33.9**
RM 620 EB	US 183	N LAKE CREEK PKWY	0.4	1.4	19	1.3	19	1.3	21
	N LAKE CREEK PKWY	FM 734-PARMER	1.6	2.9	32	3.6	26	2.3	41
	FM 734-PARMER	SH 45	1.3	1.8	44	2.3	34	1.7	46
	SH 45	GREAT OAKS	1.4	2.0	44	2.1	41	2.0	44
	GREAT OAKS	O'CONNER	0.5	0.8	33	0.8	35	0.7	38
	O'CONNER	WYOMING SPRINGS	0.7	1.4	29	1.1	36	0.9	45
	WYOMING SPRINGS	CR 173-CHISHOLM TRL	1.7	3.4	30	3.8	27	3.3	30
	CR 173-CHISHOLM TRL	IH 35	0.2	0.5	26	0.7	18	0.9	15
	RM 620 EB - TOTAL		**7.8**	**14.2**	**32.9**	**15.7**	**29.7**	**13.1**	**35.8**
GATTIS SCHOOL E	S MAYS ST	GREENLAWN BLVD	0.7	1.4	28	1.9	21	1.6	25
	GREENLAWN BLVD	AW GRIMES BLVD	0.5	1.3	24	1.0	32	1.9	16
	AW GRIMES BLVD	DOUBLE CREEK DR	0.7	1.4	29	2.2	18	1.1	36
	DOUBLE CREEK DR	HIGH COUNTRY BLVD	1.4	3.6	23	3.1	26	2.9	29
	HIGH COUNTRY BLVD	RED BUDD LN	0.2	0.8	17	0.9	15	0.5	25
	RED BUD LN	PRIEM LN	1.2	1.6	45	1.6	44	1.9	39
	PRIEM LN	SH 130	0.8	1.9	24	2.3	21	1.1	44
	GATTIS SCHOOL EB - TOTAL		**5.4**	**12.0**	**27.3**	**13.0**	**25.1**	**11.0**	**29.8**

				AM		PM		OP	
			DIST (mile)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)
SH 123 SB	IH 35	STAPLES-HAYS	0.3	0.6	27	0.4	41	0.6	29
	STAPLES-HAYS	BROADWAY	0.4	0.8	31	1.1	23	1.0	24
	BROADWAY	DE ZAVALA ST	0.3	0.6	33	0.6	32	0.6	33
	DE ZAVALA ST	WONDER WORLD	0.6	1.0	37	0.9	40	1.0	36
	WONDER WORLD	CR 266	1.2	1.7	43	2.0	36	1.0	69
	CR 266	FM 1979	3.9	4.1	57	4.1	58	4.2	55
	FM 1979	FM 1101	2.3	2.1	67	2.1	65	2.1	66
	FM 1101	FM 758	2.8	2.5	67	2.6	64	2.8	60
	FM 758	FM 2623	2.2	2.0	65	2.2	59	2.2	60
	FM 2623	LAUBACH-CORDOVA	3.0	4.0	44	3.6	49	3.1	57
	LAUBACH-CORDOVA	FM 20	0.6	0.8	48	0.7	51	1.0	36
	FM 20	IH 10	1.7	1.8	57	1.9	53	2.6	40
	SH 123 SB - TOTAL		**19.2**	**21.8**	**52.9**	**22.3**	**51.9**	**22.1**	**52.1**
FM 685 SB	US 290 WB FRTG	US 290 EB FRTG	0.1	0.2	33	0.2	33	0.2	30
	ST JOHNS	US 290 WB FRTG	0.3	1.4	14	0.9	23	0.7	31
	MCKIE-CORONADO HILLS	ST JOHNS	0.2	0.6	25	0.9	15	0.6	25
	US 183 SB FRTG	MCKIE-CORONADO HILLS	0.3	0.5	39	1.0	20	0.8	24
	US 183 NB FRTG	US 183 SB FRTG	0.0	0.1	29	0.1	27	0.1	32
	RUTHERFORD	US 183 NB FRTG	0.4	3.3	6	1.8	12	0.9	22
	CROSS PARK	RUTHERFORD	0.6	1.5	22	1.2	29	0.6	55
	FERGUSON	CROSS PARK	0.1	0.2	34	0.6	13	0.4	23
	RUNDBERG	FERGUSON	0.4	0.5	42	0.5	45	0.4	51
	BRAKER	RUNDBERG	1.7	2.3	43	2.2	45	2.1	49
	SHROPSHIRE	BRAKER	0.5	1.7	20	1.7	19	0.7	44
	FM 734	SHROPSHIRE	0.9	1.6	36	1.5	39	1.1	54
	HOWARD	FM 734	1.3	6.0	13	2.8	28	2.4	32
	WELLS BRANCH	HOWARD	1.6	4.3	23	2.6	38	2.0	49
	PECAN	WELLS BRANCH	1.1	2.4	29	1.3	52	1.7	40
	PFLUGERVILLE	PECAN	1.5	2.3	40	2.5	37	3.4	27
	SH 130 SB FRTG	PFLUGERVILLE	0.8	1.1	40	1.4	34	1.6	29
	SH 45-KELLY	SH 130 SB FRTG	0.6	1.0	36	0.7	49	0.8	46
	FM 685 SB - TOTAL		**12.5**	**30.9**	**24.3**	**23.6**	**31.8**	**20.3**	**36.9**
RM 620 WB	N LAKE CREEK PKWY	US 183	0.4	0.9	30	1.1	23	0.8	33
	FM 734-PARMER	N LAKE CREEK PKWY	1.6	2.9	32	3.6	26	2.3	41
	SH 45	FM 734-PARMER	1.3	2.1	38	3.2	25	2.0	41
	GREAT OAKS	SH 45	1.4	2.3	38	1.7	50	1.8	48
	O'CONNER	GREAT OAKS	0.5	1.5	18	0.6	46	0.6	44
	WYOMING SPRINGS	O'CONNER	0.7	1.0	41	0.9	45	0.8	50
	CR 173-CHISHOLM TRL	WYOMING SPRINGS	1.7	4.1	24	4.0	25	3.3	30
	IH 35	CR 173-CHISHOLM TRL	0.2	0.5	25	0.6	20	0.3	38
	RM 620 WB - TOTAL		**7.8**	**15.3**	**30.4**	**15.7**	**29.8**	**11.9**	**39.2**
GATTIS SCHOOL	GREENLAWN BLVD	S MAYS ST	0.7	1.7	23	2.7	14	2.3	17
	AW GRIMES BLVD	GREENLAWN BLVD	0.5	1.0	31	0.9	34	0.9	35
	DOUBLE CREEK DR	AW GRIMES BLVD	0.7	2.0	20	1.6	25	1.4	29
	HIGH COUNTRY BLVD	DOUBLE CREEK DR	1.4	4.5	18	3.1	27	3.1	26
	RED BUD LN	HIGH COUNTRY BLVD	0.2	0.4	30	0.7	18	0.4	32
	PRIEM LN	RED BUD LN	1.2	2.4	30	2.9	25	1.8	40
	SH 130	PRIEM LN	0.8	1.2	38	1.2	38	1.3	37
	GATTIS SCHOOL WB - TOTAL		**5.4**	**13.3**	**24.5**	**13.2**	**24.7**	**11.2**	**29.0**

				AM		PM		OP	
			DIST (mile)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)
PARMER LN NB	LOOP 1 NB FRTG	LOOP 1 SB FRTG	0.1	0.2	29	0.1	57	0.1	57
	LOOP 1 SB FRTG	AMHERST	0.6	0.9	38	0.8	47	0.7	49
	AMHERST	RIATA VISTA-LEGENDARY	1.6	1.8	54	2.2	44	1.7	57
	RIATA VISTA-LEGENDARY	MCNEIL	0.6	1.5	24	0.8	45	0.7	56
	MCNEIL	TAMAYO	1.1	1.2	52	1.8	36	1.2	55
	TAMAYO	ANDERSON MILL	0.3	0.4	56	0.4	52	0.4	56
	ANDERSON MILL	SH 45 EB FRTG	1.3	2.3	33	1.4	55	1.3	59
	SH 45 EB FRTG	SH 45 WB FRTG	0.1	0.1	32	0.1	44	0.1	44
	SH 45 WB FRTG	SPECTRUM	0.4	0.5	40	0.5	47	0.4	55
	SPECTRUM	LAKELINE-NEENAH	0.5	0.8	37	1.2	26	0.6	51
	LAKELINE-NEENAH	AVERY RANCH	0.7	1.6	27	1.3	34	1.4	31
	AVERY RANCH	BRUSHY CREEK	0.7	1.4	29	1.3	31	1.6	26
	BRUSHY CREEK	KENAI-RANCH TRAIL	1.1	1.3	51	1.7	39	1.3	49
	KENAI-RANCH TRAIL	COLONIAL PKWY	0.7	0.7	57	0.8	51	0.8	52
	COLONIAL PKWY	FM 1431	0.3	1.1	15	1.0	16	0.4	44
	PARMER LN NB - TOTAL		**9.9**	**15.8**	**37.7**	**15.2**	**39.2**	**12.5**	**47.5**

				AM		PM		OP	
			DIST (mile)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)	Time (Min)	Speed (MPH)
PARMER LN SB	LOOP 1 SB FRTG	LOOP 1 NB FRTG	0.1	0.1	36	0.2	26	0.2	26
	AMHERST	LOOP 1 SB FRTG	0.6	0.8	43	2.0	18	2.3	16
	RIATA VISTA-LEGENDARY	AMHERST	1.6	1.7	55	2.0	49	2.0	47
	MCNEIL	RIATA VISTA-LEGENDARY	0.6	0.7	52	1.3	29	0.7	50
	TAMAYO	MCNEIL	1.1	2.1	30	1.7	38	1.5	42
	ANDERSON MILL	TAMAYO	0.3	0.4	48	0.8	25	0.6	31
	SH 45 EB FRTG	ANDERSON MILL	1.3	1.5	52	2.1	36	1.7	43
	SH 45 WB FRTG	SH 45 EB FRTG	0.1	0.1	32	0.1	32	0.1	40
	SPECTRUM	SH 45 WB FRTG	0.4	0.9	23	2.0	11	1.2	18
	LAKELINE-NEENAH	SPECTRUM	0.5	1.8	17	0.7	45	0.6	55
	AVERY RANCH	LAKELINE-NEENAH	0.7	1.7	27	1.2	37	0.9	53
	BRUSHY CREEK	AVERY RANCH	0.7	2.3	18	1.6	26	0.9	47
	KENAI-RANCH TRAIL	BRUSHY CREEK	1.1	2.1	32	1.9	34	1.4	45
	COLONIAL PKWY	KENAI-RANCH TRAIL	0.7	0.8	51	0.7	55	1.1	37
	FM 1431	COLONIAL PKWY	0.3	0.5	36	0.6	28	0.5	33
	PARMER LN SB - TOTAL		**9.9**	**17.5**	**34.0**	**18.8**	**31.7**	**15.7**	**38.0**