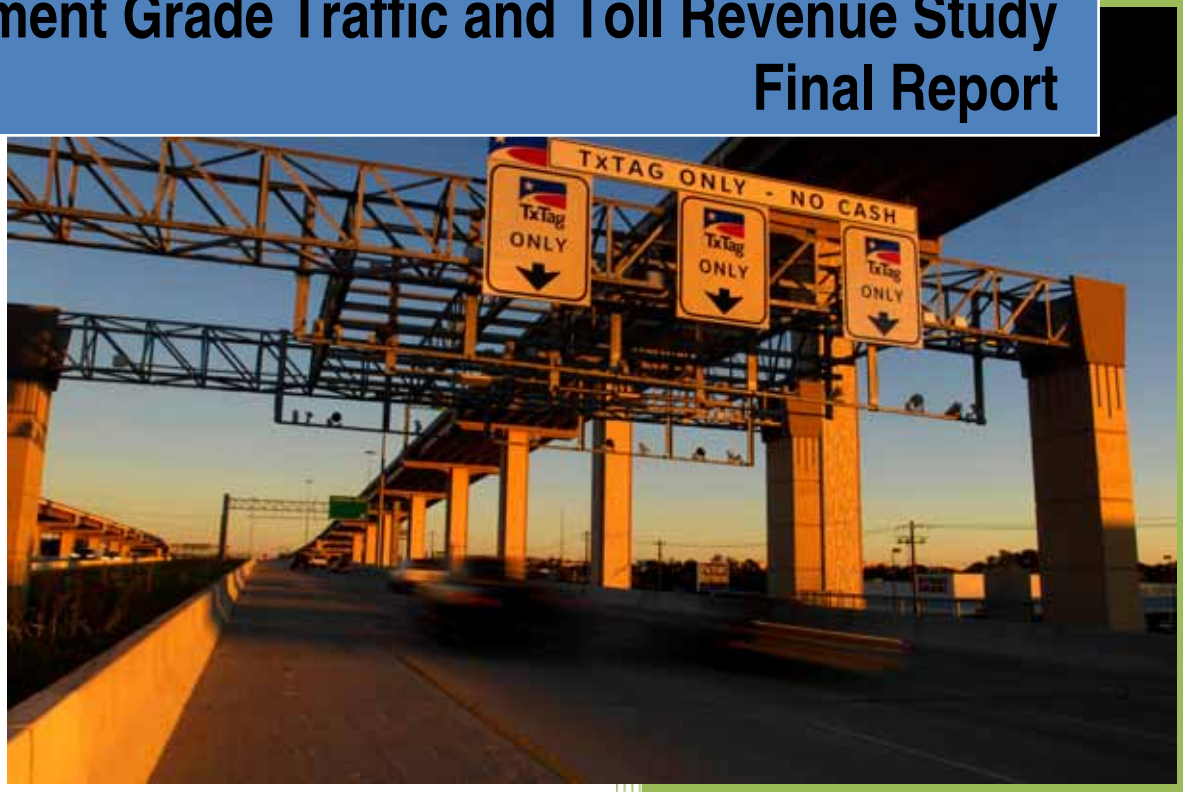
Manor Expressway Toll Road Project
Investment Grade Traffic and Toll Revenue Study
Final Report



CENTRAL TEXAS
Regional Mobility Authority

URS

May 16, 2011

Manor Expressway Toll Road Project

Investment Grade Traffic and Toll Revenue Study Final Report

Prepared for:

Central Texas Regional Mobility Authority

by:

URS

May 16, 2011

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AADT	Annual average daily traffic
ABIA	Austin Bergstrom International Airport
ATG	Alliance Transportation Group, Inc.
ATR	Automatic Traffic Recorders
AWTs	Average Weekday Transactions
BEA	U.S. Bureau of Economic Analysis
BLS	U.S. Bureau of Labor Statistics
CAGR	Compound Annual Growth Rate
CAMPO	Capital Area Metropolitan Planning Organization
CapMetro	Capital Metropolitan Transportation Authority
CARTS	Capital Area Rural Transportation System
CASI	Computer-Assisted Self-Interview
CBD	central business district
CPI	Consumer Price Index
CTRMA	Central Texas Regional Mobility Authority
CTTS	Central Texas Turnpike System
DC	Direct Connector
EB	Eastbound
ETC	Electronic toll collection
FHA	Federal Highway Administration
FM	Farm-to-Market
FY	Fiscal Year
GMP	Good Manufacturing Practices
GDP	Gross Domestic Product
GPL	General Purpose Lane
GRAM	GRAM Traffic Counting, Inc
GSP	Gross State Product
HBO	Home-Based-Other
HBS	Home-Based-Shopping
HBSch	Home-Based-School
HBW	Home-Based-Work
HH	Household
IH	Interstate Highway
ITS	Intelligent Transportation Systems
MLK/FM 969	Martin Luther King
MSA	Metropolitan Statistical Area
NB	Northbound
NHBO	Non-Home-Based-Other
NHBW	Non-Home-Based Work
O/D	Origin-Destination
P/A	Production/attraction
PBSJ	PBSJ Corporation
RM	Ranch-to-Market
RSG	Resource Systems Group
SB	Southbound
SE data	Socioeconomic data
SH	State Highway
SP	Stated Preference
TAZ	Traffic Analysis Zone
TIP	Transportation Improvement Program
TOD	Time-of-Day
T&R	Traffic and Toll Revenue
TTA	Texas Turnpike Authority

TxDOT	Texas Department of Transportation
TxSDC	Texas State Data Center
TOD	Time of Day
VMT	Vehicle-Miles-Traveled
VOT	Value of time
URS	URS Corporation
WB	Westbound

EXECUTIVE SUMMARY

The traffic and toll revenue forecasts in this report were developed for the Manor Expressway Toll Road Project (hereto as "Manor Expressway Project" or "the project" in this report) for possible implementation by the Central Texas Regional Mobility Authority (CTRMA) as one of the potential new toll facilities in Austin, Texas. The Manor Expressway Investment Grade Traffic and Toll Revenue Study complied and discussed in this report will be referred to as "the T&R Study" or "the study".

In 2008, CTRMA engaged URS Corporation (URS) and the members of its consultant team, Resource Systems Group (RSG), GRAM Traffic Counting, Inc. (GRAM) and Alliance Transportation Group, Inc. (ATG), to conduct a comprehensive, investment grade level study for possible project financing for the Manor Expressway Project from the US 183 interchange to FM 973 (Parmer Lane). The effort for the T&R Study built upon previous lower-level studies conducted by URS over the past several years. URS submitted the T&R Study report in January 2009. Since then, there were several revisions of this report due to design changes and federal stimulus funding provision.

In summer 2010, CAMPO 2035 Regional Transportation Plan (hereto as "CAMPO Mobility 2035 Plan") was adopted by the Transportation Policy Board and the associated modeling data was released. In February 2011, 2010 U.S. Census data at the census block level was available. In response to the new mobility plan and 2010 Census data, URS updated the T&R Study. The update efforts include an assessment of socioeconomic forecasts and make necessary adjustments in the Manor Expressway Project study area by ATG and traffic count survey at selected locations for the latest traffic patterns by GRAM, and updated traffic and revenue forecasts by URS. This report is a summary of the overall T&R Study work, with the latest adoption of CAMPO Mobility 2035 Plan network and revised demographic data reflecting the 2010 U.S. Census Data.

The format of the T&R Study report includes a description and discussion of existing travel patterns in the project study area in **Chapter 2**; the study methodology, including the development, calibration and application of the travel forecasting model in **Chapter 3**; the socioeconomic forecasts are presented in **Chapter 4**; assumed background highway improvements can be found in **Chapter 5**; and a detailed description of the project configuration and tolling policy are in **Chapter 6**. The traffic forecasts for the project are described in **Chapter 7** and the toll revenue estimates are presented in **Chapter 8**. The results of the sensitivity analyses that tested a range of key modeling parameters are included in **Chapter 9**. **Chapter 10** lists the analysis limitations and disclaimers regarding the use of the forecasts contained in this report.

The proposed Manor Expressway Project is located in northeastern Travis County, northeast of downtown Austin. This project is approximately 6.2 mile along the existing U.S. Highway (US) 290 corridor between US 183 and just east of Parmer Lane. It would upgrade the existing US 290 four-lane divided highway to a controlled access highway with three tolled mainlanes and three non-tolled frontage lanes in each direction.

The Manor Expressway Project will be implemented in three phases. Phase I, as shown in **Figure ES-1,** includes the four direct connectors and associated ramps between US 183 and Manor Expressway, with each ramp being two lanes. Phase II includes two stages: Interim Milestone and Full Build. Phase II Interim Milestone extends from the Manor Expressway/US 183 interchange approximately 1.4 miles east to Chimney Hill Boulevard. Phase I and Phase II Interim Milestone are both expected to collect tolls from January 2013.

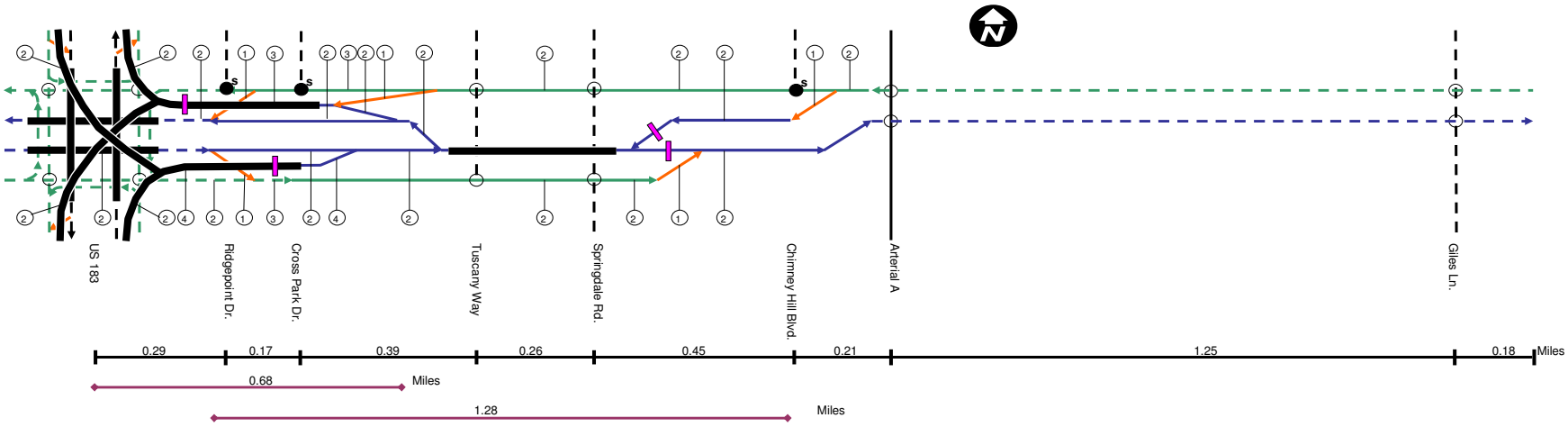
Phase II Full Build configuration extends from the end of Phase II Interim Milestone to the eastern project limits located east of Parmer Lane, as shown in **Figure ES-2**. Phase II Full Build will start to collect tolls in January 2015.

Phase III of the Manor Expressway Project includes construction of the three remaining direct connectors at the SH 130 interchange. The fourth direct connector at this interchange, the eastbound US 290 to northbound SH 130 direct connector, was previously constructed by TxDOT as part of the SH 130 project. The schedule for development and construction of Phase III is currently undetermined, and will be dictated by traffic demand for those improvements as well as the identification of funding sources. Phase III of the Manor Expressway Project is not studied in this report.

Detailed configuration for the Manor Expressway Project is referred to the Manor Expressway Engineer's Report prepared by Atkins in 2011.

Toll revenues realized from Phases I and Phase II are included in the results of this report.

Figure ES-1
Manor Expressway Configuration (Phase I + Phase II Interim Milestone)



Legend:

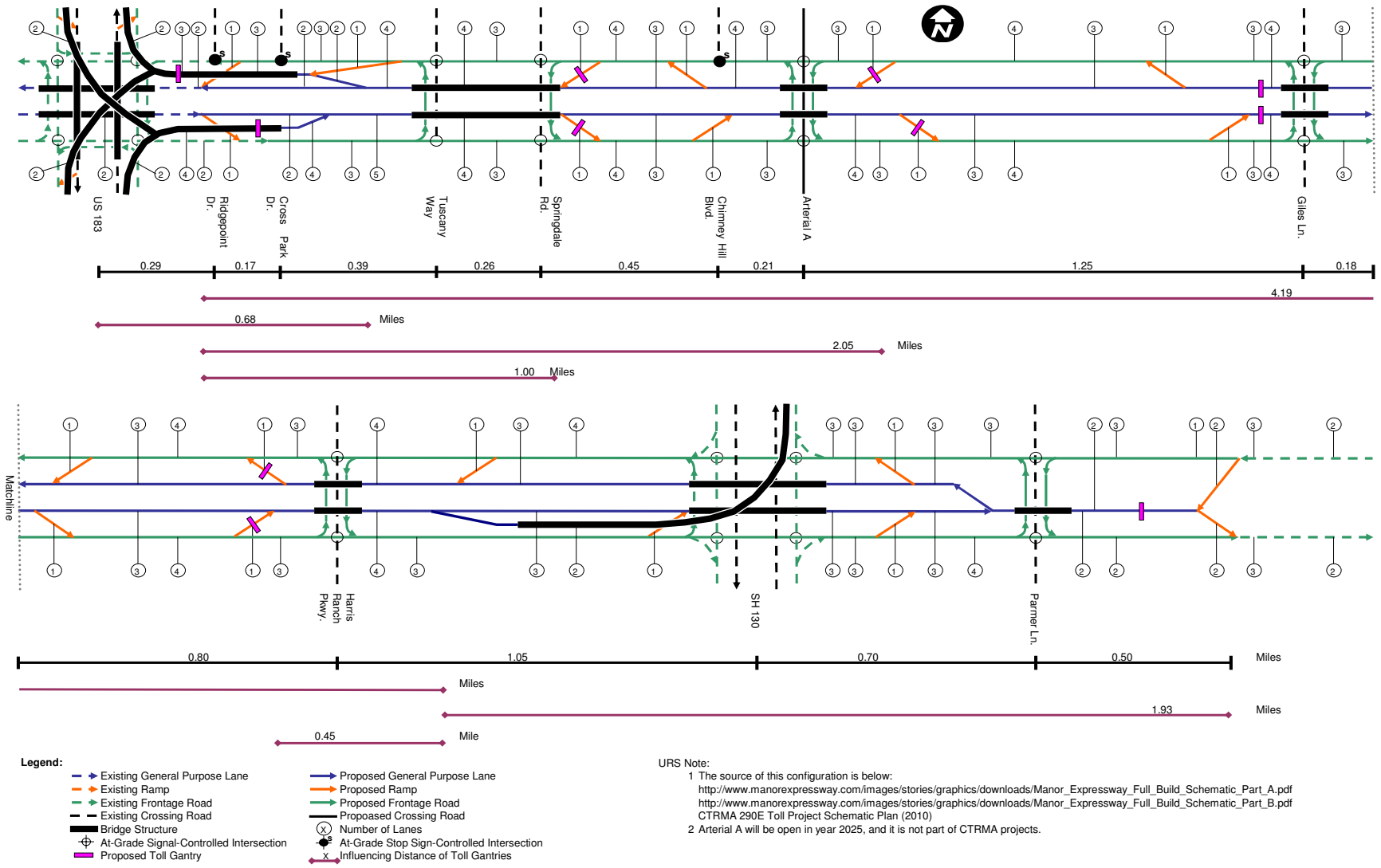
- Existing General Purpose Lane
- Existing Ramp
- Existing Frontage Road
- Existing Crossing Road
- Bridge Structure
- At-Grade Signal-Controlled Intersection
- Proposed Toll Gantry
- Proposed General Purpose Lane
- Proposed Ramp
- Proposed Frontage Road
- Proposed Crossing Road
- Number of Lanes
- At-Grade Stop Sign-Controlled Intersection
- Influencing Distance of Toll Gantries

URS Note:

1 The source of this configuration is below:
http://www.manorexpressway.com/images/stories/graphics/downloads/Manor_Expressway_Segments_1-1A_Schematic.pdf
CTRMA 290E Toll Project Schematic Plan (2010)

2 Arterial A will be open in year 2025, and it is not part of CTRMA projects.

Figure ES-2
Manor Expressway Configuration (Phases I and II)



URS Note:
1 The source of this configuration is below:
http://www.manorexpressway.com/images/stories/graphics/downloads/Manor_Expressway_Full_Build_Schematic_Part_A.pdf
http://www.manorexpressway.com/images/stories/graphics/downloads/Manor_Expressway_Full_Build_Schematic_Part_B.pdf
CTRMA 290E Toll Project Schematic Plan (2010)
2 Arterial A will be open in year 2025, and it is not part of CTRMA projects.

The purpose of this study is to forecast traffic and gross toll revenue estimates for the proposed Manor Expressway Project in support of project financing. The T&R Study involved a thorough review and update of the socioeconomic data and the incorporation of a new toll diversion element into the regional travel demand model provided by CAMPO, which is compatible with the CAMPO Mobility 2035 Plan.

Since 2008, ATG has provided new socioeconomic data with both regional and local indices of the number of households and employment type being investigated. Independent verification of socioeconomic activity was also achieved using information from regional and local authorities. In March of 2011, ATG updated the socioeconomic forecasts for the Manor Expressway Project study area to reflect 2010 Census Data and current demographics and economic trends in the Austin, Texas Metropolitan Statistical Area (MSA) and the CAMPO region. This latest demographic information was also based on land use forecasts from the CAMPO Mobility 2035 Plan and was used in this study. A comparison and description of the data can be found in **Chapter 4**. A detailed discussion of ATG's demographic forecasting methodology is included in **Appendix B**.

Based on the socioeconomic forecast used in this study, Travis County (where the project is located) population will grow from 1,023,961 to 1,500,629 between 2010 and 2035. This population increase represents a compound annual growth rate of 1.54 percent, which reflects the stable population increases in and around the City of Austin. Employment in Travis County is expected to increase from 567,148 jobs in 2010 to 855,260 jobs in 2035. This increase in jobs represents a compound annual growth rate of 1.66 percent, which is below the employment growth rate estimated in the CAMPO Mobility 2035 Plan, 1.82 percent.

Table ES-1
Travis County Demographic Forecasts Comparison

Population

Data Source	2010	2015	2025	2030	2035
CAMPO Mobility 2035 Plan	1,038,595	1,105,083	1,318,041	*1,431,756*	1,555,281
Revised Demographics (ATG)	1,023,961	1,103,122	1,286,618	*1,389,509*	1,500,629

Employment

Data Source	2010	2015	2025	2030	2035
CAMPO Mobility 2035 Plan	654,433	707,253	843,546	*930,531*	1,026,485
Revised Demographics (ATG)	567,148	596,433	718,554	*783,933*	855,260

Note: Italic numbers indicate interpolation

Most recent information was collected on the existing roadways and future improvements to the roadway network. CAMPO Mobility 2035 Plan was the major resource for the network updates. CTRMA and Atkins provided review comments on future regional toll road configurations. These revisions were coded into the modeling network for various years. Traffic data was acquired for major local and state roads in the vicinity of the project for use in the calibration process of the travel demand model. The travel demand model is based on CAMPO's regional model (which is the model

associated with the CAMPO Mobility 2035 Plan) and modified to include toll diversion equations and traffic forecasts by time of day.

URS then developed a toll rate plan specifying the tolls charged at each gantry location for the opening year of 2013 as well as the annual escalation rate. The plan minimized toll collection points and assumed that two electronic toll collection (ETC) options would be available to motorists using the tolled facilities: 1) transponder, and 2) video tolling. No cash payment option would be available on this facility. The tolling configuration consists of two mainline toll gantries, one pair of direct connector toll gantries and three pairs of ramp toll gantries. It should be noted that the toll gantry locations are structured in such a manner that all segments of the proposed tolled lanes would operate as a "closed system" and all travelers using the new toll facility are assessed a toll charge.

Based on input provided by the CTMRA, URS developed a toll rate plan based on $0.20 per mile in 2007 dollars. The toll revenues were estimated for a 3% annual toll rate escalation rate and a minimum toll rate of 50 cents between 2013 and 2035. Tolls were escalated annually (see Section 8.2 for detailed long term toll escalation assumptions).

Toll revenue forecasts for the project were then based on the tolled traffic estimated by the URS Toll Diversion Model. Future year toll traffic forecasts were developed for the opening year of 2013 for Phase I and Phase II Interim Milestone, opening year of 2015 for Phase II Full Build, a horizon year of 2035, and five intermediate years to estimate the impact of scheduled toll increases on other tolled facilities, demographic growth and assumptions regarding the changes in background highway network. These toll revenue estimates for the project were based on assumptions for several factors, including toll evasion, truck axle factors, an estimate of annual toll revenue days, and ramp-up, all of which served as final adjustments to the modeled traffic and toll revenue estimates. Traffic revenues for years between modeling years were interpolated and those for years beyond 2035 to 2052 were extrapolated.

Finally, the gross toll revenue estimates for the Manor Expressway Project were developed and are shown in **Table ES-2**. The revenue stream includes the video toll transaction's extra fee (processing fee and penalty fee) returning to CTRMA (see section 8.1.6 for details) The toll revenue estimates will be utilized by the CTRMA's financial analysts to determine the overall financial viability of the project when compared to the costs to construct, maintain and operate the Manor Expressway Project as Austin's newest toll facility.

Table ES-2
Total Annual Toll Revenue for Manor Expressway (Nominal Values in 000s)

Calendar Year	Auto Revenue	Truck Revenue	Annual Revenue from Fees	Total Manor Expressway Revenue	Revenue Growth
2013	**$1,435**	**$299**	**$79**	**$1,813**	
2014	$1,784	$383	$101	$2,268	25.1%
2015	**$10,677**	**$2,245**	**$379**	**$13,301**	**486.5%**
2016	**$12,897**	**$2,783**	**$464**	**$16,144**	**21.4%**
2017	$14,261	$3,128	$458	$17,847	10.5%
2018	**$15,728**	**$3,505**	**$446**	**$19,679**	**10.3%**
2019	$16,879	$3,838	$447	$21,164	7.5%
2020	**$18,819**	**$4,457**	**$474**	**$23,750**	**12.2%**
2021	$20,501	$4,950	$473	$25,924	9.2%
2022	$22,332	$5,497	$470	$28,299	9.2%
2023	$24,320	$6,105	$468	$30,893	9.2%
2024	$26,482	$6,779	$466	$33,727	9.2%
2025	**$28,833**	**$7,527**	**$464**	**$36,824**	**9.2%**
2026	$30,548	$8,129	$452	$39,129	6.3%
2027	$32,362	$8,775	$444	$41,581	6.3%
2028	$34,282	$9,474	$433	$44,189	6.3%
2029	$36,312	$10,228	$424	$46,964	6.3%
2030	**$38,460**	**$11,042**	**$414**	**$49,916**	**6.3%**
2031	$40,985	$11,724	$429	$53,138	6.5%
2032	$43,675	$12,447	$446	$56,568	6.5%
2033	$46,541	$13,215	$462	$60,218	6.5%
2034	$49,595	$14,030	$480	$64,105	6.5%
2035	**$52,849**	**$14,896**	**$498**	**$68,243**	**6.5%**
2036	$55,253	$15,572	$510	$71,335	4.5%
2037	$57,768	$16,280	$524	$74,572	4.5%
2038	$60,395	$17,021	$537	$77,953	4.5%
2039	$63,144	$17,796	$551	$81,491	4.5%
2040	$65,372	$18,424	$558	$84,354	3.5%
2041	$67,016	$18,887	$567	$86,470	2.5%
2042	$68,702	$19,362	$576	$88,640	2.5%
2043	$70,430	$19,849	$583	$90,862	2.5%
2044	$72,202	$20,348	$593	$93,143	2.5%
2045	$73,288	$20,655	$596	$94,539	1.5%
2046	$74,390	$20,965	$598	$95,953	1.5%
2047	$75,510	$21,280	$601	$97,391	1.5%
2048	$76,647	$21,601	$604	$98,852	1.5%
2049	$77,801	$21,926	$608	$100,335	1.5%
2050	$78,971	$22,257	$610	$101,838	1.5%
2051	$80,159	$22,591	$613	$103,363	1.5%
2052	$81,366	$22,931	$616	$104,913	1.5%

1 INTRODUCTION

Austin, the fourth most populous city in Texas and the 14th most populous city (based on 2010 United States Census) in the United States, has experienced rapid growth in recent years. According to a March 2011 article released by the US Census Bureau (http://www.census.gov/prod/cen2010/briefs/c2010br-01.pdf), Austin-Round Rock-San Marcos area was the 8th fastest growing metropolitan statistical area in the nation between 2000 and 2010 (37.3 percent). Among the top ten fastest growing metropolitan area, only Las Vegas-Paradise and Austin-Round Rock-San Marcos area has population more than 1 million people (Austin area population increased from 1,249763 to 1,716289 from 2000 to 2010). Most of the new population growth in the Austin metropolitan area is occurring north and south of the downtown area. Several potential roadway projects are currently being evaluated to improve mobility in Austin. The Manor Expressway Project will improve mobility between Austin and Houston and will improve access with surrounding areas, such as Manor and Elgin**. Figure 1-1** shows the location of the project.

1.1 Manor Expressway Project

The Manor Expressway Project is located in northeastern Travis County, to the northeast of downtown Austin. Manor Expressway is designed by segment and will be built by three phase. Phase I and Phase II Interim Milestone of the project extends from its intersection with the US 183 interchange to Chimney Hill Boulevard. Phase I and Phase II Interim Milestone is expected to collect tolls on January 1, 2013.

Phase I includes four two-lane direct-connect flyover ramps between US 183 and Manor Expressway. The four ramps will include the westbound Manor Expressway to the northbound US 183 direction, the southbound US 183 to the eastbound Manor Expressway direction, the northbound US 183 to the eastbound Manor Expressway direction, and the westbound Manor Expressway to the southbound US 183 direction. Phase II Interim Milestone extends from the Manor Expressway/US 183 interchange approximately 1.4 miles east to Chimney Hill Boulevard. The proposed configuration for Phase I and Phase II Interim Milestone includes four general purpose toll lanes and four continuous frontage road toll-free lanes.

Phase II Full Build is to build the ultimate configuration for the Manor Expressway, which will include six tolled lanes and six non-tolled frontage lanes. Phase II Full Build will extend from the end of Phase II Interim Milestone to 0.50 miles east of FM 734 (Parmer Lane), and is expected to collect tolls from January 1, 2015. This phase will add two toll lanes to the Phase I and Phase II Interim Milestone segments.

Phase III of the Manor Expressway Project includes construction of the three remaining direct connectors at the SH 130 interchange. The fourth direct connector at this interchange, the eastbound US 290 to northbound SH 130 direct connector, was previously constructed by TxDOT as part of the SH 130 project. The schedule

for development and construction of Phase III is currently undetermined, and will be dictated by traffic demand for those improvements as well as the identification of funding sources. Phase III of the Manor Expressway Project is not studied in this report.

This report estimates the toll revenues realized from both Phase I and II in 40 years period of time (from 2013 to 2052).

1.2 Study Description

The purpose of this study is to forecast traffic and gross toll revenue estimates for the proposed Manor Expressway Project, which assumes a toll collection starting date of January 1, 2013 for Phase I and Phase II Interim Milestone and a toll collection starting date of January 1, 2015 for Phase II Full Build. This study involved a thorough review and update of available socioeconomic data and traffic counts and the incorporation of a toll diversion element into the regional travel demand model. With respect to the socioeconomic data, regional and local indices of household and employment data were reviewed and verified using information from regional and local agencies, as well as independent verification of socioeconomic activity. Local agencies, including the Texas Department of Transportation (TxDOT) and the City of Austin were contacted for current information on existing roadways and future improvements to the roadway network. New traffic data was acquired for major local and state roads in the vicinity of the project for calibration of the travel demand model. The travel demand model was based on the most recent CAMPO's Mobility 2035 Plan regional model and was modified to include toll diversion equations and traffic forecasts by time of day.

1.3 Consultant Team

URS Corporation (URS) was the lead consultant for the T&R Study and was responsible for project management, coordination and the development of traffic forecasts and gross toll revenues to be derived from the proposed Manor Expressway Project. A few other firms assisted URS in various stages of this study:

- *Alliance Transportation Group, Inc. (ATG)* reviewed and updated the socioeconomic data, including population and employment projections utilized in the travel demand model.

- *GRAM Traffic Counting, Inc. (GRAM)* conducted traffic counts in the study areas in 2008 and 2010 which were used for model calibration and validation.

- *Resource Systems Group (RSG)* reviewed previous stated preference surveys in 2008 and assembled the value of time suggestions.

1.4 Organization of the Report

A brief description of the contents of each chapter is presented below:

- *Chapter 2 – Existing Travel Patterns* presents a summary of historical and 2008/2010 survey and traffic count data in the project area. These data were used in developing and calibrating the travel demand model. This chapter also presents the results of collected travel time and delay data, origin and destination (O/D) data and turning movement volumes.

- *Chapter 3 – Modeling Methodology* explains the methodology used in the development and calibration of the travel demand model used to forecast toll traffic and revenue for the Manor Expressway Project. Various enhancements to the model are also identified and discussed.

- *Chapter 4 – Socioeconomic Forecasts* describes the methodology and the socioeconomic assumptions used to assess future development in Austin and the Manor Expressway Project study area.

- *Chapter 5 – Background Highway Improvements* provides details about the assumptions regarding the planned or proposed highway improvement projects that were included in the future year highway networks.

- *Chapter 6 – Manor Expressway Project* describes in detail the design and phasing of various elements of the proposed Manor Expressway Project and the toll collection plan used to develop toll revenue estimates for this study.

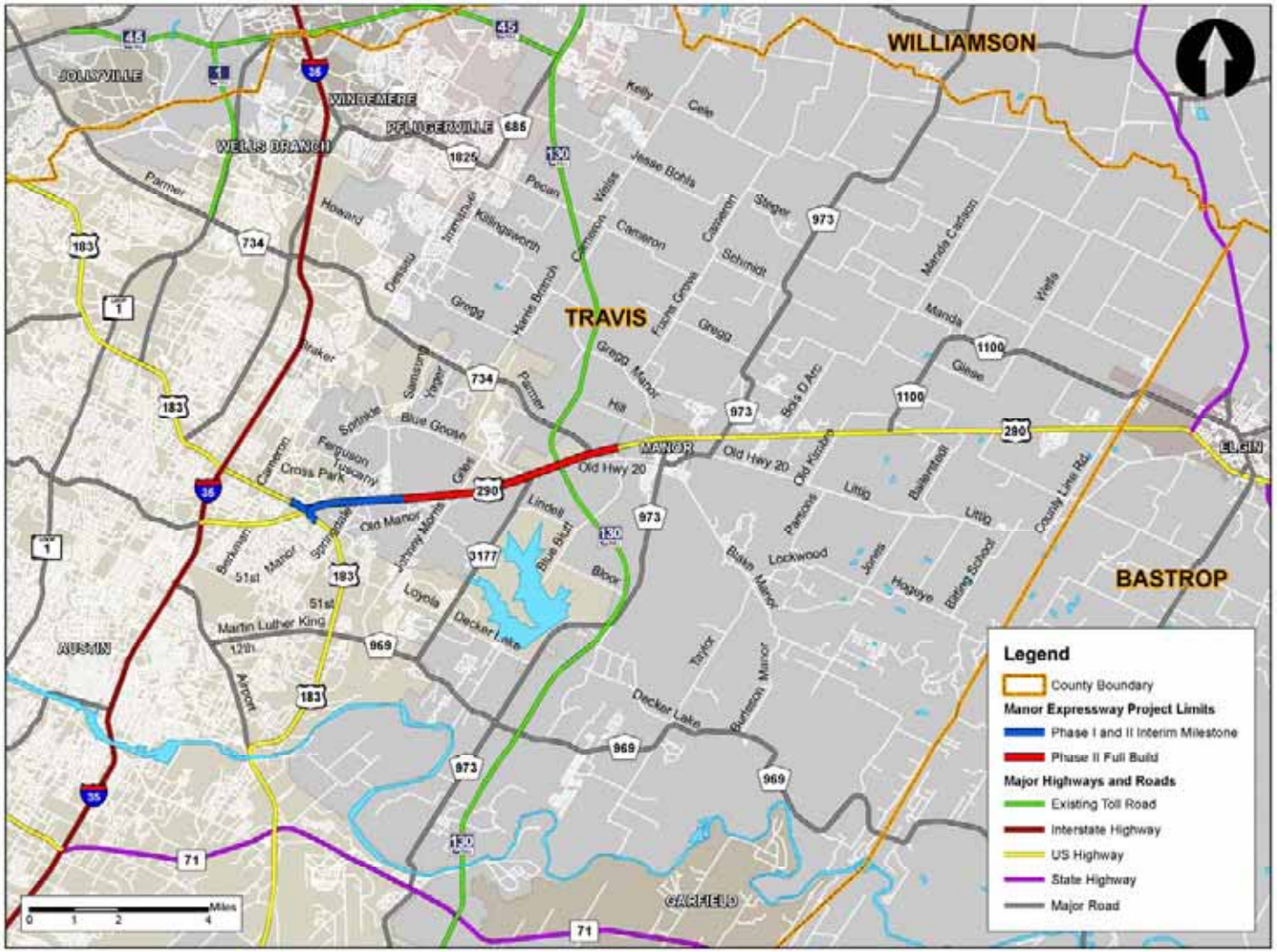
- *Chapter 7 – Traffic Forecasts* presents a summary of the traffic forecasts for the Manor Expressway Toll Road based on the base case modeling assumptions.

- *Chapter 8 – Toll Revenue Estimates* describes the toll revenue assumptions regarding toll rates, truck toll factors and electronic toll collection (ETC) transponder usage and provides the gross annual toll revenue estimates that would be derived from the proposed Manor Expressway Toll Toad.

- *Chapter 9 – Sensitivity Analysis* lists the revenue returns in response to the changes of key modeling parameters and assumptions.

- *Chapter 10 –Limitations, Disclaimers, Principal Materials, and Qualifications,* lists URS Corporation's disclaimers and limitations on the use of the financial data developed for the study.

Figure 1-1
Proposed Manor Expressway Toll Road



2 EXISTING TRAVEL PATTERNS

This chapter describes various elements of the data collection effort that were undertaken to establish existing travel patterns, and to support the development and calibration of the travel demand model for this project. URS assembled historical traffic count data collected in the study area from TxDOT, and retained the services of GRAM to collect additional traffic count data on and in the vicinity of the US 290E corridor (future Manor Expressway) in 2008 and updated traffic counts in 2010. The following sections describe the results of the data collection efforts.

2.1 Historical Traffic Counts

URS obtained annual average daily traffic (AADT) volumes from TxDOT for select locations in the vicinity of the project corridor. **Figure 2-1** shows the historical traffic count locations that were evaluated in this study. **Table 2-1** summarizes the annual TxDOT traffic count data collected between 1990 and 2009 and the calculated compounded average annual growth rates for the locations shown in **Figure 2-1**. The majority of these count locations including those along the US 290E (locations 40, 41, and 42) show a traffic volume reduction between 2008 and 2009 which is likely due to economic downturn of the recent years.

Along the existing US 290E corridor, the average annual growth rate ranges from approximately 3 to 6 percent between 1990 and 2009 and approximately 2 to 5 percent between 2000 and 2009. The largest percentage increases in traffic volumes have occurred between IH-35 and Cameron Road (location 40). This is likely due to additional residential development along US 290E.

Between 1990 and 2009, traffic growth increased on US 290E between IH-35 and Cameron Road (location 40), between US 183 and Springdale Road (location 41) and between Gregg Manor Road and FM 973 (location 42). However, TxDOT traffic counts indicate that lower traffic volumes occurred in 2006 and 2007 between US 183 and Springdale Road (at locations 40 and 41). The majority of this decrease in traffic volumes is likely due to major reconstruction of US 183 between IH-35 and US 290E, which occurred during this time. This reconstruction activity also impacted traffic volumes on US 183 between IH-35 and Cameron Road (location 36), which decreased substantially in 2006 from 71,700 to 43,000.

The largest percentage increase in traffic volumes from year 2000 to 2009 occurs on US 183 between IH-35 and Cameron Road (location 36). Traffic volumes increased from 49,000 to 94,000 at this location between 2000 and 2009. This increase is also likely due to the reconstruction improvements of US 183 between IH-35 and US 290E and the rapid growth of the local socioeconomic factors.

Large percentage increases in traffic volumes have also been documented on FM 973 between Decker Lake Road and FM 969 (location 17) and between Blake Manor Road and SH 130 (location 20). The average annual growth rates at these

locations are approximately 8 percent between 1990 and 2009 and range between approximately 2 and 8 percent between 2000 and 2009. Although the percentage increases at these locations are high, the overall increase in traffic is small (between 3,000 and 5,000 vehicles). Traffic volumes also increased significantly on FM 973 between Old Highway 20 and Blake Manor Road (location 19). The average annual increase at this location was approximately 7 percent between 1990 and 2009 and 5 percent between 2000 and 2009. As in the previous case, although the percentage increase is large, the increase in traffic is relatively small (less than 8,000 vehicles).

As indicated in **Table 2-1**, between 2000 and 2009, traffic volumes decreased approximately 4 percent on Airport Blvd. between IH-35 and Martin Luther King (MLK/FM 969) (location 1). Some of the reduction may be attributed to delayed impacts associated with the closure of Robert Mueller Municipal Airport in 1999. The largest drop in traffic volumes at this location occurs between 2000 and 2005. However, traffic volumes for 2005 through 2009 remained fairly constant and are likely to be representative of current activity.

2.1.1 2008 Traffic Count Data

For this study, URS developed and calibrated a travel demand model to forecast daily as well as peak period traffic volumes (see Chapter 3). Detailed hourly traffic count data were collected in 2008 on key roadway segments within the project study area. The data were used to calibrate the travel demand model for model year 2008. The count program was developed around a series of screenlines to ensure collection of data that would quantify overall corridor traffic flows and provide traffic count data for other key roadway segments in the study area. In that study, GRAM conducted the initial round of traffic counts between September 9 and September 16, 2008, collecting data at 52 locations. GRAM collected three-day tube counts at 45 locations on adjacent roadways for model calibration and seven-day tube counts at 4 locations along US 290E for weekday and weekend indicative traffic pattern data and model calibration. For analysis purposes, URS divided this tube count data into various time of day periods. The AM Peak Period occurred between 6:00 AM and 9:00 AM. The Mid-Day Period occurred between 9:00 AM and 4:00 PM. The PM Peak Period occurred between 4:00 PM and 7:00 PM. The Night Period occurred between 7:00 PM and 6:00 AM. GRAM also conducted 18 turning movement counts, which included one AM Peak Period and one PM Peak Period, at multiple intersections of 3 locations along US 290 E. The turning movement count data collection effort included the 4 intersections of US 290E and US 183, the 4 intersections of US 290E and SH 130, and the intersection of US 290E and FM 734 (Parmer Lane).

URS evaluated the count data for consistency with historical trends and overall reasonableness and rescheduled counts at select locations where the counts were unduly affected by increased traffic associated with the evacuation of Houston area residents in response to Hurricane Ike. GRAM conducted the recounts between October 14 and October 16, 2008.

Figure 2-2 identifies the count locations and average daily traffic volumes for the 2008 traffic count program. Specific data from each count location is presented in **Table 2-2**.

In general, average weekday traffic counts decreased from the west end of the US 290E corridor (closest to Austin) to the east end (farthest from Austin). Observed daily traffic volumes between Cross Park Drive and Tuscany Way, located near US 183S approaching downtown, were approximately 44,340. Only the counts collected between FM 734 (Parmer Lane) and FM 973 increased when compared to the adjacent eastern segment.

Figure 2-1 Historical Traffic Count Locations

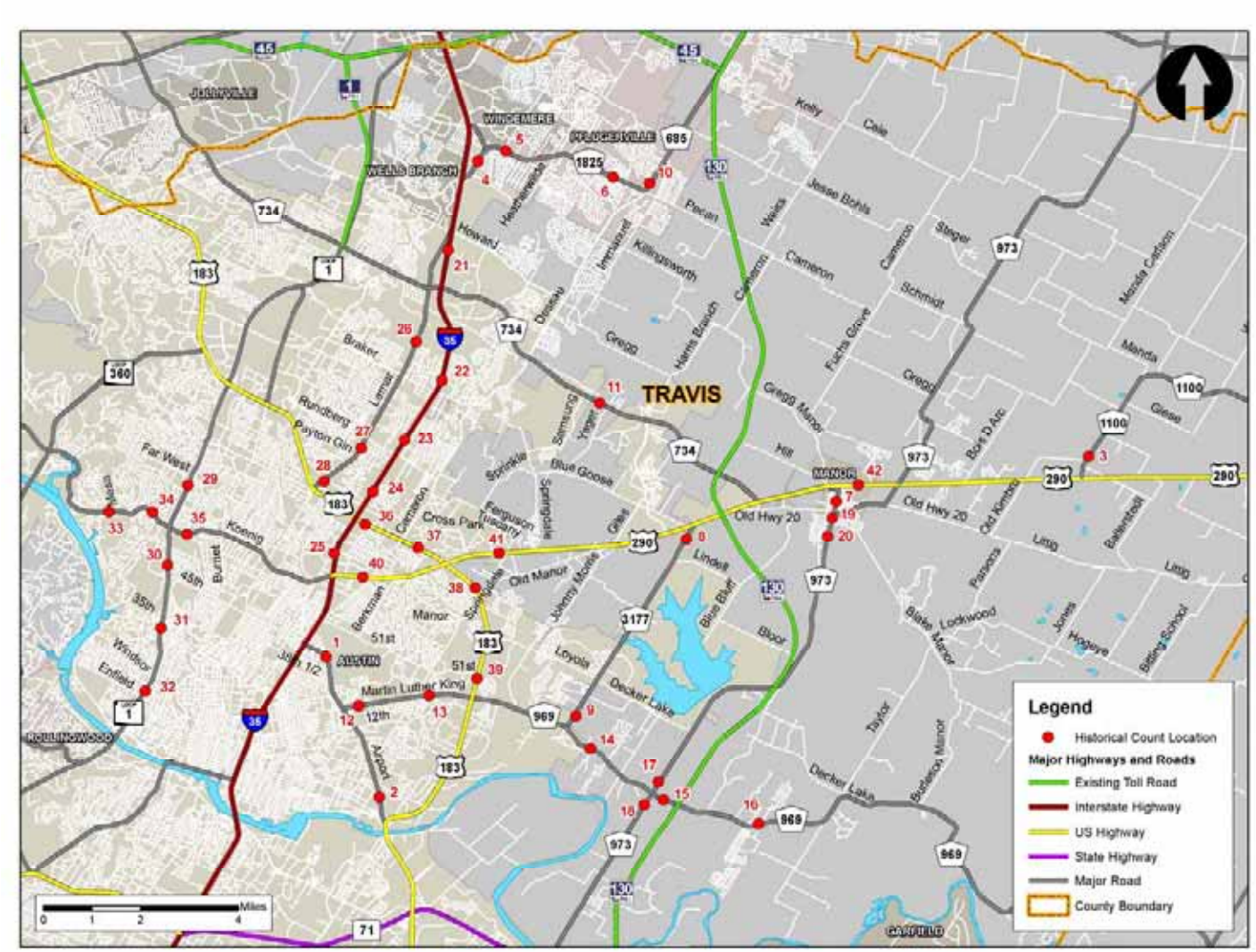


Table 2-1 Historical Traffic Counts

Count ID	Street	Limits	1990	1995	2000	2005	2006	2007	2008	2009	Avg. annual pct chg 1990 - 2009	Avg. annual pct chg 2000 - 2009
1	Airport Blvd./Spur 111	IH-35 - 38th 1/2 St.	31,000	37,000	49,000	31,000	36,000	35,000	35,000	35,000	0.64%	-3.67%
2	Airport Blvd./Spur 111	Springdale Rd. - US 183	12,400	15,000	23,000	26,300	26,000	26,000	26,000	23,000	3.31%	0.00%
3	FM 1100	US 290E - Travis County Line		300	500	600	570	570	580	460		-0.92%
4	FM 1825	IH-35 - FM 1825S	20,000	22,000	25,000	28,600	28,000	28,000	25,000	24,000	0.96%	-0.45%
5	FM 1825	FM 1825S - Heatherwilde Blvd.	18,800	24,000	28,000	35,000	36,000	30,000		25000	1.51%	-1.25%
6	FM 1825	Heatherwilde Blvd. - Railroad Ave.	12,700	16,800	20,000	19,800	19,700	19,900		14600	0.74%	-3.44%
7	FM 212	US 290E - FM 973		3,000	5,400	7,700	7,700	7,800	6,700	8,500		5.17%
8	FM 3177	US 290E - Daffan Road	2,400	3,300	5,300	6,200	6,200	8,000	5,900	5,500	4.46%	0.41%
9	FM 3177	Decker Lake Road - FM 969	3,800	5,200	7,900	7,200	7,200	7,500	8,200	7,500	3.64%	-0.58%
10	FM 685	Jesse Bohls - FM 1825	5,200	6,200	11,000	20,000	27,000	25,000		18200	6.82%	5.75%
11	FM 734 (Parmer Lane)	Dessau Road - Yager Lane			16,000	19,100	17,200	21,000	18,400	17,400		0.94%
12	MLK (FM 969)	Airport Blvd. - Springdale Road	12,800	15,800	15,200	15,800	15,700	17,200	16,100	17,200	1.57%	1.38%
13	MLK (FM 969)	Springdale Road - US 183	10,800	12,200	13,800	13,800	13,800	15,400	15,000	16,200	2.16%	1.80%
14	MLK (FM 969)	FM 3177 - FM 973	7,100	8,400	12,700	14,400	15,600	18,900	17,200	15,500	4.19%	2.24%

Table 2-1 Historical Traffic Counts

Count ID	Street	Limits	1990	1995	2000	2005	2006	2007	2008	2009	Avg. annual pct chg 1990 - 2009	Avg. annual pct chg 2000 - 2009
15	MLK (FM 969)	FM 973 - SH 130	4,900	5,500	10,400	12,000	13,600	16,100	16,200	13,500	5.48%	2.94%
16	MLK (FM 969)	SH 130 - Taylor Lane	3,200	2,400	4,700	6,300	6,400	6,500	6,600	5,900	3.27%	2.56%
17	FM 973	Decker Lake Road - FM 969	1,400	1,800	4,000	5,700	5,700	6,000	5,700	5,000	6.93%	2.51%
18	FM 973	MLK (FM 969) - Harold Green Rd.	5,500	6,200	11,600	11,700	13,700	16,400	12,500	9,800	3.09%	-1.86%
19	FM 973	Old Hwy 20 - Blake Manor Road/Brenham Road	3,100	3,000	6,900	10,100	10,800	11,500	12,000	10,700	6.74%	5.00%
20	FM 973	Blake Manor Road - SH 130	1,650	1,600	3,700	6,200	6,300	6,600	6,700	7,000	7.90%	7.34%
21	IH-35	Howard - FM 734 (Parmer Lane)	83,700	110,200	146,600	173,500	160,000	161,000	172,000	158,000	3.40%	0.84%
22	IH-35	Yager Lane - Braker Lane	81,800	104,900	128,700	164,600	146,000	175,000	161,000	152,000	3.31%	1.87%
23	IH-35	Braker Lane - Rundberg Lane	90,400	114,400	131,300	182,000	164,000	191,000	161,000	159,000	3.02%	2.15%
24	IH-35	Rundberg Lane - US 183	89,200	108,000	113,600	230,000	161,000	210,000	194,000	179,000	3.73%	5.18%
25	IH-35	US 183 - US 290 (E)	102,300	121,800	186,200	250,000	227,000	246,000	226,000	220,000	4.11%	1.87%
26	Lamar Boulevard	Yager Lane - Braker Lane	12,500	16,300	21,000	23,400	23,000	25,000	25,000	24,000	3.49%	1.49%
27	Lamar Boulevard	Rundberg Ln. - Peyton Gin Rd.	33,000	35,000	40,000	37,700	38,000	38,000	41,000	35,000	0.31%	-1.47%
28	Lamar Boulevard	Peyton Gin Road - US 183	35,000	35,000	39,000	38,000	38,000	38,000	38,000	35,000	0.00%	-1.20%
29	Loop 1 (MOPAC Blvd)	Far West Blvd. - RM 2222 (Koenig Lane)	100,000	129,600	147,100	151,600	144,000	149,000	146,000	144,000	1.94%	-0.24%

Table 2-1 Historical Traffic Counts

Count ID	Street	Limits	1990	1995	2000	2005	2006	2007	2008	2009	Avg. annual pct chg 1990 - 2009	Avg. annual pct chg 2000 - 2009
30	Loop 1 (MOPAC Blvd)	RM 2222 (Koenig Ln.) - 45th St.	111,000	139,000	156,000	163,500	168,000	156,000	157,000	157,000	1.84%	0.07%
31	Loop 1 (MOPAC Blvd)	35th St. - Windsor Rd.	96,000	120,000	136,600	141,900	137,000	127,000	133,000	134,000	1.77%	-0.21%
32	Loop 1 (MOPAC Blvd)	Windsor Road - Enfield Road	100,000	130,000	146,500	147,900	153,000	130,000	142,000	144,000	1.94%	-0.19%
33	RM 2222	Just to the west of Mesa Drive	16,100	21,000	24,000	24,000	25,000	25,000	26,000	25,000	2.34%	0.45%
34	RM 2222	Mesa Dr. - Loop 1 (MOPAC Blvd)	21,000	26,000	29,000	30,000	30,000	31,000	31,000	31,000	2.07%	0.74%
35	RM 2222	Loop 1(MOPAC Blvd) - Burnet Rd.	28,000	36,000	32,000	35,200	33,000	34,000	33,000	34,000	1.03%	0.68%
36	US 183	IH-35 (N) - Cameron Road	37,000	46,000	49,000	71,700	43,000	84,000	92,000	94,000	5.03%	7.51%
37	US 183	Cameron Road - US 290E	34,000	43,000	65,000	52,000	57,000	50,000	58,000	79,000	4.54%	2.19%
38	US 183	US 290E - Decker Lake Road	35,000	47,000	70,000	57,400	66,000	54,000	75,000	77,000	4.24%	1.06%
39	US 183	Decker Lake Road – MLK (FM 969)	30,000	45,000	59,000	55,200	62,000	63,000	63,000	60,000	3.72%	0.19%
40	US 290E	IH-35 - Cameron Road	48,000	58,000	61,000	77,700	56,000	62,000	105,000	89,000	3.30%	4.29%
41	US 290E	US 183 - Springdale Road	22,000	36,700	47,900	59,700	54,000	43,000	63,000	59,000	5.33%	2.34%
42	US 290E	Gregg Manor Road - FM 973	14,100	17,000	24,000	34,400	35,000	36,000	33,000	33,000	4.58%	3.60%

Figure 2-2 Traffic Count Locations and 2008 Daily Traffic Volumes

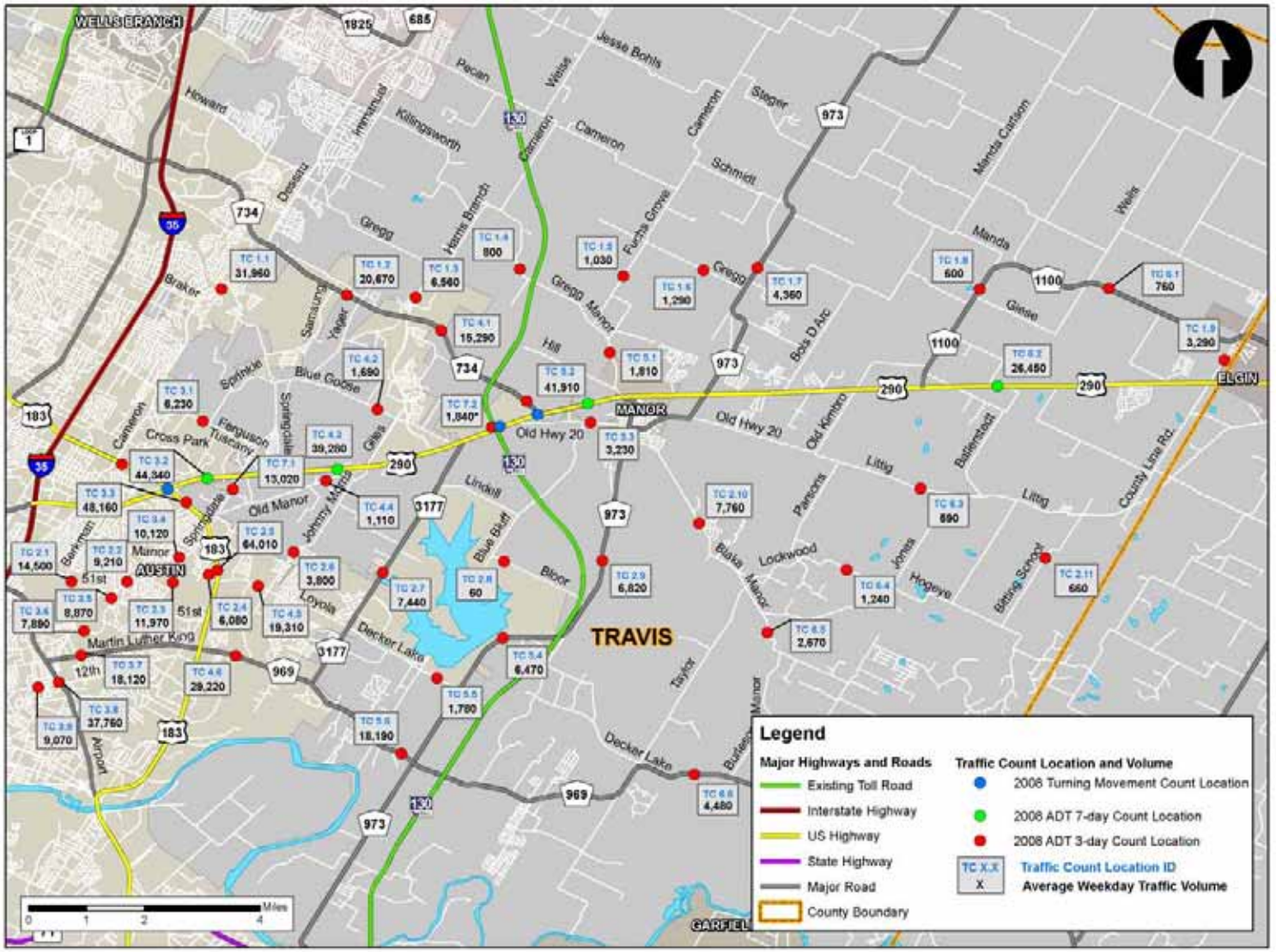


Table 2-2 2008 Traffic Counts

Station ID	Roadway	Location	Count Type	Dir	Average Weekday Traffic AM	Average Weekday Traffic MD	Average Weekday Traffic PM	Average Weekday Traffic NT	Average Weekday Traffic DY	Average Weekday Truck %
1.1	Dessau Road	June Dr./Payton Falls Dr. and Shropshire Boulevard	3-day	NB	1,900	4,550	5,260	3,750	15,460	--
				SB	5,520	5,160	2,670	3,150	16,500	--
1.2	FM 734 (Parmer Lane)	Samsung Blvd. and Yager Lane	3-day	EB	1,390	3,260	2,850	2,370	9,870	--
				WB	2,710	3,670	2,070	2,350	10,800	--
1.3	Cameron Road	Harris Branch and Gregg Lane	3-day	NB	380	860	1,090	790	3,120	--
				SB	1,030	1,320	570	520	3,440	--
1.4	Gregg Manor Road	SH 130 and Cameron Road	3-day	EB	80	130	110	70	390	--
				WB	100	140	90	80	410	--
1.5	Fuchs Grove Road	Gregg Manor Road and Gregg Lane	3-day	NB	80	180	160	90	510	--
				SB	210	140	100	70	520	--
1.6	Gregg Lane	Fuchs Grove and FM 973	3-day	EB	90	160	240	120	610	--
				WB	350	140	110	80	680	--
1.7	FM 973	Gregg Lane and Schmidt Lane	3-day	NB	280	650	820	430	2,180	--
				SB	830	610	350	390	2,180	--
1.8	FM 1100	Giese Lane and Manda Road	3-day	NB	30	90	110	50	280	--
				SB	120	100	60	40	320	--
1.9	County Line Road	FM 1100 and US 290E	3-day	NB	250	440	520	440	1,650	--
				SB	560	450	290	340	1,640	--
2.1	51st Street	Berkman Drive and Old Manor Road	3-day	EB	870	2,620	1,900	1,850	7,240	--
				WB	1,590	2,650	1,330	1,690	7,260	--
2.2	Manor Road	Old Manor Road and Rogge Lane	3-day	NB	430	1,540	1,110	1,150	4,230	--
				SB	1,020	1,810	1,030	1,120	4,980	--
2.3	Springdale Road	Rogge Lane and Hycreek Drive	3-day	NB	1,010	2,070	1,740	1,560	6,380	--
				SB	1,010	1,920	1,580	1,080	5,590	--
2.4	Loyola Lane	US 183 and Bridgewater Drive	3-day	EB	540	1,100	820	890	3,350	--
				WB	470	970	550	740	2,730	--

Table 2-2 2008 Traffic Counts

Station ID	Roadway	Location	Count Type	Dir	Average Weekday Traffic AM	Average Weekday Traffic MD	Average Weekday Traffic PM	Average Weekday Traffic NT	Average Weekday Traffic DY	Average Weekday Truck %
2.5	US 183 Main Lanes	Loyola Lane and US 183 entrance/exit ramps	3-day	NB	5,570	11,240	6,610	7,600	31,020	--
				SB	6,880	11,830	6,420	7,860	32,990	--
2.6	Johnny Morris Road	Point N Drive and Breezy Hill Drive	3-day	NB	370	560	580	400	1,910	--
				SB	420	570	540	360	1,890	--
2.7	FM 3177	Valleyfield Drive and Daffin Lane	3-day	NB	670	1,110	980	810	3,570	--
				SB	1,060	1,170	860	780	3,870	--
2.8	Bloor Road	Blue Bluff Road and SH 130	3-day	EB	10	10	10	0	30	--
				WB	0	20	10	0	30	--
2.9	FM 973	Blake Manor Road and SH 130	3-day	NB	380	950	1,230	650	3,210	--
				SB	1,400	1,010	540	660	3,610	--
2.10	Blake Manor Road	Braker Hills Drive and Briarcreek Loop	3-day	NB	320	1,030	1,270	1,290	3,910	--
				SB	1,340	1,150	590	770	3,850	--
2.11	Bitting School Road	Hog Eye Road and Littig Road	3-day	NB	70	120	80	90	360	--
				SB	20	100	90	90	300	--
3.1	Ferguson Lane	Sprinkle Road and Wall Street	3-day	EB	530	1,230	980	560	3,300	--
				WB	800	1,190	490	450	2,930	--
3.2	US 290E	Cross Park Drive and Tuscany Way	7-day	EB	2,670	7,890	5,230	4,850	20,640	27%
				WB	6,040	9,500	3,590	4,570	23,700	13%
3.3	US 183 Main Lanes	Langston Drive and US 183NB entrance ramp to US 290E	3-day	NB	5,400	8,990	5,040	6,070	25,500	--
				SB	4,500	8,070	5,090	5,000	22,660	--
3.4	Manor Road	Northeast Drive and Springdale Road	3-day	EB	620	1,700	1,130	1,180	4,630	--
				WB	1,060	1,970	1,220	1,240	5,490	--
3.5	51st Street	Manor Road and Old Manor Road	3-day	EB	540	1,660	1,380	1,140	4,720	--
				WB	860	1,500	840	950	4,150	--
3.6	Manor Road	Franklin Avenue and Lovell Drive	3-day	EB	360	1,360	1,090	910	3,720	--
				WB	840	1,570	940	820	4,170	--
3.7	MLK (FM 969)	Franklin Avenue and Deloney Street	3-day	EB	730	3,150	2,540	2,210	8,630	--

Table 2-2 2008 Traffic Counts

Station ID	Roadway	Location	Count Type	Dir	Average Weekday Traffic AM	Average Weekday Traffic MD	Average Weekday Traffic PM	Average Weekday Traffic NT	Average Weekday Traffic DY	Average Weekday Truck %
				WB	2,700	3,420	1,570	1,800	9,490	--
3.8	Airport Boulevard	12th and 13th Streets	3-day	NB	4,160	7,870	4,100	3,810	19,940	--
				SB	2,410	6,830	4,940	3,640	17,820	--
3.9	12th Street	Harvey Street and Hargrave Street	3-day	EB	430	1,800	1,220	1,210	4,660	--
				WB	940	1,690	810	970	4,410	--
4.1	FM 734 (Parmer Lane)	Harris Branch Parkway and Boyce Lane	3-day	EB	930	2,410	2,250	1,620	7,210	--
				WB	2,190	2,640	1,430	1,820	8,080	--
4.2	Blue Goose Road	Giles Lane and Cameron Road	3-day	EB	150	250	230	100	730	--
				WB	460	240	180	80	960	--
4.3	US 290E	Johnny Morris Road/Giles Lane and Chimney Hill Boulevard	7-day	EB	2,290	7,400	5,620	4,440	19,750	15%
				WB	5,440	7,460	2,950	3,680	19,530	18%
4.4	Old Manor Road	Daffan Lane and Johnny Morris Road	3-day	EB	80	150	170	60	460	--
				WB	350	170	80	50	650	--
4.5	Loyola Lane	Johnny Morris Road and Crystalbrook Drive	3-day	EB	1,000	3,020	2,320	2,860	9,200	--
				WB	2,670	3,150	1,840	2,450	10,110	--
4.6	MLK (FM 969)	Johnny Morris Road and McBee Drive	3-day	EB	1,940	4,720	4,780	3,370	14,810	--
				WB	4,710	4,750	2,450	2,500	14,410	--
5.1	Gregg Lane/Manor Road	Rector Loop and Hill Lane	3-day	EB	300	260	220	170	950	--
				WB	140	280	250	190	860	--
5.2	US 290E	Parmer Lane and Gregg Manor Road	7-day	EB	2,150	7,370	6,080	4,990	20,590	12%
				WB	6,320	7,660	3,240	4,100	21,320	15%
5.3	Old Hwy 20	Blue Bluff Road and FM 212	3-day	EB	150	460	810	630	2,050	--
				WB	530	250	180	220	1,180	--
5.4	FM 973	Decker Lake Road and SH 130	3-day	NB	360	880	1,130	660	3,030	--
				SB	1,340	1,030	520	550	3,440	--
5.5	Decker Lake Road	Blue Bluff Road and FM 973	3-day	EB	320	240	150	160	870	--
				WB	110	260	320	220	910	--

Table 2-2 2008 Traffic Counts

Station ID	Roadway	Location	Count Type	Dir	Average Weekday Traffic AM	Average Weekday Traffic MD	Average Weekday Traffic PM	Average Weekday Traffic NT	Average Weekday Traffic DY	Average Weekday Truck %
5.6	MLK (FM 969)	Blue Bluff Road and FM 973	3-day	EB	910	3,080	2,970	2,170	9,130	--
				WB	3,320	2,960	1,300	1,480	9,060	--
6.1	FM 1100	Giese Lane and Klaus Lane	3-day	EB	50	110	150	60	370	--
				WB	150	110	70	60	390	--
6.2	US 290E	Abrahamson Road and Ballerstedt Road	7-day	EB	1,360	5,110	4,150	2,660	13,280	14%
				WB	4,000	4,690	1,840	2,640	13,170	15%
6.3	Littig Road	Parsons Road and Jones Road	3-day	EB	20	90	130	60	300	--
				WB	110	80	50	50	290	--
6.4	Lockwood Road/Hog Eye Road	Parsons Road and Jones Road	3-day	EB	30	160	200	190	580	--
				WB	260	180	90	130	660	--
6.5	Blake Manor Road	Hog Eye Road and Burleson Manor Road	3-day	NB	430	400	190	280	1,300	--
				SB	120	400	470	380	1,370	--
6.6	MLK (FM 969)	Taylor Lane and Burleson Manor Road	3-day	EB	210	730	730	480	2,150	--
				WB	870	830	320	310	2,330	--
7.1	Springdale Road	Commercial Park Drive and US 290E	3-day	NB	1,030	2,600	1,700	1,580	6,910	--
				SB	1,220	2,380	1,290	1,220	6,110	--
7.2	US 290E Ramp – Eastbound	US 290E Eastbound Entrance Ramp to SH 130 Northbound	3-day	NB	170	490	880	300	1,840	--

The counts collected between FM 734 (Parmer Lane) and FM 973 had the second highest traffic volume on US 290E, with approximately 41,910 vehicles per day. The increased volume of traffic observed at this location relative to the location west of SH 130 between Giles Road and Tuscany Way may be a result of commuters from Manor and the east exiting US 290E at FM 734 (Parmer Lane) to access large employment destinations along FM 734 (Parmer Lane), such as Samsung and Dell. Traffic volumes observed on FM 734 (Parmer Lane) range from approximately 15,290 between US 290E and Harris Branch and approximately 20,670 between Harris Branch and Dessau Road.

Based on the 2008 collected data, the traffic along US 290E has strong directionality, which suggests that US 290E is primarily a commuter route during peak periods. For example, the westbound traffic volumes approaching downtown Austin are consistently higher during the AM Peak Period than the eastbound volumes at all locations. The reverse scenario occurs during the PM Peak Period.

The highest observed traffic volumes within the study area, approximately 64,500, occur on US 183S, just south of US 290E. This roadway is heavily travelled as a major route to the Austin Bergstrom International Airport (ABIA). Additionally, high volumes were also observed on Airport Boulevard south of MLK (FM 969), with approximately 37,760 daily vehicles. Airport Boulevard is a secondary option for motorists traveling to and from ABIA. The 2008 volumes observed on Airport Boulevard are approximately 9 percent higher than the traffic counts collected by TxDOT in the same vicinity in 2007. This increase in traffic may be a result of the redevelopment of the Robert Mueller Airport site north of MLK (FM 969). One of the major anchors of this redevelopment project, the Dell Children's Medical Center, opened in June 2007 followed by the opening of the first residential units in late 2007.

High traffic volumes were also observed on MLK (FM 969) and Loyola/Decker Lake Road. These roads run parallel and south of the proposed project vicinity and currently appear to serve as alternate routes to the US 290E corridor. As is the case with US 290E, the locations closest to US 183S have the highest observed traffic volumes, with approximately 29,220 vehicles on MLK (FM 969) and 19,310 on Loyola/Decker Lake Road. High traffic volumes were also observed on Cameron/Dessau Road, with approximately 31,960 vehicles. This roadway is parallel to IH-35 and serves as an alternate route to IH-35 providing access to downtown Austin from northeast Austin, Pflugerville, and Hutto.

2.1.2 2010 Traffic Count Data

Detailed hourly traffic count data were collected and updated in 2010 for use in calibrating the travel demand model for model year 2010. The count program was similar to the 2008 count program.

GRAM conducted the traffic counts during a two-week period between October 11 and October 22, 2010, collecting data at 53 locations. GRAM collected three-day tube counts at 49 locations on adjacent roadways for model calibration and seven-day tube counts at 4 locations along US 290E for weekday and weekend indicative traffic pattern data and model calibration. URS evaluated the count data for consistency with historical trends and overall reasonableness.

Figure 2-3 identifies the count locations and average daily traffic volumes for the 2010 traffic count program. The updated traffic count data from each count location for year 2010 is presented in **Table 2-3**.

The traffic patterns in 2010 are similar to 2008. In general, average weekday traffic counts decreased from the west end of the US 290E corridor (closest to Austin) to the east end (farthest from Austin).

Figure 2-3 Traffic Count Locations and 2010 Daily Traffic Volumes

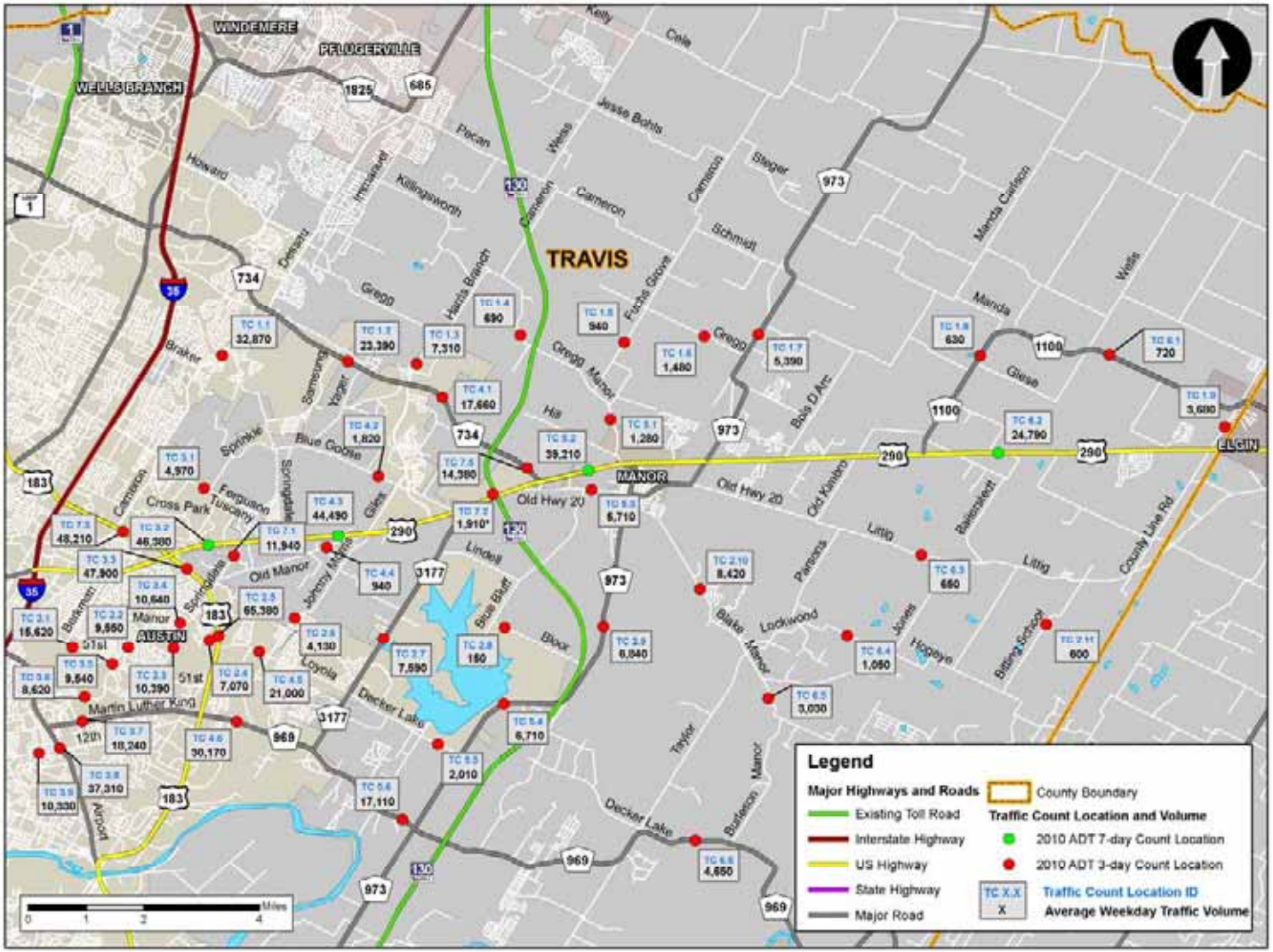


Table 2-3 2010 Traffic Counts

Station ID	Roadway	Location	Count Type	Dir	Average Weekday Traffic AM	Average Weekday Traffic MD	Average Weekday Traffic PM	Average Weekday Traffic NT	Average Weekday Traffic DY	Average Weekday Truck %
1.1	Dessau Road	June Dr./Payton Falls Dr. and Shropshire Boulevard	3-day	NB	2,020	4,530	5,300	3,990	15,840	--
				SB	5,420	5,670	2,770	3,170	17,030	--
1.2	FM 734 (Parmer Lane)	Samsung Blvd. and Yager Lane	3-day	EB	1,510	3,810	3,550	2,930	11,800	--
				WB	3,170	3,980	2,160	2,280	11,590	--
1.3	Cameron Road	Harris Branch and Gregg Lane	3-day	NB	560	930	1,340	580	3,410	--
				SB	1,610	1,070	700	520	3,900	--
1.4	Gregg Manor Road	SH 130 and Cameron Road	3-day	EB	60	120	100	70	350	--
				WB	50	140	90	60	340	--
1.5	Fuchs Grove Road	Gregg Manor Road and Gregg Lane	3-day	NB	70	160	160	90	480	--
				SB	170	140	90	60	460	--
1.6	Gregg Lane	Fuchs Grove and FM 973	3-day	EB	130	220	280	170	800	--
				WB	270	170	160	80	680	--
1.7	FM 973	Gregg Lane and Schmidt Lane	3-day	NB	960	770	470	520	2,720	--
				SB	350	820	1,000	500	2,670	--
1.8	FM 1100	Giese Lane and Manda Road	3-day	NB	120	100	50	60	330	--
				SB	30	80	120	70	300	--
1.9	County Line Road	FM 1100 and US 290E	3-day	NB	410	620	600	450	2,080	--
				SB	550	470	300	280	1,600	--
2.1	51st Street	Berkman Drive and Old Manor Road	3-day	EB	1,720	2,870	1,430	1,830	7,850	--
				WB	950	2,840	1,990	1,990	7,770	--
2.2	Manor Road	Old Manor Road and Rogge Lane	3-day	NB	950	1,940	1,130	1,100	5,120	--
				SB	390	1,650	1,230	1,160	4,430	--
2.3	Springdale Road	Rogge Lane and Hycreek Drive	3-day	NB	880	1,880	1,690	1,060	5,510	--
				SB	610	1,660	1,500	1,110	4,880	--
2.4	Loyola Lane	US 183 and Bridgewater Drive	3-day	EB	470	1,150	630	880	3,130	--

Table 2-3 2010 Traffic Counts

Station ID	Roadway	Location	Count Type	Dir	Average Weekday Traffic AM	Average Weekday Traffic MD	Average Weekday Traffic PM	Average Weekday Traffic NT	Average Weekday Traffic DY	Average Weekday Truck %
				WB	650	1,270	1,040	980	3,940	--
2.5	US 183 Main Lanes	Loyola Lane and US 183 entrance/exit ramps	3-day	NB	6,420	11,960	6,190	7,380	31,950	--
				SB	6,160	12,250	7,050	7,970	33,430	--
2.6	Johnny Morris Road	Point N Drive and Breezy Hill Drive	3-day	NB	380	570	680	450	2,080	--
				SB	500	610	580	360	2,050	--
2.7	FM 3177	Valleyfield Drive and Daffin Lane	3-day	NB	640	1,170	1,040	700	3,550	--
				SB	1,170	1,200	940	730	4,040	--
2.8	Bloor Road	Blue Bluff Road and SH 130	3-day	EB	30	40	10	10	90	--
				WB	10	30	10	10	60	--
2.9	FM 973	Blake Manor Road and SH 130	3-day	NB	480	1,040	1,310	670	3,500	--
				SB	1,230	1,000	600	510	3,340	--
2.10	Blake Manor Road	Braker Hills Drive and Briarcreek Loop	3-day	NB	1,440	1,260	640	840	4,180	--
				SB	330	1,140	1,380	1,390	4,240	--
2.11	Bitting School Road	Hog Eye Road and Littig Road	3-day	NB	50	130	70	60	310	--
				SB	20	120	80	70	290	--
3.1	Ferguson Lane	Sprinkle Road and Wall Street	3-day	EB	380	930	790	400	2,500	--
				WB	810	830	450	380	2,470	--
3.2	US 290E	Cross Park Drive and Tuscany Way	7-day	EB	3,120	8,640	4,080	5,460	21,300	16%
				WB	6,820	9,660	3,810	4,790	25,080	16%
3.3	US 183 Main Lanes	Langston Drive and US 183NB entrance ramp to US 290E	3-day	NB	5,010	8,830	4,760	5,680	24,280	--
				SB	4,470	8,590	5,260	5,300	23,620	--
3.4	Manor Road	Northeast Drive and Springdale Road	3-day	EB	980	2,110	1,380	1,290	5,760	--
				WB	590	1,830	1,260	1,200	4,880	--
3.5	51st Street	Manor Road and Old Manor Road	3-day	EB	480	1,950	1,530	1,150	5,110	--
				WB	800	1,810	970	850	4,430	--
3.6	Manor Road	Franklin Avenue and Lovell Drive	3-day	EB	430	1,580	1,160	990	4,160	--
				WB	800	1,730	1,080	850	4,460	--

Table 2-3 2010 Traffic Counts

Station ID	Roadway	Location	Count Type	Dir	Average Weekday Traffic AM	Average Weekday Traffic MD	Average Weekday Traffic PM	Average Weekday Traffic NT	Average Weekday Traffic DY	Average Weekday Truck %
3.7	MLK (FM 969)	Franklin Avenue and Deloney Street	3-day	EB	790	3,310	2,650	2,320	9,070	--
				WB	2,340	3,580	1,620	1,630	9,170	--
3.8	Airport Boulevard	12th and 13th Streets	3-day	NB	3,740	7,710	4,110	3,610	19,170	--
				SB	2,330	7,340	4,670	3,800	18,140	--
3.9	12th Street	Harvey Street and Hargrave Street	3-day	EB	980	1,950	990	980	4,900	--
				WB	600	2,110	1,420	1,300	5,430	--
3.10	US 183 Frontage Road	Langston Drive and US 183NB entrance ramp to US 290E	3-day	EB	3,070	5,440	2,840	3,180	14,530	--
				WB	2,880	7,090	4,400	4,560	18,930	--
4.1	FM 734 (Parmer Lane)	Harris Branch Parkway and Boyce Lane	3-day	EB	2,600	2,950	1,520	1,630	8,700	--
				WB	1,150	3,030	2,820	1,960	8,960	--
4.2	Blue Goose Road	Giles Lane and Cameron Road	3-day	EB	150	260	280	120	810	--
				WB	570	220	160	60	1,010	--
4.3	US 290E	Johnny Morris Road/Giles Lane and Chimney Hill Boulevard	7-day	EB	2,610	8,740	6,630	5,880	23,860	15%
				WB	4,750	7,630	3,390	4,860	20,630	18%
4.4	Old Manor Road	Daffan Lane and Johnny Morris Road	3-day	EB	330	140	70	30	570	--
				WB	60	120	150	40	370	--
4.5	Loyola Lane	Johnny Morris Road and Crystalbrook Drive	3-day	EB	1,100	3,270	2,620	3,140	10,130	--
				WB	2,660	3,570	2,070	2,570	10,870	--
4.6	MLK (FM 969)	Johnny Morris Road and McBee Drive	3-day	EB	1,950	4,930	4,760	3,620	15,260	--
				WB	4,800	5,030	2,710	2,370	14,910	--
5.1	Gregg Lane/Manor Road	Rector Loop and Hill Lane	3-day	EB	200	220	180	100	700	--
				WB	110	200	170	100	580	--
5.2	US 290E	Parmer Lane and Gregg Manor Road	7-day	EB	2,350	7,650	4,780	4,230	19,010	13%
				WB	5,770	7,330	3,280	3,820	20,200	16%
5.3	Old Hwy 20	Blue Bluff Road and FM 212	3-day	EB	1,070	790	380	420	2,660	--
				WB	290	920	1,110	730	3,050	--
5.4	FM 973	Decker Lake Road and SH 130	3-day	NB	1,260	1,050	590	520	3,420	--

Table 2-3 2010 Traffic Counts

Station ID	Roadway	Location	Count Type	Dir	Average Weekday Traffic AM	Average Weekday Traffic MD	Average Weekday Traffic PM	Average Weekday Traffic NT	Average Weekday Traffic DY	Average Weekday Truck %
				SB	490	990	1,180	630	3,290	--
5.5	Decker Lake Road	Blue Bluff Road and FM 973	3-day	EB	330	310	170	170	980	--
				WB	130	320	370	210	1,030	--
5.6	MLK (FM 969)	Blue Bluff Road and FM 973	3-day	EB	880	2,660	2,920	2,080	8,540	--
				WB	3,070	2,790	1,300	1,410	8,570	--
6.1	FM 1100	Giese Lane and Klaus Lane	3-day	EB	140	120	60	40	360	--
				WB	50	110	140	60	360	--
6.2	US 290E	Abrahamson Road and Ballerstedt Road	7-day	EB	1,290	4,560	3,890	2,700	12,440	20%
				WB	3,620	4,320	1,880	2,530	12,350	19%
6.3	Littig Road	Parsons Road and Jones Road	3-day	EB	110	120	40	50	320	--
				WB	20	100	140	70	330	--
6.4	Lockwood Road/Hog Eye Road	Parsons Road and Jones Road	3-day	EB	200	180	80	110	570	--
				WB	40	150	170	120	480	--
6.5	Blake Manor Road	Hog Eye Road and Burleson Manor Road	3-day	NB	460	490	230	240	1,420	--
				SB	140	470	560	440	1,610	--
6.6	MLK (FM 969)	Taylor Lane and Burleson Manor Road	3-day	EB	920	910	280	290	2,400	--
				WB	240	820	720	470	2,250	--
7.1	Springdale Road	Commercial Park Drive and US 290E	3-day	NB	970	2,100	1,540	1,470	6,080	--
				SB	1,150	2,170	1,350	1,190	5,860	--
7.2	US 290E Ramp – Eastbound	US 290E Eastbound Entrance Ramp to SH 130 Northbound	3-day	NB	180	480	980	270	1,910	--
7.3	US 183 Main Lanes	South of Cameron Road	3-day	NB	3,780	11,600	4,940	5,250	25,570	--
				SB	2,830	10,350	4,390	5,070	22,640	--
7.4	US 183 Frontage Roads	South of Cameron Road	3-day	NB	2,990	7,160	3,900	3,700	17,750	--
				SB	2,490	3,850	2,940	1,910	11,190	--
7.5	Parmer Lane	North of US 290E	3-day	NB	2,120	2,260	1,090	1,530	7,000	--
				SB	1,030	2,730	1,980	1,640	7,380	--

2.1.3 Travel Time / Delay Data

In 2008, URS conducted a travel time study of traffic on selected major roadways within the study area that could act as competitive or feeder routes to the US 290E corridor. These roadways included:

Corridor 1 IH-35 from just north of SH 130 (north of Georgetown) to just south of FM 1327 (north of Buda);

Corridor 2 SH 130 from north of Georgetown to US 183 (Lockhart Highway);

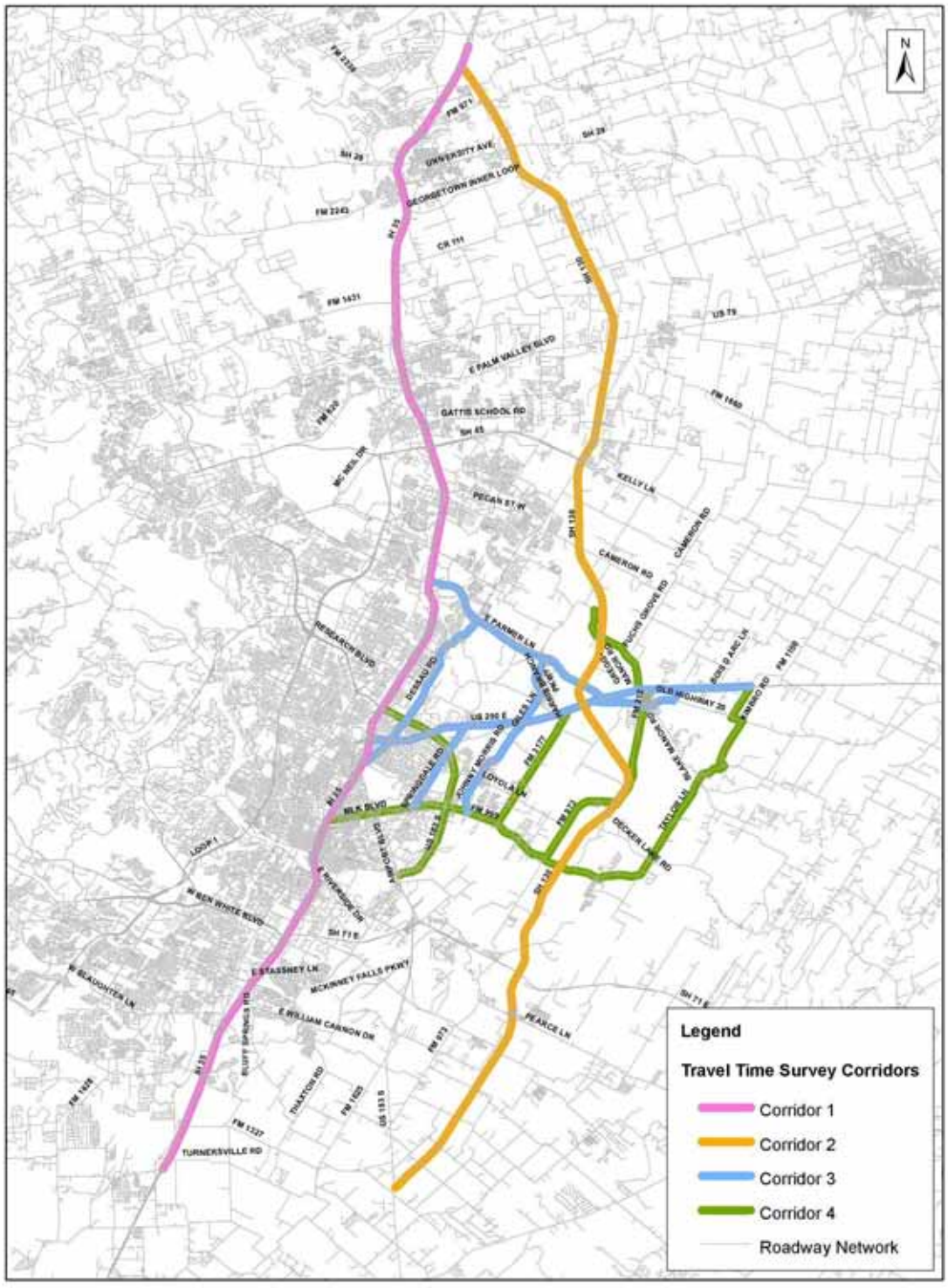
Corridor 3 Parmer Lane from IH-35 to US 290E,
Cameron Road/Dessau Road from IH-35 to FM 734 (Parmer Lane),
Springdale Road from MLK (FM 969) to US 290E,
Johnny Morris Road from MLK (FM 969) to FM 734 (Parmer Lane), and Old Highway 20/Old Kimbro Road from US 290E/FM 734 (Parmer Lane) to US 290E/Old Kimbro Road;

Corridor 4 US 183 from IH-35 to Airport Boulevard,
MLK (FM 969)/Taylor Lane/Kimbro Road from IH-35 to US 290E,
FM 3177 from MLK (FM 969) to US 290E, and
FM 973/Gregg-Manor Road from MLK (FM 969) to Harris Branch Parkway/Cameron Road.

The purpose of the travel time surveys was to obtain data for calibrating the congested speeds predicted by the model during the peak and non-peak periods. Speed and delay data were collected using Global Positioning System (GPS) technology during the AM and PM Peak Periods as well as during the Mid-Day Period. **Figure 2-4** identifies the locations of the travel time study corridors.

Speed and delay data were collected for Corridors 1 through 3 between September 9 and 10, 2008. Due to data anomalies in a few locations, an additional speed and delay survey was conducted on October 21, 2008. The speed survey for Corridor 4 was conducted on December 2, 2008. **Figures 2-5** through **2-10** and **Table 2-5** present the average travel speeds over a three-day period for the AM, PM and Mid-Day Periods. These data were primarily collected for calibration of the travel demand model.

Figure 2-4 Travel Time Study Corridors



Corridor 1

During the AM Peak Period, the slowest average northbound speeds (0 to 15 mph and 16 to 30 mph) were observed on IH-35 south of the Colorado River between FM 1327 and East Riverside Drive. **Figure 2-5** graphically presents the results of the AM Peak Period travel time runs in the northbound direction. The average speed improved slightly in the downtown area, increasing to between 31 and 45 miles per hour (mph) from East Riverside Drive to Airport Boulevard. The average northbound speed on IH-35 north of Airport Boulevard to Georgetown exceeded 60 mph during the AM Peak Period. In the southbound direction on IH-35 during the AM Peak Period, the average speed began to decrease at FM 1431, to between 31 and 45 mph, improved slightly to between 46 and 60 mph between FM 620 and just north of SH 45, and then decreases again just south of SH 45 to Wells Branch Parkway. The results of this data is presented on **Figure 2-8**. With the exception of the segment between US 183 and Airport Boulevard, the average speed on southbound IH-35 continued to improve from Airport Boulevard through SH 71E, where the average speed again exceeds 60 mph.

In the northbound direction during the Mid-Day Period, the average speed generally exceeded 60 mph with the exception of two segments. The first segment is between SH 45 and FM 620, where the speed decreased to between 16 and 30 mph. The second segment is between FM 620 and FM 1431, continued through downtown Austin to south of FM 1327, where speeds averaged between 46 and 60 mph. This data is graphically shown on **Figure 2-6**. With the exception of IH-35 through downtown Austin and continuing to south of FM 1327, the average speed along IH-35 in the southbound direction during the Mid-Day Period was greater than 60 mph. The results of this Mid-Day Period data collection is shown on **Figure 2-9**.

During the PM Peak Period, traffic continued to be the slowest on IH-35 in the downtown area between SH 71E and US 290E, with average speeds in the 0 to 30 mph range occurring in the northbound direction from SH 71E to Airport Boulevard, increasing to 31 to 45 mph between Airport Boulevard and US 290E. The results of this data are shown on **Figure 2-7**. In the southbound direction, the average speeds for this same segment ranged from 0 to 30 mph between US 290E and East Riverside Drive, increasing slightly to between 31 and 45 mph from East Riverside Drive to SH 71E. The results of this data are shown on **Figure 2-10**.

This section of IH-35 was slower during the PM Peak Period than the AM Peak Period due to increased traffic volumes during the PM Peak Period, which typically includes more non-work based trips. The average speed on southbound IH-35, north of the downtown area from FM 1431 to FM 734 (Parmer Lane), was greater than 60 mph during the PM Peak Period. However, the average speed for this same section in the northbound direction during the PM Peak Period varied from 31 to 45 between FM 734 (Parmer Lane) and FM 620 and between 46 to 60 mph between FM 620 and FM 1431. These slower speeds in the northbound direction reflect higher congestion levels from commuters returning to northern suburbs during the PM Peak Period.

The IH-35 frontage roads are generally congested during all three time periods. The observed speeds were predominantly in the 31 to 45 mph range for all periods in all directions. However, southbound speeds decreased to 0 to 15 mph during both the AM and PM Peak Periods in several segments on IH-35 through downtown Austin.

Corridor 2

The average speed on SH 130 in both the northbound and southbound directions generally exceeded 60 mph for all time periods. SH 130 is a relatively new toll road and is still in the initial ramp-up period. Therefore, congestion on this toll road was minimal. The average speed decreased slightly approaching US 183 during all time periods as a result of the signalized intersection at the termination of SH 130. At the time of the travel time survey, TxDOT was constructing SH 45SE, which parallels FM 1327 and provides a direct connection with SH 130 at the US 183 interchange. It is anticipated that the availability of this direct connector has improved speeds at US 183/SH 130.

Corridor 3

Observed speeds for US 290E during the AM Peak Period in the westbound direction were considerably lower than those in the eastbound direction. The greatest average speed declines in the westbound direction occurred between Giles Lane and FM 3177 and then FM 212 and Bois D' Arc Lane. Although there are no alternative routings directly parallel to the proposed Manor Expressway Project, there are several roadways that intersect with existing US 290E that lead to alternative routes between Austin and the surrounding suburbs. The alternative northbound routes with average observed speeds between 31 and 45 mph during the AM Peak Period include FM 734 (Parmer Lane), Harris Branch Parkway, Giles Lane, and the northern section of Johnny Morris Road. In the northbound direction, observed speeds in sections of Dessau Road, Springdale Road, and Johnny Morris in the vicinity of US 183 and FM 969 were 16 to 30 mph. In general, the observed speeds on the southbound alternative routes that provide access to downtown Austin were somewhat lower than those in the northbound direction, including sections of Dessau Road, Springdale Road, Johnny Morris Road, and Giles Lane, and were in the 16 to 30 mph range.

Observed speeds during the Mid-Day Period in both the northbound and southbound directions tended to be rather similar symmetrical in regards to observed speeds with the majority of corridor sections falling within the 31 to 45 mph range. Sections in the northbound direction including Dessau Road, Springdale Road, and Johnny Morris Road experienced several instances of lower traffic speeds in the 16 – 30 mph range near US 290E and MLK (FM 969). Similarly, sections in the southbound direction including Dessau Road, Springdale Road, Giles Lane, and FM 734 (Parmer Lane) experienced several instances of lower traffic speeds in the 16 – 30 mph range.

Observed speeds during the PM Peak Period for the southbound alternative routes from north Austin, such as FM 734 (Parmer Lane), Harris Branch Parkway, Johnny

Morris Road, and Dessau Road, were predominantly in the 31 to 45 mph range. However, the observed speeds decrease to between 16 and 30 mph for these roadways on the segments closest to US 290E. The slowest observed traffic speeds during the PM Peak Period in the southbound direction were experienced on the southern sections of Dessau Road and Springdale Road. The observed speeds for northbound Dessau Road, Springdale Road, and Johnny Morris Road during the PM Peak Period ranged between 16 and 30 mph and between 31 and 45 mph. The slowest observed traffic speeds during the PM Peak Period in the northbound direction were experienced on the sections of Dessau Road and Springdale Road nearest US 290E and US 183, the southern section of Johnny Morris Road near FM 969, and the section of FM 734 (Parmer Lane) between Dessau Road and Harris Branch Parkway.

Corridor 4

US 183 is the major roadway providing access to Austin Bergstrom International Airport (ABIA). During all periods, average speeds on the segment between Springdale Road and MLK (FM 969) declined relative to the remainder of the roadway. The slowest speeds in this section occurred around Loyola Lane. In the northbound direction on the main lanes, speed decreased north of Loyola Lane; in the southbound direction, speed decreased south of Loyola Lane. These slower speeds are a result of US 183 changing from an access-controlled freeway north of Loyola Lane to an arterial with signalized intersections at Loyola Lane.

During the AM Peak Period, observed speeds in the westbound direction were the most congested on FM 969 between IH-35 and Johnny Morris Road with a range of 16 to 30 mph and on FM 212 between US 290E and Old Highway 20 with a range of 0 to 15 mph. Similarly, observed speeds during the AM Peak Period in the eastbound direction were the most congested on Gregg Manor Road and FM 212 near US 290E with a range of 16 to 30 mph and MLK (FM 969) between IH-35 and Airport and between Springdale Road and US 183 with a range of 16 to 30 mph.

During the Mid-Day Peak Period, observed speeds were fairly symmetrical between the eastbound and westbound traffic flows with the majority ranged between 46 and 60 mph and between 31 and 45 mph. Overall somewhat slower observed speeds were observed in the northbound direction including the entire expanse of FM 3177 in the 31 to 45 mph range, MLK (FM 969) between Springdale Road and Airport Boulevard, MLK (FM 969) between FM 3177 and FM 973, and FM 973 between US 290E and Old Highway 20.

During the PM Peak Period, observed speeds for both directions tended to be within the 31 to 45 mph and 46 to 60 mph ranges. Once again, slower speeds were in the 16 to 30 mph range were observed on Gregg Manor Road in the southbound direction, FM 212 between US 290E and Old Highway 20 in the both direction, and in sections in both directions on MLK (FM 969) between IH-35 and US 183.

FM 3177 was constructed to accommodate increased traffic flows that occur during special events at the Travis County Exposition Center. However, these events typically take place during weekends and evening hours. Therefore, FM 3177 provides extra capacity during peak commuting times. The increased speeds observed on FM 973 are likely due to reduced congestion because of the absence of signalized intersections from the City of Manor south to MLK (FM 969) as well as the absence of adjacent development south of the City of Manor.

With the exception of the Mid-Day Period in the southbound direction, the US 183 frontage roads south of US 290E were consistently in the 0 to 15 mph range in all directions for all time periods. On the US 183 frontage road, speeds decreased for motorists traveling northbound and approaching US 290E. This reduction in speed is due to queuing at the signalized intersections at US 290E. On the southbound frontage roads, speed decreased south of US 290E due to queuing associated with the merging of frontage road and main lane traffic and the signalized intersection at Loyola Lane.

Figure 2-5 Observed Travel Speeds for Northbound and Westbound Directions AM Peak Period

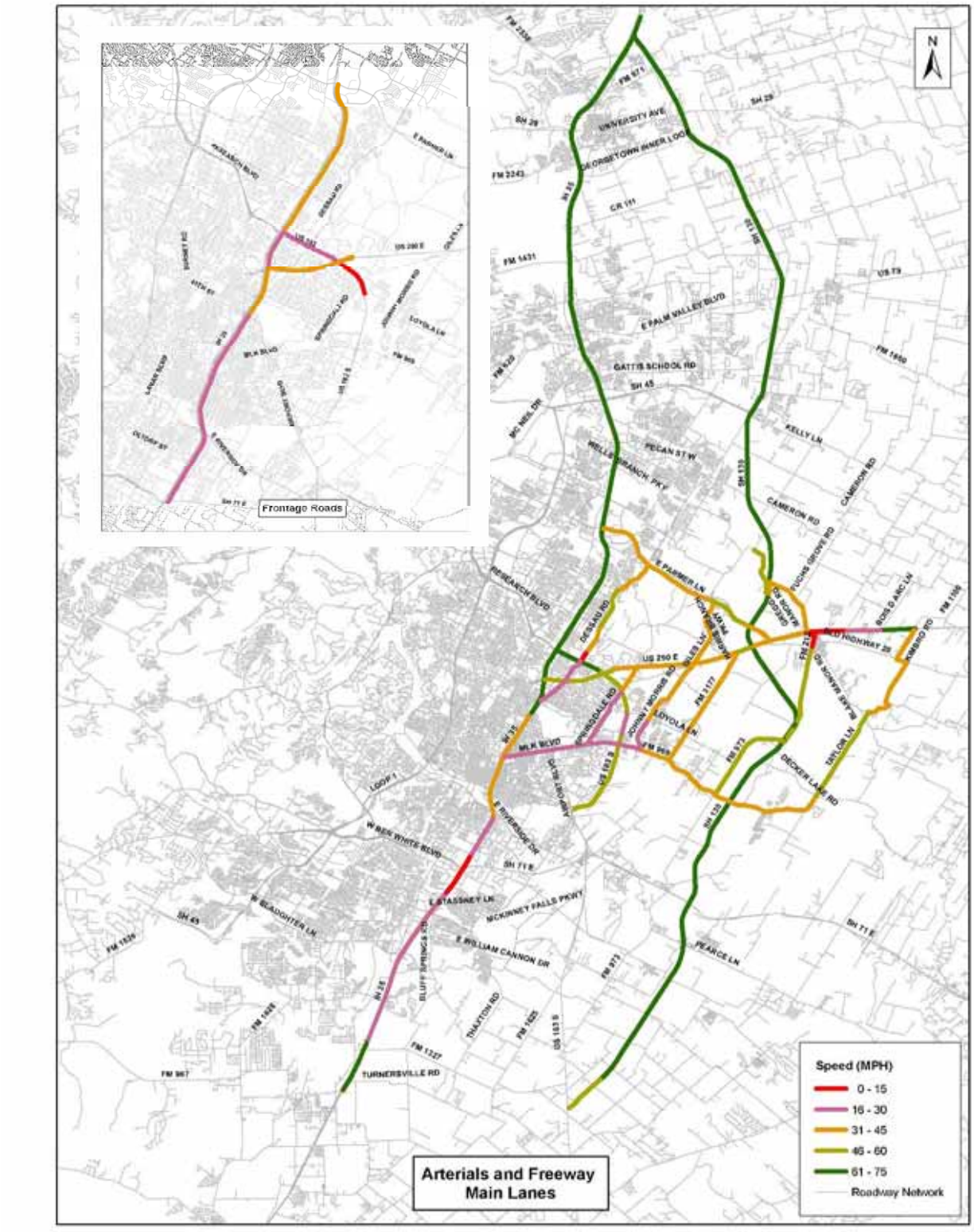


Figure 2-6 Observed Travel Speeds for Northbound and Westbound Directions Mid-Day Peak Period

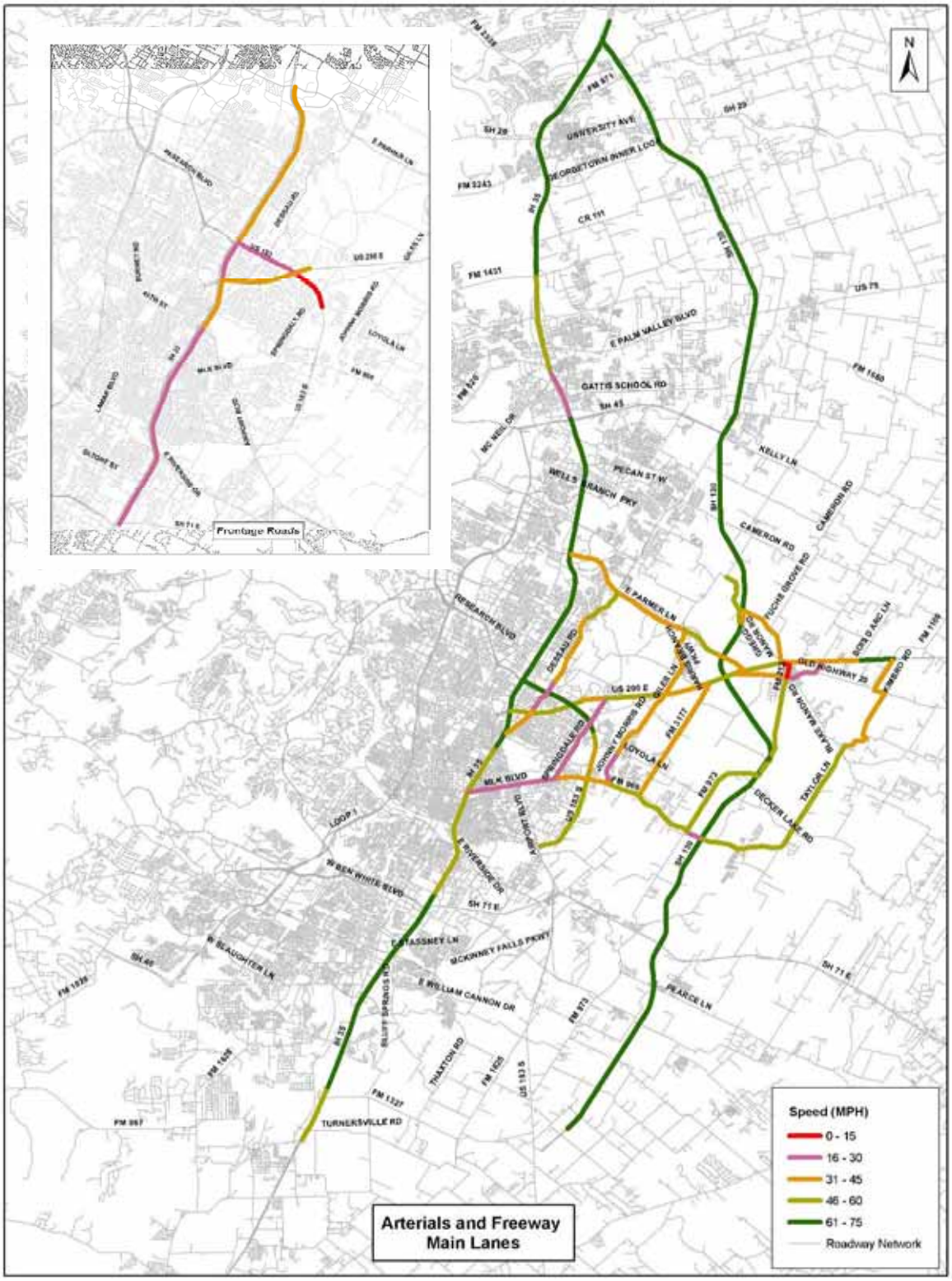


Figure 2-7 Observed Travel Speeds for Northbound and Westbound Directions PM Peak Period

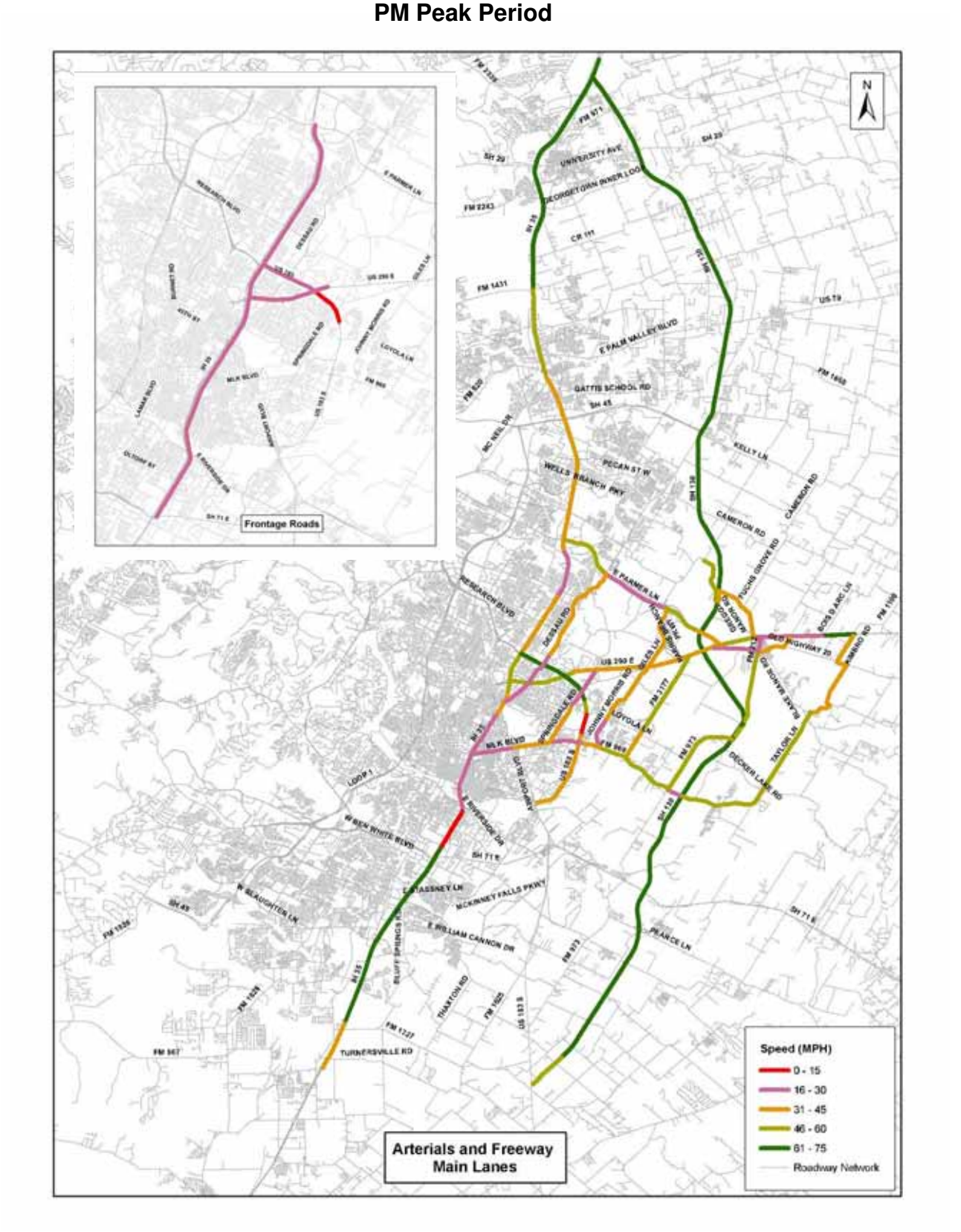


Figure 2-8 Observed Travel Speeds for Southbound and Eastbound Directions AM Peak Period

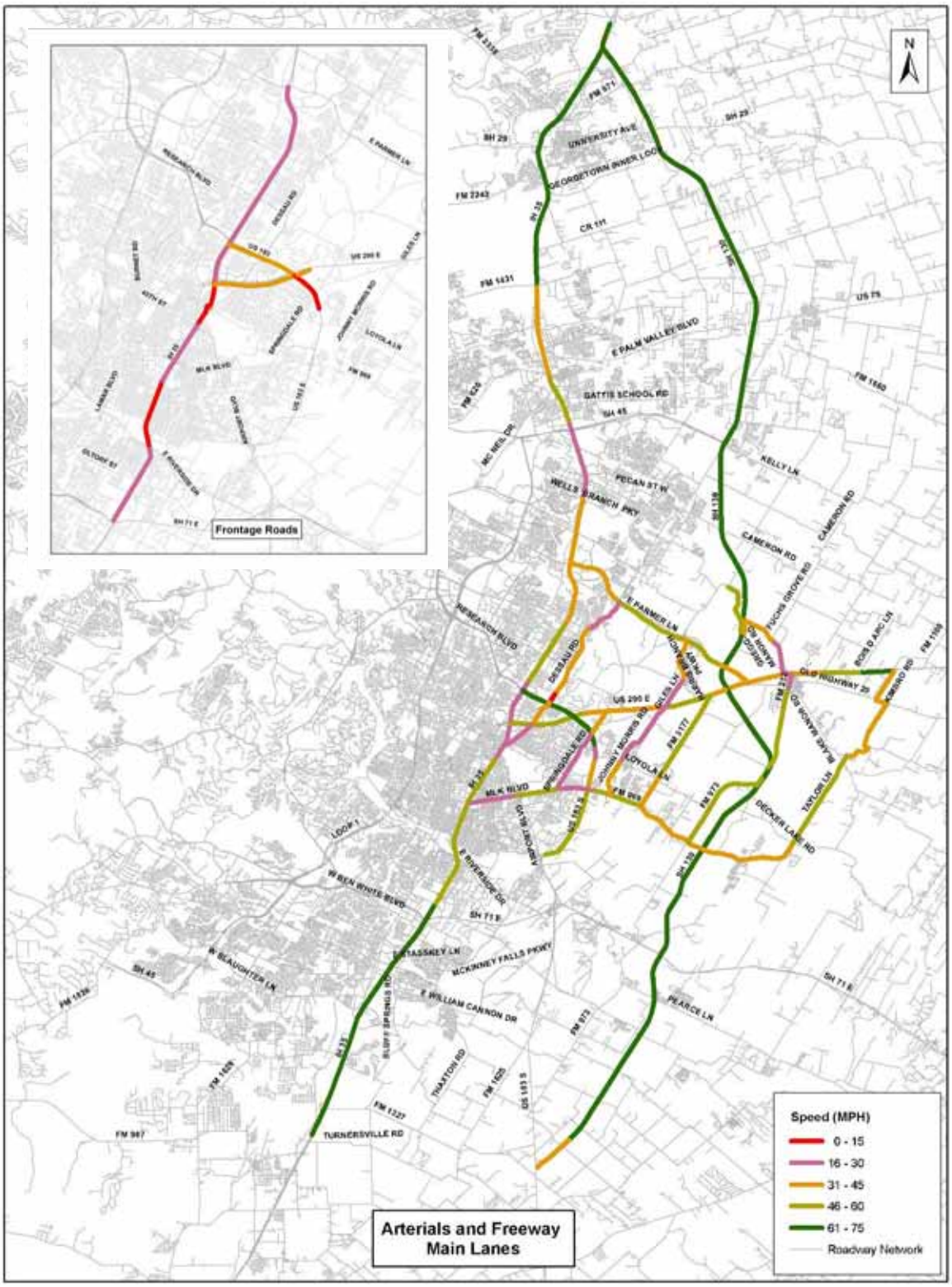


Figure 2-9 Observed Travel Speeds for Southbound and Eastbound Directions Mid-Day Peak Period

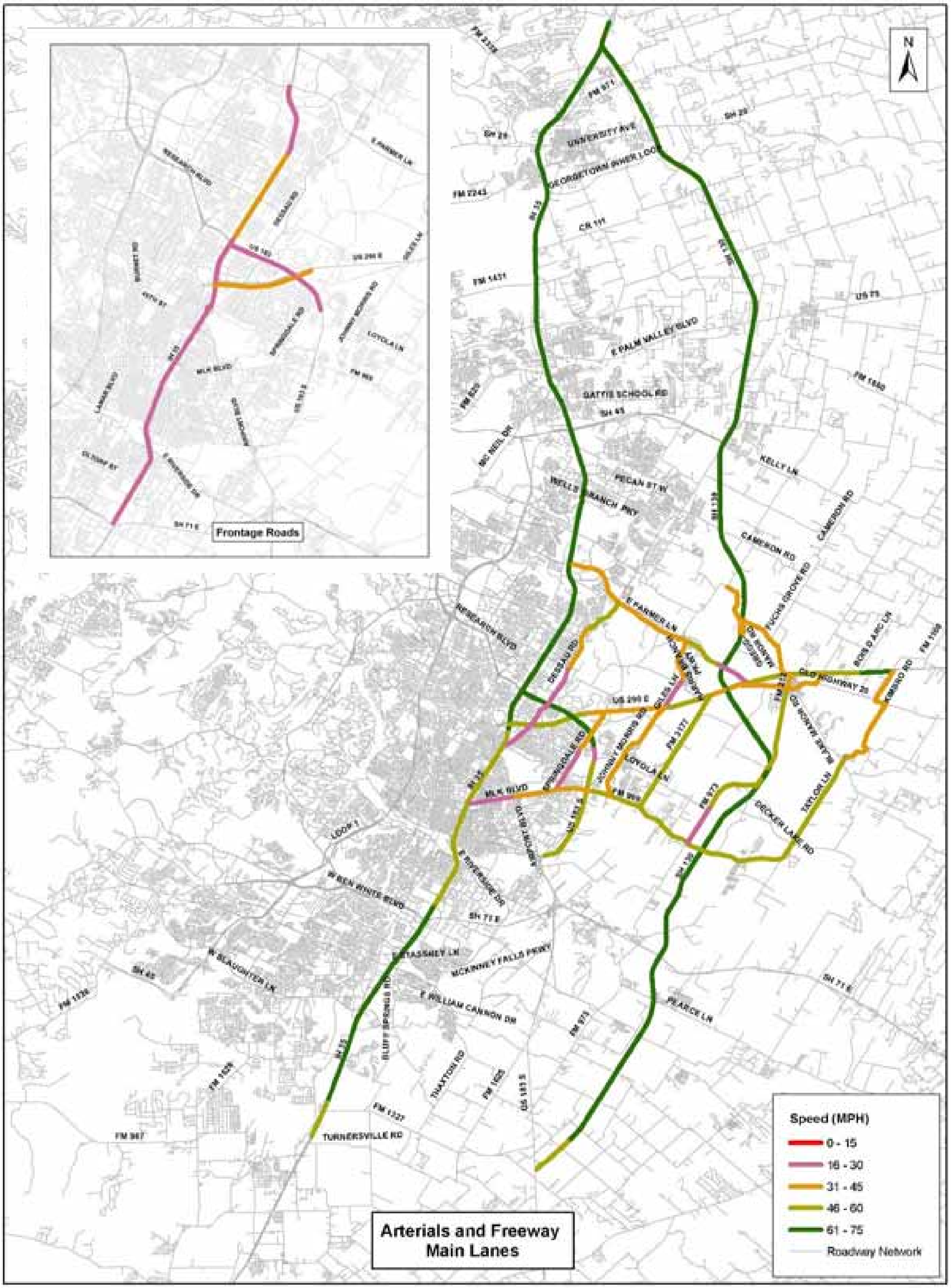


Figure 2-10 Observed Travel Speeds for Southbound and Eastbound Directions PM Peak Period

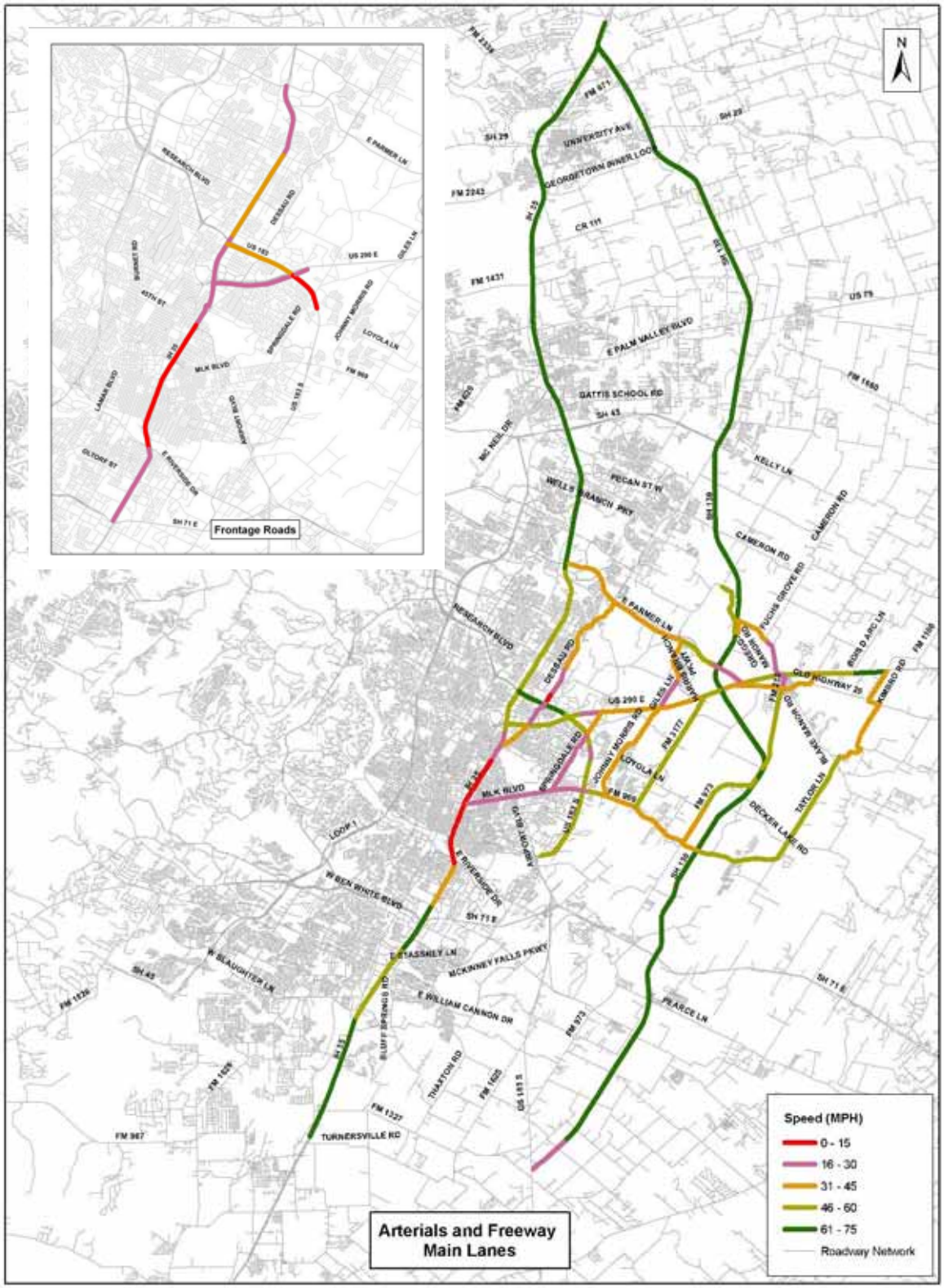


Table 2-4 2008 Observed Travel Speeds

Route Name	Section Limits		Direction of Travel	AM Peak Period Speed 6:00AM-9:00AM (Miles/Hour)	Mid-Day Peak Period Speed 9:00AM-4:00PM (Miles/Hour)	PM Peak Period Speed 4:00PM-7:00PM (Miles/Hour)
US 290E ML	IH-35	US 183	EB	57	57	58
	IH-35	US 183	WB	58	58	56
US 290E FR	IH-35	US 183	EB	31	33	27
	IH-35	US 183	WB	33	32	23
US 290E Arterial	US 183	Springdale Rd	EB	36	43	20
	US 183	Springdale Rd	WB	45	44	40
	Springdale Rd	Johnny Morris Rd	EB	43	45	43
	Springdale Rd	Johnny Morris Rd	WB	35	52	42
	Johnny Morris Rd	FM 3177	EB	47	49	44
	Johnny Morris Rd	FM 3177	WB	40	43	41
	FM 3177	SH 130	EB	45	31	46
	FM 3177	SH 130	WB	50	53	37
	SH 130	FM 734 (Parmer Ln)	EB	37	41	41
	SH 130	FM 734 (Parmer Ln)	WB	38	48	36
	FM 734 (Parmer Ln)	FM 212	EB	39	56	52
	FM 734 (Parmer Ln)	FM 212	WB	42	59	51
	FM 212	FM 973	EB	42	53	54
	FM 212	FM 973	WB	14	41	26
	FM 973	Bois D'Arc Ln	EB	51	59	51
	FM 973	Bois D'Arc Ln	WB	25	42	28
	Bois D'Arc Ln	Kimbro Rd	EB	61	63	63
	Bois D'Arc Ln	Kimbro Rd	WB	61	63	62
US 183 Main Lanes	IH-35	US 290E	SB	65	67	70
	IH-35	US 290E	NB	62	65	66
	US 290E	ML and Frontage Roads merge north of Loyola Ln	SB	63	63	58
	US 290E	ML and FR merge north of Loyola Ln	NB	60	62	64
US 183 FR	IH-35	US 290E	SB	44	28	37
	IH-35	US 290E	NB	18	24	22

Table 2-4 2008 Observed Travel Speeds

Route Name	Section Limits		Direction of Travel	AM Peak Period Speed 6:00AM-9:00AM (Miles/Hour)	Mid-Day Peak Period Speed 9:00AM-4:00PM (Miles/Hour)	PM Peak Period Speed 4:00PM-7:00PM (Miles/Hour)
	US 290E	ML and FR merge north of Loyola Ln	SB	0	28	0
	US 290E	ML and FR merge north of Loyola Ln	NB	0	0	0
US 183 Arterial	ML and FR merge north of Loyola Ln	Loyola Ln	SB	20	25	24
	ML and FR merge north of Loyola Ln	Loyola Ln	NB	52	49	52
	Loyola Ln	MLK (FM 969)	SB	40	50	48
	Loyola Ln	MLK (FM 969)	NB	24	34	14
	MLK (FM 969)	Airport Blvd	SB	51	56	48
	MLK (FM 969)	Airport Blvd	NB	57	53	42
IH-35 ML	SH 130	Georgetown Inner Loop	SB	64	69	68
	SH 130	Georgetown Inner Loop	NB	72	66	65
	Georgetown Inner Loop	FM 2338	SB	65	68	67
	Georgetown Inner Loop	FM 2338	NB	73	68	67
	FM 2338	SH 29	SB	63	67	66
	FM 2338	SH 29	NB	71	68	67
	SH 29	SW Bypass (Georgetown)	SB	65	66	63
	SH 29	SW Bypass (Georgetown)	NB	68	66	64
	SW Bypass (Georgetown)	FM 1431	SB	66	68	66
	SW Bypass (Georgetown)	FM 1431	NB	71	66	64
	FM 1431	FM 620	SB	38	65	65
	FM 1431	FM 620	NB	69	54	46
	FM 620	SH 45N	SB	48	62	62
	FM 620	SH 45N	NB	66	21	32
	SH 45N	Wells Branch Parkway	SB	28	65	65
	SH 45N	Wells Branch Parkway	NB	66	65	42
	Wells Branch Parkway	FM 734 (Parmer Ln)	SB	31	69	65

Table 2-4 2008 Observed Travel Speeds

Route Name	Section Limits		Direction of Travel	AM Peak Period Speed 6:00AM-9:00AM (Miles/Hour)	Mid-Day Peak Period Speed 9:00AM-4:00PM (Miles/Hour)	PM Peak Period Speed 4:00PM-7:00PM (Miles/Hour)
	Wells Branch Parkway	FM 734 (Parmer Ln)	NB	62	64	41
	FM 734 (Parmer Ln)	Braker Ln	SB	32	61	59
	FM 734 (Parmer Ln)	Braker Ln	NB	63	62	25
	Braker Ln	US 183	SB	53	65	60
	Braker Ln	US 183	NB	63	63	41
	US 183	US 290E	SB	22	64	52
	US 183	US 290E	NB	62	64	54
	US 290E	Airport Blvd.	SB	21	59	16
	US 290E	Airport Blvd.	NB	63	63	37
	Airport Blvd.	Riverside Dr	SB	54	57	12
	Airport Blvd.	Riverside Dr	NB	38	57	17
	Riverside Dr	US 290W/SH 71E	SB	59	51	35
	Riverside Dr	US 290W/SH 71E	NB	18	47	14
	US 290W/SH 71E	Stassney Ln	SB	67	65	62
	US 290W/SH 71E	Stassney Ln	NB	12	66	64
	Stassney Ln	Slaughter Ln	SB	67	66	59
	Stassney Ln	Slaughter Ln	NB	22	66	64
	Slaughter Ln	FM 1327	SB	68	64	62
	Slaughter Ln	FM 1327	NB	25	66	63
	FM 1327	CR 105	SB	71	60	61
	FM 1327	CR 105	NB	66	46	37
IH-35 FR	FM 734 (Parmer Ln)	Braker Ln	SB	24	27	22
	FM 734 (Parmer Ln)	Braker Ln	NB	32	33	24
	Braker Ln	US 183	SB	23	32	40
	Braker Ln	US 183	NB	40	33	25
	US 183	US 290E	SB	18	22	20
	US 183	US 290E	NB	29	19	20
	US 290E	Airport Blvd	SB	11	27	26
	US 290E	Airport Blvd	NB	37	32	30
	Airport Blvd	MLK Blvd	SB	19	21	8
	Airport Blvd	MLK Blvd	NB	23	20	24
	MLK Blvd (FM 969)	Riverside Dr	SB	15	22	14
	MLK Blvd (FM 969)	Riverside Dr	NB	16	18	17

Table 2-4 2008 Observed Travel Speeds

Route Name	Section Limits		Direction of Travel	AM Peak Period Speed 6:00AM-9:00AM (Miles/Hour)	Mid-Day Peak Period Speed 9:00AM-4:00PM (Miles/Hour)	PM Peak Period Speed 4:00PM-7:00PM (Miles/Hour)
	Riverside Dr	US 290W/SH 71 E	SB	21	24	17
	Riverside Dr	US 290W/SH 71 E	NB	17	17	19
SH 130 ML	IH-35	FM 971	SB	64	69	68
	IH-35	FM 971	NB	68	69	68
	FM 971	SH 29	SB	67	71	72
	FM 971	SH 29	NB	73	71	76
	SH 29	CR 104	SB	67	70	72
	SH 29	CR 104	NB	72	71	74
	CR 104	CR 107	SB	69	70	74
	CR 104	CR 107	NB	73	71	76
	CR 107	US 79	SB	69	71	74
	CR 107	US 79	NB	71	71	71
	US 79	CR 138	SB	67	70	72
	US 79	CR 138	NB	71	71	73
	CR 138	SH 45N	SB	67	70	72
	CR 138	SH 45N	NB	73	71	75
	SH 45N	Pflugerville Road	SB	71	71	72
	SH 45N	Pflugerville Road	NB	75	71	75
	Pflugerville Road	Cameron Rd	SB	71	70	72
	Pflugerville Road	Cameron Rd	NB	74	71	75
	Cameron Rd	Gregg Manor Road	SB	71	71	72
	Cameron Rd	Gregg Manor Road	NB	72	71	73
	Gregg-Manor Road	FM 734 (Parmer Ln)	SB	71	71	72
	Gregg-Manor Road	FM 734 (Parmer Ln)	NB	72	71	75
	FM 734 (Parmer Ln)	US 290E	SB	70	70	72
	FM 734 (Parmer Ln)	US 290E	NB	74	72	74
	US 290E	FM 973	SB	71	70	72
	US 290E	FM 973	NB	74	71	75
	FM 973	MLK (FM 969)	SB	70	70	72
	FM 973	MLK (FM 969)	NB	73	71	71
	MLK (FM	SH 71E	SB	70	70	72

Table 2-4 2008 Observed Travel Speeds

Route Name	Section Limits		Direction of Travel	AM Peak Period Speed 6:00AM-9:00AM (Miles/Hour)	Mid-Day Peak Period Speed 9:00AM-4:00PM (Miles/Hour)	PM Peak Period Speed 4:00PM-7:00PM (Miles/Hour)
	969)					
	MLK (FM 969)	SH 71E	NB	72	67	73
	SH 71E	Pearce Ln	SB	69	70	72
	SH 71E	Pearce Ln	NB	72	71	73
	Pearce Ln	FM 812	SB	71	70	72
	Pearce Ln	FM 812	NB	72	71	73
	FM 812	Slaughter Ln	SB	69	70	72
	FM 812	Slaughter Ln	NB	74	71	73
	Slaughter Ln	Maha Loop Road	SB	68	64	66
	Slaughter Ln	Maha Loop Road	NB	72	71	72
	Maha Loop Road	End of Toll Road	SB	44	56	28
	Maha Loop Road	End of Toll Road	NB	55	0	59
FM 734 (Parmer Lane)	US 183	Harris Branch Pkwy	EB	36	39	37
	US 183	Harris Branch Pkwy	WB	40	32	48
	Harris Branch Pkwy	Harris Branch Pkwy	EB	50	44	40
	Harris Branch Pkwy	Harris Branch Pkwy	WB	35	37	25
	Harris Branch Pkwy	SH 130	EB	59	54	51
	Harris Branch Pkwy	SH 130	WB	48	51	53
	SH 130	US 290E	EB	31	17	28
	SH 130	US 290E	WB	40	33	45
MLK (FM 969)	IH-35	Airport Blvd	EB	25	26	20
	IH-35	Airport Blvd	WB	21	23	22
	Airport Blvd	Springdale Road	EB	46	33	29
	Airport Blvd	Springdale Road	WB	21	29	33
	Springdale Road	US 183	EB	30	42	28
	Springdale Road	US 183	WB	28	40	26
	US 183	Johnny Morris Rd	EB	47	48	46
	US 183	Johnny Morris Rd	WB	25	41	33
	Johnny Morris Rd	FM 3177	EB	47	50	44

Table 2-4 2008 Observed Travel Speeds

Route Name	Section Limits		Direction of Travel	AM Peak Period Speed 6:00AM-9:00AM (Miles/Hour)	Mid-Day Peak Period Speed 9:00AM-4:00PM (Miles/Hour)	PM Peak Period Speed 4:00PM-7:00PM (Miles/Hour)
	Johnny Morris Rd	FM 3177	WB	32	47	47
	FM 3177	FM 973	EB	41	49	43
	FM 3177	FM 973	WB	42	48	49
	FM 973	SH 130	EB	45	51	41
	FM 973	SH 130	WB	35	29	29
	SH 130	Taylor Ln	EB	42	49	46
	SH 130	Taylor Ln	WB	37	47	47
Old Hwy 20	US 290E	FM 973	EB	0	33	31
	US 290E	FM 973	WB	0	31	28
Springdale Road	US 290E	US 183	SB	31	31	32
	US 290E	US 183	NB	31	29	30
	US 183	Manor Rd	SB	17	33	20
	US 183	Manor Rd	NB	16	21	18
	Manor Rd	MLK (FM 969)	SB	27	29	27
	Manor Rd	MLK (FM 969)	NB	29	30	35
Harris Branch Pkwy	FM 734 (Parmer Ln)	Giles Lane	SB	39	40	42
	FM 734 (Parmer Ln)	Giles Lane	NB	32	36	33
Giles Ln/Johnny Morris Rd	Harris Branch Pkwy	US 290E	SB	30	29	27
	Harris Branch Pkwy	US 290E	NB	33	33	34
	US 290E	Loyola Ln	SB	27	37	37
	US 290E	Loyola Ln	NB	35	34	37
	Loyola Ln	MLK (FM 969)	SB	38	33	31
	Loyola Ln	MLK (FM 969)	NB	28	29	27
FM 3177	US 290E	Loyola Lane	SB	52	52	52
	US 290E	Loyola Lane	NB	40	38	48
	Loyola Lane	MLK (FM 969)	SB	40	46	50
	Loyola Lane	MLK (FM 969)	NB	32	45	42
Gregg-Manor Rd/FM 212	Cameron Rd	SH 130	SB	47	45	47
	Cameron Rd	SH 130	NB	47	47	47
	SH 130	Fuchs Grove Road	SB	44	41	44
	SH 130	Fuchs Grove Road	NB	44	41	42

Table 2-4 2008 Observed Travel Speeds

Route Name	Section Limits		Direction of Travel	AM Peak Period Speed 6:00AM-9:00AM (Miles/Hour)	Mid-Day Peak Period Speed 9:00AM-4:00PM (Miles/Hour)	PM Peak Period Speed 4:00PM-7:00PM (Miles/Hour)
	Fuchs Grove Road	US 290E	SB	16	34	23
	Fuchs Grove Road	US 290E	NB	41	45	41
	US 290E	Old Hwy 20	SB	27	32	27
	US 290E	Old Hwy 20	NB	8	15	20
FM 973	US 290E	FM 212	SB	0	37	32
	US 290E	FM 212	NB	0	26	35
	FM 212	SH 130	SB	54	53	50
	FM 212	SH 130	NB	55	56	47
	SH 130	Decker Lake Road	SB	58	55	58
	SH 130	Decker Lake Road	NB	58	51	53
	Decker Lake Road	MLK (FM 969)	SB	49	30	35
	Decker Lake Road	MLK (FM 969)	NB	55	52	51
Kimbro Rd/Parsons Rd/Taylor Lane	US 290E	Littig Rd/Taylor Ln	SB	41	42	41
	US 290E	Littig Rd/Taylor Ln	NB	41	40	42
	Littig Rd/Taylor Ln	Lockwood Rd/Taylor Ln	SB	38	40	40
	Littig Rd/Taylor Ln	Lockwood Rd/Taylor Ln	NB	39	39	41
	Lockwood Rd/Taylor Ln	MLK (FM 969)	SB	46	49	47
	Lockwood Rd/Taylor Ln	MLK (FM 969)	NB	46	50	50
Dessau Rd	FM 734 (Parmer Ln)	Braker Lane	SB	28	47	33
	FM 734 (Parmer Ln)	Braker Lane	NB	32	46	37
	Braker Lane	Rundberg Ln	SB	39	45	45
	Braker Lane	Rundberg Ln	NB	48	43	43
	Rundberg Ln	Rutherford Ln	SB	42	24	30
	Rundberg Ln	Rutherford Ln	NB	41	39	31
	Rutherford Ln	US 183	SB	8	17	11
	Rutherford Ln	US 183	NB	14	20	30
	US 183	US 290E	SB	33	26	22
	US 183	US 290E	NB	23	21	25
	US 290E	IH-35	SB	30	28	34
	US 290E	IH-35	NB	25	31	26

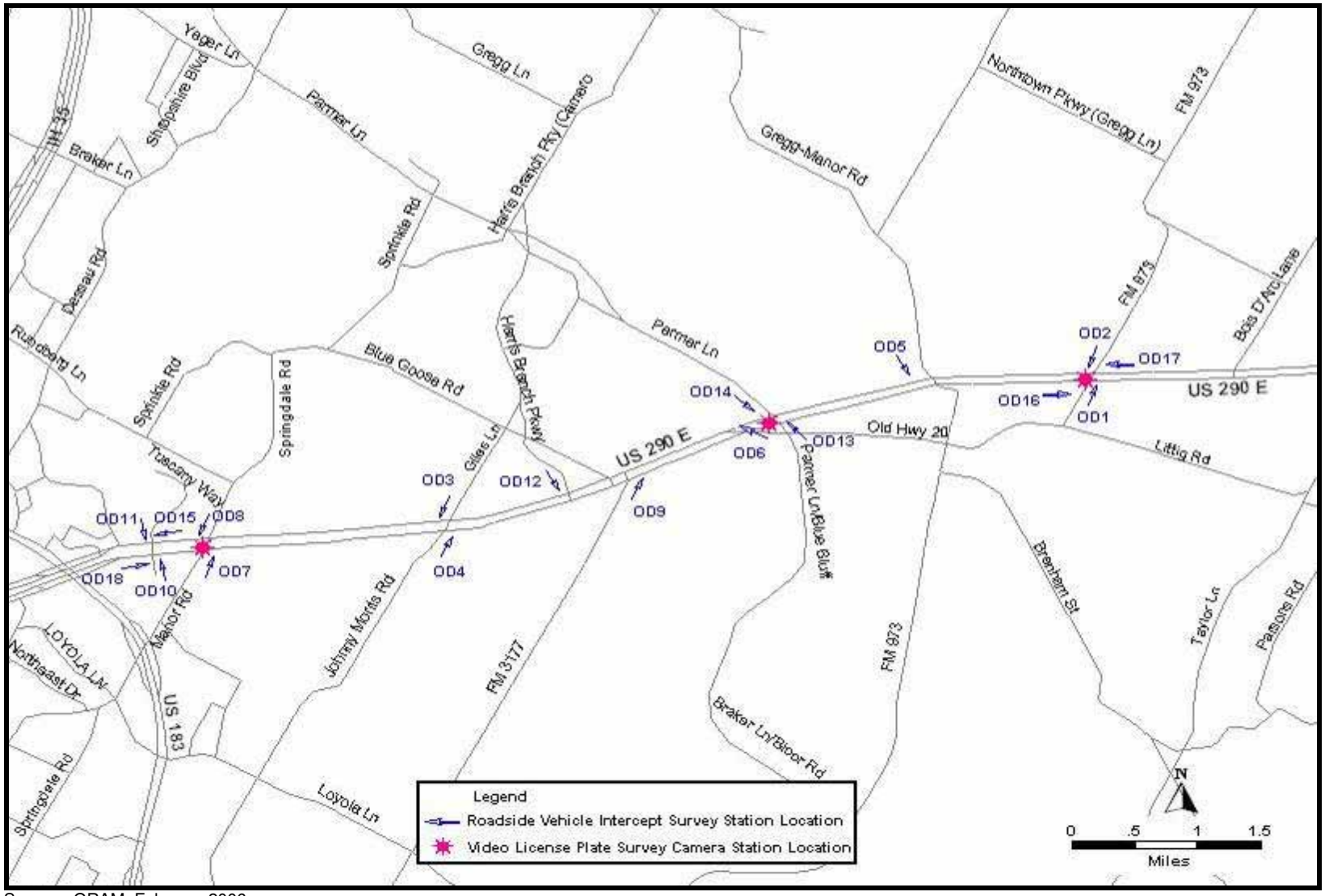
2.1.4 Origin-Destination (O/D) Survey

A motorist Origin-Destination (O/D) survey was performed in the US 290E corridor in 2006 to obtain information on existing trip-making characteristics and travel patterns. Data from this survey were analyzed to develop a framework of potential users for the proposed US 290E toll road and for input to the traffic and toll revenue-modeling program. Two O/D survey data collection methods were utilized: 1) roadside vehicle intercept O/D survey; and 2) video license plate capture/mail-back O/D survey. In total, more than 18,000 surveys were collected. The following section describes the survey process and presents a summary of the survey results. The comparison of modeled and observed survey results is presented in **Chapter 3**.

2.1.4.1 Roadside Vehicle Intercept O/D Survey

The roadside intercept survey consisted of interviewing motorists at roadside locations and recording their responses on electronic hand-held tablets that were then downloaded into a computer database. Roadside interviews were conducted along US 290E and its intersecting streets during the month of February, 2006. A total of 18 intercept stations were selected within the corridor for interviews. These survey stations were traffic controlled, with interviews were performed during the red phase of signals or at stop signs. The locations of the roadside survey stations are shown in **Figure 2-11.**

Figure 2-11 Motorist O/D Survey Station Locations



Source: GRAM, February 2006.

At the locations OD1 through OD14, the survey period was Tuesday, Wednesday, and Thursday between 7:00 AM and 6:00 PM. In consideration of the high volume of traffic on US 290E itself, interviews at locations OD15 through OD18 were conducted only between the off-peak hours of 9:00 AM to 4:00 PM. Drivers were questioned on where their trip started and where their trip would end. They were also asked the purpose of their trip, whether either end of their trip was their home, how often they made the trip, and whether or not they used US 290E for part of their trip. The surveyors recorded the time of each interview, the number of occupants in the vehicle, and the vehicle type. The questionnaire was performed for both English and Spanish speakers.

Manual and Automatic Traffic Recorders (ATR) traffic counts were conducted at each interview station simultaneously with the roadside vehicle intercept O/D survey. The number of roadside interviews was compared with average daily traffic passing through the roadside survey stations to determine the sample rate, or the percentage of the daily traffic being interviewed.

2.1.4.2 Video License Plate Capture and Mail-Back O/D Survey

To obtain more information on trips on US 290E and to increase the sample size, a video license plate capture/mail-back O/D survey was performed. Vehicle license plates were videoed in both directions. Cameras were placed at three locations along the US 290E corridor: at the western end, in the middle, and at the eastern end**. Figure 2-11** depicts the locations of the camera stations where license plate video was taken. License plate numbers were matched with vehicle registrants.

O/D surveys were then mailed to the registrants who could either complete the postage paid survey and mail it back or who could access the Manor Expressway Project survey web site and complete the O/D survey on line. A total of 1,325 postcards were returned and determined to be usable from the video license plate capture and mail-back O/D survey.

2.1.4.3 Summary of Motorists O/D Survey Data

A total of 17,312 roadside questionnaires were completed during the roadside vehicle intercept O/D survey. The time distribution of interviews was relatively uniform, ranging from 8.2 percent of the total interviews in the 8:00 AM to 9:00 AM period, to 9.8 percent in the 3:00 PM to 4:00 PM period and in the 5:00 PM to 6:00 PM period. **Table 2-5** displays the hourly distribution of the roadside vehicle intercept interviews.

Table 2-5 Roadside Vehicle Intercept O/D Survey Hourly Distribution

Period	Interviews	Percent	Period	Interviews	Percent
7- 8 AM	1,598	9.2	1- 2 PM	1,567	9.1
8- 9 AM	1,416	8.2	2- 3 PM	1,591	9.2
9-10 AM	1,630	9.4	3- 4 PM	1,692	9.8
10-11AM	1,605	9.3	4- 5 PM	1,449	8.4
11-12 AM	1,549	8.9	5- 6 PM	1,695	9.8
12- 1 PM	1,520	8.8			
			TOTAL	**17,312**	**100**

Source: GRAM, February 2006.

The number of vehicles passing through the roadside survey stations during the interview period totaled 57,859. The overall sample size represented 30 percent of the total vehicular count. **Table 2-6** provides the data distribution of the roadside survey by site location. The lowest sample rate was 12.2 percent at the US 290E at Tuscany Way survey station in the westbound direction. The highest sample rate was 57.0 percent at the Harris Branch Parkway survey station in the southbound direction.

Table 2-6 Roadside Vehicle Intercept O/D Survey Site Distribution

Site ID	Interviews	Percent	Site ID	Interviews	Percent	Site ID	Interviews	Percent
OD1	670	3.9	OD7	1,426	8.2	OD13	198	1.1
OD2	703	4.1	OD8	1,073	6.2	OD14	1,783	10.3
OD3	865	5.0	OD9	1,059	6.1	OD15	914	5.3
OD4	799	4.6	OD10	170	1.0	OD16	1,054	6.1
OD5	815	4.7	OD11	1,194	6.9	OD17	1,717	9.9
OD6	1,145	6.6	OD12	474	2.7	OD18	1,253	7.2
						TOTAL	**17,312**	**100.0**

Source: GRAM, February 2006.

As previously stated, a total of 1,325 postcards returned were usable from the video license plate capture and mail-back O/D survey. The time distribution of the reported trips was 22.8 percent from 6:00 AM to 9:00 AM; 25.5 percent from 9:00 AM to 3:00 PM; 48.4 percent from 3:00 PM to 7:00 PM; and 3.3 percent from 7:00 PM to 6:00 AM. The motorist O/D survey data, including roadside vehicle intercept interview and video license plate capture and mail-back survey, were processed and analyzed to identify any existing trip making characteristics and travel patterns. The trip features that were evaluated include trip generation type, trip purpose, trip frequency, vehicle occupancy, and whether using US 290E was part of their trip. Where data were readily available, the trips from the video license plate capture and mail-back O/D survey were combined with the roadside vehicle intercept O/D survey. The evaluation of trip purpose, trip frequency, and vehicle occupancy utilized the combined data from the two motorist O/D survey methods.

Trip Generation Type

Trip generation can be categorized by home-based and non-home-based trips. Home-based trips (a trip with either the origin or destination being "home") represented 62.6 percent of the total interviews. **Table 2-7** displays the distribution of the trips by whether or not they were home based.

Table 2-7 Distribution of Home-Based Trips

Home-Based Trip?	Number	Percent
Yes	10,612	62.6
No	6,350	37.4
TOTAL	**16,962**	**100.0**

Source: GRAM, February 2006.

Trip Purpose

A total of six trip purposes were included in both the roadside interview and mail-back survey questionnaire. Commuting to/from work was the highest trip purpose response at 37.7 percent of total trips, followed closely by work related business at 30.6 percent. Personal business was 15.9 percent. The remaining three purposes, travel to/from school, shopping, and social/recreational, were each less than 10 percent. **Table 2-8** identifies the number and percentage of each trip purpose for the O/D survey data collected.

Table 2-8 Trip Purpose

Trip Purpose	Number	Percent
Commute to/from Work	6,977	37.7
Travel to/from School	1,019	5.5
Work Related Business	5,662	30.6
Shopping	497	2.7
Social/Recreational	1,397	7.6
Other Personal Business	2,944	15.9
TOTAL	**18,496**	**100.0**

Source: GRAM, February 2006.

Trip Frequency

Of those who either were interviewed at a roadside location or have replied to the mail-back survey, 42.4 percent responded that they made the trip 4 to 5 times a week, followed by 17.6 percent making the trip more than 6 times a week. The average trip frequency for all trips being surveyed was 3.7 trips per week. **Table 2-9** shows the distribution of these trips by how often the trip was made.

Table 2-9 Trip Frequency

Frequency	Number	Percent
6+/week	3,255	17.6
4-5/week	7,836	42.4
2-3/week	2,838	15.4
1/week	1,416	7.7
2-3/month	888	4.8
1/month	1,133	6.1
less than 1/month	1,096	5.9
Total	**18,462**	**100**
Average	**3.7 trips per week**	

Source: GRAM, February 2006.

Vehicle Occupancy

Approximately 78.6 percent of the total vehicles that either were intercepted roadside or responded to the mail-back survey were solo drivers with no passengers. Average occupancy of all trips being surveyed was 1.3 persons per vehicle. **Table 2-10** provides the data distribution of these trips by the number of persons in the vehicle.

Table 2-10 Vehicle Occupancy

Persons Per Vehicle	Number	Percent
One	14,645	78.6
Two	3,069	16.5
Three	634	3.4
Four	199	1.1
Five or More	74	0.4
Total	**18,621**	**100**
Average	**1.3 persons per vehicle**	

Source: GRAM, February 2006.

Trips Using US 290E

Of all drivers interviewed during the roadside vehicle intercept O/D survey, 88.5 percent claimed that they used US 290E for part of their trip. The number and percentage of the trips using US 290E are summarized in **Table 2-11**.

Table 2-11 Trips Using US 290E

Use US 290E for Trip?	Number	Percent
Yes	15,217	88.5
No	1,974	11.5
Total	**17,191**	**100**

Source: GRAM, February 2006.

2.1.5 Turning Movement Counts

GRAM collected turning movement counts for the Manor Expressway Project at the intersections of US 290E and the US 183 frontage roads, at the SH 130 frontage roads, and at FM 734 (Parmer Lane) on September 10, 2008. The purpose of the turning movement count data collection effort was to understand current travel patterns at the key intersections within the study area. Turning movement counts were collected during peak periods from 7 AM to 9 AM and from 4 PM to 6 PM. The following discussion highlights the results of the turning movement count data collection effort. **Chapter 3** includes a comparison of the observed turning movement counts to the traffic demand model outputs.

Figures 2-12 and **2-13** present the peak hour turning movement counts at the intersection of US 290E and the US 183 frontage roads. Overall, the study intersections are more congested during the AM Peak Period than during the PM Peak Period. During the AM Peak Hour, there are 1,120 (1,053+67) vehicles approaching the intersection from the northbound US 183 frontage road south of US 290E. This volume accounts for approximately 30 percent of the total volume (3,700 vehicles) approaching the US 290E/US 183 intersection. Of the total volume of vehicles leaving the US290E/US 183 intersection during the AM Peak Hour, 1,558 (1,018+540) vehicles travel northbound on US 183 and 676 (152+524) vehicles travel westbound on US 290E. This pattern suggests that work-based trip

destinations are primarily north and west (toward downtown Austin) during the AM Peak Hour. During the PM Peak Hour, traffic volumes approaching the intersection from the eastbound US 290E frontage road and approaching US 183 or continuing on US 290E increased significantly relative to the AM Peak Hour (1,022 (281+741)) versus 795 (360+435)). These 1,022 vehicles represent almost one third of the total volume entering the US 290E/US 183 intersection (3,386 vehicles) during the PM Peak Hour. Of the total volume approaching the intersection during the PM Peak Hour (3,386 vehicles), there were 1,080 (741+339) vehicles, or approximately one third, traveling southbound on the US 183 frontage roads. Although the volumes are slightly lower than the AM Peak Hour, this turning movement pattern is the reverse in the AM Peak Hour, which suggests that the traffic volumes are commuters returning home to the south and east from work locations in the north and west.

Figures 2-14 and **2-15** present the turning movement volumes at the intersections of US 290E and the SH 130 frontage roads. These counts include only the movements at the signalized intersection and do not include traffic taking the right ramp movement from the SH 130 frontage road prior to the intersection. Approximately 2,718 vehicles entered the study intersections during the AM Peak Hour and 3,079 vehicles entered the intersections during the PM Peak Hour. Of the total number of vehicles approaching the intersection during the AM Peak Hour, 1,975 (1942+33) vehicles, or 73 percent, proceeded westbound on US 290E and 570 (532+38) vehicles, or 21 percent, proceeded eastbound on US 290E. During the PM Peak Hour, 702 (698+4) vehicles, or 23 percent, proceeded westbound on US 290E and 1,915 (1872+43) vehicles, or 63 percent, proceeded eastbound. This pattern is consistent with commuters heading to work in the westbound direction during the AM and heading in the eastbound direction and to home during the PM. The volumes on the SH 130 frontage roads were relatively low at the time of the study.

Figures 2-16 and **2-17** present the turning movement volumes at the intersection of US 290E and FM 734 (Parmer Lane)/Boyce Lane. At the time the turning movement count data was collected, Boyce Lane, the southern segment of FM 734 (Parmer Lane) was closed to traffic due to construction. During the AM Peak Hour, 1,839 (1828+11) vehicles, or 53 percent, approaching the intersection continued westbound on US 290E, while 771 (480+291) vehicles, or 22 percent, continued eastbound on US 290E. During the PM Peak Hour, 2,369 (1,661 + 708) vehicles, or 64 percent, approaching the intersection continued eastbound on US 290E, while 814 (806+8) vehicles, or 22 percent, continued westbound on US 290E. Of the 2,369 vehicles continuing eastbound on US 290E from the intersection during the PM Peak Hour, 708 vehicles, or 29 percent, came from southbound FM 734 (Parmer Lane) north of US 290E. Similarly, approximately 700 vehicles, or 20 percent, continuing northbound on FM 734 (Parmer Lane) during the AM Peak Hour came from eastbound US 290E during the AM Peak Hour.

Figure 2-12 AM Peak Hour Volumes at the Intersection of US 290E and US 183 Frontage Roads

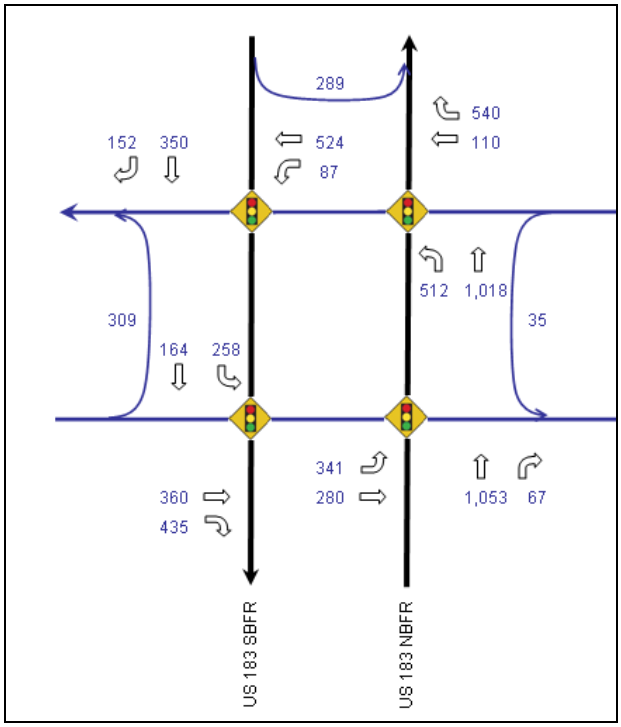


Figure 2-13 PM Peak Hour Volumes at the Intersection of US 290E and US 183 Frontage Roads

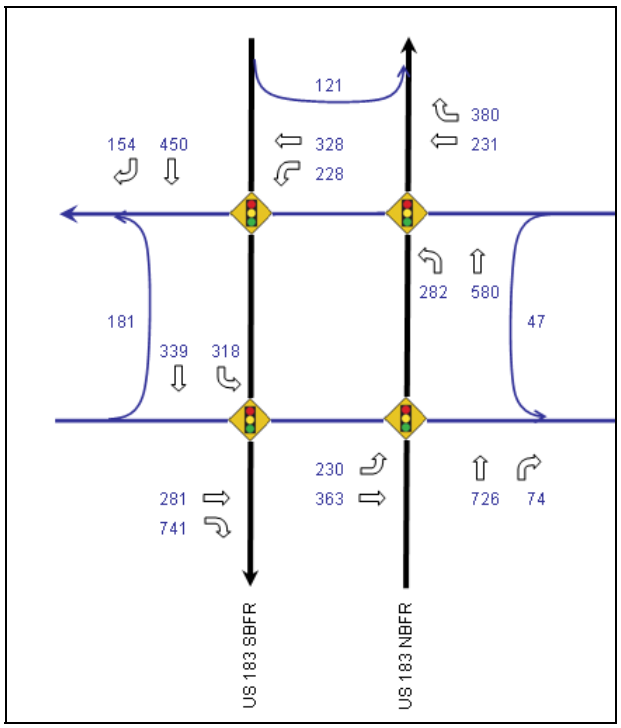


Figure 2-14 AM Peak Hour Volumes at the Intersection of US 290E and SH 130 Frontage Roads

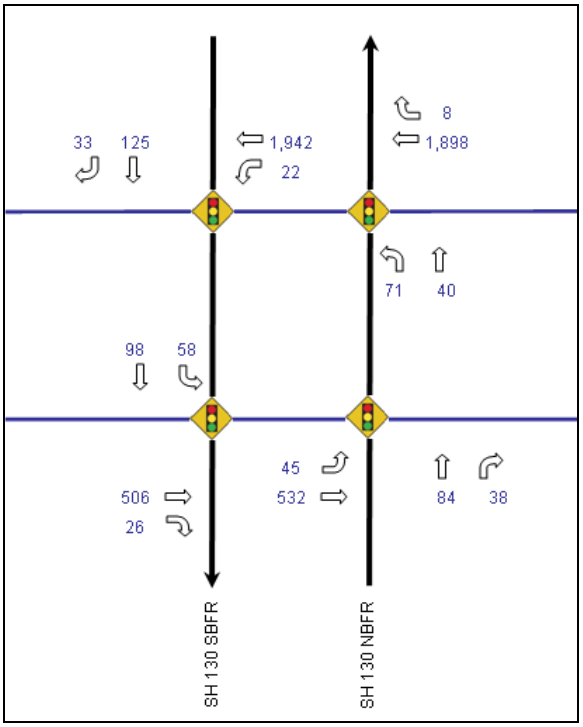


Figure 2-15 PM Peak Hour Volumes at the Intersection of US 290E and SH 130 Frontage Roads

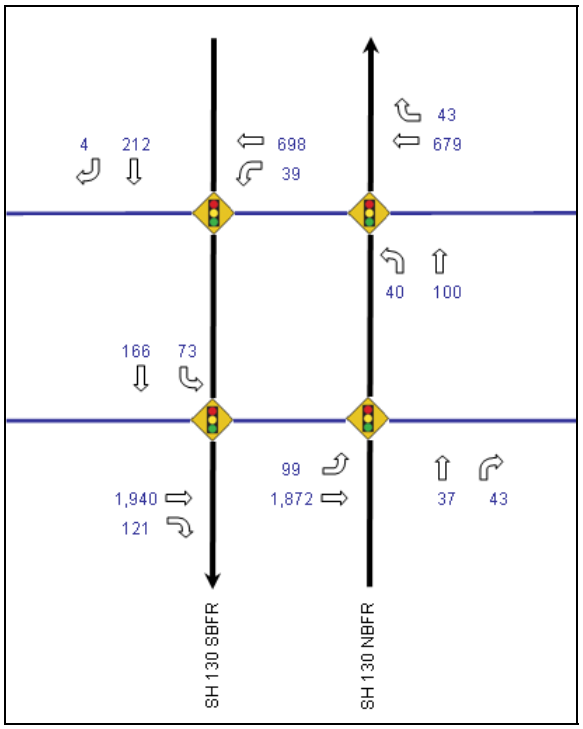


Figure 2-16 AM Peak Hour Volumes at the Intersection of US 290E and FM 734 (Parmer Lane)

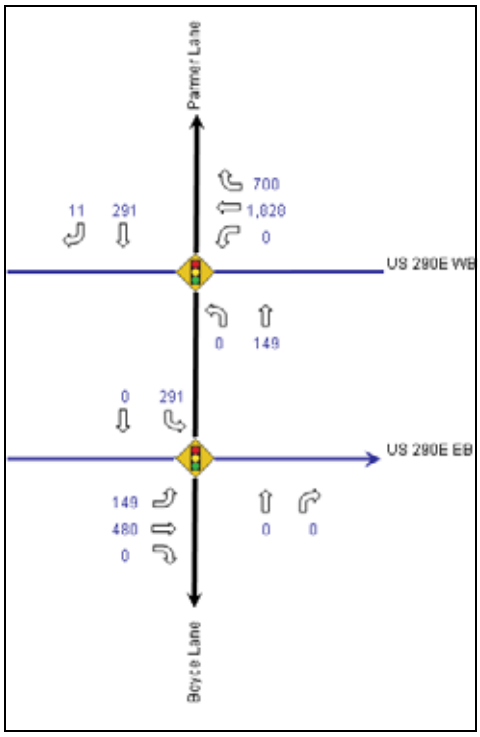
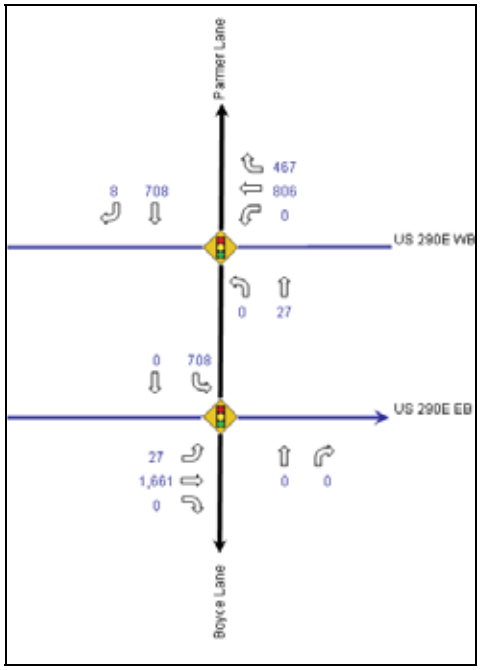


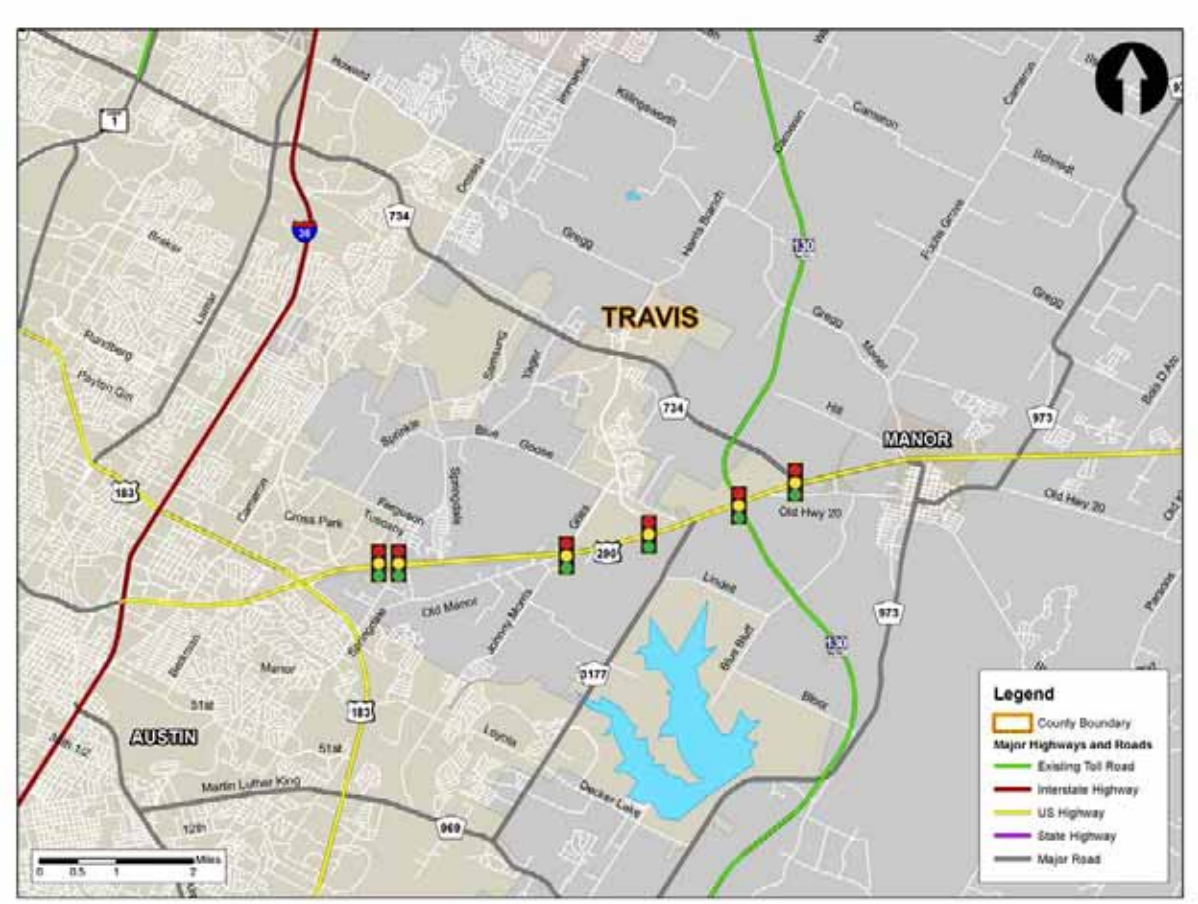
Figure 2-17 PM Peak Hour Volumes at the Intersection of US 290E and FM 734 (Parmer Lane)



2.1.6 Traffic Signals

Figure 2-18 displays the locations of existing traffic signals on US 290E within the project limit. There are 6 traffic signals along US 290E on the intersections with Tuscany Way, Springdale Rd, Chimney Hill Blvd, Giles Ln, Harris Ranch Pkwy, SH 130, and Parmer Ln. Drivers experience slow travel speeds along US 290E because of these traffic signals throughout the corridor during the peak periods. These traffic signals typically have a 3-minute cycle, which means drivers might encounter approximately 1.5 minute delay when stopped at one of these intersections. Depending on traffic conditions, it is not uncommon to experience 10 to 15 minutes of delay while passing through all 6 traffic signals in the peak period and peak direction in this corridor.

Figure 2-18 Existing Traffic Signal Locations



3 MODELING METHODOLOGY

This chapter describes the overall modeling methodology as well as various enhancements made to the model highway network, zonal structure, and trip tables. These enhancements include the introduction of a customized toll diversion process, referred to as the URS Toll Diversion Model, which was used to forecast demand for the proposed Manor Expressway.

3.1 Methodology and Enhancements

Previous T&R Studies have used CTRMA Model as the basis for estimating travel demand in the region and the latest version of the URS Toll Diversion Model for the highway assignment process. CTRMA Model is an enhanced version of the original CAMPO 2030 regional travel demand model (hereto as "CAMPO 2030 Model") which was initially developed for the T&R Study. CAMPO recently released its latest travel demand model referred to as CAMPO 2035 Model. Additionally, in February 2011, 2010 U.S. Census data at the census block level became available. As part of this study, URS updated model demographic inputs and future background roadway networks to ensure consistency of this information with the latest CAMPO 2035 Model and 2010 Census Data. The CAMPO 2035 Model is developed based on the CAMPO 2030 Model with same key parameters and thus compatible with the CAMPO 2030 Model and the CTRMA Model. In order to further verify this compatibility, toll diversion assignment results of 2008 trip tables were compared between the CAMPO 2035 Model and the CTRMA Model. The CAMPO 2035 Model extends the modeling coverage to five counties in Central Texas: Travis, Williamson, Hays, Bastrop, and Caldwell, from previous models with only the first three counties. As an intermediate step of this analysis, a subarea model was developed to convert the 2008 trip tables of the CAMPO 2035 Model to match with CTRMA zonal structure and boundary. URS has compared the trip table summaries and verified the compatibility. As a result, URS utilized the CTRMA Model for estimating regional travel demand for this current study.

The CAMPO Regional Travel Demand Model's primary function is to support regional mobility planning as the tool to measure the performance of the surface transportation system. The region's roadway and transit networks, transportation improvement projects, and socioeconomic data are input parameters required by the model. The CAMPO region is divided into much smaller analysis areas known as traffic analysis zones (TAZs).

The CAMPO 2030 Model was developed using TRANSCAD software and consists of the traditional four-step planning process: Trip Generation; Trip Distribution; Mode Choice; and Traffic Assignment. In the original model, trip generation and trip distribution processes were performed outside the TRANSCAD environment and only mode choice and traffic assignment were processed using TRANSCAD. URS streamlined the model by creating a menu-driven process to execute all four steps within the TRANSCAD environment. This streamlined model is more user-friendly and is compatible with TRANSCAD version 4.8. Due to limitations in the assignment

process of the CAMPO Models, particularly for toll analyses, URS utilized a proprietary toll diversion model to more accurately depict travelers' decisions to use a toll facility versus a non-toll facility. The URS Toll Diversion Model also allows for analysis of different types of payment methods, such as cash, transponder, and video tolling.

For this project, URS used an enhanced version of the CAMPO 2030 Model (referred to as enhanced CAMPO Model) initially developed for the Manor Expressway T&R Study as the basis for estimating travel demand in the region and the latest version of the URS Toll Diversion Model for the highway assignment process. These two models have been applied to various levels of T&R studies, from Level 1 Studies such as Loop 1 Managed Lane studies, and Level 2 studies for US 183, SH 71E, US 290W, and SH 45SW. In all of these studies, the original CAMPO 2030 Model was refined to provide better estimates of anticipated travel patterns. Various enhancements were made to the model including socioeconomic data updates, zonal disaggregation, highway network refinements in the vicinity of various corridors, and highway and transit network updates based on project information gathered from various sources in the region.

The enhanced CAMPO Model was used for the first three steps of the analysis; trip generation, trip distribution, and mode choice. Revised input parameters, including the socioeconomic data embedded at the TAZ level, provide input to trip generation. The development of socioeconomic forecasts is described in **Chapter 4**. Refinements to the existing roadway network to reflect current conditions and future roadway networks results in an origin/destination trip table that reflects the best understanding of the development of transportation infrastructure in the Austin region. The origin/destination trip table is input to the URS Toll Diversion Model for the traffic assignment step, which generates final traffic and toll revenue estimates.

The URS Toll Diversion Model developed traffic forecasts for four distinct time periods. This was essential for estimating toll diversion that is influenced by traffic congestion, which varies significantly by time period. The URS Toll Diversion Model included a specialized assignment routine that performs toll diversion using a binary logit model as described in **Section 3.3**.

3.1.1 Revised Zonal Structure

The original CAMPO 2030 Model has a total of 1,074 internal zones. Some of these zones were disaggregated, resulting in a total of 1,245 zones in the enhanced CAMPO Model prior to its application for the T&R Study. Zonal disaggregation involves the splitting of a TAZ in high density socioeconomic regions into smaller zones to provide better, detailed estimates of future travel patterns within the study area. The final zonal structure in the enhanced CAMPO Model is sufficiently detailed to support the enhanced highway network and facilitate detailed modeling of traffic movements and patterns in the vicinity of the Manor Expressway study area. This zonal structure was therefore implemented in both the enhanced CAMPO

Model framework for the development of the vehicle trip tables and in the URS Toll Diversion Model used to forecast traffic.

3.1.2 Network Enhancements

As part of the model development effort, several enhancements were made to the highway networks used in the enhanced CAMPO Model. These enhancements included modifying centroid connectors to reflect appropriate connection to the highway network. As a part of this effort, the number of lanes on all major highways coded in the model were also reviewed and corrected as necessary. Future year highway and transit networks used in the model were created by coding the future transportation projects that are scheduled to open by each of the specific years for the trip tables that were developed. The details regarding future background highway and transit projects were obtained from the CAMPO Mobility 2035 Plan and for major toll roads, this information was obtained from CTRMA as described in **Chapter 5**. Toll charges for the future toll facilities were also coded into the network based upon planned tolling policies verified by relevant agencies such as Texas Turnpike Authority (TTA).

3.1.3 Trip Table Development

The daily trip tables were developed using the enhanced CAMPO Model. Trips were generated by incorporating the updated socioeconomic forecasts developed at the disaggregated zonal level into TRIPCAL5, the trip generation program used in the CAMPO 2030 Model. Trip distribution (using the ATOM2 program) and mode choice routines were then executed to develop daily vehicle trip tables. These routines utilized the highway and transit skims that were generated using the enhanced highway networks described in **Section 3.1.2**. These are daily trip tables suitable primarily for policy-oriented planning purposes. URS used the procedure outlined in **Section 3.1.3.2** to develop the "Time-of-Day" (TOD) trip tables that were required for the development of traffic forecasts during various periods of the day. This was necessary for the development of traffic estimates for Manor Expressway Toll Road, since the demand on this tolled facility would be highly sensitive to congestion on the competing non-tolled roads that will vary by time of day.

3.1.3.1 Preparation of 2010 Trip Tables

The base year model developed for this project was calibrated to replicate 2010 traffic conditions for the network system and for the corridor. Therefore, it was necessary to create trip tables that reflected the 2010 development patterns and socioeconomic conditions for the entire CAMPO region represented by the model. The socioeconomic data was updated to reflect 2010 US Census demographic patterns. The development of the socioeconomic data is discussed in **Chapter 4** and **Appendix A**.

The revised socioeconomic data was used as the basis for the trip generation input. This revised socioeconomic data and other model parameters provided by CAMPO such as zone-level auto ownership were also used in the trip distribution and mode choice model components to estimate the 2010 trip tables. These trip tables were generated as daily trips by mode in production/attraction (P/A) format for each trip purpose.

3.1.3.2 Creation of Time-of-Day (TOD) Trip Tables

As a final step in the trip table development process, the daily trip tables were disaggregated into four distinct time periods. This step was necessary to facilitate the estimation of traffic during various periods of the day, because the level of congestion that influences toll diversion varies significantly by time period. Trip tables were developed for the following four time periods:

1. AM Peak Period (6 AM to 9 AM)
2. Mid-Day Period (9 AM to 4 PM)
3. PM Peak Period (4 PM to 7 PM)
4. Night Period (7 PM to 6 AM)

Table 3-1 shows Time-of-Day (TOD) factors by trip purpose that were used to allocate trips into the four time periods. These factors were developed from the 1997 Austin Household (HH) Survey conducted by CAMPO (See "1997 Base Year Travel Demand Model Calibration Summary for Updating the 2025 Long Range Plan" report dated May 2000). These same factors were also used in the analysis of several other toll roads in the region.

Table 3-1 Time-of-Day Factors

PERIOD	DURATION	A/P OR P/A	HBW	HBS	HBSch	HBO	NHBW	NHBO	TRUCK
AM PEAK	6:00 AM – 9:00 AM	P to A	30.2%	5.1%	29.5%	9.9%	4.6%	3.4%	8.4%
		A to P	0.5%	1.2%	4.8%	2.3%	4.6%	3.4%	8.4%
		Subtotal	*30.7%*	*6.3%*	*34.3%*	*12.2%*	*9.2%*	*6.8%*	*16.8%*
PM PEAK	4:00 PM – 7:00 PM	P to A	2.1%	11.4%	5.9%	11.1%	9.4%	11.3%	8.4%
		A to P	29.5%	13.3%	12.6%	12.4%	9.4%	11.3%	8.4%
		Subtotal	*31.6%*	*24.7%*	*18.5%*	*23.5%*	*18.8%*	*22.6%*	*16.8%*
MID-DAY		P to A	12.9%	16.8%	15.7%	20.8%	33.6%	25.5%	21.9%
		A to P	10.9%	20.2%	18.6%	18.5%	33.6%	25.5%	21.9%
		Subtotal	*23.8%*	*37.0%*	*34.3%*	*39.3%*	*67.2%*	*51.0%*	*43.8%*
NIGHT	7:00 PM – 6:00 AM	P to A	4.8%	9.7%	4.1%	8.2%	2.4%	9.8%	11.3%
		A to P	9.1%	22.3%	8.8%	16.8%	2.4%	9.8%	11.3%
		Subtotal	*13.9%*	*32.0%*	*12.9%*	*25.0%*	*4.8%*	*19.6%*	*22.6%*
DAILY	24 Hours	**P to A**	**50.0%**	**43.0%**	**55.2%**	**50.0%**	**50.0%**	**50.0%**	**50.0%**
		A to P	**50.0%**	**57.0%**	**44.8%**	**50.0%**	**50.0%**	**50.0%**	**50.0%**
		TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

HBW= Home-Based Work; HBS = Home-Based Shopping; HBSch = Home-Based School; HBO = Home-Based Other; NHBW = Non-Home-Based Work; NHBO = Non-Home-Based Other: A=Attraction; P=Production

As described earlier, the trip tables obtained from the enhanced CAMPO Model were in P/A format rather than the usual origin/destination (O/D) format that is required for use in the traffic assignment routine. The distinction between P/A and O/D trip tables is most easily explained by the example of commuting trips from home. On an O/D basis, a commuter from the suburbs with a workplace in the Central Business District (CBD) completes one trip from the suburbs to the CBD in the morning and one trip from the CBD to the suburbs in the evening. On a P/A basis, the suburb "produces" two Home-Based Work (HBW) trips at the "home" end and the CBD "attracts" two HBW trips at the employment end. The trip tables were converted into the O/D format by first transposing these trip tables (matrices) and then applying the appropriate "directional" TOD factors shown in **Table 3-1**.

3.1.3.3 Development of Future Trip Tables

The future year trip tables were developed at five-year intervals using the enhanced CAMPO Model, resulting in the creation of future trip tables for 2010, 2015, 2025, 2030, and 2035. The ultimate configuration for the Manor Expressway Toll Road is proposed to extend from the Manor Expressway/US 183 interchange to FM 734 (Parmer Lane) and will include Phase I and Phase II. Phase I of the Manor

Expressway Project which is expected to collect tolls from 2013 and include four direct connectors at US 183. Phase II Interim Milestone extends from US 183 to slightly west of Chimney Hill Boulevard and is also expected to collect toll from 2013. Phase II Full Build extends from the end of Phase II Interim Milestone to FM 734 (Parmer Lane) and is scheduled to be built by 2015. Based on the proposed segment opening years and the ultimate configuration of the Manor Expressway Toll Road and other background highway improvement projects in the area, traffic and toll revenue estimates were developed for years 2010, 2013, 2015, 2016, 2018, 2020, 2025, and 2030. The trip tables for year 2013, 2016, and 2018 were developed by using straight-line interpolation between the closest available trip tables at five-year intervals.

3.2 Model Calibration

The model calibration effort was undertaken in three separate steps and was based on calibration analysis that was performed as part of the T&R Study conducted by URS in December 2008 and following update studies in December 2009 and March 2010 (referred to as previous studies). URS applied the previous studies' applicable calibration changes to the 2010 model and conducted an updated model run calibration. This study used 2009 for the system-wide calibration since TxDOT 2010 regional counts were not available at the time the study was conducted.

The validation/reasonableness checks for the estimated volumes in both the previous and current studies are based on the "Model Validation and Reasonableness Checking Manual, Second Edition" report prepared for the Federal Highway Administration (FHWA) in September 2010. In the first step of the calibration process, URS reviewed the results of the enhanced CAMPO Model at the regional level for 2010 to ensure that the model calibration results were reasonable. The second step in the process included an update of a more comprehensive, corridor-specific calibration of the URS Toll Diversion Model that included the detailed highway networks as described in **Section 3.1.2** for 2010. In the third step, the URS team collected and summarized 2010 toll counts available from toll road systems in Austin and compared them with toll road estimated volumes at gantry locations. The results of this comparison showed that with the base toll bias parameters, the model is reasonably validated for toll road systems and thus no adjustments were needed. Toll bias represents motorists' reluctance to utilize toll roads even when the value of the travel time savings exceeds the toll charge. This adjustment was then applied to the future years' model runs to ensure a more accurate future traffic forecast.

3.2.1 Regional Model Assignment Review

URS performed an assessment of the model calibration results of the revised 2010 enhanced CAMPO Model, using the updated demographic data and the disaggregated zonal structure, to ensure that the overall level of trip-making activity predicted by the model was reasonable. URS reviewed the model results by

comparing the ratios of observed and model estimated Vehicle-Miles-Traveled (VMT) on links categorized by area type and facility type.
The grouping of links based on area type and facility type are used in travel demand modeling to classify highway links based on their location in the region as well as their physical characteristics and the hierarchy of the travel market segments that they serve. The area types are defined at the zonal level based on the density of development that occurs in each zone. The zones in the CBD have the highest density levels while those in the rural areas have the lowest. The facility types are based on the physical characteristics of the links in terms of travel speed and throughput capacity. These characteristics include the width of the travel lanes, the presence and spacing of at-grade intersections, and the type of traffic control devices at those intersections. The facility types can also be viewed in terms of the varying levels of mobility and accessibility that they provide, with freeways providing the maximum mobility with high speeds and limited access. In contrast, collector and local streets provide access to local developments and have low travel speeds, thus providing maximum accessibility.

The model validation checks based on the ratios of observed and model estimated VMT on links categorized by area type and facility type revealed that the enhanced CAMPO Model over-estimated traffic volume by approximately four percent for 2010. **Table 3-2** lists the initial enhanced CAMPO Model validation results. As part of the this study's calibration effort, URS reduced the internal trips within the three county CAMPO Model by four percent to account for over-estimation of traffic due to trip generation and/or trip distribution steps of the model. Thus, this calibration adjustment was applied to the 2010 trip table developed in this current study. URS did not adjust any of the network attributes used in the enhanced CAMPO Model to further improve model calibration results. The 2010 adjusted daily trip tables were imported into the URS Toll Diversion Model for a further calibration effort. **Table 3-3** lists the revised calibration results using the URS Toll Diversion Model.

Table 3-2 CAMPO Model Validation: Estimated/Observed VMT Ratios (2010 Regional Model)

FACILITY TYPE	No. of Observations	CBD-Fringe	URBAN	SUBURBAN	RURAL	TOTAL
IH-35	76	1.00	0.96	1.00	1.37	**1.03**
Other Freeway	72	0.95	0.90	1.35	-	**0.97**
Expressway	26	1.27	1.14	1.16	-	**1.16**
Principal Arterial Divided	272	0.90	1.04	1.20	1.26	**1.17**
Principal Arterial Undivided	346	0.97	0.78	1.13	1.22	**1.17**
Minor Arterial Undivided	40	-	-	0.61	0.94	**0.87**
Total	**832**	**0.97**	**0.93**	**1.12**	**1.24**	**1.06**

Table 3-3 URS Model Calibration: Estimated / Observed VMT Ratios (2010 Regional Model)

FACILITY TYPE	No. of Observations	CBD-Fringe	URBAN	SUBURBAN	RURAL	TOTAL
IH-35	76	0.98	0.94	0.98	1.35	**1.01**
Other Freeway	72	0.92	0.86	1.32	-	**0.94**
Expressway	26	1.20	1.10	1.11	-	**1.11**
Principal Arterial Divided	272	0.87	0.99	1.15	1.21	**1.12**
Principal Arterial Undivided	346	0.93	0.76	1.08	1.18	**1.13**
Minor Arterial Undivided	40	-	-	0.56	0.91	**0.83**
Total	**832**	**0.94**	**0.90**	**1.08**	**1.20**	**1.03**

3.2.2 Corridor Model Calibration

After reviewing the results of the enhanced CAMPO Model, the validation effort then focused on the estimation results of the URS Toll Diversion Model which was calibrated for 2010 traffic conditions. As part of this study's calibration effort, URS performed detailed model calibration for the study area using the 2010 traffic counts obtained for this study. The study area was bounded by IH-35 in the west, MLK (FM 969) in the South, the CAMPO Model boundary (county line) in the east, and approximately 4 miles to the north. All available traffic count data collected within the study area corridor was used to calibrate the model for the daily traffic volumes within the Manor Expressway study area. In this study, URS updated and reviewed calibration results based on recent model runs and 2010 traffic counts to ensure that the base year model is still valid.

3.2.2.1 Assignment Calibration

The calibration of the URS Toll Diversion Model for the previous study was conducted by performing network adjustments as necessary in order to minimize the difference between the estimated and observed link volumes as well as VMT, while keeping the trip table constant. However, after all appropriate network refinements had been made to improve the calibration, the estimated volumes were higher than observed counts by 6 percent system wide and 16 percent on screenlines on a daily basis. To minimize these differences, a trip adjustment process was employed.

URS employed a special trip adjustment process to minimize the differences in the observed counts and model-estimated link volumes and VMT for each of the four time periods. This is an iterative process which adjusts trip values between specific origin-destination zonal pairs based on the difference between observed counts and estimated link volumes along the path between the two zones. The peak period trip tables were adjusted using the traffic counts for each period that were developed using the hourly traffic count data collected for this project.

URS applied the above corridor calibration adjustments to the current study's base year model and reviewed the final model results to assure that the trip adjustment process did not improve the calibration results in the Manor Expressway Toll Road at the expense of other roadways in the area. This effort involved the review of traffic assignment on other roadways farther away from the study area along the six screenlines initially developed for the data collection as shown in **Figure 3-1**. This review indicated that the trip adjustment process did not create any anomalies in the overall trip levels in the region.

Figure 3-1 Assignment Validation Screenlines

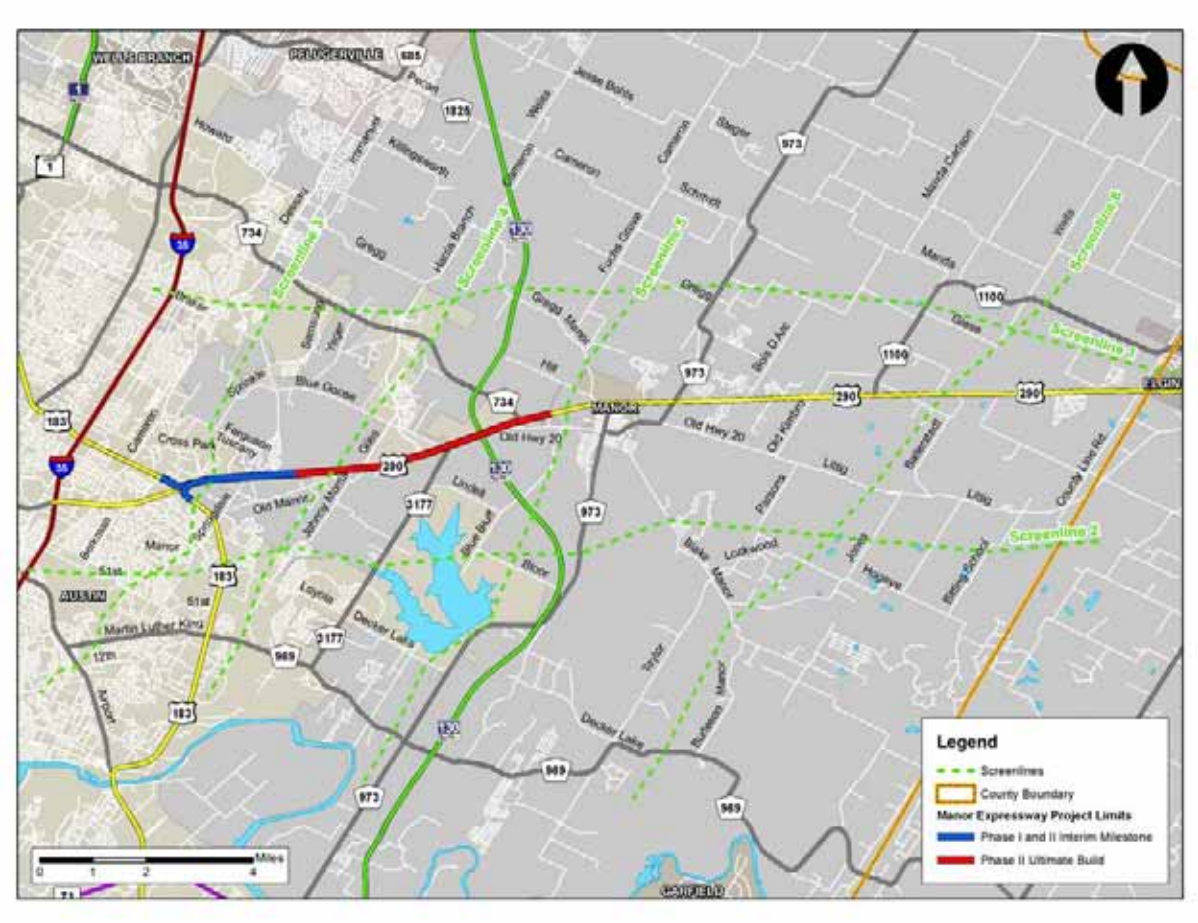


Table 3-4 lists the ratios of model-estimated and observed VMT for various facility types for daily traffic as well as for each of the four time periods used in the URS Toll Diversion Model. The calibration results shown in the table are for the Manor Expressway Project study area only.

Table 3-4 URS Model Assignment Corridor Calibration: Estimated / Observed VMT Ratios by Facility Type

Facility Type	No. of Observations	AM	MD	PM	NT	Daily
Other Freeway	11	1.05	1.02	1.30	0.89	**0.96**
Expressway	2	0.93	1.06	1.14	0.78	**0.99**
Major Arterial Divided	30	0.97	1.18	1.13	0.83	**1.05**
Major Arterial Undivided	24	1.20	1.21	1.26	0.57	**1.10**
Minor Arterial Undivided	40	1.01	1.08	1.10	0.57	**0.97**
Total	**107**	**1.01**	**1.12**	**1.18**	**0.79**	**1.02**

The results included in **Table 3-4** indicate that, on aggregate, the model-estimated VMT on a 24-Hour basis match the observed VMT, although there is variation by time periods. The traffic volumes for the Mid-day Period (9:00 AM - 4:00 PM) and for the PM Peak Period (4:00 PM - 7:00 PM) are respectively over-estimated by 12 and 18 percent. One of the reasons for this result is that the TOD factors are developed based on a household travel survey, which includes dated material. Overall, model assigned volumes are reasonable and the model is valid for forecasting traffic on the Manor Expressway Project for future years.

Table 3-5 lists the observed and estimated 24-hour volumes across these six screenlines. The table lists screenline calibration of daily traffic volumes by roadway across the six screenlines. The screenline calibration ratios for all six screenlines are within the acceptable range of 0.94 to 1.22. The estimated volumes of most screenlines are within 10 percent (+/-) of the observed volumes. Due to the relatively low total volume, screenlines 1 and 2 are overestimated by more than 10 percent but are still within desirable limit based on the “Model Validation and Reasonableness Checking Manual, Second Edition” report. For the overall total of all six screenlines, model estimated volumes are within one percent of the observed traffic. Model estimated volumes on Manor Expressway Toll Road (US 290E) are within 10 percent of observed volumes.

Table 3-5 URS Model Screenline Calibration

Screenline	Street Name	Volume	Count	V/C Ratio
1	Dessau Road	37,425	32,870	1.14
	Parmer Lane	24,307	23,390	1.04
	Harris Branch Parkway (Cameron Road)	9,241	7,310	1.26
	Gregg Manor Road	2,444	690	3.54
	Fuchs Grove Road	715	940	0.76
	Wells Branch Parkway	2,920	1,480	1.97
	FM 973	5,194	5,390	0.96
	FM 1100	1,511	630	2.40
	County Line Road	4,389	3,680	1.19
	Sub-Total	**88,146**	**76,380**	**1.15**
2	51St Street	14,000	15,620	0.90
	Manor Road	10,139	9,550	1.06
	Springdale Road	9,874	10,390	0.95
	Loyola Lane	4,690	7,070	0.66
	US 183S	65,172	65,380	1.00
	Johnny Morris Road	7,908	4,130	1.91
	FM 3177	6,433	7,590	0.85
	Braker Lane / Bloor Road	680	150	4.53
	FM 973	5,549	6,840	0.81
	Brenham Street	8,185	8,420	0.97
	Bitting School Road	684	600	1.14
	Sub-Total	**133,314**	**135,740**	**0.98**
3	Ferguson Lane	1,689	4,970	0.34
	US 183 Frontage Road	27,036	33,460	0.81
	US 290E	49,815	46,380	1.07
	US 183S	45,822	47,900	0.96
	Manor Road	9,393	10,640	0.88
	51st Street	8,365	9,540	0.88
	Manor Road	10,192	8,620	1.18
	FM 969	17,348	18,240	0.95
	Airport Boulevard	36,179	37,310	0.97
	E 12th Street	7,679	10,330	0.74
	Sub-Total	**213,518**	**227,390**	**0.94**
4	Parmer Lane	18,048	17,660	1.02
	Blue Goose Road	842	1,820	0.46
	US 290E	41,778	44,490	0.94
	Old Manor Road	770	940	0.82
	Loyola Lane	20,696	21,000	0.99
	FM 969	30,947	30,170	1.03
	Sub-Total	**113,081**	**116,080**	**0.97**
5	Gregg Manor Road	4,055	1,280	3.17
	US 290E	39,283	39,210	1.00
	Old Highway 20	7,439	5,710	1.30
	FM 973	4,508	6,710	0.67
	Decker Lane	1,676	2,010	0.83
	FM 969	21,247	17,110	1.24
	Sub-Total	**78,208**	**72,030**	**1.09**
6	FM 1100	2,811	720	3.90
	US 290E	27,139	24,790	1.09
	Littig Road	1,506	650	2.32
	Lockwood Road	507	1,050	0.48
	Blake-Manor Road	3,660	3,030	1.21
	FM 969	7,043	4,650	1.51
	Sub-Total	**42,666**	**34,890**	**1.22**
	Grand Total	**668,933**	**662,510**	**1.01**

3.2.2.2 Calibration of Network Speeds

In addition to the calibration of the model for link volumes, URS also reviewed the model results so that the congested travel speeds predicted by the model along the roadways in the vicinity of the Manor Expressway Toll Road are reasonable. This analysis was performed so that the toll traffic predicted by the model is based on acceptable estimates of speeds and travel times in the corridor. This is an essential part of the model calibration because the level of congestion in the corridor is the primary reason for diversion of traffic to the toll road.

Table 3-6 lists the observed and model-estimated congested speeds during the AM and PM Peak Periods as well as during the Mid-Day Period along the four corridors in the Manor Expressway Project study area as described previously in **Section 2.1.3**. The model-estimated speeds for US 290E are less than 7 mph different from the observed speeds, except for the eastbound direction in the PM Peak Period, where they are 11 mph lower. Note that the current US 290E corridor is classified as a major arterial and the Manor Expressway Toll Road classification will be classified as a freeway.

Speeds on the US 183 main lanes are also within a reasonable range. The estimated speeds on the IH-35 main lanes are generally within close range of the observed speeds, except for the Mid-Day Period, where the model speeds are 18 mph and 11 mph below the observed southbound and northbound speeds, respectively. The model-estimated speeds on SH 130 closely match the observed speeds. Overall, the level of calibration of travel speeds was deemed reasonable for a planning model which does not have the capability of modeling queue spillbacks and delay associated with weaving movements.

3.2.2.3 License Plate Origin/Destination Survey

Another aspect of model calibration included a comparison of observed and model-estimated travel patterns in the vicinity of the Manor Expressway Toll Road. As described in **Section 2.1.4.2**, a video license plate survey was conducted at three locations to ascertain the proportion of through and local trips along competing routes in the vicinity of the Manor Expressway Toll Road. Through trips are defined as trips with a travel time of less than one hour between origin and destination. The locations where the video license plate survey was conducted were shown in **Figure 2-11.**

Table 3-6 URS Model Speed Calibration

Route	Direction	Distance	AM Travel Speed			MD Travel Speed			PM Travel Speed		
			Obs.	Est.	Diff.	Obs.	Est.	Diff.	Obs.	Est.	Diff.
US 290E	EB	10.11	43.4	46.3	2.9	48.4	41.5	-6.9	44.2	32.7	-11.5
	WB	10.17	31.7	26.8	-4.9	48	41.4	-6.6	38	44.7	6.7
US 183	SB	4.69	41.6	36.7	-4.9	47.8	41.8	-6.0	42.7	35.1	-7.6
	NB	4.96	45.5	36.9	-8.6	47	41.6	-5.4	30.7	33.6	2.9
IH-35 Main Lanes	SB	43.51	44.9	39.4	-5.5	63.5	45.4	-18.1	40.9	38.1	-2.8
	NB	43.79	41.1	43.1	2.0	56.7	45.5	-11.2	37	38.7	1.7
SH 130	SB	47.15	67.8	68.7	0.9	69.4	68.7	-0.7	68.5	68.7	0.2
	NB	47.12	71.5	68.8	-2.7	70.8	68.8	-2.0	72.6	68.8	-3.8
Parmer Lane (FM 734)	EB	7.35	42.2	43.2	1.0	36.2	45.1	8.9	38.4	42.8	4.4
	WB	7.35	39.3	40.3	1.0	36.8	45.5	8.7	37	44.2	7.2
MLK Boulevard (FM 969)	EB	11.51	37.7	42.8	5.1	41.1	41.1	0.0	34.8	33.9	-0.9
	WB	11.51	29.7	30.5	0.8	37.2	40.6	3.4	35.4	41.4	6.0
Giles Lane/Johnny Morris Road	SB	4.39	30.1	32.2	2.1	33.3	35.7	2.4	32.8	35.7	2.9
	NB	4.39	32.5	35.2	2.7	32.5	35.6	3.1	33.1	33.8	0.7
FM 3177	SB	4.7	48.8	43.3	-5.5	50.3	44.3	-6.0	51.2	43.8	-7.4
	NB	4.7	38.2	44.5	6.3	39.3	44.5	5.2	47.1	43.1	-4.0
Kimbro Road/ Parsons Road/Taylor Lane	SB	8.13	41.7	41.1	-0.6	44.2	41.1	-3.1	43.1	41.1	-2.0
	NB	8.13	41.9	41.1	-0.8	43.5	41.1	-2.4	45	41.1	-3.9

Table 3-7 compares the observed and model-estimated trip patterns for daily traffic within the study area. As shown in the table, the model-estimated trip distances and travel times closely match observed samples. Among the trips intercepted at the survey site, four major directions corresponding to the survey sites for both the trip origins and destinations are compared. In most cases, the difference in observed and model-estimated percentage shares is within 5 percent. For the US290E and Tuscany Way survey stations (Sites 15 and 18), the most traveled origins and destinations for both directions show similar distributions. The model-estimated trips are slightly more dispersed, especially for Site 15. Also, the model-estimated trips that passed the US290E and FM 973 survey stations (Sites 16 and 17) show similar travel patterns in terms of origin and destination distributions. Most directions matched within 5 percent, except that Site 16's origin and Site 17's destination show an 8 to 9 percent difference because of a more concentrated distribution. In general, the overall model estimates of the corridor trip patterns are reasonable.

3.2.2.4 Turning Movement Counts

Turning movement counts were collected at the intersections of Manor Expressway with the US 183 frontage roads, SH 130 frontage roads, and FM 734 (Parmer Lane) during the AM and PM Peak Periods (6 AM to 9 AM and 4 PM to 7 PM, respectively). Based on the comparison of observed turning movement counts to traffic demand model outputs, the model-estimated AM Peak Hour turning movement patterns are similar to the observed patterns.

Table 3-7 Manor Expressway O/D Survey Comparison: Survey vs. Model

SITE 15 - US 290E Westbound @ Tuscany Way

% ORIGIN			% DESTINATION		
Direction	% OBS	% EST	Direction	% OBS	% EST
Northeast	45.9%	41.4%	Northwest	33.4%	30.2%
Southeast	11.1%	16.4%	Southwest	27.8%	30.8%
Northwest	19.5%	24.2%	Northeast	8.2%	7.0%
Southwest	15.3%	9.1%	Southeast	6.1%	10.4%

	Observed	Estimated
Average Distance	19.4	19.4
Average Travel Time	26.9	27.9

SITE 16 - US 290E Eastbound @ FM 973

% ORIGIN			% DESTINATION		
Direction	% OBS	% EST	Direction	% OBS	% EST
Northwest	35.1%	37.8%	Northeast	93.4%	85.2%
Southwest	27.9%	30.6%	Southeast	6.1%	13.3%
Northeast	6.8%	8.9%	Northwest	-	-
Southeast	4.0%	2.0%	Southwest	-	-

	Observed	Estimated
Average Distance	24.0	23.1
Average Travel Time	32.1	31.8

SITE 17 - US 290E Westbound @ FM 973

% ORIGIN			% DESTINATION		
Direction	% OBS	% EST	Direction	% OBS	% EST
Northeast	93.0%	86.9%	Northwest	37.6%	43.1%
Southeast	5.3%	13.1%	Southwest	22.2%	21.9%
Northwest	0.4%	-	Northeast	8.9%	6.7%
Southwest	-	-	Southeast	3.6%	3.7%

	Observed	Estimated
Average Distance	22.8	21.8
Average Travel Time	30.6	29.8

SITE 18 - US 290E Eastbound @ Tuscany Way

% ORIGIN			% DESTINATION		
Direction	% OBS	% EST	Direction	% OBS	% EST
Northwest	24.9%	25.2%	Northeast	35.0%	32.3%
Southwest	25.3%	30.2%	Southeast	9.4%	13.3%
Northeast	14.3%	13.4%	Northwest	36.8%	33.7%
Southeast	4.2%	8.0%	Southwest	11.8%	13.7%

	Observed	Estimated
Average Distance	17.3	17.7
Average Travel Time	24.2	25.7

3.3 Toll Diversion Methodology

The proportion of traffic predicted to use the toll road is estimated by a customized toll diversion model implemented within the highway assignment process. The toll diversion model is essentially a “route choice” model permitting travelers to select between the best tolled and the best non-tolled route. These models are based on straightforward binary logit functions that consider time and costs associated with each route. The toll diversion model was validated using existing toll road usage data.

A project-specific Stated Preference (SP) survey that provides an indication of travelers’ willingness to pay tolls was conducted in 2006 based on the factors previously described, and to supplement the value of time parameters based on the previous surveys. Resource Systems Group (RSG) conducted the SP surveys at locations in the vicinity of the Manor Expressway Toll Road to collect data that allowed the development of estimates of sensitivity to tolls, or "values of time," of motorists in the corridor. The value of time is estimated by presenting respondents with a series of hypothetical time and cost trade-offs and using the "stated" choices to derive a respondent’s underlying value of time. The survey can also be used to determine if travelers have any preconceived biases against using toll roads. The initial models were then adjusted during an extensive validation effort so that they correctly estimate the level of traffic on existing toll roads and have the appropriate level of sensitivity to key policies, such as variation in toll rates.

3.3.1 Stated Preference Survey

The SP survey responses were obtained from a cross section of different travel segments so that the data would support an analysis of toll sensitivities by trip type sufficient for toll diversion modeling. The SP survey approach employed a Computer-Assisted Self-Interview (CASI) technique that was developed by RSG. The customized proprietary software was programmed for administration in the field at intercept sites on laptop PCs as well as for use over the Internet via e-mail distribution to a targeted audience.

Two SP questionnaires, one for automobile users and one for commercial vehicle users, were developed that allowed the estimation of the Value of Time (VOT) for travelers in the region. These questions represented SP “experiments”, which were a set of trade-off questions that are presented to each respondent in which characteristics of the corridor travel alternatives – travel times and tolls – were systematically varied. The automobile respondents were asked multiple questions within which they had to choose between the non-toll and toll alternatives. Commercial vehicle respondents were also asked multiple questions within which they chose between non-toll and toll alternatives. Both questionnaires also included sufficient demographic details (or, in the case of the commercial vehicle survey, questions about the load, vehicle and type of operator) to allow the data to be segmented into market groups of similar characteristics and the value of time outputs from statistical modeling to be applied to the full population of users.

Based on the analysis of the SP survey responses of automobile users, separate values for the time and cost coefficients used in the toll diversion equation as well as toll bias constants were estimated for each of the six trip purposes used in the travel demand model. These trip purposes are Home-Based-Work (HBW), Home-Based-Shopping (HBS), Home-Based-School (HBSch), Home-Based-Other (HBO), Non-Home-Based Work (NHBW), and Non-Home-Based-Other (NHBO). Time and cost coefficients for truck trips, along with a toll bias constant were developed from the survey responses of commercial vehicle users.

3.3.2 Toll Diversion Model Development

Within the framework of the URS Toll Diversion Model, a toll diversion process was employed to estimate the portion of trips electing to use the toll road. The URS Toll Diversion Model is essentially a "route choice" model built into the traffic assignment routine that permits the model to allocate trips between the best toll route and the best non-toll route for a given origin-destination zonal pair. The URS Toll Diversion Model was structured as a binary logit model for each trip purpose that estimates the probability of selecting a toll road based on the tradeoff between travel time savings and associated toll costs. The URS Toll Diversion Model was also structured to enable market segmentation by payment type (i.e., transponder, cash or video-tolling) thereby producing separate traffic forecasts for each market segment.

The cost term used in the utility expression of the logit model varied slightly by trip purpose. The stated preference survey indicated that the HBW and NHBW trip purposes were sensitive to the income level of the traveler. The toll bias constant is a penalty that discourages the use of toll roads, reflecting a preconceived reluctance on the part of travelers to utilize toll roads. It represents a bias against the use of toll roads, after evaluation of the time and cost trade-offs. The value of this constant is a reflection of travelers' initial opposition to the introduction of toll roads in the region. In regions where toll facilities are present, the toll bias terms tend to be minimal, as travelers recognize the benefits in terms of timesaving provided by the toll facilities. The new SP survey conducted for the Manor Expressway Project revealed a lower value of toll bias compared to the previous SP surveys conducted in the region, largely due to the fact that several toll roads have opened in the Austin region in the last two years.

3.3.3 Toll Diversion Model Parameters

The model coefficients, toll bias, and value of time used in the URS Toll Diversion Model are listed in **Table 3-8**. The values presented in the model are adjusted values based on the calibration of the model using actual toll transactions from the toll roads in the region. An analysis of the value of time implied by the time and cost coefficients was also conducted. The values of time for auto trips vary by trip purpose within a range from $11.29 to $17.49 per hour. For auto trips, the higher values, such as those associated with HBW trips and NHBO trips, indicate a greater willingness to pay a toll in order to save travel time. This willingness is most likely due to the urgency associated with those trip purposes. In contrast, the lower values of time for purposes such as home-based other trips suggest that these trips are less willing to pay the toll associated with the time savings. For trucks, the relatively high value of time reflects the greater sensitivity related to the delivery of the commodities being transported and costs associated with drivers' salaries.

Table 3-8 Toll Diversion Model Coefficients and Value of Time

	Coefficients			Constants		Value of Time ($/HR)
	Time	Cost	Income(000)	Toll Bias	ETC Bias	
Home Based Work	0.129	0.612	-0.00227	0.331	-0.319	15.73
Home Based Shopping	0.123	0.630		0.285	-0.272	11.71
Home Based School	0.158	0.840		0.288	-0.236	11.29
Home Based Other	0.088	0.452		0.239	-0.234	11.63
Work Based Other	0.108	0.606	-0.00445	0.220	-0.187	17.49
Other Based Other	0.109	0.404		0.244	-0.226	16.19
Truck	0.115	0.234		0.302	-0.294	29.57

Note: Value of time is estimated based on 2008 household income of $52,900

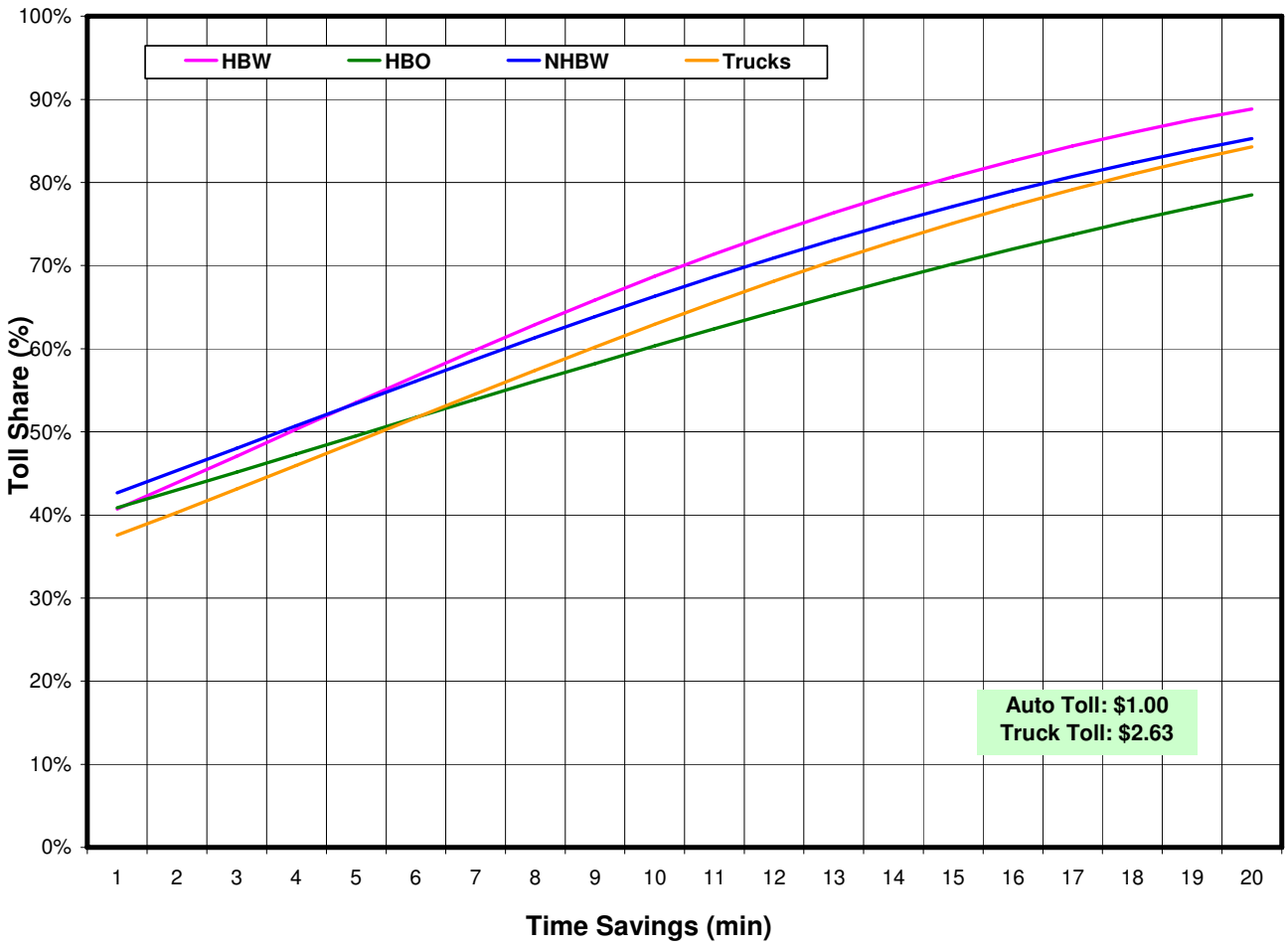
A weighted average value of time for all trips except trucks was calculated by multiplying the value of time for each trip purpose by the number of trips in that purpose. The average value of time for all trips was approximately $14.28 per hour. This value compares favorably to relationships with the average wage rate of the region. For the CAMPO region, the weighted median household income for 2008 is estimated to be approximately $52,900. Using the $14.28 estimate, the value of time is approximately 56 percent of the average wage rate of the CAMPO region. While in previous studies there has been significant variation in the value of time as a function of wage rate, it is generally accepted that the value of time should be within 50 to 70 percent of the average wage rate.

The toll bias constants for the auto purposes used in the model range from 0.220 to 0.331 for video payment users. For transponder users, there is practically no bias against using the toll roads.

The coefficients and bias terms estimated from the SP analysis for the truck trips were also assessed for reasonableness. The estimated value of time was adjusted to $29.57 to be consistent with previous SP analysis for commercial trips with respect to toll roads.

Figure 3-2 shows a graph of the toll shares for the three common auto trip purposes as well as truck toll shares against savings in travel time based on the coefficients and constants utilized in the URS Toll Diversion Model. Note that the graph displays only a sample of toll diversion curves using a constant toll value of $1.00 for autos and $2.63 for trucks. The use of a $2.63 toll for trucks reflects the expected truck multiplier in the Manor Expressway Toll Road. In practice the toll rates paid and the time savings will vary significantly depending on the length of the toll roads used and time of day the trip occurs.

Figure 3-2 Sample Toll Diversion Curves by Trip Purpose



4 SOCIOECONOMIC FORECASTS

An important input for the travel demand model is the socioeconomic data (SE data) for the area represented by the model. URS retained the services of ATG to review the socioeconomic forecasts for the Manor Expressway Toll Road based on the CAMPO Mobility 2035 Plan and the latest 2010 Census data. ATG conducted an independent economic review for the Manor Expressway Project. This study identified current demographic and economic trends in the CAMPO region and incorporated these trends into a review and adjustment of CAMPO's socioeconomic forecasts for the Manor Expressway Project. Based on the agreement with CTRMA, the latest ATG revised socioeconomic data is used in this study. **Figure 4-1** shows the study area boundary for ATG's review and update of the SE data. Independent verification of socioeconomic activity was also completed using data from regional and local agencies. Near-term forecasts of one to three years for population and employment took into account detailed knowledge about the land development in the region. Information was also collected on planned or future phases of current projects, as well as general knowledge of regional growth patterns and potential growth. The project team strived to produce the most probable estimates of population and employment growth to establish a "baseline" socioeconomic growth scenario for financial planning purposes.

This chapter compares and describes the base year and future population and employment figures at the TAZ level from the official CAMPO data and the revised demographic data set. The following sections highlight some of the key socioeconomic data as they relate to the Manor Expressway study area. A comprehensive report of economic review and development of socioeconomic data prepared by ATG is included in **Appendix B** of this report.

4.1 Population

Table 4-1 presents the calculated compound annual population growth rates for Travis County. The growth rates from the Texas State Data Center (TxSDC), the Texas Water Development Board (TWDB), and CAMPO are based on 2010 data and the published forecasts for 2035.

Figure 4-1 Manor Expressway Project Study Area

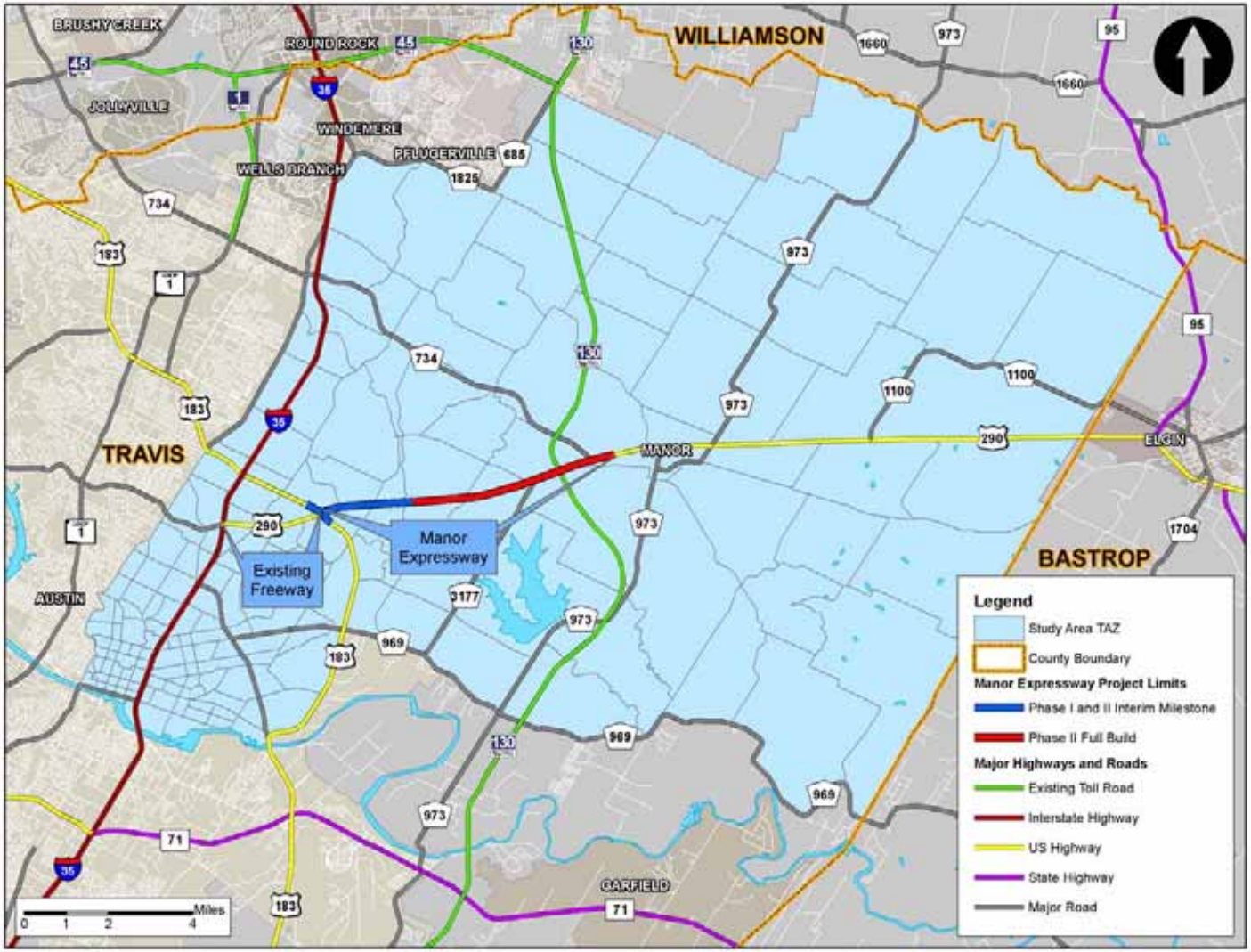


Table 4-1 Population Forecasts and Growth Rates

Data Source	Year 2010	Year 2035	Annual Compound Growth Rate Percentage 2010 – 2035
Travis County			
Texas State Data Center - Migration Scenario 0.0[1]	892,889	982,845	0.38
Texas State Data Center - Migration Scenario 0.5[1]	966,129	1,327,936	1.28
Texas State Data Center - Migration Scenario 1.0[1]	1,047,051	1,793,353	2.18
Texas State Data Center – Scenario 2000 - 2007[1]	992,773	1,419,856	1.44
Texas Water Development Board[2]	1,003,253	1,492,611	1.60
CAMPO	1,038,595	1,555,281	1.63
Revised CAMPO Demographics (ATG)[3]	1,023,961	1,500,629	1.54
Manor Expressway Project Study Area			
CAMPO	274,649	437,453	1.88
Revised CAMPO Demographics (ATG)	269,282	432,219	1.91

Source[1]: Texas State Data Center
http://txsdc.utsa.edu/cgi-bin/prj2008totnum.cgi
Source[2]: Texas Water Development Board
http://www.twdb.state.tx.us/wrpi/data/proj/popwaterdemand/2011Projections/Population/2CountyPopulation.pdf
Source[3]: Based on 2010 US Census data.

The socioeconomic forecast provided by ATG is used for this study and the data shows that the project study area's population will grow from 269,282 in 2010 to 432,219 in 2035. This population increase represents a compound annual growth rate of 1.91 percent. Based on the data presented in **Table 4-1**, the 1.91 percent annual growth rate is greater than the 1.63 percent growth rate projected by CAMPO for Travis County as a whole. For the Manor Expressway Project study area, the difference in the forecasted population growth rates stems from sizable population increases for the TAZs in and around Pflugerville and in the areas adjacent to US 290E east of FM 973. At the county level, the growth rate for the T&R Study of 1.54 percent is below the CAMPO growth rate of 1.63 percent. This relatively low rate accounts for a period of slower growth during the current recession, while anticipating strong yet measured growth throughout the remainder of the forecast horizon. Both the ATG projected 2035 population forecast of 1,500,629 and the associated growth rate of 1.54 percent are closely aligned with the TWDB population forecast in 2035 of 1,492,611 and the associated growth rate of 1.60 percent.

Table 4-2 presents historical population data for Travis County from the U.S. Census Bureau. The projected 1.54 percent annual growth rate for Travis

County used for this study is below the historical population growth rate of 2.35 percent between 2000 and 2010. Based on the data presented in **Tables 4-1** and **4-2**, the study area compound annual growth rate from 2010 to 2035 of 1.91 percent used in the traffic demand model for the proposed Manor Expressway Toll Road is reasonable.

Not all 2010 population estimates collected from various agencies are consistent with each other. For example, in October 2010, the TxSDC released its January 1, 2010 population estimate for Travis County, which estimated that there are 1,025,127 residents, which is slightly different from the April 1, 2010 U.S. Census count of 1,024,266. However, because the TxSDC develops its population estimates by averaging the results of several estimation techniques, versus the US Census Bureau, which uses just one technique, the TxSDC's population estimates are generally viewed as the more reliable source in Texas. The US Census Bureau is the source of data used to develop an understanding of historical growth trends because county population estimates are available as far back as 1990. In contrast, the earliest population estimates available from the TxSDC are 2001. The ATG Travis County 2010 population estimate of 1,023,961 presented for this study is deemed reasonable because it is based on the most recent 2010 census data and is comparable to the January 1, 2010 TxSDC population estimate.

Table 4-2 Historic Population Trends for Travis County: 1990-2010

County	Year				Growth Rate Percentage		
	1990	1995	2000	2010	1990 - 1995	1995 - 2000	2000 - 2010
Travis	576,407	696,278	812,280	1,024,266	3.85	3.13	2.35

Source: US Census Bureau, 2011.

Figure 4-2 graphically depicts the population increase between 2010 and 2035 for the TAZs in the study area of the proposed project. Socioeconomic data are assigned to each TAZ providing the basis for estimating trip-making "activity" in each zone. As indicated in **Figure 4-2**, the largest population growth (greater than 5,000 people between 2010 and 2035) occurs in TAZs 562, 623, 629, 626, and 208. TAZ 208 is located north of the proposed project between FM 734 (Parmer Lane) and SH 130. This zone had few residents during 2008, but now includes the Cantarra Subdivision which has experienced substantial development over the past two years and is platted for almost 1,400 residential lots, some of which are currently under construction.

Further north of the proposed project, several TAZs to the east of SH 130 (557 and 629 in Pflugerville) are expected to grow by more than 2,000 people between 2010 and 2035. This growth is due primarily to the Wildflower Subdivision, which is projected to have 2,500 lots over a 15-year build-out, and the Villages of Hidden Lake Subdivision, which has started a new phase of home construction adjacent to Lake Pflugerville. A field survey was conducted in May

2010 in the study area. During the field survey, home builders were still active in the Falcon Pointe Subdivision and were building homes and installing infrastructure for a new phase of the Villages of Hidden Lake Subdivision (557). TAZ 560 located north of US 290 includes the ShadowGlen Subdivision, one of the area's larger developments that provide housing at a variety of prices.

TAZ 322 is located in an area with a number of residential projects, as well as a significant redevelopment project that is underway at the former Robert Mueller Municipal Airport. TAZ 322 includes the former Robert Mueller Municipal Airport, which is being rebuilt as a mixed-use neighborhood. Residential construction in TAZ 322 includes a single-family subdivision with 348 lots and The Mosaic at Mueller Apartments, which is anticipated to provide 450 apartments. The total built-out population for TAZ 322 is estimated by project developers to be approximately 10,000 residents. At the time of the May 2010 field survey, 12-18 homes were under construction as well as the Greenway Lofts. Additionally, the Mosaic apartment complex has been completed along with numerous single-family homes and townhomes.

In the vicinity of the proposed project, six TAZs north of US 290E and east of SH 130 (560, 625, 626, 1098, and 1357) are anticipated to have large increases in population over the next 20-plus years. The growth in TAZ 560 is due primarily to the ShadowGlen Subdivision, which is expected to include 476 lots. The first phase of this development is partially constructed and construction of the infrastructure is ongoing in the new phase. TAZ 625, located to the east of TAZ 560, includes the Stonewater Subdivision, which is estimated to have more than 900 lots.

Continuing to the east, TAZs 1098 and 626 are located adjacent to US 290E. These three TAZs include three residential developments: Presidential Glen (TAZ 1098), Eagle's Landing (626), and County Line (626), which have a combined total of almost 1,800 lots. Based on the field survey conducted for this study, for the past two years, there has been no construction at Eagle's Landing and County Line developments, which account for 627 of the 1,800 lots. TAZ 1098 also includes a mobile home park.

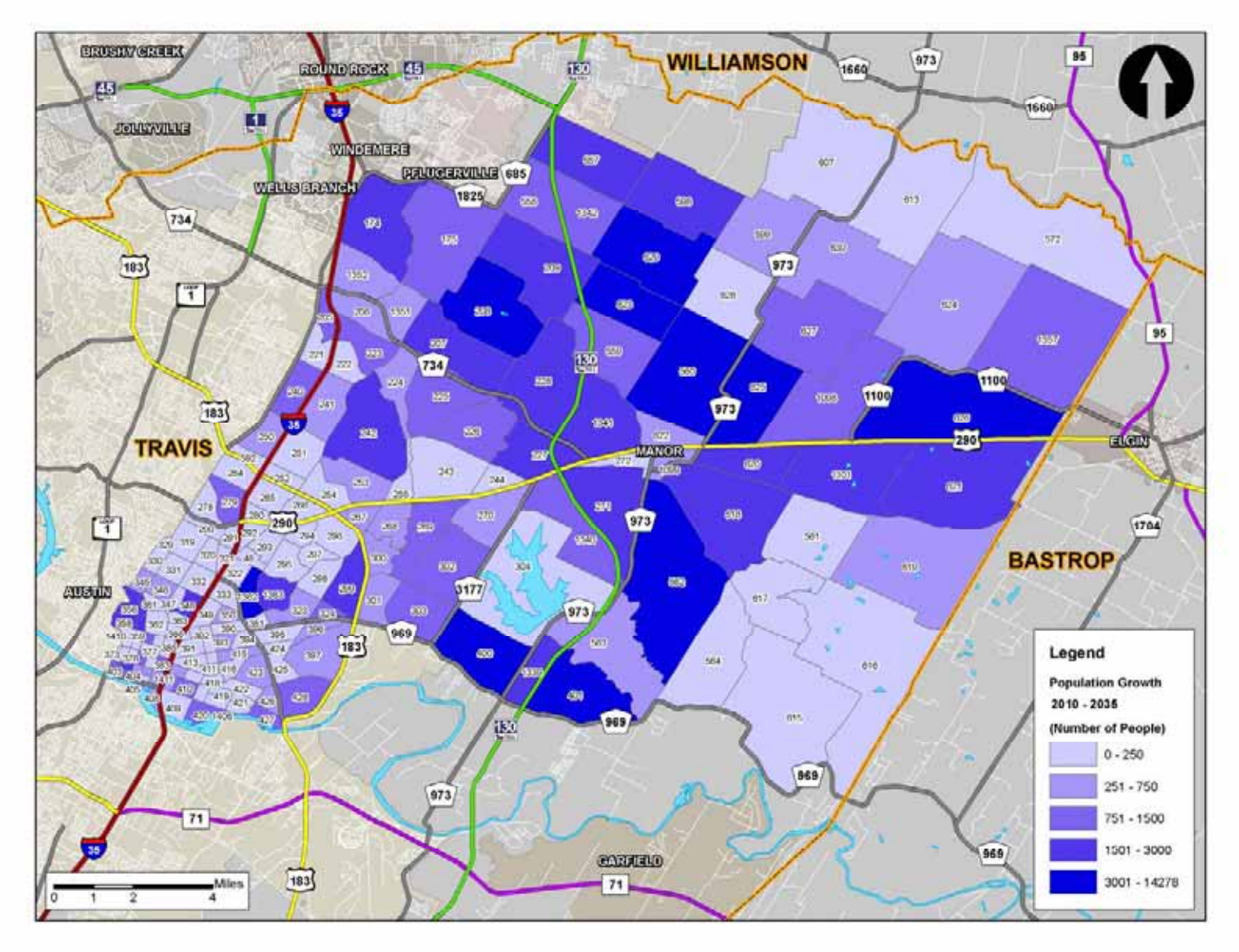
TAZ 1357 is located just north of TAZ 626, and includes the Westwind Subdivision, which is expected to have a total of 228 lots. There has been no construction in the Westwind Subdivision for the past two years at the time of the May 2010 field survey.

North of the proposed project, several TAZs to the east of SH 130 (557, 598, and 629 in Pflugerville) are expected to grow by more than 2,000 people between 2010 and 2035. This growth is due primarily to the Wildflower Subdivision, which is projected to have 2,500 lots over a 15-year build-out, and the Villages of Hidden Lake Subdivision, which has started a new phase of home construction adjacent to Lake Pflugerville. Within Elgin, additional subdivisions: Heritage Lakes MUD in TAZ 626; and Lone Willow and Elm Creek II (both in TAZ 1154)

have been proposed with no sign of development at the time of field visit. Furthermore, in TAZ 1357, an undeveloped parcel of land south of Elgin High School is platted for future residential development.

To the south of US 290E, TAZs 562, 271, 618, and 620 are expected to experience large population increases between 2010 and 2035. The Wildhorse Creek subdivision in TAZ 1162 and Briar Creek subdivision in TSZ 618 both have had ongoing construction. Additionally, In TAZ 620, the Bell Farms and Carriage Hills Subdivisions, which are partially completed, are expected to include 687 lots and 247 lots, respectively. Several subdivisions are being proposed south of Manor that would occupy portions of TAZ 562 which if fully constructed, could provide up to 10,000 new homes. At present, none of these subdivisions have been approved by Travis County due to traffic concerns. However, Travis County planners are continuing to work with the developers as they try to move the projects forward.

Figure 4-2 Population Growth in the Manor Expressway Study Area (2010-2035)



4.2 Employment

Table 4-3 presents the Travis County employment totals developed by CAMPO and the employment total adopted for the Manor Expressway study area. The employment increase in the study area from 200,290 to 318,235 represents a compound annual growth rate of 1.87 percent. The study area growth rate is slightly above the growth rate for Travis County. As shown in **Table 4-3**, the 2035 Travis County employment forecast adopted for this study is 855,260, about 20.02% lower than the CAMPO estimate of 1,026,485.

Table 4-3 Employment Forecasts

Data Source	2010	2035	Growth Rate Percentage (Compounded Annually)
Travis County			
CAMPO	654,433	1,026,485	1.82
Revised CAMPO Demographics (ATG)	567,148	855,260	1.66
Manor Expressway Project Study Area			
CAMPO	243,903	412,997	2.13
Revised CAMPO Demographics (ATG)	200,290	318,235	1.87

Figure 4-3 depicts projected growth in employment in each of the TAZs in the project study area. As indicated in **Figure 4-3**, employment growth ranges between 0 and 250 jobs for the majority of the TAZs east of SH 130. Most of the employment growth in the vicinity of the project corridor occurs north of the US 290E/US 183 interchange, vicinity of SH 130 and US 290E, and east of IH-35.

TAZs 1352, 228, 562, 242, 1362 and 322 are expected to have the largest growth in employment in this area. TAZ 1352, which is east of IH-35 and bisected by FM 734 (Parmer Lane), contains the Tech Ridge Center and substantial undeveloped land adjacent to Dell Computer's Round Rock location. Site plans for future construction at the Tech Ridge Center include four 10,000 square foot office complexes with the first phase (three buildings) of an office condominium complex along Dessau Road already developed. Additionally strip retail center has been recently added at the corner of the IH-35 northbound frontage road and Canyon Ridge Drive. TAZs 322 and 1362 in downtown Austin includes the Robert Mueller Municipal Airport redevelopment site, which includes the Dell Children's Hospital, a Ronald McDonald House, several multi-story medical office buildings and a children's shelter. In these zones, a great number of commercial properties were being constructed at the site of the former Robert Mueller Municipal Airport during the field survey.

TAZs 242, 253, and 254, which are adjacent to the project corridor, are also popular locations for industrial, warehouse, and flex space construction. These areas are expected to experience growth in employment ranging from 1,501 to 3,000 jobs. TAZ 242 is the largest of these three zones and includes a warehouse and a business park with multiple small industrial and warehouse buildings. TAZ 253 contains commercial parks and two newly constructed industrial buildings that were vacant at the time of the field survey with the exception of a single tenant that occupied about one-quarter of one building. Additionally, along the Cross Park Drive, a small strip center was recently built. Moreover, in the northern portion of this zone, a new office for the U.S. Geological Survey (USGS) was recently completed. A medical office building, a special events center, a small strip center and a convenience store are the primary contributors to recent employment growth in TAZ 254. Additionally, two industrial building were constructed along Cross Park Drive, one of which was completely vacant and the other had a single tenant that occupied the one-quarter to one-third of the space. Moreover, along Forbes Drive, an industrial building was under construction during the field survey.

In TAZ 244, which is adjacent to the study corridor, employment growth is negative due to plans by Applied Materials to significantly reduce its workforce. Currently, the facility manufactures machines that produce semiconductors and photovoltaic panels. In TAZ 225, Samsung closed one of its older semiconductor plants and opened a new facility which is expected to result in negative growth. TAZ 228 is expected to add 1,501 to 3,000 jobs between 2008 and 2030. This TAZ includes an industrial park, which recently added almost 180,000 square feet of space.

Additional employment growth is projected at the SH 130/US 290E interchange in TAZs 227, 1341, 1340, and 271 and along both SH 130 and US 290E in Zones 227, 620, 1101, 229, 228, and 562. The attractiveness of these TAZs for future employment is based upon their location, the availability of land, the absence of retail development in this portion of Travis County, good roadway access, and high visibility.

The socioeconomic data were developed at the TAZ level for the 2010 model base year and for five-year increments between 2010 and 2035. **Tables 4-4** and **4-5** present the population and employment forecasts used in the study, respectively. The tables compare the Manor Expressway Project population and employment forecasts to those included in the enhanced CAMPO Model using straight line interpolation from the enhanced CAMPO Model years of 2010, 2015, 2025, and 2035. URS updated the enhanced CAMPO Model to generate trip tables based upon the revised socioeconomic data and the highway improvements described in **Chapter 5**. These trip tables were used in the URS Toll Diversion Model to forecast traffic and toll revenue on the Manor Expressway Toll Road.

Figure 4-3 Employment Growth in the Manor Expressway Study Area (2010-2035)

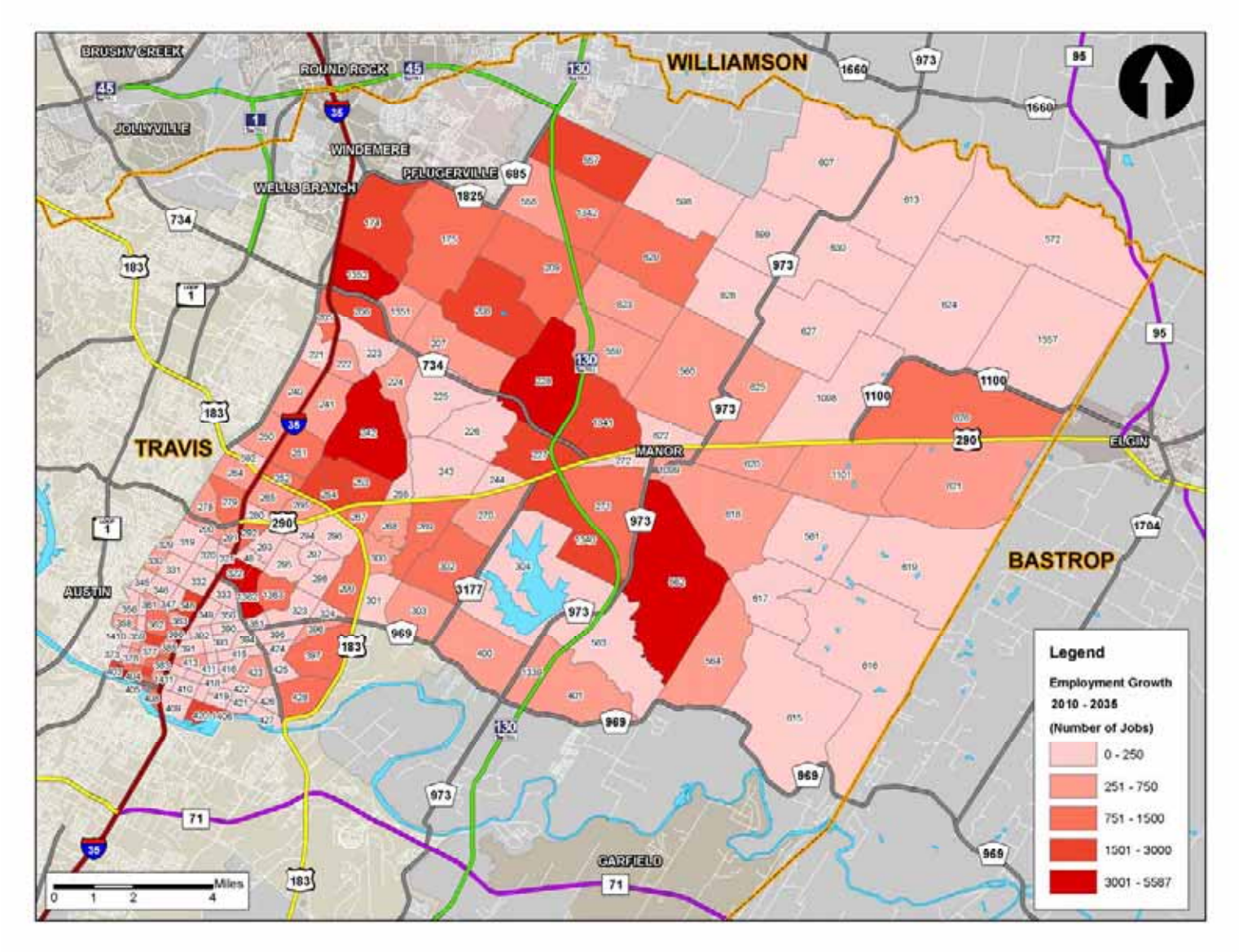


Table 4-4 Population Forecasts for Travis County

Data Source	2010	2015	2025	2030	2035
CAMPO Mobility 2035 Plan	1,038,595	1,105,083	1,318,041	1,431,756	1,555,281
Revised CAMPO Demographics (ATG)	1,023,961	1,103,122	1,286,618	1,389,509	1,500,629
Percent Difference	-1.41%	-0.18%	-2.38%	-2.95%	-3.51%

Table 4-5 Employment Forecasts for Travis County

Data Source	2010	2015	2025	2030	2035
CAMPO Mobility 2035 Plan	654,433	707,253	843,546	930,531	1,026,485
Revised CAMPO Demographics (ATG)	567,136	596,438	718,554	783,933	855,260
Percent Difference	-15.39%	-18.58%	-17.39%	-18.70%	-20.02%

4.3 Median Household Income

Table 4-6 presents the median household income for Austin and the surrounding communities. Manor and Elgin are two communities in the vicinity of the project. As indicated in **Table 4-6**, the median household income for these two communities is less than Travis County, Austin, and surrounding suburbs.

Table 4-6 1999 Median Household Income - Austin and Surrounding Cities

Suburb	1999 Median Household Income
Austin	$42,689
Cedar Park	$67,527
Elgin	$38,750
Manor	$37,500
Pflugerville	$71,985
Round Rock	$60,354

Source: www.localcensus.com (2008)

The travel demand model is based on median household income levels using 2005 dollars. **Figures 4-4** and **4-5** present the 2010 and 2035 median household income ranges in 2005 dollars for each TAZ in the Manor Expressway study area. As indicated in **Figure 4-4**, the majority of the TAZs east of US 183 and south of US 290E corridor have 2010 median household incomes ranging from $30,001 to $45,000. These income ranges reflect a predominantly rural environment. The most notable exception is the area immediately south of Manor and the area east of FM 973 and north of FM 969 corridor, where incomes

range from $45,001 to $60,000. This area includes large tracts of property that are owned by a few individual landowners.

The median household income east of US 183 and north of US 290E are somewhat higher, with the majority of the TAZs in either the $45,001 to $60,000 range or greater than $60,000 range. The area west of FM 973 with predominantly income range of higher than $60,000 includes more suburban households, which typically have higher median incomes than rural households. The TAZs around Pflugerville include subdivisions that are attractive to middle-income workers who are seeking housing choices close to employers in Austin. Pflugerville is also a popular housing choice for workers employed at companies like Dell Computer, which has facilities in north Austin and in Round Rock, and which pays salaries that are typically higher than the average for the region. Additionally, the area just north of US 290E and east of US 183 includes some higher middle income residential subdivisions that are in close proximity to Samsung and Applied Materials, which also historically have paid higher than the regional average wage.

In general, the 2035 median household income ranges (in 2005 dollars) are similar to those in 2010 with a few exceptions for TAZs immediately east of IH-35 and between FM 734 and US 183 where income ranges are higher in 2035. This observation indicates that in general further developments to provide residential alternatives to central Austin is not likely to results in an overall increase in median income levels.

Figure 4-4 Manor Expressway Study Area 2010 Median Household Income

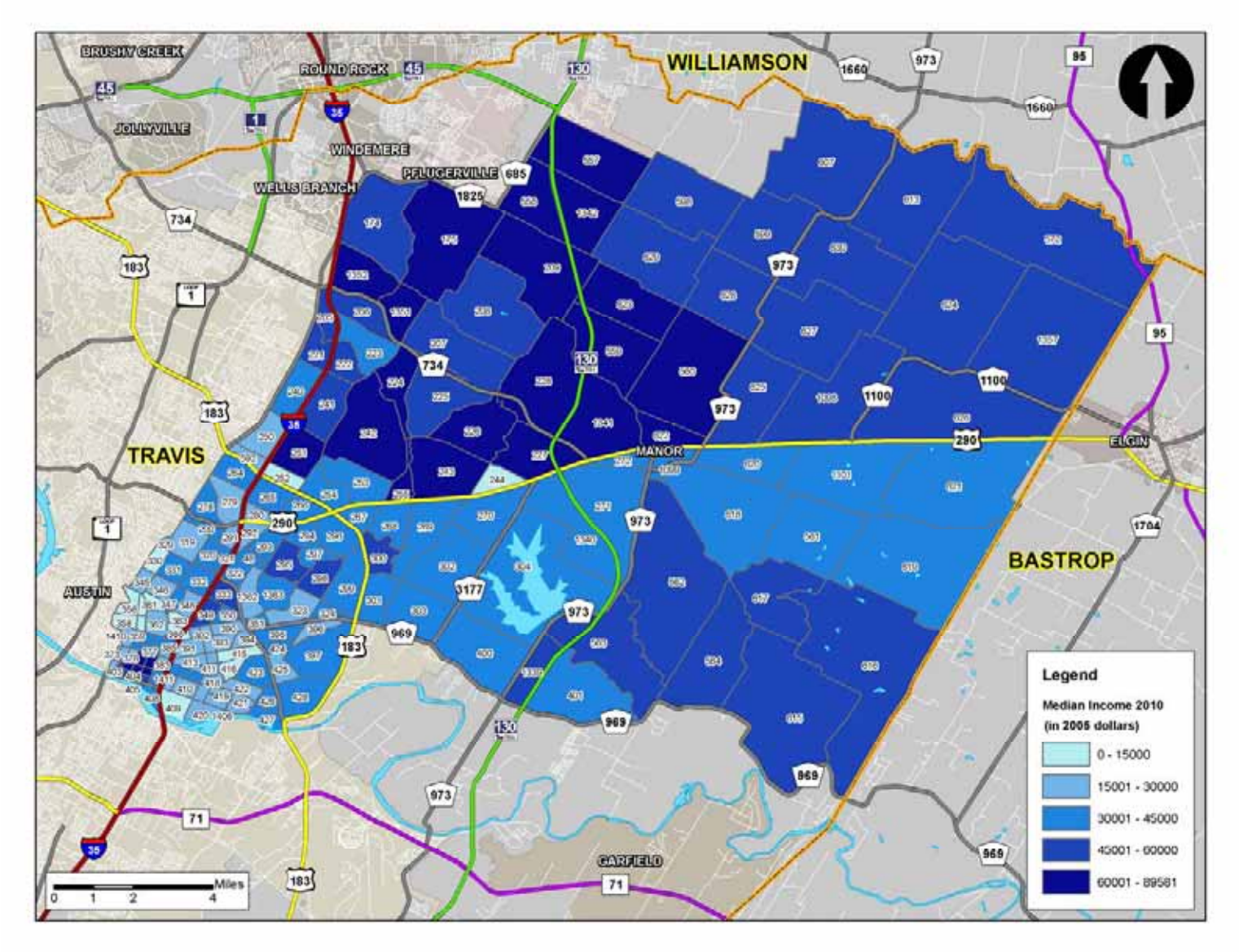
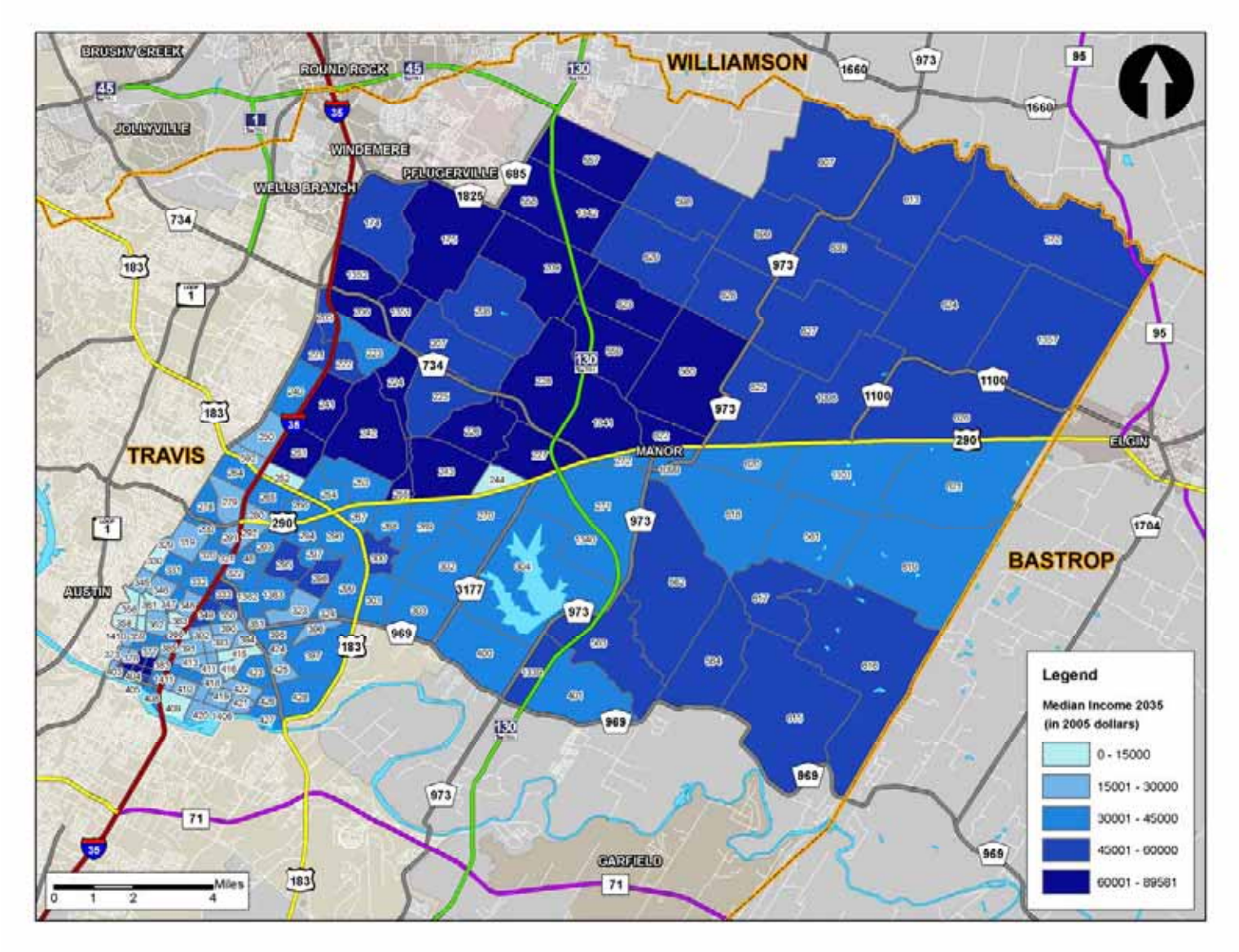


Figure 4-5 Manor Expressway Study Area 2035 Median Household Income



4.4 Austin Economic Downturn and Recovery

It is important to review the latest economic development trend in the Austin area to evaluate the revised future demographic data used in this traffic and revenue study, particularly in this time of nationwide economic recession. Along with the United States economy seeing a downturn beginning at the end of 2007 or early in 2008, the Austin economy was also adversely impacted by this recession. However, the impact on the Texas state economy, and particularly the Austin metropolitan area, has been less severe compared to other US cities and the area seems to be rebounding relatively quickly.

This section discusses Austin economy conditions. First, the Austin metropolitan area is compared with Texas and with the US in terms of economic conditions using some major economic indicators published by the Austin Chamber of Commerce in July 2010. Later, the most recent available related articles will be discussed.

Table 4-7 Percentage of Change of Employees on Non-Farm Payrolls

	2008 - 2009	2009 - 2010	Feb 10 - Feb 11
Austin MSA	-2.3	1.0	1.5
Texas	-2.8	0.3	2.3
United States	-4.3	-0.8	1.0

Source: Austin Chamber of Commerce, April 2011

As shown in **Table 4-7**, the number of employees on non-farm payrolls has been least impacted in the Austin Metropolitan Statistical Area (MSA) as compared to Texas and the US. The number of non-farm payroll jobs in Austin increased by 1.5 percent between February 2010 and February 2011 ranking the Austin MSA the 15th among the 50 largest metropolitan areas in the nation (Texas Workforce Commission and US Bureau of Labor Statistics, April 2011). During this same period, Texas and the United States as a whole showed an increase of 2.3 and 1.0 percent, respectively. Additionally, between 2009 and 2010, the number of employees showed an increase of 1.0 percent in the Austin MSA, compared to the nation as a whole, where the number decreased by 0.8 percent.

Table 4-8 Percentage of Unemployment Rate

	2009	2010	Feb 2010	Feb 2011
Austin MSA	6.9	7.1	7.3	6.9
Texas	7.6	8.2	8.4	8.2
United States	9.3	9.6	10.4	9.5

Source: Austin Chamber of Commerce, April 2011

The unemployment rate in February 2011 compared to February 20110 decreased by 0.4 percent to 6.9 percent in the Austin MSA compared to an average of 8.2 and 9.5 percent for Texas and for the US as a whole, as shown in **Table 4-8**. The

unemployment rate in the Austin MSA was 7.3 percent in January 2011, ranking the 3rd lowest unemployment rate among the 50 largest metropolitan areas in the nation (Austin Chamber of Commerce, April 2011).

Table 4-9 Employment Growth

	2008 - 2009	2009 - 2010	Feb 10 - Feb 11
Austin MSA	0.0	2.2	1.2
Texas	-0.4	1.2	1.3
United States	-3.8	-0.6	0.6

Source: Austin Chamber of Commerce, April 2011

As shown in **Table 4-9**, employment growth was 2.2 between 2009 and 2010 for the Austin MSA compared to Texas and to the US growth of 1.2 and negative 0.6 percent. Furthermore, the employment in the Austin MSA grew by 1.2 percent in February 2011 relative to February 2010 while it increased by 1.3 percent in Texas and by 0.6 percent in the US.

Table 4-10 Percent Change in Existing Home Sales Average Price

	2008 - 2009	2009 - 2010	Feb 10 - Feb 11
Austin MSA	-2.7	4.0	3.1
United States	-10.6	1.4	-2.7

Source: Austin Chamber of Commerce, April 2011

As shown in **Table 4-10**, between year 2009 and year 2010, the average home sales price increased by 4.0 percent while it increased by 1.4 percent nationwide. Furthermore, average home sale price continued to increase between February 2010 and February 2011 by 3.1 percent while it decreased by 2.7 percent nationwide.

Table 4-11 Percent Change in Median Family Income

	2008 - 2009	Q1 08 - Q1 09
Austin MSA	6.1	0.7
United States	4.1	6.7

Source: Austin Chamber of Commerce, July 2010

As shown in **Table 4-11**, average median family income has generally increased from 2008 to 2009 by a greater percentage for the Austin MSA when compared to the US as a whole. However, the latest available information shows a significantly lower percentage change in income between the first quarter of 2008 and first quarter in 2009.

Supporting the Austin Chamber of Commerce's view, various economists who monitor the local and national economic status have suggested that Austin is on the fastest pace to recover from recession. Based on an online news article as of January 21 of

2010, the Austin economy seemed to have passed out of the worst conditions and is continually improving. As indicated by Austin economist Angelos Angelou, the recovery will be slow initially but will increase gradually. He also predicts that by the end of 2011, employment will be as normal and creating jobs at a rate of maybe 25,000 jobs per year. Additionally, the forecasted 11,000 new jobs will be created in 2010, up from 2,100 in 2009, but still significantly down from the 38,900 jobs created in 2007. (See:http://www.kvue.com/news/Austin-economy-well-on-its-way-to-recovery.html)

Another article posted on Austinowners.net as of October 15, 2009 shows a faster economy recovery compared to some other metropolitan areas in the US. The content of this article is based on an adversity index from msnbc.com and a report provided by Moody's Economy.com. As this article explains, among four economic levels of expansion, recovery, at risk, and in recession, Austin has been in the recovery category since August of 2009. No city in the US is labeled as being in expansion mode yet. The study notes that, while housing prices have dropped in Austin, strong population growth supports demographically-driven consumer demand and a well-educated labor force attracts high value-added tech businesses. On the negative side, competitive pressure of foreign high-tech manufacturing challenges local industry and the tech cycle adds to cyclical volatility of overall local economy. The article concludes that even though home prices will not jump in the near term, the worst is very likely to be over and that, with lower mortgage rates, this could help the house market recovery further.

More recently, in an online article posted by CNN on June 24, 2010, Austin is listed in the 3rd position among the 21 strongest-performing metropolitan areas in an assessment based on the Brookings institute's June 2010 edition of the quarterly MetroMonitor report. This ranking uses measures such as keeping labor and housing markets stable and posting robust economic activity during past few years. Based on this article, Austin's gross metropolitan product increased by 5.3 percent compared with its peak before recession and job losses have slowed down. According to Austin's Mayor Lee Leffingwell, Austin has been working diligently to attract high-tech companies in the past decade which most recently has resulted in opening of a Facebook office in Austin which plans to hire over 200 employees over the next four years. Additionally, the existing companies continue to grow their workforce such as Samsung Electronics that will be increasing its payroll by 500 permanent positions (http://money.cnn.com/2010/06/22/news/economy/recession_proof_cities/index.htm).

On June 25, 2010, Forbes.com ranked Austin as America's fastest recovering city. This report listed the 100 largest metropolitan statistical areas in five categories of unemployment rate, Good Manufacturing Practices (GMP), foreclosures, home prices, and retail sales rates (See: http://www.forbes.com/2010/06/25/americas-recovery-capitals-business-beltway-recovery-capitals.html). Although Austin has been affected by the nationwide economic downturn, the latest trends shown in several key economic indicators suggest that Austin is on the fast track to recover from the recession.

4.5 Recent Austin Toll Transaction Trends

Another important indicator in long term traffic and revenue studies is the existing toll road traffic trend. Toll road traffic patterns are a direct reflection of local economic developments. Existing Austin area toll roads are shown in **Figure 4-6**. The existing Austin area toll roads have shown considerable resilience despite difficult economic conditions. The Central Texas Turnpike System (CTTS) consists of the Loop 1 Extension, SH 45 N, SH 45 SE, and SH 130 Segments 1-4. In the 2010 Fiscal Year (FY), CTTS generated $66 million in revenue and 78 million total transactions. The Average Weekday Transactions (AWTs) and revenue of CTTS toll facilities exceeded projections for the 2010 FY by 15.6 and 10.8 percent, respectively. Transactions increased 6.7 percent over the previous fiscal year while revenues increased by 12.3 percent. TxTag transactions accounted for 74 percent of FY 2010 toll transactions. Monthly toll transaction comparisons of these facilities by year are shown in **Figures 4-7** through **4-11**. These figures are presented such that seasonal variations are clearly depicted.

The Loop 1 Extension opened in the fall of 2006. The eastern section of SH 45N, from Loop 1 east to SH 130, and the western section of SH 45N, from Loop 1 to RM 620, opened in the Fall of 2006; however, tolling on the entire western section of SH 45N between US 183 and Loop 1 did not begin until August 25, 2007. The commencement of toll collection on the western section of SH 45 N is reflected in both **Figures 4-7** and **4-8**.

SH 130 Segment 2 opened on October 31, 2006, and SH 130 Segment 1 opened shortly thereafter on December 13, 2006. As shown in **Figure 4-9**, the opening of both Segment 3 on September 6, 2007 and Segment 4 on April 30, 2008 greatly increased the toll facility AWT totals. On May 8, 2009, the opening of SH 45 SE, which completed the Austin downtown bypass, once again positively influenced the toll transaction trend for SH 130. As is shown in **Figure 4-10**, even though SH 45 SE was opened in May of 2009, toll collection did not start until June of 2009. It should be noted that the decrease in traffic in May and June of 2009 reflects the starting of toll collections.

Lastly, **Figure 4-11** shows the total monthly transactions for US 183A. In FY 2010, the 183A toll facility generated $20.2 million in revenue with 22 million transactions. These FY 2010 figures represent a 16.7 percent increase in revenues and 4.3 percent increase in transactions over the prior fiscal year. In FY 2009, US 183A experienced annual transaction growth of 10.4 percent and revenue growth of 12.9 percent. During the 2009 FY, US 183A moved to a cashless tolling policy without sustaining a negative impact to its revenue collection. The success of this revenue collection conversion was largely a result of a greater than 75 percent TxTag usage rate. In FY 2008, AWTs transactions on US 183A exceeded traffic and revenue projections by 85.7 percent. The widespread use of US 183A resulted in the accelerated development by more than seven years of the second phase. This second phase of US 183A will be constructed from FM 1431 to RM 2243.

Figure 4-6 Manor Expressway Project Segments and Existing Austin Area Toll Roads

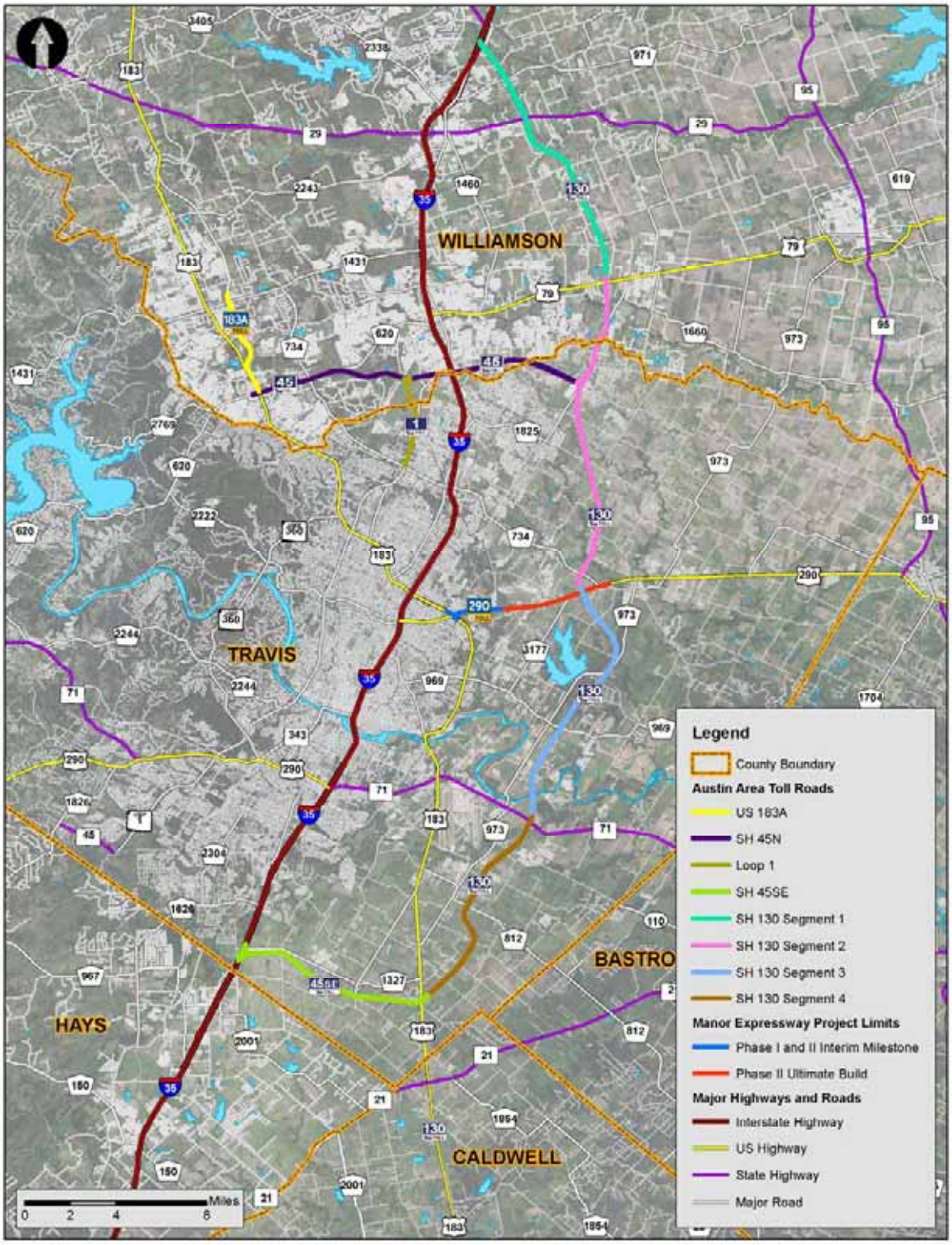


Figure 4-7 Average Weekday Transactions for Loop 1 Extension

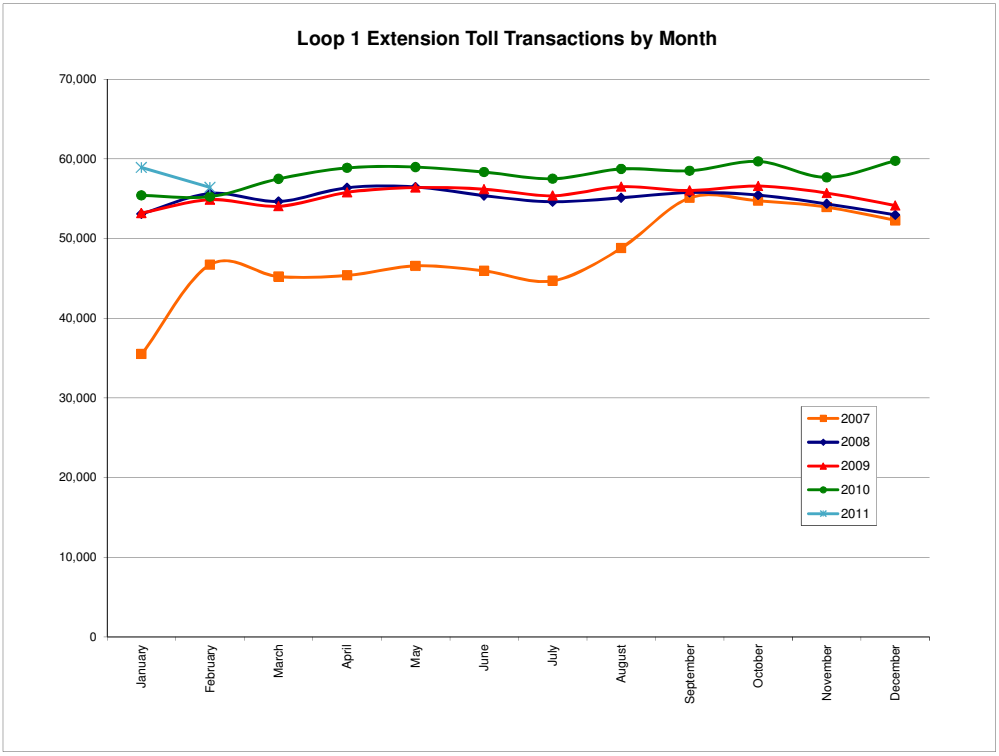


Figure 4-8 Average Weekday Transactions for SH 45 N

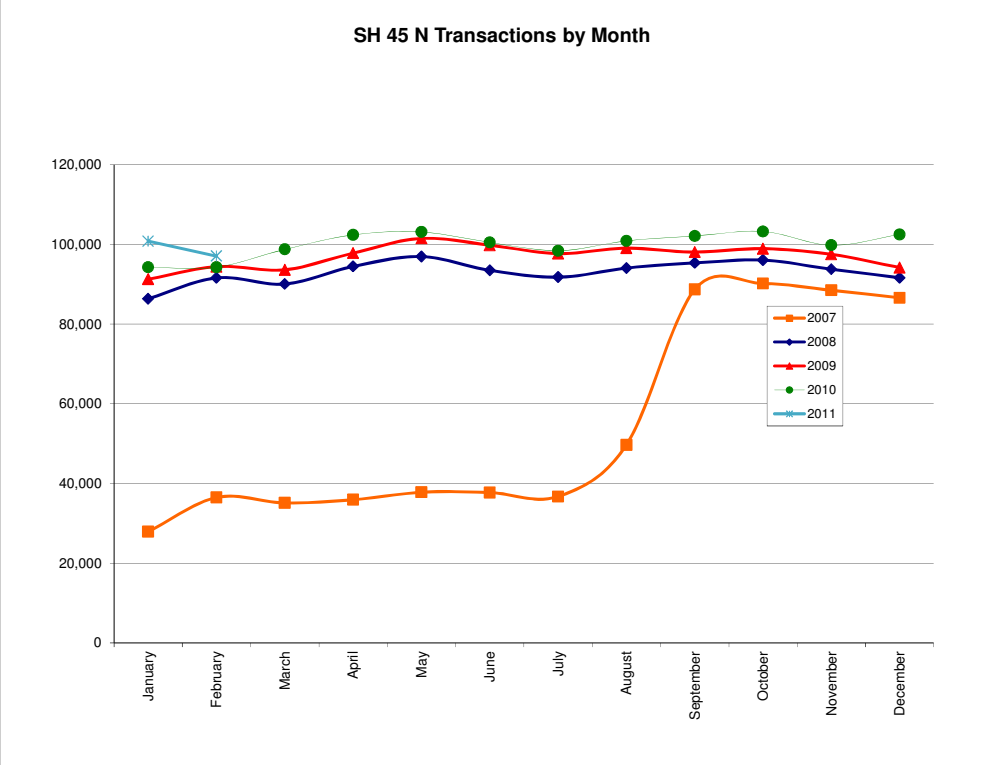


Figure 4-9 Average Weekday Transactions for SH 130 Segments 1-4

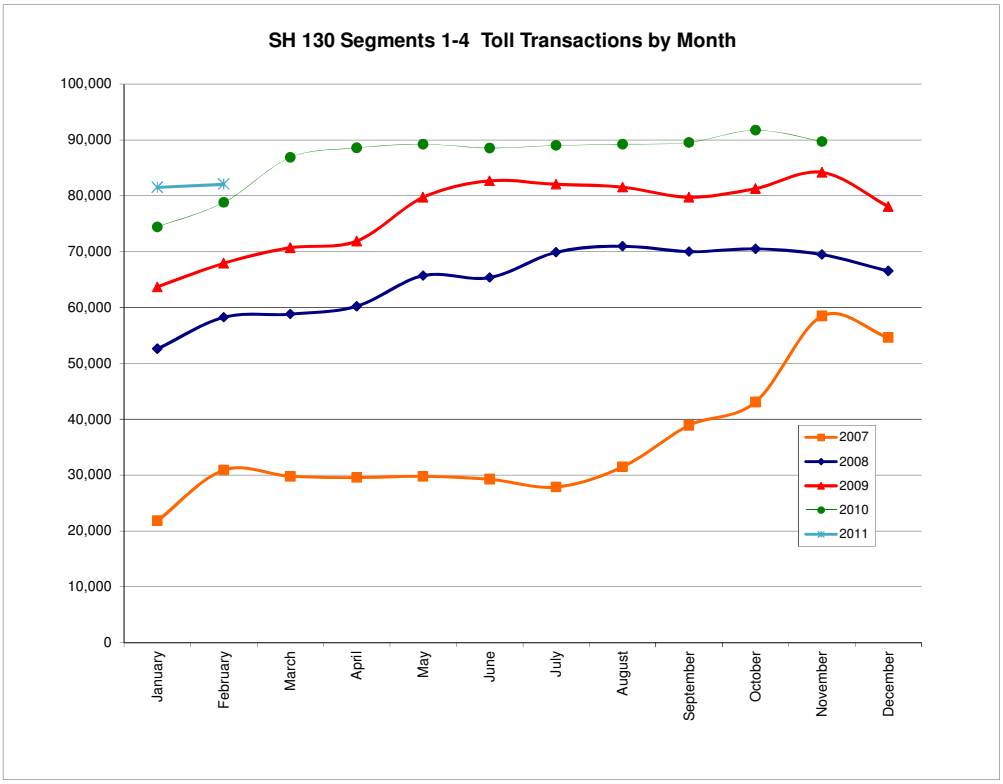


Figure 4-10 Average Weekday Transactions for SH 45 SE

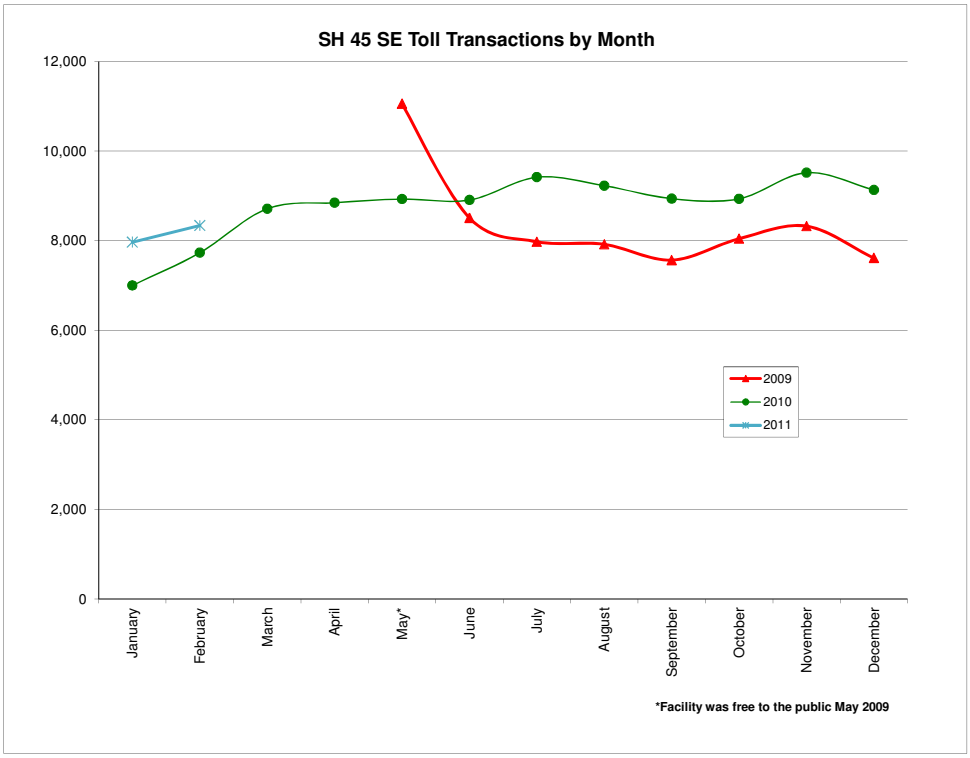
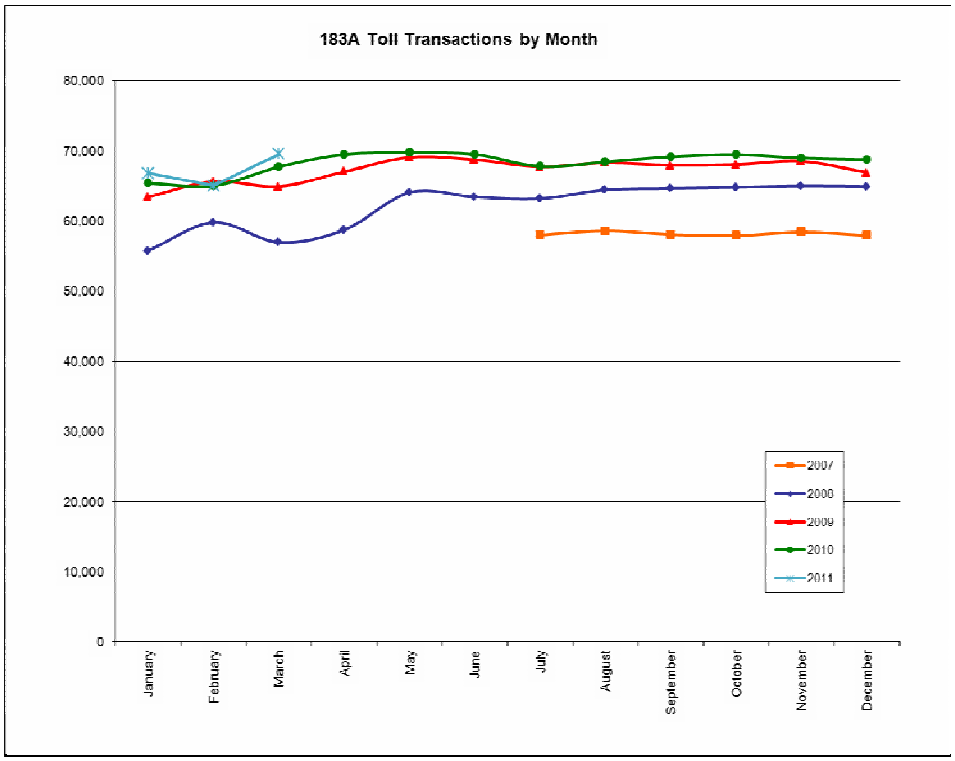


Figure 4-11 Average Weekday Transactions for US 183A



Source: CTRMA, April 2011
Note: The Mobility Authority implemented a toll rate increase on January 1, 2010

5. BACKGROUND HIGHWAY IMPROVEMENTS

URS developed the future highway networks to reflect the project configuration and current planning assumptions for the Austin area. Background highway improvements were incorporated into the future year highway networks based on a comprehensive list of future projects compiled for the project study area. The list of future projects was developed from the following resources:

1. The most recent geometric designs obtained from CTRMA for the Manor Expressway Project.

2. A review of the following planning documents:
   - ❖ CAMPO Mobility 2035 Plan (Adopted May 24, 2010)
   - ❖ CAMPO Mobility 2035 Plan (Amendments dated: November 5, 2010)

3. Knowledge from previous studies conducted for CTRMA and/or TxDOT, including:
   - ❖ Loop 1 North Managed Lanes
   - ❖ Loop 1 South Managed Lanes
   - ❖ US 183 Managed Lanes
   - ❖ IH-35 Direct Connectors
   - ❖ SH 45SW
   - ❖ US 290W / SH 71W

4. Input from TxDOT, CAMPO, the Cities of Austin, Elgin, Manor, and Pflugerville, and Travis County staff on the appropriate configuration and timing of potential toll projects.

Figure 5-1 shows the highway improvements in the Manor Expressway Toll Road that were assumed to be in place for the various years for which model runs were conducted. The various colors associated with each of the highway projects on the graphic represent the opening year for the project. A list of the improvement projects represented in **Figure 5-1** is provided in **Table 5-1**, which lists the limits of the planned improvements, the estimated opening year, and a brief description of the type of improvement planned for each corridor.

Figure 5-1 Major Improvements in Manor Expressway Corridor

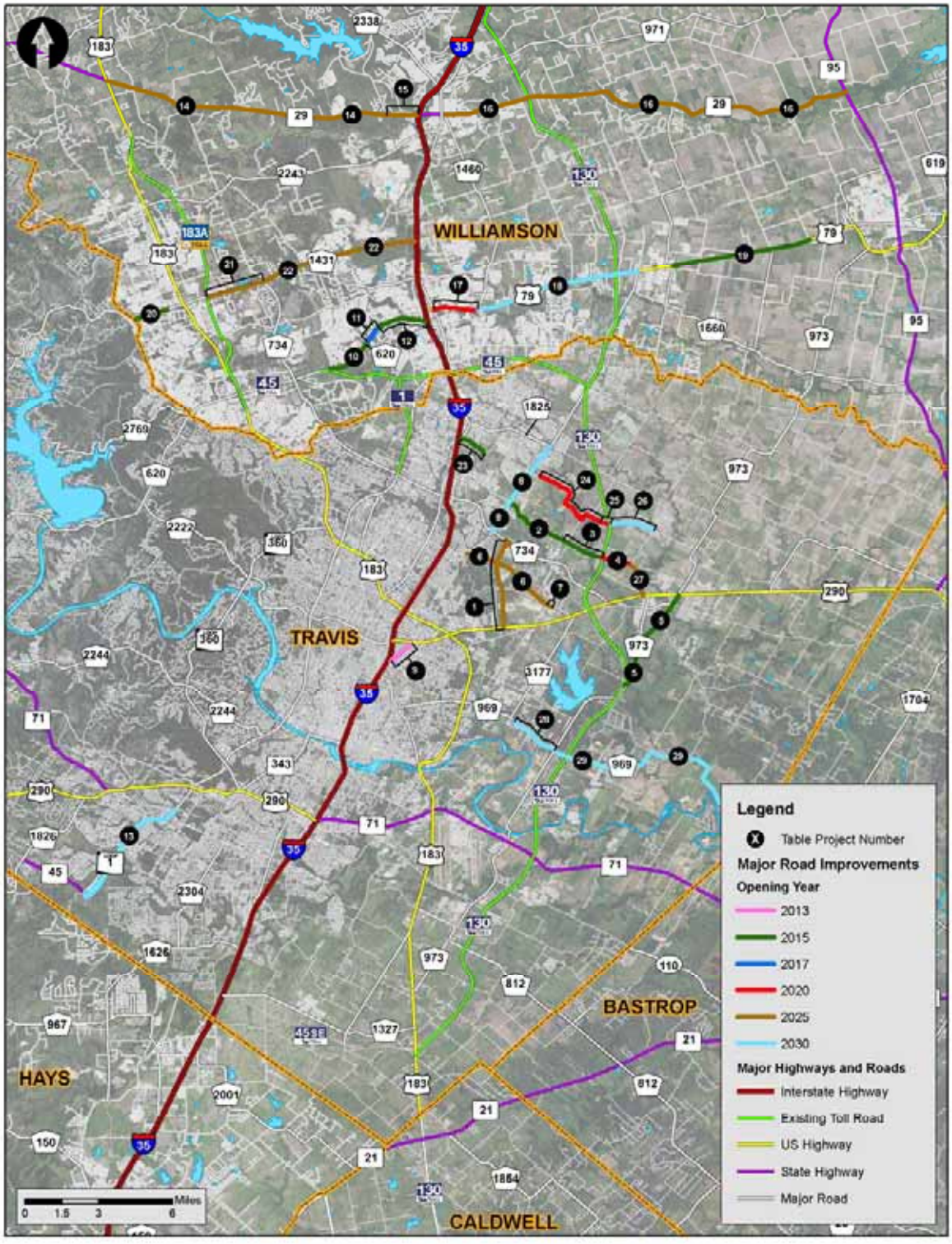


Table 5-1 Major Roadway Improvements

Project Number	Roadway	Segment Location		Assumed Opening Year	Project Description
		From	To		
1	Arterial A	FM 734 (Parmer Lane)	US 290E	2025	New MAD4
2	Gregg Lane	Dessau Road	Harris Branch/Cameron	2015	From MAU2 to MAD4
3	Howard Lane	Harris Branch/Cameron Road	SH 130	2015	New MAD4
4	Howard Lane	SH 130	Gregg-Manor Road	2020	New MAD4
5	FM 973	US 290E	Braker Lane	2015	From MAU2 to MAD4
6	Braker Lane	Dessau Road	Giles Lane	2025	New MAD4
7	E Braker/Blue Goose Rd.	Giles Lane	Harris Branch Parkway	2025	From MNR2 to MAD4
8	Dessau Road	Pflugerville Road	FM 734 (Parmer Lane)	2030	From MAD4 to MAD6
9	Cameron Road	US 290E	IH-35	2013	From MAU4 to MAD2
10	RM 620	SH 45N	O'Connor Drive	2015	From MAU4 to MAD6
11	RM 620	O'Connor Drive	Wyoming Springs Drive	2017	From MAU4 to MAD6
12	RM 620	Wyoming Springs Drive	IH-35	2015	From MAD4 to MAD6
13	Loop 1 (MOPAC)	William Cannon Drive	SH 45S	2030	From MAD4 to FWY6
14	SH 29	US 183N	DB Woods Road	2025	From MAU4 to MAD4
15	SH 29	DB Woods Road	IH-35	2025	From MAD4 to MAD6
16	SH 29	FM 1460	SH 95	2025	From MAU2 to MAU4
17	US 79	BR IH-35	FM 1460	2020	From MAD4 to MAD6
18	US 79	FM 1460	FM 685	2030	From MAD4 to MAD6
19	US 79	FM 1660	East of FM 3349	2015	From MAU4 to MAD4
20	FM 1431	Anderson Mill Rd./Lime Creek Rd.	Bagdad Road	2015	From MAD4 to MAD6
21	FM 1431	US 183A	Parmer Lane	2025	From MAD4 to MAD6
22	FM 1431	FM 734 (Parmer Lane)	IH-35	2025	From MAD4 to MAD8
23	Wells Branch Parkway	IH-35	Heatherwilde Boulevard	2015	From MAU2 to MAD4
24	Wells Branch Parkway	Immanuel Road	Gregg-Manor Road	2020	From MNR2 to MAD4
25	Wells Branch Parkway	Gregg-Manor Road	SH 130	2020	New MAD4
26	Wells Branch Parkway	SH 130	Fuchs Grove Road	2030	New MAD4
27	Gregg Manor	Howard Lane	US 290E	2025	From MNR2 to MAD4
28	MLK Boulevard.(FM 969)	East of FM 3177	SH 130	2030	From MAU4 to MAD4
29	MLK Boulevard (FM 969)	SH 130	County Boundary	2030	From MAU2 to MAD4

5.1 Toll Roads

Twenty toll road projects in the Austin region are currently planned, open, or under construction. These toll roads were coded into the model to more accurately represent the overall travel conditions in the region. A list of the toll roads that were incorporated into the model is graphically depicted in **Figure 5-2** and listed in **Table 5-2**.

5.2 Transit Improvements

URS contacted the following entities to obtain information on planned transit and bus services in the Austin area:

- Capital Metropolitan Transportation Authority (CapMetro) – the City of Austin's public transit provider for the Austin metropolitan area; and
- Capital Area Rural Transportation System (CARTS) – the rural transit provider that serves nine counties, including Hays and the non-urbanized areas of Travis counties.

URS incorporated the major transit improvements into the travel demand model network for the T&R Study based on the information received.

Figure 5-2 Austin Region Toll Roads

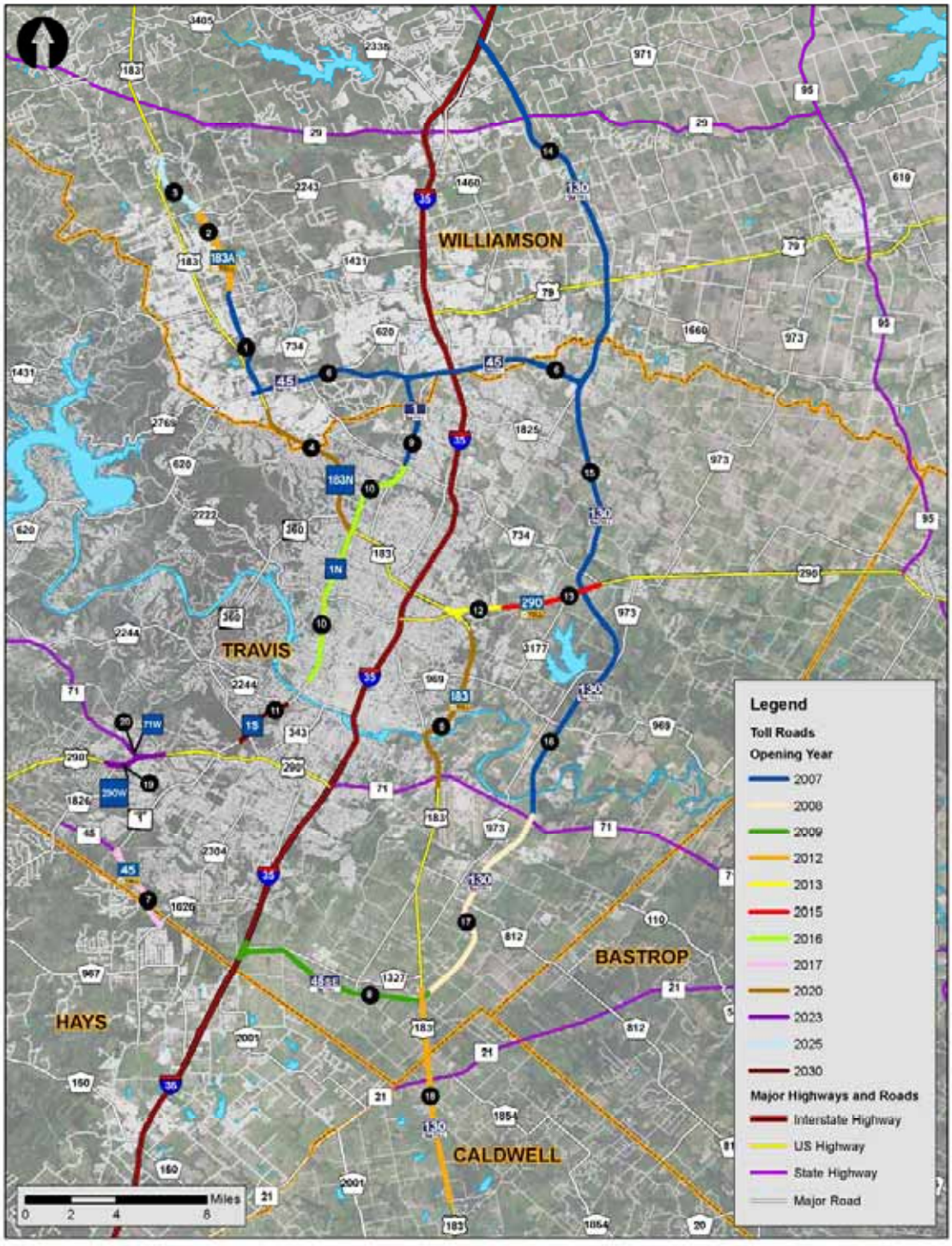


Table 5-2 Austin Region Toll Roads

ID	Facility	Limit		Open Year
		From	To	
1	183A Turnpike	RM 620/SH 45N	FM 1431	2007
2	183A Turnpike Extension	FM 1431	FM 2243	2012
3	183A Turnpike Extension	FM 2243	US 183N	2025
4	US 183N Managed Lanes	South of RM 620	Loop 1 (MOPAC)	2020
5	US 183S	Springdale Road	SH 71E	2020
6	SH 45N	US 183	SH 130	2007
7	SH 45SW (Segment 1)	Loop 1 (MOPAC)	FM 1626	2017
8	SH 45SE Phase 1	IH 35	US 183/SH 130 JCT	2009
9	Loop 1 (MOPAC)	SH 45N	FM 734 (Parmer Lane)	2007
10	Loop 1N Managed Lanes	FM 734 (Parmer Lane)	North of Lady Bird Lake	2016
11	Loop 1S Managed Lanes	Lady Bird Lake	Loop 360	2030
12	Manor Expressway Phase I + Phase II Interim Milestone	US 183	Arterial A	2013
13	Manor Expressway Phase II Ultimate Build	Arterial A	FM 734 (Parmer Lane)	2015
14	SH 130 Segment 1	IH-35	US 79	2007
15	SH 130 Segment 2	US 79	US 290E	2007
16	SH 130 Segment 3	US 290E	SH 71E	2007
17	SH 130 Segment 4	SH 71E	US 183/SH 45SE JCT	2008
18	SH 130 Segment 5	US 183 North of Mustang Ridge	FM 1185 North of Lockhart	2012
19	US 290W	Circle Drive	0.5 miles east of William Cannon Drive	2023
20	SH 71W	South of Silvermine Drive/Fletcher Lane	US 290W	2023

6. MANOR EXPRESSWAY TOLL ROAD PROJECT

This chapter provides descriptions of the physical characteristics of the Manor Expressway Project. The toll collection plan and toll rates for various vehicle classes are also provided in this chapter.

6.1 Project Description

The proposed Manor Expressway Project is located in northeastern Travis County, and will be built on the existing US 290E and will replace the current 4-lane, median-divided highway with a 6-lane limited access expressway. Directional 3-lane frontage roads will be constructed as a free alternative to the proposed project. This project will be constructed in two phases. Phase I includes four direct connectors to and from US 183 and will start collecting tolls from 2013. Phase II Interim Milestone will open in the same year as Phase I and extends the toll facility from the US 183 interchange to Chimney Hill Drive. Phase II Full Build, which extends from the end of Phase II Interim Milestone to FM 734 (Parmer Lane), is expected to open in year 2015 and complete the entire Manor Expressway Toll Road with the exception of Phase III. Phase III includes construction of the three remaining direct connectors at the SH 130 interchange. The fourth director connector of this interchange, the eastbound US 290 to northbound SH 130 direct connector, was previously constructed by TxDOT as part of the SH 130 project. Phase III of the Manor Expressway Toll Road Project will be constructed in the future when the financing and traffic demand condition permits. Phase III is not considered in this study.

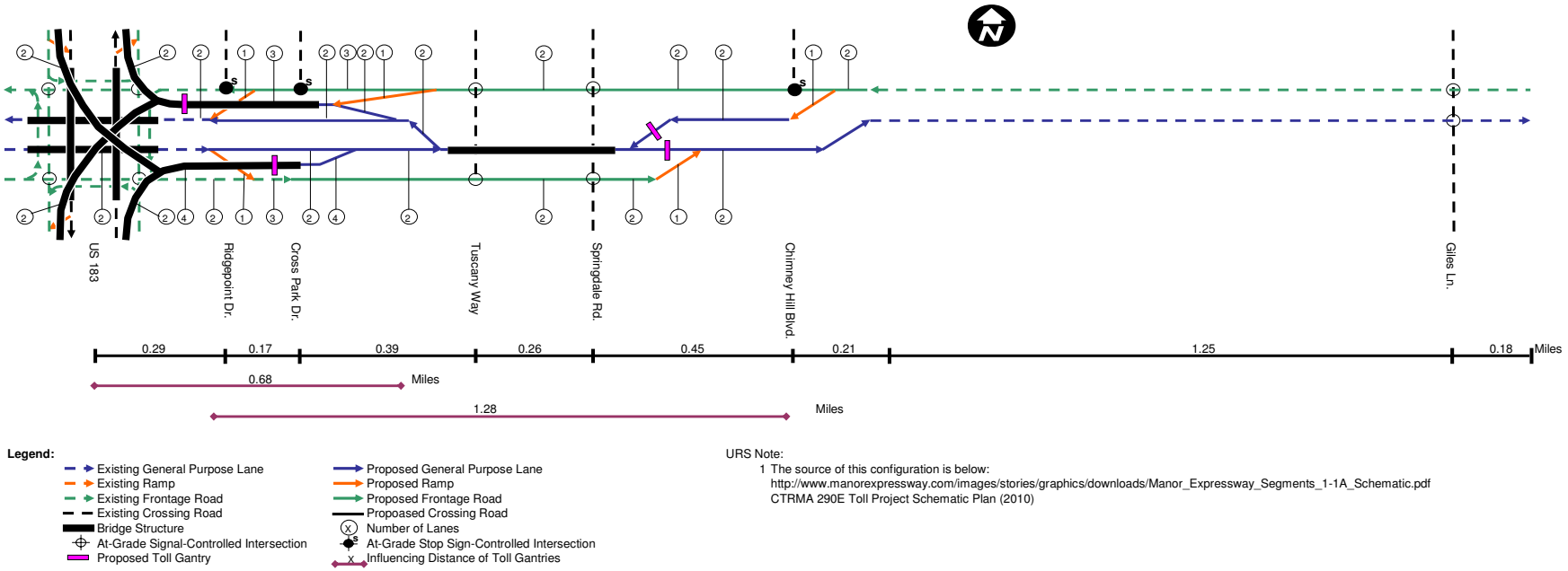
Figure 6-1 and **Figure 6-2** show the layouts of the Manor Expressway Toll Road configuration and the toll collection locations for the proposed toll gantries for the two different opening years.

6.2 Toll Collection Plan

URS developed a toll rate plan specifying the tolls charged and annual escalation rates at each gantry location for the opening years of 2013 and 2015. The toll plan was developed to minimize toll collection points in order to reduce the transaction costs and system maintenance. The T&R Study assumed that two electronic toll collection (ETC) options – transponder and video tolling - would be available to motorists using the tolled facilities. No cash payment option would be available on this facility.

The transponder option will apply to the motorists with a transponder and a valid TxTag account. The video tolling option is available for motorists who would like access to the tolled facility but do not want to maintain a TxTag account. Therefore, all motorists, with or without a transponder/TxTag account, are permitted to access the tolled facility.

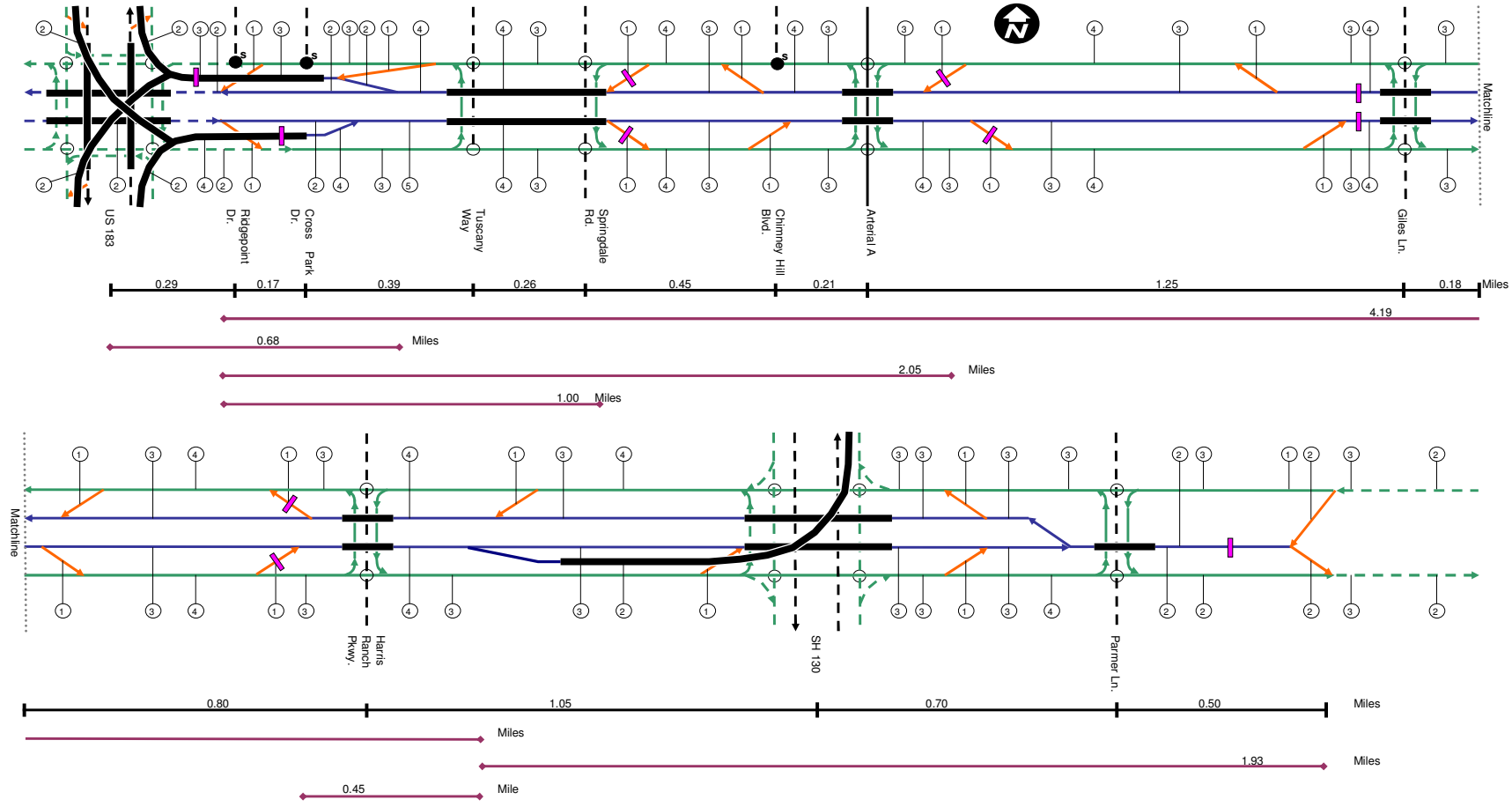
Figure 6-1 Manor Expressway Interim Configuration (Phase I + Phase II Interim Build)



URS Note:

1 The source of this configuration is below:
http://www.manorexpressway.com/images/stories/graphics/downloads/Manor_Expressway_Segments_1-1A_Schematic.pdf
CTRMA 290E Toll Project Schematic Plan (2010)

Figure 6-2 Manor Expressway Ultimate Configuration (Phase I and Phase II Full Build)



URS Note:
1 The source of this configuration is below:
http://www.manorexpressway.com/images/stories/graphics/downloads/Manor_Expressway_Full_Build_Schematic_Part_A.pdf
http://www.manorexpressway.com/images/stories/graphics/downloads/Manor_Expressway_Full_Build_Schematic_Part_B.pdf
CTRMA 290E Toll Project Schematic Plan (2010)
2 Arterial A will be open in year 2025, and it is not part of CTRMA projects.

6.2.1 Toll Rates

In **Figure 6-1** and **Figure 6-2**, the toll gantry locations are shown in purple as symbolic "barriers" perpendicular to the roadway segments. The tolling configuration of Phase I and Phase II Interim Milestone includes two main lane toll gantries and one pair of direct connector toll gantries within the toll facility, and the tolling configuration of project full build includes four main lane toll gantries, one pair of direct connector toll gantries and three pairs of ramp toll gantries within the toll facility. Toll gantries are located in a manner that forces all segments of the proposed tolled lanes to operate as a "closed system". All travelers using the new facility are assessed a toll charge.

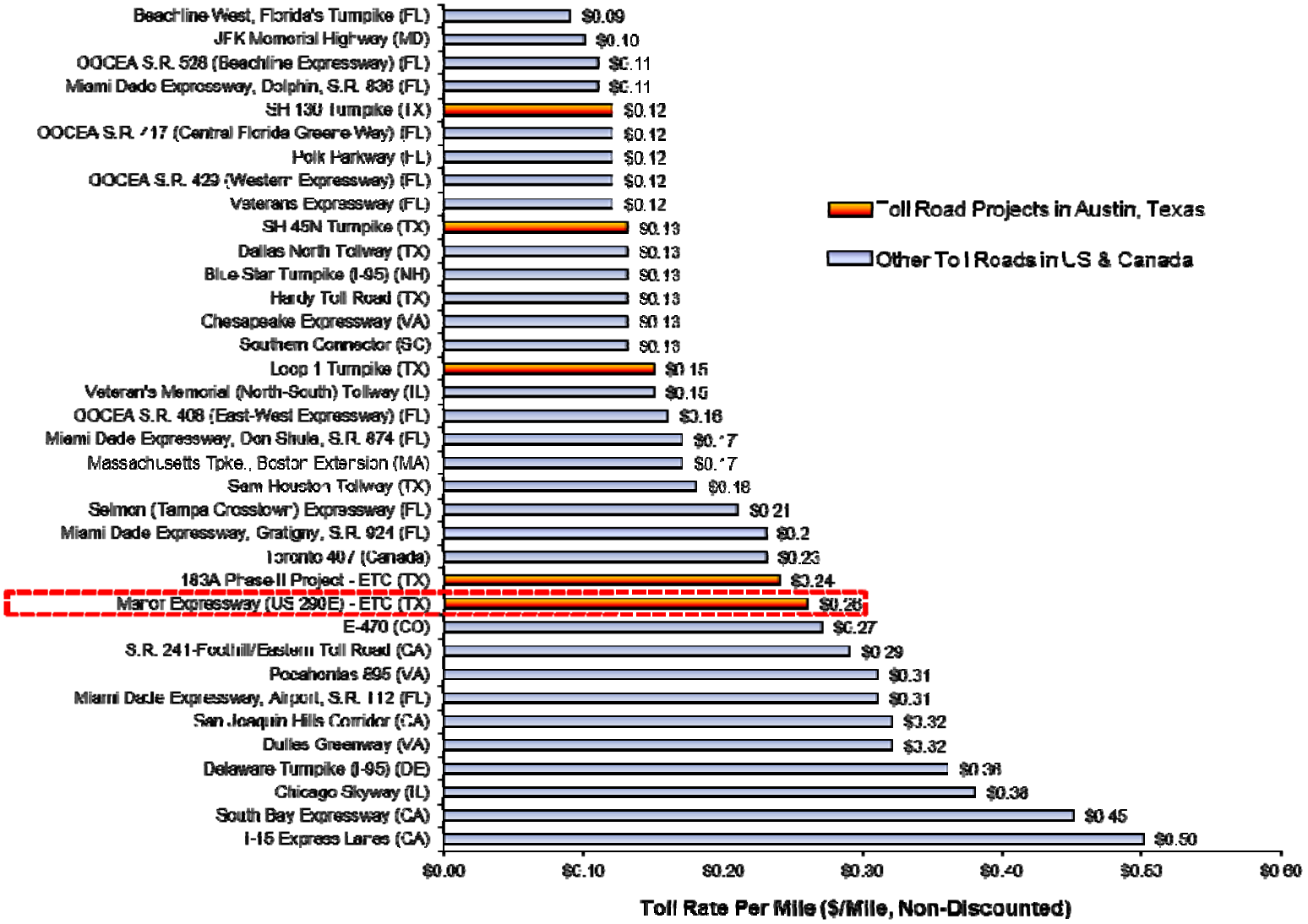
Based on input provided by the CTRMA, URS adopted a $0.20 per-mile toll rate in 2007 dollars, which is $0.26 per-mile in 2015 when the whole project is completed. **Figure 6-3** shows comparative passenger car toll rates on North American toll facilities. Please note that toll rate for Manor Expressway is in 2015 dollar while 183A Phase II is in 2012 dollar, and other project toll rates are in 2011 dollar. The proposed toll rate for Manor Expressway is comparable with the toll rates on the other North American turnpikes. The toll rate per mile is higher nowadays mainly due to higher right-of-way costs, higher construction costs, and higher operating and maintenance costs. Most of the proposed new toll systems assume that tolls will be increased on a regular basis, roughly equivalent to the general inflation rates.

The transponder toll cost was estimated by multiplying the distance served by the toll gantry by this per-mile toll rate, although a minimum threshold of 50 cents toll charge is assumed for the project opening year 2013. This threshold was established to partially offset the transaction costs so that each location would provide effective "net" revenue. This minimum toll is in line with the minimum toll charges on other toll road facilities in the region. The minimum toll plays a significant role in the toll rate plan of Phase I and Phase II Interim Milestone in 2013 and 2014 because of the short distance of the toll road section in these years.

For vehicles using the video tolling option, a surcharge was added to the tolls charged to transponder users. Previous studies have used a surcharge of 33 or 45 percent. Based on instructions from CTRMA, a 33 percent surcharge was used for this T&R Study. In this study, the video-tolling surcharges were both reflected in the toll diversion model and included in the gross toll revenue estimates.

Trucks with two axles were tolled at the same rate as autos. Trucks with more than two axles are charged at N-1 (where N represents the number of axles) times the two-axle rate.

Figure 6-3 Comparison of Per Mile Toll Rates on Major North American Toll Facilities



6.2.2 Toll Escalation

As part of the CTRMA's approved toll policy (Toll Policy Resolution No. 11-041, April 2009), beginning in 2012, the toll rates of all CTRMA toll facilities are to be escalated annually by the average Consumer Price Index (CPI).

To determine the appropriate toll rate escalation scenarios for the T&R Study based on the Manor Expressway Project terms and conditions, URS compiled regional historical CPI data from the U.S. Bureau of Labor Statistics (BLS) for 1997 through 2010. Due to the availability of data, only the Dallas/Fort Worth average CPI data is presented in **Table 6-1**. Based on the data presented in **Table 6-1**, the average percent change in CPI for the ten year period 1997 through 2010 is 2.2 percent.

Table 6-1 Dallas/Fort Worth, TX Average CPI (1997 – 2010)
All Urban Consumers

Year	Consumer Price Index (CPI)	Percent Change
1997	151.4	NA
1998	153.6	1.5%
1999	158.0	2.9%
2000	164.7	4.2%
2001	170.4	3.5%
2002	172.7	1.3%
2003	176.2	2.0%
2004	178.7	1.4%
2005	184.7	3.4%
2006	190.1	2.9%
2007	193.2	1.6%
2008	201.8	4.5%
2009	200.5	-0.6%
2010	201.6	0.5%
Average Annual Percentage Change		2.2%

Source: U.S. Bureau of Labor Statistics, CPI Program, Last Updated November 12, 2009.

Based on these analyses and coordination with CTRMA, it is recommended that the Manor Expressway Project evaluate the toll revenue based on the 3 percent annual toll escalation rate as the base case.

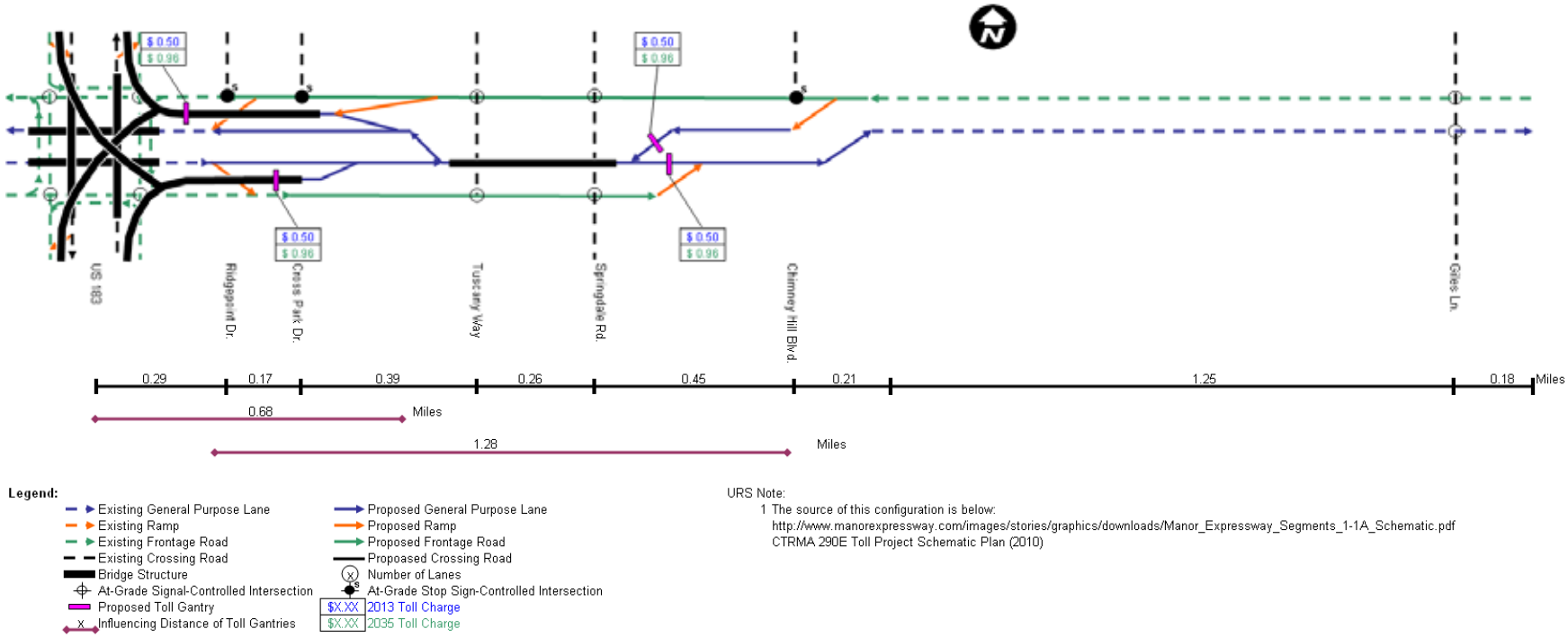
Tables 6-2 show the proposed toll schedule for transponder patrons from 2013 to 2035.

Table 6-2 Proposed Manor Expressway Toll Schedule

Gantry Location	Gantry Type	Transponder Toll Charge							
		2013	2015	2016	2018	2020	2025	2030	2035
US 183 Direct Connectors	Ramp	$0.50	$0.53	$0.55	$0.58	$0.61	$0.71	$0.83	$0.96
Gantry Plaza at Springdale Road	Plaza	$0.50	--	--	--	--	--	--	--
On/Off Ramp east of Springdale Road	Ramp	--	$0.53	$0.55	$0.58	$0.61	$0.71	$0.83	$0.96
On/Off Ramp east of Arterial A	Ramp	--	$0.53	$0.55	$0.58	$0.61	$0.71	$0.83	$0.96
Gantry Plaza at Giles Lane	Plaza	--	$1.06	$1.09	$1.16	$1.23	$1.43	$1.65	$1.92
On/Off Ramp west of Harris Ranch Parkway	Ramp	--	$0.53	$0.55	$0.58	$0.61	$0.71	$0.83	$0.96
Gantry Plaza at Parmer Lane	Plaza	--	$0.53	$ 0.55	$ 0.58	$ 0.61	$0.71	$0.83	$0.96

Figures 6-4 and 6-5 show a schematic of the toll gantry locations for the opening year (2013 for Phase I and Phase II Interim Milestone and 2015 for Phase II Full Build) and year 2035 transponder toll rates along the Manor Expressway Project for both Phase I and Phase II Interim Milestone configuration and Phase II Full Build configuration.

Figure 6-4 Manor Expressway Toll Plan (Phase I + Phase II Interim Milestone)

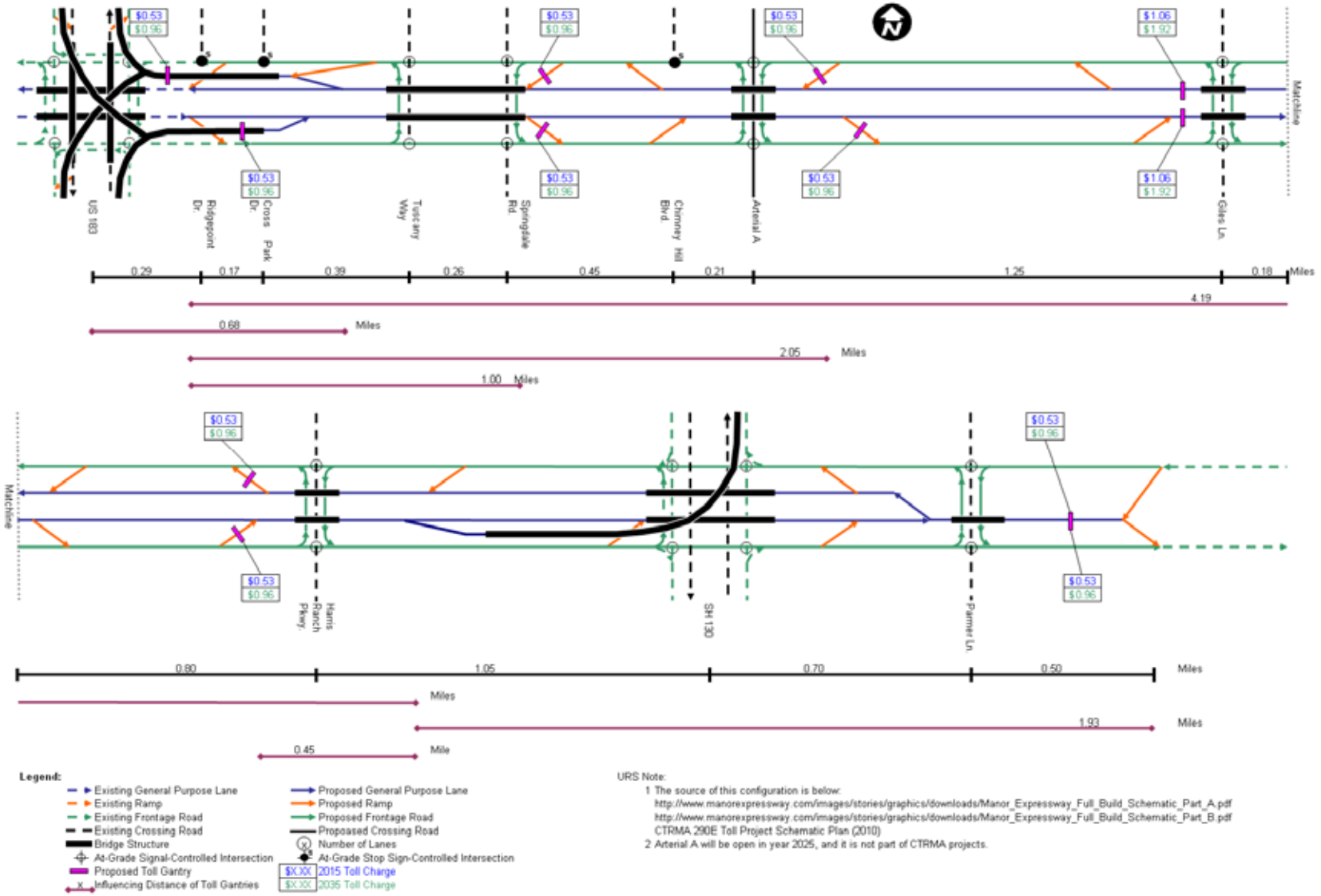


Legend:

- Existing General Purpose Lane
- Existing Ramp
- Existing Frontage Road
- Existing Crossing Road
- Bridge Structure
- At-Grade Signal-Controlled Intersection
- Proposed Toll Gantry
- Influencing Distance of Toll Gantries
- Proposed General Purpose Lane
- Proposed Ramp
- Proposed Frontage Road
- Propoased Crossing Road
- Number of Lanes
- At-Grade Stop Sign-Controlled Intersection
- $X.XX 2013 Toll Charge
- $X.XX 2035 Toll Charge

URS Note:
1 The source of this configuration is below:
http://www.manorexpressway.com/images/stories/graphics/downloads/Manor_Expressway_Segments_1-1A_Schematic.pdf
CTRMA 290E Toll Project Schematic Plan (2010)

Figure 6-5 Manor Expressway Toll Plan (Phase I and Phase II Full Build)



7 TRAFFIC FORECASTS

As part of this study, URS performed model runs to develop traffic forecasts for the Manor Expressway Project using the calibrated travel demand model. Future year toll traffic forecasts were developed for the project opening years 2013 and 2015, the horizon year of 2035 and five intermediate years of 2016, 2018, 2020, 2025 and 2030 to estimate the impact of scheduled toll increases, socioeconomic growth and the changes in the background highway network. The traffic and toll revenue forecasts were developed and summarized for the Manor Expressway Project, as defined and shown in **Section 6.2**.

7.1 Daily Toll Transactions

Table 7-1 lists daily tolled transactions for individual toll gantry locations along the Manor Expressway Toll Road. The table shows auto and truck tolled transactions for opening year 2013 when Phase I and Phase II Interim Milestone of the project is open for the entire year, for opening year 2015 when the full build is open and operative for the entire year, for the project horizon year of 2035 as well as intermediate years for individual toll gantry locations. The transactions shown in **Table 7-1** have not been adjusted for ramp-up or for toll evasion. Traffic forecasts for year 2013 represent the initial traffic demand for the Manor Expressway Toll Road during its first full year of operation.

The entire Manor Expressway Project is estimated to have 49,828 daily tolled transactions in year 2015 when Phase II Ultimate Build is built. The transactions are estimated to increase to 128,879 in 2035 at a Compound Annual Growth Rate (CAGR) of 4.87 percent. In year 2013, the highest number of tolled transactions for an individual toll gantry location is generated at the main lane toll gantries east of Springdale Road. Tolled transactions at this gantry account for approximately 73.4 percent (or 10,564 total transactions) of all tolled transactions for Phase I and Phase II Interim Milestone in 2013. After Phase II Full Build is built in 2015, the highest number of tolled transactions for an individual toll gantry location is generated at the main lane toll gantries between Arterial A and Giles Road. Total tolled transactions at this gantry approximately contribute 56.1 percent (or 27,953 total transactions) of the full build total tolled transactions in 2015.

Figures 7-1 through **7-8** are schematic line diagrams of the Manor Expressway Project that show average weekday traffic volumes by link that were generated from the tolled traffic forecasts for model years 2013, 2015 (full build), 2016, 2018, 2020, 2025, 2030 and 2035.

Table 7-1 Daily Tolled Transactions at Individual Toll Gantries (Before ramp-up and evasion adjustments)

TOLL LOCATION	TYPE	2013			
		AUTO TOLL	Daily Transactions		
			Autos	Trucks	TOTAL
US 183S NB&SB to US 290E EB	Direct Connector	$ 0.50	1,084	204	1,289
US 290E WB to US 183S NB&SB	Direct Connector	$ 0.50	2,196	350	2,546
Springdale Rd.	Main Lane	$ 0.50	8,751	1,813	10,564
TOTAL			**12,032**	**2,367**	**14,399**

Table 7-1 (continued)

TOLL LOCATION	TYPE	2015				2016				2018			
		AUTO TOLL	Daily Transactions			AUTO TOLL	Daily Transactions			AUTO TOLL	Daily Transactions		
			Autos	Trucks	TOTAL		Autos	Trucks	TOTAL		Autos	Trucks	TOTAL
US 183S NB&SB to US 290E EB	Direct Connector	$ 0.53	2,306	274	2,580	$ 0.55	2,458	296	2,754	$ 0.58	3,091	354	3,445
US 290E WB to US 183S NB&SB	Direct Connector	$ 0.53	3,438	397	3,835	$ 0.55	3,677	421	4,098	$ 0.58	4,082	477	4,560
Springdale Rd.	Ramp	$ 0.53	86	20	106	$ 0.55	92	21	113	$ 0.58	112	25	137
Arterial A	Ramp	$ 0.53	1,050	143	1,193	$ 0.55	1,179	155	1,334	$ 0.58	1,462	186	1,648
Between Arterial A & Giles Rd.	Main Lane	$ 1.06	24,989	2,965	27,953	$ 1.09	26,104	3,157	29,261	$ 1.16	30,298	3,563	33,860
Harris Branch Pkwy.	Ramp	$ 0.53	980	75	1,055	$ 0.55	1,073	81	1,154	$ 0.58	1,192	92	1,284
Parmer Ln.	Main Lane	$ 0.53	11,111	1,995	13,106	$ 0.55	11,811	2,113	13,924	$ 0.58	12,829	2,354	15,183
TOTAL			**43,960**	**5,868**	**49,828**		**46,394**	**6,243**	**52,637**		**53,065**	**7,051**	**60,116**

Table 7-1 (continued)

TOLL LOCATION	TYPE	2020				2025				2030			
		AUTO TOLL	Daily Transactions			AUTO TOLL	Daily Transactions			AUTO TOLL	Daily Transactions		
			Autos	Trucks	TOTAL		Autos	Trucks	TOTAL		Autos	Trucks	TOTAL
US 183S NB&SB to US 290E EB	Direct Connector	$ 0.61	4,595	376	4,971	$ 0.71	6,711	485	7,196	$ 0.83	8,686	512	9,199
US 290E WB to US 183S NB&SB	Direct Connector	$ 0.61	7,571	690	8,261	$ 0.71	10,481	929	11,410	$ 0.83	12,843	1,040	13,883
Springdale Rd.	Ramp	$ 0.61	143	26	169	$ 0.71	2,519	157	2,676	$ 0.83	2,999	171	3,170
Arterial A	Ramp	$ 0.61	2,145	238	2,382	$ 0.71	3,174	314	3,488	$ 0.83	3,461	412	3,874
Between Arterial A & Giles Rd.	Main Lane	$ 1.23	32,760	3,972	36,733	$ 1.43	42,200	4,979	47,178	$ 1.65	49,943	5,811	55,754
Harris Branch Pkwy.	Ramp	$ 0.61	1,339	120	1,460	$ 0.71	1,701	143	1,844	$ 0.83	1,941	170	2,111
Parmer Ln.	Main Lane	$ 0.61	13,598	2,606	16,204	$ 0.71	17,469	3,478	20,947	$ 0.83	17,536	3,544	21,080
TOTAL			**62,151**	**8,028**	**70,179**		**84,254**	**10,485**	**94,739**		**97,409**	**11,660**	**109,069**

Table 7-1 (continued)

TOLL LOCATION	TYPE	2035			
		AUTO TOLL	Daily Transactions		
			Autos	Trucks	TOTAL
US 183S NB&SB to US 290E EB	Direct Connector	$ 0.96	10,885	585	11,470
US 290E WB to US 183S NB&SB	Direct Connector	$ 0.96	15,628	1,198	16,825
Springdale Rd.	Ramp	$ 0.96	3,355	211	3,566
Arterial A	Ramp	$ 0.96	4,741	552	5,293
Between Arterial A & Giles Rd.	Main Lane	$ 1.92	58,980	6,799	65,778
Harris Branch Pkwy.	Ramp	$ 0.96	2,324	216	2,540
Parmer Ln.	Main Lane	$ 0.96	19,465	3,941	23,406
TOTAL			**115,377**	**13,502**	**128,879**

Figure 7-1 Year 2013 Average Weekday Traffic

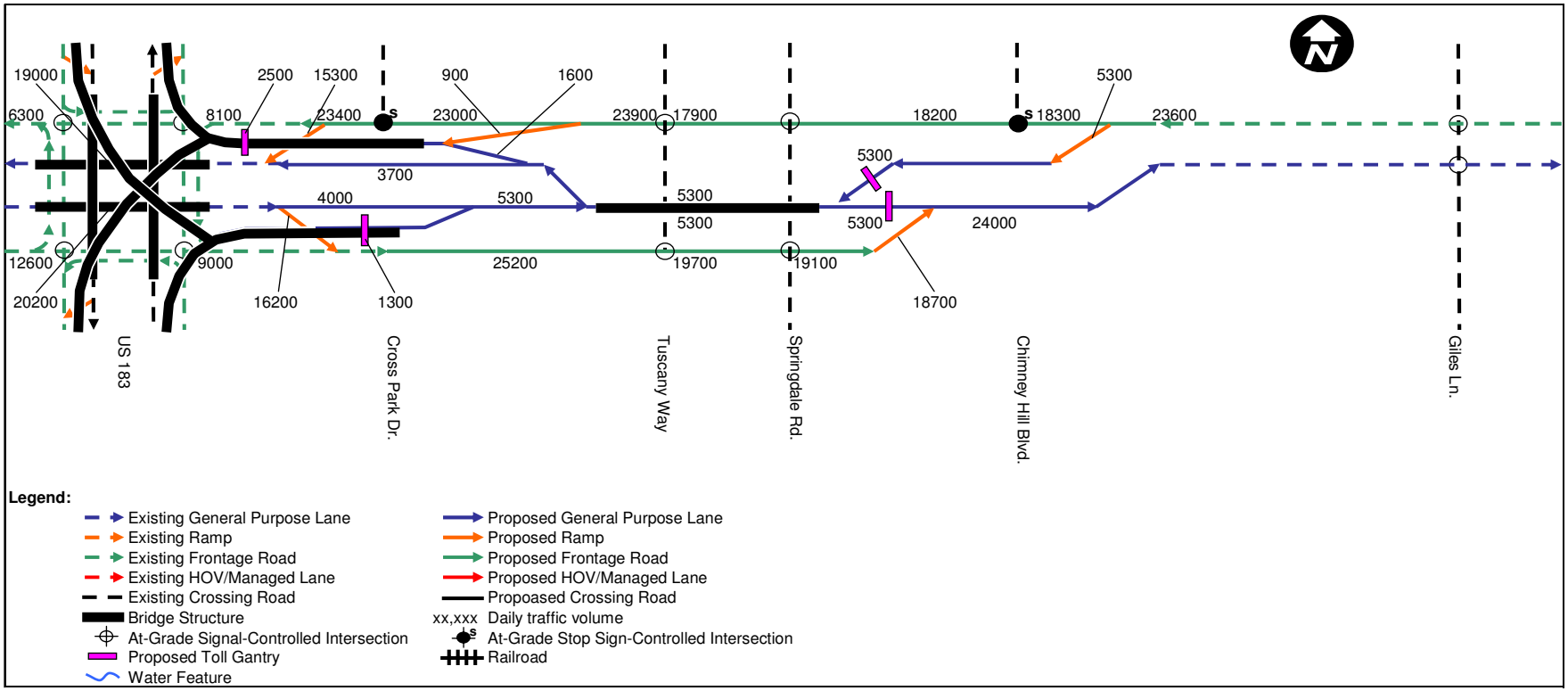


Figure 7-2 Year 2015 Average Weekday Traffic

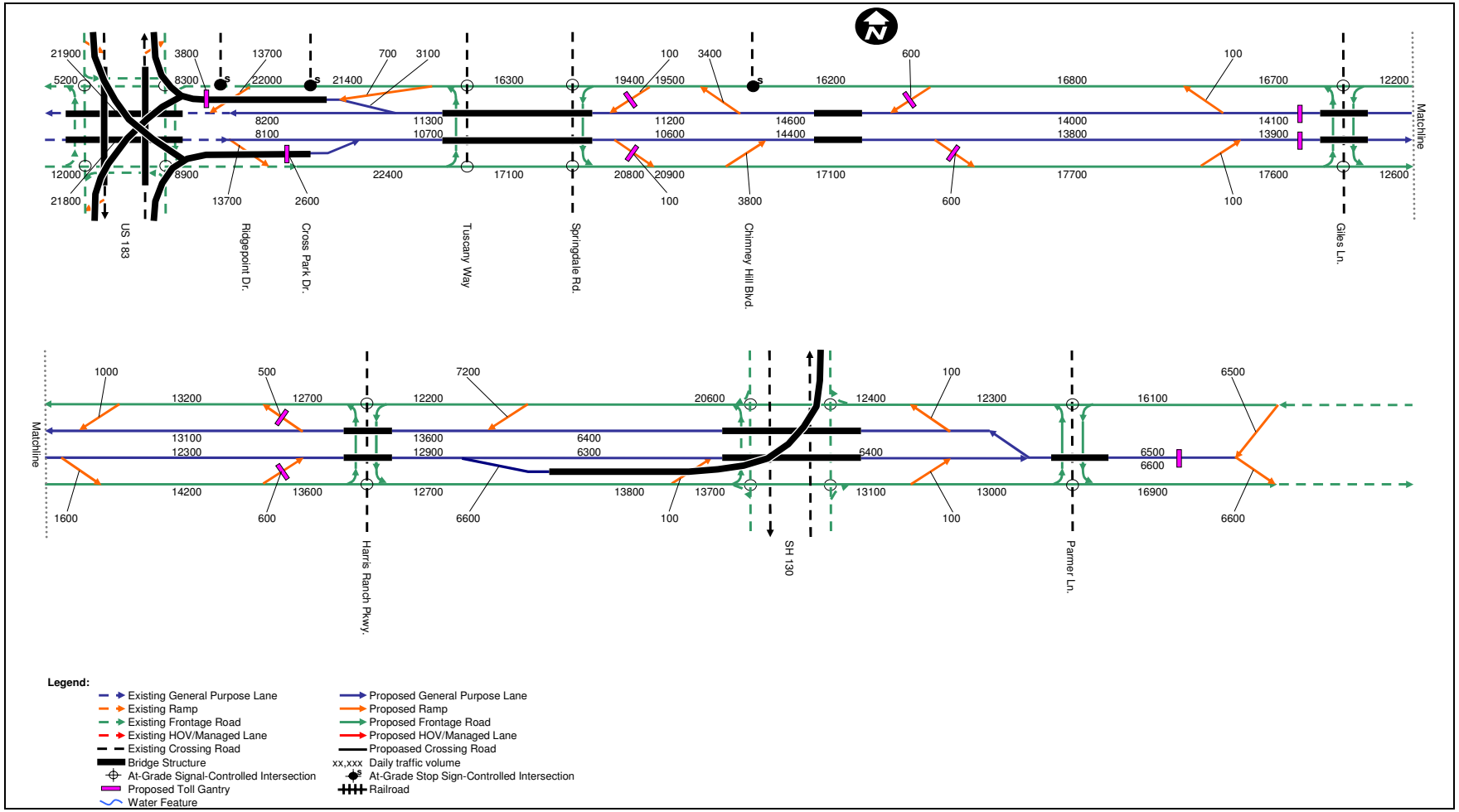


Figure 7-3 Year 2016 Average Weekday Traffic

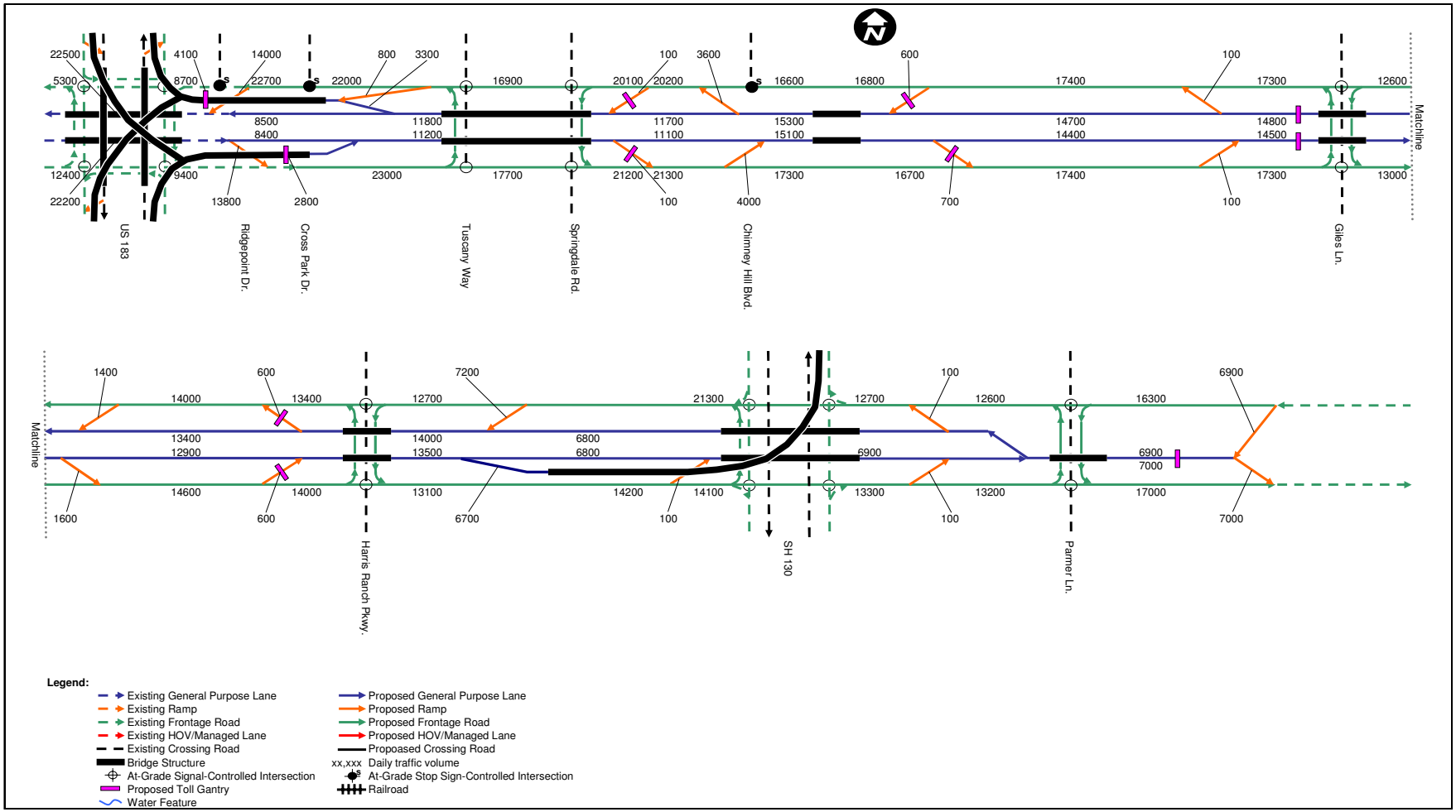


Figure 7-4 Year 2018 Average Weekday Traffic

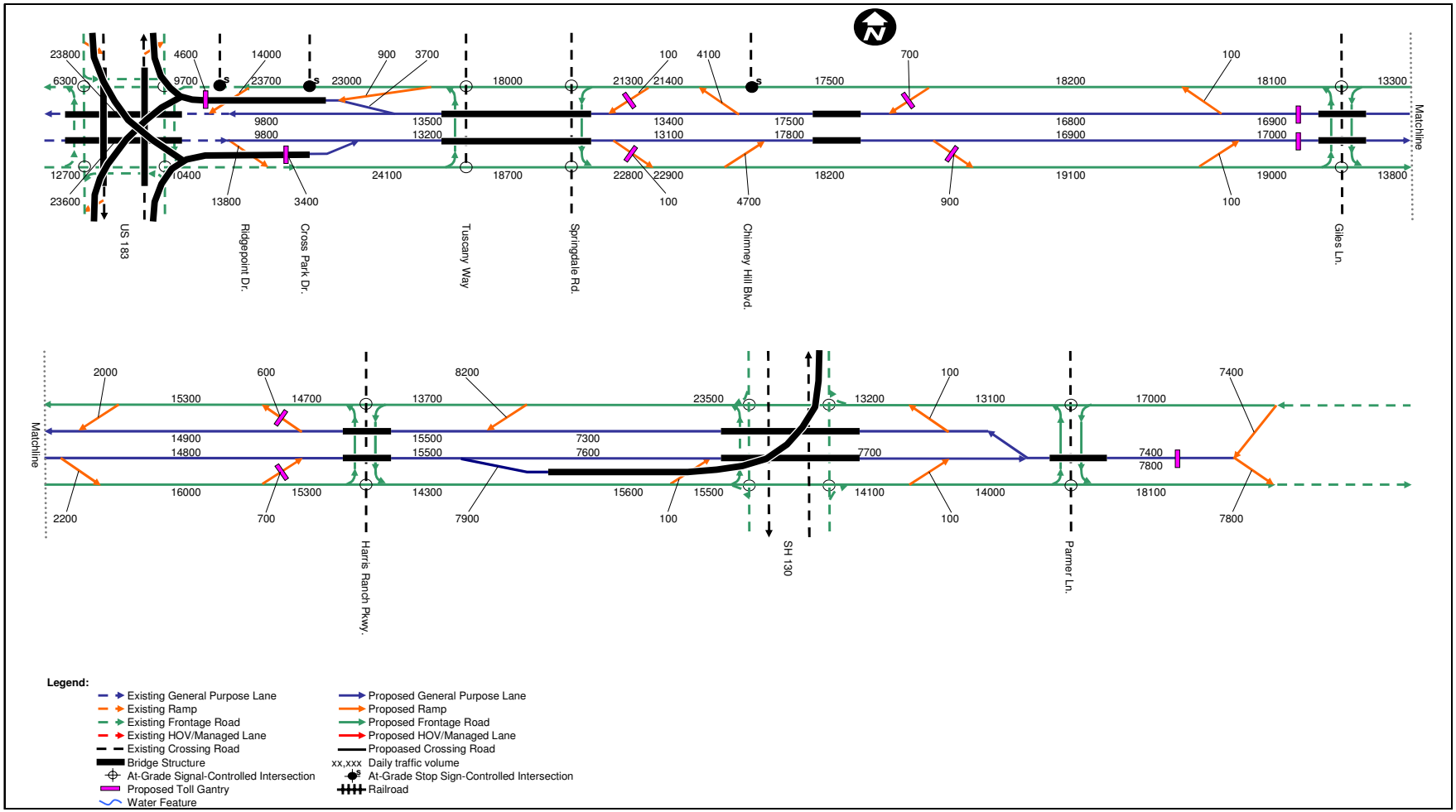


Figure 7-5 Year 2020 Average Weekday Traffic

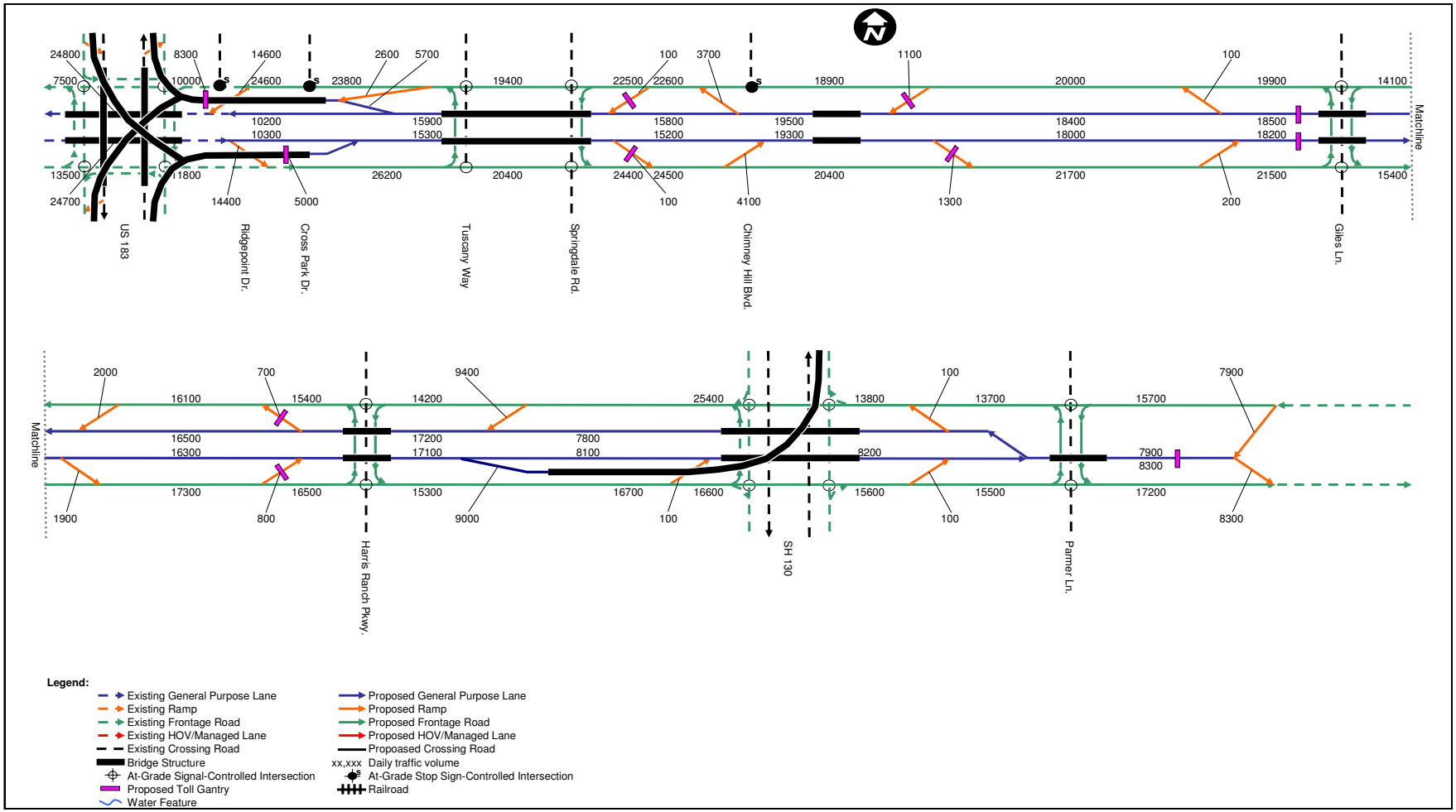


Figure 7-6 Year 2025 Average Weekday Traffic

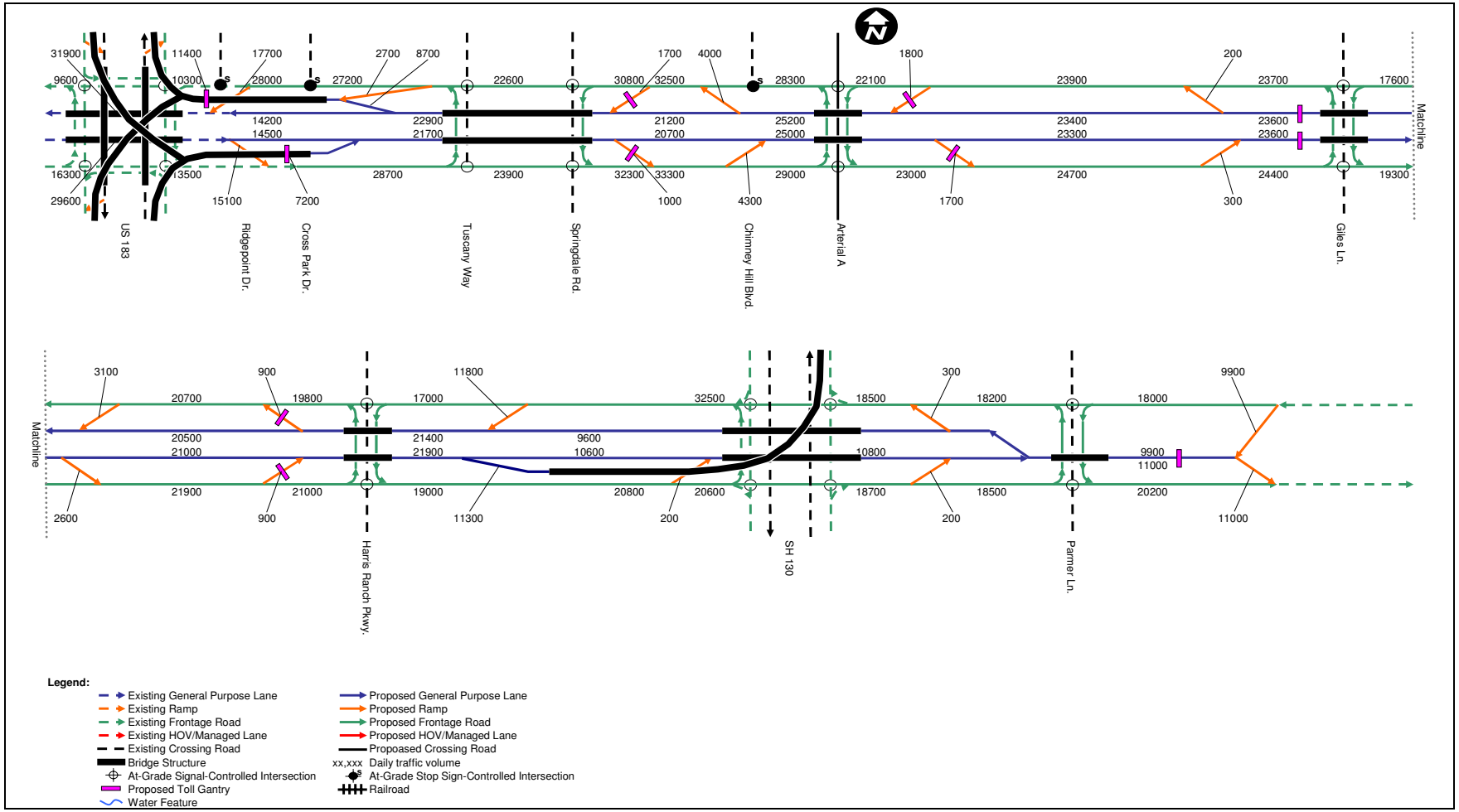


Figure 7-7 Year 2030 Average Weekday Traffic

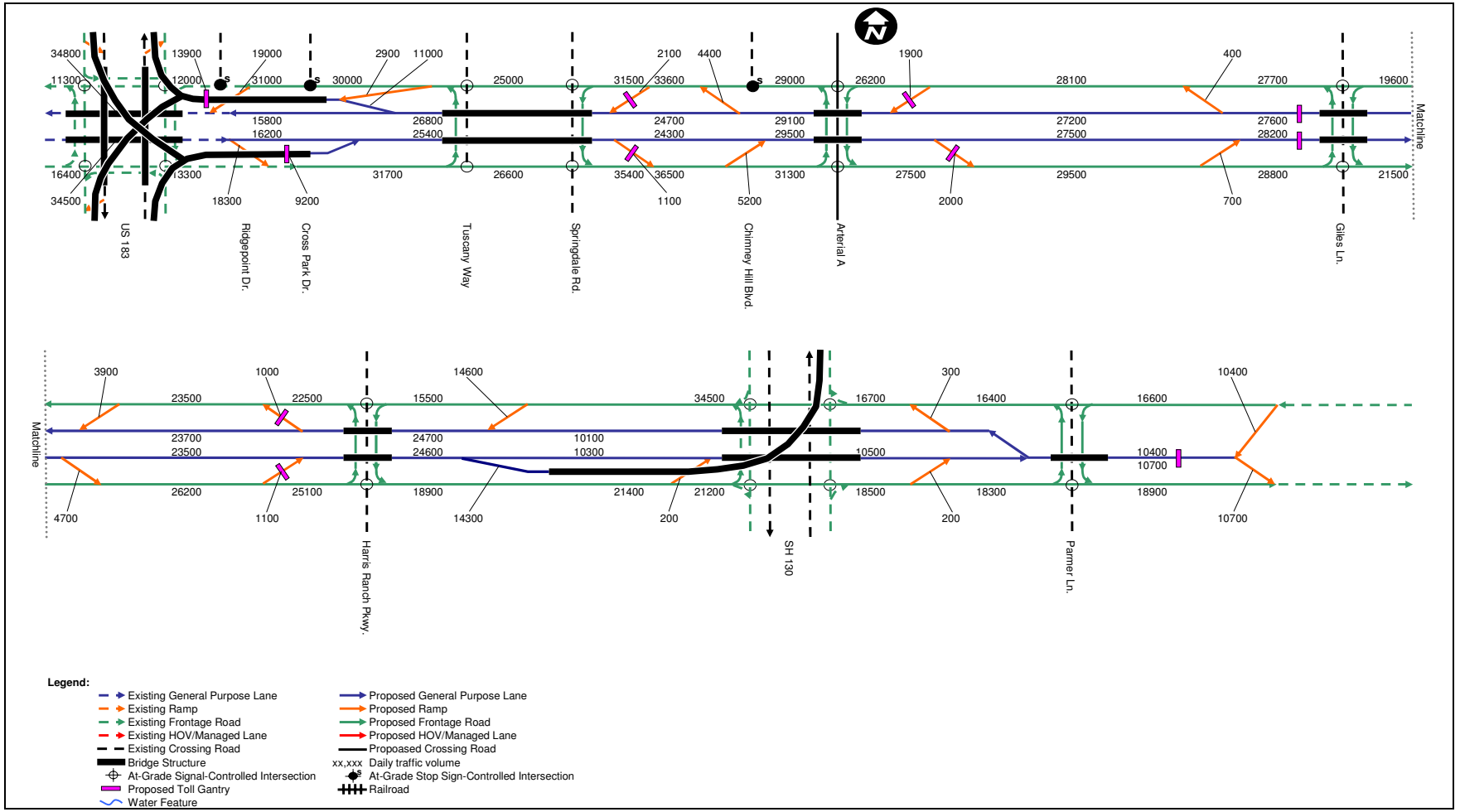
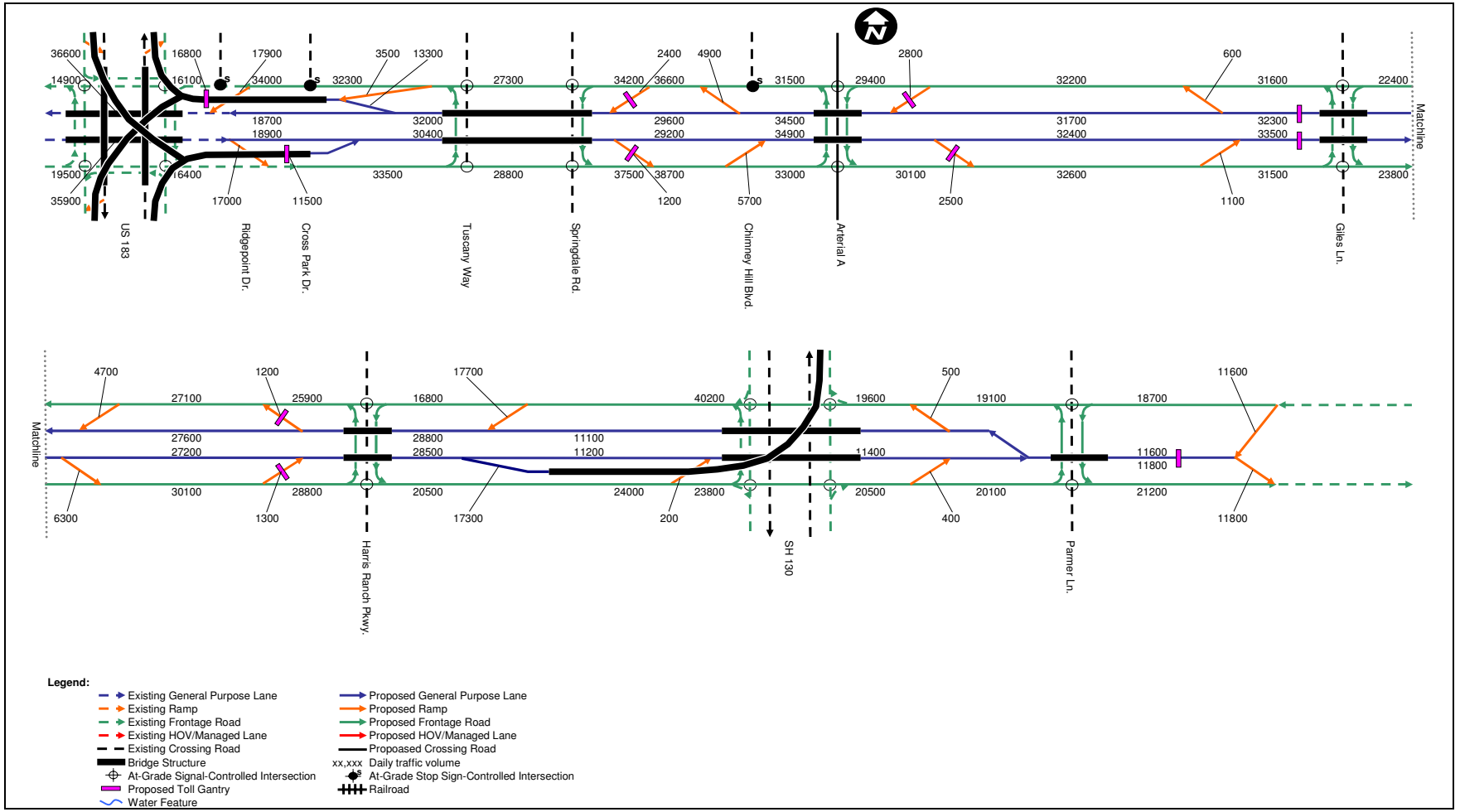


Figure 7-8 Year 2035 Average Weekday Traffic



7.2 Corridor Diversion Screen Line Analysis

A screen line is a boundary, whether it is a river, or an imaginary line, across which only a limited number of routes traverse. Screen lines are used by traffic engineers to measure and analyze volume changes over a period of years or with respect to competing routes and traffic diversions. **Figure 7-9** shows the three screen lines selected for the purpose of diversion analysis. (These screen lines are different from the calibration screen lines used in **Chapter 3**, and are used for different purposes.)

Diversion Screen Line A was established on a north-south line through the western terminus of the project, just to the east of Springdale Road and US 183. This screen line is the main measure for the toll diversion as the Manor Expressway mainlanes on this screen line remains a toll road facility for all the modeling years analyzed, therefore Screen Line A was used to compare the base case, the no-toll case, and the no-build case. Screen Line B was established on a north-south line at a point just east of SH 130. Screen Line C was set along the eastern end of the modeling area at a point just east of Wells/Ballerstedt Road. This screen line generally describes the overall traffic growth in the east end of the corridor. Only the base case was compared for Screen Line B and C. **Figures 7-10** through **7-12** show the results of the diversion screen line analyses for two of the years for which model runs were conducted. The volumes shown for the Manor Expressway for each of the three screen lines are daily traffic without adjustments for ramp-up or toll evasion.

As shown in **Figure 7-10,** in the base case, the percentage of overall traffic that crosses Screen Line A using the Manor Expressway tolled mainlanes (in the red boxes) will increase from approximately 12 percent (22,700) in 2015 to 19 percent (65,900) in 2035. Traffic volumes on the Manor Expressway mainlanes continue to grow by approximately 5 percent annually, reflecting demographic growth and network improvement in the area. In the no-toll case, the percentages of traffic using the Manor Expressway mainlanes are much higher than the base case and stay at approximately 30-40% for all the years. In the no-build case, the percentage of traffic using the existing US 290E decreases from 29% in year 2015 to 24% in year 2035.

As shown on **Figure 7-11**, the Manor Expressway mainlane traffic share of Screen Line B decreases from 16 percent in 2015 to 11 percent in 2035 due to the opening of Howard Lane and the extension of Wells Branch Parkway in 2020 and the opening of Arterial A in 2025.

Figure 7-12 indicates the general traffic growth trend to the east end of the corridor. As the Manor Expressway mainlane traffic continues to increase from 2015 to 2035, the Manor Expressway mainlane traffic share of Screen Line C will decrease from 82 percent in 2015 to 72 percent in 2035, due to faster traffic growth on other roads, especially the opening of Pflugerville East Loop to the north of the corridor in 2030. However, when compared with Screen Line B, the small decrease of traffic does not

affect the traffic patterns near SH 130, as the demographic changes around that area still show stable growth.

Figure 7-9 Corridor Diversion Screen Lines

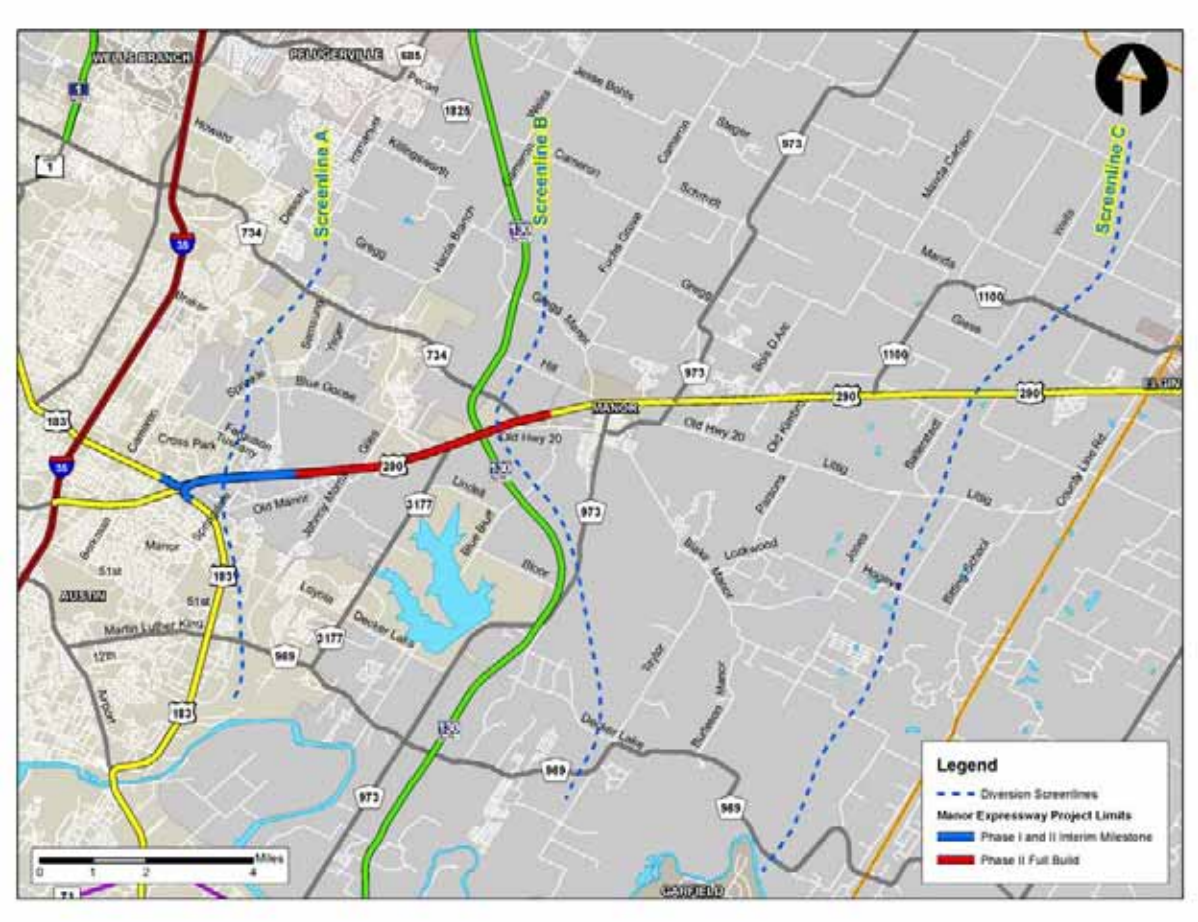
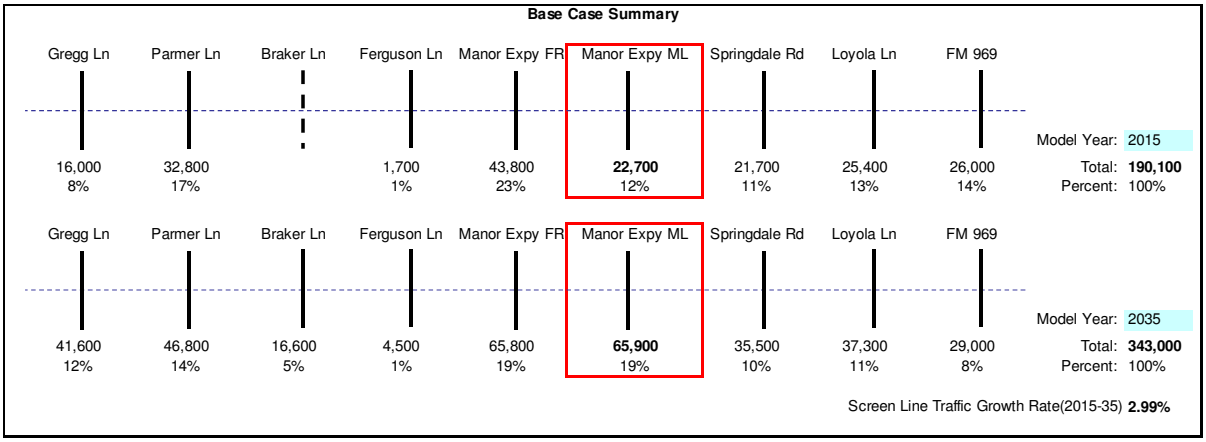
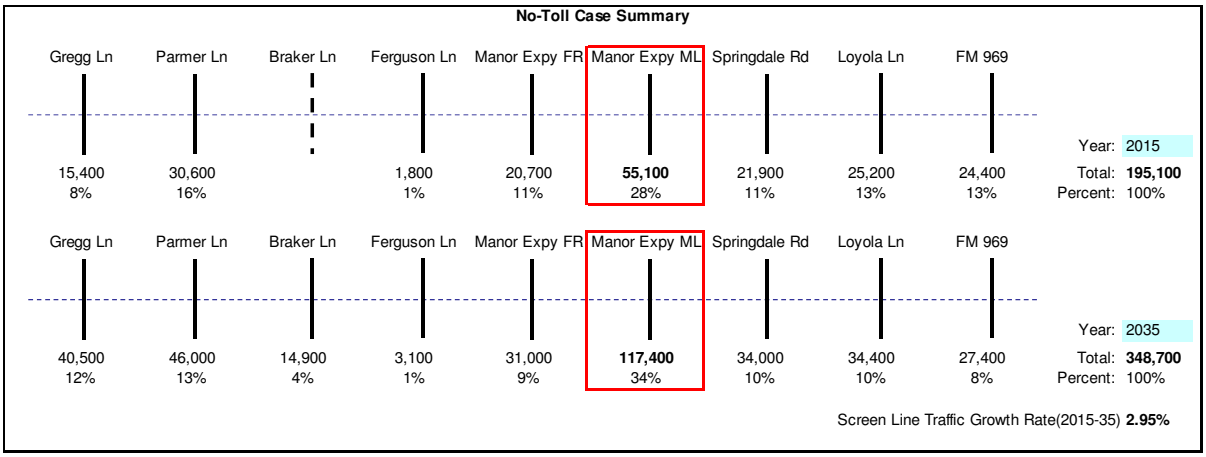


Figure 7-10 Screen Line A Volumes (East of Springdale Road/US 183) Vehicles per Weekday





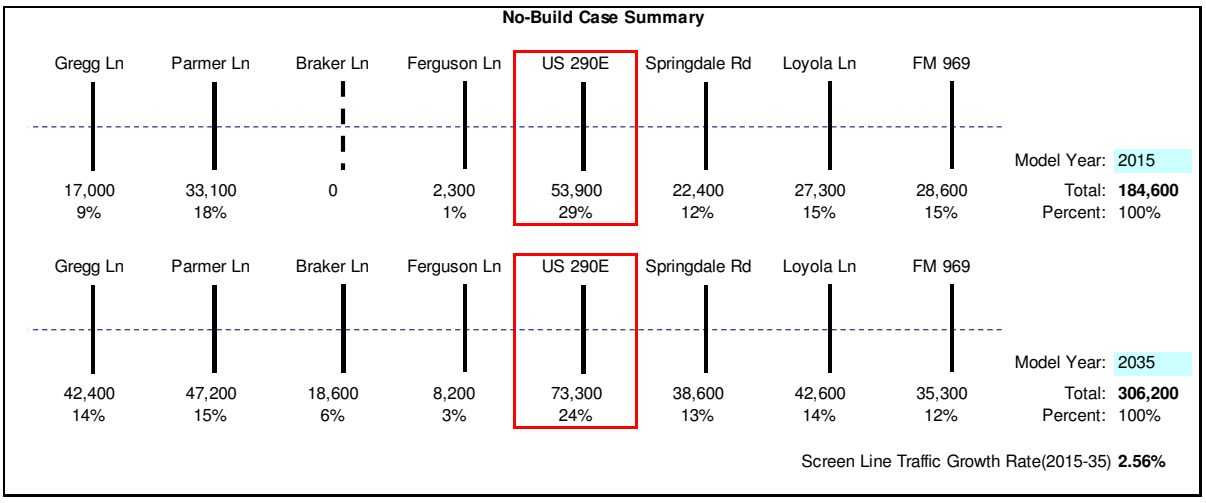


Figure 7-11 Screen Line B Volumes (East of SH 130)
Vehicles per Weekday

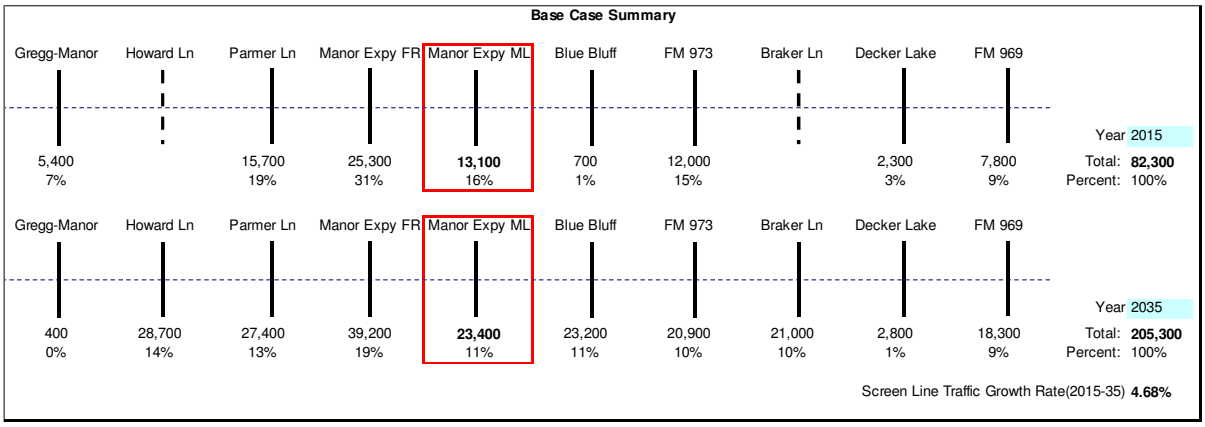
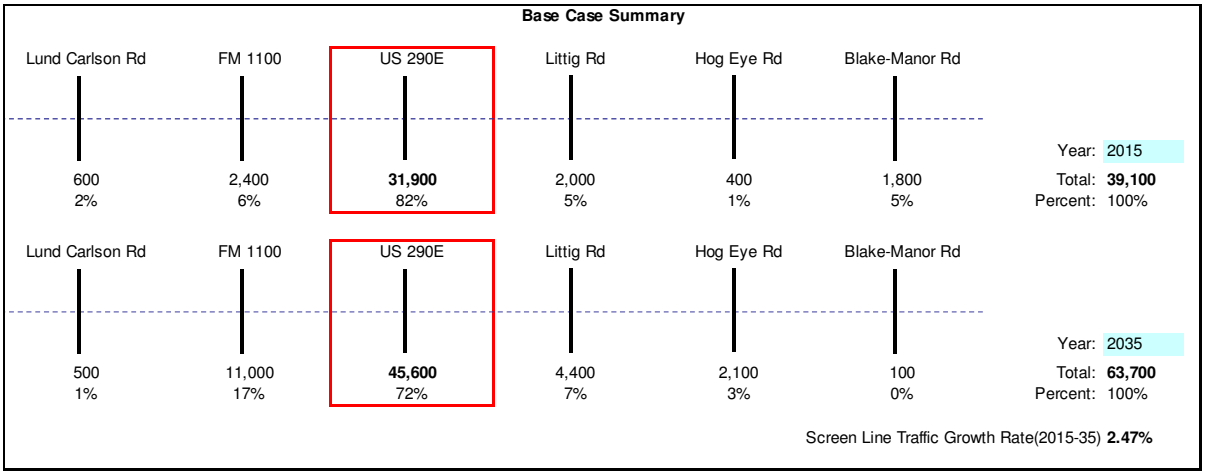
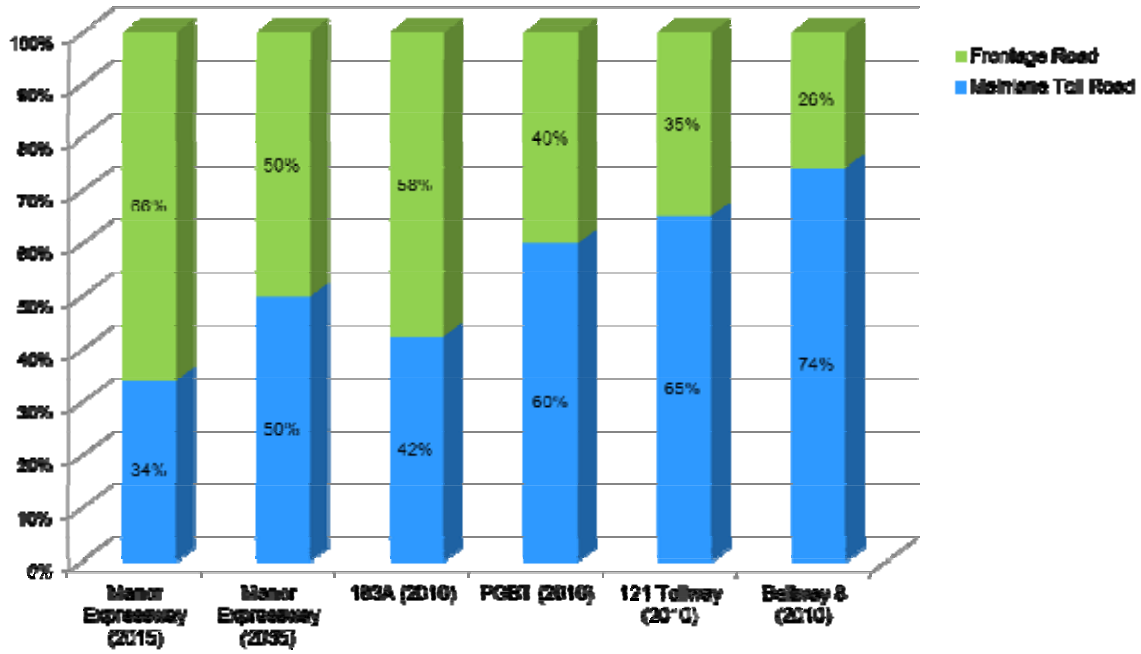


Figure 7-12 Screen Line C Volumes (East of Wells/Ballerstedt)
Vehicles per Weekday



As shown in **Figure 7-9**, there are no other major competing, alternative routes parallel to Manor Expressway except its frontage road. It is worthwhile to examine the corridor traffic split among the tolled mainlanes and the free frontage road. **Figure 7-10** suggests that in 2015, the Manor Expressway frontage road on Screen Line A carries about 66% of the combined corridor traffic (43,800 of 66,500). However, when traffic congestion increases on the frontage road in 2035, the frontage road share of the combined corridor traffic drops to approximately 50% (65,800 of 131,700). On Screen Line B shown in **Figure 7-11**, the frontage road traffic share changes from 66% (25,300 of 38,400) in 2015 to 63% (39,000 of 62,600). **Figure 7-13** shows comparative frontage road shares of several Texas toll facilities. As can be seen from **Figure 7-13**, the frontage road traffic share for Manor Expressway is within the reasonable range and relatively conservative compared to other existing Texas turnpikes with frontage roads.

Figure 7-13 Comparison of Frontage Road Traffic Share on Texas Toll Facilities



Source: Traffic data of 183A was obtained from CTRMA; Beltway 8 (Sam Houston Tollway) from HCTRA; PGBT (President George Bush Turnpike) and 121 Tollway (Sam Rayburn Tollway) from NTTA

8 TOLL REVENUE ESTIMATES

Toll revenue forecasts for the Manor Expressway Project were generated from the tolled traffic volumes estimated by the URS Toll Diversion Model. Future-year tolled traffic forecasts were developed for the project opening years 2013 and 2015, a horizon year of 2035, and five intermediate years to estimate the impact of scheduled toll increases on other tolled facilities, demographic growth and assumptions regarding changes in background highway network. In order to develop the required 40-year toll revenue stream for the project, the tolled transactions and toll revenue estimates for the years between model runs were calculated using interpolation. Transaction and toll revenue estimates for the years beyond the model horizon year of 2035 were developed using the standard extrapolation techniques described in Section 8.2. The toll revenue estimates provided in this chapter are the gross annual toll revenues for the Base Scenario which is defined as: **3.0%** toll rate escalation rate, **$0.20/mile** toll rate in **2007** dollars, and a **minimum** toll charge of **50 cents** in the opening year 2013.

8.1 Toll Revenue Estimation Assumptions

The toll revenue estimates developed for the Manor Expressway Project were based on assumptions that included several factors that are described in the following sections and summarized in **Section 8.2**.

8.1.1 Truck Axle Factors

Trucks with two axles were tolled at the same rate as autos. Trucks with more than two axles were tolled using an N-1 rate for each extra axle, where N is the number of axles. The truck multiplier factor, N-1, which represents the ratio of the average toll charged to a truck to the toll for an automobile, is estimated by the average number of axles for the trucks in the study area. URS developed a truck axle factor from truck classification data collected in the vicinity of the project study area. A truck axle factor of **3.42** (i.e., truck multiplier factor 2.42) was used for the Manor Expressway Project.

8.1.2 Annual Toll Revenue Days Estimation

Both the enhanced CAMPO Model and URS Toll Diversion Model estimate weekday traffic. The annual transaction number is estimated by multiplying the projected weekday traffic by an annualized factor. This factor takes into account the lower volume experienced on the facility during the weekend days throughout the year. Based on the traffic data collection effort, URS adopted an annualized factor of **325** for the Manor Expressway Project.

8.1.3 "Ramp-Up" Factors

Travel demand models assume that motorists have perfect knowledge of the transportation network. In reality, motorists require time to adjust to new facilities, particularly toll roads. "Ramp-up" is a term used to describe the period from the time when a toll road first opens to traffic until it achieves the steady traffic flows predicted by the travel demand model. "Ramp-up" accounts for the time that toll-paying customers need to find and become acquainted with the project, and to decide whether use of the toll road provides good value to them.

The "ramp-up" factors are applied to the estimated traffic for the first few years after the opening year. For this analysis, a three-year "ramp-up" period was adopted based on the assumption that motorists have a high degree of familiarity with the roadway and need less time to adjust to the addition of the toll road because the proposed Manor Expressway Toll Road is being added to an existing configuration. **Table 8-1** presents the "ramp-up" factors assumed for the Manor Expressway Project.

Table 8-1
"Ramp-Up" Factors

Year	"Ramp-Up" Factor
2013	70%
2014	80%
2015	90%
2016 and beyond	100%

8.1.4 Toll Evasion Factors

The final adjustment to the toll revenue estimates involved reducing the revenues to account for potential toll evasion. Evasion rates vary based on toll collection type. Evasion rates for video toll collection tend to be higher than for transponders because of technological challenges and failure to pay. **Table 8-2** presents the evasion rates for each collection type for the duration of the forecast. The evasion rate for video toll collection decreases over time as motorists become more familiar with the penalties associated with violations.

Table 8-2
Toll Evasion Rates

Year	Video	Transponders
2013	34%	2.5%
2014	33%	2.5%
2015	32%	2.5%
2016	31%	2.5%
2017	30%	2.5%
2018 and beyond	30%	2.5%

The toll evasion rate was developed from available data and evasion experience from other toll roads in the country. The evasion rate is consistent with other "open road tolling" configurations that involve high-speed video recognition.

8.1.5 Transponder and Video Tolling Assumptions

The transponder ownership rate represents the percentage of all vehicles with a transponder and a valid TxTag account, not the percentage of tolled transactions using transponders. Various rates of transponder ownership have been assumed in previous CTRMA studies, but the percentages have been revised as more information on toll road operations in Austin becomes available. Assumptions regarding the percentages of transponders for this project were developed based on the recent transponder usage data from other toll facilities in the Austin region and are presented in **Table 8-3**. ETC transactions currently represent approximately 80 percent of tolled transactions. Based on this information, the maximum transponder percentage of 90 percent was assumed appropriate. The ownership rates between the years shown in **Table 8-3** will be interpolated accordingly. Vehicles without transponders were assumed to be eligible for video billing.

Table 8-3
Transponder Percentages

Year	Transponder Shares
2013	70%
2018	80%
2023	85%
2028 and beyond	90%

8.1.6 Video Toll Fee Revenue Assumption

Based on the historical data of 183A provided by CTRMA, video toll transactions are handled by mailings. In additional to the occurred video toll charge, processing fees and in the same cases penalty fees were also collected and reported as part of CTRMA's revenue income. These fee revenues were directly related to video toll transactions. As suggested by the 183A historical data, Stantec carried out a calculation formula with $0.214/video toll transaction for the fee revenue estimation. This formula is used in this study. However, it is assumed that the fee structure will not change or escalate between 2013 and 2052. Additionally, considering the challenges in video toll collections for the new toll project of Manor Expressway Toll Road, a three-year "ramp-up" period is assumed, as shown in **Table 8-4**. Note that the video toll fee revenue ramp-up factors are different from the project ramp-up factors in **Table 8-1**. The fee revenue ramp-up factors account for the video toll transaction collection process for the new facility. The project ramp-up factors account for the familiarity of facility users.

Table 8-4
Video Toll Fee Revenue "Ramp-Up" Factors

Year	"Ramp-Up" Factor
2013	70%
2014	80%
2015	90%
2016 and beyond	100%

8.2 Annual Toll Revenue Estimates

Table 8-5 lists daily tolled transactions for the Manor Expressway Toll Road for the Base Scenario for a 40-year period. The numbers shown in bold are for those years where the model runs were performed. The tables show transactions by vehicle class. For the period beyond the last model year of 2035, it was assumed that the annual growth rate in transactions would be estimated using a "constant increment" approach. This increment was based on the average growth in total transactions by vehicle type for the five-year period between 2030 and 2035. With this assumption, the annual change in transactions for the Base Scenario will decrease from 3.4 percent in 2035 to approximately 0.5 percent in 2052 and beyond. Significant growth in transactions for year 2015 is due to the opening of Phase II Full Build. Note that these growth rates do not solely represent transaction changes but also reflect variations in ramp-up factors.

Tables 8-6 lists annual toll revenue estimates for the Manor Expressway Toll Road for the Base Scenario. The numbers shown in bold are for those years where the model runs were performed. The toll revenue estimates reported in this table are for a calendar year and are in nominal dollar values. For the early years, the growth in

transactions and toll revenue listed in **Tables 8-5 and 8-6** shows significant increases due to the effect of the ramp-up factors as described in Section 8.1.3. The annual toll revenue changes include the combined effect of increasing numbers of transactions and annual percentage increases in toll rates.

The toll revenue forecast for the Manor Expressway Project shown in **Tables 8-6** was based on the following assumptions:

1. The Manor Expressway Project would be open to traffic in the years discussed in **Section 6.1**.

2. Phase I and Phase II Interim Milestone will start to collect toll on January 1, 2013.

3. Phase II Full Build will start to collect toll on January 1, 2015.

4. The toll collection plan and rates for the Manor Expressway Toll Road described in **Section 6.2.1** of the report will be implemented as proposed, including the toll rates specified for multi-axle vehicles and annual toll increases described in that section.

5. Transponder market shares for the Manor Expressway Toll Road will match the forecast in **Section 8.1.5**.

6. The composition and percentage of trucks in the various axle categories for the Manor Expressway Toll Road will remain sufficiently similar in relation to the existing vehicle mix that the toll multiplier for trucks will remain at 2.42 as described in **Section 8.1.1**.

7. The socioeconomic growth discussed in **Chapter 4** of the report will occur as forecast.

8. The highway network improvements discussed in **Chapter 5** of the report will be constructed as assumed.

9. Inflation will generally continue at **3.0** percent compounded annually during the forecast period through year 2052. The increase of average toll rate generally follows the inflation rate at **3.0** percent before year 2035, then falls to 2.0 percent between year 2036 and 2040, and falls further to 1.0 percent between year 2041 and 2052. The median household income will also increase at a rate that tracks the assumed rate of inflation.

10. The Manor Expressway Project traffic during the early years of operation will ramp-up as described in **Section 8.1.3**.

11. Toll evasion will occur as discussed in **Section 8.1.4**.

12. The Manor Expressway Project will be efficiently maintained and operated.

13. Motor fuel will remain in adequate supply during the forecast period. As a result, motor fuel prices will not rise (except as a short term spike in prices) to more than $4.50 per gallon (the average price for regular gasoline), adjusted for inflation. Although motor fuel prices are not an explicit factor in the travel demand model, high fuel prices over a prolonged period will gradually affect the level and location of economic activities, which in turn will tend to reduce traffic volumes.

14. Federal and State fuel tax increases will not increase to the extent that, together with fuel price increases, prolonged motor fuel prices exceed $4.50 per gallon for regular gasoline, adjusted for inflation.

15. No radical change in travel modes, such as high usage of non-motorized modes, in the Austin area that would drastically curtail motor vehicle use, is expected during the forecast period.

16. In the long term, generally normal economic conditions (e.g., no major recession, depression, national emergency or prolonged fuel shortage) will prevail during the forecast period.

Table 8-5
Total Daily Transactions for Manor Expressway Toll Road

Calendar Year	Auto Transactions	Truck Transactions	Total Transactions	Transaction Growth
2013	**8,340**	**720**	**9,060**	
2014	10,000	890	10,890	20.2%
2015	**37,680**	**3,420**	**41,100**	**277.4%**
2016	**44,450**	**4,120**	**48,570**	**18.2%**
2017	47,690	4,510	52,200	7.5%
2018	**51,170**	**4,930**	**56,100**	**7.5%**
2019	53,480	5,260	58,740	4.7%
2020	**59,750**	**5,990**	**65,740**	**11.9%**
2021	63,480	6,480	69,960	6.4%
2022	67,440	7,010	74,450	6.4%
2023	71,650	7,590	79,240	6.4%
2024	76,120	8,210	84,330	6.4%
2025	**80,870**	**8,890**	**89,760**	**6.4%**
2026	83,140	9,300	92,440	3.0%
2027	85,470	9,730	95,200	3.0%
2028	87,870	10,170	98,040	3.0%
2029	90,340	10,640	100,980	3.0%
2030	**92,870**	**11,130**	**104,000**	**3.0%**
2031	96,060	11,460	107,520	3.4%
2032	99,360	11,800	111,160	3.4%
2033	102,770	12,150	114,920	3.4%
2034	106,300	12,510	118,810	3.4%
2035	**109,950**	**12,890**	**122,840**	**3.4%**
2036	112,700	13,210	125,910	2.5%
2037	115,520	13,550	129,070	2.5%
2038	118,410	13,890	132,300	2.5%
2039	121,370	14,230	135,600	2.5%
2040	123,190	14,450	137,640	1.5%
2041	125,040	14,660	139,700	1.5%
2042	126,910	14,880	141,790	1.5%
2043	128,820	15,100	143,920	1.5%
2044	130,740	15,330	146,070	1.5%
2045	131,400	15,410	146,810	0.5%
2046	132,060	15,480	147,540	0.5%
2047	132,720	15,560	148,280	0.5%
2048	133,380	15,640	149,020	0.5%
2049	134,050	15,720	149,770	0.5%
2050	134,710	15,800	150,510	0.5%
2051	135,390	15,870	151,260	0.5%
2052	136,060	15,960	152,020	0.5%

Note: Bold lettering indicates model run year.

Table 8-6
Total Annual Toll Revenue for Manor Expressway Toll Road (Nominal Values in 000s)

Calendar Year	Auto Revenue	Truck Revenue	Video Toll Fee Revenue	Total Revenue	Revenue Growth
2013	**$1,435**	**$299**	**$79**	**$1,813**	
2014	$1,784	$383	$101	$2,268	25.1%
2015	**$10,677**	**$2,245**	**$379**	**$13,301**	**486.5%**
2016	**$12,897**	**$2,783**	**$464**	**$16,144**	**21.4%**
2017	$14,261	$3,128	$458	$17,847	10.5%
2018	**$15,728**	**$3,505**	**$446**	**$19,679**	**10.3%**
2019	$16,879	$3,838	$447	$21,164	7.5%
2020	**$18,819**	**$4,457**	**$474**	**$23,750**	**12.2%**
2021	$20,501	$4,950	$473	$25,924	9.2%
2022	$22,332	$5,497	$470	$28,299	9.2%
2023	$24,320	$6,105	$468	$30,893	9.2%
2024	$26,482	$6,779	$466	$33,727	9.2%
2025	**$28,833**	**$7,527**	**$464**	**$36,824**	**9.2%**
2026	$30,548	$8,129	$452	$39,129	6.3%
2027	$32,362	$8,775	$444	$41,581	6.3%
2028	$34,282	$9,474	$433	$44,189	6.3%
2029	$36,312	$10,228	$424	$46,964	6.3%
2030	**$38,460**	**$11,042**	**$414**	**$49,916**	**6.3%**
2031	$40,985	$11,724	$429	$53,138	6.5%
2032	$43,675	$12,447	$446	$56,568	6.5%
2033	$46,541	$13,215	$462	$60,218	6.5%
2034	$49,595	$14,030	$480	$64,105	6.5%
2035	**$52,849**	**$14,896**	**$498**	**$68,243**	**6.5%**
2036	$55,253	$15,572	$510	$71,335	4.5%
2037	$57,768	$16,280	$524	$74,572	4.5%
2038	$60,395	$17,021	$537	$77,953	4.5%
2039	$63,144	$17,796	$551	$81,491	4.5%
2040	$65,372	$18,424	$558	$84,354	3.5%
2041	$67,016	$18,887	$567	$86,470	2.5%
2042	$68,702	$19,362	$576	$88,640	2.5%
2043	$70,430	$19,849	$583	$90,862	2.5%
2044	$72,202	$20,348	$593	$93,143	2.5%
2045	$73,288	$20,655	$596	$94,539	1.5%
2046	$74,390	$20,965	$598	$95,953	1.5%
2047	$75,510	$21,280	$601	$97,391	1.5%
2048	$76,647	$21,601	$604	$98,852	1.5%
2049	$77,801	$21,926	$608	$100,335	1.5%
2050	$78,971	$22,257	$610	$101,838	1.5%
2051	$80,159	$22,591	$613	$103,363	1.5%
2052	$81,366	$22,931	$616	$104,913	1.5%

Note: Bold lettering indicates model run year.

Although the projections are presented in a year-by-year format, they are intended to show the trends that may reasonably be anticipated on the basis of the assumptions stated above. Any material changes in the assumptions listed above would have an impact on the forecasted traffic and toll revenue.

Table 8-7 lists transactions and toll revenue by vehicle type for the Manor Expressway Toll Road for the Base Scenario. Total daily truck transactions increase from approximately 720 in 2013 to 12,890 in 2035. With minor variations throughout the intermediate years, the proportion of truck transactions increases slightly from 7.9 percent in 2013 to 10.5 percent in 2035 in the Base Scenario. With intermediate year variations corresponding to that of toll transactions, the revenue share of truck traffic will also increase from about 17.2 percent in 2013 to 22.0 percent in 2035 in the Base Scenario.

Table 8-7
Transactions and Toll Revenue Shares by Vehicle Type

Vehicle Type	Percentage By Year							
	2013	2015	2016	2018	2020	2025	2030	2035
Auto Transactions	92.1%	91.7%	91.5%	91.2%	90.9%	90.1%	89.3%	89.5%
Truck Transactions	7.9%	8.3%	8.5%	8.8%	9.1%	9.9%	10.7%	10.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Auto Revenue	82.8%	82.6%	82.3%	81.8%	80.9%	79.3%	77.7%	78.0%
Truck Revenue	17.2%	17.4%	17.7%	18.2%	19.1%	20.7%	22.3%	22.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

8.3 Travel Time Savings

This section describes the travel time savings associated with using the Manor Expressway Toll Road compared with using the non-tolled facilities for year 2015 and 2035 when both Phase I and Phase II are built. The travel times have been calculated from the model runs. The selected routes for the travel times are presented in **Figures 8-1** for both 2015 and 2035. Points A is west of the intersection of Manor Expressway Toll Road and US 183 where the project start. Point B is east of the intersection of Manor Expressway Toll Road and Parmer Lane, where the project ends. The results of the travel time studies are presented in **Table 8-8** and **Table 8-9**.

The tolled option for Movement A-B represents Manor Expressway mainlane between US 183 and Parmer Lane. One alternate toll-free option for westbound movement A-B is to drive on Manor Expressway westbound frontage roads. The arterial non-tolled route for Movement A-B includes traveling on westbound Manor Expressway frontage roads and taking northbound FM 734 (Parmer Lane), westbound Yager Lane, westbound Sprinkle Road, westbound Ferguson Lane, westbound/southbound Cameron Road, and southbound US 183 to end at Manor Expressway Toll Road. Movement A-B was analyzed for the AM Peak Period and

Movement B-A was analyzed for the PM Peak Period following the route in the reverse order. Reflecting the directional commute traffic, the westbound traffic is more congested in the AM Peak Period and the eastbound is more congested in the PM Peak Period.

As shown in **Table 8-8,** in the AM Peak Period in year 2015, the average travel time savings from utilizing the Manor Expressway mainlane compared to frontage roads and arterials options are 3.2 and 10.1 minutes, respectively; or 34% and 62% travel time reduction. In the PM Peak Period, the time savings are 3.1 and 11.1 minutes; or 33% and 64% travel time reduction. In year 2035, as shown in **Table 8-9**, when traffic is more congested, the average travel time savings from utilizing the Manor Expressway versus frontage roads and arterials options increase to 5.2 and 11.2 minutes, respectively; or 41% and 61% travel time reduction. In the PM Peak Period, the time savings are 4.6 and 12.0 minutes; or 39% and 62% travel time reduction.

Please note that these travel time saving estimations are evaluated on an average basis from the travel demand model. Intersection delay from traffic signals is reflected in the model using lower travel speed and capacity but not explicitly modeled. A detailed traffic simulation may reveal more travel time saving for using Manor Expressway. There are 6 intersections with traffic signals on the frontage road today and one additional on Arterial A will be added in 2025. For a particular traveler, traveling on the frontage road may experience additional travel delay of 10 to 15 minutes from these traffic signals. This T&R study follows the traditional travel demand model methodology widely accepted in the transportation industry. The travel time saving presented in this section is for this reason generally conservative.

Figure 8-1
Travel Time Analysis Routes: Movement A-B

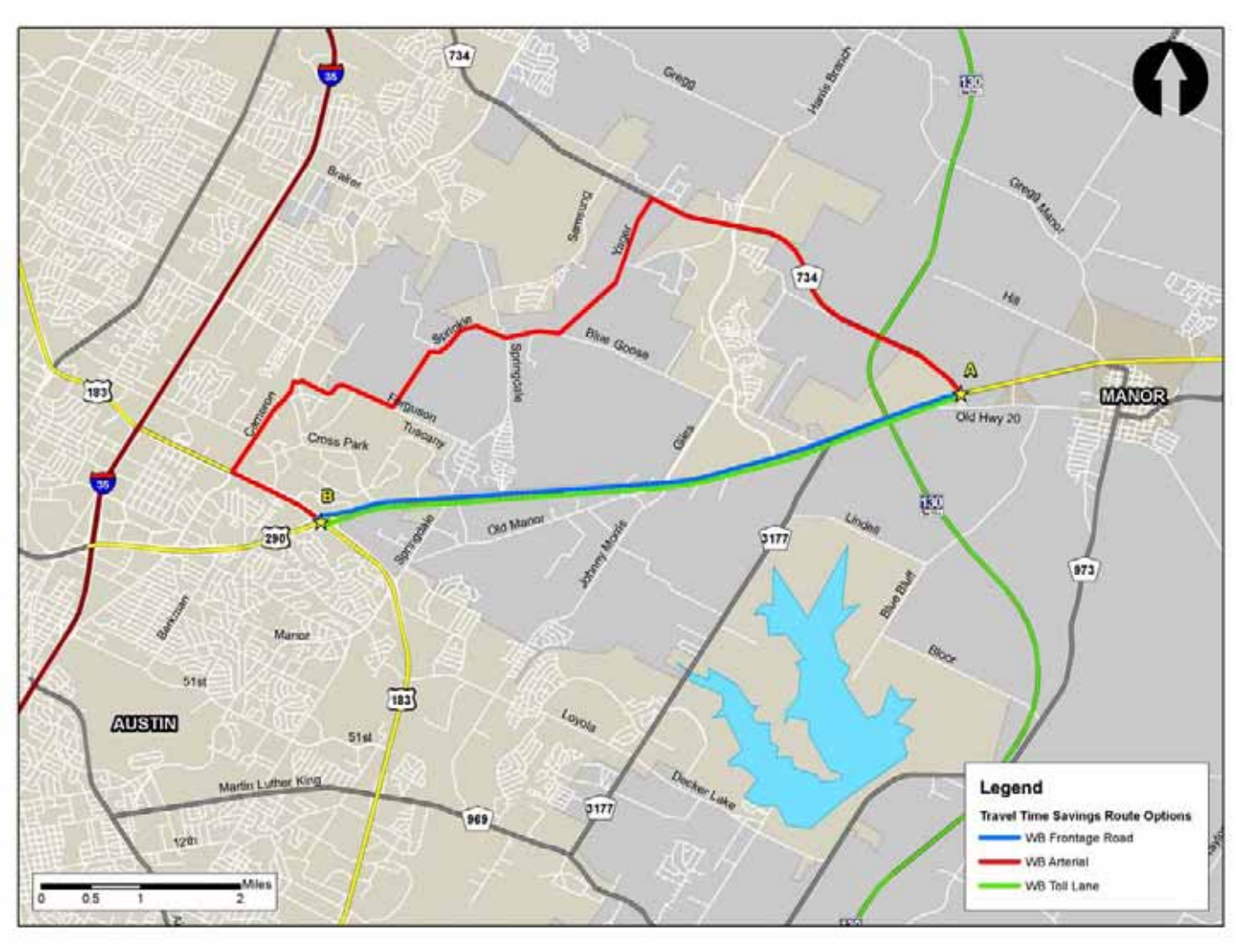


Table 8-8
Representative Travel Time Savings
(Year 2015)

Morning Peak Period (WB) (Movement A-B, From Parmer Lane to US 183)

	Frontage Roads (Toll Free Option)	Manor Expy Tolled Mainlanes	Delta (Savings)		Arterial (Toll Free Option)	Manor Expy Tolled Mainlanes	Delta (Savings)
Distance (Miles)	6.2	6.2	0.0		10.2	6.2	4.0
Travel Time (Minutes)	9.5	6.3	3.2		16.4	6.3	10.1
Percentage of Travel Time Saving			**34%**				**62%**

Afternoon Peak Period (EB) (Movement B-A, From US 183 to Parmer Lane)

	Frontage Roads (Toll Free Option)	Manor Expy Tolled Mainlanes	Delta (Savings)		Arterial (Toll Free Option)	Manor Expy Tolled Mainlanes	Delta (Savings)
Distance (Miles)	6.2	6.2	0.0		10.6	6.2	4.4
Travel Time (Minutes)	9.3	6.2	3.1		17.4	6.2	11.1
Percentage of Travel Time Saving			**33%**				**64%**

Table 8-9
Representative Travel Time Savings
(Year 2035)

Morning Peak Period (WB) (Movement A-B, From Parmer Lane to US 183)

	Frontage Roads (Toll Free Option)	Manor Expy Tolled Mainlanes	Delta (Savings)		Arterial (Toll Free Option)	Manor Expy Tolled Mainlanes	Delta (Savings)
Distance (Miles)	6.2	6.2	0.0		10.2	6.2	4.0
Travel Time (Minutes)	12.4	7.2	5.1		18.5	7.2	11.2
Percentage of Travel Time Saving			**41%**				**61%**

Afternoon Peak Period (EB) (Movement B-A, From US 183 to Parmer Lane)

	Frontage Roads (Toll Free Option)	Manor Expy Tolled Mainlanes	Delta (Savings)		Arterial (Toll Free Option)	Manor Expy Tolled Mainlanes	Delta (Savings)
Distance (Miles)	6.2	6.2	0.0		10.6	6.2	4.4
Travel Time (Minutes)	11.9	7.3	4.6		19.3	7.3	12.0
Percentage of Travel Time Saving			**39%**				**62%**

9 SENSITIVITY ANALYSIS

9.1 Overview of Analyses

As stated in previous chapters, the traffic and toll revenue forecasts for the Manor Expressway Project were based on several assumptions regarding key variables that would influence toll diversion and the resulting toll revenue estimates. In many instances, different assumptions appear reasonable, which could result in material differences in the revenue forecasts. A sensitivity analysis tests how the change of one or multiple assumptions affects the revenue in respect to the Base Scenario. This section of the report summarizes a series of sensitivity tests of the traffic and toll revenue forecasts by employing reasonable changes to toll rates, toll diversion coefficients (willingness to pay tolls and transponder share), the annualization factor, ramp-up factors, and socioeconomic growth.

9.2 Toll Elasticity and Toll Rate Sensitivity

Using the toll coefficients developed for the Base Scenario toll revenue forecast described and discussed in Chapter 8 of this report, a range of toll levels above and below the Base Scenario was tested. With regards to toll elasticity, the model outputs for the Manor Expressway Project reflect the impact of planned annual toll increases, as attenuated by the impact of inflation on these higher tolls over time. Traffic/toll elasticity was tested by eliminating the effect of inflation for the model year 2020. In the context of the estimation of traffic demand for toll roads, elasticity (or toll elasticity) is defined as the sensitivity of the traffic demand for a toll facility to the changes in the tolls charged for that facility. This concept is represented by the following formula:

Toll Elasticity = (Percentage Change in Traffic) / (Percentage Change in Tolls)

In other words, toll elasticity represents the relative decrease in traffic corresponding to a given increase in toll and thus is always a negative value. Lower absolute values of toll elasticity (which is a negative value) imply that the demand for the toll road is not very sensitive to the amount of tolls charged or the demand is *inelastic*. In contrast, high absolute values of toll elasticity suggest the facility will lose traffic due to increased tolls, which can be due to diversion to competing facilities, shifting trips to other travel modes and consolidation of trips. In other words, the demand for the toll road is very sensitive to the amount of tolls charged or the demand is *elastic*. Expressing toll elasticity in absolute values, values less than 0.1 for toll facilities are relatively inelastic; values from 0.1 to 0.25 are considered to be in the lower range of moderate elasticity; values from 0.26 to 0.4 are considered to be moderately elastic, but in the upper range; and values higher than 0.4 are elastic and, therefore, quite sensitive to changes in tolls.

In general, toll revenue continues to increase when toll increases are moderate. While Manor Expressway Toll Road volumes will decrease with higher tolls, the combined effect of lower volumes and higher tolls usually means an increase in toll

revenue. A range of toll charges from free of toll to $0.80 per mile at 10-cent increments were tested for model year 2020. However, because revenue did not reach its peak within this range, additional toll charges from $1.00 to $3.00 per mile at 20-cent increments were evaluated. **Figures 9-1** shows daily toll transactions and revenue elasticity curves for model year 2020 derived for the Manor Expressway Toll Road from the model outputs. These curves represent the aggregate impact on two-axle and multi-axle vehicles combined. The toll elasticity value with a weighted average is -0.032 for 2020. The overall elasticity values fall in the relatively inelastic range as defined earlier.

As shown in **Figure 9-2** toll revenue is expected to peak at a toll level approximately $0.88/mile in the year 2020.

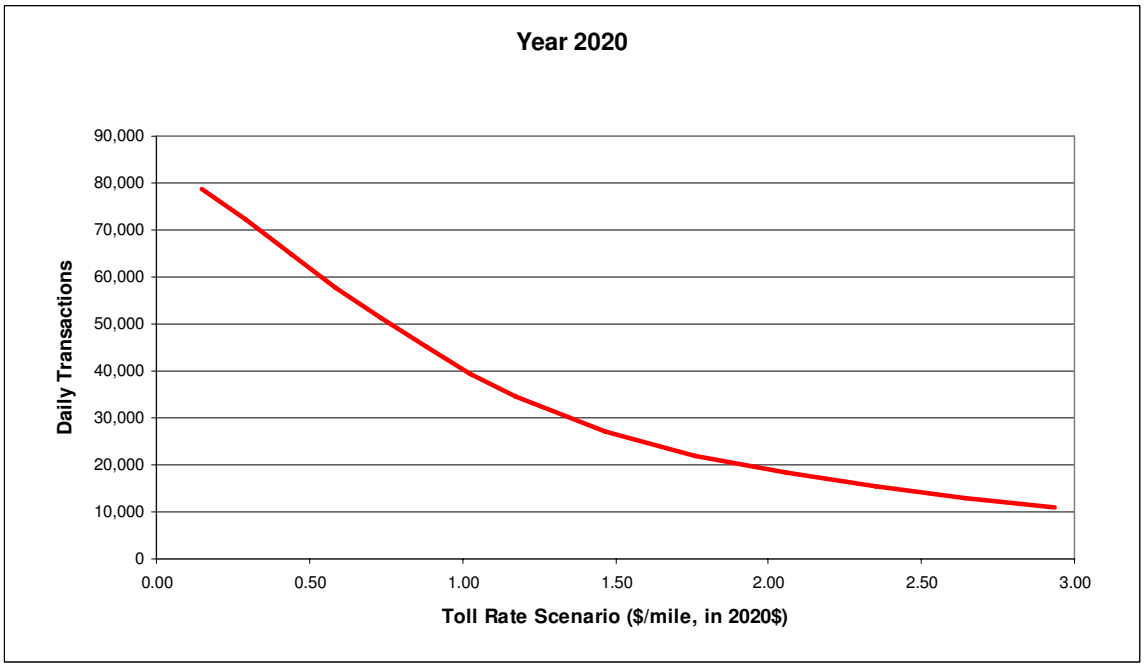
Table 9-1 compares daily transactions and revenues for toll free, Base Scenario, and optimal toll scenarios for model year 2020. A comparison index was defined as the ratio of daily transactions/daily revenue of non-Base Scenarios to those of Base Scenario. The Base Scenario transaction and revenue values were normalized and indexed as 100, for comparison purposes. As expected, toll transactions in the toll free scenario are significantly higher.

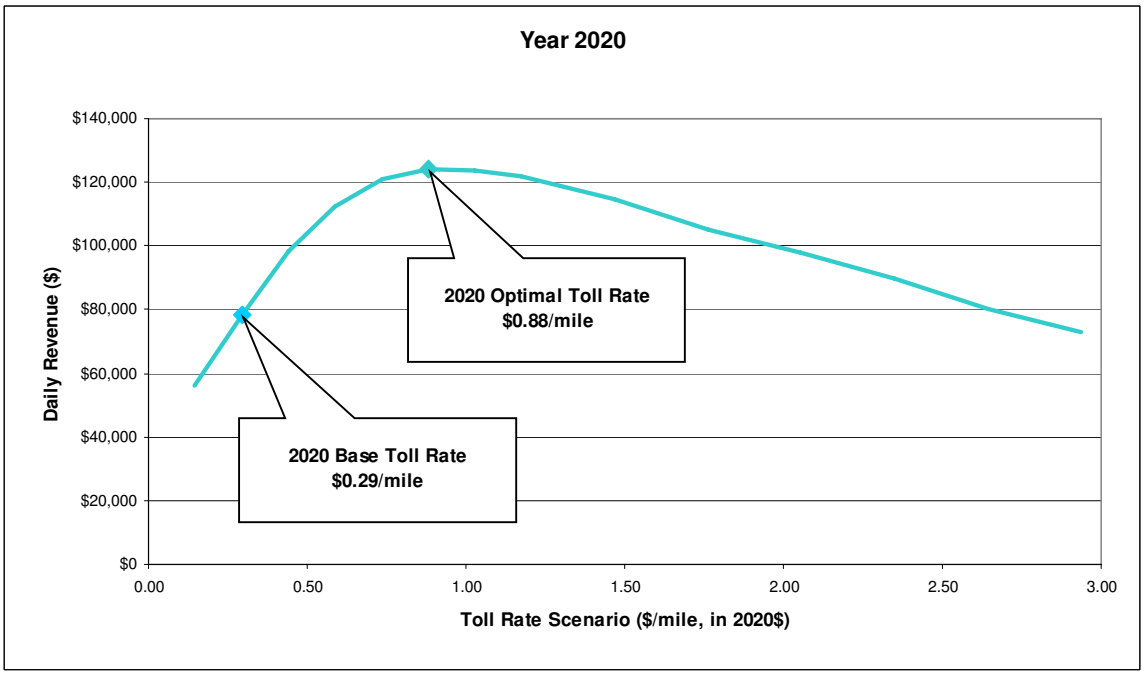
Table 9-1 Daily Transactions and Revenue Comparison For Toll Free, Base, and Optimal Toll Scenarios

Year	Toll Free Scenario	Base Scenario		Optimal Toll Scenario	
	Transaction Index	Toll Rate ($/mile)	Transaction Index	Toll Rate ($/mile)	Transaction Index
2020	243.62	0.29	100.00	0.88	62.42

Year	Base Scenario		Optimal Toll Scenario	
	Toll Rate ($/mile)	Revenue Index	Toll Rate ($/mile)	Revenue Index
2020	0.29	100.00	0.88	158.14

Figure 9-1 Year 2020 Transaction and Revenue Elasticity Curves- Daily Transactions and Toll Revenues at Various Toll Rates





9.3 Value of Time Sensitivity Test

Base Scenario values of time used in this study have been discussed in **Section 3.3.3** and presented in **Table 3-8** of this report. To evaluate impacts of VOT variation on toll transactions and revenue, two alternative VOT factors of 0.50 (Low Scenario) and 1.50 (High Scenario) were tested for model year 2020. **Table 9-2** compares impacts of VOT factor variation on toll transactions and revenue. As shown in this table, variation of the VOT factor by 50 percent below and above the Base Scenario VOT, results in a toll revenue reduction (Low Scenario) and an increase (High Scenario) of less than seven percent in daily toll revenue and transactions.

Table 9-2 Value of Time Sensitivity Results

Year	Transaction Index		
	0.50 VOT (Low Scenario)	1.00 VOT (Base Scenario)	1.50 VOT (High Scenario)
2020	93.69	100.00	105.76

Year	Revenue Index		
	0.50 VOT (Low Scenario)	1.00 VOT (Base Scenario)	1.50 VOT (High Scenario)
2020	94.79	100.00	104.72

9.4 Transponder Share Sensitivity Test

In this section, two different transponder shares were evaluated and corresponding toll transactions and revenue were estimated as shown in **Table 9-3**. The Base Scenario assumes an ETC ownership variation of 70 to 90 percent from 2013 to 2030 as discussed in **Section 8.1.5** and presented in **Table 8-3**. The second scenario, referred to as the High Scenario, assumes an ETC ownership percentage of 90 percent across all of the years. The third scenario, referred to as the Low Scenario, assumes an ETC share of 70 percent.

As shown in **Table 9-3**, the Low Scenario results in revenue and transaction reductions of less than eight percent (across all model years) with higher differences in later years due to the increasing difference in ETC share factor from the Base Scenario. Comparatively, the High Scenario yields revenue and transaction increases of less than 10 percent with higher differences in earlier years due to a higher difference in the ETC share percentages from the Base Scenario.

Table 9-3 Transponder Share Sensitivity Results

Year	Low Scenario		Base Scenario		High Scenario	
	ETC Share Percentage	Transaction Index	ETC Share Percentage	Transaction Index	ETC Share Percentage	Transaction Index
2013	70%	100.00	70%	100.00	90%	109.57
2015	70%	97.75	74%	100.00	90%	108.11
2016	70%	96.79	76%	100.00	90%	106.79
2018	70%	95.46	80%	100.00	90%	104.86
2020	70%	94.89	82%	100.00	90%	103.18
2025	70%	92.75	87%	100.00	90%	101.29
2030	70%	92.16	90%	100.00	90%	100.00
2035	70%	93.24	90%	100.00	90%	100.00

Year	Low Scenario		Base Scenario		High Scenario	
	ETC Share Percentage	Revenue Index	ETC Share Percentage	Revenue Index	ETC Share Percentage	Revenue Index
2013	70%	100.00	70%	100.00	90%	104.64
2015	70%	98.57	74%	100.00	90%	104.94
2016	70%	97.79	76%	100.00	90%	103.90
2018	70%	97.54	80%	100.00	90%	102.61
2020	70%	97.37	82%	100.00	90%	101.51
2025	70%	95.91	87%	100.00	90%	100.67
2030	70%	95.80	90%	100.00	90%	100.00
2035	**70%**	96.87	**90%**	**100.00**	**90%**	100.00

9.5 Annual Revenue Days Sensitivity Test

In this section, two different total revenue days were tested and revenue estimations were evaluated accordingly as shown in **Table 9-4**. The Base Scenario uses an annualization factor of 325 days, which was derived from toll counts obtained from 183A toll system in Austin. The two alternatives referred to as Low and High Scenarios use revenue day factors of 305 and 335, respectively. As shown in **Table 9-4,** the Low Scenario results in average annual toll revenue reduction of six percent while the High Scenario results in average annual toll revenue increase of three percent.

Table 9-4 Annualization Factors Sensitivity Results

Year	Revenue Index		
	Low Scenario (Annualization Factor of 305)	Base Scenario (Annualization Factor of 325)	High Scenario (Annualization Factor of 335)
2013	93.87	100.00	103.04
2015	93.85	100.00	103.08
2016	93.85	100.00	103.08
2018	93.85	100.00	103.07
2020	93.85	100.00	103.08
2025	93.85	100.00	103.08
2030	93.85	100.00	103.08
2035	93.85	100.00	103.08

9.6 Ramp-Up Factor Sensitivity Test

In this section, two alternative scenarios will be discussed and revenue estimates will be compared to the Base Scenario, as shown in **Table 9-5.** One alternative, referred to as the Low Scenario, assumes slower ramp-up factors which considers a possible economy downturn and/or longer possible times for drivers to become familiar with the roadway system in the area. The results show a reduction of revenue by 10 to 30 percent in the Low Scenario and an increase of 11 to 19 percent for the High Scenario. These differences become smaller as ramp-up factors come closer to the Base Scenario ramp-up values.

Table 9-5 Ramp-Up Factors Sensitivity Results

Year	Low Scenario		Base Scenario		High Scenario	
	Ramp-Up Factors	Revenue Index	Ramp-Up Factors	Revenue Index	Ramp-Up Factors	Revenue Index
2013	50%	69.54	70%	100.00	85%	119.43
2014	60%	75.27	80%	100.00	90%	113.32
2015	70%	78.00	90%	100.00	100%	111.30
2016	80%	79.93	100%	100.00	100%	100.00
2017	90%	89.98	100%	100.00	100%	100.00
2018	100%	100.00	100%	100.00	100%	100.00

9.7 Demographic Growth Sensitivity Test

URS tested two different demographic growth cases and evaluated the corresponding traffic and revenue forecasts for both cases for model year 2020. The results are presented in **Table 9-6**. Base Scenario socioeconomic data, as described in **Chapter 4**, was prepared for this evaluation. The first case implemented a 2-year lag in demographics, which results in an average reduction in daily toll transactions and revenue of thirteen percent.

In the second scenario, the official CAMPO demographics were tested. As shown in **Table 9-6**, this alternative yields average revenue and transaction increases of ten percent and seven percent compared to the Base Scenario.

Table 9-6 Demographic Growth Sensitivity Results

Year	Transaction Index		
	Revised Demographics (2-Year Lag)	Revised Demographics (Base Case)	Official CAMPO Demographics
2020	90.51	100.00	110.44

Year	Revenue Index		
	Revised Demographics (2-Year Lag)	Revised Demographics (Base Case)	Official CAMPO Demographics
2020	88.93	100.00	107.76

9.8 Background Network Sensitivity Test

URS tested five different network change scenarios and evaluated the corresponding traffic and revenue forecasts for model year 2020 to which these changes would be applicable. These network change scenarios are presented in **Table 9-7** and involve roads that are either competing routes to Manor Expressway Toll Road such as Parmer Lane, FM 969, Braker Lane, and Blue Goose Road or provide access to competing routes such as Tuscany Way. As shown in **Table 9-8**, in general, the impact of these network changes is marginal and only result in differences of less than three percent in transactions and toll revenues.

Table 9-7 Network Change Sensitivity Test Scenarios

Scenario	Road	Limit	Configuration in 2010 Study	Configuration in sensitivity test
A	Braker Lane	b/w Dessau and Blue Goose/Giles	MAD4 open in 2025	MAD4 open in 2020
B	Blue Goose	b/w Arterial A and US 290	2 lane in 2015	4 lane in 2020
C	Tuscany Way	b/w US 290 and Springdale	open in 2015	open in 2020
D	Parmer Lane	b/w IH-35 and US 290	MAD4 in 2030	MAD4 in 2020
E	FM 969	b/w Johnny Morris and SH 130	MAD4 in 2030	MAD6 from 2020
F	All Above			

Table 9-8 Network Change Sensitivity Results

Year	Transaction Index	
	Scenario F	Base Scenario
2020	97.9	100.0

Year	Revenue Index	
	Scenario F	Base Scenario
2020	98.1	100.0

9.9 Inflation Rate Sensitivity Test

Base Scenario inflation rate used for this study is 3%. To evaluate impacts of inflation rates on toll transactions and revenue, URS performed a sensitivity test for two inflation rates of 2% and 2.5%. As shown in **Table 9-9**, the difference in toll transactions and revenues of the test scenarios is less than one percent.

Table 9-9 Toll Rate Escalation Rate Sensitivity Results

Year	Transaction Index		
	CPI 2.0	CPI 2.5	CPI 3.0 (Base Scenario)
2020	99.3	99.9	100.0

Year	Revenue Index		
	CPI 2.0	CPI 2.5	CPI 3.0 (Base Scenario)
2020	99.3	100.0	100.0

10 LIMITATIONS, DISCLAIMERS, PRINCIPAL MATERIALS, AND QUALIFICATIONS

The traffic and toll revenue analysis conducted as part of this project was structured to provide an estimate of traffic and toll revenue for the Manor Expressway Project. It should be noted that this analysis is subject to the limitations, disclaimers, principal materials, and qualifications listed in the following sections.

10.1 Limitations

The traffic estimates summarized in this report are based on many assumptions pertaining to the configuration of the highway network and socioeconomic data in the corridor. These are described in Chapter 8. Generally, the primary assumptions that influenced the traffic estimates include, but are not limited to the following list of conditions adopted for the analysis:

- The background network information was obtained from CAMPO and other agencies for each of the horizon years and is based on the latest available planning assumptions. Unforeseen changes to the background network, either in terms of the specific improvement projects or their implementation schedule, could materially impact the traffic and toll revenue estimates in this report.

- The configuration and alignments of Manor Expressway Project as provided by the CTRMA in the form of stick diagrams are the basis for the traffic forecasts. Revisions to these configurations and/or the toll collection scheme developed for this alignment could materially impact the traffic and toll revenue estimates.

- The socioeconomic data obtained from ATG for the forecast period were adopted for this analysis. Any changes in the anticipated development trends could materially impact the future socioeconomic data estimates. Unforeseen changes in the future socioeconomic data would impact the estimated traffic and toll revenue.

- The percentage of vehicles equipped with ETC transponders was based on current trends in transponder usage for similar toll facilities. Any changes in the assumed proportion of vehicles with ETC transponders would alter the traffic and toll revenue forecasts.

10.2 Disclaimers

It is URS' opinion that the toll revenue projections are reasonable and that they have been prepared in accordance with accepted practice. However, given the uncertainties within the current international and economic climate, it is important to note the following limitations:

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

The traffic and toll revenue forecasts will be subject to future economic and social conditions, demographic developments and regional transportation construction activities that cannot be predicted with certainty.

The projections contained in this report, while presented with numeric 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 are beyond the control of the CTRMA and cannot be predicted with certainty. 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.

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

If, for any reason, any of these conditions should change due to changes in the economy or competitive environment, or other factors, URS' opinions or estimates may be affected.

Many statements contained in this report that are not historical facts are forward-looking statements, which are based on information provided by CTRMA, as well as assumptions made by, and information currently available to, the management and staff of CTRMA and URS. 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.

10.3 Principal Materials and Qualifications

This report is subject to the following conditions and limitations:

In our review and analysis, and arriving at our report we have assumed and relied upon the accuracy and completeness of all of the information provided to us (both written and oral) by CTRMA or otherwise publicly available and have neither attempted independently to verify, nor assumed responsibility for verifying, such information. We have relied upon the assurances of CTRMA that they are not aware of any facts that would make such information misleading.

All estimates and projections in our report are based on URS' experience and judgment and upon a review of information provided to URS by CTRMA, limited visual observation of conditions at the relevant sites and interview(s) with CTRMA personnel and a review of other publicly available reports and information. These estimates and projections are not necessarily indicative of actual values or predictive of future results, which may ultimately be more or less favorable than those suggested by our report and are therefore subject to substantial uncertainty.

Any summary of URS' information contained in this report is not a complete description of the analysis and methods conducted in the URS report as such analysis and method involves a complex analytical process involving various determinations as to the most appropriate and relevant methods of analysis and the application of those methods to the particular circumstances; therefore, any analysis is not readily susceptible to a summary description. URS has made qualitative judgments as to the significance and relevance of each analysis and method that it considered. Accordingly, URS' analyses must be considered as a whole and that selecting portions of any individual analyses without considering all analyses and methods could create a misleading or incomplete view of the processes underlying its analyses. We therefore give no opinion as to the value or merit standing alone of any one or more sections of our report.

This report is necessarily based upon scientific, governmental, market, economic and other conditions as in effect on, and information made available to us as of, the date of our report. It should be understood that subsequent developments may affect the estimates or projections expressed in the report and cannot be predicted with certainty. We specifically do not guarantee or warrant any estimate or projections contained in our report.

Certain statements made in the report that are not historical facts may constitute estimates, projections or other forward-looking statements and even though URS believes that such forward-looking are reasonable and are based on reasonable assumptions as of the date in the report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted.

We disclaim any undertaking or obligation to advise any person of any change in any matter affecting this report, which may come or be brought to our attention after the date of this report opinion.

We do not express any opinion on the following items: socioeconomic and demographic forecasts, proposed land use development projects and potential improvements to the regional transportation network.

APPENDIX A

List of CAMPO Projects in Manor Expressway Study Area

Appendix A
List of CAMPO Projects in Manor Expressway Study Area

Roadway/Project	Segment/Location	Existing (2010)	2015	2020	2025	2030	2035
US 183	IH-35N - Springdale Rd.	FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6
US 183	Springdale Rd. - E. 7th St.	MAD 4	MAD 4	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6
US 290E	US 183S - Springdale Rd.	MAD 4	Toll FWY 8	Toll FWY 8	Toll FWY 8	Toll FWY 8	Toll FWY 8
US 290E	Springdale Rd. - Giles Rd.	MAD 4	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6
US 290E	Giles Rd. - FM 3177	MAD 4	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6
US 290E	FM 3177 - FM 973	MAD 4	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6
SH 130	Pfluger Ln.- Pflugerville Rd.	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6
SH 130	Pflugerville Rd. - Wells Branch Pkwy./Howard Ln.	Toll PKWY 4	Toll PKWY 4	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6
SH 130	Wells Branch Pkwy./Howard Ln. - Parmer Ln.	Toll PKWY 4	Toll PKWY 4	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6
SH 130	Parmer Ln. - US 290E	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6	Toll FWY 6
SH 130	US 290E - SH 71E	Toll PKWY 4	Toll PKWY 4	Toll PKWY 4	Toll PKWY 4	Toll PKWY 4	Toll PKWY 4
FM 969/MLK Blvd.	East of FM 3177 – SH 130	MAU 4	MAU 4	MAU 4	MAU 4	MAD 4	MAD 4
FM 969/MLK Blvd.	SH 130 – County Boundary	MAU 2	MAU 2	MAU 2	MAU 2	MAD 4	MAD 4
FM 973	US 290E – Braker Ln.	MAU 2	MAD 4	MAD 4	MAD 4	MAD 4	MAD 4
Airport Blvd.	N. Lamar Blvd. - RM 2222	MAD 4	MAD 4	MAD 4	MAD 4	MAD 6	MAD 6
Airport Blvd.	RM 2222 - 51st St.	MAD 4	MAD 4	MAD 4	MAD 4	MAD 6	MAD 6
Airport Blvd.	51st St. – IH-35N	MAD 4	MAD 4	MAD 4	MAD 4	MAD 6	MAD 6
Arterial A (Travis County)	Parmer Lane - US 290E	---	---	---	MAD 4	MAD 4	MAD 4
Blake Manor Rd.	FM 973 - Taylor Ln.	MNR 2	MNR 2	MNR 2	MAD 4	MAD 4	MAD 4
Blake Manor Rd.	Taylor Ln. - Bitting School Rd	MNR 2	MNR 2	MNR 2	MAD 4	MAD 4	MAD 4
Braker Ln.	Dessau Rd. - Arterial A (Travis Co.)	---	---	---	MAD 6	MAD 6	MAD 6
Braker Ln.	Arterial A (Travis Co.) - Harris Branch Pkwy	---	---	---	MAD 4	MAD 4	MAD 4
Braker Ln./Blue Goose Rd.	FM 973 - Taylor Ln.	---	---	MAD 4	MAD 4	MAD 4	MAD 4
Braker Ln./Blue Goose Rd.	Taylor Ln - Blake Manor	---	---	---	MAD 4	MAD 4	MAD 4
Dessau Rd./Cameron Rd.	FM 1825 - Wells Branch Pkwy.	MAD 4	MAD 4	MAD 4	MAD 4	MAD 6	MAD 6
Dessau Rd./Cameron Rd.	Wells Branch Pkwy. - Howard Ln.	MAD 4	MAD 4	MAD 4	MAD 4	MAD 6	MAD 6
Dessau Rd./Cameron Rd.	Howard Ln. – FM 734 (Parmer Ln.)	MAD 4	MAD 4	MAD 4	MAD 4	MAD 6	MAD 6
Harris Branch Pkwy./Cameron Rd./ CR 137	Kelly Ln. - Pflugerville East Rd.	MNR 2	MNR 2	MAD 4	MAD 4	MAD 4	MAD 4
Harris Branch Pkwy./Cameron Rd./ CR 137	Pflugerville East Rd. - SH 130	MNR 2	MNR 2	MNR 2	MNR 2	MAD 4	MAD 4
Harris Branch	SH 130 - Wells Branch	MNR 2	MNR 2	MNR 2	MNR 2	MAD 4	MAD 4

Appendix A
List of CAMPO Projects in Manor Expressway Study Area

Roadway/Project	Segment/Location	Existing (2010)	2015	2020	2025	2030	2035
Pkwy./Cameron Rd./ CR 137	Pkwy						
Harris Branch Pkwy./Cameron Rd./ CR 137	Wells Branch Pkwy. – Gregg Ln..	MNR 2	MNR 2	MNR 2	MNR 2	MAD 4	MAD 4
Howard Ln./CR 175	Dessau Rd. - Harris Branch Pkwy	MAU 2	MAD 4	MAD 4	MAD 4	MAD 4	MAD 4
Howard Ln./CR 175	Harris Branch - SH 130	---	MAD 4	MAD 4	MAD 4	MAD 4	MAD 4
Howard Ln./CR 175	SH 130 – Fuchs Grove Rd.	---	---	MAD 4	MAD 4	MAD 4	MAD 4
Lamar Blvd.	Parmer Ln. - Rundberg Ln.	MAD 4	MAD 4	MAD 4	MAD 6	MAD 6	MAD 6
Pfluger Ln./ Pflugerville Loop	FM 685 - Harris Branch Pkwy.	MNR 2	MNR 2	MNR 2	MAD 4	MAD 4	MAD 4
St. Johns Ave.	Cameron Rd. - Berkman Dr.	MNR 2	MNR 2	MNR 2	MNR 2	MNR 4	MNR 4
Taylor Ln./Old Kimbro Rd.	US 290E - Littig Rd.	MNR 2	MNR 2	MAD 4	MAD 4	MAD 4	MAD 4
Taylor Ln./Old Kimbro Rd.	Blake Manor Rd. - FM 969 (MLK Blvd.)	MNR 2	MNR 2	MNR 2	MNR 2	MAD 4	MAD 4
Wells Branch Pkwy.	FM 1825 - Heatherwilde Blvd.	MAU 2	MAD 4	MAD 4	MAD 4	MAD 4	MAD 4
Wells Branch Pkwy.	Dessau Rd. - Cameron Rd.	MNR 2	MNR 2	MAD 4	MAD 4	MAD 4	MAD 4
Wells Branch Pkwy.	Cameron Rd. - SH 130N	MNR 2/0	MNR 2/0	MAD 4	MAD 4	MAD 4	MAD 4
Wells Branch Pkwy.	SH 130N - Decker Lane	---	---	---	---	MAD 4	MAD 4
Fifth St.	IH-35N - Chicon St.	MNR 2	MNR 2	MNR 2	MNR 2	MAU 2	MAU 2
Seventh St.	IH-35N - Pleasant Valley Rd.	MAU 4	MAU 4	MAU 4	MAU 4	MAD 4	MAD 4
Seventh St.	Pleasant Valley Rd. - Airport Blvd.	MAU 4	MAU 4	MAU 4	MAU 4	MAD 4	MAD 4
Fifty-first St.	N. Lamar Blvd. - Airport Blvd.	MNR 2	MNR 2	MNR 2	MNR 2	MNR 4	MNR 4

Legend: EXY–Expressway, FWY–Freeway, ML–Managed Lanes or HOV, MAU-Major Arterial Undivided, MAD-Major Arterial Divided, MNR-Minor Arterial.

APPENDIX B

Assessment of CAMPO's Socioeconomic Forecasts in the Manor Expressway Study Area

TECHNICAL MEMORANDUM
ASSESSMENT OF CAMPO'S SOCIOECONOMIC FORECASTS IN THE MANOR EXPRESSWAY STUDY AREA

The purpose of this technical memorandum is to identify current demographic and economic trends in the Austin, Texas Metropolitan Statistical Area (MSA) and the Capital Area Metropolitan Planning Organization (CAMPO) study area and to incorporate these trends into a review and adjustment of CAMPO's socioeconomic forecasts for the 2010 US 290 East (Manor Expressway) project study area. For descriptive purposes, this memorandum divides the overall project study area into multiple subareas and assesses the development trends of each one, in terms of location and scale of growth. The memorandum also compares the revised county control total figures for the overall CAMPO study area to the county control totals used for the 2010 CAMPO demographic update, and provides a brief description of the methodology used to adjust the socioeconomic data at the Traffic Serial Zone (TSZ) level.

HISTORIC AND RECENT REGIONAL POPULATION AND EMPLOYMENT TRENDS

Population

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 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 1). 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. The City of Austin's population, which is located almost entirely in Travis County, has increased by approximately 130,000 residents between 2000 and 2009, according to TxSDC estimates. This was equal to annual population increase of about 14,100 residents or a CAGR of 1.95 percent (a rate that was slower than Travis County as a whole).

Table 1: 2008 and 2009 Population Estimates for Counties in the CAMPO Study Area

	Travis	Williamson	Hays	Bastrop	Caldwell	City of Austin	5-County Total
April 1, 2000 Census Count	812,280	249,967	97,589	57,733	32,194	667,631	1,249,763
TxSDC Estimate – Jul. 1, 2008	988,312	392,043	147,555	73,382	36,644	757,717	1,637,936
U.S. Census Estimate – Jul. 1, 2008	998,561	395,146	149,424	73,346	37,533	767,201	1,654,010
TxSDC Estimate – Jul. 1, 2009	1,012,789	408,128	154,354	74,912	37,253	798,350	1,687,436
U.S. Census Estimate – Jul. 1, 2009	1,026,158	410,686	155,545	74,876	37,810	786,386	1,705,075
April 1, 2010 Census Count	1,024,266	422,679	157,107	74,171	38,066	790,390	1,716,289
Difference 2000 Census - 2008 TxSDC	176,032	142,076	49,966	15,649	4,450	90,086	388,173
Annual Change 2000 Census – 2008 TxSDC	21,339	17,223	6,057	1,897	539	10,920	47,055
Compounded Annual Growth Rate	2.41%	5.61%	5.14%	2.95%	1.58%	1.55%	3.33%
Difference U.S. Census 2000-2008	186,281	145,179	51,835	15,613	5,339	99,570	404,247
Annual Change U.S. Census 2000-2008	22,581	17,599	6,284	1,893	647	12,069	49,004
Compounded Annual Growth Rate	2.53%	5.71%	5.30%	2.94%	1.88%	1.70%	3.46%
Difference 2000 Census - 2009 TxSDC	200,509	158,161	56,765	17,179	5,059	130,719	437,673
Annual Change 2000 Census – 2009 TxSDC	21,678	17,100	6,137	1,857	547	14,132	47,320
Compounded Annual Growth Rate	2.41%	5.44%	5.08%	2.86%	1.59%	1.95%	3.30%
Difference U.S. Census 2000-2009	213,878	160,719	57,956	17,143	5,616	118,755	455,312
Annual Change U.S. Census 2000-2009	23,124	17,376	6,266	1,853	607	12,838	49,227
Compounded Annual Growth Rate	2.56%	5.51%	5.17%	2.85%	1.75%	1.79%	3.42%
Difference U.S. Census 2000-2010	211,986	172,712	59,518	16,438	5,872	122,759	466,526
Annual Change U.S. Census 2000-2010	21,199	17,271	5,952	1,644	587	12,276	46,653
Compounded Annual Growth Rate	2.35%	5.39%	4.88%	2.54%	1.69%	1.70%	3.22%

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.

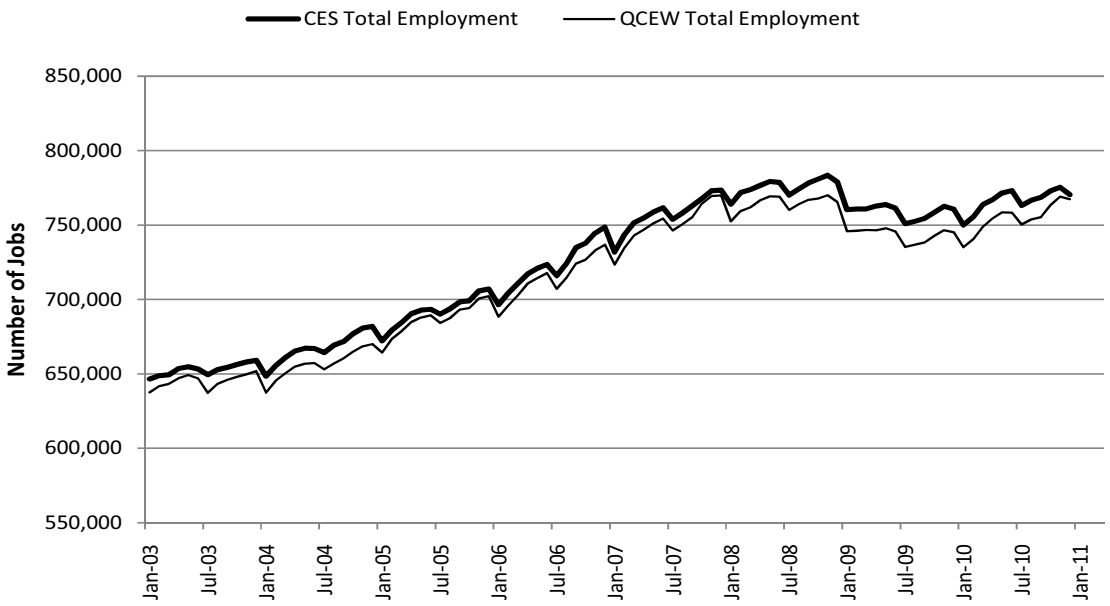
Source: Texas State Data Center, 2009 and 2010 and U.S. Census Bureau, 2010.

Employment

Figures 1 and 2 graph two different employment counts for the Austin MSA. 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 compiles employment data on the number of workers with unemployment insurance. The public is most familiar with the CES data because 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 these data reflect individuals in traditional employment arrangements. The two drawbacks to the QCEW data are a six-month lag before they are released and they are now only available from January 2005 forward. 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 MSA.

Total employment in the Austin MSA has grown substantially between January 2003 and December 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 occurred between December 2007 and July 2009, when total employment fell to 735,265 workers (a loss of 34,700 jobs). Since then, the general trend has been upward and total employment during December 2011 was 767,292 workers or an increase of 32,000 new jobs. It should be noted that the CES employment estimate for December 2010 is 770,500 jobs, which is about 3,000 more jobs than the QCEW estimate. Due to the recent improvements in the national and local economy, during December 2010, the local job market was within 2,000 jobs of its November 2007 peak.

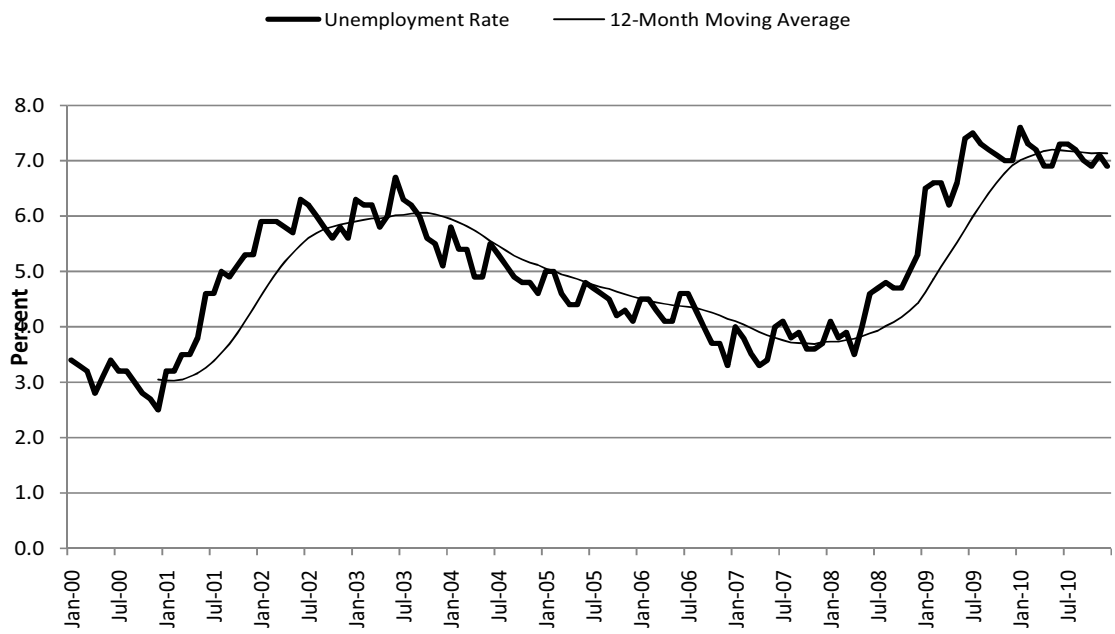
Figure 1: Total Employment in the Austin, TX MSA – January 2003 to December 2010



Source: Texas Workforce Commission, 2011.

Figure 2 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 December 2010, the situation had improved somewhat and the Austin MSA had an unemployment rate of 6.9 percent. Another means of viewing these data is to produce a smoothed trend line by averaging values over a 12-month period and then graphing these points on the chart. The unemployment rate's 12-month moving average showed signs that unemployment was leveling out and perhaps the start of a slow decline. Regardless, the Austin region's unemployment rate is considerably lower than the national rate of 9.1 percent and also lower than Texas's rate of 8.0 percent (December 2010). While recent declines in unemployment rates are 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 2: Unadjusted Unemployment Rate - Austin, Texas MSA - January 2000 - December 2010

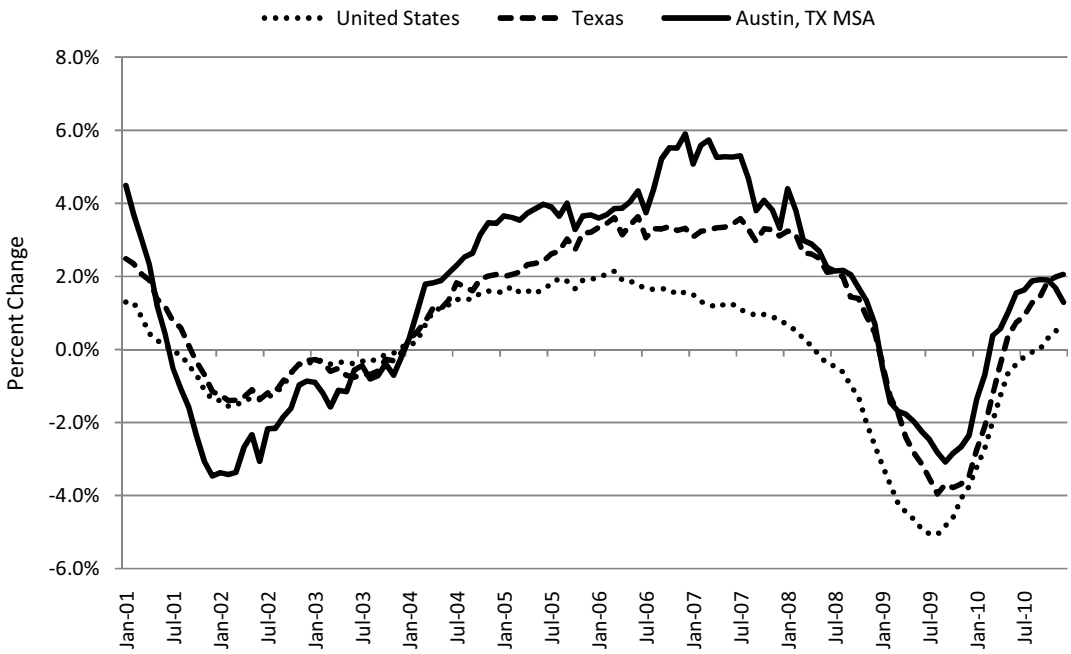


Source: Local Area Unemployment Statistics. Texas Workforce Commission, 2011.

The State of Texas's economy and the Austin MSA's economy, 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. However, by early 2009, the Austin MSA began to experience employment loss, as national economic conditions finally began taking a toll.

Figure 3 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-over-year employment change between 2008 and 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 showed the most positive year-over-year employment growth during the first half of 2010, but employment growth slowed during the second half of 2010.

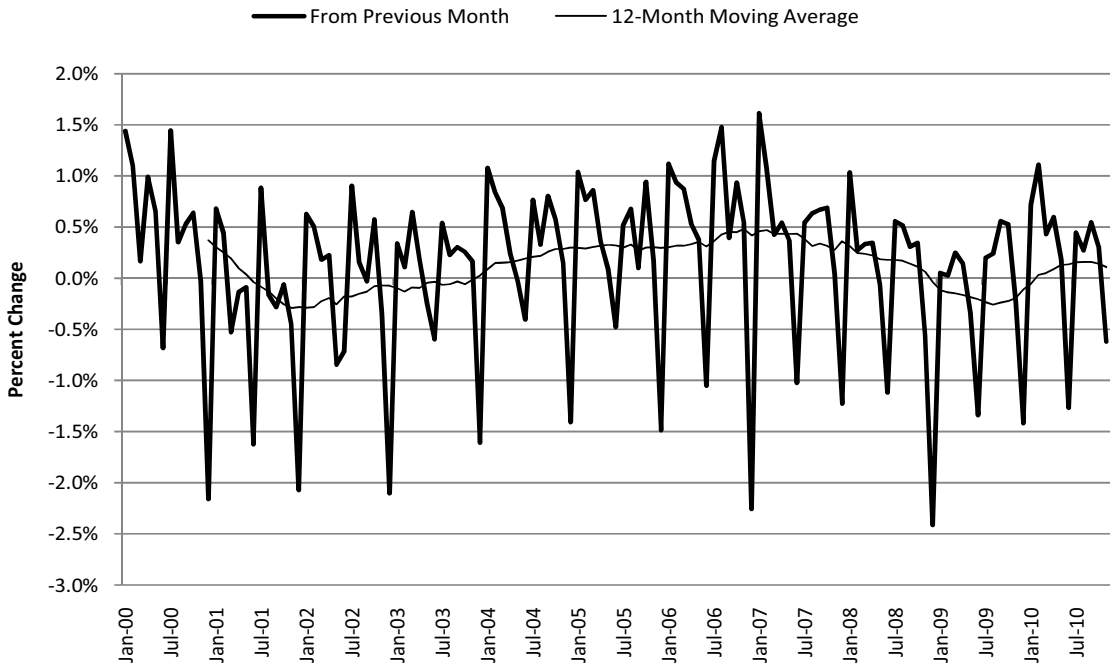
Figure 3: Year-on-Year CES Monthly Employment Change, January 2001-December 2010



Source: Current Employment Estimates. Texas Workforce Commission, 2011.

Figure 4 shows the percent change of employment in the Austin MSA between each month from January 2000 through December 2010. The 12-month moving average of monthly employment change produces a more discernible trend and 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: Austin, TX MSA CES Percent Monthly Employment Change, January 2000-December 2010



Source: Current Employment Estimates. Texas Workforce Commission, 2011.

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 3 provides data showing employment change in each employment sector between December 2003 and December 2010, as well as between December 2007 and December 2010 (the current economic downturn). The data in Table 3 show that more than 115,000 net jobs were created in the Austin MSA between December 2003 and December 2010. However, Table 3 also shows that the region lost 2,505 jobs between December 2007 and December 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 37,700 new jobs. In fact, even during the economic contraction between December 2007 and December 2010, this sector added almost 16,700 jobs. The employment increase during this 7-year period, within the health services component, was a factor of population growth and was 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 component also grew steadily because the region's rapid population growth required the construction of new elementary and secondary schools.

The trade, transportation, and utilities sector added almost 23,400 jobs between 2003 and 2010, although 967 jobs were lost between 2007 and 2010. The retail industry accounted 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 14,000 jobs between 2003 and 2010. The retail subsector'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 25,800 jobs between 2003 and 2010, although approximately 2,600 jobs were lost between 2007 and 2010. Another local employment growth sector has been the hospitality and leisure industry, which increased by 20,350 jobs between 2003 and 2010 (including more than 6,500 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 2 also show that employment in the manufacturing sector (which consists almost entirely of computer, semiconductor, and electronics production) has experienced the steepest decline, with more than 11,700 jobs lost between 2007 and 2010. In addition to reduced demand from the national recession, job losses were the result of some local manufacturing following a global trend and shifting to offshore locations. Likewise, the information sector also had negative net employment, shedding more than 1,700 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 11,700 jobs between 2007 and 2010 as housing demand sharply contracted. The financial activities sector also lost more than 2,200 jobs between 2007 and 2010, although the industry still had a net increase of 4,800 jobs between 2003 and 2010.

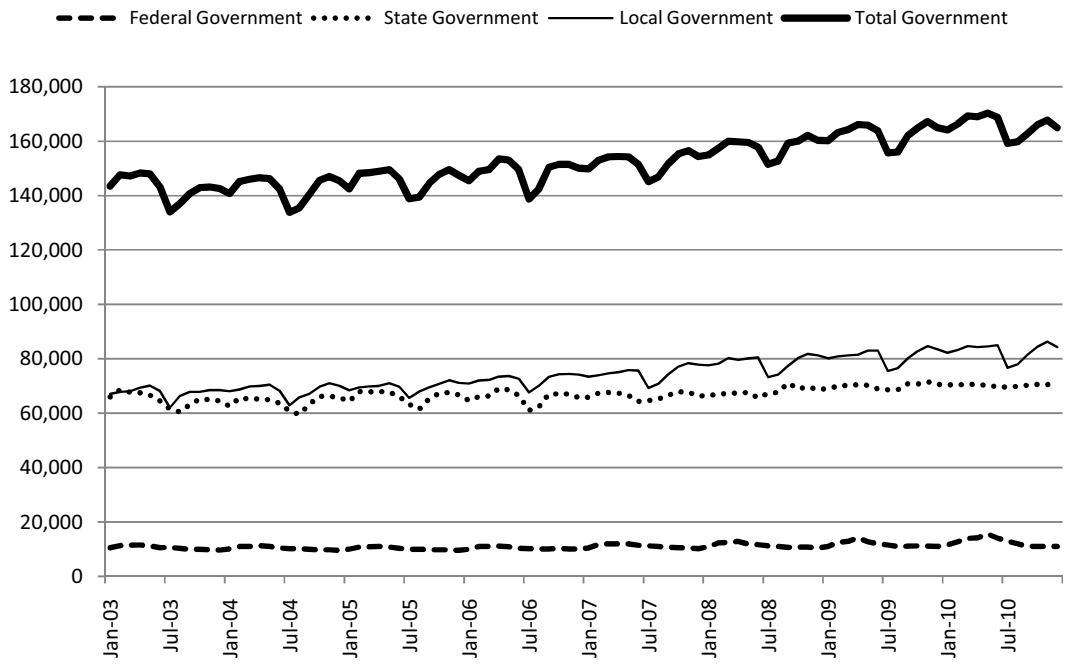
Table 2: QCEW Employment Change in the Austin, TX MSA by Sector – December 2003 to December 2009

Employment Sector	Change 12/03-12/10 Employment	CAGR	Change 12/07-12/10 Employment	CAGR
Manufacturing	-9,523	-2.54%	-11,731	-6.99%
Construction	2,288	0.82%	-11,338	-7.75%
Professional and Business Services	25,800	3.78%	-2,574	-0.75%
Financial Activities	4,834	1.63%	-2,267	-1.62%
Information	-347	-0.24%	-1,760	-2.67%
Trade, Transportation and Utilities	23,383	2.46%	-967	-0.22%
Natural Resources and Mining	1,468	7.60%	-132	-1.17%
Unclassified	-973	-14.32%	155	13.20%
Other Services	5,646	3.36%	1,046	1.31%
Public Administration	4,839	1.29%	3,854	2.39%
Leisure and Hospitality	20,351	3.90%	6,513	2.64%
Education and Health Services	37,703	3.53%	16,696	3.40%
TOTAL	**115,469**		**-2,505**	

Source: Texas Workforce Commission, 2011.

Finally, Figure 5 presents regional employment in the local, state, and federal government sectors between January 2003 and December 2009. It should be noted that these data are also a component of the figures shown in Table 3 (for example, a large share of local government employment is in primary and secondary education, which is also part of the education and health services sector). During June 2010, the total number of federal, state, and local government employees in the Austin MSA totaled 168,497. Between January 2003 and December 2010, combined government employment grew by almost 21,400 workers. Local government had the largest number of employees at 84,279, increasing by almost 17,200 workers between January 2003 and December 2010. State government increased its payroll by about 3,700 employees during this same period for a total of 69,657 workers during December 2010, and federal employment increased by 431 workers to a total of 10,955. The total number of federal employees may be understated by temporary hiring at the Internal Revenue Service's processing center in Austin.

Figure 5: Total Employment in the Austin, Texas MSA Local, State, and Federal Government Sector – January 2003 to June 2010



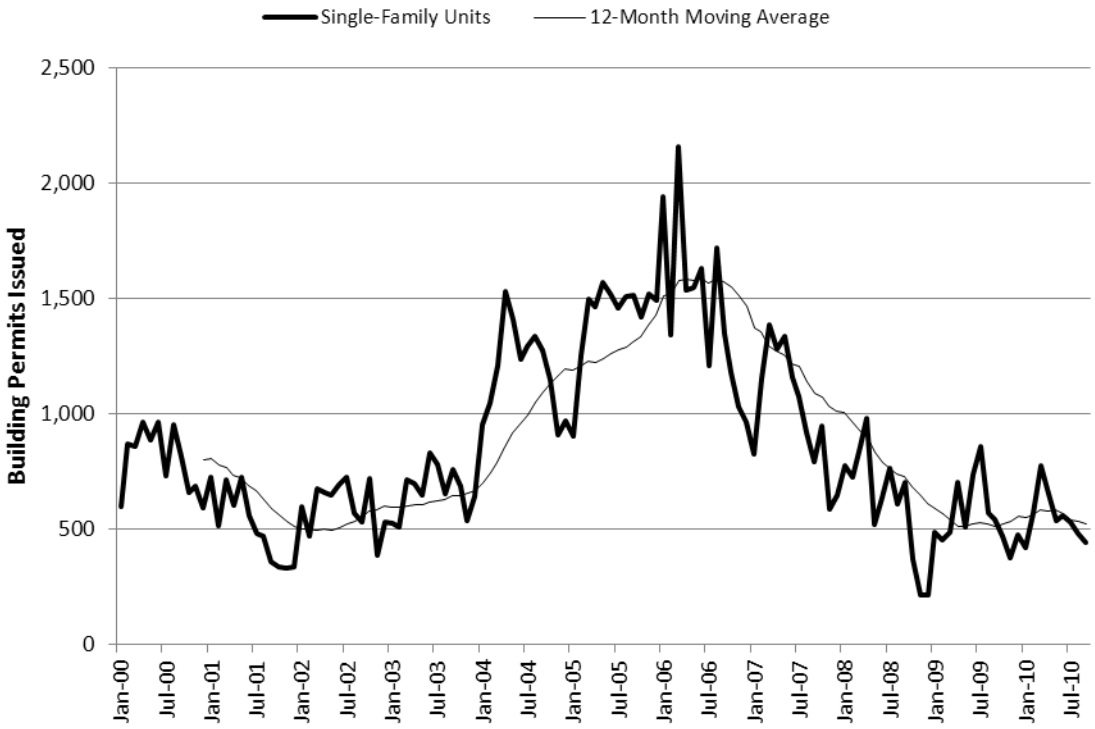
Source: Quarterly Covered Employment and Wages. Texas Workforce Commission, 2011.

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 the 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 to near its previously low levels.

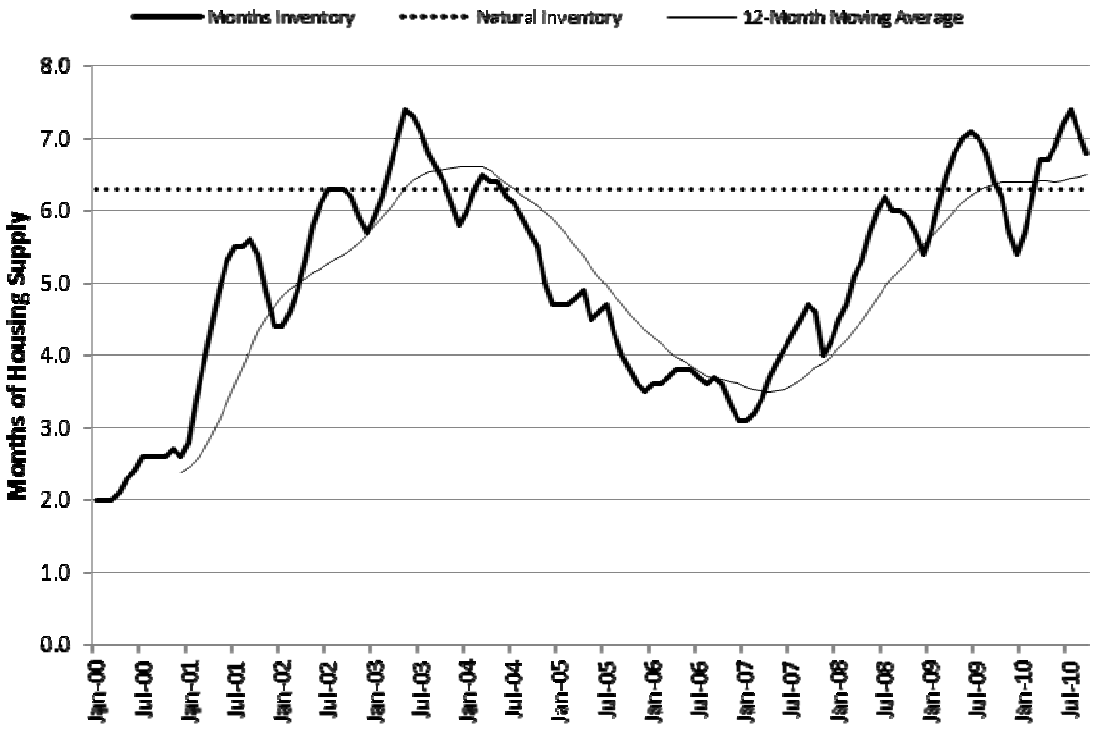
Figure 6: Single-Family Building Permits Issued in the Austin, TX MSA, January 2000 through September 2010



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 7 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 the inventory of homes on the market exceeded the 7.4 month supply that occurred during May 2003 (and July 2010).

Figure 7: Months of Housing Supply in the Austin, TX MSA Market, January 2000 through April 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. This is true, despite dramatically slower household formation at the national level 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 fell 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 an 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 was 8.2 percent during the third quarter of 2010 and improving. While the Austin's region's vacancy rate would be considered somewhat higher than normal for the region (which averages about 5.1 percent since 2000), it compares positively to the statewide multifamily vacancy rate of 10.4 percent (Texas Real Estate Center, 2010). Table 3 provides a submarket review of apartment vacancy rates during the third quarter of 2010.

Table 3: Apartment Vacancy Conditions in the Austin Area – Third Quarter 2010

Rank	Submarket	Vacancy Rate	Year-on-Year Change
1	North Travis	5.8%	1.5%
2	Ranch Road 620 N./FM 2222	6.9%	2.0%
3	Far Northwest	7.1%	1.1%
4	Near Northwest	7.3%	1.1%
5	US 183/Cedar Park/Leander	8.2%	2.0%
6	Central	8.7%	1.8%
7	San Marcos/North Hays County	8.8%	-0.1%
8	Round Rock/Georgetown/Hutto	9.8%	0.0%
9	Southeast	10.1%	-1.8%
10	East	11.1%	1.8%

Source: Marcus & Millichap, 2010.

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). 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 5 also shows that none of the submarkets in the region were adding new office space. For obvious reasons, builders have stopped supplying space to the market.

Table 4: 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	15.1%	64,078	0
Northwest	15,351,933	27.1%	174,682	0
North Central	3,302,421	28.6%	112,389	0
Round Rock	964,611	46.8%	(2,337)	0
East	1,534,677	32.4%	25,553	0
South	1,712,674	25.6%	(3,948)	0
Southwest	9,259,675	16.7%	156,796	0
TOTAL	**41,157,706**	**22.9%**	**527,213**	**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 9.6 percent vacancy rate during the fourth quarter of 2009. A listing of

select retail rental submarkets is provided in Table 5. 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 5: Retail Rental Market Conditions in the Austin Area – Second Quarter 2010

Submarket	Vacancy Rate	Year-on-Year Change
South Austin	6.4%	-3.4%
Central/Downtown Austin	8.2%	-3.2%
Round Rock/Williamson County	14.6%	-4.1%

Source: Marcus & Millichap, 2010.

Industrial

Table 6 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.

Table 6: 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	8.9%	0	0
Central	1,366,893	12.2%	8,009	0
East	3,641,742	28.3%	(70,549)	0
Far Northeast	2,208,328	33.6%	(5,543)	0
Far Northwest	524,790	14.8%	(18,779)	0
Georgetown	1,213,215	2.9%	26,454	0
Hays County	565,549	26.0%	0	0
North	14,097,769	19.1%	(27,859)	0
Northeast	7,648,102	23.5%	(13,579)	0
Northwest	2,759,300	11.0%	(36,796)	0
Round Rock	3,506,367	34.9%	(29,503)	0
South	1,962,886	5.4%	42,860	0
Southeast	10,355,028	22.3%	(40,059)	0
Southwest	414,928	14.5%	(15,751)	0
TOTAL	**50,310,943**	**21.3%**	**(181,113)**	**0**

Source: CB Richard Ellis, 2010.

RECENT GROWTH PATTERNS IN THE MANOR EXPRESSWAY STUDY AREA

The following sections will provide brief descriptions of recent residential and commercial development trends in the project study area, which are based upon May 2010 field surveys, interviews with local planning officials, documents collected from local planning agencies, and local newspapers and business journals. Appendices A and B provide tables and maps which summarize and identify the location of recent and ongoing residential and commercial projects.

Travis County – North of US 290 E/West of SH 130

This part of the US 290E study area contains portions of north and northeast Austin, as well as the southern portion of the city of Pflugerville and some unincorporated areas of Travis County. Starting at the northwest corner of the subarea in TSZ 174, construction has continued in a subdivision called the Lakes at Northtown, which was about two-thirds complete during the field visit. At that time, approximately 10 to 12 homes were under construction. Also in TSZ 174, a recently completed apartment complex was built at the northwest corner of Howard Lane and The Lakes Boulevard called the Villas at Tech Ridge.

To the east, in TSZ 175 along Dessau Road, a residential project called Mountain Creek Ranch Condominiums has stalled, with only a few incomplete units constructed. In TSZ 206, an apartment complex called Bella Springs was under construction along Center Ridge Drive. Another residential project in TSZ 206, called Bella Terra Condominiums, was still under construction during the field survey. Residential construction at The Enclave at Harris Ridge subdivision was complete. Also in TSZ 206, but on the south side of Wells Branch Parkway, construction was complete in a small townhome subdivision.

In TSZ 241, a large, four-story retirement community called Greenridge at Buckner's Villa was under construction. Another nursing home in TSZ 241 was recently completed along Dessau Road. In TSZ 1099, single-family homes were under construction in the Cantarra subdivision, which has experienced substantial development over the past two years. In TSZ 223, an apartment complex, called Chalk Rock Canyon (which continues into TSZ 224) was recently completed and another called Archstone Tech Ridge was still under construction. A completed apartment complex named Carrington at Parmer Park was located in TSZ 224. The Pioneer Crossing East subdivision in TSZ 225 continued construction, but the Pioneer Crossing West subdivision in TSZ 224 was mostly complete and had only a few remaining residences to be built. On the south side of Parmer Lane, the Stirling Ridge subdivision in TSZ 226 had a number of homes constructed, since 2008, and there was construction during the field survey. Finally, in TSZ 279, the 21-unit Swanee 21 condominium was under construction.

There have been a number of new commercial projects, many of which serve the existing urban population and the growing suburban and urban fringe neighborhoods. In TSZ 174, at the southeast corner of the intersection of the northbound IH 35 frontage road and Tandem Boulevard, a furniture store was being built. On Pecan Boulevard and in TSZ 174, a small retail building or fast-food restaurant was under construction. Due east from this site, a 5,500 square

foot medical office building was completed and a second, equivalent building was under construction. A pre-school/day care was constructed at the northwest corner of Wells Branch Parkway and S. 10th Street in TSZ 175. Also in TSZ 175, a strip center was built along Dessau Road, which contained a gym, a day care, and a vacant suite.

In TSZ 1116, an oil changing establishment and a fast-food restaurant were built, while a drug store was under construction. Along Dessau Road, at its intersection with Tudor House Road in TSZ 1092, a convenience store was built that also contained a small restaurant and a laundromat. In TSZ 206, at the corner of the IH 35 northbound frontage road and Canyon Ridge Drive, strip retail was recently added to an existing grocery store and shopping center. The new addition included an office supply store, a pet store, a massage therapist, a printer cartridge refill store, and a video rental store. Also completed in TSZ 206, was the first phase (three buildings) of The Dessau Ridge Office Condominium complex along Dessau Road and a free-standing restaurant on Parmer Lane.

In TSZ 208, a new office building was constructed or occupied by the *Pflugerville Independent School District*. In TSZ 241, a small strip center was constructed along the northbound frontage of IH 35 south of Braker Lane. During the field visit, it only had one tenant – an electronics store. Along Braker Lane, a small strip retail building with three suites was built, although only one suite was occupied by a convenience store.

In TSZ 225, Pioneer Crossing Elementary School was recently completed. An adult cabaret was built in TSZ 243 along US 290. In TSZ 253, a large flex-space building was completed along Tuscany Way, which was completely vacant at the time of the field survey. Also along Tuscany Drive, another building was under construction. On Market Place Drive, in TSZ 253, two large industrial buildings were constructed and both were vacant, with the exception of a single tenant that occupied about one-quarter of one building. Along Cross Park Drive, a convenience store and small strip center that contained two restaurants and ten vacant suites was built. In the northern portion of TSZ 253, a new office for the U.S. Geological Survey (USGS) was recently completed.

In the adjacent TSZ 254, two industrial buildings were constructed along Cross Park Drive. One building was completely vacant and the other building had a single tenant that occupied one-quarter to one-third of the space. Along Exchange Drive, construction on a large two-story office building was halted, while along Forbes Drive an industrial building was under construction. At the corner of Centre Creek Road and Cross Park Drive a new two-story office building was constructed. In TSZ 252, a new tire store was completed and, in TSZ 265, a restaurant supply store was built.

West of IH 35 to Lamar Boulevard and south to US 290, most of the new commercial development has been infill projects. In TSZ 205, two limited service hotels have been constructed. In TSZ 240, south of the intersection of Lamar Boulevard and Masterson Drive, a small strip center was built, which contained an insurance office, a check cashing

establishment, a dental office, and a vacant suite.

Along Braker Lane, an extension was being built to the Walnut Creek Elementary School and a discount retailer was constructed near the intersection with IH 35. In TSZ 278, a new multi-story Texas Department of Public Safety crime lab was under construction. Also in TSZ 278, a hardwood floor distribution center was finishing construction. Two notable locations were a 100,000 square foot office building located in TSZ 205, that was completed approximately two years ago and is still without a tenant, and an office complex used by Dell Financial Services along the southbound frontage road of IH 35 that was recently vacated.

Future Development Projects
Limited information was available on the timing of new projects planned for this portion of the study area since many developers are either unable to obtain financing and/or there was considerable uncertainty about current and future market conditions. City of Pflugerville planning officials anticipate that existing residential projects will continue moving forward, however, there has been very little new subdivision platting activity. As a result of this inactivity, City of Pflugerville planners believe that a housing shortage in Pflugerville is possible within the next few years, as developers exhaust the existing supply of lots and have to work new subdivision proposals through the review process, which can take a year or more. Planners also anticipate that new commercial development in Pflugerville will occur along FM 685 before it occurs along SH 130, since utilities are already in place.

Travis County – North of US 290/East of SH 130
The eastern portion of this subarea contains the extremities of Pflugerville's and Austin's jurisdictions, along with portions of the cities of Manor and Elgin. In the northwest part of the subarea, Pflugerville has historically experienced a high volume of residential growth, which has slowed under the current economic conditions. During the field survey, homebuilders were still active in the Falcon Pointe subdivision and were building homes and installing infrastructure for a new phase of the Villages of Hidden Lake subdivision (TSZ 557). Additionally, at the northwest corner of TSZ 598, builders were constructing homes in the Reserve at West Creek subdivision, a former mobile home subdivision that is being redeveloped with "stick-built" single-family homes.

The city of Manor is located along US 290E, lying roughly 10 miles from downtown Austin. Manor has been experiencing an influx of moderate and middle income households. North of US 290, the ShadowGlen subdivision (TSZs 560 and 622) is one of the area's larger developments and sells homes at a variety of price points. However, a limited amount of construction was occurring in the ShadowGlen subdivision at the time of the field visit. In addition to ShadowGlen, there were several other subdivisions with homes at introductory price points, such as Presidential Meadows (TSZ 1151) and Presidential Glen (TSZ 1152) in Manor. The Presidential Meadows subdivision did not have any construction at the time of the field survey, although a number of homes were recently built. The Presidential Glen subdivision

had fewer than 10 homes built and none under construction, while more substantial construction occurring at the Stonewater subdivision (TSZ 625). Despite land being cleared and utilities installed for the Johle Hill subdivision (TSZ 599), no building had occurred. Within the city of Elgin, three subdivisions are in the US 290E study area, which consist of Eagle's Landing (TSZ 1154), Westwind (TSZ 624), and County Line (TSZ 1154). None of the subdivisions had construction at the time of the field survey nor was there any new construction during the past two years.

There was a limited amount of new commercial and public facility construction. The Bird's Nest Airport is being expanded with a longer runway and new hangars and facilities. The airport will provide services to the underserved general aviation market in the Austin area, especially corporate aviation. The airport is located in TSZs 1149, 623, and 559 and the construction was ongoing during the field survey. Also, a new football stadium for the Manor Independent School District was built in TSZ 1140 along FM 973.

Future Development Projects

A number of residential projects have been proposed for this portion of the Manor Expressway study area. Longer term development plans in Pflugerville call for building a subdivision called Wildflower that will have 2,500 lots and will be served by a municipal utility district (MUD). The project, located in TSZ 629, TSZ 1156, and TSZ 598, is anticipated to have a 15-year build-out. Previously announced projects in this area, such as the New Sweden development in far northeast Travis County, have not advanced in several years, although Travis County's planning staff assumes they are still active proposals. Within Elgin, there are several subdivisions that have been proposed but with no sign of development: Wildflower North in TSZ 598; Wildflower MUD in TSZ 629 and TSZ 1156; Heritage Lakes MUD in TSZ 1153; and Lone Willow and Elm Creek II both in TSZ 1154. Additionally, the Elgin City Manager identified an empty parcel south of Elgin High School in TSZ 624, which is slated for future residential development.

Potential commercial projects that have been identified include a parcel in TSZ 557 that is being planned for commercial development, which is located between Hendrickson High School and SH 130. Commercial development is also anticipated in TSZ 557, due south of the high school. When the proposed Heritage Lakes MUD is built in TSZ 1153 it is expected that an elementary school will be built.

Travis County – South of US 290/East of SH 130/North of FM 969

The northwest portion of this subarea contains the southern half of the city of Manor, a small portion of western Elgin, and unincorporated areas of eastern Travis County. The Wildhorse Creek subdivision in TSZ 1162 and Briar Creek subdivision in TSZ 618 both had ongoing construction. There was also new construction at the Bell Farms subdivision in TSZ 620, while building was winding down at the Carriage Hills subdivisions (also in TSZ 620). During an interview with the Manor City Manger, it was indicated that new residential construction, while somewhat improved, has remained weak since the current economic downturn began. Within

the city of Elgin, the Elm Creek I subdivision in TSZ 1146 had active construction during the field visit and has experienced substantial growth throughout its development. The southern portion of the subarea is primarily rural agricultural land, which is intermixed with large lot residential subdivisions. The southwestern portion of this subarea, however, is slowly becoming suburbanized. Construction in the Forest Bluff Meadows subdivision in TSZ 401, for example, appeared to be complete.

There has been limited employment-related development in this area. A small strip center was built along US 290 with three suites, with only one suite occupied by a fast-food restaurant. Further east along US 290 and also in TSZ 1136, a small commercial park was under development. A post office has been completed on the site and a credit union is being planned for next year. Other proposed tenants include an events center and medical office. A second small strip center was built in TSZ 1136 and was vacant during the field survey. A third small strip center was built along Parsons Street (also in TSZ 1136) that will have a laundromat in a portion of the building, but the remainder was vacant. A convenience store was built and operating in TSZ 1162 at the southwest corner of FM 973 and W. Brenham Street.

Future Development Projects

Several subdivisions are being proposed south of Manor that would occupy portions of TSZs 1142, 562, and 1141. These subdivisions are called Whisper Valley, Indian Hills, Wolf, and Eastwood. Collectively, if fully built out, they could have up to 10,000 new homes. The Indian Hills subdivision is also being planned for 1.6 million square feet of office space, 472,000 square feet of research and development, 275,000 square feet of industrial space, and 60,000 square feet of retail space. A preliminary plan for the Wolf tract was approved by the City of Austin's Zoning and Platting Commission during June 2010. The area of the proposed Whisper Valley subdivision (2,066 acres) and Indian Hills (240 acres) were annexed (limited purpose) by the City of Austin in September 2010 with the intent of fully annexing them at a later date. The Whispering Valley area was annexed as a Planned Unit Development. The Eastwood subdivision's preliminary plan received approval from Travis County in November 2010.

Travis County – South of US 290/West of SH 130/East of US 183

Most of the recent residential development in this subarea has been located along FM 969, Johnny Morris Road, and Loyola Lane. During the past two years, an apartment complex called Park Place at Loyola was completed. TSZ 300 experienced some infill of single-family and duplex housing. In TSZ 302 and TSZ 303, existing mobile home parks were almost completely occupied. A smaller mobile home park was being expanded along Johnny Morris Road, in TSZ 303. Another mobile home subdivision in TSZ 1109, called Oak Crest, has also received more dwelling units. Additionally, there were two subdivisions along FM 969 with some new construction, called Agave 969 and The Villas. Farther south in TSZ 400, the Woodland Hills subdivision was very active with a number of new homes and some construction occurring at the time of the field survey. There has also been a small amount of residential infill development in the Forest Bluff subdivision, along FM 969. The Austin Hindu Center in TSZ 400

was building a few single family homes for religious leaders during the field survey.

Commercial projects in this part of the project study area include the recently completed Travis County service center. In TSZ 302, a warehouse for a petroleum product distributor was completed along Johnny Morris Road and in TSZ 270 another warehouse was under construction (also along Johnny Morris Road). An existing lawn care service has expanded its facilities in TSZ 1107 along US 290 and a City of Austin tennis center was built in TSZ 269.

Future Development Projects
No significant, pending projects were identified within this portion of the US 290E project study area.

Travis County – South of US 290/West of US 183/East of Airport Boulevard (Loop 111)
This subarea wraps around central Austin to the north and east and is the location of a number of residential infill projects, as well as a significant redevelopment project that is underway at the former Robert Mueller Municipal Airport. The airport is being rebuilt as a mixed-use neighborhood in TSZ 322 and will contain 348 single-family homes and approximately 450 apartments, when the first phase is complete. At the time of the summer 2010 field visit, 12-18 homes were under construction as well as the Greenway Lofts. The Mosaic apartment complex has been completed along with numerous single-family homes and townhomes. The closing of the airport has prompted some redevelopment in the surrounding neighborhoods and this trend is expected to continue as the various amenities built on the Mueller property increase the value and desirability of adjacent neighborhoods. South of the airport redevelopment project, in TSZ 351, the Chestnut Corner retirement apartment complex was under construction. The Triangle project, in TSZ 329, is another significant redevelopment project in this subarea. However, it is at or near completion. Further south, in TSZ 428, Cobra live-work studios were completed and the Sol Austin infill subdivision was also underway in TSZ 428. The project has 38 lots and was approximately half built out.

The majority of recent commercial development has been at the Mueller Airport redevelopment site. The TSZ has several new medical office buildings (one of which was under construction at the time of the field visit and the other was completed), a bank, and a children's shelter. The Triangle mixed-use development, in TSZ 329, which was planned for a total of 120,000 square feet of retail, commercial, and restaurant space, appeared to be at or near completion. A final phase of the development, which has retail/commercial space on the bottom floor and residences above, was under construction during the field survey. However, the greatest addition of commercial property in this subarea was occurring at the site of the former Mueller Municipal Airport in TSZ 322. In TSZ 396, Travis County built a small drive-thru tax office.

Future Development Projects
Over the near and medium term, the most significant growth in this subarea will occur as the

Robert Mueller Municipal Airport redevelopment project progresses. Ultimately, this area will contain 4,600 single-family, condominium, and apartment homes. As the residential development is built out, smaller commercial projects, including a town center, will be built to provide neighborhood access to goods and services. Additional office space is also being planned for the Mueller development.

Travis County – South of 38th Street/South of Airport Boulevard (Loop 111) – Downtown Austin

This subarea of the US 290E study area includes downtown Austin, near east Austin, the University area, and a portion of north central Austin. The past decade has seen a large number of mid- to high-rise residential buildings being constructed in and around the downtown area. These buildings range from 4-story condos to a 56-story residential building with commercial space on the lower floors. The City of Austin's policy for the past decade or more has been to encourage dense, residential development in Austin's central business district (CBD) and urban core. Austin's previous mayor had a very ambitious policy goal of 25,000 residents living in downtown Austin by 2015. While this goal will not be reached by this date, it did and continues to reflect the commitment from city officials to intensify development within central Austin. An interesting pattern produced by this policy, from the perspective of trip generation, is the dearth of new high-rise office buildings. The last high-rise office building built in Austin was the Frost Bank Tower, which was completed in 2003. While new retail and office space are still being planned for downtown or awaiting occupancy, most of the new projects (while mixed use) are predominantly residential units.

A number of residential projects were underway or recently completed in downtown Austin during the field survey. Starting from the southernmost TSZ in the study area and working northward, the Legacy on the Lake residential tower was recently completed in TSZ 408. Also in TSZ 408, the Four Seasons condominium tower was under construction and nearing completion. Moving to the southwestern corner of downtown, the Spring condominium project was completed in TSZ 403, as was the Gable Park Plaza residential project. In TSZ 404, two residential projects were completed called The Monarch and the 360 Condominiums. In TSZ 404, it is anticipated that the Seaholm site will be redeveloped into a mixed use project containing residential, office, retail, and a hotel. In TSZ 405, the 56-story Austonian was completed and another residential building was under construction called the Ashton. Also in TSZ 405 construction of the W Austin Hotel & Residences was underway. On the eastern side of downtown, there have been fewer residential projects but the Greystar Red River Flats was completed in TSZ 383. At the northern end of the CBD, the Presidios at Judge's Hill (TSZ 375) was recently completed and the La Vista on Lavaca residential building (TSZ 376) has started construction but is now stalled.

Despite the concerns of long-time residents, the gentrification of East Austin has occurred rapidly over the past few years, as development restrictions have been relaxed and as market demand has grown. Although East Austin neighborhoods have historically had low incomes,

because of their proximity to downtown, homebuyers priced out of the downtown market find more affordable housing options in East Austin while remaining near downtown. During the field survey, in TSZ 419, there was a three-story multi-family building where construction had started but stalled. A small infill subdivision called Chestnut Commons has been built in TSZ 393. The development consists of 32 small homes and 32 apartments. In TSZ 294 the 8-unit Harvey Street lofts have been completed. A residential building (apartments or condominiums) with ground floor retail was completed in TSZ 413. Additionally, there have been a number of single home redevelopment projects that have either rebuilt homes on existing lots or consolidated two or more lots to build larger homes. There have also been a number of small infill projects consisting of townhome structures or condominiums. Given the number and scattered nature of such projects, it was not practical to identify and report each location, but this trend was taken into account when assessing and adjusting the zonal forecasts.

The neighborhood west of the University of Texas at Austin is known locally as West Campus (defined as TSZs 356, 358, 359, 360) and, for decades, was under a high density building moratorium. This moratorium led to few new redevelopment projects, even though much of the housing stock was aging and housing units commanded high rents. In 2004, the Austin City Council approved the University Neighborhood Overlay which allowed the building of significantly taller buildings in West Campus. Due to pent up demand from students desiring to live closer to campus, the area continues to see a number of residential development projects in the area. In TSZ 356 several new residential buildings were completed: the Texan Pearl, the Block on 25th, and Galileo at 25th. In TSZ 358, the Quarters Grayson House was completed, as well as, the Block on 23rd and Vintage West Campus. In TSZ 359, the Quarters Nueces House was completed and the 21-story Rio21 apartment building was nearing completion. Also in TSZ 359, a parcel was cleared and was currently being marketed for high-density development. Jefferson on 26th and the Block on Rio Grande was completed in TSZ 360 and another small (3-story) residential project was under construction. It is important to note that the units in many of these new residential towers in West Campus have one to four bedrooms, so the number of persons living in each unit is likely much higher than in typical multifamily structures.

North of the University of Texas at Austin campus, a small dormitory containing 16 apartments for the Austin Theological Seminary was completed in TSZ 361. In TSZ 345, a new two-story residential building with 57 units was completed and a 16-unit work-live condominium was under construction. In TSZ 346, a smaller three-story apartment building was under construction on 30th Street. Further east, in TSZ 348, a five-unit condominium project was completed. Also in TSZ 348, along IH 35 the former Concordia University campus was demolished in preparation for the new mixed-use development project. The demolition resulted in the removal of the university's dormitories but the project's redevelopment plans call for 1,450 apartments.

The downtown area has also seen some commercial growth, primarily on the ground floors of residential towers. The Austin City Council has been adamant about developers constructing mixed-use projects. As a result, most (if not all) new residential buildings in downtown Austin

have ground floor retail with some also incorporating office space. There is one new government building under construction in downtown Austin, which is the new federal courthouse in TSZ 849. In TSZ 358, the West Campus Market was completed with 46,000 square feet of office and retail space and the Quarters parking garage (that serves its apartment buildings) was built with 44,579 square feet of retail space. In TSZ 359, the 21 Rio building will have 4,000 square feet of retail when completed. At the former Concordia University (TSZ 348), an eight-story commercial building was completed and as of June 2010 had one tenant. The University of Texas at Austin campus continues to make improvements to its physical plant. During the field survey, it was observed that the Experimental Sciences Building had been demolished (TSZ 362) for its replacement. Construction was also started on the Student Activity Center and Liberal Arts buildings near Gregory Gym, which will house the University's ROTC program and other academic functions. A new Communications College building was under construction in TSZ 361 that will house the KUT radio station, the KLRU PBS television station, and the student-run *Daily Texan* newspaper. Moving south into downtown Austin, a new federal courthouse was under construction in TSZ 849. Just south of the University of Texas campus, in TSZ 376, La Vista on Lavaca will have 32 office spaces for lease. In TSZ 378, five stories of office space were built on top of an existing parking garage. In East Austin, Lance Armstrong's Live Strong Foundation redeveloped a warehouse/industrial building for its new headquarters in TSZ 419. A new bank was built in TSZ 420 and a new headquarters for Meals on Wheels was built in TSZ 421.

Future Development Projects

In the near term, the single most significant project to occur in this subarea will be the redevelopment of the Concordia University campus. Located in TSZ 348, the former campus was demolished mid-2008. Redevelopment plans for the property includes a 210-room hotel, 500,000 square feet of office space, 325,000 square feet of retail space, and 1,450 condominium and apartment units. At present, however, the project has stalled and the parcel has changed owners. Development is expected to begin again, once commercial credit becomes easier to obtain and market conditions improve. Another significant redevelopment opportunity proposed by state officials (October 2008) was to construct a state office park along SH 130, which would allow the State to move some staff out of aging downtown buildings and would permit the sale of some of these buildings for private development. However, given the downturn in the commercial real estate market and the large projected state budget deficit for the coming biennium (2011-2012), it is unlikely that this proposal is still receiving serious consideration. A number of new projects continue to be planned for downtown Austin, East Austin, and the West Campus area. However, the conditions of the credit market will affect the ability of some of these proposals to be brought to market in the near term. As a result, some proposed projects will start as planned, while others will be delayed or may simply disappear. These circumstances make it more difficult to predict future commercial development in downtown Austin beyond the projects that are already under construction.

Over the medium- to long-term, as development continues, there will constraints to further growth. In the case of downtown Austin, the primary future constraint will be the Capitol View

Corridors, which preserves numerous viewing corridors of the State Capitol's rotunda. In the future, as there are increasingly fewer parcels in downtown Austin that can be profitably developed, there will likely be intense pressure from developers to reduce the number of viewsheds in the ordinance. Constraints to growth in West Campus will likely be market saturation and, in the long-term, the difficulties of assembling parcels of land for large, multi-story projects. New East Austin developments will continue to be challenged by residents who are opposed to further gentrification. Historically, East Austin has been the neighborhoods of minorities due to segregation policies implemented by the City of Austin during the early 20th Century. The gentrification of the area, primarily by wealthy whites, has created a certain amount of tension and backlash that has manifested itself through stricter development policies. In all three areas, growing demands on utility and transportation infrastructure capacity may require significant investments by the City of Austin and developers that may make certain projects uneconomical or infeasible.

ASSESSING AND ADJUSTING THE POPULATION AND EMPLOYMENT FORECASTS

Control Total Assessments and Adjustments

With the release of the 2010 U.S. Census population counts, it was necessary to re-review the control totals used for the study. In several cases, county population control totals were too high and needed to be adjusted downward. Likewise, population control totals for forecast years also required some adjustment to more reasonable figures. Table 7 provides a summary of the adjustments from the most recent CAMPO control totals for each county.

Population and employment control totals anticipate reasonably strong growth for the CAMPO study area through the year 2035 (See Tables 7 and 8). 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). The employment forecast control totals for each county in the CAMPO study area 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 7: Adjustments to the CAMPO County Population Control Totals

	TRAVIS COUNTY				
	2010 CAMPO		2010 MANOR EXPRESSWAY		
Year	Population Forecast	Compounded Annual Growth Rate	Population Forecast	Compounded Annual Growth Rate	Total Population Change
2008	966,138	--	988,304	--	22,166
2010	1,038,595	3.68%	1,023,961	1.79%	-14,634
2015	1,105,083	1.25%	1,103,122	1.50%	-1,961
2025	1,318,041	1.78%	1,286,618	1.55%	-31,423
2035	1,555,281	1.67%	1,500,629	1.55%	-54,652

WILLIAMSON COUNTY					
	2010 CAMPO		2010 MANOR EXPRESSWAY		
Year	Population Forecast	Compounded Annual Growth Rate	Population Forecast	Compounded Annual Growth Rate	Total Population Change
2008	385,570	--	392,034	--	6,464
2010	418,000	4.12%	422,499	3.81%	4,499
2015	473,316	2.52%	491,114	3.06%	17,798
2025	702,694	4.03%	637,363	2.64%	-65,331
2035	1,026,484	3.86%	873,568	3.20%	-152,916

Table 7: Adjustments to the CAMPO County Population Control Totals (Continued)

HAYS COUNTY					
	2010 CAMPO		2010 MANOR EXPRESSWAY		
Year	Population Forecast	Compounded Annual Growth Rate	Population Forecast	Compounded Annual Growth Rate	Total Population Change
2008	144,759	--	147,552	--	2,793
2010	152,180	2.53%	156,985	3.15%	4,805
2015	189,153	4.45%	183,337	3.15%	-5,816
2025	271,593	3.68%	243,333	2.87%	-28,260
2035	371,245	3.17%	333,693	3.21%	-37,552

BASTROP COUNTY					
	2010 CAMPO		2010 MANOR EXPRESSWAY		
Year	Population Forecast	Compounded Annual Growth Rate	Population Forecast	Compounded Annual Growth Rate	Total Population Change
2008	73,372	--	73,372	--	0
2010	77,485	2.76%	74,109	0.50%	-3,376
2015	102,289	5.71%	87,091	3.28%	-15,198
2025	149,185	3.85%	117,866	3.07%	-31,319
2035	215,452	3.74%	154,320	2.73%	-61,132

CALDWELL COUNTY					
	2010 CAMPO		2010 MANOR EXPRESSWAY		
Year	Population Forecast	Compounded Annual Growth Rate	Population Forecast	Compounded Annual Growth Rate	Total Population Change
2008	35,880	--	36,649	--	769
2010	39,000	4.26%	38,017	1.85%	-983
2015	50,127	5.15%	41,518	1.78%	-8,609
2025	65,321	2.68%	47,820	1.42%	-17,501
2035	82,069	2.31%	52,868	1.01%	-29,201

Table 8: Adjustments to the CAMPO County Employment Control Totals

TRAVIS COUNTY

	2010 CAMPO		2010 MANOR EXPRESSWAY		
Year	Employment Forecast	Compounded Annual Growth Rate	Employment Forecast	Compounded Annual Growth Rate	Total Employment Change
2008	611,085	--	581,572	--	-29,513
2010	654,433	3.49%	567,148	-1.25%	-87,297
2015	707,253	1.56%	596,433	1.01%	-110,815
2025	843,546	1.78%	718,554	1.88%	-124,992
2035	1026,485	1.98%	855,260	1.76%	-171,207

WILLIAMSON COUNTY

	2010 CAMPO		2010 MANOR EXPRESSWAY		
Year	Employment Forecast	Compounded Annual Growth Rate	Employment Forecast	Compounded Annual Growth Rate	Total Employment Change
2008	130,516	--	115,690	--	-14,826
2010	146,313	5.88%	120,500	2.06%	-25,813
2015	165,661	2.52%	134,194	2.18%	-31,467
2025	252,970	4.32%	183,043	3.15%	-69,927
2035	400,329	4.70%	239,062	2.71%	-161,267

HAYS COUNTY

	2010 CAMPO		2010 MANOR EXPRESSWAY		
Year	Employment Forecast	Compounded Annual Growth Rate	Employment Forecast	Compounded Annual Growth Rate	Total Employment Change
2008	52,137	--	46,843	--	-5,294
2010	56,330	3.94%	48,000	1.23%	-8,330
2015	71,878	5.00%	54,162	2.44%	-17,716
2025	104,563	3.82%	74,728	3.27%	-29,835
2035	144,786	3.31%	98,778	2.83%	-46,008

BASTROP COUNTY

	2010 CAMPO		2010 MANOR EXPRESSWAY		
Year	Employment Forecast	Compounded Annual Growth Rate	Employment Forecast	Compounded Annual Growth Rate	Total Employment Change
2008	16,274	--	13,865	--	-2,409
2010	17,047	2.35%	14,250	1.38%	-2,797
2015	23,526	6.65%	16,079	2.44%	-7,447
2025	37,296	4.72%	22,185	3.27%	-15,111
2035	58,172	4.55%	29,325	2.83%	-28,847

10.3.1 *Table 8: Adjustments to the CAMPO County Employment Control Totals (Continued)*

	CALDWELL COUNTY				
	2010 CAMPO		2010 MANOR EXPRESSWAY		
Year	Employment Forecast	Compounded Annual Growth Rate	Employment Forecast	Compounded Annual Growth Rate	Total Employment Change
2008	8,588	--	6,887	--	-1,701
2010	9,360	4.40%	6,850	-0.27%	-2,510
2015	12,030	5.15%	7,729	2.44%	-4,301
2025	16,330	3.10%	10,664	3.27%	-5,666
2035	20,517	2.31%	14,096	2.83%	-6,421

Assessment and Adjustment at the TSZ level

An initial assessment of the baseline 2008 population and employment estimates within the Manor Expressway project study area found that most TSZs had reasonable values. In some cases, it was determined that adjustments were necessary so the forecast would more accurately reflect 2008 conditions. Using GIS software and 2010 U.S. Census data at the block level, 2010 population counts were created for each TSZ in the Manor Expressway study area. Some TSZs did not entirely follow the boundaries of the U.S. Census blocks, so aerial photography was used to move dwelling units to the appropriate TSZs.

On the other hand, a cursory review of CAMPO's 2010 population and employment 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. Therefore, zonal population and employment forecasts from the previous Manor Expressway toll study were used and applied to the CAMPO's baseline population and employment estimates. This created a new, hybrid forecast for the study area 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 Manor Expressway study area, the original 2010 CAMPO zonal forecasts were used. As the final step, all population and employment forecasts at the zonal level were adjusted to conform to the countywide control totals, shown in Tables 8 and 9.

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 Manor Expressway 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 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. Household median income estimates were not changed based on the 2010 Census because these data have not yet been released.

Households

The assessment maintained CAMPO'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. Because 2010 Census data on dwelling units have not yet been released at the block group level, the number of housing units in the Manor Expressway study area were based upon estimates of persons per dwelling unit at the county level.

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.

CURRENT AND FUTURE RISKS 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 negative, but yet to be determined effects 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 population and employment forecasts for the Manor Expressway 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 January 2011 ($85-$95 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 MSA 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 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.

Despite the current and future economic risks that face the nation and the region, population and employment growth in the Austin MSA 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. Fortunately, despite future 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 strong competitive advantage over many other regions in the United States. However, the region must also confront important challenges. In particular, the decline of the Austin region's manufacturing base is especially 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. "Clean energy" industries (like bio-technology before it) are frequently touted as the next industry to advance the regional economy but, despite a few recent successes, they do not play a significant role in the local economy.

CONCLUSIONS

Despite the relative strength of the Austin economy, 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 Manor Expressway corridor. During the May 2010 field surveys, residential construction continued at a subdued 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 MSA is currently recovering from the effects of the severe downturn in the national economy and has likely entered into a prolonged period of modest growth. As it proceeds 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, or energy price fluctuations. Although the fundamental elements of the regional economy appear to be 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, modest growth is expected to continue in the region 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. Overall, however, the rate of economic and population growth in the Austin MSA is expected to outperform national trends.

REFERENCES

Anari, Ali. 2008. "How Inventory Affects Housing Prices." *Tierra Grande 1843*.

CBRE Richard Ellis. 2010. *Market View Austin – Industrial Third Quarter 2010*. http://www.cbre.com/usa/us/tx/san+antonio.

_____. 2010. *Market View Austin – Office Third Quarter 2010*. http://www.cbre.com/usa/us/tx/san+antonio.

Marcus & Millichap. 2010. *Apartment Research Market Update: Austin Metro Area Update: Fourth Quarter 2010*. http://www.marcusmillichap.com/.

_____. 2010. *Office Research Market Update: Austin Metro Area Update: Second Quarter 2010*. http://www.marcusmillichap.com/.

_____. 2010. *Retail Research Market Update: Austin Metro Area Update: Second Quarter 2010*. http://www.marcusmillichap.com/.

Texas A&M Real Estate Center. 2010. *Building Permit Data*. http://recenter.tamu.edu.

Texas A&M Real Estate Center. 2010. Texas Metro Market Overview: Austin-Round Rock-San Marcos. http://recenter.tamu.edu.

Texas Employment Commission. 2010. *Employment Estimates (Current Employment Statistics - CES)*. www.twc.state.tx.us.

Texas Employment Commission. 2010. *Quarterly Census of Employment and Wages (QCEW)*. www.twc.state.tx.us.

Texas Employment Commission. 2010. *Unemployment Rates (Local Area Unemployment Statistics -LAUS)*. www.twc.state.tx.us.

Texas State Data Center. 2010. *2009 Age, Sex, and Race/Ethnicity Population Estimates for Texas Counties, Places, MSAs, and COGs*. http://txsdc.utsa.edu.

_____. 2009. *2008 Age, Sex, and Race/Ethnicity Population Estimates for Texas Counties, Places, MSAs, and COGs*. http://txsdc.utsa.edu.

Texas State Data Center. 2010. *2009 Age, Sex, and Race/Ethnicity Population Projections for Texas Counties*. http://txsdc.utsa.edu.

U.S. Census Bureau. 2010. *2000 SF-3 Population Characteristics*. www.census.gov.

U.S. Census Bureau. 2010. *County population, population change and estimated components of population change: April 1, 2000 to July 1, 2009*. www.census.gov.

APPENDIX B-1

DESCRIPTIONS OF RECENT AND ONGOING RESIDENTIAL DEVELOPMENT IN THE MANOR EXPRESSWAY PROJECT STUDY AREA

Table B.1 – Recent and Ongoing Residential Development in the Manor Expressway Project Study Area

ID	MAP #	TSZ	Name	Lots/Units	Status During Field Survey
R1	B-1	174	The Lakes at Northtown	310 lots	Partially completed, ongoing construction
R2	B-1	174	Villas at Tech Ridge Apartments	350 units	Complete?
R3	B -1	175	Mountain Creek Ranch Condominiums	99 units	Under construction, stalled
R4	B-1	1352	Bella Springs Apartments		Under construction
R5	B-1	206	Bella Terra Condominiums	86 units	Partially completed, ongoing construction
R6	B-1	1351	Enclave at Harris Ridge Subdivision		Complete
R7	B-1	208	Cantarra	1,384 lots	Partially completed, ongoing construction
R8	B-1	223	Archstone Tech Ridge	256 units	Under construction
R9	B-1	223/224	Chalk Rock Canyon Apartments	264 units	Under construction
R10	B-1	224	Pioneer Crossing West	817 lots	Mostly completed
R11	B-1	224	Carrington at Parmer Park		Completed
R12	B-1	241	Greenridge at Buckner's Villa, 4-story building		Under construction
R13	B-1	241	Nursing Home		Completed
R14	B-1	225	Pioneer Crossing East	499 lots	Under construction
R15	B -1	226	Stirling Bridge	N/A	Under construction
R16	B-1	279	Swanee 21	21 units	Under construction
R17	B-2	557	Falcon Pointe	1,700 lots	Partially completed, ongoing construction
R18	B-2	557	Villages of Hidden Lake	1,200 lots	Partially completed, continued construction; constructing infrastructure in new phase
R19	B-2	598	Reserve at West Creek	580 lots	Partially completed
R20	B-2	599	Johle Hill	18 lots	No construction
R21	B-2	599	Bella Vista at Cottonwood Creek	20 lots	Partially completed
R22	B-2	560/622	Shadow Glen	476 lots	Partially completed, continued construction of current phase
R23	B-2	625	Stonewater	926 lots	Partially completed, continued construction
R24	B-2	1357	Westwind subdivision		Completed
R25	B-2	625	Presidential Meadows	1,000 lots	Completed
R26	B-2	1098	Presidential Glen	1,150 lots	Construction stalled
R27	B-2	626	Eagle's Landing		Completed
R28*	B-2	1209	County Line		Completed

*The County Line subdivision is outside of the study area. However, the County Line subdivision's exit is on County Line Rd, which is within the study area.

Table B.1 – Recent and Ongoing Residential Development in the Manor Expressway Project Study Area (continued)

R29	B-3	271	Wildhorse Creek	443 lots	Partially completed; ongoing construction
R30	B-3	620	Bell Farms	687 lots 43 units	Partially completed; ongoing construction
R31	B-3	620	Carriage Hills	247 lots	Completed
R32	B-3	621	Elm Creek I	474 lots	Partially completed, ongoing construction
R33	B-3	618	Briar Creek	1,050 lots	Partially completed; ongoing construction
R34	B-3	401	Forest Bluff Meadows	N/A	Complete
R35	B-4	302	Oak Crest subdivision		Mobile homes; partially completed
R36	B-4	302	Mobile homes park		Mostly occupied
R37	B-4	269	Park Place at Loyola Apartments	252	Completed
R38	B-4	303	Pecan Park mobile home subdivision	N/A	Partially occupied
R39	B-4	303	The Villas/ Agave 969	848 lots	Partially completed. Limited construction
R40	B-4	400	Single Family Homes		Construction of single family homes at the Austin Hindu Center
R41	B-4	400	Forest Bluff subdivision		Completed
R42	B-4	400	Woodland Hills	N/A	Partially completed; ongoing construction; and new infrastructure installation
R43	B-5	322	Subdivision/Mosaic at Mueller Apartments	348 lots/433 units	Under construction
R44	B-5	428	Sol Austin	38 lots	Under construction; partially complete
R45	B-5	428	Cobra Studios	24 units	Complete
R46	B-5	351	Chestnut Corner		Under construction
R47	B-5	413	Apartments or Condominiums		Completed; ground floor retail
R48	B-5	393	Chestnut Commons	32 lots/32 units	Completed
R49	B-5	394	Harvey Street Lofts	8 units	Completed
R50	B-5	1406	Three-story multi-family building		Construction stalled

Table B.1 – Recent and Ongoing Residential Development in the Manor Expressway Project Study Area (continued)

R51	B-6a	403	Spring	263 units	Completed
R52	B-6a	403	Gables Park Plaza	479 units	Completed
R53	B-6a	404	The Monarch	311 units	Completed
R54	B-6a	404	360 Condominiums		Completed
R55	B-6a	405	W Austin Hotel & Residences		Under construction
R56	B-6a	405	The Austonian	127 units	Completed; ground floor retail
R57	B-6a	405	Ashton		Under construction
R58	B-6a	383	Greystar Red River Flats	120 units	Completed
R59	B-6a	408	Four Seasons Condominiums		Partially completed; ongoing construction
R60	B-6a	408	Legacy on the Lake	196 units	Completed
R61	B-6b	345	16-unit work-live condominiums	16 units	Under construction
R62	B-6b	345	Two-story residential building	57 units	Complete
R63	B-6b	348	Apartments	5 units	Completed
R64	B-6b	356	Texan Tower	74 units	Completed
R65	B-6b	356	Texan Pearl	78 units	Completed
R66	B-6b	356	Galileo at 25th		Completed
R67	B-6b	356	The Block on 25th	167 units	Completed
R68	B-6b	360	The Block on Rio Grande	85 units	Completed
R69	B-6b	360	Three-story residential building		Under construction
R70	B-6b	360	Jefferson on 26th	364 units	Completed
R71	B-6b	361	Austin Theological Seminary dormitory	16 units	Completed
R72	B-6b	346	Apartments		Under Construction
R73	B-6b	358	The Block on 23rd	92 units	Completed
R74	B-6b	358	Vintage West Campus		Completed
R75	B-6b	358	Quarters Grayson House	101 units	Completed
R76	B-6b	359	Quarter Nueces House	235 units	Completed
R77	B-6b	359	21 Rio	128 units	Under construction with 4,000 sq. ft. retail
R78	B-6b	359	Multi-story building	N/A	Parking garage
R79	B-6b	1410	Presidios at Judge's Hill condominiums	45 units	Completed
R80	B-6b	376	La Vista on Lavaca	31 units	Construction stalled– 16 condos; 15 corporate condos (live-work); 32 offices on two floors

Table B.2 – Summary of Recent and Ongoing Commercial Development in the Manor Expressway Study Area

ID	MAP #	TSZ	Description	Status
C1	B-1	174	Small retail building	Under construction
C2	B-1	174	Medical office buildings	Two 5,500 sq. ft. buildings; one completed and there other is under construction
C3	B-1	174	Furniture store	Under construction
C4	B-1	175	Pre-school/daycare	Completed
C5	B-1	558	Drug store	Under Construction
C6	B-1	558	Fast food restaurant	Completed
C7	B-1	558	Oil change shop	Completed
C8	B-1	175	Strip Center	Completed; partially occupied
C9	B-1	175	Convenience store/small restaurant/Laundromat	Completed
C10	B-1	205	Hotel	Completed
C11	B-1	205	Office building	Completed; 100,000 sq. ft; vacant
C12	B-1	206	Strip center addition	Completed, occupied
C13	B-1	205	Hotel	Completed
C14	B-1	205	Dell Financial Services building	Vacant
C15	B-1	206	Restaurant	Completed
C16	B-1	1351	Dessau Ridge Office Condominiums	First phase of construction completed; continued construction
C17	B-1	208	Pflugerville ISD Office Building	Completed
C18	B-1	240	Discount retailer	Completed
C19	B-1	241	Strip center	Completed, partially occupied
C20	B-1	241	Strip center	Completed, partially occupied
C21	B-1	240	Strip center	Completed; partially occupied
C22	B-1	250	Barrington Elementary School expansion	Under construction
C23	B-1	225	Pioneer Crossing Elementary School	Completed
C24	B-1	252	Tire store	Completed
C25	B-1	265	Restaurant supply store	Completed
C26	B-1	278	Texas DPS Crime Lab	Under construction
C27	B-1	278	Hardwood flooring distribution center	Under construction
C28	B-1	254	Office building	Completed
C29	B-1	254	Office building	Construction halted
C30	B-1	254	Industrial building	Under construction
C31	B-1	254	Two industrial buildings	Completed; one building is vacant and the other has one tenant that occupies one-quarter to one-third of the space
C32	B-1	253	USGS office building	Completed
C33	B-1	253	Small strip center	Completed; partially occupied
C34	B-1	253	Building	Under construction
C35	B-1	253	Warehouse buildings	Completed, partially vacant
C36	B-1	253	Large flex-space building	Completed, vacant
C37	B-1	243	Adult Cabaret	Completed

Table B.2 – Summary of Recent and Ongoing Commercial Development in the Manor Expressway Study Area (Continued)

C38	B-2	560	Manor ISD Football Stadium	Completed, operating
C39	B-2	623	Bird's Nest Airport Expansion	Under construction
C40	B-3	1099	Small strip center	Completed, unoccupied
C41	B-3	1099	Small commercial park	Under Construction
C42	B-3	1099	Small strip center	Constructed, vacant
C43	B-3	1099	Small strip center	Constructed, vacant
C44	B-3	271	Gas Station/Convenience store	Completed, operating
C45	B-4	269	ABC lawn service	Facility expansion complete, operating
C46	B-4	270	Warehouse	Under construction
C47	B-4	269	City of Austin Tennis Center	Complete, operating
C48	B-4	302	Petroleum Distributor warehouse	Complete, operating
C49	B-4	400	Travis County Service Center	Under construction
C50	B-5	329	Triangle mixed-use development	Partially completed, ongoing construction
C51	B-5	322	Bank	Under construction
C52	B-5	322	Medical office building	Complete
C53	B-5	322	Medical office building	Under construction
C54	B-5	1363	Austin Children's Shelter	Under construction
C55	B-5	396	Travis County Tax Office Drive Thru	Completed
C56	B-5	419	Lance Armstrong's Headquarters	C58
C57	B-5	1407	Meals on Wheels Headquarters	C59
C58	B-5	420	Bank	C60
C59	B-6a	378	5-story building over garage	Completed
C60	B-6a	849	Federal Courthouse	Under construction
C61	B-6b	348	Eight-story building	Completed; partially occupied
C62	B-6b	361	Communications College building	Under construction
C63	B-6b	358	Retail center	Completed, will have 46,000 sq. ft. retail and office
C64	B-6b	358	Quarters parking garage	Complete; will have 44,579 sq. ft. retail
C65	B-6b	362	Experimental Sciences building	Demolition completed. Building will be replaced
C66	B-6b	362	Student Activity Center and Liberal Arts building	Under construction
C67	B6-b	376	La Vista Lavaca	Construction stalled– 16 condos; 15 corporate condos (live-work); 32 offices on two floors

Table B.3 – Summary of Proposed Commercial and Residential Developments in the Manor Expressway Study Area

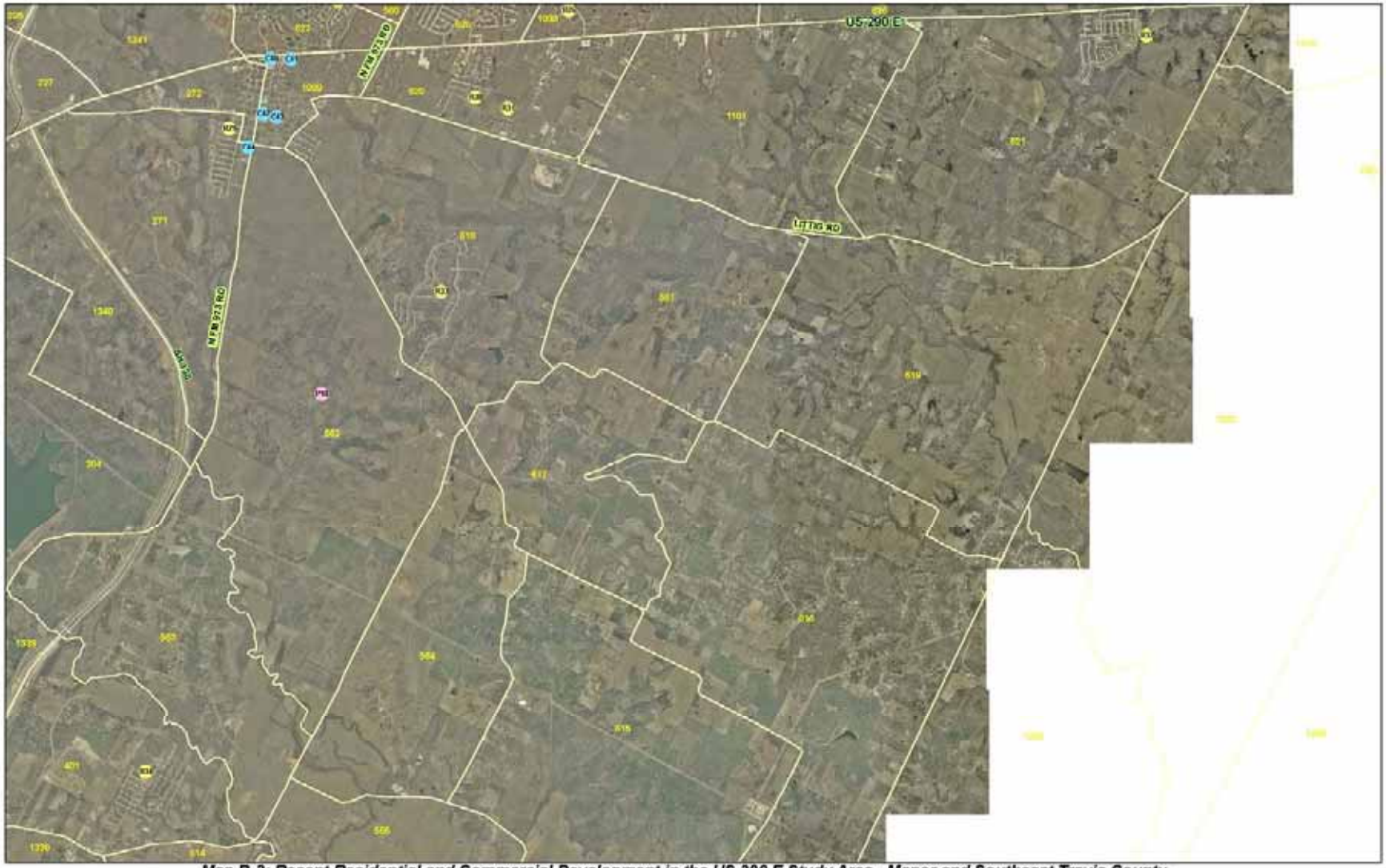
ID	MAP #	TSZ	Name	Status
P1	B1	174	Pacana (Triangle tract)	Proposed mixed use development
P2	B2	557	Cornerstone at Kelly Lane	Proposed commercial development (TIA submitted)
P3	B2	557	Commercial development	Proposed commercial development
P4	B2	598	Wildflower North	Proposed MUD: in conceptual stage
P5	B2	629	Wildflower MUD	Proposed subdivision; 2,500 lots with a 15-year build out
P6	B2	626	Elementary School	Proposed development of an elementary school
P7	B2	626	Heritage Lakes MUD	Proposed subdivision; 1,740 lots anticipated in next five years
P8	B2	626	Lone Willow	Proposed subdivision; 1,000 lots
P9	B2	626	Elm Creek II	Proposed subdivision
P10	B3	562	Whisper Valley, Indian Hills, Wolf and Eastwood	Proposed residential subdivisions; collectively would add up to 10,000 new homes
P11	B-6a	403	Seaholm site	Proposed redevelopment of Seaholm mixed-use site with retail, office, residential, and hotel
P12	B-6b	348	Concordia University tract redevelopment	Demolition started. 210-room full-service hotel; 500,000 sq. ft. of office; and 325,000 sq. ft. of retail.

APPENDIX B-2

MAPS OF RECENT AND ONGOING RESIDENTIAL DEVELOPMENT IN THE MANOR EXPRESSWAY PROJECT STUDY AREA

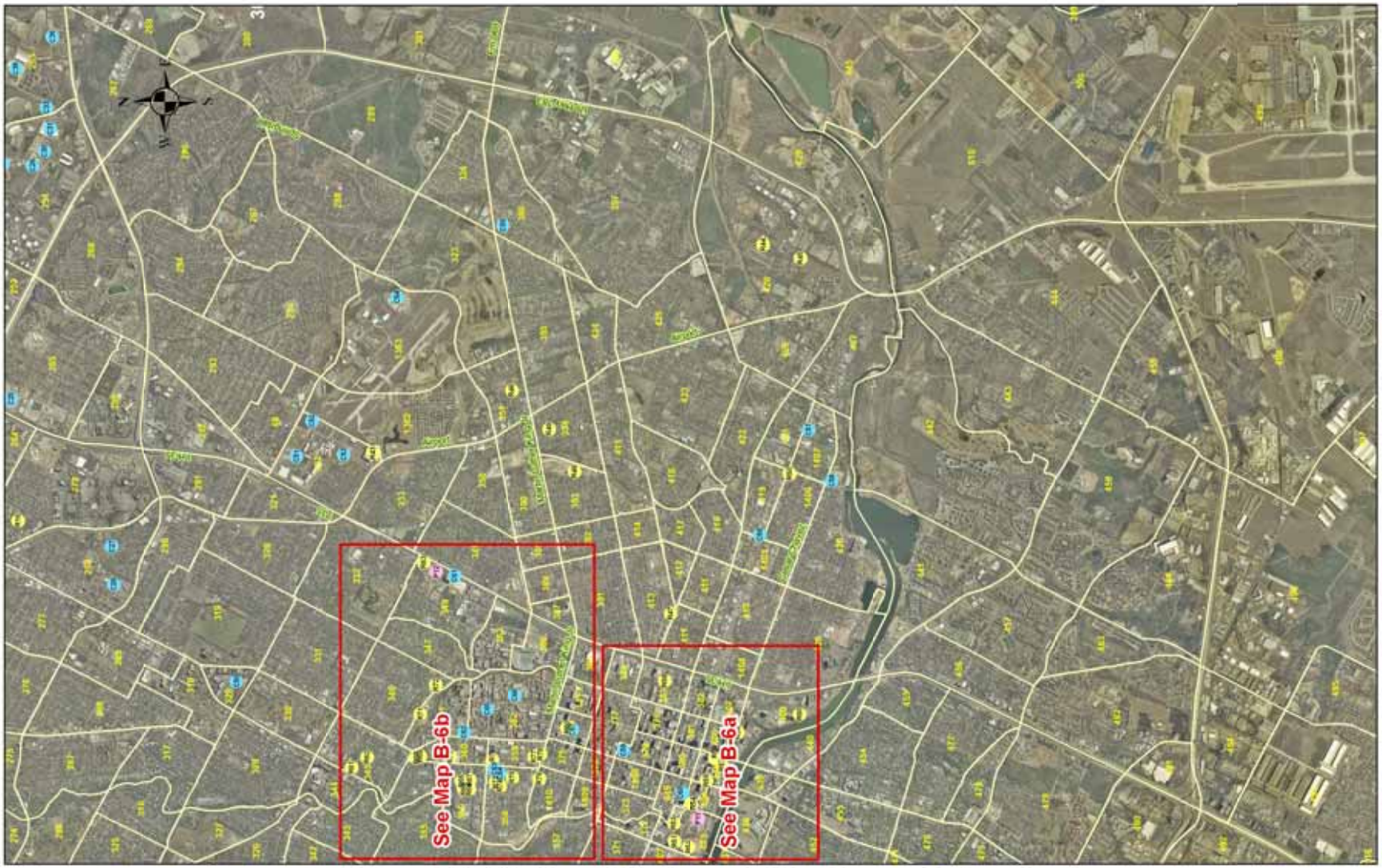
Map B-1: Recent Residential and Commercial Construction in the Manor Expressway Study Area - Northwest

Map B-2: Recent Residential and Commercial Development in the US 290 E Study Area - Northeast

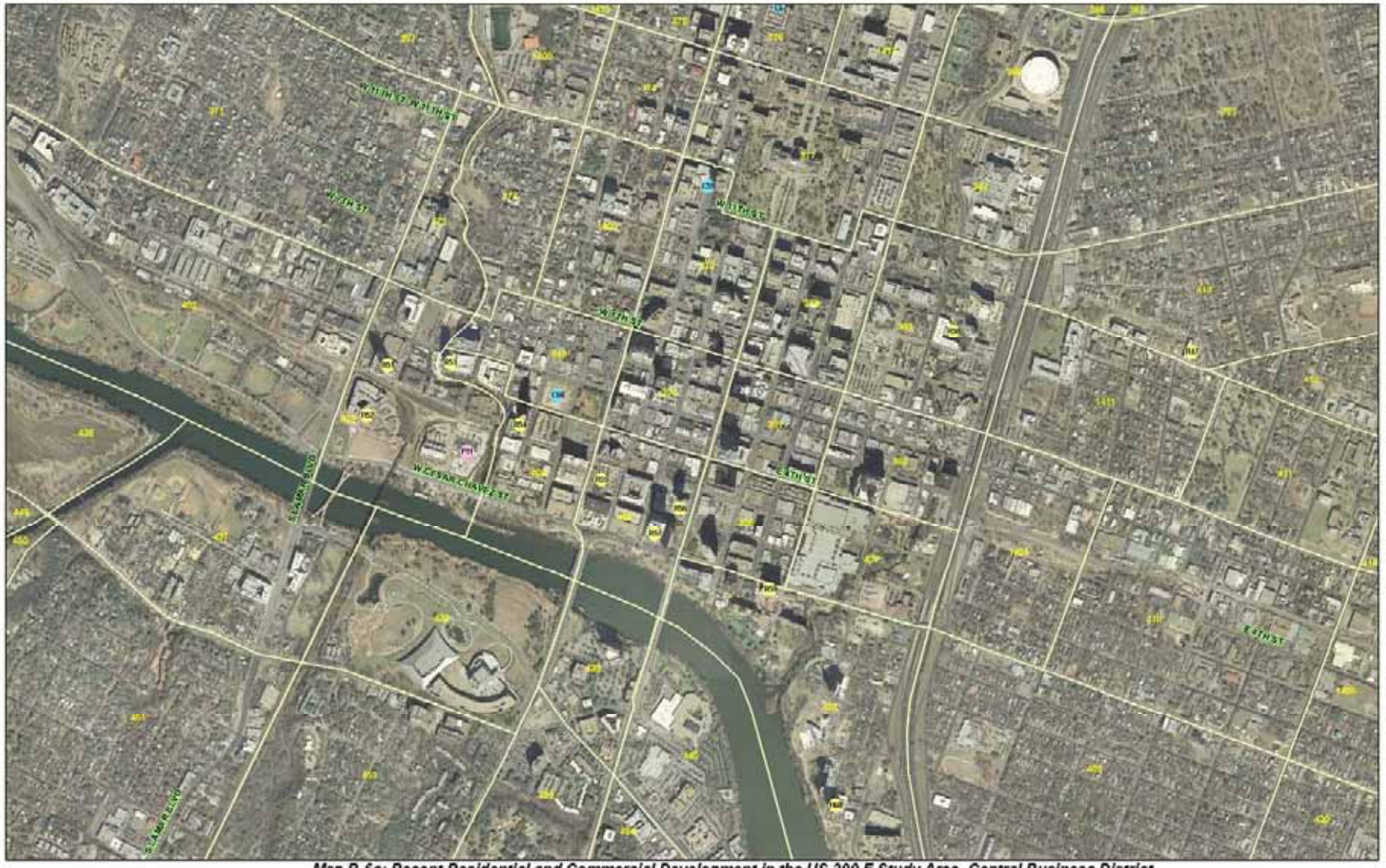


Map B-3: Recent Residential and Commercial Development in the US 290 E Study Area - Manor and Southeast Travis County

Map B-4: Recent Residential and Commercial Development in the US 290 E Study Area -Decker Lake



Map B-5: Recent Residential and Commercial Development in the Manor Expressway Study Area - Central



Map B-6a: Recent Residential and Commercial Development in the US 290 E Study Area -Central Business District

Map B-6b: Recent Residential and Commercial Development in the US 290 E Study Area - University of Texas at Austin Campus